

# CRISTAL

## WAREHOUSE MANAGEMENT SYSTEM

Version 5.400

Last Updated: 18 September 2020

### System Administrator Guide

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## PREFACE

This manual is based for CRISTAL Warehouse Management System **Version 5.400** Enterprise Version. Some of the functionalities will not be available in earlier version.

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For an overall understanding of CRISTAL Warehouse Management System, please contact your implementation consultant for assistance or contact CRISTAL Solutions Pte Ltd at:

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**Note:** This guide is written based on the Enterprise Edition. Some of the functions describe herein may not be available in the Standard and Subscription editions.

CRISTAL

**Table of Contents**

<b>1.</b>	<b>INTRODUCTION</b>	<b>15</b>
1.1.	Brief Overview.....	15
1.2.	Measurement Units .....	16
1.3.	Revision Notes .....	16
1.3.1.	Release 5.400 Build 868 – Dropping of Pallet Numbers’ suffix	16
<b>2.</b>	<b>SYSTEM CONFIGURATION</b>	<b>17</b>
2.1.	Site Configurable Setting.....	17
2.1.1.	User Configurable Parameters	18
2.2.	SQL Job.....	18
2.3.	System User Define Parameters .....	19
2.3.1.	UDF Parameters List	20
2.4.	Product Unit of Measurement (UOM) .....	22
2.5.	Order Types Maintenance.....	22
2.5.1.	Order Class	23
2.6.	Document Reference Maintenance .....	23
2.7.	User Language Group.....	24
2.8.	UDF Field Captions .....	25
2.9.	Warehouse Task Priorities .....	26
2.10.	Calendar Workdays .....	26
2.11.	RF Devices Register .....	26
2.12.	UDF Procedures (Site Configurable).....	27
2.12.1.	Procedure List Default	28
2.12.1.1.	Obsoleted Procedures	29
2.13.	Site Licence and System Setting .....	29
2.13.1.	Site Licence	29
2.13.1.1.	Site License pre 5.395.4	29
2.13.2.	Licensee Address	30
2.13.3.	Support Contact	30
2.13.4.	GST Registration and Rate	30
2.13.5.	Directories Location Setup	30
<b>3.</b>	<b>USER ACCESS CONTROL &amp; MANAGEMENT</b>	<b>31</b>
3.1.	User Group Administration .....	31
3.1.1.	Menu Options	32
3.1.1.1.	List of Menu Options	32
3.1.2.	Client Access	36
3.1.3.	Client-Customer	36
3.1.4.	Work Areas and Tasks	36
3.1.4.1.	Default Warehouse	37
3.1.4.2.	Printer Group	37
3.1.4.3.	Maximum Tasks	37
3.1.4.4.	Max Load per Task	37
3.1.4.5.	Tasks Assignment and Priorities	37
3.1.4.6.	Access Level	37
3.1.4.7.	Work Areas or zones accesses	38
3.1.5.	Carriers Access	38
3.1.6.	Truckers Access	38
3.1.7.	Brand and Product Group Access	39
3.1.8.	Reports and WMSNET Access	39
3.1.9.	Administrative Tools	40
3.1.10.	Department Access	40
3.1.11.	Data Export	41

3.1.12.	Field Access	41
3.1.13.	WMS Imports	42
3.2.	User Profiles .....	43
3.2.1.	Deleting User ID	44
<b>4.</b>	<b>WAREHOUSE / LOCATION SETUP AND MAINTENANCE</b>	<b>45</b>
4.1.	Warehouse Setup.....	45
4.2.	Station Setup and Maintenance.....	46
4.2.1.	Station Setup	46
4.2.2.	Station Maintenance	46
4.3.	Zone Maintenance .....	47
4.3.1.	Zone-Station Definition	48
4.3.2.	Auto Zoning	48
4.4.	Locations Setup.....	49
4.5.	Locations Maintenance .....	50
4.6.	Locations Zones and Status Maintenance.....	50
4.6.1.	Zones Maintenance	50
4.6.2.	Status Maintenance	51
<b>5.</b>	<b>ENTITIES FUNCTIONS</b>	<b>52</b>
5.1.	Entity Profiles .....	52
5.1.1.	Configuration	53
5.1.2.	Entity Type Flag – Trade Net	53
5.1.3.	Help Function of Entity Master	54
5.2.	Clients Profiles .....	54
5.2.1.	Master Client	61
5.2.2.	Picks Method	61
5.2.2.1.	Pickface Pick Allocation	63
5.2.2.2.	Dynamic Pickfaces	63
5.2.3.	Picks Method Sort Extension	66
5.2.3.1.	Scenarios for Rules Violations	67
5.2.4.	Pick Sequencing Method	67
5.2.5.	Client Stock Owner	67
5.3.	Customers Profiles .....	68
5.3.1.	Customer Instruction	70
5.3.2.	Delivery Destination	70
5.3.3.	UDF Parameters	71
5.3.3.1.	Customized Reports	72
5.4.	Suppliers Profiles.....	73
<b>6.</b>	<b>PRODUCTS SETUP</b>	<b>74</b>
6.1.	Defining Product ID.....	74
6.1.1.	Basic (Mandatory Attributes Maintenance)	74
6.1.2.	Unit of Measure	78
6.1.2.1.	Notes	79
6.1.2.2.	Propagation to Pallet History	80
6.1.3.	Pre-Packaging Definition	80
6.1.4.	Dangerous Goods and Miscellaneous	80
6.1.5.	Barcode Codes Maintenance	81
6.1.6.	Pickfaces and Preferred storage Locations Definition	82
6.1.7.	Item Prices	83
6.1.8.	UDF (stock) Controls	83
6.1.9.	Customer SKU / Stock Owners	84
6.1.10.	Supplier SKU	84
6.1.11.	Bill of Materials	85
6.1.11.1.	Limitation	85



6.1.12.	UDT Annotations	86
6.1.13.	Change Request Notes	86
6.1.14.	Warranty	86
6.1.15.	Stock Status Query	86
6.1.16.	Stock Control Parameters	87
6.1.17.	eFiles	87
6.2.	Product Price Manage	87
6.3.	Customer Item Codes	88
6.4.	Supplier Item Codes	89
<b>7.</b>	<b>INBOUND OPERATIONS</b>	<b>90</b>
7.1.	Purchase Orders	90
7.1.1.	Purchase Orders Entry	90
7.1.2.	Purchase Order Manage	92
7.2.	Advance Ship Note (ASN)	93
7.3.	Material Returns Advice (Authorisation)	95
7.4.	Receipt Check In	96
7.4.1.1.	Command Buttons Action	101
7.4.2.	Supplementary Receipt Detail Function	102
7.4.2.1.	Detail Entry by Product ID Scan	102
7.4.2.2.	Detail Entry by Serialized Attributes	103
7.4.2.3.	Check in Serial Numbered Product	104
7.4.2.4.	Detail Entry by Qualified Barcode	104
7.4.2.5.	Line Item Labels utility	105
7.4.2.6.	Check In (Receipt) Line	105
7.4.2.7.	RETURNS Receipt Processing	105
7.4.2.8.	XDOCK Receipt Processing	105
7.4.3.	Receipt Costing	105
7.4.4.	Receipt Orders Manage	106
7.4.5.	Receipt Pallet Putaway Logic	106
7.4.5.1.	System Driven Putaway	107
7.5.	Crossdocking	108
7.5.1.	Manual Managed Crossdocking	108
7.5.1.1.	XDOCK-D	108
7.5.1.2.	XDOCK-B (Breakbulk)	109
7.5.2.	System Managed Crossdocking	110
7.5.2.1.	Releasing Sales Orders	111
<b>8.</b>	<b>OUTBOUND OPERATIONS</b>	<b>113</b>
8.1.	Sales Orders	113
8.1.1.	Sales Orders Entry	113
8.1.1.1.	Alternative method of details entry	119
8.1.1.2.	Detail Entry by Serialize Attributes	120
8.1.1.3.	Sales order Interfaces	121
8.1.1.4.	Delivery ASN (Interface)	121
8.1.1.5.	Despatch Label	121
8.1.1.6.	Copy SO Detail	121
8.1.1.7.	Duplicate Orders	121
8.1.1.8.	File Attachment	122
8.1.1.9.	Other Configurable Functions	122
8.1.1.10.	Modifying Sales Orders	122
8.1.1.11.	Delete Sales Order	123
8.1.2.	Sales Orders Manage	123
8.1.2.1.	Auto Selected and Print	123
8.1.2.2.	Selecting Sales Orders	124

8.1.2.3.	Create Picks Tasks	125
8.1.2.4.	Force Close Sales Orders	125
8.1.2.5.	Changing Sales Order Picks Priority	125
8.1.3.	Sales Orders Merge	125
8.2.	Packing – Carton Item .....	127
8.2.1.	Label and Pack list	128
8.3.	Packing – Despatch .....	129
8.4.	Delivery Orders (Generate and Print) .....	130
8.4.1.	Generating Delivery Orders	130
8.4.1.1.	Interface File	131
8.4.1.2.	Pallet Dimension	132
8.4.1.3.	Despatch Data	132
8.4.1.4.	Cancel Sales Order	132
8.4.2.	Despatch Label	132
8.4.3.	Packing List	133
8.4.4.	Changing Sales Order's Customer and Delivery Address	134
8.4.4.1.	Reassign Customer	134
8.4.4.2.	Changing Delivery Address	134
8.4.5.	Repackaging Options	134
8.4.5.1.	Reconfigure Pallet Awaiting Despatch	134
8.4.5.2.	Un-Pick selected line	135
8.4.5.3.	Un-Pick a pallet	135
8.5.	Trucking Loading .....	136
8.6.	Shipment Loading .....	136
8.6.1.	Print DO	137
8.7.	Delivery Order Confirmation .....	138
8.8.	Delivery Routes Maintenance .....	139
8.8.1.	Defining delivery Route ID	140
8.8.2.	Delivery Drop ID Maintenance	140
8.8.3.	Delivery Route by Postal Code	141
8.9.	Street Maintenance .....	142
8.9.1.	Manual Entry	142
8.9.2.	Uploading Street Name	142
<b>9.</b>	<b>WAREHOUSE OPERATIONS</b>	<b>144</b>
9.1.	De-Kitting Order Entry .....	144
9.2.	Kitting Orders Entry .....	144
9.3.	Pick Zone Transfers .....	144
9.4.	Multi Orders Picks .....	144
9.4.1.	Function	145
9.5.	Replenishment Transfers .....	147
9.6.	Warehouse Tasks .....	148
9.7.	Warehouse Tasks Manage .....	151
9.7.1.	Change Location	151
9.7.2.	Change Priority	151
<b>10.</b>	<b>KITTING MODULE</b>	<b>152</b>
10.1.	Configuration for Kitting Function .....	152
10.1.1.	Limitation	152
10.2.	Kitting Order Entry .....	152
10.2.1.	Creating Kit Order	153
10.2.2.	Updating Completed Kit Set	153
10.3.	De-kitting Order Entry .....	154
10.4.	Report - Kit Order .....	156
<b>11.</b>	<b>STOCK MANAGEMENT</b>	<b>157</b>

11.1.	Inter Warehouse Transfer .....	157
11.1.1.	Process .....	157
11.1.2.	Order Entry .....	157
11.2.	Ownership / Item Code Transfer .....	158
11.3.	Pallet Relocation .....	160
11.4.	Stock Adjustments .....	161
11.4.1.	Adding New Product ID .....	161
11.5.	Stock Location2Location .....	161
11.6.	Stock Re-labelling .....	162
11.7.	Stock Relocation .....	163
<b>12.</b>	<b>STOCK COUNT MANAGEMENT</b> .....	<b>165</b>
12.1.	Stocktake Options .....	165
12.1.1.	By Product .....	165
12.1.2.	By Location .....	166
12.1.3.	Random .....	166
12.1.4.	Conducting a Stocktake .....	166
12.2.	Cycle Counting .....	167
12.2.1.	Cycle Count by Item Code .....	168
12.2.1.1.	Setting Up Cycle Count Frequency .....	168
12.2.2.	Cycle Count by Location .....	168
12.2.3.	Starting Cycle Count .....	169
12.3.	Stock Count Entry .....	169
12.3.1.	Batch Mode .....	169
12.3.2.	Real-time Mode .....	170
12.4.	Stock Count Reports .....	170
12.4.1.	Stock Count Tag .....	170
12.4.2.	Stock Count Worksheet .....	171
12.4.3.	No Physical Count Report .....	171
<b>13.</b>	<b>REPORTS MENU MAINTENANCE</b> .....	<b>173</b>
13.1.	Adding New Report Template .....	175
13.2.	Updating Report Menu Option .....	176
13.3.	CRISTAL WMS Printer Control .....	177
13.3.1.	Multiple Output Printers Configuration .....	178
13.3.2.	Wide Area Network (WAN) Printers .....	179
<b>14.</b>	<b>TRANSPORT MANAGEMENT MODULE</b> .....	<b>180</b>
14.1.	Vehicle Setup and Maintenance .....	180
14.2.	Loading and Unloading Points .....	181
14.3.	Create Transport Order .....	182
14.4.	Schedule and Issue Transport Order .....	183
14.5.	Closing completed transport Order .....	184
<b>15.</b>	<b>ADMINISTRATOR TOOLS</b> .....	<b>186</b>
15.1.	ABC Classification Update .....	186
15.1.1.	Movement Classification .....	186
15.1.2.	Value Classification .....	186
15.2.	Alternate Code Check .....	187
15.3.	AR Data Export – Navision AX .....	188
15.4.	Booked Quantity Synchronise .....	188
15.5.	Client Data Delete .....	188
15.6.	Client Data Duplication (Copy) .....	189
15.7.	Client ID Change .....	189
15.8.	Client Stock Balance ZEROize .....	190
15.9.	Client Transaction Clear .....	190
15.10.	Customer ID Change .....	191

15.11.	Database Backup.....	191
15.11.1.	Limitation .....	192
15.12.	Database Initiate.....	192
15.13.	Date Correction.....	192
15.14.	De-bonding of Temporary Bonded .....	193
15.15.	Despatch Grid Clear .....	194
15.16.	Email Delivery Pre-Alert .....	194
15.17.	Interface File Generate .....	194
15.18.	Lot and Batch Update .....	195
15.19.	Pallet-Location: Multi-Location Correction .....	196
15.20.	Pallet-Location: Multi-Pallets Merge.....	197
15.21.	Item Attributes Exclusion List.....	198
15.22.	Product Details Update .....	199
15.23.	Product ID Change .....	199
15.24.	Product Pricing Maintenance.....	200
15.25.	Product UOM Correction .....	200
15.26.	Product Status Change.....	201
15.27.	Receipt Cancelled UNDO.....	201
15.28.	Receipt Check In Undo .....	202
15.29.	Reverse Transactions .....	202
15.29.1.	Refinement .....	203
15.29.1.1.	Merging of Sales Orders Reversal .....	203
15.29.1.2.	Pallet Numbers on Reversal .....	203
15.30.	Sales Order Consignment Note Update .....	204
15.31.	Sales Order No-Pick Closed REOPEN.....	204
15.32.	Sales Order Release UNDO.....	205
15.33.	Opening Balance Adjustment.....	205
15.34.	Stock Owner Removal .....	206
15.35.	System Logs Maintenance .....	206
15.36.	Warehouse Locations Copy.....	207
15.37.	Warehouse Move.....	207
15.38.	Warehouse Transfer .....	208
15.39.	Warehouse Walk Order Re-sequence.....	208
15.40.	Work Order Reassign .....	209
15.40.1.	Release Work Order .....	209
15.40.2.	Reassign Works Order .....	209
<b>16.</b>	<b>MANAGEMENT DASHBOARD AND KPI</b> .....	<b>211</b>
16.1.	Operation Activities Status.....	211
16.2.	Warehouse Operations Summary Query .....	212
16.3.	Warehouse Orders Summary.....	214
16.4.	Warehouse Utilization .....	215
16.4.1.	Aisle .....	215
16.4.2.	Zone .....	215
16.4.3.	Location by Level .....	215
16.4.4.	Location by Aisle .....	216
16.4.5.	Summary .....	216
16.4.6.	Projected .....	217
16.5.	Key Performance Indicator Report.....	217
16.5.1.	Sample Report .....	219
<b>17.</b>	<b>REAL-TIME ALERT</b> .....	<b>219</b>
17.1.	Detail Enquiry.....	220
17.2.	Sales Orders Due for Picking .....	221
17.3.	Other Queries .....	221

17.4.	Function and Setup .....	222
17.5.	Site Customisation .....	222
17.6.	Configuration for Email Alert .....	222
17.6.1.	System Configuration .....	223
17.6.2.	Client Setting .....	223
17.6.3.	Email Alert .....	224
<b>18.</b>	<b>3PL WAREHOUSING REVENUE-COST ANALYSIS</b> .....	<b>225</b>
18.1.	Concept .....	225
18.1.1.	Data Sources .....	225
18.1.2.	Report Structure .....	225
18.1.3.	Work Unit .....	226
18.2.	Setup for Reports .....	226
18.2.1.	Warehouse Costs .....	226
18.2.1.1.	Expense Code Setup .....	226
18.2.1.2.	Typical Warehouse Costs .....	226
18.2.1.3.	Warehouse Costs Maintenance .....	227
18.2.1.4.	Clear Simulation Data .....	228
18.2.1.5.	Clear Year Data .....	228
18.2.2.	Whse Cost Group and Work Unit Maintenance .....	228
18.2.3.	Storage and Handling Costing .....	229
18.3.	Report Sample – Warehouse Billing Summary .....	231
<b>19.</b>	<b>IMPROVING WAREHOUSE PRODUCTIVITY</b> .....	<b>232</b>
19.1.	Pickfaces Operations .....	232
19.1.1.	Dynamic Pickfaces .....	232
19.1.1.1.	Report Sample .....	232
19.1.2.	Static Pickfaces .....	232
19.1.2.1.	Process .....	232
19.1.2.2.	Refinement .....	233
19.1.3.	Sales Orders Pickfaces Replenishment .....	233
19.1.3.1.	SQL Agent Job .....	233
19.1.3.2.	Related Procedures .....	233
19.2.	Pick Zone Transfer .....	233
19.2.1.	Operations .....	234
19.3.	Pick By Light Setup .....	235
19.3.1.	Location Address Structure .....	235
19.3.2.	SQL Agent Jobs .....	235
19.3.3.	CRISTALITF database structure .....	235
19.5.	Storage by Picks Activities .....	236
19.5.1.	Setting up The Zones .....	236
19.5.2.	Setting up the Item .....	236
<b>20.</b>	<b>VENDOR MANAGED INVENTORY</b> .....	<b>238</b>
20.1.	CRISTAL Vendor Managed Inventory Solution .....	238
20.2.	The Setup .....	238
20.2.1.	Defining the Clients .....	238
20.2.2.	Define the Customer of the VMI CUSTOMER .....	238
20.2.3.	Define the Vendor of the VMI CUSTOMER .....	238
20.2.4.	Define Vendors' item code .....	239
20.2.5.	Define VMI CUSTOMER item code .....	239
20.3.	Operations .....	240
20.3.1.	VMI VENDOR Advice .....	241
<b>21.</b>	<b>INTERFACES</b> .....	<b>242</b>
21.1.	WMS Import2 .....	242
21.1.1.	Data Files in Other Formats .....	243



21.1.2.	Command Line Execution	244
21.1.3.	File Names	244
21.1.4.	Remove Data	246
21.1.5.	Excel File Structure	246
21.1.5.1.	“DATA” Worksheet	246
21.1.5.2.	Headings Row	246
21.1.5.3.	First Column	246
21.1.5.4.	Cell Format	246
21.1.6.	CSV File Structure	247
21.1.6.1.	Headings Row	247
21.1.6.2.	Data Columns	247
21.1.6.3.	Data Rows	247
21.1.6.4.	Data Format	247
21.1.6.5.	Special Field Names	247
21.1.7.	WMS_Import.INI File	248
21.1.7.1.	[DATABASE] Section	248
21.1.7.2.	[EXCEL] Section (optional)	248
21.1.7.3.	[SP] Section (optional)	248
21.1.8.	Barcode	250
21.1.9.	Client Records	251
21.1.10.	Customer Records	252
21.1.11.	PICKFACE	253
21.1.12.	Product Item Definitions	254
21.1.13.	PRODUCT DESCRIPTION	256
21.1.14.	Product UOM	257
21.1.15.	Receipt	258
21.1.15.1.	RECEIPT_MASTER	258
21.1.15.2.	RECEIPT_DETAIL	258
21.1.16.	RELOCATE ITEM	260
21.1.17.	REMOVEGRN	261
21.1.18.	REMOVESO	262
21.1.19.	RPRODUCT	263
21.1.19.1.	Note	263
21.1.20.	RSERIAL	264
21.1.21.	RSTOCK	265
21.1.21.1.	Note:	265
21.1.22.	SO – Sales Orders	266
21.1.23.	STKADJUST	267
21.1.24.	STKRECEIPT	268
21.1.25.	Stock Balance	269
21.1.26.	SUPPLIER	270
21.2.	Interfaces 3 Method.....	271
21.2.1.	Data Structure Setup	272
21.2.2.	CSV File Examples (see Example.csv)	273
21.2.3.	Download FROM CRISTAL WMS	273
21.2.3.1.	INCOMING SHIPMENT –	273
21.2.3.2.	OUTGOING SHIPMENT	274
21.2.3.3.	SALES ORDER	276
21.2.4.	Upload TO WMS	277
21.2.4.1.	Purchase Order	277
21.2.4.2.	Advance Shipment Note	278
21.2.4.3.	Sales (Customer) Order	279
21.2.4.4.	Product Master	280

21.2.4.5.	CUSTOMER MASTER	282
21.2.4.6.	Stock Adjustment and Attribute Change	283
21.3.	Interfaces file upload messages .....	283
21.3.1.	Defining the addressees	284
<b>22.</b>	<b>USER DEFINED DATA EXPORT</b>	<b>285</b>
22.1.	Data Export Definition.....	285
22.1.1.	Creating an Export Data Definition	285
22.1.2.	Enable User Access	286
22.2.	Exporting Data .....	287
22.3.	Data Elements .....	288
22.3.1.	view_audit_trail	288
22.3.2.	view_delivery	289
22.3.3.	view_item_locations	290
22.3.4.	view_stock_detail	291
22.3.5.	view_stock_free	292
<b>APPENDIX A.</b>	<b>SUPPLEMENTARY SUPPORT FUNCTIONS</b>	<b>293</b>
A.1.	File Attachments .....	293
A.2.	VA Services.....	293
A.3.	Item Labels.....	294
A.4.	Label Utility .....	295
A.4.1.	Defining Label Options	295
A.4.2.	Printing Label	296
A.4.2.1.	Adhoc	296
A.4.2.2.	Sales Orders	296
A.5.	Grid Columns Sequence .....	297
A.5.1.	Rearranging Grid Columns	297
A.5.2.	Rearrange via WMS Import function	298
<b>APPENDIX B.</b>	<b>COMPLEMENTARY FUNCTIONS</b>	<b>299</b>
B.1.	(Licensed Warehouses) Customs Lots Register .....	299
B.1.1.	Setup for Generation of Lot Number	299
B.1.2.	Lot Number Client Maintenance	300
B.1.2.1.	Allocation of Lot Numbers	300
B.1.2.2.	Reassign Lot Number to another Client	301
B.1.3.	Receipt Specific Lot Number	302
B.1.4.	Customs Lots Reports	302
B.2.	Quality Assurance Module .....	303
B.2.1.	QA Hold	303
B.2.1.1.	QA Hold by Location / Pallets	304
B.2.1.2.	QA Hold by Product	305
B.2.2.	QA Release	305
B.2.2.1.	QA Release by Location / Pallets	305
B.2.2.2.	QA Release by Products	306
B.3.	Auto Alerts and Reports Emailing .....	307
B.3.1.	Email Job Maintenance	307
B.3.1.1.	Scheduled email of reports	307
B.3.1.2.	Email Reports	308
1.	Email Expiry Stock	308
2.	Email Low Stock	309
3.	Email Replenishment	309
4.	Email Stock Status Item	309
B.3.1.3.	Sending the Email Reports	309
B.3.1.4.	Email Jobs	310
B.4.	SMS Messaging .....	310

B.5.	Reports Menu .....	311
B.5.1.	Printing a Report	311
B.5.2.	Emailing Reports	312
B.5.3.	Using Crystal Reports™ in CRISTAL WMS	312
B.5.4.	Tables Structures	313
B.5.5.	Stored Procedure	313
B.6.	Carrier and Waybill Setup .....	313
B.6.1.	Defining Carrier ID	313
B.6.2.	Waybill Numbering Control	314
B.6.3.	Granting Access	315
B.6.4.	Waybill Manage	315
B.7.	Configuring for Other Languages .....	316
B.7.1.	Setting the locale	316
B.7.2.	Setting the CRISTAL WMS	316
B.8.	Database Maintenance .....	317
B.8.1.	Available Schedulable Stored Procedures	318
B.8.2.	Brief Guide on Job Schedules	319
B.9.	SAP Material Document Processing .....	320
B.9.1.	Process Material Document Transactions	320
B.9.2.	Enquiry and Report	321
B.9.3.	SAP Movement/Plant -> CRISTAL WMS Conversion	322
B.9.4.	Sample of Material Document Report	322
B.9.5.	Stock Movements Report	323
<b>APPENDIX C. SQL AGENT JOBS</b>		<b>324</b>
C.1.	End of Days Processing .....	325
C.1.1.	Redundant Clients	327
C.2.	Master Data Logs .....	327
C.2.1.	Sales Orders	327
C.2.2.	Sales Details	327
<b>APPENDIX D. WMS DATABASE MAINTENANCE UTILITIES</b>		<b>329</b>
<b>APPENDIX F. USER CONFIGURABLE PARAMETERS AND SETTING</b>		<b>330</b>
F.1.	Client Specific Configuration .....	330
F.1.1.	Billing	330
F.1.2.	Reports	330
F.1.3.	Grade-Zone	332
F.1.4.	(Application) Data Identifiers	332
F.1.5.	Interfaces	332
F.1.5.1.	Data Processing Services	336
F.1.6.	Miscellaneous Parameters	336
F.1.7.	Email Messaging Parameters	345
F.1.7.1.	Auto Emailing of Serial Numbers	346
F.2.	Customer UDF Parameters.....	347
F.3.	Item Specific Parameters .....	348
<b>APPENDIX G. INTRODUCTION TO CRYSTAL REPORTS™</b>		<b>350</b>
G.1.	Synchronising Reports with Data Source .....	353
G.1.1.	Verify Database	353
G.1.2.	Set Location	354
<b>APPENDIX H. WINDOWS SERVICE PROGRAMS</b>		<b>358</b>
H.1.	Print Queue .....	358
H.1.1.	Installation	358
H.1.1.1.	Installing the Service	358
H.1.1.2.	Starting the Service	359
H.1.1.3.	Windows Registry Keys	359



H.1.1.4.	Uninstalling the Service	359
H.1.1.5.	Windows Printer Configuration	359
H.1.1.6.	Security Tab Not Seen in Printer Properties	361
<b>APPENDIX I.</b>	<b>APPLICATION LOG QUERY</b>	<b>363</b>
<b>APPENDIX J.</b>	<b>DATABASE AUTOMATED DUPLICATION</b>	<b>364</b>
J.1.	Step 1 - Creating the Job .....	364
J.2.	Step 2 - Defining the tasks .....	364
J.2.1.	Task 1 - Adding DB Backup Location	364
J.2.2.	Task 2 - Create Backup from LIVE	365
J.2.3.	Task 3 - Drop Existing Database	365
J.2.4.	Task 4 - Recreate Duplicate Database	365
J.2.5.	Task 6 - Reset AEservr Parameter	366
J.2.5.1.	Disable Auto Email Function	366
J.2.5.2.	Redirect Interface FTP folders	367
J.2.6.	Task 7 - Reset Login Users	367
J.3.	Step 3 – Setting Job Schedule .....	367
J.3.1.	Task 1 – Specify Required Schedule	367
J.3.1.1.	Define the Details if Recurring	368
<b>APPENDIX K.</b>	<b>INSTALLING CRISTAL WMS</b>	<b>369</b>
K.1.	Install the database.....	369
K.2.	Installing CRISTAL WMS application.....	369
K.2.1.	Installing CRISTAL WMS on a new PC / Notebook	370
K.2.2.	Updating INI Configuration	370
K.2.3.	Login Error Troubleshoot	370
<b>APPENDIX L.</b>	<b>ADMINISTRATOR HELPS</b>	<b>371</b>
L.1.	Application Issues and Resolutions.....	371
1.	<i>CANNOT RESOLVE COLLATION CONFLICT</i>	371
2.	<i>MISSING DLL</i>	371
3.	<i>RUNTIME ERROR 3420</i>	371
4.	<i>RUNTIME ERROR 429 (OCCURS AT PROGRAM LOADING)</i>	371
5.	<i>CRYSTAL REPORTS ERROR 507</i>	371
6.	<i>CRYSTAL REPORTS ERROR 515.</i>	371
7.	<i>CRYSTAL REPORTS ERROR 534</i>	371
8.	<i>CRYSTAL REPORTS ERROR 567</i>	372
9.	<i>CRYSTAL REPORTS ERROR 599 – ERROR OPENING SQL SERVER</i>	372
10.	<i>CRYSTAL REPORTS ERROR 997</i>	373
11.	<i>RUNTIME ERROR (3146) IN REVERSE TRANSACTIONS -&gt; SALES ORDERS (RECORDED 09 MAR 2007)</i>	373
12.	<i>SQL SERVER ERROR 08004 / 4060</i>	373
13.	<i>RUNTIME ERROR 3000</i>	373
14.	<i>SQL SERVER ERROR 53 / 17</i>	374
L.2.	Frequent Asked Questions (FAQ).....	375
L.2.1.	System	375
15.	<i>SQL SERVER CONNECTION ERROR 10060</i>	375
16.	<i>WHAT ARE THE THINGS THAT NEED TO BE DONE WHEN IMPLEMENT CRISTAL WMS OR SETUP NEW CLIENT?</i>	375
17.	<i>DEFINING DEFAULT WAREHOUSE TO USER GROUP BUT THE WAREHOUSE IS NOT LISTED IN THE POPUP LIST EVEN THOUGH WAREHOUSE’S ZONES HAVE BEEN GRANTED?</i>	376
18.	<i>REPORTS – EXCEL OPTIONS IS NOT AVAILABLE IN THE EXPORTS DIALOG BOX</i>	376
L.2.2.	Receiving and Putaway	376
19.	<i>HOW TO ENSURE THAT NEW SHIPMENT OF AN ITEM THAT IS BLOCKED BY QA FOR QUALITY REASON IS NOT PICKED FOR ORDER?</i>	376
20.	<i>THE SYSTEM DOES NOT ALLOW ME TO CONFIRM TASK AFTER ASSIGN ANOTHER LOCATION FOR PUTAWAY</i>	376
21.	<i>PALLET-ITEMS ARE CHECKED IN BUT IT DOES NOT GET ASSIGNED TO ANY OPERATOR EVEN THOUGH THEY ARE AVAILABLE FOR WORK</i>	376

22.	THERE IS NO WAREHOUSE IN THE RECEIPT HEADER.	377
23.	THERE IS MORE THAN ONE WAREHOUSE IN THE WAREHOUSE DROP DOWN BUT USER CANNOT SELECT OTHER THAN THE DISPLAYED.	377
24.	HOW CAN SKU BE PUTAWAY TO A FIXED LOCATION ON RECEIPT?	377
L.2.3.	Sales Orders	377
25.	FULL PICKS ONLY AND BACK ORDER CONTROLS	377
L.2.4.	Picking and Despatch	379
26.	HOW CAN THE SYSTEM FACILITATE USE OF PICKFACES WITHOUT HAVING TO ASSIGN ONE TO EACH PRODUCT ID?	379
27.	HOW TO HANDLE RETURN TO SUPPLIER?	379
28.	“THERE IS STOCK IN THE WAREHOUSE BUT THE SYSTEM IS NOT GENERATING PICK ORDER” – WHAT IS THE PROBLEM?	379
29.	“WHEN I ENTER THE DESPATCH, THE WAREHOUSE AND THE CLIENT IS DISPLAYED. BUT WHEN I TAB AND THE CURSOR JUMP OF THE WAREHOUSE COMBO BOX, THE CLIENT COMBO BOX IS CLEARED. I AM UNABLE TO RETRIEVE ANY CLIENT CODE.”	380
30.	ALTHOUGH THERE IS STOCK IN THE WAREHOUSE (QUERY VIA THE INQUIRY->INVENTORY), THE SYSTEM DOESN’T SEEM TO BE ABLE TO ALLOCATE THE STOCK FOR PICKING. EVERYTHING ELSE SEEMS TO BE IN ORDER.	380
31.	WHAT ARE THE DESPATCH LABELS AVAILABLE AND WHERE IS IT DEFINED?	380
L.2.5.	Miscellaneous	382
32.	HOW THE LENGTH OF PALLET NUMBER IS BE CONTROLLED?	382
33.	HOW TO RE-PRINT A WORK ORDER IF FORGET TO PRINT?	384
34.	PUTAWAY, PICKING... IS CREATED BUT IS NOT ASSIGNED TO ANY OPERATORS.	384
35.	HOW CAN STOCK OWNERSHIP BE ACTIVATED FOR EXISTING PRODUCTS THAT DO NOT HAVE OWNERSHIP CONTROL ORIGINALLY?	384
36.	UNABLE TO CHANGE EXPIRED USERS PASSWORD	384
37.	HOW TO PRINT SUMMARY REPORT OF MONTHLY BILLABLE REPORT?	384
38.	WHAT HAPPEN TO THE STOCK IN THE WAREHOUSE WHEN THE LOCATIONS ARE RE-ZONED?	386
39.	NEWER STOCKS ARE ALLOCATED OVER OLDER STOCK WHEN THE PICK METHOD IS SET TO FEFO-FIFO AND THERE IS NO EXPIRY DATE CONTROL. NEITHER IS ANY STOCK ATTRIBUTES BEING SPECIFIED IN THE SALES DETAILS.	386
40.	EXPORTING TO PDF FROM CRYSTAL REPORTS NOT WORKING	386
<b>APPENDIX M.</b>	<b>SYSTEM CONFIGURATION SETTING (USER-CONFIGURABLE)</b>	<b>388</b>
M.1.	Default Application Folders.....	396
<b>APPENDIX N.</b>	<b>SYSTEM ENHANCEMENTS DOCUMENTATION</b>	<b>398</b>
N.1.	Excel Spread sheet Export function.....	398
N.1.1.	Possible Issues	399
<b>APPENDIX O.</b>	<b>WAREHOUSE UTILIZATION REPORTS</b>	<b>401</b>
<b>APPENDIX P.</b>	<b>DISPLAY OF CHINESE AND OTHER ASIAN CHARACTERS</b>	<b>402</b>
P.1.	Reports.....	403
<b>APPENDIX Q.</b>	<b>USER DEFINED FIELDS</b>	<b>404</b>
Q.1.	Customize UDF Caption .....	404
<b>APPENDIX R.</b>	<b>WMS IMPORTS GUIDE</b>	<b>406</b>
R.1.	Stock Relabel.....	406
22.3.6.	Stock Re-Grade	407
R.2.	Stock Adjustment .....	407
<b>APPENDIX S.</b>	<b>USERS INTERFACES DESIGNS</b>	<b>409</b>
S.1.	Product Master .....	409
S.2.	Receipts.....	410
S.3.	Sales Orders .....	410
<b>APPENDIX T.</b>	<b>REVISION HISTORY</b>	<b>412</b>
<b>INDEX TABLE</b>		<b>416</b>

# 1. INTRODUCTION

This document is meant as a guide for implement consultant and system administrators to assist them in the setting up and implementation of CRISTAL Warehouse Management System – and subsequent support and maintenance.

Although some of the functions are not in the System Configuration menu option, it is included for complete setup reference. These functions are being covered in separate documents.

Where stored procedures and report templates are to be specified, it is the responsibility of the system administrators to ensure the names are correctly entered.

Error in the naming of the stored procedures and report templates will result in the failure of the system in completing the required functions or failure of the system itself.

Some of the settings and parameters are controlled by requiring additional password.

Change required must be communicated to the vendor who will provide the required password which is valid for the day.

This document merges and replaces the following documents

- System Configuration Documentation
- Client Configuration and Parameters

It is further expanded to include the setup of master files such as below but not limiting to them:

- Warehouse Setup
- Entity Profiles
- Client Profiles
- Customers Profiles
- Suppliers Profiles

The other supplementary documents are:

- [3PL Service Billing](#)
  - This document is made available only to sites that are licensed for the 3PL Enterprise edition only
- [Auto Upload Setup](#)
  - This document is made available only to sites that run full licence edition only

## 1.1. Brief Overview

CRISTAL Warehouse Management System, designed based on Third Party Logistics (3PL) warehouse operations, aims to meet the diversity of products that their client contract them to warehouse, distribute and manage, and achieving this with minimum customization.

The system focuses on managing the movements (tasks or activities) in the warehouses which are defined as:

Movement Types	Code	Affect Stock Balance	Remarks
1. Check In	C	No	Receiving and checking activity
2. Putaway or Storage	S	Increase	Storage – stock in increase at this point
3. Replenishment	R	No	Activity to move stock from Storage to Pickfaces or bins
4. Kitting / De-kitting	+K/-K	Decrease / Increase	Decrease stock of parts used and increase set quantity. Vice versa for de-kitting/
5. Picking	P	Decrease	Issue stock for sales orders / delivery
6. Despatch	D	No	Despatch of picked item
7. Stock Adjustment	A	Increase / Decrease	Correction to stock balance
8. Stock Relabel	L	No	Change stock attributes
9. Pallet / Stock Relocation	T / U	No	Moving of stock for one location to another within the warehouse – by pallet or by item
10. Owner / Item Transfer	O	Yes	Stock change between customer-owners
	P, C, S		Stock between clients – transactions effected with Picks, Check In and Putaway movements

Although focus on activities within the 4 walls of warehouses, CRISTAL WMS also incorporate some transport management such as Load Planning, Routing, Trucks Loading to meet basic transport operations need by some of the warehouse operations.

The system is also enabled for collaboration with trading partners by being enabled for basic and comprehensive EDI (electronic data interchange) of interfacing. The interfacing media can be in XML, ACII (CSV of fixed position) text file or simply with Excel spreadsheet.

The interfacing can either be manual or automated or via automated emailing.

In Build 5.399.012 Build 833, the command and tabs buttons are reformate to be larger to facilitate touchscreen monitor and tablets – namely, more touchscreen friendly.

The program is also being enabled to reconnect to the database after waking up from a system hibernation or sleep.

## 1.2. Measurement Units

The measurement units adopted by the system are as follows:

Measurement	Unit
• Dimensions (Height, Depth and Width)	Millimetres (mm)
• Volume	Cubic Meters (M3)
• Weight	Kilograms (Kg)

## 1.3. Revision Notes

Following notes are information on system design infrastructure changes. However these changes are transparent to users and do not affect the functionality of the system.

### 1.3.1. Release 5.400 Build 868 – Dropping of Pallet Numbers' suffix

Change is made to pallet numbering. The '0' suffix is dropped from pallet numbers and no longer has any significance in CRISTAL WMS.

Prior to this release, all pallets numbering are suffixed with '0'. This was originally used to identify pallet numbering generated by the system with other digit identify pallet number that originated from outside the system. This was originally incorporate to meet specific operations' need which are no longer required.

It is dropped to simplify and optimize the system logic.

## 2. SYSTEM CONFIGURATION

System Configuration comprise of system level setting which defines the processes in the WMS. Change to the settings will change the behaviour of the system.

These settings are usually configured by the implementation consultants or system administrators.

Only persons that are trained in the system are to be authorised access to this option. Changes to any of the attributes may cause undesired results to the site.

The parameters are stored in the table system config.

Following are the fields in the table:

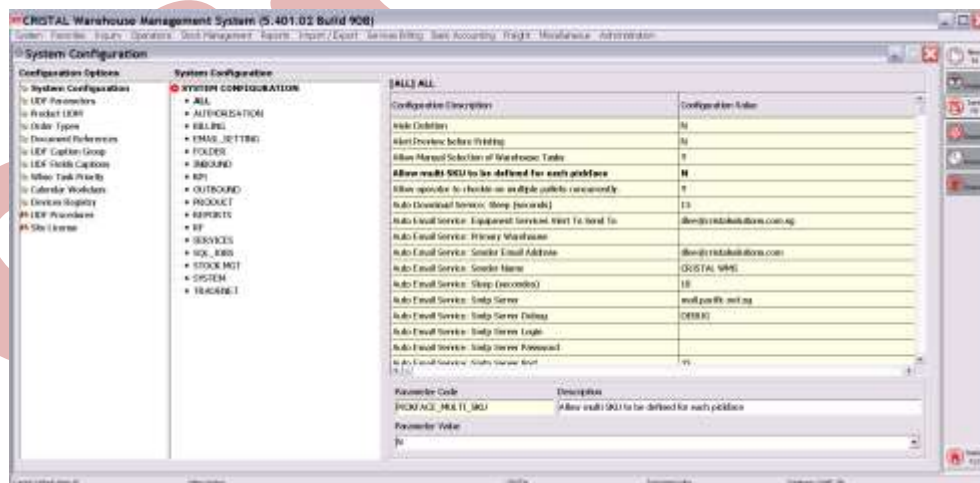
Field Name	Data Type	Comments	Default Value
cfg_code	Nvarchar(50)	Primary key – Configuration Code	
cfg_description	Nvarchar(50)	Description of the code	
cfg_value	Nvarchar(255)	The value setting	
last_update	datetime	Last updated	
sys_user	Nvarchar(50)	'SYSTEM' or 'USER' – only 'USER' are listed in the grid box	'SYSTEM'
grouping	Nvarchar(50)	Code grouping – to facilitate maintenance	'SYSTEM'
value_type	Nvarchar(50)	Value Type <ul style="list-style-type: none"> <li>• BOOLEAN'</li> <li>• 'FREE form,</li> <li>• NUMERIC</li> <li>• TEXT</li> <li>– Same as FREE but subject to validation</li> </ul>	FREE

### 2.1. Site Configurable Setting

The System Configuration option lists the Configuration Groups and Keys in 2 separate grid boxes.

The default 'All' Configuration Group list all the user configurable parameters. If the user clicked on any of the Configuration Group, the Configuration Key grid box will be refreshed and display Configuration Keys belonging to the selected group as shown.

As most of the setting take immediate effect, it is advisable that changes, when required, be done without any user log in. This is to prevent confusion to the user.



To change any of the Configuration Key' value:

1. Select the key by clicking on the record in the Configuration Key grid box
  - a. The data will be displayed in the text boxes
  - b. Only the Parameter Value can be modified
2. The option available Parameter Value control is according to the data type:
3. If the value is of Boolean, user will click No or Yes accordingly
  - a. Change is updated in the grid box and database at the same time

4. If the value is of validated data, the dropdown button will be activated and user is to click the button to pop up a window that displays the available value.
  - a. Select the required value
  - b. The value is updated in the grid box and database at the same time
5. If the value is of free form, the text box will be enabled.
  - a. Input the desired value
    - i. Caution – input numeric value if the required value is numeric (check with vendor if not sure)
    - ii. Input a character string in a numeric field will be translated to 0 (ZERO) by the system
  - b. Click 'Update Change' to update the data
6. Repeat the above step to change other Configuration Key

**2.1.1. User Configurable Parameters**

Designed as a configurable system in order to meet various operational requirements, CRISTAL WMS incorporates a fair number of configuration parameters. These are grouped into System and User configurable parameters. The System configurable parameters are usually set up by the vendor or the implementation consultants.

The User configurable parameters are as listed in Appendix A. These parameters are again being grouped into 3 sub-groups by the value type that they require:

1. Boolean – YES or NO
2. Text – structured text string that defined values required by the system
  - a. Popup windows are provided to assist administrator to ensure correctness of the input
3. This parameters required value that first defined in other area of the system such as Admin | WMS Parameters Maintenance and Admin | Products | Order Types
  - a. Free – value to be specified by the user subjected to basic Windows defined formats.
  - b. Although this sub-group are classified as freeform value, it does not imply that administrator input any value or string. In fact, the onus is on the administrator to enter the correct string or value that is required for the proper functioning of the system.
4. Numeric – Value specified must be of numeric otherwise system error may occur

The list of system configuration parameters is in the appendix – User Definable System Configuration Setting

**2.2. SQL Job**

SQL Job group is introduced in 5.398 to consolidate the various agent jobs to enable site administrators to enable / disable the jobs as required.

1. Daily Warehouse Utilisation Update
2. Expiry Stock Maintenance
3. Synchronise Pallets Location
4. System Logs Maintenance
5. System Assign Warehouse Tasks
6. System Interface Imports

These jobs, which previously required to be setup individually, can be enabled/disabled in System Configuration | SQL Jobs

These categorise into 2 groups:

1. Real time
  - a. Procedure sql\_server\_agent\_realtime\_jobs
  - b. This is to be setup and scheduled to run at interval that emulate real-time – minimum not less than 1 minute.
2. Batch
  - a. Procedure sql\_server\_agent\_batch\_jobs
  - b. This is to be setup and scheduled to run every night as end-of-day processing to perform the following processes

The function of the sub processes are as follows:

Process	Description	Type
1. Daily Warehouse Utilisation Update system_kpi_daily_whse_utilisation_compute	SP archives the number of locations used, number of pallets, volume, and weight to kpi_daily_whse_utilisation. The frequency of data archived is dependent on the frequency it is being triggered to run.  The frequency is as scheduled in MS SQL Server   Management   Jobs  This is a feature available in ENTERPRISE version only.	Batch

Process	Description	Type
2. Synchronise Pallets Location Synchronise_locations	This job correct multi located pallets. The job effect transfer of stock from the 'multi-located' pallet to pallet that are in the location using the Item Relocation function This is a feature available in both STANDARD and ENTERPRISE version.	Batch
3. Expiry Stock Maintenance system_expiry_stock_update	This SP update the quality grade of the stock that is used-by date controlled. The grade is change from '01' (commercial grade) to <ul style="list-style-type: none"> <li>'NG' negotiable – when balance shelf live is less or equal to the Pre-alert days as defined in Product Definition</li> <li>'EX' (expired grade)</li> </ul> This is a feature available in both STANDARD and ENTERPRISE version.	Batch
4. System Logs Maintenance See Appendix on End of Days Processing	The SP is designed to manage the activity logs that the system recorded for troubleshooting and investigation. This does not include the movement_history. The number of days to be retained is to be specified in System Configuration. The logs that are cleared by this SP are: <ol style="list-style-type: none"> <li>1. application_log</li> <li>2. print_log</li> <li>3. security_log</li> <li>4. interface_archive</li> <li>5. interface_msg</li> <li>6. user_login_history</li> </ol> This is only available to the STANDARD and ENTERPRISE version of CRISTAL WMS.	Batch
5. System Assign Warehouse Tasks system_task_assignment	The SP is designed to automatically assign outstanding tasks to suitable available operators. This is only available to the Enterprise version of CRISTAL WMS.	Real time
6. System Interface Imports system_interface_imports	The SP transfer data that are inserted into the interface_import table by an interfacing program, such Microsoft BizTalk, to the tables proper. The data structures is as defined in Automated Interface 3.doc This is only available to the ENTERPRISE version of CRISTAL WMS.	Real time

### 2.3. System User Define Parameters

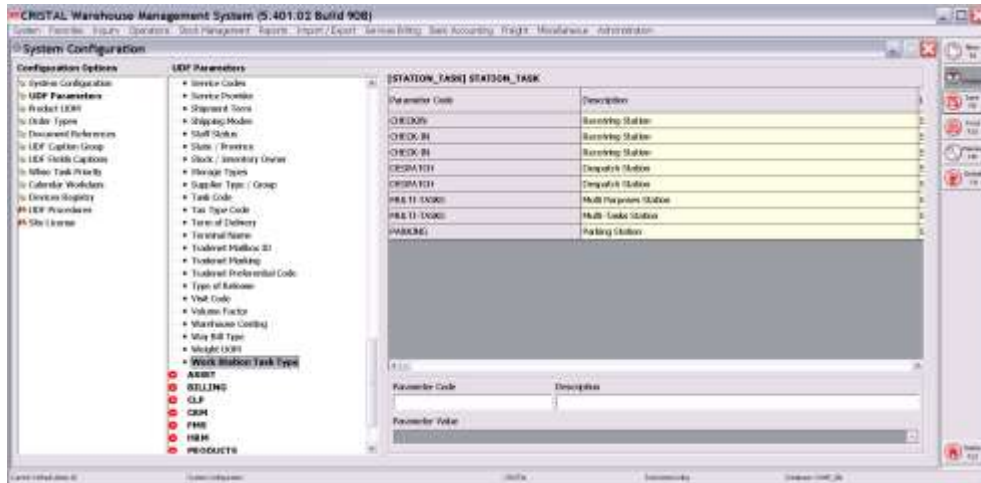
System User Defined Parameters (UDF Parameters) are a set of parameters that are meant for user to define in accordance to their operational requirements.

The defined parameter codes served as validation values fir the various attributes in the system

They are grouped into a number of groups for the convenient of the users in accordance to their function

1. Billing
2. CLP (Construction Logistics Ports)
3. CRM (Customer Relation Management)
4. Outbound
5. Products
6. QA (Quality Assurance)
7. System
8. Transport





Click the UDF Parameters will list all the parameters. While click the above groups will the parameters that is specific to the group.  
Updating Parameter Code

To update parameter code:

1. Select the parameter group / Reference
2. Input Parameter Code and Description
3. Specify the Parameter Value, if applicable
4. Click Save

To delete a parameter code

1. Select the parameter group / Reference
2. Select the parameter code to be deleted
3. Click Delete

**2.3.1. UDF Parameters List**

The list of parameters is as follows:

Parameters	Grouping	Comments
1. ABC CLASS	PRODUCTS	ABC Movement – product classification by activity
2. ABC VALUE	PRODUCTS	ABC Value – product classification by value / cost
3. ACCOUNT CATEGORY	BILLING	General Ledger Account Category
4. ACCOUNT CODE	BILLING	General Ledger Account Code
5. AIRLINE	TRANSPORT	Airline Code – uses in Airway Bill Entry
6. ASSET_GROUP	BILLING	Fixed Asset Group Classification
7. ASSET_LOCATION	BILLING	Fixed Asset Holding Location
8. BANK	BILLING	Bank Codes
9. BANK AC TYPE	BILLING	Bank Account Types
10. BILL GROUP	BILLING	Billable Services Group
11. BRAND	PRODUCTS	Product Brand – product grouping
12. CARRIER	TRANSPORT	Carrier / Forwarder
13. CATEGORY	PRODUCTS	Product Category – product grouping
14. CATEGORY 1	PRODUCTS	Product Sub Category 1 – product grouping
15. CATEGORY 2	PRODUCTS	Product Sub Category 2 – product grouping
16. CATEGORY 3	PRODUCTS	Product Sub Category 3 – product grouping
17. CATEGORY 4	PRODUCTS	Product Sub Category 4 – product grouping
18. CATEGORY 5	PRODUCTS	Product Sub Category 5 – product grouping
19. CLIENT_GROUP	SYSTEM	Client Grouping Code
20. CLIENT_LABEL	SYSTEM	Label Templates
21. CLIENT_PARAMETER	SYSTEM	Client Level Parameter
22. CLT_REPORT_FLAG	SYSTEM	Client Report Flag
23. COLOR	PRODUCTS	Product Color
24. COMPLAINT_CLS	CRM	Complaints Groups
25. CONTAINER TYPE	SYSTEM	Container / Station Types



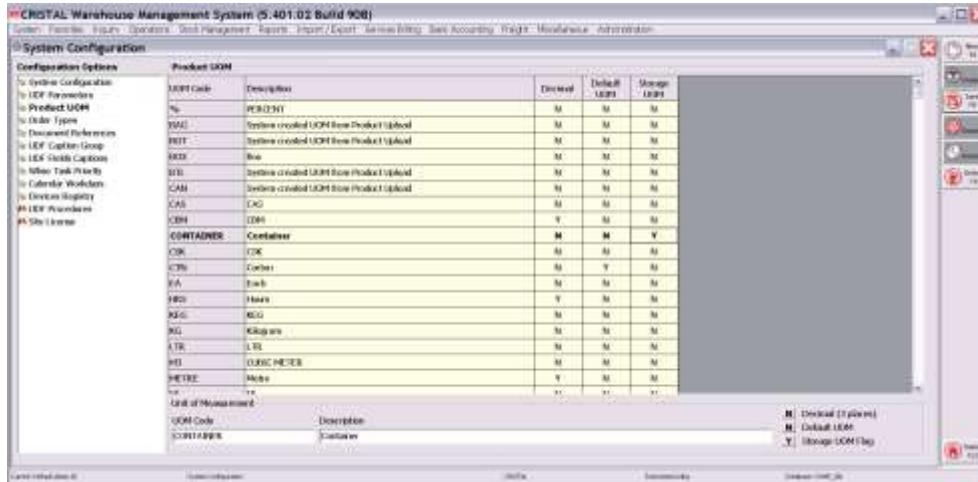
Parameters	Grouping	Comments
26. COUNTRY	SYSTEM	Countries setup
27. CURRENCY	BILLING	Currency – Whole : e.g. Dollars
28. CURRENCY_LOOSE	BILLING	Currency – Loose : e.g. Cents
29. CUST_DELIVERY	SYSTEM	Customer specific instruction
30. CUSTOM_DECLARE_TYPE	SYSTEM	Custom Declaration Type
31. DEPARTMENT	PRODUCTS	Department
32. DEPRECIATION	BILLING	Fixed Depreciation Methods
33. DRIVER	TRANSPORT	Delivery Drivers
34. EQUIPMENT	SYSTEM	Equipment Types
35. EQUIPMENT_CLASS	SYSTEM	Equipment Class
36. EU_COUNTRY	SYSTEM	European Union Countries – for services billing purposes
37. GRADE	PRODUCTS	Product Grades
38. HS_CODE	PRODUCTS	Harmonized System Code
39. IMO CLASS	PRODUCTS	IMO Classes
40. ITEM_SIZE	PRODUCTS	Item Size
41. ITEM_UDF_ATTRIBUTE	PRODUCTS	Item Attribute - User Definable
42. JOB_TITLE	CLP	Job Title
43. MENU_OPTION_GROUP	SYSTEM	Menu Option Grouping
44. MENU_OPTION_SUBGROUP	SYSTEM	Menu Option Sub Grouping
45. MSG_CENTER	SYSTEM	Messages - User ID to direct
46. PALLET_TYPE	PRODUCTS	Pallet / Storage Unit Types
47. PAY-TERM	BILLING	Payment Term
48. PLACE_OF_WORK	CLP	Place of Works
49. PPQ_PACKING	PRODUCTS	PrePack Packing Code
50. PQSERVER	SYSTEM	Print Queue Server Printer Configuration
51. PRODUCT CLASS	PRODUCTS	Product Classes
52. PRODUCT GROUP	PRODUCTS	Product Groups
53. PRODUCT_CODING	PRODUCTS	Product Coding Components
54. QA_DEFECT_ACTION	QA	QA Defect Action Code
55. QA_EQUIPMENT	QA	QA Equipment
56. QA_FOLLOW_UP	QA	QA Supplier Follow Up Code
57. QA_INSPECTION	QA	QA Inspection Code
58. REASONCODE	SYSTEM	Reason Codes
59. REGION	BILLING	Region - Destination
60. REPORT GROUP	SYSTEM	Report Groups
61. REPORT TYPE	SYSTEM	Report Type
62. RESOLUTION_CLS	CRM	Resolutions Groups
63. ROUTE	TRANSPORT	Delivery Route
64. SEQ_GROUP	SYSTEM	Document Refer Group
65. SERVICE_PROVIDER	TRANSPORT	Service Provider
66. SHIP MODE	TRANSPORT	Shipping Modes
67. SORTBY	OUTBOUND	Sales Order Manage Sort Sequence
68. STATE	SYSTEM	State / Province
69. STATION_TASK	SYSTEM	Work Station Task Type
70. STOCK_OWNER	PRODUCTS	Stock / Inventory Owner
71. STORAGE	SYSTEM	Storage Types
72. SUB CATEGORY	PRODUCTS	Product Sub Category
73. SUPPLIER_TYPE	SYSTEM	Supplier Type / Group
74. TAX_TYPE	BILLING	Tax Type Code
75. TERMINAL	CLP	Terminal Name
76. TPT_SERVICE	TRANSPORT	Transport Service
77. TRUCKER	TRANSPORT	Trucker / Hailer

Parameters	Grouping	Comments
78. WHSE_COSTING	BILLING	Warehouse Costing

**2.4. Product Unit of Measurement (UOM)**

This is enhanced on Release 5.401 to refine control on Storage UOM.

Storage UOM flag is introduced to identify unit of measure that are to be used as Storage. They differ from other UOM (identify as Stock or Sales UOM. An UOM flagged as Storage UOM cannot be flagged as Default UOM at the same time.



The function is for adding and maintenance of Unit of Measure (UOM).

When the Decimal is flagged, the quantity is enabled to be input as decimal up to 3 places.

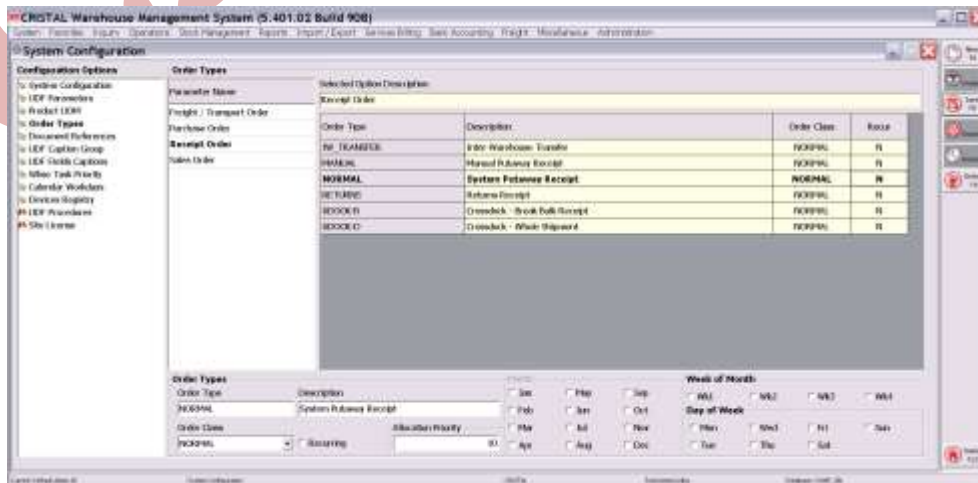
To add new UOM:

1. Input eh UOM Code
2. Specify the Description
3. Flag Decimal, if required
  - a. When an UOM is flagged as Y, quantity is permitted to be input as decimal, up to 3 places.
4. If an UOM is to use as the default UOM. Set flag to Y.
  - a. Only 1 UOM can be flagged as Y. (Flagging an UOM as Y will automatic set the rest to N.)
5. Flag Storage UOM Flag to Y if UOM is a Storage Unit.
6. Click Save

To Delete an UOM (which is not used):

1. Select the UOM Code
2. Click Delete
  - a. Only UOM that have not be used are allowed to be delete

**2.5. Order Types Maintenance**



The system is setup with the minimum required Order Types for various documents. Users are enabled to add new order type as required. Each defined Order Type must be assigned an Order Class (see notes below).

The design of the Order Type maintenance incorporates the capacity to set up recurring order. However, this is provision for customisation and is not activated.

Please discuss this with the implementation consultants, if required.

To add Order Type:

1. Select the Document Type (Parameter Code)
2. Input the Order Type
3. Select the Order Class:
  - a. Bonded
  - b. Direct
  - c. Normal
  - d. Reserve
    - i. This is used in Sales Order to place reservation of stock
  - e. Retail
    - i. This is a special Sales Order in which when released, it is processed to completion – deduct and update the inventory
  - f. Returns
  - g. Urgent
    - i. Urgent sales order – override quantity under Reserve orders.
4. Input the description
5. Click Save

To delete order type

1. Select the document type (Parameter Code)
2. Select the Order Type
3. Click Delete
  - a. Only unused Order Type can be deleted.

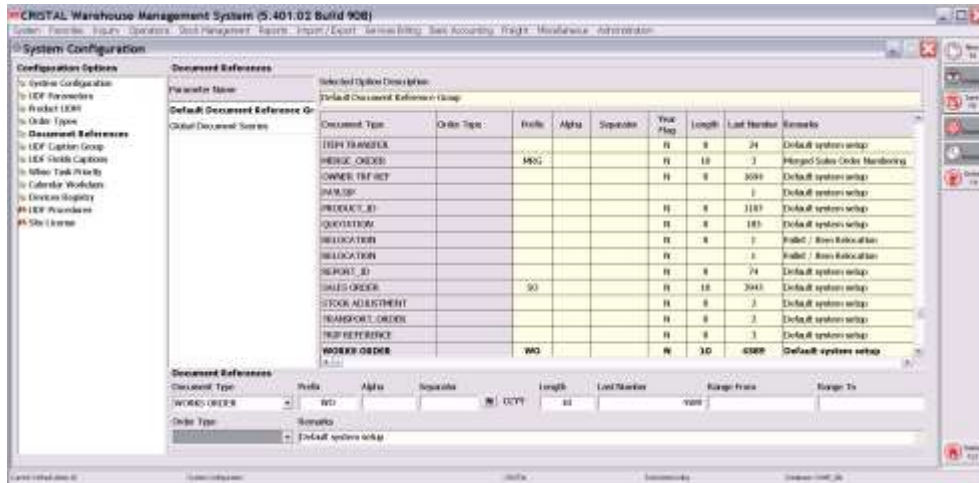
**2.5.1. Order Class**

Order Class to which an Order Type is assigned determines how an Order behaves and being processed. Not all Order Class is applicable to every Document Types.

Document Type	Order Class	Description
Purchase	NORMAL	
Receipt	NORMAL	
	RETURNS	
Sales	NORMAL	
	DIRECT	
	RETAILS	
	RESERVE	This is used in Sales Order to place reservation of stock.
	URGENT	
Transport	NORMAL	

**2.6. Document Reference Maintenance**

Refinement is made in Release 5.400 to allow users to configure embed CCYY (century year) in a Document Reference series and adding a separator between each of the reference numbering components. In addition, the Length is now refers to only the number of numeric characters required for the running numbers.



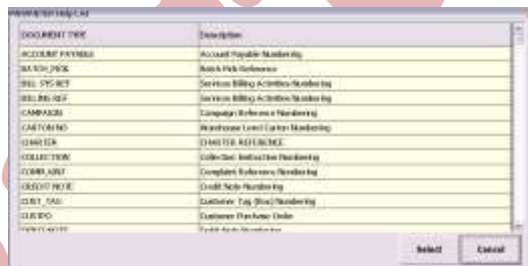
The option enable user to setup and maintain document reference (numbers) series. The references are defined in group or Reference Code, which is then associated to the Client, Customer and Warehouse level.

This enables Reference Code to be assigned to individual client or a number of clients that would then share the set of document reference.

New Reference Code is added in Document Refer Group in (All) Parameters.

To update or change the document references

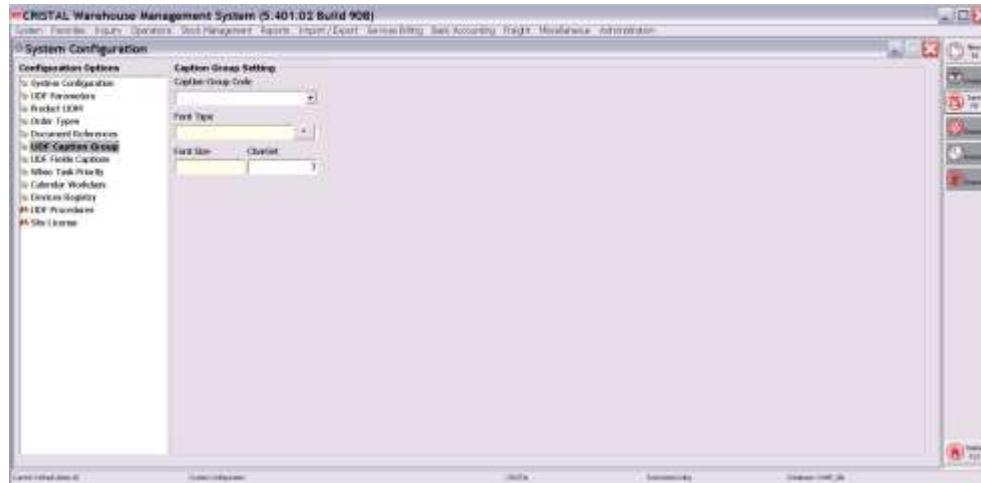
1. Select the Reference Code under Parameter Code grid box
2. Select the Document Type to be maintenance
  - a. Click the required document type if available in the grid box
  - b. Else click the dropdown button at the Document Type combo box to pop up list of available document types



3. Specify the Order Type, if relevant
4. Input the Prefix
  - a. Except for (some) 'Default' reference group, all other document type requires prefix
  - b. The prefix must be unique
5. Specify the (incremental) Alpha, if preferred
  - a. This is automatically increment from Space to 0 ... to A to Z when the numeric component reach its maximum and being reset
6. Input the Separator, desired
  - a. Although there is no constrain, it is advisable to use appropriate character such as '-', '/'...
7. Specify the Length of the running numbers
  - a. Excluding the Prefix, Alpha, Separator and CCYY
8. Enable CCYY if desired
  - a. This is position between the Prefix and the running number.
9. Input the Last Number
  - a. Specify the Range from / to if required
  - b. Leave blank if starting from 1
10. Input Remark, if any.
11. Click Save

## 2.7. User Language Group

The option enables to add language / site terminology code.



To add new code

1. Input the Language
2. Click dropdown arrow on the right of the Font Type combo box
  - a. Select the Font preferred
    - i. If no Font is selected, it will be default to Tahoma
  - b. Select the Font Style
  - c. Select the Font Size
  - d. The other options are not in use
  - e. Click OK
3. Click Save
  - a. The captions for the language code is generated
  - b. Select UDF Field Caption to maintain

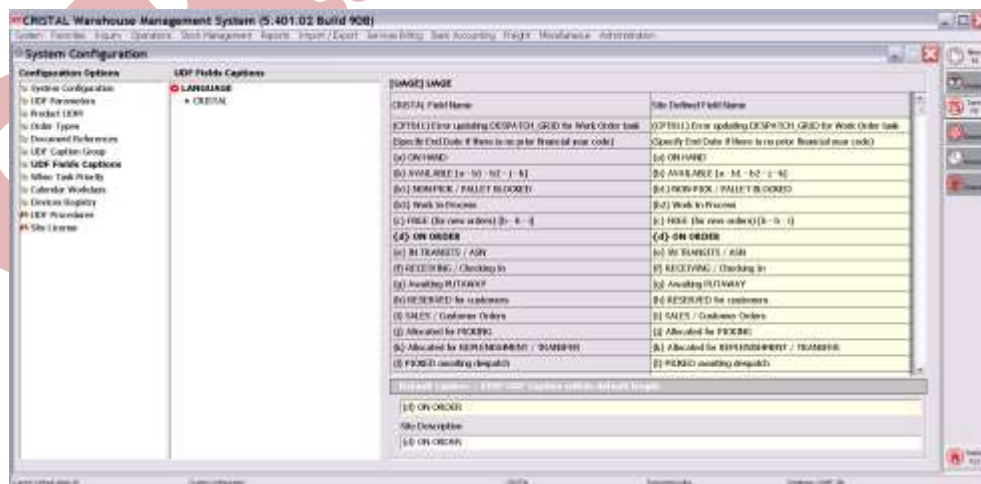


### 2.8. UDF Field Captions

The option enable site to change field caption to suitable its operational requirements – be it in term of terminology or language. However, as this program development is in Visual Basic 6, which although double bytes enable, it is not Unicode, the display of some characters are closely linked to the font set being used.

For example, Thai characters require fonts set where the name ends with UPC like EucrosiaUPC...

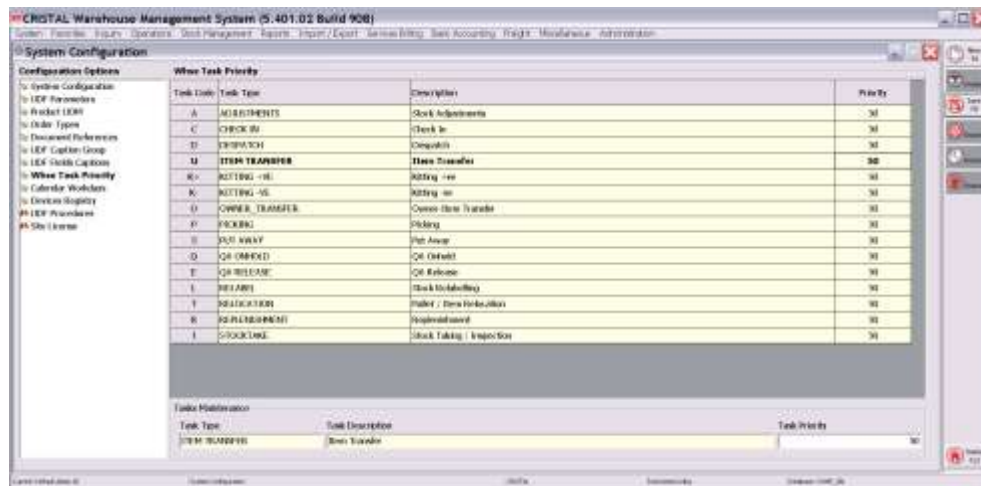
For language like Chinese, Chinese fonts would need to be set in User Language Group



To update / change a field caption

1. Click the caption to be modified
2. Input the Site Description
  - a. Try to keep the length of the caption to be the same or shorter as then the original.
3. Click Save

**2.9. Warehouse Task Priorities**



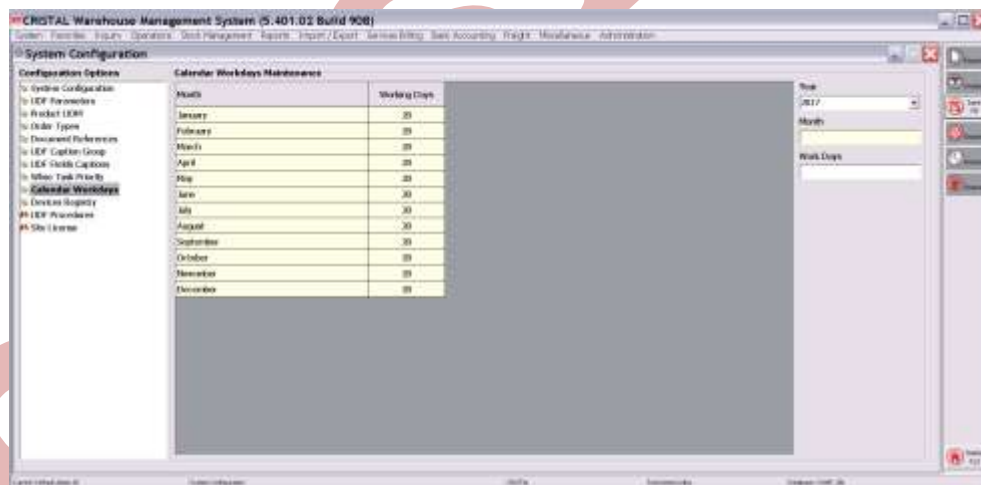
This is the list of Warehouse tasks or activities. They are predefined in the system. User is not able to add new tasks. However, are enabled to prioritise the activities which would determine the sequence or priority that a task is assigned in relative to each other.

To change the priority:

1. Select the Task to be modified
2. Input the new Task Priority
3. Click Save

**2.10. Calendar Workdays**

The option is to enable maintain the number of work days in a calendar month. This data are used in productivity reporting.



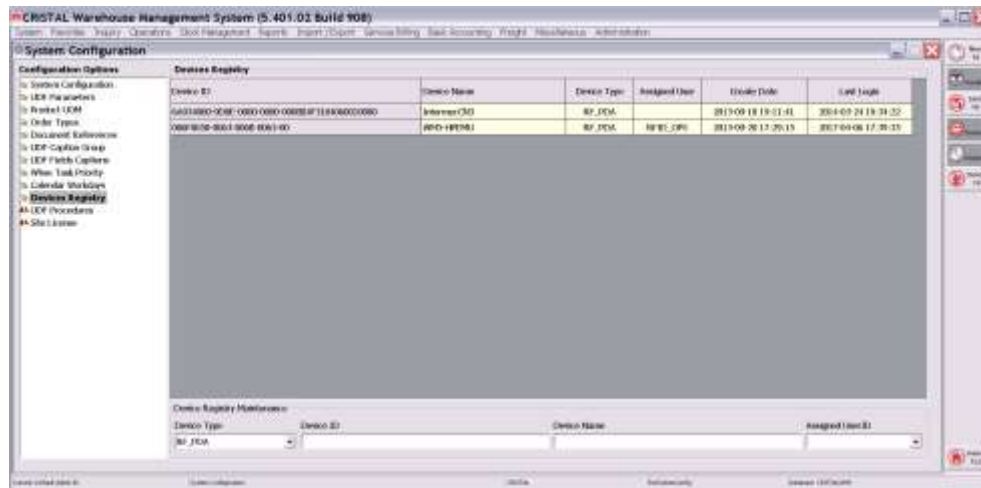
To update,

1. Specify the Year
2. Select the month from the grid box
3. Specify the number of Work Days
4. Click Save

**2.11. RF Devices Register**

The function is for the update of RF (radio frequency) devices.





The number of Device ID that can be maintained is equal to the total of '# of Users' plus '# of RF'.

The Device ID is automatically updated when an RF device is used to log into the system. If the device ID is not previously updated, it would automatically add to the Register.

If a new device log in and that the Device Register limit has been reached, the device would be blocked from logging in.

A redundant device ID would therefore needs to be removed first.

To remove a device ID

1. Select the Device ID
2. Click Delete.

A new device can also be added manually

1. Input the Device ID
2. Input the Device Name
3. Select the Device Type
  - a. RF\_PDA of wireless Win Mobile device
4. Click Save

**2.12. UDF Procedures (Site Configurable)**

To maximise the flexibility of the system, the system incorporate keys (Reference Code) which linked to specific stored procedure that is to be called by the program.

This method enables modification and customisation to be carried out without the need to recompile the program every time.



The Reference Codes cover 2 key areas of the system

1. Service Billing Charges computation
2. Interface Import / Export procedures
  - a. This is valid for standard interfaces
  - b. Client specific interfaces are defined in Client Profiles | UDF

The list of Reference Codes is as listed in Appendix A

To change the link:

1. Select the required Reference Code
2. Click the dropdown button for list of Stored Procedure Name
  - a. Ensure that the right stored procedure is specified. Otherwise the system may fail or provide unexpected result.
3. Click 'Save'

**2.12.1. Procedure List Default**

Reference Code	Stored Procedure
ACCURRED_STORAGE_LOCATION	acc_storage_location_accurred_compute
ACCURRED_STORAGE_LOOSE	acc_storage_loose_accurred_compute
ACCURRED_STORAGE_NONSTD	acc_storage_nonstd_accurred_compute
ACCURRED_STORAGE_PALLET	acc_storage_pallet_accurred_compute
ACCURRED_STORAGE_PHY_PALLET	acc_storage_phy_plt_accurred_compute
ACCURRED_STORAGE_WHOLE	acc_storage_whole_accurred_compute
ADVANCED_STORAGE_LOCATION	acc_storage_location_advanced_compute
ADVANCED_STORAGE_LOOSE	acc_storage_loose_advanced_compute
ADVANCED_STORAGE_NONSTD	acc_storage_nonstd_advanced_compute
ADVANCED_STORAGE_PALLET	acc_storage_pallet_advanced_compute
ADVANCED_STORAGE_PHY_PALLET	acc_storage_phy_plt_advanced_compute
ADVANCED_STORAGE_WHOLE	acc_storage_whole_advanced_compute
ANNIVERSARY_STORAGE_LOCATION	acc_storage_location_anniversary_compute
ANNIVERSARY_STORAGE_LOOSE	acc_storage_loose_anniversary_compute
ANNIVERSARY_STORAGE_NONSTD	acc_storage_nonstd_anniversary_compute
ANNIVERSARY_STORAGE_PALLET	acc_storage_pallet_anniversary_compute
ANNIVERSARY_STORAGE_PHY_PALLET	acc_storage_phy_plt_anniversary_compute
ANNIVERSARY_STORAGE_WHOLE	acc_storage_whole_anniversary_compute
AVERAGE_STORAGE_LOCATION	acc_storage_location_average_compute
AVERAGE_STORAGE_LOOSE	acc_storage_loose_average_compute
AVERAGE_STORAGE_PALLET	acc_storage_pallet_average_compute
AVERAGE_STORAGE_PHY_PALLET	acc_storage_phy_plt_average_compute
AVERAGE_STORAGE_WHOLE	acc_storage_whole_average_compute
EMAIL STOCK STATUS ITEM	rpt_stock_status_by_item
EXPORT ADJUSTMENT	interface_export_adjustment
EXPORT CONNOTE DETAIL	rpt_connote_detail
EXPORT CONNOTE HEADER	rpt_connote_header
EXPORT DESPATCH	interface_export_despatch
EXPORT PRODUCT ATTRIBUTES	export_product_data
EXPORT RECEIPT	interface_export_receipt
EXPORT SALESORDER PICK	interface_export_salesorder
EXPORT STOCK STATUS	stockcount_symix_format
EXPORT STOCK STATUS ITEM	rpt_stock_status_by_item
EXPORT TRX MOVEMENT	interface_export_move
EXPORT_SALESORDER	sales_order_export_PW
MAXIMUM_STORAGE_PALLET	acc_storage_maximum_compute
SERVICE_ASN_ORDERLINE	acc_service_asn_line_compute
SERVICE_DELIVERY	acc_service_delivery_compute
SERVICE_LOOSE	acc_service_loose_compute
SERVICE_NONSTD	acc_service_nonstd_compute
SERVICE_PALLET	acc_service_pallet_compute



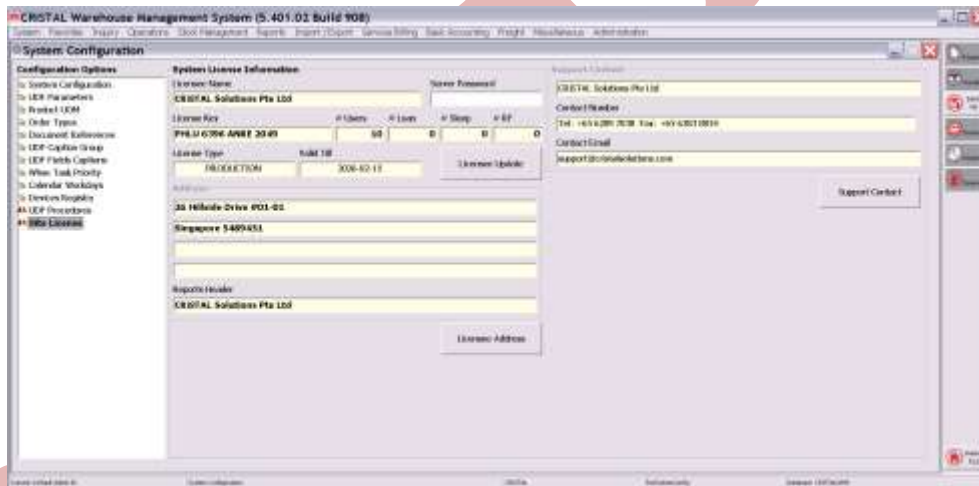
SERVICE_PALLET_WHOLE	acc_service_pallet_whole_compute
SERVICE_RECEIPT	acc_service_receipt_compute
SERVICE_WHOLE	acc_service_whole_compute
SERVICE_WHOLE_LOOSE	acc_service_whole_loose_compute
STRAIGHT_STORAGE_LOCATION	acc_storage_location_straight_compute
STRAIGHT_STORAGE_LOOSE	acc_storage_loose_straight_compute
STRAIGHT_STORAGE_PALLET	acc_storage_pallet_straight_compute
STRAIGHT_STORAGE_PHY_PALLET	acc_storage_phy_plt_straight_compute
STRAIGHT_STORAGE_WHOLE	acc_storage_whole_straight_compute

**2.12.1.1. Obsoleted Procedures**

The following procedures are obsoleted in Build 819.

1. They are replaced by the enhanced SERVICE\_RECEIPT procedures:
  - a. SERVICE\_NON-RETURN\_RECEIPT
  - b. SERVICE\_NON-RETURN\_RECEIPT\_ORDERLINE
  - c. SERVICE\_RECEIPT\_ORDERLINE
  - d. SERVICE\_RETURN\_RECEIPT
  - e. SERVICE\_RETURN\_RECEIPT\_ITEM
  - f. SERVICE\_RETURN\_RECEIPT\_ORDERLINE
2. The procedures below are replaced by SERVICE\_DELIVERY
  - a. SERVICE\_ORDERLINE

**2.13. Site Licence and System Setting**



This page comprises of following groups of data

1. Licence Key
2. Licensee Address
3. Support Contact

These functions requires authorisation keys

On click on any of the 3 command buttons, the Authorisation Key form will appear.

The authorisation key is provided by the vendor of the system when required.

Input the authorisation key and click OK.



**2.13.1. Site Licence**

In 5.395.4 and later, license key is updated from an INI file that is provided by CRISTAL Solutions – LicenseKey.INI. Do not modify the data shown in file. Any change made to the file will invalidate the license provider and render the system inoperative.

The INI file is to be place in the same folder as the CRISTALWMS.exe.

On successful authorisation above, the license will be updated from the license file.

**2.13.1.1. Site License pre 5.395.4**

This accessible by staff of CRISTAL Solutions only

To update the Licence Name, the licensee name together with the number of user licences required must be provided to the vendor.

The vendor would then advise the Authorisation Key and Licence Key  
Click the Update Licence button to change the Company Name and with the licence key.

1. A popup window will appear asking for authorisation key.
  - a. Input the key as provided
2. On entry of the correct password, another windows will appear
3. Input the Licensee Name, the Number of licensed Users and the License Key
  - a. Make sure the Licensee Name is spelled exactly as advised to the vendor together with the number of users
  - b. Input the License Key accordingly
4. Tick the System Keys that is to be required in the database
5. Select PRODUCTION for the Validity Period
6. Click Process
7. The window will close.
8. The company name, Report Header and Licence Key will be updated accordingly



**2.13.2. Licensee Address**

To amend address,

1. Click Enable Address Change.
2. An authorisation form as above will appear.
3. The authorisation key is obtainable from the vendor.
4. The address section will be enabled for modification
5. Make the required change
6. Click 'Save'

**2.13.3. Support Contact**

This section is for the update and maintenance of support contact info.

By default, this contains the contact info of CRISTAL Solutions Pte Ltd.

This can be amended by System Administrator or resellers. A password is required to access function.

**2.13.4. GST Registration and Rate**

To update the GST Rate, it is mandatory to specify the GST Registration reference.

1. Input the GST Registration
2. Specify the GST Rate
3. Click Save

**2.13.5. Directories Location Setup**

The directories field are of freeform. The onus is on the administrators to enter the correct path and folder name.

This limited to 50 characters.

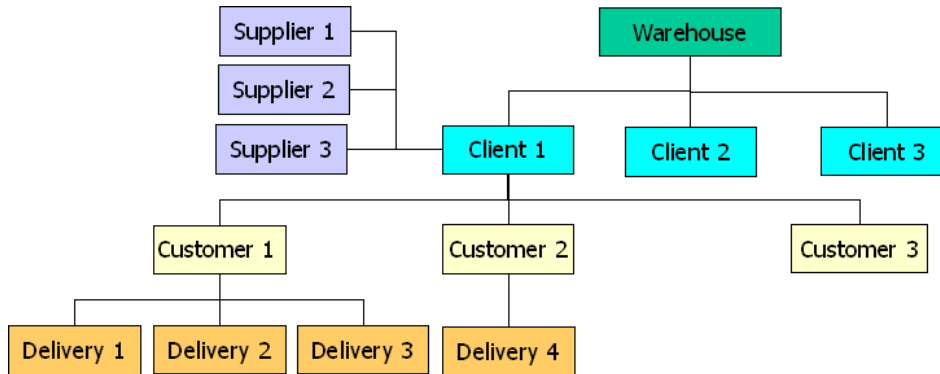
This is a global setting for each database.

Click 'Save' to update the database.

Change will take effect on the next login.

### 3. USER ACCESS CONTROL & MANAGEMENT

CRISTAL WMS is designed as a 3PL warehousing system with the capability to also manage 4PL warehousing operation. It differs from other WMS in that it incorporates both product ownership (which is designated as Client) and stock owner (designated as Customer) as show in the schematic diagram below.



In 5.400, it incorporate an enhancement that enable Master Client requirement. This simplify setup of common master data such as product master and customer master for business where multi business units share common customers and product codes.

Effectively, CRISTAL WMS is designed to handle multi-warehouses and multi-client in a single database. This does not exclude setup of multiple databases when required.

With product ownership, the system is capable to handle a SKU (item Code) differently for different client.

The user access is re-designed for version 5.330 and later.

User access control and management of login administration, functionality and workflow accesses are managed at User Group level. Users that are member of one group will inherit the rights, privileges and limitations of the group. Any changes makes to the rights, privileges and limitations of the group will be applied to all members of the group without exception.

In addition, user will only see the menu options that they have been granted accesses.

The user access is further expanded in Build 5.393 to include Brand, miscellaneous Utilities and Department.

**Tips: New user group can be setup by copy from an existing group:**

1. **Select a user group that have the closest definition**
2. **Overwrite the User Group code and name**
3. **Click Save**
4. **Amend as required**
5. **Click Save again**

#### 3.1. User Group Administration

The UI have been redesigned to ease the administration of the security. The user group that are defined are now listed in the left grid box instead of having to click for a popup list.

To modify a user group, simply click on the required group and amend.

To add new group, select the 'closest' group, rename the group id and description. Then Save and proceed with amendment.

Alternatively, click Clear which would set every option to N. Input group id and description, Save and define as required.

The functionality and workflow access control by at the User Group level are:

1. Menu Options
2. Client Access
3. Client-Customers
4. Work Tasks / Areas or Zones
5. Carrier
6. Truckers (Forwarders)
7. Brand
8. Product Group
9. Reports (Site and Standard)
10. WMSNET reports
11. (Administrative) Tools

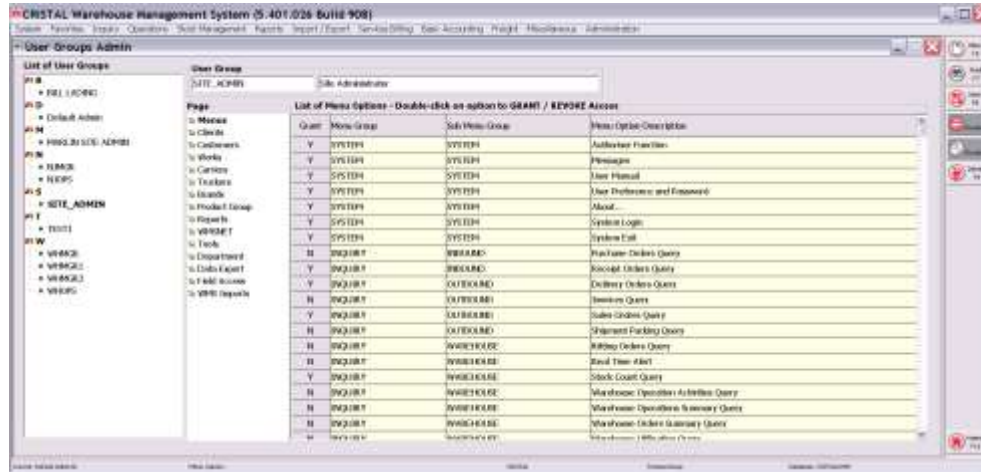
- 12. Department
- 13. Data Export
- 14. Field Access
- 15. WMS Imports

The options available are listed in grid box as shown below. The left column indicates whether a particular option have been granted to the group or not by a 'Y' or 'N' flag – which is toggled by double clicking on the option row.

Although most changes take effect immediately, it is recommended that member of amended user group to logout and re-login to enable all changes to take effect.

**3.1.1. Menu Options**

The Menu Options have been redesigned and simplified in 5.395.



The available functions in the system are now all listed. Group and prior level access is automatically granted once a function is granted to a user group.

The detail of the menu options will not be covered in this manual as they are constantly being adapted and updated. However, as it is based on industry standard, it would be easily comprehended. Otherwise, seeks assistance from the implementation consultant.

**3.1.1.1. List of Menu Options**

Following are the current options available:

Menu Groups	Menu Option Name	Sub Grouping
System	About ...	System
	System Exit	System
	System Login	System
	Messages	Others
	User Preference and Password	Others
	User Manual	Help
Inquiry	PO Receipt History Query	Inbound
	Purchase Orders Query	Inbound
	Receipt Orders Query	Inbound
	Delivery Orders Query	Outbound
	Invoices Query	Outbound
	Sales Orders Query	Outbound
	Shipment Packing Query	Outbound
	Kitting Orders Query	Warehouse
	Real Time Alert	Warehouse
	Stock Count Query	Warehouse
	Warehouse Operation Activities Query	Warehouse

Menu Groups	Menu Option Name	Sub Grouping
	Warehouse Operations Summary Query	Warehouse
	Warehouse Orders Summary Query	Warehouse
	Warehouse Utilization Query	Warehouse
	Works Orders Query	Warehouse
	Transport Orders Status	Transport
	Item Inventory Query	Stock Status
	Location Status / History Query	Stock Status
	Pallet Status / History Query	Stock Status
	Product Definition Query	Stock Status
	Product Grade Stock Query	Stock Status
	Interface Auto Upload Record Query	Services
	Interface Messages Query	Services
	Interface Records Query	Services
	iPicks Query	Services
	Services Messages Query	Services
Operations	Advance Ship Notice Entry	Inbound
	Material Returns Advice	Inbound
	Purchase Orders Entry	Inbound
	Purchase Orders Manage	Inbound
	Receipt Check-In	Inbound
	Receipt Costing	Inbound
	Receipt Orders Manage	Inbound
	Delivery Orders	Outbound
	Delivery Orders Confirmation	Outbound
	Delivery Orders Invoicing Manage	Outbound
	Delivery Transport Manage	Outbound
	Invoices Payment Manage	Outbound
	Packing - Carton Item	Outbound
	Packing - Despatch	Outbound
	Sales Order Serial Maintenance	Outbound
	Sales Orders Entry	Outbound
	Sales Orders Entry - Simple	Outbound
	Sales Orders Manage	Outbound
	Sales Orders Merge	Outbound
	Shipment Loading	Outbound
	Truck Loading	Outbound
	Waybill Manage	Outbound
	Air Waybill Entry	Transport
	Bill of Lading Entry	Transport
	Gate Controller	Transport
	Shipment Advices Maintenance	Transport
	Transport Orders Confirmation	Transport
	Transport Orders Entry	Transport
	Transport Orders Manage	Transport
	DeKitting Order Entry	Warehouse

Menu Groups	Menu Option Name	Sub Grouping
	Kitting Order Entry	Warehouse
	Pick Zone Transfer	Warehouse
	Replenishments Manage	Warehouse
	Warehouse Tasks	Warehouse
	Warehouse Tasks Manage	Warehouse
	QA Onhold	Quality Assurance
	QA Release	Quality Assurance
	Jobs Costing	Others
	SAP Material Documents Manage	Others
	Visitors Register	Others
	Events Diary Entry	Customer Service
Stock Management	Stock Count Entry	Stock / Cycle Count
	Stock Count Management	Stock / Cycle Count
	Stock Status Export	Stock / Cycle Count
	Inter Warehouse Transfer	Stock Management
	Ownership / Item Code Transfer	Stock Management
	Pallet Relocation	Stock Management
	Stock Adjustments	Stock Management
	Stock Location2Location	Stock Management
	Stock Relocation	Stock Management
	Stock Re-Labeling	Stock Management
Services Billing	Company-Client Relation Query	Inquiry
SERVICES BILLING	Billable Activity Maintenance	Services Billing
	Billable Services Setup	Services Billing
	Billing Batch Compute	Services Billing
	Account Codes Maintenance	Administration
	Company Profile Maintenance	Administration
	Warehouse Costs Maintenance	Administration
Reports	Reports Menu	Reports
	Labels Utility	Reports
Import / Export	Auto Batch Upload	Import / Export
	Export Files - Manual	Import / Export
	Import Files - Manual	Import / Export
	Inbound CSV	Import / Export
	Outbound CSV	Import / Export
	WMS Import	Import / Export
Basic Accounting	Account Payable Query	Inquiry
	Bank Transaction Query	Inquiry
	Credit Note Query	Inquiry
	Debit Note Query	Inquiry
	Credit Note Entry	Account Receivable
	Debit Note Entry	Account Receivable
	Account Payable Entry	Account Payable
	Bank Reconciliation	Bank
	Bank Transaction Entry - Deposit	Bank

Menu Groups	Menu Option Name	Sub Grouping
	Bank Transaction Entry - Withdrawal	Bank
	Account Codes Maintenance	Administration
	Fixed Assets Registry	Administration
Customer Services	Appointment Slot Query	Inquiry
	Customer Warranty Maintenance	Operation
	Service Action Update	Operation
	Service Request Entry	Operation
	CRM Specific Parameters Maintenance	Administration
	Project Warranty Maintenance	Administration
Remote Warehouse	Remote Warehouse Pick Update	Outbound
	Remote Warehouse Receipt Update	Inbound
	Product Setup - Basic	Admin
Passenger Control	Charter	Operations
	Despatch Loading	Operations
	Disembarkation	Operations
	Embarkation	Operations
	Passenger Registry	Admin
	Receipt Pallet Putaway	Operations
Administration	Client Profiles	Client Entities
	Customer Profiles	Client Entities
	Entity Profiles	Client Entities
	Staff Profiles	Client Entities
	Supplier Profiles	Client Entities
	Bill of Materials	Products
	Customer Item Codes	Products
	Product / Item Definition	Products
	Product Prices Maintenance	Products
	Supplier Item Codes	Products
	Facility (Warehouses) Setup	Warehouse
	Locations Maintenance	Warehouse
	Locations Maintenance - Lite	Warehouse
	Grid Columns Resequence	System
	Administrator Tools	System
	Reports Menu Maintenance	System
	System Configuration	System
	User Groups	Users
	User Profiles	Users
	Email Jobs Maintenance	Miscellaneous
	Jobs Rates Maintenance	Miscellaneous
	UDF Interface Definition	Miscellaneous
	Delivery Routes Maintenance	Transport
	Equipment Maintenance	Transport

'Favourites' are not listed as they are dynamic collection.



### 3.1.2. Client Access

CRISTAL WMS is designed as a 3PL/4PL warehouse management system which enables operations to manage stock for different stock or inventory owners.

CRISTAL defined them as Client in the system.

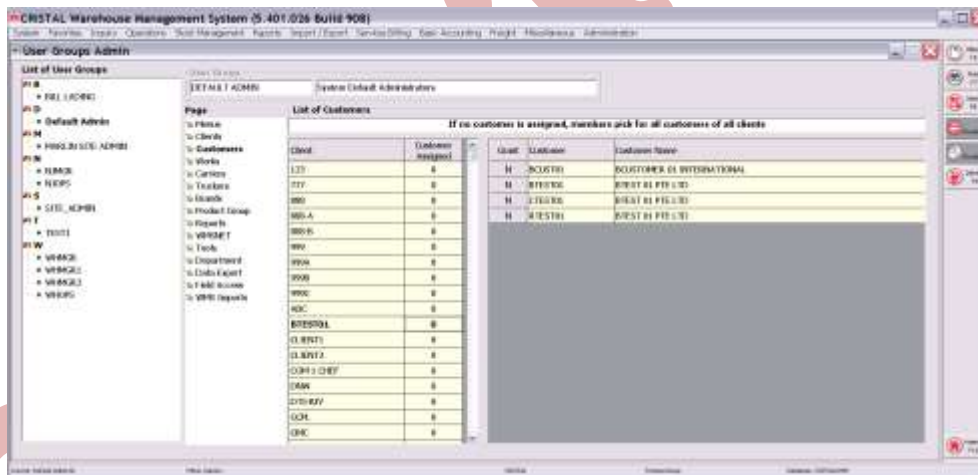
To effectively manage such operation, it is necessary at times to dedicate and assign staff to perform works for different clients.

CRISTAL WMS allows operation to manage and control the access and work flows of the assigned staff by clients.



This is done simply by clicking the rows in the grid box, setting them to Y or N accordingly.

### 3.1.3. Client-Customer



To enable a user group to access specific client-customer, set the 'Grant' to 'Y' by clicking on the records. Set to 'N' if not granted.

If no client-customer is assigned at, members of the group is assumed to be allowed to access all client-customer.

If 1 or more client-customer is assigned, then the group would only assign those that have assigned.

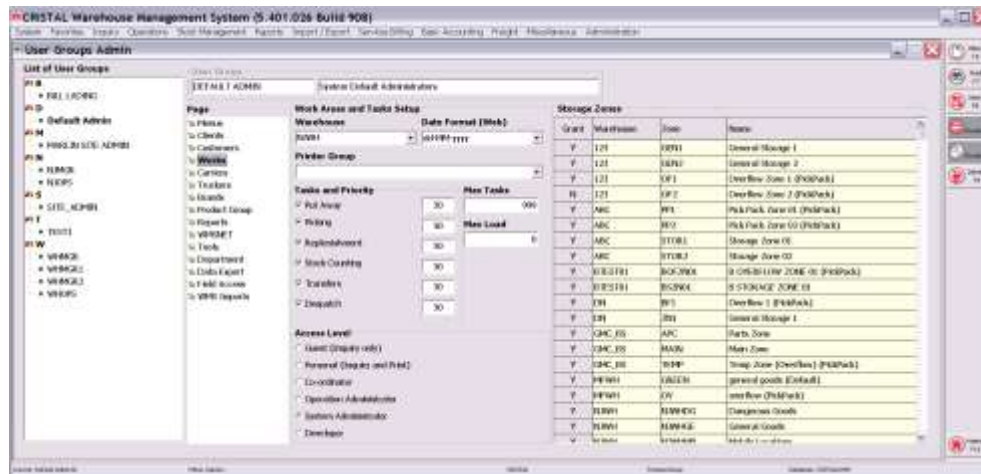
The number of Client-Customer assigned is shown against each client in the Client grid box.

### 3.1.4. Work Areas and Tasks

This page contains a number of access functions:

- Default Warehouse
- Printer Group
- Access Level
- Tasks Assignment and Priorities
- Work Areas or zones accesses





**3.1.4.1. Default Warehouse**

This is the warehouse that the user is assigned to work in. Only work tasks that are being performed in the warehouse will be assigned to the user.

In CRISTAL WMS, warehouses are defined as separate physical warehouses.

Even though a user may be required to work in zones that spread over multiple warehouses and are being assigned accordingly, system required one of the warehouse (primary) be designated as the default warehouse.

Note: The user that is defining a warehouse as Default Warehouse for a User Group must be a member of user group that have access to the warehouse in the first place.

**3.1.4.2. Printer Group**

The printer group is the name assigned to a group of printers in a warehouse. This is use to direct where auto printed document are being send to.

Further details are in the Report Setup document.

**3.1.4.3. Maximum Tasks**

The maximum number tasks or movements that can be assigned to the operator for each work order.

**3.1.4.4. Max Load per Task**

This control the maximum load or weight of the tasks that can be assigned to the operator.

The objective of this parameter is to ensure we do not assign a task with a load of, say, 2000 kg to an operator that drives a forklift that can handle 1500 kg.

This is to prevent overloading.

**3.1.4.5. Tasks Assignment and Priorities**

This controls the works that the system will assigned to operators that belong to the User Group

1. Putaway
2. Picking
3. Replenishment
4. Stock Take or stock count (on-line)
5. Transfers
6. Despatch

If the checkbox is not selected (ticked), operators belonging to the user group will not be assigned the tasks. The priority assigned to a task in relative to the others is to be input (by default 50) in the respectively text boxes with smaller number indicate a higher priority. Priority 1 is the highest.

This setting does not affect manually assigned function such as Manual Receipt.

**3.1.4.6. Access Level**

Access level control the data retrieval and updating capability of the user:

1. Guest – allows only on-screen enquiries
2. Personal – on-screen enquiry and print reports
  - i. The actual reports accessible is controlled in Reports Menu Maintenance
3. Coordinator – Above plus Update but no Delete

4. Operation Administrator – All functions except for system administrator such as database maintenance...
5. System Administrator – super user
6. Developer – this is not available

**3.1.4.7. Work Areas or zones accesses**

A warehouse is usually zoned into a number of zones or work areas, such storage, receiving, despatch. Storage zones may further be refined into General Cargo zone, Dangerous Goods zone... Different zones may require different skill sets in handling of the goods. CRISTAL WMS allows the users to assign different operators to work in different zones to achieve maximum effectiveness and efficiency and minimise risks that may arise due to lacks of knowledge of specific care that need to be exercised. The Storage zones are assigned by setting the Grant to Y by click on the record in the grid box. Associated or related receiving stations and despatch grids are automatically assigned.

**3.1.5. Carriers Access**



Carriers’ access control is introduced in Release 5.398 to facilitate user that manage multiple warehouses and have different carriers / transporters facilitating each warehouses. Carriers are defined in Entity Profiles with the Entity Type defined as CARRIER.

**3.1.6. Truckers Access**



Truckers’ access control is introduced in Release 5.398 to facilitate user that manage multiple warehouses and have different truckers facilitating each warehouses. Truckers are defined in Entity Profiles with the Entity Type defined as TRUCKER.

**3.1.7. Brand and Product Group Access**

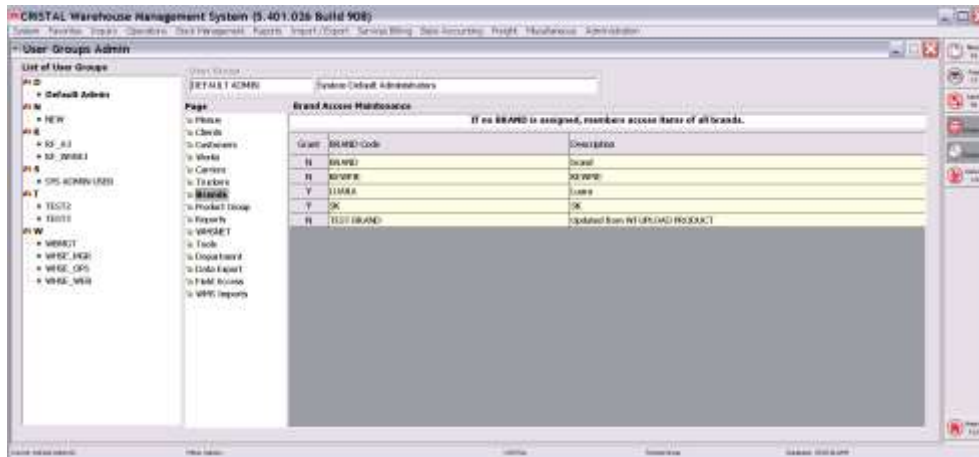


Figure 1 - Brand Access

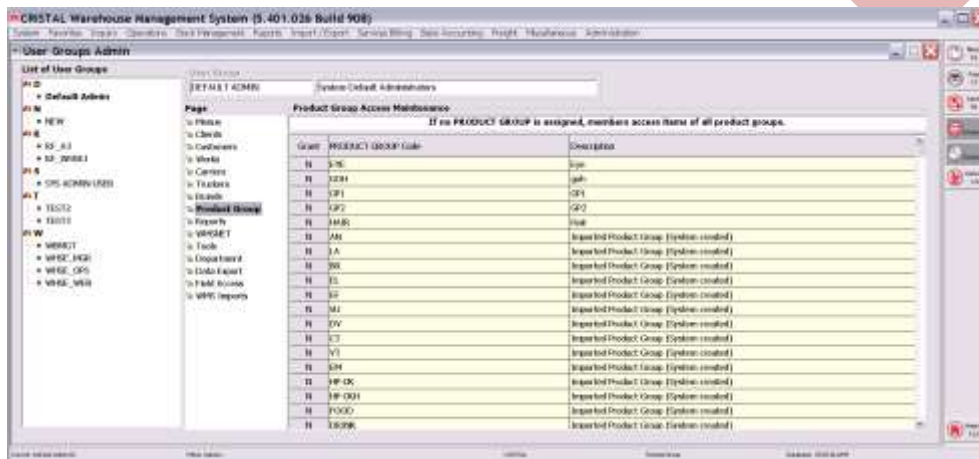


Figure 2 - Product Group Access

Brand and Product Group are grouping or classification of item code. In addition to enable user to use the attributes to obtain specialised reports, they are also being used to manage user access to specific group item codes – in Sales Orders, Purchase Orders and Item Queries. They can use individually or as a combination which provide the level of flexibility that is needed in many operations. If no access is defined for a user group, the group are deemed to be grant accesses to all item codes.

**3.1.8. Reports and WMSNEN Access**



Figure 3 - Standard and Site (Specific) Reports

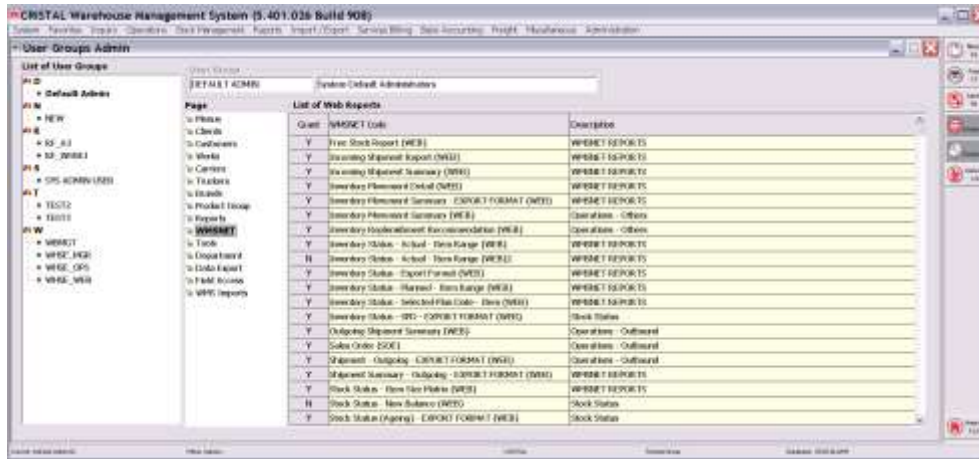


Figure 4 - WMSNET (Web) Reports

Access to reports can be updated in Report Menus Maintenance which enabled administrators to grant access to user groups for a specific report at a time.

In this function access to reports are granted for specific user group at a time.

Administrator enabled / disabled Report Access to specific reports by click on the records.

When 'Grant' is 'Y', user will have access to the report.

**3.1.9. Administrative Tools**



As in Report Access, administrator is required to specify which utility is allowed for each user group. Only those with 'Grant' set to 'Y' will be listed in Administrator Tools.

**3.1.10. Department Access**

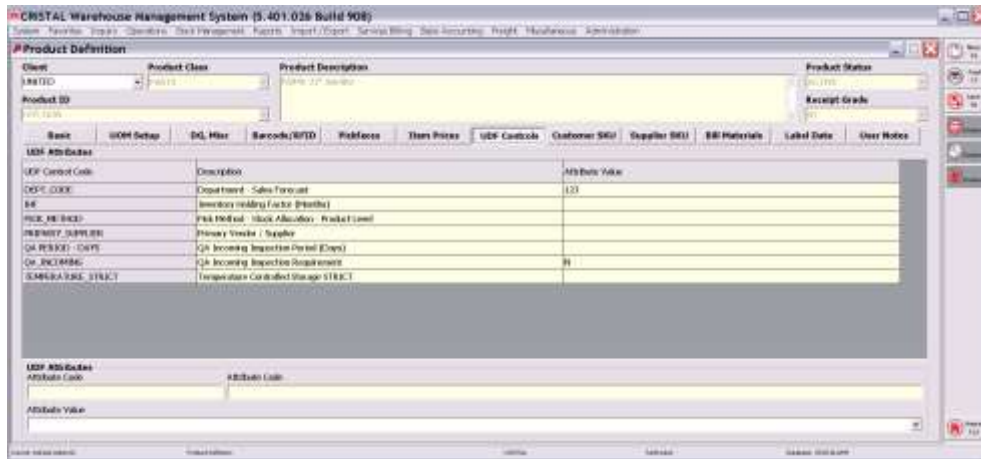


This is used by 'Sales Forecast Entry'. Department access enables / disables a user from entry sales forecast data.



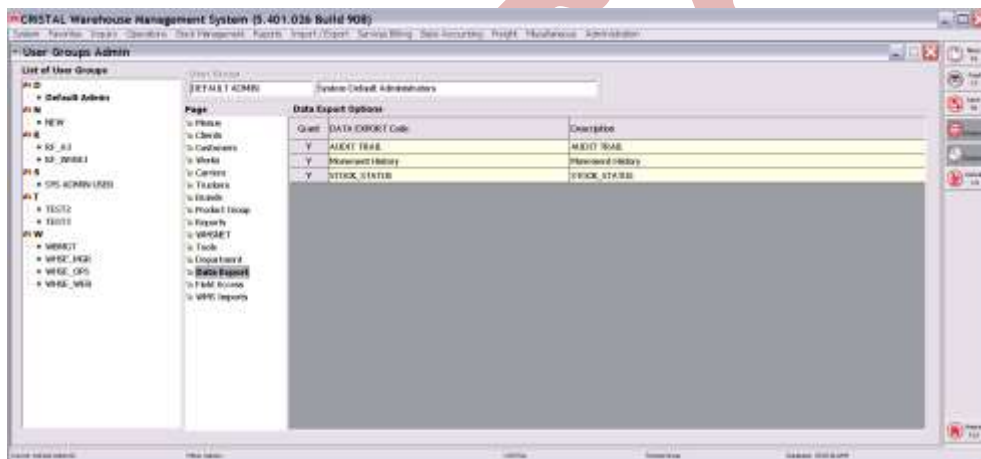
To activate Department access, The Department code must first be defined in System Parameters Maintenance under 'Department'.

Each item code that is to be allowed access under the specific department must be assigned the 'Department – Sales Forecast' under Product Definition | UDF Parameter as shown



User with specific department access will be able to access the item code that is assigned to the Department. Each item code can be assigned to only 1 department.

### 3.1.11. Data Export



This control the access to user defined data exports options. The options are as defined in UDF Interface Definition.

### 3.1.12. Field Access



Field Access control is designed to control the access to individual objects in a user interface (UI) or screen

Although CRiSTAL WMS have the capability to manage the access of UI objects, users are advise to consider their requirement as this is a tedious administrative tasks.

Users are advised to discuss with implementation consultants on the pro and con of deploying this functions.

This control is applicable to pre 5.401.026.908 release. In this release, most of the fields are maintained via gridbox. Please discuss with implementation consultants if field access control is required.

**3.1.13. WMS Imports**

In Release 5.401. 908026., access control is incorporated for WMS Imports. The rationale for the enhancement is that many of the Excel templates upload that are introduced have integrity implication to the system. Users not trained in the uploading may be unaware of implication of the data uploaded.

However, the control is applicable to non 'Default Admin' user group. All templates, current and new, is not controlled by this access control.

Build 5.401.908.050, CRiSTAL WMS is enabled to import Excel XLSX spreadsheet. To enable the capability, it is necessary to install Microsoft Access 2007 runtime on the PC that requires uploading of XLSX spreadsheet. The runtime can be download from Microsoft website:

<https://www.microsoft.com/en-us/download/details.aspx?id=4438>

Later version of Microsoft Access is not supported.



Only authorised options will be displayed in the WMS Imports function.



Attempt to upload template that are not listed will result in an error message:



**3.2. User Profiles**

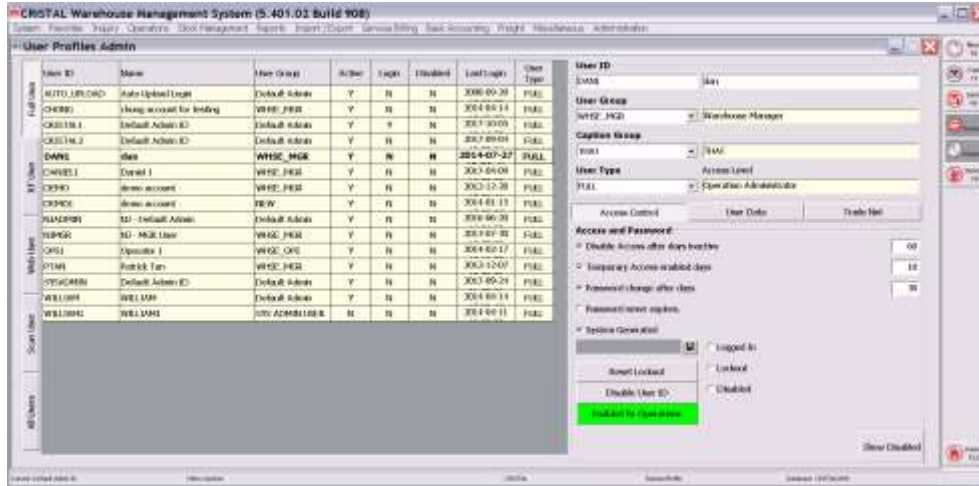
User Profiles is the administration function user accounts.

In Build 5.393 and later, Enable Concurrent Login by a user is no longer available except for 'Default Admin' group. This is by default. Administrators are advised against setting all accounts to 'Default Admin' to enable concurrent login for user as this tantamount to granting all accounts super user status.

To add new accounts, click 'Clear' and input the User ID. To modify an existing account, click the required record in the grid box.

The 'Hide Disabled' button when clicked, will hide user IDs that have been disabled. The caption will change to 'Show Disabled'.

Click the button again will reverse the action



1. Set the Operational Status
  - a. To set to INACTIVE, click the green bar – it will change to red and show INACTIVE on the bar
  - b. Click again will toggle it back ACTIVE and green
  - c. If set to INACTIVE, user will not be assign task by the system
2. Specify the User Group that the account belong to
  - a. It will inherit the rights of the group
  - b. The access level will be shown in the Access Level frame
3. Specify the Language that user will use
  - a. This will change the caption of the fields to that as required when the user login
4. Specify the User Type
  - a. The option available are FULL, RF and WEB
    - i. FULL – allow user to access CRISTAL WMS via desktop, RF (wireless) devices and Web module
    - ii. RF – access WMS via RF devices only
    - iii. WEB – access WMS via Web module only
5. Access Control
  - a. Tick or un-tick the Disable Access after days of inactivity
    - i. If account will automatically be disabled from login if it has not login the number of days specified
  - b. Tick or un-tick the Temporary Access valid for (number of) days only
    - i. If ticked, specify the number of days
    - ii. The account will automatically be disabled from login after the number of days specified
  - c. Tick or un-tick the Force Password change every (number of) day
    - i. If ticked, specify the number of days
    - ii. The account will be prompted to change the password at least once every number of days specified
  - d. If 'Password never expires' is ticked, change of password is not mandatory.
  - e. Set Password – administrator is enabled to change the password of account that for user that forget theirs.
    - i. If the 'System Generated' is ticked, the system will generate a random password.
    - ii. To assign a specific password, un-tick the 'System Generated' and input the password string
    - iii. Click 'Set Password' button
      - An added level of security can be enforced by requiring Authorisation when there is a change required.
      - This is controlled by a flag setting in System Configuration
  - f. The Disable button is for disabling an Account that is no longer required.



- g. The Reset Lockout enable administrator to clear a lockout for user that forgotten their password
  - i. An added level of security can be enforced by requiring Authorisation when there is a change required.
  - ii. This is controlled by a flag setting in System Configuration

6. Contact Data – enable maintenance of the user contact information. This is used by some sites in their reports, enabling report users to know who generate the reports

- a. Job Title
- b. Department
- c. Email Address
- d. DID phone number
- e. Fax
- f. Mobile phone number

Access Control			User Data			Trade Net			
User ID Info						DID			
Job Title									
Department						Fax			
Email Address						Mobile			
<input type="checkbox"/> Resize Form						Back Color			
<input type="checkbox"/> Resize Grid									
<input type="checkbox"/> Resize Menu									
Last Login		Password Change		Date Disabled					
2014-07-27 18:36:41				2014-07-27 18:25:24					
Last Attempt		Last Updated		Date Enabled					
2017-03-06 01:13:50		2017-01-31		2014-07-27 18:26:37					

- 7. The Login History show whether the Account is
  - a. 'in use' (login)
  - b. lockout (after failing login in after 3 times)
    - i. This lockout will be enforced for 5 minutes
    - ii. The function is to discourage illegal login attempts
  - c. disabled (due to being inactive or deliberately disabled)

8. Trade Net

- a. This is additional fields added to facilitate Trade Net or customs declaration which is currently under development under Release 5.401
- b. This section will be updated when the functions are release.

Access Control			User Data			Trade Net		
Trade Net Configuration								
Mailbox ID								
CR UET No								
Recipient ID								

9. Click Save after any change.

**3.2.1. Deleting User ID**

Delete User ID by selecting the ID and then click the 'Delete' button. Only user id that does not have any transactions recorded against it is allowed be to be deleted and removed from the database. User ID that has transactions records is flagged as DELETED but the user data are maintained in the database. They are however suppressed and hide from viewing. Such user ID cannot be recycled. If a person who has left the organisation and subsequently re-joins, a new user ID would need to be assigned.

## 4. WAREHOUSE / LOCATION SETUP AND MAINTENANCE

A major revamp of the function is done in 5.398 to consolidate all the menu options related to warehouse/location setup and maintenance into 1 single option. This is aimed to streamline the warehouse definition and enhance ease of use.

The first step toward configuring the WMS is the setup of the warehouse location matrix – that is the location addresses.

The steps involved are

1. Define the warehouse – code, name, address...
2. Define the work station – receiving, despatch, holding...
3. Define the zoning for the warehouse
4. Create the location matrix (itself)

CRISTAL WMS adopts the concept that WAREHOUSE identifies Physical warehouses while ZONE identifies virtual or logical warehouses.

ZONE is also being used in the putaway / storage logic.

In the concept revamp, Location Types PICKFACE and HOLDING are being dropped and its function is replaced with Zone Type (see Zone Maintenance).

Location Type is being reconceptualised for further development. All locations' Location Type is now classified as 'S' (storage).

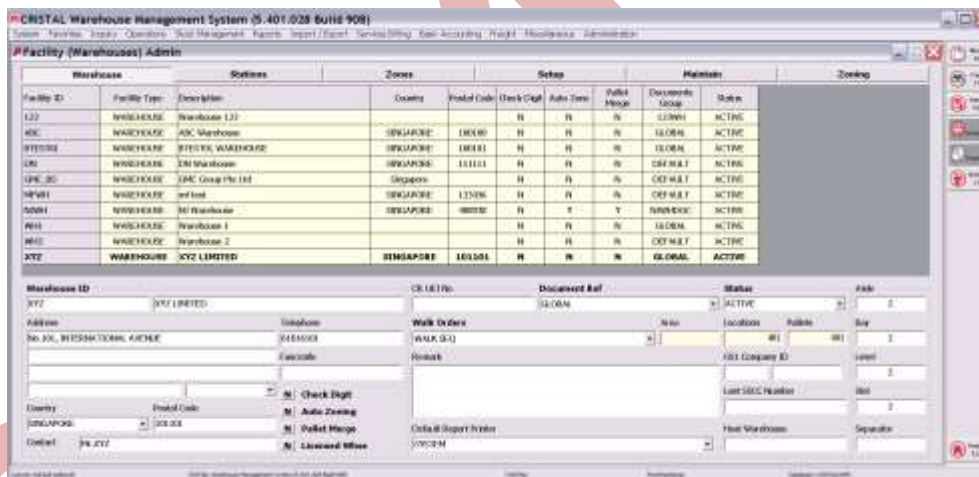
### 4.1. Warehouse Setup

In Build 823, the location parts (number of characters) together with the part separator configuration is moved from Administration | System Configuration to Warehouse Setup. This is to enable different warehouse to have its own definition.

In Build 830, the paging tab buttons is redesigned as a right sidebar to 'reclaim' some screen estate.

The Zones listing is enhanced to show the number of locations and pallets defined for each zone.

To define the warehouse



Select the Warehouse tab button

1. Input the Warehouse ID, Description, Address, Building, Country, Postal code, Telephone and Facsimile...
2. Flag 'Check Digit Validation' as Y, if check digit is to be used for warehouse tasks confirmation
3. Flag 'Auto Zone Assignment' if putaway logic is to consider picking activity
4. Flag Pallet Merge prompt
  - a. By default, when a pallet is updated into a location that set to 1 pallet unit and already has a pallet during RF Putaway or Transfer, the stock is automatically merged into the existing pallet.
  - b. If set to Y, operator will be prompted whether to merge pallet
5. Flag Licensed Warehouse, if applicable
  - a. This enable a number of rules required by Customs authority
6. Select the 'Document Sequence Group' – this is for default document numbering if it is not specified at client level.
  - a. If not defined, the group 'DEFAULT' will be used.
7. Specify the Host Warehouse code if the system is interfaced to another system with its own Warehouse code. (Added in Build 5.393)
8. Define the location address components' number of characters – Aisle, Bay Level, Slot and Separator
  - a. Maximum total number of characters, including of separators if specified, for location address is 20

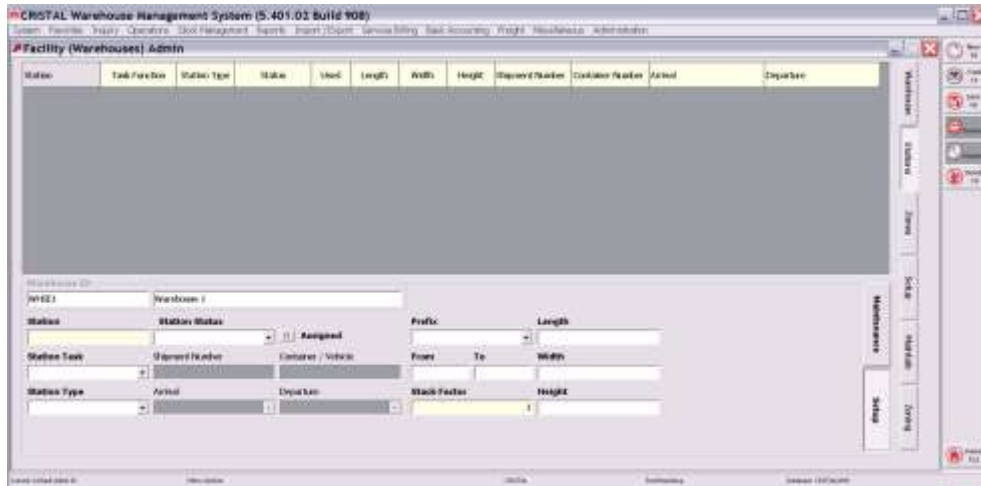
9. Separator is single character.
    - a. Leave if not required
  10. Click SAVE
- Repeat step 2 to 8 to define additional warehouse

**4.2. Station Setup and Maintenance**

Station or Work Stations are the interface between the internal and external of a warehouse.

Goods received from suppliers or forwarders are check in into a receiving area (or incoming work station) before being putaway to a storage location.

Similarly, when goods are to be issued against a sales order are picked, they are placed in the despatch grid (or outgoing work station).



**4.2.1. Station Setup**

To setup stations, select the required Warehouse and click Stations tab button

1. Click the Setup button
2. Select the Station Task - Check In, Despatch, Parking or Multi-Tasks
3. Select Station Type – 20 FT, 40 FT, LCL, or any user defined (see System Parameter Maintenance)
4. Input the Prefix for the stations to be created
5. Specify the range (From and To) of station to be created
6. Specify the Length, Width and Height of the stations
7. Select the Status – Available or Blocked
8. The Stack Factor is default to 1
9. Click SAVE – this generate the stations as defined

**4.2.2. Station Maintenance**



To make change to existing stations

1. Click on 'Maintenance' button

2. Click on the station to be modified
  - a. The details will be displayed in the textboxes
3. Modify as required
4. Click SAVE to effect change

**4.3. Zone Maintenance**

The next step in the creation of the location matrix is defining the Zoning of the warehouses.

Each zone is allowed to be linked to 8 check-in stations and 8 despatch stations. The rationale of the limitation is to minimize crisscrossing of movements in the work areas.

Note: When making change to zone-station relationship, ensure that all tasks in the system have been completed as removal of existing relation will cause outstanding task not to be assigned to operators for completion.

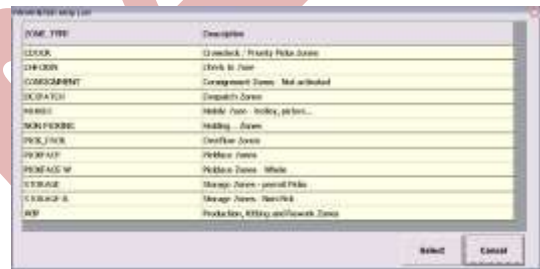
In Build 5.393, Zone Type is introduced to further enhance the functionality of the system. 'Pick Pack' zone is being reclassified as one of the Zone Type.

This is further enhanced by added Storage-R, Pickface Pickface-W and Non-Picking.

- Storage-R is designed not to allow Picking from the zone while allowing Replenishment to be drawn from the zone.
- Pickface is introduced to replace Location Type 'P' which has been dropped due increased requirement such as managing Pick to Light system.
- Pickface-W is introduced to extend the function of pickfaces to facilitate Whole or Carton picks.
- Non-Picking is to replace Location Type 'H' which for holding stocks that are returned and pending inspection, quality assurance, quarantine... Stocks in such zones are not assigned for any activity such as Picking, Replenishment.
  - o They must be transferred out of the zone first.

The Zone Types available currently are:

1. CONSIGNMENT
  - a. Reserved for future enhancement
2. MOBILE
  - a. Mobile (transitional) locations like carts...
3. NON-PICKING
  - a. This is for Damaged, Service Centres... where stocks are not to be assigned for picking
4. PICK\_PACK
  - a. For Crossdock and Break-Bulk operation
5. PICKFACE
  - a. Locations assigned for LOOSE picks
  - b. This replace Location Type 'P'
6. PICKFACE-W
  - a. Locations assigned for WHOLE picks
7. STORAGE
  - a. Normal storage area
8. STORAGE-R
  - a. Storage area where picking is not allowed
9. WIP
  - a. Work in process stocks for Kitting, Production...

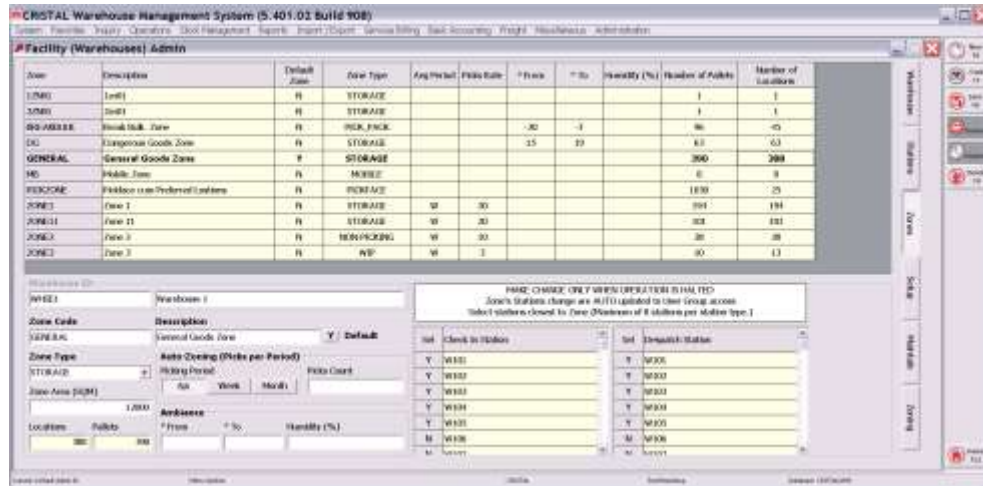


In a warehouse, it is necessary to specify a 'Default Zone' and a 'Pick Pack' zone type. The 2 zones can be the same zone. Default Zone is used in uploading of Product Code – in which the Default Zone is assigned as the Storage zone for the item if no storage zone is defined for the item.

Pick Pack zone is the overflow zone for the warehouse. When the assigned storage zone(s) for an item are completely filled, a receipt of the item will automatically assigned to locations in the Pick Pack.

Notes: Do not use Pick Pack zones for normal storage as the stock rotation will be affect as allocation of stock from Pick Pack are being assigned first in FEFO-FIFO and last when Productivity is involved. If required set up a BLOCK storage zone for regular overflow stock.

Pick Pack zone is also the break bulk zone of the warehouse. When a receipt is required to be cross docked and break bulk to a number of sales orders, the receipt is assigned location in the Pick Pack.



To define a zone

1. Input the Zone Code and Description
2. Tick Default Zone, if it is to be assigned as one
3. Specify the Zone Type
4. Select the Check In Station that is to be linked to (maximum – 8) – See [Zone-Station Definition](#)
5. Select the Despatch Grids that is to be linked to (maximum – 8) – See [Zone-Station Definition](#)
6. If zone is to be assigned for Auto-Assigned Putaway, tick whether the movement frequency is by Weekly or Monthly and input Picking Frequency for the period.
7. Click Save to update
8. Repeat step 1 to 8 to add new zone

To maintain existing zone, click on the record in the grid box. The details will be displayed in the textbox. Modify as required and click Save.

**4.3.1. Zone-Station Definition**

A maximum number of 8 work stations – Check In or Despatch – are allowed to be attached to each storage zone. This is to minimize the distance to be travelled by the operator when moving pallet to and from the stations. It also minimizes crisscrossing of the operators when going about performing their works. Thereby reduce risk of accident.

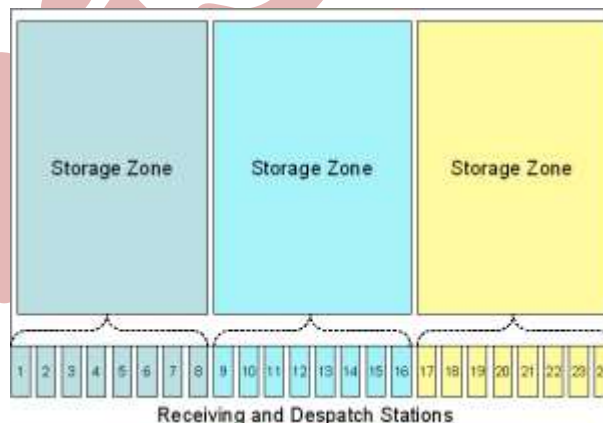


Figure 5 - Warehouse Storage Zone - Work Station Layout

**4.3.2. Auto Zoning**

Auto Zoning is designed to facilitate FMCG warehousing operation such that the system will assign location for storage based on the frequency of picking activities of an item averaging over 3 periods – week or month as selected.

When an item, which is flagged as ‘Auto Zoning’, is being assigned for putaway, the system computed the average pick frequency and then seeks for a location that has a limit set that is higher than the computed picks. For item that do not have any picking activities it will be assigned to the specified Storage Zone in the Product Definition.

For further detail refer to appendix [Storage By Picks Activities](#)



**4.4. Locations Setup**

The location address comprise of 4 components

- Aisle (alphanumeric)
- Bay (numeric)
- Level (numeric)
- Slot (numeric)

The definition of each is illustrated in the picture on the right.

The standard of each component is 2 characters.

This can be defined as needed in Facility Definition.

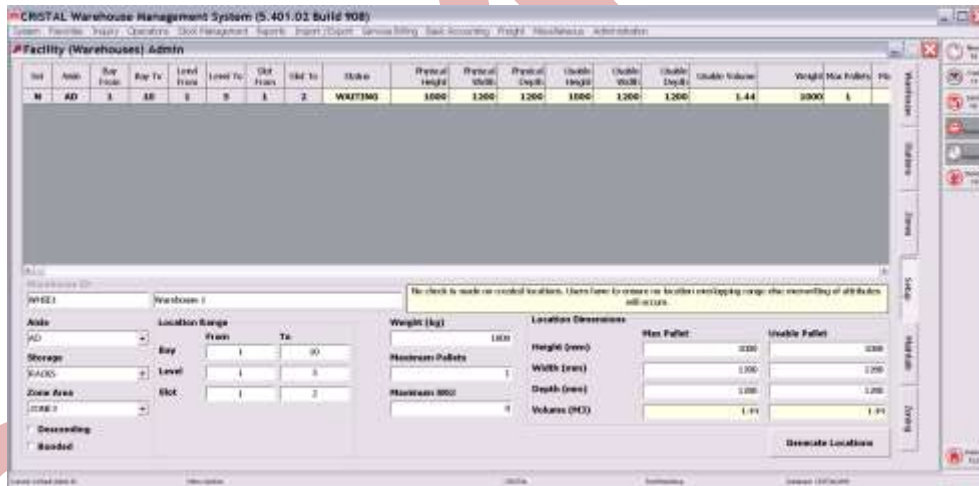
Location matrix setup is defined by range. The option is available to define the Pick Faces and Holding Area at the same time. However, it is recommended that they be defined later after the operation is familiar with the operation. It is necessary that the Pick Faces and Holding Area are assigned the same zone as the storage zone.



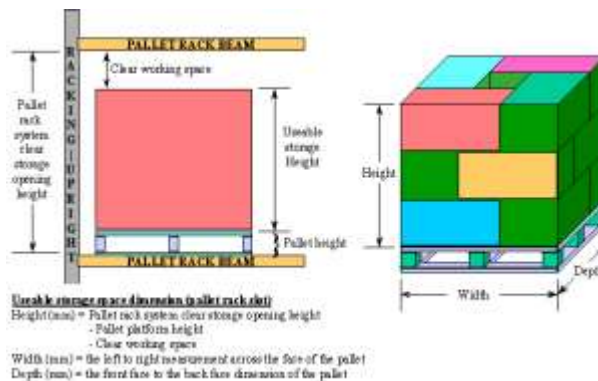
Note: If the specified range overlaps existing location, the properties of the existing location will be redefined by the current definition. This is to enable redefinition of existing locations when the need arises.

To define the location matrix

1. Specify the Aisle
2. Select the Storage – Block (stack), DDRacks, DriveIn, (Single-deep) Racks and Shelf
  - a. DDRacks allow 2 pallets in 1 location while Racks allow for 1 pallets
  - b. The others are to be specified by the users.
3. Define the Zone the locations are zoned in.
  - a. This can be changed under Location Maintenance
4. Tick 'Descend Walk Sequence' if the sequencing is to be reversed
5. Tick 'Bonded' if locations are to be assigned as Bonded locations



6. Specify the range for Bay, Level, Slot (pallet/bin position)
  - a. Specified ranges should not overlap existing locations. Otherwise their attributes will be overwritten.



7. Define the weight (in kilograms) capacity of the locations
  - a. Minimum weight = 5 kg

8. Define the (maximum) number (#) of pallets each location can hold
9. Define the (maximum) number of SKU allow in each location
10. Defined the Physical and Usable dimensions – Height, Width and Depth (in millimeters)
  - a. The minimum dimension is 50 mm
  - b. The Usable dimensions cannot be greater than Physical
  - c. Whether the Usable height is to include the pallet height is dependent on individual business policy – ‘Is the pallet volume billable?’
11. Click SAVE to add to the grid box (locations are not created yet)
12. Repeat step 3 to 14 for the next range with the aisle
13. To generate the locations matrix, ensure ‘Select’ column is set to ‘Y’
  - a. Click ‘Generate Locations’ to create the locations
14. Repeat step 2 to 16 for next aisle

If there are locations with different dimensions and / or weight, they are to be defined as different line.

**4.5. Locations Maintenance**

In Build 5.398 Build 500 and later, only Default Admin group users can access and maintain all warehouses and locations. Others are allowed to access only their default warehouse’s locations.

After the creation of the location matrix, there may be a need to modify the properties due to operational requirement change. Modification to locations is carried out aisle by aisle or by specific properties or combination.



To modify the locations

1. Specify the selection criteria and click Find
  - a. Only the following fields are available for selection
    - i. Aisle
    - ii. Zone
    - iii. Storage Type
2. Select the location to be changed, the data will be displayed in the textboxes
  - a. Double click the required location to change ‘Sel’ to ‘Y’
3. Modify required properties
4. Click ‘Update Current Grid Row’ or ‘Update Selected Grid Rows’
  - a. Only the grid box is updated
  - b. Changes are updated to the database only when the Save button is clicked
5. Click SAVE to effect the changes

The Select All set the Select column to ‘Y’ and the Select None set the Select column to ‘N’. The Filter button hides the unselected records.

**4.6. Locations Zones and Status Maintenance**

This is designed as a graphical user interface to provide a simple and friendly screen to system administrators and an easy mean of updating locations zoning and change location status.

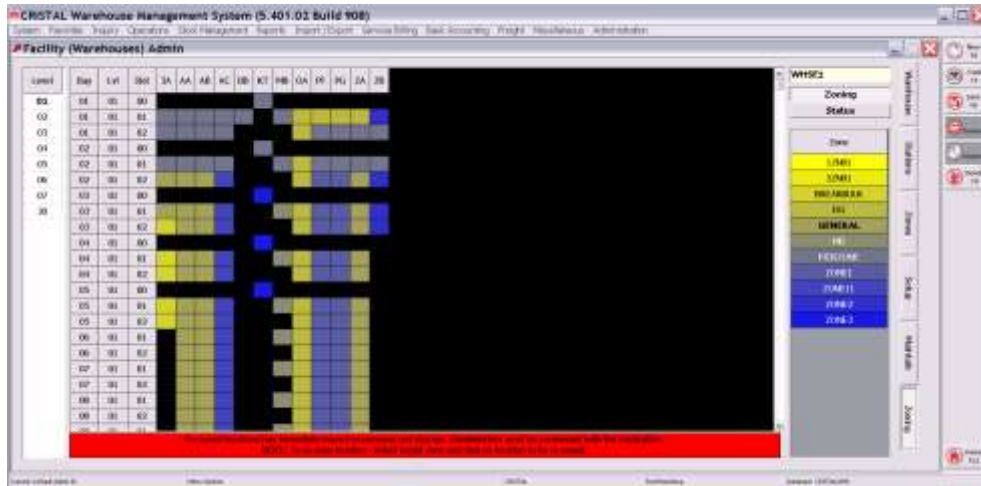
**4.6.1. Zones Maintenance**

To change the zone of a location, select Location Zoning and Zoning buttons after specifying the warehouse at the Warehouse page:

1. Select the Level of the Location



- a. The location matrix with the current zoning will be displayed
2. Select the zone that a location is to be assigned by click on the record in the Zone grid



3. Click the Location
  - a. The zone of the location is updated and its color is changed to the new zone.
4. Repeat as required.

#### 4.6.2. Status Maintenance



To change the status of a location, select Status button

1. Select the Level of the location
  - a. The location matrix with the current Status will be displayed
2. Select the Status to change to from the Status grid
3. Click on the location to be change
  - a. The Status of the location is updated and its color is changed to the new status
4. Repeat as required.

## 5. ENTITIES FUNCTIONS

Client Entities group of functions comprises of the WMS setup of Client related data that directly related to the Warehouse and the Product.

This is one of the key components in the CRISTAL Warehouse Management System.

For example, before product code can be defined, the Client code must be created first.

For details on the sequence of data creation in the configuration of the WMS, please discuss with your implementation consultants.

CRISTAL warehouse management system is designed to allow user to maintain multiple clients within the system, multiple customers to each client and multiple delivery destinations to each customer.

However, for simplicity of maintenance, user can set up the system where each customer code is the delivery destination, namely one delivery destination to one customer.

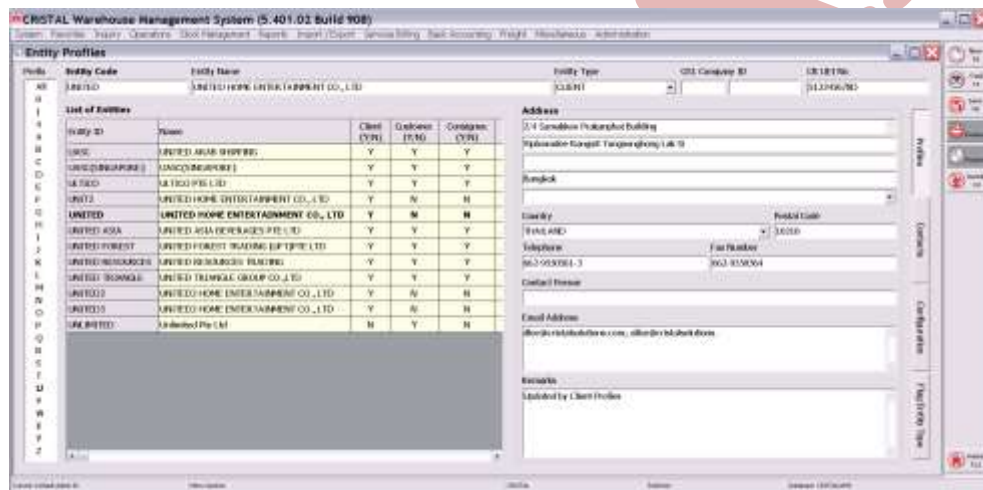
### 5.1. Entity Profiles

Entity master is the collection of company names and addresses - be they clients, customers or suppliers.

In 5.398, the Entity Type CARRIER, TRUCKER, MULTI and UNDEFINED are added to further enhance the function.

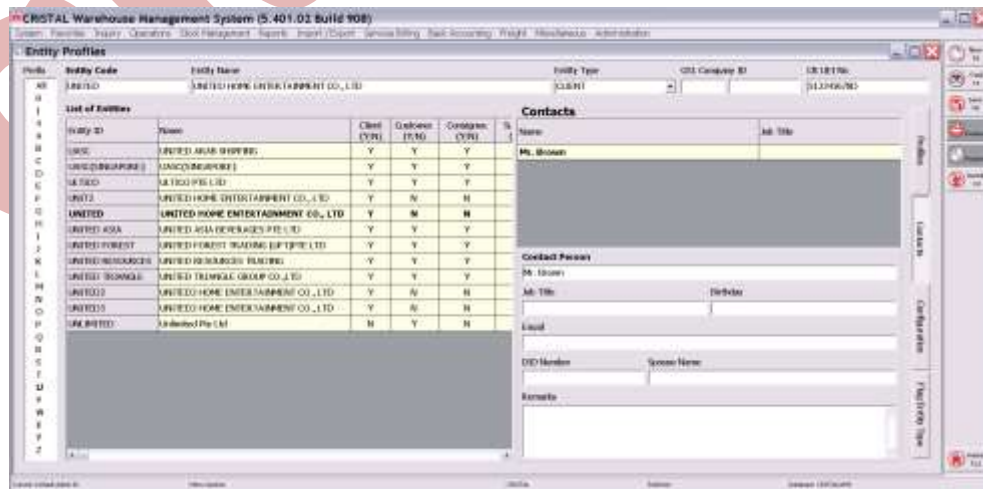
The objective of the function is to assist the operation to standardise the code used to identify a company or entity.

This also serves to standard a company name and minimise different abbreviation by different user which result in multiple code for a single company.



A level of flexibility is opened to the users as it is not the intention of this function to be so rigid that it makes data entry a chore.

The entity master is therefore be updated via the Entity Master maintenance function and via updating of Clients, Customers and Suppliers master on a transparent basis – with no extra effort from data entry.



To update via the Entity Master maintenance

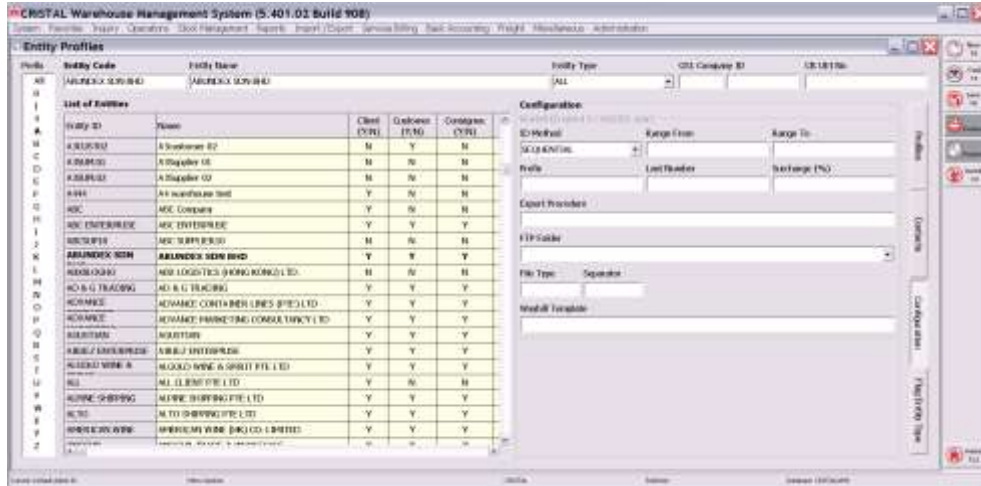
1. Enter an entity code if it is a new entry
2. Input relevant data – address, contact person email...

3. Click Save

Additional contact and information that may be required for customer service can be recorded in the Contacts. Again input the relevant information and click Save for each record to be added.

### 5.1.1. Configuration

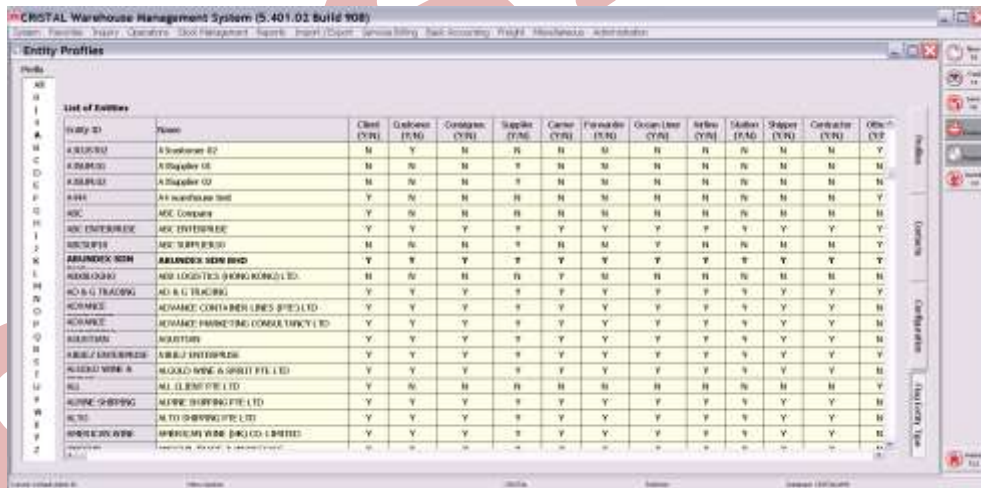
In 5.398, the Entity Profiles is being enhanced to control waybill numbering for CARRIER. This includes generate of waybill interface file (export) and setup of label template.



This is enabled only if the Entity Type is CARRIER.

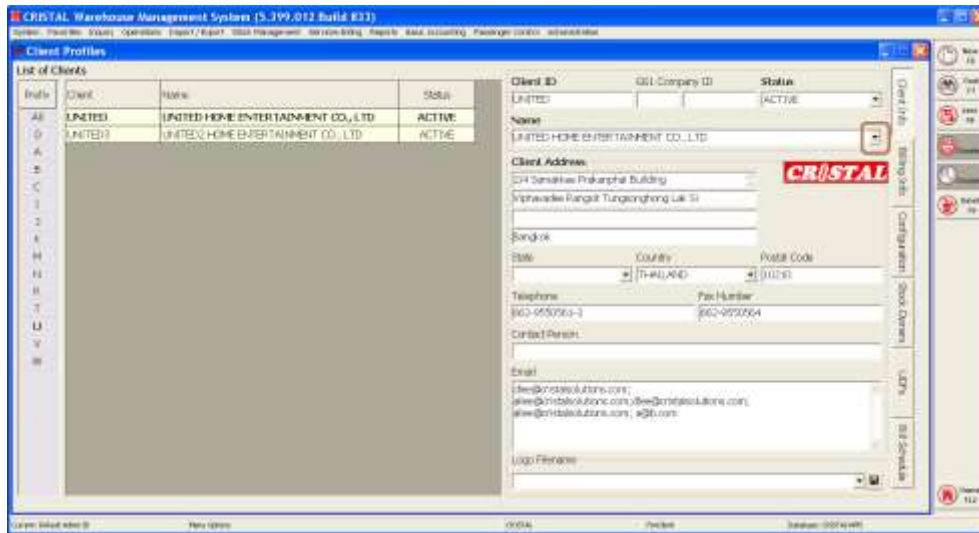
### 5.1.2. Entity Type Flag – Trade Net

This function is added to facilitate the development of Trade Net customs declaration function. It enables users to flag what is the relation a company have with the warehouse operation.



Users simply click on the cell under the column to toggle between Y and N.

**5.1.3. Help Function of Entity Master**



The help function is provided via a command button that is provided on the right of the Name textbox in the Client Master, Customer Master and Supplier Master.

1. User input the first character or prefix or beginning string of the company in the Name
2. Click the command button.
3. A popup windows will appear list the matching company names.
4. User select the required company
5. The entity code, name and address will be populated into the relevant data field



**5.2. Clients Profiles**

CRISTAL WMS is designed to meet the requirement of 3PL warehousing operation requirement. In a 3PL warehousing operation, the operator manages inventories that belong to a number of owners – which is being identified as ‘Client’.

The definition of the client profiles is being grouped into a number of pages

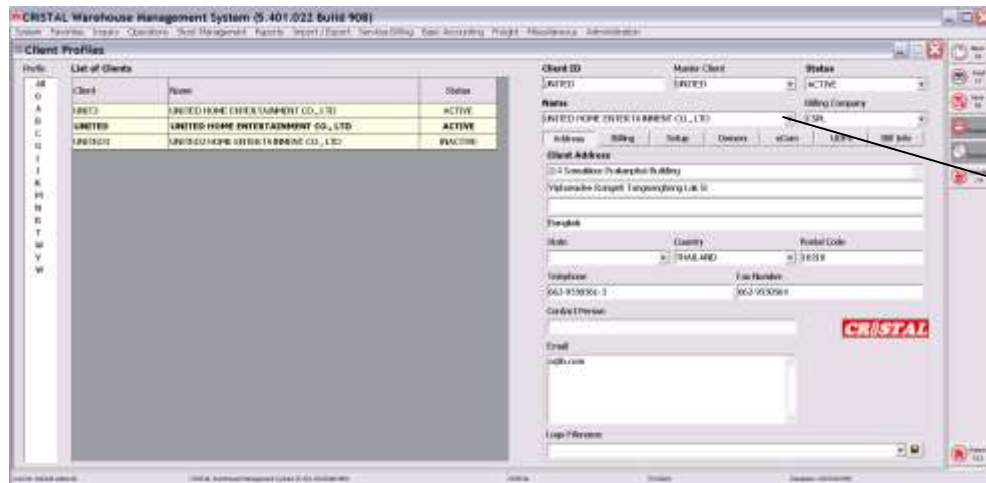
- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Client Details</li> <li>2. Billing Address</li> <li>3. Client Configuration</li> <li>4. Stock Owner</li> <li>5. eCom</li> <li>6. UDF Parameters</li> </ol> | <p>Necessary particular of Client</p> <p>Billing address of Client</p> <p>Basic operational logic require by client such as FIFO, documents reference serial</p> <p>Product stock owner whereby the goods will be allowed to supplied to</p> <p>Mapping of eCommerce marketplace nickname to Client code.</p> <p>Design based on SelluSellers marketplaces interfaces which enable collaboration with multiple public eCommerce domains.</p> <p>This is enabled for Release 5.401.025.908 and later.</p> <p>Extension of Client Configuration designed to enable warehouses to manage highly customised operation to individual clients</p> |
|--|---|

In order to identify inventories that belong to different clients, the product code or stocks are assigned client or owner code to distinguish them from each other.

Clients are therefore a mandatory requirement in CRISTAL WMS. They serve as Product Ownership in the system.

For a private warehouse, there will be only 1 client, namely, the warehouse owner.





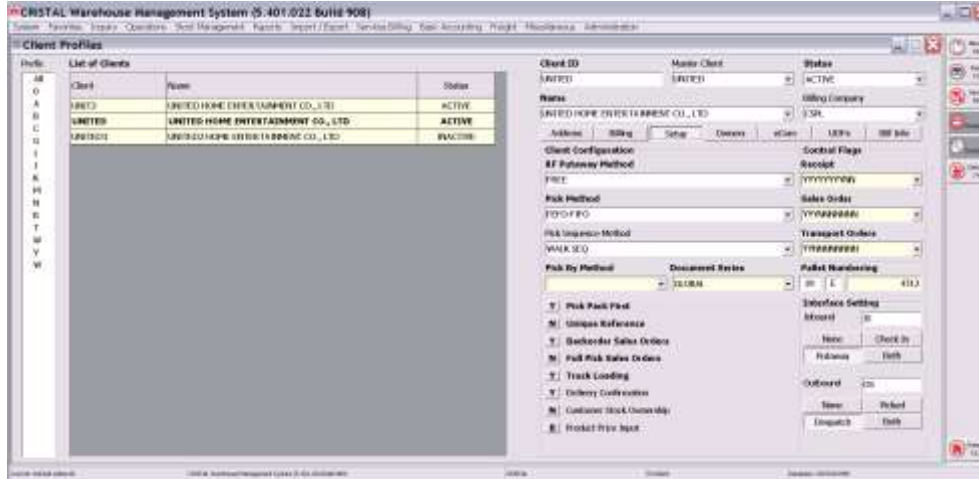
Client record is created / edited as follows:

1. Enter the Client code and Name or select from the Entity List Help window
  - a. To edit, select the client code by clicking on the required client record in the grid box.
  - b. Input the Country / EAN company code, if available
  - c. Specify whether the client is ACTIVE.
    - i. The Status flag is introduced in version 5.393 to enable 3PL warehousing operation to inactive clients that are no longer being supported by the company.
      - In 5.398, the statuses DELETE and ARCHIVE
      - If the status is set to DELETE, the End Of Day SQL Agent Job, if setup and activated, will delete all data related to the client and then set the status to DELETED which user than then manual delete it from the database.
      - ARCHIVE is currently not enabled
    - ii. This affect the client popup windows – which will show only 'ACTIVE' client
    - iii. By default, the Status is set to ACTIVE.
  - d. Enter other relevant available information
2. Select Billing Info



- a. Input the relevant data
- b. If Logistics Service Billing is required, tick the checkbox
- c. If billing is to be done with the WMS, specify the Costing Currency and Payment Term
- d. Client Bank and Bank Account # are introduced in 5.398 to facilitate warehouses who also handle collection of payment on behalf of the client.
  - i. The fields are for reference only
3. On completion of Billing Information, select Setup (Client Configuration)
  - a. If RF wireless Terminal is used, specify the RF Putaway Method
    - i. TOPUP – add new receipt to location with same item
    - ii. FREE – assign new (empty) location for putaway
  - b. Specify the Pick Method (See section on Pick Method for more information).

- i. This is incorporated in Release 3.394 Build 29
- ii. Select 'Pick Pack First' option
  - If YES, system will allocation stock from PICK PACK zones first
    - a. This enable user to configure to pick from PICK PACK first regardless PICK METHOD selected
    - b. This extension replaces PICK PACK FIRST pick method that is available in earlier releases
    - c. Always specified YES if warehouse operation practises crossdocking
- c. Select the Pick Sequence Method – this defined the sequence of the pick tasks. (See section on Pick Sequencing Method for more information)



- d. Specify the Document Sequence Group to be used for the client
  - i. This is set up under Admin | Security | Document Reference Sequence
  - ii. If left blank, the system will automatically use the document sequence group that is specified for the warehouse under Admin | Warehouse | Warehouse Settings
- e. Specify the starting number for the pallet in Pallet Sequence if it is to start from other than zero
  - i. Once specified, avoid resetting the numbering as this would result in pallet number duplication
- f. Specify the Receipt Header Control String – it control whether the header information can be modified at different status. By default, only receipt with 'DATA ENTRY' status can be modified
  - i. Click the '?' button to pop-up a window that list the status and specify accordingly – checked to enable
  - ii. Click OK on completion – the control sequence will be generate and populated into the text box
- g. Specify the Sales Order Control String – it control whether the header information can be modified for different status. By default, only sales orders with 'DATA ENTRY' status can be modified
  - i. Click the '?' button to pop-up a window that list the status and specify accordingly – checked to enable
  - ii. Click OK on completion – the control sequence will be generate and populated into the text box
- h. Host Interface – if applicable
  - i. Specify the export interface creation point
    - Incoming
      - a. N/A – No hosting interface
      - b. Check In – generate interface file on Check-in
      - c. Putaway – generate interface file on Putaway (confirmation)
      - d. Prefix of the incoming interface file name
    - Outgoing
      - a. N/A – No hosting interface
      - b. Picking – generate interface file on Pick (confirmation)
      - c. Despatch – generate interface file on Delivery order generation (despatch)
      - d. Prefix of the outgoing interface file name
  - ii. When entering sales order or check-in shipment, if the Reference # is to be unique, tick the Unique Ref # check box
    - i. Leave blank if not sure

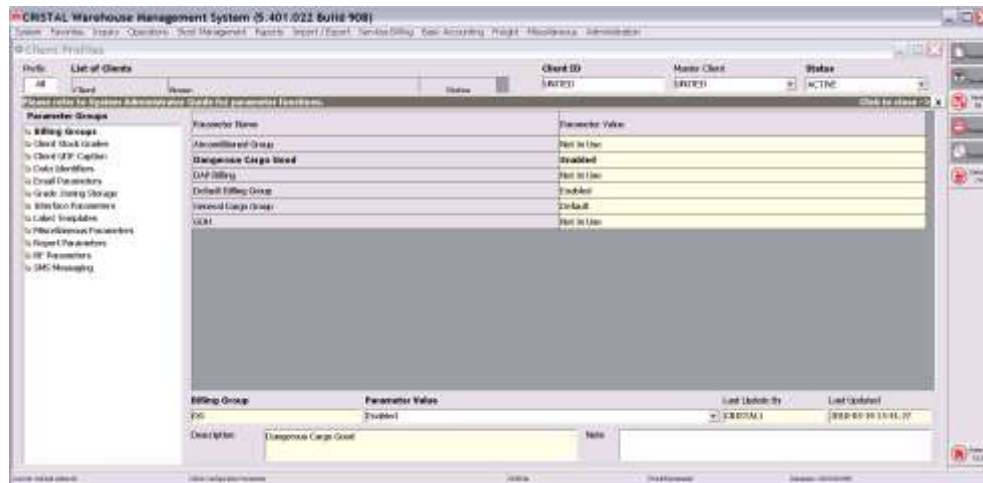


- j. Check Backorder Sales Order when there is inadequate to meet required quantity.
    - i. This serve as a default setting for the customers of the client where the actual control is being defined when it is first created
      - If unchecked, the outstanding quantity will be flushed and the sales order closed.
  - k. Check Pick by Order check box if picking task for a sales order is to be assigned to 1 operator.
    - i. Check if not sure
  - l. Check Delivery Confirmation if update of delivery confirmation is required.
  - m. Check 'Product Costing' if cost of goods is to be captured during receiving
    - i. Average costing is used to compute the cost of stock.
  - n. Check 'Customer Stock Ownership' if stock ownership is required to be maintained.
  - o. Specify Delivery Order and Invoice Template – this is now defined in client Parameters | Reports
4. eCOM Marketplace Mapping
- a. The configuration is for use in identify orders downloaded for SelluSellers or similar marketplace domain.



- b. To update
    - i. Specify the Alias Name that is defined in the SelluSellers configuration for the Marketplace
    - ii. Marketplace – name
    - iii. The stock Grade that of stock to be allocate for the Marketplace.
5. [UDF Parameters](#) contain all other parameters that are used to configure the requirement of the clients. These parameters are grouped into
- a. Billing Group
  - b. Client Stock Grade
  - c. Data Identifier
  - d. [Email Parameters](#)
  - e. Grade Zoning Storage
  - f. [Interfaces Parameters](#)
  - g. Label Templates
  - h. [Miscellaneous Parameters](#)
    - i. – which group parameters that are not defined in the above
  - i. [Reports Parameters](#) (and templates)
  - j. RF Parameters
    - i. Click Save for every parameter modified



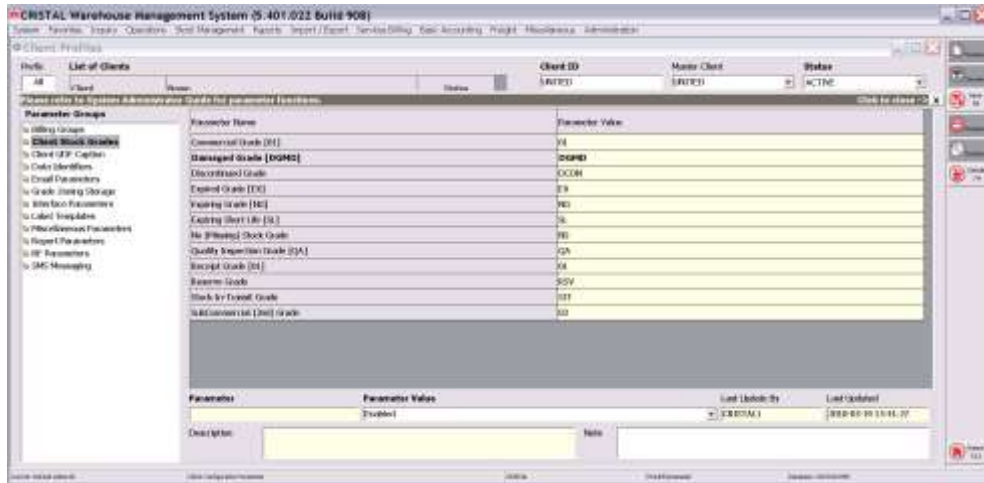


6. Select 'UDF Parameters' button to define Client specific parameters – this will pop up a new windows. Always click 'Update' button to update any changes. This will reflect in the grid box.
  - a. Select the Billing Groups
    - i. Select the Billing Group required and select 'Enabled' in Parameter Value to enable the group code to be used in the Billable Services Setup
      - Click the Save button
    - ii. Specify the group that is to be used as the default group in the Product Definition
    - iii. These enable the groups to be available in Product Definition to classify the item code and that would be required to be quoted in the 3PL Service Billing module.
    - iv. To remove any of the group, click the row to be removed and click the Delete button – the Default Flag column in the grid will be shown as 'Not In Use' when 'Deleted' or not assigned for used in Billable Services Setup
  - b. Client Stock Grade – introduced in version 5.401.04

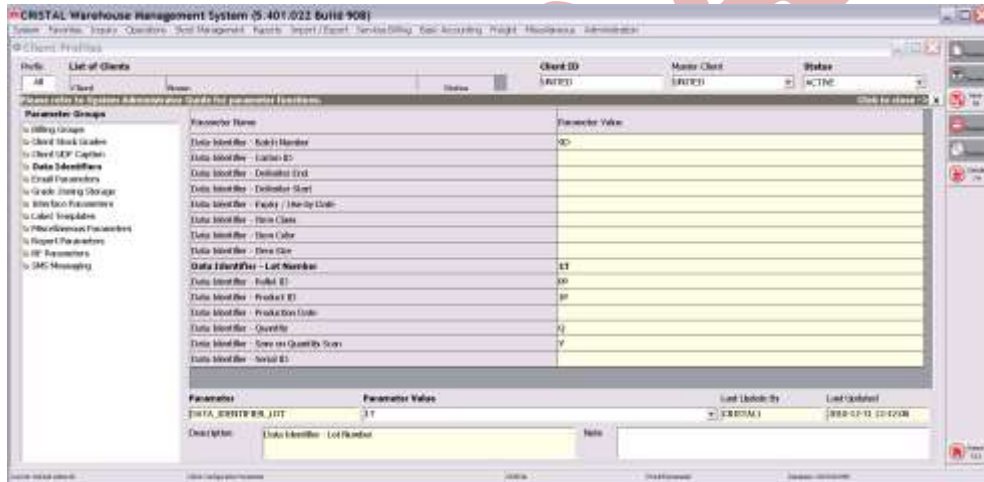
This is introduced to user defined grades for specific customer. The enable ERP stock grade (for example, SAP's Location) to be used in the system which facilitate communication between the Warehouse and the client's staff  
 If not defined, the system stock grade will be used



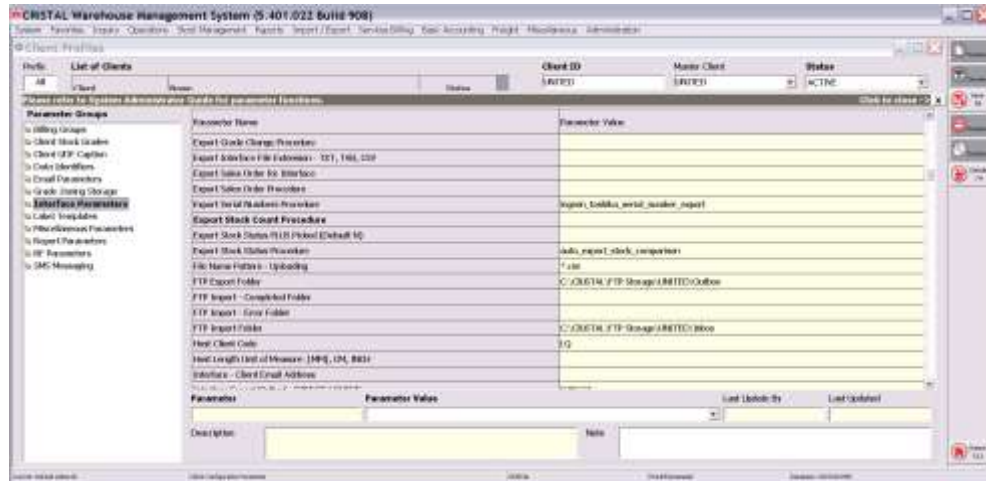
- i. Select the Grade to be defined
    - ii. Specify the code to be used for each of the grades
      - The Grade code to be used must first defined in System Configuration | UDF Parameters | Product Code
  - c. Grade-Zoning Storage option allows user to specify which warehouse zone a specific grade is to be stored in.
    - i. If specified, it takes precedence over the Assigned Storage Zone that is defined for a product in the Product Definition.



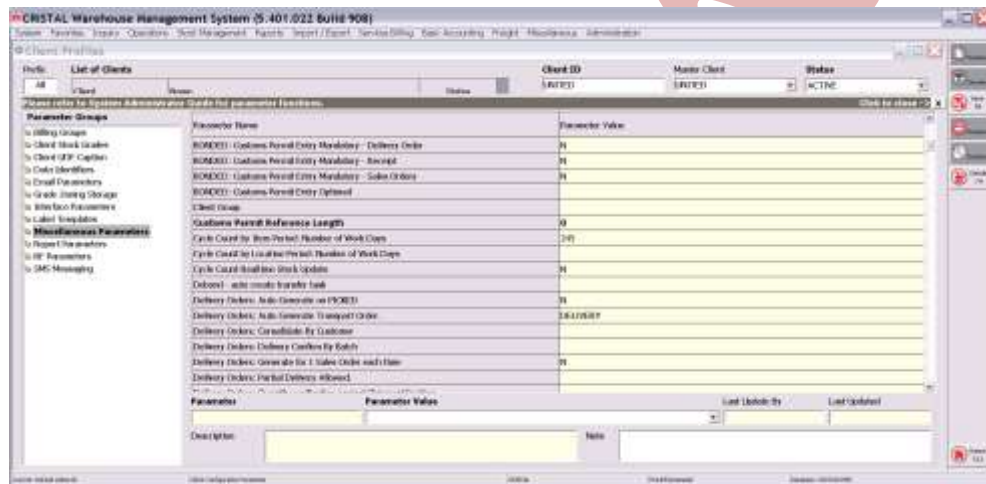
- ii. If defined, for example, Damaged stock to be putaway into a zone assigned for damaged goods while 'good' stock putaway to normal storage location
- d. Data Identifiers
  - i. This is the prefixes embedded in barcodes that identifying what data a barcode scan reading is.
  - ii. This eliminates the need to enable that the cursor is positioned in the right data box before scanning a barcode.



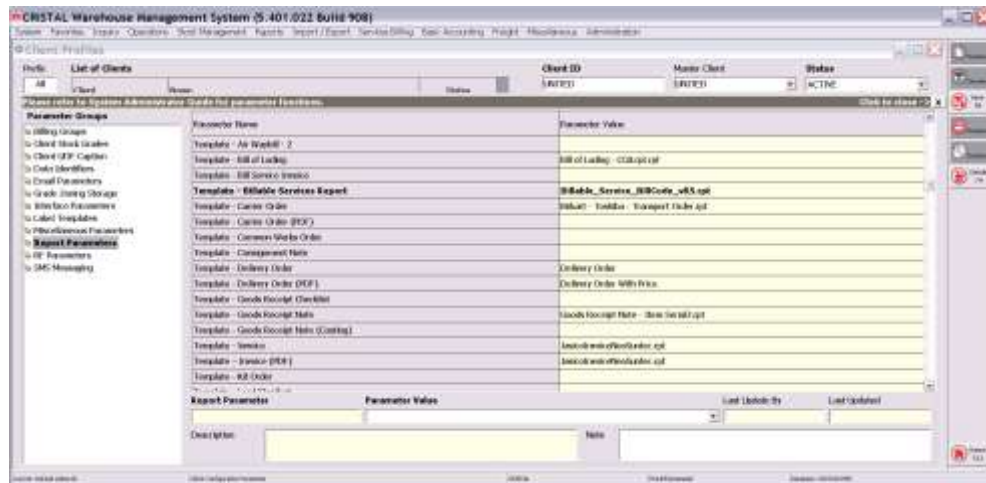
- iii. Select the code to be defined
- iv. Input the Prefix
- v. Click Save
- e. Select Interface option
  - i. This group incorporate client specific parameters that are related to interface with client's system
  - ii. This enable client specific interface to be developed at double quick times.
  - iii. The options that are currently available in the client parameter table are defined in [Client Configuration Parameters](#) documentation.



- f. Select the Miscellaneous Parameters
  - i. This incorporate miscellaneous client specific parameters that provide refinement to the management of the client
  - ii. The options that are currently available in the client parameter table are defined in [Client Configuration Parameters](#) documentation.



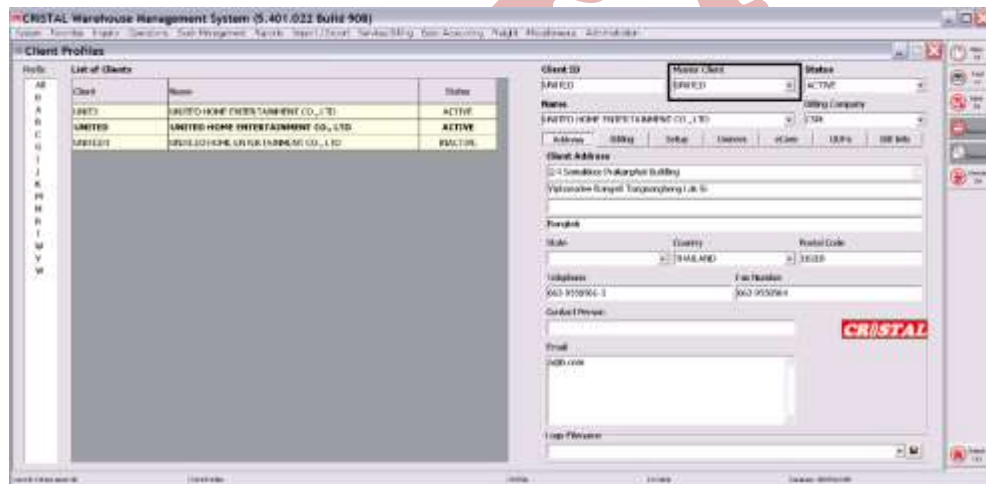
- g. Select the Report option – this group contains parameters that are used in some reports stored procedure and client specific document templates
  - i. The reports parameter is to allow user to add special parameter for report templates for specific requirement.
  - ii. For example the parameter ‘INCL\_DESPATCH’ is a parameter used by the Stock Report by Attributes to control the inclusion of stock in the despatch grid.
- h. Parameters that prefix with ‘Report Template’ are for specifying specific template to be used for the client document (See details in [Client Configuration Parameters](#) documentation).



### 5.2.1. Master Client

In Release 5.400.859 (and later), the system is enhanced to incorporate Master Client. The concept of Master Client is to enable a number of clients to be grouped under 1 master client which allows the group to share 1 set of:

1. Product Definition
2. Customer Profiles
3. Suppliers Profile



Only the master client codes will appear in the above functions. Namely, products ID, customer / delivery address and suppliers need (and can only) to be defined for the Master Client.

The definition of the Client Profiles for master or slave clients is the same except for the field Master Client must be specified.

(For master client, the Master Client and Client ID would be the same.

If a new client is created by copying from an existing, the Master Client will be cleared in UI and set to be the same as the Client ID)

### 5.2.2. Picks Method

Pick Methods or stock allocation for picking is the logic used by the system in the allocation of available stock to meet picking requirement – sales order, campaign order, Ownership transfer or kit order.

The date sequencing is based on date, rather than date-time, and the smallest balance of a location with exception of 'PRODUCTIVITY'.

Note:

1. In 5.398 Build 709, the Production Date is changed to take precedence over receipt date if Production Dates are recorded.
2. IN FIFO WEEK, MONTH and YEAR, only Receipt Date is considered

This, in effect, places emphasis on space utilisation in a CRISTAL WMS driven warehousing operation when using pick-method other than productivity.

Except for PICK-PACK FIRST, priority is to pick from pickfaces if they are being set up for a product. Following are the methods available:

Picks Allocation Methods	Details
1. FEFO-FIFO	<p>The default method if none is specified</p> <p>Under FEFO-FIFO, stocks are assigned in <b>ascending</b> order based on the precedence as ordered:</p> <ol style="list-style-type: none"> <li>1. Expiry Date</li> <li>2. Production Date</li> <li>3. Receipt Date</li> <li>4. Lot Number</li> <li>5. Batch Number</li> </ol> <p>If an item is not 'Expiry Date' controlled, the next attribute will take control.</p>
2. FEFO-FIFO SPACE OPTIMISE	<p>This method assigns stock in <b>ascending</b> order based on the precedence as ordered:</p> <ol style="list-style-type: none"> <li>1. Expiry Date</li> <li>2. Production Date</li> <li>3. Receipt Date</li> <li>4. Lot Number</li> <li>5. Batch Number</li> </ol> <p>If an item is not 'Expiry Date' controlled, the next attribute will take control.</p> <p>However, if stocks with same attributes are available in a number of locations, it would assign location that has the smallest quantity first – an attempt to free locations with 'loose' quantity.</p> <p>- Avoid splitting the quantity of an item in a location into multiple lots unless their attributes as the system identifies each lot as 'loose' by itself</p>
3. FEFO-FIFO PRODUCTIVITY	<p>(Release 5.394.25 and later)</p> <p>This method assigns stock in <b>ascending</b> order based on the precedence as ordered as in FEFO-FIFO:</p> <ol style="list-style-type: none"> <li>1. Expiry Date</li> <li>2. Production Date</li> <li>3. Receipt Date</li> <li>4. Lot Number</li> <li>5. Batch Number</li> </ol> <p>However, if stocks with same attributes are available in a number of locations, then</p> <ol style="list-style-type: none"> <li>1. If the required quantity is greater than a full pallet             <ol style="list-style-type: none"> <li>a. Allocate pick of full pallet</li> <li>b. Allocate pick of loose balance based on space optimization</li> </ol> </li> <li>2. If required quantity is less than full pallet             <ol style="list-style-type: none"> <li>a. Allocate pick based on space optimization</li> </ol> </li> </ol> <p>The rationale of this method is to minimise the number of picks required to fulfil a requirement while minimizing locations occupied by the partial pallets</p> <p>This overcomes the problem faced with pure productivity method that has the tendency to result in multiple locations with partial pallets.</p>
4. FIFO WEEK PRODUCTIVITY	<p>This method assigns stock for picking based the Week of Receipt.</p> <p>The objective of the method is to facilitate warehouse operation where FIFO requirement is based on Week instead of date of receipt.</p> <p>All other stock attributes are ignored – including Expiry and Production.</p>
5. FIFO MONTH PRODUCTIVITY	<p>This method assigns stock for picking based the Month of Receipt.</p> <p>The objective of the method is to facilitate warehouse operation where FIFO requirement is based on Month instead of date of receipt.</p> <p>All other stock attributes are ignored – including Expiry and Production</p>
6. FIFO YEAR PRODUCTIVITY	<p>This method assigns stock for picking based the Year of Receipt.</p> <p>The objective of the method is to facilitate warehouse operation where FIFO requirement is based on Year instead of date of receipt.</p> <p>By combining with Location in Pick Method Extension, this allows operation to force the system to assign stock for picking based on location sequence as below.</p> <p>All other stock attributes are ignored – including Expiry and Production.</p>
7. LOCATION PRIORITY	<p>This assigns stock for picking by Location sequence.</p> <p>This method forces the system to assign all stock in a location before assigning from the next location.</p> <p>Shortcoming of the option is that if new stocks are placed in a location that is prior to location of existing stock of item, it will be assign first.</p> <p>All other stock attributes are ignored.</p>
8. LEFO-LIFO	<p>This method is same as FEFO-FIFO except that the allocation is based on <b>descending</b> order</p>



Picks Allocation Methods	Details
9. PRECEDING BATCH	The method is the same as FEFO-FIFO except that Batch # takes precedence over Lot # and Receipt Date as follow: Expiry Date - Production Date - Batch #- Lot # - Receipt Date Stock are allocated based on <b>ascending</b> order
10. PRECEDING LOT	The method is the same as FEFO-FIFO except that Batch # takes precedence over Lot # and Receipt Date as follow: Expiry Date – Production Date - Lot # - Batch # - Receipt Date Stock are allocated based on <b>ascending</b> order
11. PPQ SMALLEST FIRST	The method assigns stocks to be picked base the smallest pre-packed quantity (PPQ) available. This in effect will clear any loose packages first This is meant for items that does not have a standard packaging.
12. PPQ LARGEST FIRST	The method assigns stocks to be picked base the largest pre-packed quantity (PPQ) available. This is meant for items that does not have a standard packaging.
13. PRODUCTIVITY	Productivity method minimise the number of picks to meet the requirement of a sales order. Effectively, the system will pick from the largest available balance that would meet a sales requirement. The undesired effect of this method is that there is a tendency to leave odd quantity of an item on the shelves. When this method is used, warehouse management need to perform regular housekeeping to consolidate loose quantity.
14. SPACE OPTIMISATION	In this method, the system will allocate picking from locations that have the smallest balance quantity. This method disregards FIFO rule. However, with this method, the system minimise the number of locations being occupied by an item. The result is increasing space utilisation by clearing loose quantity first.

However, whichever pick method is specified for a client, it will be ignored if an item is controlled by specific attribute(s) and the required attribute(s) is specified in a sales order.

For example, an item that is controlled by Batch number and a batch number is specified for the item in a sales order, the WMS will ignore the Pick Method and search for stock with the required attribute.

If there is no stock with the matching attribute, the order will be backordered or closed, in accordance to the 'Auto Back Order' flag in the Customer setup.

**5.2.2.1. Pickface Pick Allocation**

In version 5.393 and later, allocation of stock for picking from pickfaces is enhanced in favour of productivity.

When the system decides whether to assign pick from pickfaces, it compare the required quantity against the pickface balance and check against the percentage defined in client parameter 'Pick from reserve - reqn exceed % pickface balance'. If the requirement exceeded the specified percentage, the system will assign pick from the reserve.

This objective is to minimise the cycle of pick and replenishment and in the process optimise the warehouse operation.

**5.2.2.2. Dynamic Pickfaces**

Also introduced in 5.393, CRISTAL WMS also support dynamic pickfaces.

In standard or static pickface operation, a pickface must be defined for each item number and be specific the quantity it can hold and at which level of quantity balance that a replenishment is to be triggered. This can become very tedious if the products are seasonal or have short product life cycle.

Dynamic pickfaces allow operation to move item into location under a pickface zone **without** needing to assign pickfaces to the item. To facilitate operation on what item is to be moved into pickfaces, following reports are provided:

- ABC Analysis
  - Help to identify item as fast and slow mover by quantity picked

**CRISTAL Solutions Pte Ltd**

27 Jun 2014

ABC Analysis Report for period from 1/07/2013 To 30/06/2014

Client: A3

S/No	Item Code	Description	Out Qty	Accum Qty	Item %	Accum %	Qty Avail	Class
1	ABTMA0001	ABTMA STK0001	1,030	1,030	3.33	3.33	152	A
2	513-30248-50847-08	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:08	750	1,780	2.43	5.76	50	A
3	513-30248-50847-10	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:10	750	2,530	2.43	8.19	50	A
4	513-30248-50903-06	MELISSA ULTRAGIRL + J. MAGKREY BLACK LE SIZE:06	750	3,280	2.43	10.61	50	A
5	513-30248-50903-07	MELISSA ULTRAGIRL + J. MAGKREY BLACK LE SIZE:07	750	4,030	2.43	13.04	50	A
6	513-30248-50903-08	MELISSA ULTRAGIRL + J. MAGKREY BLACK LE SIZE:08	750	4,780	2.43	15.47	50	A
7	513-30248-50903-09	MELISSA ULTRAGIRL + J. MAGKREY BLACK LE SIZE:09	750	5,530	2.43	17.89	50	A
8	513-30248-50903-10	MELISSA ULTRAGIRL + J. MAGKREY BLACK LE SIZE:10	750	6,280	2.43	20.32	50	A
9	513-30248-50833-09	MELISSA ULTRAGIRL + J. MAGKREY CLEAR LE SIZE:09	650	6,930	2.10	22.42	50	A
10	513-30248-50833-10	MELISSA ULTRAGIRL + J. MAGKREY CLEAR LE SIZE:10	650	7,580	2.10	24.53	50	A
11	513-30248-50847-05	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:05	650	8,230	2.10	26.63	50	A
12	ABNRST0001	ABNR STK0001	630	8,860	2.04	28.67	60	A
13	ABLBTISST0001	ABLBTIS STK0001	570	9,430	1.84	30.51	114	A
14	ABLOCST0001	ABLOC STK0001	415	9,845	1.34	31.86	50	A
15	ABLOCST0002	ABLOC STK0002	320	10,165	1.04	32.89	50	A
16	ABNRST0002	ABNR STK0002	310	10,475	1.00	33.89	50	A
17	ABLTST0002	ABLT STK0002	293	10,768	0.95	34.84	38	A
18	ABEXST0001	ABEX STK0001	273	11,041	0.88	35.73	68	A
19	ABLTST0001	ABLT STK0001	263	11,304	0.85	36.58	38	A
20	ABBCNCPST0001	ABBCNCP STK0001	252	11,556	0.82	37.39	138	A
21	ABBAST0002	ABBA STK0002	233	11,789	0.75	38.15	138	A
22	ABBAST0001	ABBA STK0001	223	12,012	0.72	38.87	38	A
23	ABSCP06-ITSCC	AB SCP06 ITSCC	220	12,232	0.71	39.58	152	A
24	ABSCP07-LTB-HEXISICI CCO-02	ABSCP07-LTB-HEXISICCOO-02	210	12,442	0.68	40.26	210	A
25	513-30248-50847-09	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:09	150	12,592	0.49	40.74	50	A
26	513-34081-18028-00	MELISSAREFRACTION WHITE US SIZE:00	129	12,721	0.42	41.16	1	A
27	513-34081-18043-00	MELISSAREFRACTION YELLOW US SIZE:00	129	12,850	0.42	41.58	1	A
28	513-34081-18044-00	MELISSAREFRACTION GREEN US SIZE:00	129	12,979	0.42	42.00	1	A
29	513-30248-50833-06	MELISSA ULTRAGIRL + J. MAGKREY CLEAR LE SIZE:06	117	13,096	0.38	42.38	1	A
30	ABLOCST0003	ABLOC STK0003	117	13,213	0.38	42.75	50	A
31	513-30248-50833-07	MELISSA ULTRAGIRL + J. MAGKREY CLEAR LE SIZE:07	101	13,314	0.33	43.08	1	A
32	513-30248-50833-08	MELISSA ULTRAGIRL + J. MAGKREY CLEAR LE SIZE:08	101	13,415	0.33	43.41	1	A
33	513-34081-00263-00	MELISSAREFRACTION BLACK US SIZE:00	101	13,516	0.33	43.73	1	A
34	513-34081-18045-00	MELISSAREFRACTION ORANGE US SIZE:00	101	13,617	0.33	44.06	1	A
35	456	456 NR	93	13,710	0.30	44.36	10	A
36	513-34081-18025-00	MELISSAREFRACTION PINK US SIZE:00	89	13,799	0.29	44.65	1	A
37	513-30248-50847-06	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:06	66	13,865	0.21	44.86	1	A
38	513-30248-50847-07	MELISSA ULTRAGIRL + J. MAGKREY RED LE SIZE:07	66	13,931	0.21	45.08	1	A
39	ABPLTIDABLOC0001	ABPLT ID AS LOC 0001	60	13,991	0.19	45.27	50	A
40	ABPLTIDABLOC0002	ABPLT ID AS LOC 0002	60	14,051	0.19	45.47	50	A
41	ABPLTIDABLOC0003	ABPLT ID AS LOC 0003	60	14,111	0.19	45.66	50	A
42	TEST123	TEST123 LT	55	14,166	0.18	45.84	38	A

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Page 1 of 10

- ABC Analysis by Orders Count
  - Help to identify fast and slow mover by Orders



CRISTAL Solutions Pte Ltd								27 Jun 2014
ABC Analysis by Orders Count Report for period from 1/07/2013 To 30/06/2014								
Client: A3								
S/No	Item Code	Description	No of Orders	Accum Orders	Orders %	Accum %	Qty Avail	Class
1	987	123AB	16	16	3.25	3.25	4	A
2	ABBAST0001	ABBA STK0001	7	23	1.42	4.67	38	A
3	ABBAST0002	ABBA STK0002	7	30	1.42	6.09	138	A
4	ABNRST0001	ABNR STK0001	6	36	1.22	7.30	60	A
5	ABNRST0002	ABNR STK0002	6	42	1.22	8.52	50	A
6	ABITAST0001	ABITMA STK0001	5	47	1.01	9.53	152	A
7	ABBCNCPST0001	ABBCNCP STK0001	4	51	0.81	10.35	138	A
8	123	123	4	55	0.81	11.16	106	A
9	ABSCP06-ITSOC	AB SCP06 ITSOC	4	59	0.81	11.97	152	A
10	ABSTST0001	ABST STK0001	4	63	0.81	12.78	30	A
11	ABCCST0001	ABCO STK0001	3	66	0.61	13.39	38	A
12	ABPLTIDAGLOC0001	ABPLT ID AS LOC 0001	3	69	0.61	14.00	50	A
13	456	456 NR	3	72	0.61	14.60	10	A
14	911	911 ISKICCO	3	75	0.61	15.21	1	A
15	ABLOCST0001	ABLOC STK0001	3	78	0.61	15.82	50	A
16	ABLOCST0002	ABLOC STK0002	3	81	0.61	16.43	50	A
17	ABLOCST0003	ABLOC STK0003	3	84	0.61	17.04	50	A
18	ABLTBTISST0001	ABLTBTIS STK0001	3	87	0.61	17.65	114	A
19	ABLTST0001	ABLT STK0001	3	90	0.61	18.26	38	A
20	ABLTST0002	ABLT STK0002	3	93	0.61	18.86	38	A
21	ABLLCMST0001	ABLLCM STK0001	3	96	0.61	19.47	2	A
22	901	901 ISKICCO	2	98	0.41	19.88	20	A
23	ABPLTIDAGLOC0002	ABPLT ID AS LOC 0002	2	100	0.41	20.28	50	A
24	ABPLTIDAGLOC0003	ABPLT ID AS LOC 0003	2	102	0.41	20.69	50	A
25	ABRELABLITIS0001	ABRELABL ITIS STK	2	104	0.41	21.10	65	A
26	ABEXST0001	ABEX STK0001	2	106	0.41	21.50	68	A
27	S13-34081-00263-00	MELISSAREFRACTION BLACK US SIZE:00	2	108	0.41	21.91	1	A
28	S13-34081-18025-00	MELISSAREFRACTION PINK US SIZE:00	2	110	0.41	22.31	1	A
29	S13-34081-18028-00	MELISSAREFRACTION WHITE US SIZE:00	2	112	0.41	22.72	1	A
30	S13-34081-18043-00	MELISSAREFRACTION YELLOW US SIZE:00	2	114	0.41	23.12	1	A
31	S13-34081-18044-00	MELISSAREFRACTION GREEN US SIZE:00	2	116	0.41	23.53	1	A
32	S13-34081-18045-00	MELISSAREFRACTION ORANGE US SIZE:00	2	118	0.41	23.94	1	A
33	TEST123	TEST123 LT	2	120	0.41	24.34	38	A
34	TEST456	TEST456 IA-C/S	2	122	0.41	24.75	38	A
35	TEST789	TEST789 EX	2	124	0.41	25.15	38	A
36	ABSRST0001	ABSR STK0001	2	126	0.41	25.56	150	A
37	S13-30248-50833-05	MELISSALLTRAGIRL + J. MAGREY CLEAR LE SIZE:05	2	128	0.41	25.96	1	B
38	S13-30248-50833-06	MELISSALLTRAGIRL + J. MAGREY CLEAR LE SIZE:06	2	130	0.41	26.37	1	B
39	S13-30248-50833-07	MELISSALLTRAGIRL + J. MAGREY CLEAR LE SIZE:07	2	132	0.41	26.78	1	B
40	S13-30248-50833-08	MELISSALLTRAGIRL + J. MAGREY CLEAR LE SIZE:08	2	134	0.41	27.18	1	B
41	S13-30248-50833-09	MELISSALLTRAGIRL + J. MAGREY CLEAR LE SIZE:09	2	136	0.41	27.59	50	B

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Page 1 of 11

- Recommended Pickfaces Stocking Report
  - Help identify item with specific picks frequency for specified period
  - The input parameters for the report are:
    - Client code
    - Period for pick computation based on order line, and
    - Minimised pick frequency required

**CRISTAL Solutions Pte Ltd**

Recommended Pick face Stocking Report as at 27 Jun 2014 27 Jun 2014  
with available reserve stock

Client: A3

S/No	Item_no	Description	Pface Bal	# Of Picks	Min Reqd	Max Reqd	Ttl Reqd	Avg Reqd
<b>1</b>	<b>987</b>	<b>123AB</b>		<b>16</b>	<b>1</b>	<b>3</b>	<b>25</b>	<b>2</b>
	Warehouse	Location	Grade	UOM	Qty Available	Lot Number	Batch Number	Receipt Date
	A3	AB060101	01	PC	3.00			04 Nov 2013
	A3	AA100301	01	PC	1.00			06 Dec 2013
<b>2</b>	<b>A3BAST0001</b>	<b>A3BA STK0001</b>		<b>0.00</b>	<b>7</b>	<b>4</b>	<b>60</b>	<b>223</b>
	A3	AA010101	01	EA	38.00		BT787-0002	04 Nov 2013
<b>3</b>	<b>A3BAST0002</b>	<b>A3BA STK0002</b>		<b>0.00</b>	<b>7</b>	<b>10</b>	<b>70</b>	<b>233</b>
	A3	AA010101	01	EA	38.00		BT787-0003	04 Nov 2013
<b>4</b>	<b>123</b>	<b>123</b>		<b>0.00</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>7</b>
	A3	AA010101	01	PC	5.00	LT787-0001	BT787-0001	04 Nov 2013
<b>5</b>	<b>A3CDST0001</b>	<b>A3CD STK0001</b>		<b>0.00</b>	<b>4</b>	<b>2</b>	<b>30</b>	<b>60</b>
	A3	AA010101	01	EA	38.00			04 Nov 2013
<b>6</b>	<b>A3ETAST0001</b>	<b>A3ETMA STK0001</b>		<b>0.00</b>	<b>4</b>	<b>25</b>	<b>100</b>	<b>1,045</b>
	A3	AA010101	01	EA	38.00			04 Nov 2013
	A3	AA010101	01	EA	38.00			04 Nov 2013
	A3	AA010101	01	EA	38.00			04 Nov 2013
	A3	AA010101	01	EA	38.00			04 Nov 2013
<b>7</b>	<b>A3NRST0001</b>	<b>A3NR STK0001</b>		<b>0.00</b>	<b>4</b>	<b>30</b>	<b>183</b>	<b>563</b>
	A3	AA020301	01	EA	60.00			04 Nov 2013
<b>8</b>	<b>A3NRST0002</b>	<b>A3NR STK0002</b>		<b>0.00</b>	<b>4</b>	<b>43</b>	<b>100</b>	<b>243</b>
	A3	AA020302	01	EA	50.00			04 Nov 2013
<b>9</b>	<b>A3SCP06-ITSCC</b>	<b>A3 SCP06 ITSCC</b>		<b>0.00</b>	<b>4</b>	<b>20</b>	<b>60</b>	<b>220</b>
	A3	AA070402	01	EA	38.00	LT787-0004	BT787-0004	04 Nov 2013
	A3	AA080101	01	EA	38.00	LT787-0004	BT787-0004	04 Nov 2013
	A3	AA080102	01	EA	38.00	LT787-0004	BT787-0004	04 Nov 2013
	A3	AA080201	01	EA	38.00	LT787-0004	BT787-0004	04 Nov 2013
<b>10</b>	<b>A3STST0001</b>	<b>A3ST STK0001</b>		<b>0.00</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>10</b>
	A3	AB010102	01	EA	30.00			04 Nov 2013
<b>11</b>	<b>456</b>	<b>456 NR</b>		<b>0.00</b>	<b>3</b>	<b>20</b>	<b>50</b>	<b>93</b>
	A3	AB060101	01	EA	7.00			04 Nov 2013
	A3	AA010301	01	EA	3.00			09 Dec 2013
<b>12</b>	<b>911</b>	<b>911 ISICICO</b>		<b>0.00</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>5</b>

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The final decision of which items is to be transferred to pickfaces rest with the operation.

**5.2.3. Picks Method Sort Extension**

An extension to the Pick Method is introduced in Build 392 to refine the assignment of pick locations. In earlier version, after meeting the pick method requirement, the final criteria in assignment of a pick location if there are multiple locations that meet the requirement is the pallet numbering. This logic has its limitation as the time component in the receipt date can occasionally result in undesired location sequence. The Pick Method Extension is client specific that allow different options be specified for different client. The options available are:

1. Last Picked Location – Pick from last location picked until emptied
  - o If constantly being topped up, picks will NOT be allocated from other locations, even

though they are older stock

- a. This option is not effective when
  - i. Pick Method is SPACE OPTIMIZATION and PRODUCTIVITY
  - ii. Last Picked Location is a Pickface
  - iii. Specific stock attributes is specified, except Grade
    - Subject to the required Grade is available in location
- 2. Location – location address sequence
- 3. Pallet – pallet number sequence
- 4. Walk Sequence – picks walking sequence as defined in the Locations walk (search)sequence
- 5. Zone – Zone-Location Sequence

**5.2.3.1. Scenarios for Rules Violations**

In as much as possible to conform to the required Picks Method, following scenario will violate the rules:

1. Stock in PICKFACE (static or dynamic) zones – this take precedence over FEFO-FIFO
  - a. They are always allocated before stock in STORAGE zones. Thus ignoring FEFO-FIFO
2. When specific stock attribute or attributes is specified in Sales Orders lines
  - a. Stocks is allocated for picking from matching attributes stocks
3. When specific pallet or location is specified in Sales Orders lines
  - a. Stock is allocated for picking from specified pallet or location

**5.2.4. Pick Sequencing Method**

This defines how the warehouse tasks are to be sorted or sequenced before the works orders is released to the operators.

The warehouse tasks may be grouped by pallet / location or individualised in accordance to the parameter ‘Individual Pick Task numbering’ that is specified in the System Configuration definition.

By default, the warehouse tasks are grouped.

The Pick Sequencing Methods available are:

1. Aisle-Bay Priority – Pick by locations in a bay before the next  
– The bays within an aisle are to be completed before the aisle
2. Aisle-Level Priority – Similar to Aisle-Bay Priority except the priority is on level  
– Pick from locations in, say, level 1 in an aisle is assigned first follows by level 2, 3...  
– On completion of all the locations in an aisle, the next aisle is then assigned
3. Item Code – Ascending based on alphanumeric
4. Item Density – Sequence by density of the item with the picking of lightest item first  
– The Density is defined in Product Definition that automatically updated based on the Unit of Measurement definition
5. Level Priority – Picking from locations in level 1 of all aisles is to be completed before the picks from locations in the next level is assigned
6. Pallet Numbering – Picking is sequence based on Pallet Numbers (or Licence Tag number)
7. Walk Sequence – The sequence is of picks is based on the Walk Sequence as defined in the Location Setup and Maintenance
8. Zone Priority – The picks are assigned based on the Walk Sequence as defined in the Location Setup and Maintenance within a ZONE

Which is the best method to be used is dependent on each warehouse operation.

By default, that is, if no Pick Sequencing Methods is selected, the Walk Sequence is used.

**5.2.5. Client Stock Owner**

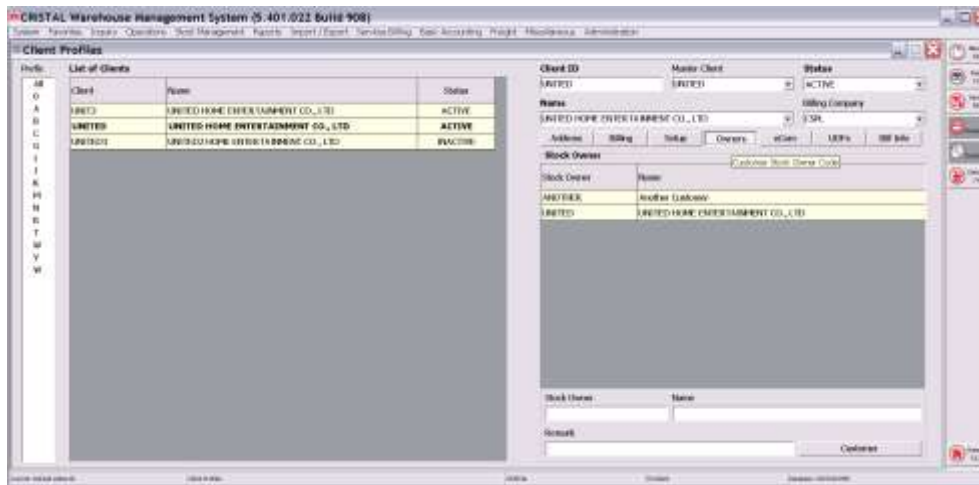
Client stock owner is an extension of Client ownership in which a client’s inventory are allocated to a number of stock owner with in the client.

This is a 4PL (fourth party logistics) in which a 3PL (warehouse owner) handle the logistics for another 3PL (who does not own any warehouse).

Implementation of this function:

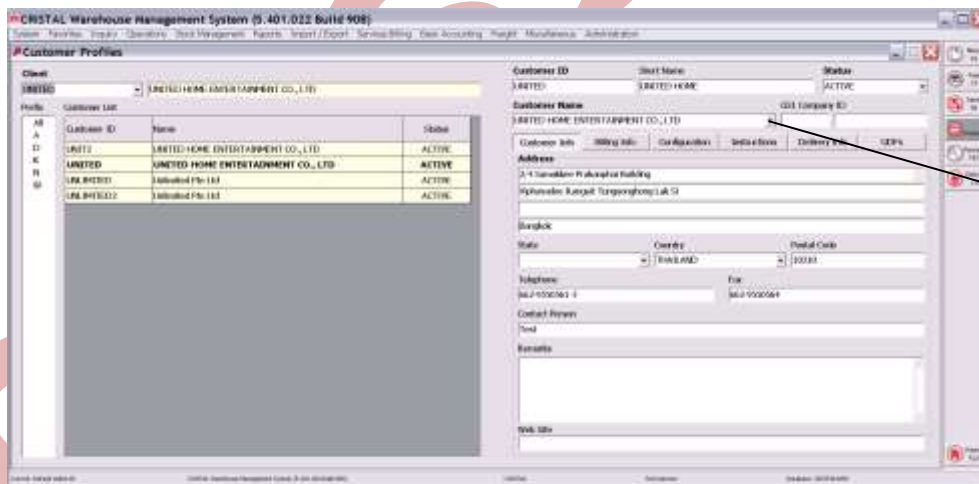
1. Define the stock owners

- a. If customers are the stock owners, click Customer command button which would import the client's customers as stock owner
  - b. Edit where required
2. Specify in the Customer Master which Stock Owner Group each of the customers belong to
- In the product master, the owner flag is to be checked.  
 During receipt, the stock owner is to be specified.  
 (For further details, discuss with your implementation consultants)

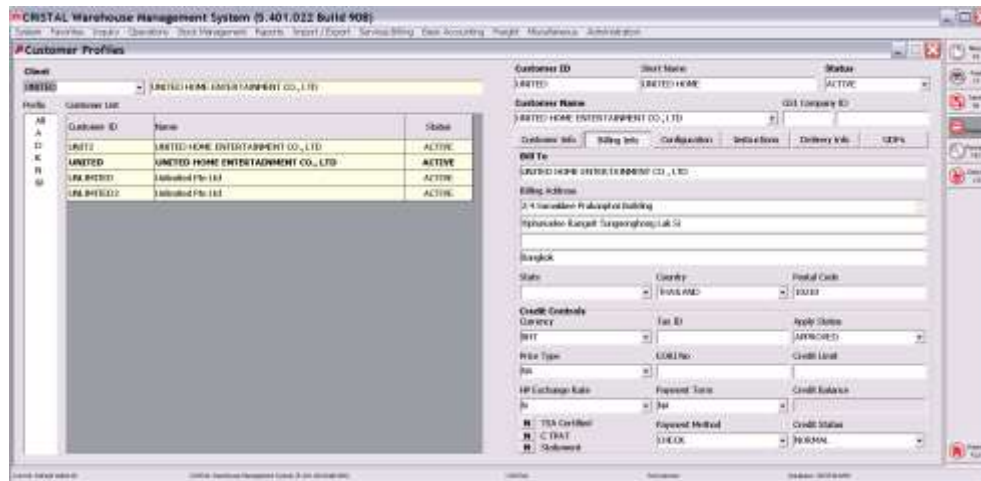


**5.3. Customers Profiles**

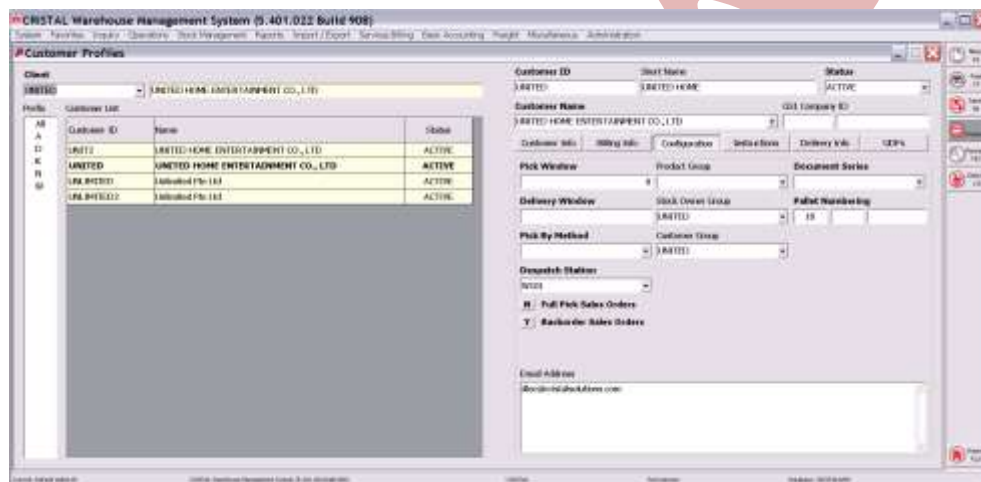
CRISTAL warehouse management system is designed to allow each customer to have multiple delivery destinations. Each customer must, however, have a minimum of ONE delivery destination, which is defaulted to the customer code. This is created at the same time that the customer code is created. To add or update a Customer of a Client:



1. Select the Client
  - a. Existing customers will be listed once the cursor moved to the next field
2. To add a new customer, input the Customer code and Name and other available data or select from the Entity List Help windows
  - a. Specify a short name, if required. It must be unique.



3. Check on Billing Address, if required
  - a. Update the relevant field
  - b. If invoicing is carried out via the WMS, specify the Payment Term and the Price Type that applicable to the customer – Export, Dealer or Retail – and Currency
4. Click on configuration to define how the warehouse is to handle this customer.



- a. Optional – specify the customer group that the customer belong – this is used in Sales Campaign which is enabled to allow a sales order to be duplicated to customers in the same group (see Sales Campaign for details)
  - i. By default, it would be the same as Customer Code
- b. Optional – Input the Country / EAN company code if available
- c. Optional – specify the Product Group that the customer belong – this is used in Sales Campaign which is enabled to allow a sales order to be duplicated to customers in the same group (see Sales Campaign for details)
- d. Optional – specify the Document Sequence Group if a SO # Prefix and starting number if the customer is to be issued its own serial of order number
  - i. The separate Document Sequence Group is to be set up at Admin | Security | Document Reference Sequence
- e. If customer stock ownership is required, specify the Stock Owner Group – customers that are a member of a group share stock that is assigned to the group.
  - i. One member of the group will act as the group leader and stock is assigned to the group leader
  - ii. When a sales order for a customer that belong to a group is released for picking, stock belonging to the group will be allocated for picking if the customer does not have adequate or no stock
  - iii. The Customer Group code would serve as the principal stock customer-owner
- f. Input starting pallet number in Pallet Sequence if the customer “stock” is to be assigned its own pallet numbering
- g. Pick Window
  - i. Number of days the customer order is to be picked before delivery date. This is to enable operation times to perform value-added activities. (Field introduced in Version 5.394.28)

- h. Pick Method
    - i. NA
      - Assigned pick tasks based on works specification in User Group | Works
    - ii. ORDER
      - pick tasks for a sales order are grouped together and assigned to 1 operator, even if he have no access to a zone that some of the stock is to be picked from.
    - iii. ZONE
      - Pick Tasks for a sales order are grouped and assigned by zones.
      - Assigned operator must have access to the zones
  - i. Delivery Window
    - i. Delivery lead time – days taken for an shipment to arrive at customer’s warehouse
  - j. Default Despatch station – this is used as a default in the Sales Order Entry.
    - i. In practice, this is linked to a delivery route
    - ii. Orders for the same delivery route are in effect consolidated in the despatch station, thereby minimising the requirement to search for goods of each order.
  - k. Check the checkbox as required
    - i. Auto Back Order – requirement that are not met in a pick is backordered and required to be re-released for picking under Manage->Sales Orders when new stock arrived.
    - ii. Full Pick Order – when ticked, order would not be released for picking until there is stock to fulfil the WHOLE order requirement
      - This effectively prevent partial shipment
5. Click Save

**5.3.1. Customer Instruction**

Customer instruction is introduced in Build 5.393 to assist warehouse operation in ensuring that specific requirement by customer are be performed such as special packing.

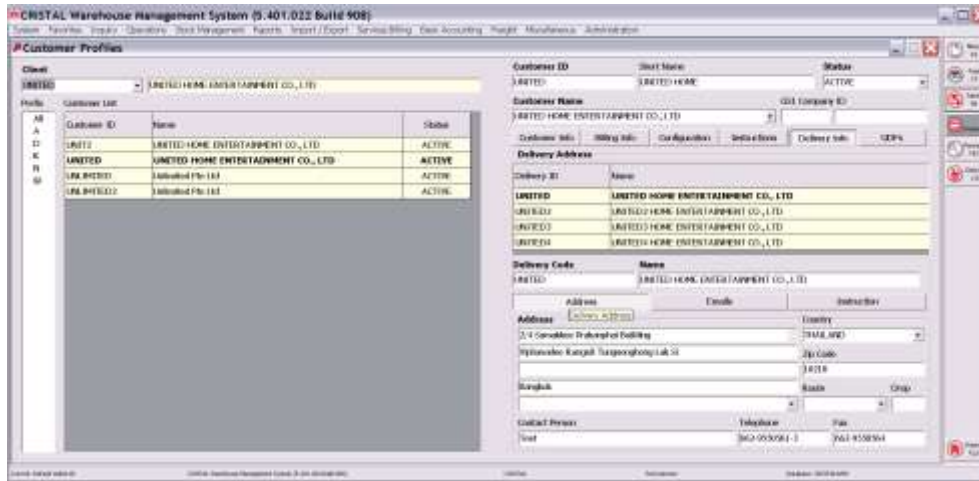


1. This instructions are customer specific and are updated accordingly
2. The warehouse Task Type that the instruction is relevant to is specified.
3. This instruction is then enabled (customized) to be printed in the relevant work orders or documents – this is site specific and therefore some modification to reports templates may be required.

**5.3.2. Delivery Destination**

As mentioned above, a delivery code is created from a customer code when it is first defined.





To update or add a delivery destination:

1. Click on Delivery Address – to update the delivery destination if it differs from the address as defined in the Customer Details in the Customer Information.
  - a. Update the relevant data.
  - b. To attach delivery address map, click Dropdown button and select the file to attach from the dialogue window.
  - c. Click Save
2. To add additional delivery destination, click clear
  - a. Specify the new delivery code.
  - b. Update the relevant date.
  - c. Click Save.
3. Repeat 2. for additional delivery destination

Following data may be required:

1. If automated email is required,
  - a. Select Email tab button
  - b. Specify the Email Address and Email Address 2
  - c. They are used for different email requirement – see section on Email setup
2. Instruction – standing instruction as required by customer such as delivery timing or special handling
  - a. This is used to customize picks orders / delivery orders based on requirement
  - b. Select Instructions tab button and update as required
3. Map Filename – attachment of map of delivery address
  - a. This can be recall in Sales Order Entry



### 5.3.3. UDF Parameters



This option is introduced in Release 5.394 Build 29 to further improve the flexibility of the system. Click the UDF Parameter command button opens the window for updating of UDF parameters. This is similar to the UDF Parameters window in Client Master.

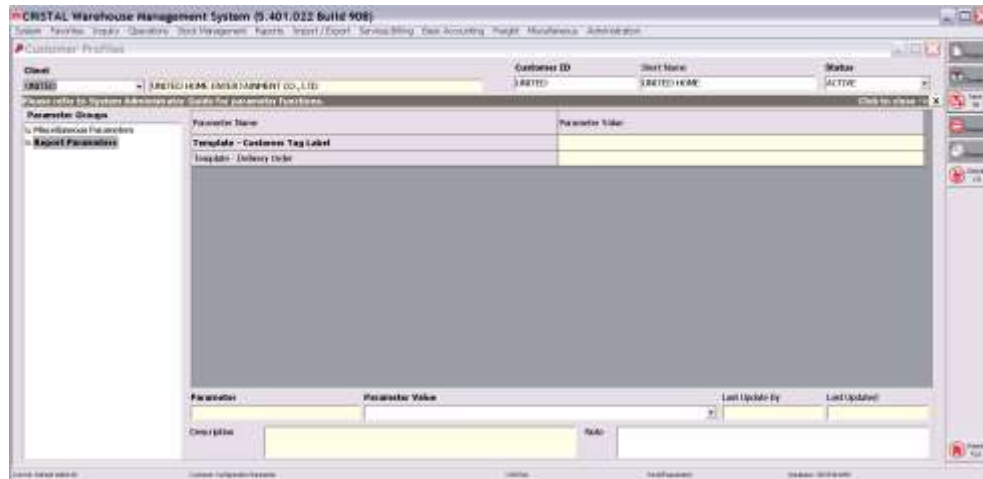
Always click the 'Update' to update value of the parameter selected or Remove to delete the value.

The parameters are as follows:

1. LANGUAGE - Product Alternate Description Language
  - a. This is used in customised reports and documents in which Language specific Product Alternate Description is to be printed
  - b. If specified, user must enable that the Language specific Product Alternate Description is defined. Otherwise there will be no description.

**5.3.3.1. Customized Reports**

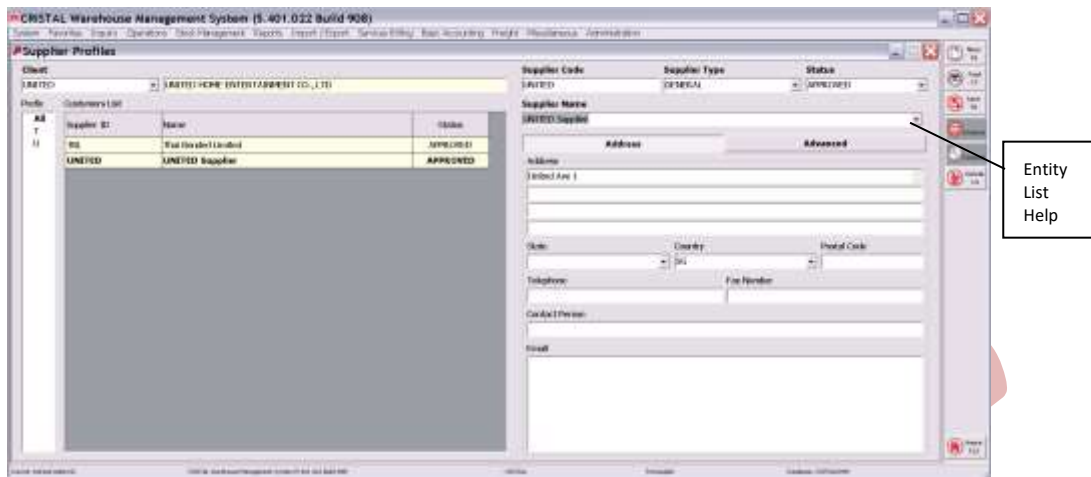
UDF is provided to enable customized reports as below to be defined for specific customer:



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### 5.4. Suppliers Profiles

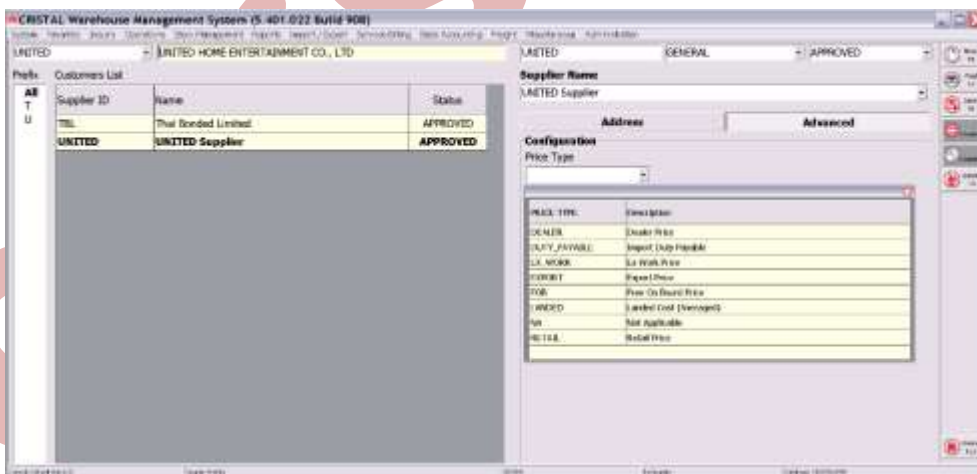
Supplier maintenance is optional unless it is necessary to track stock by their supplier or vendor. (Configuration button is not in use – reserved for future development.)



To add or update Supplier

1. Specify the Client code
  - a. Existing suppliers will be listed in the grid box when cursor moves out of the Client Code field.
  - b. Alternatively, click the Entity List Help button to select a pre-defined company.
2. Input the Supplier code and Description and other relevant available data
  - a. To select an existing Supplier code, click on the Supplier in the grid box
  - b. The detail will be displayed in the fields
3. Update the relevant date
4. Set Status to APPROVED
  - a. Shipment can only be received against an APPROVED supplier
5. Click Save

To set the default price option, select Setup tab button:



1. Click dropdown button of Price Type
2. Select the required type
3. Click Save

## 6. PRODUCTS SETUP

In Build 799, the UI is substantially re-layout to facilitate further enhancement by splitting various attributes into more specific grouping. This is further revised in Build 823 in which the Prices definition is enhanced to enable user defined pricing groups.

In Build 830, the layout is being redesign to move more frequent used attributes to the Basic and lesser used to the Grouping section.

1. Licenced Warehouse related to Basic
2. Dangerous goods related to Grouping

In Build 5.401.908.033, The Grouping and ETC, Warranty tabs is merged into Basic tab with the redesign of the UI to use grid box to minimise needs to modify the UI whenever new field need to be added when enhancement and customisation

The attributes in the Product Definition are grouped into following pages:

1. **Basic** (Mandatory attributes)
2. **UOM Setup** (Unit of Measure)
3. **Pre-Pack** (Carton Packaging)
4. **Barcodes/Rfid** definition
5. **Pickfaces** (and preferred locations) definition
6. **Item Prices** maintenance
7. **UDFs** (Product specific Stock) Controls
8. **Customer SKU** (stock ownership and parts numbers)
9. **Supplier SKU** (parts numbers)
10. Bill of Materials
11. **Alternate** (product description)
12. Healthcare ingredient **Label** data
13. **User Notes** (Comments of data change)

Product definition in a Warehouse Management System requires much more data than a typical inventory management system.

In CRISTAL WMS, apart from the usual data required by inventory management system, addition information such as [storage Zones](#) and [Packing Definition](#) or configuration are also needed together with the stock control parameter such as Batch #, Expiry Date...

In addition, each Product code is associated to a Client.

Products menu group comprise of the WMS configuration functions that are directly related to the Product coding.

**Tips: New product ID can be setup by copy from an existing product:**

1. **Select a product that have the closest definition**
2. **Overwrite the Product ID and Product Description**
3. **Click Save**
4. **Amend as required**
5. **Click Save again**

### 6.1. Defining Product ID

The Product Definition GUI is grouped into 13 pages (as defined above) due to the data needed in the management of a warehouse operation. A 'Stock Status' button is also provided to allows user perform stock enquiry when needed.

A redesign of the UI is made in build 5.401 with the objective to facilitate future enhancement such as addition of new fields for recording of new data without having to modify the UI, and with it minimise need to release ne EXE

#### 6.1.1. Basic (Mandatory Attributes Maintenance)

Basic comprises of the properties that are required to the basic functions of the WMS. This includes various stock control parameters, storage zoning and product unit of measurement (UOM) hierarchy.

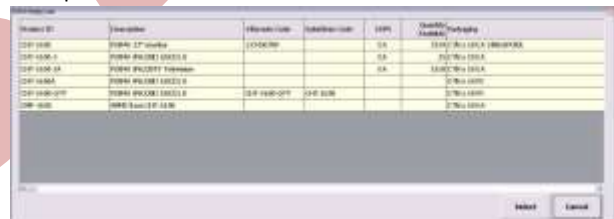


This is re-layout to also include some of the more commonly used fields in Build 820.

Change is also made to the display of image of the product. While the option to map Product ID to an image file name (moved to Grouping and ETC page), this is no longer necessary. An image file that is to be also to the Product ID will need only to be named with the Product ID as its name with JPG extension and placed into the defined Images folder (in System Configuration).

To update item code:

1. Select the Client
2. Input the Item code
  - a. The system will check whether the Item existing in the database
    - i. If yes, it will retrieve the details
    - ii. If no, it prompts the user whether to create new item code. If the user prompt to create new, the cursor will position in the Description
  - b. Alternatively, the user may click the dropdown button in the Item Code combo box
    - i. A pop-up window will appear listing the item code
    - ii. If there was any entry in the Item Code combo box, only matching code will be listed
      - Users can also input (partial) Description or item No to search
    - iii. Click the required item row and click 'Select'
    - iv. The details will be displayed



3. Stock Control Attributes
  - a. Specify the default Receipt Grade
    - i. This is a mandatory field and is used in the Receipt Check-In...
  - b. Set the 'Product Status' to ACTIVE
  - c. Tick 'Bonded Product' if product is a bonded goods
    - i. Ensure that there is a corresponding bonded zone in warehouse as the WMS will look for bonded zone to putaway the bonded stock
  - d. Specify the Assigned Storage Zones
    - i. If product is seasonal and stocks are to be zoned by activity
      - Tick Auto Zoning (See [Storage By Picks Activities](#))
    - ii. If the product is flagged as a bonded goods, the zones assigned must also be a Bonded zone
    - iii. If there is no storage zone that is set up as a Bonded Zone, item that is specified bonded will NOT be putaway.
  - e. Toggle the stock control parameters required in the 'Stock Control Parameters' by clicking on the appropriate command button
    - i. Those toggle to 'Y' (or other than 'N') signify that data is required or optional during receiving and that stock for picking will be allocated accordingly
    - ii. The parameters are
      - Lot Tracking
      - Batch Tracking

- In Build 5.401, Batch Tracking is enabled to be flagged as optional [0].
  - When flagged as [0] , users will not be prompted for input during Receipt Check In.
  - The Batch Number prompt will appear in Sales Orders Entry
- (Batch) As Serial
  - This is moved from Client level to Product level to enhance flexibility for only a number of item is required Products are to be Picked By Serial while others though Batch controlled are not.
  - When tacked, entry is required in both Receipt Check In and Sales Order Entry
- (Batch) as Date Code
  - This is introduced in Build 5.401 to meet operations where Date Code is used to code production date and use for computation of Expiry Date
- Expiry Date
  - This checkbox is disabled unless the Client Profile | UDF |
  - Miscellaneous | End of Day Processing – Expiry Stock is defined: 'N', 'Y' or 'P' (Product Date detive)
  - If enabled (Y or P), following data are also needed
    - Shelf Life (in days) is used to default the Expiry Date, if it is not specified, by adding the Shelf Life days to receipt date
      - Shelf Live is also use to trigger a warning to the user if the Expiry Date specified have a shorter shelf live than the defined required Shelf Life
    - Pre-Alert (in days) is used to trigger a warning of pending expiry of stock
  - If Enabled as 'P', Production Date must also be enabled
    - Expiry Date, if not specified, will be derived for Production + Shelf Live.
- Production Date
- Serial Number control
  - Options are
    - N – Not applicable
    - R – Recording: Serial Numbering entry required during picks confirmation
    - T – Tracking: Serial Numbering entry required during Check In and picks confirmation
      - In 35.395.2 and later, the change from Tracking to non-Tracking is not allowed if there is stock for the item in the warehouse.
      - This constraint is incorporated to ensure that all stock in the warehouse have a serial number as required in Tracking
  - Specify number of serial numbers required PER each unit check in or picked
- Stock Owner
  - Used in operations where stocks are allocated to customers
- Item Size
  - This can be configured to be mandatory or otherwise in Sales Orders Entry, too
- Item Color
  - This can be configured to be mandatory or otherwise in Sales Orders Entry, too
- Item Class
- Item Version
  - Added in release 5.400.859
  - This is to facilitate product revision tracking





- j. Billing Group – specify if applicable
  - i. Select the billing group the product to be charged under
  - ii. This must be first defined under Third Party Logistics Service Billing (3SB) module
- k. Degrees From / To and Strict Ambience
  - i. These are introduced from temperature controlled storage requirement
    - If Strict Ambience is checked, it is necessary to specify the temperature range required (it is not specific whether the temperature is in Centigrade or Fahrenheit – sites would have to be consistent)
    - If specified, the Assigned Storage Zones must have temperature that falls with the ranges
- 6. If inventory replenishment and management is required, specify
  - a. Maximum Stock
  - b. Reorder Level (commonly called Safety Stock)
- 7. Storage Ambiance
  - a. For products that required special packing like dry ice
  - b. Info can be extracted and printed on pick order and picking list...
- 8. The File Attachment enables documents, such product specification and material handling information that are relevant to the product to be attached to the Product ID.
  - a. See section on [File Attachments](#)
- 9. Specify Brand Product Group, Category, Sub Category and additional sub-categories if applicable
  - a. These parameters must first be defined under Warehouse Parameters Maintenance
  - b. The Brand and Product Group, if specified, can be used to control the access by an User Group, in turn, the users
    - i. If Brand and/or Product Group are used to limit access to item codes, it is necessary that all items are assigned a Brand and/or Product Group as NULL attributes is deemed accessible by all users.
- 10. The Image Filename allows user to link image to the product which are used in Sales Order entry and Item Query to facilitate users in the selection of item if they are not familiar with the product. It is particular useful to new staff
  - a. Click the Dropdown button which would open a Window directory to list the folder/file available for selection.
    - i. The image file must be in the (shared) directory as specified in System Configuration | Folders | Images Depository Directory.
    - ii. Select the file and close the browser window, the Image Filename will be populated with the filename
  - b. The image is also viewable on the RF handheld devices
- 11. Click Save

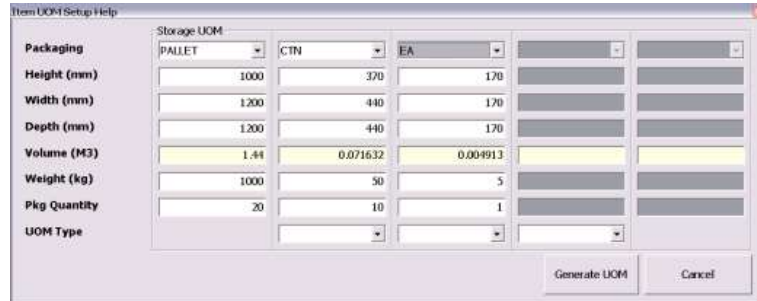
**6.1.2. Unit of Measure**

If Build 5.401.908.033. The Event status is moved into UPM tab to maximise screen estate utilization.



This is enhanced and designed as a new page in Build 820. The basic definition and setup remain largely unchanged. However, the Update and Remove command button is only visible when the user is a member of Default Admin group.

1. Define the Packaging UOM Configuration
  - a. Start with the UOM of 'PALLET' which is mandatory requirement, for example
  - b. The relation of the UOM levels must be hierarchical
  - c. The dimension and weight defined for each line is that of the Packing, not Unit
  - d. Although Packing definition for Quantity of 1 is not mandatory, it is good practice to defined it
    - i. This will enable report to be formatted to report on actual volume and weight and when billing of services and storage is based on net volume and weight
2. The UOM Setup Help is a quick entry for UOM hierarchy that have up to 5 levels
  - a. Click the button will open an window



- b. Select the Packaging Unit and input the other attributes
  - i. The first level is the Storage unit of measure
    - Only Product UOM code that are flagged Storage UOM in System Configuration | Product UOM will be available
  - ii. If the Pkg Quantity is specified to be other than 1, the next level will be enabled.
  - iii. Repeat until all required UOMs are defined
- c. Click Generate UOM
- d. The attributes will be converted and display in the Packaging UOM Configuration

Packing	Quantity	UOM	Height (mm)	Width (mm)	Depth (mm)	Volume (M3)	Weight (kg)	UOM Type
PALLET	20	CTN	900	1100	1200	1.188	1000	PALLET
CTN	12	EA	331	405	442	1.05925231	50	WHOLE
EA	1	EA	144	176	193	0.04891392	1666666666	LOOSE

- i. Note the UOM Type for pallet will always be default as PALLET and the lowest level where Quantity is defined as 1 is LOOSE
- ii. In 3 level UOMs, the middle level will be defined WHOLE
  - For UOMs having more than 3 level, it is necessary to specify the level that is to be treated as WHOLE. Otherwise the second level will be deem as WHOLE
- iii. Note that there is also a UOM Type PICK UNIT – this is for used in Pick By Light system interface in which the pick quantity is converted to before transmitting to the system.
- e. When update, the system will compute the Load Per M2
  - i. This is used during location assignment instead of the pallet deadweight
    - This is to prevent overloading due to extreme dense product of the its weight occupy a small footprint that can result 'point-load' that can cause rack beean to break

**6.1.2.1. Notes**

The command buttons Remove and Update will only appear when the login user belong to the Default Admin groups  
 The hierarchy of the Unit of Measure must also be from the largest (e.g. PALLET) to the lowest or unit (e.g. EA).  
 Note that PALLET, CARTON, EA... are just unit / pack name and there is no significant implication to the system, except PALLET. The onus is thus on the users to assign significance to each of the packaging names or IDs.

**6.1.2.2. Propagation to Pallet History**

In Build 5.400..., the prompt to propagate / synchronize the updated dimension/weight to Pallet History is removed. This is due to users tendency to skip the step as it does take a while which users deem it 'time-wasting'.

This control is moved to Client Profile | UDFs | Miscellaneous Parameters | Product ID: Synchronize UOM Dimension / Weight Change. When set to 'Y', Change to the UOM definition will automatically propagated to Pallet History.

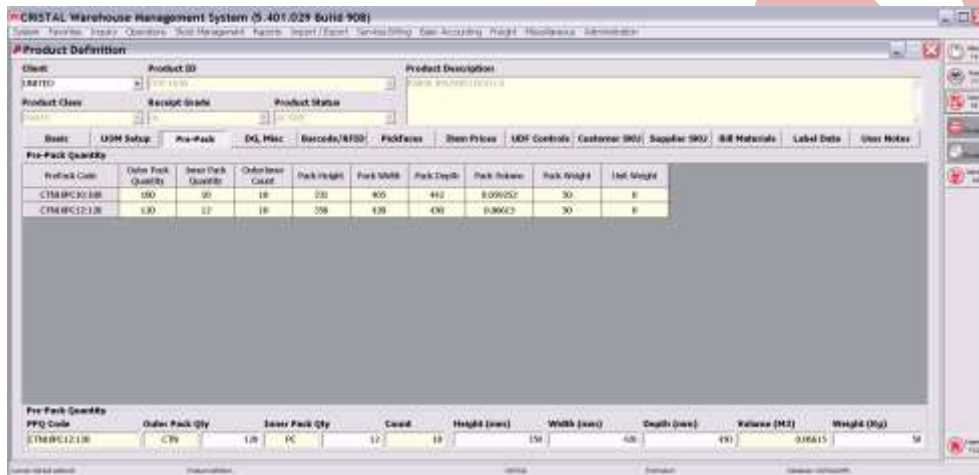
As if enabled, the update of the dimensions / Weight will take a while, the default is set to 'N'.

Onus is for site administrator to enable it if they so desired.

The propagation is only applicable to products that are not flagged for Dimension and / or Weight requirement during receipt.

**6.1.3. Pre-Packaging Definition**

This feature is introduced in Build 5.401.908.30 to enable management of multiple packaging for a given Item No that happened when same products are manufactured in a number of factories and/or countries.



To new PPQ Code, specify

1. Outer Pack (Unit) Qty
2. Inner Pack (Unit) Qty
3. Dimensions and Weight

And click Save

The system will assign the PPQ Code while the Outer and Inner Pack UOM will be as defined in UOM Setup. Defined PPQ Code shall available in Receipt and Sales Orders Entry when the product is enabled for Non-Standard control. If not enabled, the standard PPQ Code will be assigned and updated in Pallet History.

**6.1.4. Dangerous Goods and Miscellaneous**

This page comprises of the attributes that are optional. They meant to meet demand for more refined management requirement such as alternate description, dangerous goods and Preventive Maontenance. Although the attributes are optional, some of the attributes do have an impact on the behaviour of the WMS (as indicated below).

We also consolidate and enhance display of the updating events





2. Input Pick Unit Equivalent – minimum 1.
3. Specify, if applicable, Item Size, Item Color and Item Class
4. Tick the Primary Barcode checkbox if the Barcode is the primary barcode – and to be printed in price tags
5. Enter remarks if required
6. Click Update

To Remove

1. Select the record to be deleted
2. Click Remove

**6.1.6. Pickfaces and Preferred storage Locations Definition**

Updated 21 Jan 2017 – DL

In 5.398, the Pickfaces and Preferred Storage Location are re-designed and merged into 1 UI.

Pickfaces and Preferred (or designated storage) Location are warehouse configuration designed to facilitate operation productivities.

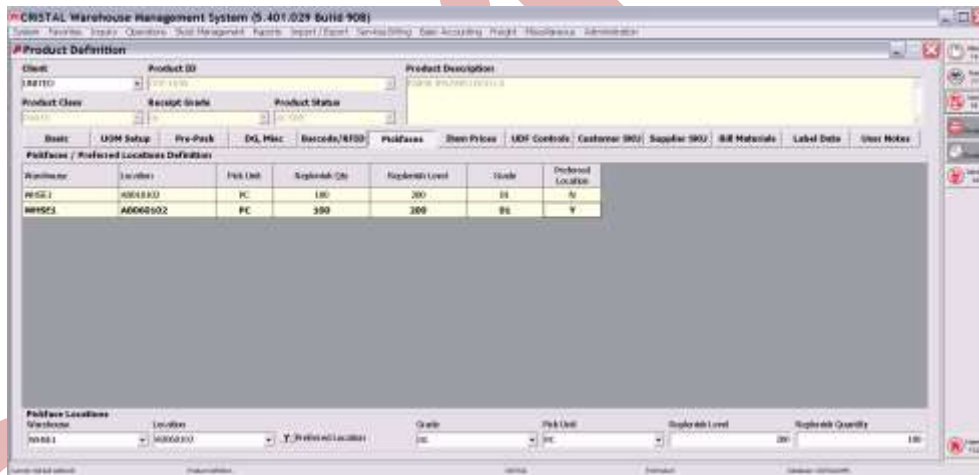
Note: Pickfaces are not appropriate for product having (customer) stock ownership

Pickface Locations facilitate operation that has a high level picking activities such as a FMCG (fast moving consumer goods) distribution centre. They are usually located at levels that are within hand-reach. In CRISTAL WMS, user can configure the system to trigger replenishment of the pickfaces whenever the balance stock drop below a defined level after a pick.

Preferred Storage Locations aims to assist operation that handles small parts that rarely occupy more than 1 locations and where FIFO is not a critical requirement.

The two options are typical mutually exclusive. However, a Preferred Location is by default a pickface. Thus only locations zoned as PICKFACE can be used and designated as Preferred Location for an Item.

Data entry in this page is enabled only after the Mandatory page has been defined and 'Save'.



To assign pickface / preferred location, select the Pickfaces button

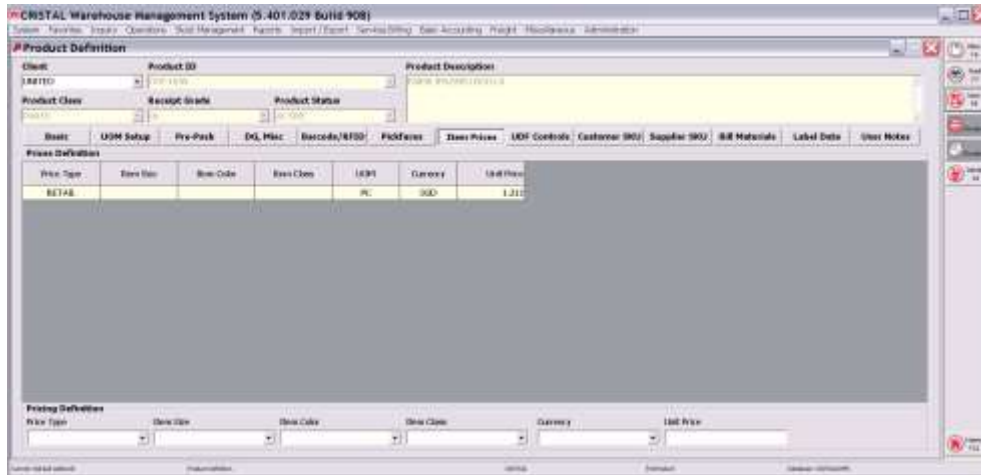
1. Click the  button at the right of Warehouse / Location and select the location to be assigned
  - a. Note that only locations that are zoned in a PICKFACE Zone and the Zone must be assigned as one of the Storage Zone (in Basic tab) are available to be assigned
  - b. Although it is configurable to assigned a pickface to more than 1 product, this is not advisable as multiple items in 1 pickface make pick more complicated and increase picking error.
    - i. When the space required for an item is small, it is recommended that they are physically divided and assigned separate location address.
2. Specify the Grade that the pickface is to hold
3. Select the Pick Unit
4. Specify the Replenishment Quantity
5. This is the quantity (or partial) that the pickface would be replenished each time.
6. Specify the Replenishment Level (at which the replenishment is triggered)
7. Tick Preferred Putaway if location is to be used as Preferred Location
8. Click Add

Although step 4 and 5 are not applicable to Preferred Location, input is needed as standardization of the functions.



### 6.1.7. Item Prices

This function is designed to maintenance prices of Product ID.



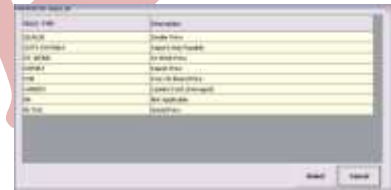
The maintenance of product prices is change in Build 823 to facilitate users definable price list.

New price type can be added in System Configuration | Parameters | Prices Type.

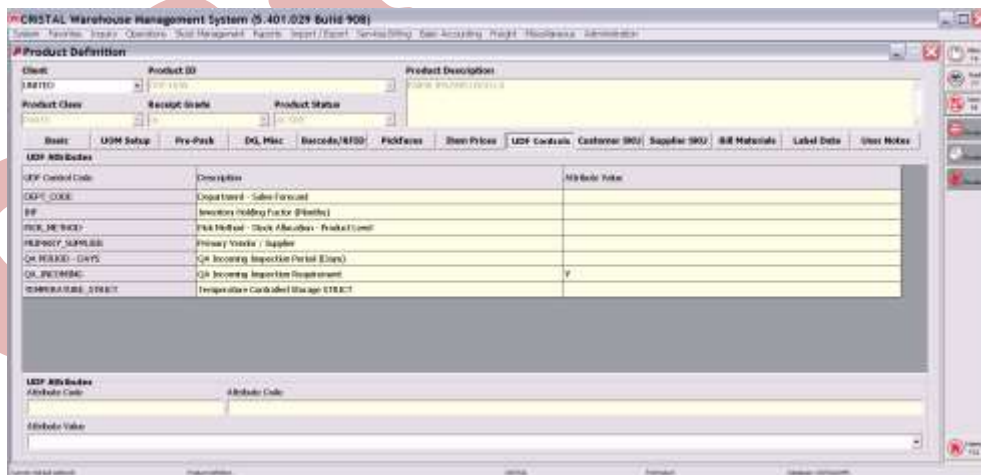
To update and existing price type, click on the record as required, modify the Unit Price (and change Currency of required) and click Save.

To add new price type:

1. Click on the drop down arrow at Price Type, the selection window will open
  - a. Select the require Price Type
  - b. Do not select NA (Not Applicable) as it is meant for use in Billing module
2. It will be propagate to the Price Type combo box
3. Specify the Currency
4. Input the Unit Price
5. Click Save



### 6.1.8. UDF (stock) Controls



The UDF Controls page is a multi-values design that allows users to define customised attributes to meet operational requirement.

For example, the 2 attributes show control whether QA Inspection is required and what the QA inspection Period (Days) is.

Adding of a new UDF Attribute is done via Administration | System Parameters Maintenance | Item Attribute – User Definable. (This is a system administration. Only users that are fully understand the system should be doing this. Error input, particularly wrong data type will cause system error.)

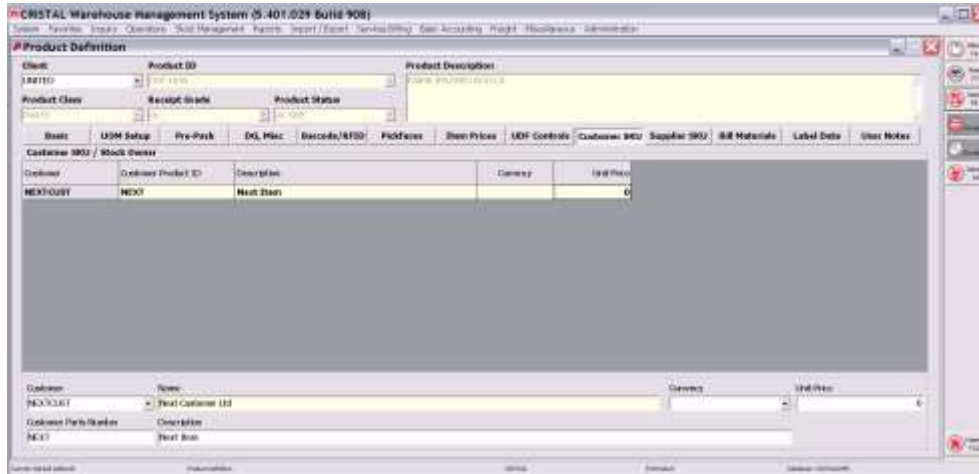
To set value for a defined UDF Attribute

Select the UDF attribute to be update by click on the specific row

1. Input the value
2. Click Save

**6.1.9. Customer SKU / Stock Owners**

‘Stock Owners’ serves a dual function in the system.



The primary function is to allow user to define and record customer parts numbering that can then be used to customise delivery orders and invoices as some companies insist on suppliers identify goods delivered with their part numbering instead of the suppliers’.

Users can also maintain different unit selling price for different customers.

The second function of the Stock Owners is for the warehouse operation to manage a second level stock ownership (in addition to the Product Ownership). This functionality is designed to enable 3PL operation to provide services to 4PL service providers.

When stock ownership is activated, only customer that have been defined as owning stock for an item code is allowed to have stock. This facilitates users in their receiving function in that they would not be able to receive goods against a non-specified owner – thereby reducing input error.

To update a customer parts number

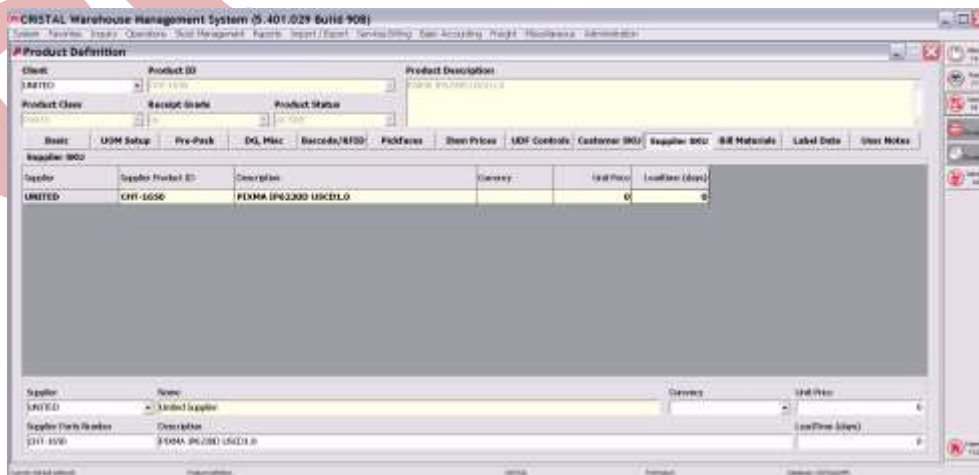
Select the customer

1. Input the Customer Parts Number, Description and Unit Price, if applicable
2. Click ‘Add’ button

To delete

1. Click on the record to be remove
2. Click ‘Remove’ button

**6.1.10. Supplier SKU**



‘Supplier SKU’ allows user to maintain a record of the item code that is used by the supplier. The uses of this data include

1. Cross-referencing – enabling receiving personnel to check for correct item code
2. Customising pick list by printing the supplier item code which would eliminate the need for re-labelling

- Facilitate tracing of supplier of stocks

To update a supplier SKU number

- Select the supplier
- Input the Supplier Parts Number, Description and Unit Price, if applicable
- Click 'Add' button

To delete

- Click on the record to be remove
- Click 'Remove' button

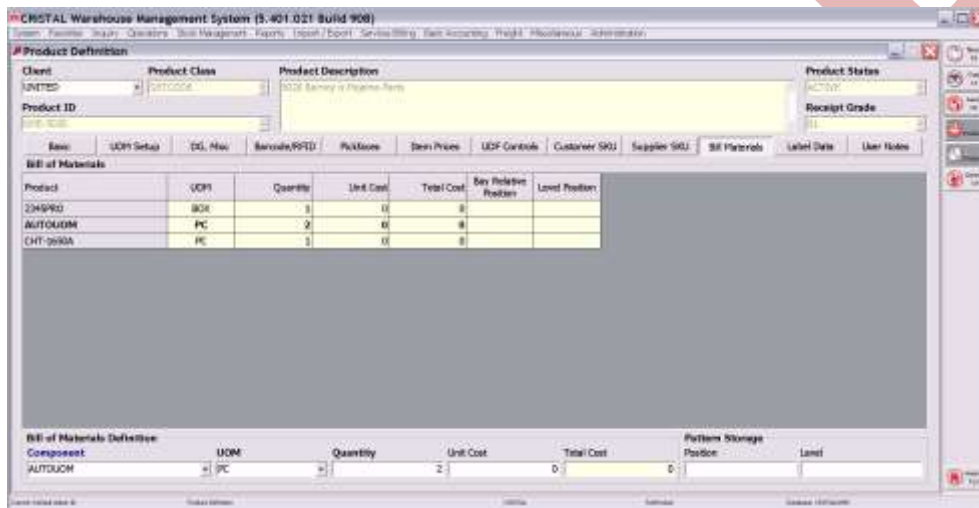
**6.1.11. Bill of Materials**

This function is moved from Kitting on Build 830 to integrate into Product Definition to centralise the maintenance of Product ID and related data.

The maintenance of a Set code list is made redundant.

Product ID for which a Bill of Materials is required to be defined now identified by Product Class as SETCODE or SUB-MODULE,

Only when the Product Class are specified as such is the tab option be able to open the Bill of Material function.



The Bill of Materials option is to enable user to define the kit set code and its components.

This is used by the Kitting and De-kitting to generate the component in a kit to facilitate the operation in retrieving the required components.

Version of the Set code can be maintained under Product Version – this manually maintained. No history of revision to the BOM is maintained.

To set up the bill of material for a set code:

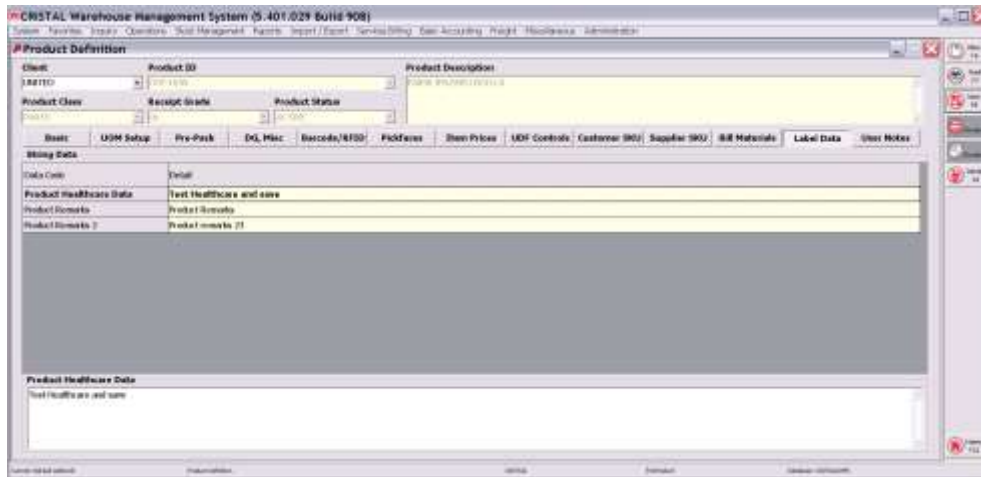
- Select the Component
  - This can be any of the Product ID that are not defined as SETCODE
- Specify the Quantity required
- Input the Unit Cost if costing is required to be maintained.
  - Currency of the cost is based on entity trading currency.
- Click Save
  - To remove a component, select the component from the grid box and click Delete
- Repeat as required

It is vital that the BOM is accurately defined as it is used to generate the Transfer movements to effect transfer of components to the kitting stations and the quantity are depleted accordingly as each kit set is updated.

**6.1.11.1. Limitation**

For simplicity, the BOM (bill of materials) is limited to 2 levels – kit set code and components relation.

**6.1.12. UDT Annotations**



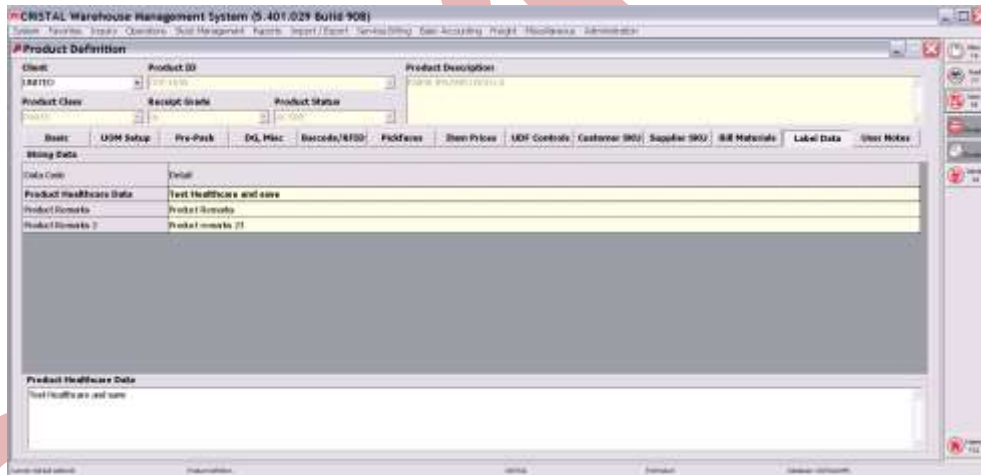
This is meant for use in operation where health warning labels are required to be printed and labelled on product...

To update:

1. Select the String Data ID
2. Input the info (up to 255 characters)
3. Click Save

The printing of the label is via Reports menu options. The labels are customized as required.

**6.1.13. Change Request Notes**



This is incorporate in Build 823 based on users' requested.

The intention is to enable users to input a note that they can referred to subsequently.

It is a customer service event logs.

To update:

1. Specify the Request date
2. Input name of Requests
3. Input a note on the request.
  - a. As the grid box is designed to list the requests, only the first line is display
  - b. Try to input the a short subject title on the first line so as to facilitate future reference.

**6.1.14. Warranty**

This section is scheduled to be dropped in future release. No info is thus to be provided.

**6.1.15. Stock Status Query**

The Stock Status command button activates a popup window which lists the stock status of the selected item as shown

The Quantity Free is the uncommitted stock.

Code	Quantity Available	Receipt Reference	Receipt Date	Lot Number	Sub-Item	WMS Picking	Pick Quantity
00	000	RECEIPT	2017-08-08	20112	BATES	CTN	30
00	100	RECEIPT	2017-08-11	08	08	CTN	30
00	000	RECEIPT	2017-08-11	02100	00003	CTN	30
00	00	RECEIPT	2017-08-11	02000	00001	CTN	30
00	000	RECEIPT	2017-08-11	021	004	CTN	30
00	00	RECEIPT	2017-08-11	02104	004	CTN	30
00	000	RECEIPT	2017-08-11	00003	000	CTN	30
00	25	RECEIPT	2017-08-11	00003	000	CTN	30
00	00	RECEIPT	2017-08-11	00003	00003	CTN	30

**6.1.16. Stock Control Parameters**

The stock control parameters control the rotation of the stock and facilitate returns. When a parameter is flagged in the Product Definition, the receiving clerk would be required to input the relevant information accordingly, with exception of the Supplier, which will be defaulted from the Receipt Header. However, if the Supplier field is not completed, the receiving clerk will be prompted to complete it. For picking, when a sales order is entered the flagged field will be open for input. However, entry is optional except for Item Size, Item Color and Item Class. They will be default from product barcode if it is not specified and they are defined in the product barcode table. If any of the parameters is specified in a Sales order, the WMS will assign stock with the required parameters. If there is not matching stock, the system will return zero stock – no pick will be allocated even though there stock with other attributes. If the stock control parameters are not specified, the WMS will be allocated stock based strictly on FIFO (First In First Out). In the case of Expiry Date control, it is allocated based FEFO (First Expired First Out). If an item is specified to be Ownership control, the WMS will allocate stock with ownership that match the Customer specified for the Sales Order. Detail is explained in the section for Client Profiles.

**6.1.17. eFiles**

This document management function enables user to define links in relation to the Item No, such as Materials Handling Specification documents and / or product specification.

1. Click the Attachment File Path and Name drop down button
2. Navigate and select from the file window and select
3. Input description of the attachment in the Remark field
4. Click Update to complete the attachment

**6.2. Product Price Manage**

In Build 834 and later, the product prices are centralised and manage under this function. Update in Product Definition | Prices is actual maintained under Product Price table. In addition, function is enhanced to enable to maintain prices at Item Size, Color Class level. They are however optional. This function is enhanced to facilitate prices validity. It does not replace the current price fields in Product Definition. However, the data are independent from the Product Definition. Intention is to ultimately dropping the price field from Production Definition.

Client	Reference	Price Type	Valid From	Valid To	Product ID	Data Description	Price Type	Base Size	Base Code	Base Class	UOM	Currency	Unit Price
0000007		FOG	2015-01-01	2022-12-31	J-1001	J-1001 PB	FOG				EA		
		FOG			J-1002	J-1001 LT	FOG				EA		
		FOG			J-1003	J-1001 SM	FOG				EA		
		FOG			2500000	Product 25000	FOG				BOX		
		FOG			J-1076	Launder 7M	FOG				PC		
		FOG			J-1076-3P	Launder 3M	FOG				BEI		
		FOG			400-023	Application Data Identifier L23	FOG				EA		
		FOG			AJ-12791	AJ-12791	FOG				CTH		
		FOG			AUT00000	Auto L000	FOG				PC		
		FOG			AUT00002	Auto L000	FOG				PC		
		FOG			WATER CONTROL	Water Controlled Item	FOG				PC		
		FOG			WATER00000	Water Control Serial	FOG				PC		
		FOG			WATER00001	AJ-12791	FOG				CTH		
		FOG			OFF-1000	Office 21" wooden	FOG				EA	USD	2.600
		FOG			OFF-1000-2	Office 45x200x1000	FOG				EA		
		FOG			OFF-1000-2R	Office 45x200x1000	FOG				EA	USD	12.000
		FOG			OFF-1000A	Office 45x200x1000	FOG				PC		
		FOG			OFF-1000GFP	Office 45x200x1000	FOG				PC		
		FOG			OFF-1000P	Office 100x100x100	FOG				PC		

This option is for the purpose of updating of product pricing and product classification without having the users to have to use the Product Definition.

To update the prices and product classification

1. Select the client
2. Select the item code
  - a. Existing attributes will be displayed
3. Modify as required
  - a. The Landed Cost cannot be changed
4. Click Save
5. For next item, click Clear and repeat step 2 to 4

### 6.3. Customer Item Codes

Product ID	Customer Product ID	Customer Item Description	Currency	Unit Price (if Required)
AJ-12791	AJ-12791	AJ-12791		MINIMUM PRICE

While the maintenance of the customer item code is available in the Product Definition, the updating is control at item level.

The Customer Item Codes enable the user to update customer item codes at Customer level.

To update a customer's item codes

1. Select the Client
2. Select the Customer
3. Select the Item Code
4. Input Customer Item Code, Description and Unit Price (optional)
5. Click Save
  - a. The Customer Item code will be added to the grid box.
6. Click Clear and repeat step 1 to 5 for next item



### 6.4. Supplier Item Codes



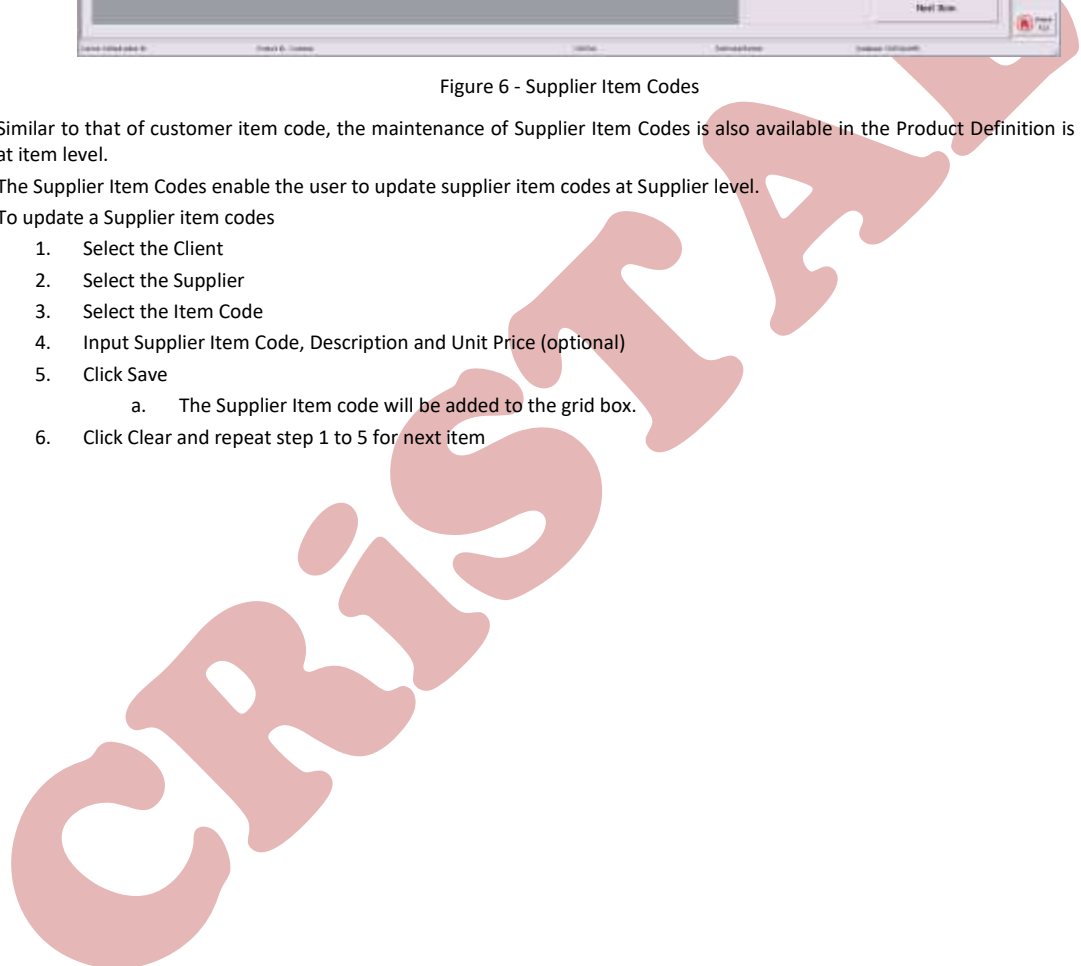
Figure 6 - Supplier Item Codes

Similar to that of customer item code, the maintenance of Supplier Item Codes is also available in the Product Definition is control at item level.

The Supplier Item Codes enable the user to update supplier item codes at Supplier level.

To update a Supplier item codes

1. Select the Client
2. Select the Supplier
3. Select the Item Code
4. Input Supplier Item Code, Description and Unit Price (optional)
5. Click Save
  - a. The Supplier Item code will be added to the grid box.
6. Click Clear and repeat step 1 to 5 for next item



## 7. INBOUND OPERATIONS

The Inbound module comprises of the following functions:

### Purchase Orders Entry

1. Purchase Order Manage
2. Advance Ship Note (ASN)
3. Material Returns Advice (authorisation)
4. Receipt Check In
5. Receipt Costing
6. Receipt Orders Manage

However, the incorporated Purchase Orders and Materials Returns Advice modules are not intended as a comprehensive function, though it is likely to meet the basic need that required by some operations.

They are nevertheless incorporated to facilitate operations which run an ERP system to enable the data to be downloaded for validations.

### 7.1. Purchase Orders

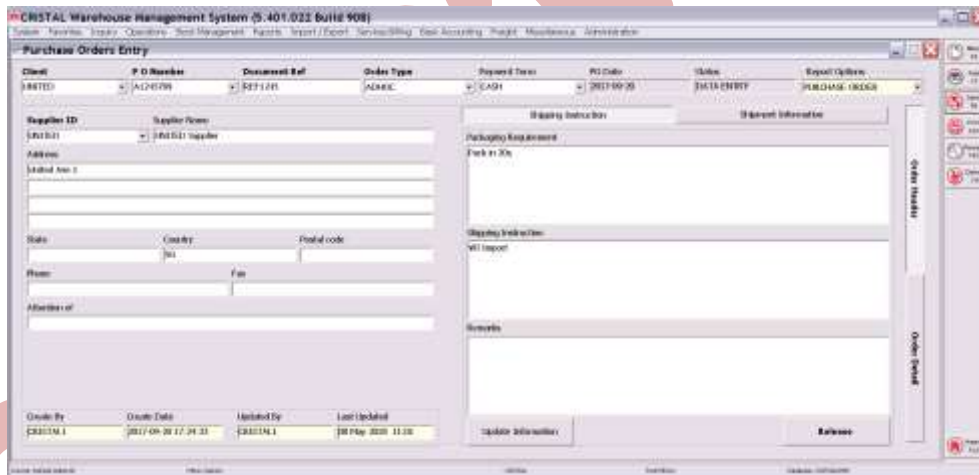
The module is incorporated to facilitate the operations to ensure that shipment received from suppliers can be validated to ensure they are authorised and have been purchase.

Data are typically to be downloaded from the site ERP system via EDI interface.

However, the Purchased Order UI is provided in CRISTAL WMS. This would facilitate operation that need a basic purchase order function and enable amendment to be made when required.

#### 7.1.1. Purchase Orders Entry

Although meant to be a basic function, Purchase Orders entry incorporates PO release authorisation and letter of credit tracking and monitoring.



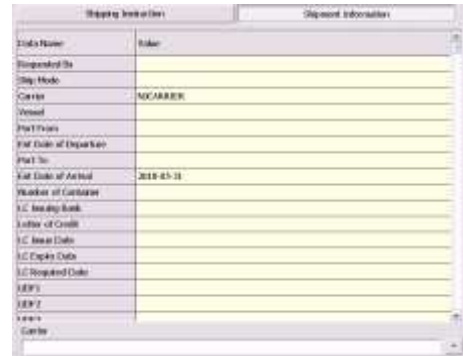
To update a purchase order:

1. Specify Client, Order Type, Supplier and relevant data
  - a. To update an existing PO, input the Purchase Order and click Find or click the dropdown arrow to pop up list to select
  - b. Specify the relevant data
    - i. Shipping Instruction (Click dropdown arrow button for popup help if available)
      - Shipping Mode
        - List as defined in System Configuration | UDF Parameters
      - Carrier
        - List as defined in Entity Profiles with Entity Type CARRIER
        - Granted access in User Groups | Carrier
      - Ship From and Ship To
        - Ports to ship From and To respectively
      - Initiate By
        - Request or issue by
      - Approval Level
        - Click '...' command button to update approval level

- Based on authorised amount
      - N in the second textbox indicate not required
    - Shipping Instruction
    - Remarks
      - Shipping related

ii. Shipment Information

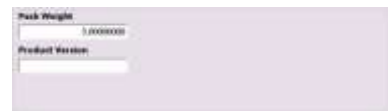
- LC (letter of credit) Required Date
- Bank
  - LC Issue Bank
- Letter of Credit number
- LC Issue Date
- LC Expiry Date
- Latest Ship Date
- Vessel Name
- Containers
- ETA (expected to arrive)
- Remarks (letter of credit related)



2. Click Save
  - a. System will assign a PO number
3. Click Order Details tab button to input details



- a. Specify the Product ID, Item Grade, UOM and required quantity
- b. Input the relevant attributes – fields is enabled as flagged in Product Master
  - i. In Build 5.399, following Attributes are controlled to be displayed only if they are enabled
  - ii. However, the UI can display up to 9 attributes – if more than 9 attributes control are enabled, the balance will overflow to a second page



- Lot Number
- Batch Number
- Expiry Date
- Production Date
- Customer Owner
- Requirement Date
- Currency (of price)
- Unit Price
- Item Size
- Item Color
- Item Class
- Item Height

- Item Width
  - Item Depth
    - Item Weight
  - iii. ETC page
    - Line Remark
      - As relevant to the PO line
  - iv. UDF fields (maximum characters = 50)
    - UDF 1
    - UDF 2
    - UDF3
    - UDF 4
    - UDF 5
4. Click Save
  5. Repeat 3 as required
  6. On completion, click Release to enable operations to receive against it
    - a. PO Status is updated to WAITING

**7.1.2. Purchase Order Manage**

Function is designed to enable supervisors to administrate and manage the purchase orders.



1. Select required Client
  - a. PO that are with Status in WAITING or DATA ENTRY will be listed
  - b. Click Find if POs are not listed after Client selection
2. Click on the required PO



- a. The PO number will be displayed in the Order Number textbox
  - b. Click List Order Details to display the PO lines
  - c. Click List Orders (same) command button to return to the PO list.
3. Select the required orders

- a. The number of PO selected will be display in the Selected (first textbox)
  - i. The second textbox which is the product ID selected is not relevant in Purchase Order Manage
- b. Click Clear Selection to clear all selected orders
  - i. Clear single selected PO is by re-clicking on the PO
- c. Click List SELECTED to hide unselected orders
4. To release DATA ENTRY purchase orders for receipt check in
  - a. Click Start Jobs command button
    - i. PO status will change from DATA ENTRY to WAITING
5. To close or cancel PO
  - a. Click Close Job command button
    - i. PO status will be changed to CLOSED
    - ii. It will not be list in the PO List on refresh

**7.2. Advance Ship Note (ASN)**



This function enabled operations verify that shipments received and check in is per suppliers' advices. Data of ASN can be updated via

1. EDI interface
2. WMS Imports
  - a. Excel spread sheet
3. Manually input per function

The ASN is created as a receipt with the ASN flagged as Y. Effectively, this eliminates the need to perform multiple entries, thereby improve operational performance and reduce data entry error.

To manually input an ASN:

1. Specify the Client code and various mandatory field (in blue or bold)
  - a. Receipt Number
    - i. If to be manually assigned
      - Onus is on users to ensure this is not previously assigned
  - b. Receipt Type
  - c. Receipt Date
    - i. As expected
    - ii. This is to be actualize during receipt check in
  - d. Location Assign option
    - i. SYSTEM or MANUAL
  - e. Master PO (Purchase Order)
    - i. If Purchase Order receipt
      - If specified, it will be defaulted to Line PO
      - For receipt against multi PO, leave blank
  - f. Document Reference
  - g. ASN? flag
    - i. This will be default to 'Y'
  - h. Customs Type and Permit number, as required

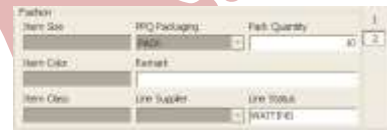
- i. (Receiving) Warehouse
- j. Check In Station
- k. And other relevant (optional) fields
  - i. Storage Zone
  - ii. Default Supplier
    - CRiSTAL WMS cater for multiple supplier per receipt which is update at detail level
    - If specified, the Supplier Name will be display
  - iii. Customer code
    - Assigned stock owner, if relevant
    - If specified, Customer Name will be displayed
  - iv. Sales Order
    - For crossdock receipt
  - v. Trucker
  - vi. Vehicle Number
  - vii. Shipment No
  - viii. Shipping Mode
  - ix. Carrier / Forwarder
  - x. ETA Date
  - xi. Airway Bill (AWB)
  - xii. House Airway Bill (HAWB)
  - xiii. Vessel / Flight
  - xiv. Voyage Number
  - xv. Container Number
  - xvi. Container Seal No
  - xvii. Bill of Lading
  - xviii. Remarks
  - xix. Pallet Type and Pallet Quantity
    - For operations that need to tracking the number received and issued
- 2. Click Save
  - a. Receipt Number shall be assigned, if not already specified
- 3. Click AND Details



- a. Line #
  - i. Ensure it is blank when adding new line
  - ii. Otherwise it overwrite existing line
- b. Line PO
  - i. This is disabled if Master PO is specified
  - ii. Specify if relevant
- c. Specify Product ID
  - i. Click dropdown arrow button for popup list
  - ii. The Item Description will be displayed



- iii. Alternatively, popup list can be activate fir the Product Description dropdown arrow button
  - iv. Specify prefix to shorten list
    - Only first 500 product ID are listed
  - d. Specify Item Grade
    - i. This is default from Product Master's Default Grade
  - e. Specify UOM and Quantity
    - i. If other than lowest UOM is specified, the UOM and quantity will be converted to lowest as receiving and inventory is managed at lowest UOM.
  - f. Specify required attributes (textboxes that are enabled)
    - i. Attributes page 1
      - Lot Number
      - Batch Number
      - Expiry Date
      - Product Date
      - Stock Owner
      - Country of Origin
        - This will be default from Product Master | Country Made, if specified
      - Carton Number
    - ii. Currency and Unit Price, if relevant
    - iii. Attributes page 2
      - Item Size
      - Item Color
      - Item Class
      - PPQ Packaging
      - PPQ Quantity
      - (Line) Remarks
      - Line Supplier
        - This will default from header page if specified
4. Click Save
  - a. The line will be added / updated in the grid box
5. Repeat 3 and 4 as required
6. Click Release To Whse command button to enable operations to check in receipt
  - a. The ASN Status is changed from ASN Entry to DATA ENTRY
  - b. The ASN number will no longer appear in the ASN list when clicking the dropdown arrow button at the ASN (Receipt) Number
    - i. This only list ASN with status ASN ENTRY
    - ii. To retrieve an ASN that is already released, input the ASN number to click Find command button



### 7.3. Material Returns Advice (Authorisation)

The function is to enable operations to issue a material returns advice (MRA) to customers to authorise them to return goods that were previously. This is practice in some operations to manage and monitor returns from customers.

Although in most case, a MRA is issued on a per sales / delivery order, CRISTAL WMS caters for situation where an MRA is required to be issued for multiple sales / delivery orders to reduce administration requirement.

Before raising a MRA, it is necessary to know which delivery order requested returns are to be made against.



To issue a MRA:

1. Specify the Client code
2. Specify the Customer
  - a. The customer's address will be populated
3. Select the Delivery Order that the MRA is being issued for
  - a. Input other relevant data
4. Click Save
  - a. System will generate and display the MRA Reference
5. Click Details tab button
6. Click on the dropdown arrow button on the right of the Product ID textbox
  - a. This popup list of product in the delivery order
    - i. Only product in the specified delivery order can be authorised for returns
7. Specify Return Grade and UOM
8. Input the quantity authorised
  - a. Authorized returns cannot exceed delivered against delivery order
9. Repeat 6 to 8 as required
10. Return to Header



11. Click Authorize For Returns command button
  - a. The status of the MRA will be updated to WAITING
12. The MRA is ready to be issued to the customer

#### 7.4. Receipt Check In

Receipt Check In is the function used to input stock received from suppliers. It caters for 3 modes of receipts:

- Purchase Order Receipts
- Receipts with ASN

- Blind Receipt – no pre-alert

There is no distinction between a purchase order receipt and non purchase order receipt via Receipt Type as in most other system. CRISTAL WMS simply distinguish them by whether a Purchase Order number is specified or otherwise.

The Receipt Check In UI (user interface) is designed to behave in accordance to the data specified:

- If purchase order is specified in the Master or Line PO field, input will be controlled such that only product IDs and the PO quantity are allowed to be received
  - Thereby ensuring only authorized purchases can be received
- If the RF? Flag is set to Y, it indicate that the receipt is check in via RF handheld devices.
  - Although the desktop can view the receipt data, it should not amended as the process flow on the RF differ from the desktop Receipt Check In
- If the ASN? Flag of the receipt is set to 'Y', only product IDs and the quantity specified in the ASN can be received.
  - This ensure that operations receive only what the suppliers have advised

The main difference between PO and ASN, as far as the operations is concerned, is that

- POs allow multiple receipt to be make against them
- ASN allow only 1 receipt against it
  - And ASN and Receipt share the same reference (receipt) number
  - Operations cannot receive a shipment from an ASN into another receipt.

Notes:

- Build 776
  - The prompts for product attributes controls are enhanced to dynamically display only required attributes instead of original where all attributes are arranged in a number of tabbed frames and enabled when required.
  - This enhancement aims to eases data entry and removes messages faced when a required attributes is not input as it is hidden.
  - The limitation, however, is that only up to 9 attributes can be enabled for each product.
  - Noted that Dimension when required utilize 3 attributes input while Costing required 2.
- Build 833
  - 5 UDF fields are added. This is catered for requirement by some interfaces. They can be used for information purpose if there is no interfaces requirement
- Build 833.27
  - Enhancement made to prevent User from checking in item that does not exist or quantity greater than specified ASN or PO, if they exists. Check priority is in ASN, if it exists.
- Build 908.021
  - Increased UDFs to 10 to facilitate interfaces need.
  - Redesigned the input method to use gridbox in place of textboxes. The objective is to minimize need to tweak UO when adding new fields to meet enhancement requirement
  - This also reduce the multiple page (frames) that were needed to layout the testboxes.

To manually input a Receipt:




1. Specify the Client code and various mandatory field (in blue or bold)
  - a. Receipt Number
    - i. If it is to be manually assigned
      - Onus is on users to ensure this is not previously assigned
    - ii. To amend an existing receipt, click dropdown arrow and select from popup list or input receipt number and click Find
  - b. Receipt Type
    - i. NORMAL
    - ii. RETURNS

- iii. XDOCK
- iv. XDOCK-B
- v. MANUAL
  - This is not available in new deployment
  - It is a special receipt type but is redundant as it is replaced by NORMAL Receipt Type with MANUAL Location Assign
- c. Receipt Date
  - i. This is to be actualize if it is an ASN receipt
- d. Location Assign option
  - i. SYSTEM
    - System allocate location for putaway
  - ii. MANUAL
    - Operators specified – must be input during details entry
- e. Master PO (Purchase Order)
  - i. If Purchase Order receipt
    - If specified, it will be defaulted to Line PO
    - For receipt against multi PO, leave blank
- f. Document Reference
- g. ASN?
  - i. This will be 'Y' if ASN receipt
- h. Customs Type and Permit number, as required
- i. (Receiving) Warehouse
  - i. The warehouse that the stocks is to be stored
- j. Check In (receiving) Station
- k. And other relevant (optional) fields
  - i. Storage Zone
  - ii. Default Supplier
    - CRISTAL WMS cater for multiple supplier per receipt which is update at detail level
    - If specified, the Supplier Name will be display
  - iii. Customer code
    - Assigned stock owner, if relevant
    - If specified, Customer Name will be displayed
  - iv. Sales Order
    - For crossdock receipt
  - v. Trucker
    - Defined in Entity Profiles with Entity Type TRUCKER
    - Access granted in User Group | Carrier
  - vi. Vehicle Number
    - Defined in Equipment Maintenance | Truck
  - vii. Shipment No
  - viii. Shipping Mode
    - Defined in System Configuration | UDF Parameters | Shipping Mode
  - ix. Carrier / Forwarder
    - Defined in Entity Profiles with Entity Type CARRIER
    - Access granted in User Group | Carrier
  - x. ETA Date
  - xi. Airway Bill (AWB)
  - xii. House Airway Bill (HAWB)
  - xiii. Vessel / Flight
  - xiv. Voyage Number
  - xv. Container Number
  - xvi. Container Seal No
  - xvii. Bill of Lading
  - xviii. Remarks
  - xix. Pallet Type and Pallet Quantity

- For operations that need to tracking the number received and issued
- 2. Click Save
  - a. Receipt Number shall be assigned, if not already specified
- 3. To input details, click Receipt Details tab button
  - a. The default Attribute tab page will set focus as specified in Client Profile | UDF | Miscellaneous | Receipt Check In - Default Attribute Tab (1 - 4).



- b. Line #
  - i. Ensure it is blank when adding new line
  - ii. Otherwise it overwrite existing line
- c. Line PO
  - i. This is disabled if Master PO is specified
  - ii. Specify if relevant
- d. Specify the Pallet Number
  - i. Click the  command button on the left to assign next pallet number
    - Or input the pallet number if the pallet is already tagged
      - The pallet number must not already in the system and check is carried out for existing in the following
        - Pallet Location
        - Work pool (stock movements)
        - Delivery Detail (for pending despatch)
        - Receipt Detail (for check in against other receipt number)
        - Movements History (if reused of pallet number is not permitted – default option)
  - ii. Pallet Number is disabled if System Configuration | Location Address as Pallet Number is set to 'Y'
    - This is a database level control
- e. Specify Product ID
  - i. Click dropdown arrow button for popup list
  - ii. The Item Description will be displayed
  - iii. Alternatively, popup list can be activate fir the Product Description dropdown arrow button
  - iv. Specify prefix to shorten list
    - Only first 500 product ID are listed
- f. Location
  - i. This is mandatory if Location Assign is MANAUL
  - ii. If SYSTEM, Location Assign is this is optional
    - If specified, system will generate putaway task to the required location
    - Otherwise system will assign location based on rule as describe in [Receipt Pallet Putaway Logic](#)
- g. Specify Item Grade
  - i. This is defaulted from Product Master's Default Grade

- h. Specify UOM and Quantity
  - If other than lowest UOM is specified, the UOM and quantity will be converted to lowest as receiving and inventories are managed at lowest UOM.

i. Specify required attributes – as defined in Product Master | Mandatory | Stock Control Parameters

i. The attributes' input box will be displayed if required, that is mandatory

- Up to 9 attributes is available and be displayed per product
  - Please discussed with vendor if more than 9 attributes is needed for a



product

ii. The attributes controllable are

- Lot Number
  - Limited to 20 characters
  - **In Build 5.401 implemented block to prevent 1 Lot Number to be received against multiple Item Number that are check in with Bonded grade. This is to meet Licensed / Bonded Warehouse operations**
  - **This control can be deployed to early version on request, subjected to compatibility**
- Batch Number
  - Limited to 20 characters
- Expiry Date
- Production Date
- Item Size
  - Limited to 20 characters
- Item Color
  - Limited to 20 characters
- Item Class
  - Limited to 20 characters
- Country of Origin
  - If required but not input
    - defaulted from Product Master | Country Made, if specified
    - Else default to Supplier's country, if Supplier is defined in receipt.
- Stock Owner
- Catch Weight
  - This is for recording of weight (value unit) the lines as required grocery operations
- PPQ Packaging
- PPQ Quantity
- Below are defaulted from product lowest UOM for product that are not dimensions and weight flagged in Product Definition | Mandatory | Stock Control Parameters
  - Otherwise they will be enabled for input of the pallet physical dimensions and weight
  - These data are used in the logistics services billing
    - Pack Width
    - Pack Depth
    - Pack Height
    - Pack Weight
- Customs Permit number
  - For operations where permits are required to be maintain at receipt line level
- Currency and Unit Price, if relevant
  - These will be visible only if Client Profiles | Configuration | Product Pricing is set to B (both) or R (receipt)

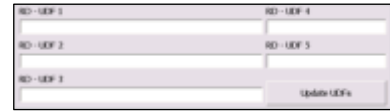
iii. (Line) Remarks, if required

- This is assigned a fixed tabbed frame
- It incorporated also





- Line Status
    - Show status of receipt line
    - Item Label command buyyon
      - This open the Label print wondpw
  - iv. Attributes page UDF
    - UDF 1 to 5
    - Update UDF
      - This command button enable operators to modify and update the UDF 1 to 5 after the receipt have been checked in
4. Click Save
- a. The line will be added / updated in the grid box
5. Repeat 3 and 4 as required
6. On completion of the data entry, the receipt must be check in or confirmed
- a. See [Check In Receipt / Confirm Receipt](#)



**7.4.1.1. Command Buttons Action**

In the Receipt Check In, there is a number of command buttons provided to trigger actions required in the receipt processing

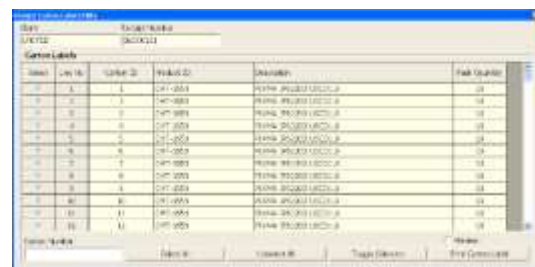
1. Check In Receipt / Confirm Receipt
  - a. This button's caption display is displayed as Check In Receipt when the Location Assign option is SYSTEM and Confirm Receipt when it is MANUAL
    - i. Its function serve to complete the receipt processing
    - ii. As Check In Receipt, when click
      - Closes the receipt
      - Generate putaway movements (tasks) into the works pool (stock movements)
        - These are to be completed with Warehouse Tasks function or via the RF devices
    - iii. As Confirm Receipt, when click
      - Closes the receipt
      - Update the stock (Pallet Location)
      - Generate the movements (transactions) into the stock movements records
2. Nullify Receipt
  - a. This enables operators to nullify the processing of a receipt
    - i. Delete the movements from the movements history
    - ii. Reverse the receipt status to DATA ENTRY
    - iii. This is subjected to that no stock from the receipt have been allocated for picking or being picked
  - b. As data will be deleted and clear from the system, authorisation control is introduced in Build 770
    - i. A second user ID and password must be input to complete the nullification.
3. Pallet Label
  - a. It is for printing of label for labelling the pallet
4. Job Costing

This enables operations to record incidental costs incurred in the processing of a specific receipt

- a. Click the command button open the Job Costing Entry
- b. Specify
  - i. Service Provider
  - ii. Service Code
  - iii. ... and input the relevant data



- c. Click Save
- d. Close window on completion
5. Export Data
  - a. This command button is enabled if the procedure is defined in Client Profiles | UDF | Interface | Order Confirmation Inbound Procedure
    - i. The SQL procedure specified must cater for input of the following parameters
      - File prefix
      - Client ID
      - Receipt Number
    - b. Click the command button trigger the create of CSV format file containing selected receipt data
6. Email GRN
  - a. The procedure for creation of the email must be defined in Client Profiles | UDF | Email | Email Advice - Receipt Procedure Name
  - b. Click the command button generate and the GRN via email to the client's email as specified in Client Profiles | Email
7. Generate Billing
  - a. Click the command button journalize the billable activities related to the receipt into the BILLABLE ACTIVITY table.
  - b. This will appear in the Billable Services Maintenances functions
8. Print Carton Label
  - a. The options enable operations to print carton labels that are need to label the cartons received against the receipt
  - b. The number of labels is calculated based on defined Pack Quantity
  - c. By default, all labels are selected
    - i. Double click on row to unselect
  - d. Click Print Carton Label to print the label
    - i. Tick Preview checkbox, if to be previewed
9. VA Services
  - a. See section on [VA Services](#)
10. File Attachment
  - a. See section on [File Attachments](#)



**7.4.2. Supplementary Receipt Detail Function**

To meet different industry operations requirement, a number of supplementary entries is provided in CRISTAL WMS as follows

**7.4.2.1. Detail Entry by Product ID Scan**

Instead of the normal entry of a receipt line by specifying the Product ID and quantity, CRiSTAL WMS enable entry of the receipt by scanning the product barcode.

The entry if receipt by scanning barcode label eliminates input error caused by misreading of product label due to fatigue or miswritten or smudged characters.

Although there is no guaranteed 100% accuracy, it does greatly reduce input error. This is especially so when the products are mixed on a pallet and looks similar such fashion products like tee-shirt, shoes...

*In Build 5.401.908.036, the UO id revised to enabled capturing of Lot Number, Batch Number, Production Date and Expiry Date. The function is also enhanced to record attributes such as Item Size, Item Color, Item Class and Country of Origin by defaulting them from Product Barcode definition.*

*In addition, Receipt Scan is enabled to check in either by Unit scan or Carton (Enable scan of Carton Number by checking Carton Scan checkbox.*

*Check is also incorporated to validate pack quantity if Non Standard flag is enabled in Products Definition,*



To use Product ID Scan:

1. Specify the Pallet Number to pack the product into
2. Click on the command button which open the Receipt Scanning window
3. Specify the Grade
4. Tick the Carton No checkbox if product is required to be tracked by carton number
  - a. This would enable and make textbox mandatory
5. Position the cursor in the Carton or Barcode Reading textbox
6. Commence scanning
  - a. 1 scan per label
    - i. Avoid shortcut by multiple of a single label
  - b. Each scan would be reflected in the record in the grid box
  - c. Repeat until all product is scanned
    - i. If there is a scan too many and need to be deducted, double click on the extra record
      - The record will be deleted and removed from the grid box.
      - Records that already posted cannot be deleted
        - Delete the Receipt Detail line and rescan the cartons / items
7. Click Post command button on completion
  - a. The scanned records will be summarized and insert into the receipt details
    - i. If the scanned products are not specified to be managed by any attributes, during the posting, the attributes WILL NOT be propagated even if they are captured during scanning.
8. To temporary pause the scanning, click the 'x' button (at the top right corner of the window) which will close the windows
  - a. Operators can return to the partial scanned pallet by selecting the Pallet Number and click Scanning button
    - i. It will open the window and list the previously scanned record
9. Click Cancel Scan to terminate the scanning and dump the scanned records

**7.4.2.2. Detail Entry by Serialized Attributes**

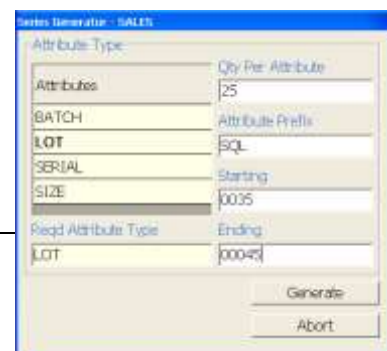
For operations, where stock are tracked by serialize attributes (individual), the WMS incorporate function to generate receipt details by attributes ranges.

Serialize attributes input is enabled for

- Batch numbers
- Lot numbers
- Serial numbers
- Item Sizes

To input receipt details by serialize attributes Specify the Product ID

1. Click Attributes command button
  - a. The window will popup
  - b. Select the Attribute required



- i. The Required Attribute Type shall display the selected
- C. Input the Qty Per Attribute required
- d. Specify the attribute prefix, if application
- e. Specify the range required
  - i. Include 0 (zero) prefixes, if applicable
  - ii. Ensure the Starting is smaller than Ending value
- f. Click Generate button
  - i. The entries will be inserted into the Receipt Details
  - ii. The window will be closed

**7.4.2.3. Check in Serial Numbered Product**

Serial Numbered product need to have their unique serials recorded during receipt if they are to be tracked in the warehouses.

The Serial No command button will be enabled if the specified product ID is flagged to be serial number controlled in Product Definition.

Input the Quantity to be check in.

Click the Serial No button opens the Serial Number – Receipt window.

1. The following textboxes will be populated from the receipt data
  - a. Client
  - b. Product ID
2. The required number of serial numbers will be show in #of Serial Req.
  - a. This is the quantity to be receipted multiple by the number of serial number per unit as specified in Product Definition
  - b. The # of Serial Red is reduced by the number of serials scanned / input
3. Place the cursor in the Serial Number text box and commence scanning/inputting the serial numbers
  - a. Scan and input the Warranty Number if applicable
    - i. Note that the system caters 1 warranty number per serial
  - b. To delete a wrongly scanned serial
    - i. Select the wrong serial
    - ii. Click Delete to remove the serial
4. Click Done on completion
  - a. The operators would usually be prompted when the number serial required is reached



**7.4.2.4. Detail Entry by Qualified Barcode**

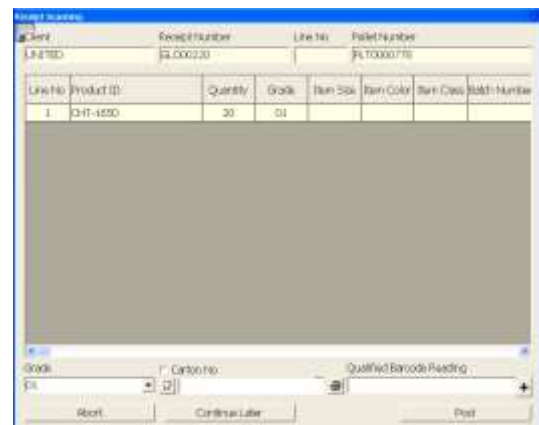
This function is an Add-on which needs a separate licence key to activate.

This is a variation to the Detail Entry Product ID Scanning described above.

Besides enabling the function, it is necessary to define the (application) date identifiers prior to commencing operations. These prefixes are to be defined in Client Profiles | UDF | Data Identifiers.

To commence qualified barcode scan entry:

1. Specify the Pallet Number to be packed
  - a. If Qualified Barcode is enabled, the input (scanned) pallet number will automatically trim of the pallet qualifier prefix
    - i. It is important that the pallet prefixes should not be the same as the pallet qualifier prefix
2. Specify the Location to be putaway, if Location Assign is MANUAL
3. Click Qualified Barcode command button to open the Receipt Scanning window



4. Specify the Grade of the products to be input
5. Scan the relevant barcodes on the package label
  - a. Product ID
  - b. Quantity
  - c. Any other relevant barcodes
  - d. The scans will be captured, update and list in the grid box
6. Repeat 5 as required
7. Click Post command button on completion
  - a. System will sum and insert records into the Receipt Details
8. Repeat process with next pallet.

**7.4.2.5. Line Item Labels utility**

See Item Labels

**7.4.2.6. Check In (Receipt) Line**

The Check In Line command button enables operators to check in a selected line for which the product may be urgent required, particularly when a big receipt is involved.

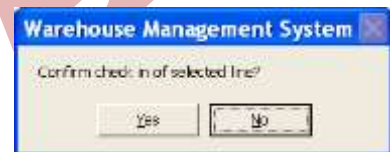
The Check In Line is visible only the receipt's Location Assign is MANUAL.

Note: It makes visible when the receipt data are retrieved – not simply changing the Location Assign.

The command button is enabled on selected of a record in the grid box.

And if VA (value add) Service is enabled for the client, then it is necessary to open and close the VA Service window.

On clicking Check In Line command button, the prompt would appear. Answer Yes to check in the selected line. The stock would then be available for allocation for picking.



**7.4.2.7. RETURNS Receipt Processing**

Returns goods are check in into the system with same procedure as new shipments.

The difference is the Receipt Type must be specified as RETURNS.

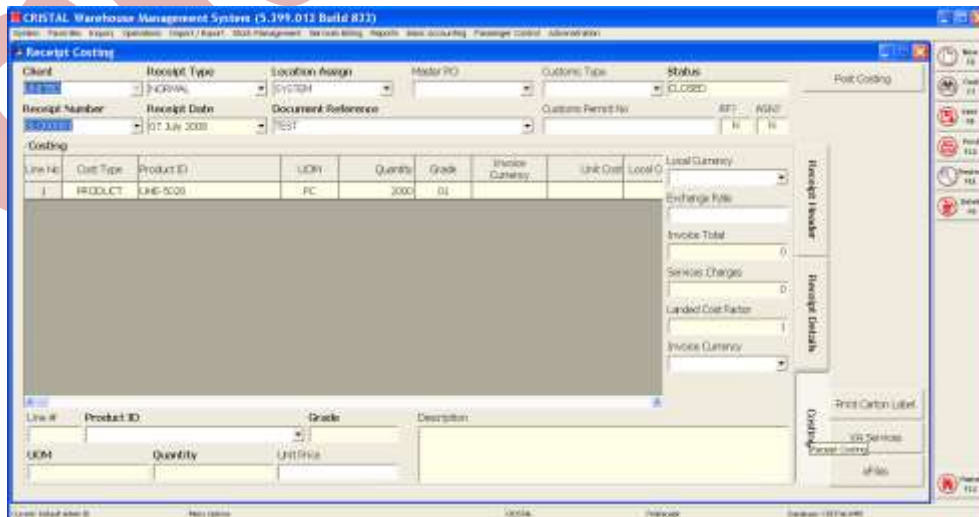
This will have the goods received flagged as returned goods and will then be picked first even though they have a later receipt date.

**7.4.2.8. XDOCK Receipt Processing**

See section on Crossdocking

**7.4.3. Receipt Costing**

Receipt Costing is an extension of the receipt check in function. The function enables separation of duty – warehouse operators to handle the receipt entry and costing personnel to update costs.



Although the costing personnel may view the receipt details, they are not enabled to make amendment to them. Any change to the quantity or related physical data must be done at operations. Only receipts that are putaway can be accessed by costing personnel for processing.



To update:

1. Retrieve the required receipt
2. Click on Costing tab button to open the Costing entry form
3. Select the item line to update by click on the rows in the grid box
4. Input eh Invoice Currency and Unit Prices
  - a. CRISTAL WMS is enabled for multi-currency entry
5. Click Save
6. Repeat as required.

**7.4.4. Receipt Orders Manage**

The function enables operations supervisors to manage the receipts that have been updated – manually or updated.

This includes

1. Force-closing a cancelled receipt
  - a. Click on the required receipt
  - b. Click Close Job command button



2. Releasing a receipt ASN for check in
  - a. Click required Receipt ASN
  - b. Click Start Job command button
3. Checking in a receipt that have completed data entry
  - a. Click required Receipt ASN
  - b. Click Start Job command button

**7.4.5. Receipt Pallet Putaway Logic**

This section describes the putaway logic adopted by CRISTAL Warehouse Management System. However, these are subjected to change without prior notices as CRISTAL is constantly seeking ways to further improve the system.

CRISTAL WMS allows for receipt putaway by manual or by system. This is controlled by the flag 'Location Assign'

1. MANUAL
  - a. Manual receipt (MANUAL Location Assign) is defined as putaway by operator – the operator putaway a pallet and then tells the system where he placed it
2. SYSTEM
  - a. Location is allocated for putting away or storing a pallet based on a set of defined rules
  - b. Operator can still overrule the assigned location and place the pallet in other location
    - i. The reason for allowing the overruling is to cater for location that are damaged or not appropriate for the product.

System driven putaway assigns location by pallet. However, in a paper based operation we allow 1 pallet to have multiple lines / items.

The system will assign the location for subsequent line to the location assigned to the first line.

Note: Attempt to putaway different lines on a pallet will fail as the system will not process such instruction.



**7.4.5.1. System Driven Putaway**

When allocating location for putaway, the logic in assigning the location follows the steps as defined, going to the next step if the current step fails to allocate.

If all the steps fail to allocate a location for putaway, the pallet will then be assigned to be putaway to a location in a PICK-PACK zone.

The stored procedures that manage location allocation assign putaway tasks and manual putaway task. This occurs when operator asks for works or the supervisor assign works.

The system does not allocate location before this process as it blocks locations for pallets that may be putaway later.

1. Get putaway location of existing pallet in PALLET\_LOCATION table
  - a. In case there is a pallet with the same assigned pallet number
2. Get the first location in the STOCK\_MOVEMENT table for the pallet
  - a. In case there are multiple lines / items on the pallet
3. Get assigned location in RECEIPT\_DETAIL
  - a. Users are allowed to specify putaway locations in the Receipt Check-In.
4. Get Preferred Storage Location for Item
  - a. Putaway to Preferred Storage Location will be process only if the pallet contain only 1 item.
  - b. If Preferred Storage Location is assigned
    - i. Check the volume and weight of pallet will fit into the available volume and weight in the Location
      - In Build 698, they are computed from the storage unit (PALLET) instead of from the lowest UOM in earlier version.
      - This is changed due to user defining the UNIT dimensions / weight as net which result in undersized location assigned for pallet putaway.
5. Assign to Crossdock if flagged
  - a. Stored Procedure - receipt\_pallet\_crossdock
  - b. This is controlled by the parameter 'RECEIPT\_AUTO\_CROSSDOCK' in the Client Profiles | UDF Parameter
  - c. If the parameter is flagged as 'Y'
    - i. Check the outstanding sales order quantity required
    - ii. If quantity is greater than ZERO, check for quantity available in pallet location
      - If quantity available is greater or equal to the sales order requirement, do not crossdock receipt as this will compromise on the stock control.
      - If quantity available is less than the sales order requirement, select the first available location in the PICK PACK zones
6. Attempt to top up pickface if flagged
  - a. Stored Procedure - putaway\_pickface\_location\_get
  - b. There must be only 1 item on the pallet. Else it will be assigned based on 1 (randomly) of the items
  - c. This is controlled by the parameter 'PICKFACE\_TOPUP' in the Client Profiles | UDF Parameter
  - d. If the parameter is flagged as 'Y'
    - i. Check the quantity on the pallet is not greater than the quantity 'space' available in the pickface.
      - The Quantity 'space' is calculated from the Maximum quantity (Replenishment Quantity PLUS Replenishment Level) LESS quantity in the pickface.
    - ii. If Quantity 'space' is adequate to accommodate the quantity to be putaway, assign putaway to pickface
7. Get storage location based on item's assigned storage zones
  - a. Stored Procedure - get\_preferred\_location
    - i. Get available location from locations TABLE that meet full control requirement
      - Location Status is AVAIL
      - Available pallet unit
      - Operator is accessible to location zone
      - Pallet height is less than or equal to location useable height
      - Pallet width is less than or equal to location useable width
      - Pallet depth is less than or equal to location useable depth
      - Pallet volume is less than or equal to location useable volume
      - Pallet weight is less than or equal to location useable weight
        - In Build 823, instead of gross pallet weight, the MASS PER UNIT AREA is used

- The rationale for the upgrade is that a rack beam may be fractured if a load is concentrated in a small area instead of 'distributed' even though the pallet load is within the location load capacity.
    - This is also to facility load that may spread over more than 1 location
  - Location is of Storage type
  - Zone is bonded if stock is bonded and vice versa
  - Location is in designated storage warehouse
  - If non-01, in the specified grade-zone if assigned
- ii. If no location is available above, look for location in PICK-PACK zones basing on following criteria
  - Location Status is AVAIL
  - Available pallet unit
  - Operator is accessible to location zone
  - Zone is bonded if stock is bonded and vice versa
  - Location is in designated storage warehouse
- iii. If still no location available, assign any location in Pick-Pack zone

**7.5. Crossdocking**

Crossdocking is the process of issuing of stock directly from a receipt without going through process of first putting away into storage (locations). This procedure helps warehouse operation to improve their productivity as the procedure reduces the number of tasks to be performed in the physical operations.

In CRISTAL WMS, crossdocking process can be

1. Manually managed
2. System control

And whether the process is manual or system controlled, CRISTAL enabled different ways to allow user to manage the operation in accordance to their requirement.

For Crossdocking, whether manual or system control, the pre-condition for the function to work are

1. Pick Pack zone must be defined for the warehouse
2. Location matrix must be defined for the pick-pack zone

**7.5.1. Manual Managed Crossdocking**

In manual crossdocking, it is necessary that for the operators to be aware of the shipment that is to be crossdock and to which the customer.

In CRISTAL manual crossdocking, distinction is made between:

- 'whole'
  - This meant that the whole incoming shipment is to be despatch to ONE customer without need to repack – namely the shipment is despatched as it is being received.
  - This also replaces DROPSHIP receipt type where a shipment is shipped directly from supplier to customer.
  - Recording of such shipment is mainly to capture for historical sales data
    - This may be an issue for 3PL warehouses as they become part of billable activity
- 'break-bulk'
  - In this case, the incoming shipment is to be picked and repacked for a number of customers.
  - And there may be left over which would then need to be transferred into the storage locations.

The 2 different crossdocking processes are called XDOCK-D and XDOCK-B respectively and assigned different receipt type with the same names.

**7.5.1.1. XDOCK-D**

In 5.398 Build 745, the need to have a pre-input sales order is dropped to simplify data entry for XDOCK-D. This also prevents situation of over or short shipment on the sales orders.

To operationalize the function, the following configuration needs to be defined

1. The despatch station for the customer must be of MULTI-TASKS as it is a receipt station during check in and need to serve as a loading station during despatch
2. A sales orders' Order Type XDOCK must be defined in System Configuration | Order Types

The receipt's Location Assign method will be default to SYSTEM and user will not be allowed to change.

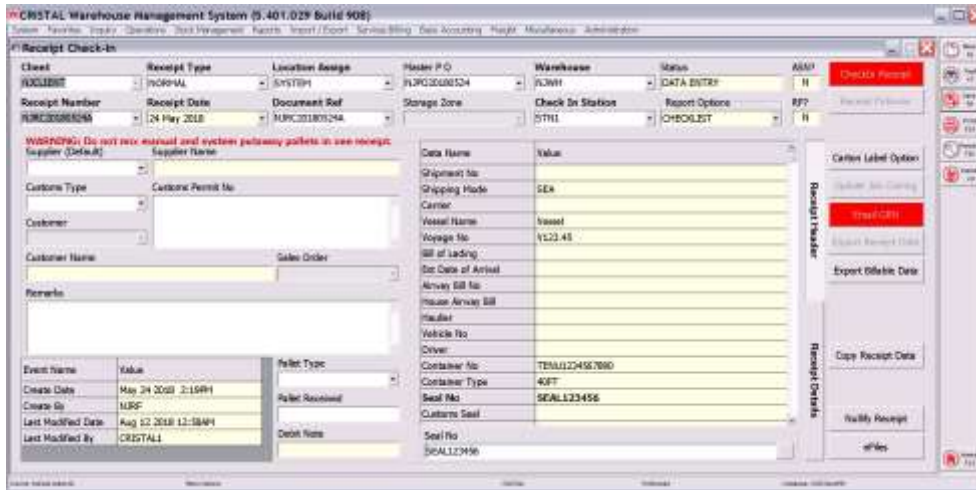
The need to specify a Sales Order is no longer required.

When the system generates the picks data, the Receipt Number will be used as the sales order number. This is to facilitate cross-reference.



However, if a sales order is specified, the sales details will be deleted and recreated from the Receipt Checkin.

As such, sales orders where part of the fulfilment is to be from the warehouse cannot be used with crossdocking.



Other than the above, the entry of the receipt is the same as other receipt type. Upon completion of the receipt details,

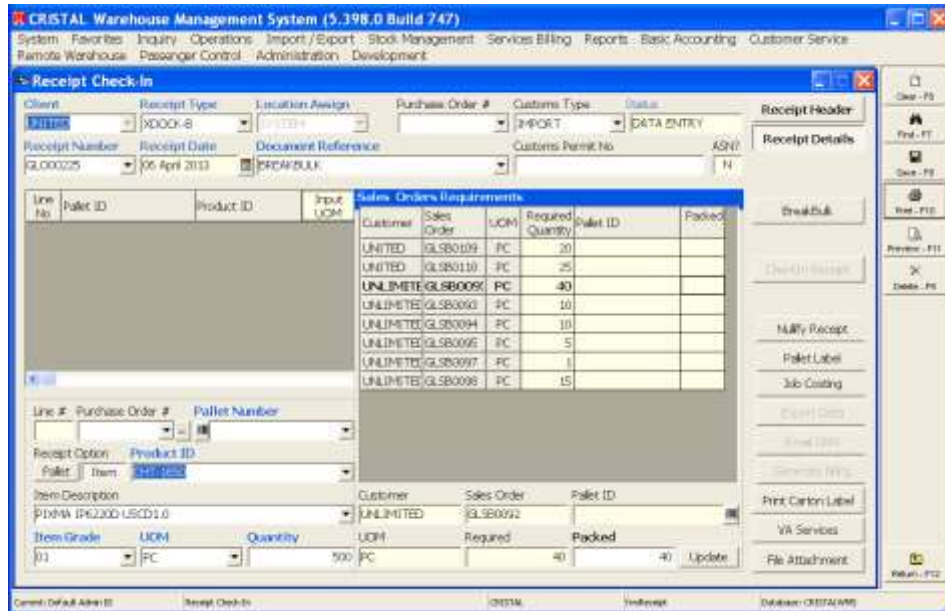
1. Check in the receipt
2. The shipment is putaway to the first location in PICK PACK zone
  - a. Check-In and Putaway tasks are updated into movement history accordingly
  - b. Sales Order, if specified, is generated with details as receipt details
    - i. If sales order is specified and existing, the order details are deleted and replaced with receipt details
    - ii. Pick tasks for the sales order are generated into the work pool (stock movements) and auto confirmed
3. Generate delivery orders as required...

**7.5.1.2. XDOCK-B (Breakbulk)**

XDOCK-B is currently not operationalized. Please approach vendor for details. The write-up here is for review and feedback.

The concept of XDOCK-B is to facilitate operations during receiving to allocate and palletize the receipt according to customers' requirement. This requirement is based on outstanding sales orders.

The receipt is created with Receipt Type XDOCK-B. No customers or sales orders are to be specified in the receipt header.



To update the details

1. Specifying the product ID
2. Input the quantity and attributes
3. Click Break Bulk button to open the Sales Orders Requirement window
  - a. This list sales orders with Order Type XDOCK (only)
4. Click the sales order to allocate to and input the quantity packed
  - a. Assign pallet number to each of the sales order
    - i. Assign new pallet as each is full
  - b. Ensure proper pallet labelling as it is needed for subsequent operations – despatch / loading / delivery and/or putaway
    - i. Allocate until all sales order requirements are fulfilled or receipt quantity is full allocated
    - ii. As the quantity is allocated, the Quantity is deducted and show the balance
  - c. Click Update
    - i. The Sales Order Requirement will be posted into the receipt detail grid box
      - The receipt details are posted with the customer code in the Owner and sales order in the UDF Attribute fields
  - d. If there is any balance, click Save
5. Repeat 1 to 4 for all products received
6. On completion, click CheckIn Receipt button
  - a. Pallets packed for sales orders are processed as in XDOCK-D
    - i. Automatically check-in, putaway and picked
    - ii. Lines that are not fulfilled are either closed or backordered per flagged in Sales Orders
    - iii. Sales Orders must not be flagged for Full Picks Only
  - b. If it is, it will be automatically disabled
  - c. Putaway task will be created for unallocated / balance stock pallets
    - i. They are assigned to operators as per normal receipts
      - Thus the important of the pallet labelling which is needed for identification
7. Generate delivery for the sales orders

### 7.5.2. System Managed Crossdocking

System managed crossdocking directly pallets that hold products required by pending sales orders to be putaway to PICKPACK zone to facilitate picks.

This is controlled at client level by the parameter Client Profiles | UDF Parameters | Miscellaneous Parameter | Receipt - Auto Crossdock Required Item Pallet.

If the auto cross dock is activated, the system when assign putaway task to an operator will check for quantity required for the item being assigned in sales orders whose status are 'WAITING' or 'BACKORDER' and quantity that is currently available in the warehouse.



The checks are as follows:

1. Compute quantity required by sales orders that are past due based on pick date with order status either in 'WAITING' or 'BACKORDER'
2. Compute stock that is currently in the warehouse
3. Compute stock that is currently assigned to be putaway into PICK-PACK zone

If 1 is greater than 2 plus 3, the system will crossdock the next pallet by assigning it to be putaway to a location in a PICKPACK zone.

If the pallet contains mixed SKU, all SKU will be assigned to the PICKPACK zone.

The putaway process is as normal routine.

### 7.5.2.1. Releasing Sales Orders

As an extension to crossdocking, CRISTAL WMS also enable sites to configure the system to auto-release sales orders that are in BACKORDER or due for picking. The due for picking date is based on Pick Date - delivery date less the pick window days (as defined in the customer profiles).

These parameters are set at system and client level. If the system level is set to YES, the system will supersede setting at Client level and auto release sales orders for all clients. Otherwise, it will check individual client setting.



Figure 7 - System Configuration





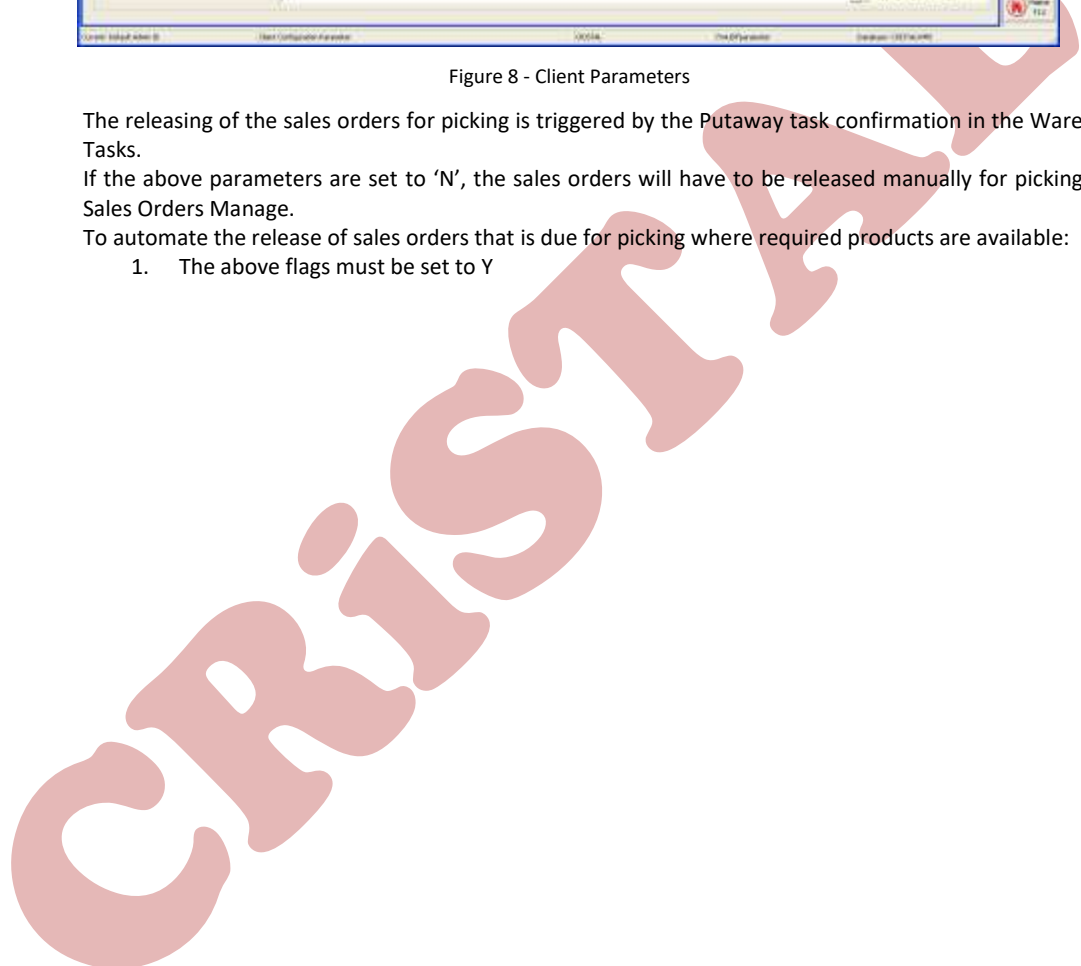
Figure 8 - Client Parameters

The releasing of the sales orders for picking is triggered by the Putaway task confirmation in the Warehouse Tasks.

If the above parameters are set to 'N', the sales orders will have to be released manually for picking using Sales Orders Manage.

To automate the release of sales orders that is due for picking where required products are available:

1. The above flags must be set to Y





**8. OUTBOUND OPERATIONS**

Outbound comprising of following functions (in sequence of operation process)

1. Sales Orders
  - a. Sales Orders Entry
  - b. Sales Orders Merge
  - c. Sales Order Manage
2. Packing – Despatch
3. Packing – Carton Item
4. Delivery Orders (creation)
5. Trucking Loading
6. Shipment Loading
7. Delivery Orders Confirmation

**8.1. Sales Orders**

Picking requirement is initiated through Sales Orders in CRISTAL WMS. These orders can be entered into the system via

1. Sales Orders Entry (as described below)
2. Excel spread sheet upload (See WMS Import)
3. Interfaces – (See section / document on Auto Upload)

**8.1.1. Sales Orders Entry**

This UI is being updated in Build 830 to cater more comprehensively to Licensed Warehouses operation by adding

1. Changed the frame option Tabs from top to vertical left of frames
2. Additional input fields:
  - a. Container Type
  - b. Customs Seal Number
  - c. Stuffing Date
  - d. Stuff By
3. Enable system level default Sales Order Grade



The tab button paging is also rearranged as vertical right sidebar to ‘reclaim’ some screen estate. The ‘Release To Whse’ command button is now color coded in Green (can be released) or Red (cannot or already processed) to improve user-friendliness. Other command buttons are rearranged to streamline the layout. The Remarks field at the Sales Order header to enhance to control the MaxLength based on the database defined characters width.

To create a sales order:

1. Specify the Client, Customer (together with the Delivery (Code) address), Delivery Date and the Document Ref
  - a. Document Ref can be configurable to be mandatory or otherwise via the parameter System Configuration | Sales Orders - Mandatory Document Reference Entry
  - b. If configured as mandatory, it can further be defined as to allow to be repeatable with same reference for multiple sales orders or only unique
    - i. This control is defined in Client Profiles | Miscellaneous | Sales Orders - Mandatory Document Reference
  - c. Delivery Date, although allowed to be back dated, it cannot be earlier than existing stock oldest receipt date.
2. Other field are either being defaulted or optional
  - a. The Warehouse is defaulted from the warehouse where the bulk of the client's inventory is stored
  - b. The Despatch Station is defaulted from Customer Delivery Address definitions
  - c. The Full Picks is defaulted from Customer Profiles | Configuration
    - i. If checked, sales order will be allowed to be picked only when all products and quantities can be fulfilled from the inventory available
  - d. The Back Order is defaulted from Customer Profiles | Configuration
    - i. The checked, unfulfilled products / quantity will be backordered automatically.
      - Otherwise the outstanding quantities will be closed
  - e. The On Hold is unchecked by default
    - i. When checked, it prevent the order from being release to warehouse for processing
      - The feature facilitate an order from being accidentally being released – after it is requested to be pended.
  - f. The Pick By Date is date by which an order is to be picked
    - i. This is calculated from Customer Profiles | Configuration | Pick Window which is the number of days an order is to be picked in advance of Delivery Date
    - ii. If not specified, it would be same as Delivery Date.
  - g. Instructions – Picking, Packing, Delivery and Remarks
  - h. Other optional fields under the tab buttons are
    - i. Delivery Information

- Shipment #
  - Default from Packing - Despatch and Carton Item functions
- Ship Mode
  - As defined in System Configuration | UDF Parameters | Shipping Modes
- Carrier
  - As defined in Entity Profiles and assigned in User Group
- Container Type
- Container Number
- Seal No
- Customs Seal Number
- Stuffing Date
- Stuffed By
- ETD Date
  - Estimated ship date
- Vehicle Number
- Route ID and Drop
  - Default from Customer Delivery definition
- Currency



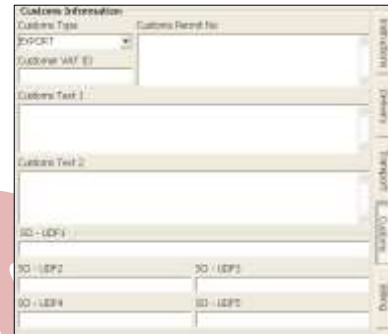
- ii. Transport
  - Transport Order Loading Ref Unloading Ref Loading Date and Time of Delivery Goods Description Currency Phone Update Transport Order
  - (Sales order) Processing Dates



- Picked By - operator
- Picked date / time
- Interface Create date and time
- Delivery Order number
- DO Print – date time DO is printed
- Despatched date / time
  - Per Truck Loading. If function is operationalized
- Closed
  - Based on Delivery Confirmation, if operationalized
  - Otherwise, per DO Print
- Last Modified By and Date

iii. Customs

- Customs related info
- Customs Type and Permit No are for recording of exports declaration reference
- Customer VAT ID is default from Customer Profile | UDF
  - Is used for specific requirement together with Customs Text 1 and 2 – usually populated from interface
- UDF fields are moved from Delivery to here to make room for added fields.



iv. Billing

- The billing data are defaulted from the Customer Profiles definition
- Payment Term is defaulted from Customer Profiles definition
- Debit Note – the DN against which the sales order related services are charge against
  - Service Note Billable
    - This is used in Billing Batch Compute function which will skip the Sales Order when it is flagged

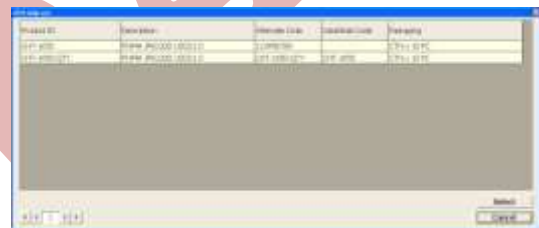


3. Click Save
  - a. The Sales Order number shall be assigned
    - i. Assigned sales order number is based on Document Reference Sequence as specified in Client Profiles | Configuration
4. Select Order Details to input the sales order required



- a. In Build 777 and later, the attributes entry boxes are redesigned to be dynamically displayed only when required as specified in Product Definition
- b. Line # is system assigned and increment from the last line number
- c. Specify the Product ID required

- i. Manual key required Product ID if so preferred
- ii. Click the Dropdown button to pop up list of available product id



- This is modified in Build 829 to also show the Packaging of the listed Product ID as needed in Licensed Warehouses operation
- Maximum of 500 product IDs will be listed in the list
- Input (partial) prefix of product ID to get more precise list of product ID
- or Select Substitute product (Extn tabbed frame)

- iii. or Select Substitute product (Extn tabbed frame)
  - Specify the required Product ID and click on the Substitute Code help command button
    - The popup will list the Substitute code that are defined for the product
    - Select as required

- iv. or Select by Image help (Extn tabbed frame)
  - Click on the Image help



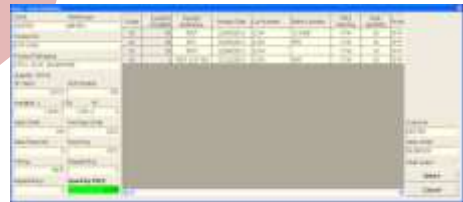
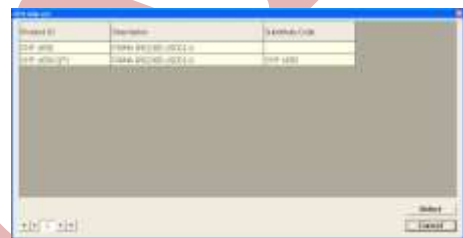
- Select the Brand, Product Group and Category option, as appropriate / relevant, to narrow the list of product ID
- Click on the Product ID list
  - The image of the product shall be displayed – provided it is available and mapped
- Click on Stock Details to check quantity available
- Click OK to select.


- v. or Select required Set Code (Extn tabbed frame)

- This option enable user to input the components required for a Set



- Code as defined in the Bill of Materials function.
- Select the Set Code required
- Specify the quantity required
- Click Process
  - The components required in the Bill of Materials together with the quantities will be inserted into the Sales Details
- vi. or Select by required carton (Extn tabbed frame)
  - This option is designed to facilitate operations that receive and issue by uniquely identifiable carton numbers
  - Scan the cartons that are to be issued
  - Click Process
    - The Product IDs and quantities in the selected cartons will be inserted into Sales Details
- vii. Or Select by Product Description
  - Specify the description of the required product
  - Click the Dropdown button
  - Product ID with matching description will be listed
  - Select as required
- viii. Or Select by Lot Number added in Build 829 for Licensed Warehouses)
  - Specified the Lot Number required in the Product Description field
    - If the full Lot Number is not known, specify '%' follow by matching suffix
  - Click the command button captioned with 'L'
    - The windows will open and show the first matching Lot Number
    - A warning message will be displayed if there is more than 1 lot number matching the suffix.
      - Input more characters as suffix and repeat selection.
  - On selection, the Product ID and will be populated.
  - Proceed as usual...
- d. Specify required stock Grade
  - i. Default: 01
- e. Specify product UOM
  - i. Default: lowest UOM
- f. Specify the Quantity required
- g. Specify the other attributes and line remark, if appropriate, in the tabbed frame (see sales details screen) if relevant
  - i. Most of the attributes are optional except for Item Size, and Color
    - Users must be careful when specifying specific attributes to ensure that stock is available for required (combination) attributes
      - Otherwise, the line would not be picked
  - ii. The default tab to be opened initial can be configured in Client Profile | UDF | Miscellaneous | Sales Orders - Default Attribute Tab (1 - 5)
    - ATB1 – attributes
      - Receipt Date
      - Pallet Number
      - Location
      - Lot Number



- Batch Number
- Expiry Date
- Production Date
- Fashion related
  - Item Size
  - Item Color
  - Item Class
  - Item Size and Color are mandatory for fashion related product
  - They can be made optional by setting the parameters below in Client Profiles | UDF | Miscellaneous to 'Y'
  - Sales orders - Item Size Optional
  - Sales orders - Item Color Optional
- Price related fields are visible only if :
  - Client Profiles | Configuration | Product Pricing is set to 'B' or 'S'
  - AND Customer Profiles | Billing | Price Type is specified
    - Retail
    - Dealer
    - ...
  - Price related fields are
    - Unit Price
    - Discount
    - GST
- Supplier
- PrePack Packing
- PrePack Quantity
- Customs Permit number
  - The save (  ) commend button enabled user to update Customs Permit number after the sales orders have been picked and despatched
    - This is to cater to countries where customs (export) permit number is only available when export declaration is submitted which prerequisite that the cargoes are ready for export/shipment.
    - This is provided for data integrity reason, to ensure other data are not being modified after delivery
- Serial Number
- Country of Origin

• Etc... - remark

- The Line Remark allow operators to input comments, if applicable, as special instruction and for future reference



• UDF

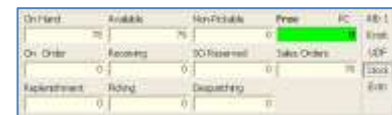
- The Update UDFs command button is catered for the same reason above.



- This enables users to update the UDF values as may require

• Stock (and requirements)

- The stock available and committed quantities will be displayed in tab option 'Stock'



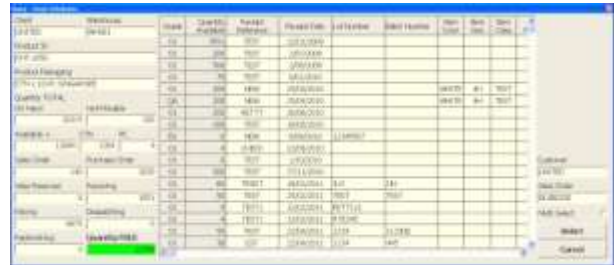
• Extn – popup help and extension functions





- The command buttons that open help or extended functions are group into this tabbed frame to de-clustered screen
- The command buttons are
  - Substitution Help
  - Image Search
  - Stock Details
  - Size-Color Matrix help
  - Carton # Entry
  - Setcode Entry
  - Attributes Series entry
  - Pick Selected Line

iii. Specifying of required attributes can also be done by clicking the dropdown button on the right of the Quantity combo box



- The Quantity summary is being redesigned to show the quantity Available in Outer and Inner pack counts (quantities)
  - This is to facilitate operations that typically move by Outer and Inner packages
- Click the line with the required attributes
  - The line will be bolded
- Click Select
  - The attributes of the selected lines will be populated into the relevant attribute textboxes
  - The required Quantity must still be input

- h. Click Save
- i. Repeat as required
- 5. Click Release To Whse on completion of the order entry
  - a. A check for stock availability is incorporated in Build 793. User is prompted if there is inadequate stock to meet requirement. User is give option to abort or continue the release.
  - b. The order Status will change from DATA ENTRY to WAITING
    - i. SMS messaging can be configured to be sent in Build 758 and later (See [SMS Messaging](#))
  - c. A message prompt will appear whether to generate tasks
    - i. If answered YES, stocks will be allocated and Picks are generated into the Stock Movements
  - d. The Sales Order Picks button will be enabled
    - i. Clicking the button will assign the tasks to login user and open the Warehouse Tasks
      - See Warehouse Tasks for details
- 6. If the Warehouse Tasks is completed (confirmed), the Delivery Order button will be enabled allowing user to generated and print the delivery order
  - a. Click the button to generate and print the delivery order.

**8.1.1.1. Alternative method of details entry**

Entry of the sales details can also be done by selection from a popup list of the available stock by pallets or locations

To select

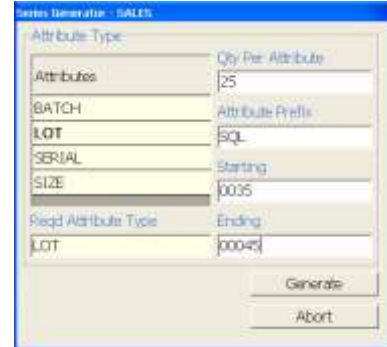
1. Click on the dropdown button on the right of the Pallet Number or Location (in tab 2) which popup the window



- Serial numbers
- Item Sizes

To input sales details by serialize attributes

1. Specify the Product ID
2. Click the '...' command button on the right of Lot Number combo box
  - a. The window will popup
  - b. Select the Attribute required
    - i. The Required Attribute Type shall display the selected
  - c. Input the Qty Per Attribute required
  - d. Specify the attribute prefix, if application
  - e. Specify the range required
    - i. Include 0 (zero) prefixes, if applicable
    - ii. Ensure the Starting is smaller than Ending value
  - f. Click Generate button
    - i. The entries will be inserted into the Sales Details
    - ii. The window will be closed



**8.1.1.3. Sales order Interfaces**

In operations where CRISTAL WMS functions Order Management, an EDI file can be configured to be generated by:

1. Setting to 'Y'
  - a. Client Profile | UDF | Interface | Export Sales Order for Interface (EXPORT\_SALESORDER)
2. Specify the stored procedure to be called to generate the file in
  - a. Client Profile | UDF | Interface | Export Sales Order Procedure (EXPORT\_SO\_PROCEDURE)

The file is created when the sales order is released to warehouse.

**8.1.1.4. Delivery ASN (Interface)**

The Delivery ASN command button when click generate and send a soft copy advance Ship note to the Customer via EDI

**8.1.1.5. Despatch Label**

The Despatch Label command button enables printing of despatch label for labelling the pallets to be despatched

See FAQ ['What are the Despatch Labels available and where is it defined?'](#)

**8.1.1.6. Copy SO Detail**

This Copy SO Detail command button enable user to create sales order details for another order. It is meant as a productivity tool for operation where orders need to be created for multiple customers with same items and quantity



User can also use to also create order that have a high degree of details similarity and then amend as require

1. Select the Source (original) Customer and Sales Order
2. Click Process
3. The sales details will be generated for the new order from the source order

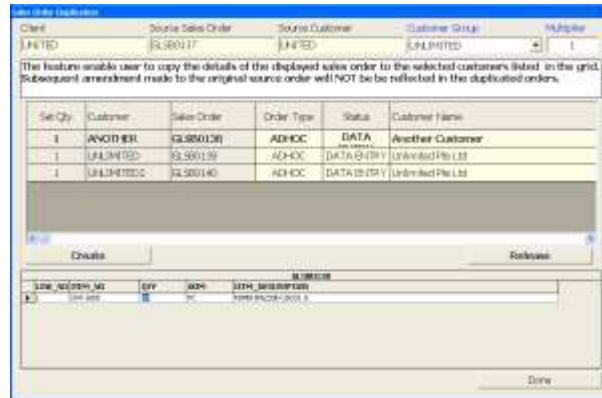
Note: If the Process button is clicked multiple times, each click will copy the sales details from the source order.

This is not disabled for flexibility in event multiple copy is required. User need to be caution.

**8.1.1.7. Duplicate Orders**

The Duplication Orders command button popup and window that is designed for operations that run sales campaigns where selected products (by itself or in kits) are being promoted and stock are 'pushed' to retail / customer (within a Customer Group – as defined in Customer Profiles | Configuration) outlets in multiple sets

Click the command button to open the duplication window



1. Specify the Multiplier
2. Select the Customer Group
3. The customers in the group will be listed
4. Click Create
  - a. The sales orders will be generated and the grid box will be refresh and the assigned Sales Order number will be listed
  - b. There must be quantity available to meet the orders' total requirement
  - c. Partial orders will be created if there is not enough quantity to meet all requirements.
  - d. Select the order, the detail will be listed in the data box below
  - e. The quantity can be amended, if required
5. Click Release
  - a. This release the sales orders to the operations from processing
6. Click Done to close the window

**8.1.1.8. File Attachment**

See section on [File Attachments](#)

**8.1.1.9. Other Configurable Functions**

Following are the user configurable parameters that are relevant to the Sales Orders functions.

1. Sales Orders: Alert Email Address
2. Sales Orders: Auto Release Back Order on Receipt
3. Sales Orders: Auto Release Due on Receipt
4. Sales Orders: Carrier code Mandatory
5. Sales Orders: Default Attribute Tab (1 - 5)
6. Sales Orders: Disable Advance Entry
7. Sales Orders: Disable Transport Order Option
8. Sales Orders: Item Color Optional
9. Sales Orders: Item Size Optional
10. Sales Orders: Mandatory Document Reference
11. Sales Orders: Pick from reserve - requirement exceed % pickface max quantity
12. Sales Orders: Pick Loose from PICKFACE ONLY - Default for uploaded Customer UDF
13. Sales Orders: Pick separate whole and loose
  - a. Note that this option is not compatible with Pick Method PRODUCTIVITY as they are mutually exclusive by definition – it shall be automatically disabled during picks allocation
14. Sales Orders: Picks Returned Stock First
15. Sales Orders: print on Release to Whse

For details, please refer to [Miscellaneous Parameters](#) under [Users Configurable Parameters and Setting](#).

**8.1.1.10. Modifying Sales Orders**

To modify an existing sales order:

1. Specify Client code
2. Specify the Sales Order
  - a. Click Find
  - b. Alternatively, click the dropdown arrow button to popup sales orders
    - i. Only DATA ENTRY / WAITING orders are listed

ii. For other status orders, input the order number or suffixes and click the dropdown arrow button

3. The order data will be displayed
4. Amended as required
5. Click Save

Note that order that have been processed cannot be amended unless specifically enabled in Client Profiles | Client Configuration | Sales Order (status) Control

However, amended cannot be made to product ID and quantity if it have been picked. It has to be reversed (transaction), amended and then re-processed (picked).

**8.1.1.11. Delete Sales Order**

Sales order that have been processed for picking or picked cannot be deleted. It has be reversed (transaction) – nullifying the picking.

To delete a sales order:

1. Specify Client code
2. Specify the Sales Order
  - a. Click Find
3. Click the Delete command button
  - a. Operators will be prompt to confirm the deletion.

CRISTAL WMS do not actually delete a sales order, its status is set to CANCELLED.

**8.1.2. Sales Orders Manage**

Sales Order Manage is to enable warehouse operations to create picks orders from WAITING (and BACKORDER) sales orders.

It is also enabled for a number of operations related functions as described below.



**8.1.2.1. Auto Selected and Print**

In Build 5.401.908.019, sales orders that can be fulfilled are auto selected (in bold).

The Order Number are coloured as:

- **Green** - Fully fulfillable
- **Yellow** - Partial Fulfillable
- **Red** - No stock to meet any of the requirement
- **Grey** - No color coding as requirement is assigned Pallet or Location

This however exclude orders that includes

- Batch control item for which batch numbers are excluded for customers

The auto selection and processing are subjected to following **limitations**:

1. Orders that include items that are Serial No control, although they will be selected if there are stock to meet their requirement, their works orders will not be Auto Confirmed if enabled.
2. If orders with items that are specified to be picked from specific location or pallet they will not be selected (even though there may be enough stock to meet requirement)
  - a. They will not be colour coded and remained as grey (or the header color)
  - b. It is thus recommended that requirement not be allocate pallet or location as they would also override stock rotation (FIFO) rules.
3. There may be other limitation that is yet to be identified.



In Release 5.401.908.035, 3 client specific parameters are introduced to auto print following documents/reports – via Windows service CRISTAL PQServer or via the station PQServer Desktop function (which must be enabled in System Configuration if required):

1. Sales Orders: Auto print Sales Orders on Release via SO Manage
  - a. When set to 'Y', the Sales Order will be printed
2. Sales Orders: Auto Assign WO on Picks create via SO Manage
  - a. When set to 'Y', works order will auto assign to the 'user ID' as operator and printed
3. Sales Orders: Auto Confirm WO on Picks create via SO Manage
  - a. When set to 'Y', the works order will auto confirm
  - b. If not defined, it defaults to 'N'
4. Sales Orders: Auto Delivery Order on Picks Tasks Confirmation
  - a. When set to 'Y', it auto generates and print the Delivery Orders – subjected that Auto Confirm WO is enabled

Note that if Auto Print Delivery Order is enabled, Auto Conform WO will be enabled even though it may have been set to 'N'. This is because delivery order can only be printed after works order have been confirmed.

The above prints are printed via Print Queue service or the workstation (to be enabled in System Configuration | PQServer (Desktop) Enable flag

If the order picks is reversed and reprocessed, the **interval must be 5 minutes or more**. Otherwise the auto print documents will not be triggered (again).

**8.1.2.2. Selecting Sales Orders**

To select sales orders for processing

1. Select Client
  - a. In Release 5.401.908.xxx, Sales Order Manage is enhanced to auto-select sales orders that are fully fulfillable.
2. Select the SO List Option:

ALL	All Orders pending picking
PAST	Past Due orders
TODAY	Orders due to be picked today
TOMORROW	Orders due pick tomorrow
NEXTDAY	Orders due pick day after tomorrow
AFTER	Orders due pick thereafter

- a. Pending order will be listed in the grid box
3. Select the Sort Sequence, if required
  - a. Customer
  - b. Delivery Date
  - c. Despatch station
  - d. Order No - Default
  - e. Order Type
  - f. Pick Date
  - g. Route
  - h. Status

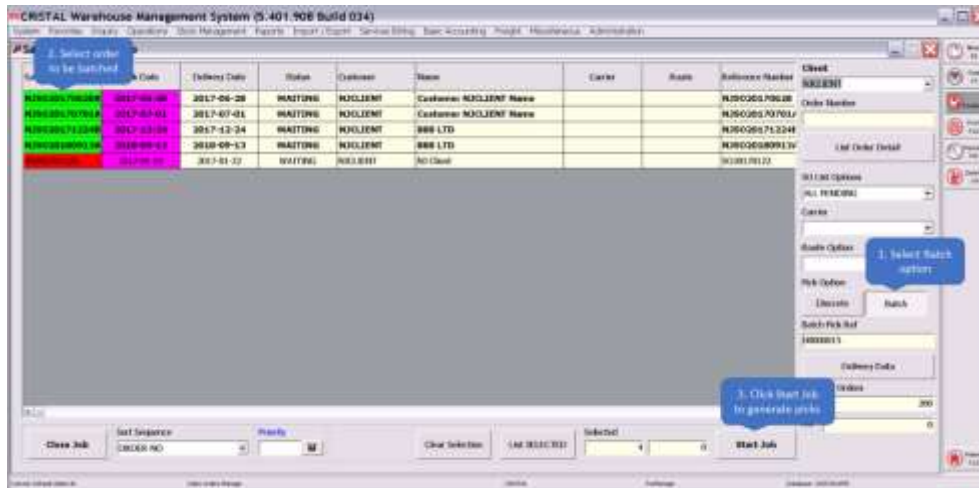


4. To view details in an order



- a. Click the order to view
  - i. The sales order will be displayed in the Order Number textbox
- b. Click on List Order Details to view the details
- c. Click List Orders to return to orders list

**8.1.2.3. Create Picks Tasks**



1. Specify the Carrier and Route Option, if relevant
2. Select the Pick Option
  - a. Discrete - by individual order
    - i. Click on the orders to be released for picks
      - The fonts of selected orders will appear in **bold**
      - The total volume (M3) and weight (KG) of selected orders will be displayed accordingly
    - ii. Select the Batch option
      - i. Select the Batch option
      - ii. Select the orders to be batched or wave picked
        - The total volume (M3) and weight (KG) of selected orders will be displayed accordingly
3. Click Start Job

**8.1.2.4. Force Close Sales Orders**

1. As in Create Picks, click on the orders to be closed (without picking)
2. Click Close Job

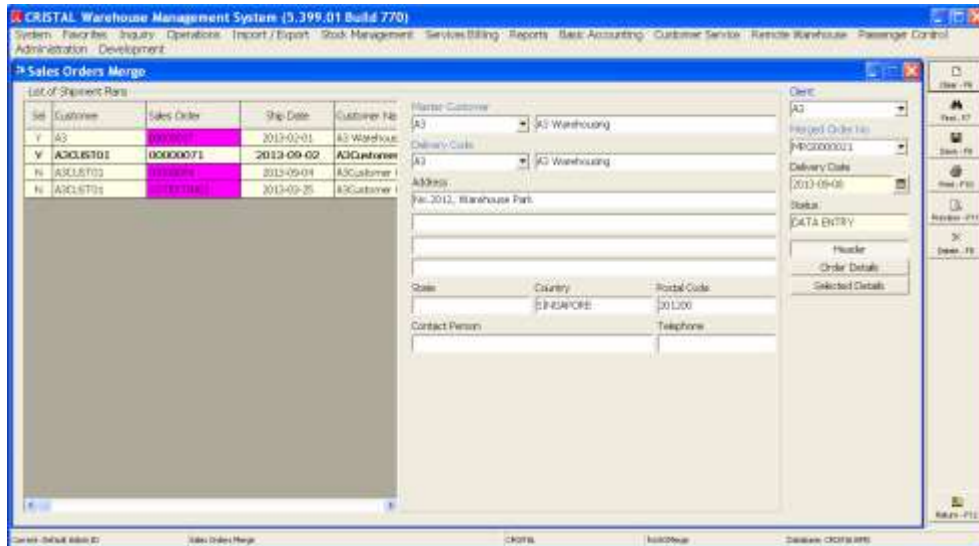
**8.1.2.5. Changing Sales Order Picks Priority**

This option is relevant mainly in picking with RF devices where operators are assigned 1 pick at a time. Changing sales order to a high priority before releasing for picking effectively forces it to be picked before those with lower priority even though they are released earlier.

1. Select the order to be changed
2. Specify the Priority to change to
  - a. 1 being the highest priority
  - b. By default all sales orders are assigned as priority 50
3. Click the save button (beside the textbox) to update the change

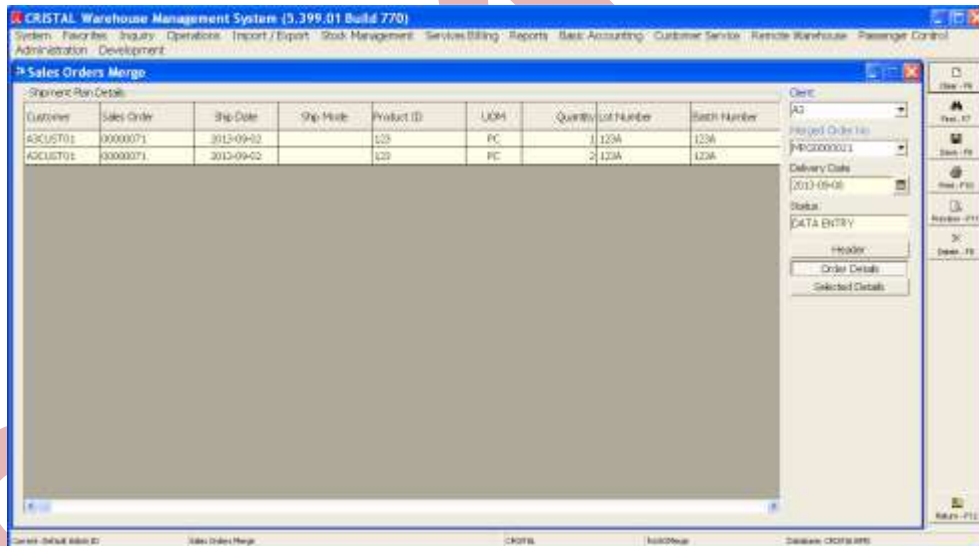
**8.1.3. Sales Orders Merge**

Sales Orders Merge is designed to enable users to merge or combine a number of sales orders, belong to 1 or more customers, into a single order for purpose of picking and shipping.



The Customer of the first selected orders is the master customer and delivery (ship to) destination.

1. Select the Client
  - a. The pending orders will be listed in the grid box.
2. Click on the orders for which the Customer is to be the deliver (ship to) destination
3. Select the orders to be merged
  - a. The 'Sel' column will be changed to Y
  - b. Click again to de-select
  - c. Click Order Details to view the requirement of current order

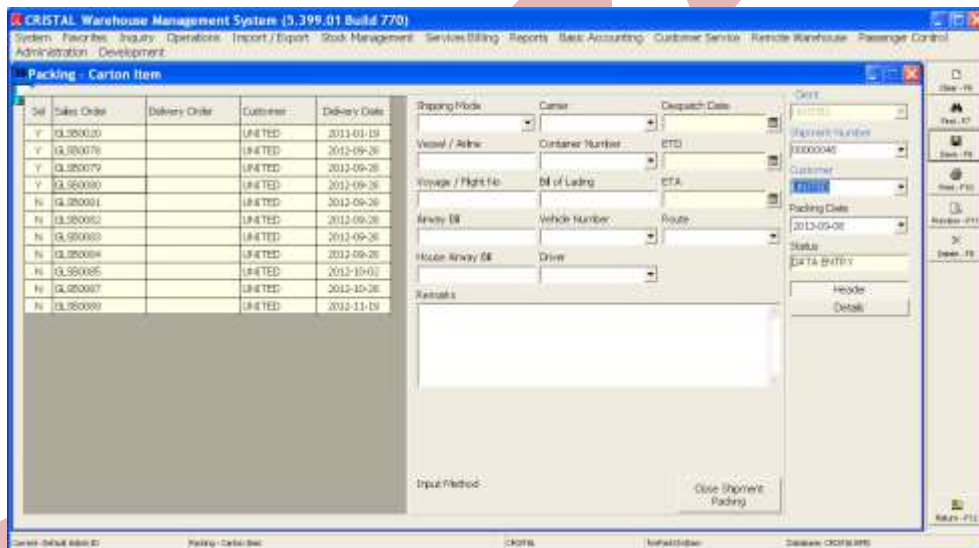


- d. Click Selected Orders to view the requirement of the selected order



4. Click Save
  - a. A merge order number will be assigned
  - b. The requirements of selected orders will be consolidated in the merged order

**8.2. Packing – Carton Item**



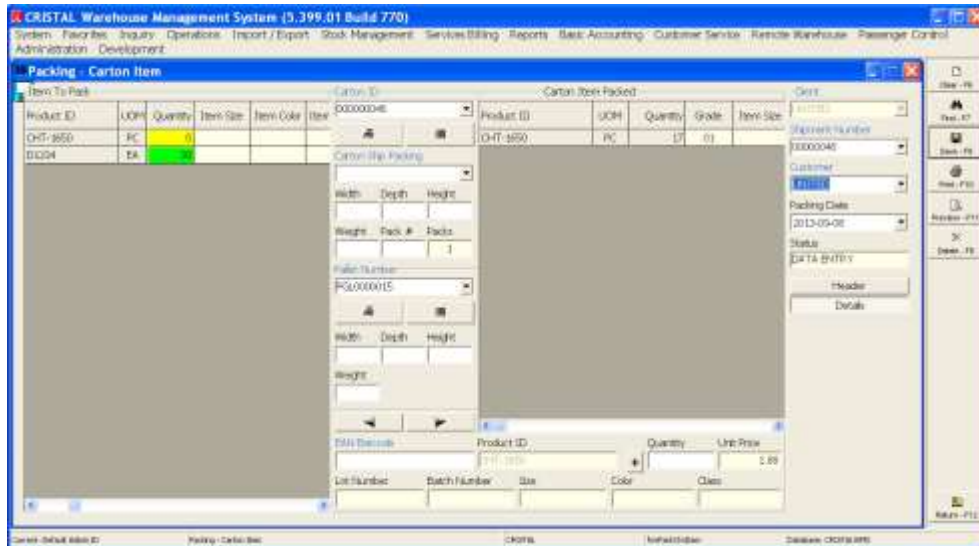
The function is designed to facilitate operation where goods picked for a sales order are required to be packing into (uniquely identifiable) cartons before being packed on to pallets for delivery / shipment.

This function also serves as despatch verification for products that are barcoded in the form of a scan-pack process.

The function is designed for packing for shipment by Customer.

To start a packing:

1. Select the Client and the Customer
  - a. Click Find
  - b. The orders that are available for packing will be listed in the grid box



2. Select the orders to be packed in the shipment
3. Specify the shipping information and click Save
4. Select the Detail tab button
5. Specify the Carton ID and the Pallet Number
  - a. Input the dimensions and other info as required.
  - b. Click Save
  - c. Print and label carton / pallet as required
6. Position the cursor in the EAN Barcode textbox:
  - a. Commence scan and pack the 1 unit at a time
  - b. As the item is scanned, it is added to the carton which will be displayed in the grid box on the right.
  - c. The packed item quantity will be decrement simultaneously
  - d. If the quantity packed for an item is completed, the background of the Quantity will be change to yellow.
    - i. It changes to RED if the packed quantity is greater than the required / picked quantity.
    - ii. This is an indication that wrong item or exceed quantity have picked.
  - e. Repeat with new carton when current carton is filled.

**8.2.1. Label and Pack list**

Below are sample of the standard Packing List together with Carton and Pallet Label as provided in CRISTAL WMS. Customized templates formatted by users must be defined to accept the same input values as above. The templates are configured and defined in Client Profiles | UDF | Reports. This is to enable sites to modify and format them as required. The parameters are

1. Pack List
  - a. Parameter: Template - Shipment Packing List
  - b. Template: Shipment PackList - DO\_pallet.rpt
  - c. Predefined input values
    - i. Client
    - ii. Sales Order Number
    - iii. Login User ID

Sample – See [Packing List](#) below

2. Carton Label
  - a. Parameter:
    - i. Shipment Packing - Carton Label
  - b. Template:
    - i. Shipment Packing Carton Label2.rpt
  - c. Predefined input values
    - i. Client
    - ii. Sales Order Number
    - iii. Carton Number

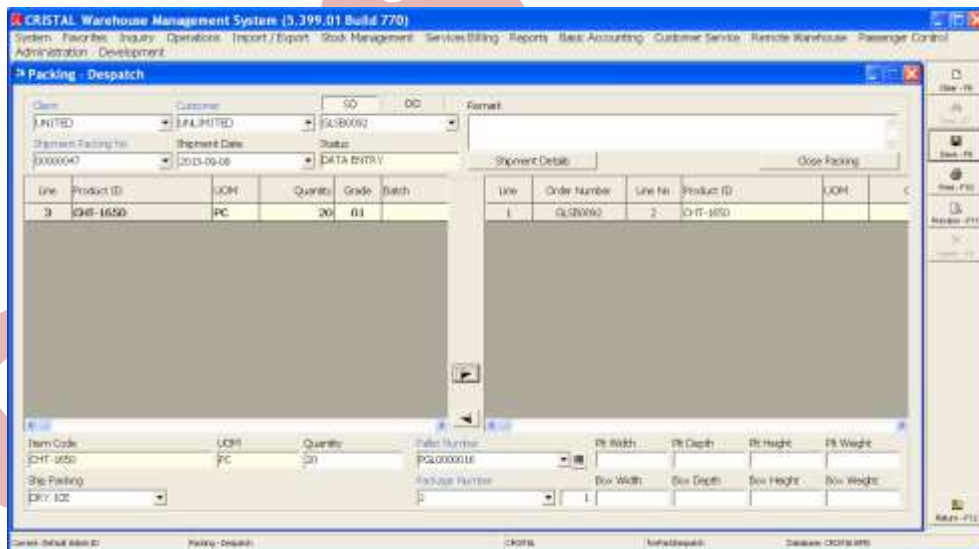


3. Pallet Label
  - a. Parameter:
    - i. Shipment Packing - Pallet Label
  - b. Template:
    - i. Shipment Packing Pallet Label.rpt
  - c. Predefined input values
    - i. Client
    - ii. Sales Order Number
    - iii. Pallet Number



**8.3. Packing – Despatch**

The function is a simplified version of Packing – Carton Item. It is designed to re-palletize picks for a sales order prior to shipment.



1. To palletize the picks:
2. Select the Sales order or Delivery Order to be packed
  - a. Select Client, Customer and Sales order / Delivery
  - b. The products picked will be listed
  - c. Click Shipment Details
    - i. This popup the shipment details for update
      - Ignore the right section as this is activate only in Delivery Orders (creation)
    - ii. Update the relevant data



- iii. Click Done to close window
3. Specify the Pallet Number to be packed
  - a. Click Save to generate Shipment Number
4. To add products to the pallet
  - a. Click on the Line (in the left grid box)
    - i. Click Right arrow to add selected line to the pallet
      - Note there is no partial quantity allowed in this function
5. To unpack an item from as pallet
  - a. Click on the Line in the right grid box
  - b. Click Left arrow to add selected line to the pallet
6. Repeat with new pallet number if multiple pallets is need.
7. Click Close Packing command button on completion
8. Click Print or Preview to print packing list

#### 8.4. Delivery Orders (Generate and Print)

Delivery Orders function for the generation and print of delivery orders.

In CRISTAL WMS, delivery order for sales orders may be generated:

- 1 sales orders – 1 delivery orders
- 1 sales orders – multiple delivery orders
  - To facilitate multiple trips delivery
- Multiple sales orders – 1 delivery order
  - Multiple sales orders for 1 customer be generated as 1 delivery order
    - This is configure in Client Profile | UDF | Miscellaneous | Delivery Orders - Consolidate By Customer
      - Set to 'Y'

As shown in Reports Options, apart from generate and print delivery orders, the function also enabled to print:

- 1 Despatch Label
- 2 Packing List

User must specify the number of copy to be printed for each of the documents to be printed. Leave those that are not required as 0 (zero).

The function also incorporate options that is needed to facilitate the operations

- 1 Reassigning Customer
- 2 Changing Delivery Address
- 3 Repacking

In addition, it provide for updating of Pallet Dimension and Despatch Data.

##### 8.4.1. Generating Delivery Orders

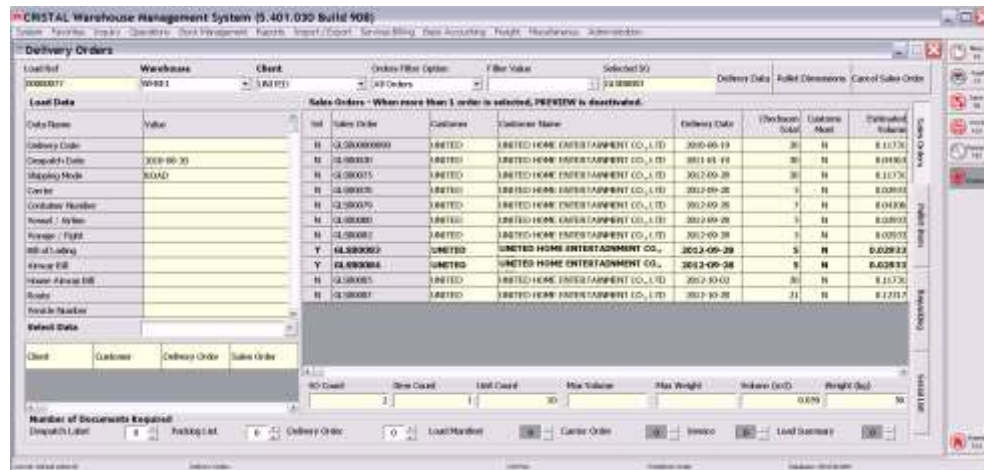
The Delivery Orders is redesigned on Build 5.401.098.030 to improve performance and facilitate ongoing enhancement and maintenance.

The Load Data textboxes are replaced with grid box to enable adding of new field, when required, without having to replace the UI and EXE.

A new command button 'Delivery Data' is added which enable users to default the Load Data from selected sales orders.

The Load Ref is assigned on click on a sales order.





To generate delivery orders

- Specify the number of copies required for Delivery Order in Report Options
  - Minimum copy is 1
- Select the Warehouse
- Select the Client by clicking the Dropdown arrow
  - Only clients with picked sales orders will be listed
  - Picked sales orders will be listed
  - To shorten the list of picked sales order, specify the preferred Order Filter Option:
    - All Orders
    - Consignment
    - Delivery Date
    - Despatch Grid (Station)
    - Route
  - Specify the Filter Value
    - The grid box will be refreshed and list only orders that matches the option
- Select orders to be despatched
  - If the parameter *Client Profiles | UDF | Miscellaneous | Delivery Orders - Generate for 1 Sales Order each time* is set to Y, only 1 sales order can be selected at a time to generate an print delivery order. (Build 774)
    - The Sales Orders frame caption will display 'Only 1 sales order is selectable at a time.'



- For partial delivery order
    - Select Pallet-Item tab button
    - De-select the pallets that are not to be despatched
- Click Print or Preview

#### 8.4.1.1. Interface File

The delivery orders create function is the event at which outbound interface file is generated:

- If it is specified in Client Profile | Client Configuration | Interface File Creation Setting (Outgoing Shipment) is set to Despatch.

2. The interface file may be generated by individual sales order or consolidated 'session'
  - a. For individual, ensure that Client Profiles | UDF | Interface | Despatch Interface File Option is specified as INDIVIDUAL
    - i. Ensure the spelling is correct as any other word or misspell is interpret as Consolidated
  - b. The store procedure via which the data are created must be specified in Client Profiles | UDF | Interface |
    - i. INDIVIDUAL
      - Order Confirmation Outbound Procedure (ORDER\_CONFIRM\_OUT)
    - ii. Consolidated
      - Order Confirmation Delivery Procedure (ORDER\_CONFIRM\_LOAD)

**8.4.1.2. Pallet Dimension**

The Pallet Dimension enables operations to update the actual dimensions and weight of despatching pallet.

To update:

1. Select the sales orders
  - a. This pop up a windows which list the pallet numbers in the picked order
2. Select the pallet
  - a. The data will be populated below
3. Update the dimensions and weight
4. Click Update command button



**8.4.1.3. Despatch Data**

In Build 832, the Despatch Date update is integrated into the main Delivery Order windows.

This is an extension of the Delivery Orders create to enable operations in updating the despatch date:

1. Load Ref
  - a. System assign if not specified
2. Despatch Date
  - a. Default to 'today' if not specified
3. Customs Type and Permit #
4. Delivery Date
  - a. Will be updated to Sales Orders table
5. Other despatch data and Remark

Note that the input despatch data are updated to all selected sales orders



**8.4.1.4. Cancel Sales Order**

The command button 'Cancel Sales Order' enable users to cancel a sales order after being picked but before generating the delivery order. (This is different from Reverse Transactions | Sales Orders which nullify all activities (transactions) of the sales order.)

In Cancel Sales Order, the picks transaction is not deleted or cancelled.

Instead the picks are re-check in into the warehouse. A receipt will be created with the Sales Order number as the Receipt Number and check in, creating the putaway.

The operations is required to do a putaway of the picked stock.

This approach enable the warehouse to compute (and bill if applicable) the picks and putaway activities that arise from the cancelled sales order.

The function can be activated by a user with System Administrator access level only.

**8.4.2. Despatch Label**

Please see FQA ['What are the Despatch Labels available and where is it defined?'](#) for label format available.

To print despatch label

1. Specify the number of copies required for Despatch Label in Report Options
  - a. Minimum copy is 1
2. Specify Warehouse, Client... as in printing delivery order
3. Select the required order
4. Click Print or Preview to generate the required label

**8.4.3. Packing List**

**UNITED HOME ENTERTAINMENT CO., LTD**  
 2/4 Samakkee Prakanphai Building Viphavadee Rangsit Tungsonghong Lak Si Bangkok THAILAND 10210  
 Tel: 662-9550561-3 Fax: 662-9550564

Date: 21 Jul 2013 Page 1 of 1

SOLD TO : Shipment No : 0000042

Shipment Mode : OTHERS

Container No :

**PACKING LIST**

Special Instruction:  
Pack in qty of 12

Pallet No	Carton No	Item Code	Qty	Lot No	Expiry	Dimension (H x L x B)	Gross Wgt
PLT0000365	000000152	CHT-1650	20				
			20.00				

Cover Invoice #: Total Cartons : 1

Packing List #: GLSB075 Total Volume : 0.00 m3

UNITED HOME ENTERTAINMENT CO., LTD Total Gross Weight : 0.00 Kg

To print packing list

1. Specify the number of copies required for Packing List in Report Options
  - a. Minimum copy is 1
2. Specify Warehouse, Client... as in printing delivery order
3. Select the required order
4. Click Print or Preview to generate the required label

**8.4.4. Changing Sales Order’s Customer and Delivery Address**

The function enables operations to change the Customer of a sales order after it have been picked. This is to facilitate operations where Client required a sales order to be picked before the customer is finalized for whatever reasons.

As in Generating Delivery Order above, select the order (1 order at a time) to be amended:

**8.4.4.1. Reassign Customer**

Click on the Reassign Customer command button which will pop up the window:

1. Select the new Customer to assign to
  - a. Delivery Address will automatically assign to the ‘first’ delivery address of the new Customer
2. Client Update command button to save change

The specified customer will be updated into Sales Orders master and used in the generation of Delivery Orders.



**8.4.4.2. Changing Delivery Address**

Click on the Redirect Delivery command button which will pop up the window:

1. Select the new delivery destination
  - a. Only Delivery Address of the sales order specified Customer as defined in Customer Profiles | Delivery will be available for the change
2. Click Update command button to save change

The selected Delivery Address will be updated into Sales Orders master and used in the generation of Delivery Orders.



**8.4.5. Repackaging Options**

The function enables operations to

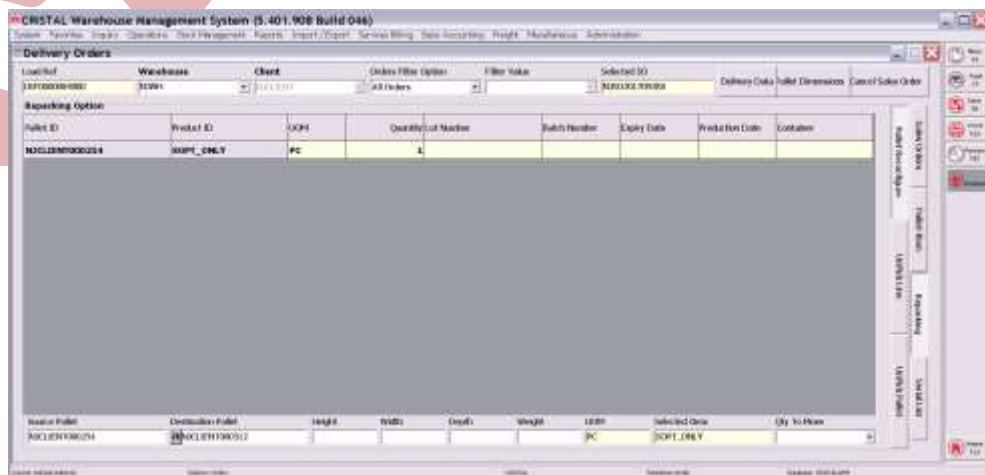
1. Reconfigure Pallet awaiting despatch
2. Un-Pick selected line
3. Un-Pick a pallet
4. Un-Pick a Sales Order

**8.4.5.1. Reconfigure Pallet Awaiting Despatch**

The function enable operations to reconfigure (repack) picked pallets.

For example, an order may be picked to a single ‘pallet number’. Physically, the cargoes may be on a couple of pallets which need to be identified accordingly.

To split or transfer some of the goods for the Source (original) Pallet to Destination (another) pallet:



1. Select the line to be repack
  - a. The select line data would be populated into the relevant textboxes

2. Click on the barcode button (right of Destination Pallet textbox) to generate the next pallet number (license plate)
3. Specify Quantity To Move
4. Click Save
  - a. The select product and quantity is transferred to the new pallet
5. Repeat till all repacking is completed

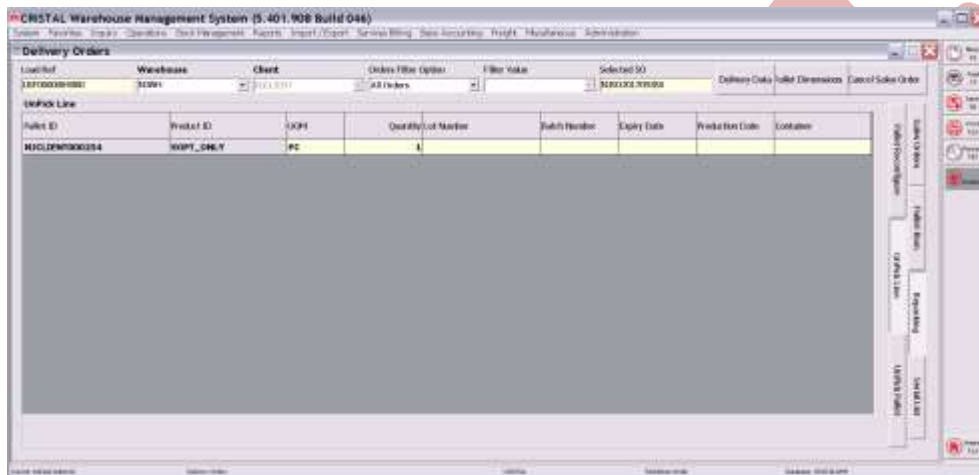
To merge pallet, instead of generate a new pallet number input the pallet number that the product is to merge to.

**8.4.5.2. Un-Pick selected line**

Occasionally, operations faced with request not to deliver a specific product in a sales order. These functions allow to 'delete' selected record and return the picked product to the warehouse for putaway.

This is not picks reversal.

The selected is re-check in and a Putaway task is generated. It is then to be putaway as is for a new receipt.



To un-pick a line:

1. Click on the line
2. Click Save
  - a. A putaway task is created into the Stock Movements table
  - b. This is to be putaway as is with other receipt

**8.4.5.3. Un-Pick a pallet**

Un-pick pallet is an extension of the un-pick select line.

In this case when a line is selected, the Source Pallet is populated with the line's pallet number.

Click Save will 'delete' the **pallet** from the picked order and a putaway task is created in the Stock Movements.

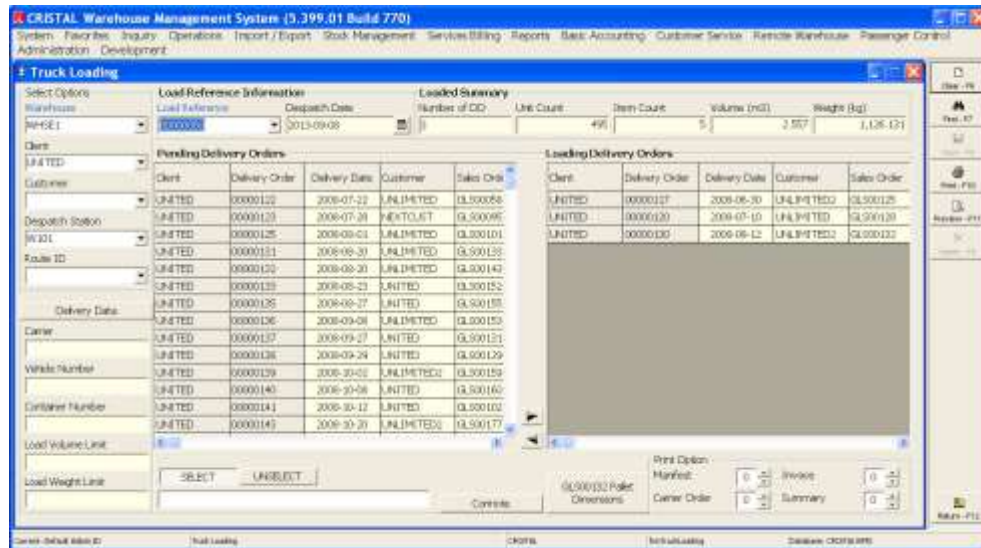


As above, it is to be putaway as is with other receipt.

### 8.5. Trucking Loading

This is based on Release 5.398 Build 657

Truck Loading allows user.



- To optimize their truck space by selecting and consolidate pending Delivery Order prior loading
- Print Load Manifest, Load Summary and invoices for shipping document purposes.
- Truck Loading is an optional process and must be activated in Client Profiles | Configuration

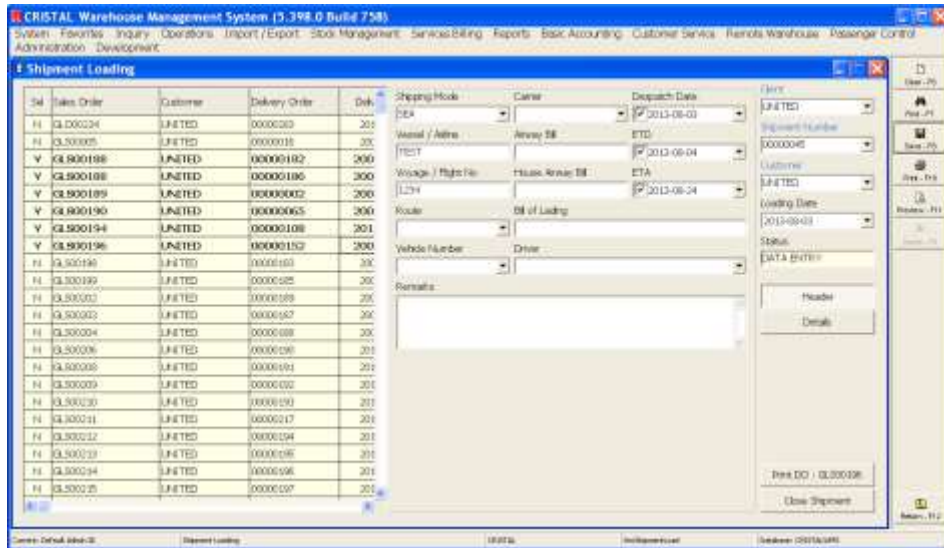
**STEPS:**

1. Click Truck Loading under the Outbound sub-module.
2. Select Client and click Find
  - a. System displays pending Delivery Order based option such as All Orders, Dispatch, Customer or Routes.
3. Select the pending DO by clicking on the DO line on the left column. The selected DO line shall be transfer to the right column indicating the desired loading.
4. System auto generate Load Reference number.
5. Continue step 3 until it optimize the truck space.
6. After completion the selection, user can select to print following by specifying the number of copy required:
  - a. Load Manifest
  - b. Carrier Order
  - c. Invoice
  - d. Load Summary
    - i. Status of the selected Sales Orders shall be updated to DESPATCHED if Load Summary is printed

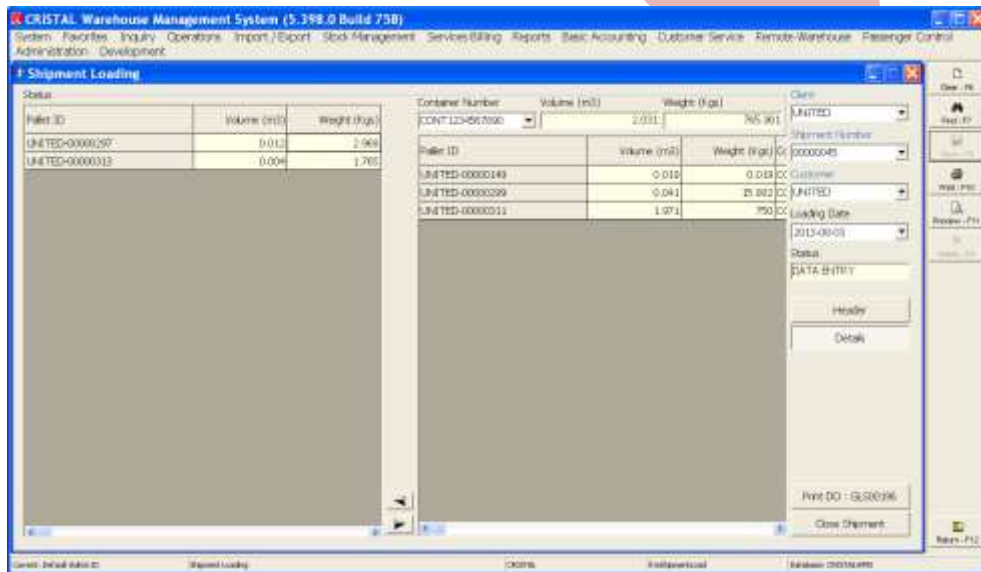
### 8.6. Shipment Loading

The function facilitates the loading of cargoes for delivery. It is an extension of Truck Loading.





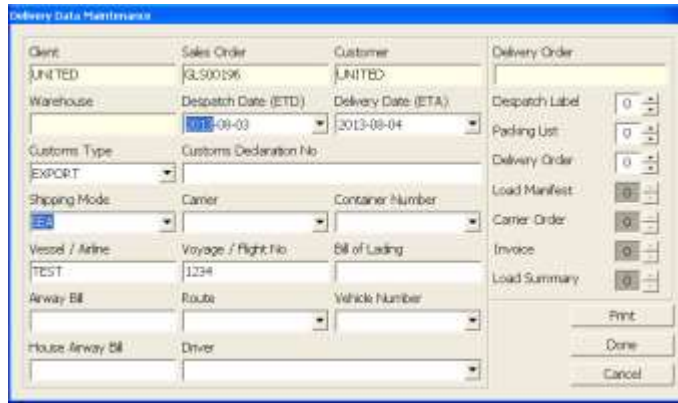
While Truck Loading tracking by orders being loaded, Shipment Loading enabled tracking by pallets.  
To commence Shipment Loading:



1. Select Client and Customer and click Find
2. Input relevant data
  - a. Click Save
3. Select sales orders / Delivery to be loaded
4. Click Detail tab button
5. Specify the Container Number
6. Double-click on the pallet in the left grid box to load the pallet into the container
  - a. The Volume and Weight accumulate accordingly
    - i. This enable user to monitor the total load loaded into the container, which help to prevent overloading
    - b. To unselect or unload a pallet, double-click on the pallet number in the right grid box
7. Repeat 5 and 6 till all pallet is loaded,
8. Click Close Shipment command button to complete the Shipment Loading.

**8.6.1. Print DO**

The command button Print DO enable users to generate the delivery order without using the Delivery Orders option by opening the Delivery Data window



Please see [Delivery Data](#) for details

### 8.7. Delivery Order Confirmation

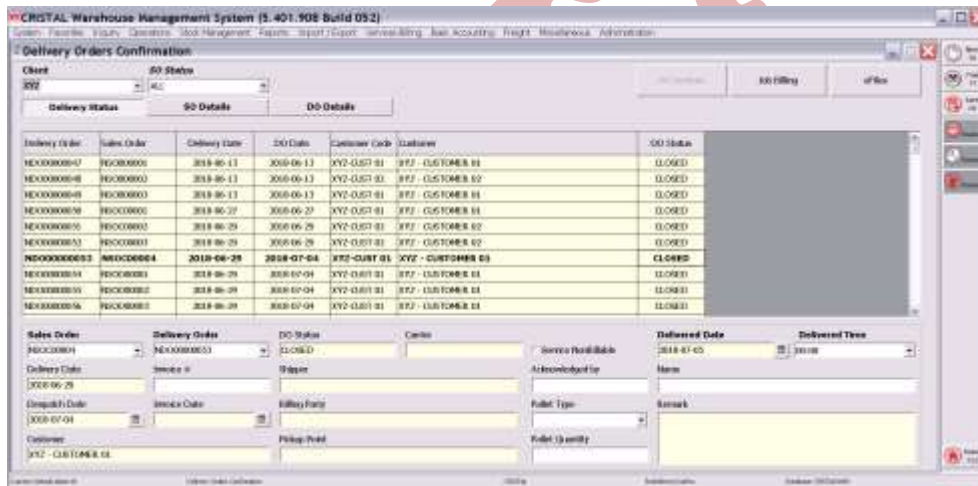
This is based on Release 5.398 Build 656

Delivery Confirmation is the final stage of the warehouse / distribution process in which the delivery is made and accepted by the customer. This closes the loop of the physical distribution function.

In CRISTAL WMS, depending on site configuration, Delivery Confirmation may be an optional function.

STEPS:

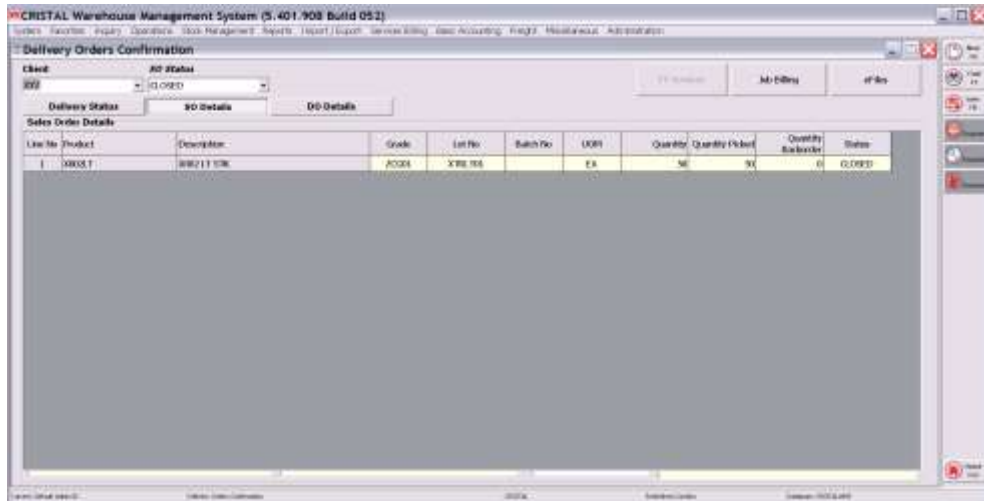
1. Click Delivery Confirmation under the Outbound sub-module.
2. Specify the Client



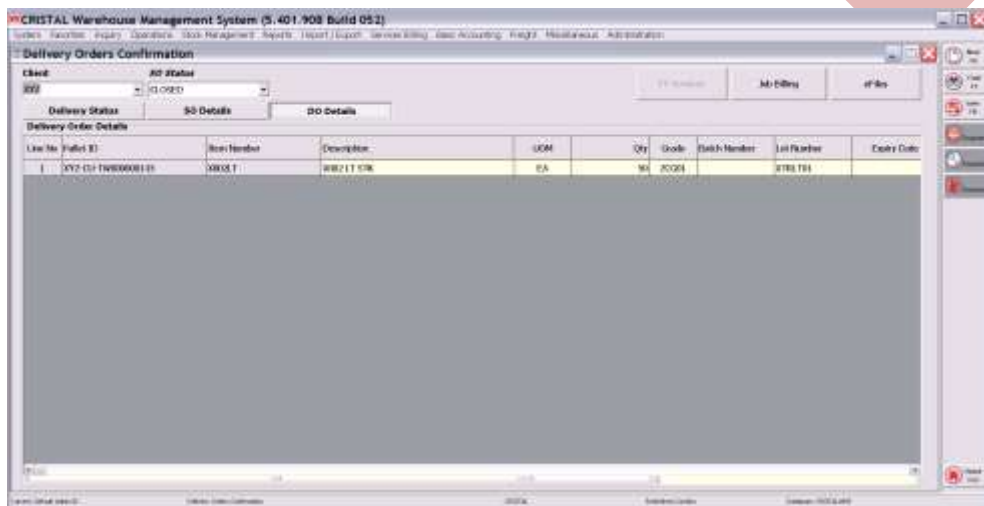
3. Select the (Sales, Transport or Delivery) Order Number.
4. Select the required Order Status
5. Click on the required order, the order details will be displayed.
  - a. Alternatively, the order can be selected via the popup window that is activated by clicking on the dropdown arrow Sales Order or Delivery Order
6. Update the Delivered Date and Delivered Time. Enter Acknowledgement and Name of the recipient.
7. Click Save-F8 to close the Sales Order.
8. Digitized copy of POD (proof of delivery) can be attached to the sales order via the eFiles attachment.
9. Adhoc (VA) services can be update via the [VA Services](#) pop-up window

User can view the items before confirming by selecting

1. SO Details



2. DO Details to.

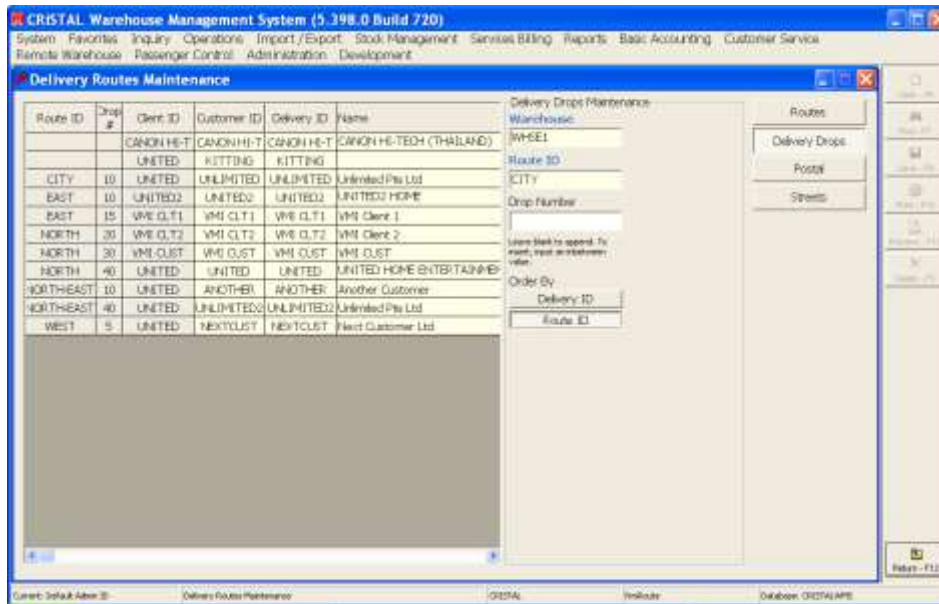


### 8.8. Delivery Routes Maintenance

The Delivery Routes Maintenance is streamlined in 5.398 Build 712.

The function to define Delivery Route by Postal Code, which originally under Administrator Tools is moved to be part of this function

### 8.8.1. Defining delivery Route ID



To update a Route ID, click on the route to be maintain or

1. Input the Route ID
2. Select the Warehouse the Route originate
3. Select the default Despatch Grid
4. Specify other available data
  - a. Default Vehicle,
  - b. Number of Trip per day
  - c. Number of Load Unit (pallets, cartons... - appropriate)
  - d. Load Volume (in cubic meters)
  - e. Load Weight capacity (in kilograms)
  - f. Remarks
5. Click Save.

### 8.8.2. Delivery Drop ID Maintenance

To assign route to a delivery address (ID), select the Route ID from the 'Routes' page. The delivery ID that originates from the Warehouse will list.



1. Click on the Delivery ID to be assigned to the Route ID
  - a. The Delivery ID is already assigned, clicking on it will trigger a prompt "Clear defined route?"

- b. If Yes, the Route ID and Drop # will be cleared and it can then be re-assigned.
- 2. The Route ID and Drop # will be updated
  - a. If the Drop Number is blank, the Drop # is automatically assigned – they will be in interval of 10.
    - i. This is to facilitate insert of drop between already assigned drops
    - b. To insert a drop between 2 existing drops, specify a drop number between the drops
      - i. Click the Delivery ID to be inserted.
  - 3. To change to another route to assign, switch back to Routes page and select the required Route.
    - a. Repeat 1 and 2

To check the drops in an assigned routes, click 'Route ID' button under Order By. The grid box will be re-listed in order of the Route ID-Drop#.

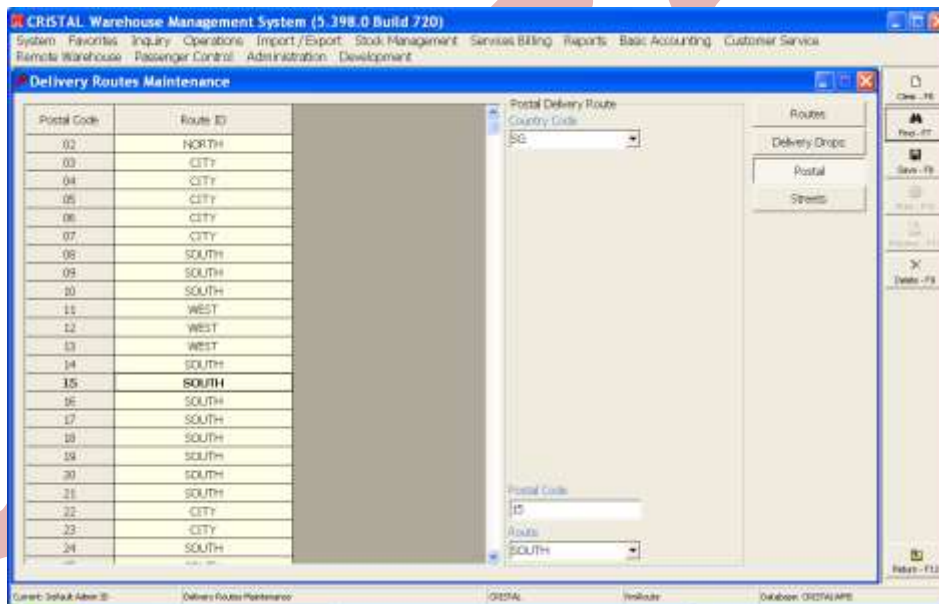
**8.8.3. Delivery Route by Postal Code**

The function is created to facilitate sites that manage their delivery routing based on the postal (zip) code. The function enables users to assign and maintain the route for each post code. The number of digits of the postal code to be used must be standardised. For example, although the postal code of Singapore is 6, the first 2 digits, which form the original postal codes, is typically used as a routing. The postal code delivery routing is country specific.

The data is used as default in Customer Profiles | Delivery Address. When the Country and Postal Code are specified, the system read and default the Route when the cursor lost focus from the Postal Code textbox.

To update:

- 1. Select the Country Code
- 2. Input the Postal Code



- 3. Select the Route
- 4. By click the drop arrow button
- 5. Click Save.

To change the Route of a Postal Code

- 1. Click the row in the grid box
- 2. The Postal Code and the Route will be populated.
- 3. Change the route
- 4. Click Save.

The Route specified for a postal code ID and its matching Despatch Station will be propagated (updated) to the Customer Delivery.

**Notes**

When updating routing using Postal Code, the Drop Sequence will not be assigned.

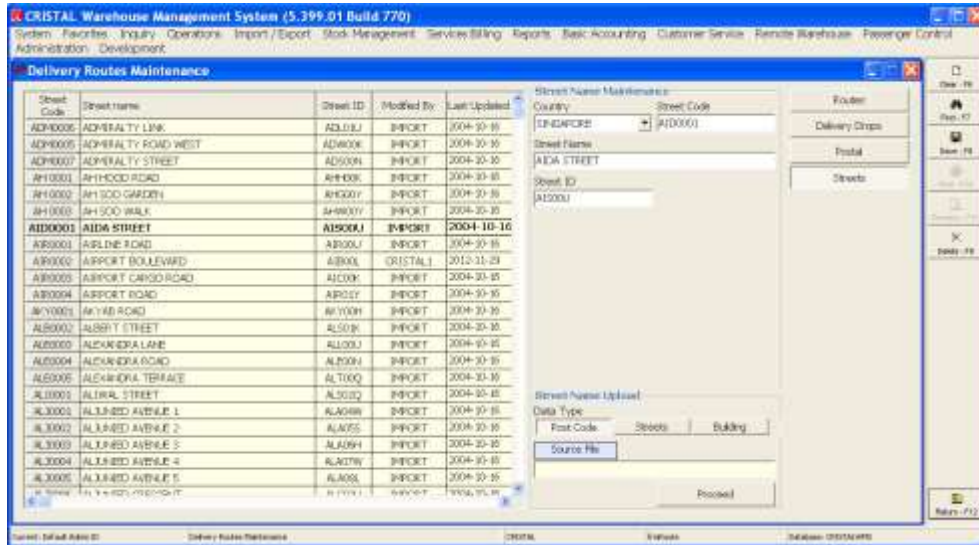
Note the Route ID and its matching Despatch Station in the Customer Delivery will be overwritten if a route is defined, for example, to '127' and then follow by '12'. This is because the updating routing in Customer Delivery is based on matching prefix of Postal Codes.



**8.9. Street Maintenance**

This is originally provided and designed for CRISTAL Warranty Management and is incorporated to enable standardization of rand and street name. It is country specific.

The function caters for manual entry of street names and via upload. The current upload function is based on interface file structure as provided by SingPost – Singapore postal service.

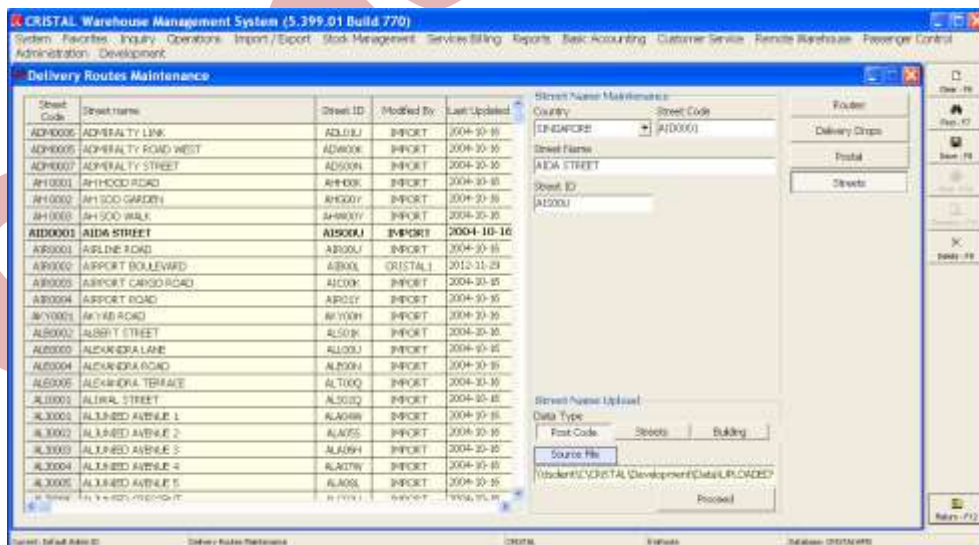


**8.9.1. Manual Entry**

To add / update street names:

1. Select Country ID
  - a. The existing streets will be listed
2. Input Street Code, Name and ID (this is based on SingPost convention)
3. Click Save
  - a. The list will be reloaded if successfully updated.
4. Repeat as required

**8.9.2. Uploading Street Name**



SingPost provide a number of interface formats:

1. Post Code
2. Street
3. Building

To upload

1. Select Country ID
  - a. There is no country code in the interface data file



2. Select the Data Type
3. Specify the Source File
4. Click Proceed button

CRISTAL

## 9. WAREHOUSE OPERATIONS

The functionalities that are grouped as Warehouse Operations are

1. [De-Kitting Order Entry](#)
2. [Kitting Orders Entry](#)
3. Multi Orders Picks
4. [Pick Zone Transfers](#)
5. Replenishment Transfers
6. Warehouse Tasks
7. Warehouse Task Manage

Their primary function is to manage the warehouse operations.

Please refer to the relevant sections for topics that are hyperlinked.

### 9.1. [De-Kitting Order Entry](#)

### 9.2. [Kitting Orders Entry](#)

### 9.3. [Pick Zone Transfers](#)

Follow hyperlinks

### 9.4. Multi Orders Picks

This function is first introduced in Build 833.005. The UI is optimised for touchscreen monitor.

This is further enhanced in Release 5.400 Build 868 to facilitate hybrid batch-discrete order picking

Function is designed to facilitate picks operations of orders of small items which are typically stored in hand reach storage locations.

The function is further enhanced to batch or wave picks a number of orders with (high level of) common items. This is facilitated by displaying the number and percentage of commonality of orders against the orders with the most items.

This feature is introduced for use with pick carts (which CRISTAL Solutions can provide if required) similar to below:



To simplify the function, a number of limitations is deliberately incorporated:

1. Orders are expected to be full picks with no exception
2. Partial or 'no-picks' is not permitted
3. Each location is required to hold only 1 items – in effect a Pick by Location function
  - a. If attributes controls, such as Item Size, Color, Class, they are preferably in separate locations.
    - ii. This is however not mandatory with the latest enhancement, though separate location is still preferred
  - b. No attributes input is required such as Serial Number, Catch Weight...
4. The maximum number of orders to be picked is limited to 6, but dependent on the screen width
  - a. This is not a mandatory limitation with the enhancement.
5. Order Numbers must be of alphanumeric only and with no space in between, preferably not more than 8 characters

The function is designed for use on a tablets or a desktop mounted on a trolley, preferably with touchscreen monitor – the grid box rows' height are increased to facilitate finger touch.

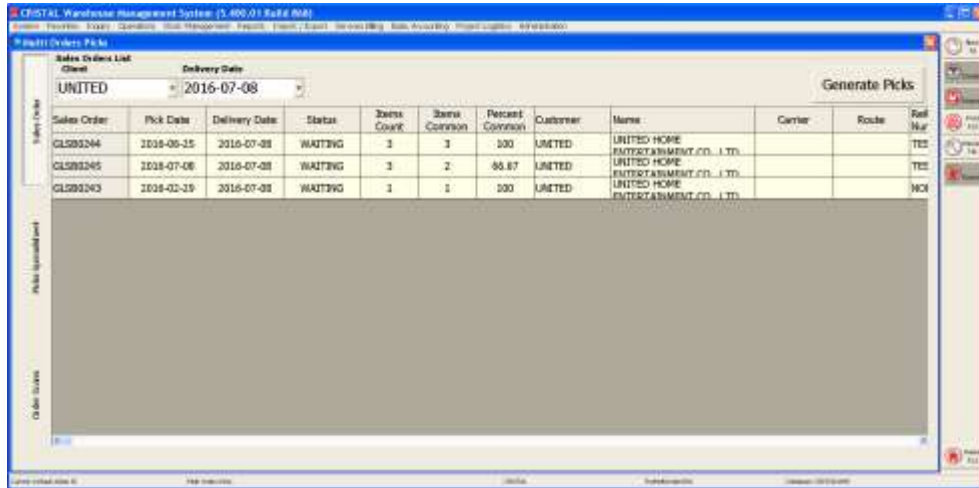
Scanning of Sales Order number is incorporated with the enhancement to facilitate picks confirmation.

**9.4.1. Function**

The function comprises of 3 pages, controlled by tab buttons

1. 'WAITING' picks sales orders
2. Picks requirement (with touchscreen picks confirmation)
3. Combination of Picks requirement with order scan confirmation

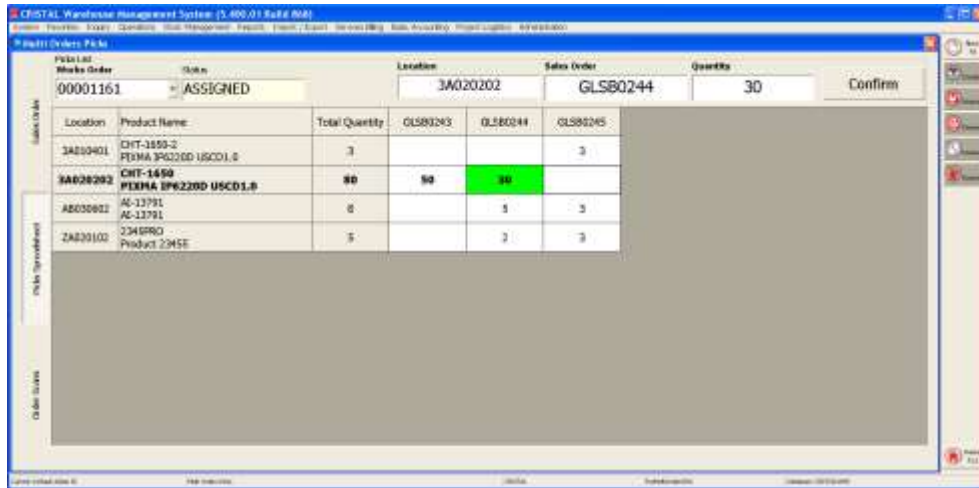
On selection of the Client and Delivery Date, sales orders that are in WAITING or BACKORDER status are listed, sorted in sequence of Percent Common in relation to the first order – which is the order with the most required items.



1. Users select the order to be picked by double click on the sales order
  - a. Selected orders will be bolded.
  - b. There is no limit incorporated on the number of orders can be selected, but for practical purpose, 6 to 7 orders are advised, if using the touchscreen pick confirmation mode as users will need to scroll the display when too many orders are selected for picking
  - c. Print the Sales Order Label to label the carton / packing that is assigned for the selected order



2. Click on Generate Picks command button to trigger the processing – this effectively generate a wave pick work order.
3. The Works Order will be displayed in the Works Order combo box and the page will be switched to the Picks requirement page
4. The picks are displayed as follows:

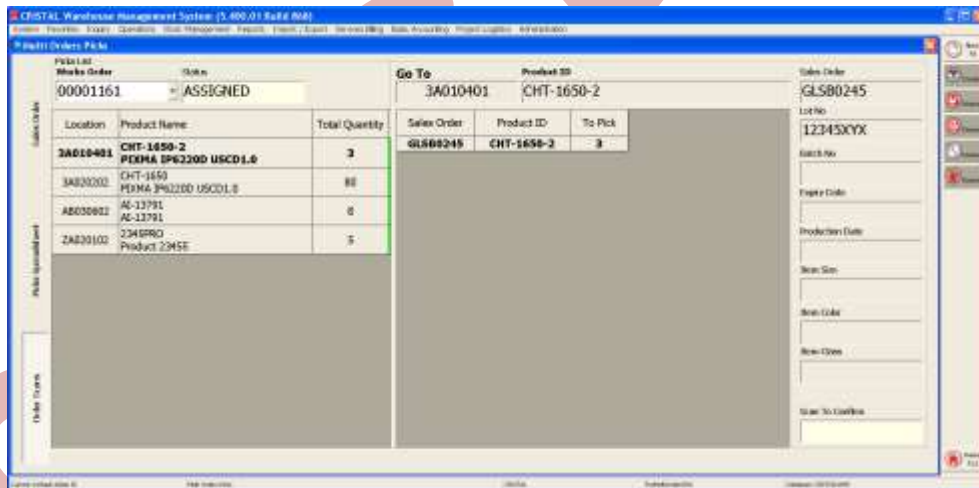


- a. The listing is sorted by Location sequence with the Total Quantity showing the total requirement and individual order's requirement by columns.
5. To confirm picks from a location for each order, double click in the quantity in each cell.
  - a. The cell will be blanked when the confirmation is successfully processed.
6. After all the picks are confirmed, click New to return to the orders page.

To continue from a partial picked works orders, click on the Dropdown button at the Works Order and select the required works order from the popup windows.  
The process to confirm is as item 5 above.

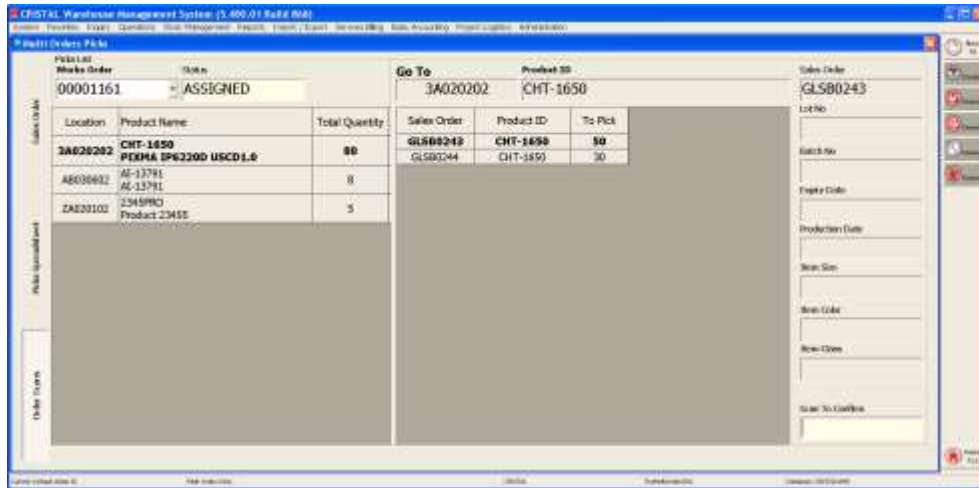
The option to use scanner to confirm a picks is added in Build 898.

Selecting the tab button 'Order Scan' bring a second section which list the order to be picked for the first location.



1. Go to the location
2. Pick the Product ID (with the required attributes, if applicable).
3. Scan the sales order for which the item is pick for to confirm the pick

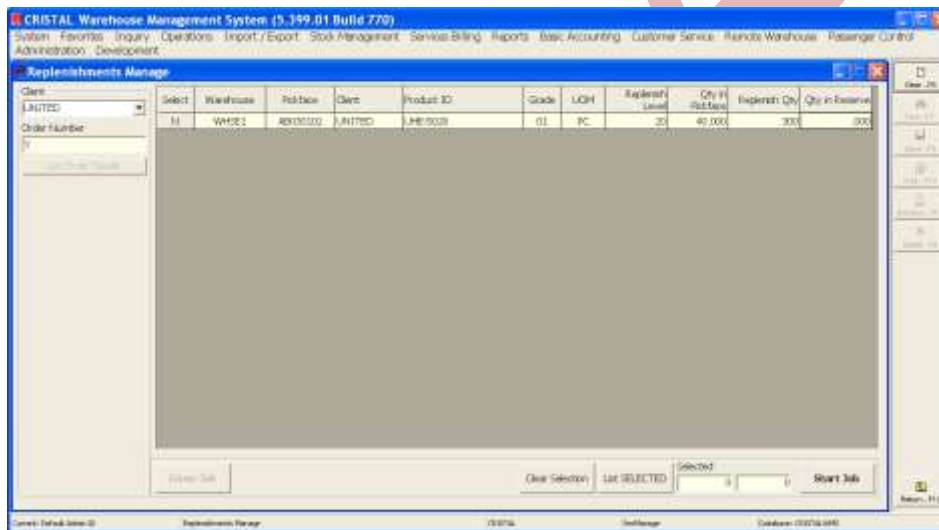
On completing the list of order, the completed picks will be removed from the first section and the next location requirement will be listed in the section:



Repeat until all picks are completed.

### 9.5. Replenishment Transfers

In CRISTAL WMS, the replenishment function is an automated. Namely, when a pickface depleted the stock balance in the pickface, the system will automatically generated a replenishment task to have the pickface top up.



Replenishment Transfer is to facilitate operations to manage workflow by triggering the system to generate replenishment tasks and having pickfaces top up during low activity period to prepare for next picking cycle.

The Replenishment Transfer UI show list of pickfaces to replenish:

1. Product ID
2. Grade
3. UOM
4. Quantity in Pickface
5. Replenish Quantity
6. Quantity (available) in Reserve.

To generate replenishment tasks:

1. Select the pickfaces to be replenished by clicking on the row
  - a. Ensure there are stock in the reserve for the replenishment
  - b. The number of rows selected is shown in Selected textbox
    - i. Click 'Clear Selection' to set selected to 'N' to restart
    - ii. Click 'List SELECTED' to show only rows that are selected
2. Click 'Start Job'
  - a. Replenishment tasks will be generated into the work pool (stock movements table)

The tasks are to be processed via [Warehouse Tasks](#).

**9.6. Warehouse Tasks**

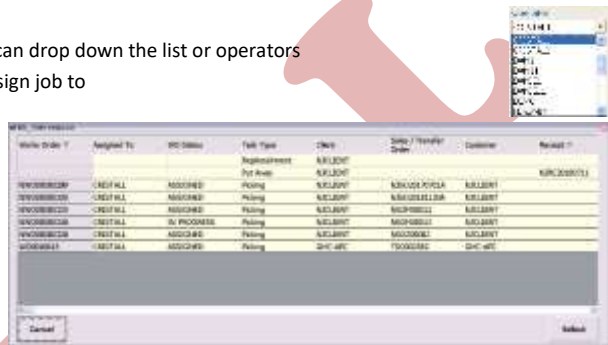
The Warehouse Task proper is a multiple functions tasks confirmation:

1. Putaway
2. Picks
3. Transfers
4. Real-time Stock Count

It is designed as a single UI (screen) entry functions to minimise complexity for the warehouse operators as they would need to contend (familiarize and work) with only 1 UI.

The function is designed for multi-purposes:

1. Automate the assignment of works
  - a. When the operators open the UI, the system will display a pending works order, if available, or assign the next outstanding order from the work pool (stock movements table)
  - b. The works order, if newly assigned, can be configured to be automatically printed.
2. Enable Supervisor to manage and assign
  - a. In the Supervisor mode, supervisor can drop down the list or operators
    - i. Select the operator to assign job to
  - b. Select the works (by receipt number or sales order) that is to be assigned by click on the Dropdown button on the right of the Works Order # combo box
  - c. Print the works order as required
    - i. A number of different templates are enabled – check with your implementation consultant if required.
    - ii. If the operations is using wireless handheld devices, the works order would be retrieved and displayed on the devices
3. Allow the operators to select the works
  - a. In Operators mode, the Operator combo box would show only the operator ID – meaning it would not allow selection of other operator
  - b. As in Supervisor mode, click the Dropdown button at the Works Order # and select the works to process and print the works order
    - i. Alternatively, use wireless handheld devices to retrieve required works order.
4. The displays for the different tasks (or moves) are similar as follows:



In Build 5.401.908.036, the display of item / stock attributes is changed from textboxes to grid box to facilitate future enhancement and customization. The change enabled adding of new control, when required, without need to modify UI and replace EXE.

In 5.401.908.047, function is added to enable amendment of allocated picks quantity that may arise after sales orders have been release and processed for picking.

- a. Putaway



- b. Picking





c. Replenishment



d. Transfer



The Confirm Tasks and Confirm ALL command buttons are disabled if the Client has been setup for adhoc services billing. To confirm works order:

1. Select the Operator
2. Select the Works Order #
  - a. Print the Work, if needed
  - i. Each movement type has its own works order template
    - For picking, there are 2 type of picks – Discrete and Batch or wave
    - Each has its own format
      - Batch Picks works order

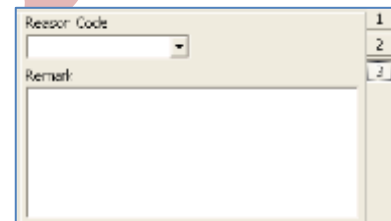
**Picks Order - Multi-Orders**

2020-09-22 Page 7 of 7

Order No	Location	Product ID	Product Description	Quantity	TOTAL	09/02/2020	09/03/2020	09/04/2020	09/05/2020	09/06/2020	09/07/2020	09/08/2020	09/09/2020	09/10/2020	09/11/2020	09/12/2020	09/13/2020	09/14/2020	09/15/2020	09/16/2020	09/17/2020	09/18/2020	09/19/2020	09/20/2020	09/21/2020	09/22/2020
77	00000001	1128220000	Stock Order 01	10.00	10.00																					
78	00000001	4932220000	Stock Order 01	2.00	2.00																					
79	00000001	0204470000	Stock Order 01	20.00	20.00																					
80	00000001	1128220000	Stock Order 01	50.00	50.00																					
81	00000001	0722220000	Stock Order 01	10.00	10.00																					
82	00000001	0204470000	Stock Order 01	91.00	91.00																					
83	00000001	4932220000	Stock Order 01	13.00	13.00																					
84	00000001	4932220000	Stock Order 01	2.00	2.00																					
85	00000001	4932220000	Stock Order 01	3.00	3.00																					
86	00000001	4932220000	Stock Order 01	6.00	6.00																					
87	00000001	1128220000	Stock Order 01	18.00	18.00																					
88	00000001	4932220000	Stock Order 01	20.00	20.00																					
89	00000001	0722220000	Stock Order 01	40.00	40.00																					
90	00000001	0722220000	Stock Order 01	80.00	80.00																					
91	00000001	1128220000	Stock Order 01	200.00	200.00																					
92	00000001	0722220000	Stock Order 01	54.00	54.00																					
93	00000001	1128220000	Stock Order 01	203.00	203.00																					
TOTAL Quantity:					1,441.00	1,441.00	573.00	6.00	203.00	115.00	1,866.00	5.00	6.00	8.00												

C:\CRISTAL\Warehouse\Reports\PickOrder\PickOrder.rpt

- Up to 10 orders can be picked at the same times with the works order
3. If Confirm command buttons are disabled, click on [VA Services](#) and update any adhoc services performed
  4. Click Confirm ALL if there is no exception to confirm the works order
    - a. This is appropriate only if no Check Digit entry is required
  5. Else
    - a. Select the task/activity to confirm
    - b. Input the Quantity (Loose)
    - c. Select Tab 3 button
      - i. Specify the Reason Code for the exception
        - When confirm Picks, if the Reason Code is CANCELLED, the sales order line's status will be updated as CANCELLED even if there is quantity picked for the line – due to other tasks.
          - This is to and prevents the sales order lines to be process for picking again – as when CANCELLED, it is deemed not required anymore.
      - ii. Input comments in Remarks to facilitate future reference
      - iii. Specify Check Digit if required.
      - iv. Click Confirm Task.
    - d. Repeat a - c to confirm tasks that are exception to the listed.
    - e. Click Confirm ALL, if there are balance that have no exception



For Putaway and Pallet / Item Transfer, the Location is enabled

1. This is to enable operators to input the actual location that a pallet is being putaway for storage – in case a change need to be made
  - a. The command button on the right of the Location text box will open a window that list the locations in the warehouse
2. Note if there are multiple products on a pallet, all rows with the same pallet number must be putaway to the same location.

Note that the attributes text boxes are disabled from amendment.

If the specified product with the specified attributes is not available, it is necessary to confirm the task as 0 (zero) and reprocess the exception again. This is to conform to the stock control rules as defined for the client / product.

However, this situation is rare if the operations have adhered strictly to the operational disciplines as required in warehouses.

The other functionalities available in the Warehouse Tasks are

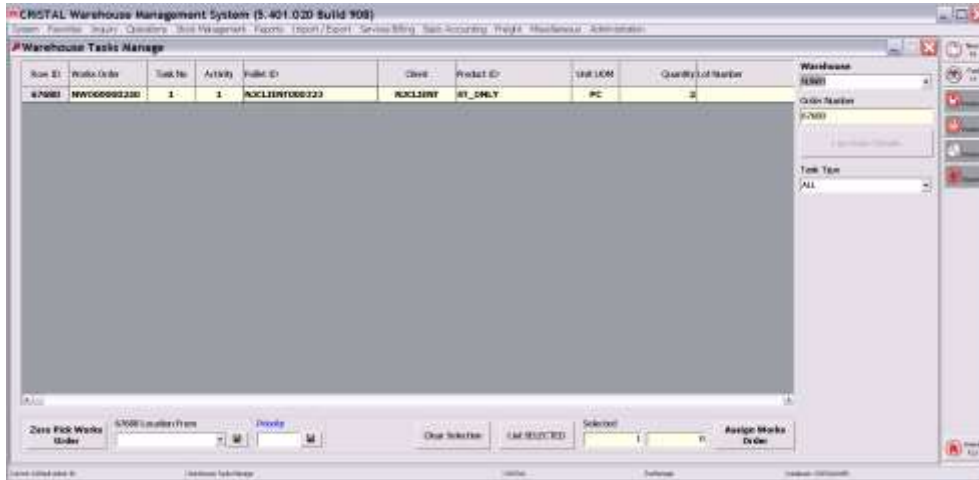
1. Pallet Label
  - a. This print despatch label for Picking and pallet number label for other tasks
2. Operator WOs
  - a. Print a consolidated works order of all pending works orders that are assigned to the displayed operator
3. Item Labels utility
  - a. See [Item Labels](#)

### 9.7. Warehouse Tasks Manage

In Build 5.401.020.908, the Start and Close Job command button is enabled as 'Assign Works Order' and Zero Pick Works Order' respectively.

The objective of the function is to enable supervisors to


1. Change location of a task as may arise in operations
2. Upgrade the priority of a task in an wireless handheld devices based operation
  - a. To force tasks to be assigned first over others




3. Assign Works Order
  - a. This enable user to assign unassigned warehouse tasks to themselves – assuming they are enabled to perform works in the for the Client and in the Warehouse.
  - b. Assigned works orders will not be affected.
4. Zero Pick Works Order
  - a. User can cancelled an assigned works order by zero picks the works order.
  - b. No action will be taken if the Works Order is empty.

#### 9.7.1. Change Location

To change a pick's location to another

1. Select the task to be re-allocate by click on the row in the grid box
  - a. The Location From will be prefixed with the Row ID
2. Specify the new location to be picked from
  - a. Click the Dropdown arrow to list locations that have the require product ID\
    - i. The onus is on the operator to select the location that have adequate stock to meet requirement
  - b. The new location cannot be the original location unless it is enabled in Client Profiles | UDF | Miscellaneous | Warehouse Tasks – Enable Same Location Change
3. Click the  command button on the right of the Location From combo box to effect the required change

#### 9.7.2. Change Priority

1. Select the task to be re-allocate by click on the row in the grid box
2. Specify the priority
  - a. Priority 1 – highest, priority 99 - lowest
3. Click the  command button on the right of the Priority text box to effect the required change

Note that while Change Priority allow for multiple rows to be selected and update, Change Location can be effected only on a single row at a time.

## 10. KITTING MODULE

The function Bill of Material setup and maintenance is moved and integrated into Product Definition to ease product data maintenance in Build 830,

Kitting module is being revamped in version 5.395.3d

In prior version the kitting utilise the Picks, Check In and Putaway together Purchase Order to process and manage the kitting operation.

This has proved to be tedious and causes some undesired effect on the 3PL services billing.

Two new movement codes, K+ (Kitting movement) and K- (De-kitting movement), are introduced to facilitate the revamp of the functions together with Relocation movement.

In addition, instead of the Packing Station, locations with zone type WIP are introduced to hold the components stocks that have been assigned for the kitting. In the former, the components are no longer reflected in the inventory even though they still in the warehouse and yet to be consumed.

The required components stock are transferred or Relocated to the assigned kitting location in place of Picks.

The use of location enabled the components stock to be reflected in the various stock query functions. However, they are not available for allocation to meet order requirement.

In this approach, the stock can be made available to meet urgent order requirement by simply transfer the stock to storage or pick-pack locations. This eliminates the need of a 'reverse transaction'. And they can be replaced subsequently when new stock arrived.

In any kitting and de-kitting, there is a need to know the components needed to kit or de-kit a kit set. This are be defined in the Bill of Materials – an existing function.

### 10.1. Configuration for Kitting Function

To enable the kitting function, the following must be configured / set up prior to using the function:

1. WIP Location
  - a. Locations to be used as kitting locations / stations must be defined.
    - i. Define a zone with zone-type 'WIP' using Zone Maintenance
    - ii. Create the required locations using Location Setup
2. Define the Kitting Order numbers series
3. Define Bill of Materials for each kit set code

#### 10.1.1. Limitation

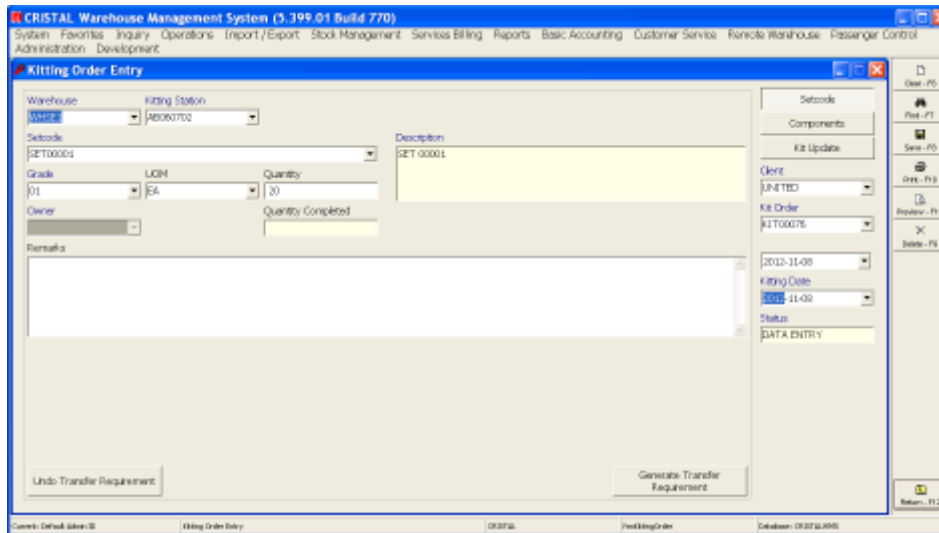
Due to complexity involved, the function does not cater for kiting and de-kitting of serial / carton numbered controlled products.

### 10.2. Kitting Order Entry

The Kitting Order Entry is designed as a single user interface for kitting. It comprises

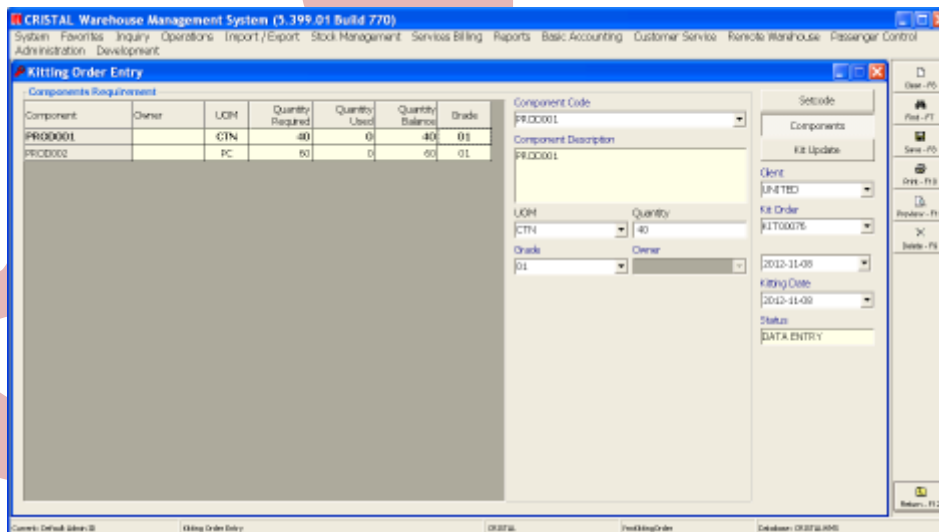
1. Creating a kit order
2. Generating the components required
3. Processing the kit order to generate the Transfer movements to transfer the required components to the Kitting Stations
  - a. The Transfer tasks are generated into stock movements which are to be processed with Warehouse Task or the RF devices.
4. Updating of completed kit set inventory
  - a. This will deplete the stock of the components in the kitting station on Posting

**10.2.1. Creating Kit Order**



To create a new kit order

1. Select the Kitting Station
2. Select the Set code to be kitted
3. Specify the UOM and Quantity required
4. Click Save
  - a. A Kit Order number will be assigned
  - b. User will be prompted whether to Generate Components Requirement
  - c. On Yes, the required components will be generated.
  - d. If the components requirement have been prior generated, it will be overwritten
5. Click Components to view or amend components, if required



- a. Note that the depletion of components is based on the defined BOM
    - i. Additional components specified will not be depleted by the completed kit set
    - ii. Reducing the components quantity will prevent the completion of the kit order
6. Click Post to generate the Transfer movements
  - a. The Transfer task is to be processed via [Warehouse Tasks](#) to move the stock to the Kitting Station

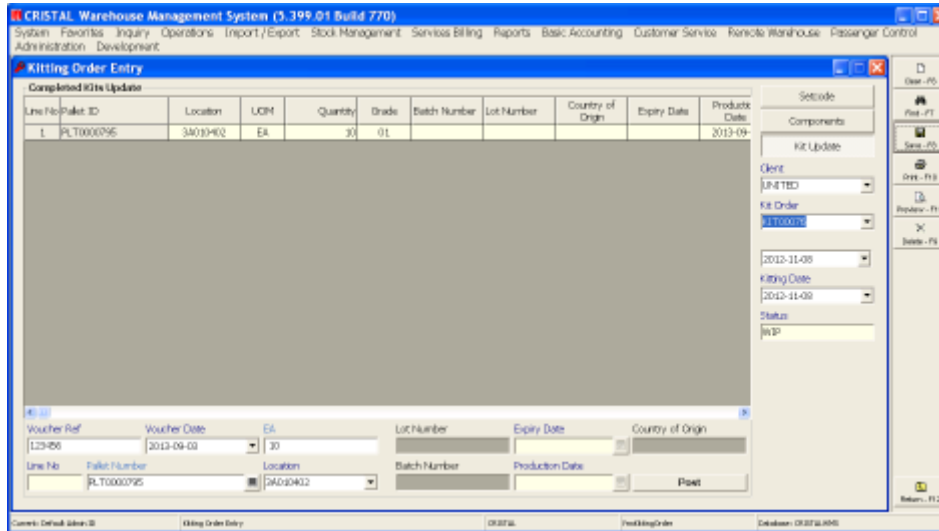
**10.2.2. Updating Completed Kit Set**

When kit set are completed, it is necessary to update the quantity of completed set in the Kit Update, partially or in total.

To update the kit set

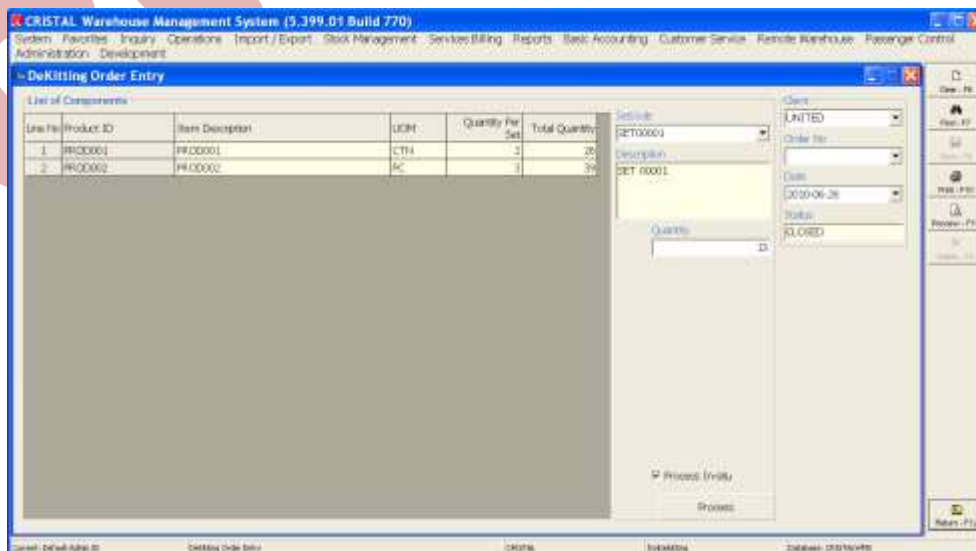
1. Specify the pallet number

2. Specify the quantity on the pallet
3. Specify the Voucher Reference and Date
4. Specify the location that the pallet is being stored / putaway
  - a. If the storage location is not specified, the completed kit set will be updated as stored in the packing station
    - i. The stocks will NOT be available for allocation to sales orders picking
  - b. TRANSFER tasks will be created into the stock movements table.
    - i. They are to be processed via Warehouse Tasks function
    - ii. The stocks will become available once they are transferred and confirm into storage or pickface locations.



5. Input the Production and / or Expiry Date where applicable.
6. Click Save.
  - a. This save the record into the database but does not update the inventory
7. 'Post' the update record if OK.
  - a. The 'Post' update the will update the stock of the completed kit and depleted the stock of the components in the packing station.
    - i. The stock of the components must be adequate to meet the quantity of the completed kit set.
    - ii. The used quantity in the Components will be updated
  - b. The status of the Kit Order will be updated as 'CLOSED' once the completed quantity is equal to the required set quantity

**10.3. De-kitting Order Entry**



The de-kitting order is a function to disassemble a SetCode or kitted set by breakdown to its component level.



In the process it reduce the stock of the specified set code and increase the stock of the components as defined in the bill of materials.

The assumption is the de-kitting process is non-destructive and all components are intact and are of commercial quality.

The current function performs the de-kitting in-situ – namely no physical operation is involved. The equivalent stock of the components is simply made available in the location the kit is in and the quantity of the set code depleted.

To de-kit a set code or kit set:

1. Select the Set code
2. Specify the quantity to be de-kitted.
3. Click Process
  - a. The Order No will be assigned for tracking purpose.
  - b. The Status will be set to CLOSED
  - c. The stock of the specified set code will be depleted by the specified quantity
  - d. The equivalent quantity of the components will be updated.

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### 10.4. Report - Kit Order

This report is printed from the Kit Order Entry

CRISTAL Solutions Pte Ltd													
Client: UNITED HOME ENTERTAINMENT CO., LTD 2/4 Sornakkee Prakanphai Building Vohwadee Rangsit Tungsoyong Lak Si Bangkok 10210 THAILAND				Set Code	SET00001								
				Quantity	20.00								
				Req Date	2009-11-02								
				WHSE (Pack Station)	KT050100								
						<table border="1"> <thead> <tr> <th>ORDER STATUS</th> </tr> </thead> <tbody> <tr> <td>CLOSED</td> </tr> <tr> <td><b>KIT BUILT</b></td> </tr> <tr> <td>KT00027</td> </tr> <tr> <td><b>Order Date</b></td> </tr> <tr> <td>2009-11-02</td> </tr> </tbody> </table>		ORDER STATUS	CLOSED	<b>KIT BUILT</b>	KT00027	<b>Order Date</b>	2009-11-02
ORDER STATUS													
CLOSED													
<b>KIT BUILT</b>													
KT00027													
<b>Order Date</b>													
2009-11-02													
Components													
Line #	Item Code	Item Description	Owner	Grade	UOM	Quantity	Consumed						
1	PROD001	PROD001		01	CTN	20.00	20.00						
2	PROD002	PROD002		01	PC	60.00	60.00						
Kit Set Built:													
Line #	Pallet Number	Location	Quantity	Grade	Req Date	Lot Number	Batch No	Status					
1	PLT0000066	AB010101	10	01	2009-11-02			CLOSED					
2	PLT0000067	AB010102	10	01	2009-11-02			CLOSED					
			<b>20</b>										
CRISTALWMS							Page 1 of 1						
C:\CRISTAL\Development\Reports\Kit Order.rpt													

## 11. STOCK MANAGEMENT

Stock Management function is designed for housekeeping of the stocks. It comprises the following options:

1. Inter Warehouse Transfer
2. Ownership / Item Code Transfer
3. Pallet Relocation
4. Stock Adjustments
5. Stock Location2Location
  - a. Introduced in 5.398 Build 752
6. Stock Re-labeling
7. Stock Relocation

The UI for the following have been redesigned to simplify data entry

1. Pallet Relocation
2. Stock Adjustments
3. Stock Re-labeling
4. Stock Relocation

Functionally they remain unchanged.

### 11.1. Inter Warehouse Transfer

Inter-warehouse transfer is a feature designed to enable user to transfer from one warehouse to another.

Operationally, stocks to be transferred are:

1. Picked in one warehouse
2. Transported to the destination warehouse
3. Check In
4. Putaway

The process requires a sales order to be input, release for picking and the task of allocating stock and confirming of the tasks to be performed in source warehouse.

On arrival of the stock at the destination warehouse, the stock being transferred are being check in into the destination warehouse, and then putaway into the storage location.

These processes are combined in the Inter Warehouse Transfer

#### 11.1.1. Process

An Inter Warehouse Transfer order is created and the detail inputted – item and quantity required.

On release, the system will assign the stock to be picked (same as release of a sales order).

A pick order is generated and assigned to an operator which will pick and confirm the task.

On confirmation, if the destination warehouse resides in the same database, a receipt is automatically created.

Operator on receipt of stock would then check in the receipt and putaway the pallets accordingly to the assigned location.

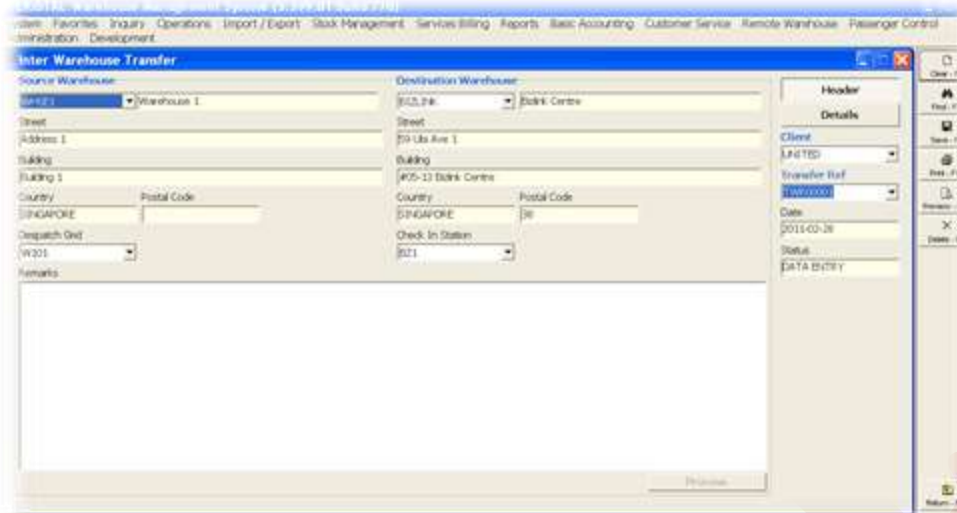
Thereby reducing the paperwork and data entry and reduce data entry error.

#### 11.1.2. Order Entry

To create a inter warehouse transfer order:

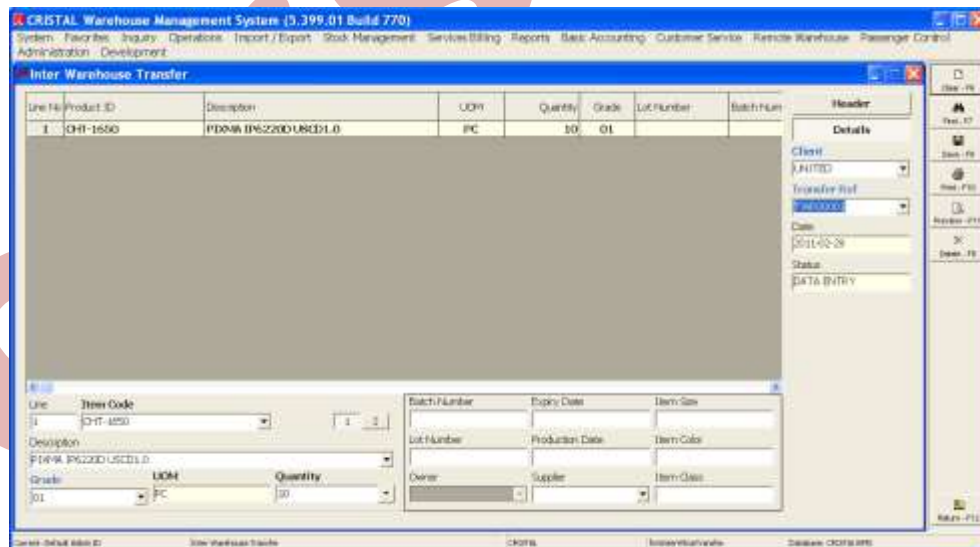
1. Select the client that the transfer order is for
2. Specify the Destination Warehouse (the source warehouse will be defaulted to the login user's warehouse)
3. Click Save to create order

Click Transfer Detail



To input the order detail:

1. Click on Transfer Detail button
2. Specify the Item required
3. Input the required Quantity
  - a. Check the Qty On Hand and Qty Available fields
  - b. Quantity specified above Qty Available, the unavailable quantity will automatically closed as no backordering is allowed in inter-warehouse transfer
4. Input other attributes, if required
5. Click 'Add / Update' to save line.
  - a. Repeat as required.
6. On completion, click Inter-Warehouse Order button
  - a. The Process Requirement button will be enabled
7. Click the Process Requirement
  - a. The order will be processed and picks task generated.



The rest of the process will be as normal – the pick tasks will be assigned to operators, under Warehouse Tasks, who would then confirm and despatch.

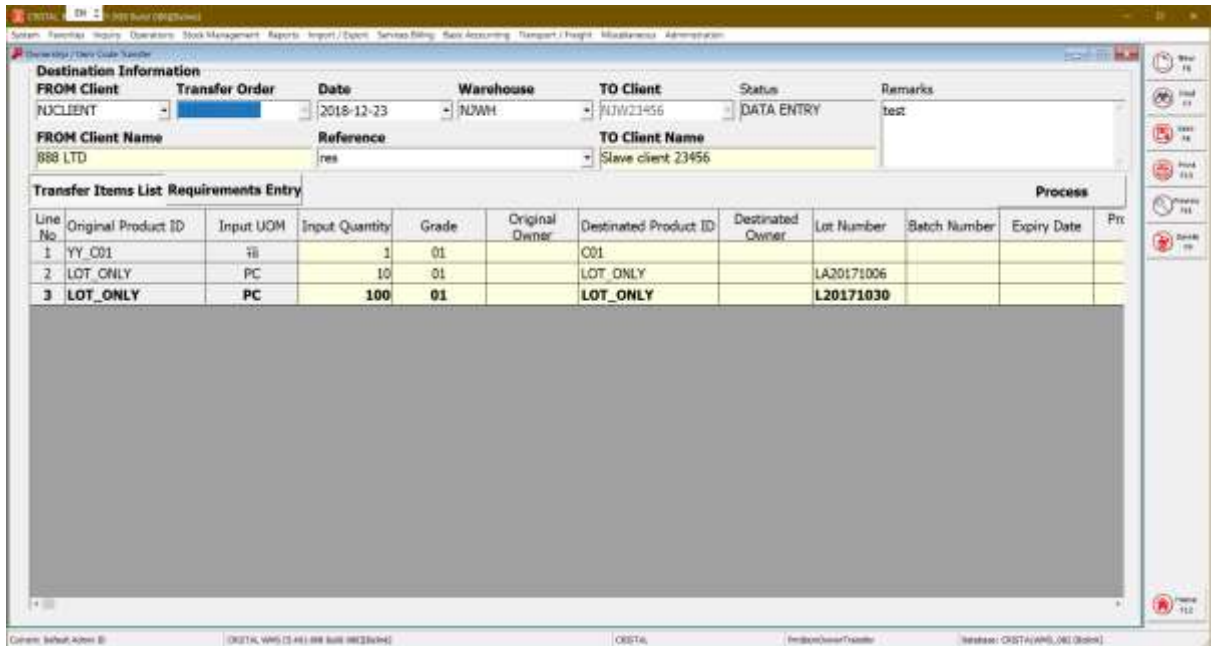
If the destination warehouse is within the same database, a receipt will be created with the same Transfer order reference.

The check in and putaway process is the same as receiving a new shipment.

### 11.2. Ownership / Item Code Transfer

An enhancement is incorporated in 5.400.868.33 to default the destination Product ID, Name, Grade and Lot Number to improve user friendliness.

This aims also to minimize data entry error in Licensed Warehouse where the 4 values cannot be changed during transfer. A validity check is incorporate during update (Save) to prevent accidental change by users. This check is activated if the Warehouse is flagged as Licensed Warehouse in Facility (Warehouses) setup



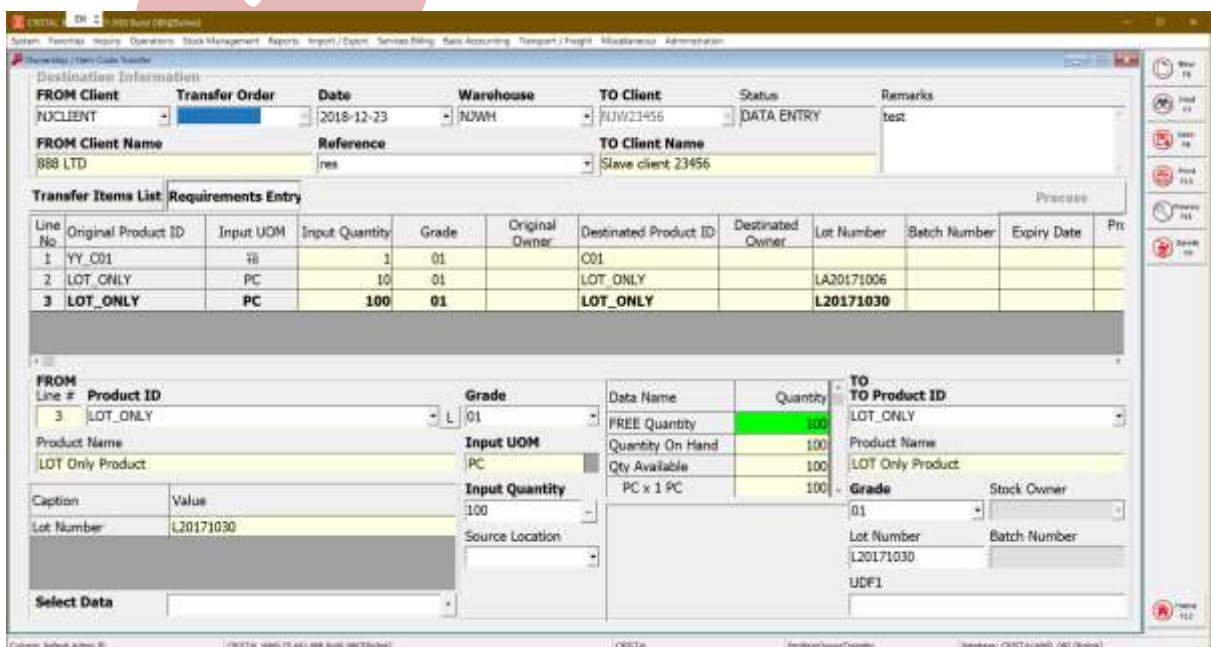
Ownership / Item Transfer is designed as a productivity tool to assist users in converting stock owned by one client to another or convert a product with one item code to another.

Typically, when stock is transferred from one client to another, the stock has to be picked and then re-check in and putaway to some other storage location. Similarly, when changing one item from one item code to another.

The Ownership / Item Transfer function is designed to carry out a system transfer. Namely, no physical movement is required. The system effects the transfer by creating within the system – the activities that is involved in a transfer – pick, check in and putaway into the original locations.

To effect a transfer:

1. Select the Client to transfer stock FROM
2. Select the Warehouse
3. Select the Client to transfer TO
4. Input put Remarks, if any
5. Click Save to create Transfer Order
6. Switch to the Detail



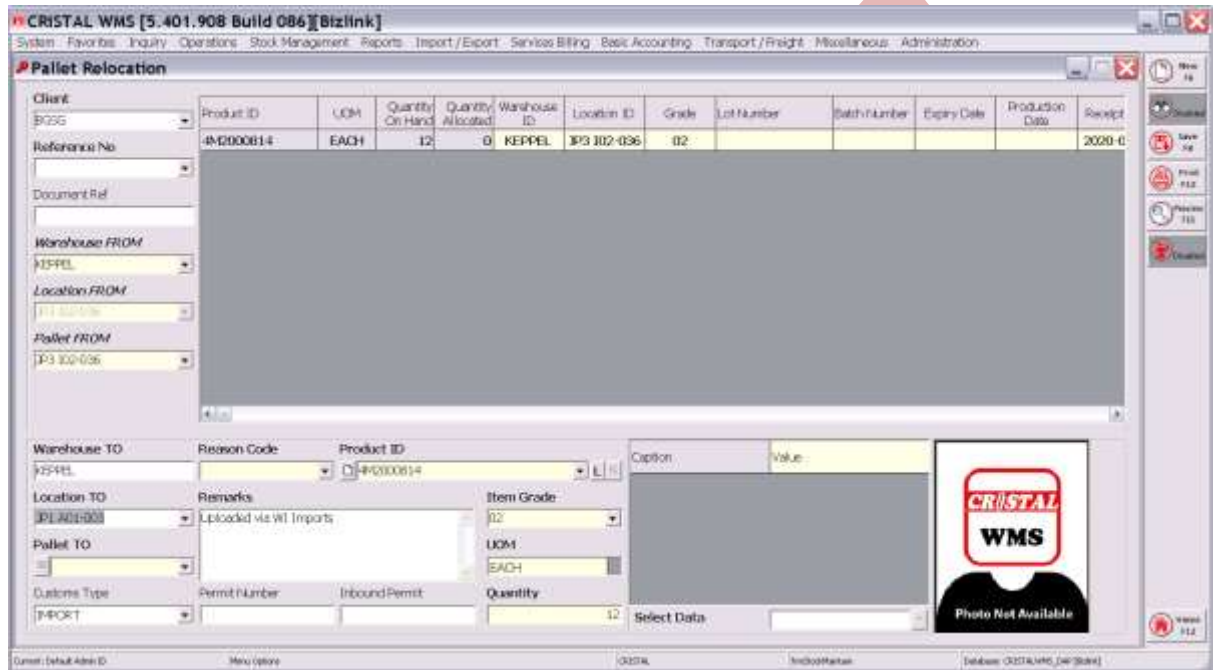
Update the product to be transferred by

1. Select the Product ID
  - a. The selected Product ID will automatically default to the TO Product ID together with Product Name and Grad
2. Change the Destination Product ID, if it differs from the source Product ID
  - a. A conversion of product id will be effected if they are different
3. Input Grade, UOM Quantity to be transferred
4. Specify other relevant attributes
  - a. If Lot Number is specified, it will be default to the TO Lot Number
5. Click Save
6. Repeat as required.

On completion of the detail entry, switch back to Header and click on the Process command button.

### 11.3. Pallet Relocation

The function enable user to move stock on a pallet from 1 location to another.



To update

1. Specify the pallet to be relocated
  - a. Select the Client
  - b. Select the Warehouse
  - c. Select the Pallet ID
    - i. Alternatively, select the Location first – this will shorten the list of pallet in the popup help list
    - ii. This item on the Pallet ID will be listed
2. Specify the Location ID (in Destination frame)
3. Click Save
  - a. A session Reference will be assigned
4. Repeat as required

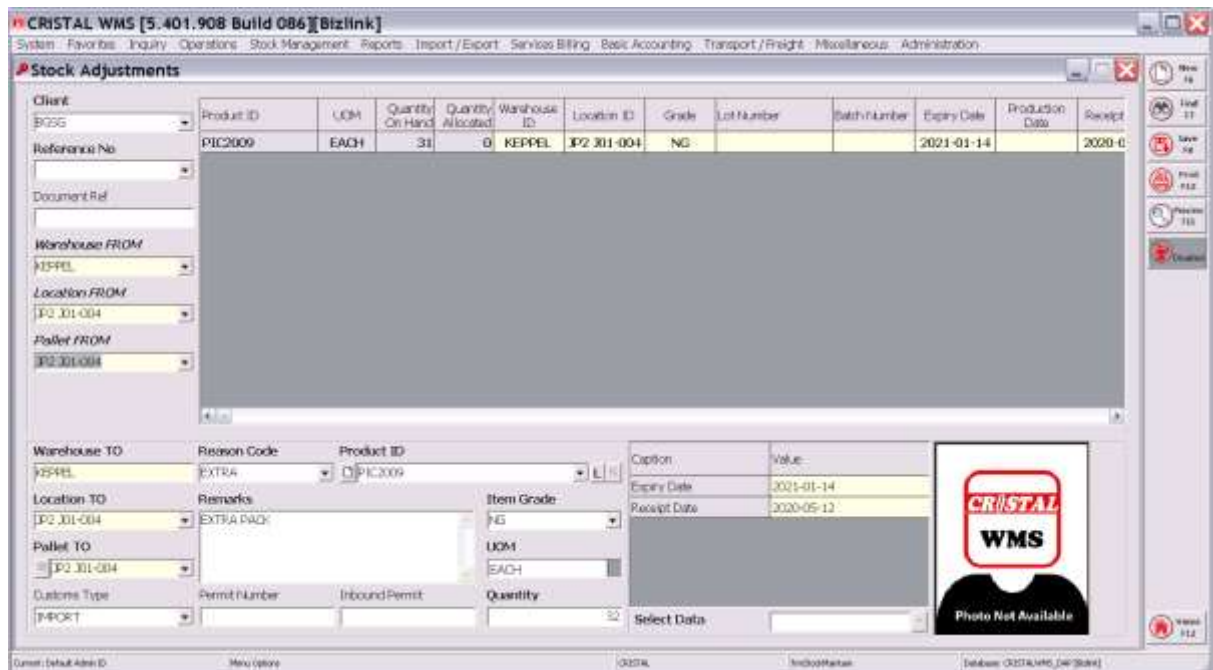
Note: Product attributes are not displayed in Pallet Transfer as they cannot be amended and can only display 1 product's attributes at a time.

Click Process command button to complete the transfer.

A report can be printed before clearing the Reference.



### 11.4. Stock Adjustments



Function is to enable users to correct stock discrepancies with physical.  
 The Stock Adjustments function allows from adding or deducting stock from the system record.  
 To update

1. Specify the record to be adjusted
  - a. Select the Client
  - b. Select the Warehouse
  - c. Select the Pallet ID
    - i. Alternatively, select the Location first – this will shorten the list of pallet in the popup help list
    - ii. This item on the Pallet ID will be listed
2. Select the row to amend
  - a. The data will be populate into the objects below
3. Amend the Quantity
  - a. This is the TOTAL quantity – not quantity to adjust
  - b. The system will calculate against existing record the quantity to be adjusted
4. Specify the Reason for the adjustment and Remark
5. Click Save
  - a. An authorisation box will popup, if configured, prompting for authorisation
    - i. The authorisation required is controlled at Client level – Client Profiles | UDF | Miscellaneous | Stock Adjustment - Authorisation Required – Y or N
    - ii. The authoriser ID must be different from the user ID that updating the adjustment
  - b. A session Reference will assigned
6. Repeat as required

#### 11.4.1. Adding New Product ID

To add new item to the pallet, click the button on the left of the Product ID combobox.

1. Input the product id
2. Specify the stock attributes
3. Click Save

### 11.5. Stock Location2Location

In Build 833.012, users is enabled to also filter selection by Product ID – in addition to Client  
 Stock Location2Location (relocation) is designed with the intention of replacing Pallet Relocation and, if suitable, Stock Relocation.

The function enables user to move stock in a location to another by simply double-click on the row in the grid box to move to move it to the destination location. The update is effected on real-time.

No partial relocation of a record is allowed.

A new pallet number is always assigned if the destination location is empty. Otherwise, the stock would be merged into the existing pallet.

A Document Reference is auto-assigned per session.

The function is Warehouse-Location dominant. Namely, it also allows multiple clients' stock to be relocated without having to process 1 client at a time as in Pallet Relocation and Stock Relocation.

It also simplified the merging of stock from multiple pallets/locations.



To effect relocation:

1. Specify the Warehouse-Location to be relocated FROM
  - a. Select the Warehouse From
    - i. It is deliberate that no Warehouse ID is defaulted
  - b. Select Location From to relocate from
    - i. The upper grid box will be loaded – if there is stock in the location
  - c. Select Product ID, if required
    - i. The upper grid box will be refreshed with the selected Client's stock in the location
  - d. Select the Client, if appropriate
    - i. The upper grid box will be refreshed with the selected Client's stock in the location
  - e. Select Product ID, if required
    - i. The upper grid box will be refreshed with the selected Client's stock in the location
2. Specify the Warehouse-Location to be relocated TO
  - a. The Warehouse TO will be default to the Warehouse FROM
    - i. This is to prevent relocate across warehouses
  - b. Select Location TO
    - i. If there is existing stock, they will be listed in the lower grid box
3. Double click in the row to be moved
  - a. A session Reference will be assigned by the system.
    - i. This Reference cannot be manually input or selected.
  - b. The relocation is updated immediately and the lower grid box will be refreshed, showing the stock that is just added.
    - i. Serial numbers of serial-controlled product will be transfer to the new pallet / location.
    - ii. Therein the rationale of enabled for whole quantity relocation only
  - c. Repeat 3b until all required relocation is effected.

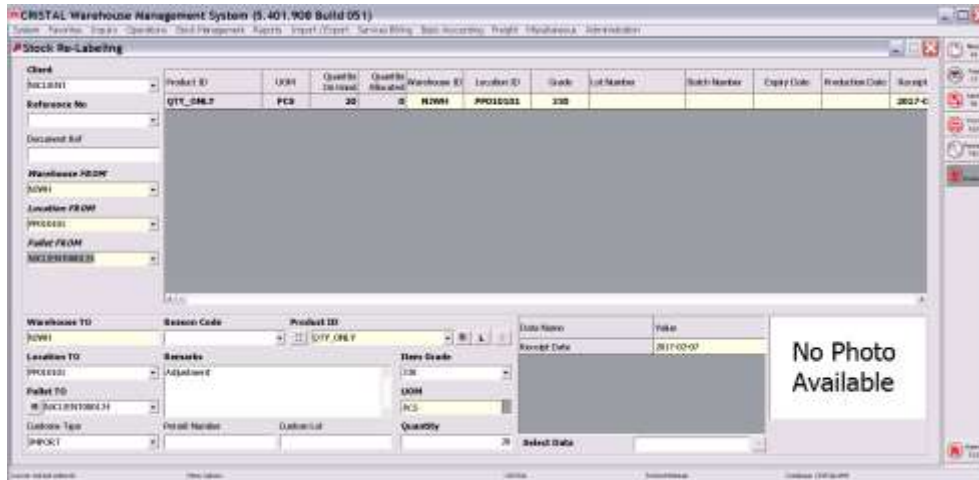
Note:

- Double Click on the lower grid box do not triggers reverse relocation. If a reversal is required, swop the Location FROM and TO and repeat process.
  - Ensure that that no stock have been allocated for picking as no partial transfer.
- All relocation is effected as pallet relocation moves. Minimal restriction is built into the function to keep it simple. Administrator must exercise caution on granting access to users.

### 11.6. Stock Re-labelling

This is renamed from Item Re-labeling to reflect the objective of the function.

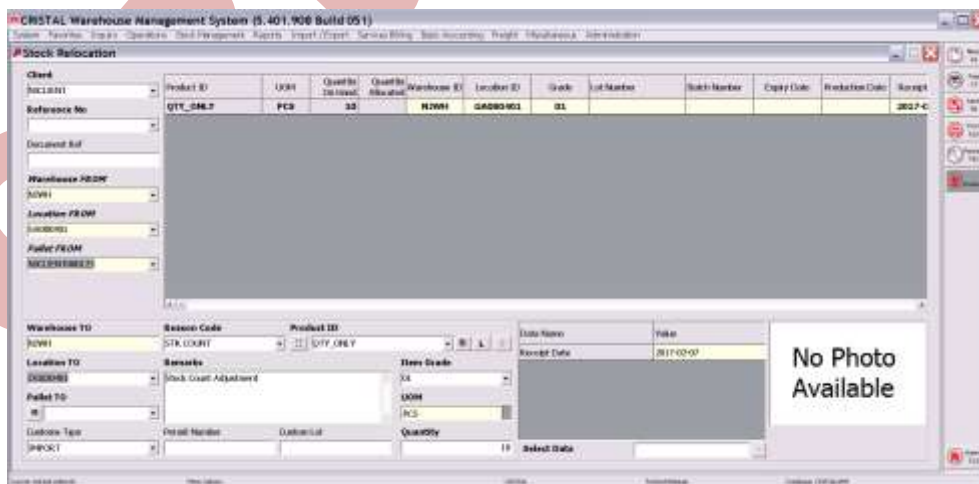
The function is to enable user to amend the attributes of the stock.



To update

1. Specify the record to be amended
  - a. Select the Client
  - b. Select the Warehouse
  - c. Select the Pallet ID
    - i. Alternatively, select the Location first – this will shorten the list of pallet in the popup help list
    - ii. This item on the Pallet ID will be listed
2. Select the row to amend
3. Specify the Reason Code and Remarks for the change
4. If the quantity to be relabelled is partial, amend the Quantity accordingly
5. Modified the appropriate attributes
6. Click Save
  - a. A session Reference will be assigned
  - b. The grid box will be refreshed with the amended record.
7. Repeat as required.

### 11.7. Stock Relocation



In Build 833.012 is enhanced to enable relabel of the attributes at the same times. This is to facilitate operation where stock need to be relocated after relabel.

However, it cannot be used to relabel stock without relocation. (Use Stock Relabel for the purpose.)

This is renamed from Item Relocation to reflect the objective of the function.

To update

1. Specify the record to be amended
  - a. Select the Client

- b. Select the Warehouse
      - c. Select the Pallet ID
        - i. Alternatively, select the Location first – this will shorten the list of pallet in the popup help list
        - ii. This item on the Pallet ID will be listed
    2. Select the row to amend
    3. Specify the location it is to be relocated
      - a. Select the Location TO
      - b. Specify the Quantity to be relocate, if partial
        - i. Else accept the quantity that is defaulted
      - c. Select the Reason Code
      - d. Input Remarks
      - e. Change stock attributes where applicable.
    4. Click Save
    5. Repeat as required.

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## 12. STOCK COUNT MANAGEMENT

The function is streamlined to improve support and maintainability by normalizing the tables to stocktake\_master and st\_stock\_count (detail) in Build 770.

CRISTAL Warehouse management system incorporates stocktaking and cycle counting functions to facilitate housekeeping in the warehouse.

The cycle count function is manual activate rather than automated to allow users trigger it during low activity period

It also facilitates stocktaking or stock comparison at host system by exporting stock balance for upload to the host system.

**The checkbox Blind Count (RF Stock Count), if selected, will initialize the Physical Count as 0 (zero) instead of system balance.**

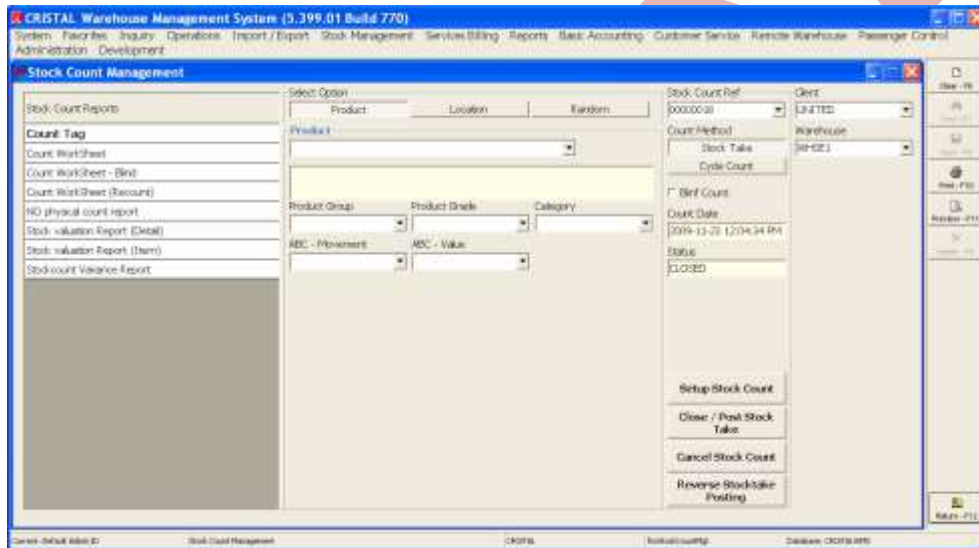
User is cautioned that any Count not updated (no input) is posted as Zero Stock.

### 12.1. Stocktake Options

The Stocktake option is being redesigned to enhance clarity of the option available for each of the Selection Method in 5.398 Build 689.

CRISTAL WMS provide for various options in carrying out a stocktake:

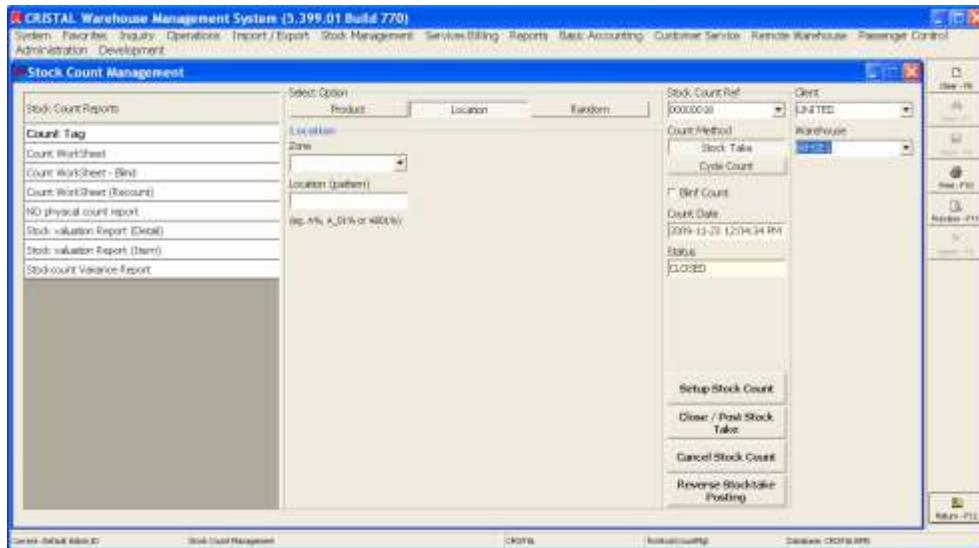
#### 12.1.1. By Product



User is further allowed to select a specific

1. Product code
2. Product Group
3. Product Grade
4. ABC – Movement group
5. ABC – Value group
6. Category
7. Or combination of above
8. Or none – which mean all Products

**12.1.2. By Location**

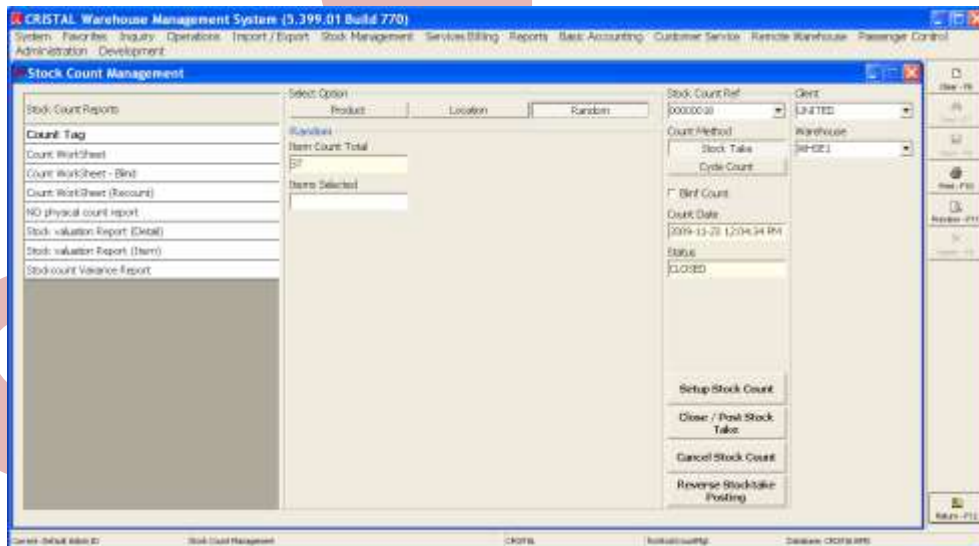


User has the options of

1. Warehouse
2. Zone
3. Location or prefix of the location address
4. Or combination of above
  - a. user need to ensure it is valid else no location will be selected

**12.1.3. Random**

A variation of the stocktake takes product code in which user specify the number of product code to be checked while the system select the product codes to check. The selection may include product code that has no stock.



**12.1.4. Conducting a Stocktake**

To start and conduct a stocktake:

1. Specify the warehouse
2. Select the Client
3. Select the Stock Take option
4. Specify the option and select criteria
5. Click Setup Stock Count
6. Print the required worksheet
  - a. Count Tag – 1 page per location (see appendix)
  - b. Count Worksheet – by aisle (see appendix)



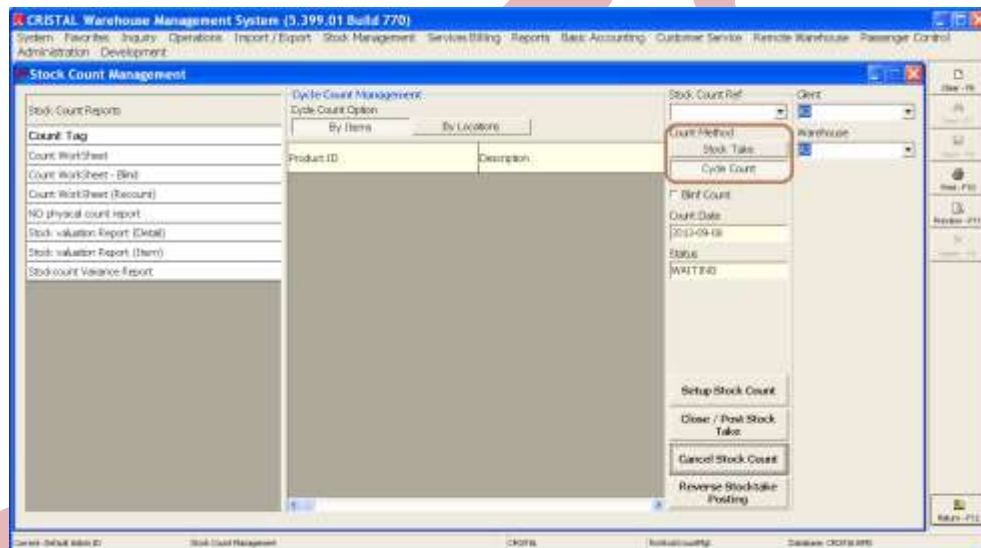
7. Perform the physical count
  - a. Record item found in location not in the worksheet in the space provided.
8. Input the count (see next section)
9. On completion of the count entry, generate the following reports to confirm the count and verify the variance
  - a. NO physical count report
    - i. Check for location that have not been counted or missing count entry
  - b. Stock count Variance Report
10. If stock count is correct, print
  - a. Stock valuation Report (Detail), or
  - b. Stock valuation Report (Item)
11. On completion of the stock, user have the option to
  - a. Close / Post Stock Take (Count)
    - i. A prompt will required user to response whether to post the variance or otherwise.
    - ii. On confirmation of acceptance of the stock count variance to Post variance
      - This synchronises the system stock balance with the physical stock count
      - Stock Adjustment entries are created in the movement history for all adjustments.
  - b. Cancel Stock Count

**12.2. Cycle Counting**

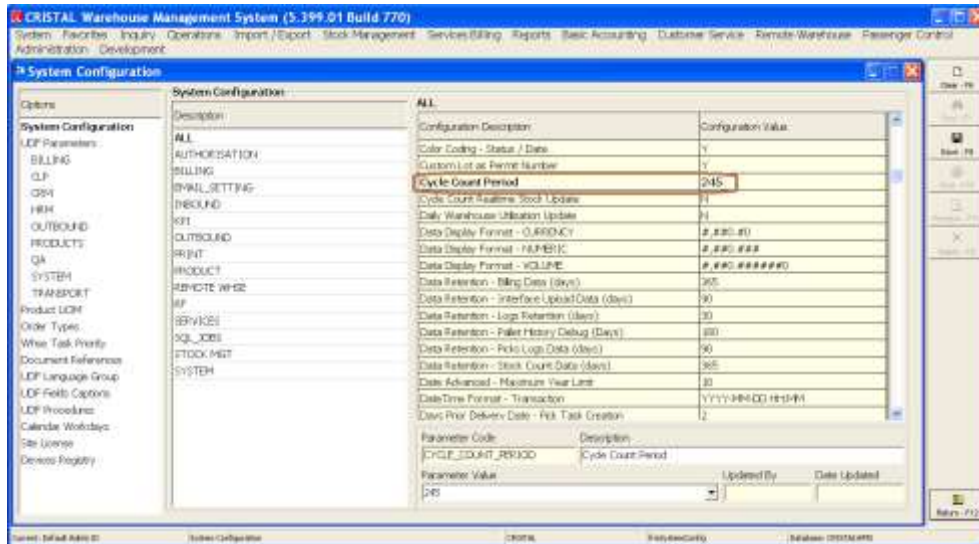
CRISTAL WMS enables cycle counting to be carried out either by Item Code (SKU) or location.

For SKU based cycle count, the cycle count can be based on activity, value or combination.

In cycle count, it is necessary to define the cycle count period (in number of working days) in which a count cycle is to be completed – namely everything is counted as required.



The cycle count period is defined in the System Configuration as shown.

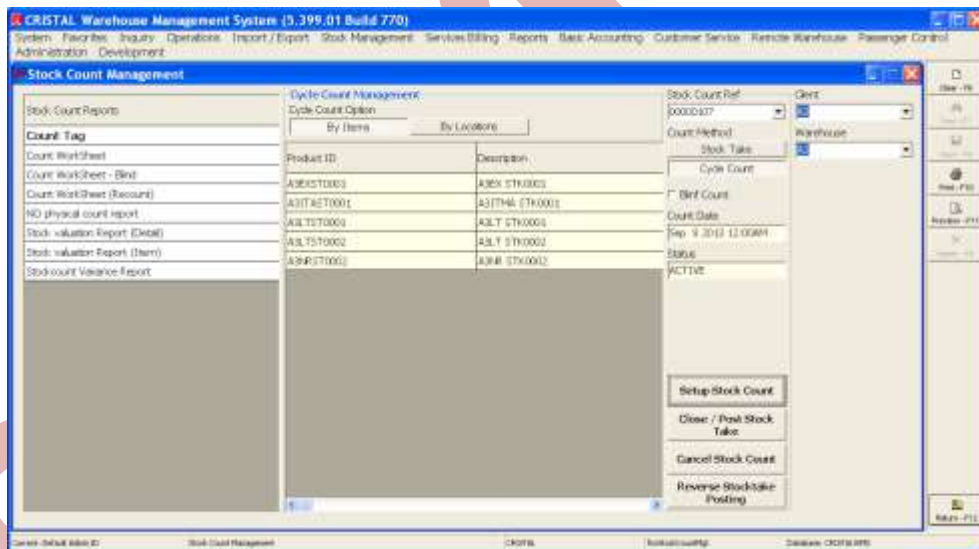


In addition, the Cycle Count Real-time Stock Update flags whether stock adjustment is to on real time – adjust on updating of physical or otherwise.

If it is flagged as 'N', the physical count entry will be posted to a table in the system for review before posting.

**12.2.1. Cycle Count by Item Code**

The system identifies item codes to be cycle-counted based on the Count Frequency, as specified in Product Definition for each item code and the Last Count date. The Last Count date is automatically updated by the 'Setup Stock Count' in the Stock Management.



Notes: When a Count is cancelled, the items that have been assigned for count will be reverted. Namely they will / can be re-selecting by the system for the next counts.

Note that the Cycle Count period specified in System Configuration is the number of counts to be performed to complete a cycle.

**12.2.1.1. Setting Up Cycle Count Frequency**

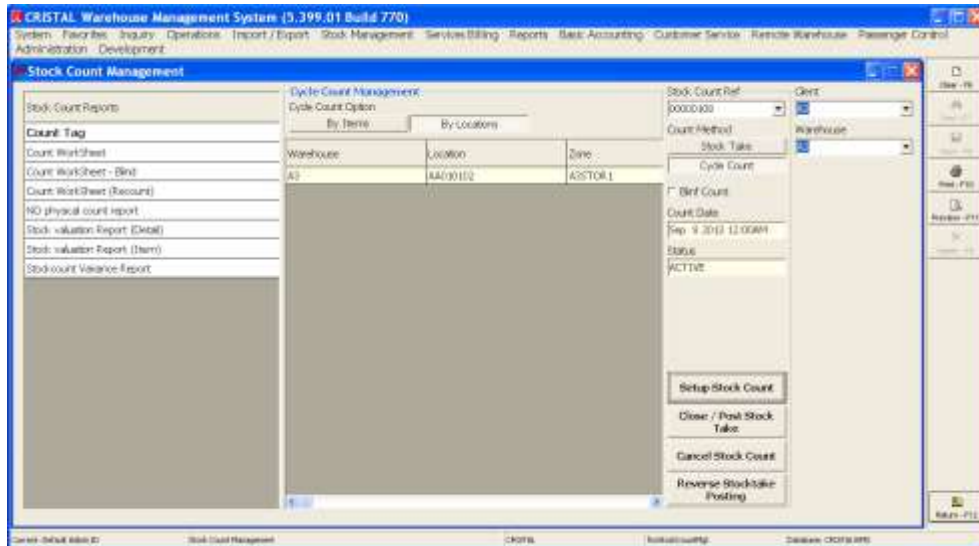
To facilitate the definition of the Count Frequency of the items, a utility is provided in the Administration | Administrator Tools -> ABC Class and Cycle Count Update.

The item codes are to be classified in ABC class by movements (Pick Frequency) and product value basing on FOB Cost.

(Refer to Miscellaneous Utilities documentation for details.)

**12.2.2. Cycle Count by Location**

Cycle count by location is available at Warehouse level only.



When the location cycle count is triggered, the system computes the total number of 'AVAIL' locations in the warehouse and divides it by the cycle count period to compute the number of locations to be counted. The locations are then identified from the locations matrix basing on the walk sequence in the warehouse. Empty location will also be selected. The count task is then created based on the selected locations for items that are in the locations.

**12.2.3. Starting Cycle Count**

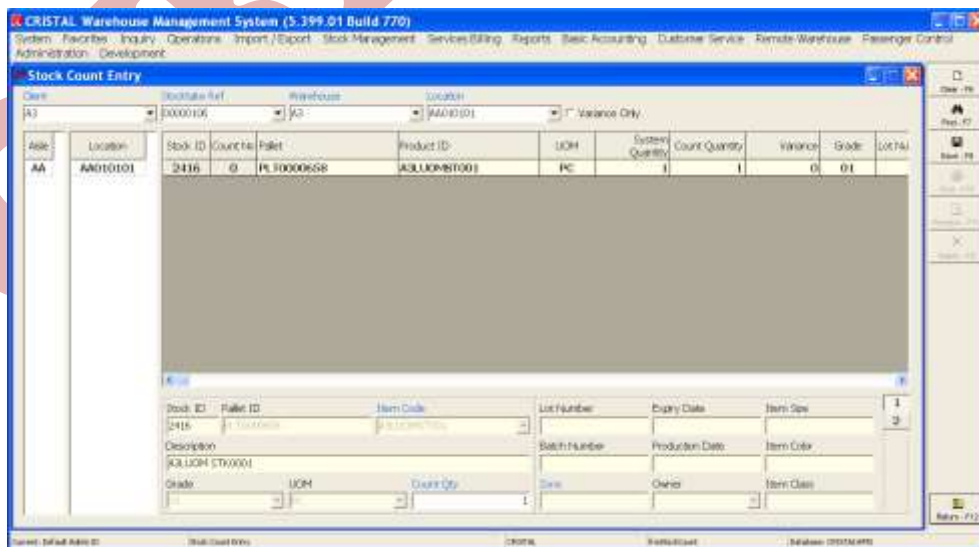
After selecting the Cycle Count Option, click Setup Stock Count button to start the cycle count. The system will based on the option specified and select the items or location to be counted. The system will prompt for entry of user/pass of an authorizer.

**12.3. Stock Count Entry**

The next step in the stocktaking or cycle count is the stock count entry.

**12.3.1. Batch Mode**

The stock count entry as described here is the batch mode count – stock counts are captured in a separate table. Reports of variances can be printed and reviewed. Recounts can be made till the management is satisfied and approved the count.



To input the stock counts:

1. Select the location / item
2. Input the Count Qty



- a. Select '2' tab button to view the variance and input Remarks, if required
3. Click 'Save'
4. Repeat till all counts are updated

### 12.3.2. Real-time Mode

In real-time mode, stock counts are created as 'I' or inspection tasks in stock movements table or work pool. These tasks are assigned and confirm or updated via the [Warehouse Tasks](#) function. Entry input will immediately update the stock status of the item counted.

## 12.4. Stock Count Reports

Following are samples of the stock count reports:

### 12.4.1. Stock Count Tag

<b>STOCK TAKE COUNT TAG</b>		8 Sep 2013
<b>Stocktake Ref:</b> 00000106		
<b>Warehouse :</b> A3		<b>TAG No</b>
<b>Pallet :</b> PLT0000658		<b>1</b>
<b>Location:</b> AA010101		of 1
<b>Client :</b> A3		
<b>Item No</b>	<b>Quantity</b>	<b>Count</b>
A3LUOMST001		
A3LUOM STK0001		
-----		
<b>Additional Item</b>		
_____		
_____		
_____		
_____		
_____		
_____		

**12.4.2. Stock Count Worksheet**

STOCKTAKE COUNT SHEET					
Stocktake Ref : 00000005				8 Apr 2007	
Warehouse : WHSE1				Page 2 of 3	
Client : UNITED					
S/N	Location	Item No & Description	Stock Attributes	Quantity	Count
2	AA010101	CHT-1650 PIXMA IP6220D USCD1.0		281.00	_____
3	AA010101	PROD002 PROD002		50.00	_____
4	AA010102	CHT-1650 PIXMA IP6220D USCD1.0	Item Color: YELLOW	20.00	_____
5	AA010102	UHE-5028 5028 Barney is Pajama Party	Expiry Date: 29 Jan 2009	20.00	_____
6	AA020101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 29 Jan 2009	30.00	_____
7	AA020102	SET00001 SET 00001		200.00	_____
8	AA030102	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 07 Jan 2009	292.00	_____
9	AA040101	PROD002 PROD002		20.00	_____
10	AA040101	SET00001 SET 00001		10.00	_____
11	AA040101	UHE-5028 5028 Barney is Pajama Party	Expiry Date: 08 Jan 2009	100.00	_____
12	AA040101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 08 Jan 2009	300.00	_____
13	AA050101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 10 Jan 2009	100.00	_____

**Additional Item**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

CRISTAL WMS DEMO  
E:\Development\Reports\Stocktake Count Sheet.rpt

**12.4.3. No Physical Count Report**

This report list the locations that no stock count entry / input are made.

**STOCKTAKE COUNT SHEET**

8 Apr 2007

Stocktake Ref : 00000005

Page 2 of 3

Warehouse : WHSE1

Client : UNITED

S/N	Location	Item No & Description	Stock Attributes	Quantity	Count
2	AA010101	CHT-1650 PIXMA IP6220D USCD1.0		281.00	_____
3	AA010101	PROD002 PROD002		50.00	_____
4	AA010102	CHT-1650 PIXMA IP6220D USCD1.0	Item Color: YELLOW	20.00	_____
5	AA010102	UHE-5028 5028 Barney is Pajama Party	Expiry Date: 29 Jan 2009	20.00	_____
6	AA020101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 29 Jan 2009	30.00	_____
7	AA020102	SET00001 SET 00001		200.00	_____
8	AA030102	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 07 Jan 2009	292.00	_____
9	AA040101	PROD002 PROD002		20.00	_____
10	AA040101	SET00001 SET 00001		10.00	_____
11	AA040101	UHE-5028 5028 Barney is Pajama Party	Expiry Date: 08 Jan 2009	100.00	_____
12	AA040101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 08 Jan 2009	300.00	_____
13	AA050101	UHE-5373 5373 He Loves Me He Loves Me No 3	Expiry Date: 10 Jan 2009	100.00	_____

**Additional Item**


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CRISTAL WMS DEMO  
E:\Development\Reports\Stocktake Count Sheet.rpt



### 13. REPORTS MENU MAINTENANCE

CRISTAL Warehouse Management System are delivered with a set of report templates on a 'as is' basis. The reports templates are formatted with Crystal Reports™, the majority of which is done with version 7 / 8.5, which is not Unicode enabled.

The onus is on the user to update the templates with a later version that is Unicode enabled if double bytes language capability is required. Such reports would be to be printed CRISTAL iWMS (internet Warehouse Management System)

However, following are the version of Crystal Reports templates supported

- Client desktop - 7, 8 and 8.5
- Web module - 13

The CRISTAL WMS report menu is designed as a user-maintainable module that allow user to add new reports or change the templates that is being called.

The reports classified into 4 report types:

1. Site Reports
2. CRISTAL Reports
3. WMSNET Reports
4. System Reports

CRISTAL and WMSNET Reports are standard report templates that are provided to each site on a 'as is' basis.

System Reports are reports templates that are called by the system for auto print such as Works Orders, alert messages, etc.

Site Reports is user-defined or specifically customised reports templates.

Although CRISTAL, WMSNET and System Reports are maintainable by the users, they should not be deleted. Users are also required to rename modified templates and prefixed the file names with agreed site code.

***This is to prevent the modified templates from overwritten during an update / upgrade.***

It is the user responsibility to ensure the any change made does not affect the other functions of the system.

Similarly, the onus is on the users that new templates added work in accordance its requirement and does not affect the system functions.

The system administrator can defined up to 11 selection parameters (limited by screen estate constraint) in user-defined report templates inclusive a fixed value.

The parameters that can be used in a report are:

Parameter Code	Caption	Parameter Type	Default Value	Field Name	Tooltip Text
ACTIVITY	Activity	LIST	All Activities		
AGE_PERIOD	Aging Period	LIST			
BANK ACCOUNT	Bank Account	STRING			
BILLING GROUP	Billing Group	LIST			
BRAND	Brand	PARAMETER			
CARTON FROM	Carton From	STRING			
CARTON NO	Carton Number	STRING			
CARTON TO	Carton To	STRING			
CATEGORY	Category	PARAMETER			
CATEGORY 1	Sub Category 1	PARAMETER			
CLIENT	Client ID	LIST		CLIENT	
COMPANY	Company ID	LIST		COMPANY	
CONTAINER	Container Number	STRING			
COUNTRY	Country	PARAMETER			
CUSTOMER	Customer ID	LIST		CUSTOMER	
CUSTOMER FR	Customer From	LIST		CUSTOMER	
CUSTOMER TO	Customer To	LIST		CUSTOMER	
DATE	Date	DATE			
DATE FROM	Date From	DATE			

Parameter Code	Caption	Parameter Type	Default Value	Field Name	Tooltip Text
DATE TO	Date To	DATE			
EXPIRY_DATE	Expiry Date	SDATE			
PRODUCTION_DATE	Production Date	SDATE			
RECEIPT_DATE	Receipt Date	SDATE			
DAYS	Days	NUMERIC			
DEBIT NOTE	Debit Note	LIST			
DELIVERY ORDER	Delivery Order	LIST			
DOCUMENT REF	Document Reference	LIST			
FROM	From	STRING			
FYR	Financial Year Code	LIST			
GRADE	Product Grade	PARAMETER	All Grades	GRADE	
ITEM	Product ID	LIST	All Items	ITEM_NO	
ITEM FR	Item From	LIST		ITEM_NO	
ITEM TO	Item To	LIST		ITEM_NO	
LOAD SUMMARY	Load Summary	STRING			
LOCATION FR	Location From	LIST		LOCATION	
LOCATION	Location ID	LIST		LOCATION	
LOCATION TO	Location To	LIST		LOCATION	
LOCATION_TYPE	Location Type	PARAMETER	All Types	LOCATION	
MOVEMENT	Movement Type	LIST	ALL	MOVEMENT_TYPE	
OCCUPANCY STATUS	Occupancy Status	PARAMETER	ALL	STATUS	
OPERATOR	Operator ID	LIST	All Operators		
ORDER STATUS	Order Status	PARAMETER		STATUS	
PALLET FROM	Pallet From	LIST		PALLET	
PALLET NO	Pallet ID	LIST		PALLET	
PALLET TO	Pallet To	LIST		PALLET	
PICK COUNT	Pick Count	LIST			
PRODUCT CLASS	Product Class	PARAMETER			
PRODUCT GROUP	Product Group	PARAMETER	All Groups		
PURCHASE ORDER	Purchase Order	LIST		ORDER_NO	
RANGE FR	Range From	STRING			
RANGE TO	Range To	STRING			
RECEIPT	Receipt Number	LIST		RECEIPT_NO	
REFERENCE	Reference	STRING			
REPORT TYPE	Report Type	PARAMETER			
SALESORDER	Sales Order	LIST		ORDER_NO	Input suffix for order other than DATA ENTRY and WAITING
SERIAL FROM	Serial From	LIST		SERIAL_NO	
SERIAL NO	Serial No	LIST		SERIAL_NO	
SERIAL TO	Serial To	LIST		SERIAL_NO	
STATUS	Status	STRING		STATUS	
STOCKTAKE	Stock Count Ref	LIST		STATUS	
SUB CATEGORY	Sub Category	PARAMETER		SUB_CATEGORY	

Parameter Code	Caption	Parameter Type	Default Value	Field Name	Tooltip Text
TO	To	STRING			
USER ID	User ID	DEFAULT			
USER ID HIDDEN	User ID Hidden	STRING			
WAREHOUSE	Warehouse ID	LIST			
WORK ORDER	Works Order	LIST		WORKS_ORDER	
YEAR	Year (YYYY)	STRING			
WHSE_ZONE	Zone ID	LIST		WHSE_ZONE	

The above available parameters are subjected to change without prior notice. However, it is more likely that new parameters are added than for existing parameters to be removed.

For the latest list of parameter, please view them in the drop down list in the Reports Menu Maintenance.

If a selection parameter required is not in the above list, user can still incorporate it in the report. The difference of the prompt from the above is that the former will not be validated by the WMS.

### 13.1. Adding New Report Template

New reports can only be added to Site Specific report type.

To add a new report to the WMS Report Menu, the template must be first created with Crystal Reports. For desktop reports, Crystal Reports 7 or 8.5 is to be used. For web reports, the version to be used is 13.

The template is recommended to be saved in a sub-folder within the Reports directory that has been defined during the initial setup although it is not necessary. The 'Selected Report Template' field is limited to 255 characters. If a template is placed in a sub-folder of the Reports directory, the system will record only the relative path; otherwise the full path will be recorded.

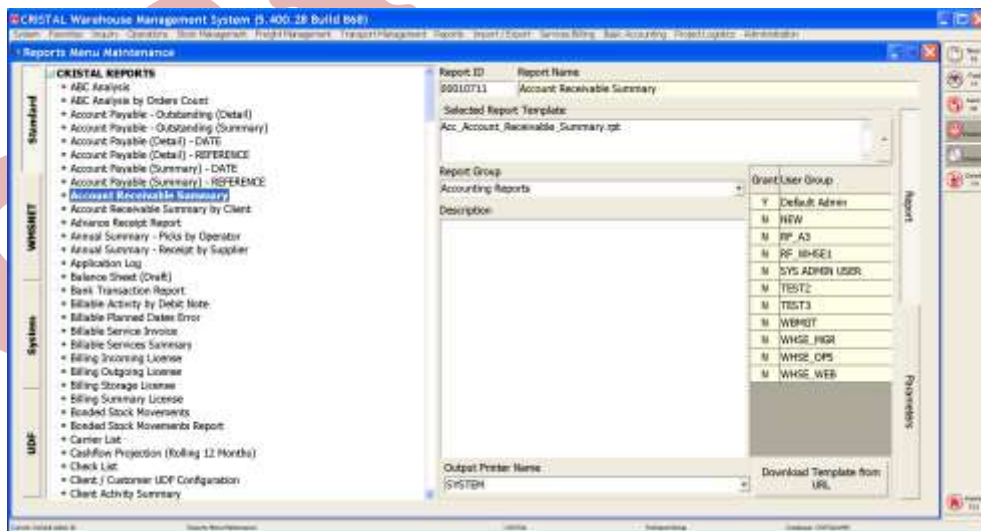
Note that if a template is to be shared, it must be in the shared Reports folder as defined in the configuration.

Before adding new report menu option, decide on:

1. The menu option name (Report Name)
  - a. This must be unique and should not be already assigned in the standard reports
2. Report Group
3. User Group accessibility
4. Output printer Name – 'SYSTEM' if workstation default printer is to be used.
5. The list of parameters

The interface for the function is redesigned in release 5.400.868 to use Treeview which enable use of mouse wheel to scroll the reports options.

The report option must be first defined before updating the parameter of the report.



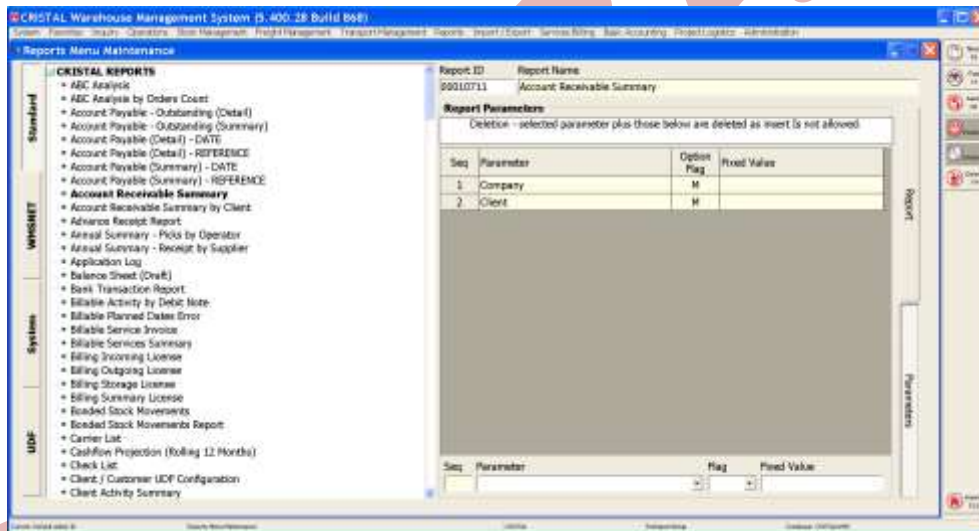
The step in adding a report:

1. Save the template in the desired folder
2. Select report type – UDF for desktop, WMSNET for web report
3. Input the Report Name
  - a. For Web report, only Crystal Reports 13 template is supported
4. Select the user group
  - a. For Web report, select report type WMSNET

5. Specify the User Group that is granted access
6. To select the template to be linked



- a. Click the drop down button on the right of the 'Selected Report Template' textbox
- b. This opens the Windows folder dialogue
- c. Select the required template (change folder if required)
- d. Click Open
- e. The report's path and name will be reflected in the Selected Report Template field.
  - i. If the report template is in the System default reports folder, the folder path will be suppressed
7. Input a short description of the report template, if applicable.
8. Click on the Save button
9. Select the Parameter tab button



10. Specify the selection Parameter(s)
11. Select (for WMS validated) or input parameter
12. Select Flag – available option
  - a. O - optional
  - b. M - mandatory
  - c. D - default
    - i. Option are USER ID and USERGROUP
  - d. F - fixed
    - i. If chosen, the Fixed Value will be enabled for value input
13. The order of the parameters must be in accordance to the sequence in the report templates
14. Click Save

### 13.2. Updating Report Menu Option

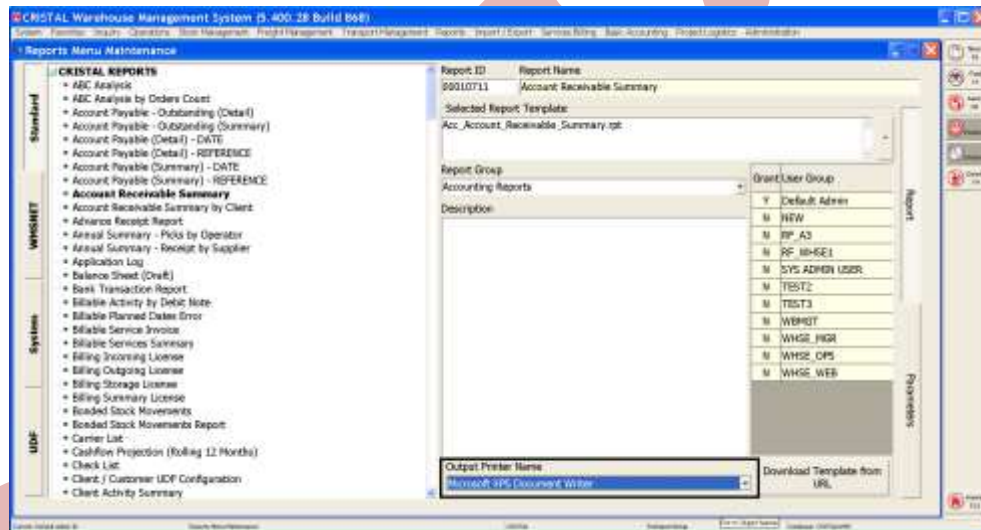
The step to update an existing report menu option is similar to Adding New Report:

1. Select the required Reports Type – UDF (site specific reports), CRISTAL REPORTS, WMSNET REPORTS, SYSTEM REPORTS
2. Select the Report Name from the Grid Box
3. Select new user group, if required
4. Change the User Group that is granted access, if required

5. To change the report template name
  - a. Select the Directory button
    - i. Select the drive
    - ii. Select the directory by double-click on the required folder
  - b. Select Templates button
    - i. Click on the required template
    - ii. The report's path and name will be reflected in the Selected Report Template field.
6. Click on the Save button
7. To change, if required, the selection parameter(s), click Parameters
  - a. Note – parameters are replaced or appended – insert is not enabled
    - i. To insert, it is required to delete those that are to come after it
  - b. Input / amend as required.
  - c. The order of the parameters must be in accordance to the sequence in the report templates
  - d. Click SAVE
8. The report is updated.

**13.3. CRISTAL WMS Printer Control**

CRISTAL WMS have been enhanced since Release 4 to enable auto printing of a report to multiple printers. However the output printer control is updated with release 5.400.868 to overcome an issue with Window 10 OS in which the output can no longer be redirected without first the desired printer as the System Default at the OS level. The also simplified the user selection. Available printers on the station will be automatically loaded into the Output Printer Name combo box. (The Print Setup window will no longer open as in earlier version.)

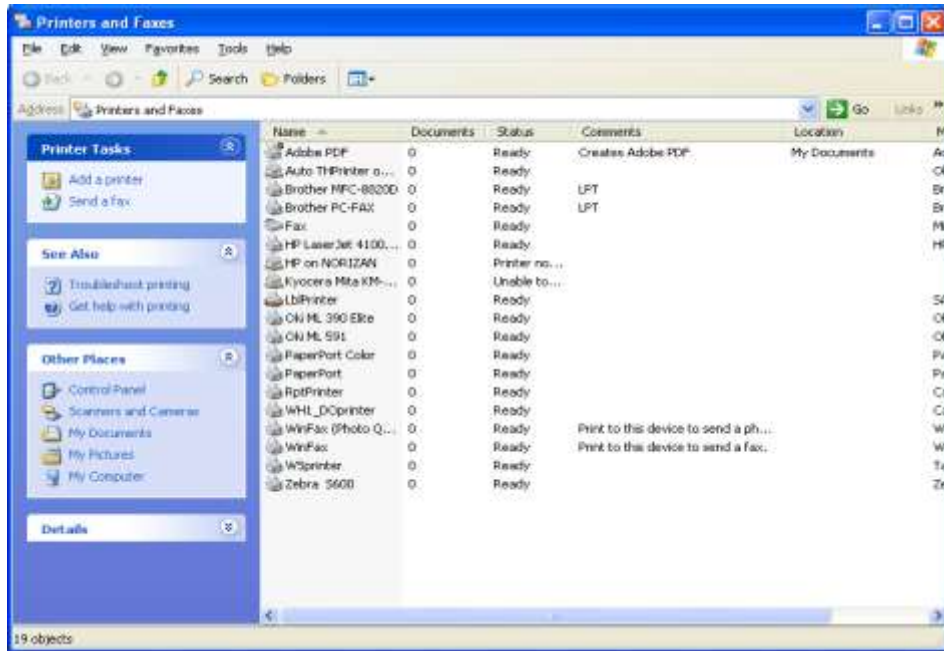


This utilise the method enabled by Seagate Crystal to manage the print output. Briefly, when printing a report, Seagate Crystal Reports will:

1. First try to print to the printer as named in the report templates
2. If the named Printer is not available, Crystal Reports will then send the output to the printer that is defined in the CRISTAL WMS Reports Menu Maintenance.
  - a. Change of printer, which is enabled for users with access right of 40 and above, when required must be done before clicking the Print or Preview button.
3. If both option above failed, Crystal Reports will then direct the print output to the workstation default printer.

The named printers as defined in the templates and the Reports Menu Maintenance must be setup in the Windows Printer and Faxes options – in accordance to the desired effect.



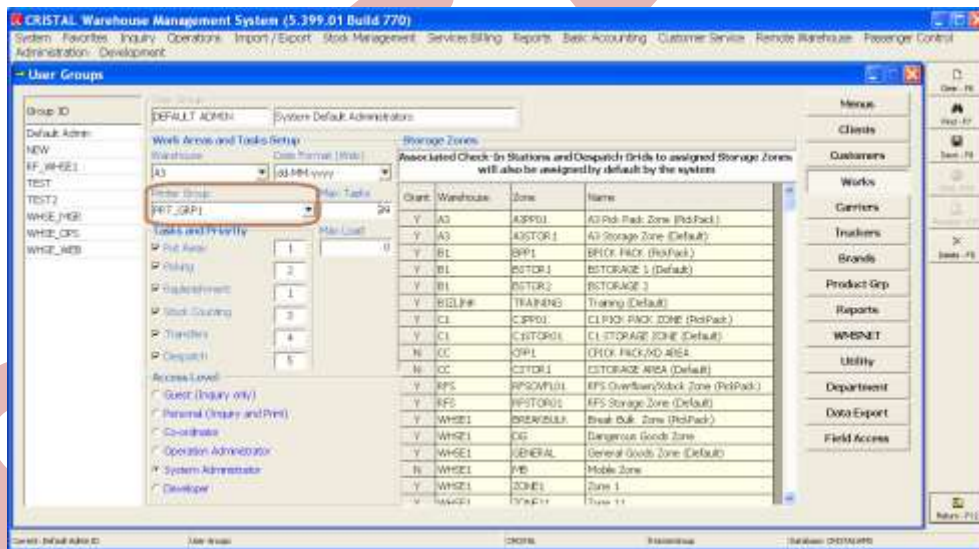


Namely, if the print output is to be control by the templates named printer, then the printer name must be set up in the Windows Printers and Faxes. Otherwise, it must not as it take precedence over the printer controls.

Apart from the Named Printer in the templates and the workstation default printer, each report templates can automatically directed to one printer as named in Output Printer Name in the Reports Menu Maintenance.

However, this allows 1 template to be directed to 1 printer only.

**13.3.1. Multiple Output Printers Configuration**



To enable a template to print to more than 1 printer, CRISTAL WMS incorporate the parameter Printer Group which is attached to the User Group.

If a Printer Group is defined and a user is a member of a User Group that is assigned a Printer Group, when a report is triggered to print, Seagate Crystal Report, on failing to get its default printer will look for the Output Printer specified in the Report Menu Maintenance.

However, instead of looking for the name defined, it would look for a concatenated 'PrinterGroup\_PrinterName' printer name.

For example:

1. Printer Group
2. Group1
3. Group2

Output Printer Name (as specified in Reports Menu Maintenance)

1. RptPrinter
2. DOPriater



3. HP4

Printer name to be setup in Windows Printer and Faxes

1. Group1\_RptPrinter
2. Group1\_DOPrinter
3. Group1\_HP4
4. Group2\_RptPrinter
5. Group2\_DOPrinter
6. Group3\_HP4

If no printer is defined, then Crystal Reports™ will look for only the Output Printer name.

This is managed through 2 parameters called Printer Group and Printer Name. The parameters are defined and managed as defined above.

### 13.3.2. Wide Area Network (WAN) Printers

This Printer Group function is no longer available in release 5.400.868 as it is redundant.

Crystal Reports direct print output to printer by the printer name.

As such, each printer in a WAN must be named uniquely to avoid report being generated in a warehouse be printed on another printer in another warehouse. Such issue will arise if same printer model are being installed in more than 1 warehouse and installed with the same printer name.

This is because CRISTAL WMS direct the output printer based on matching substring of the printer name.

Erroneous example:

1. \\ CRISTAL-BIZLINK \BROTHER-USB
2. \\ CRISTAL-CLEMENTI \BROTHER-USB

Preferred example:

1. \\ CRISTAL-BIZLINK \BROTHER-USB\_BIZLINK
2. \\ CRISTAL-CLEMENTI \BROTHER-USB\_CLEMENTI

## 14. TRANSPORT MANAGEMENT MODULE

The Transport Management Module (TMM) is designed to meet the need of the basic function of distribution operation of 3PL warehouse.

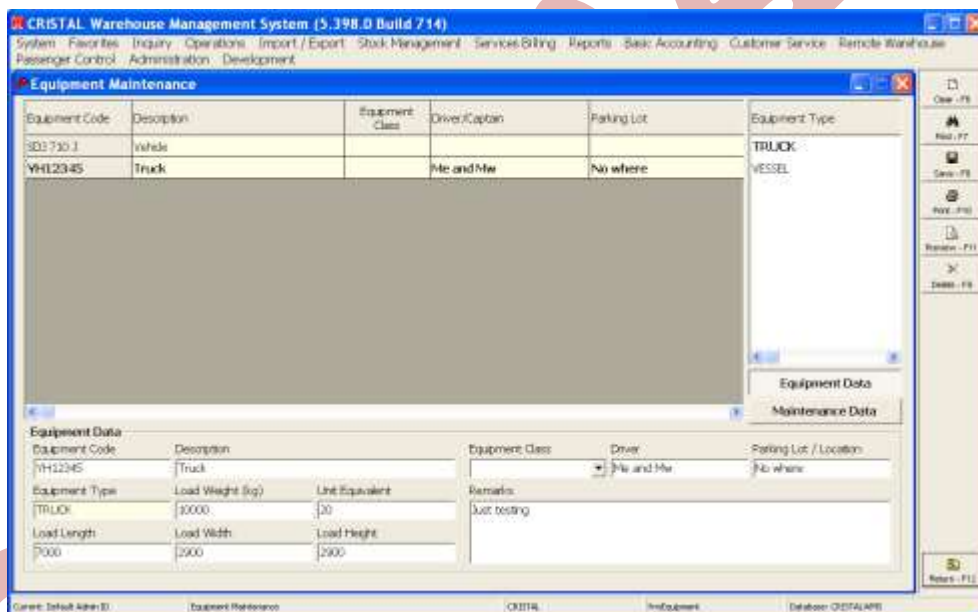
Designed with the intention for further development, the TMM function covers:

1. Vehicle setup and maintenance
2. Pickup and Delivery Point Maintenance
3. Route Planning
4. Transport Order entry
5. Manage and Assign of Transport Orders
  - a. Load control
6. Job Confirmation
  - a. Additional Services Performed
7. Query

Building on the inbuilt flexibility of CRISTAL WMS report function, the TMM is designed to allow additional reports to be formatted and added as the needs arise.

### 14.1. Vehicle Setup and Maintenance

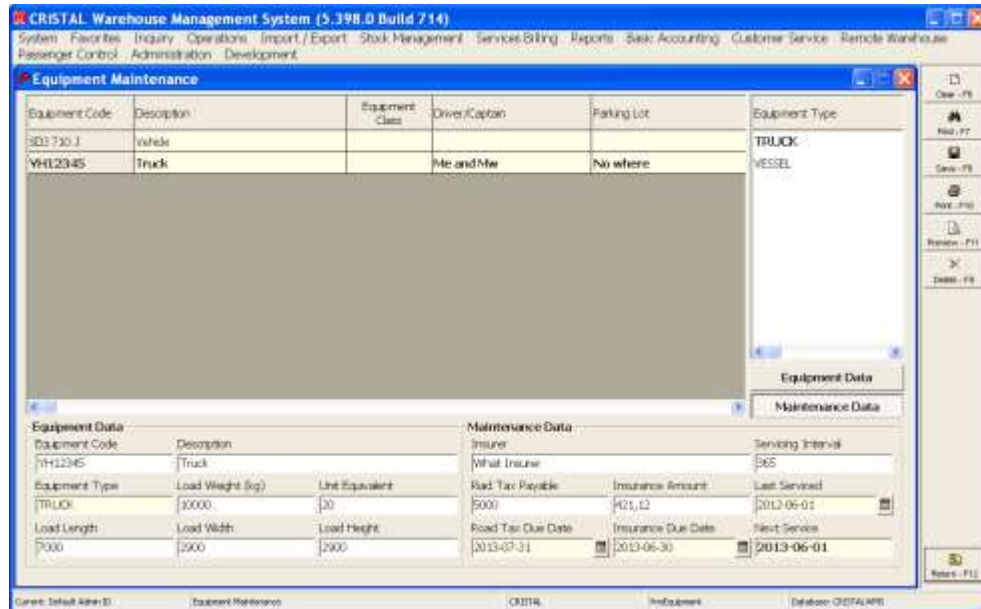
The function is intended for the user to setup and maintenance a vehicle registry that help the truck loading function not to overload a vehicle and to help ensure that proper licensing and insurance are being maintained.



The Equipment Maintenance screen also enable user o to record and maintain other types of equipment.

To update a vehicle record:

1. Click on the required equipment type in Equipment Type grid
2. Select the record in the equipment list or input the Equipment # (if it is new)
3. Enter the description and other relevant data
  - a. Input the Load Capacity, if available, as they are used in the loading function to control and prevent overloading
4. Click on the Maintenance Detail button to update the maintenance data such as insurer...
  - a. Input the relevant data
5. Click Save to update information to the database
6. Repeat 2 to 5 for the next vehicle record, change the Equipment Type if required.



**14.2. Loading and Unloading Points**

To simplify the configuration and maintenance required to enable the Transport Order function, the loading and unloading points required in a transport order is the combination of the warehouse, suppliers and customers.

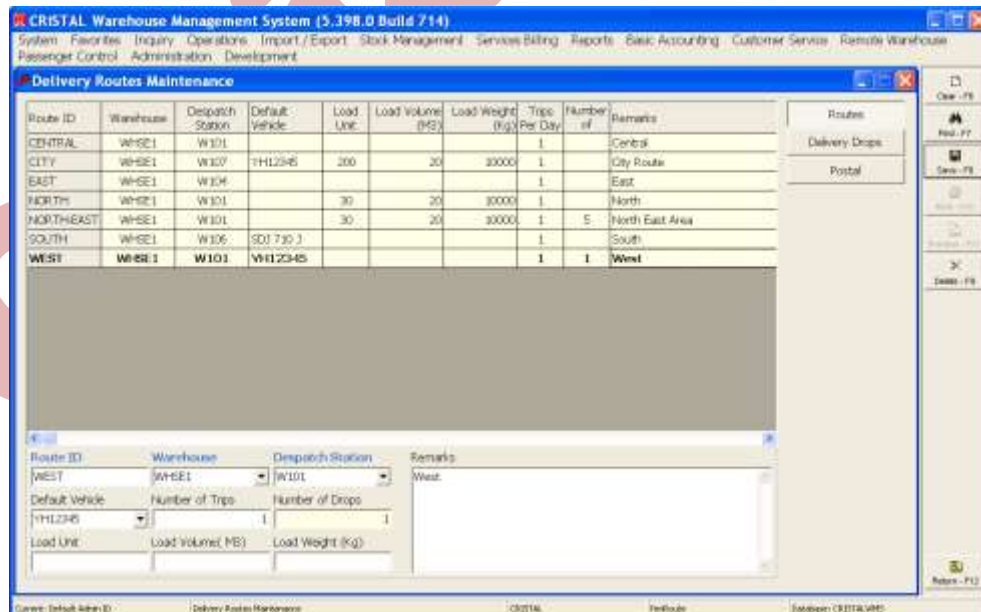
To fully enable the loading and unloading points, it is therefore the code assigned for warehouses, suppliers and customers must be uniquely with them.

**Delivery Route Setup and Maintenance**

Delivery Routes allows user to update and arrange the delivery routing for the deliveries that are performed by the transport department.

Transport Planners are required to arrange companies that the operations are required to delivery in drops or stops sequence. This helps the delivery personnel in loading their truck in reverse sequence – last stop first to be loaded. The arrangement of the drops is based on the usually sequence of stops, typically on the physical location of the companies along the routes.

It is common that daily delivery does not require the driver to stop at every single company along a route. The drop numbering is usually not numbered consecutively. This is to enable new stop to be added and slotted in between 2 existing stops.



Each route is associated to a specific Despatch Grid to enable the warehouse operation to consolidate picking for a delivery for a route to the despatch grid. Thereby minimise misplacement of cargoes that are for a delivery.

To create a new route:

1. Enter the route code, description, the warehouse it is to start from and the preferred despatch grid
2. Input the drop number,
3. Select the client code

4. Select the customer and the delivery code
5. Input the remarks, if any
6. Click Save
7. Repeat 2 to 6 to add drops to the route.
8. To edit, click on the required row and repeat 2 to 6

To edit existing route - select the route to be amended and repeat the above procedure.

### 14.3. Create Transport Order

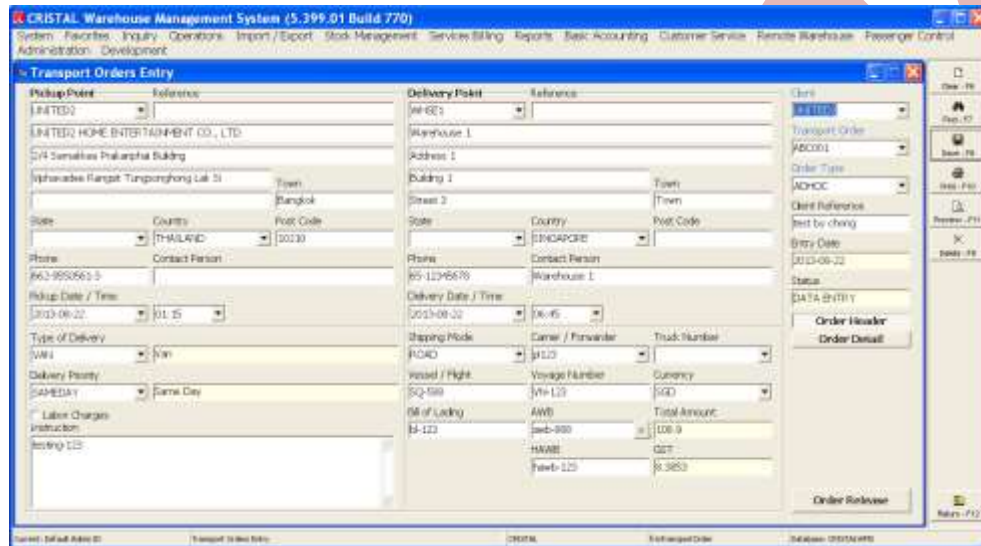
Designed as an order entry form for input of transport request by clients, the windows allow user to create a Transport Order by client and specify a different shipper and billing party and give instruction to pick up other than the warehouse and deliver to a customer.

In Build 760, the option to specify Shipper and Bill Information is removed from the function for accounting and security reasons.

Users can only input orders for a Client.

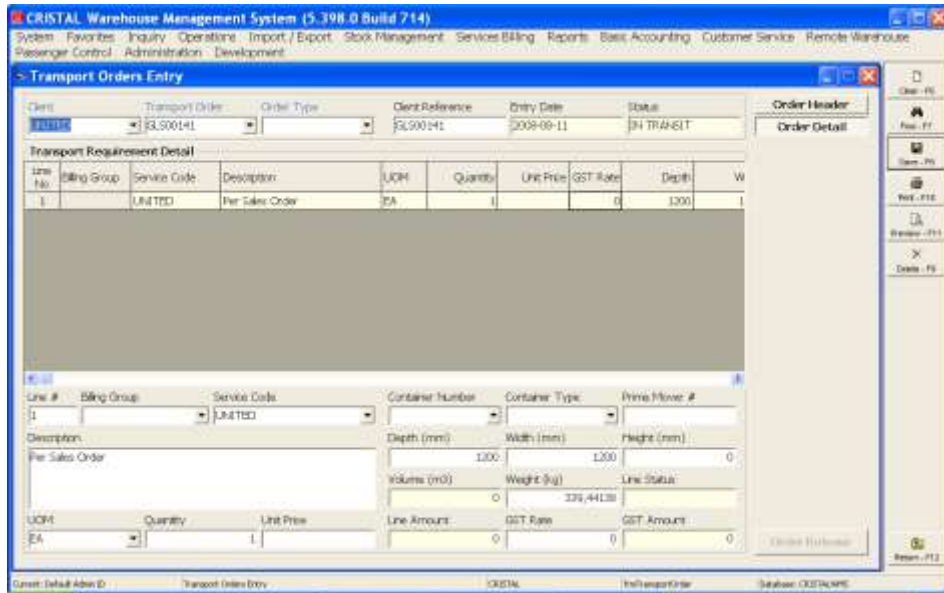
Entry by a client user would thus be limited to input transport order requirement for them themselves only.

The Shipper and Billing Information would be, by default, the Client.



To create an order

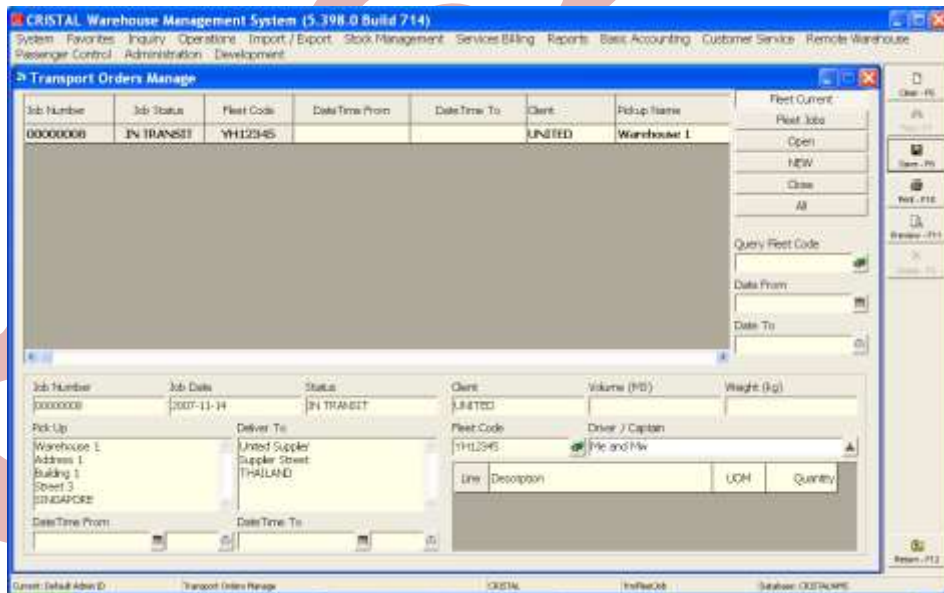
1. Specify the client
2. Input the Pickup Information
  - a. This is defaulted to client detail – amend if necessary
3. Input the delivery or Destination Information
4. Specify
  - a. Type of Delivery
    - i. This is maintained in System Configuration | UDF Parameter | Delivery Type
  - b. Delivery Priority
    - i. This is maintained in System Configuration | UDF Parameter | Delivery Priority
5. Input various data and instruction.
6. Click Save to create the Transport Order
7. Select Transport Order Detail
8. Select the billing group
  - a. This is link to the Billing Group and Billable Service Code in the 3PL Billing System
  - b. Leave the Line number blank for new line
    - i. The system will automatically assign the next number on Save
9. Select the Service Code and input the Description or instruction
10. Input Quantity



11. Input Container Number if relevant
12. Specify the Height, Depth, Width and Weight of the cargo
13. Click Save
14. Repeat 11 to 16 for next line
15. On completion, return to first page – Transport Order Header – and click Release to release it to transport planning to schedule and issue the order.

**14.4. Schedule and Issue Transport Order**

The Manage | Transport Order enable the Transport Planner to list and select the order that are waiting scheduling and issue.



To schedule the order:

1. Click the '?' under Trip Reference
  - a. If left blank, user will be prompted whether to start a new trip
2. Select the Carrier / Forwarder
3. Select the Truck Number
  - a. If the load capacity is specified in the Equipment Maintenance, the Max Volume and Max Weight will be populated and will be used to ensure no overloading occur due to oversight
4. Click on the transport orders are assigned to the truck
  - a. The selected transport orders' Order Status will change to 'IN TRANSIT'
  - b. The total Volume and Weight will be summed and displayed, and check against the Max Volume and Weight
  - c. A warning message will appear if the Max is exceeded.



- On completion of the trip schedule, click on Print which will generate the Transport Order instruction below

**CRISTAL WMS DEMO**

Client: 44B 2 Jan 2004  
 Transport #: 0000011 Page 1 of 1

<b>Shipper</b>	<b>Pickup Address</b>
TYCO ELECTRONICS (S) PTE LTD NO. 6 CHANGI SOUTH STREET 3 SINGAPORE 486548	<Please input name and address>     SINGAPORE
<b>Billing Party</b>	<b>Deliver To</b>
<Please input name and address>     SINGAPORE	<Please input name and address>     SINGAPORE
Carrier: COMFORT	Pickup Date / Time: 27 Dec 2003 01:57
Truck: YG288B	Deliver Date / Time: 31 Dec 2003 13:57
<b>Shipping Instruction</b>	
Any Instruction	

S/No	Service Code	Description	Volume (m3)	Weight (kg)	Qty	T Volume (m3)	T Weight (kg)
1	ETC_PKG_MAT	Material Packing	2.53500	1,000.00	3	7.60500	3,000.00
<b>TOTAL</b>					<b>3.00</b>	<b>7.60500</b>	<b>3,000.00</b>

- Repeat 1 to 5 for the next trip

### 14.5. Closing completed transport Order

On completion of transport job, it is necessary to closing or Confirm completion of the job.

This is done via Transport Order Confirmation.

To list the job that is pending closing

- Select Client
- Select the status PENDING
  - This pending job will be listed in the grid box.

To close a job:



1. Select the job to be closed by
  - a. Clicking on the job in the grid box, or
  - b. Click the dropdown button at the Transport Order.
    - i. To view details of the job, click on the Transport Details button
2. Specify the Delivered Date and Time
3. Input other available data
4. Click 'Save'

CRISTAL

## 15. ADMINISTRATOR TOOLS

These are designed as Administrator tools to facility the WMS administrator in the support of the end users. The impact can be serious if the utility are not used in the way they are meant for.

The tools available are listed in the Table of Contents.

The numbering of the tools in the menu is always consecutive and is not specific to specified tool.

Notes:

1. Modification of lowest UOM code and packaging dimension and weight is dropped in version 5.400.001 and later. The functionality is incorporated into Product Definition | Unit of Measure

1.

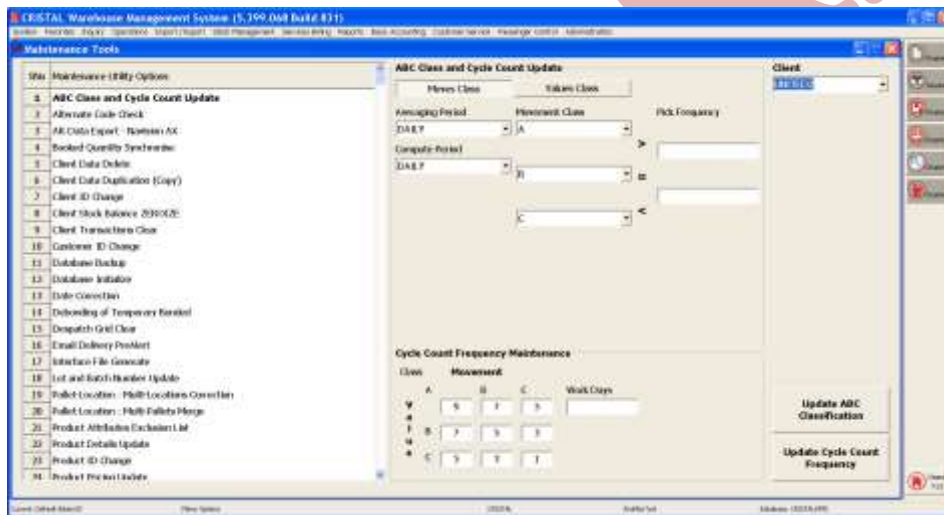
### 15.1. ABC Classification Update

ABC Classification Update is a function to update the product classification, either by the picking activity or by the value of the item, basing on the Landed Cost.

This function is limited to 3 classifications only, namely, Class A, Class B and Class B. User can defined the terminology that they preferred. This is update and maintained under Admin->Parameter Maintenance.

#### 15.1.1. Movement Classification

ABC Classification of an item is based on the picking movement or product value only.



To update ABC classification by movement:

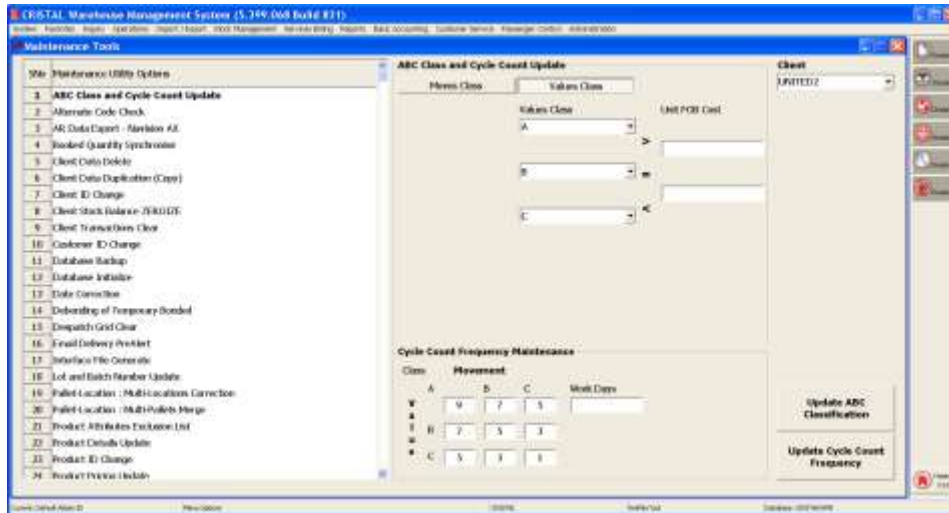
1. Select Movement Classification
2. Specify the Movement Classes – top, mid and low
3. Specify the upper and lower limit of the mid Movement Class
4. Select the Averaging period – the period within which the data is to be taken into consideration
5. Select the computation period
6. Click 'Update' to process the specification.

#### 15.1.2. Value Classification

ABC Classification by value is based on the Landed (Average) cost of the product.

To update ABC – value classification

1. Select Value Classification
2. Specify the Movement Classes – top, mid and low
3. Specify the upper and lower limit of the mid Movement Class
4. Click 'Update' to update specification.



**Cycle Count Frequency Maintenance**

To update the Count Frequency of the items basing on the matrix of Movement and Value,

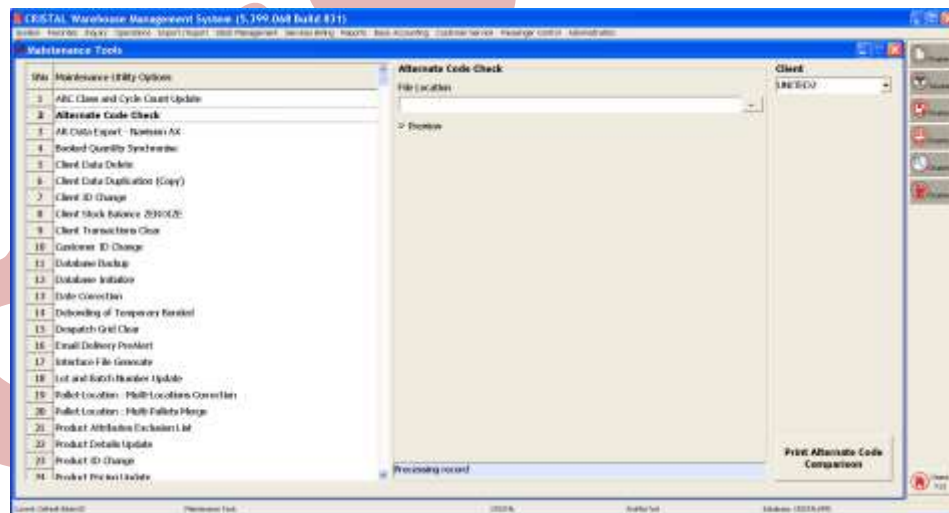
1. Specify the frequency of Count to be performed over a Count Cycle as shown in the above form.
2. Specify the Number of Working Days in the Count Cycle
3. Click 'Update Cycle Count Frequency

**15.2. Alternate Code Check**

Alternate Code Check is designed to synchronise the alternate code with a host system.

The CSV file structure required for the import and comparison:

1. client
2. item\_no
3. alternate\_code
4. description
5. product\_group



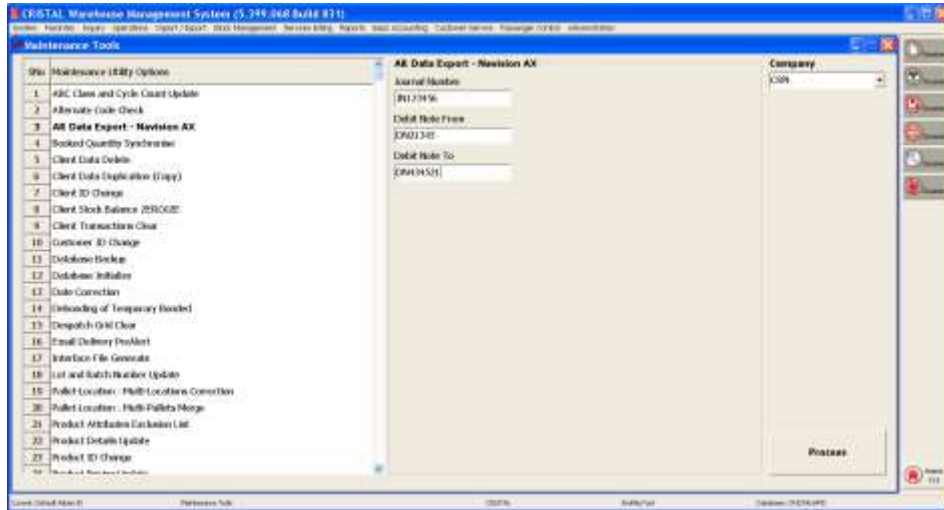
A report of any difference in the alternate code between the Host and the WMS will be printed.

To perform an Alternate Code Check:

- Specify the CSV file location (inclusive of drive and path)
- Check Preview if the report is to be displayed on screen
- Click 'Print Alternate Code Comparison

### 15.3. AR Data Export – Navision AX

This function is customised to meet the interface file structure required by Navision Axapta ERP as specified by a site.



To generate the required file:

1. Specify the Company
2. Journal Number – as provided by Navision AX
3. The range of Debit Note required – From and To (inclusive)
4. Click 'Process'

The file created will be deposited in the Export subfolder in the Data Path specified in the System Configuration.

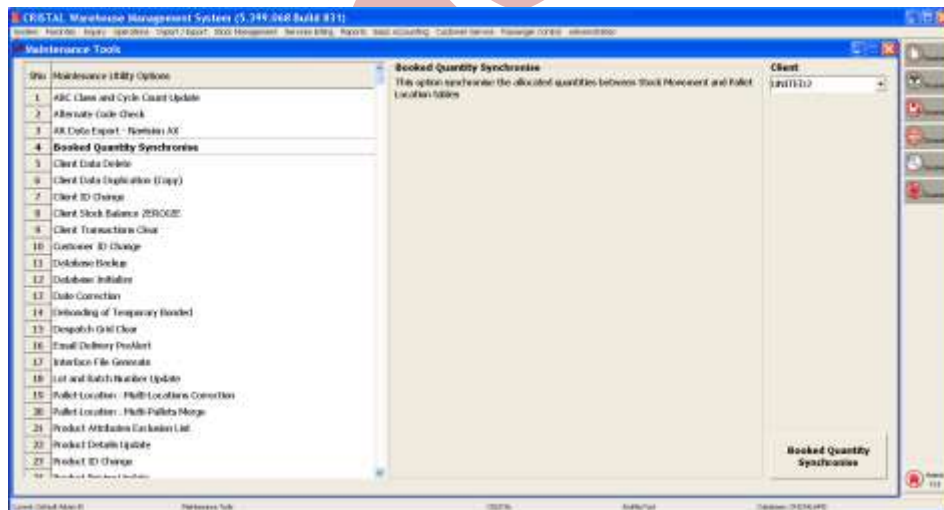
### 15.4. Booked Quantity Synchronise

When stocks are allocated for picking, replenishment or transfer, the quantity required is recorded in the field Quantity Booked in the Pallet Location table.

Occasionally, due mainly to incomplete backdoor adjustment, the quantity went out of synchronization with the Stock Movements table.

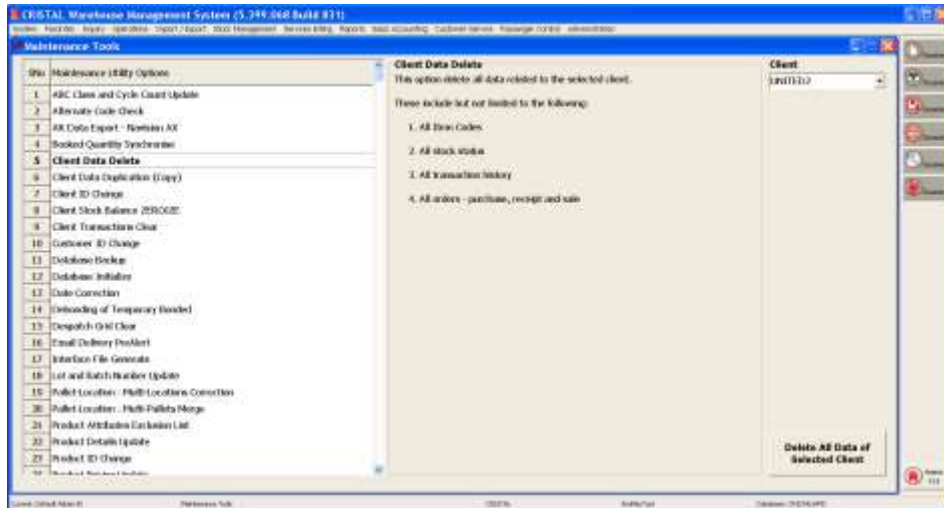
Symptom of such situation would be a task is unable to be confirmed.

This function re-updates the Quantity Booked from the Stock Movements.



### 15.5. Client Data Delete

This option clears all data in relation to a selected client. The objective of the option is to enable user to delete all data related to a client when it is redundant such as the client has terminated their contract with the company.



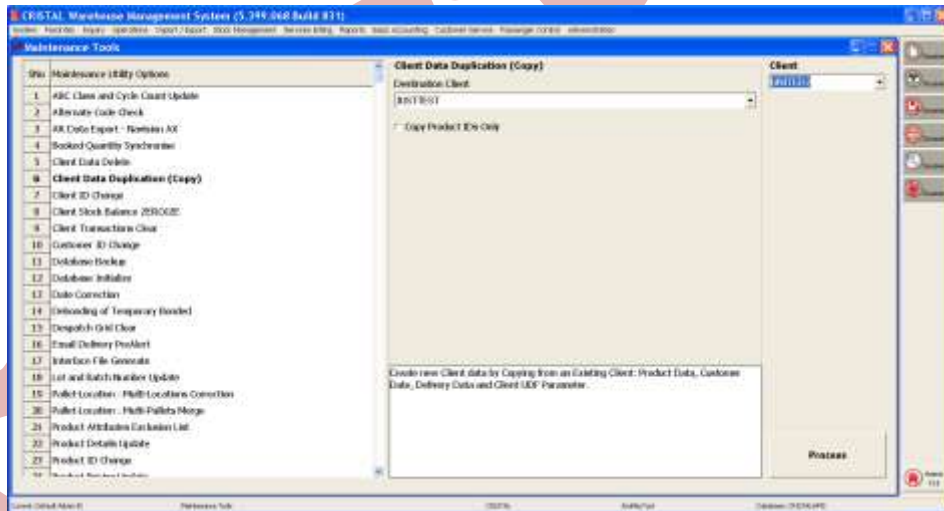
1. Select the client to be deleted
2. Click 'Delete All Data of Selected Client'

**15.6. Client Data Duplication (Copy)**

Option enable user to define following master data for a new Client by copying then from an existing client:

1. Products
2. Customers
3. Customer Deliveries
4. Client UDF Parameter

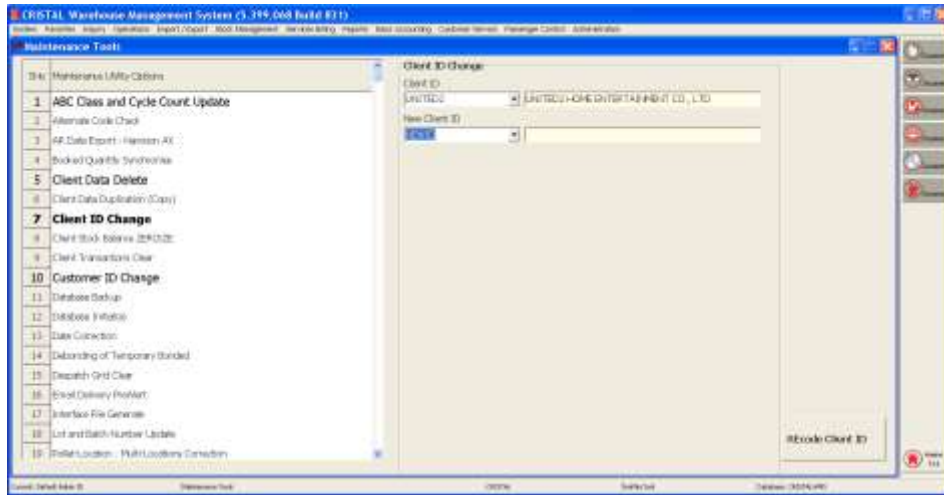
The user must be a member of Default Admin user group.



1. Specify the source Client to copy from
2. Specify the target (destination) Client to copy to
  - a. Apart from defining the Client code, no other master data must be defined.
3. Copy Product IDs Only
  - a. If checked, only Product data is duplicated
  - b. If unchecked, above master data are duplicated.

**15.7. Client ID Change**

This tool is to enable administrator to re-code or reassign a new ID to an existing Client. All transaction and audit trails will be redefined to the new client code.



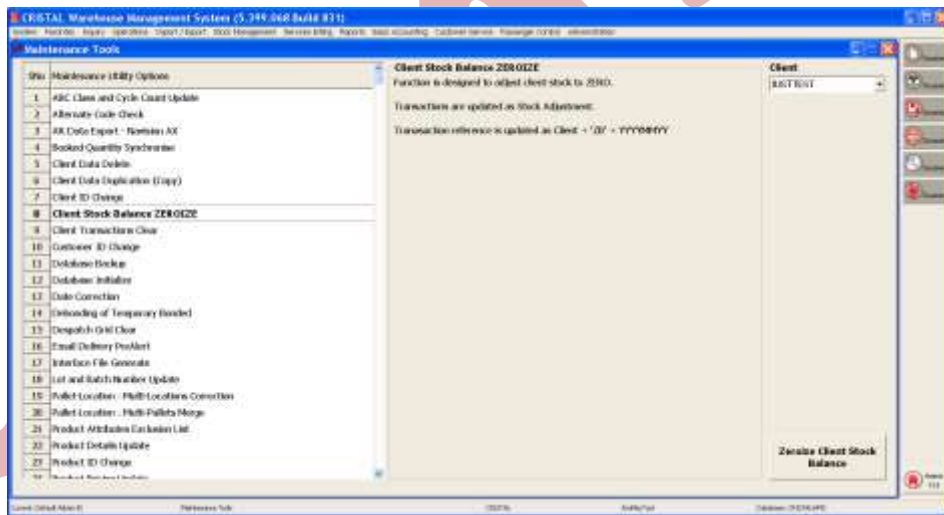
1. Select the Client ID to be changed
2. Input the New Client ID
3. Click 'Recode Client ID'

**15.8. Client Stock Balance ZEROize**

This functions is introduced in Release 5.396.1

This function is designed to adjust client stock balance to ZERO.

This function is different from SysMaint – Clear Client Transactions in that all transactional records are retained in the system.



The stock balances are set to ZERO by Stock Adjustment movements.

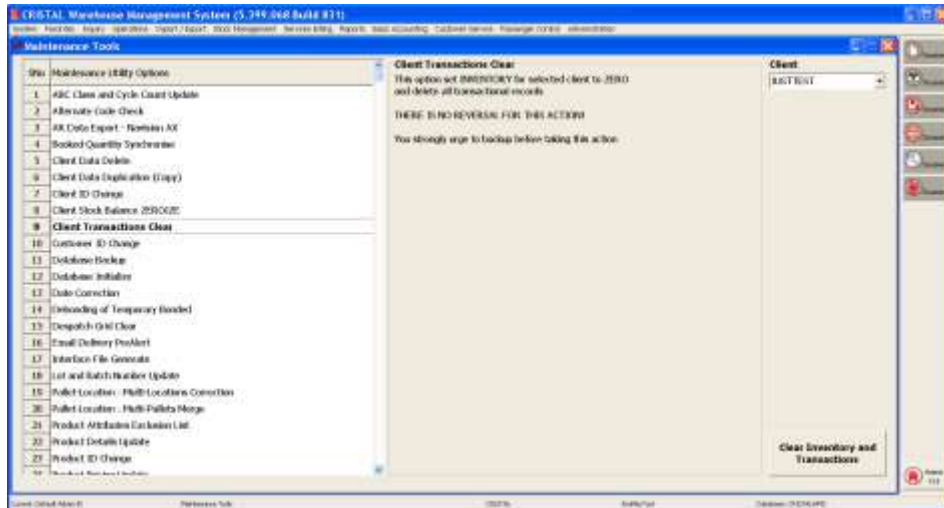
1. Select Client to process
2. Click on 'Zeroize Client Stock Balance'

**15.9. Client Transaction Clear**

This function ensure user to set to the stock level of all items belonging to a client to ZERO.

This is to facilitate testing by user for a client. All other data such as client setup and product definition will not be affected.



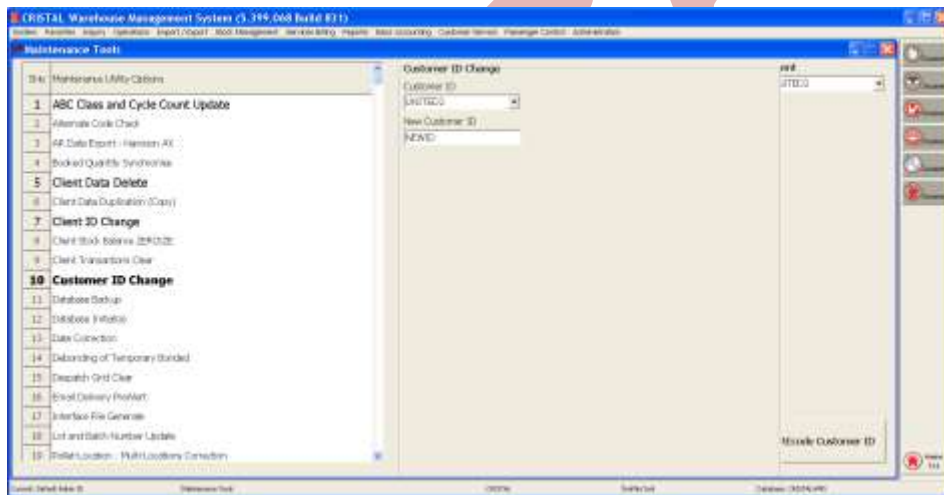


All stocks records and all transactions in Movements History table are DELETED.

1. Select Client to process
2. Click on 'Clear Inventory and Transactions'

**15.10. Customer ID Change**

As per Client ID Change, this tool enable administrator to Recode a Customer ID



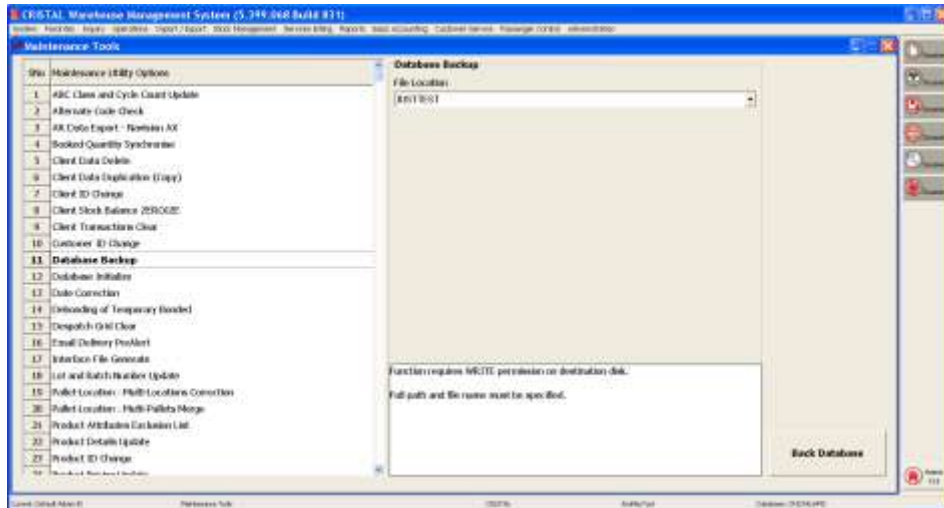
1. Select the Client for which the Customer ID is to be Recode
2. Select The Customer ID to be changed
3. Input the New Customer ID
  - a. Ensure that the New Customer ID is not an existing Customer ID
4. Click 'REcode Customer ID'

**15.11. Database Backup**

Function is designed for sites that run CRISTAL Warehouse Management System on Microsoft SQL Server Express which does not support SQL Agent jobs which is normally setup to perform a scheduled backup

The function enables sites to back up the database manually.

Users performing the backup must have full write permission to the destination folder.



To backup

1. Specify the backup file location
  - a. Ensure the full path and file name is specified and is valid.
2. Click Backup Database

**15.11.1. Limitation**

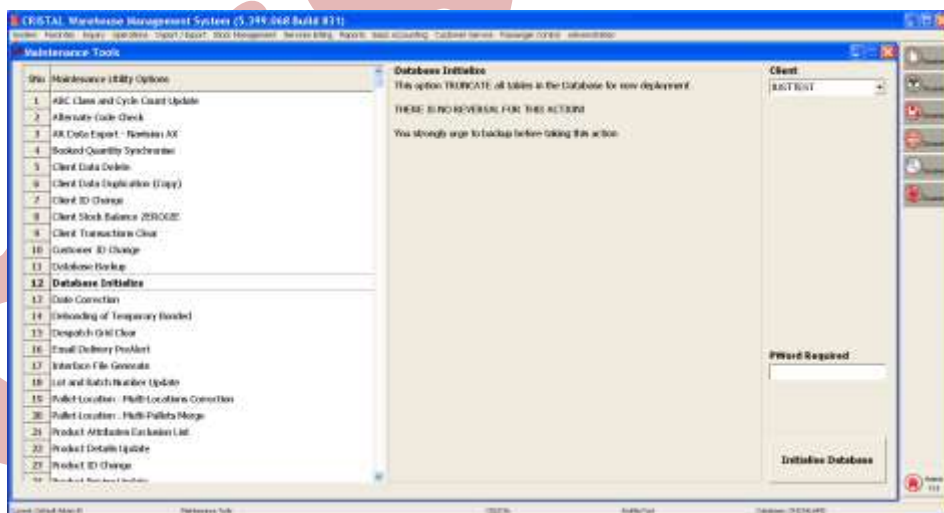
This function may not work properly if the database is too large or that the server is of low performance. It would result in a Timeout error (Error Code: 3146) Please discuss with your implementation consultant.

**15.12. Database Initiate**

This function clears ALL data from the database.

This is provided to enable user to prepare the database for LIVE operation.

It is require additional password controlled to prevent accidental deletion. The password is obtainable from the vendor.



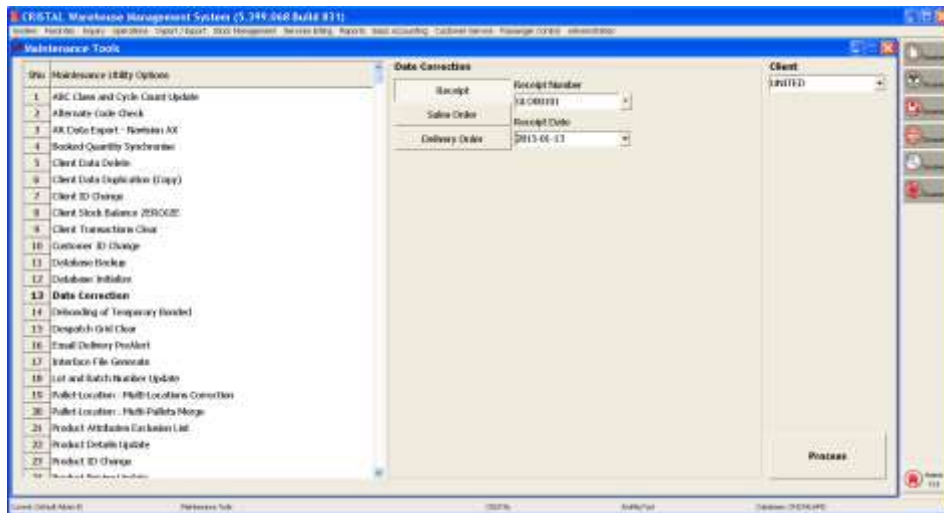
**15.13. Date Correction**

This option is an enhancement that merges various date correction functions:

1. Receipt
  - a. Receipt Date in
    - i. Receipt Master
    - ii. Receipt Detail
    - iii. Pallet History
2. Sales Order
  - a. Delivery Date and ETD in Sales Order

3. Delivery Order
  - a. Despatch Date in the Delivery Orders
    - i. Delivery Order generated date
  - a. Last Update in the Movements History

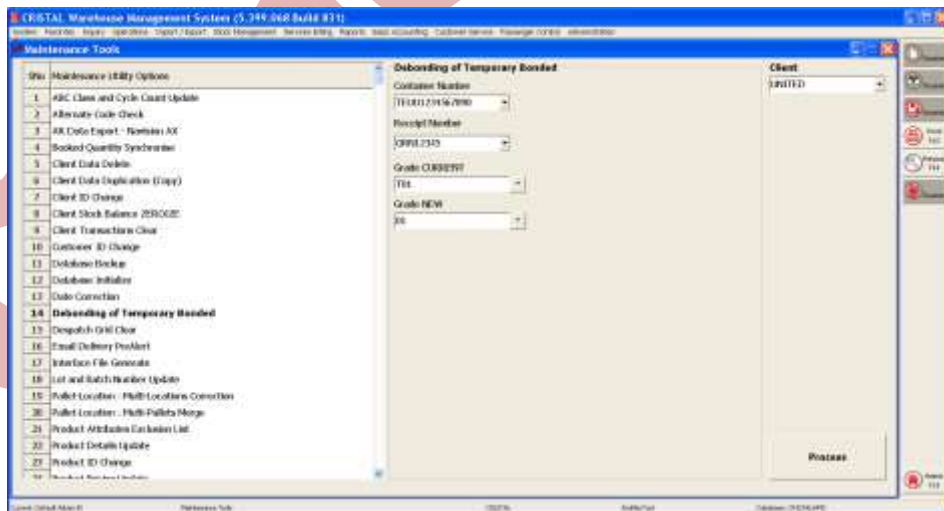
Note: Change made will affect the service billing calculation if it is based on Planned date.



To amend:

1. Specify the Client
2. Select the order type
3. Specify the order number
  - a. Receipt Number for Receipt
  - b. Sales Order number for Sales Order
  - c. Delivery Order number for Delivery Order
4. Specify Date to change to
5. Click PROCESS

**15.14. De-bonding of Temporary Bonded**



Function is designed to meet a Malaysian Bonded Warehouse operation where non-bonded stocks received in a bonded container. This are required to be deemed bonded until clearance is given by Customs.

Although this could be handled via the Stock Re-labelling function, this is provided as a productivity tool.

To process

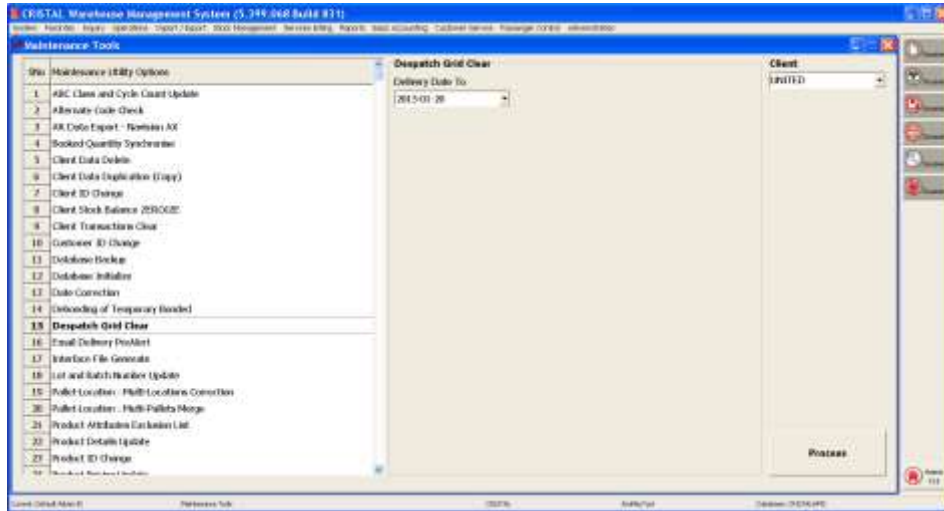
1. Specify the Client
2. Specify the Container Number
3. Specify Receipt Number
4. Specify the temporary bond Grade

5. Specify the Grade to be changed to
6. Click PROCESS

The processing of the de-bonding is effected by the Stock Re-labelling program.

**15.15. Despatch Grid Clear**

This is designed for operations which do not generate delivery order from the warehouse management system.

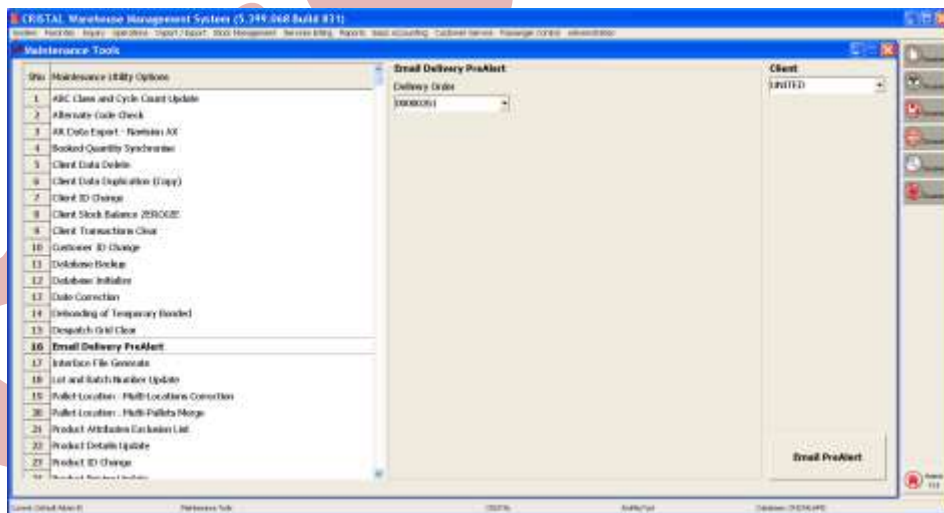


To clear the pick data from the despatch grids:

1. Select the Client
2. Specify the date to clear the data up to.
3. Click 'Process' button

This process will take a while if the despatch grids have not been cleared for a long time, whether via the normal despatch function or this option.

**15.16. Email Delivery Pre-Alert**



Function is a supplement to the emailing of Delivery ASN in the Sales Order program. This enable user to resend the alert in case the originally email failed for whatever reason. The email addresses to be send to must be specified in the Customer Delivery.

To trigger the email, select the client and the delivery order and client Email PreAlert.

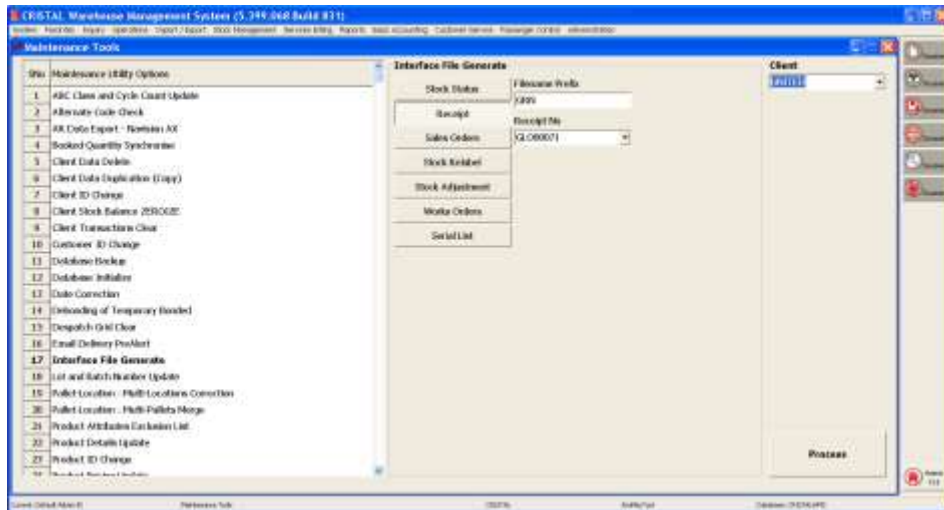
**15.17. Interface File Generate**

This is an enhancement that merges the follow options.

1. Export Stock Status Interface File
2. SysMaint - Generate Receipt Interface
3. SysMaint – Generate Sales Order Picks Interface
4. SysMaint – Generate Serial Numbering Interface

5. SysMaint - Generate Works Order Interface

The function is a backup to the automated host-wms system interface. It enable user to manually re-create the interface file that is missing for whatever reason.



It means that the interface files for various options below will only generate if they are activate for auto interface download (export). The activation is triggered by defining the appropriate (and valid) procedure in Client Profiles | UDF Parameters | Interface.

The generated file will be placed in the folder as specified in 'FTP Export Folder' parameter in the Client Profiles | UDF Parameters.

The function provides for generation of the following interface files

1. Stock
  - a. The parameter is 'Export Stock Status Procedure'
2. Receipt
  - a. The parameter is Order Confirmation Inbound Procedure
3. Seles Order
  - a. The parameter is Order Confirmation Outbound Procedure
4. Stock Relabel
  - a. The parameter is Order Confirmation Stock Relabel
5. Stock Adjustment
  - a. The parameter is Order Confirmation Stock Adjustment
6. Works Orders
  - a. The parameter is Order Confirmation Movement Procedure
  - b. This option uses works order number instead of the required sales order as it is possible that more than 1 works order is generated for a sales order due to backorder or the pickings have been assigned to 2 or more picker and only one of the pickers works order interface is misplaced.
7. Serial Numbers
  - a. The parameter is Serial Numbers Export Procedure

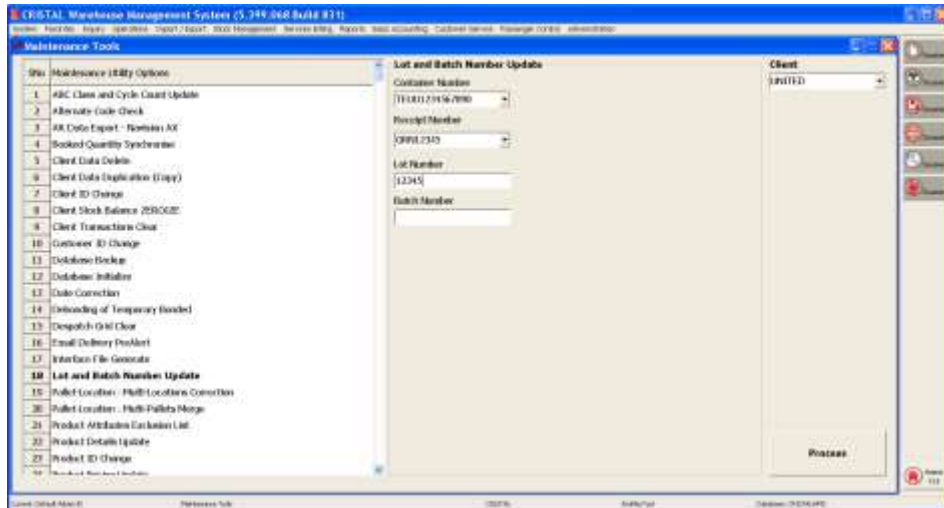
To generate a required interface file

1. Specify Filename Prefix
2. Specify the required order number, if and as appropriate
  - a. The caption will be so named
    - i. This is not required for Stock option
    - ii. For Receipt, Receipt number,
    - iii. For Sales Order, Sales Order Number
    - iv. For Stock Relabel and Adjustment, Reference No
    - v. For Works Order, Work Order
    - vi. For Serial, Receipt Date
3. Click Process

**15.18. Lot and Batch Update**

This function is customised to meet specific operations' requirement.

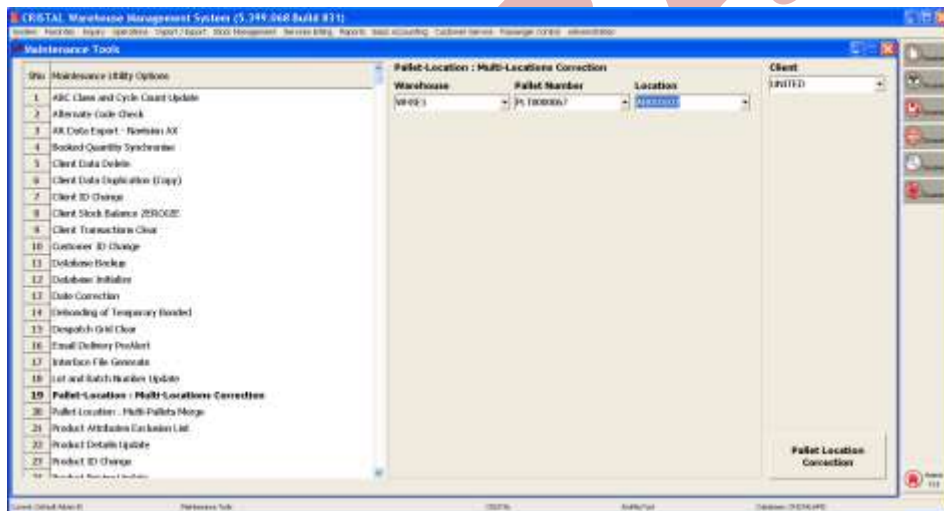
The function enable users to batch update all items in a receipt with a specified Lot and / or Batch Number.



To update:

1. Select the Container and Receipt numbers
2. Specify the Lot and / or Batch Number
3. Click PROCESS

**15.19. Pallet-Location: Multi-Location Correction**



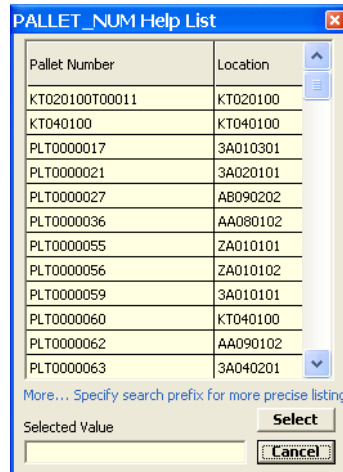
This is to assist the user to resolve anomaly of a pallet number being assigned to more than 1 location.

To resolve the anomaly, the pallet must be assigned or synchronise to 1 single location. If there are items that are supposed to be in other locations, they are updated using Manage->Item Relocation.

The process to correct a pallet with multiple locations:

1. Click the option button and select the client
2. Select the Warehouse
3. Select the pallet number





4. If the pallet number is valid, the anomaly locations will be shown in the Location field.
5. Select the location to synchronise the pallet to.
6. Click the 'Pallet Location Correction' button
7. The update will be performed
  - a. The items in the duplicated location will be assigned a new pallet number.
  - b. An Item Relocation movement will be generated.

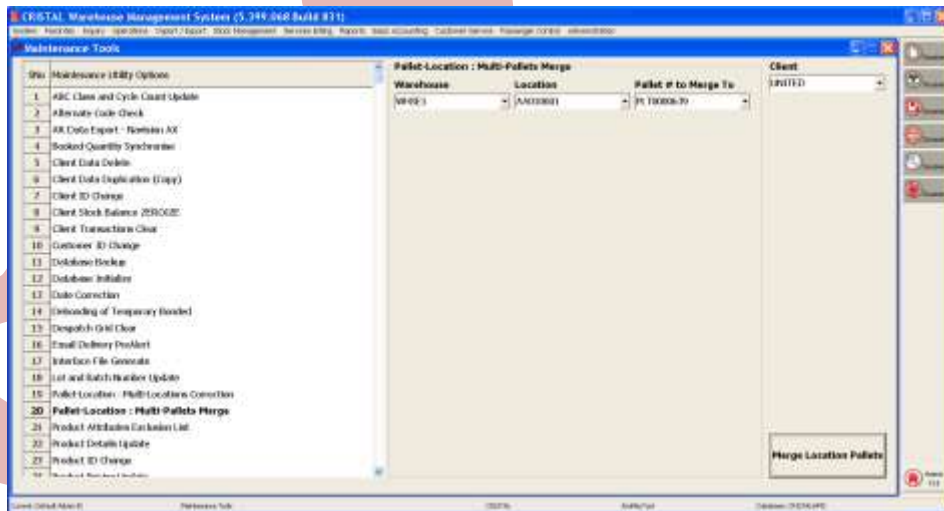
This function cannot be used for pallet relocation update.

**15.20. Pallet-Location: Multi-Pallets Merge**

Note: In version 5.398, due to change concept in Locations classification and zoning control, only locations in zones specific to a Client (locations in zones as defined in Product Definition | Assigned Storage Zones) can be access and merged.

This will affect locations in pickface zones that are not in the Storage Zones. However, merging is needed for pickfaces, then simply added the zone to the Storage Zones

The function is designed to combine or merge multiple pallets in a location and consolidate them into 1 pallet number. The pallet number that is to be consolidated to must be an existing pallet number in the location.



The procedure to consolidate multiple pallets

1. Select the Warehouse that the pallets are in
2. Select the location

Location	Date	Divided	SMAL	Plan	Std	Plan	Pallet
AA010001	GENERAL	N	SMAL	1	0	1	1
AA010002	GENERAL	N	SMAL	2	0	2	1
AA010003	GENERAL	N	SMAL	3	1	1	1
AA010004	GENERAL	N	SMAL	3	1	1	1
AA010005	GENERAL	N	SMAL	3	1	1	1
AA010006	GENERAL	N	SMAL	3	1	1	1
AA010007	GENERAL	N	SMAL	3	1	1	1
AA010008	GENERAL	N	SMAL	3	1	1	1
AA010009	GENERAL	N	SMAL	3	1	1	1
AA010010	GENERAL	N	SMAL	3	1	1	1
AA010011	GENERAL	N	SMAL	3	1	1	1
AA010012	GENERAL	N	SMAL	3	1	1	1
AA010013	GENERAL	N	SMAL	3	1	1	1
AA010014	GENERAL	N	SMAL	3	1	1	1
AA010015	GENERAL	N	SMAL	3	1	1	1
AA010016	GENERAL	N	SMAL	3	1	1	1
AA010017	GENERAL	N	SMAL	3	1	1	1
AA010018	GENERAL	N	SMAL	3	1	1	1
AA010019	GENERAL	N	SMAL	3	1	1	1
AA010020	GENERAL	N	SMAL	3	1	1	1
AA010021	GENERAL	N	SMAL	3	1	1	1
AA010022	GENERAL	N	SMAL	3	1	1	1
AA010023	GENERAL	N	SMAL	3	1	1	1
AA010024	GENERAL	N	SMAL	3	1	1	1
AA010025	GENERAL	N	SMAL	3	1	1	1
AA010026	GENERAL	N	SMAL	3	1	1	1
AA010027	GENERAL	N	SMAL	3	1	1	1
AA010028	GENERAL	N	SMAL	3	1	1	1
AA010029	GENERAL	N	SMAL	3	1	1	1
AA010030	GENERAL	N	SMAL	3	1	1	1
AA010031	GENERAL	N	SMAL	3	1	1	1
AA010032	GENERAL	N	SMAL	3	1	1	1
AA010033	GENERAL	N	SMAL	3	1	1	1
AA010034	GENERAL	N	SMAL	3	1	1	1
AA010035	GENERAL	N	SMAL	3	1	1	1
AA010036	GENERAL	N	SMAL	3	1	1	1
AA010037	GENERAL	N	SMAL	3	1	1	1
AA010038	GENERAL	N	SMAL	3	1	1	1
AA010039	GENERAL	N	SMAL	3	1	1	1
AA010040	GENERAL	N	SMAL	3	1	1	1
AA010041	GENERAL	N	SMAL	3	1	1	1
AA010042	GENERAL	N	SMAL	3	1	1	1
AA010043	GENERAL	N	SMAL	3	1	1	1
AA010044	GENERAL	N	SMAL	3	1	1	1
AA010045	GENERAL	N	SMAL	3	1	1	1
AA010046	GENERAL	N	SMAL	3	1	1	1
AA010047	GENERAL	N	SMAL	3	1	1	1
AA010048	GENERAL	N	SMAL	3	1	1	1
AA010049	GENERAL	N	SMAL	3	1	1	1
AA010050	GENERAL	N	SMAL	3	1	1	1
AA010051	GENERAL	N	SMAL	3	1	1	1
AA010052	GENERAL	N	SMAL	3	1	1	1
AA010053	GENERAL	N	SMAL	3	1	1	1
AA010054	GENERAL	N	SMAL	3	1	1	1
AA010055	GENERAL	N	SMAL	3	1	1	1
AA010056	GENERAL	N	SMAL	3	1	1	1
AA010057	GENERAL	N	SMAL	3	1	1	1
AA010058	GENERAL	N	SMAL	3	1	1	1
AA010059	GENERAL	N	SMAL	3	1	1	1
AA010060	GENERAL	N	SMAL	3	1	1	1
AA010061	GENERAL	N	SMAL	3	1	1	1
AA010062	GENERAL	N	SMAL	3	1	1	1
AA010063	GENERAL	N	SMAL	3	1	1	1
AA010064	GENERAL	N	SMAL	3	1	1	1
AA010065	GENERAL	N	SMAL	3	1	1	1
AA010066	GENERAL	N	SMAL	3	1	1	1
AA010067	GENERAL	N	SMAL	3	1	1	1
AA010068	GENERAL	N	SMAL	3	1	1	1
AA010069	GENERAL	N	SMAL	3	1	1	1
AA010070	GENERAL	N	SMAL	3	1	1	1
AA010071	GENERAL	N	SMAL	3	1	1	1
AA010072	GENERAL	N	SMAL	3	1	1	1
AA010073	GENERAL	N	SMAL	3	1	1	1
AA010074	GENERAL	N	SMAL	3	1	1	1
AA010075	GENERAL	N	SMAL	3	1	1	1
AA010076	GENERAL	N	SMAL	3	1	1	1
AA010077	GENERAL	N	SMAL	3	1	1	1
AA010078	GENERAL	N	SMAL	3	1	1	1
AA010079	GENERAL	N	SMAL	3	1	1	1
AA010080	GENERAL	N	SMAL	3	1	1	1
AA010081	GENERAL	N	SMAL	3	1	1	1
AA010082	GENERAL	N	SMAL	3	1	1	1
AA010083	GENERAL	N	SMAL	3	1	1	1
AA010084	GENERAL	N	SMAL	3	1	1	1
AA010085	GENERAL	N	SMAL	3	1	1	1
AA010086	GENERAL	N	SMAL	3	1	1	1
AA010087	GENERAL	N	SMAL	3	1	1	1
AA010088	GENERAL	N	SMAL	3	1	1	1
AA010089	GENERAL	N	SMAL	3	1	1	1
AA010090	GENERAL	N	SMAL	3	1	1	1
AA010091	GENERAL	N	SMAL	3	1	1	1
AA010092	GENERAL	N	SMAL	3	1	1	1
AA010093	GENERAL	N	SMAL	3	1	1	1
AA010094	GENERAL	N	SMAL	3	1	1	1
AA010095	GENERAL	N	SMAL	3	1	1	1
AA010096	GENERAL	N	SMAL	3	1	1	1
AA010097	GENERAL	N	SMAL	3	1	1	1
AA010098	GENERAL	N	SMAL	3	1	1	1
AA010099	GENERAL	N	SMAL	3	1	1	1
AA010100	GENERAL	N	SMAL	3	1	1	1

3. Select the pallet number to be consolidated to

Pallet Number	Location
PL000001	AA010001
PL000002	AA010002

4. Click 'Merge Location Pallets' button

The function effect the merging via item transfer on the items in the various pallets to the specified pallet number.

(Note: This function is enabled in version 5.395.4 Build 10 and later)

**15.21. Item Attributes Exclusion List**

The objective of the function is to enable user to exclude stock with specified attributes from being picked and send to customers who do not want them.

The screenshot shows the 'Product Attributes Exclusion List' window. It includes a 'Maintenance Tools' sidebar on the left with various utility options. The main window is divided into sections for 'Customer' (UNITED HERE ENTERTAINMENT CO., LTD), 'Attribute Type' (LOT\_NO), and 'Item Code' (CHT-1630). Below these are 'Active List' and 'Exclusion List' tables. The 'Active List' contains item codes like 113, 114, 115, etc. The 'Exclusion List' is currently empty.

The attributes that can be excluded are

1. Batch Number
2. Country of Origin
3. Item Class
4. Item Color
5. Item Size
6. Lot Number
7. Supplier

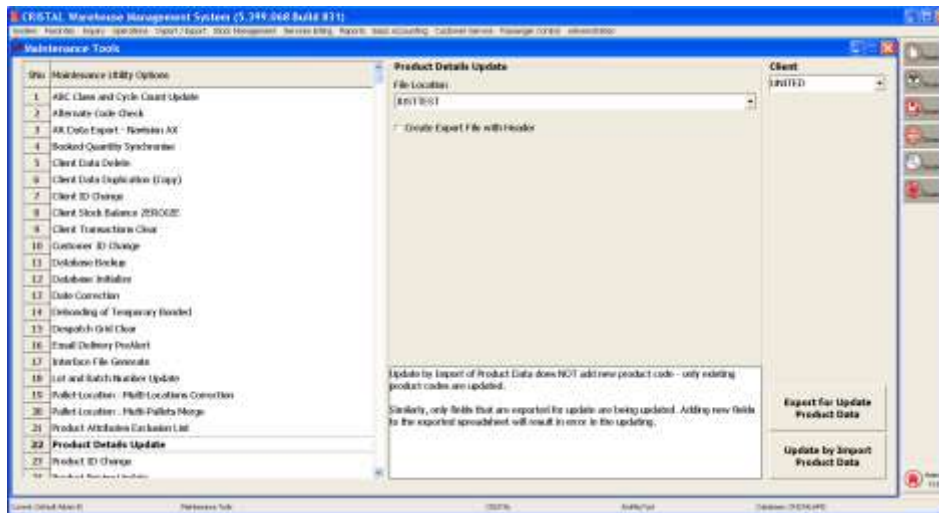
The exclusion is not item specified.

To add to the exclusion list

1. Specify the Client and Customer

2. Select the Attribute Type
  - a. The active attributes will be listed
3. Select / Deselect the attribute to be excluded

**15.22. Product Details Update**



This is to enable to create a .CSV file of the product definition and make changes in a spread sheet and then re-import and update the product definition.

To export the .CSV file:

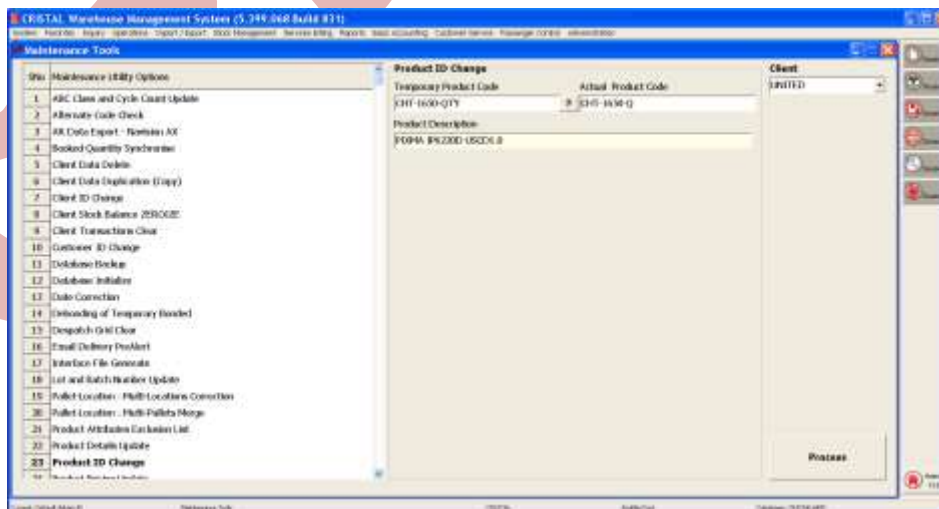
1. Select the client
2. Specify the destination of the file
3. Check or Uncheck whether a header row is required for the file
4. Click 'Export Product Data'.

To import a CSV file and update the Product Data:

1. Select the client
2. Specify the source file
3. Click 'Import Product Data'.

The import file structure must be the same as the export file. When importing but with the header row removed.

**15.23. Product ID Change**



Function is designed to enable user to change / correct an Item Code.

Purpose of the function is to facilitate operation where item code is not available when a shipment is received.

It enables user to create a temporary or dummy code to receive the stock and then update it to the correct item code when it have been defined.

The defined item code MUST NOT be an existing item code.

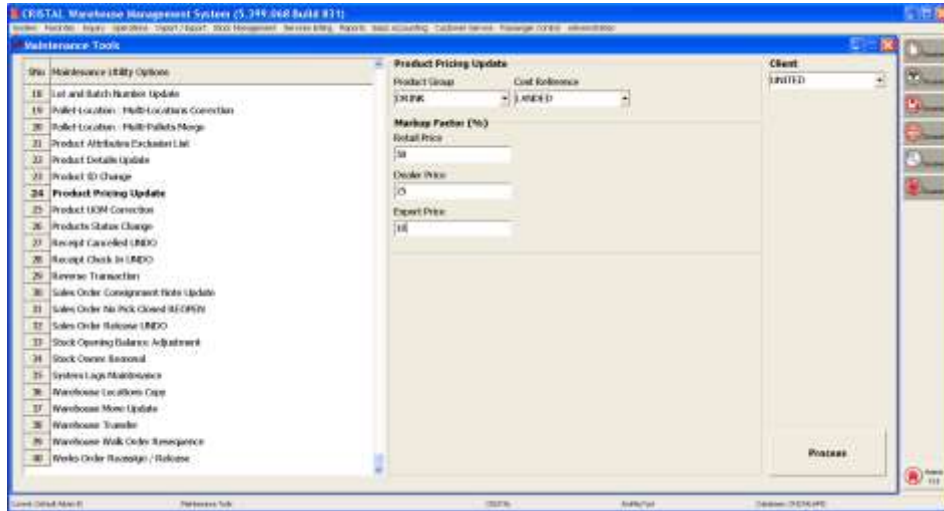
The process will switch all data including historical data to the actual item code.

No validation is carried out to ensure correctness of item code.

To update

1. Select the Client
2. Select the Temporary Product Code
3. Input the Actual Product Code
4. Click PROCESS

**15.24. Product Pricing Maintenance**



This option will be dropped from 5.306.2 and later due to revamp to pricing maintenance enhancement that allows user defined price type.

Pricing Maintenance enable user to update the following prices by compute them against the desired cost base:

- Retail Price
- Dealer Price
- Export Price

To update the prices:

1. Select the client
2. Select the product group.
3. Select the cost base (reference)
4. Input the mark-up factors for the various price structures.
5. Click PROCESS.

**15.25. Product UOM Correction**

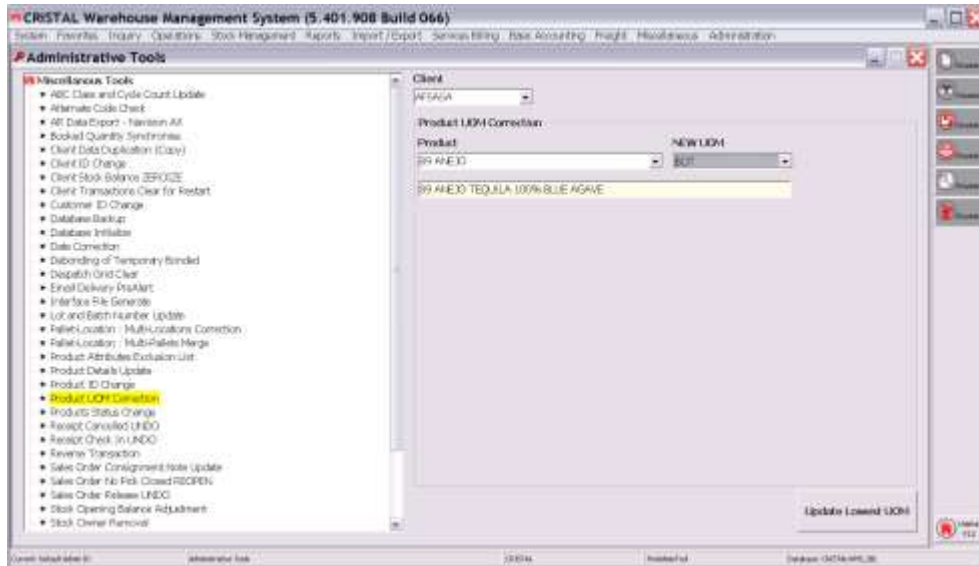
Note: 'Re-define the dimension and weight of an item' is dropped / disabled in Build 5.399.833.026 as this is constant cause of UOM definition error due to lack of users' understanding in the use of the function and disciplines.

Change of UOM definition is now limited to be via Product Definition | Unit of Measure | UOM Setup Help

When an item is ACTIVE and there are stocks, it is not possible to change the UOM definition in the Product Definition.

Product UOM Correction is designed to facilitate users, after transactions have been effected, to Change the Lowest UOM (sometimes being called Pick Unit or Sales Unit). . For example, change 'EA' to 'PC' ...

In Build 5.399.833.026 the UOM Correction is limited to recode or rename of the lowest UOM code. Change of packaging is disabled.

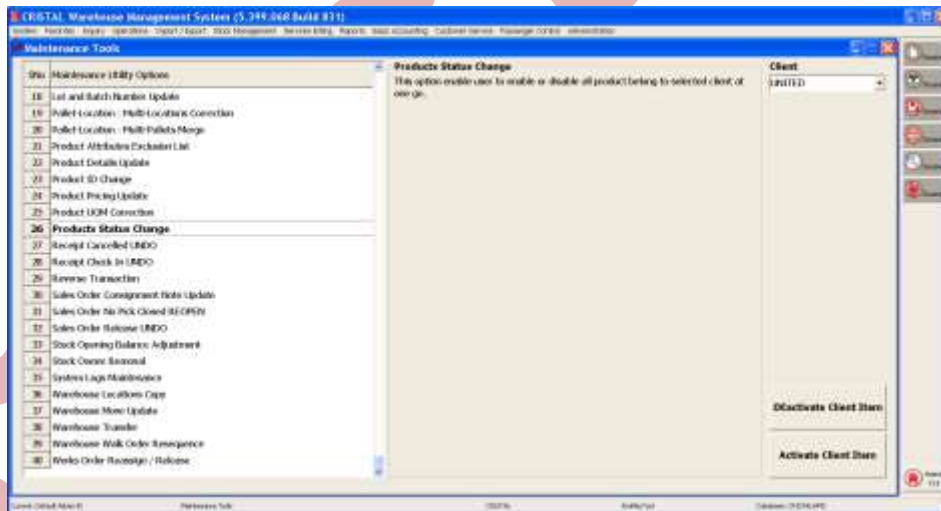


In normal situation, we need to issue all stock – zero the stock balance at ‘Whole’ unit and then re-receive the stock into the system in ‘Lowest’ unit.

To simplify the change, the option enable to made the change required and convert the stock balance to ‘Lowest’ unit at the same

1. Select Client and specify the Product code.
2. Specify the NEW UOM
3. Click ‘Update UOM Configuration’ button

**15.26. Product Status Change**

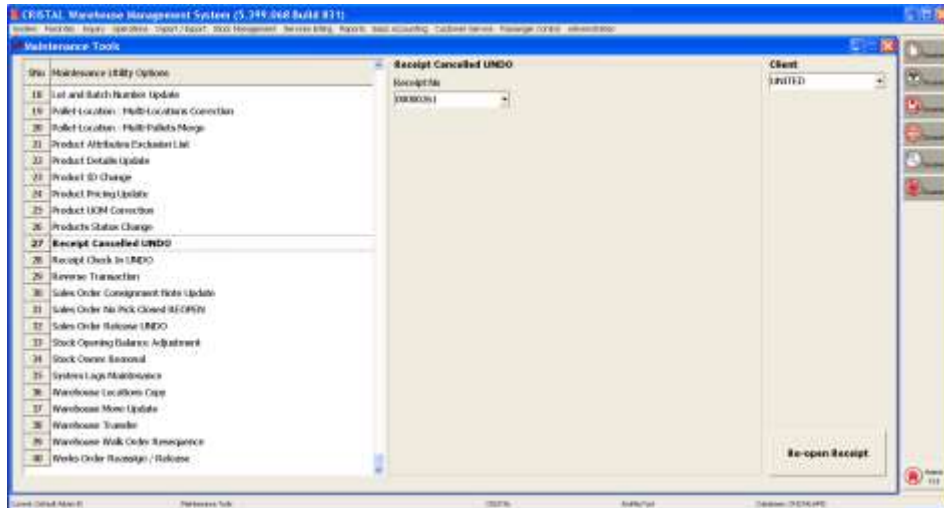


The function is to set product status to ‘ACTIVE’ and ‘INACTIVE’ as may be required in an on-going operation.

1. Select the client
2. Click ‘Deactivate Client Item’
  - a. The product status is set to ‘INACTIVE’
3. Click ‘Activate Client Item’
  - a. The product status is set to ‘ACTIVE’

**15.27. Receipt Cancelled UNDO**

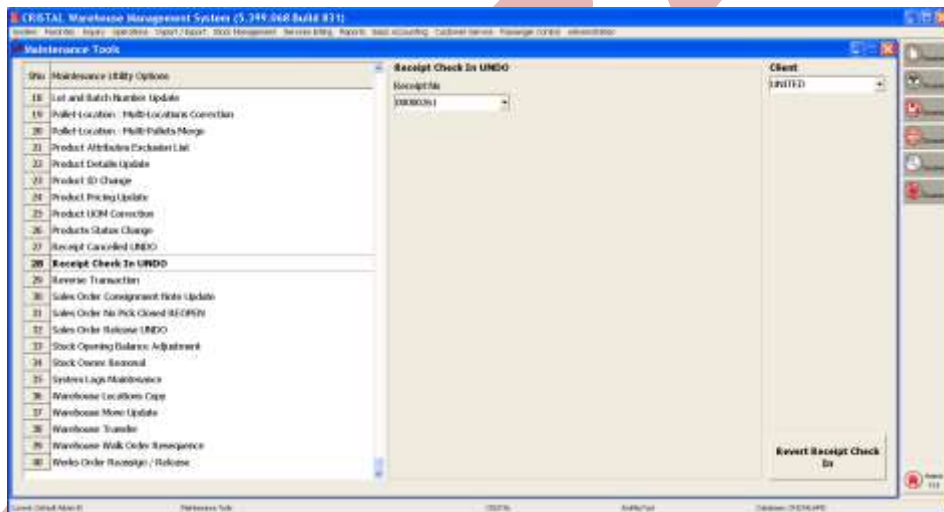
This option is scheduled to be dropped and the function merged into Reverse Transaction | Receipt in near future. The function enable reopen of a cancelled receipt.



Select the Client and Receipt Number and click Re-open Receipt.  
The Receipt status will be updated as DATA ENTRY.

**15.28. Receipt Check In Undo**

The option enable user to reverse a receipt check in. It cancels the putaway tasks that are generated and change the receipt STATUS to 'DATA ENTRY'.



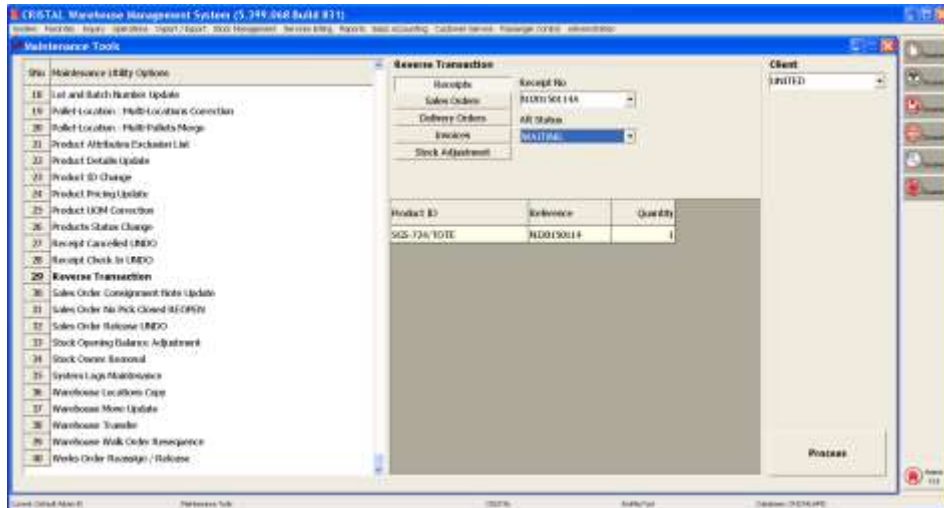
1. Select the receipt number to be undo
2. Click 'Reverse Receipt Check In'

**15.29. Reverse Transactions**

Reverse Transactions enable user to revert a receipt, sales order, delivery order, invoice and adjustment.

The function effectively NULLIFIES the audit trail and the receipt, sales order, delivery order, invoice or adjustment, making appears as if it has not occurred / processed.





This function must be properly managed otherwise it could cause missing transactions that may be required for service billing. While sales order, delivery order, invoice and adjustments are reversed without having to verify related transactions, receipts can only be reverted when there is no picking or adjustment being done on the receipt. Therefore if there is any picking or adjustment against the receipt, it is necessary to first reverse them.

When reversing a sales order / delivery order

- It cannot be reversed if invoice has been generated.
  - The invoice must therefore be reversed first.
- Reversal of Sales Order will automatically reverse the Delivery Order if it is already generated.
  - However, this can be disabled by setting 'Reverse sales order with delivery order in 2 stages' in System Configuration is set to 'Y'.
- If the 'last' Pick (as in the case of Adhoc Picking) is from MOBILE locations, stock will be reversed to a PICK PACK location instead.
  - This is because stock in MOBILE locations cannot be picked or allocate for picking
  - This stock must be subsequently be relocated to their original or other storage locations.

To reverse any of the receipt, sales order or adjustments

1. Click the required button
2. Click the down button of the Transaction Reference
  - a. The list of activities will be displayed
3. User has a choice of status to reverted to
  - a. For Receipt and Sales Order – CANCELLED, DATA ENTRY, DELETE and WAITING
    - i. If DATA ENTRY is opted, users have an option whether to DELETE the delete
    - b. For Delivery Order, Invoice and Adjustment, there is no Status to be specified.
4. Click the Process button to complete the reversal

**15.29.1. Refinement**

**15.29.1.1. Merging of Sales Orders Reversal**

The Sales Orders Reversal are enhanced in 5.399.012.833 to incorporate:

1. Undo Closed 'No Picks' Sales Order
2. Undo Sales Order Release – picks generated but no picks being confirmed yet.
3. Reverse partially or fully picked Sales Orders

This effectively merges the other options in the reversing of sales orders from different status. The other options will thus be dropped in future upgrade.

**15.29.1.2. Pallet Numbers on Reversal**

Change made to overcome issue of '1 pallet number into 2 locations' scenario that arises when a pallet is relocated after a pick. When the sales order is reversed, the stock that was picked is reversed to its original pallet number and location. Thus resulting in the '1 pallet 2 locations' anomaly,

This situation is caused by the needs of operations where sales order is processed and confirmed picked before physical picks. Reversal thus needs to place stock back to its original location.

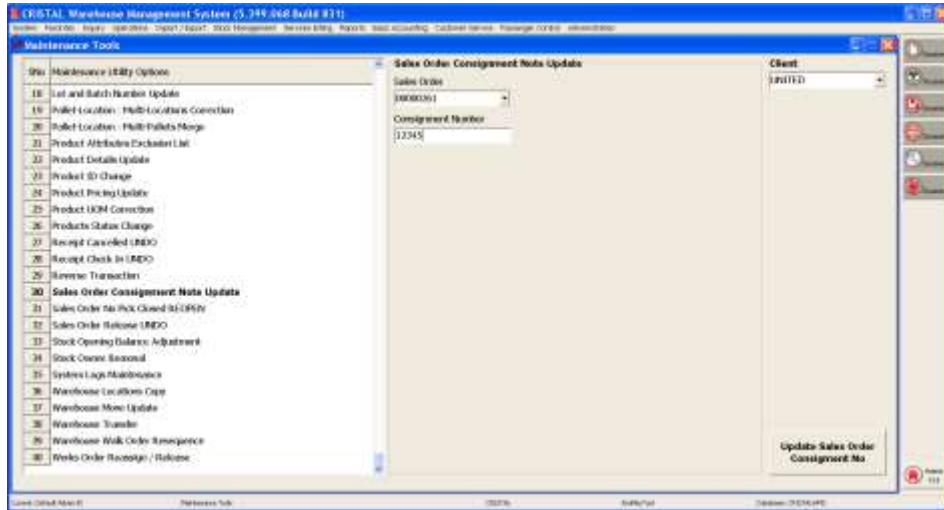
The change made, while still place stock back to its original location, it will add the stock to the pallet that in the location or assign a new pallet if location is empty

Change is also made to default PALLET LOCATION.RECEIPT NO to the MOVEMENT HISTORY.REFERENCE NO or ROW ID, if there is no receipt number (due to stock being added via Stock Adjustment).

**15.30. Sales Order Consignment Note Update**

Function enables users to update the consignment note number in the Sales Order after it has been processed. This caters to operation where Sales Order is picked and sends via courier and would like to record the courier note number which is only available when the courier services pick up the shipment.

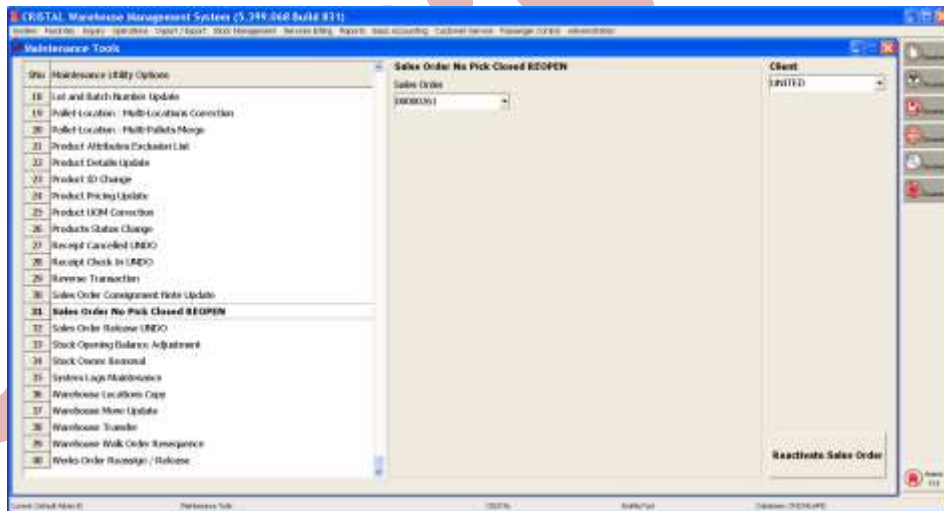
To update, select Client and Sales Order, input the Consignment Number and click Update Sales Order Consignment No.



Note that each sales order records 1 consignment note.

**15.31. Sales Order No-Pick Closed REOPEN**

This option is scheduled to be dropped and the function merged into Reverse Transaction | Receipt in near future.

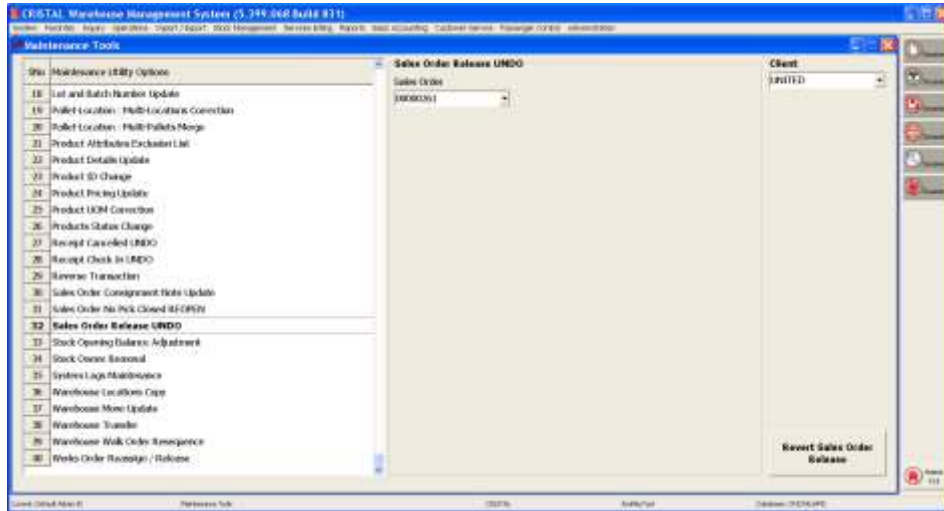


The function enable reopen of a CLOSED sales order that have no picks.

Select the Client and Sales Order and click Re-open Sales Order

The Sales Order status will be updated as DATA ENTRY.

**15.32. Sales Order Release UNDO**

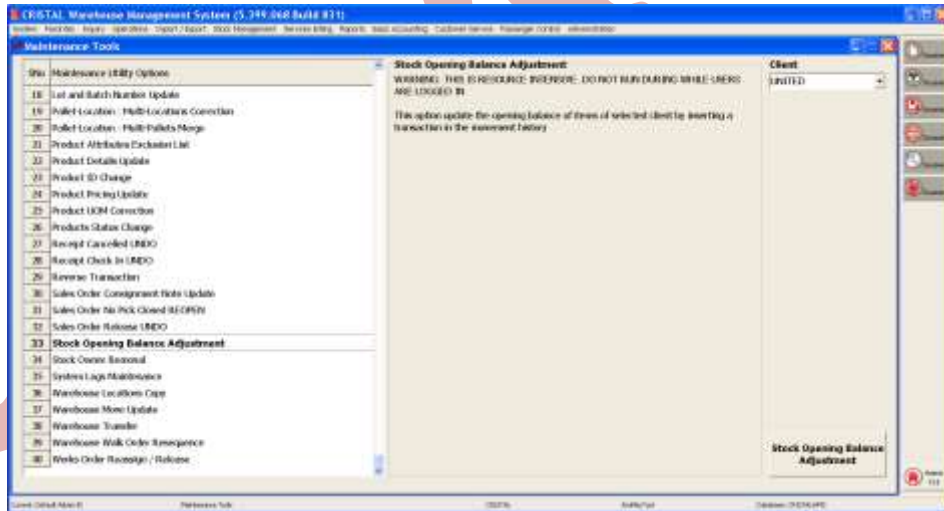


Similar to the above, the option enable user to reverse a Released Sales Order.

1. Select Client
2. Select the released Sales Order to be reversed
3. Click on 'Revert Sales Order Release' button

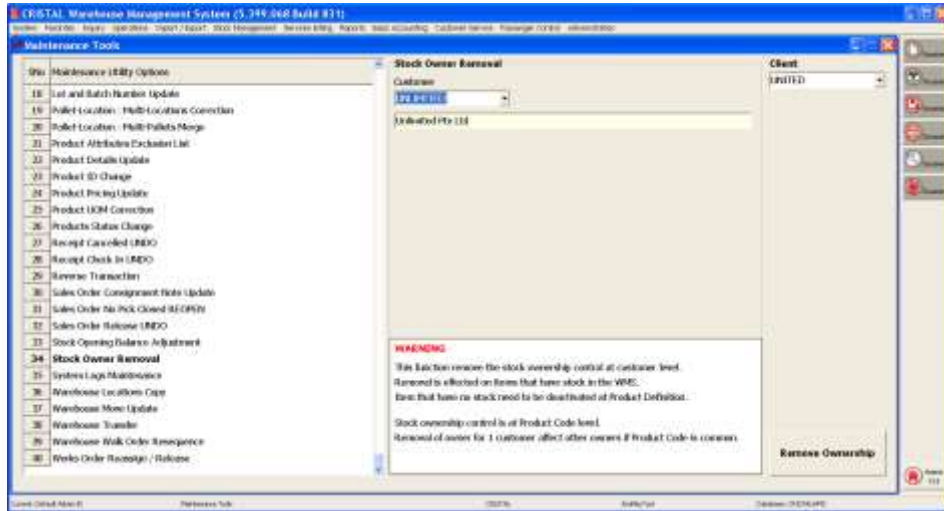
The action cancelled pick tasks and released assigned stock.

**15.33. Opening Balance Adjustment**



The function automatically set the Opening Stock to ZERO by insert stock adjustment transaction in the movements history table. This function should only be used after other methods have been exhausted.

**15.34. Stock Owner Removal**



Stock Owner Removal is designed for removing the stock ownership that is initially required in accordance to business requirement. Such requirement may no longer be required due to business requirement change.

The function removes all stock ownership for existing stock and made them available as common stock. Note the warning given on the screen.

1. Select the client and specify the customer.
2. Click the 'Remove Ownership' button.
  - a. The stock that have previously assigned to the customer will become common stock and available to other customers.

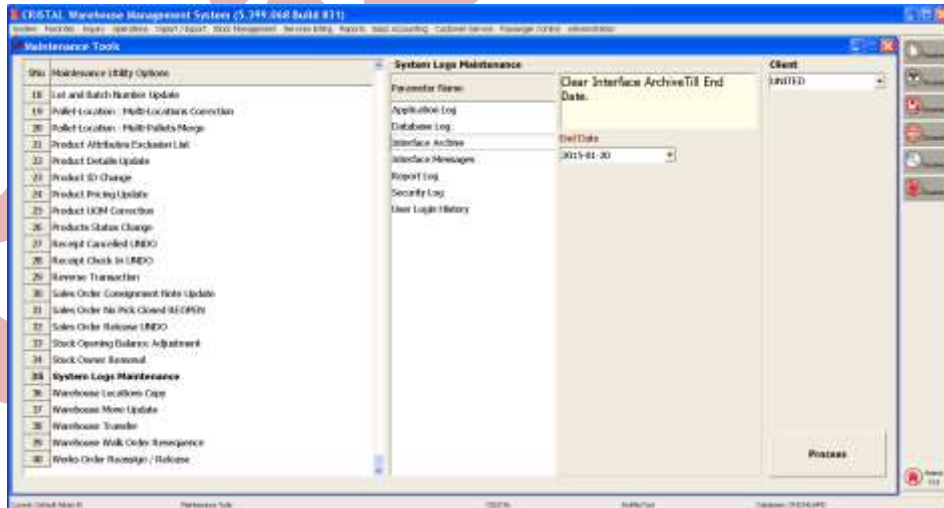
Please note that the removal of ownership of an item for a customer will make stock assigned to other customers also become available as common stock as stock ownership is control at item level.

**15.35. System Logs Maintenance**

This function is moved here in 5.398 Build 711 from System Configuration as part of functionality streamline.

The System Logs Maintenance option is to enable the site administrator to manually clear the logs in the system:

The logs are as shown in the picture below



To clear

1. Select the required log
2. Specify the End Date
  - a. The date the log is to be cleared up to.
3. Click Process.

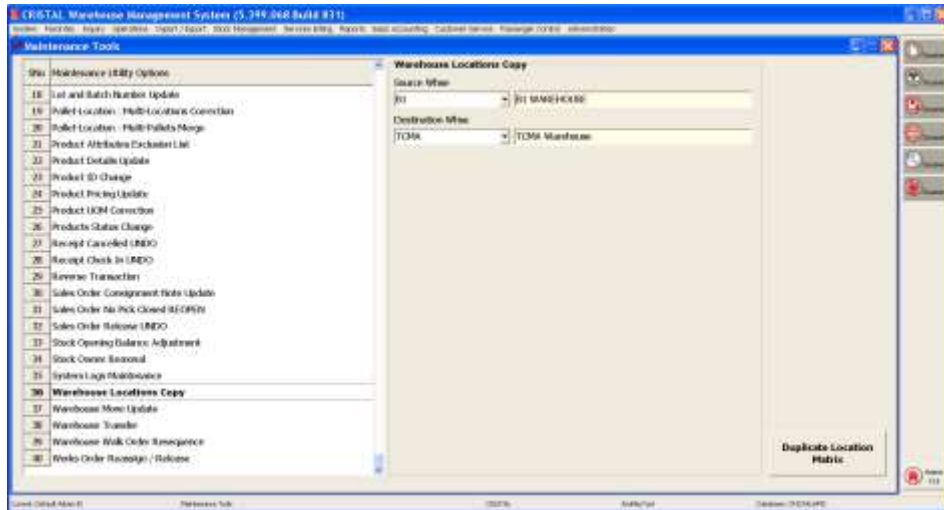
For Database Log, this may not work in SQL Server 2008 and later due to enhanced database security. Clearing of the database log would need to be performed via the SQL Server Management Studio.

**15.36. Warehouse Locations Copy**

The function is a shortcut in the creation of the location matrix of a warehouse by mirroring it from an existing warehouse.

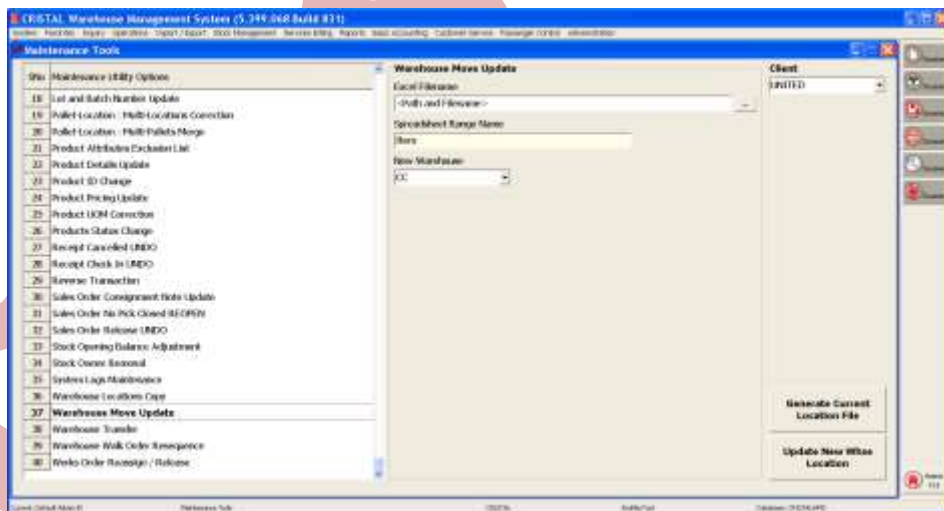
1. Create new warehouse under Facility (Warehouse) Definition
2. In the function UI,
  - a. Select the Source Warehouse to copy from
  - b. Specify the Destination Warehouse to be defined
3. Click Duplicate Locations Matrix command button

The locations matrix created will be actually the same (in properties) as the source warehouse.



**15.37. Warehouse Move**

The function is designed to facilitate operation to move stock of client from 1 warehouse to another. It is a 2 steps process.



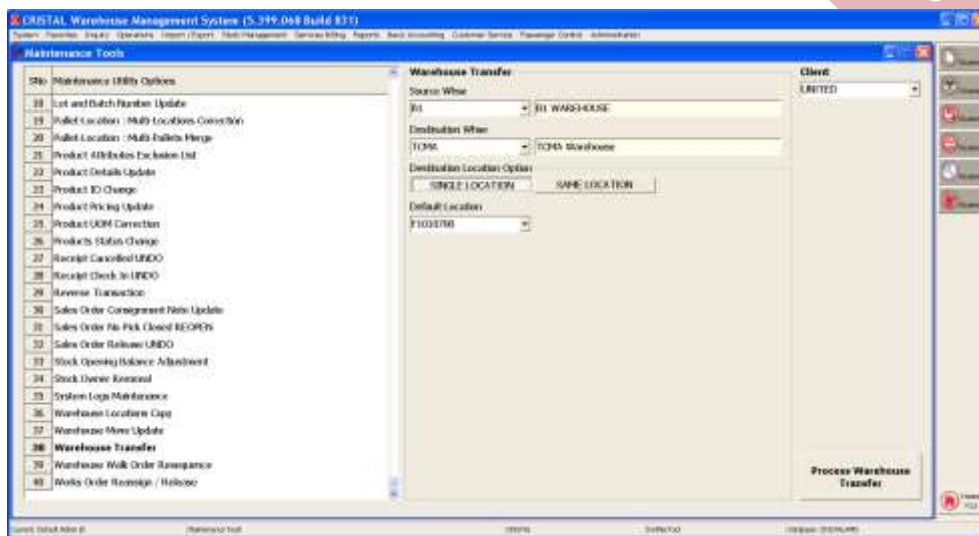
The procedure to update the warehouse move:

1. User is first to generate an Excel file of the pallets of a client using Generate Current Location File
  - a. The function utilise Crystal Reports to create the Excel spread sheet
  - b. The fields in the spread sheet are
    - i. REC\_NUM
    - ii. Whse (current)
    - iii. Cur Location
    - iv. New Location
    - v. Pallet
    - vi. Item Code
    - vii. Description
    - viii. UOM

- ix. Quantity
  - x. Volume
  - xi. Grade
  - xii. Lot Number
  - xiii. Batch Number
2. User is required to input the destination location in the New Location
    - a. Do not add or delete stock into the spread sheet
      - i. Any amendment required must be done before or after the move update
  3. To update the New Warehouse - Location
    - a. Specify the File Location
      - i. Rename the spread sheet name as 'Item'
    - b. Specify the New Warehouse
    - c. Clicking Update New Whse Location

**15.38. Warehouse Transfer**

Warehouse Transfer is designed to facilitate user in the operation where ALL stock of a client is required to be moved from one warehouse to another.



User must ensure all activities – putaway, picking... – have been completed before activating the function.

Select the client to be transferred

1. Select the Source or current warehouse
2. Select the Destination or new warehouse
3. Select whether to transfer all stock to one SINGLE LOCATION or SAME LOCATION address (as the current) in the destination warehouse
4. Specify a default location
  - a. For SINGLE LOCATION, all stock will be assigned to the default location
  - b. For SAME LOCATION, stock will be assigned to the same location address as the current warehouse. If the location is not available, then it will be assigned the default location

The onus is on the user to ensure that stock is transferred to the proper storage locations. It is recommended that a stock report by location is printed before the option is processed.

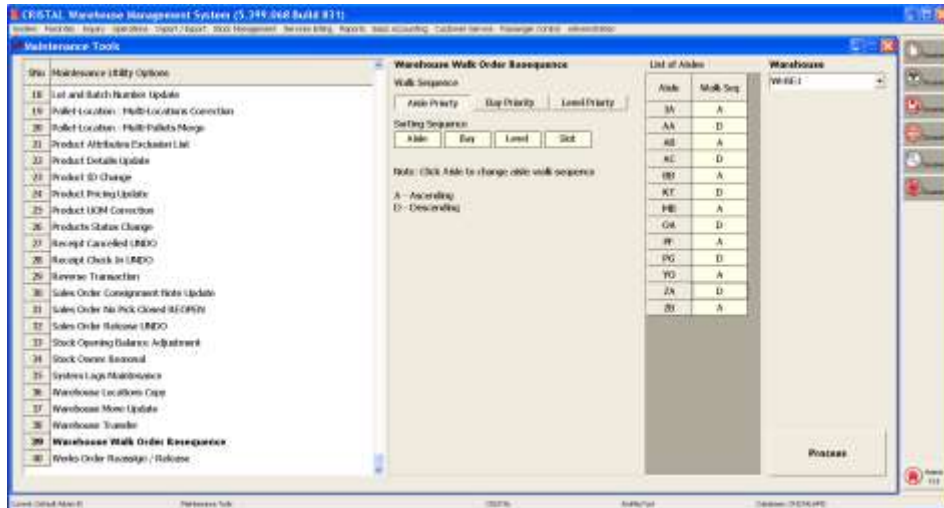
**15.39. Warehouse Walk Order Re-sequence**

The function allow user to re-sequence walk order or picking sequence that the tasks of a works order is being sorted.

The sequencing is prioritised:

1. Aisle
2. Bay
3. Level





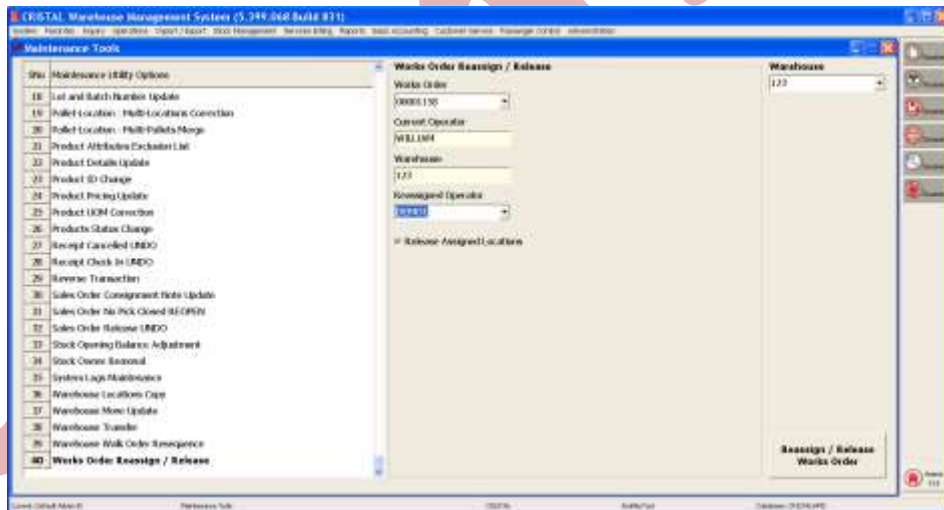
Users have a further option of have alternate ascending and descending walk sequence for Aisle and Level priority – U in the List of Aisles grid box indicate existing sequence to remain unchanged when Updating.

To change the walk sequence of an aisle, select the Walk Sequencing required and then clicks on the aisle in the grid box that is to be change.

The sorting sequence indicates the sorting sequence that each option offers.

**15.40. Work Order Reassign**

The function of Reassign Work Order is to facilitate the transfer of work order from one operator to another. It also enable supervisor to release assigned task beck into the work pool.



**15.40.1. Release Work Order**

To release a work order:

1. Select the work order, which must be current and have not been Task Confirmed.
2. Leave the Reassigned Operator blank
  - a. The 'Release Assigned Locations' is enabled
    - i. Tick the checkbox if the originally assigned picks is to be freed else un-tick the checkbox
3. Click Reassign / Release Works Order
4. The outstanding tasks will be released to the work pool for reassignment by the system to available operators.

**15.40.2. Reassign Works Order**

To reassign a work order:

1. Select the work order, which must be current and have not been Task Confirmed.
2. Select the operator to be reassigned to
3. Click Reassign / Release Works Order

- a. Only unconfirmed tasks will be reassigned

CRISTAL

## 16. MANAGEMENT DASHBOARD AND KPI

This section describes and specified the various Performance Indicators dashboard in CRiSTAL WMS which comprises of:

- **Operators Activities Status**
- **Warehouse Operations Summary**
- **Warehouse Orders Summary**
- **Warehouse Utilization**
- **Key Performance Indicators Report**
- **Real-time Alert**

These real time queries are designed to refresh regularly. These are aims to enable management to monitor the warehouse operations without having to be in the warehouses.

The queries are designed to provide a ‘helicopter’ view of the warehouse operations and computed on approximation in the interest of performance. It is not meant as reference for precision requirement.

The summary is presented in a bar chart, grid box and/or reports.

### 16.1. Operation Activities Status

Operator Activities Status Query provides minute by minute status of operator(s) activities in the form of Bar Chart or Grid.

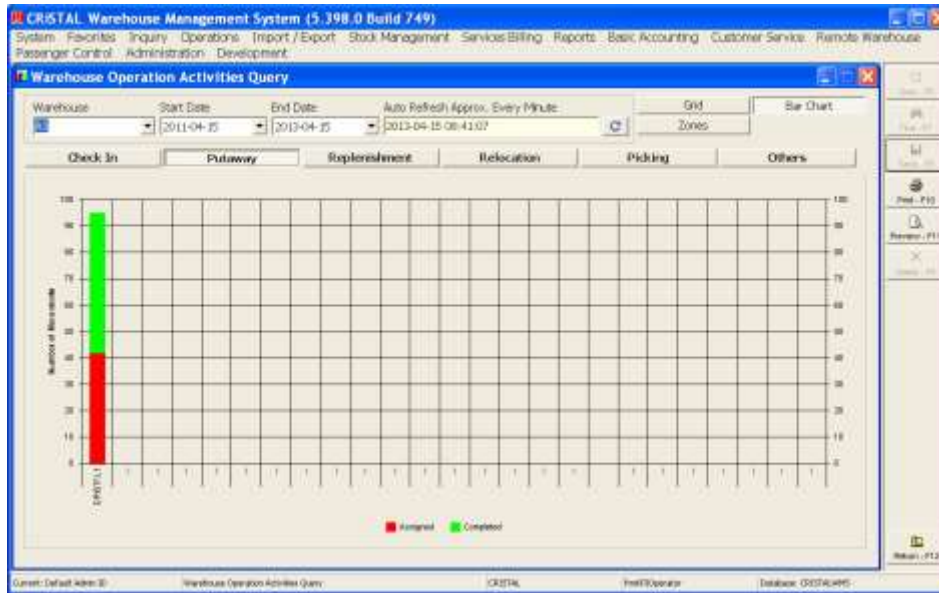
To query, select the warehouse and date range. The data is displayed in Grid or Bar Chart.

The Grid form list all the operators with their tasks (assigned and completed).

Operator	Movement	Assigned	Completed	TOTAL
CRISTAL	Others	0	1	1
CRISTAL	Picking	0	60	60
CRISTAL	Replenish	0	2	2
CRISTAL	Putaway	42	53	95
CRISTAL	Relocation	0	11	11

In Bar Chart, the same data are displayed in charts by tasks:

- Check In
- Putaway
- Replenishment
- Relocations
- Picking
- Others – stock counts...



The Zones option enables management to query on the activities occurring in different zones and the details for following warehouse tasks:

- Picking
- Putaway
- Replenishment

The screenshot shows the 'Warehouse Operation Activities Query' window with the 'Zones' option selected. It displays an 'Outstanding Tasks Summary by Zones' table and a 'Tasks / Activities Details' table.

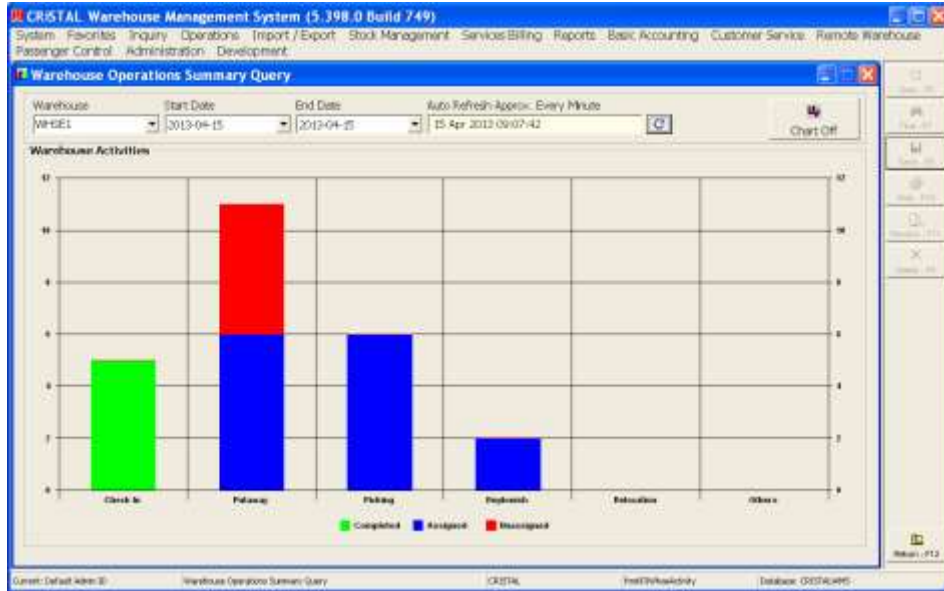
Zone	Tasks Count	Activities Count	Operators Count	Average / Operator
BREAKBULK	4	4	22	1
GENERAL	2	2	22	1

Work Order	Item Number	UOM	Quantity	Location From	Location To
00000570	CHT-2650	PC	100	3A020901	
00000570	CHT-2650	PC	225	3A020902	
00000570	CHT-2650	PC	37	3A020101	
00000570	CHT-2650	PC	50	3A020200	

### 16.2. Warehouse Operations Summary Query

This option provides a 'helicopter' view of the operation of a selected warehouse. The information is presented in the form of a bar chart or grid box.



The date that is used for computation is LAST\_UPDATE, if applicable.

The information presented in the query is

1. Warehouse Task (-Activity) Summary
  - a. Unassigned
    - i. Number of Task-activity that is unassigned (pending)
  - b. Assigned
    - i. Number of Task-activity that have been assigned
  - c. Completed
    - i. Number of Task-activity that are closed during query period

Warehouse Activity	Unassigned	Assigned	Completed	TOTAL
CHECK IN	0	0	5	5
PICKING	0	6	0	6
PUT AWAY	5	6	0	11
REPLENISHMENT	0	2	0	2

Activity	Pending	In Progress	Closed	TOTAL
Putaway	3	0	0	3
Picking	2	0	0	2
Replenishment	1	0	0	1
Replenish	0	0	0	0

Order Type	Count
Data Entry	1
Waiting	5
Receiving	0
Closed	0
TOTAL	6

Order Type	Count
Data Entry	7
Waiting	10
Back Order	1
Closed	0
TOTAL	18

Order Type	Count
Pto Pending	10
Pto Delivered	0
Pto Delivered	0
DO Delivered	0

2. Purchase Order – updated in 5.398 Build 618 to report by specific warehouse
  - a. Data Entry
    - i. Number of PO with status
  - b. Waiting
    - i. Number of PO with status
  - c. Receiving
    - i. Number of PO where receiving have commenced
  - d. Closed
    - i. Number of PO that have been closed during query period
3. Sales Order
  - a. Data Entry

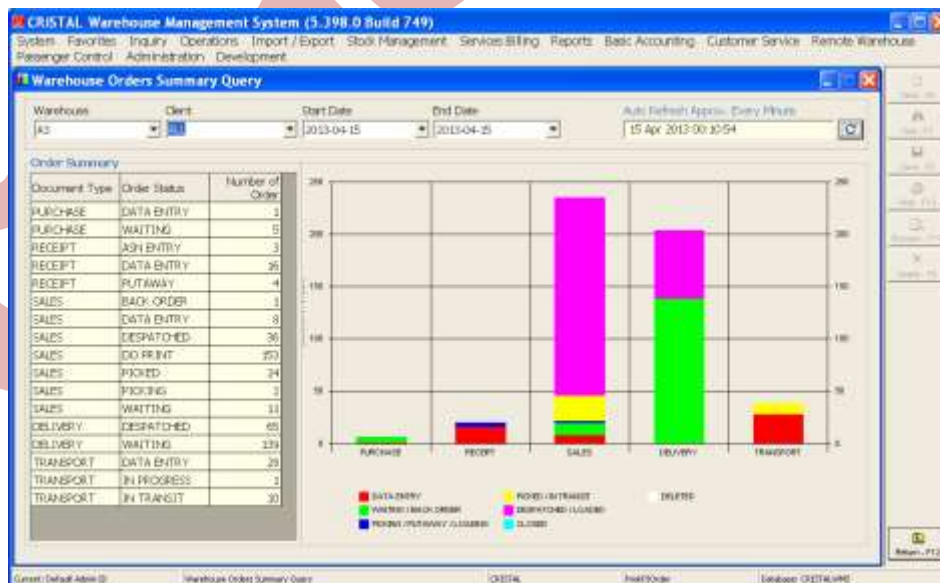
- i. Number of sales orders with status at query time
  - b. Waiting
    - i. Number of sales orders with status at query time
  - c. Back Order
    - i. Number of sales orders with status at query time
  - d. Closed
    - i. Number of sales orders that are closed during query period
- 4. Works Orders Summary – this shows the various status of the Putaway Picking Replenishment and Relocation tasks
  - a. Assigned
    - i. Number of Task-Activity that are assigned
  - b. In Progress
    - i. Number of that are works in progress
    - ii. This is meaningful only for RF based operation
  - c. Closed - Number of task-activity confirmed during query period
- 5. Delivery Orders
  - a. Pallets Pending
    - i. Number of pallets (number) in despatch grid (station)
  - b. Pallets Delivering
    - i. Number of pallets for which DO is printed
  - c. Pallets Delivery
    - i. Number of pallets delivered
  - d. DO Delivered
    - i. Number of delivery orders delivered during query period

This is conditional that Delivery order Confirmation is activated else only Pallets Pending would be meaningful.

**16.3. Warehouse Orders Summary**

Warehouse Order Summary Query provides the summary status on the various orders pertaining to the warehouse operations namely

- Purchase Orders
- Goods Receipt
- Sales Orders
- Delivery Orders
- Transport Orders



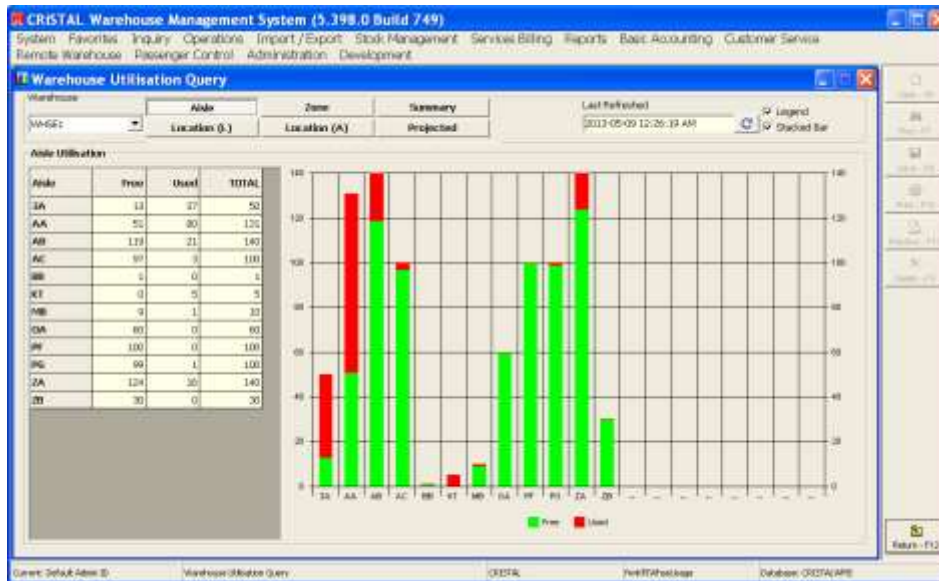
1. Click Warehouse Order Summary Query under the Warehouse sub module. The system shall display current order status based on the default warehouse.
2. Select Warehouse, Client, Start Date and End Date of the required parameter. Click Refresh to load the new display. The screen auto refreshes every one minute.



### 16.4. Warehouse Utilization

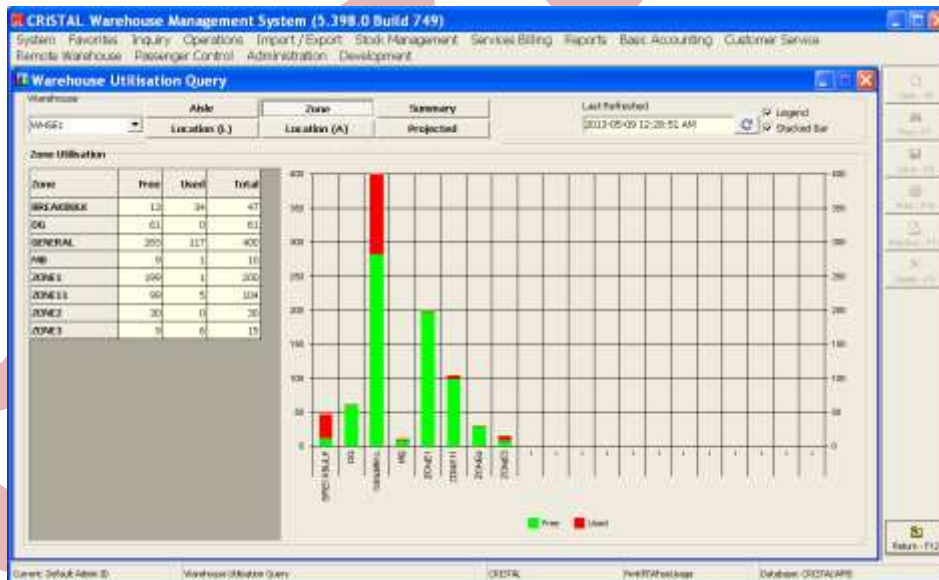
The function presents an overview of the warehouse locations usage status. The overview are provided in a number of options as follows

#### 16.4.1. Aisle



Limited to the first 20 aisles due screen estate limitation

#### 16.4.2. Zone



Limited to first 20 zones due screen estate limitation

#### 16.4.3. Location by Level

The Percent Used is computed by Volume or Weight. The graphic presentation is by Level of the locations. (Note: this limited to locations that are defined in CRISTAL address convention (Aisle-Bay-Level-Slot)



**16.4.4. Location by Aisle**

Introduced in Build 749.

The Percent Used is computed by Volume or Weight.

The graphic presentation is by Aisle of the locations. (Note: this limited to locations that are defined in CRISTAL address convention (Aisle-Bay-Level-Slot))

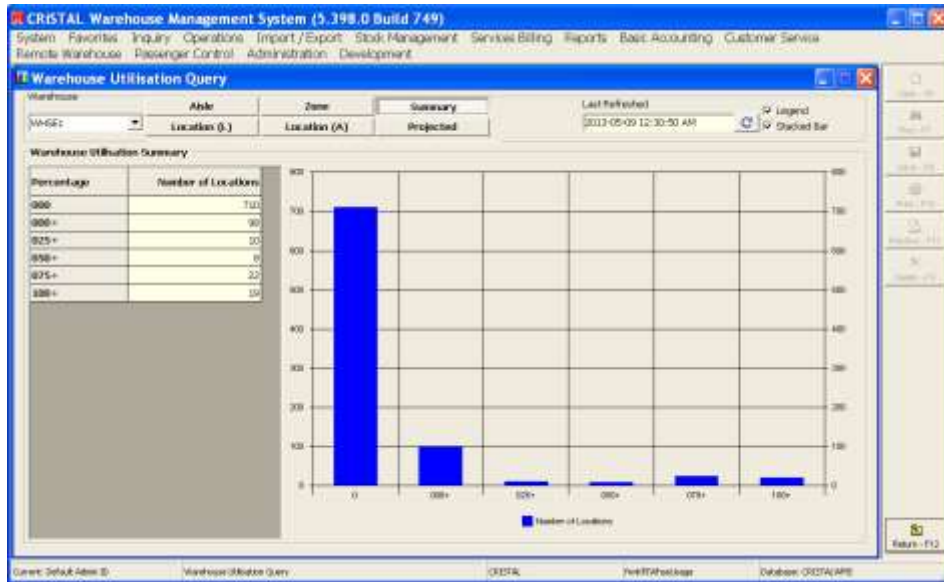
The columns title is Bay-Slot.



The Level is sequenced in descending order. This pictorial view allows management to have a quick of how the racks are loaded. If there is more green at the bottom, management must review the process and logic of putaway as the racks are effectively top heavy – a highly dangerous scenario if the pallets are holding dense product.

**16.4.5. Summary**

This summarizes the locations by percentage used by Volume



**16.4.6. Projected**

The option aims to give a projection of warehouse space requirement. The volume and weight is calculated based on dimensions and weights defined in Product UOM table. Product that are of non-standard dimensions and weights would therefore not be considered appropriately. Assumption is made that outbound would always be issued before receiving. Option would be of real benefits if data of purchases and advance ship notes are available together with advance entry of sales orders.

Date	City	MTon Inbound	MTon Outbound	MTon Available	MD Inbound	MD Outbound	MD Available	PALET Inbound	PALET Outbound	PALET Available	Source
2023-05-08	CANON-H-T	0.259		882.743	0.503		2549.004	1		745	STOCK
2023-05-08	MFO	2.7		881.043	3.189		2946.641	3		743	STOCK
2023-05-08	UNITED	183.446		899.989	274.723		3271.935	234		889	STOCK
2023-05-08	WHE O.72	0.085		498.35	0.173		3271.747	2		567	STOCK
2023-05-08	WHE O.72	0.267		499.023	0.367		3271.36	2		565	STOCK
2023-05-08	WHE OUST	0.013		498.03	0.017		3271.383	1		564	STOCK
2023-05-08	UNITED		0.25	499.00		0.059	3271.422		0.1	504.1	SALES
2023-05-08	UNITED		0.1	498.39		0.117	3271.599		0.1	504.2	SALES
2023-05-08	UNITED		0.25	498.25		0.176	3271.725		0.2	504.4	SALES
2023-05-08	UNITED		0.2	499.51		0.225	3271.95		0.2	504.6	SALES
2023-05-08	UNITED		0.25	499.26		0.259	3272.069		0.1	504.7	SALES
2023-05-08	UNITED		0.01	499.57		0.312	3272.021		0	504.7	SALES
2023-05-08	UNITED		0.075	499.645		0.388	3272.129		0.1	504.8	SALES
2023-05-08	UNITED		0.075	498.72		0.391	3272.2		0.1	504.9	SALES
2023-05-08	UNITED		1.25	500.77		1.232	3272.432		1.1	506	SALES
2023-05-08	UNITED		0.6	503.37		0.704	3274.136		0.0	505.5	SALES
2023-05-08	UNITED		0.1	503.47		0.117	3274.253		0.1	506.7	SALES

**16.5. Key Performance Indicator Report**

The Key Performance Indicators report, per appendix, is formatted as a generic templates with the objective of meeting as many as requirements as possible.

The calculations of the KPI are as follows:

Key Performance Indicators	Calculations
Inventory Turn - Quantity	The ratio of Quantity Picked (Issued) divided by the Average Stock during reporting period
	The Average Stock is the average of Opening and Closing Stock

Key Performance Indicators	Calculations
Inventory Turn - Volume (M3)	As above but by Volume.  Volumes is calculated from the UNIT volume – as effective at time of receipt
Stock Accuracy By Items ADJUSTED	The NUMBER of item code adjusted divided by the number of item code that is NOT flagged as INACTIVE
Stock Accuracy By Quantity ADJUSTED	The ration of Quantity Adjusted divided by the Average Stock during reporting period
Order Picking - Before Due	The percentage of Sales Orders picked BEFORE required Pick Date against the total number of sales orders during reporting period.  Pick Date referred to the specified pick date in Sales Orders
Order Picking - On Time	The percentage of Sales Orders picked ON required Pick Date against the total number of sales orders during reporting period.  Pick Date referred to the specified pick date in Sales Orders
Order Picking - Past due	The percentage of Sales Orders picked AFTER required Pick Date against the total number of sales orders during reporting period.  Pick Date referred to the specified pick date in Sales Orders
Storage - Location as at 2011-02-18 15:09:18	Number of storage location occupied at print time
Storage - Carton as at 2011-02-18 15:09:18	Number of 'Carton' in storage locations at print time. Assumption – no mixed item in each carton, If a carton contain multiple items, it is multiple-count.
Receipt – Shipment	Number of receipts during reporting period basing on putaway date. Receipt that is 'reversed' is not counted
Receipt – Location	Number of Location that is assigned and confirmed for putaway during reporting period.
Receipt – Carton	Number of carton that is received and putaway during reporting period. Assumption – no mixed item in each carton, If a carton contain multiple items, it is multiple-count.
Picking - Sales Orders	Number of sales order that is picked during reporting period.
Picking - Sales Order Lines	Number of sales order lines that are picked during reporting period.
Picking – Carton	Number of carton that is picked during reporting period. Assumption – no mixed item in each carton, If a carton contain multiple items, it is multiple-count.
Time Receipt (48 hours)	The percentage of receipts that is putaway on time basing on the Create date-time of the receipt and the putaway time of the last pallet.  On Time is as defined within the specified process times as specified in Client Profile   UDF Parameter   Miscellaneous   ON_TIME_RECEIPT
Time Delivery (0 days)	The percentage of sales orders that is delivered on time basing the Delivery Date (specified in Sales Order) and the Delivered Date as updated in Delivery Order Confirmation.  On Time is as defined within the specified process times as specified in Client Profile   UDF Parameter   Miscellaneous   ON_TIME_DELIVERY.  Noted that there is no time component in the Sales Order's Delivery Date/

**16.5.1. Sample Report**

<b>CRISTAL Solutions Pte Ltd</b>			
<b>CLIENT KEY PERFORMANCE INDICES for period from 2/1/2011 to 2/18/2011</b>			
<b>Client: CRISTAL Solutions Pte Ltd</b>			18 Feb 2011
<b>Key Performance Indicator</b>	<b>Quantity</b>	<b>Total</b>	<b>Indices</b>
001. Inventory Turn - Quantity	4,196	84,048	0.05
002. Inventory Turn - Volume (M3)	30	695	0.04
003. Stock Accuracy By Items ADJUSTED	3	147,409	100.00 %
004. Stock Accuracy By Quantity ADJUSTED	53	91,899	99.94 %
005. Order Picking - Before Due	98	118	83.05 %
006. Order Picking - On Time	17	118	14.41 %
007. Order Picking - Past due	1	118	0.85 %
008. Storage - Location as at 2011-02-18 15:09:18		775	
009. Storage - Carton as at 2011-02-18 15:09:18		3,989	
010. Receipt - Shipment		19	
011. Receipt - Location		46	
012. Receipt - Carton		279	
013. Picking - Sales Orders		104	
014. Picking - Sales Order Lines		1,338	
015. Picking - Carton		425	
016. On Time Receipt (48 hours)	19	19	100.00 %
017. On Time Delivery (0 days)	88	118	74.58 %

CRISTALWMS	SINTAZ
Q:\CRISTAL Solutions\Warehouse Management System\Reports\Client Key_Performance_Indices.rpt	Page 1 of 1

**17. REAL-TIME ALERT**

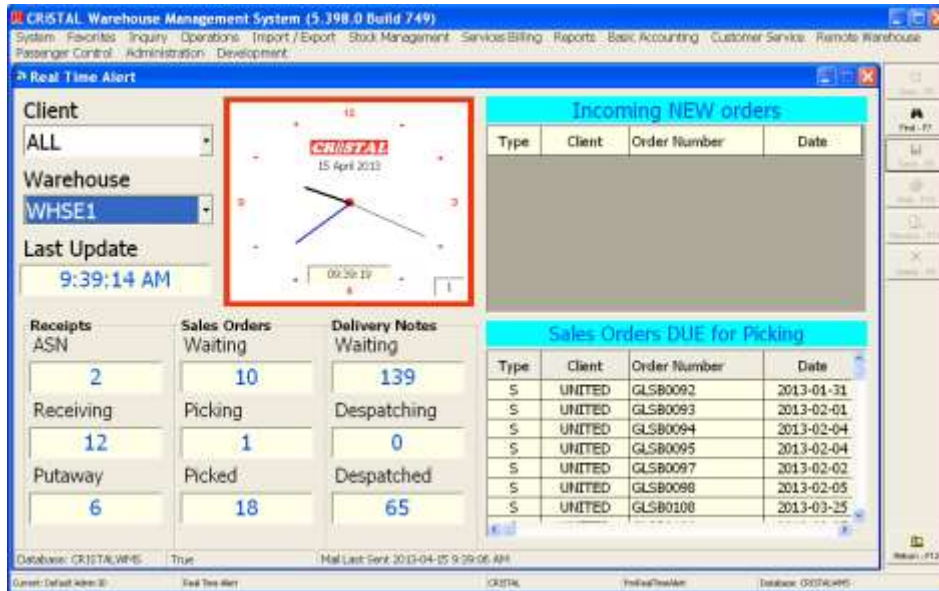
*The module is available as a function in the CRISTAL WMS desktop program and as a standalone program*

The primary objective of Real Time Alert is to monitor the database for new receipt and sales orders in an operation where the receipt ASN and sales orders are being updated via EDI.

In addition, the function can be configured to send an email to a user to alert him / her of incoming orders. (Build 5.394.33 and later)

In addition, it assist the warehouse operation to monitor on a real time basis sales orders that are due for picking and trigger supervisors for required actions by playing an audio sound.





The function provides information on the number of orders that is awaiting further actions:

1. Receipts
  - a. Receipt ASN received
  - b. Incoming shipment that is currently in Receiving
  - c. Receipt that is checked in pending Putaway
2. Sales Orders
  - a. Waiting for picking
  - b. In the Picking process
  - c. Picked waiting for creation delivery order
3. Delivery Notes
  - a. Waiting for loading
  - b. Loaded waiting for despatch - Despatching
  - c. Despatched waiting for confirmation

The analogue clock show the current time based on the workstation clock setting. The date shown in the clock is today date and at the lower right corner is the time interval in minutes that the system refreshes the screen display.

The New Orders lists new receipt ASN and sales orders that have been created in the 30 minutes (default – user configurable).

The Sales Orders DUE are sales orders in WAITING that is due to be picked, taking into consideration the advance picks that the operation practise. (Default 1 day in advance – user configurable)

### 17.1. Detail Enquiry

Click on any of the orders will automatically open the order query waiting for user to check the details.





The option allows user to monitor all Clients in the default warehouse of the login user or specific client in specific warehouse. The frequency of scanning the database is specified by the 'Refresh' in minutes.

NOTE: Avoid keeping the function running in the background as it is resource intensive due to the requirement to constantly monitor change to the database.

### 17.2. Sales Orders Due for Picking

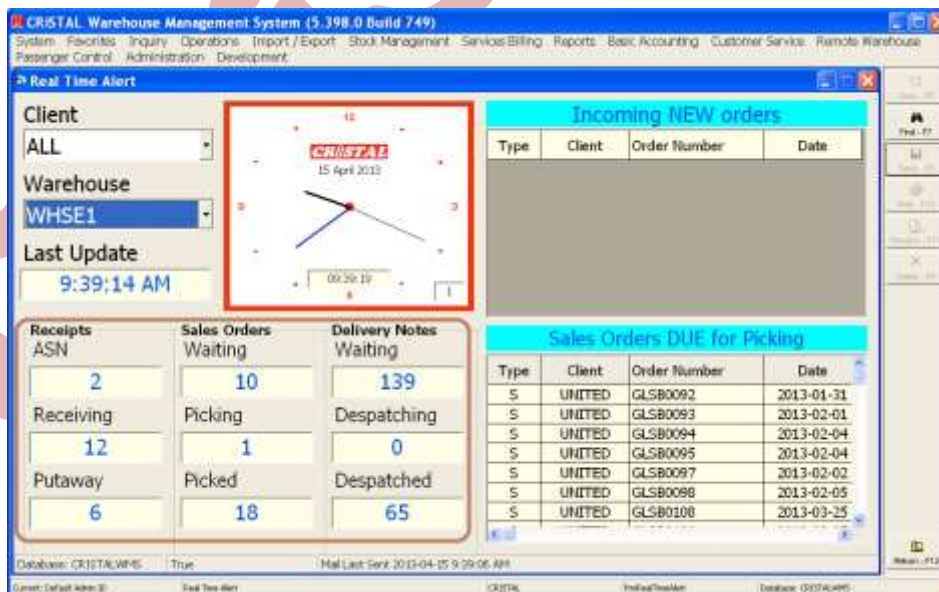
Sales orders that are due for picking can be released for picking and generation of pick orders via Sales Order Manage.

Alternatively, a sales order can be released individually by click on the required orders that is listed as due for picking. This will open the Sales Order Entry form and display the order. User can then Release To Warehouse and generate the require picking order.

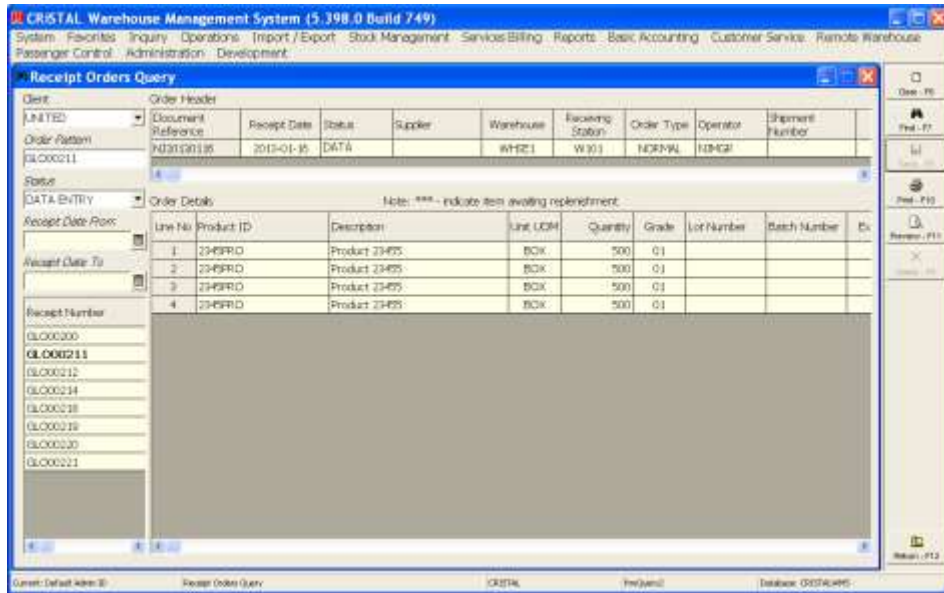
### 17.3. Other Queries

Click on any of the textboxes (circled in the picture below) will force the details to be displayed in the top right grid box.

This is as shown below where the Receipts – Receiving is being listed



Clicking on any of the list orders will open the Query window and display the order details.



**17.4. Function and Setup**

The option is self-contained with minimal configuration. The default refresh is 1 minute.

An audio will be sounded if there are new orders – receipt or sales orders – created in the last 30 minutes. The orders will be listed in the ‘New Order Received’ and the caption will flash.

The same audio will also be triggered if there are sales orders that are due for picking and have not been processed. The orders will be listed in the ‘Sales Order DUE’ and the caption will flash.

The audio is triggered by playing a wave file.

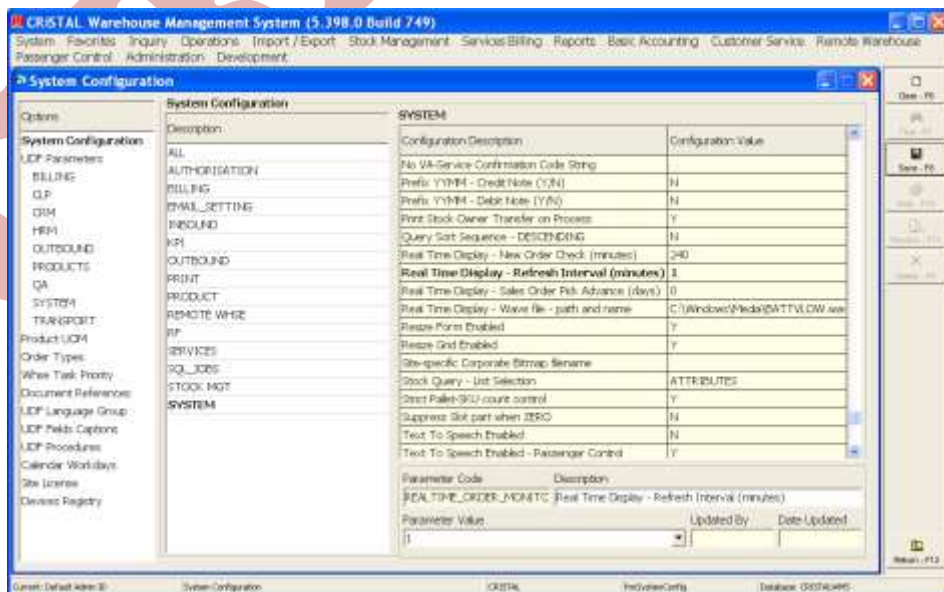
The default is "C:\Windows\Media\BATTVLOW.wav". This file must exist in the specified folder.

**17.5. Site Customisation**

The default settings describe above can be configured by the user to site requirement in the System Configuration option.

The parameters are as follows:

- Real Time Display – New Order Check (minutes)
- Real Time Display – Refresh Interval (minutes)
- Real Time Display – Sales Order Pick Advance (days)
- Real Time Display – Wave file – the full drive, path and file name

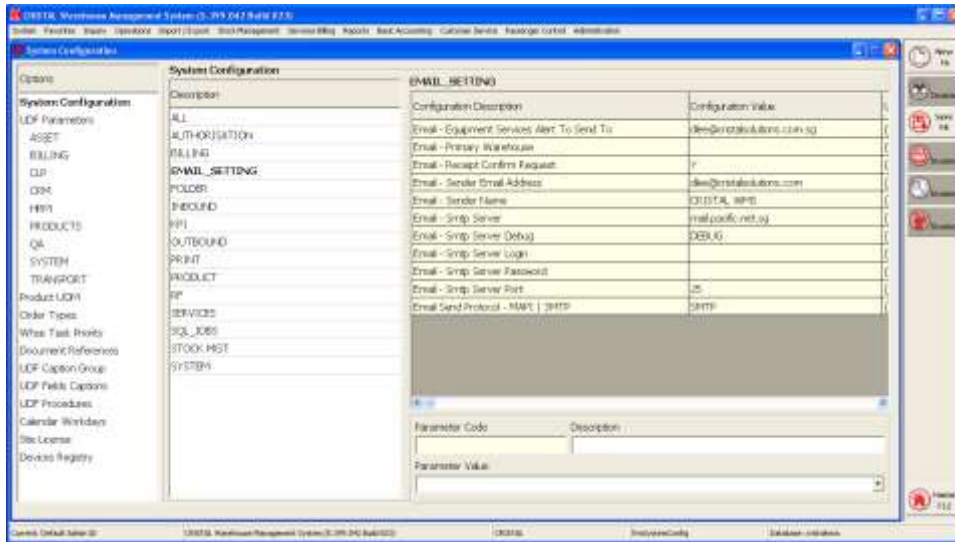


**17.6. Configuration for Email Alert**

This function is available in Release 4.384.33 and later

To set up the Real-time Alert to send email to alert user, the configuration requirement is as follows.

### 17.6.1. System Configuration



The sending protocol of the email can be configured to be via SMTP or MAPI.

If MAPI is used, it is necessary that Microsoft Outlook 2000 or later is installed and active on the same machine that is running the Real Time Alert.

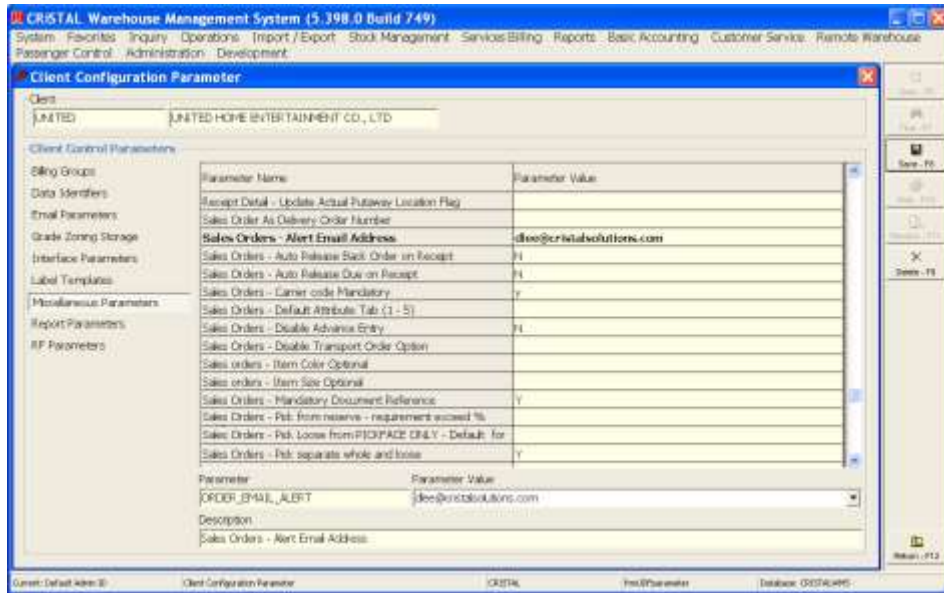
If SMTP is used, a valid SMTP Server must be accessible by email client and port 25 must be opened.

The following parameter must be completed in the System Configuration | Email Setting

Parameters	Remarks
1. Email – Sender Email Address	Must be a valid email address
2. Email – Sender Name	Defaulted to email address if not specified
3. Email – SMTP Server	Must be a valid SMTP server if Email Send Protocol is SMTP. The SMTP must not require authentication.
4. Email – SMTP Server Debug	Update either as DEBUG or NODEBUG – this is used for troubleshooting to monitor the sending progress if SMTP is used
5. Email – Smtip Server Port	Port 25
6. Email Send Protocol – MAPI   SMTP	MAPI or SMTP

### 17.6.2. Client Setting

Beside the System Configuration, it is necessary to specify the email account to which an email alert is to be send to for each client that requires it.

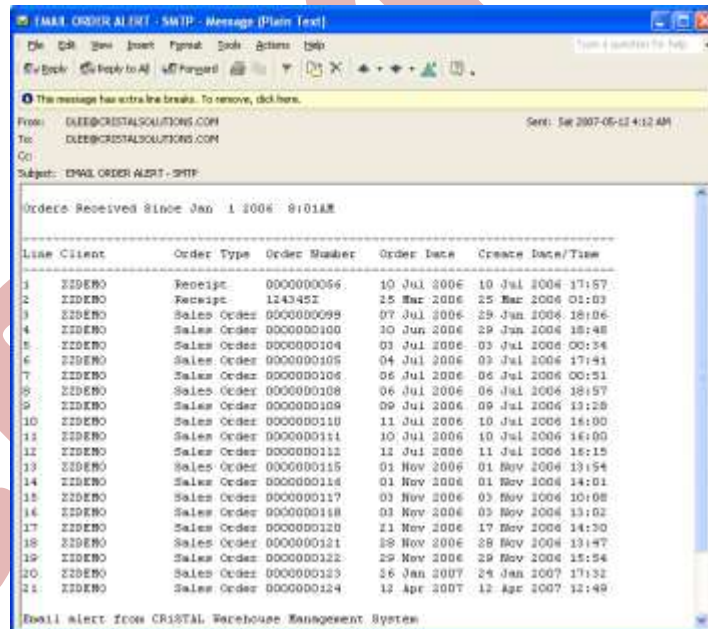


This parameter is in the Client Profiles | UDF Parameters | Miscellaneous Parameters | Sales Order – Alert Email Address.

To send to more than one email address, separate the email address with semicolon (;).

### 17.6.3. Email Alert

Following email alert will be sent to the defined email account defined by individual client.



## 18. 3PL WAREHOUSING REVENUE-COST ANALYSIS

The 3PL warehouse revenue-cost analysis is a report that enables management to have a quick overview of a warehouse and the profitability of individual clients on a real-time basis.

### 18.1. Concept

The report is designed as a management tool to provide management a real-time overview of the warehouse viability. It is not a financial report and the format has been designed as a generic report.

The report is very computation intensive and may take 15 minutes or more to generate.

This report is only available in the Enterprise edition of CRISTAL WMS and for operations where the billing module is deployed.

#### 18.1.1. Data Sources

The report relies on the billing module data and warehouse costs as defined in Warehouse Costs Maintenance.

#### 18.1.2. Report Structure

Following are the data that are presented in the report (see Report Sample):

- 1 Warehouse
  - a. Reporting warehouse
- 2 Date range
  - a. Reporting period date Range
- 3 Client
  - a. Client Code
  - b. Client Name intentional suppressed for confidentiality
- 4 Revenue
  - a. Extracted from Billable Activity
  - b. Only CLOSED bill references are extracted
  - c. If required Date Range does not coincide with billing dates, the revenue is apportion based on numbers of days within the reporting date range
  - d. Revenue breakdown as follows based in Warehouse Cost Groups as defined in Billable Activities Setup (Details)
    - i. Storage
    - ii. Handling
    - iii. Contract
- 5 % of {Revenue} Total
  - a. Percent of Client revenue of Warehouse total revenue
- 6 Work Unit Equivalent
  - a. Bill Quantity \* Work Unit
  - b. Work Unit – ratio of effort of work tasks against a standard reference
    - i. This is specified in Billable Services Setup (Details)
    - ii. If not specified, default value is 1
  - c. This is break down as follows
    - i. Storage
    - ii. Handling
    - iii. Contract
- 7 Allotted Cost
  - a. Allotted warehouse costs based on the percentage of {Work Unit} Total
  - b. Warehouse costs – maintained in Warehouse Costs Maintenance
    - i. The Expense is to be first set up in Account Codes Maintenance – for the billing company of the Client
    - ii. The warehouse cost is maintained by Year Total
      - This is apportioned by days for the reporting period against 365 days.
  - c. This is break down as follows
    - i. Storage
    - ii. Handling
    - iii. Contract
- 8 Profit (Loss)
  - a. Revenue less Allotted Cost
- 9 {Gross} Margins (%)
  - a. Gross profit / loss margin against Revenue



**18.1.3. Work Unit**

Work Unit is based on the principle of Standard Costing. However, with Standard Costing, the actual operational costs may over or under recovered depending on the level of activities during the reporting period. To overcome the issue, the report apportions Warehouse Costs based on the ratio of activities that are performed for each client. The Work Unit factor, maintained in the Billable Activity Setup, is a weighing factor for each of the billable activities. The Work Unit Equivalent is calculated by summing the billable quantity \* Work Unit factor.

**18.2. Setup for Reports**

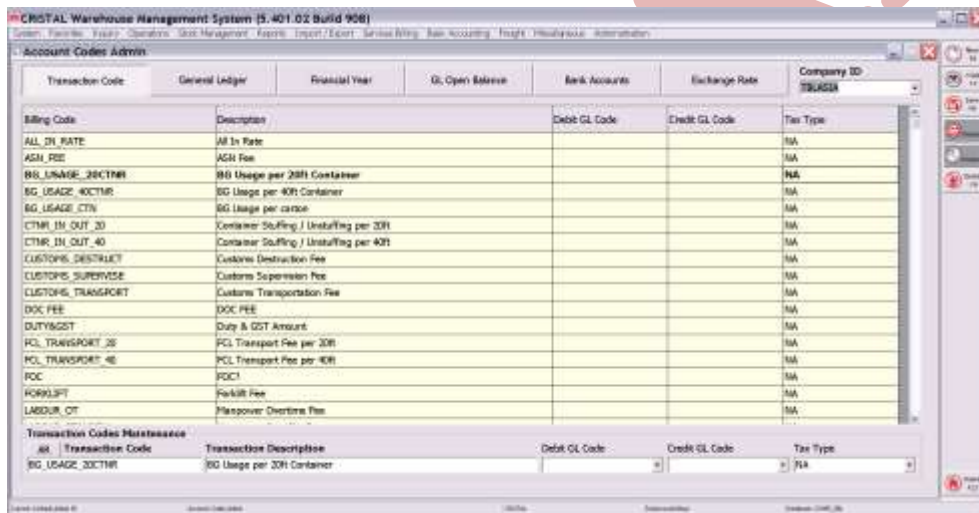
Before a meaningful report can be generated, a number of setup and configuration have to be completed.

**18.2.1. Warehouse Costs**

The warehouse costs – fixed and variable – must be defined to enable the report.

**18.2.1.1. Expense Code Setup**

To define the warehouse the Expense Code must be first defined in Account Codes Maintenance | AP (Accounts Payable)



1. To update, specify
2. Transaction Code (which is the Expense Code in Warehouse Costs Maintenance)
3. Transaction Description
4. Debit GL Code (optional)
5. Credit GL Code (optional)
6. Tax Type (optional)
7. Click SAVE

**18.2.1.2. Typical Warehouse Costs**

Following listed are some of the costs in a warehouse operation.

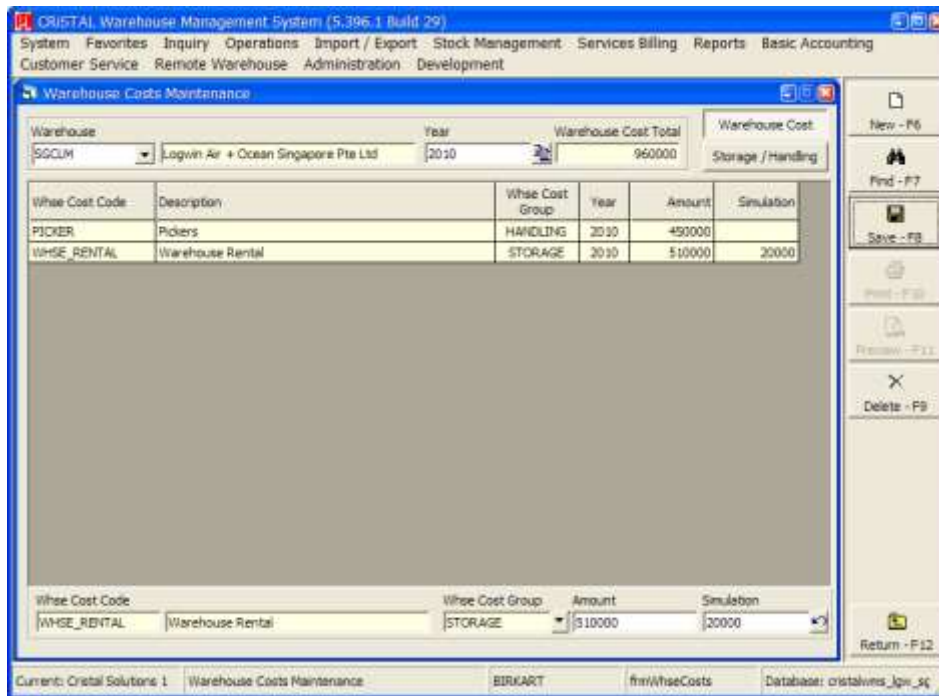
1. Warehouse proper
  - a. Rent or Lease on the Building or Land
  - b. Buildings Depreciation
  - c. Repair & Maintenance
  - d. Security
2. Material Storage and Handling Equipment
  - a. Depreciation
  - b. Repair & Maintenance
3. Cleaning & Refuse Collecting
4. Service Charges
  - a. Staff Compensation and welfare / benefits
  - b. Recruitment and Severance cost
5. Insurance



- a. Building
- b. Staff Medical and Accidents
- 6. Electricity & Gas & Water
- 7. Office Equipment
  - a. Including IT – software....
- 8. Overheads
  - a. Financial costs
  - b. Head Office

The above are by no means exhaustive lists. Each warehouse would have its own costs factors.

**18.2.1.3. Warehouse Costs Maintenance**



The menu option is under Service Billing | Administration.

The costs are maintained at YEAR total.

To update

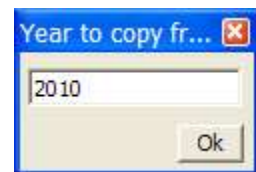
1. Select Warehouse
2. Input the Year to update
  - a. Last updated data, if any, will be loaded on the cursor Lost Focus or jump out of the text box
3. Select Whse Cost Code to update, click row in grid box
4. Specify the Whse Cost Group
  - a. STORAGE
  - b. HANDLING
  - c. CONTRACT
5. Input Amount
6. Input Simulation amount, if required
7. Click Save
8. Repeat 3 to 6 as required.

The Warehouse Costs Total is displayed on the top right corner.

Create Year data by copy

To create a year warehouse costs data by copying from previous year:

1. Specify the Year to be created
2. Click the Copy button located on the right of the Year textbox
  - a. A popup textbox will appear
  - b. Input the Year to be copied from and click
3. The created Year data will be listed
  - a. Note that Simulation amount will not be copied



**18.2.1.4. Clear Simulation Data**

To clear simulation Data, specify the Warehouse and Year. Then click the Undo button beside the Simulation textbook.

**18.2.1.5. Clear Year Data**

To clear a Year warehouse cost, click Delete.  
 User will be prompted whether to proceed.  
 On Yes, the data for the specified will be cleared.

**18.2.2. Whse Cost Group and Work Unit Maintenance**

The Whse Cost Group work unit is maintained in the Billable Serviced Setup.  
 The warehouse revenues and costs are grouped into 3 groups

1. Storage
  - a. This is basically storage services
    - i. The costs are subjected to site definition
      - Warehouse Depreciation / Rental
      - Equipment ...
2. Handling
  - a. Services performed such as receiving, picking, shrink-wrap, labelling...
3. Contract
  - a. Outsourced services



The Work Unit is defined at Client – Quotation level. This enables different Work Unit be specified for different client for the same bill code or even for same client but different quotations that is effective for different period. For services, WORK UNIT would be equivalent FTE (Full Time Equivalent).

For storage, WORK UNIT would be the ratio between different billing UOM.

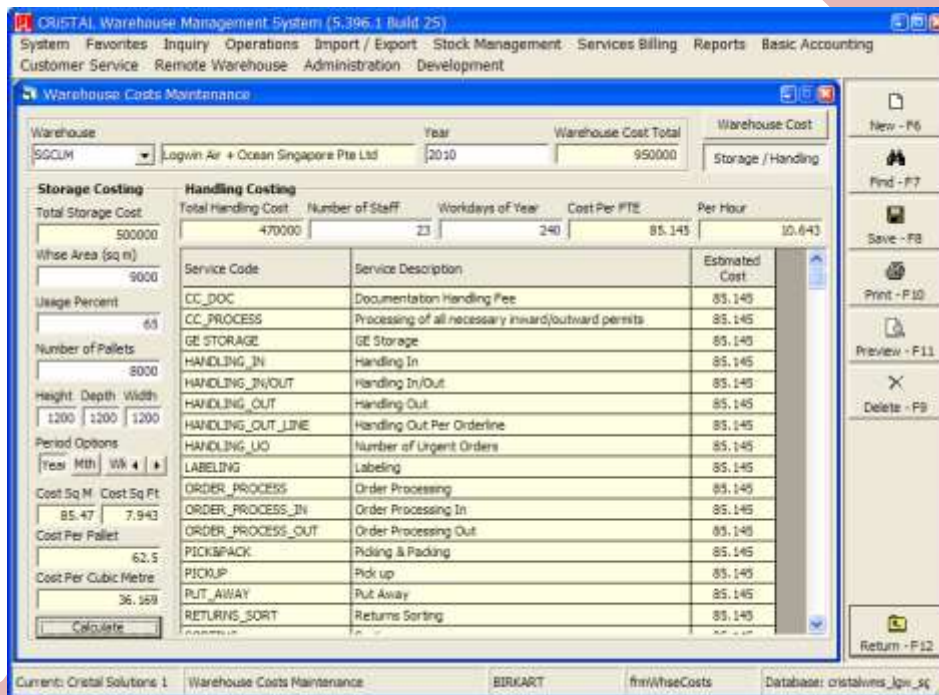
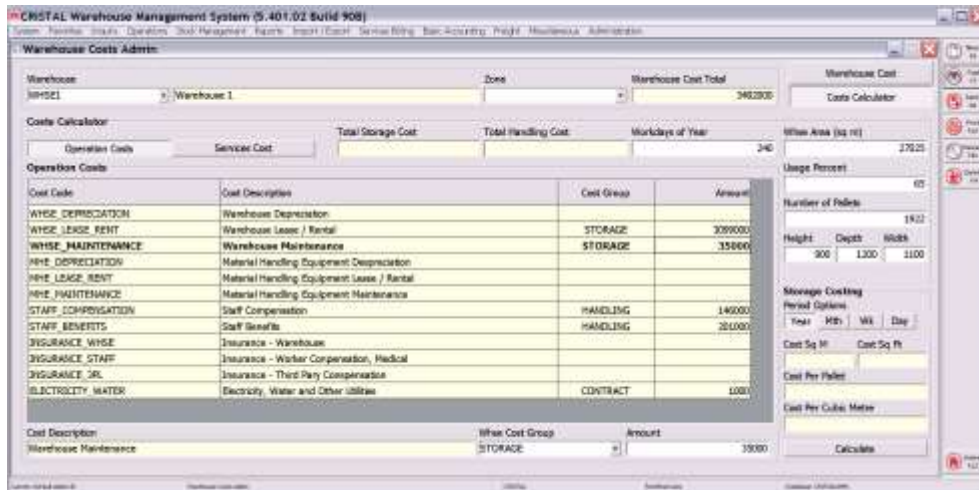
The above are examples only. There is no specific definition that users must adhere. The purpose of the WORK UNIT is for the purpose of cost allocation and user is free to define as preferred.

However, the WORK UNIT of 'SYSTEM' services are used in Handling costs estimation. It would be of better value to define it in term of FTE.

To update

1. Select the quotation and goes to Details
2. Click row
3. Input the Work Unit
  - a. If not specified, default value is 1
4. Specify the Whse Cost Group
  - a. Click Drop Down button to select
  - b. If not defined, it is defaulted based on the Service Type
    - i. Storage – default as STORAGE
    - ii. Others – default as HANDLING
5. CONTACT must be explicitly defined
6. Click SAVE
7. Repeat 2 to 5 as required.

**18.2.3. Storage and Handling Costing**



The functions are designed to give a quick estimation of the warehousing storage and services costs. It is not a substitution to a comprehensive financial analysis and costing.

Please note that the function is designed as a calculator. The input data are not saved.

To estimate storage and handling, click Storage / Handling button  
Input

1. Warehouse area (in square metre)
2. The warehouse area usage percent
  - a. Area used for actual storage (e.g. – space occupied by racks) against the total area
3. Number of Pallet locations
4. The pallet dimensions – height, depth and width
5. Number of Staff / Operators
6. Workdays for the year

Click Calculate button. The following data are computed:

1. Cost Per Square Metre
  - a. Total Storage related cost divided by the Warehouse Area
2. Cost per Square Feet
  - a. Converted square feet cost
3. Cost per (standard) Pallet
  - a. Total Storage related cost divided by the number of pallet

4. Cost per Cubic Metre
  - a. Converted per cubic metre cost
5. The handling Services
  - a. The listing is based on the quoted bill codes in the Services Quotation Setup for clients that utilise the specified warehouse basing on the Work Unit (FTE) specified for the services.
    - i. If the Work Unit is not defined, it is default to 1
  - b. Assumption is made that service codes in a given warehouse would have been defined with the same Work Unit.
  - c. The FTE is based on an 8 hours work day.

To see the storage costs for Year, Month, Week or Day, select the Period Options accordingly.

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18.3. Report Sample – Warehouse Billing Summary

Client	Revenue		% of Total		Revenue		Work Unit Equivalent		Allotted Cost		Profit (Loss)		Margin (%)
	Storage	Handling	Storage	Handling	Storage	Handling	Storage	Handling	Storage	Handling	Storage	Handling	
ANTH	1,135	0.33	1,135	105	1,029	106	9.36						
AR-MOUR	929	0.27	929	43	424	505	54.32						
BARCL	1,984	0.58	1,984	50	492	1,493	75.22						
BAUR	4,729	1.38	4,682	328	3,223	1,504	31.81						
BAURA-PTE	3,312	0.97	2,394	258	2,531	5,661	(147,34)	2					
BAURA-STD	1,346	0.39	886	95	937	366	27.20	43					
C2SA	19,246	5.61	19,200	21	0	19,039	98.92	0					
CLINK-DES	3,577	1.04	3,577	116	1,135	2,442	68.27						
EASEC-BON	1,889	0.55	1,548	14	17	1,729	91.51	25					
EASEC-INT	3,123	0.91	1,775	237	418	191	6.12	607					
ENCUS-INT	211	0.06	178	166	39	1,633	(699.98)	57					
EX-PACK	453	0.13	453	33	319	134	29.52						
FRES	65,505	19.09	54,689	1,575	3,848	44,446	67.85	5,588					
FUSIC	45,752	13.33	4,345	179	6,151	35,062	76.63	8,931					
HORIZ-RUE	1,183	0.34	1,115	1	9	1,170	98.94	4					
JOLI-JYUN	279	0.08	214	14	14	123	43.99	20					
LAU	18,890	5.50	2,477	183	1,802	18,890	100.00						
LIFES-SIN	2,928	0.85	2,477	451		1,022	34.90	104					
MARK	38,555	11.24	2,221	24	2	38,555	100.00						
MET/	2,562	0.75	15,484	135	10,156	2,327	90.82	2					
MCC	30,145	8.78	14,216	417	811	14,071	46.68	14,748					
NEW	18,197	5.30	4,903	487	64	12,918	70.99	1,178					
PIAN	5,469	1.59	273	3	37	590	10.78	93					
PM-INT	462	0.13	189	3	54	380	82.16						
PRACT	18,615	5.42	15,972	2,643	61	2,778	14.92	88					
QBB-SIN	2,502	0.73	1,813	59	575	1,800	71.95	127					
RENU-SLOG	409	0.12	310	43	8	(27)	(6.64)	12					
SHAIN-SG	5,724	1.67	5,326	86	84	4,756	83.10	123					
SMNS-AI	303	0.09	265	15	8	144	47.48	12					
SMN	4,590	1.34	2,914	142	423	2,580	56.22	614					
THOR	23,146	6.74	10,569	5,688	385	(33,302)	(143.88)	559					
TRUK	14,696	4.28	5,411	159	48,944	(57,938)	(394.23)	71,074					
VAI	1,321	0.39	1,321	131	1,290	32	2.39						
<b>Total:</b>	<b>343,167</b>	<b>100.00</b>	<b>182,581</b>	<b>103,141</b>	<b>0</b>	<b>111,526</b>	<b>32.50</b>	<b>0</b>	<b>121,916</b>	<b>109,725</b>	<b>0</b>	<b>111,526</b>	<b>32.50</b>



## 19. IMPROVING WAREHOUSE PRODUCTIVITY

To facilitate warehouses in improving the picks operation CRISTAL WMS incorporate functionality such as pickfaces (static and dynamics) and pick by light for high volume FMCG requirement.

### 19.1. Pickfaces Operations

CRISTAL WMS is enabled for 3 different pickfaces operations:

1. Dynamic Pickfaces
2. Static Pickfaces
3. Sales Orders Pickfaces

#### 19.1.1. Dynamic Pickfaces

This is designed for operations when fast moving products are seasonal and constantly changing over a short timeframe which make setup and maintenance of static pickfaces time consuming and tedious.

To facilitate such operations, a report, ABC Analysis by Orders, identify the fast moving item for a given period by classifying the products that accounting for top 80% of picks as 'A' class products.

Basing on the reports, operation then identify the products that they like to be placed in the pickface zones by transferring them before releasing the sales orders for picking.

##### 19.1.1.1. Report Sample

S/No	Item Code	Description	No of Orders	Accum Orders	Orders % Accum	No	Qty Avail	Class
1	CHT-1650	PDMA 3P6200D USCD1.0	16	16	72,73	72,73	22,223	A
2	DL234	LOM TESTING	2	18	9,09	81,82	346	A
3	PROD001	PROD001	1	19	4,55	86,36	1,561	A
4	LHE-5028	5028 Barney In Rajan's Party	1	20	4,55	90,91	6,051	A
5	LHE-5373	5373 He Loves Me He Loves Me No 3 4	1	21	4,55	95,46	2,190	A
6	CHT-1650-QTY	PDMA 3P6200D USCD1.0	1	22	4,55	100,00	250	A
7	23495	Product 23495	0	22	0,00	100,00	350	D
8	AD3-123	Application Data Identifier 123	0	22	0,00	100,00	646	D
9	AI-13791	AI-13791	0	22	0,00	100,00	1,654	D
10	BATCH_CONTROL	Batch Controlled Item	0	22	0,00	100,00	12	D
11	BONDED	AI-13791	0	22	0,00	100,00	8	D
12	CONTAINER_LOADED	Loaded Container	0	22	0,00	100,00	26	D
13	CUST_ITEM	Customer Item	0	22	0,00	100,00	1,172	D
14	EXPIRY_CONTROL	Expiry Controlled Item	0	22	0,00	100,00	50	D
15	NESTED-ITEM	Nested Item	0	22	0,00	100,00	50	D
16	PROD002	PROD002	0	22	0,00	100,00	611	D
17	PUTAWAY_TEST	putaway test	0	22	0,00	100,00	1,337	D
18	SERIAL_R	Serial Number Recording	0	22	0,00	100,00	16	D
19	SERIAL01	Serial Number Control 01	0	22	0,00	100,00	6	D
20	SET00001	SET 00001	0	22	0,00	100,00	37	D
21	LHF-2143A	This is a Rock	0	22	0,00	100,00	1,364	D
22	LOM_TEST	Product 23495	0	22	0,00	100,00	50	D
23	WHOLE_LOOSE	Whole Loose Picking	0	22	0,00	100,00	48	D
24	WLS0	Whole Loose 50	0	22	0,00	100,00	3,550	D

#### 19.1.2. Static Pickfaces

This is the typical pickfaces operation in which each fast moving is assigned a pickface (aka preferred bin...).

A Replenishment Quantity (RQ) and Replenish Level (RL) are defined for each item pickfaces.

When a new pickface is defined, it is necessary to prime it by filling it up using Item Transfer. This is especially so if the pickface is setup when there stock already in the Storage locations.

If there is no stock in the warehouse, replenishment will be triggered by the next receipt putaway of the product.

##### 19.1.2.1. Process

Static pickface is a pick event triggered activity.

During operations, picks will be assigned to the pickfaces based on defined picking rules.

In general, the process is:

1. When a picks is confirmed, the balance in the pickface is depleted.
2. Replenishment is created into the work pool once the balance falls to or below the Replenish Level.
  - a. The replenishment task will created with the Replenishment Quantity.



- b. This may come from 1 or more locations as stock assigned for the replenishment is based on defined stock rotation rules – FIFO...

In a pickfaces operation it is usually priority is given to complete replenishment tasks to minimise disruption to picking operations.

#### 19.1.2.2. Refinement

Some pointers to consider when defining pickfaces:

1. When defining RQ, it is typically defined as a full pallet to minimise the number of replenishment tasks. The set of RL is a more difficult. It must be set such the pickface do not run of stock during a picking operation while replenishment is pending.
  - a. This is usually 2 to 3 times the largest order quantity – that is to be picked from the pickface.
2. It is usual to pick largest quantity required directly from the Storage locations instead of ‘always’ from the pickfaces
  - a. This is to avoid emptying out the pickface which result in frequent replenishment requirement.

#### 19.1.3. Sales Orders Pickfaces Replenishment

This is an extension of the Static Pickfaces operation.

In operation where picks (usually less than carton quantity) is always to be picked from the pickfaces, it can be enforced by setting the parameter in *Customer Profiles | UDF | Pick Loose from PICKFACE ONLY* to ‘Y’.

When flagged as ‘Y’, when a sales order is released for picking,

- Check whether there is adequate free stock in the pickfaces.
  - If yes, the sales order will be processed and picks tasks created.
- Otherwise, the replenishment tasks will be created and the sales order is set to PENDING
- On completion of the Replenishment, a SQL Agent Job will automatically reprocess the sales order for picking.

If during normal picks confirmation, the normal Static Pickfaces replenishment operations will be effected if the stock balance falls to or below the Replenish Level.

##### 19.1.3.1. SQL Agent Job

The following procedure must be setup as SQL Agent job and enabled

1. pickface\_replenish\_agent\_job
  - a. This is for supporting RF picks – by moving the replenishment check from the RF to the agent job.
2. sales\_order\_replenish\_release\_agent\_job
  - a. This scans PENDING sales orders for which the required item is available in the pickfaces – a replenishment.

##### 19.1.3.2. Related Procedures

Other procedures that complement the functions are:

1. manual\_pick\_sales\_order
  - a. The main procedure that process releasd sales orders
2. sales\_order\_stock\_available\_check
  - a. Called by above to check for stock availability in the warehouse if sales order is flagged for ‘Full Pick’
3. sales\_order\_requirement\_transfer
  - a. Called to check stock availability in pickfaces if *Customer Profiles | UDF | Pick Loose from PICKFACE ONLY* is set to ‘Y’
  - b. Generate Replenishment tasks if Pickface stock is inadequate.
4. undo\_sales\_order\_pick\_release
  - a. Called to undo partial processed sales order.

#### 19.2. Pick Zone Transfer

Pick Zone Transfer is designed as an productivity facilitating function for warehouses that handle fast moving products or warehouse that are equipped with VNA (very narrow aisle) or ASRS (automated storage retrieval system) storage system.

The function enables the operations to transfer items required by all sales orders for the day to a pick zone or area.

This is designed as an alternatively to wave or batch picking.

When triggered, the function computes the Total Requirement for the by summing the sales orders of current and past due.

It then checks the quantity that is already in the Pick Zone and Quantity available in storage to derive the Additional Quantity Required to be transferred.

**19.2.1. Operations**



To initialise the Transfer:

1. Select the Client to process
  - a. Select the Warehouse
2. Specify the Pick Date
  - a. Current and Back Ordered sales orders will be processed
3. Specify the Pick Zone to transfer items to
  - a. The Drop Down will list Pick-Pack zone that the user (group) have access to
4. Click 'Find'
  - a. If List All is selected, all required items will be listed regardless whether stock need to be transferred
  - b. Otherwise only items that need stock to be transferred is listed.
  - c. Items that have stock in Storage zones is automatically flagged as selected for processing
  - d. *Unselect* those that are not required
5. Click 'Create Transfer' to generate the transfer
  - a. Quantity of items to be transferred will be rounded up to the quantity on the quantity on the selected pallets
    - i. This is to eliminate partial transfer which defeat the objective of the function
  - b. The Transfer tasks are then to be processed via the Warehouse Tasks of the RF Warehouse module.

**19.3. Pick By Light Setup**

In version 5.398, CRISTAL WMS incorporated an interface to Schaefer ePicks Pick by Light system. The interface is done via database to database connection.

To facilitate the requirement while keeping the CRISTAL WMS database intact a new database CRISTALITF is defined for the purpose. ePicks program shall only be granted access to the CRISTALITF database only.

The CRISTALITF share the same database login ID and downer accounts as CRISTALWMS as we need to transfer database between the 2 databases. The data transfers are triggered on real-time using triggers.

Following are the triggers that are implemented

Trigger Name	Function	Table
1. sql_trigger_itf_stocks_delete	Clean up cristalitf.dbo.itf_stocks item code that have ZERO stocks – e.g. due to pickface reassign	Cristalwms.pallet_location
2. sql_trigger_itf_stocks_update	Update / insert stock balance in cristalitf.dbo.itf_stocks when record is updated	Cristalwms.pallet_location
3. sql_trigger_itf_orders_update	Insert into cristalitf.dbo.itf_orders when pick tasks required from Pick By Light zone	Cristalwms.stock_movements
4. sql_trigger_itf_picked_process	Trigger an insert into Cristalwms.ipick_picked which in turn activate below trigger	Cristalitf.itf_picked
5. sql_trigger_itf_picked_update	Trigger confirmation of picks when the picks are effected on the Pick By Light locations.	Cristalwms.ipick_picked

The program is designed to utilise as much as possible existing process to minimise need for extensive testing.

**19.3.1. Location Address Structure**

Although the same location address structure applied in the Pick Ro Light system, the components are applied differently as follows:

Characters	Location Address Components
1 and 2	Pick To Light System
3 and 4	Pick to Light Line
5 and 6	Level
7 and 8	Position / Slot

The components, if desired, can be separated with hyphen (-) but this is applicable at database level.

**19.3.2. SQL Agent Jobs**

A set of procedures are to be defined and scheduled as required to transfer and process the data between the WMS and cristalitf databases. They are:

1. pickface\_replenish\_agent\_job
2. receipt\_status\_processing\_agent\_job
3. sales\_order\_replenish\_release\_agent\_job
4. sales\_order\_status\_processing\_agent\_job

**19.3.3. CRISTALITF database structure**

Please contact implementation consultants for details

**19.5. Storage by Picks Activities**

Apart from putaway by hierarchical zoning of locations, CRISTAL Warehouse Management System also incorporate storage of item by their picking frequency.

Location for putaway of an item is allocated base on the picking trend of the items, averaged over 3 periods – weeks or month – which is user definable.

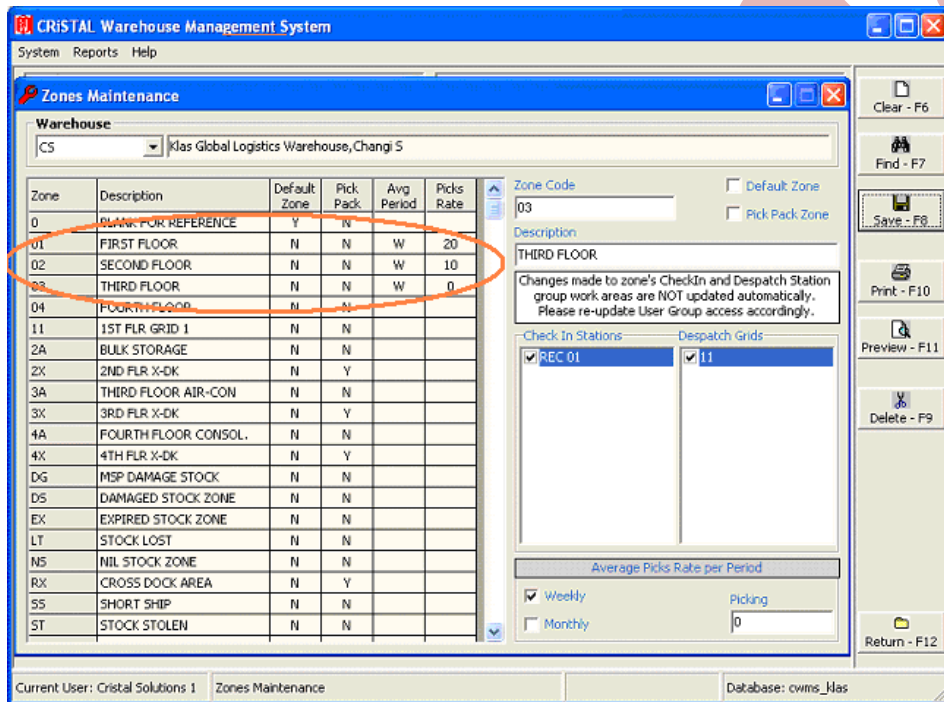
The system is designed to require minimal maintenance as the system keep tabs on of the on-going picking and assigns appropriate location for a putaway.

The functionality is designed to allow a warehouse to have both hierarchical zoning and activity-based putaway function concurrently.

**19.5.1. Setting up The Zones**

The zones in the warehouse that is to be set up for activity based putaway are identified. There is no limit on the number of zones that can be defined for the activity-based putaway.

To set up, decisions is to be made where the picks rate is to be week or month based. System will compute on real-time the average picks rate of an item over 3 periods (weeks or months)



In the example above, 3 zones have been assigned as the activity-based putaway zones. The Averaging Period is specified as W – week.

Note: The Averaging Period of all 3 zones is the same – this is a pre-requisition.

The Pick Rate is the minimum average pick rates for item – weekly or monthly.

For example, if an item has a pick rate 12, it will be assigned a location in Zone 02. If there is no location in zone 02, it will be assigned to Zone 03. Failing again, it will be putaway to a 'Pick Pack' zone.

**19.5.2. Setting up the Item**

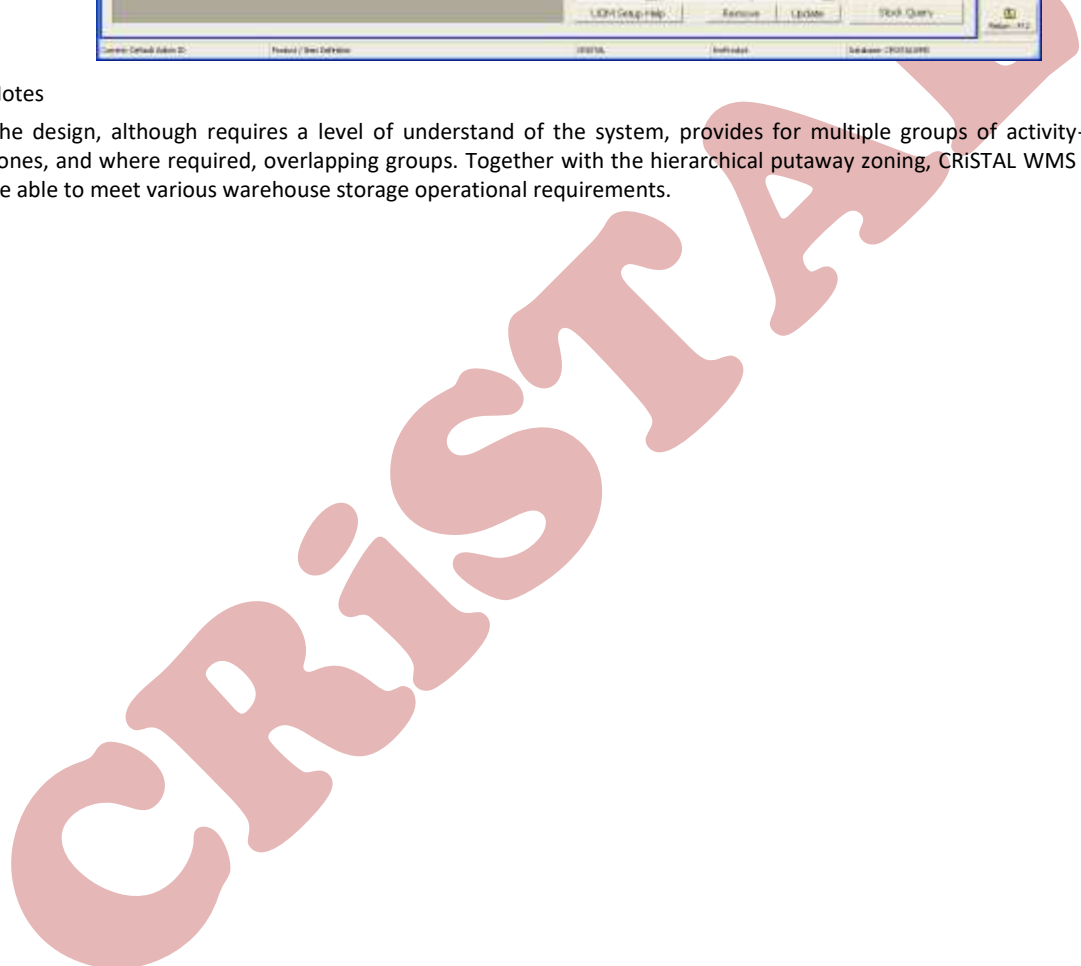
The setup of the Storage Zone for the item in Product Definition is the same as hierarchical zoning. The only difference is the sequence of the zones is not important as the hierarchical zoning as the Pick Rate would be the primary control.

The item must be able to be putaway to all the activity-based zones as below



Notes

The design, although requires a level of understand of the system, provides for multiple groups of activity-based zones, and where required, overlapping groups. Together with the hierarchical putaway zoning, CRISTAL WMS would be able to meet various warehouse storage operational requirements.



## 20. VENDOR MANAGED INVENTORY

In a Vendor Managed Inventory environment, stocks are placed in the customer warehouse by vendors under consignment. The customer is given full access to the stocks that are placed in his custody

However, the customer does not own the inventory until he informs the vendors that he has drawn out the stock.

This is pretty straightforward arrangement so long the customer is in full custody of the stocks.

However, the relationship is much more complicated with outsourcing of warehousing service, a common practice today, with a 3PL warehouse having physical custody.

In such VMI operations, complications arise as the inventory is stocked in a 3PL warehouse. The warehouse operator is answerable to the customer but typically charges the vendors for the services rendered.

In other words, the vendors are the stock owners as it is under Vendor Managed Inventory concept.

This create a set of operational issues in that requirement by the customer may have to be picked against individual vendors. This dictates that the 3PL operator knows the products well so that sales orders can be raise against the appropriate vendors. This places a serious demand on the 3PL operator as he has to maintain a team of staff that have good products in order to provide acceptable services.

Such requirement would in turn make the arrangement not viable to vendors and the 3PL operators as the skill set demanded of the staff would pre-empt them to be of relative high cost.

The proposed Vendor Managed Inventory implementation Concept as described below is on the standard CRISTAL Warehouse Management System.

The Concept is for operation where logistic services are billable to the vendors.

In operation where the logistic services are to the account of the customer, then the concept may not be of much benefit as CRISTAL WMS is also enabled to track stock by supplier.

### 20.1. CRISTAL Vendor Managed Inventory Solution

The Vendor Managed Inventory module is built on the existing functionalities of CRISTAL WMS, namely

1. Sales Order Entry
2. Stock Ownership Transfer

In CRISTAL WMS the VMI CUSTOMER AND VMI VENDORS are set up as clients in the system – the existing product ownership concept. This extends full confidentiality and product controls to both VMI CUSTOMER and VMI VENDORS.

In effect, the VMI module enables the 3PL to manage 'many VMI CUSTOMER to many VMI VENDOR' relationships. Namely, a VMI VENDOR can also stock his inventory with the 3PL and use it to meet the requirement of a number of VMI CUSTOMER (customers).

### 20.2. The Setup

1. Define the clients
  - a. VMI CUSTOMER
  - b. VMI VENDORS
2. Define the customer of the VMI CUSTOMER
3. Define the vendors of the VMI CUSTOMER
  - a. namely the VMI VENDOR
4. Define the item codes for each of the VMI VENDOR
5. Define the item codes of the VM CUSTOMER
6. Define the Supplier Cross-reference for each of the items of the VMI CUSTOMER

#### 20.2.1. Defining the Clients

The customer and his suppliers are first to be defined as Clients in the CRISTAL WMS. For purpose of simplicity, in this write up the customer is coded as VMI CUST and the vendors as VMI CLT.

(See section on [Client Profiles](#))

#### 20.2.2. Define the Customer of the VMI CUSTOMER

To enable the 3PL Warehouse to deliver required stock to the correct address, the delivery destinations are defined as customers in the Customer Profile

(See section on [Customers Profiles](#))

#### 20.2.3. Define the Vendor of the VMI CUSTOMER

Each of the vendors is to be defined in the Supplier Profile. The code to be used must be the same as the Client Code for the VMI VENDOR

(See section on [Suppliers Profiles](#))



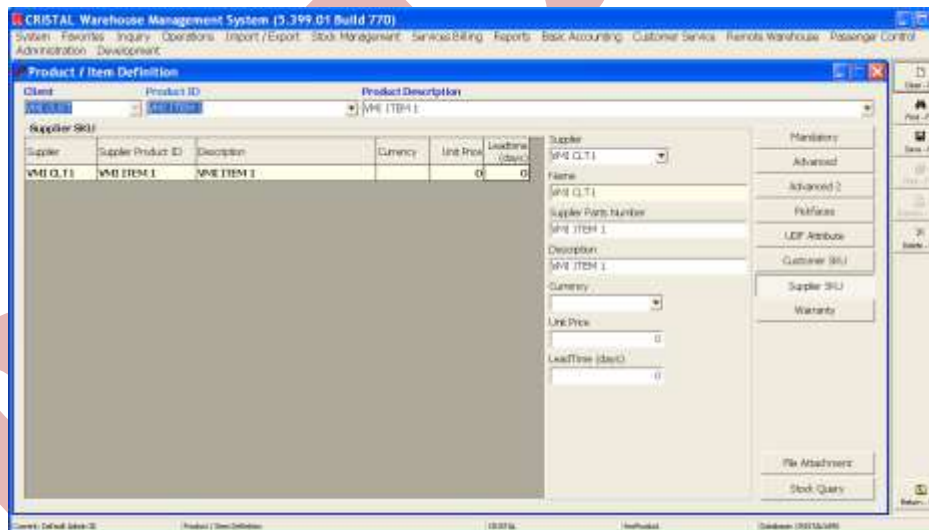
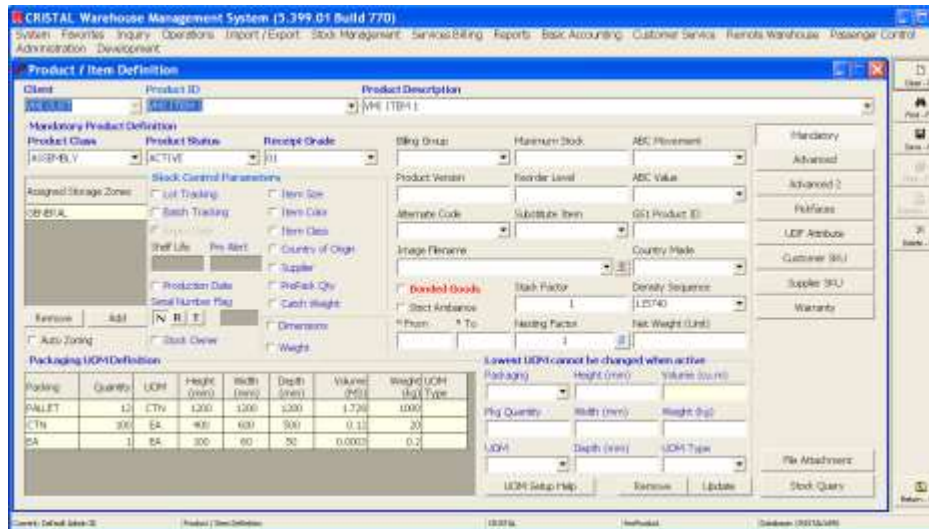
**20.2.4. Define Vendors' item code**

Define the Item Code for each of the vendors  
(See section on [Product Setup](#))

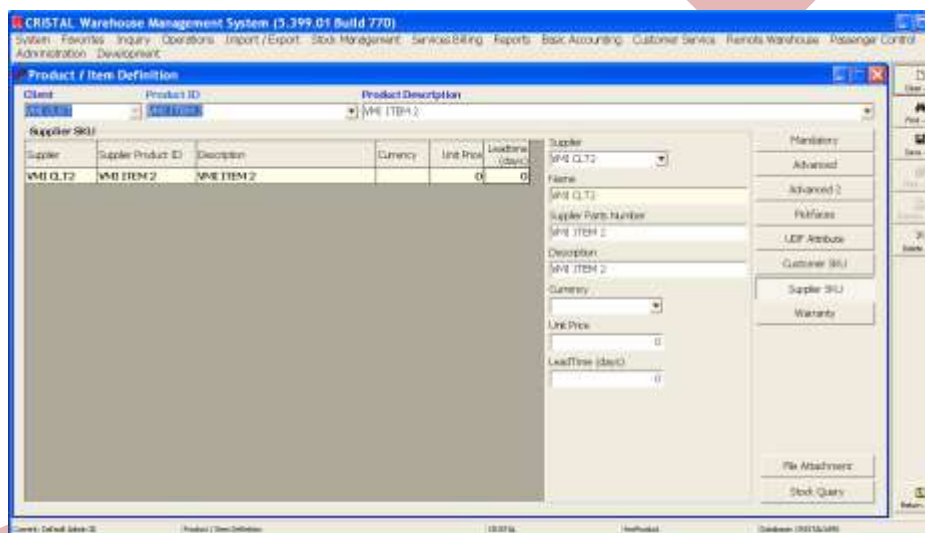
**20.2.5. Define VMI CUSTOMER item code**

Define the item codes and its supplier

1. Item 1



2. Item 2



3. Item 3

And so on...

**20.3. Operations**

The basic operation for the VMI is no different from any other clients.

1. Shipments received from the VMI VENDOR are check in and putaway against each individual VMI VENDOR (clients)
2. Requirement from the VIM CLIENT is input under the VMI CUSTOMER with sales order type 'VMI ORDER'
  - a. The sales order is released for picking and pick tasks generate as normal
  - b. The VMI ORDER would then trigger stock transfer from the relevant VMI VENDOR basing on FIFO stock control method. Effectively,
    - i. PICKS are generated and confirm automatically, thereby reducing the inventory of the VMI VENDOR
    - ii. The stock picked is then CHECKIN and PUTAWAY, automatically, to the same locations as the picks. Thereby increment the inventory for the VMI CUSTOMER
3. Picks is then generated as normally for the sales order against the stock that are transferred
4. The rest of the process would be as normal
  - a. Pick Orders are then created and confirmed
  - b. Delivery Orders generated as required
  - c. DO is then despatched via Truck Loading as required.
  - d. Delivery Confirmation updated as required

The result of which is that there are 2 CHECKIN/PUTWAY and 2 PICKS transactions

- 1 set against the VMI VENDOR
- 1 set against the VMI CUSTOMER

### 20.3.1. VMI VENDOR Advice

When the stock is transferred from the VMI VENDOR to the VMI CUSTOMER in 2b, it can also be configured to send an email to the VMI VENDOR advising the items and quantity pulled by the VMI CUSTOMER. This would enable the VMI VENDOR to bill the VMI CUSTOMER and replenish the inventory as required.

CRISTAL

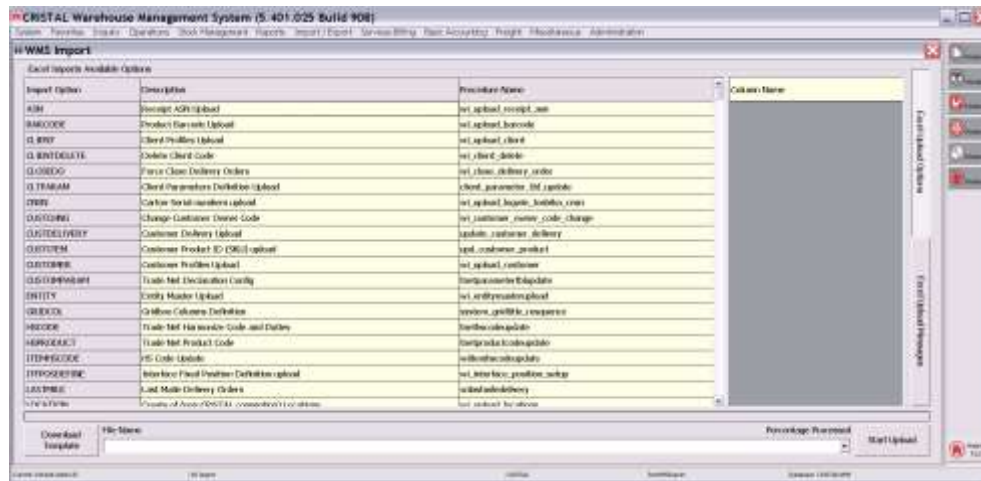
## 21. INTERFACES

CRISTAL WMS is enabled for collaboration via a number of interfacing methods to facilitate data exchange with other systems:

1. WMS Imports
  - a. This is an Excel spread sheets upload functionality
    - i. Based on Excel 97 – 2003 version
  - b. The function is available as a standalone program and an option in the desktop program
    - i. The desktop function is enabled for Import of Excel spreadsheet only
    - ii. In Release 5.401.908.026, access security is enhanced to allow access control by user group, except for Default Admin, via Administration | User Groups | WMS Imports.
    - iii. **IMPORTANT: The Excel unload is designed as alternative to backdoor update via MSSQL Management Studio to facilitate administrators that are not familiar. The onus is thus on the users to ensure integrity of data that are to be uploaded as minimal validation is incorporate in the interest of the performance of the uploading.**
2. Auto Upload (Reference to **Auto Upload Setup** manual)
  - a. ASCII file-based interfaces
    - i. CSV – comma separated values with or without delimiter
    - ii. TAB – tab separated values
    - iii. TXT – positional value
  - b. Processing
    - i. Automated
      - Various a set of Windows Service program
    - ii. Manually triggered upload
  - c. Information on this method is to be found in [Auto Upload Setup](#) manual
3. Interface 3
  - a. Direct population of specified tables
    - i. Facilitate by SQL Agent Job
    - ii. Alternatively via third party collaboration tools such as
      - Microsoft BizTalk
      - nServiceBus
  - b. Information on this method is to be found in [Auto Upload Setup](#) manual

### 21.1. WMS Import2

Date	By	Remarks
08 Sep 2003	NJ	Creation Date
26 Dec 2007	DL	Update added upload functions
<b>02 Jun 2018</b>	<b>DL</b>	<b>Incorporate Access Control by User Group</b> <b>Only Default Admin group members are automatically can access all defined templates including newly added.</b> <b>Other user groups accesses must be defined in Administration   User Group   WMS Imports</b>



Although so named, WMS Import2 is a utility program that

1. Import data from
  - a. Excel spread sheet files
  - b. CSV (comma-separated value which is not available in the desktop EXE) files to the CRISTAL WMS
2. Export data in CSV format

The following data can be imported:

1. Product Barcode
2. Client records
3. Customer records
4. Product Pickfaces
5. Product Item definitions
6. Product Description update
7. Product UOM definitions
8. Receipt Check IN entry
9. Excluding Serial numbering controlled item
10. Relocate Item Stock
11. Receipt of Serial number controlled item
12. Sales Order entry
13. Stock Adjustment entry
14. Stock Opening Balance via Receipt
15. Stock Opening Balance
16. Stock Relabel (with WMS Export | Stock Relabel List)
17. Supplier / Vendor records

Note:

1. The actual data structure in the Excel templates may differ from the definition below. This is due to regular modification requested by various clients.
2. The WMS Import2 program is used for INSERTING new records into the database. If there is an existing record in the system already, the data row cannot be imported, and will be skipped.

**21.1.1. Data Files in Other Formats**

Although WMS Import2 works only with Excel 'XLS' files and 'CSV' files, since Excel can open other file types including CSV, fixed-length record files, tab-delimited files etc., and files in those other formats can be also be processed.

To do so, simply use Excel to open the file and then save it into Excel 'XLS' format.

WMS Import2 can natively process "CSV" files.

Note: Microsoft Excel/Microsoft Office Required for Importing 'XLS' Files

To process Excel 'XLS' files, WMS Import2 uses library routines in Microsoft Excel/Microsoft Office. If Microsoft Excel is not installed on the PC running the WMS Import2 program, you will not be able to import 'XLS' files.

**21.1.2. Command Line Execution**

The WMS Import2 program can be executed interactively, or in command-line mode. To run the program interactively, simply run the command:

WMS Import2

Or click an appropriate short-cut icon to the “WMS\_Import.exe” executable file, and then answer the prompts as indicated.

To run the WMS Import2 program in batch (command-line) mode, you must execute the command as follows:

WMS Import2 data\_file\_with\_extension wms\_user\_id wms\_user\_password

where:

Parameter	Description
data_file_with_extension	This is the full pathname to the data file, including its “.CSV” or “.XLS” file extension. The program uses the file’s extension to determine the file type
wms_user_id	This must be a valid WMS User ID as defined in the USER_PROFILE table
wms_user_password	This is the WMS User’s Password as defined in the USER_PROFILE table

If any of the 3 parameters are missing, the program will revert to interactive mode and prompt the user for the missing parameter.

In command-line mode, no dialog boxes will be displayed when errors are encountered. If you run the command-line mode in a batch file, you can test the ERRORLEVEL environment variable whether the program executed successfully or not. ERRORLEVEL returns the following:

ERRORLEVEL	Description
0	Success
-1	Cannot connect to database server/database instance
-2	Invalid WMS User ID/Password
-3	Invalid data file
-11	Microsoft Excel not available on PC
-12	XLS file does not contain the “DATA” worksheet
-13	No column headers (fieldnames row) found in “DATA” worksheet

**21.1.3. File Names**

The WMS Import2 uses the prefix of the filename to determine the type of data being imported:

Prefix	Remark	Stored Procedure
1. ASN_	Receipt ASN Upload	wi_upload_receipt_asn
2. BARCODE_	Product Barcode Upload	wi_upload_barcode
3. CLIENT_	Client Profiles Upload	wi_upload_client
4. CLIENTDELETE_	Delete Client Code	wi_client_delete
5. CLOSED_	Force Close Delivery Orders	wi_close_delivery_order
6. CLTPARAM_	Client Parameters Definition Upload	client_parameter_tbl_update
7. CNSN_	Carton-Serial numbers upload	wi_upload_logwin_toshiba_cnsn
8. CUSTCHNG_	Change Customer Owner Code	wi_customer_owner_code_change
9. CUSTDELIVERY_	Customer Delivery Upload	update_customer_delivery
10. CUSTITEM_	Customer Product ID (SKU) upload	upd_customer_product
11. CUSTOMER_	Customer Profiles Upload	wi_upload_customer
12. CUSTOMPARAM_	Trade Net Declaration Config	tnetparametertblupdate
13. ENTITY_	Entity Master Upload	wi_entitymasterupload
14. GRIDCOL_	Gridbox Columns Definition	system_gridtitle_resquence
15. HSCODE_	Trade Net Harmonize Code and Duties	tnethscodeupdate
16. HSPRODUCT_	Trade Net Product Code	tnetproductcodeupdate
17. ITEMHSCODE_	HS Code Update	wiitemhscodeupdate
18. ITEMPRMSTD_	Item Parameters Standard ALL Clients	wi_itemparamglobalupdate
19. ITFPOSDEFINE_	Interface Fixed Position Definition upload	wi_interface_position_setup
20. LASTMILE_	Last Maile Delivery Orders	wilastmiledelivery



Prefix	Remark	Stored Procedure
21. LOCATION_	Create of (non-CRISTAL convention) Locations	wi_upload_locations
22. LOCATIONDG_	Upadte of specified Locations attribution	wi_location_field_update
23. LUOMAMEND_	Lowest Unit of Measure Amend	item_base_uom_change
24. LWSTORAGE_	Licensed Warehouse Storage Rate	wi_billing_storage_licensed_whse
25. PARAMCODE_	Parameter Codes update	upd_parameters
26. PAXREGISTRY_	Passengers Registry upload	passenger_master_update
27. PICKFACE_	Product Pickface defintion upload	wi_upload_item_pickface
28. PO_	Purchase Order Import	wi_upload_po
29. PRICELIST_	Product Price Lists upload	wi_product_price_update2
30. PRODUCT_	Product Definition upload	wi_upload_product
31. PRODUCTBASIC_	Product Definition upload	wi_upload_product_basic
32. PRODUCTBOM_	Product Bill of Material upload	update_product_bom
33. PRODUCTDUTY_	Product Customs Dutiable Base Price Upload	wi_product_dutiable_update
34. PRODUCTFIELD_	Product definition selected field upload	product_master_field_update
35. PRODUCTMLD_	Prodcut Multi Language description update	update_ml_description
36. PRODUCTSCC_	Product Size / Color / Class Upload	wi_upload_product_size_color_size
37. PRODUCTSERIAL_	Product Serial (KLine) Upload	wi_upload_product_serial_receipt
38. PRODUCTUOM_	Multiple levels Product UOM setup upload	wi_upload_product_uom
39. PRODUCTZONE_	Product Zones redefine upload	ins_product_zoning
40. RECEIPT_	Receipt Check in upload	wi_upload_receipt
41. RECEIPT2_	Receipt import with Pallet No	wi_upload_receipt2
42. RECEIPTSERIAL_	Receipt Serial Numbers upload	wi_receipt_serial_import
43. RELOCATEITEM_	Batch relocation of stock	wi_relocate_item
44. RELOCATEPALLET_	Batch relocation of pallets	wi_relocate_pallet
45. RLSERIAL	Relabel (correction) Serial Numbers	util_relabel_serial_no
46. ROUTEPOSTAL_	Route by Postal Upload	wi_postalrouteupdate
47. RSERIAL_	Receipt Serial Numbers upload	wi_receipt_serial_import
48. SETUPORDERTYPE_	Order Type Setup	wi_upload_order_type
49. SETUPUOM_	Product UOM Definition	upd_uom
50. SETUPZONE_	Zones Definition Setup	wi_setup_zone
51. SO_	Sales Orders upload	wi_upload_so
52. SO2_	Sales Orders with price upload	wi_upload_so2
53. SO3ANSI	Sales Orders (ASCII characters only) upload	wi_upload_so3_asni
54. SOAGXER		wi_so_tabulated_import
55. SODELIVERY_	Sales Orders Deliuvery Date Batch Update	delivery_date_change_salesorder
56. SOECOM	Sales Order: eCommerce - Addresses per specified	wi_soecom
57. SOFC_	Sales Order - Force Close	wi_sales_order_forced_closed
58. SOHB	Sales Orders (Hugo Boss) upload	wi_upload_so_hb
59. STKCORRECT	Stock Entry Correction	wi_stock_variance_correction
60. STKRECEIPT	Opening Stock (with Receipt reference) Upload	wi_upload_stock_receipt
61. STKSERIAL	Opening Stock Serial Number Retro Upload	wi_serialretroupload
62. STKSRL	Opening Stock with Serial Number Upload	wi_stockserial
63. STOCKADJ_	Stock Adjustment with Excel generated by Stock Adjustment List	wi_stockadjustdata
64. STOCKCOUNT_	(External) Stock Counts Upload	stockcount_external_import
65. STOCKREGRADE	Stock Re-Grade of Existing Stock	wi_stockregrade
66. STOCKRL	Relabel Stock with Excel generated by Stock Relabel List	wi_stockrelabeldata
67. SUPPLIER	Supplier Profiles upload	wi_upload_supplier
68. SWAPITEM_	Product ID batch Redefine	swap_item_code
69. TRXCODE_	Account Transaction Code upload	acc_trx_code_update
70. UOM2LVL_	2 Level Product UOM Setup	wi_upload_plt_unit_uom
71. UOM3LVL_	3 Level Product UOM Setup	wi_upload_3level_uom
72. WHSEMOVE_	Warehouse based Stock Transfer	wi_whse_move_upload

For example, if we have an Excel file containing Client records, we can name the file as “CLIENT\_08SEP2003.XLS”, “CLIENT\_AcmeProducts.XLS” etc.

The file's extension determines the data format that will be processed:

Extension	Data Format
XLS	Excel spreadsheet
CSV	Comma-separated value file

**21.1.4. Remove Data**

Apart from data upload, a set of templates are also provided to enable user to remove or delete data from the database.

The objective of this function is to enable System Administrator to carry database maintenance when needs arise.

The Prefix of the templates is

Prefix	Remark	Stored Procedure
73. REMOVEBARCODE_	Delete PRODUCT_BARCODE records	wi_remove_barcode
74. REMOVEGRN_	Batch deletion of Receipts	wi_remove_receipt
75. REMOVEPRODUCT_	Batch deletion of Product IDs	delete_product
76. REMOVESO_	Batch deletion of sales orders	wi_remove_so

RSTOCK have been dropped to prevent unintentional deletion of stock records.

**21.1.5. Excel File Structure**

**21.1.5.1. "DATA" Worksheet**

An Excel "XLS" file contains a workbook comprising of multiple worksheets. For WMS\_Import, the data rows must always be placed in a worksheet called "DATA". (However, you can change this through a WMS\_Import.INI file parameter.)

**21.1.5.2. Headings Row**

Row 1 of the "DATA" worksheet contains the Fieldnames as described in the sections below. This row is known as the "Headings Row". (Note: you can define another row to be the Headings Row through a WMS\_Import.INI parameter.) The Fieldname in each column determines the data of that column.

Mandatory Fieldnames must be defined in the "Headings Row". You can leave out optional Fieldnames. If an optional Fieldname and its corresponding data are not supplied, NULL or the pre-defined default value (see sections below) will be assumed for every data row imported.

Note that the Fieldnames in the "Headings Row" (i.e. Row 1) must be supplied in contiguous columns with no breaks in between. The system uses the first blank column found to demarcate the right boundary, and the program will not examine any further columns to the right of it.

**21.1.5.3. First Column**

Actual data starts from the row below the "Headings Row" (i.e. Row 2). When processing the data rows, the moment a row with a blank cell in the "First Column" (Column A) is detected, the program will assume that the end of data has been reached, and will stop the import process.

The "First Column" can be defined to refer to some other column through a WMS\_Import.INI parameter.

**21.1.5.4. Cell Format**

Columns storing text should be formatted with the Text format.

Columns storing dates or times should be formatted with either the Date or Time format.

Columns storing numbers should be formatted with the General format.

Special FieldNames

In the "Headings Row" (Row 1), the program recognises 2 special fieldnames:

- WI\_SQLSTATUS
  - If this fieldname exists, cells in this column will be updated with the SQLSTATUS value returned from the stored procedure when each line of data is processed.
- WI\_SQLMSG
  - If this fieldname exists, cells in this column will be updated with the SQLMSG value returned from the stored procedure when each line of data is processed.

## 21.1.6. CSV File Structure

### 21.1.6.1. Headings Row

Row 1 is reserved for storing Fieldnames as documented in the sections below. This row is known as the "Headings Row". The Fieldname in each column determines the data of that column.

### 21.1.6.2. Data Columns

Each column of data must be identified with a Fieldname in the "Headings Row" (Row 1). You can leave out the entire column in the file if the Fieldname is optional. However, data columns must be included for all mandatory Fieldnames.

If an optional Fieldname and its corresponding data are not supplied, NULL or the pre-defined default value (see sections below) will be assumed for every data row imported.

### 21.1.6.3. Data Rows

Actual data starts from Row 2.

Unlike the Excel format, the program will look for the End-Of-File (EOF) marker to indicate the end of the file. As such, you are permitted to leave blank lines in between rows of data. (Blank rows in between sections of data are not permitted in the Excel format as the presence of a blank Excel line immediately signals end of data).

Each line must be ended with a carriage return plus line feed (including Row 1 which defines the fieldnames). A single carriage return is insufficient.

### 21.1.6.4. Data Format

For the values on each line, enclosing the values with double quotes is optional. For example, the value "RED PAINT" can be encoded as either:

RED PAINT or "RED PAINT"

However, if the value being encoded contains a comma, enclosing double quotes is mandatory. For example, if the value being encoded is an address such as "123, Any Street, Any Town", you must encode it as:

"123, ANY STREET, ANY TOWN"

Only double quotes can be used as the enclosing delimiter. Single quotes are not supported.

If a particular value contains the double quote as part of its text, the double quote must be repeated. For example, if the value being encoded is the description of a 21 inch colour TV:

21" COLOUR TV

The description must be encoded as follows:

21"" COLOUR TV

For date values, it is recommended that ISO date format ("yyyy-mm-dd") be used to encode the date to prevent errors arising from interpreting European dates (dd-mm-yyyy) in American format (mm-dd-yyyy) or vice versa.

However double quote (") and comma (,) must not be used in primary key such as client code, customer code, item codes...

### 21.1.6.5. Special Field Names

In Row 1, the program recognises 2 special Fieldnames:

- WI\_SQLSTATUS
  - If this fieldname exists, the SQLSTATUS returned from the stored procedure when each line of data is processed will be written into the corresponding column.
- WI\_SQLMSG
  - If this fieldname exists, the SQLMSG returned from the stored procedure when each line of data is processed will be written into the corresponding column.

### 21.1.7. WMS\_Import.INI File

WMS Import2 uses an INI file (WMS\_Import.INI) which is stored in the same directory as the executable (WMS\_Import.EXE) file. This INI file contains 3 sections:

- The [DATABASE] section contains the server name and WMS database instance to be referenced.
- The optional [EXCEL] section defines parameters governing the worksheet name and the row and column locations of the data to be imported
- The optional [SP] section defines the stored procedures to be executed.

#### 21.1.7.1. [DATABASE] Section

Parameter	Description	Default if not specified
SERVER	Server name or IP address of the machine running the Microsoft SQL Database Service	LOCALHOST
DATABASE	WMS database instance name	CRISTALWMS
USER ID	MSSQL Login account for the WMS "DATABASE" instance	WAREHOUSEDBO
PASSWORD	Password for the MSSQL Login account.	CRISTAL2001

#### 21.1.7.2. [EXCEL] Section (optional)

Parameter	Description	Default if not specified
DATA SHEET	Name of the worksheet in the Excel file containing the data.	DATA
HEADINGS ROW	Row number in the worksheet where the Fieldnames are stored.	1
FIRST COLUMN	The left most column in the worksheet where the data is stored	A

#### 21.1.7.3. [SP] Section (optional)

Parameter	Description	Default if not specified
BARCODE	Stored procedure for Product barcode import	WI_UPLOAD_BARCODE
CLIENT	Stored procedure for Client import	WI_UPLOAD_CLIENT
CUSTOMER	Stored procedure for Customer import	WI_UPLOAD_CUSTOMER
PICKFACE	Stored procedure for Product Pickface import	WI_UPLOAD_ITEM_PICKFACE
PRODUCT	Stored procedure for Product Definitions import	WI_UPLOAD_PRODUCT
PRODUCTDESCRIPTION	Stored procedure for Product Description (update) import	WI_UPDATE_PRODUCT_DESCRIPTION
PRODUCTUOM	Stored procedure for Product UOM import	WI_UPLOAD_PRODUCT_UOM
RECEIPT	Stored procedure for Receipt import	WI_UPLOAD_RECEIPT
RELOCATEITEM	Stored procedure for Stock Relocation import	WI_RELOCATE_ITEM
REMOVEGRN	Stored Procedure for removing Receipt records	WI_REMOVE_RECEIPT
REMOVESO	Stored Procedure for removing Sales Orders	WI_REMOVE_SO
RPRODUCT	Stored procedure to remove uploaded item code	WI_REMOVE_PRODUCT
RSTOCK	Stored procedure to removed opening balance quantity	WI_REMOVE_STOCK
RSERIAL	Stored procedure for Receipt of Serial number controlled import	WI_RECEIPT_SERIAL_IMPORT
SO	Stored procedure for Sales order import	WI_UPLOAD_SO

STKADJUST	Stored procedure for Stock Adjustment import	WI_STOCK_ADJUST_PALLET_ITEM_QTY
STKRECEIPT	Stored procedure for Opening Stock Balance via Receipt entry import	WI_UPLOAD_STOCK_RECEIPT
STOCK	Stored procedure for Opening Stock Balance import	WI_UPLOAD_STOCK
SUPPLIER	Stored procedure for Supplier / Vendor import	UPD_SUPPLIER

**Note:**

If any parameters are not specified, or the "WMS\_Import.ini" file cannot be located, the defaults are always assumed.

**Example:**

```
[DATABASE]
SERVER = ACER_NJWONG
DATABASE = CRISTALWMS_TRAINING
USER ID = WAREHOUSEDBO_TRAINING
PASSWORD = CRISTAL2001
```

CRISTAL

### 21.1.8. Barcode

BARCODE records are processed with the WI\_UPLOAD\_BARCODE stored procedure.

The procedure updates the tables:

- Product\_master
- Product\_barcode

Note:

1. Fieldnames in bold are mandatory fields.
2. Each barcode can only be mapped to 1 item code.
  - a. If an uploading barcode is exiting in the product\_barcode table, the existing record will be deleted and replace with the uploading record
  - b. Effectively, the assumption is made that the last uploaded record is correct.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>BARCODE_NO</b>	NVARCHAR(30)	Barcode Reading
PACK_UOM	NVARCHAR(20)	
CONVERT_QTY	NUMERIC(15,3)	Quantity in lowest UOM

CRISTAL



### 21.1.9. Client Records

Client records are processed with the WI\_UPLOAD\_CLIENT stored procedure.

The procedure updates the tables:

- CLIENT\_MASTER
- CUSTOMER\_MASTER
- CUSTOMER\_DELIVERY
- CLIENT\_GROUP,

When a new Client record is created CLIENT\_MASTER, a Customer record using the same identifier is used to create a Customer for this client in the CUSTOMER\_MASTER table.

Example: if a new client with client code "ACME" is created, in the CUSTOMER\_MASTER table, we will create a new record with Client Code = "ACME" and Customer Code = "ACME").

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>CLIENT_NAME</b>	NVARCHAR(50)	Client Name
CONTACT_PERSON	NVARCHAR(50)	
STREET	NVARCHAR(50)	
BUILDING	NVARCHAR(50)	
TOWN	NVARCHAR(50)	
COUNTRY	NVARCHAR(50)	
POST_CODE	NVARCHAR(50)	
PHONE	NVARCHAR(50)	
FAX	NVARCHAR(50)	
EMAIL	NVARCHAR(50)	
BILL_TO	NVARCHAR(50)	
BILL_STREET	NVARCHAR(50)	
BILL_BUILDING	NVARCHAR(50)	
BILL_TOWN	NVARCHAR(50)	
BILL_COUNTRY	NVARCHAR(50)	
BILL_POST_CODE	NVARCHAR(50)	
DELIVER_TO	NVARCHAR(50)	
DELIVER_STREET	NVARCHAR(50)	
DELIVER_BUILDING	NVARCHAR(50)	
DELIVER_TOWN	NVARCHAR(50)	
DELIVER_COUNTRY	NVARCHAR(50)	
DELIVER_POST_CODE	NVARCHAR(50)	

### 21.1.10. Customer Records

Customer records are processed with the WI\_UPLOAD\_CUSTOMER stored procedure.

This procedure writes to the tables:

- CUSTOMER\_MASTER
- CUSTOMER\_DELIVERY

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>CUSTOMER</b>	NVARCHAR(10)	Customer Code
<b>CUSTOMER_NAME</b>	NVARCHAR(50)	Customer Name
CONTACT_PERSON	NVARCHAR(50)	
STREET	NVARCHAR(50)	
BUILDING	NVARCHAR(50)	
TOWN	NVARCHAR(50)	
COUNTRY	NVARCHAR(50)	
POST_CODE	NVARCHAR(50)	
PHONE	NVARCHAR(50)	
FAX	NVARCHAR(50)	
EMAIL	NVARCHAR(50)	
BILL_TO	NVARCHAR(50)	
BILL_STREET	NVARCHAR(50)	
BILL_BUILDING	NVARCHAR(50)	
BILL_TOWN	NVARCHAR(50)	
BILL_COUNTRY	NVARCHAR(50)	
BILL_POST_CODE	NVARCHAR(50)	
DELIVER_TO	NVARCHAR(50)	
DELIVER_STREET	NVARCHAR(50)	
DELIVER_BUILDING	NVARCHAR(50)	
DELIVER_TOWN	NVARCHAR(50)	
DELIVER_COUNTRY	NVARCHAR(50)	
DELIVER_POST_CODE	NVARCHAR(50)	
INSTRUCTION	NVARCHAR(255)	

**21.1.11. PICKFACE**

PICKFACE records are processed with the WI\_UPLOAD\_ITEM\_PICKFACE stored procedure.

The procedure updates the tables:

- product\_picking

If record exists, the Replenish Qty and Replenish Level will be updated

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>PICK_UNIT</b>	NVARCHAR(20)	Lowest UOM
<b>GRADE</b>	NVARCHAR(20)	
<b>WAREHOUSE</b>	NVARCHAR(10)	
<b>LOCATION</b>	NVARCHAR(20)	Pickface Location Address
<b>REPLENISH_QTY</b>	NUMERIC(15,3)	Quantity to replenish
<b>REPLENISH_LEVEL</b>	NUMERIC(15,3)	Quantity that trigger replenishment



### 21.1.12. Product Item Definitions

Product item definitions are processed with the WI\_UPLOAD\_PRODUCT stored procedure.

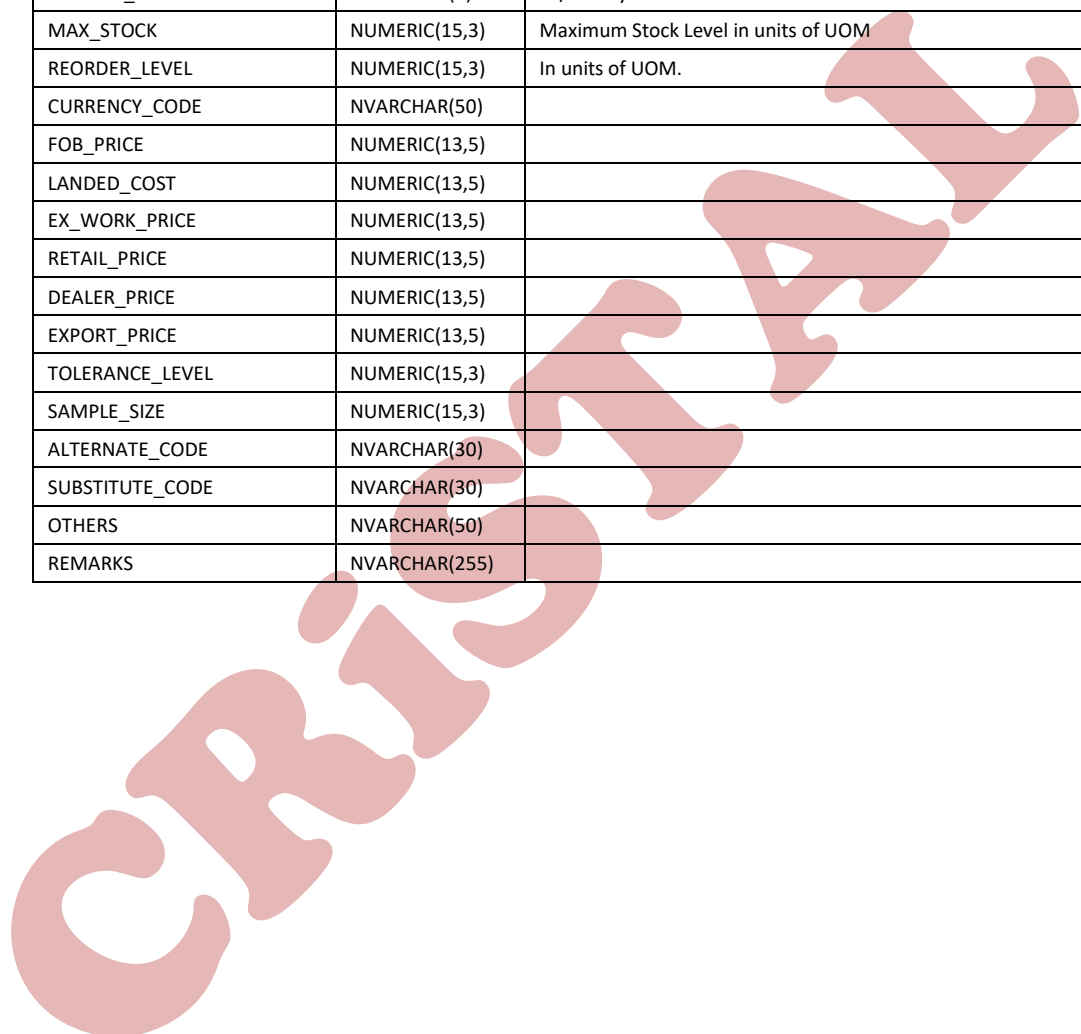
This procedure writes to the tables:

- PRODUCT\_MASTER
- PRODUCT\_ZONING
- PRODUCT\_UOM
- PRODUCT\_BARCODE
- PARAMETER\_TBL
- UNIT\_OF\_MEASURE

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	
<b>DESCRIPTION</b>	NVARCHAR(80)	
STATUS	NVARCHAR(50)	'ACTIVE', 'INACTIVE', 'OBSOLETE'. Default 'ACTIVE'.
GRADE	NVARCHAR(50)	Receiving Grade. If Null, WMS default to '01'
ZONE	NVARCHAR(50)	Storage Zone. If null, WMS will default to "Default Storage Zone" defined in WMS
PRODUCT_CLASS	NVARCHAR(20)	Defaults to "SETCODE"
PRODUCT_GROUP	NVARCHAR(20)	
CATEGORY	NVARCHAR(20)	
SUB_CATEGORY	NVARCHAR(520)	
SUB_CATEGORY_1	NVARCHAR(20)	
SUB_CATEGORY_2	NVARCHAR(20)	
SUB_CATEGORY_3	NVARCHAR(20)	
SUB_CATEGORY_4	NVARCHAR(20)	
SUB_CATEGORY_5	NVARCHAR(20)	
PALLET_QTY	NUMERIC(15,3)	Number of units in a full pallet. If not specified, this is calculated based on the dimensions of the smallest location in the ZONE storage zone.
<b>UOM</b>	NVARCHAR(20)	Transaction Unit (Lowest UOM)
<b>ITEM_HEIGHT</b>	NUMERIC(8,3)	Height of 1 unit of UOM. In millimeters
<b>ITEM_WIDTH</b>	NUMERIC(8,3)	In millimeters
<b>ITEM_DEPTH</b>	NUMERIC(8,3)	In millimeters
<b>ITEM_WEIGHT</b>	NUMERIC(28,15)	In millimeters
BATCH_NO_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
LOT_NO_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
EXPIRY_DT_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
SHELF_LIFE	INTEGER	In Days
EXPIRY_PREALERT	INTEGER	In Days
PRODUCTION_DT_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
SERIAL_NO_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
NUM_SERIAL	INTEGER	Number of Serial No per UOM.
ITEM_CLASS_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
ITEM_SIZE_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
ITEM_COLOR_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
SUPPLIER_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
CUSTOMER_FLAG	NVARCHAR(1)	Y / N – by default = 'N'

FieldName	Data Type	Description
COUNTRY_FLAG	NVARCHAR(1)	Country of Origin Y / N – by default = 'N'
PPO_PACKING_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
DIMENSIONS_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
WEIGHT_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
DG_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
UN_CODE	NVARCHAR(50)	
HAZCHEM_CODE	NVARCHAR(20)	
IMO_CLASS	NVARCHAR(20)	
BONDED_FLAG	NVARCHAR(1)	Y / N – by default = 'N'
MAX_STOCK	NUMERIC(15,3)	Maximum Stock Level in units of UOM
REORDER_LEVEL	NUMERIC(15,3)	In units of UOM.
CURRENCY_CODE	NVARCHAR(50)	
FOB_PRICE	NUMERIC(13,5)	
LANDED_COST	NUMERIC(13,5)	
EX_WORK_PRICE	NUMERIC(13,5)	
RETAIL_PRICE	NUMERIC(13,5)	
DEALER_PRICE	NUMERIC(13,5)	
EXPORT_PRICE	NUMERIC(13,5)	
TOLERANCE_LEVEL	NUMERIC(15,3)	
SAMPLE_SIZE	NUMERIC(15,3)	
ALTERNATE_CODE	NVARCHAR(30)	
SUBSTITUTE_CODE	NVARCHAR(30)	
OTHERS	NVARCHAR(50)	
REMARKS	NVARCHAR(255)	



### 21.1.13. PRODUCT DESCRIPTION

PRODUCTDESCRIPTION records are processed with the WI\_UPDATE\_PRODUCT\_DESCRIPTION stored procedure. This procedure will only update the DESCRIPTION field for existing records. It does not create new PRODUCT\_MASTER records. Creating new PRODUCT\_MASTER records require using WI\_UPLOAD\_PRODUCT stored procedure.

The procedure updates the tables:

- product\_master

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>DESCRIPTION</b>	NVARCHAR(80)	

CRISTAL



### 21.1.14. Product UOM

PRODUCTUOM records are processed with the WI\_UPLOAD\_PRODUCT\_UOM stored procedure.

This procedure will only update the UOM hierarchy for existing records. It does not create new PRODUCT\_MASTER records. Creating new PRODUCT\_MASTER records require using WI\_UPLOAD\_PRODUCT stored procedure.

The order of the multiple UOM levels must be sequential (as specified in uom\_sequence) and the last level item\_packing and item\_uom must be the same - as this is used as the trigger to activate the update of the lowest UOM and luom\_equivalent

No level to level relation check is carried out by the stored procedure. User is therefore expected to ensure the level to level relation is logical, including the dimensions and weight.

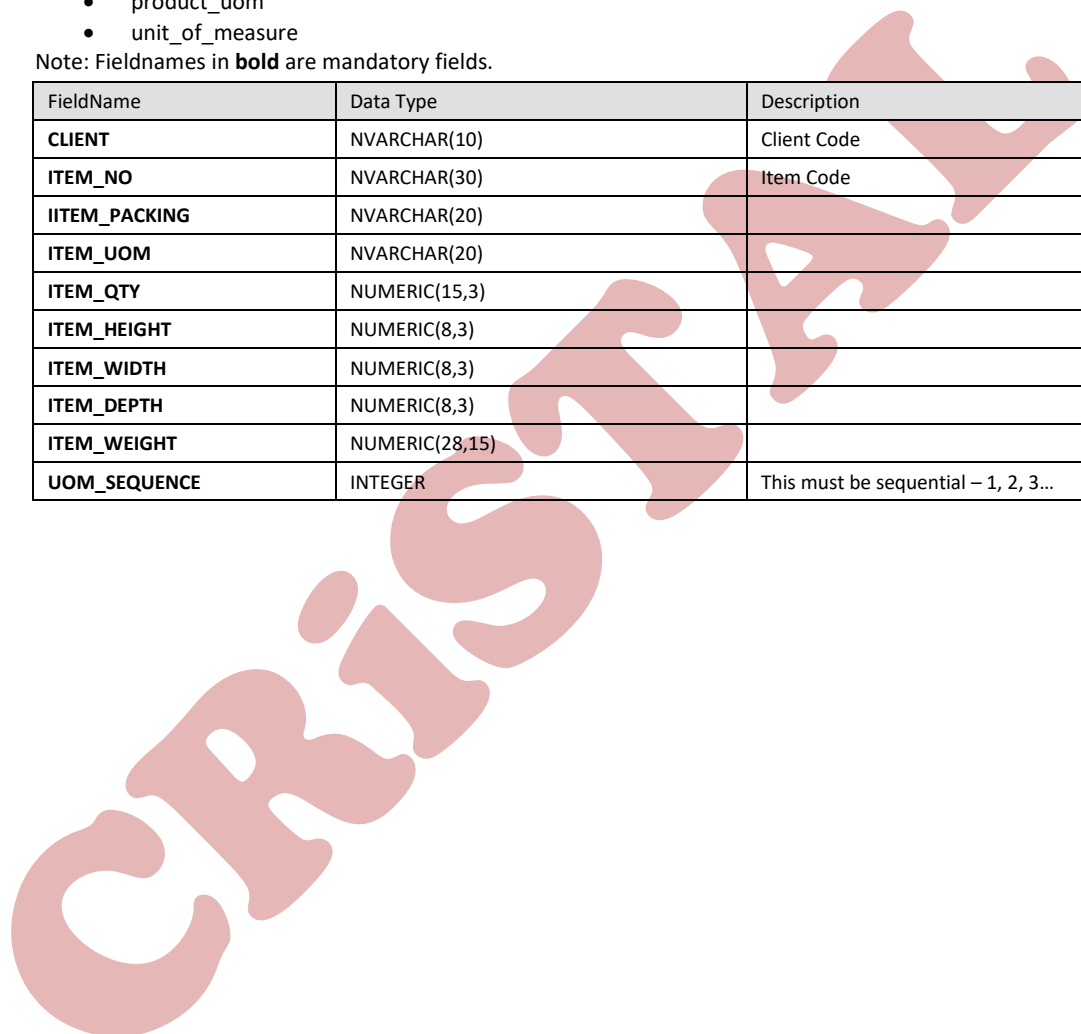
When uploading, existing UOM records of the item code is deleted first.

The procedure updates the tables:

- product\_uom
- unit\_of\_measure

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>IITEM_PACKING</b>	NVARCHAR(20)	
<b>ITEM_UOM</b>	NVARCHAR(20)	
<b>ITEM_QTY</b>	NUMERIC(15,3)	
<b>ITEM_HEIGHT</b>	NUMERIC(8,3)	
<b>ITEM_WIDTH</b>	NUMERIC(8,3)	
<b>ITEM_DEPTH</b>	NUMERIC(8,3)	
<b>ITEM_WEIGHT</b>	NUMERIC(28,15)	
<b>UOM_SEQUENCE</b>	INTEGER	This must be sequential – 1, 2, 3...



**21.1.15. Receipt**

RECEIPT records are processed with the WI\_UPLOAD\_RECEIPT stored procedure.

In CRISTALWMS, each Receipt Detail requires a corresponding pallet number. This actually creates a problem during uploading of receipts:

1. If a supplier is sending 1000 sets of an item, the Incoming Shipment may have a record with 1 line for 1000 sets. However, if a pallet can only hold 200 sets, we really need to create 5 Receipt Detail lines of qty 200 in each line so to equal the Incoming Shipment qty of 1000 sets.
2. If a supplier is sending 5 different kinds of items, the physical qty of all the 5 items may fit on a single pallet, or divided into multiple pallets. There is really no way to tell.

Because of this unpredictability problem, a decision has been made to always store each line in the Incoming Shipment to equal 1 line in the Receipt Detail, and the Receipt Detail is thus behaving like an Advance Shipment Notice instead of storing pallet details.

For ASN type records, there are no pallets or pallet locations to contend with.

**21.1.15.1. RECEIPT\_MASTER**

1. Receipts status is defaulted to 'DATA ENTRY'.
2. If Receipt header information is being presented for existing Receipt Master record, the new information will overwrite the existing header information if the existing record is in 'DATA ENTRY' status. Otherwise, no change is allowed.

**21.1.15.2. RECEIPT\_DETAIL**

1. Receipt Detail status defaulted to 'WAITING'.
2. If Receipt Details information already exists, the new information will overwrite the existing detail line only if the existing record is in 'WAITING' status. Otherwise, no change is allowed.
  - a. The overwriting enable user to amend the receipt quantity for a receipt line when required.
3. If the quantity is zero or negative, the receipt line will be deleted
  - a. This enable user to remove an erroneously uploaded line

Pallet numbers and Location numbers will be ignored as the imported record is supposed to be some form of Advance Shipment Notice, and there is no way to break down the qty to the pallet level before the physical goods are received in the warehouse.

Note: CRISTALWMS allows a Receipt to record receipts from multiple suppliers.

This procedure writes to the tables:

- receipt\_master
- receipt\_detail

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>RECEIPT_NO</b>	NVARCHAR(20)	Receipt Number
<b>LINE_NO</b>	INTEGER	0 = Header Info >0 Detail Line
<b>SUPPLIER</b>	NVARCHAR(10)	Supplier Code
<b>RECEIPT_TYPE</b>	NVARCHAR(20)	Receipt Type
<b>WAREHOUSE</b>	NVARCHAR(10)	Warehouse Coe
<b>RECEIPT_STATION</b>	NVARCHAR(10)	Receipt Station Code
CLIENT_PO_NO	NVARCHAR(50)	
CLIENT_PO_LINE	INTEGER	
CLIENT_SO_NO	NVARCHAR(50)	
RECEIPT_REF_NO	NVARCHAR(50)	
REMARKS	NVARCHAR(255)	
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>QTY</b>	NVARCHAR(15,3)	
UOM	NVARCHAR(20)	
GRADE	NVARCHAR(10)	
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	

FieldName	Data Type	Description
EXPIRY_DATE	DATETIME	'YYYY-MM-DD'
MFG_DATE	DATETIME	'YYYY-MM-DD'
RECEIPT_DATE	DATETIME	'YYYY-MM-DD'
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	
CUSTOMER	NVARCHAR(10)	
PPQ_PACKING	NVARCHAR(50)	
PPQ_QTY	NUMERIC(15,3)	
ORIGIN_COUNTRY	NVARCHAR(50)	
CURRENCY	NVARCHAR(50)	
UNIT_COST	NUMERIC(15,4)	
LOCATION	NVARCHAR(50)	

CRISTAL

### 21.1.16. RELOCATE ITEM

RELOCATEITEM records are processed with the WI\_RELOCATE\_ITEM stored procedure.

This utility is designed to perform item relocation in batch using a spreadsheet.

The procedure updates the tables:

- PALLET\_LOCATION
- PALLET\_HISTORY

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>SOURCE_WAREHOUSE</b>	NVARCHAR(10)	Source Warehouse Code
<b>SOURCE_PALLET</b>	NVARCHAR(18)	Source Pallet Number
<b>DEST_WAREHOUSE</b>	NVARCHAR(10)	Destination Warehouse Code
<b>DEST_LOCATION</b>	NVARCHAR(20)	Destination Location
DEST_PALLET	NVARCHAR(18)	Destination Pallet
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>UOM</b>	NVARCHAR(20)	
<b>QTY</b>	NUMERIC(15,3)	
REASON_CODE	NVARCHAR(20)	
<b>GRADE</b>	NVARCHAR(20)	
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	
RECEIPT_DATE	DATETIME	YYYY-MM-DD
PROD_DATE	DATETIME	YYYY-MM-DD
EXPIRY_DATE	DATETIME	YYYY-MM-DD
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	
SUPPLIER	NVARCHAR(50)	
OWNER	NVARCHAR(50)	

### 21.1.17. REMOVEGRN

REMOVEGRN records are processed with the WI\_REMOVE\_RECEIPT stored procedure.

This utility is designed to remove receipt records in batch using a spreadsheet.

Removal of receipts is limited to receipt that have not been processed (putaway) – partial or completed.

The procedure updates the tables:

- RECEIPT\_MASTER
  - Status of receipts must not be CLOSED.
- RECEIPT\_DETAILS
  - All detail line must be in WAITING status
  - Partial putaway is deemed to be processed.

Although the function incorporated Reverse Transaction, it is limited to reverse receipt that is pending PUTAWAY.

The rationale of which is that removal of receipts must NOT affect or decrement the stock balance.

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>RECEIPT_NO</b>	NVARCHAR(20)	Receipt Number

CRISTAL

### 21.1.18. REMOVESO

REMOVESO records are processed with the WI\_REMOVE\_SO stored procedure.

This utility is designed to remove sales order records in batch using a spreadsheet.

The procedure updates the tables:

- SALES\_ORDERS
  - Status of Sales Orders must be in 'DATA ENTRY, WAITING or CANCELLED.
- SALES\_DETAILS
  - Quantity picked must be 0 (zero).

Although the function incorporated Reverse Transaction, it is limited to reverse sales orders that have been released but have not been picked.

The rationale of which is that removal of sales order must NOT affect or increment the stock balance.

Note: Fieldnames in **bold** are mandatory fields.

Field Name	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>SALES_ORDER</b>	NVARCHAR(20)	Sales Order number

CRISTAL



### 21.1.19. RPRODUCT

RPRODUCT records are processed with the WI\_REMOVE\_PRODUCT stored procedure.

This utility is designed to perform item relocation in batch using a spreadsheet.

The procedure updates the tables:

- PRODUCT\_MASTER
- PRODUCT\_ZONING
- PRODUCT\_UOM
- PRODUCT\_BARCODE

#### 21.1.19.1. Note

Field names in **bold** are mandatory.

Item Code that is to be deleted must not have prior transactions including receipts, sales orders requirement...

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code

CRISTAL

### 21.1.20. RSERIAL

RESERIAL records are processed with the WI\_RECEIPT\_SERIAL\_IMPORT stored procedure.

RSERIAL is designed to enable warehouse operation that handle serial numbering controlled items but are not enabled with wireless LAN and scanning devices.

This function allows user to capture the serial numbers in an EXCEL spreadsheet and then upload them into the CRISTAL WMS.

The upload allow user to import against existing receipt that is in DATA ENTRY mode or new receipt (but the receipt number must be specified).

This procedure writes to the tables:

- RECEIPT\_MASTER
- RECEIPT\_DETAIL
- PRODUCT\_SERIAL

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>RECEIPT_NO</b>	NVARCHAR(20)	Receipt Number
REFERENCE	NVARCHAR(50)	
<b>RECEIPT_DATE</b>	DATETIME	YYYY-MM-DD
SUPPLIER	NVARCHAR(10)	Supplier Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
GRADE	NVARCHAR(10)	If NULL, default to '01'
<b>SERIAL_NO</b>	NVARCHAR(50)	Serial Numbers
<b>PALLET_NO</b>	NVARCHAR(18)	
<b>WAREHOUSE</b>	NVARCHAR(10)	
<b>LOCATION</b>	NVARCHAR(20)	



### 21.1.21. RSTOCK

RSTOCK records are processed with the WI\_REMOVE\_STOCK stored procedure.

This utility is designed to remove opening balance quantity that is created via the STOCK upload spreadsheet.

The procedure updates the tables:

- PALLET\_LOCATION
- PALLET\_HISTORY
- MOVEMENTS\_HISTORY

#### 21.1.21.1. Note:

Field names in **bold** are mandatory.

There must be no other transactions such as receipt and sales orders picking when using this function to delete opening balance. Otherwise the deletion would not be complete.

FieldName	Data Type	Description
<b>WAREHOUSE</b>	NVARCHAR(10)	
LOCATION	NVARCHAR(20)	If null, defaults to first location in the Warehouse.
PALLET	NVARCHAR(18)	If null, the Location will be used as the Pallet ID for single warehouse installation. For multiple warehouse installation, Pallet ID is formed from (Warehouse + Location).
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	
<b>UOM</b>	NVARCHAR(20)	
<b>QTY</b>	NUMERIC(15,3)	Opening Balance Qty in units of UOM.
RECEIPT_NO	NVARCHAR(20)	
RECEIPT_DATE	DATETIME	If null, defaults to current date
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	
SUPPLIER	NVARCHAR(50)	
CUSTOMER	NVARCHAR(50)	
GRADE	NVARCHAR(50)	Defaulted to "01" if not specified.
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	
HEIGHT	NUMERIC(8,3)	Total height of goods on pallet. If null, will be auto-calculated.
WIDTH	NUMERIC(8,3)	
DEPTH	NUMERIC(8,3)	
WEIGHT	NUMERIC(28,15)	Total weight of goods on pallet. If null will be auto-calculated.
PROD_DATE	DATETIME	Production Date
EXPIRY_DATE	DATETIME	Expiry Date
COUNTRY	NVARCHAR(50)	Country of Origin
PPQ_PACKING	NVARCHAR(20)	"Pre Packed Qty" UOM
PPQ_QTY	NUMERIC(15,3)	"Pre Packed Qty" Qty
UDF1	NVARCHAR(50)	User Definable Field
UDF2	NVARCHAR(50)	
UDF3	NVARCHAR(50)	
UDF4	NVARCHAR(50)	
UDF5	NVARCHAR(50)	
REMARKS	NVARCHAR(255)	

### 21.1.22. SO – Sales Orders

SO records are processed with the WI\_UPLOAD\_SO stored procedure.

This procedure writes to the tables:

#### SALES\_ORDERS

- Sales Order status is defaulted to 'WAITING'
  - If Sales Order header information is being presented for existing Sales Order record, the new information will overwrite the existing header information if the existing record is in 'WAITING'. Otherwise, no change is allowed.
- SALES\_DETAILS
  - Sales Details status is defaulted to 'WAITING'
  - If Sales Details information being presented already exists, the new information will overwrite the existing detail line only if the existing record is in 'WAITING' status. Otherwise, no change is allowed.
  - If the quantity of a detail line is specified as zero or negative, the line will be deleted.
    - This ensure user to amend and delete an erroneously upload detail line.

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>SO_NO</b>	NVARCHAR(20)	Sales Order Number
<b>LINE_NO</b>	INTEGER	Sales Order Line Number
<b>CUSTOMER</b>	NVARCHAR(10)	Customer Code
<b>SO_TYPE</b>	NVARCHAR(20)	Sales Order Type
INVOICE_NO	NVARCHAR(20)	
DELIVERY_DATE	DATETIME	Date of Delivery Required
REFERENCE_NO	NVARCHAR(20)	
REMARKS	NVARCHAR(255)	
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>QTY</b>	NUMERIC(15,3)	
UOM	NVARCHAR(20)	
GRADE	NVARCHAR(10)	
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	
EXPIRY_DATE	DATETIME	
MFG_DATE	DATETIME	
RECEIPT_DATE	DATETIME	
<b>SUPPLIER</b>	NVARCHAR(10)	
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	

### 21.1.23. STKADJUST

STKADJUST records are processed with the WI\_STOCK\_ADJUST\_PALLET\_ITEM\_QTY stored procedure. The function enable user to perform stock adjustment by batch as during a stock count / stock take.

This procedure writes to the tables:

- PALLET\_LOCATION
- PALLET\_HISTORY
- MOVEMENTS\_HISTORY

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>PALLET_NO</b>	NVARCHAR(18)	Pallet Number
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item code
<b>NEW_QTY</b>	NUMERIC(15,3)	
<b>UOM</b>	NVARCHAR(20)	
REMARKS	NVARCHAR(255)	

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### 21.1.24. STKRECEIPT

STKRECEIPT records are processed with the WI\_UPLOAD\_STOCK\_RECEIPT stored procedure.

This is designed to create opening stock balance as a receipt check in instead of Stock Adjustment as in Stock Balance.

Transactions recorded will be a Check In and Putaway activity

This procedure writes to the tables:

- PALLET\_LOCATION
- PALLET\_HISTORY
- RECEIPT\_MASTER
- RECEIPT\_DETAIL
- MOVEMENTS\_HISTORY

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>WAREHOUSE</b>	NVARCHAR(10)	Client Code
LOCATION	NVARCHAR(20)	
PALLET	NVARCHAR(18)	
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	Item Code
<b>UOM</b>	NVARCHAR(20)	
<b>QTY</b>	NUMERIC(15,3)	
RECEIPT_NO	NVARCHAR(20)	
REF_NO	NVARCHAR(20)	
RECEIPT_DATE	DATETIME	
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	
SUPPLIER	NVARCHAR(10)	
CUSTOMER	NVARCHAR(10)	
GRADE	NVARCHAR(20)	
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	
HEIGHT	NUMERIC(8,3)	
WIDTH	NUMERIC(8,3)	
DEPTH	NUMERIC(8,3)	
WEIGHT	NUMERIC(28,15)	
PROD_DATE	DATETIME	
EXPIRY_DATE	DATETIME	
COUNTRY	NVARCHAR(50)	
PPQ_PACKING	NVARCHAR(50)	
PPQ_QTY	NUMERIC(15,3)	
UDF1	NVARCHAR(50)	UDF are user defined fields, namely for use as assigned by user. They are information fields only.
UDF2	NVARCHAR(50)	
UDF3	NVARCHAR(50)	
UDF4	NVARCHAR(50)	
UDF5	NVARCHAR(50)	



### 21.1.25. Stock Balance

Opening Stock Balance records are processed with the WI\_UPLOAD\_STOCK stored procedure.

This procedure writes to the tables:

- PALLET\_LOCATION
- PALLET\_HISTORY
- MOVEMENTS\_HISTORY

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>WAREHOUSE</b>	NVARCHAR(10)	
LOCATION	NVARCHAR(20)	If null, defaults to first location in the Warehouse.
PALLET	NVARCHAR(18)	If null, the Location will be used as the Pallet ID for single warehouse installation. For multiple warehouse installation, Pallet ID is formed from (Warehouse + Location).
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>ITEM_NO</b>	NVARCHAR(30)	
<b>UOM</b>	NVARCHAR(20)	
<b>QTY</b>	NUMERIC(15,3)	Opening Balance Qty in units of UOM.
RECEIPT_NO	NVARCHAR(20)	
RECEIPT_DATE	DATETIME	If null, defaults to current date
LOT_NO	NVARCHAR(50)	
BATCH_NO	NVARCHAR(50)	
SUPPLIER	NVARCHAR(50)	
CUSTOMER	NVARCHAR(50)	
GRADE	NVARCHAR(50)	Defaulted to "01" if not specified.
ITEM_SIZE	NVARCHAR(50)	
ITEM_COLOR	NVARCHAR(50)	
ITEM_CLASS	NVARCHAR(50)	
HEIGHT	NUMERIC(8,3)	Total height of goods on pallet. If null, will be auto-calculated.
WIDTH	NUMERIC(8,3)	
DEPTH	NUMERIC(8,3)	
WEIGHT	NUMERIC(28,15)	Total weight of goods on pallet. If null will be auto-calculated.
PROD_DATE	DATETIME	Production Date
EXPIRY_DATE	DATETIME	Expiry Date
COUNTRY	NVARCHAR(50)	Country of Origin
PPQ_PACKING	NVARCHAR(20)	"Pre Packed Qty" UOM
PPQ_QTY	NUMERIC(15,3)	"Pre Packed Qty" Qty
UDF1	NVARCHAR(50)	User Definable Field
UDF2	NVARCHAR(50)	
UDF3	NVARCHAR(50)	
UDF4	NVARCHAR(50)	
UDF5	NVARCHAR(50)	
REMARKS	NVARCHAR(255)	

### 21.1.26. SUPPLIER

SUPPLIER records are processed with the UPD\_SUPPLIER stored procedure.

This procedure writes to the tables:

- SUPPLIER

Note: Fieldnames in **bold** are mandatory fields.

FieldName	Data Type	Description
<b>CLIENT</b>	NVARCHAR(10)	Client Code
<b>SUPPLIER_CODE</b>	NVARCHAR(10)	Supplier Code
<b>SUPPLIER_NAME</b>	NVARCHAR(50)	Supplier Name
CONTACT	NVARCHAR(50)	Contact Person Name
STREET	NVARCHAR(50)	
BUILDING	NVARCHAR(50)	
TOWN	NVARCHAR(50)	
COUNTRY	NVARCHAR(50)	
POSTCODE	NVARCHAR(10)	
PHONE	NVARCHAR(20)	
FAX	NVARCHAR(20)	
EMAIL	NVARCHAR(50)	
STATUS	NVARCHAR(20)	If NULL, default to 'APPROVED'

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**21.2. Interfaces 3 Method**

CRISTAL uses CSV (comma-separated value) files for interfacing to external systems. The same formatted file is used for all interface file modules. Thus, regardless of whether CRISTAL is importing Incoming Shipment transactions, or exporting Product Master records, each line in the CSV file always have 17 fields.

In the CSV files, it is not necessary to have the field names (e.g. "exp\_filename", "data\_type". See "Table 1: Interface File Fieldnames" below) stored in line 1 of the file. It is the field position that is important.

However, you can opt to have the field names written on line 1 for documentation purposes. If the field names are stored in line 1, they must be spelt out exactly as shown, and must be in the exact field positions as described here.

Field Position	Field Name
1	exp_filename
2	data_type
3	line_type
4	action_flag
5	client
6	wms_doc
7	field1
8	field2
:	:
25	field19

Table 1: Interface File Fieldnames

The field positions and its function are:

1. Position 1: exp\_filename
  - a. This field can contain any text, but is mainly used to contain the name of the CSV file.
  - b. After a CSV line is processed, the CSV record is written into the INTERFACE\_ARCHIVE table, which has an identical structure as the CSV files. When examining the archived records in this INTERFACE\_ARCHIVE table, the exp\_filename value will tell you the name of the CSV file that contained the transaction record originally. This is useful for traceability purposes.
  - c. CRISTAL WMS will not complain if you store some other kind of text data in this field. But you will then lose the ability to trace which CSV file a record originated from.
2. Position 2 and 3: data\_type and line\_type
  - a. The "data\_type" and "line\_type" fields determine the type of information that is encoded on that particular line. The various "data\_type" codes currently available are defined in "Table 2: DATA\_TYPE Codes

DATA_TYPE Code	Description
INSHIP	Incoming Shipment
OUTSHIP	Outgoing Shipment
PO	Purchase Order
RO	Receipt Order (Advance Shipment Note)
SO	Sales Order (Customer Order)
ITEM	Product Definition
CUSTOMER	Customer Definition
ADJ	Stock Adjustment Transaction

Table 2: DATA\_TYPE Codes

- b. The "data\_type" determines the actual attributes that are to be stored in positions 7 to 17 ("field1" to "field11").
  - c. The "line\_type" is either "H" (header) or "D" (detail). It indicates where the "field1" to "field19" values are to be updated into (either the header or the detail portion).
  - d. Note that for some tables which have a large number of attributes (e.g. CUSTOMER\_MASTER table), the "D" line\_type has been extended into line\_type codes "D1", "D2", "D3", "D4". This is to allow tables with large number of field attributes to be accommodated
3. Position 4: action\_flag
  - a. This indicates the transaction type. The codes for "action\_flag" are:

ACTION_FLAG Codes	Description
-------------------	-------------

I	Insert / Update new record
D	Delete existing record

Table 3: ACTION\_FLAG Codes

4. Position 5: client
  - a. The “client” code must always be specified in field position 5
5. Position 6 wms\_doc
  - a. This field position is used to store numbers like Receipt No, Sales Order No, PO No etc. (depending on the value of “data\_type”).
  - b. For example, for data\_type “INSHIP” (Incoming Shipment), you will store the Receipt Number in this position. However, for data\_type “OUTSHIP” (Outgoing Shipment), this field is used to store the Sales Order Number instead.
6. Position 7 to 25: field1 to field19
  - a. The values in these fields depend on the value of “data\_type” and “line\_type”. Please refer to the individual file formats.

### 21.2.1. Data Structure Setup

1. Because the contents of each line are identified by its “data\_type” attribute, it is actually possible to combine lines for various transaction types into the same CSV text file.
2. Each record line should be ended with a carriage return plus line feed.
3. Enclosing every one of the 17 values on each CSV line with double quotes is optional. However, if a particular value contains commas, it is compulsory to enclose that particular value in double quotes.

For example, if the value being encoded is the text:

RED PAINT

this value can be encoded either as is,

RED PAINT

or enclosed with double quotes

“RED PAINT”

However, if the value being encoded is an address label that contains commas:

123, ANY STREET, ANY TOWN

the value *must* be enclosed in double quotes:

“123, ANY STREET, ANY TOWN”

4. Only double quotes can be used as the enclosing delimiter. Single quotes are not supported.
5. If a particular value contains the double quote as part of its text, the double quote must be repeated.

For example, if the value being encoded is the description of a 21 inch colour TV:

21”

COLOUR

TV

the description must be encoded as follows:

21”” COLOUR TV

6. For date values, it is recommended that ISO date format (“yyyy-mm-dd”) be used to encode the date to prevent errors arising from interpreting European dates (dd-mm-yyyy) in American format (mm-dd-yyyy) or vice versa.
7. Text field values should be limited to 50 characters in length, unless otherwise indicated.

**21.2.2. CSV File Examples (see [Example.csv](#))**

```
"FO2003-06-02T13:50:04","PO","H","I","CRISTAL","MSI01175","","CRISTAL","H2003/0601","","","","","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","1","13110530","EA","3780","01","","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","2","13110619","EA","400","01","","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","3","13110654","EA","100","01","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","4","13110705","EA","1200","01","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","5","13110708","EA","2800","01","","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","6","13110710","EA","5800","01","","","",""
"FO2003-06-02T13:50:04","PO","D","I","CRISTAL","MSI01175","7","13110707","EA","1000","01","","",""

"SO2003-06-02T21:15:10","SO","H","D","CRISTAL","MSO02114","CRISTAL","","MSP3/121/1691","20030602","MSP3/121/1691","",""
"SO2003-06-02T21:15:10","SO","D","I","CRISTAL","MSO02114","CRISTAL","1","32210144","PCS","300","01","MSP2003/0405",""
"SO2003-06-02T21:55:52","SO","D","I","CRISTAL","MSO02114","CRISTAL","2","12160109","PCS","10000","01","MSP2003/0505",""
"SO2003-06-02T21:55:52","SO","D","I","CRISTAL","MSO02114","CRISTAL","3","32210144","PCS","300","01","MSP2003/0405",""
"SO2003-06-02T21:55:52","SO","D","I","CRISTAL","MSO02114","CRISTAL","4","32210159","PCS","8000","01","MSP2003/0405",""

"MX020030603171720.CSV","OUTSHIP","H","I","CRISTAL","MSO02076","MSP3/32/1643","","BACK ORDER","CRISTAL1","CRISTAL1","",""
"MX020030603171720.CSV","OUTSHIP","D","I","CRISTAL","MSO02076","1","Jun 3 2003 5:32PM","51310209","EA","300.000","01",""
"MX020030603171720.CSV","OUTSHIP","D","I","CRISTAL","MSO02076","2","Jun 3 2003 5:32PM","51310235","EA","200.000","01",""
"MX020030603171720.CSV","OUTSHIP","D","I","CRISTAL","MSO02076","3","Jun 3 2003 5:32PM","51340404","EA","5000.000","01",""
"MX020030603171720.CSV","OUTSHIP","D","I","CRISTAL","MSO02076","4","Jun 3 2003 5:32PM","51340405","EA","200.000","01",""
"MX020030603171720.CSV","OUTSHIP","D","I","CRISTAL","MSO02076","5","Jun 3 2003 5:32PM","51440106","EA","5000.000","01",""

"MXI20030603174138.CSV","INSHIP","H","I","CRISTAL","GRO0001617","MSI01149","MANUAL","CLOSED","MSP2003/0510","CRISTAL",""
"MXI20030603174138.CSV","INSHIP","D","I","CRISTAL","GRO0001617","1","03/06/2003","51340304","EA","10000.000","01",""
"MXI20030603174138.CSV","INSHIP","D","I","CRISTAL","GRO0001617","2","03/06/2003","51440106","EA","10000.000","01",""
"MXI20030603174138.CSV","INSHIP","D","I","CRISTAL","GRO0001617","3","03/06/2003","51440107","EA","10000.000","01",""
"MXI20030603174138.CSV","INSHIP","D","I","CRISTAL","GRO0001617","4","03/06/2003","51440108","EA","10000.000","01",""

"MXI20030716201423.CSV","ADJ","D","I","CRISTAL","00000001","13110102","EA","50.000","01",""
"MXI20030716201423.CSV","ADJ","D","I","CRISTAL","00000001","13110102","EA","-50.000","01",""
"MXI20030716201423.CSV","ADJ","D","I","CRISTAL","00000001","13110102","EA","50.000","01",""
```

**21.2.3. Download FROM CRISTAL WMS**

**21.2.3.1. INCOMING SHIPMENT –**

HEADER

S/No	Field Name	Header Line	Comments
1.	exp_filename	Filename	Prefix + YYYYMMDDHHMMSS
2.	data_type	'INSHIP'	Data Type
3.	line_type	'H'	Default Value
4.	action_flag	'I' / 'D'	Insert (Modify) / Delete
5.	client	Client	Client code
6.	wms_doc	receipt_no	CRISTAL WMS RO
7.	field1	PO No	
8.	field2	Order_type	
9.	field3	Status	
10.	field4	Doc Ref	
11.	field5	Supplier	
12.	field6	ship_mode	
13.	field7	awb_no	
14.	field8	bl_no	
15.	field9	hawb_no	
16.	field10	Maker	
17.	field11	Last Updated	
18.	Field12	Receipt Date	
19.	Field13	Customs Permit Number	
20.	Field14	Carrier	
21.	Field15	Vessel	
22.	Field16	Container	
23.	Field17		
24.	Field18		
25.	Field19		

DETAIL

S/No	Field Name	Detail Line	Comments
1.	exp_filename	filename	Prefix + YYYYMMDDHHMMSS
2.	data_type	'INSHIP'	
3.	line_type	'D'	
4.	action_flag	'I' / 'D'	Insert (Modify) / Delete
5.	client	Client	
6.	wms_doc	receipt_no	
7.	field1	line_no	
8.	field2	receipt_date	
9.	field3	Item_no	
10.	field4	UOM	
11.	field5	Qty	
12.	field6	Grade	
13.	field7	Batch No	
14.	field8	Lot No	
15.	field9	Expiry Date	
16.	field10	Mfg Date	
17.	field11	Currency + ' + unit_cost	
18.	Field12	Item Size	
19.	Field13	Item Color	
20.	Field14	Item Class	
21.	Field15	UDF1	From PO Lines if PO Receipt Else From Receipt Details
22.	Field16	UDF2	
23.	Field17	UDF3	
24.	Field18	Country of Origin	As defined in Receipt Detail Else Product Master
25.	Field19	ASN Quantity	Item-Attributes specific

**21.2.3.2. OUTGOING SHIPMENT**

HEADER

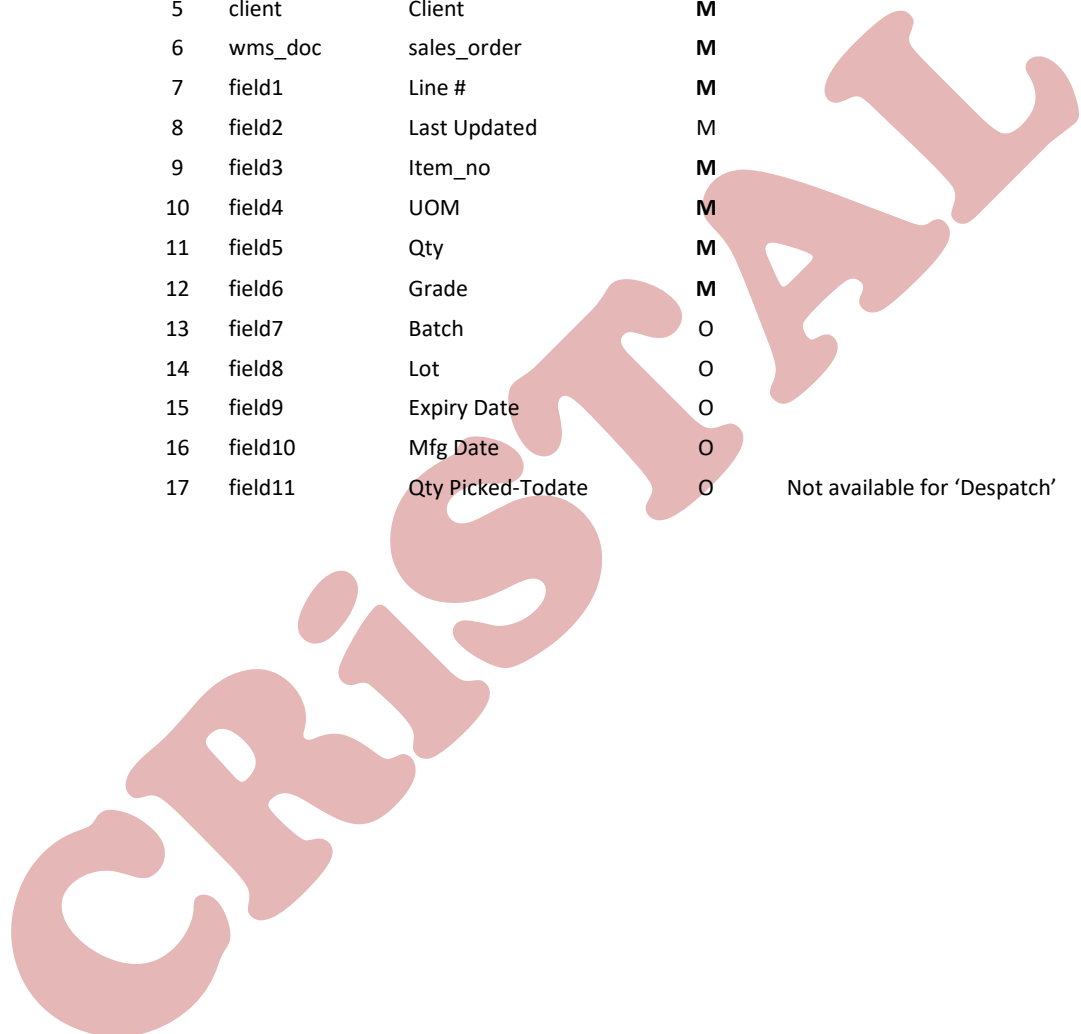
S/No	Field Name	Header Line	Insert	Comments
1	exp_filename	filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'OUTSHIP'	M	
3	line_type	'H'	M	
4	action_flag	'I' / 'D'	M	Insert (Modify) / Delete
5	client	Client	M	
6	wms_doc	Sales order	M	
7	field1	Reference no	M	
8	field2	Container / Delivery Order	M	Delivery Order No (if at pick confirm)
9	field3	Order status	M	
10	field4	Customer Code	M	
11	field5	Delivery code	M	
12	field6	Shipping mode	O	
13	field7	Airway Bill	O	
14	field8	Bill of Lading	O	



15	field9	House AWB	O	
16	field10	Despatch Date	M	At Picking – this is last_update
17	field11	Remark	O	

DETAIL

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'OUTSHIP'	M	
3	line_type	'D'	M	
4	action_flag	'I' / 'D'	M	Insert (Modify) / Delete
5	client	Client	M	
6	wms_doc	sales_order	M	
7	field1	Line #	M	
8	field2	Last Updated	M	
9	field3	Item_no	M	
10	field4	UOM	M	
11	field5	Qty	M	
12	field6	Grade	M	
13	field7	Batch	O	
14	field8	Lot	O	
15	field9	Expiry Date	O	
16	field10	Mfg Date	O	
17	field11	Qty Picked-Todate	O	Not available for 'Despatch'



**21.2.3.3. SALES ORDER**

## HEADER

S/No	Field Name	Header Line	Insert	Comments
1	exp_filename	filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'SALES'	M	
3	line_type	'H'	M	Header Line
4	action_flag	'I' / 'D'	M	Insert (Modify) / Delete
5	client	Client	M	Varchar(50)
6	wms_doc	Sales order	M	Varchar(50)
7	field1	Delivery Date	M	Varchar(50)
8	field2	Customer Code	M	Varchar(50)
9	field3	Reference No	M	Varchar(50)
10	field4	Customer Name	M	Varchar(50)
11	field5	Delivery Street	M	Varchar(50)
12	field6	Delivery Building	O	Varchar(50)
13	field7	Delivery Town	O	Varchar(50)
14	field8	Delivery Country	M	Varchar(50)
15	field9	Delivery Postal Code	O	Varchar(50)
16	field10	Remarks	M	Varchar(255)
17	field11		O	
18	field12		O	

## DETAILS

S/No	Field Name	Header Line	Insert	Comments
1	exp_filename	filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'SALES'	M	
3	line_type	'D'	M	Header Line
4	action_flag	'I' / 'D'	M	Insert (Modify) / Delete
5	client	Client	M	Varchar(50)
6	wms_doc	Sales order	M	Varchar(50)
7	field1	Line No	M	Varchar(50)
8	field2	Item Code	M	Varchar(50)
9	field3	Item Description	O	Varchar(50)
10	field4	Stock Grade	M	Varchar(50)
11	field5	UOM	M	Varchar(50)
12	field6	Quantity	M	Varchar(50)
13	field7	Currency	O	Varchar(50)
14	field8	Unit Price	O	Varchar(50)
15	field9	Lot Number	O	Varchar(50)
16	field10	Batch Number	O	Varchar(50)
17	field11	Use By Date	O	Varchar(50)
18	field12	Production Date	O	Varchar(50)

**21.2.4. Upload TO WMS**

In the data structures definition, the legend for the Insert and Delete columns are:

- M – mandatory
- O – optional

**21.2.4.1. Purchase Order**

HEADER

S/No	Field Name	Header Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	PO	M	M	
3	line_type	'H'	M	M	
4	action_flag	'I' / 'D' / U	M	M	Insert (Modify) / Delete
5	Client	Client	M	M	
6	wms_doc	Purchase Order	M	M	ITLS PO
7	field1	Order Type	M		If null, WMS will default
8	field2	Supplier	M		If null, WMS will default
9	field3	Reference_no	M		HML PO
10	field4	Transport_mode	O		
11	field5	Carrier	O		
12	field6		O		
13	field7		O		
14	field8		O		
15	field9		O		
16	field10		O		
17	field11	Remarks	O		

DETAIL

S/No	Field Name	Detail Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	PO	M	M	
3	line_type	'D'	M	M	
4	action_flag	'I' / 'D'	M	M	Insert (Modify) / Delete
5	client	Client	M	M	
6	wms_doc	<b>Purchase_order</b>	M	M	I
7	field1	Line_no	M	M	
8	field2	Item_no	M		
9	field3	UOM	M		
10	field4	QTY	M		
11	field5	Grade	M		
12	field6	Lot_no	O		
13	field7	Batch_no	O		
14	field8	Expiry_date	O		
15	field9	Mfg_date	O		
16	field10	Item Description	O		
17	field11	Owner	O		

Note: ??? Default create item\_no if missing. Trigger report.

**21.2.4.2. Advance Shipment Note**

HEADER

S/No	Field Name	Header Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	RO	M	M	
3	line_type	'H'	M	M	
4	action_flag	'I' / 'D'	M	M	Insert (Modify) / Delete
5	Client	Client	M	M	
6	wms_doc	Receipt_no	M	M	
7	field1	Receipt_station	O		
8	field2	Receipt_type	M		
9	field3	Warehouse	M		
10	field4	Container #	O		
11	field5	Receipt_date / ETA	M		
12	field6	Supplier	O		
13	field7	Client's PO #	O		
14	field8	Billing_group	O		
15	field9	Airways Bill	O		
16	field10	Bill of Lading	O		
17	field11	Remarks	O		

DETAIL

S/No	Field Name	Detail Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	RO	M	M	
3	line_type	'D'	M	M	
4	action_flag	'I' / 'D'	M	M	Insert (Modify) / Delete
5	client	Client	M	M	
6	wms_doc	receipt_no	M	M	
7	field1	Location	M	O	Originally Pallet_no – redefined as Location 28 Feb 2012
8	field2	Line_no	M	M	
9	field3	Item_no	M		
10	field4	UOM	M		
11	field5	QTY	M		
12	field6	Grade	M		
13	field7	Lot_no	O		
14	field8	Batch_no	O		
15	field9	Expiry_date	O		
16	field10	Mfg_date	O		
17	field11	Country of origin	O		

**21.2.4.3. Sales (Customer) Order**

HEADER –

Revised 28 Mar 2007 – Added upload of delivery address

Notes: CRISTAL WMS allows for multiple delivery address to a customer. However in many host system, there is no equivalent feature. CRISTAL WMS therefore default and assume the delivery code to be the same as the customer code.

Therefore in defining a customer code, an equivalent delivery code with the same Customer Code must be defined.

S/No	Field Name	Header Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	SO	M	M	Sales Order
3	line_type	'H'	M	M	Header / Details
4	action_flag	'I' / 'D'	M	M	Insert (Modify) / Delete
5	Client	Client	M	M	
6	wms_doc	sales_order	M	M	ITLS Sales Order
7	field1	customer	M	M	
8	field2	Order_type	M		
9	field3	Invoice_no	O		Client Sales Order
10	field4	Delivery_date	M		
11	field5	Reference No	O		Customer PO
12	field6	Delivery To	O		Varchar(50)
13	field7	Delivery Street	O		Varchar(50)
14	field8	Delivery Building	O		Varchar(50)
15	field9	Delivery Town	O		Varchar(50)
16	field10	Delivery Country & Postal Code	O		Varchar(50)
17	field11	Remarks	O		Varchar(200)

DETAIL

S/No	Field Name	Detail Line	Insert	Delete	Comments
1	Imp_filename	filename	M	M	Prefix + YYYYMMDDHHMMSS
2	data_type	SO	M	M	Sales Order
3	line_type	'D'	M	M	Header / Details
4	action_flag	'I' / 'D'	M	M	Insert (Modify) / Delete
5	client	Client	M	M	
6	wms_doc	sales_order	M	M	ITLS Sales Order
7	field1	Customer	M	M	
8	field2	Line_no	M	M	
9	field3	Item_no	M		
10	field4	UOM	M		
11	field5	Qty	M		
12	field6	Grade	M		
13	field7	Lot_no	O		
14	field8	Batch_no	O		
15	field9	Expiry_date	O		
16	field10	Mfg_date	O		
17	field11	Supplier	O		

**21.2.4.4. Product Master**

There is NO header line for Product Master Import

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'ITEM'	M	
3	line_type	'D0'	M	
4	action_flag	'I'	M	There is no Deletion in this upload
5	client	Client	M	
6	host_doc	Item_no	M	
7	field1	Description	M	
8	field2	Status	M	'ACTIVE', 'INACTIVE', 'OBSOLETE'
9	field3	Receiving Grade	M	If Null, WMS default to '01'
10	field4	Storage Zone	M	If null, WMS will default
11	field5	Product Class	M	SETCODE, SUB-MODULE, COMPONENT
12	field6	Pallet Qty	M	Quantity of Item UOM per Pallet
13	field7	Item UOM	M	First Level UOM
14	field8	Height	M	
15	field9	Width	M	
16	field10	Depth	M	
17	field11	Weight	M	

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'ITEM'	M	
3	line_type	'D1'	M	
4	action_flag	'I'	M	There is no Deletion in this upload
5	client	Client	M	
6	host_doc	Item_no	M	
7	field1	Batch-control	M	Y / N – by default = 'N'
8	field2	Lot-control	M	Y / N – by default = 'N'
9	field3	Expiry control	M	Y / N – by default = 'N'
10	field4	Shelf-life	M	In Days
11	field5	Pre Alert	M	In Days
12	field6	Mfg Dated	M	Y / N – by default = 'N'
13	field7	Serial	M	Y / N – by default = 'N'
14	field8	Number of serial # EACH	M	Numeric – default = 1
15	field9	Class	M	Y / N – by default = 'N'
16	field10	Size	M	Y / N – by default = 'N'
17	field11	Color	M	Y / N – by default = 'N'

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'ITEM'	M	
3	line_type	'D2'	M	
4	action_flag	'I'	M	There is no Deletion in this upload



5	client	Client	M	
6	host_doc	Item_no	M	
7	field1	Supplier	M	Y / N – by default = 'N'
8	field2	Customer stock owner	M	Y / N – by default = 'N'
9	field3	Country of Origin	M	Y / N – by default = 'N'
10	field4	PPQ Packing	M	Y / N – by default = 'N'
11	field5	Dimensions	M	Y / N – by default = 'N'
12	field6	Weight	M	Y / N – by default = 'N'
13	field7	DG_flag	M	Y / N – by default = 'N'
14	field8	UN Code	O	
15	field9	HazChem Code	O	
16	field10	IMO Class	O	
17	field11	Bonded flag	M	Y / N – by default = 'N'

Optional Line

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'ITEM'	M	
3	line_type	'D4'	M	
4	action_flag	'I'	M	There is no Deletion in this upload
5	client	Client	M	
6	host_doc	Item_no	M	
7	field1	Maximum Stock Level	M	
8	field2	Re-order Level	O	
9	field3	Currency	O	
10	field4	FOB Price	O	
11	field5	Landed Cost	O	
12	field6	EX-Work Price	O	
13	field7	Retail Price	O	
14	field8	Dealer Price	O	
15	field9	Export Price	O	
16	field10	Tolerance Level	O	
17	field11	Sample Size	O	

**21.2.4.5. CUSTOMER MASTER**

Header

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'CUSTOMER'	M	
3	line_type	'D0'	M	
4	action_flag	'I' / 'U'	M	Insert (Modify) / Delete
5	client	Client	M	
6	wms_doc	Customer Code	M	
7	field1	Customer Name	M	
8	field2	Street	O	
9	field3	Building	O	
10	field4	Town	O	
11	field5	Country	O	
12	field6	Post Code	O	
13	field7	Phone	O	
14	field8	Fax	O	
15	field9	Contact Person	M	
16	field10	Email	O	
17	field11	Backorder	O	Flag - 'Y' / 'N'

Billing Address

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'CUSTOMER'	M	
3	line_type	'D1'	M	
4	action_flag	'I' / 'U'	M	Insert (Modify) / Delete
5	client	Client	M	
6	wms_doc	Customer Code	M	
7	field1	Bill To name	M	
8	field2	Billing Street	O	
9	field3	Billing Building	O	
10	field4	Billing Town	O	
11	field5	Billing Country	O	
12	field6	Billing Post Code	O	
13	field7	Payment Term	O	
14	field8	Price Type	O	
15	field9		M	
16	field10		O	
17	field11		O	

Delivery Address

S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'CUSTOMER'	M	
3	line_type	'D2'	M	
4	action_flag	'I' / 'U'	M	Insert (Modify) / Delete
5	client	Client	M	

6	wms_doc	Customer Code	M
7	field1	Delivery Code	M
8	field2	Deliver To	M
9	field3	Deliver Street	O
10	field4	Deliver Building	O
11	field5	Deliver Town	O
12	field6	Deliver Country	O
13	field7	Deliver Post Code	O
14	field8	Deliver Contact Person	O
15	field9	Delivery Phone	O
16	field10	Delivery Fax	O
17	field11	Instruction	O

**21.2.4.6. Stock Adjustment and Attribute Change**

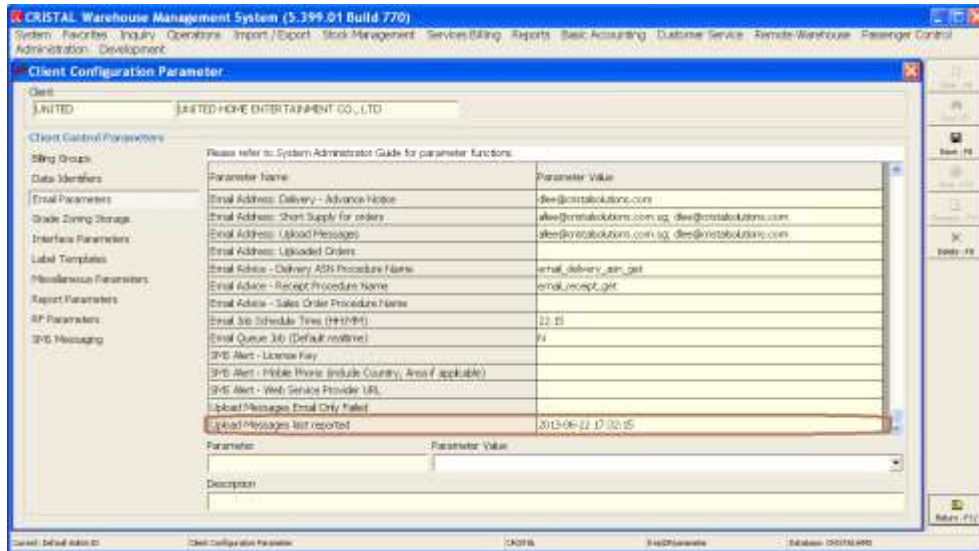
S/No	Field Name	Detail Line	Insert	Comments
1	exp_filename	Filename	M	Prefix + YYYYMMDDHHMMSS
2	data_type	'ADJ'	M	Including re-labelling
3	line_type	'D'	M	There is no header line
4	action_flag	'I' / 'U'	M	Insert (Modify) / Delete
5	client	Client Code	M	
6	wms_doc	Reference No	M	
7	field1	Item No	M	
8	field2	UOM	M	
9	field3	Quantity	M	Both positive and negative
10	field4	Grade	M	
11	field5	Lot no	O	
12	field6	Batch No	O	
13	field7	Expiry Date	O	
14	field8	Production Date	O	
15	field9	Last Update	O	
16	field10	Reason Code	M	
17	field11	Remarks	O	

**21.3. Interfaces file upload messages**

In the interfaces function, files are uploaded or downloaded, manually through the Auto Batch Upload or automated via the AutoUpload or AutoDownload, from the CRISTAL WMS.

When each file is uploaded or downloaded, a message is written to the table interface\_manual\_workspace\_msg.

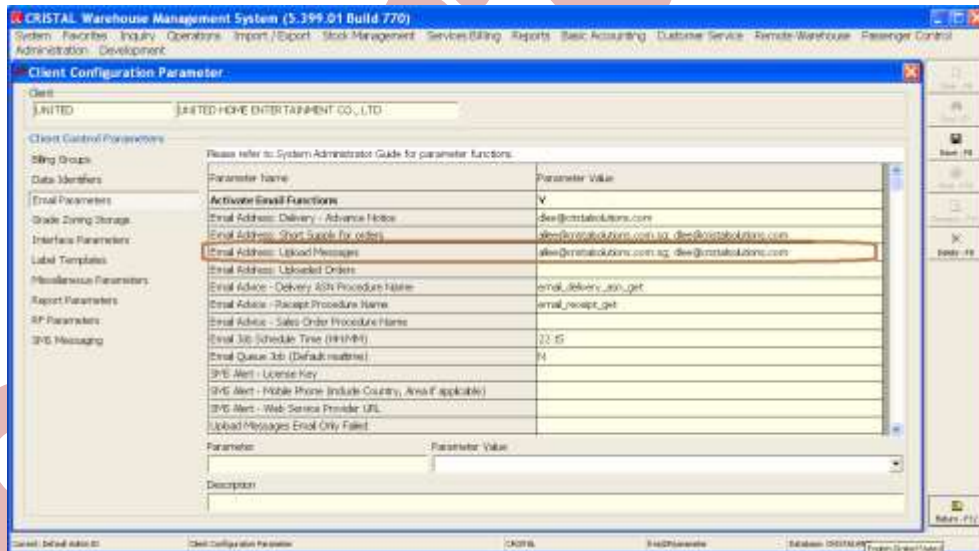
The AutoEmail will read the table and create an email for each of the message and send it to the specified addressees.



To prevent messages that have been sent from being resend, the last sending date and time is recorded in the parameter below. Each time the AutoEmail process the interface messages, it would retrieve messages that are created after the 'Upload Message last reported date-time'.

**21.3.1. Defining the addressees**

The email addresses are defined in the Client Profiles | UDF Parameters | Upload Messages. Each of the emails can be defined to be sent to 1 or more addressees. The email addresses, if more than 1, is to be separated by semi-colon (;). If no email address is specified, the email is skipped.



## 22. USER DEFINED DATA EXPORT

The user define data export function is designed to enable user to create template of the data that that they would like to extract from CRISTAL Warehouse Management System.

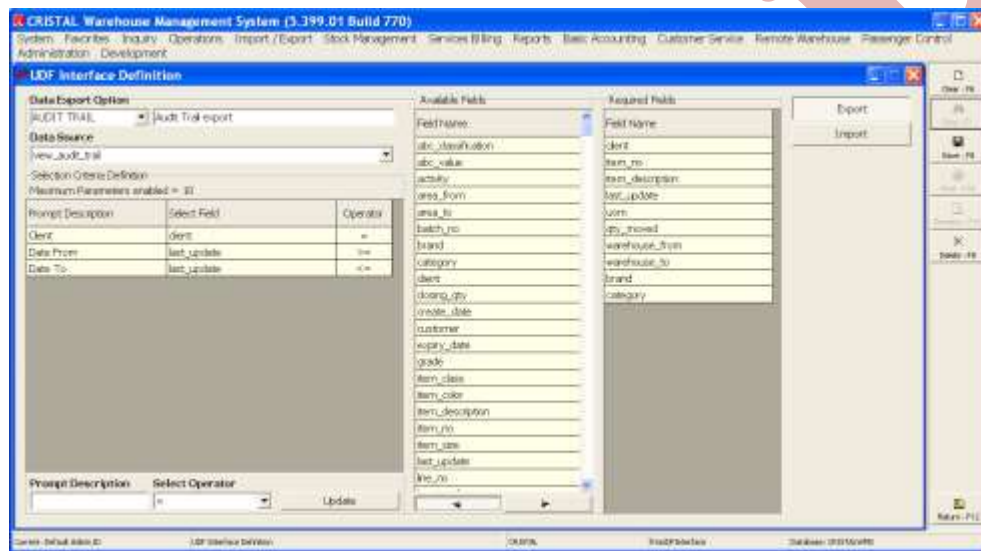
The function comprises of the menu options

1. UDF Interface Definition
  - a. This is an administrator function which enable the system administrator to create and administrate the defined template
2. Export Files - Manual
  - a. This is a multi-interface function which allows users to export required data using both stand predefined data structure and the data structure defined above

In addition, the users must be granted access to the defined templates. This is controlled in User Group maintenance.

### 22.1. Data Export Definition

The image below shows a defined data export template (or definition).



The image comprises of 3 grid boxes:

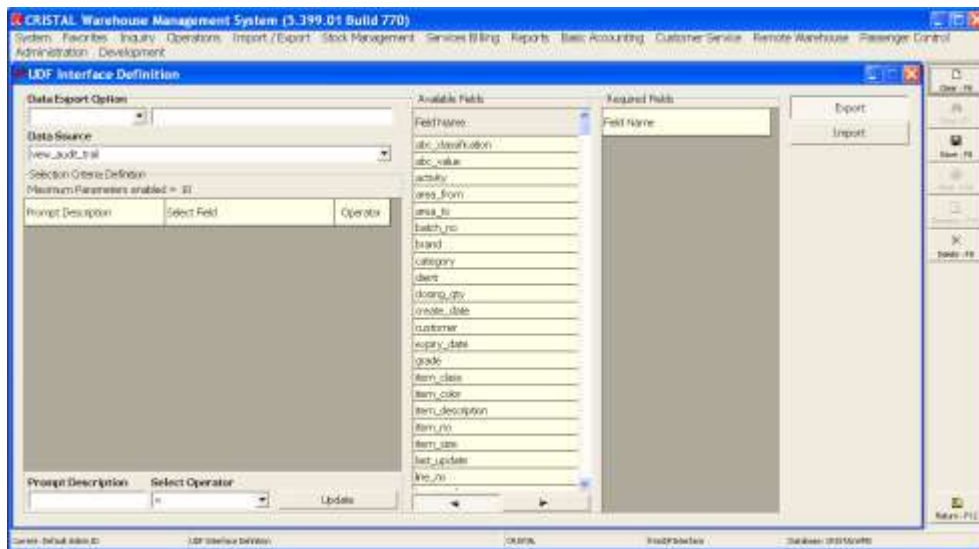
1. The Selection Criteria is the inputs that users are required to specify
2. The Available Fields are the data elements that is available from the specified Data Source
  - a. The Data Source are views of the tables that have been defined
3. The Required Fields are the selected fields that are extracted from the data source and exported.

#### 22.1.1. Creating an Export Data Definition

To create a new export data definition

1. Click 'Clear'
2. Input the name or description for the definition in the Data Export Option
  - a. This will be the description (Option) that will appear in the UDF Export Data menu option.
3. Select the Data Source
  - a. The available data source are:
    - i. view\_audit\_trail
      - Transaction History
    - ii. view\_delivery
      - Delivery Orders Information
    - iii. view\_item\_locations
      - Stock by locations
    - iv. view\_stock\_detail
      - Stock by item code
    - v. view\_stock\_free
      - Stock by status - consolidated information from
        - view\_stock\_free\_picked

- view\_stock\_free\_picking
  - view\_stock\_free\_qoh
  - view\_stock\_free\_qoo
  - view\_stock\_free\_receiving
  - view\_stock\_free\_reserved
  - view\_stock\_free\_sales
  - view\_stock\_free\_transit
- vi. The available fields or data elements will be listed in the middle grid box (Available Fields) sorted by ascending alphanumeric sequence
  - vii. See list below for data elements

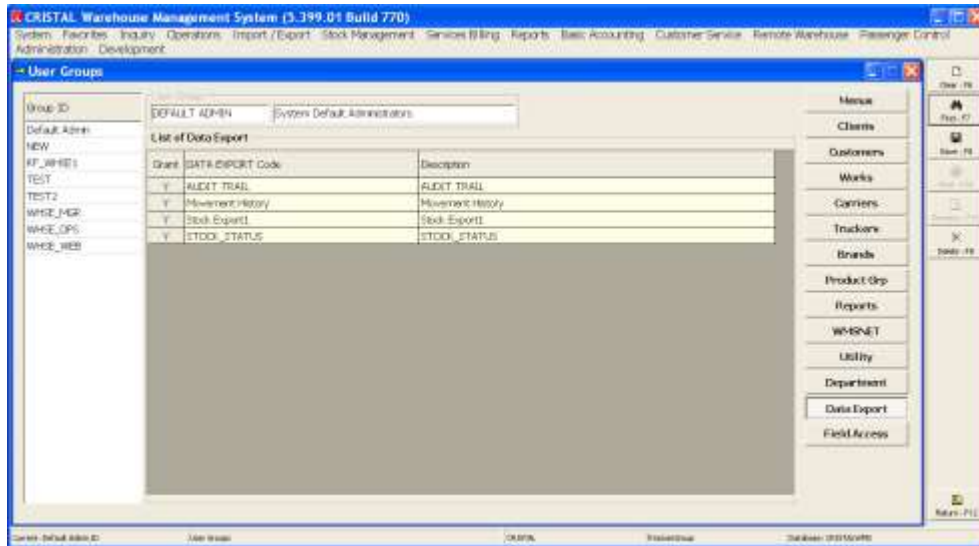


4. To specify the Selection Criteria
    - a. Click the Left Arrow button above the Available field (middle grid box)
    - b. Double click on the required data elements
      - i. The selected data element will appear in the Selection Criteria grid box
      - ii. The next step is to describe the Prompt Description of data elements as it would appear to the users
        - Click on a row in the Selection Criteria grid box
        - The selected row will be bolded
        - Input the Prompt Description
        - Specify the required Operator
          - = (equal to)
          - >= (greater than and equal)
          - <= (less than or equal)
          - LIKE
          - NOT LIKE
          - <> (not equal)
        - Click Update command button
        - Repeat for all selected criteria
5. To specify the Required Fields or data elements
  - a. Click the Right Arrow button
  - b. Select the required data element by double click on the data element
  - c. The selected data elements will appear in the Required Fields grid box
6. Click Save to complete definition

**22.1.2. Enable User Access**

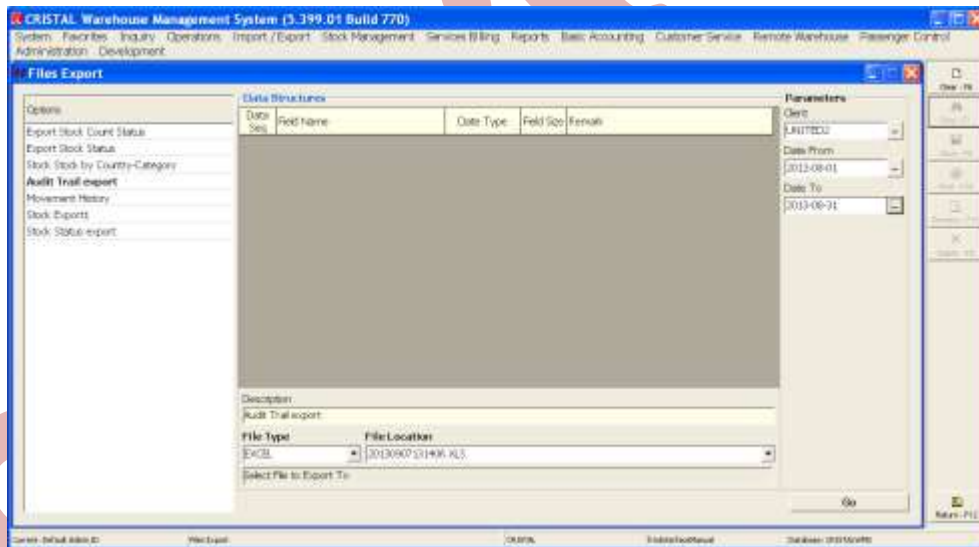
User access to the defined UDF Data Export is defined in the User Group maintenance.





1. Select the User Group to be authorised
  2. Select Data Export button
  3. Double click on the option to enable or disable
    - a. 'Y' to enable, 'N' to disable
  4. Click Save to complete definition
- The user can now access the authorised options.

**22.2. Exporting Data**



To export data from CRISTAL WMS

1. Select the Required Parameters
2. Select the File Type
3. Specify the File Location (output file name)
  - a. Click the Drop Down arrow button to specify drive and folder



- b. On closing the path and file name will appear in the File Name combo box
- 4. The selection prompts will appear on the right grid box
  - a. The last specified selection criteria
    - i. Change as required
      - Click on the criteria
      - Change the value as required
      - Repeat as needed
- 5. Click Process
- 6. The file will be created and save as specified as a .csv file which can be opened in Excel spread sheet

**22.3. Data Elements**

Below are the current available data sources

**22.3.1. view\_audit\_trail**

- abc\_classification
- abc\_value
- activity
- area\_from
- area\_to
- batch\_no
- brand
- category
- client
- closing\_qty
- customer
- date\_created
- expiry\_date
- grade
- item\_class
- item\_color
- item\_description
- item\_no
- item\_size
- last\_update
- line\_no
- location\_from
- location\_to
- loose\_pack
- lot\_no
- maker
- movement\_description

- movement\_type
- origin\_country
- pallet\_from
- pallet\_to
- ppq\_packing
- priority
- prod\_date
- product\_group
- qty
- qty\_moved
- reason\_code
- rec\_num
- receipt\_no
- reference\_no
- remark
- row\_id
- sales\_order
- status
- sub\_category
- sub\_category\_1
- sub\_category\_2
- sub\_category\_3
- sub\_category\_4
- sub\_category\_5
- uom
- warehouse\_from
- warehouse\_to
- works\_order

### 22.3.2. view\_delivery

- awb\_no
- batch
- bl\_no
- carrier
- client
- client\_name
- con\_note
- container
- customer
- delivered\_date
- delivered\_time
- delivery
- description
- despatch
- despatch\_date
- dlvr\_bldg
- dlvr\_code
- dlvr\_country
- dlvr\_postcode
- dlvr\_street
- dlvr\_to
- dlvr\_town
- dlvr\_stop
- do\_line\_no
- driver
- est\_vol

- est\_weight
- etd
- expiry
- grade
- hawb\_no
- invoice\_date
- invoice\_no
- item\_class
- item\_color
- item\_no
- item\_size
- last\_update
- load\_summary
- lot
- maker
- pallet
- prod\_date
- qty
- receipt
- recipient
- recipientID
- reference\_no
- remark
- route
- sales\_order
- serial
- ship\_mode
- shipment\_no
- so\_line\_no
- status
- supplier
- uom
- vehicle
- vessel
- warehouse
- work\_order

### 22.3.3. view\_item\_locations

- aisle
- allocated
- bay
- bonded
- checkdigit
- client
- depth
- height
- item\_no
- item\_status
- last\_cycle\_count
- last\_update
- level
- location
- maker
- multi\_sku
- pallet
- pallet\_unit

- pallet\_used
- phy\_depth
- phy\_height
- phy\_volume
- phy\_width
- pick\_hold
- qty\_avail
- qty\_booked
- row\_id
- search\_seq
- sku\_pallet\_unit
- slot
- status
- storage
- uom
- volume
- warehouse
- weight
- width
- zone

#### 22.3.4. view\_stock\_detail

- batch\_no
- client
- expiry\_date
- grade
- item\_class
- item\_color
- item\_depth
- item\_description
- item\_height
- item\_no
- item\_size
- item\_weight
- item\_width
- last\_update
- location
- lot\_no
- maker
- origin\_country
- pallet
- ppq\_packing
- ppq\_qty
- prod\_date
- qty\_avail
- qty\_booked
- qty\_rcvd
- rec\_num
- receipt\_date
- receipt\_no
- ref\_no
- remarks

- sales\_order
- status
- stock\_owner
- supplier
- udf1
- udf2
- udf3
- udf4
- udf5
- uom
- warehouse

#### 22.3.5. view\_stock\_free

- client
- grade
- item\_no
- qoh
- qoo
- qty\_avail
- qty\_free
- qty\_picked
- qty\_picking
- qty\_rcvg
- qty\_reserved
- qty\_sales
- qty\_transit
- uom

CRISTAL



## Appendix A. Supplementary Support Functions

CRISTAL WMS incorporated a number of supplementary functions in the system which is called by various functions. They aim to enhance the usability and ease of uses.

Some of these supplementary functions would appear unrelated to a warehouse management system is incorporated to meet indirect requirement such as Digit Documents Archiving. They reduce a business' IT costs as a result.

### A.1. File Attachments

In Build 829, the attached files are centralized in the eFile subfolder in the application Data folder. The files that are 'attached' that are in local folder are automatically copied to the central folder.

It is therefore necessary to grant full access to the Data folder and subfolder to facilitate this function.

The File Attachment command button which appears in a number of functions –

1. Product Definition
  - a. Materials Specification Documents...
2. Receipt Check In
  - a. Referencing documents
    - i. Supplier Invoices
    - ii. Supplier Delivery Orders
    - iii. Bill of Lading / Air Waybill...
3. Sales Orders Entry
  - a. Referencing Documents
    - i. Customs Declaration
    - ii. Shipping documents...
4. Delivery Orders Confirmation
  - a. Proof of Delivery

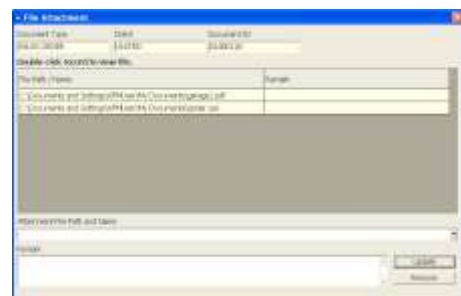
The command button opens a window that enables user to attach soft copy of documents to the respective function document reference.

This is basically an eFiling or Digitized Documents function which enables archiving of reference documents (in softcopy) and facilitates quick retrieval when needed.

Click the command button open the window below.

The Document Type, Client and Document ID will automatically fill with the referencing data from the parent form as below

1. To add
  - a. Input the Path and file name (or click the dropdown to select) in the Attachment File Path and Name
  - b. Input relevant comment in the Remark
  - c. Click Save.
  - d. Repeat as required.
2. To remove obsolete attachment, select file in the grid box
  - a. Click Remove



### A.2. VA Services

Revision in Build 833.012

The function is enhanced to enable entry of billable Unit Rate.

This capability is added to facilitate Adhoc services that are not charged based on standard rate.

In such case, the Billable Quantity should always be 1 while the chargeable amount is updated as the Unite Rate.

The VA (values add) Services is designed to enabled operations to record adhoc logistics services performed. These services, such as container stuffing and unstuffing, price tagging..., are not computable from other warehouse activity due to the nature of their non-routine requirements.

The window is activate by VA Services command button in

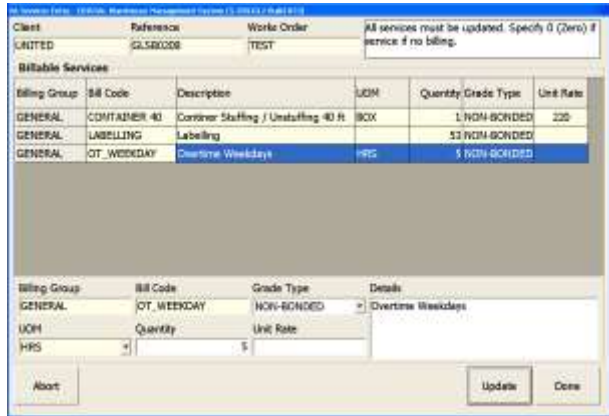
1. Receipt Check In

- For inbound related services
- 2. Warehouse Tasks
  - For inbound and outbound related services
- 3. Delivery Order Confirmation
  - For outbound related services

The command buttons are visible and / or enabled only if Adhoc services are defined in an active Services Billing Quotation.

To update value add services

1. Click on the required service that are listed in the grid box
  - a. These are as defined in an active services billing quotation
  - b. Operations is not allowed services that are not defined in the quotation as the data is used to compute the services chargeable
    - i. Without the services defined, there is no rate to compute the amount chargeable
2. Input the Quantity performed
  - a. Input the Unit Rate if nonstandard rate/
3. Added Details if available
4. Click Add / Update
5. Repeat as required
6. Tick the Completed check box, if it is visible, when done
7. Click 'Done' command button to close the window.
  - a. If configured, an Authorised Code text box may be visible.
    - i. Users must input a specified string before allowing to close the window
    - ii. This is use in some operations to ensure that the window is not closed without update the services performed
      - And if there is no services to update, it is a conscious action by the users.



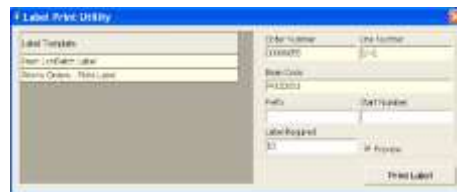
**A.3. Item Labels**

Item Labels is a customised label function.

It is activated by the Item Labels command button in

1. Receipt Check In
2. Sales Order Entry
3. Warehouse Tasks

It opens the Label Print Utility window. It differs from the Label Utility section below.



Although meant as a mean to enable customised label templates to be added, 2 templates is available in the system. Users may operationalize them on the understanding of 'as is' basis.

The 2 templates are

1. Item Lot-Batch Label
  - a. Select the detail line to print the label against
  - b. Click the command button open the window
    - i. The following will be populated from the detail data
    - ii. Order Number
    - iii. Line Number
    - iv. Product ID
    - v. Label Quantity
      - From the line Quantity
  - c. Select the Label Template required
  - d. Specify the Prefix, if required, and the Start Number

- e. Click Print Label
  - f. Ensure the printer is set to a label printer
2. Works Order – Pick Labels (Price Tags)
- a. This label is designed primarily as a Picking Label with each label representing a requirement of 1 (one)
  - b. Select the Works Order in Warehouse Tasks
    - i. Click on the Item Labels command button
    - ii. The Label Print Utility window will open
    - iii. Click Print Label
      - This label ignore the data show in the text boxes
      - The number of labels prints will be equal to the total quantity

The template for the labels is specified in Client Profiles | UDF | Labels.

**A.4. Label Utility**

Label Utility is an add-on feature that enables users to format and print label, with or without barcode, in accordance to operational requirement.

It is designed to minimise the data input that typically required when using a standalone label printing software, thereby reducing the error that resulted from data entry.

The utility have been enhanced since Build 350 to retrieve data from sales orders that further reduce data entry requirement.

It utilises data that is existing in the Warehouse Management System without affect the data itself – that is the Label Utility is designed without UPDATING capability. All data required on a label must either be read from the database or input by the user.

Without the UPDATING function, all data used for printing label will be lose once the user click ‘New’ or exist from the windows.

**A.4.1. Defining Label Options**

Before the Label Utility can be used, it is necessary to first format the label templates using Crystal Reports™ version 7 or 8.

The data source to be used to design the template is the stored procedure *generate\_label\_user*. The stored procedure is written to cater for the field as specified in below.



After the template has been created, it must be defined and linked in the Label Utility.

To added the template to the utility, specify

1. Label Name
2. File Name – full drive and path
3. Vendor code and name
4. Default Customer ID
5. Delivery destination
6. Tick the fields that are used (as required) and to be printed on the label
  - a. Delivery Date
  - b. Lot Number

- C. Batch Number
  - d. Item Size
  - e. Item Color
  - f. Item Class
  - g. Serial Number
  - h. Expiry Date
  - i. Manufacturing / Production Date
  - j. Grade
  - k. Weight
  - l. Dimensions (Pack Width)
  - m. Job Number
  - n. Line Number
  - o. D/O Number
  - p. UOM
  - q. Pack Quantity
7. Click Save

**A.4.2. Printing Label**

There are 2 options in printing the label:

**A.4.2.1. Adhoc**

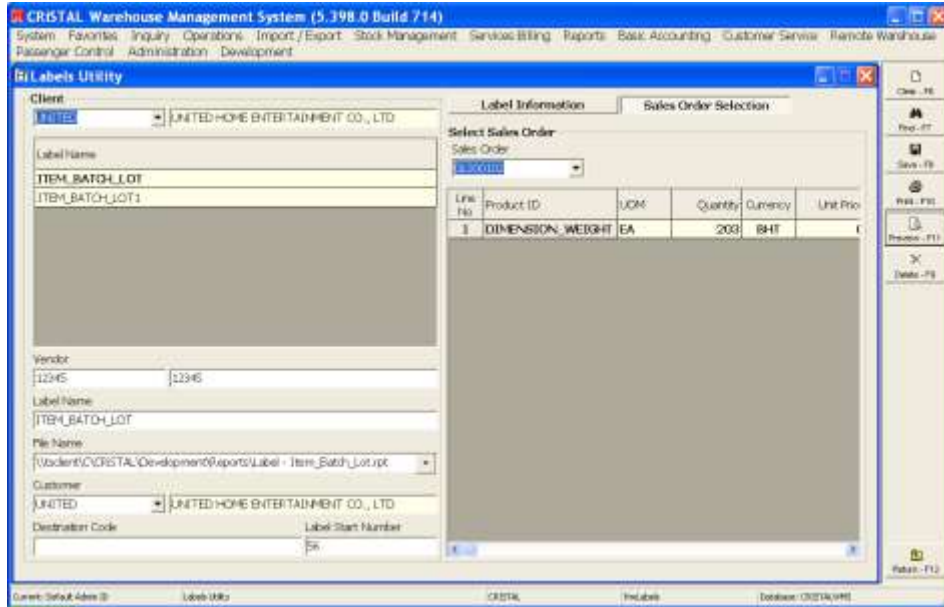


To print an adhoc label, simply select the predefined label from the grid box:

1. Select the product ID.
2. Input the required attributes
3. Specify the number of Label Required
4. Click Print

**A.4.2.2. Sales Orders**

To print label for a sales order, select the Sales Order Selection tab button.



1. Select the Sales Order
2. The order detail will be listed
3. Select the Line to print
4. Select Label Information
5. Specify the number of Label Required
6. Click Print

**A.5. Grid Columns Sequence**

This function is introduced in Release 5.398 Build 653.

This function enables sites to rearrange the sequence of columns displayed in grid boxes. In the Build 653, the grid columns in the following functions are enabled:

1. Receipt Check In details
2. Sales Orders Entry details

New options will be added in later builds.

Note: Rearranged column sequence may be nullified in an upgrading or major updating of the system.

**A.5.1. Rearranging Grid Columns**

When window is opened, the available Grid Keys will be listed – the grid key of a grid box are shown in the Tooltip when the cursor is placed over the grid box as above.





To modify columns sequence:

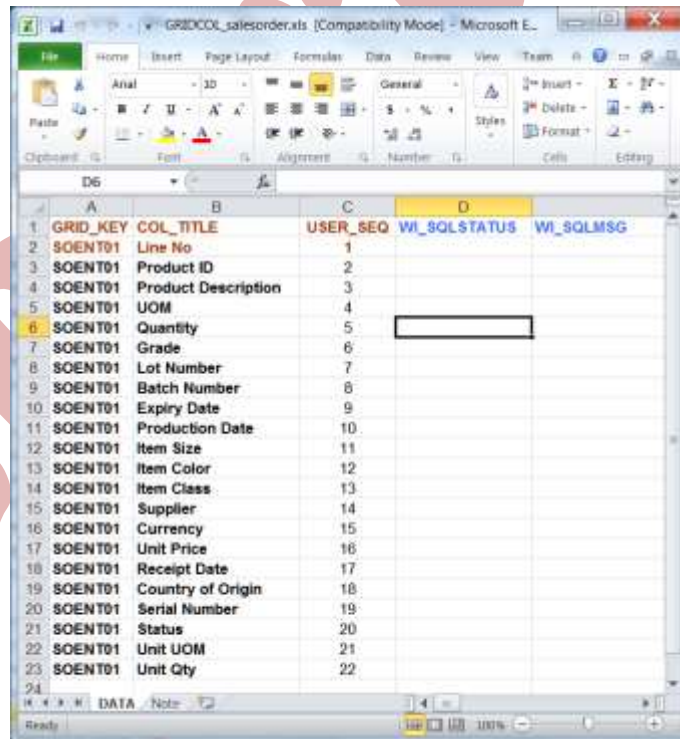
1. Select the desired Grid Key
  - a. The list of title of columns in the grid will be list in accordance to the default sequence in the center grid.
  - b. Hidden columns in the grid will not be listed.
2. Click each row in the order of desired sequence.
  - a. The column name will appear in the right grid
  - b. Column with 'Y' in the 'Fixed' column MUST be in the sales position
  - c. Rows that are already selected will have the Column Number prefixed with an asterisk (\*).
  - d. Each row can only be selected once
  - e. All rows must be selected and appear in the right grid
    - i. Columns that not required must still be selected – simply place them at the bottom of the list – they then appear to the extreme right.
3. To remove a wrongly selected row, click on the row in the right grid
  - a. The row will be removed and the asterisk on the corresponding row in the center grid will be removed too to allow the row to be selected again.
4. Click Save to effect the new sequence.

**A.5.2. Rearrange via WMS Import function**

To facilitate system administrator to maintain and manage grid columns re-sequencing, the list of columns are made available in Excel templates. The current available are:

1. GRIDCOL\_receipt.xls
2. GRIDCOL\_salesorder.xls

Cells whose value is in bold are not to be modified. User\_Seq which are in bold are fixed position column. They must not be modified as they are key field which is used by the system. Change the bold cell value will result in function failure.



Modify the User\_Seq number in accordance to required columns arrangement – 1 being the left most. They must be sequential and no repeat is allowed. Once finalised, update the database by using the WMS Import function.



## Appendix B. Complementary Functions

A number of functions, though not of standard warehouse operations requirement, are included in CRISTAL WMS to meet specific warehouses' needs.

These functions include but not limited to the following:

1. Customs Lot numbers Register
2. Quality Control
3. SMS Messaging

New functions will be added as and when requirements arise.

### B.1. (Licensed Warehouses) Customs Lots Register

Customs Lot Numbering allocation is first incorporate Release 5.396.2

This function is separated from Administrator Tools and assigned as a menu option in Build 772. Although the option is still available in Administrator Tools, it must be enabled in User Groups | Utility but cannot be opened in the function as the Winform is redesigned and will block other option subsequently.

The Licensed Warehouse Lot Numbers registry is based on requirement per Singapore Customs.

The lot numbers are allocated for each item of a shipment. This is allocated prior to the receipt of an inbound shipment and are declared in the required import declaration

This enables Licensed Warehouses to assign and maintain the allocation of the Customs Lot Numbering.

#### B.1.1. Setup for Generation of Lot Number

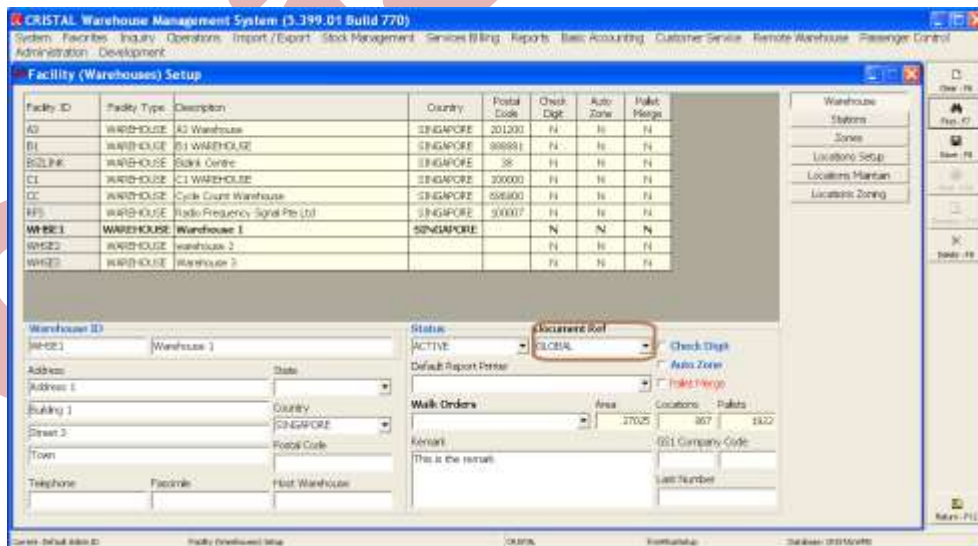
Prior to allocation of the lot number, the function must be configured or set up for each warehouse and product group (Order Type) in the System Configuration | Document Reference Series -> Lot Customs

The Lot Numbers structure is based on Singapore Customs definition which is 8 characters:

1. First 2 characters identify the Warehouse
2. The 3<sup>rd</sup> character is the product group (type)
3. The 4<sup>th</sup> character is a running alpha which automatically increment to the next character when the running number exceed 9999
4. The 5<sup>th</sup> to 8<sup>th</sup> characters are numeric value which is incremented.

The customs lot numbers are warehouse specific. As such each warehouse must be assigned a different document reference series.

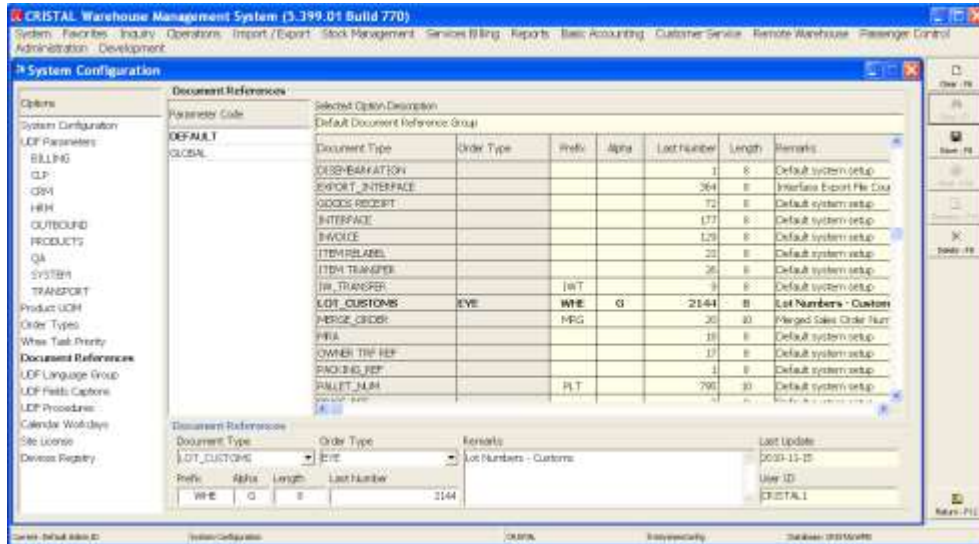
To setup the Customs Lot for a warehouse, specify the Document Ref Series as below.



In System Configuration | Document References, define the custom lot numbering as follows:

1. Specify LOT\_CUSTOMS for Document Type
  - a. Note that there is another Document Type identified as CUSTOM\_LOT – this is the key for customs lot numbering allocation reference
2. Specify the product group in Order Type
3. Specify the Prefix – the Customs Assigned warehouse code and product type code
4. Specify the current Alpha
5. Input the Last Number that has been assigned

6. Specify the Length as 8 or any other value as required
7. Click Save
8. Repeat as required for each product to be defined.



**B.1.2. Lot Number Client Maintenance**

The function is designed to enable Licensed Warehouse operator to allocate, track and maintain lot numbers that issued to their clients.

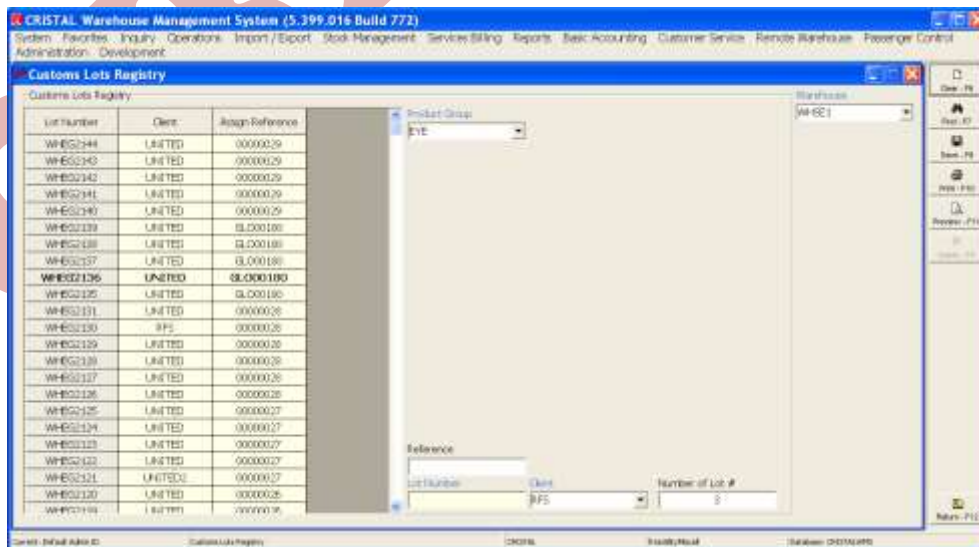
The function as provided in Administration | Administrator Tools is dual functions:

1. Allocation of Lot Numbers
2. Maintenance assigned client

**B.1.2.1. Allocation of Lot Numbers**

To allocate lot numbers to a client:

1. Specify
  - a. Warehouse
  - b. Product Group
  - c. Client
  - d. Number of Lot # (number) required



2. Click Print / Preview
  - a. This will generate the required Customs Lots required and generate the printout as below
  - b. The Customs Lots are also being printed in the list as barcode to facilitate operations where appropriate

- i. The barcode symbology used is Code 39

CRISTAL Solutions Pte Ltd							
Customs Lot Numbers Allocation						2010-11-15	
S/No	Warehouse	Client	Custom Lot No	Custom Lot Barcode	Ref No	Create Date	Create By
1	WHSE1	UNITED	WHEG2106		00000024	2010-11-15	CRISTAL
2	WHSE1	UNITED	WHEG2107		00000024	2010-11-15	CRISTAL
3	WHSE1	UNITED	WHEG2108		00000024	2010-11-15	CRISTAL
4	WHSE1	UNITED	WHEG2109		00000024	2010-11-15	CRISTAL
5	WHSE1	UNITED	WHEG2110		00000024	2010-11-15	CRISTAL

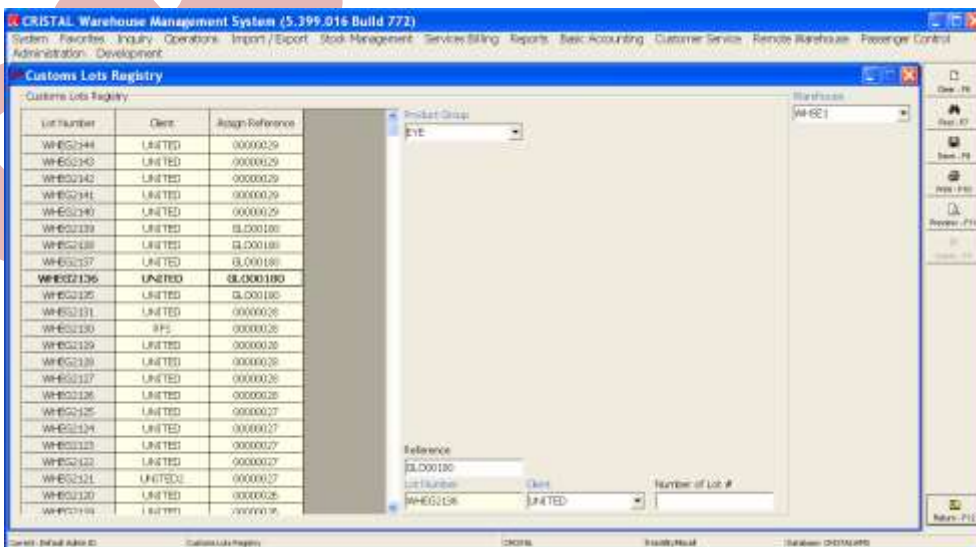
A system allocated reference number will be assigned to each set of lot numbers issued. To reprint a previous generated customs lots:

1. Click the required Customs Lots number
  - a. The Client and Assign Reference will be populated in the Client and Reference objects respectively
2. Click Print / Preview
  - a. The printout will list lots number that matches the Client and Reference
    - i. If one of the lot numbers have been reassigned to another client, it will not be listed in the reprint.

**B.1.2.2. Reassign Lot Number to another Client**

This is provided to overcome situation where client uses a Lot Number (assigned to another client) that have not been assigned to them in their customs permit declaration.

As Customs House does not allow the same Lot Number being used for declaring another shipment-item and the need to maintain up-to-date record, users are enabled to reassign a generated Lot Number from 1 client to another.



To reassign a Lot Number:

1. Select the Warehouse
2. Select the Product Group

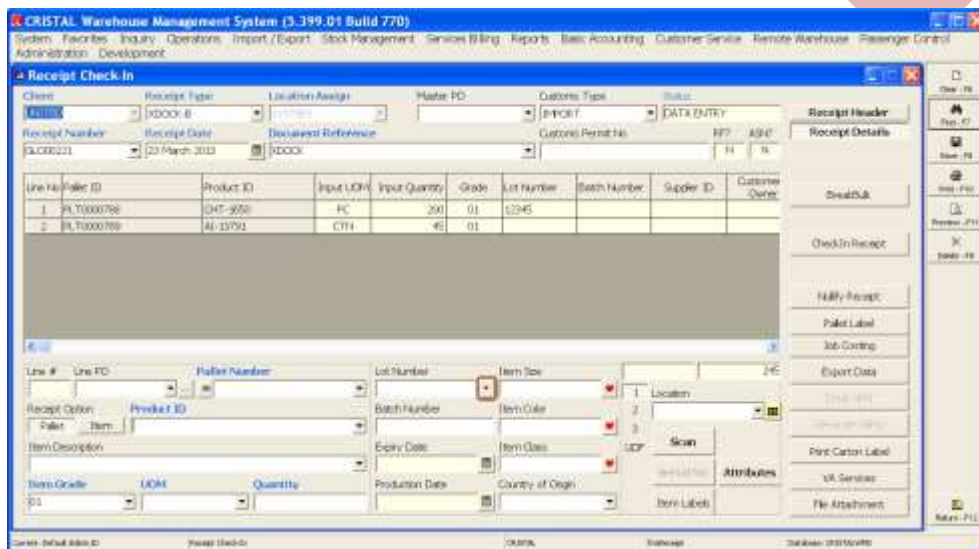
- a. This will list all the assigned lot number
3. Scroll the grid box and click on the Lot Number to be reassigned
4. The selected lot number will be appear in the Lot Number textbox
5. Specify the Client to be reassigned
6. Leave the Qty textbox empty
7. Click Save
8. Repeat 2 to 4 as required.

Note that there is no Delete function to remove an assigned number. Neither is it possible to add an unassigned number.

**B.1.3. Receipt Specific Lot Number**

Apart from pre-assignment of Lot Numbers, CRISTAL WMS also allow issue of Lot Number at the time of Receipt Check In.

Note that the Lot Number is strictly for Bonded (Licensed) goods and are Product Group specified. It is therefore necessary that Bonded flag and Product Group are defined in the Product Definition. Although the Lot Number can be assigned with the 2 values specified, it is usually required to enable Lot Tracking too. To assigned a new Lot Number



1. Specified the Item Code being check in
2. Click on the boxed button (with a barcode)
  - a. A new number will be updated into the Lot Number textbox
    - i. Note multi-click the button will increment the numbers accordingly.
3. Continue the check in as required...

**B.1.4. Customs Lots Reports**

A report of assigned Lot Numbers can be printed from the Reports as per sample:

CRISTAL Solutions Pte Ltd

Customs Lot Numbers Allocation 2011-06-06

S/No	Warehouse	Client	Custom Lot No	Custom Lot Barcode	Ref No	Create Date	Create By
1	WHSE1	UNITED	WHEG2111	[Barcode]	00000025	2011-06-05	CRISTAL1
2	WHSE1	UNITED	WHEG2112	[Barcode]	00000025	2011-06-05	CRISTAL1
3	WHSE1	UNITED	WHEG2113	[Barcode]	00000025	2011-06-05	CRISTAL1
4	WHSE1	UNITED	WHEG2114	[Barcode]	00000025	2011-06-05	CRISTAL1
5	WHSE1	UNITED	WHEG2115	[Barcode]	00000025	2011-06-05	CRISTAL1
6	WHSE1	UNITED	WHEG2116	[Barcode]	00000026	2011-06-05	CRISTAL1
7	WHSE1	UNITED	WHEG2117	[Barcode]	00000026	2011-06-05	CRISTAL1
8	WHSE1	UNITED	WHEG2118	[Barcode]	00000026	2011-06-05	CRISTAL1
9	WHSE1	UNITED	WHEG2119	[Barcode]	00000026	2011-06-05	CRISTAL1
10	WHSE1	UNITED	WHEG2120	[Barcode]	00000026	2011-06-05	CRISTAL1
11	WHSE1	UNITED	WHEG2121	[Barcode]	00000027	2011-06-05	CRISTAL1
12	WHSE1	UNITED	WHEG2122	[Barcode]	00000027	2011-06-05	CRISTAL1
13	WHSE1	UNITED	WHEG2123	[Barcode]	00000027	2011-06-05	CRISTAL1
14	WHSE1	UNITED	WHEG2124	[Barcode]	00000027	2011-06-05	CRISTAL1
15	WHSE1	UNITED	WHEG2125	[Barcode]	00000027	2011-06-05	CRISTAL1
16	WHSE1	UNITED	WHEG2126	[Barcode]	00000028	2011-06-05	CRISTAL1
17	WHSE1	UNITED	WHEG2127	[Barcode]	00000028	2011-06-05	CRISTAL1
18	WHSE1	UNITED	WHEG2128	[Barcode]	00000028	2011-06-05	CRISTAL1
19	WHSE1	UNITED	WHEG2129	[Barcode]	00000028	2011-06-05	CRISTAL1
20	WHSE1	UNITED	WHEG2130	[Barcode]	00000028	2011-06-05	CRISTAL1
21	WHSE1	UNITED	WHEG2131	[Barcode]	00000028	2011-06-05	CRISTAL1

The report option in the Reports menu is Customs Lot Numbers List.

The required parameters are

1. Warehouse ID
2. (Issued) Date From
3. (Issued) Date To

**B.2. Quality Assurance Module**

CRISTAL Warehouse Management System incorporates a Quality Assurance Module that facilitates operation that requires incoming shipment to be inspected before delivery to customers.

The design of the module enables users to deploy it in accordance to requirement.

At the basics, there are the QA Hold and QA Release option to block incoming shipments from being picked until they are inspected and released for shipment. This works in tandem with the Default Receipt Grade in [Product Definition](#).

These functions are designed to meet the warehousing operation where stocks on receipt are required to be QA Hold pending QA inspection. Upon approval, they are then QA Release so that the stocks can be picked and issued.

To facilitate this operation, items that need to be QA inspected, can be set up to be received with 'QA' grade instead of others. This is set up in the [Product Definition](#).

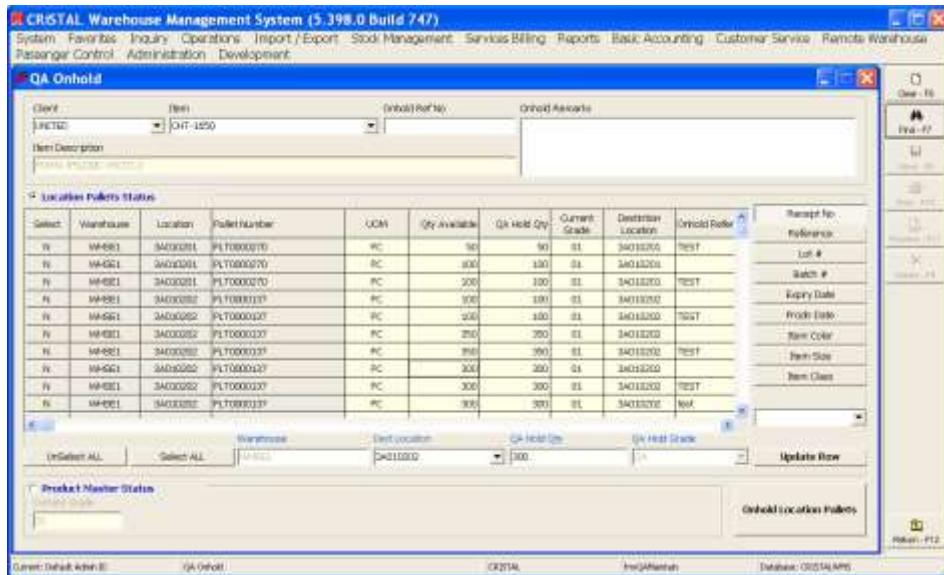
Stock with QA grade will not be assigned for picking under normal operation.

**B.2.1. QA Hold**

The function is designed to handle QA Hold on product or stock in location.



**B.2.1.1. QA Hold by Location / Pallets**



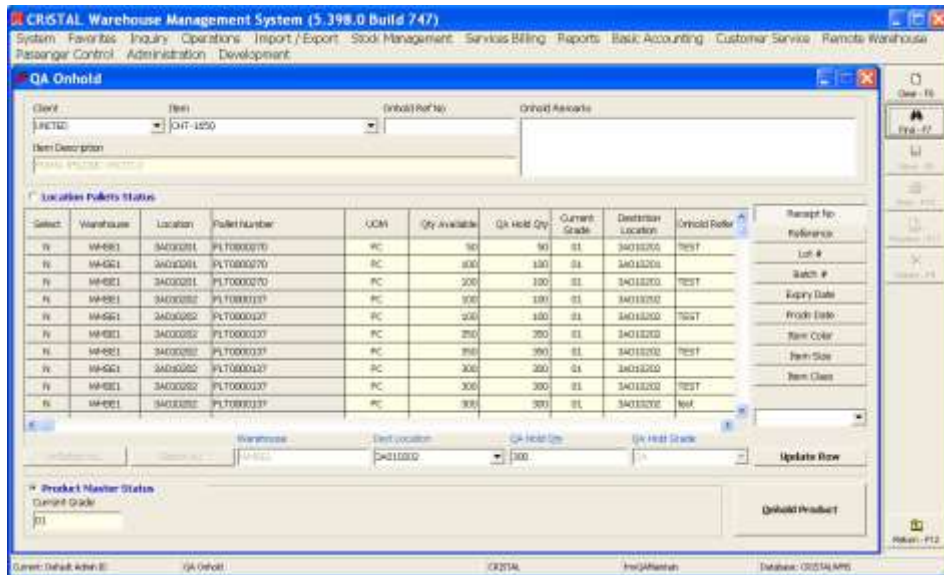
To place a QA Hold on an item stock

1. Select the option 'Location Pallets Status'
2. Select the item required
3. Specify the attribute required, if applicable
  - a. The attribute option are
    - i. Receipt No
    - ii. Document Reference
    - iii. Lot Number
    - iv. Batch Number
    - v. Use by or expiry date
    - vi. Manufacturing or Production Date
    - vii. Item Size
    - viii. Item Color
4. Click Find
  - a. The location / stock details will be listed in the grid box
5. Specified the OnHold Reference and Remarks, if any
6. If the entire listed stock are to be hold, click Select All to set the Select column to 'Y' else double click on the required record.
7. If the location of the QA Hold stock are to be moved to other location, select the row, the data will be displayed below
  - a. Select the destination location
  - b. Click 'Update Row'
  - c. Repeat as required
8. Click 'OnHold Location Pallets'
  - a. The QA Hold is updated
  - b. The pallet-item will be moved to the specified location

Ensure that the QA Hold stocks are physically moved to the specified destination location.



**B.2.1.2. QA Hold by Product**



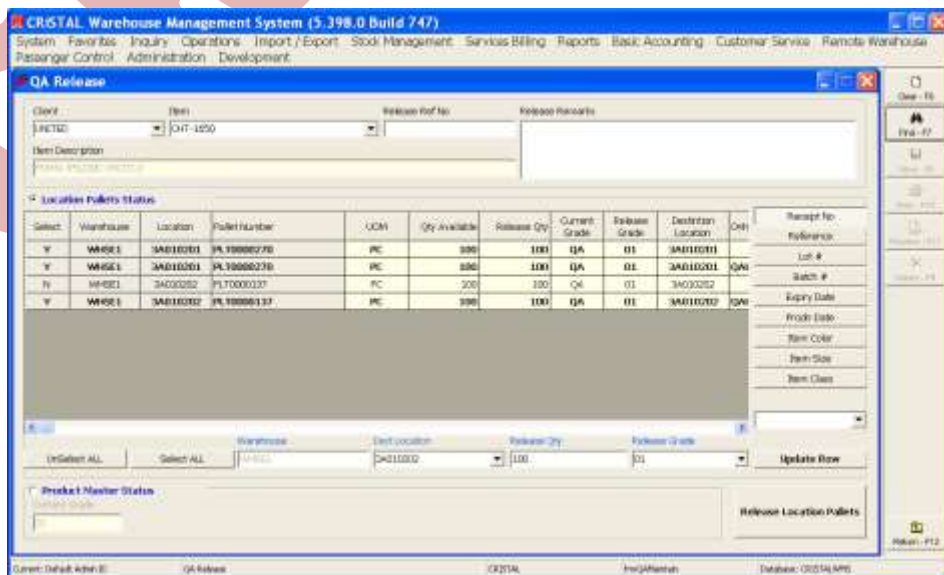
To place a QA Hold on an item

1. Select the option 'Product Master Status'
2. Select the item required
  - a. Click Find
3. Specified the OnHold Reference and Remarks, if any
4. Click 'OnHold Product'
  - a. The Default Receipt Grade in Product Definition will be changed to 'QA' grade
  - b. This will force the grade all incoming receipt of the item to 'QA'
    - i. Effectively placing a QA Hold on the product
  - c. Existing will not be affected
    - i. If existing stock is also to be placed on QA Hold, a QA Hold by Location must be carried out.

**B.2.2. QA Release**

As in QA Hold, the function is designed to handle releasing from QA Hold for product or stock.

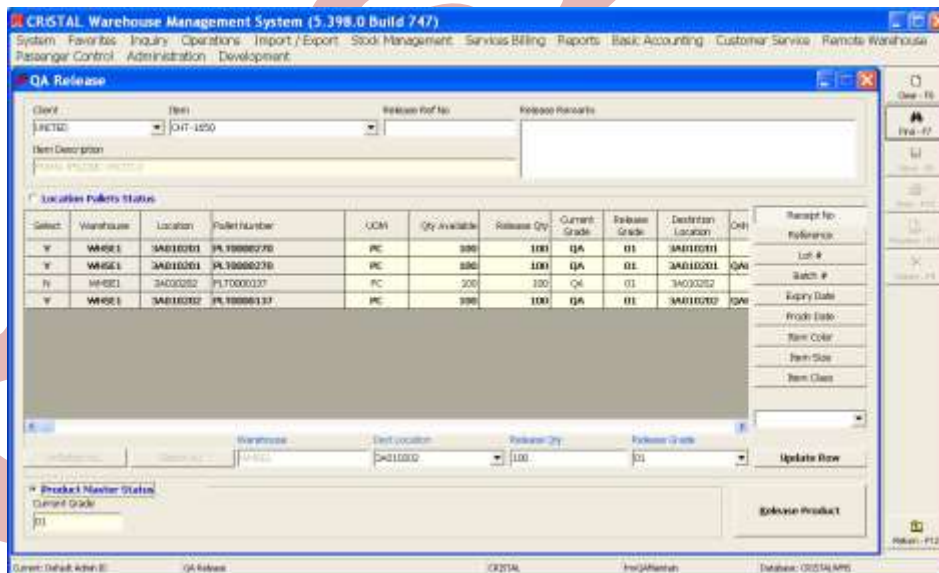
**B.2.2.1. QA Release by Location / Pallets**



To release stocks of item that is on QA Hold

1. Select the option 'Location Pallets Status'
  2. Select the item required
  3. Specify the attribute required, if applicable
    - a. The attribute option are
      - i. Receipt No
      - ii. Document Reference
      - iii. Lot Number
      - iv. Batch Number
      - v. Use by or expiry date
      - vi. Manufacturing or Production Date
      - vii. Item Size
      - viii. Item Color
  4. Click Find
    - a. The location / stock details will be listed in the grid box
  5. Input the Release Ref and Remarks, if applicable
  6. If the entire listed stock are to be release, click Select All to set the Select column to 'Y' ELSE double click on the required record.
  7. If the location, quantity or grade of the QA Release stock is different from the default, select the row, the data will be displayed below
    - a. If the destination location is changed, select the destination location
    - b. If the quantity is to be released is partial, input the quantity to be released
    - c. If the grade to be released to is not '01', change the Release Grade
    - d. Click 'Update Row' button
    - e. Repeat as required
  8. Click 'Release Location Pallets'
    - a. The QA Release is updated
    - b. The pallet-item is moved to the specified location
- Ensure that the QA Release stocks are physically moved to the specified destination location.

**B.2.2.2. QA Release by Products**



To release an item that is on QA Hold

1. Select the option 'Product Master Status'
2. Select the item required
  - a. Click Find
3. Specified the Release Reference and Remarks, if any
4. Click 'Release Product'
  - a. The Default Receipt Grade in Product Definition will be changed to '01' grade
  - b. Existing stock that are on QA hold will not be affected
    - i. If existing stock is on QA Hold is to be release a QA Release by Location must be carried out.

**B.3. Auto Alerts and Reports Emailing**

The function is facilitated with AutoEmail program which is designed to run as a Windows services.

Its function is to automatically create and send messages to email addresses as specified. The function is designed send 2 groups of messages:

- Interfaces file upload messages
  - Email is created for each of the messages and sends to email addresses as defined for each individual client.
- Scheduled email of reports
  - This function enable user to automate the generating of reports and send them to the clients that require them on a regular basis.
  - The report that is available are:
    - Email Stock Status Item
      - This is a summary of the stock balance by item
    - Email Replenishment
      - The replenishment report is computed from the stock balance against the Maximum Stock and Reorder Level as defined in Product / Item Definition | Advanced
      - A replenishment record is created when the stock balance falls below the Reorder Level



- Only items that required replenishment are reported
  - Email Expiry Stock
    - This includes expiring and expired stock

**B.3.1. Email Job Maintenance**

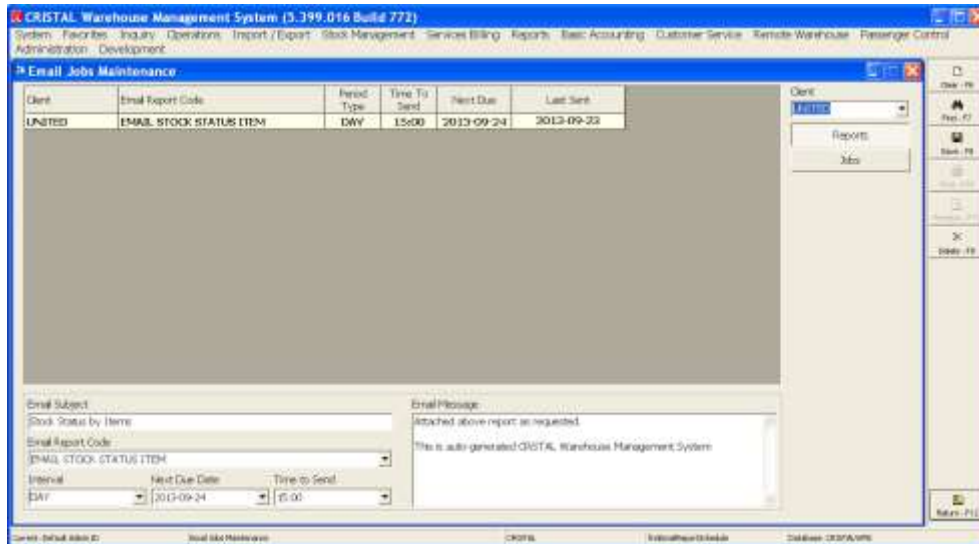
In version 5.395.4, the Scheduled Email function enhanced to manage, apart from the scheduled email report, to include emailing Jobs.

**B.3.1.1. Scheduled email of reports**

Note: To activate this function ensure that the SQL Agent Job have been setup as the email creation is perform by the SQL Agent.

Scheduled Email Report is client specific. It is necessary to specify and define the reports to be sent.

The scheduled is defined in the Administration | Miscellaneous | Email Reporting Schedule Maintenance.



To define a schedule:

1. Specify the Client
2. Select the Email Code (report)
3. Specify the Period (frequency)
4. The Period available are
  - a. DAY
  - b. WEEK
  - c. MONTH
5. Input the Time To Send and the Next Due Date
  - a. Note that the Next Due must be in the future.
6. Input the Email Message that is to be sent with the attached report
7. Click Save

**B.3.1.2. Email Reports**

The email reports format (data elements and structure) are defined via stored procedure and specified in the System Configuration | Procedure.

The procedures specified below are the default formats for the email report



The data elements in the reports are as follows:

1. Email Expiry Stock
  - Line No

- Item Code
- Item Description
- Grade
- UOM
- Quantity
- Used By (Expiry) date
- Warehouse
- Location

**2. Email Low Stock**

- Line No
- Item Code
- Item Description
- Stock Grade
- Unit of Measurement
- Maximum Stock Level
- Re-order Level
- Quarterly Issue Quantity (average over last 4 quarter)
- Quantity on hand

**3. Email Replenishment**

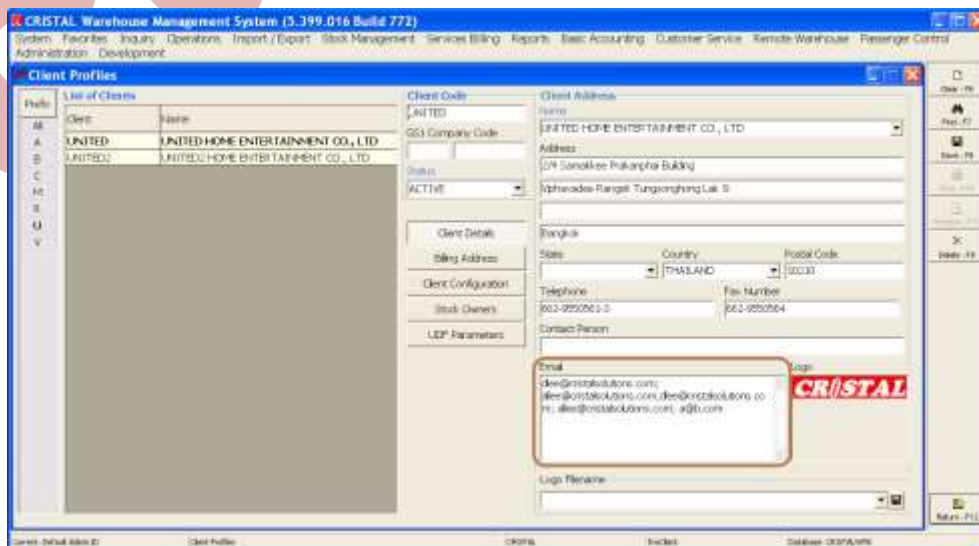
- Line No
- Item Code
- Item Description
- Reorder Level
- Maximum Stock
- Quantity On Hand
- Customer Order Quantity
- Replenishment Quantity

**4. Email Stock Status Item**

- Line\_No
- Item\_Code
- Item\_Description
- UOM
- Quantity

**B.3.1.3. Sending the Email Reports**

AutoEmail when active will read the table email\_schedule and search for Email Reports that is due or past due.





The reports are first generated (in csv format) and then send to the client as an attachment in an email. The email address that is being sent to is per as specified in Email in the Client Profile

**B.3.1.4. Email Jobs**

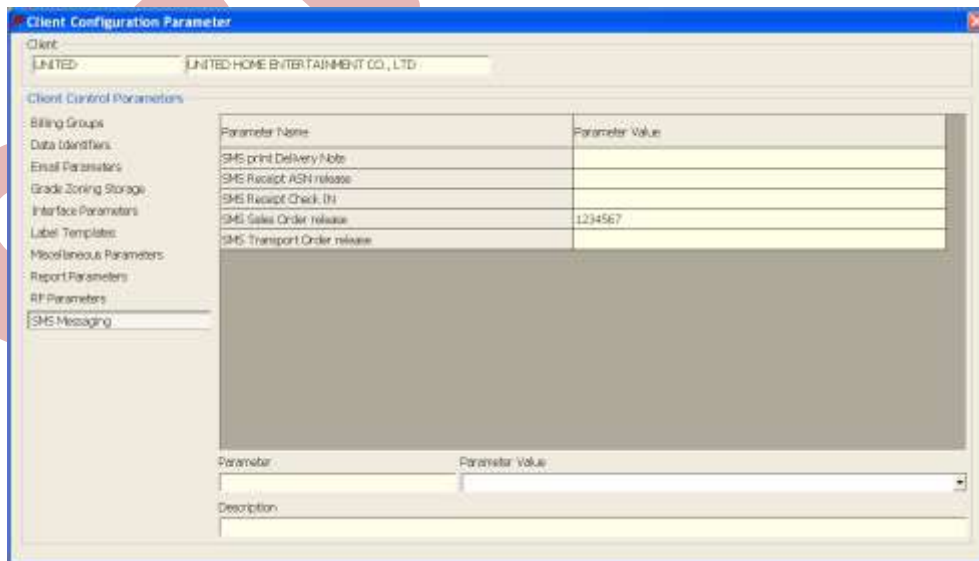
The function is designed to view and maintain emailing job that are delayed and to be triggered and send as configured in the Client Profiles | UDF Parameters | Email Parameters (Messaging Address). In the system, when a delivery order is generated, it is possible to configure the system to send Delivery ASN to the customer via email. This email in 5.395.4 can be sent on real-time or be delayed (to enable other data to be updated).



To delay the sending of the email, the following parameter as highlighted must be defined:

1. Email Queue Job (Default real time)
  - a. Set 'Y' to delay emailing
2. Email Job Schedule Time (HH:MM)
  - a. The timing is to be set in 24 hours format

**B.4. SMS Messaging**



This function is available in Release 5.398 Build 758 and later

SMS messaging is developed as an add-on operating system service program.

To enable the function, an SMS or mobile phone account has to be opened with a Telcom service provider. Currently, only M1 have been test and supported.

Other Telcom will be tested on an as required basis.



A PC with the mobile broadband modem is required to run the service.

Following are the functions for which SMS messages will be sent if configured:

1. Advance Ship Notes
  - a. On release to warehouses for receipt check in
2. Receipts
  - a. Manual location assign – on Receipt Confirm
  - b. System Location assign – on Receipt Check in for putaway
  - c. Crossdock – on Receipt Confirm
3. Sales Orders
  - a. On release to warehouses for processing (picking)
4. Delivery Orders
  - a. On creation (printing) of delivery order
5. Transport Orders
  - a. On release to operations for processing

To activate any of the options, specify the mobile phone number to which the SMS are to be sent.

The onus is on the administrator to ensure that the specified mobile phone number is current and valid.

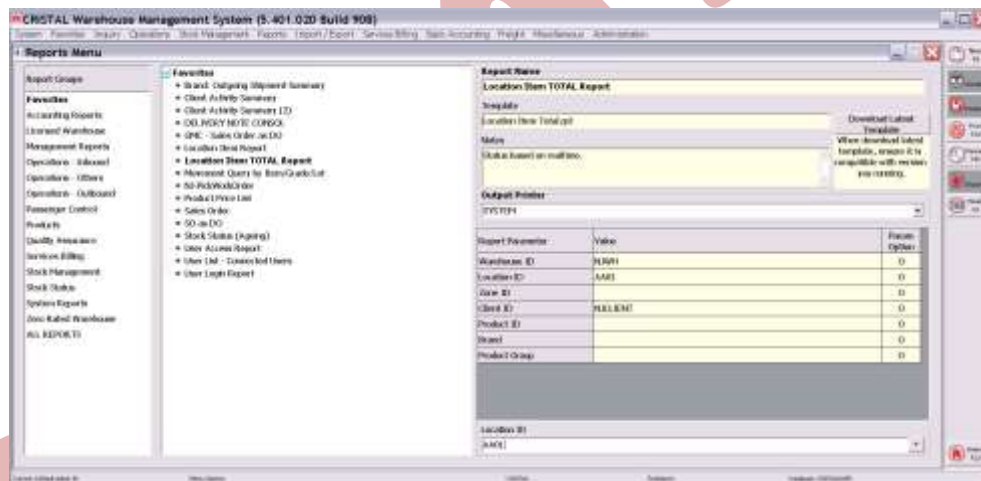
**B.5. Reports Menu**

The Report Menu is updated using a combination of grid box to list the reports grouping and treeview to display the reports options in release 5.400.868 and later. The using of treeview is to enable the mouse wheel to scroll the report option when options available exceed the screen display.

Favourites group is added to list the 10 most commonly used reports plus the last 10 used.

The reports are listed alphabetically by default. Site Reports and CRISTAL Reports are combined in the report grouping.

Users can shorten list and select the required Report Group.



Version delivered or upgraded to Build 5.394.33 or later also incorporates an emailing function that enables soft copy of a report to be send via email to the client.

This function is activated by click on the Email button

Note: The emailing function is designed to ease the workflow of the WMS user and is not a substitution to an email program such Microsoft Outlook.

The function is designed to send email via SMTP server. It is imperative that the SMTP server is specified in the System Configuration -> EMAIL\_SETTING

In 5.401 and later, the parameter input is change to use a gridbox with a textbox and command button. This change removed the limit on the number of input parameters that can be defined for reports.

**B.5.1. Printing a Report**

The 'Download Latest Template' when click will download from CRISTAL Solutions website the latest available template. This is subjected that the website is accessible by the workstation.

Note that the template is usually the latest version. The onus is on the users to ensure that the template is what he required and compatible to the version of the application his station is running.

To print a required report

1. Select the report from the menu

- a. The report name and template together with the required parameters are displayed in the right half of the screen.
- b. The required parameters will be listed in the Report Parameter gridbox.
  - i. The Parameter Option indicated:
    - M – Mandatory
    - O – Optional
    - F – Predefined fixed value
2. Click on the required parameter
  - a. Input in the textbox below
    - i. The input value will be mirrored in the selected row in the gridbox
    - b. The command button will be enabled if popup help is available.
3. Change the Printer, if required.
4. Click Preview or Print button
  - a. Print send the output to the specific printer directly
  - b. Preview display the output the screen
    - i. This function allows the output to print to the selected printer or export to a selected file format.
    - ii. These functions are controlled by Seagate Crystal Reports.
5. Close the report menu after the printing.

**B.5.2. Emailing Reports**

The Email window is activated by click on the Email Button or press F4 function key.

To email a soft copy report after it is created with the Preview function and saved to a specific folder, select the emailing utility:

1. Select the client to email the report to.
  - a. The client name and email address (as defined in Client Master will appear)
  - b. User may change the email address, if required.
2. Input the Subject Header and Message
  - a. A short comment – “Send by ‘UserID’ – will automatically append to the message.
  - b. Select the file to be attached by click the drop down button in the Attachment combo box which will open a Window folder dialogue window.
  - c. Select the required file.
3. Click ‘Send’ to despatch the email.



**B.5.3. Using Crystal Reports™ in CRiSTAL WMS**

The desktop report templates that are installed with CRiSTAL WMS are formatted with Crystal Reports (CR) 7.

Current version of the CRiSTAL WMS will support CR 7, CR 8 and CR 8.5.

The Web based report templates are however formatted with CR 9 due to the limitation of earlier version of CR. All templates are formatted using scheme generated with MS SQL stored procedures to achieve a higher level of performance. The fields incorporated with the scheme are generally more than what is displayed in a report. The objective of which is to enable users to format their own reports from an existing templates.

Users are encouraged to explore the templates provided to find a suitable template when required to create new reports.

**NOTES:**

- All new reports created by the users are required to prefix the report templates name with their company name.

The objective of the requirement is to prevent overwriting of the user report templates when CRiSTAL Solutions carry out an update to the WMS.

CRiSTAL Solutions will not accept any responsibility when such incident occurs.

- When creating or modifying a reports template, ensure that the Printer specified in the File | Printer Setup | Name does NOT existing on the workstation if the templates’ output printer is to be directed by CRiSTAL WMS.

This is because Crystal Reports always direct the output to the printer if it is available on the station – overriding station’s default printer.

**B.5.4. Tables Structures**

To create a report other than from existing templates, users can utilise the many stored procedure that are prefixed or suffixed with 'rpt' or access directly to the tables.

Typically, a report that read directly from the tables is slower due to the need to process the data at the workstation. And if the table that is being read is large, the performance will take some times.

To create a report from the tables or write a stored procedure to extract the required data, user needs some basic understanding of the database structure.

Following are the usual tables that majority of the report templates are created from:

Report Name	Tables	Link fieldname	Comments
Audit Trail	Movements_history		
Inventory Status	pallet_location pallet_history	Rec_num	
Receipts	receipt_master receipt_detail	client receipt_no	
Sales Order	sales_orders sales_details	client order_no	
Delivery	delivery_master delivery_detail	client delivery	

**B.5.5. Stored Procedure**

To write stored procedure to create scheme for report templates, apart from understanding of the table structures, users need to have a basic understanding SQL statements.

Below is an example of a simple stored procedure to create the scheme for supplier list:

The statement cause the database to drop or delete a stored procedure with the specified name if one is already exists. If not specified, and if the stored procedure exists, the creation will fail.

```
if exists (select 1 from sysobjects where name = 'rpt_supplier_list')
drop procedure rpt_supplier_list
go
```

```
State of the creation of the stored procedure
create procedure rpt_supplier_list
(@client nvarchar(50) = "")with encryption
as
If @client is specified as 'All Clients', change it to " - " is interpreted as all suppliers is required
if @client = 'All Clients'
set @client = "
If the @client is "", the select all supplier else select supplier of the client
if @client = "
select *
from supplier
else
select *
from supplier
where client = @client
end of stored procedure
return 0
go
```

**B.6. Carrier and Waybill Setup**

The carrier definition is reconceptualised to facilitate an enhancement to enable additional capability and control to be incorporated.

The first capability is the facilitating of control of Waybill numbering.

The Carrier has been enhanced to enable administrator to assign carriers to different user group. This is to allow users to view and select Carrier that is relevant to them.

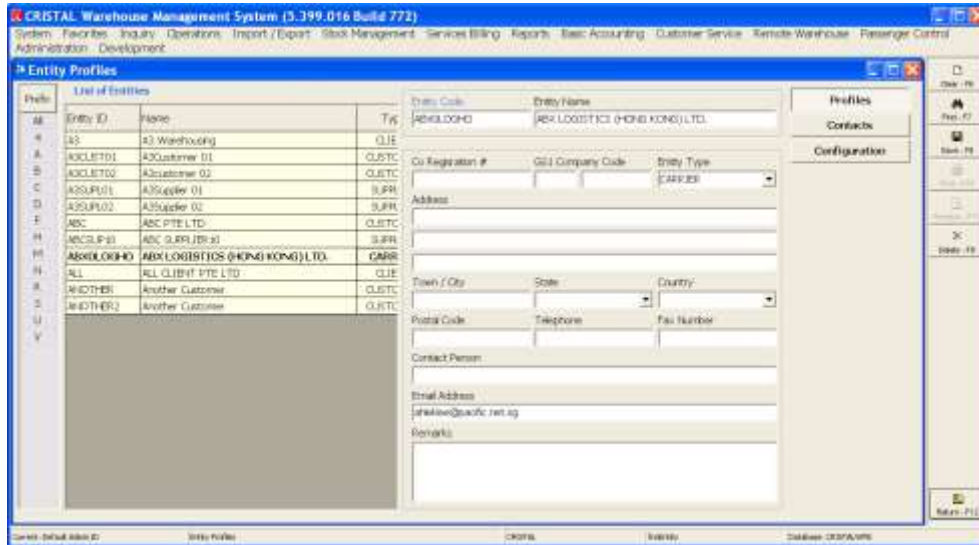
**B.6.1. Defining Carrier ID**

The Carrier is now defined in Entity Profiles (instead of under System Configuration | Parameters).

The setting up of a carrier is the same as updating any Entity except that the Entity Type is to be specified as 'CARRIER'.

Other data is to be updated as required:

1. Input Entity Code
2. Input Entity Name and other available/required date
3. Click Save



4. If available,
  - a. Input Contact Person and available date
  - b. Click Save



**B.6.2. Waybill Numbering Control**

If waybill is not required, skip this section.

Otherwise, if it is to be generated / printed, define the waybill number

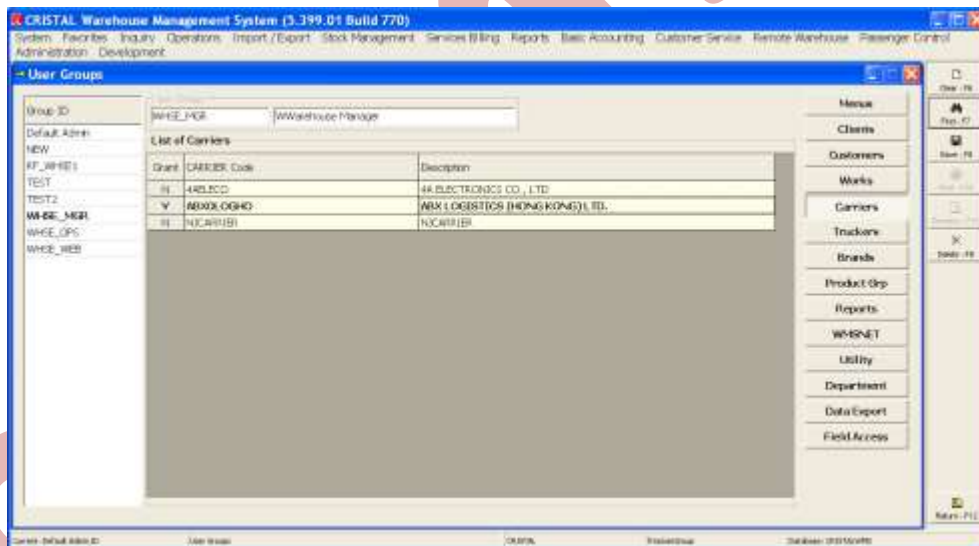
1. Select ID Method
  - a. Available: SEQUENTIAL | RANDOM
2. Specify the Number Range
3. Input Prefix, if required
4. Specify the Last Number, if appropriate
5. If interfere file is required, specify the stored procedure to be called
6. If Waybill label is required, specify the template to be used.



**B.6.3. Granting Access**

Before user can view and select the Carrier codes, their user group must be granted access in User Group | Carrier

1. Select User Group
2. Switch to Carrier page
3. Click on the Carrier that is to be enabled for the User Group
4. Click Save



**B.6.4. Waybill Manage**

Waybill Manage is a customized function to generate and/or print waybill for EU couriers.

Waybill is usually printed by the courier services' application which is triggered by an interface from CRISTAL WMS.

The function in the system is to provide added flexibility to enable operations to generate and print the waybill if they so preferred.

The generated waybill may either be exported as an interface to waybill printing software or be printed.

The waybills are generated for sales orders/delivery orders.

1. Specify the Client Code
2. Select the Sales Order / Delivery Order
3. The Customer and Carrier will be retrieved from the Sales Order





- a. Specify the number of waybill required in Waybill Count
    - i. The waybill will be generated and listed in the grid box
  - b. Click Export Data button to generate an interface file or Print/Preview as required
- To delete a generated waybill, tick the Delete Flag checkbox and Save.

**B.7. Configuring for Other Languages**

CRISTAL Warehouse Management System is designed to be multi-language capability for single byte language. That is languages that are ASCII characters based.

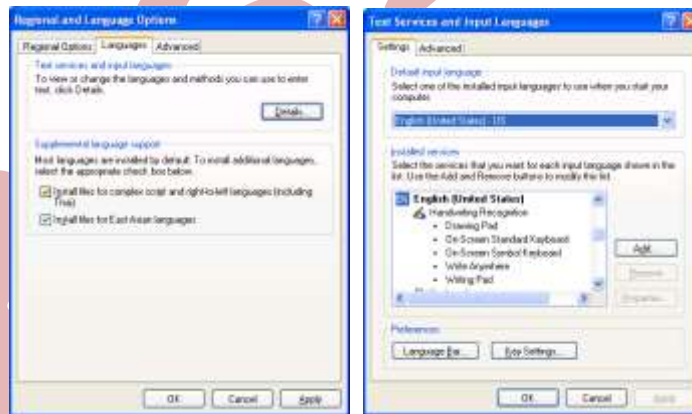
For Asian languages such as Chinese, Korean, Japanese..., support for the languages are via the Locale setting in Region and Language Options Setting.

Similar approach is taken for languages that utilize extended characters.

**B.7.1. Setting the locale**

To change the locale of the station, open the Regional and Language Options in Control Panel.

Select Advanced tab and choose the 'Language for non-Unicode programs'. Click 'Apply' button to activate the option. You may be required to restart the machine. Apart from setting the 'Language for non-Unicode programs, it may be necessary to Default Input Language. (Refer Windows User Manual for details)

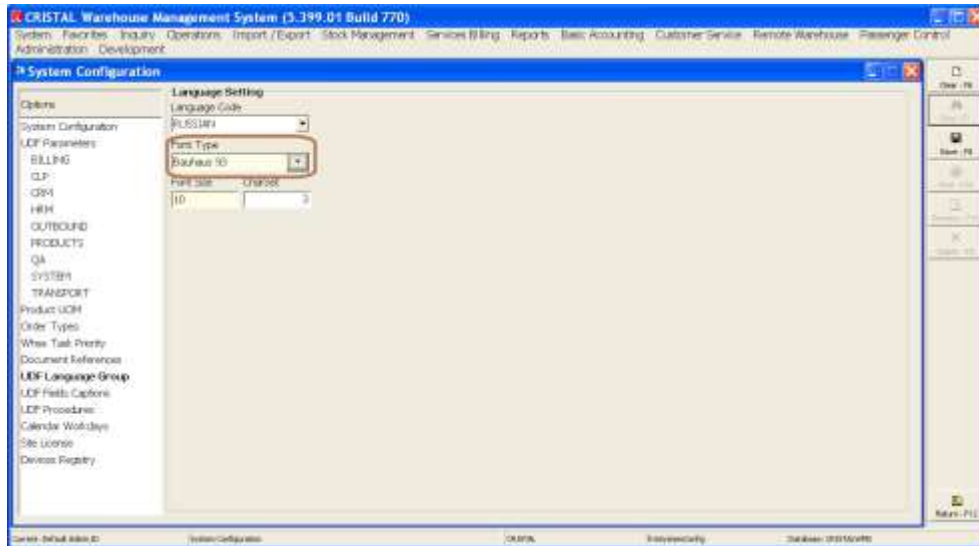


**B.7.2. Setting the CRISTAL WMS**

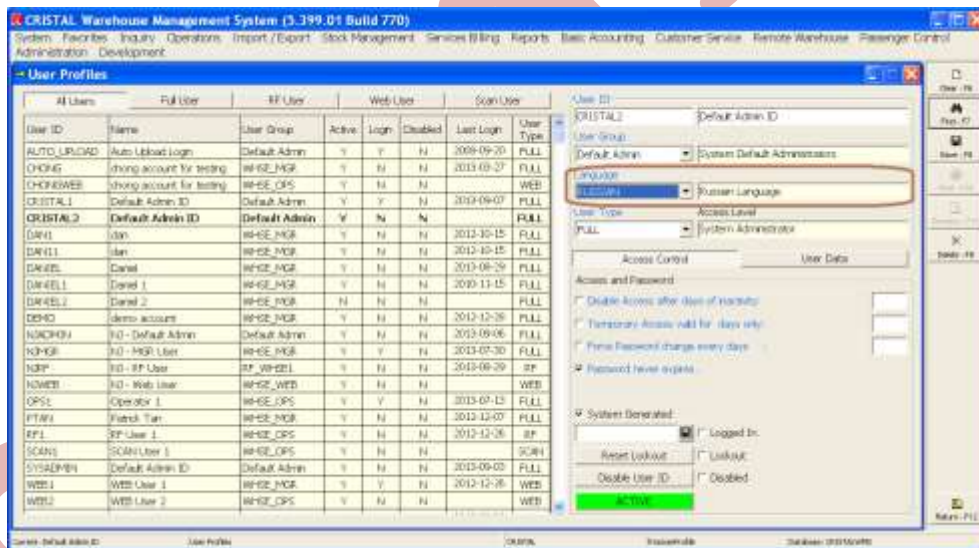
To enable CRISTAL WMS to display characters correctly, particularly fonts of language that utilize extended characters set, it is necessary to specify a font set that is appropriate to the language.

1. The definition of a Language group, select option Administration | System | User Defined Field Names
  - a. The fonts to be used for each language must be appropriate to the language. For example
    - i. To display Thai characters correctly, it is necessary, to use fonts that have the suffix 'UPC'
    - ii. To display Russian characters, the fonts selected must be of '1251' type.
    - iii. Failure to assign the appropriate font required by a language will result in the caption of the field caption in a series of '??????' or garbage characters.





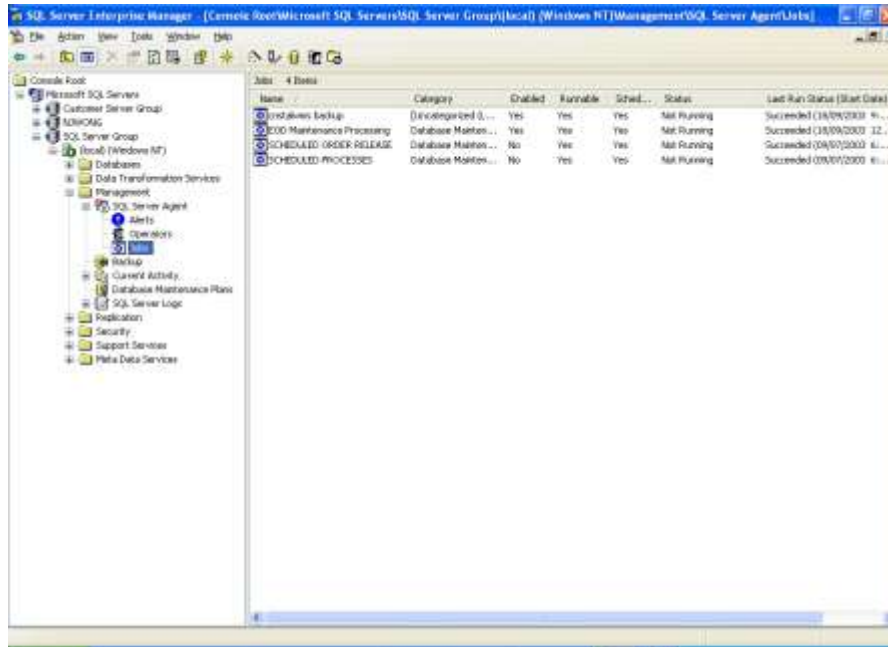
- b. The field names are then translated accordingly.
  - i. Field names that are not translated will be displayed as original
  - ii. Those that are translated will take effect the next time a user using the language log in.
- 2. Users that prefer a language other than the default language is to be specify accordingly in Administration | Users | Users Profiles
  - a. User must log out and then login for a change in language to take effect.



**B.8. Database Maintenance**

To assist in the administration of the Warehouse Management System, CRISTAL incorporate a number of stored procedures that is to be scheduled as a job under Microsoft SQL Server.

These jobs are set up under Jobs as shown below:



**B.8.1. Available Schedulable Stored Procedures**

The stored procedures are to be scheduled:

S/No	Stored Procedure Name	Function
1.	System_task_assignment	The SP is designed to automatically assign outstanding tasks to suitable available operators. This is only available to the Enterprise version of CRiSTAL WMS.
2.	System_interface_imports	The SP transfer data that are updated into the interface_import table by an interfacing program, such Microsoft BizTalk, to the tables proper. This is only available to the ENTERPRISE version of CRiSTAL WMS.
3.	System_release_picks	Release sales order that is due for picking. The due date is calculated from the planned delivery date. The number of days in advance of the delivery date is configured in System Configuration. This is only available to the ENTERPRISE version of CRiSTAL WMS.
4.	system_billable_activity_compute	SP trigger the calculation of system derivable logistic services that a warehouse is performing. Typically, this is scheduled to run in the evening before midnight if calculation is based on closing of the day or after midnight if based on opening of the ENTERPRISE. This is only available to the ENTERPRISE version of CRiSTAL WMS together with CRiSTAL 3PL Service Billing module. THIS IS NO LONGER AVAILABLE
5.	Synchronise_locations	SP maintain the allocated flag of the locations. This is a self-correction function to ensure 'correctness' of the allocated flag. This is a feature available in both Standard and Enterprise version.
6.	Update_expiry_stock	This SP update the quality grade of the stock that is used-by date controlled. The grade are change from '01' (commercial grade) to 'EX' (expired grade) prior to the stock become non-commercial. The number of days prior to expiry is configured at

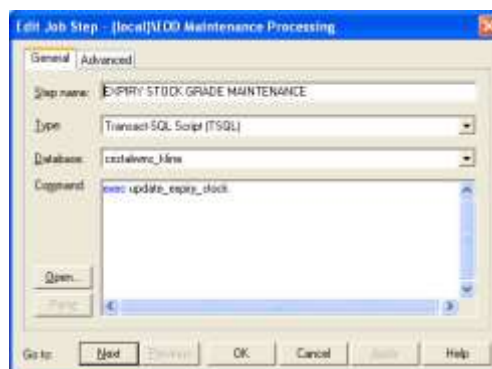
S/No	Stored Procedure Name	Function
		product level in the Product Definition. This is a feature available in both BASIC and STANDARD version.
7.	system_kpi_daily_whse_utilisation_compute.sql	SP archives the number of locations used, number of pallets, volume, and weight to kpi_daily_whse_utilisation. The frequency of data archived is dependent on the frequency it is being triggered to run. The frequency is as scheduled in MS SQL Server   Management   Jobs This is a feature available in STANDARD version only.
8.	System_clear_log	The SP is designed to manage the activity logs that the system recorded for troubleshooting and investigation. This does not include the movement_history. The number of days to be retained is to be specified in System Configuration. The logs that are cleared by this SP are: application_log print_log security_log interface_archive interface_msg user_login_history This is only available to the STANDARD version of CRISTAL WMS.

**B.8.2. Brief Guide on Job Schedules**

The setup of the jobs is as described in MS SQL Server documentation. Example of the setup is as follows:



1. Setting up the jobs



2. Specifying the tasks to be performed.

**B.9. SAP Material Document Processing**

This function is designed specific to process SAP Material Document transactions.

These transactions are transmitted to the WMS via a text file which is then uploaded into the WMS using a customised Uploading program. The file name must be prefixed with 'MATDOC'. This requirement is due to the design of the Uploading program which uses the prefix to identify the process to run during the uploading.

The transactions are in effect grade changes (or Item Stock Re-labelling) function in CRISTAL Warehouse management system.

However, there is a key difference between a grade change in SAP and CRISTAL WMS. In SAP the stock are manage at item level while in CRISTAL WMS stock is managed at pallet / location level. This means that CRISTAL WMS need to know which pallet and/or location, the change need to be effected.

In the interface files received receive from SAP, this information is not available. It is necessary therefore for user to identify the pallet/location and effect the change.

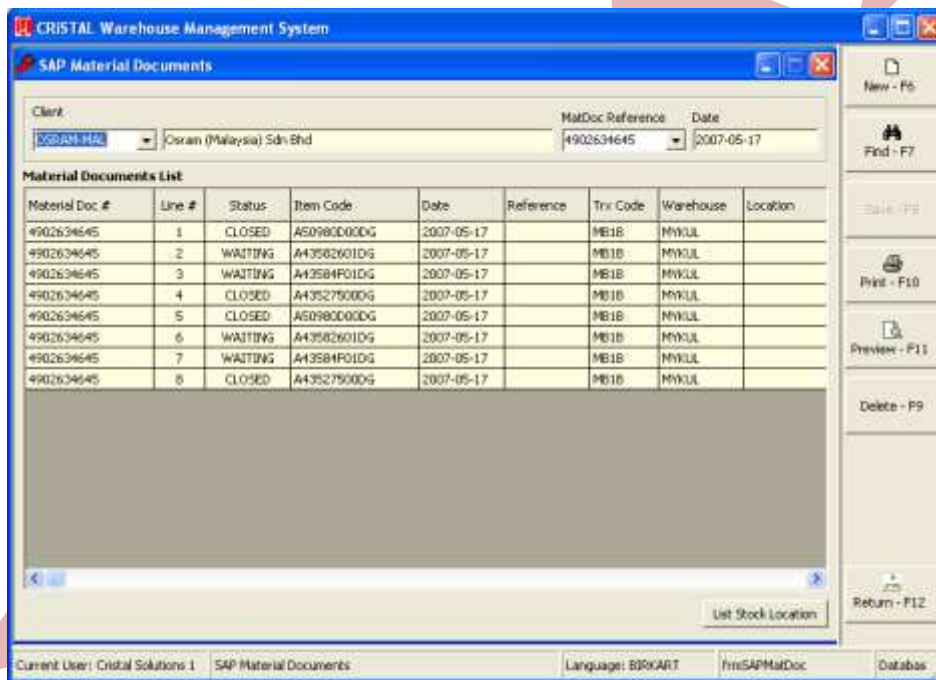
The Item Re-labelling function requires users to select and change grade of the stock by pallet. This can become tedious when the quantity to be grade changed affected a number of pallets / locations.

This module is designed to semi-automated the process by enabling the user to select from a list of pallets / locations in a pop-up window and then effect the change.

The SAP movement codes that the WMS is set up to process is as specified in Appendix A.

There is no transaction reversal enabled for this function as the process to do so is nightmarish. As such, no partial processing of a line is enabled. If there is inadequate stock to meet required quantity, the processing will not be effected.

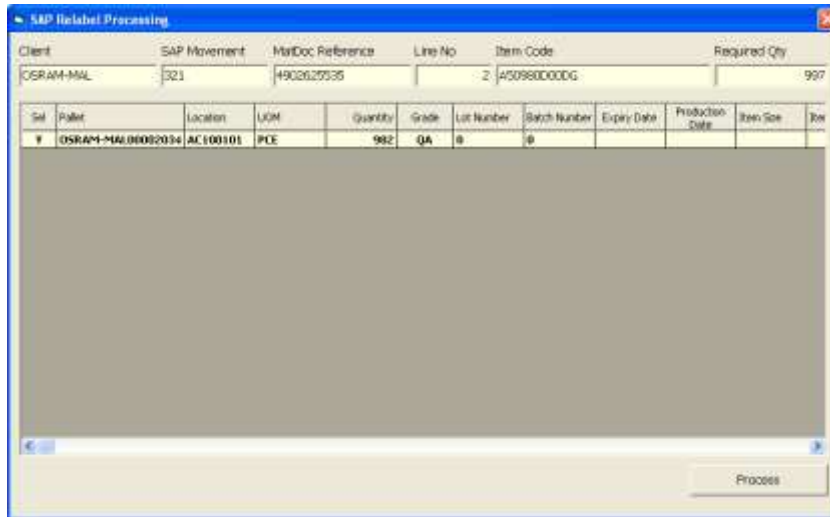
**B.9.1. Process Material Document Transactions**



To process MatDoc files, the date files must first be uploaded with the customised uploading program.

In the SAP Material Documents function

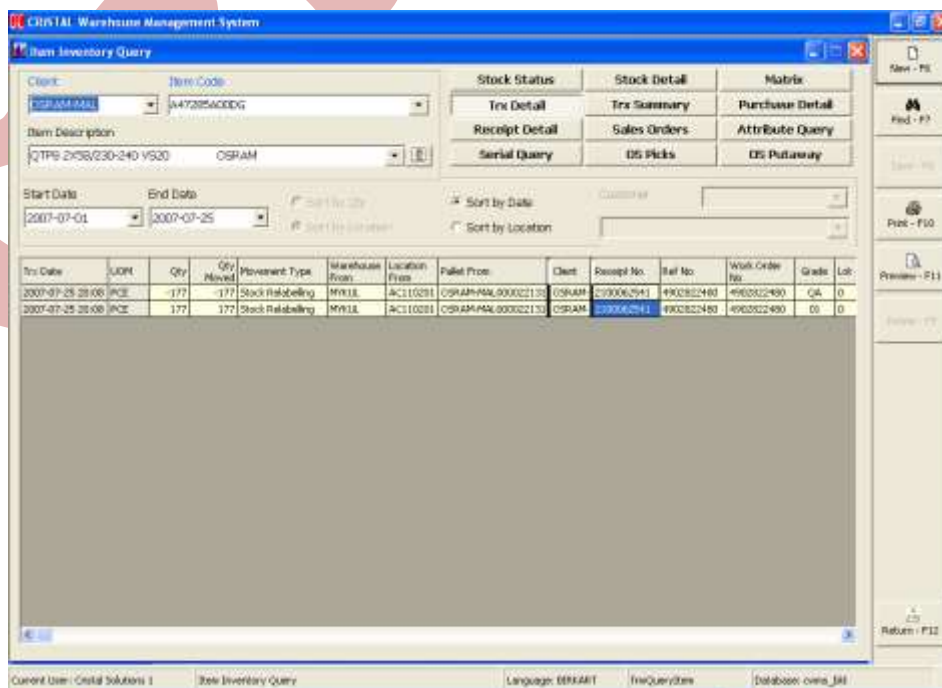
1. Select the client
2. Select the Material Document (MatDoc) Reference. The details will be listed in the grid box
  - a. The MatDoc can be selected by click the dropdown button in the MatDoc Reference combo box
    - i. On selection from the popup window, the details will be listed
  - b. Alternatively, input the MatDoc reference in the combo box and click GET button to list the details
3. Select the line to process by clicking on the required line
4. Click the 'List Stock Locations' button
  - a. A popup window will open listing available pallets



- i. If there is no stock available, a message will appear to report that no stock is available
  - ii. If the selected line is not in 'WAITING' status, a message that the line has already been processed will be given
  - b. Click to select the pallet(s) to be processed
    - i. Column 'Sel' will be changed to 'Y'
  - c. Click 'Process' button to process the selection
    - i. If the total quantity of the selected pallet(s) is inadequate to effect the requirement, a message will appear to indicate inadequate quantity.
      - The processing will not be effected.
  - d. If the total quantity of selected pallets is adequate, the processing will be effected and a message to indicate completion of the updating
    - i. If the requirement is less than the selected quantity, only the required quantity will be processed.
5. Repeat 3 and 4 – processing 1 line at time.

**B.9.2. Enquiry and Report**

The SAP transactions are processed as Re-labelling movements in CRISTAL WMS.



A report of the Material Document can be printed as per Appendix B.

Appendix C is a report of the transactions that are processed.

**B.9.3. SAP Movement/Plant -> CRISTAL WMS Conversion**

SAP Movement Code	SAP Plant (From)	Source Grade	Destination Grade
321	B540	BQA	B01
321	D540	QA	01
322	B540	B01	BQA
322	D540	01	QA

**B.9.4. Sample of Material Document Report**

Line No	Move Code	Plant	Status	Item Code	Trx Code	Warehouse	UOM	Quantity
BIRKART GLOBISTICS (S.E.A) Pte Ltd <span style="float: right;">25 Jul 2007 4:48:23PM</span>								
Material Documents Report								
Client: OSRAM-MAL								
MatDoc Reference: 4902634645			Date: 2007-05-17		Document Header Text: SERIM QAS			
1	321	D540	CLOSED	A50980000G	MB1B	MYKUL	PCE	3.00
2	321	D540	WAITING	A43582601DG	MB1B	MYKUL	PCE	3.00
3	321	D540	WAITING	A43584F01DG	MB1B	MYKUL	PCE	3.00
4	321	D540	CLOSED	A43527500DG	MB1B	MYKUL	PCE	3.00
5	321	D540	CLOSED	A50980000G	MB1B	MYKUL	PCE	3.00
6	321	D540	WAITING	A43582601DG	MB1B	MYKUL	PCE	3.00
7	321	D540	WAITING	A43584F01DG	MB1B	MYKUL	PCE	3.00
8	321	D540	CLOSED	A43527500DG	MB1B	MYKUL	PCE	3.00

CRISTAL WMS BKT E:\Development\Reports\SAP Material Documents Report.rpt	CRISTAL1 Page 1 of 1
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**B.9.5. Stock Movements Report**

**Birkart Globistics Sdn. Bhd.**

Item Movement History Report from 2007-07-25 to 2007-07-25 Sorted By ITEM

Client: OSRAM-MAL

25-Jul-07

Date	Customer	Transaction	UOM	Transaction Qty	Clearing Qty	Source Pallet	Dest Pallet	PO #	S.O #	Document	Order	Status	Item ID
Item Code: A43527500DG													
25-Jul-07	10:26:36AM	Stock Relabelling PCE	QA	-3.00	1,041.00	OSRAM-MAL00002195	OSRAM-MAL00002195	OSRAM-MAL00002195					RELABELLIN CRISTAL
						MYKLL AC050301	MYKLL AC050301	Lot No: 0					G
25-Jul-07	10:26:40AM	Stock Relabelling PCE	U1	3.00	3.00	OSRAM-MAL00002195	OSRAM-MAL00002195	OSRAM-MAL00002195					RELABELLIN CRISTAL
						MYKLL AC050301	MYKLL AC050301	Lot No: 0					G
25-Jul-07	12:11:01PM	Stock Relabelling PCE	QA	-3.00	1,038.00	OSRAM-MAL00002195	OSRAM-MAL00002195	OSRAM-MAL00002195					RELABELLIN CRISTAL
						MYKLL AC050301	MYKLL AC050301	Lot No: 0					G
25-Jul-07	12:11:01PM	Stock Relabelling PCE	U1	3.00	3.00	OSRAM-MAL00002195	OSRAM-MAL00002195	OSRAM-MAL00002195					RELABELLIN CRISTAL
						MYKLL AC050301	MYKLL AC050301	Lot No: 0					G
Item Code: A47285400DG													
25-Jul-07	8:08:01PM	Stock Relabelling PCE	QA	-177.00	21.00	OSRAM-MAL00002211	OSRAM-MAL00002211	OSRAM-MAL00002211					RELABELLIN CRISTAL
						MYKLL AC110201	MYKLL AC110201	Lot No: 0					G
25-Jul-07	8:08:01PM	Stock Relabelling PCE	U1	177.00	177.00	OSRAM-MAL00002211	OSRAM-MAL00002211	OSRAM-MAL00002211					RELABELLIN CRISTAL
						MYKLL AC110201	MYKLL AC110201	Lot No: 0					G
Item Code: A5098000100													
25-Jul-07	11:21:58AM	Stock Relabelling PCE	QA	-3.00	985.00	OSRAM-MAL00002035	OSRAM-MAL00002035	OSRAM-MAL00002035					RELABELLIN CRISTAL
						MYKLL AC100101	MYKLL AC100101	Lot No: 0					G
25-Jul-07	11:21:58AM	Stock Relabelling PCE	U1	3.00	3.00	OSRAM-MAL00002035	OSRAM-MAL00002035	OSRAM-MAL00002035					RELABELLIN CRISTAL
						MYKLL AC100101	MYKLL AC100101	Lot No: 0					G
25-Jul-07	11:24:36AM	Stock Relabelling PCE	QA	-3.00	982.00	OSRAM-MAL00002035	OSRAM-MAL00002035	OSRAM-MAL00002035					RELABELLIN CRISTAL
						MYKLL AC100101	MYKLL AC100101	Lot No: 0					G
25-Jul-07	11:24:36AM	Stock Relabelling PCE	U1	3.00	3.00	OSRAM-MAL00002035	OSRAM-MAL00002035	OSRAM-MAL00002035					RELABELLIN CRISTAL
						MYKLL AC100101	MYKLL AC100101	Lot No: 0					G

Page 1 of 1

## Appendix C. SQL Agent Jobs

**Note:** These SQL Server Agents stored procedure are available only in the standard and enterprise edition.

SQL Server Agent function is available in Microsoft SQL Server standard edition and above.

It is not available in the MSSQL Server Express edition.

CRISTAL Warehouse Management System is designed as a real-time system in which processes are triggered mainly by events (user input actions).

However in the interest of performance, particularly in the RF module, some of the processes are performed in the background by SQL Agent.

Following are the SQL Server Agent Jobs that must be setup in the database:

1. Database backup
  - a. This is database function.
  - b. It is configured using Maintenance Plan Wizard under Management | Maintenance Plans
2. EndOfDayProgressing (See section on End of Day Processing for more details)
  - a. Purposes: Clearing redundant application and various logs records.
    - i. See section on Available Schedulable Stored Procedures
  - b. Stored Procedure: *System\_clear\_log*
  - c. Interval: Once a day
  - d. Time: Schedule as Required when operation is not working
3. InterfaceQueueJob
  - a. Purposes: Create Auto Download job
  - b. Stored Procedure: *interface\_queue\_insert*
    - i. Command: EXEC interface\_queue\_insert <file\_prefix>, <export\_code>, <client>, <filter1>, <filter2>, <filter>3, <maker>, [<originated>>]
      - Stock Status
        - EXEC interface\_queue\_insert 'SF', 'EXPORT\_STOCK\_PROCEDURE', 'TOSHI-NEU', NULL, NULL, NULL, 'SQL\_JOB'
      - Serial List:
        - EXEC interface\_queue\_insert 'SR', 'EXPORT\_SERIAL', 'TOSHI-DBX', 'GETDATE', NULL, NULL, 'SQL\_JOB'
    - c. Interval: Once Daily or selected day of week
    - d. Time: Schedule as Required
4. Itf\_pick\_picked\_agent\_job
  - a. Purpose: For Pick By Light Interface database
  - b. Stored Procedure: *itf\_pick\_picked\_agent\_job*
    - i. Command:
 

```
USE [CWMS_CIT]
GO

DECLARE @return_value int
EXEC @return_value = [dbo].[itf_pick_picked_agent_job]
SELECT 'Return Value' = @return_value
GO
```
    - c. Interval: Daily at 1 to 15 minutes interval as required.
5. PickfaceReplenishJob
  - a. Purpose: Create pickface replenishment tasks for RF module and Pick2Light operations
  - b. Stored Procedure: *pickface\_replenish\_agent\_job*
  - c. Interval: Daily at 1 to 15 minutes interval as required
6. ReceiptStatusProcessing
  - a. Purpose: Trigger receipt status related sub-routine processes

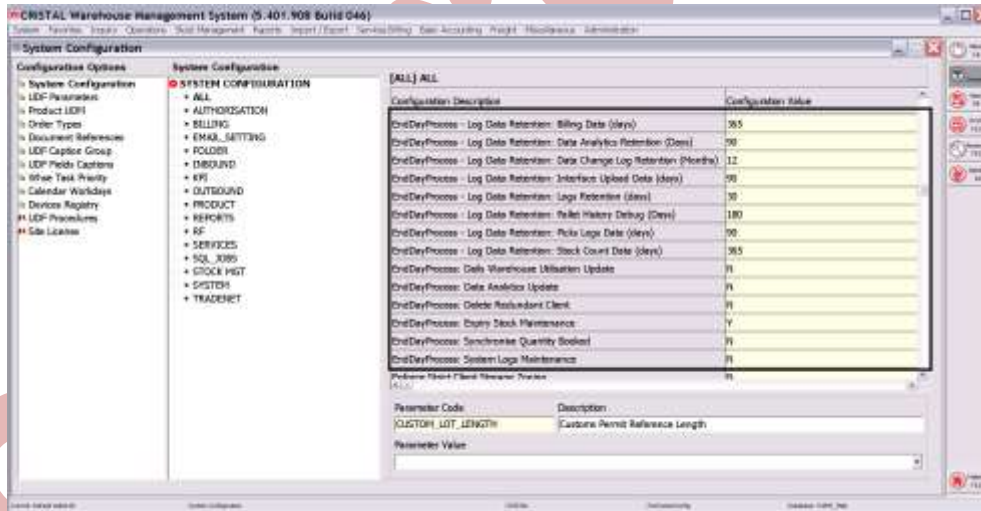
- i. Email Job of goods received
    - ii. Creation of Interface Job of goods received.
  - b. Stored Procedure: *receipt\_status\_processing\_agent\_job*
  - c. Interval: Daily at 15 minutes to 1 hours interval or as required
- 7. SalesOrderStatusProcessing
  - a. Purpose: Trigger Sales Order status related sub-routine processes
    - i. Create email job of sales order delivery
    - ii. Generate STATUS based Messaging
    - iii. SMS (not activated – required SMS Server)
  - b. Stored Procedure: *sales\_order\_status\_processing\_agent\_job*
  - c. Interval: Daily at 5 minute interval or as required.
- 8. SalesOrderReplenishRelease
  - a. Purpose: For in Pick2Light operations
    - i. Trigger Sales Order Release after confirmation of replenish tasks
  - b. Stored Procedure: *sales\_order\_replenish\_release\_agent\_job*
  - c. Interval: Daily at 5 minute interval or as required.

**C.1. End of Days Processing**

End of Day Processing is an SQL Agent Job that is to be set up and scheduled to run the stored procedure system\_clear\_log – no parameter need to be specified in the job.

The procedure is enhanced in 5.398 build 700 to maintain the log and debug tables as listed that are incorporated in the database to provide audit trail of processing in the system and facilitate investigations.

The procedure is designed to enable site administrators to specify the number of days data are to be maintained. This is to be specified in Administration | System Configuration | System.



The tables maintained are:

Table Names	Parameter (Number of Days)	Remarks
Application Log	Audit Trail - Logs Retention (days) (150)	
Billable Activity	LOGDAYS BILLING	<i>If not specified, no action will be taken.</i>
Client Transactions data	Delete Client transactions when client_master.status is set to DELETE.	After deletion, client_master.status is set to DELETED. Final deletion of the Client Code is to be done manually.
Email Queue (job)	Audit Trail - Logs Retention (days) (150)	Clear only completed jobs

Table Names	Parameter (Number of Days)	Remarks
Interface Archive	Audit Trail - Logs Retention (days) (150)	Interface Upload Data
Interface Messages	Audit Trail - Logs Retention (days) (150)	Interface Upload application messages
Interface Manual Workspace	Audit Trail - Interface Upload Data (days) (90)	Auto Batch Upload data
Interface Queue (job) History	Audit Trail - Logs Retention (days) (150)	Interface export job
Log Client Parameter Table	Audit Trail - Logs Retention (days) (150)	Log of change made in Client Parameter table
Log Product Master	Audit Trail - Logs Retention (days) (150)	Log of Change Made in Product Master table
Log Product Serial	Audit Trail - Logs Retention (days) (150)	Log of changes made in Product Serial
Log Product UOM	Audit Trail - Logs Retention (days) (150)	Log of Changes in Product UOM table
Log Product Zoning	Audit Trail - Logs Retention (days) (150)	Log of changes in Product Zoning table
Log Sales Orders	Audit Trail - Logs Retention (days) (150)	Log of changes in Sales Orders table
Log Sales Details	Audit Trail - Logs Retention (days) (150)	Log of changes in Sales Details table
Log Stock Count	Audit Trail - Logs Retention (days) (150)	Log of changes in Stock Count table
Log Stock Count2	Audit Trail - Logs Retention (days) (150)	Log of changes in Stock Count2 table
Message Centre	Audit Trail - Logs Retention (days) (150)	Clear only NORMAL (routine) messages
Pallet History Debug	Audit Trail - Pallet History Debug (Days) (365)	
Report History	Audit Trail - Logs Retention (days) (150)	Report Printed Log
Security Log	Audit Trail - Logs Retention (days) (150)	Security related application log
SQL Trigger Process	Audit Trail - Logs Retention (days) (150)	
Stock Count	LOGDAYS STOCKCOUNT	<i>If not specified, no action will be taken.</i> Following tables are processed: 1. Stockcount_master 2. Stockcount History 3. Stockcount External 4. Stock Variance
System Picks Log	Audit Trail - Picks Logs Data (days) (90)	Picks allocation logs
Temp Label	Audit Trail - Logs Retention (days) (150)	

Table Names	Parameter (Number of Days)	Remarks
User login history	Audit Trail - Logs Retention (days) (150)	

The value in () is the default days to be retained if they are no defined in Administration | System Configuration.

The End of Days processing also take snapshot of selected data for data analytics purposes. Note that when enabled, additional disk spaces are required to store these data.

**C.1.1. Redundant Clients**

The process to delete redundant clients is added to End Day Processing in Release 5.401.908 Build 046 to facilitate site to delete data (masters and transactions) of clients that are redundant and no longer needed to be maintained.

To delete a client, set the client Status in Client Profiles to 'DELETE' and set the System Configuration | **EndDayProcess: Delete Redundant Client parameter value to 'Y' – this is added to prevent unintentional / unauthorized deletion**

The End Day Process SQL Agent will delete the data when activated and then set the Client status to 'DELETED' The final deletion of the Client code is manual and to be performed in Client Profiles.

**C.2. Master Data Logs**

A centralized log table <log\_change\_data> is introduced in Release 5.398 Build 746.

The log is redesigned to record selected fields and when there is data value change. This is taken to reduce the disk space that is required to maintain the logs.

The tables that are being logged are:

**C.2.1. Sales Orders**

The data value changes are recorded for the following fields at order level:

- Customer
- Delivery Code
- Delivery Date
- Pick Date
- Wave Pick Number
- Shipment Mode
- Order Type
- Document Reference Number
- Container Number
- Seal Number

**C.2.2. Sales Details**

The data value changes are recorded for the following fields at line level:

- Product ID
- Customer
- Document Reference Number
- Currency
- Unit Price
- Grade
- Lot Number
- Batch Number
- Receipt Date
- Expiry (user-by) Date
- Production Date
- Item Size
- Item Color
- Item Class (Style)
- Supplier
- Stock Owner
- Country of Origin

- PPQ Packing
- PPQ Quantity
- Customs Permit Number (Customs Lot)
- Pallet Number To Pick
- Location To Pick
- Delivery Date
- Catch Weight
- Serial Number
- Input UOM
- Input Quantity
- UDF 1
- UDF 2

CRISTAL



## Appendix D. WMS Database Maintenance Utilities

CRISTAL WMS also includes a set of utility SQL scripts to facilitate support of the operation. These utilities are highly powerful and are intentionally written to be run in MSSQL Management Studio to prevent access by operational users.

Users must be aware of the objectives of the utilities before running as use of these are at users' own perils.

S/No	Procedure Name	Remarks
1.	ReverseReceiptSalesOrders	<p>Written as 1 step process to reverse or nullify processed receipt and related sales orders, namely sales orders that have been picked from the receipt.</p> <p>The Receipt and Sales Orders are reversed to DATA ENTRY status.</p> <p>Users would need to delete them manually if not required or reprocess after correction.</p> <p>Input parameters:</p> <ol style="list-style-type: none"> <li>1. User ID</li> <li>2. Client Code</li> <li>3. Receipt No</li> </ol>
2.	reverse_all_sales_orders	<p>Written to reverse and DELETE processed sales orders specific to a client.</p> <p>Input parameters:</p> <ol style="list-style-type: none"> <li>1. Client Code</li> <li>2. User ID</li> </ol>
3.	synchronise_pallet_location_booked_qty	<p>Utility procedure to synchronize Quantity Booked in Pallet Location with open tasks in Stock Movements</p> <p>This is at Database level procedure</p> <p>Input parameters:</p> <ol style="list-style-type: none"> <li>3. User ID</li> <li>4. Return Message flag = Y / N</li> </ol>
4.	sql_qty_booked_synchronize	<p>Utility procedure to synchronize Quantity Booked in Pallet Location with open tasks in Stock Movements</p> <p>This is at Client specific procedure</p> <p>Input parameters:</p> <ol style="list-style-type: none"> <li>1. User ID</li> <li>2. Client Code</li> <li>3. Item Code</li> <li>4. Debug Message flag = Y / N</li> </ol>

## Appendix F. User Configurable Parameters and Setting

CRISTAL WMS is designed to meet the operational requirements of 3PL warehouse operators. To achieve the high level of flexibilities that is needed in order to be able to meet different industries requirement, CRISTAL WMS incorporates configurable parameters at:

1. Database (see System Configuration)
2. Clients
3. Customers
4. Products

### F.1. Client Specific Configuration

This section defines and explains client specific parameters setting that enable site to tailor the operations according to client requirements.

#### F.1.1. Billing

This is list of Billing Groups that is relevant or specific to the client and is used in Billable Services Setup. Billing groups that are specified here will be the options that will be listed in the popup help windows.

#### F.1.2. Reports

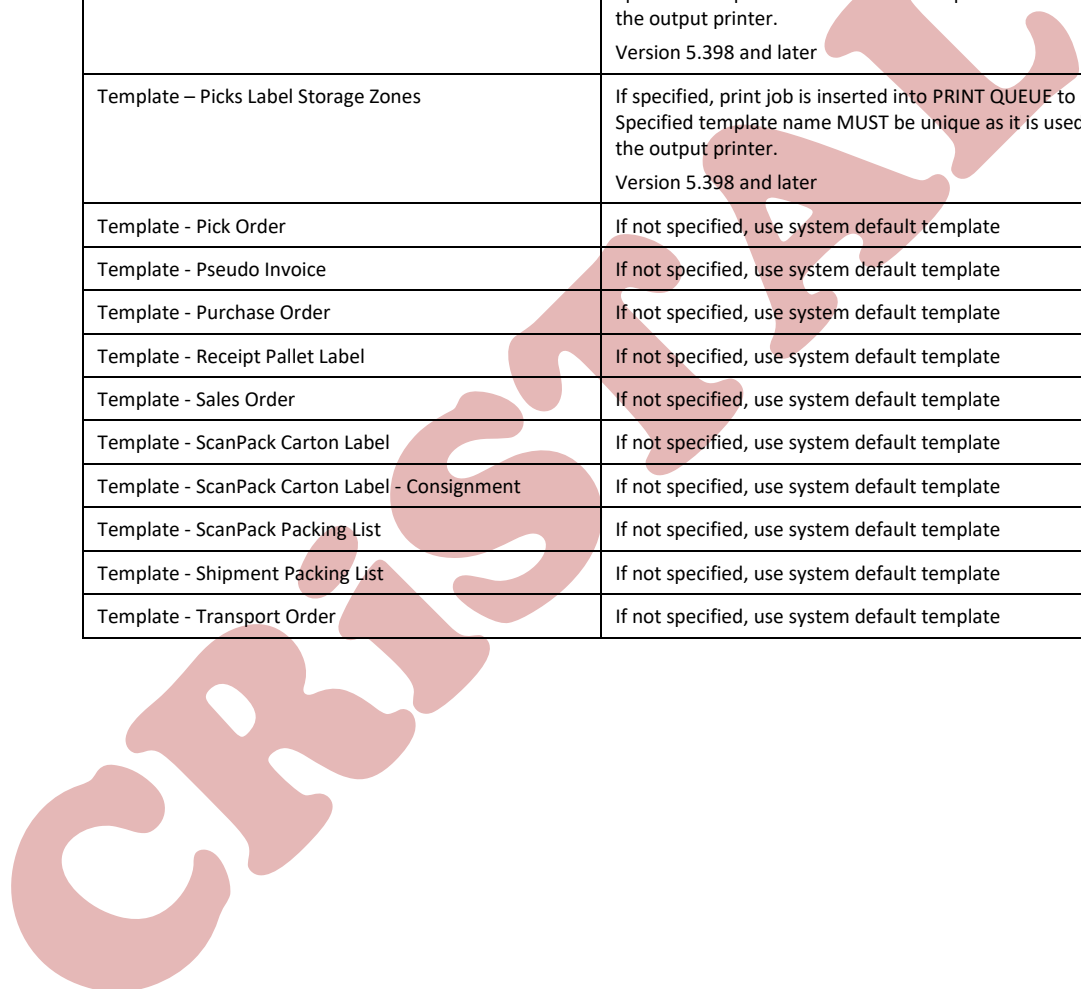
Following parameters are report related parameters.

Report Template... is for specifying the report template to be used for the named documents. If no template is specified, the system default will be used.

When specifying specific templates, the administrator must ensure that the template name is correct and that a copy is deposited the Reports folder as defined in the system registry.

Client Report Options	Remarks
Default Number of Copies - Delivery Order  <i>Version 5.398 Build 622</i> <i>This replace 'Delivery Order - Number of Print Copy' under Miscellaneous Parameters</i>	Integer – 0 to 9  Default value for number of copies of Delivery Orders required/to be printed.  Used in Delivery Orders and Real Time Alert functions.
<b>Inventory Status Date Type Option - ACTUAL / PLANNED</b>  <i>Introduced 04 Mar 2017 to standardize Date Type option for Client</i>	Parameter to calculate Inventory Status by Selected date – option to calculate by ACTUAL (system date) or PLANNED (Receipts' Receipt Date and Sales Orders' Delivery Date)
Outgoing Shipment Summary - Scheduled Delivery	Use in Outgoing Shipment Summary – Scheduled Delivery <ul style="list-style-type: none"> <li>• If 'Y', reports delivery date specified in Sales Order as Delivered Date</li> <li>• Else use system despatch date as Delivered Date</li> </ul>
Shipment Packing - Carton Label	No system default – used by Carton Item Packing function
Shipment Packing - Pallet Label	No system default – used by Carton Item Packing function
Stock by Attributes include pending despatch	Use in Stock by Attributes reports. <ul style="list-style-type: none"> <li>• If 'Y', include stock that is in despatch grid</li> </ul>
Template - Air Waybill - 1	If not specified, use system default template <ul style="list-style-type: none"> <li>• Existing template is based on Singapore's' generic air waybill</li> </ul>
Template - Air Waybill - 2	If not specified, use system default template <ul style="list-style-type: none"> <li>• Existing template is based on Singapore's' generic air waybill</li> </ul>
Template - Bill of Lading	If not specified, use system default template <ul style="list-style-type: none"> <li>• existing template based on specific requirement</li> </ul>
Template - Billable Services Report	If not specified, use system default template
Template - Carrier Order	If not specified, use system default template
Template - Consignment Note	If not specified, use system default template

Client Report Options	Remarks
Template - Delivery Order	If not specified, use system default template
Template - Goods Receipt Checklist	If not specified, use system default template
Template - Goods Receipt Note	If not specified, use system default template
Template - Goods Receipt Note (Costing)	If not specified, use system default template
Template - Invoice	If not specified, use system default template
Template - Load Manifest	If not specified, use system default template
Template - Load Summary	If not specified, use system default template
Template - Packing List (DO)	If not specified, use system default template
Template – Picks Label Pickface Zones	If specified, print job is inserted into PRINT QUEUE to print. Specified template name MUST be unique as it is used to set the output printer. Version 5.398 and later
Template – Picks Label Storage Zones	If specified, print job is inserted into PRINT QUEUE to print. Specified template name MUST be unique as it is used to set the output printer. Version 5.398 and later
Template - Pick Order	If not specified, use system default template
Template - Pseudo Invoice	If not specified, use system default template
Template - Purchase Order	If not specified, use system default template
Template - Receipt Pallet Label	If not specified, use system default template
Template - Sales Order	If not specified, use system default template
Template - ScanPack Carton Label	If not specified, use system default template
Template - ScanPack Carton Label - Consignment	If not specified, use system default template
Template - ScanPack Packing List	If not specified, use system default template
Template - Shipment Packing List	If not specified, use system default template
Template - Transport Order	If not specified, use system default template



**F.1.3. Grade-Zone**

List defined product grades except for '01'. User can specified what zone a stock of selected product grade is to be stored.

If not specified, the Assigned Storage Zones in Product Definition is used to assign location for storage.

For grade '01', the Assigned Storage Zones in Product Definite will be the effective control.

**F.1.4. (Application) Data Identifiers**

Application Data Identifiers are used in some industries such as Electronic to identify the data encoded in a barcode. This is by usually by prefixing the barcode with a qualifying identifier. This facilitates receipt and picking operations by not having the need to ensure that the cursor is in the right attribute box below scanning.

For example, product ID is usually prefixed with '1P' while quantity is prefixed with 'Q'...

This greatly enhances data accuracy and allows system design to provide only 1 textbox for the data scanning. The data read on scanning is translated by the system and populates to the correct attribute container (combo / text box).

CRISTAL WMS provides for user define for following parameters

Data Identifiers	Values (e.g.)	Remarks
1. Data Identifier - Batch Number	9D	
2. Data Identifier - Carton ID		
3. Data Identifier - Delimiter End		
4. Data Identifier - Delimiter Start		
5. Data Identifier - Expiry / Use-by Date		
6. Data Identifier - Item Class		
7. Data Identifier - Item Color		
8. Data Identifier - Item Size		
9. Data Identifier - Lot Number	1T	
10. Data Identifier - Pallet ID	PP	
11. Data Identifier - Product ID	1P	
12. Data Identifier - Production Date		
13. Data Identifier - Quantity	Q	
14. Data Identifier - Save on Quantity Scan		
15. Data Identifier - Serial ID		

**F.1.5. Interfaces**

Client Interface parameters are defined to facilitate customised requirement of interfaces between CRISTAL WMS and various host system. This enables the deployment of different interfaces for different clients.

Client Interface Parameters	Values	Remarks
1. ASN - default Status when upload : ASN ENTRY   DATA ENTRY		Status to be assigned to uploaded ASN
2. Carrier-Proof of Delivery Date		Carrier Code – use for identify clients that uses specific carrier from whose a web service can be called to update Delivered Date and recipient in Sales Orders.  The calling of web service is handled by AUserver. This is a client specific function.
3. Data Element Separator for Export files	1 character	Character used to separate the data field in an interface files. Default = , (comma)  This is not retrofitted – for new interface only unless specifically defined

Client Interface Parameters	Values	Remarks
4. Data Element Separator for Import files	1 character	Character used to separate the data field in an interface files. Default = , (comma). This is not retrofitted – for new interface only unless specifically defined
5. Default Storage Zone - Auto Created Item		The storage zone to be assigned when auto creating item code during interface upload (Specified ZONE must be valid – user to ensure)
6. Despatch Interface File Option	'INDIVIDUAL' 'CONSOLIDATED'	When Interface is set to trigger for Outgoing shipment on DESPATCH, the files can be set to generate by 'INDIVIDUAL' sales order or 'CONSOLIDATED' batch as in Delivery Orders creation.
7. EDI Data Processing Option [ORDER ADJUST]	ORDER ADJUST	This parameter is called by procedure 'auto_upload_order_create_tcma' that synchronize stock with QAD system – whether to process change as Order or as Stock Adjustment
8. Export Grade Change Procedure		The stored procedure to call to create interface file for Grade Change (Item Re-labelling)
9. Export Interface File Extension - TXT, TAB, CSV	TXT, TAB, CSV	The type of files to be exported TXT – Fixed position TAB – used Tab as separator CSV – comma delimited values file
10. Export Sales Order for Interface	'Y' / 'N'	If 'Y', system to create sales order as interface file on 'Release to Warehouse' in Sales Order Entry
11. Export Sales Order Procedure		The stored procedure to call to create the sales order interface file. The stored procedure defines the file structure / data elements
12. Export Stock Status Procedure  <i>The interface file is generated via job inserted into the interface_queue table by ADserver service.</i>  <i>The insertion of the job is via a scheduled SQL Agent Job - set to insert by 23:59 hours.</i>		The stored procedure to call to create stock balance interface file  <i>logwin_toshiba_stock_comparison</i>
13. File Name Pattern - Uploading	*, *.* , *.txt	The pattern of the file names to be listed for uploading under Auto Batch Upload option
14. FTP Export Folder		e.g. E:\FTP storage\ThyssenKrupp\Outbox
15. FTP Import Folder		e.g. E:\FTP storage\ThyssenKrupp\Inbox
16. Host Client Code		The client code as defined in Host system
17. Interface - Client Email Address		The destination email address of client to send an interface files to – as attachment.
18. Interface Export Method - DIRECT   QUEUE	DIRECT   QUEUE	If DIRECT, the interface file is created by the WMS program. If QUEUE, the WMS program insert a script in an interface queue which is read by a specialised interface file creation program to create the interface files.
19. Order Confirm Inbound Method - ORDER, CONTAINER		When generating inbound order confirmation, the option is either to create a file for each order OR consolidate by container number This is specific to client requirement

Client Interface Parameters	Values	Remarks
20. Order Confirm Outbound Method - ORDER, CONTAINER, LOAD		When generating outbound order confirmation, the option is either to create a file for each order OR consolidate by container number OR load summary. This is specific to client requirement
21. Order Confirmation Delivery Procedure		The stored procedure to be called to create Delivery (ASN) interface file. This is triggered in Delivery Orders when Interface Files Creation Setting in Client Profiles   Client Configuration is set to Despatch (for Outgoing Shipment). This is triggered when above Despatch Interface File Option is set to CONSOLIDATED.
22. Order Confirmation Inbound Procedure		The stored procedure to be called to create the Inbound order confirmation. This is triggered in Receipt Check In when Interface Files Creation Setting in Client Profiles   Client Configuration is set to Check In (for Incoming Shipment).
23. Order Confirmation Inbound: PO Receipt Only  Build 5.400.859.05	Y / N	When Y, and if Order Confirmation Inbound Procedure is defined, generate interface data file only if inbound is a OPO Receipt
24. Order Confirmation Movement Procedure		The stored procedure to be called to create the order confirmation basing on warehouse tasks that are confirmed This is triggered in Warehouse Tasks when Interface Files Creation Setting in Client Profiles   Client Configuration is set to Putaway (for Incoming Shipment) and Picked (for Outgoing Shipment).
25. Order Confirmation Outbound on CLOSED  Build 5.399.833.27g	Y / N	If Y, generate Outbound Interface file when Sales Order's status change to CLOSED. This is an <b>additional</b> event point to trigger interface file to the Client Profiles   Configuration   Interface Setting   Outbound option of Pick and Despatch. The procedure that generate the file must be defined in Client Profile   UDF   Client Interface   Order Confirmation Outbound Procedure - Despatch
26. Order Confirmation Outbound Procedure		The stored procedure to be called to create the outbound order confirmation This is triggered in Delivery Orders when Interface Files Creation Setting in Client Profiles   Client Configuration is set to Despatch (for Outgoing Shipment). This is triggered when above Despatch Interface File Option is set to INDIVIDUAL
27. Order Confirmation Outbound Procedure - Despatch		The stored procedure to be called to create the outbound order confirmation on printing of Delivery Orders
28. Order Confirmation Outbound Procedure - Picks		The stored procedure to be called to create the outbound order confirmation on Warehouse Tasks – Picks Confirmation
29. Order Confirmation Stock Adjustment Procedure  Build 817		The stored procedure to called to create Stock Adjustment advice This is trigger a job in Interface Queue table by Stock Adjustment if it is specified
30. Order Confirmation Stock Relabel Procedure  Build 817		The stored procedure to called to create Stock Relabel advice This is trigger a job in Interface Queue table by Stock Relabel if it is specified
31. Order Pick In Progress Advice Procedure		The stored procedure to be called to create interface file of Sales Orders that the pickings are in process.



Client Interface Parameters	Values	Remarks
32. Order Upload Procedure		e.g. auto_upload_main_procedure This is the primary stored procedure being trigger in Auto Batch Upload. This in turn calls other stored procedures as sub-routine which are designed for specific task.
33. Packing Data for GLS Label		Customised procedure name to generated interface data file for third party system – data file generation is triggered manually in Delivery Order Confirmation
34. Packing ID Range for GLS Label  <b>THIS IS OBSOLETE BY ENHANCEMENT in Build 686</b>		Customised Parameter Added to limit generation of random document reference to specified range. Specified values must be NUMERIC only. Format 000000 999999 Max length 12 digits
35. Packing Data for GLS Label  (PACKING_DATA_GLS)		Parameter for specify the procedure to be called to export data for printing packing labels by 3 <sup>rd</sup> party application. (Customised for Logwin-Nespresso) Available procedure: <ul style="list-style-type: none"> <li>logwin_nespresso_gls_label_get</li> </ul>
36. Pick By Light Zone	FREE	Pick By Light (PBL) pickface zone. If specified, trigger update of stocks table in cristaltf database by stored procedure close_replenishment_task of the current stock quantity in the PNL location. Administrator must ensure specified zone is valid and (static) pickface is defined for the items.
37. Product ID - Disable upload of existing	Y / N	Default = N (allow overwriting of attributes of existing Product ID. If Y, prevent overwriting.  Release: 5.398 Build 659 and later
38. Product ID - Standard Unit UOM.		Default UNIT UOM if not defined in interface data file – this must be valid UOM, already defined in the Parameter table
39. Product Status upload - set to ACTIVE	Y / N	If set to N, the Product Status is set to INACTIVE, otherwise ACTIVE Default – Y (when not specified) Release: 5.396.2
40. Purchase Order Upload - Ignore Status	Y/N	If Y, update data in purchase order regardless of order or line status Release 5.398 Build 659 and later
41. Purchase Order Upload - Disable Auto Create Item Code	Y / N	If Y, reject item code that is not in Product Master
42. Purchase Order Upload - Ignore Status	Y / N	If Y, update existing lines regardless of STATUS
43. Serial Numbers Export Procedure EXPORT_SERIAL  <i>The interface file is generated via job inserted into the interface_queue table by ADserver service.  The insertion of the job is via a scheduled SQL Agent Job - set to insert by 23:59 hours.</i>		<i>The stored procedure to be called to create interface file of serial numbers that are issued (outbound)</i>  <i>logwin_toshiba_serial_number_export</i>
44. User ID to report interface messages		User Name that is to be used as the reporting ID of interface messages

### F.1.5.1. Data Processing Services

Automated uploading and downloading are handled by 2 utility programs that run as a service on a workstation. The programs are:

1. AUServer – Auto Upload service
  - a. The service is designed as a generic service. Please refer to documentation on Auto Upload for data definition
2. ADServer – Auto Download Service
  - a. Job and time of the download are to be defined in the SQL Agent job scheduler which would insert a formatted instruction into the interface\_queue table.

### F.1.6. Miscellaneous Parameters

Miscellaneous Parameters	Values	Remarks
1. ASN - Item Attributes Validation (Version 5.395.2)	Y / N	Default Y If N, skip item attributes check and validation in Advance Ship Note entry.
2. Barcode - Code 39 Modulo 43 Product ID (Not enabled in RF Device)	Y / N	Default N If Y, truncate check digit of Product ID in Code 39 Modulo 43 barcode reading
3. Barcode - Code 39 Modulo 43 Serial Number	Y / N	Default N If Y, truncate check digit of Serial Number in Code 39 Modulo 43 barcode reading
4. Billable Services - Multiple Storage Charges	Y / N	Default N If Y, allow multiple STORAGE billing to be defined in Service Quotation.
5. BONDED – Custom Lot Entry Optional	Y / N	If Y, allow user to skip input of Custom Lot during receipt when grade is Bonded
6. BONDED - Customs Lot – System Generated	Y / N	If Y, Customs Lot numbers will be generated by the system when left empty during Receipt Check In. The last number is maintained in System Configuration   Document Reference under document type CUSTOMS_LOT. (See Licenced Warehouse Lot Numbers Registry)
7. Bonded in Non-bonded location vice-versa	Y / N	If Y, allows bonded product to be storage in non-bonded location and vice-versa. Effectively disable BONED check.
8. Client Group	Text	Allow user to categorise a number of clients as belong to group for purposes of Reporting
9. Customs Central Registration Number	Text	Use in report template where information is required
10. Customs Permit Entry Mandatory – Delivery Order	Y / N	If Y, Customs Permit (in Sales Order Entry) must be updated before the Delivery Order can be generated. Entry of the Customs Permit can also be updated via Delivery Orders -> Delivery Data. Delivery Order must be generated for 1 sales order at a time.
11. Customs Permit Entry Mandatory - Receipt	Y / N	If N, entry of Customs Permit is optional for Bonded grade during Receipt Check In
12. Customs Permit Entry Mandatory - Sales Orders	Y / N	If N, entry of Customs Permit is optional for Bonded grade during Sales Order Entry
13. Customs Permit Reference Length	Integer – Max 50	If specified, system checks length of inputted Customs Permit number (Customs Lot) at details level in Receipt Check IN and Sales Order Entry.
14. Cycle Count by Item Period - Number of Work Days	Integer	The number of working days in a complete cycle count period for By Item
15. Cycle Count by Location Period - Number of Work Days	Integer	The number of working days in a complete cycle count period for By Location

Miscellaneous Parameters	Values	Remarks
16. Cycle Count Real-time Stock Update	'N/Y'	If Y, adjust stock on entry of stock count quantity
17. Debond - auto create transfer task	Y / N	If Y, Transfer task is created when Item Re-label BONDED grade to NON-BONDED. Tasks must be retrieved and confirmed in Warehouse Tasks function.
18. Delivery Orders - Auto Generate on PICKED	Y / N	If 'Y', auto generated delivery orders for sales order when the required picking is completed – used in picks confirmation – Warehouse Tasks.
19. Delivery Orders - Consolidate By Customer	Y / N	If 'Y', during Delivery Orders combine selected a number of sales orders for each customers into 1 delivery order This is originally System level parameter. It is enhanced in Build 393 to client level to enable 3PL warehouse operators to manage delivery orders creation at client level.
20. Delivery Orders - Delivery Confirm By Batch	Y / N	If 'Y' allows users to batch confirm delivery of selected delivery orders – used in Delivery Confirmation
21. Delivery Orders - Generate for 1 Sales Order each time Key : DO_PRINT_1_SO (Build 773)	Y / N	Default – N If Y, allow user to select 1 sales orders at a time to generate and print delivery order - in Operations   Outbound   Delivery Orders
22. Delivery Orders – Partial Delivery Allowed  Key: DELIVERY_PARTIAL Build 698	Y / N	Default = Y If N, when generation when Delivery Order, check that sales order total quantity and picked quantity matched
23. Despatch Pallet - HG9999 WD9999 DP9999 WG9999	HG9999 WD9999 DP9999 WG9999	Dimension and weight of despatch pallet – HG, WD, DP and WG are code for height, width, depth and weight respectively. 9999 is the numeric value of the attributes in millimetres.
24. Despatch Pallet Build Method - DENSITY   WEIGHT	DENSITY WEIGHT	The parameter enable user to configure whether to pallet build picks by DENSITY of product or WEIGHT of the goods.  The pallet build is activate when the Order Picks is By ZONE – defined in Client Profiles   Configuration.
25. Enable Customer Item Code Change By X-Reference	Y / N	If 'Y', system try to substitute an item code that is not found in product master with another, if defined in the Customer Cross Reference table.
26. End Day Processing - Expiry Stock  Key: EDP_EXPIRY_STOCKE Build 5.398 Build 709	Y / N	If Y, system convert grade of expiry to EX and expiring (balance shelf life equal/less than Pre-Alert days) to NG (negotiable). The processing procedure <i>system_expiry_stock_update</i> is triggered via SQL Agent Job - <i>sql_server_agent_batch_jobs</i>
27. Export Sales Order for Interface	Y / N	If 'Y', create a text file of sales order when it is 'Released To Warehouse' for export to other system
28. GST (VAT) Number	Text	Goods and Service Tax Reference Number
29. GST (VAT) Rate (%)	Numeric	Goods and Services Tax rate in percentage
30. Inter-Warehouse Pallet Relocation Enabled	Y / N	If Y, allows transfer of Pallet from 1 warehouse to another in Stock Management   Pallet Relocation. Default is Not Allowed
31. Item Picking UOM Default	Text	The UOM to be used when auto-creating an item code during an interface uploading
32. Item Product Attributes Input Check	Y / N	

Miscellaneous Parameters	Values	Remarks
33. Item Stock Attributes Input Check	Y / N	
34. Item-Ownership Transfer Receipt Grade	Valid GRADE	The default receipt grade when transfer item or ownership
35. Job Costing Entry : Y - Enabled, N - Disabled	Y / N	Y – enabled to input job costing data during Receipt Entry and Truck Loading (Build 5.394.34 and later)
36. KPI - On Time Delivery (Days)	Numeric	Use in Key Performance Indicators reports – Delivery deem to failed if the hours between specified delivery and actual delivery are greater than specified hours.
37. KPI - On Time Receipt (hours)	Numeric	Use in Key Performance Indicators reports – Receipt deems to fail if the times take to check in is greater than specified hours.  The hours is the difference between the first pallet checked in and the last pallet being putaway
38. Miscellaneous Tax Rate (%)	Numeric	For use in debit note or similar report templates
39. Packing Carton Item - Enable over packing	Y / N	Parameter to enable site to disallow overpack resulted from wrong SKU picked - Default = 'Y' for backward compatiability
40. Pallet Number Size (# of CHARACTERS)	Numeric	The length of the pallet license number in term of number of characters or digits If not specified, the default is 18 (Also see appendix on pallet number length control)
41. Pick Method Select Extension	<ul style="list-style-type: none"> <li>- LOCATION</li> <li>- PALLET</li> <li>- WALK_SEQ</li> <li>- ZONE</li> </ul>	Extended option for pick method – this affect the pallet / location to be allocated for picking
42. Pickface Definition - Allow 1 pickface per Product ID in WI Upload (PICKFACE_SETUP_SINGLE)	Y / N	If Y, prevent multiple pickface to be defined in Zone Type PICKFACE. (PICKFACE-W is not affected). This is only applicable in WMS Import2 function. (Version 5.398 and later)
43. Pickface Putaway Loose Quantity (THIS IS NO LONGER IN USE)	Y / N	If 'Y', system try to putaway pallet with loose quantity to the pickface. <ul style="list-style-type: none"> <li>- This overrides Stock Rotation rules</li> <li>- Pallet must NOT be mixed – only 1 item code</li> <li>- There is adequate 'quantity' space in the pickface to receive the putaway</li> </ul>
44. Print Queue - Enabled	Y / N	Enable / Disable Desktop function report to send report to Print Queue for printing <ul style="list-style-type: none"> <li>- Warehouse Tasks</li> <li>- Short Pick Alert</li> <li>- Short Supply Alert</li> </ul> Default - DISABLED
45. Product Definition - Whole Unit - Default (CLT_WHOLE_UNIT)	Text	To facilitate operation where product uom is more than 3 level  While the system allow user to flag the WHOLE level in product_uom, this may be tedious if it is not pre-defined. CLT_WHOLE_UNIT is defined for operation where the WHOLE is standard.  For example, CARTON.

Miscellaneous Parameters	Values	Remarks
46. Product ID: REPLACE Space with Underscore	Y / N	If Y, replace SPACE with UNDERSCORE in Item Number when creating product ID using WMS Imports with PRODUCT template.  This take precedence over 'Product ID: Skip Consecutive Space Check'  Default: N
47. Product ID: Skip Consecutive Space Check	Y / N	If Y, ignore consecutive SPACE in Item Number when creating product ID using WMS Imports with PRODUCT template.  Default: N
48. Product ID: System Assugn	Y / N	Parameter when set to Y enable the System to assign Product ID based on Product Description. (To use function, it is impreative that product descriptions are unique) The Product ID is assigned in the same metho as Document Reference series and by Product Group. To setup: <ol style="list-style-type: none"> <li>1. Define the Product Group in System Configuration   UDF Parameters   Product Group</li> <li>2. Setup the PRODUCT_ID in Document Reference <ol style="list-style-type: none"> <li>a. The Prefix and Last Number by Product Group</li> </ol> </li> <li>3. Enable the function by set the paramete to Y in Client Profiles   UDF   Miscellaneous</li> </ol> This function is active only for <ol style="list-style-type: none"> <li>1. WMS Imports of Product ID by leaving the ITEM_ID column blank</li> <li>2. WMS Import of opening Stock by Receipt <ol style="list-style-type: none"> <li>a. Specify the product description in the ITEM_NO column.</li> </ol> </li> </ol>
49. Product Storage Zoning - Strict	Boolean	If 'Y', allow item to stock in assigned zones only. This must be set to 'Y' if product requires strict segregation
50. Purchase Order - Allow line amendment at status	Y / N	IF 'Y', allows PO Lines to be modified regardless of status except CANCELLED
51. Purchase Order Authorisation Required	Y / N	If 'Y', trigger authorisation entry if inventory holding is exceeded by the new Purchase Order.
52. Putaway - Strict Bonded Zone (Default = Y)	Y / N	Invoke BONDED_NONBONED_LOC_MIX flag - if not specified check STRICT_BONDED_ZONING - which is not defined, default to 'Y'  This is a second confirmation of allowing or disallowing Bonded and Non-bonded grade mix
53. QA Grade Change via Item Re-label	Y / N	If 'Y', allow grade change to / from QA in Item Re-labelling function  - Added in Build 5.394.32
54. QA Incoming Inspection Requirement	Y / N	If 'Y', create an QA inspection record when a receipt is check in.
55. QA Inspection Period (Days)	Numeric	The number of days permits to complete a QA inspection. If exceeded, the inspection record will be flagged in red.
56. Quantity - Popup Help Default (Inter-Whse Trf)	Y / N	IF Y, default quantity from Popup Help selection

Miscellaneous Parameters	Values	Remarks
57. Receipt - Auto Propagate Receipt Date Change (in Receipt CheckIn)	Y / N	If Y and there is a change in Receipt Date in Receipt CheckIn, auto update Receipt Date in Pallet Location  (Build 833.005)
58. Receipt - Allow ASN Receipt Unannounced Product	Y / N	When Y, SKIP check whether item code received is announced in an Advanced Ship Note (ASN)
59. Receipt - Default Attribute Tab (1 – 4) (Version 5.399 Build 773 and later)	1, 2, 3, and 4	Set the default tag (Attribute Page) in Receipt Check In   Details for specified client.
60. Receipt - Auto Crossdock Required Item Pallet	Y / N	If 'Y', system checks for sales orders requirement and quantity on hand (QOH).  If QOH is less than sales orders requirement, the system will cross dock pallet and direct it to be putaway to a location in Pick Pack zone.
61. Receipt - Batch as Serial Number	Y / N	This parameter flags the Batch number to behave as a Serial Number. If 'Y', the receipt line update program will check for stock in the pallet location-pallet history to ensure that there is no stock with the same batch number. Check is also performed against receipt_detail for check-in pending putaway for the batch number. When an batch is flagged as Serial Number, we assume that the quantity is always 1 The rationale for the above is to enable returns to be received.
62. Receipt - Bypass ASN Item Check	Y / N	If Y, skip ASN item validation during Receipt Check In when ASN is available.
63. Receipt CheckIn – Clear Item Attributes on New Line	Y / N	Default = Y In Receipt Check In, clear item attributes for new line after Save. By default, the item attributes are always clear. If set to N, the attributes will not be clear if item is the same. User need to explicitly click Clear to clear attributes fields. Release: 5.398.0 Build 685
64. Receipt CheckIn – Clear Station on New	Y / N	Default N – No In Receipt Check In, control whether to clear Chyeck In station on clicking New. Enable site to enforce user to update station if frequent wrong station check in occur. Version: 5.396.2 Build 207
65. Receipt - Default Pallet as Carton Number	Y / N	Default N – No Update Pallet Number as Carton Number if field is valid. Version: 5.396.2 Build 207
66. Receipt - Default Production Date EQUAL Receipt Date	Y / N	If 'Y' and Production Date is required for product ID and is not specified during Receipt CheckIn, default Production Date to Receipt Date
67. Receipt - Default Receipt Type	Text	The default receipt order type. If not specified, default will per defined in System Configuration.
68. Receipt - First Time ITEM receipt for Stock Owner Check	Y / N	If 'Y', a message box will advise user that a first time receipt of the item for the specified stock owner.



Miscellaneous Parameters	Values	Remarks
69. Receipt - First Time ITEM receipt from Supplier Check	Y / N	If 'Y', a message box will advise user that a first time receipt of the item from the specified supplier
70. Receipt - Mandatory PO Number	Y / N	(Purchase Order Receipt ONLY) If Y, purchase order number must be specified in Advance Ship Note and Receipt Check In Multiple POs per Receipt is also disabled.
71. Receipt - No Excess Receipt Against PO / ASN  <i>Update 18 Jan 2016 - DL</i>	Y / N	If Y, do not allow check in of quantity exceeding PO / ASN quantity <ul style="list-style-type: none"> <li>• IF ASN exists, verify against ASN quantity, ELSE                             <ul style="list-style-type: none"> <li>○ If PO exists, verify against PO quantity</li> </ul> </li> </ul> Version: 5.399.27 and later
72. Receipt - No Partial Receipt Against ASN	Y / N	If 'Y', do not allow partial receipt (against ASN – Advance Ship Note) to be check in
73. Receipt - Receipt Date = Check In Date	Y / N	If 'Y', set check in date as receipt date
74. Receipt - Default Location Assign Option	MANUAL SYSTEM	If 'Y', Location Assign will be defaulted to 'MANUAL' or operator discretion otherwise SYSTEM assign. IF default Receipt Type is MANUAL, the Location Assign will be MANUAL even if the flag is set to 'N'.
75. Receipt Costing - Also update Receipt Details	Y / N	IF Y, the update in Receipt Costing of Currency and Unit Cost will also be updated into Receipt Detail
76. Receipt Detail - Update Actual Putaway Location Flag  (Currently not activated)	Y / N	If Y, update receipt detail with actual putaway location (default logic in RF Putaway)
77. Receipt: Genrate Receipt Details On ASN Release  (Release 5.400.868.35)	Y / N	If Y, auto generate Receipt Details from Receipt ASN when an ASN is Release to Warehouse. ASN Line would split into pallet (based Product UOM definition) if quantity exceed pallet quantity
78. Sales Order As Delivery Order Number	Y / N	Use sales order as delivery order number with '-1', '-2'... to identify multiple delivery orders against a sales orders
79. Sales Orders: Alert Email Address	Free text	Email address to whom an email alert is to be sent when an order is uploaded or input via the Web order entry
80. Sales Orders: Auto Picks Processing	Y / N	If Y, it auto process sales orders that are due for picking based on the PICK_DATE specified in the sales order.  This requires the stored procedure agent_job_sales_order_auto_process to be setup as an SQL Agent Job in the database.  <b>The procedure is currently not deployed and is available on request to Enterprise version only.</b>
81. Sales Orders: Auto Release Back Order on Receipt	Y / N	If 'Y', on receipt putaway trigger release backordered sales orders.  This was a system level parameter – it is moved to client level to enhance flexibility If system level is set to 'Y', it will supersede client level setting
82. Sales Orders: Auto Release Due on Receipt	Y / N	If 'Y', on receipt putaway trigger release due sales orders – based on delivery date less pick window (days) – defined in Customer Profiles.  This was a system level parameter – it is moved to client level to enhance flexibility If system level is set to 'Y', it will supersede client level setting

Miscellaneous Parameters	Values	Remarks
83. Sales Orders – Carrier code Mandatory	Y / N	By default, it is N. If flagged as ‘Y’, Carrier must be specified in Sales Order Entry. This is required in operations that generate Carrier / Transporter specific labels and interfaces.
84. Orders: Contro; (Expiry, Production and Receipt) Date Match When Specified	Y / N	Default = N If N, allocate picks of stock based on Greater or Equal to required Dates, if specified. If Y, allocate picks of stocks based on EQUAL to required Dates, if specified. <b>The parameter is applied to Expiry, Production and Receipt Dates in total.</b> <b>(Introduced on 15 Jul 2016 – deploy on request or with next update)</b>
85. Sales Orders – Customer Change Authorisation Required (Build 833.016)	Y / N	If Y, an authoriser is required to change customer in sales order [Default = Y if not specified]
86. Sales Orders: Default Delivery (Ship) Mode	Text	This parameter is for defining the preferred delivery or ship mode of Client. This is used in SOECOM Excel upload template as default if ShipMode is not specified in the template If not defined and not specified in SOECOM, the value is set to ROAD.
87. Sales Orders – Default Warehouse (Build 5.396)	Text	Default Warehouse in Sales Order Entry
88. Sales Orders: Disable Advance Entry	Y / N	If ‘Y’, prevent user to input sales requirement for item that have no stock available This was a system level parameter – it is moved to client level to enhance flexibility (Build 5.395.2a and later)
89. Sales Orders: Disable Transport Order Option	Y / N	If ‘Y’, hide Transport Order command button in Sales Order Entry
90. Sales Orders – Enable Over picking	Y / N	Default – ‘N’ If ‘Y’, allow picks task confirmation of quantity picked to be greater than allocated. This is subjected that there is adequate free quantity (unallocated) to meet the extra quantity picked.
91. Sales Orders: Item Color Optional	Y / N	By default, if activated in Product Definition, Item Color is mandatory during Receipt Check In and Sales Order Entry. If flagged as ‘Y’, then entry of parameter is optional in Sales Order Entry only.
92. Sales Orders: Item Size Optional	Y / N	By default, if activated in Product Definition, Item Size is mandatory during Receipt Check In and Sales Order Entry. If flagged as ‘Y’, then entry of parameter is optional in Sales Order Entry only.
93. Sales Orders: Mandatory Document Reference	Y / N	If ‘Y’, entry of Document Reference is required to create new sales order. This parameter also exist in System Configuration with it taking precedence if set to ‘Y’. If ‘N’ at System configuration, then system will check Client level. (Build 5.395.2a and later)

Miscellaneous Parameters	Values	Remarks
94. Sales Orders: Permitted Grade	Free Text	If not specified, permit all grades to in input, except BONDED which can only be input in BONDED order type. The   is used as separator. Example - ' 01 02 ' or ' 01 02 EX '
95. Sales Orders: Pick from reserve - requirement exceed % pickface max quantity	Numeric (max value 100)	If pickface is assigned, pick from the pickface if quantity required is less that the defined percent of the pickface defined maximum quantity – replenishment quantity PLUS replenish level. This is to minimize the event where a pick empty the pickface and trigger replenishment.
96. Sales Orders: Pick Loose from PICKFACE ONLY - Default for uploaded Customer UDF	Y / N	This is used as default value in Customer Profile   UDF   Pick Order from PICKFACE ONLY
97. Sales Orders: Pick separate whole and loose	Y / N	If 'Y', system split a pick requirement into WHOLE and LOOSE picks. In effect, picking LOOSE from pickface and WHOLE from storage location.  Note that this option is not compatible with Pick Method PRODUCTIVITY as they are mutually exclusive by definition– it shall be automatically disabled during picks allocation
98. Sales Orders: Picks Returned Stock First	Y / N	If Y, system allocate picks from returned stock first regardless of receipt date. Other controls still apply. Function enabled in Release 5.395.4 and is not retrospective on prior returned stocks.
99. Sales Orders: Print on Release to Whse	Y / N	If Y, auto print Sales Order of Release for Picking in Sales Order Entry
100. Sales Orders: WHOLE Picks Only	Y / N	If Y, quantity to pick is round up to WHOLE (full box/carton) quantity. If the quantity exceed available, then picks will be on what available. Sales Orders quantity is not amended.
101. Serial Numbers: Entry During Receipt Check In [Y]	Y / N	Default : 'Y' If Y, Serial Numbers must be input during Receipt Check In. Else they are to be input during Warehouse Tasks.
102. Serial Numbers: Strict Assigned Pallets Picks [Y]	Y/N	Default: 'Y' If Y, enforce strict Serial Numbers picks from assigned pallets
103. Stock Adjustment - Ignore Location Check	Y / N	Introduced in 5.398 If Y, enable stock adjustment to be made on Blocked Location.
104. Stock Adjustment - Authorisation Required (Build 750)	Y / N	If Y, an authoriser is required to update stock adjustment

Miscellaneous Parameters	Values	Remarks
105. Stock Control - Lot Number number of characters	Numeric	Number of characters required for Lot Numbers. (Maximum: 20)
106. Stock Count – Post Serialised Item Variance (Y/N) <sup>1</sup>	Y / N	If Y, update stock count variance of serialised items. However, the serial numbers records are not updated AND need to be RF hand-held devices with scanner. Note also that even there is no variance, it does not mean that serials in location match records in system – a scan count of the serials are strongly advocated.
107. Stock Damaged Auto Clear	Y / N	If 'Y', subjected to the stored procedure 'system_clear_damaged_stock' is scheduled to run as a job in Enterprise Manager, automate clearing of damaged stock from the stocks.
108. Stock Ownership Options	'CUSTOMER' / 'OWNER'	Option in stock ownership control. 'CUSTOMER' is used when stocks are assigned to individual customer. 'OWNER' is used if a number of customers 'share' stocks
109. Stock Relabel - Allow QA Grade Change (ALLOW_QA_RELABEL)	Y / N	If 'Y', allow QA grade to be change in Stock Re-label. Default = N
110. Stocktake - Include ZERO stock location	Y / N	If Y, empty locations are included in stocktake
111. Stocktake - Initialise Count Quantity as ZERO  (Build 5.394.2)	Y / N	By default, Count Quantity is defaulted to System Quantity when stocktake is initialised. This is to prevent location being ZERO if Count is not updated. If Y, Count Quantity is set to ZERO when stocktake is initialised.
112. System Generated GRN Numbering Only	Y / N	If Y, disallow user from manually input Receipt Number
113. System Generated SO Numbering Only	Y / N	If Y, disallow user from manually input Sales Order Number  This must be N if sales orders are being uploaded and the sales order number is assigned by host system
114. Truck Loading Function Required	Y / N	<ul style="list-style-type: none"> <li>If 'Y', Truck Loading function needs to be performed. <ul style="list-style-type: none"> <li>Delivery order Status is set to 'WAITING' and records are maintained in Despatch Grid.</li> <li>This is cleared by Delivery Confirmation if applicable else Truck Loading will clear records</li> </ul> </li> <li>If 'N', Delivery Order status is set to 'CLOSED'. <ul style="list-style-type: none"> <li>Records in despatch are cleared.</li> </ul> </li> </ul>
115. VA Services – Enforced Inputs when applicable (5.396.2)	Y / N	If Y, the Confirm Tasks and Confirm ALL command buttons in Warehouse Tasks are disabled if Ad Hoc Services are defined in the Billing Service Setup
116. Warehouse Tasks – Enable Same Location Change	Boolean	Default = N If Y, it allows reallocation of warehouse tasks to same (original allocated) location.  <i>Note: Although user is allow to configure to Y, the effectiveness of same location reallocation is however unpredictable at best.</i>
117. Zero Transaction Movement Class	'D'	If specified, item code with ZERO transaction with period defined in ABC Movement Classification will be update as 'D' class

<sup>1</sup> Add to meet operations that required Stock Count Posting to update quantity variance of serial numbered item though it is not advisable as no validation of serial numbers is available.

### F.1.7. Email Messaging Parameters

This group of parameters is introduced to facilitate emailing of messages automatically at selected point of the operational process with the aim of helping enhancing customer service level without the need to corresponding increase of resources.

This includes definition of email addresses to which various messages are to be sent.

The string allowed for 255 characters for email addresses. Multiple addresses are to be separated by semi-colon (;).

Email Parameters	Values	Remarks
1. Activate Email Functions	Y / N	If Y, enable emailing for client
2. Email Address: Delivery - Advance Notice		Email Address to send advance notice of delivery. Apart for this parameter, email address is also read from customer master for the customer specific email address AND entity master for carrier email address if the carrier is specified in the sales orders <ul style="list-style-type: none"> <li>Procedure: <i>email_delivery_asn_get</i></li> </ul>
3. Email Address: Short Supply for orders		Email Address to send short supply or inadequate stock alert
4. Email Address: Upload Messages		Email Address to send alert messages of uploaded interface files
a. Upload Messages last reported	DATETIME	The last date and time the uploaded message is being extracted and emailed <ul style="list-style-type: none"> <li>Updated by the message reporting program</li> </ul>
b. Upload Messages Email Only Failed	'Y' / 'N'	If 'Y', report only failed messages ELSE all messages
5. Email Address: Uploaded Orders		Email Address to send alert messages of uploaded orders – purchase, advance ship note and sales orders
6. Email Advice - Delivery ASN Procedure (Version 5.395.4)		To activate auto email of Delivery ASN function– defines the stored procedure to call. <ul style="list-style-type: none"> <li>Email address send to per defined in Email Address: Delivery - Advance Notice</li> <li>Procedure: <i>email_delivery_asn_get</i></li> </ul>
7. Email Advice - Receipt Procedure Name (Version 5.395.4)		To activate auto email of Receipt on Checked In – define the stored procedure to call. Email is send to Client email address. <ul style="list-style-type: none"> <li>Procedure: <i>email_receipt_get</i></li> <li>Email from : Email Address of user ID must be defined in User Profiles</li> <li>Send To : Email address in Client Profiles must be defined</li> </ul>
8. Email Advice – Sales Order Procedure Name (Version 5.398 Build 656)		To activate auto email of Sales Order alert status change – define the stored procedure to call. Email is sent to address defined in 'Email Address: Uploaded Orders'. <ul style="list-style-type: none"> <li>Procedure:</li> <li>Email from : Email Address of user ID must be defined in User Profiles</li> </ul> Send To : 'Email Address: Uploaded Orders' must be defined
9. Email Job Schedule Time (HH:MM)		The time to trigger sending of email advice as below – Delivery ASN The time specified must be valid and in 24 hours format. The specified time is invalid, it is default to 'current' time
10. Email Queue Job (Default realtime)	Y / N	If N, send email advise below on real-time else as scheduled job: Delivery ASN By allowing delayed email transmission, user is enabled to update data that are not available at time of reports generation.

**F.1.7.1. Auto Emailing of Serial Numbers**

The auto emailing of list of serial numbers of item delivered in a delivery orders in an Excel file is a configurable feature in CRiSTAL WMS.

This is customer specific and the following parameters must be defined in Customer Profiles | UDF | Miscellaneous Parameters

1. Email - Delivery ASN Serial Number Attachment Prefix
2. Email - Delivery ASN Serial Number Attachment Stored Procedure
  - a. Available Procedure : logwin\_toshiba\_delivery\_serial\_get
3. Email - Delivery ASN Serial Number Stored Procedure
  - a. Available Procedure : email\_delivery\_asn\_serial\_number\_get

Apart from the parameters, it is necessary to specify the follows

1. Send From email address
  - a. This is to be specified in user's email
    - i. If not defined, the Client Profiles' email address
2. Send To email address
  - a. As defined in Customer Profiles' Email2 field

Note that the fields and parameters are for free format. It is onus on users to ensure that the correct data are being updated.

CRISTAL

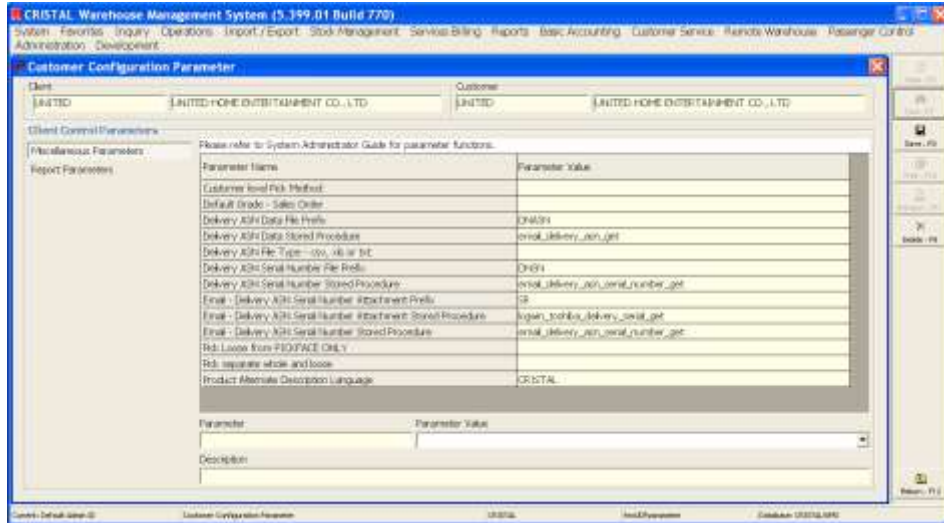


**F.2. Customer UDF Parameters**

Customer specific UDF parameters are under Customer Profiles. The inclusion in this document is for completeness of the system configuration documentation.

The parameters are grouped into

- Miscellaneous Parameters
- Reports Parameters



The Miscellaneous Parameters are

Item Attributes	Values	Remarks
1. Customer Level Pick Method	TEXT	Parameter is introduced in version 5.396 to enable specific customer requirement.  For example, in fresh product industry, local customers are usually supplied based on FEFO while export customers are supplied based on LIFO. This is typically due to the longer transit time required and the need to ensure that the goods are not already expired when they reach their destination.  This is preceded by item level PICK METHOD while superseding client level PICK METHOD.
2. Default Grade - Sales Order	TEXT	Allow configuring specific grade to be defaulted in sales orders for customer.
3. Delivery ASN Data File Prefix	FREE	The prefix of the name of the generated Delivery ASN file. This is for customisation purposes.
4. Delivery ASN Data Stored Procedure	FREE	The stored procedure to call to generate the Delivery ASN data – which control the data elements and structure. This is for customisation purposes.
5. Delivery ASN File Type - CSV, xls or txt	TEXT	The file type that the delivery ASN is to be created as. Only CSV, XLS or TXT. If others is specified, it the file will be created as CSV  This is for customisation purposes.
6. Delivery ASN Serial Number File Prefix		The prefix of the name of the generated Delivery ASN Serial Number file.  This is for customisation purposes.

Item Attributes	Values	Remarks
7. Delivery ASN Serial Number Stored Procedure		The stored procedure to call to generate the Delivery ASN Serial Number data – which control the data elements and structure. The file type is CSV. This is for customisation purposes.
8. Email - Delivery ASN Serial Number Attachment Prefix		The prefix to the sales orders that is used to name the serial number Excel file
9. Email - Delivery ASN Serial Number Attachment Stored Procedure		The stored procedure that is to be called that defines the data structure of the serial number Excel file. The available stored procedure is <i>logwin_toshiba_delivery_serial_get</i>
10. Email - Delivery ASN Serial Number Stored Procedure		The stored procedure that is to be called that defines the format and content of the email together with the email audiences The available stored procedure is <i>email_delivery_asn_serial_number_get</i>
11. Pick separate whole and loose	Y / N	If Y, Loose quantity will be picked from Pickface while Whole quantity is Storage or while Pickface. This parameter take precedent over same in Client Profile  Note that this option is not compatible with Pick Method PRODUCTIVITY as they are mutually exclusive by definition– it shall be automatically disabled during picks allocation
12. Picks Order from PICKFACE ONLY	Y / N	Default = N If Y, when processing sales order for picking, checks pickfaces stock availability – trigger replenishment if inadequate and set order status to PENDING-R. On completion of replenishment, order is then release for picking. The control is managed by procedure <i>sales_order_requirement_transfer</i>
13. Product Alternate Description Language	FREE	Used in Delivery Order (or require) stored procedure to flag the required Language alternate description to be returned in the record set as Item Description. This is for customisation purposes.

The Report Parameters are:

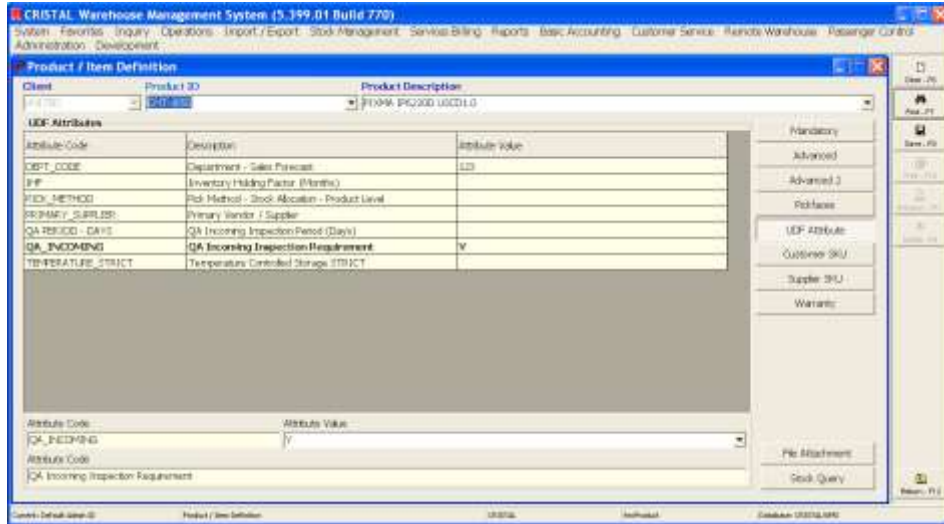
Item Attributes	Values	Remarks
1. Template - Customer Tag Label	TEXT	For specifying of customised report template
2. Template - Delivery Order	TEXT	For specifying of customised delivery order template. This override templates specified in Client Profile and System Reports

To update:

1. Click the required attribute
2. Input the required attribute
3. Click Save

### F.3. Item Specific Parameters

Item specific parameters are under Product Definitions. The inclusion in this document is for completeness of the system configuration documentation.



The UDF attributes available at item level are

Item Attributes	Values	Remarks
1. DEPT_CODE – Department – Sales Forecast	TEXT	Used in Sales Forecast Entry – to control the user access to the items. Department access is managed in User Groups.
2. IHF – Inventory Holding Factor (Months)	Numeric	The number of months equivalent of inventory allowed computed from sales quantity
3. PICK_METHOD	TEXT	Item specific stock rotation method – supersedes specified in Client Profiles
4. PRIMARY_SUPPLIER	TEXT	The primary vendor / supplier from which stock is to be assigned in VMI operation
5. QA_INCOMING	Y / N	If Y, requires QA inspection when received - trigger message to user during Receipt Check In
6. TRMPERATURE_STRICT	Y / N	If Y, requires stock to be assigned location with suitable ambience temperature for putaway

To update:

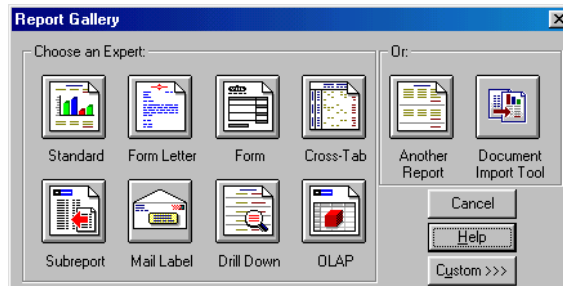
1. Click the required attribute
2. Input the required attribute
3. Click Save

## Appendix G. Introduction to Crystal Reports™

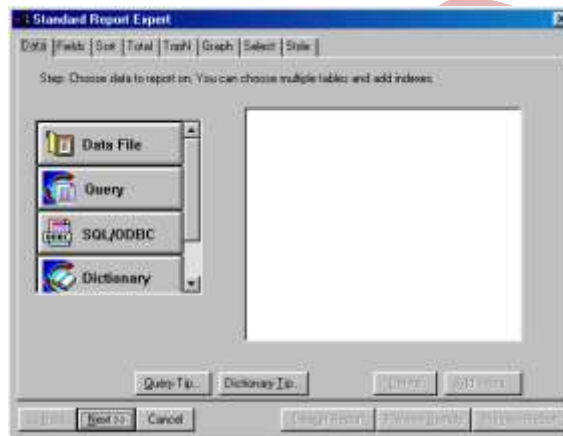
The section is a basic guide to the use of Crystal Reports 7. It is however also applicable to Crystal Reports 8.5 – the difference is in the UI. The process and logic is similar.

For comprehensive training, please contact the appropriate commercial training centres that conduct Crystal Reports training.

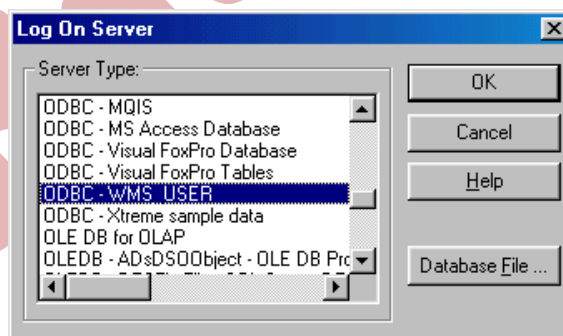
1. Click on New Reports (or New under the File menu)



2. Select Standard in the Choose an Expert frame



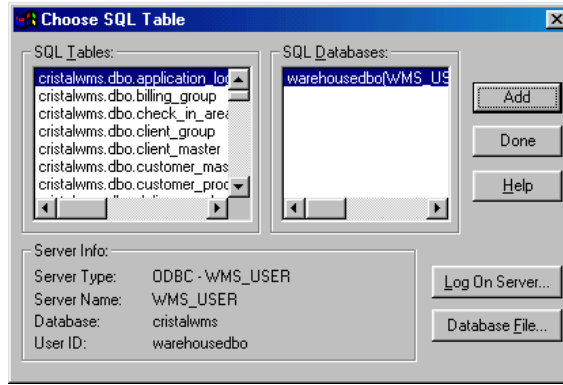
3. Select SQL/ODBC under the Data tab



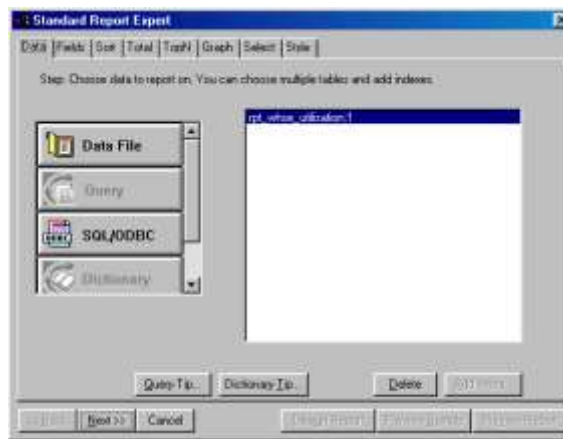
4. Choose "ODBC – WMS User" and click OK



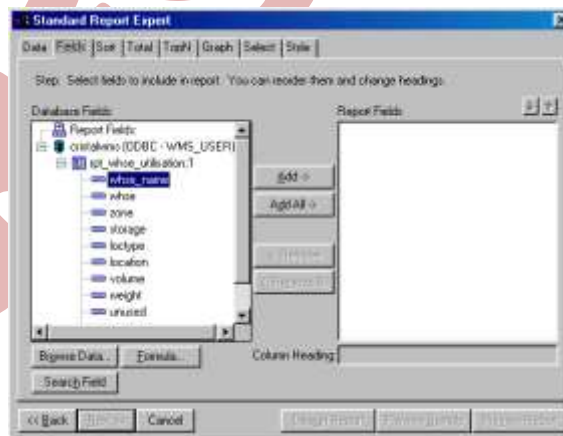
5. Enter the Password



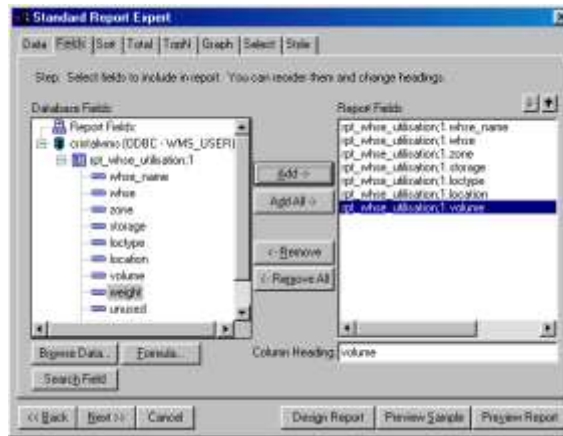
6. A list of all available Database Tables will be listed
  - a. Double click to select the required Table, Views or Stored Procedure
  - b. Click on Done



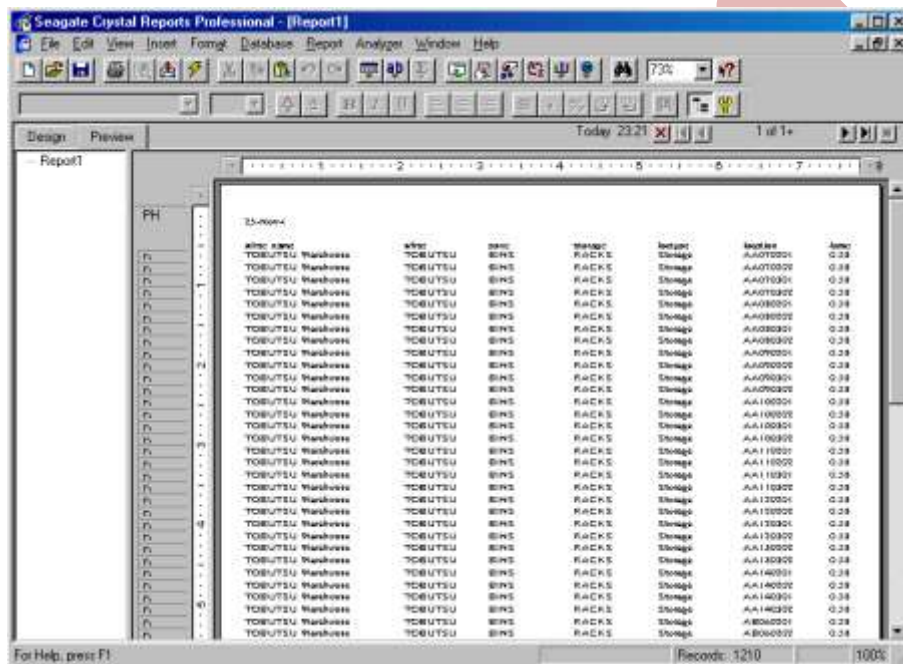
7. Click Next



8. Select required fields from Database Fields and click Add
  - a. If all fields is required, click on Add All

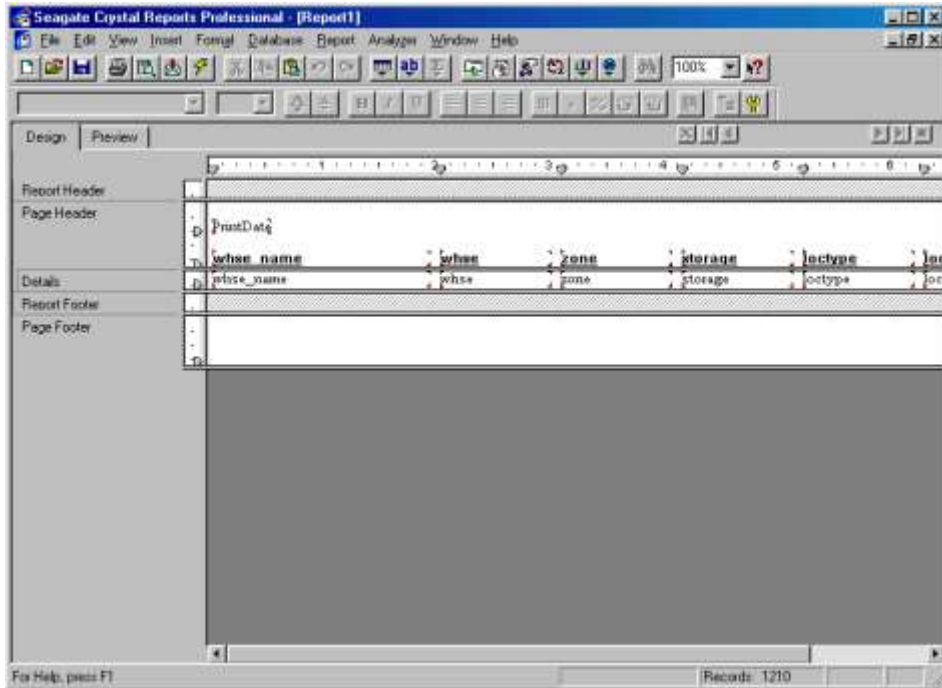


9. Click on the **Preview** button to display the report on screen



10. Click on the **Design** Tab to go to design mode to fine tune the report presentation





11. On completion of the template, add the following formulae to the template
  - a. gTitle
  - b. gRegion
  - c. gMakerID
  - d. SubTitle
  - e. SystemName
12. These formulae are used by CRISTAL WMS to pass value to the Reports. Without the formulae, the template will not work when attached in the system.

**G.1. Synchronising Reports with Data Source**

With Crystal Reports, when the data source is modified, be adding of new fields or increasing the size of a field, it upset the synchronisation between the reports template and its data source.

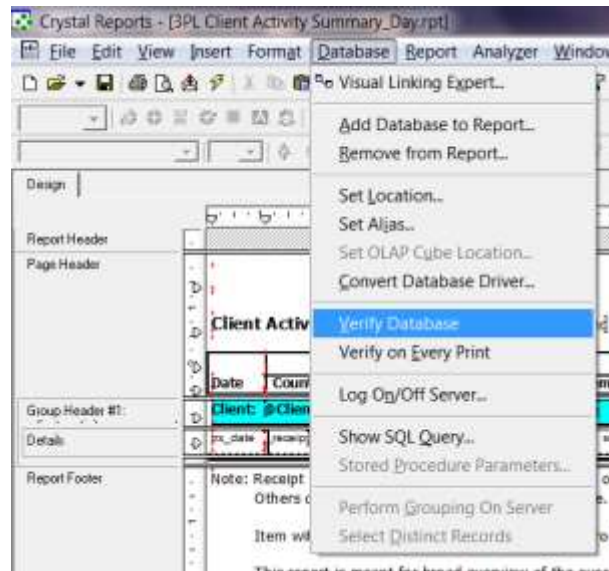
When this happens, the display of the report becomes garbled. It is necessary to re-synchronize them.

**G.1.1. Verify Database**

Crystal Reports provides a utility Database | Verify Database for this purpose.

To do so:

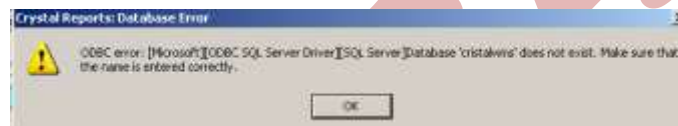
1. Open the templates
2. Click on the Verify Database as below



However there is a catch

1. The database to which the report is reporting against is available
2. The template is created with the database

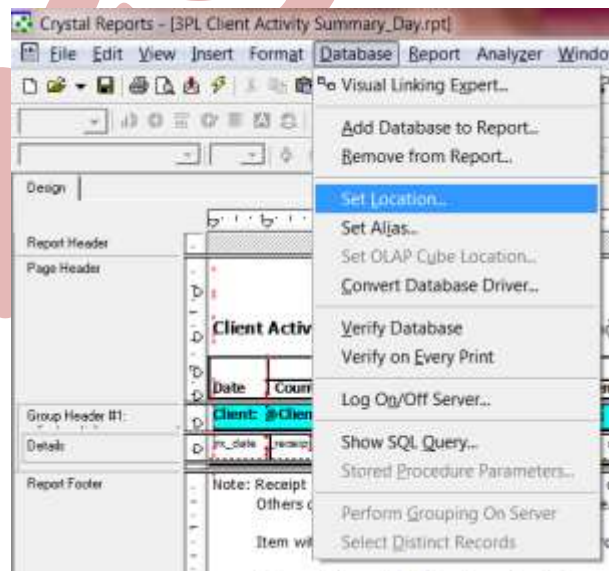
If otherwise, the message below will appear:



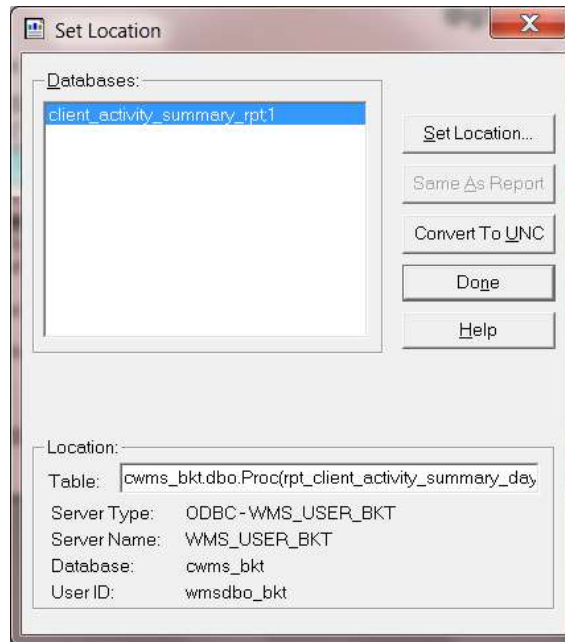
### G.1.2. Set Location

If the template is originally not created with the current database, it is necessary to establish the connection to the current database.

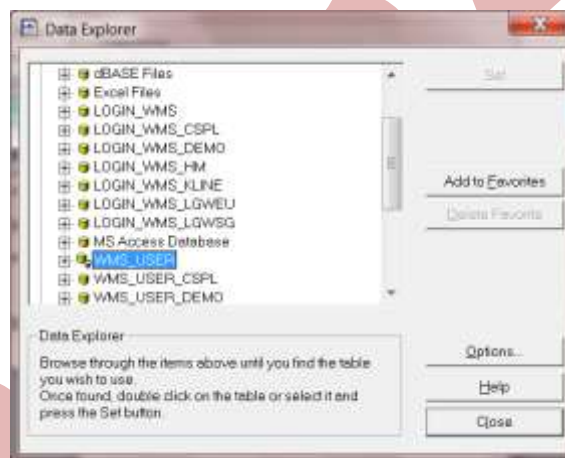
In this case, the Database | Set Location is used.



1. Select the option



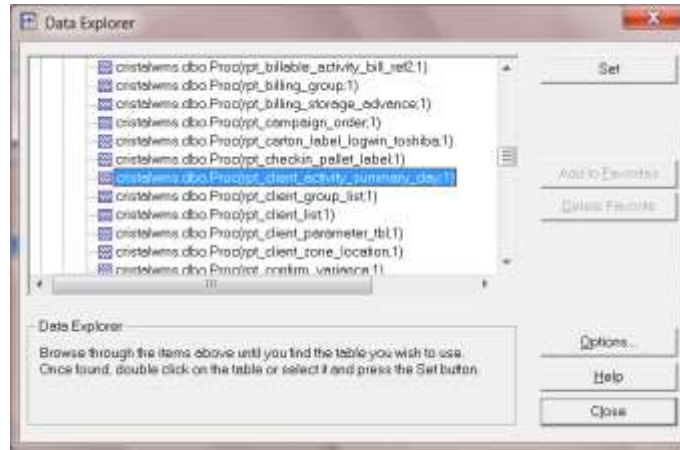
2. Click on Set Location button which open the Data Explorer



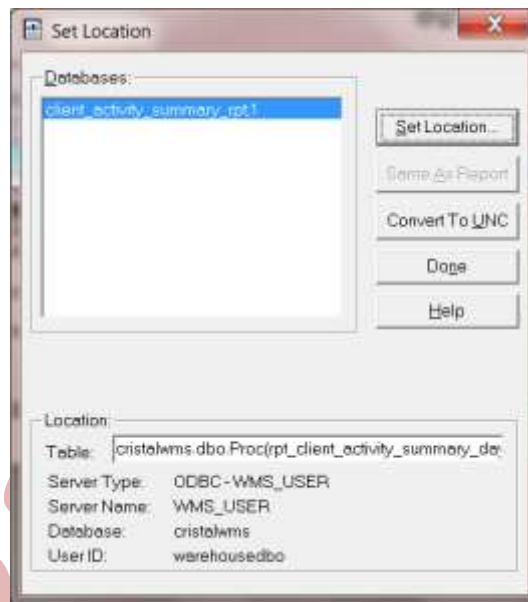
3. Look for the appropriate DSN double click on it
  - a. This is typically named as WMS\_USER...
  - b. This will open a SQL Server Login



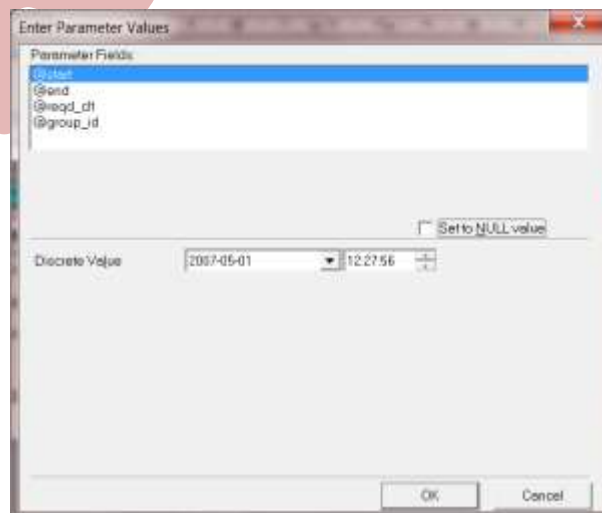
4. Input the Login ID (warehousedbo) and Password (crystal2001)
  - a. The available data source will be listed



5. Select the appropriate data source and click Set
  - a. The select data source will replace the original

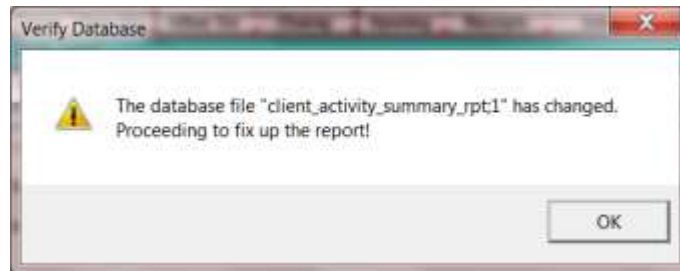


6. Click Done



- a. The Enter Parameter Value will appear
  - i. The number of parameters listed depend on the selected data source (procedure)
- b. Select each of them and input a valid value

- i. Where the required parameter is a Date, manually input the date even though a default date is displayed.
    - ii. This is because there an issue in the data default which tend to be set to Null if not manually overwritten
  - c. Click OK
7. If successful, the message screen appear



8. This complete the synchronisation

CRISTAL

## Appendix H. Windows Service Programs

To further extend the functionalities of the system, CRISTAL WMS incorporate a number Windows service programs that run in the background to emulate real-time processing without overload the devices such as wireless handheld terminals as thin client workstation.

Following are the service programs that are provided with the Enterprise version of CRISTAL WMS:

Services	Program Name	Remarks
1. Auto Upload	AUserver / AUserverNET	
2. Auto Download	ADserver / ADserverNet	
3. Auto Email	AEServer / AEServerNet	
4. Print Queue	PQServer	
5. SMS Messaging		

### H.1. Print Queue

#### Revision History

Revision	Creation Date
18 Jul 2003	NJ

PQSERVER is a facility used by the CRISTAL WMS to print reports from designated printers. It works as follows:

1. CRISTAL WMS program writes a record into the PRINT\_QUEUE database table regarding information about the report to be printed. This record has a special format that is related to the way parameters are fed into the associated Seagate Crystal Reports template.
2. The PC running the PQSERVER service checks the PRINT\_QUEUE table for new records. When found, it will print the report defined by the record.

Currently, only the Sales Order entry screen updates into the PRINT\_QUEUE table.

The PQSERVER service runs only on Windows NT/2000/XP machines only. The PQSERVER service does not run on Windows 9x/ME machines. This is because the "SC" command required for installing the service is not available on Windows 9x/ME machines.

#### H.1.1. Installation

Following are the step in installing the Print Queue service:

##### H.1.1.1. Installing the Service

1. After installing the package (run the SETUP.EXE), the program PQSERVER.EXE will be installed into the specified destination directory. At this point, the service has still not been installed.
2. Open a DOS prompt and change to the directory where PQServer.EXE is located.
3. At the DOS prompt, type the following command:

```
C> PQServer –install dbinstance WMSuserid/WMSuserpw
```

Where:

- *dbinstance* is the MS SQL database instance (e.g. CRISTALWMS\_SGCS)
- *WMSuserid* is a WMS user ID (e.g. CRISTAL1)
- *WMSuserpw* is the password for the WMS user ID (e.g. CRISTAL1PW)

```
C> PQServer –install CRISTALWMS_SGCS CRISTAL1/CRISTAL1PW
```

4. If you want to have the same machine running the PQSERVER service for multiple database instances, it is necessary that each service name be uniquely different. The executable PQServer2.EXE, PQServer3.EXE and PQServer4.EXE is available for installing up to 4 PQSERVER services on the same machine.

```
C> PQServer –install CRISTALWMS_SGCS CRISTAL1/CRISTAL1PW
```

```
C> PQServer2 –install CRISTALWMS_SGTH CRISTAL1/CRISTAL1PW
```

```
C> PQServer3 –install CRISTALWMS_HKYT CRISTAL1/CRISTAL1PW
```

```
C> PQServer4 –install CRISTALWMS_AWS CRISTAL1/CRISTAL1PW
```



- Note that each database instance should only be served by one PQSERVER service.

#### H.1.1.2. Starting the Service

The above commands will only install the respective PQSERVER service, but not start them or set them to auto-start.

Also, if these services are to be run from a machine that is also running the MS SQL Server, it is imperative that the PQSERVER services run only if the MSSQLSERVER service is running.

These additional conditions require running the SC command.

To configure the service to auto-start, type the following command/s:

```
C> SC config PQServer start= auto
```

```
C> SC config PQServer2 start= auto
```

```
C> SC config PQServer3 start= auto
```

```
C> SC config PQServer4 start= auto
```

(Warning: there is a space " " between the words "start=" and "auto".)

If the services are running on the same machine supplying the Microsoft SQL Server, it is necessary to set the service to start only if the MSSQLSERVER service is already running. In this case, the SC command should be:

```
C> SC config PQServer start= auto depend= MSSQLSERVER
```

```
C> SC config PQServer2 start= auto depend= MSSQLSERVER
```

```
C> SC config PQServer3 start= auto depend= MSSQLSERVER
```

```
C> SC config PQServer4 start= auto depend= MSSQLSERVER
```

(Warning: there is a space " " between the words "start=" and "auto", and also between the words "depend=" and "MSSQLSERVER")

#### H.1.1.3. Windows Registry Keys

The above steps will write special values into the Windows Registry. You can examine these registry settings in the following keys:

```
My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\PQServer
```

```
My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\PQServer2
```

```
My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\PQServer3
```

```
My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\PQServer4
```

#### H.1.1.4. Uninstalling the Service

To uninstall the PQSERVER service, runs the EXE name with the "-uninstall" parameter:

```
C> PQServer -uninstall
```

```
C> PQServer2 -uninstall
```

```
C> PQServer3 -uninstall
```

```
C> PQServer4 -uninstall
```

#### H.1.1.5. Windows Printer Configuration

The PQSERVER service, by default, will always run using the local Windows NT "SYSTEM" account.

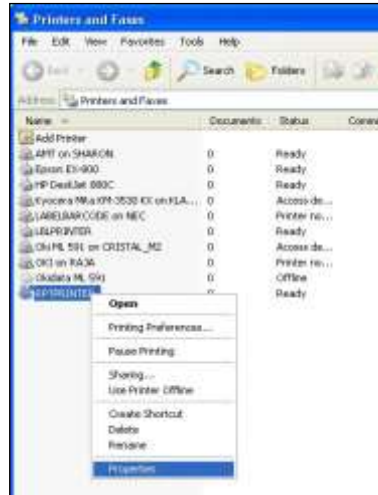
Seagate Crystal Reports require that a default printer be specified in the report templates. However, users can use CRISTAL WMS to divert the report output to any other printer. In either case, the printer names must be configured on the Windows NT/2000/XP machine that is running the PQSERVER service.

For example, suppose a network printer is identified by the name "RPTPRINTER" on the machine running the PQSERVER service. However, this same network printer is also identified by the name "HP Laserjet in QA Office" on a user's client machine. When we want a particular WMS report to be printed using the PQSERVER service, it is necessary to assign the printer "RPTPRINTER" to the WMS report.

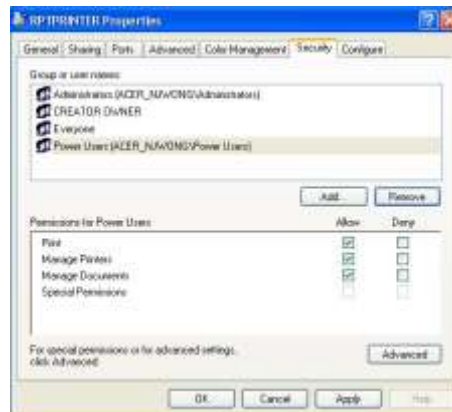
Generally, we must use the printer name as seen from the machine running the PQSERVER service.

Also, on the PQSERVER machine, we must add the Windows "SYSTEM" account as an administrator of the printer. If the "SYSTEM" account has not been added as an administrator, a Seagate Crystal Reports 545 error will be generated when the PQSERVER service attempts to process the WMS report.

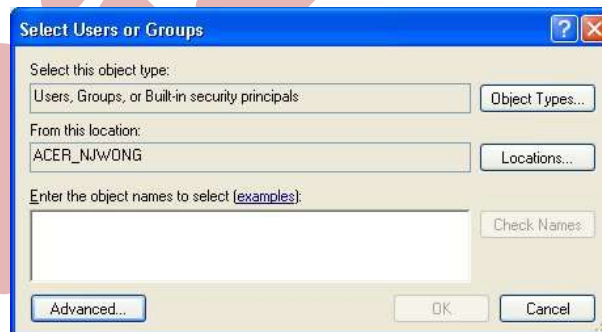
The following illustrates how to add the "SYSTEM" account as an administrator of the printer "RPTPRINTER".



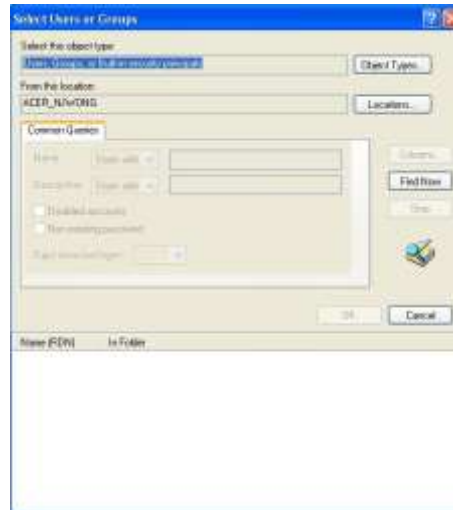
First, right click on the printer name and select **Properties**.



Select the **Security** tab. Note, if the **Security** tab is not shown, please see the discussion in the next section.



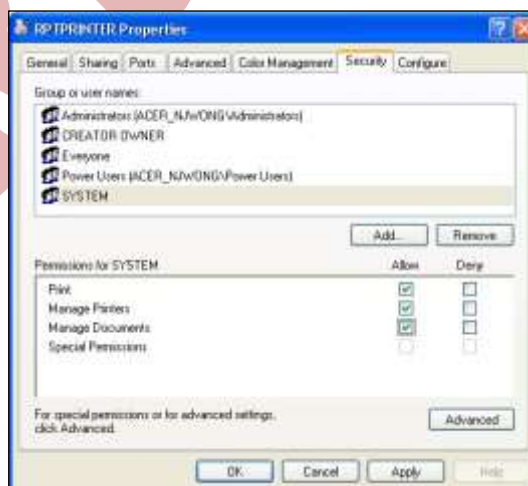
Click on the **Advanced...** button.



Click on the **Find Now** button.



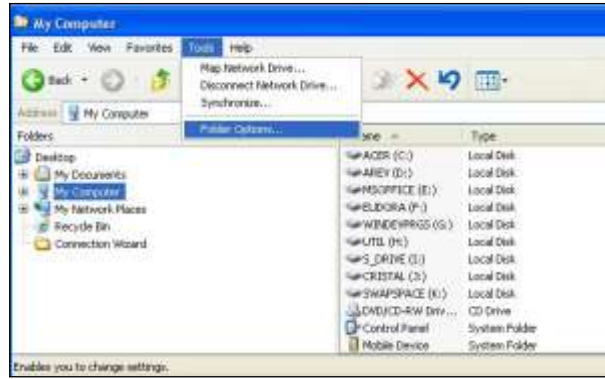
A list of Windows accounts maintained on this machine will be displayed. Select the "SYSTEM" account and click **OK**.



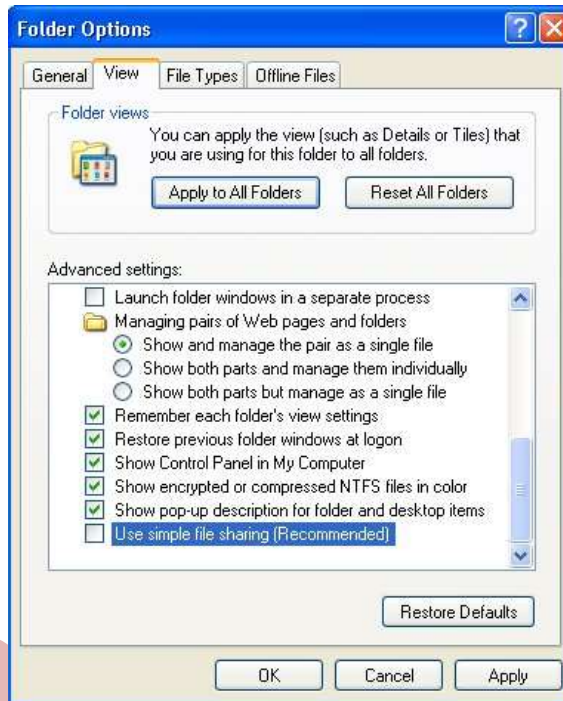
The "SYSTEM" account will now be added to list of users who can access the "RPTPRINTER". You must add the "Print", "Manage Printers" and "Manage Documents" permissions to the "SYSTEM" account. Tick the "Allow" permissions checkboxes and click the **Apply** button.

**H.1.1.1.6. Security Tab Not Seen in Printer Properties**

If the **Security** tab cannot be seen in the Printer Properties, please ensure that you are logged in to the Administrator account.



Open Windows Explorer and select **Tools • Folder Options ...**



Select the **View** tab and look at the last option in the **Advanced settings** box. If the “Use simple file sharing (Recommended)” checkbox is enabled, uncheck it and then click the **Apply** button.

## Appendix I. Application Log query

This is moved to Inquiry Section

The Application Log is a query function to help site administrator to investigate and troubleshoot an issue.

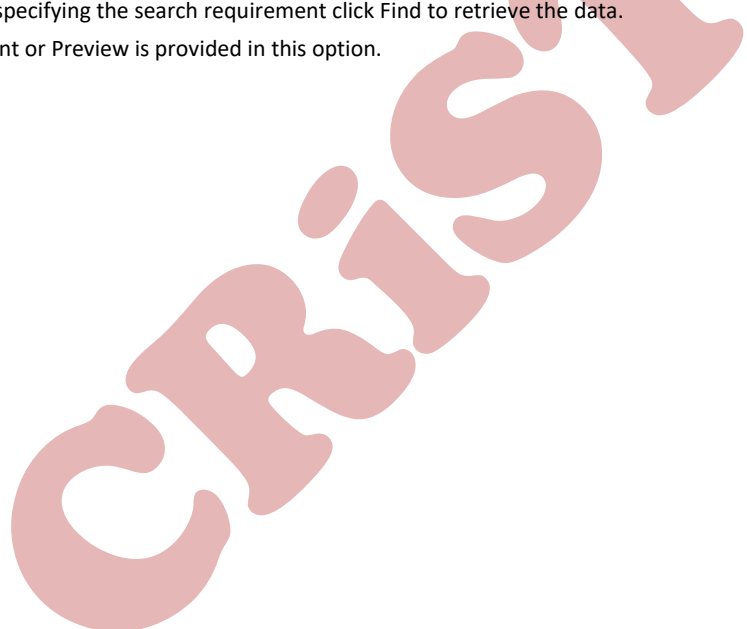
Trx Date	Procedure	Message	Msg Code	User ID
2013-07-01 2:00:41 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:00:41 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:00:41 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:00:34 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:00:36 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:06:20 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:06:30 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:06:33 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:06:34 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:06:35 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:06:43 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:07:57 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 42	0	(SYSTEM)
2013-07-01 2:07:58 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 2:29:46 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:29:47 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:29:47 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 2:59:25 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 40	0	(SYSTEM)
2013-07-01 2:59:25 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 43	0	(SYSTEM)
2013-07-01 4:27:22 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 47	0	(SYSTEM)
2013-07-01 4:27:22 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 40	0	(SYSTEM)
2013-07-01 4:27:23 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 40	0	(SYSTEM)
2013-07-01 4:27:23 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 40	0	(SYSTEM)
2013-07-01 4:29:23 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)
2013-07-01 4:29:23 PM	outstanding_tasks_get	outstanding_tasks_get - Time Taken: 46	0	(SYSTEM)

Query made is date ranged based on transaction date (last update) to prevent excessive data being returned.

Apart from the dates, user have the option to query by the activity or stored procedures, messages (or substring by prefix and/or suffix the string pattern such as order numbers with the SQL wildcard '%') and user id.

After specifying the search requirement click Find to retrieve the data.

No Print or Preview is provided in this option.



## Appendix J. Database Automated Duplication

This appendix covers the setup of a scheduled Job in the MS SQL Server to auto create or duplicate a LIVE database to another database to provide a test environment for the users.

The source database so named below is *cwms\_LIVE* and the destination database is *cwms\_testops*. These are to be replaced with actual database name as required.

Words in *italic* are to be substituted accordingly.

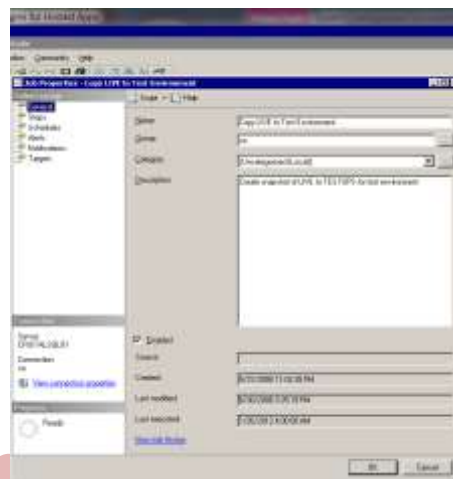
Paths and folders must be valid.

Administrator that is setting up the Job is assumed to have knowledge of MS SQL Management Studio and the setup of Agent Job.

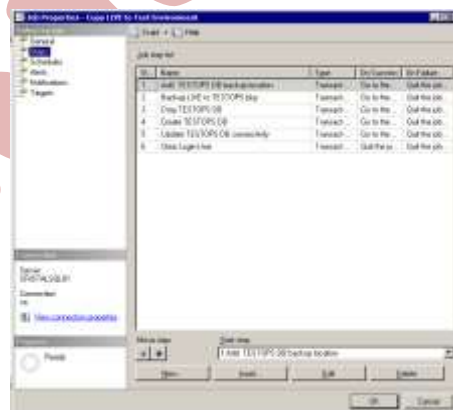
Before setting up the Job, it is necessary to first define the database Login. 2 login IDs are required – 1 for general login, the second is the database owner login. This is defined under Security | Login. The standard formats used are *warehousechk\_...* and *warehousedbo\_...* respectively.

Following are the steps to define the Job.

### J.1. Step 1 - Creating the Job



### J.2. Step 2 - Defining the tasks

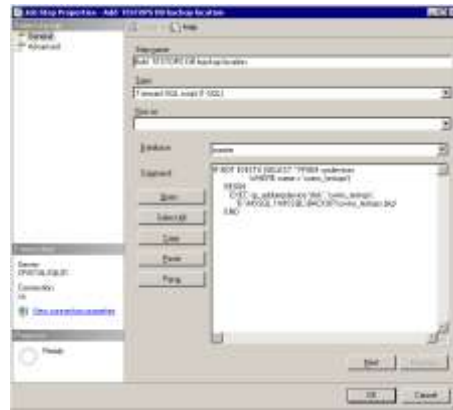


#### J.2.1. Task 1 - Adding DB Backup Location

Make sure the specified drive and directory is valid.

```
IF NOT EXISTS (SELECT * FROM sysdevices WHERE name = '<i>cwms_testops</i>')
    BEGIN
        EXEC sp_addumpdevice 'disk', '<i>cwms_testops</i>',
            '<i>E:\MSSQL\BACKUP\cwms_testops.bkp</i>'
    END
```





**J.2.2. Task 2 - Create Backup from LIVE**

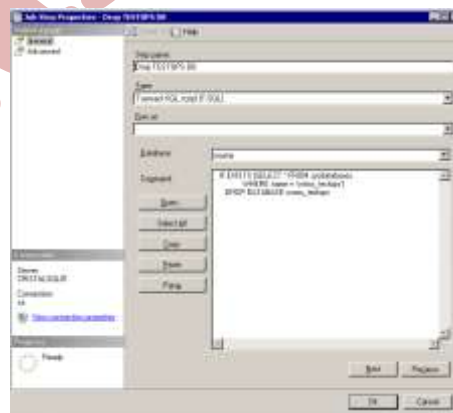
The backup must be with the clause 'WITH INIT' as it only requires the latest data only.

```
BACKUP DATABASE <cwms_LIVE> TO <cwms_testops> WITH INIT
GO
```



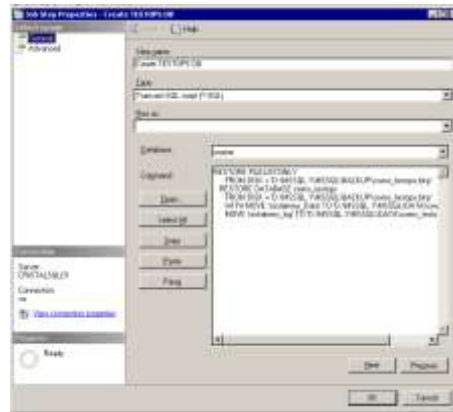
**J.2.3. Task 3 - Drop Existing Database**

```
IF EXISTS (SELECT * FROM sysdatabases WHERE name = '<cwms_testops>')
DROP DATABASE <cwms_testops>
```



**J.2.4. Task 4 - Recreate Duplicate Database**

```
RESTORE FILELISTONLY
FROM DISK = '<E:\MSSQL\BACKUP\cwms_testops.bkp>'
RESTORE DATABASE <cwms_testops> FROM DISK =
'E:\MSSQL\BACKUP\cwms_testops.bkp>'
WITH MOVE 'cristalwms_Data' TO '<E:\MSSQL\DATA\cwms_testops.mdf>',
MOVE 'cristalwms_log' TO '<E:\MSSQL\DATA\cwms_testops_log.ldf>'
```

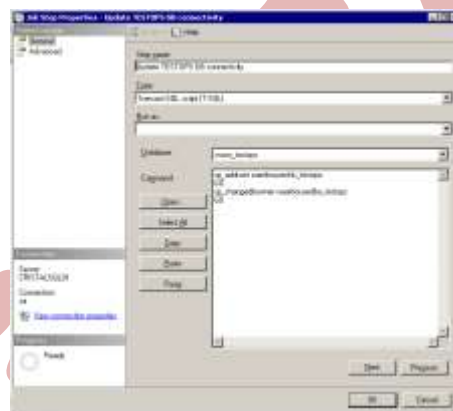


Task 5 - Update Database Logical Connection

Note: Ensure Database is set to <cwms\_teststops>

The database specified must be 'cwms\_training' – duplicated database

```
EXEC sp_adduser wmschk_training
GO
EXEC sp_changedbowner wmsdbo_training
GO
```



**J.2.5. Task 6 - Reset AEsServer Parameter**

For database that is configured for interface and Auto Email, it is necessary to clear and / or reset the configuration. Otherwise, the interface and/or email of test data may be send to the host system or client respectively and result in confusion.

This is clearing / resetting of the configuration is handled by the stored procedure 'sql\_db\_duplicate\_param\_reset'.

The SQL statement to be specified in Task 7 is:

```
EXEC sql_db_duplicate_param_reset
```

The stored procedure is designed to performance the following actions:

**J.2.5.1. Disable Auto Email Function**

This is done by prefixing the email parameters in system configuration with 'DISABLED-'

- EMAIL\_METHOD
- EMAIL\_RECEIPT\_CONFIRM
- EMAIL\_SENDER\_EMAILADDRESS
- EMAIL\_SENDER\_NAME
- EMAIL\_SMTP\_PORT
- EMAIL\_SMTP\_SERVER
- EMAIL\_SMTP\_SERVER\_DEBUG

To re-enable the email parameters, simply remove the prefix.

**J.2.5.2. Redirect Interface FTP folders**

The interface files is redirected to the Test folders by changing the FTP folder defined in CLIENT\_INTERFACE by redefining the string from '**FTP Storage**' to '**FTP Storage-Test**'.

The folder 'FTP Storage' is the primary inteface storage folder. If the folder name is different, then the stored procedure would need to be customised.

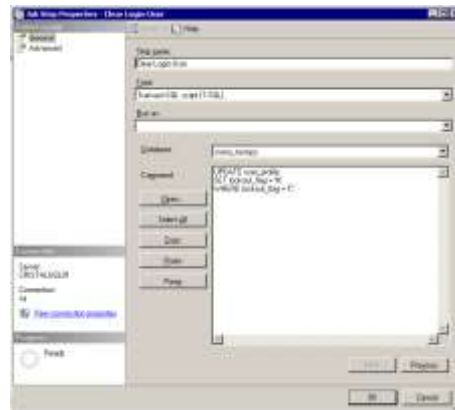
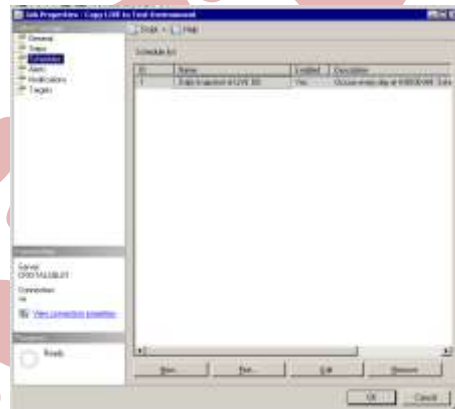
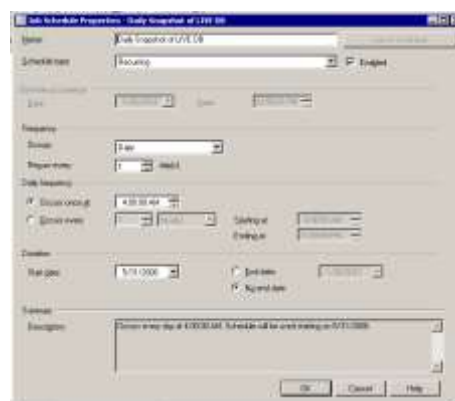
Restore would be simply reversing the redirection.

**J.2.6. Task 7 - Reset Login Users**

Note: Ensure Database is set to <cwms\_testops>

The SQL statement is to be run in Task 8 of the job.

```
UPDATE user_profile SET lockout_flag = 'N' WHERE lockout_flag = 'C'
```

**J.3. Step 3 – Setting Job Schedule****J.3.1. Task 1 – Specify Required Schedule**

**J.3.1.1. Define the Details of Recurring**

The screenshot shows the 'Job Schedule Properties' dialog box for a job named 'Daily Snapshot of LIVE DB'. The 'Schedule type' is set to 'Recurring' and is checked as 'Enabled'. The 'Frequency' is set to 'Weekly'. The 'Occurs every' is set to '1' week(s) on 'Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Friday', 'Saturday', and 'Sunday'. The 'Occurs once at' is set to '4:00:00 AM'. The 'Starting at' is set to '01/01/2000' and the 'Ending at' is set to '11/30/2000'. The 'Start date' is set to '5/31/2000' and the 'End date' is set to '11/30/2000'. The 'Repeat end date' is checked. The 'Summary' field contains the text: 'Occurs every week at 4:00:00 AM. Schedule will be used starting on 5/31/2000.' The dialog box has 'OK', 'Cancel', and 'Help' buttons.

## Appendix K. Installing CRiSTAL WMS

CRiSTAL WMS is an enterprise system that utilize database to store the data. Installing the WMS effectively is a 2 stage affairs:

1. Install the database
2. Installing the 'client' station

To simplify the installation process, the WMS database is installed by restore from a backup.

### K.1. Install the database

Note: Instructions below is written with the assumption that the administrator have a fair knowledge of Microsoft SQL Server database and installation

The database used by CRiSTAL WMS is Microsoft SQL Server. Version supported is 2005 and later. Preferred version is 2008 R2 and 2012

The steps:

1. Install the Microsoft SQL Server on the database server
  - a. Accept the default values except for authentication which must use the Mixed Authentication
  - b. Create 2 New Logins:
    - i. warehousechk
    - ii. warehousedbo
      - Please get the passwords to be used from your implementation consultants
2. On completion, create the database by restore from backup
  - a. The database is typically named as 'cristalwms'
    - i. For multiple database environments, they are usually being suffixed.
    - ii. For training or test databases, they must be suffixed with '\_test', '\_train' or '\_training'
      - Databases named otherwise require licence key to be updated
      - The CRiSTALWMS when run against the so named databases will display the caption 'TEST System' (for test) or 'TRAINING System' (for train and training)
3. Run the scripts below to establish the connectivity

```
sp_dropuser warehousechk
go
sp_adduser warehousechk
go
sp_changedbowner warehousedbo
go
```
4. It is recommended that following parameters in Properties | Options to be changed:
  - a. Auto Close
    - i. Set to FALSE
  - b. Auto Shrink
    - i. Set to FALSE
5. The database installation is completed

### K.2. Installing CRiSTAL WMS application

CRiSTAL WMS main application is a client-server window application.

Various approaches can be used in the deployment of the CRiSTAL WMS application:

1. On a Citrix server for wide area network
2. On application server for local area network
  - a. This can be extended using VPN
3. On individual PC or notebook

Because CRiSTAL WMS is designed to run using TCP/IP connection, the application can be configured to run over internet connectivity.

Regardless of the deployment approach adopted, the installation of the Citrix server, application server, PC or notebook the installation is as below.

However, in the case of application server, the client station must also be installed with the program. This is to load the DLLs file into the local stations. Thereafter, create a shortcut with the Target pointed to the EXE on the application server:

For example: \\192.168.10.1\CRiSTALwms\CRiSTALWMS.exe CRiSTALWMS

### K.2.1. Installing CRiSTAL WMS on a new PC / Notebook

Installation package that is provided to site are customize to the site environment and should not be used to install other site.

Following are the files that are in the installation disk:

1. CRiSTAL WMS install package (in a folder)
2. Reports folder (containing the reports templates)
3. CRiSTALWMS.EXE
4. CRiSTALWMS\_WV.ini
5. CRiSTALWMS32.reg
6. CRiSTALWMS64.reg

To install:

1. Run Setup.exe in the installation package
  - a. Follow the install instruction as prompted
  - b. Answer to Yes to prompt to keep DLLs
2. On completion, copy the Reports folder into the CRiSTALwms folder where the program is install
  - a. Overwrite folder and templates when prompted
3. Copy the following files into the CRiSTALwms folder:
  - a. CRiSTALWMS\_....INI
  - b. CRiSTALWMS.EXE
4. Run the REG file to update the registry by double-clicking on the appropriate file:
  - CRiSTALWMS32.reg for 32 bits OS
  - CRiSTALWMS64.reg for 64 bits OS
  - a. There may be a need to copy the appropriate file to the local machine due to Windows security.
5. Create a Shortcut from the CRiSTALWMS.EXE
  - a. Right click on the shortcut and open Properties
  - b. Modify the Target to:
    - i. C:\CRiSTALwms\CRiSTALWMS.exe CRiSTALWMS\_... (without the '.INI')
6. Copy the Shortcut to the Desktop or pin it to the Start menu
7. The installation is completed.

### K.2.2. Updating INI Configuration

For adding new workstation to an existing installation, this section is not relevant.

Following are the statement in the INI file:

```
[DATABASE]
DRIVER=SQL Server
SERVER=192.168.10.200</database instance name>
APPLICATION_DB=CRiSTALWMS
DATABASE_DSN=WMS_USER
```

```
[APPLICATION_PATH]
DATAPATH=C:\CRiSTALwms\Data
ERRORPATH=C:\CRiSTALwms>Error
EXECUTABLES=C:\CRiSTALwms
HELPPATH=C:\CRiSTALwms\Help
IMAGEPATH=C:\CRiSTAL\Development\Image
REPORTPATH=C:\CRiSTALwms\Reports
```

Amend the italic value as required.

### K.2.3. Login Error Troubleshoot

In the event that after setup, database connectivity error occurred.

This could also happen to PCs that are original working – possibly after a Windows 10 update.

**Potentially this due to tightening of connectivity security. Check that the INI file and ODBC Data Source are defined using IP address instead Server name.**



**Appendix L. Administrator Helps**

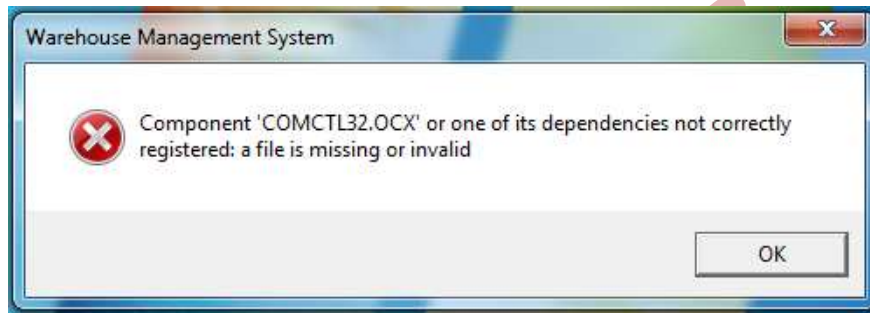
**L.1. Application Issues and Resolutions**

Following some common errors in the application and reports and their resolutions:

**1. Cannot Resolve Collation Conflict**

Different Collation Setting between the database and the server installation causes problem. This will occur when temp table is used in as stored procedure and is being joined to a normal table. Problem can be overcome by setting the collation of the column in the temp table that is joined or linked to a normal to be the same as that of the database.

**2. Missing DLL**



Potential cause of the issue are

1. Corrupted DLL file – copy from another PC or reinstall CRISTAL WMS
2. Renamed 'CRISTALwms' folder – the folder cannot be renamed once installed as the DLLs path are registered in the operation system registry
  - a. Revert the to 'CRISTALwms' would rectified the problem.

**3. Runtime Error 3420**

Possible cause is that the called Stored Procedure is using dynamic constructed SQL statement and that there is a NULL value in one of the parameters. This results in no record set being returned – therein invalid object.

**4. Runtime Error 429 (Occurs at program loading)**

This error occurs when the WMS attempts to open the database. It usually would only occur when the system is being updated. The cause of the error is as a result of ODBC version problem. The update requires a later version of the ODBC DLL that is resulted from new functionality objects. The resolution to the problem is to update the OBCD DLL. This is done by installing MDAC 2.6 and above and run the program sqlreDIR.exe which is found in MS SQL 2000 CD.

**5. Crystal Reports Error 507**

Missing report template from specified Reports folder – resolves by copy and pastes the report template or ensures the Reports folder is specified correctly or both.

**6. Crystal Reports Error 515.**

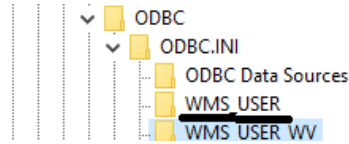
Error arise when a memo (field length greater than 254 characters) is embedded in a formula.

Remove or replace the field in affect formula or truncate the memo field to 254 before using it in formulae.

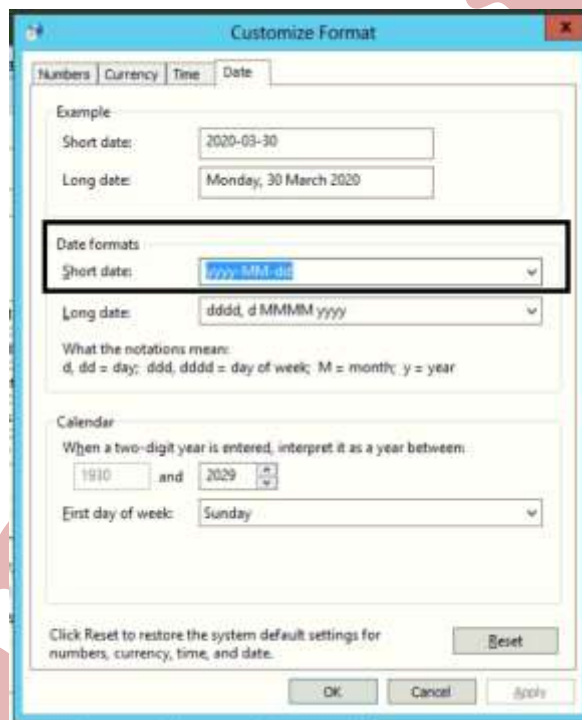
**7. Crystal Reports Error 534**

This error could appear due to a number of reasons

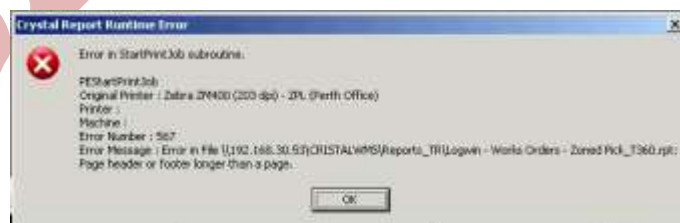
1. Due to ODBC definition – similar issue as 599
  - a. See Error 599 for solutions
  - b. Database DSN in INI file error
    - i. Ensure that the specified DSN is as defined in the Registry | Local Machine | ODBC



2. Due to data type mismatch between data source (stored procedure) and the field in template
  - a. Cause of problem is usually due to change in the data source after the template has been created.
    - i. Open template in Crystal Reports
    - ii. Run Database | Verify Database
    - iii. Review the template to ensure display fields to ensure that none is missing after the verification
      - This will occur if some of the field names have been changed.
3. Issue can also arise on workstation where its system date is set to American (and sometimes with British) date format. Error will occur when the date is 13<sup>th</sup> and later of any month.
  - a. Change the system date setting to ISO (yyyy-MM-dd) date format as below



**8. Crystal Reports Error 567**



Error arises because of system default printer setting. The report generating is likely of A4 or Letter Form while the printer is a label printer. Set the default printer to a A4 printer to resolve issue.

**9. Crystal Reports Error 599 – Error opening SQL Server**

Issue is cause by missing or misspelled ODBC registry definition. Ensure the correct spelling of registry key:

1. On 32 bits machine, this is in
  - a. HKEY\_LOCAL\_MACHINE\Software\ODBC\ODBC.INI
  - b. This must match the DATABASE\_DSN name, typically “WMS\_USER...”
2. On 64 bits machine, this is in

- a. HKEY\_LOCAL\_MACHINE\SOFTWARE\Wow6432Node\ODBC\ODBC.INI
- b. The registry key is typically named a WMS\_USER – it must match DATABASE\_DSN name defined in the INI file
- c. Sample of registry registration script:

```
Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\ODBC\ODBC.INI\WMS_USER]
"Driver"="sqlsrv32.dll"
"Server"="127.0.0.1"
```

The registry key should contain the following keys

Driver	REG_SZ	sqlsrv32.dll
Server	REG_SZ	127.0.0.1

The 'Server' is the IP address or server name of database server  
For example:

The image shows two screenshots side-by-side. The top screenshot is a Notepad window titled 'CRISTALWMS.INI - Notepad' showing the contents of the INI file. The text is as follows:  
[Database]  
ENCRYPTN=N  
DRIVER=SQL Server  
SERVER=DESKTOP-IU0Q3PD  
APPLICATION\_DB=CRISTALWMS  
DATABASE\_DSN=WMS\_USER  
The name 'WMS\_USER' is highlighted with a black box. The bottom screenshot is the Windows Registry Editor window. The left pane shows the tree structure expanded to 'Computer\HKEY\_LOCAL\_MACHINE\SOFTWARE\Wow6432Node\ODBC\ODBC.INI\WMS\_USER'. The right pane shows a list of registry values:  
Name: (Default) Type: REG\_SZ Data: (value not set)  
Name: Database Type: REG\_SZ Data: cristalwms  
Name: Driver Type: REG\_SZ Data: C:\WINDOWS\system32\SQLSRV32.dll  
Name: LastUser Type: REG\_SZ Data: warehousedbo  
Name: Server Type: REG\_SZ Data: DESKTOP-IU0Q3PD  
The 'WMS\_USER' folder name in the left pane is highlighted with a black box.

**The 2 boxed names must be identical.**

**10. Crystal Reports Error 997**

- 1. Missing DLL – sccsdk32.dll from system32 folder
- 2. Path to Reports folder wrongly specified in Registry.
- 3. Computer Name is changed after installation

**11. Runtime Error (3146) in Reverse Transactions -> Sales Orders (recorded 09 Mar 2007)**

Possible Causes

- 1. Reverse Transactions carried out too many time result in the Remarks overflow resulting in truncation error
  - a. Update with reverse\_trx\_salesorder SP dated 09 Mar 2007 and later
- 2. product\_serial\_history row\_id IDENTITY attribute set to YES
  - a. Change IDENTITY to NO and allows NULL value.

**12. SQL Server Error 08004 / 4060**

Database access denied or authentication failed

Possible Cause: misspelled database name between actual and database name in registry records.

**13. Runtime Error 3000**

When running SQL statement in VB

Possible cause – misspelled field or object names in the stored procedures, especially where SQL statement is dynamically constructed.

**14. SQL Server Error 53 / 17**



Possible Cause:

1. Firewall block – open the port required by SQL Server
  - a. Port 1433
  - b. Port 1434
2. DSN Server IP – IP address setting error
  - a. Redefine use Administrative Tools | Network Connection (ODBC)
3. Check in SQL Server Configuration Manager that the TCP/IP Protocol in Protocols for MSSQLSERVER is ENABLED



4. Check database name specified in the DSN in the registry
5. This issue can also arise in PCs that are original working.
  - a. This typically occurs after a Windows 10 Update which involved database ODBC connection security enhancement
  - b. Cause is usually due to configuration is done using Server Name instead of server IP address
  - c. Check the following and amend as required:
    - i. CRISTALwms INI file | Server
    - ii. ODBC Date Source (32 bits)
    - iii. Registry | ODBC definition | database DSN

## L.2. Frequent Asked Questions (FAQ)

Following are some questions that are frequently asked:

### L.2.1. System

#### 15. SQL Server Connection Error 10060

Ensure following service in Windows Control Panel | Administrative Tools | Services are running on the SQL database server machine:

1. SQL Server (MSSQLSERVER)
2. SQL Server Agent (MSSQLSERVER)
3. SQL Server Browser

CRISTAL WMS need the services to be active to establish connection to the database.

Detailed info is available at:

<https://support.microsoft.com/en-us/help/914277/how-to-configure-sql-server-2005-to-allow-remote-connections>

#### 16. What are the things that need to be done when implement CRISTAL WMS or setup new Client?

Below is a checklist for basic setup for new warehouse and/or clients:

Group	Task Description	Check Box
<a href="#">Warehouse</a>	1. Define Warehouse	
	2. Define Stations	
	a. Check In	
	b. Despatch	
	3. Define Zones	
	a. Storages	
	b. Pick-Pack (Overflow)	
	4. Define Locations	
	5. Define Client	
	a. <a href="#">Picks (Stock Rotation) Method</a>	
	b. Document Reference series	
	6. Define Customers	
	a. Delivery Codes	
	b. Backorder?	
	c. Full Picks (no partial shipment)?	
	d. Default Despatch Station	
<a href="#">Products</a>	7. Define Supplier (optional)	
	8. Define Product	
	a. Storage Zone	
	b. Product UOM	
	c. Billing Group (if applicable)	
<a href="#">Security</a>	d. Pickface (if applicable)	
	9. User Groups	
	a. Menu Options	
	b. Client	
	c. Works	
	i. Default Warehouse	

Group	Task Description	Check Box
	ii. Tasks Assignable	
	iii. Access Level	
	iv. Zones Access	
	d. Carrier (if applicable)	
	e. Trucker (if applicable)	
	f. Reports	
	g. Admirative Tools	
	10. User Profiles	
	a. User ID	
	i. Member of User Group	
	ii. User (license) Type	

**17. Defining Default Warehouse to user group but the warehouse is not listed in the popup list even though warehouse’s zones have been granted?**

(Added 06 Jun 2013 - DL)

Before one user (assigner) can assign (define) Default Warehouse to a user group, the assigner’s user group must have access to the warehouse he is trying to define.

The rationale is that the assigner must first have access to a warehouse before he can assign it to other user for security control reason.

We do not want user that have access to User Group to assign themselves Warehouse that they are not authorized – though it is not a perfect control.

This rule applied also to User ID that belongs to Default Admin.

**18. Reports – Excel options is not available in the Exports dialog box**

Check in the folder where CRISTAL WMS application is installed, usually C:\\CRISTALwms, and look for the file *crxf\_xls.dll*. Rename it by prefix it with ZZZ – this is to disable it – or delete it.

Restart the application and then Preview and select the Exports dialog again. The Excel option should appear.

**L.2.2. Receiving and Putaway**

**19. How to ensure that new shipment of an item that is blocked by QA for quality reason is not picked for order?**

- Set “Default Product Grade” to other than “01”
  - When the item is received, the Grade to be received as is obtained from the field and the stock received will automatically block from being picked by normal order
- If the item is to be segregated, change Storage Zone to a special zone that is assigned to hold such item

**20. The system does not allow me to confirm task after assign another location for putaway**

In putaway, a manually assigned location must be in one of the authorized storage zone as specified in the Admin->Products->Product Definition. The rationale is to ensure that operator does not putaway items into a location that contain incompatible products such placing product that requires air-conditioning in non-aircon location.

This rule does not apply in Pallet Relocation as such relocation is typically under instruction from supervisor or manager.

**21. Pallet-items are checked in but it does not get assigned to any operator even though they are available for work**

There are a number of reasons, sometimes combination of them, which can cause this situation

- Check Admin->Product->Product Definition that the product has been assigned Storage Zone(s)
  - Check the Bonded checkbox – it should not be flagged if it is not a bonded product and/or when there is no bonded Zone in the warehouse
- Check Admin->Location Maintenance that locations have been assigned to the Zones



- Specify the Warehouse and the Zone and click Get
- Location assigned to the Zone will be listed
- Check Inquiry->Location that there is Unused or Empty location in the Zone(s)
  - Check that packing size and weight defined for the PALLET of the item does exceed the size of the available locations
- Check the operator setup to make sure that can be the operators available can receive putaway tasks.

**22. There is no Warehouse in the Receipt header.**

The Warehouse in the receipt header is loaded from the zoning of client product. The storage zones of the client products must be defined first before receipt can be entered for a client.

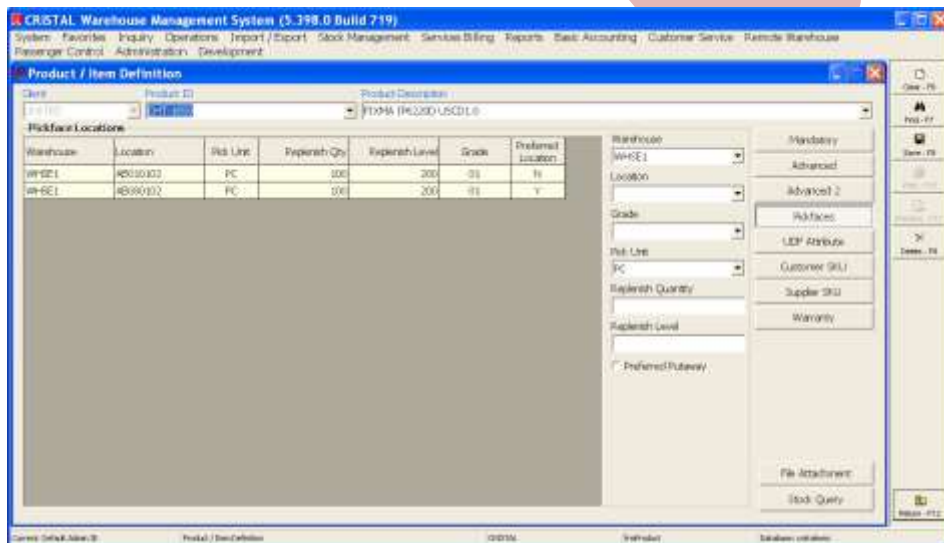
**23. There is more than one warehouse in the Warehouse drop down but user cannot select other than the displayed.**

The user does not have access to the other warehouses.  
To enable user to select the other warehouse, the user must be granted access under the User Group.

**24. How can SKU be putaway to a fixed location on receipt?**

(Release 5.398 Build 718)

To have an item be putaway to a fixed location, CRiSTAL WMS can be configured by defining a Pickface in the Product Definition | Pickfaces and have the Preferred Putaway (Location) checked.



Although it is possible to define multiple pickfaces, only 1 Preferred Putaway (Location) can be specified for each item.

Note that while the definition of pickfaces quantity to be specified for Replenish Qty and Level, these data are not used by fixed Preferred Location. The onus is on the users to define a location that can accommodate the potential maximum stock that the warehouse is likely to have.

However, operators can override the assigned (fixed) location if it is already full by simply scan the location that he chooses.

**L.2.3. Sales Orders**

**25. Full Picks Only and Back Order Controls**

Full Pick Only and Back Orders flags in Sales Orders Entry enable users to determine how a sales order is to be processed when released by the warehouse operations for picking.

When sales orders are flagged for Full Pick Only, the program will first determine whether there are adequate available stocks (in pick-able zones – after deducting stock that are allocated or reversed for other sales orders) to fulfil the sales order requirement. If there are inadequately stock to picks all requirement, the release for picking will be blocked.

In the case of Back Order flagged sales orders, when released, the program will allocate available stock and generate pick tasks accordingly. For requirement that are not fulfilled, the program will put them into back order when the order is 'confirm' picked and despatched (generate Delivery Order). The sales order will then be flagged as BACKORDER.

If the parameter 'Sales Orders: Auto Release Back Order on Receipt' in Client Profiles | UDF | Miscellaneous us set to 'Y', the Back Ordered sales orders will automatically be processed for picking.  
By the way, sales orders that are due for picking can similarly be processed if the flag 'Sales Orders: Auto Release Due on Receipt' is set to 'Y'

Setting up default Full Picks Only and Back Order flags:

The Full Picks Only and Back Order flags in a new sales order are defaulted from the Customer Profiles | Configuration.

The flags in the Customers Profiles are in turn default from the Client Profiles | Configuration.

The approach is to facilitate setting up of new customers. They can be un-flagged if it is not required at the customer level.

CRISTAL

**L.2.4. Picking and Despatch**

**26. How can the system facilitate use of Pickfaces without having to assign one to each product ID?**

CRISTAL WMS support what we call dynamic pickfaces – namely no pickface need to be defined for each product ID.

The report is to facilitate warehouses by identifying the fast moving products which are then transferred to pickface location – without having to assign them – before releasing sales orders for picking.

CRISTAL Solutions Pte Ltd								
Recommended Pickface Stocking Report as at 17 Apr 2006								17 Apr 2006
with available reserve stock								
Client: UNITED								
S/No	Item_no	Description					Pickface Balance	Number of Picks
1	PRDD001	PRDD001					80.00	4
	Warehouse	Location	Grade	UOM	Qty Available	Lot Number	Batch Number	Receipt Date
	WHSE1	AA010101	01	CTN	100.00			08 Apr 2006
	WHSE1	AA010102	01	CTN	95.00			08 Apr 2006
	WHSE1	AA010201	01	CTN	100.00			08 Apr 2006
	WHSE1	AA010202	01	CTN	24.00			08 Apr 2006
	WHSE1	AA010501	01	CTN	100.00			09 Apr 2006
	WHSE1	AA010502	01	CTN	70.00			09 Apr 2006
	WHSE1	3A040302	01	CTN	32.00			13 Apr 2006
	WHSE1	A0070501	01	CTN	2.00			13 Apr 2006
2	AI-11791	AI-11791					0.00	3
	Warehouse	Location	Grade	UOM	Qty Available	Lot Number	Batch Number	Receipt Date
	WHSE1	3A010402	01	CTN	20.00			13 Apr 2006
	WHSE1	AB100402	01	CTN	30.00			13 Apr 2006
	WHSE1	AA030102	01	CTN	5.00			13 Apr 2006
	WHSE1	AA030401	01	CTN	16.00			13 Apr 2006
	WHSE1	3A010401	01	CTN	6.00			13 Apr 2006
	WHSE1	3A040302	01	CTN	5.00			13 Apr 2006
	WHSE1	A0070501	01	CTN	6.00			13 Apr 2006
3	LHE-5173	5173 He Loves Me He Loves Me No					0.00	3
	Warehouse	Location	Grade	UOM	Qty Available	Lot Number	Batch Number	Receipt Date
	WHSE1	AA010301	01	PC	400.00			08 Apr 2006
	WHSE1	AA010401	01	PC	497.00			08 Apr 2006
	WHSE1	AA010402	01	PC	500.00			08 Apr 2006
4	PRDD002	PRDD002					0.00	2
	Warehouse	Location	Grade	UOM	Qty Available	Lot Number	Batch Number	Receipt Date
	WHSE1	AA010302	01	PC	300.00			08 Apr 2006

CRISTAL WMS demo  
E:\Development\Reports\Pickface Stocking Recommendation.rpt

Page 1 of 1

**27. How to handle Return to Supplier?**

Return to Supplier is effectively taking stock out of the system. A Sales Order is thus raised to generate a pick-order to pick the item from the warehouse. However, to ensure that the right stock/pallet is being picked ensures that the Grade of the stock is set to a specially assigned Grade for the purposes and that the Grade of the item in the Sales Order is specified accordingly.

**28. "There is stock in the warehouse but the system is not generating pick order" – what is the problem?**

Check to ensure the conditions specified in the Sales Order have matching stock in the WMS.

This could be caused by a number of factors:

- Ownership difference
- Grade difference
- Product Blocked at Product Definition level
- Others such Lot, Batch, Production Date... specified in the Sales Order but not available
- Status of pallet-item are in status other than 'AVAIL'

**29. "When I enter the Despatch, the warehouse and the client is displayed. But when I tab and the cursor jump of the warehouse combo box, the client combo box is cleared. I am unable to retrieve any client code."**

Check the Warehouse-Zone setup. When the Despatch loads the grid box, it looks for pallets to be dispatched in the selected warehouse via the warehouse-zone-despatch link as defined in the Zone. And pallets are located in the dispatch grids.

**30. Although there is stock in the warehouse (query via the Inquiry->Inventory), the system doesn't seem to be able to allocate the stock for picking. Everything else seems to be in order.**

Is the location that the stock is in a Pickface or a Holding Location? Stock in a Holding location will not be assigned for picking. It must be transferred to Reserve locations or the pickface of the item.

If the location the stock is in a Pickface, checks that the pickface have been assigned to the item. Stock of an item in a pickface other than being specified will not be assigned for picking.

**31. What are the Despatch Labels available and where is it defined?**

1. Despatch label can be printed at
  - a. Sales Order Entry / Warehouse Tasks (5.398 Build 718)
    - i. The template to be used is specified in Client Profiles | UDF | Report | Template - Picks Pallet Label
  - b. Delivery Orders
    - i. The template to be used is specified in Reports Menu Maintenance | System | SYSRPT - DESPATCH LABEL
2. The templates that are available as standard
  - a. LabelDespatchStd.rpt
    - i. Data schema - rpt\_despatch\_label2
    - ii. This label is printable after Picking
      - This is not suitable for printing at Warehouse Tasks
  - b. LabelDespatchPallet.rpt
    - i. Data schema - rpt\_despatch\_label2
    - ii. This label is printable after picking
      - This is not suitable for printing at Warehouse Tasks



- c. Label - SO Despatch.rpt
  - i. Data schema – rpt\_sales\_order3
  - ii. This label is printable from Sales Order Entry and Warehouse Tasks – after picks tasks generation



- d. Pallet Label -Picks.rpt
  - i. Data schema – rpt\_sales\_order3
  - ii. This label is printable from Sales Order Entry and Warehouse Tasks – after picks tasks generation



- 3. For customised template
  - a. Procedure to use – rpt\_despatch\_label2
    - i. Parameters required:
      - Client
      - Sales Order
      - Load Summary (in Delivery Orders only)
    - ii. Labels created with this procedure is printable after Picks confirmation

CRISTAL

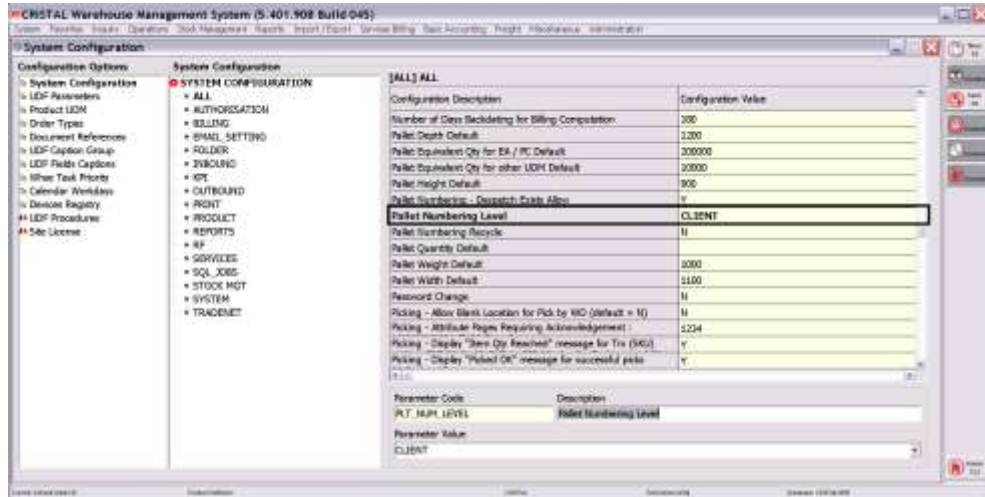
**L.2.5. Miscellaneous**

**32. How the length of pallet number is be controlled?**

The maximum length of the pallet number is 18. This is in conforming to the EAN / ISO SSCC (Serial Shipping Container Code) convention.

Please note that the generated pallet number is not compliant with EAN / ISO. CRISTAL WMS is however able to handle the SSCC label.

To meet various operational requirements, the length of the pallet number can be defined and configured in System Configuration | Pallet Numbering Level to be controlled at



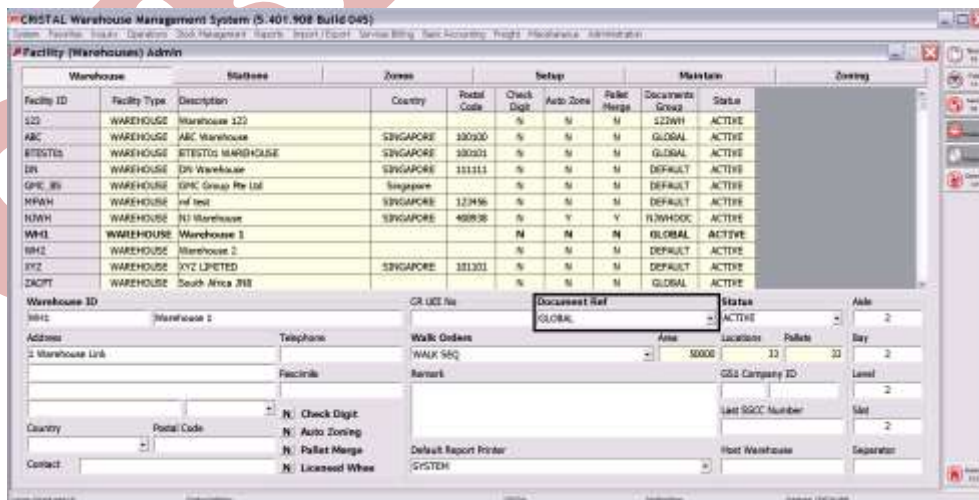
The options are:

1. WAREHOUSE
2. (Document) GROUP
3. CLIENT

If not specified, the default option is CLIENT.

The required option is set up as follows:

1. **WAREHOUSE**
  - a. To define Pallet Number to use WAREHOUSE, set System Configuration | Pallet Numbering Level as WAREHOUSE



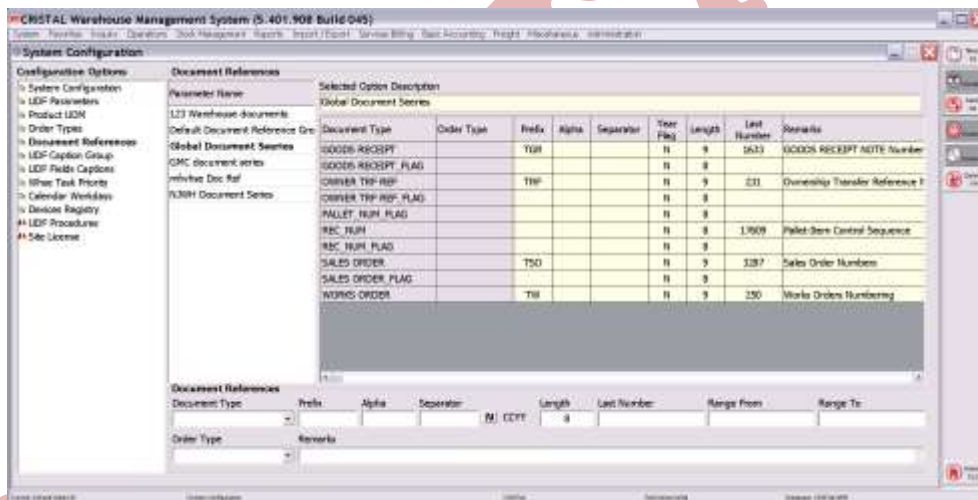
- b. At Warehouse level, the pallet numbering is controlled also by the Document References sequence as above. However, the effective Sequence Group is as specified in Warehouse
- c. The effective warehouse that the number is generated from is based on the Warehouse that the client stocks are being stocked.
- d. Under Client Profiles | Setup | Document Series, select the option '<WAREHOUSE>'



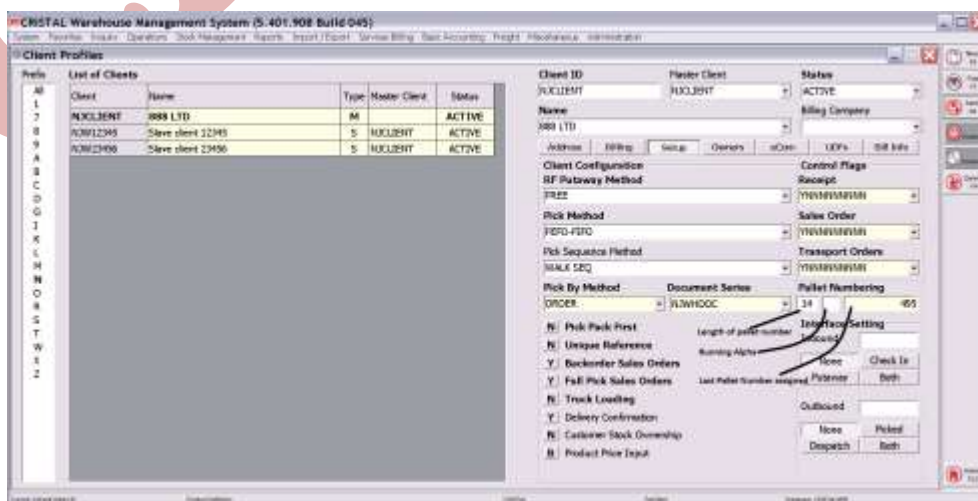


**2. Document Sequence GROUP**

- a. To define Pallet Number to use Group, set System Configuration | Pallet Numbering Level as 'GROUP'
- b. Basing on the Document Reference Sequence Group as defined in Client Profile
- c. The length is as specified in Length in System Configuration | Document References as below
  - i. The Length is the number of numeric digits (this differ form earlier version which included the Prefix and Alpha).



**3. CLIENT**



- a. To define Pallet Number to use CLIENT, set System Configuration | Pallet Numbering Level to 'CLIENT'
- b. At client level, the pallet number is generated based on the Pallet Sequence in the Client Profile.
- c. The control is modified in Release 5.396.2
- d. The Prefix of the pallet number Country Code concatenated with the EAN number, if they are defined, or the client code
- e. The length of the pallet number is based:
- f. The Length specified in the Pallet Sequence first box (which is showing 14 – Max allowed is 18)
- g. The length specified must be greater than the number of characters of Client Code PLUS 6 – otherwise the number of characters of Client Code PLUS 6 applied
- h. The Pallet Sequence second box is a running Alpha which auto increment to the next alpha when the last number exceed its current numbering
- i. The last number is based on the individual client Pallet Sequence last box

### **33. How to re-print a work order if forget to print?**

Trace the Work Order Number by querying via the Inquiry by Item, Location, and Pallet – whichever information is available.

Use Pick Order or Putaway Order Reprint:  
Enter the work Order Number and click OK.

### **34. Putaway, Picking... is created but is not assigned to any operators.**

Check the Admin->Security->Operator Setup. Some of the probable causes are

1. None of the operators have access to BOTH the Source and Destination Zones
  - a. Check the Zone which the location of the belong to using Admin->location
  - b. Check Admin->Security->Operator Setup and make sure that the operator that is set up to be assigned the task have the Zone assigned.
2. None have the operators have been assigned the Movement
3. All the operators "Max Tasks" is not specified

### **35. How can Stock Ownership be activated for existing products that do not have ownership control originally?**

At Admin->Products->Product Definition, check the Ownership flag  
Identify all the pallets that is holding the item(s) using Inquiry->Inventory  
Use Manage->Item Re-labelling and set the ownership of the stock for each pallet-item  
All new shipment will automatically be required to specify owner during receiving.

### **36. Unable to change expired users password**

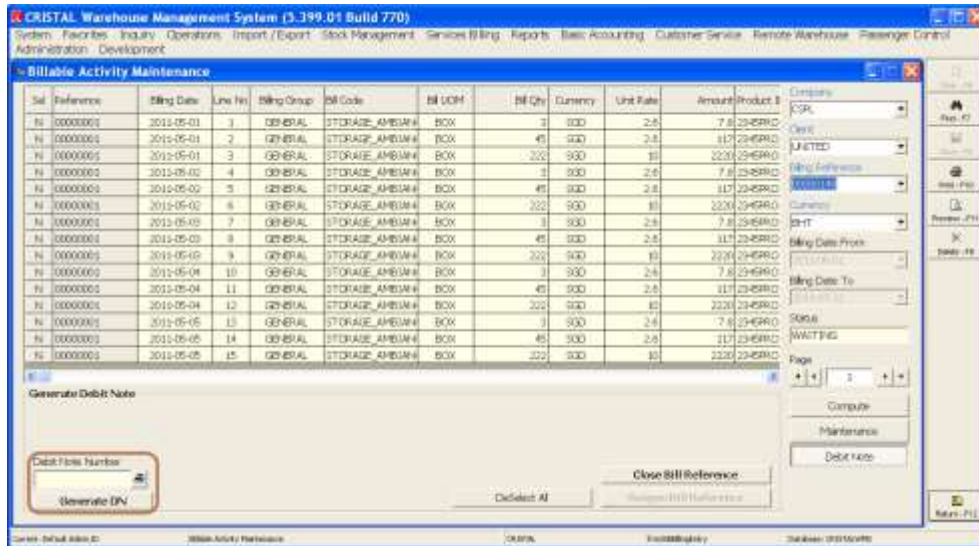
Password of users can only be change by the users themselves or by other users who have higher access level rights.

Users, even though they are granted access to User Profiles, cannot change the password of another user that has the same access level.

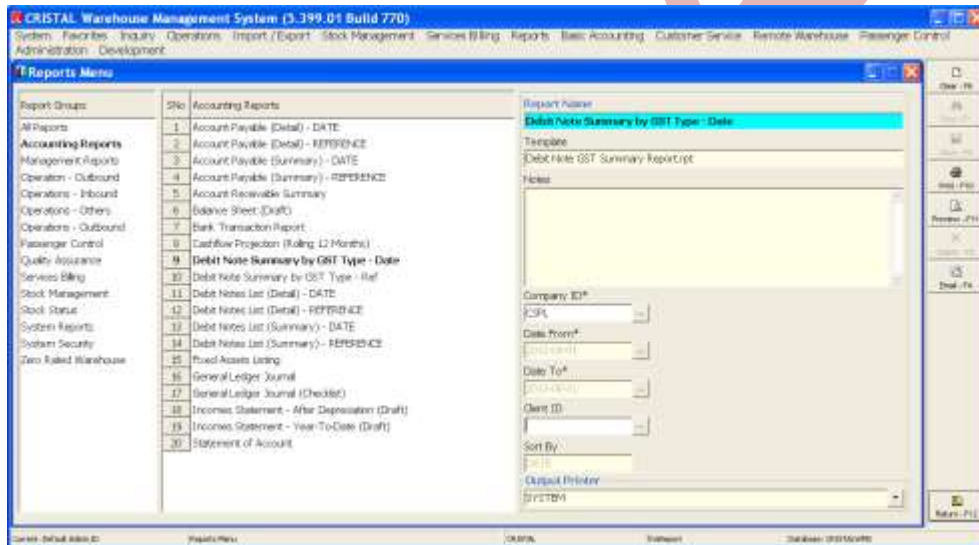
### **37. How to print summary report of monthly billable report?**

This is achievable with the latest 5.398 build 741 (and later):

1. Generate service as normal
  - a. Post billing as debit note (Generate DN)
    - i. This basically capture the billing in summary in the debit note table and close the billing
    - ii. Not necessary to print and post debit note
    - iii. Date of Generate DN would be the billing date (which is the reporting date range)



2. Print Debit Note List (Summary) – Date
  - a. The Date From / Date To are based on the debit note date – the date of Generate (Create)
    - i. Clear Client ID field if all clients is required.



- ii. Sample Report

CRISTAL Solutions Pte Ltd								
Debit Note Summary by GST Type from 2009-04-01 To 2013-04-08								
Accounting Entity : CSPL								
Debit Note	Company Code	DN Date	Min Amount	Total Charges	GST Charges	Standard	Zero	Out of Scope
00000028	UNITED	2010-11-16		325.280	21.28	233.00	0.00	0.00
00000029	UNITED	2010-11-24		1,217,517.400	0.00	0.00	0.00	0.00
00000030	UNITED	2010-11-24		306.800	16.80	240.00	0.00	0.00
00000031	UNITED	2010-12-02		1,509.420	98.75	1,764.01	0.00	0.00
00000032	UNITED	2010-12-06		1,509.420	98.75	1,764.01	0.00	0.00
00000033	UNITED	2011-04-27		355.000	0.00	0.00	0.00	0.00
00000034	UNITED	2011-06-08		1,070.850	70.05	1,575.20	0.00	0.00
00000035	UNITED	2011-07-17		306.800	16.80	0.00	0.00	0.00
00000036	UNITED	2011-07-21		313,505.970	3,453.80	49,612.90	0.00	0.00
				<b>1,536,406.94</b>	<b>3,776.23</b>	<b>55,188.72</b>	<b>0.00</b>	<b>0.00</b>

**38. What happen to the stock in the warehouse when the locations are re-zoned?**

Existing stock will not be affected. They will continue to be assigned for picking when new sales orders are being processed.

Issue would possibly arise if the products that are assigned to the original zone name – if all the locations in the zone are being re-zoned. New receipt will not be putaway as system would not be able to find locations for putaway.

Products affected by the re-zoning must be assigned new stock zones.

**39. Newer stocks are allocated over older stock when the Pick Method is set to FEFO-FIFO and there is no expiry date control. Neither is any stock attributes being specified in the sales details.**

Check the zoning of the locations.

CRISTAL WMS is enabled for dynamic pickfaces operations where there is no requirement assign static pickface for every product ID.

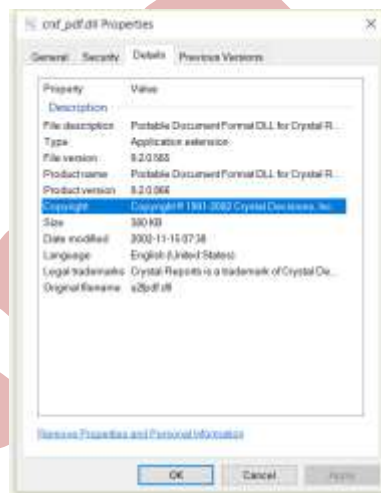
Stock stored in locations that are zoned as PICKFACE are being allocated prior to stock in STORAGE locations, disregarding the receipt date / expiry date.

Solution:

1. Rezone all locations under STOREGE zones if pickfaces operations are not required.
2. Ensure that stock are not placed into PICKFACE zone
  - a. Enable Strict Zoning in Client Profiles | UDF | Miscellaneous

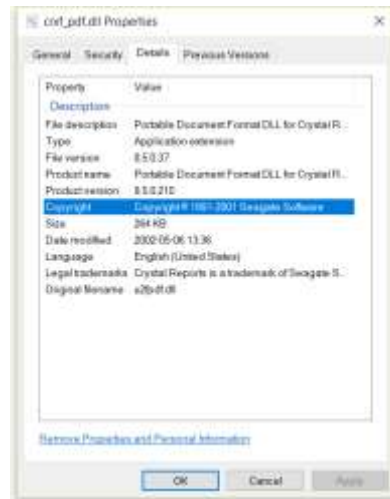
**40. Exporting to PDF from Crystal Reports not working**

The function is controlled by one of Crystal Reports library crxf\_pdf.dll



Check that the file exist In the CRISTALwms file and right click on it to verify that its version is 9.2 dated 2002-11-15 as above.

There is an earlier version which is 8.5.0.37 dated 2002-05-06 which is the cause of the issue



Replace the 8.5 version with the version 9.2 to resolve the problem

CRISTAL

**Appendix M. System Configuration Setting (user-configurable)**

Description	Configuration Code	Value	Grouping	Value Type	Comments
1. Aisle Deletion	AISLE DELETION	N	AUTHORISATION	BOOLEAN	<i>If Y, user will be prompted for authorisation</i>
2. Alert Preview before Printing	ALERT PREVIEW	N	PRINT	BOOLEAN	
3. Allow multi SKU to be defined for each pick face	PICKFACE_MULTI_SKU	N	SYSTEM	BOOLEAN	
4. Auto Generate PO Days Interval	AUTOGEN PO DAYS	1	PURCHASE ORDER	NUMERIC	
5. Auto Generate PO Last Generated Date	AUTOGEN PO LAST	01 Jan 2004	PURCHASE ORDER	FREE	
6. Auto Grade Change for Expiry Dated Stock	EXPIRY_CONTROL	Y	STOCK MGT	BOOLEAN	<i>A SQL Server job must be scheduled to run the stored procedure update_expiry_stock</i>
7. Auto print GRN upon Receipt putaway	RF_PUTAWAY_GRN_REPORT	N	RF	BOOLEAN	<i>Require CRISTAL PQ Server to be running (at all time)</i>
8. Auto Print Sales Order on Release	AUTOPRINT SO	N	PRINT	BOOLEAN	
9. Auto Print Works Orders On Assigned	AUTOPRINT WO	Y	PRINT	BOOLEAN	
10. Auto Release Back Order on Receipt	BO_AUTORELEASE	Y	SALESORDER	FREE	
11. Auto Release Due Sales Order on Receipt	SO_DUE_AUTORELEASE	N	SALESORDER	BOOLEAN	<i>Backordered and Delivery Date due</i>
12. Auto Release QA quarantine stock	QUARANTINE_AUTO_REL	Y	STOCK MGT	BOOLEAN	
13. Auto Return Single Record Help	AUTO_UPLOAD_ENABLED	N	SYSTEM	BOOLEAN	
14. Auto Return Single Record Help	AUTORTN_1ROW	N	SYSTEM	BOOLEAN	<i>Auto populate field when there is only 1 record</i>
15. Auto Update Session Status	AUTO_UPLOAD_SESSION_STATUS	N	SYSTEM	BOOLEAN	
16. Bonded Grade Prefix	BONDED PREFIX	B	PRODUCT	FREE	<i>Bonded Grade Identifier. Stock Grade flagged as such can only be putaway to Bonded Zone</i>
17. Check Inventory During Sales Order Entry	SO INVENTORY	Y	SALESORDER	BOOLEAN	
18. Clear Despatch Grid Stock ON Despatch	CLEAR DESPATCHED	Y	DESPATCH	BOOLEAN	<i>If Y, mean no delivery confirmation required. This is not the direct control on the system. It is the default value for the Delivery Confirmation in the Client Master maintenance</i>



Description	Configuration Code	Value	Grouping	Value Type	Comments
19. Clear Item and Attributes on Next Item	RcptCLEAR4ITEM	N	RECEIPT	BOOLEAN	Used in Receipt Check In detail – clear the item code field if flagged as Y after 'SAVE'
20. Clear Item field on Next Item	CLEAR4ITEM	N	SALESORDER	BOOLEAN	receipt and sales order entry
21. Clear Logs	CLEAR LOGS	N	AUTHORISATION	BOOLEAN	Audit Trail Logs
22. Color Coding – Status / Date	COLOR_CODING	N	SALESORDER	BOOLEAN	Using in Queries
23. Customs Lot as Permit Number	CUSTOM_LOT_AS_PERMIT_NO	Y	SYSTEM	BOOLEAN	If set to Y, control on entry requirement is disabled and will be always available for user input – in Receipt CheckIn and Sales Order Entry
24. Cycle Count Period	CYCLE_COUNT_PERIOD	245	SYSTEM	NUMERIC	Number of Working Days for a Count Cycle
25. Cycle Count Real-time Stock Update	CYCLE_COUNT_REALTIME_UPDATE	N	SYSTEM	BOOLEAN	Update stock status on Stock Count update
26. Data Analytics					
27. Data Display Format – CURRENCY	CURRENCY FORMAT	#,##0.#0	DATA FORMAT	FREE	
28. Data Display Format – NUMERIC	NUMERIC FORMAT	#,##0.##0	DATA FORMAT	FREE	
29. Data Display Format - VOLUME	VOLUME FORMAT	#,##0.#####0	DATA FORMAT	FREE	
30. Data Retention - Billing Data (days)	LOGDAYS_BILLING	365	SYSTEM	INTEGER	Number of days Billing Data is to be retained
31. Data Retention - Interface Upload Data (days)	LOGDAYS_INTERFACE	90	SYSTEM	INTEGER	Number of days Interface Upload Data to be retained
32. Data Retention - Logs Retention (days)	LOGDAYS	30	SYSTEM	INTEGER	Number of Days WMS Logs is to be maintained – used by system_clear_log stored procedure – which is to be set up as a job in database
33. Data Retention - Pallet History Debug (Days)	LOGDAYS_DEBUG	365	SYSTEM	INTEGER	
34. Data Retention – Picks Logs Data (days)	LOGDAYS_PICKS	90	SYSTEM	INTEGER	Number of days Picks LogsData to be retained
35. Data Retention – Stock Counts Data Retention (Days)	LOGDAY_STOCKCOUNT	365	SYSTEM	INTEGER	Number of days Stock Count Data is to be retained
36. DateTime Format – Transaction	DATE FORMAT – TRX	YYYY-MM-DD HH:MM	SYSTEM	FREE	Used by Transaction Queries
37. Days Prior Delivery Date – Pick Task Creation	PICK DAY	2	SALESORDER	NUMERIC	number of days before the delivery is due to effect picking – system trigger

Description	Configuration Code	Value	Grouping	Value Type	Comments
38. Default Base UOM	PALLET UOM	PC	PRODUCT	FREE	<i>in creation of new product in Product Definition</i>
39. Default Customer AS Stock Owner	CUSTOMER_OWNER	Y	SYSTEM	BOOLEAN	<i>Used in Receipt to ease user data entry</i>
40. Default Location Assign Option 41. (Released 5.398 Build 686)	DEFAULT_LOCATION_ASSIGN	SYSTEM	SYSTEM	Text	<i>Options – MANUAL (user assign location for putaway) or SYSTEM (system allocate location for putaway). When MANUAL, receipts are updated into pallet location on check in SYSTEM will generate putaway tasks into stock movements.</i>
42. Default Pallet Depth	PALLET DEPTH	1165	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
43. Default Pallet Equivalent Qty for EA / PC	PALLET_EA_PC_QTY	200000	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
44. Default Pallet Equivalent Qty for other UOM	PALLET_ETC_QTY	10000	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
45. Default Pallet Height	PALLET HEIGHT	1500	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
46. Default Pallet Quantity	PALLET QTY		PRODUCT	FREE	<i>in creation of new product in Product Definition</i>
47. Default Pallet Weight	PALLET WEIGHT	1000	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
48. Default Pallet Width	PALLET WIDTH	1165	PRODUCT	NUMERIC	<i>in creation of new product in Product Definition</i>
49. Default Product Pallet Configuration	DEFAULT PALLET	Y	PRODUCT	BOOLEAN	<i>default dimension and weight in item code creation</i>
50. Default Product Status	DF PRODUCT STATUS	ACTIVE	PRODUCT	TEXT	
51. Default Purchase order Type	DEFAULT POTYPE	ADHOC	SYSTEM	TEXT	
52. Default Receipt Bonded Grade	BONDED RCPTGRADE	BO1	PRODUCT	TEXT	
53. Default Receipt Grade	DEFAULT RCPTGRADE	01	PRODUCT	TEXT	
54. Default Receipt Type	DEFAULT RCPTTYPE	NORMAL	SYSTEM	TEXT	
55. Default Sales Order Grade	DEFAULT SOGRADE	01	PRODUCT	TEXT	<i>System level default configuration for Sales Order – added in Build 829</i>
56. Default Sales Order Type	DEFAULT SOTYPE	ADHOC	SYSTEM	TEXT	<i>System level default configuration for Sales Order</i>
57. Default Web Browser	WEB_BROWSER		SYSTEM	FREE	<i>The web browser to use when opening help file. If not specified, it is default to "C:\Program Files\Internet Explorer\iexplore.exe".</i>
58. Disable Advance Sales Order Entry	NO ADVANCE SO	N	SALESORDER	BOOLEAN	

Description	Configuration Code	Value	Grouping	Value Type	Comments
59. Disable Authoriser Requirement	AUTHORISER	Y	AUTHORISATION	BOOLEAN	
60. Display Stock Status during sales order entry	SHOW STOCK STATUS	N	SYSTEM	BOOLEAN	
61. Display Welcome Message on Login	WELCOME MESSAGE	N	SYSTEM	BOOLEAN	
62. Download Missing Reports Templates from URL [Default = N]	DOWNLOAD_RPT_TEMPLATE	Y / N	SYSTEM	BOOLEN	If Y, auto download reports templates from URL <a href="http://www.cristalsolutions.com/support/CRISTALreports">http://www.cristalsolutions.com/support/CRISTALreports</a> PCs must be enabled to access the URL and write permission to the Reports folder
63. Email – Sender Email Address	EMAIL_SENDER_EMAILADDRESS	<a href="mailto:user@company.com">user@company.com</a>	EMAIL_SETTING	FREE	Email – auto emailing controls
64. Email – Sender Name	EMAIL_SENDER_NAME	Sender Name	EMAIL_SETTING	FREE	Email – auto emailing controls
65. Email – Smtplib Server	EMAIL_SMTP_SERVER		EMAIL_SETTING	FREE	Email – auto emailing controls
66. Email – Smtplib Server Debug	EMAIL_SMTP_SERVER_DEBUG	DEBUG	EMAIL_SETTING	FREE	Email – auto emailing controls
67. Email – Smtplib Server Port	EMAIL_SMTP_PORT	25	EMAIL_SETTING	NUMERIC	Email – auto emailing controls
68. Email Send Protocol – MAPI   SMTP	EMAIL_METHOD	SMTP	EMAIL_SETTING	FREE	Email – auto emailing controls
69. Enable Backdate of Sales Order Delivery Date  <i>Updated 01 Oct 2016</i>	BACKDATE DELIVERY	Y	SALESORDER	BOOLEAN	Delivery Date is not allowed to be backdated earlier than: 1. New order – oldest stock receipt date 2. Picking / Picked Order – ‘newest’ receipt date of allocated stock
70. Enable Manual Putaway During Receipt	DIRECT PUTAWAY	Y	RECEIPT	BOOLEAN	
71. Enable Pick By SO Option on RF	RF_PICKING_BY_SO	N	RF	BOOLEAN	
72. Enable Receipt Date Change Authorisation	RCVDDATECHANGE	N	RECEIPT	BOOLEAN	
73. Enable Text To Speech	TEXT2SPEECH	N	SYSTEM	BOOLEAN	When Y, the computer will generate the in speech the selected menu option
74. Enable/Disable User	USER ENABLE	N	AUTHORISATION	BOOLEAN	requirement of authorizer
75. Enforce Strict Client Storage Zoning	STRICT_CLIENT_ZONE	N	RECEIPT	BOOLEAN	When Y, putaway only to authorised zones a specified in Product Definition – Assigned Storage Zone
76. Enforce Strict Password Reign	STRICT PASSWORD	N	AUTHORISATION	BOOLEAN	

Description	Configuration Code	Value	Grouping	Value Type	Comments
77. Enhanced Password Security	Enhanced Password Security	Y/N	SYSTEM	BOOLEAN	Enhance User Password Security – enable user configurable case sensitive password. This must be decided at implementation. If done after live, all password must be updated after enabling. User who changes setting must update his password before he exit. This is to ensure at least 1 user can subsequently login to reset others' password. Default = 'N'
78. Excel Worksheet - Title row backgroupd color (RGB)	EXCELWSTITLECOLOR	Example: 255, 255, 0	SYSTEM	FREE	<i>The string specified must be in number with comma as separator in format required by RGB() color function</i>
79. Expand Treeview Menu to 2 <sup>nd</sup> Level	MENU2NDLVLEXPAND	N	SYSTEM	BOOLEAN	
80. Field Length of Product Code (Max. 30)	PRODUCT CFG	30	PRODUCT	NUMERIC	<i>Maximum allowed = 30</i>
81. Generate pallet label from Check In	RF_CHECKIN_PALLET_LABEL	Y	RF	BOOLEAN	<i>Require CRISTAL PQ Server to be running (at all time)</i>
82. Help – Online URL	HELP_ONLINE		SYSTEM	FREE	<i>The value by default is set to 'http://www.cristalsolutions.com.sg/Support/help' This is used as the default if the specified help file is not found in the specified Help Path.</i>
83. Indicates if Picked Pallet No must be specified	RF_PICKING_PALLET_NO	N	RF	BOOLEAN	
84. Indicates if Products have barcodes	RF_PICKING_ITEM_BARCODE	N	RF	BOOLEAN	
85. Individualised Pick Task Numbering	UNIPICKTASKNO	Y	SALESORDER	BOOLEAN	<i>Warehouse Tasks – number each pick as 1 task instead of grouping by locations</i>
86. Interface file (Export) Unicode Enabled	INTERFACE_FILE_EXPORT_UNICODE	N	SYSTEM	BOOLEAN	<i>This enable/disable the interface file export to accept Unicode characters from database field. <b>Users must close and restart application.</b> (Build 696)</i>
87. Interface Message – Delete older than number of days	INTERFACE_MSG_ARCHIVE_DAYS	1	SYSTEM	NUMERIC	
88. Key Fields Max Length	KEY FIELD	9	SYSTEM	FREE	<i>number of characters (maximum – 20)</i>
89. KPI – Whse Usage Archived Data	KPIWHSEUSAGEARCHIVED	100	KPI	NUMERIC	<i>number days to archive</i>
90. Last Email Alert	REALTIME_ORDER_EMAILALERT	1	SYSTEM	FREE	

Description	Configuration Code	Value	Grouping	Value Type	Comments
91. List Sales Order with Data Entry status	MSO DATA	N	MSO	BOOLEAN	Manage Sales Order Query setting
92. List Sales order with Waiting and Backorder status	MSO WAITING	Y	MSO	BOOLEAN	Manage Sales Order Query setting
93. List Sales Orders with Picking and Picked status	MSO PICK	N	MSO	BOOLEAN	Manage Sales Order Query setting
94. Location Address as Pallet #	LOCATIONPALLET	Y	RECEIPT	BOOLEAN	User Location Address as Pallet Number
95. Location Address Components Separator	LOC_SEPARATOR		SYSTEM	FREE	Location Address configuration
96. Location Aisle – Number of Digit	LOC_AISLE_DIGIT	2	SYSTEM	NUMERIC	Location Address configuration
97. Location Bay – Number of Digit	LOC_BAY_DIGIT	2	SYSTEM	NUMERIC	Location Address configuration
98. Location Level – Number of Digit	LOC_LEVEL_DIGIT	2	SYSTEM	NUMERIC	Location Address configuration
99. Location Slot – Number of Digit	LOC_SLOT_DIGIT	2	SYSTEM	NUMERIC	Location Address configuration
100. Logout after minutes inactive	MINUTE INACTIVE	480	SYSTEM	NUMERIC	quit after the number of minutes program is inactive
101. Mandatory Adhoc Logistics Services Entry	DELIVERY LOGSERVICE	N	SYSTEM	BOOLEAN	
102. Mandatory Document Reference Entry	MANDATORY SO DOCREF	N	SALESORDER	BOOLEAN	Used by Sales Order Entry
103. Manual Replenishment – Percent of Filled	REPLENISH PERCENT	0	SYSTEM	NUMERIC	Used in Manual Trigger Replenishment of Pickfaces – the minimum filled percentage
104. Minimum Characters for Password	PASSWORD LENGTH	3	AUTHORISATION	NUMERIC	
105. Month Document Series – Debit / Credit Note	MTH_SERIES	N	System	BOLLEAN	Control whether to have a new series of document for each month. Require Prefix YYYY to be set to 'Y' at the same time.
106. No of working decimal places during amount computation	DECIMAL_COMPUTE_CURRENCY	3	SYSTEM	NUMERIC	Used by Service Billing Computation
107. No VA-Service Confirmation Code String	NO ADHOC SERVICE		SYSTEM	FREE	user defined string that required user to input there is no VA services
108. Number of Days Backdating for Billing Computation	DAYS_BACKDATING	180	BILLING	NUMERIC	Used by Service Billing Computation
109. Pallet – Standard Width	PALLET_WIDTH_STANDARD	1200	SYSTEM	NUMERIC	

Description	Configuration Code	Value	Grouping	Value Type	Comments
110. Pallet Numbering Level	PLT_NUM_LEVEL	CLIENT	SYSTEM	TEXT	The level at which the pallet ID series is controlled Available options: CLIENT, GROUP, WAREHOUSE
111. Pallet Numbering Recycle	PLT_ID_RECYCLE	N	SYSTEM	BOOLEAN	If Y, allow pallet ID to be reused once the pallet ID have be 'despatched' – no longer in stock movements, pallet location, receipt detail (WAITING) and delivery detail (WAITING) If N, also check on movements history
112. PALLET_HISTORY {receipt_date} Source	RF_CHECKIN_RECEIPT_DATE_SOURCE	ACTUAL	RF	FREE	
113. Password Change	PASSWORD RESET	N	AUTHORISATION	BOOLEAN	requirement of authorizer
114. Picking location scan confirmation required	RF_PICKING_LOC_CONFIRMATION	Y	RF	BOOLEAN	
115. Prefix YYMM - Credit Note (Y/N)	YYMM_PREFIX_CN	N	SYSTEM	BOOLEN	Control whether to prefix Credit Note with YYMM
116. PQ Server  Deployed in 5.401.908.035 (Nov 2018)	PQSERVER_DESLTOP	N	PRINT	BOOLEAN	Set to N if PQServer window server is enabled to print auto print documents/reports. Set to Y if print auto print documents/reports to be printed by station – meant for low level automation requirement.
117. Prefix YYMM - Debit Note (Y/N)	YYMM_PREFIX_DN	N	SYSTEM	BOOLEN	Control whether to prefix Debit Note with YYMM
118. Preview before Printing	PRINTPREVIEW	N	PRINT	BOOLEAN	
119. Print Checklist on Creation	prtCHECKLIST	Y	RECEIPT	BOOLEAN	
120. Print Good Received Note on CheckIn	prtGRN	Y	RECEIPT	BOOLEAN	
121. Print Good Received Note on Putaway via Print Queue	prtGRN_PQ	N	RECEIPT	BOOLEAN	
122. Print Queue Interval	PQ INTERVAL	0	PRINT	FREE	number of minutes interval
123. Print Short Pick Alert (Task Confirmation)	SHORT PICK	Y	SALESORDER	BOOLEAN	
124. Print Short Supplied Alert (Task Generation)	SHORT SUPPLIED	Y	SALESORDER	BOOLEAN	
125. Printer Selection	PRINTERCHANGE	Y	PRINT	BOOLEAN	allow user to change printer when printing reports
126. Product Definition: Suppress INACTIVE/OBSOLETE Product ID	INACTIVE_SUPPRESS	Y/N	PRODUCT	BOOLEAN	If 'Y', suppress INACTIVE and OBSOLETE product ID in Product Definition.



Description	Configuration Code	Value	Grouping	Value Type	Comments
127. Putaway location scan confirmation required	RF_PUTAWAY_LOC_CONFIRMATION	Y	RF	BOOLEAN	
128. QA Release – Default multi-select ALL rows	QA_MULTIREL	Y	QA	BOOLEAN	
129. QA Release – Default SELECTED Status	QA_RELSELECTED	Y	QA	BOOLEAN	
130. Query Sort Sequence – DESCENDING	QUERYSORT	N	SYSTEM	BOOLEAN	
131. Real Time Display – New Order Check (minutes)	REALTIME_ORDER_CHECK	1	SYSTEM	NUMERIC	
132. Real Time Display – Refresh Interval (minutes)	REALTIME_ORDER_MONITOR	1	SYSTEM	NUMERIC	
133. Real Time Display – Sales Order Pick Advance (days)	REALTIME_ORDER_PICK	1	SYSTEM	NUMERIC	<i>Auto release of Sales Orders in advance of delivery date</i>
134. Real Time Display – Wave file – path and name	REALTIME_ORDER_AUDIO	C:\Windows\Media\BATTVLO W.wav	SYSTEM	FREE	<i>WAV file that activate by Real-time Alert – user must ensure the specified file name is valid</i>
135. Receipt – Enable Manual Input Date	DATE_MANUAL	N	INBOUND	BOOLEAN	<i>There is no validation for manual input date value. The onus is on the users to ensure data validation. In case the data input is invalid, it will be updated as NULL This is available in 5.396.2 Build 362 and later</i>
136. <b>Receipt - Item Dimension Option Source - PALLET   UNIT</b>	<b>PH_DIMENSION_OPTION'</b>	PALLET	SYSTEM	TEST	<i>If PALLET, derive unit dimension from PALLET definition. If UNIT, derive dimension from lowest UOM definition</i>
137. Reset Lockout	LOCKSET RESET	N	AUTHORISATION	BOOLEAN	<i>requirement of authorizer</i>
138. Resize Form Enabled	RESIZE_FORM_ENABLED	Y	SYSTEM	BOOLEAN	<i>Expand forma to fill screen</i>
139. Resize Grid Enabled	RESIZE_GRID_ENABLED	Y	SYSTEM	BOOLEAN	<i>Proportional enlarge font and columns of grid</i>
140. Reuse of Password	PASSWORD REUSE	1	AUTHORISATION	FREE	
141. RF Check In Type	RF_CHECKIN_PUTAWAY	SEPARATE	RF	FREE	
142. <b>Sales Order Delivery Date and Remarks Update when printing DO</b>	<b>SO_DELIVERY_DATE_UPDATE'</b>	Y	SALESORDER	BOOLEAN	<i>If 'Y', in Delivery Orders function, update Selected sales orders' Delivery Date and Remarks with specified.</i>
143. Sales Order Picking Default Mode	SO_PICK_MODE	BATCH	SALESORDER	TEXT	<i>Discrete (Single Order) or Batch</i>

Description	Configuration Code	Value	Grouping	Value Type	Comments
144. Sales Order Tasks Creation at Order Entry	USERSORELEASE	Y	SALESORDER	BOOLEAN	Enable order entry clerk to release sales order for picking, else use Sales Order Manage
145. Site-specific Corporate Bitmap filename	1000BITMAP		SYSTEM	FREE	Name of desired bitmap file instead of default
146. Station Registry: Auto Update Station ID  Added on 06 Mar 2017	STATION_ID_AUTO	Y / N	SYSTEM	BOOLEAN	If Y, Station ID (Name) is auto insert into Station Registry – an enhanced security control. If N, Station ID is checked against Station Registry when user login. If station ID is not in registry, login will be rejected. To add new station ID, first time login on the station must be a Default Admin user account.
147. Stock Query – List Selection	METHODSTOCKQUERY	ATTRIBUTES	SYSTEM	TEXT	
148. Suppress Slot part when ZERO	SUPPRESS_SLOT_WHEN_ZERO	N	SYSTEM	BOOLEAN	If Y, Location address will be generate without SLOT component if it is specified as ZERO
149. Time difference between Server and Workstation allowed (minutes)	TIME_DIFF	60	SYSTEM	NUMERIC	This is to ensure the client station and database server system is not too far apart.
150. Transfer Released Quarantine To Storage	QUARANTINE_TRANSFER	Y	STOCK MGT	BOOLEAN	
151. Value Added Service Update Control Flag	VAS_UPDATE_FLAG	Y	SYSTEM	BOOLEAN	If Y, when computing Service Billing check that Receipt have been flagged as UA updated else skip
152. VMI Client	VMI_CLIENT	VMI_CLT	VMI SETTING	FREE	VMI Module Setting
153. VMI Customer	VMI_CUSTOMER	VMI_CUST	VMI SETTING	FREE	VMI Module Setting
154. VMI Default Reorder Level	VMI_REORDER_QTY	50	VMI SETTING	NUMERIC	VMI Module Setting
155. VMI Email Address To Send To	VMI_DEST_EMAIL		VMI SETTING	FREE	VMI Module Setting
156. VMI Last Replenishment Processing	VMI_LAST_REPLENISH	06/04/2005	VMI SETTING	FREE	VMI Module Setting
157. VMI Warehouse	VMI_WAREHOUSE	YTW	VMI SETTING	FREE	VMI Module Setting
158. Works Orders – System Assign	SYSTEM_ASSIGN_WO	N	SYSTEM	BOOLEAN	If Y, system auto assign works orders to operator

### M.1. Default Application Folders

In Build 823, the default folders definitions is moved from the Licencing section to the System Configuration section under the grouping FOLDER. Although they belong to the system level configuration, they are enabled to be display and updateable by site administrators.

However, note that change to the parameter value will affect the system in total. And definition in the parameters overrides the setting in the INI configuration file

Although the Value Type is FREE, the onus is on the administrators to ensure the specified folders are valid and accessible by the CRISTAL WMS application and the users.

Similarly for the URLs. They must be related to the physical folder (directories) that is defined for the desktop application.

If left blank, CRISTAL WMS will take the values specified in the INI configuration.

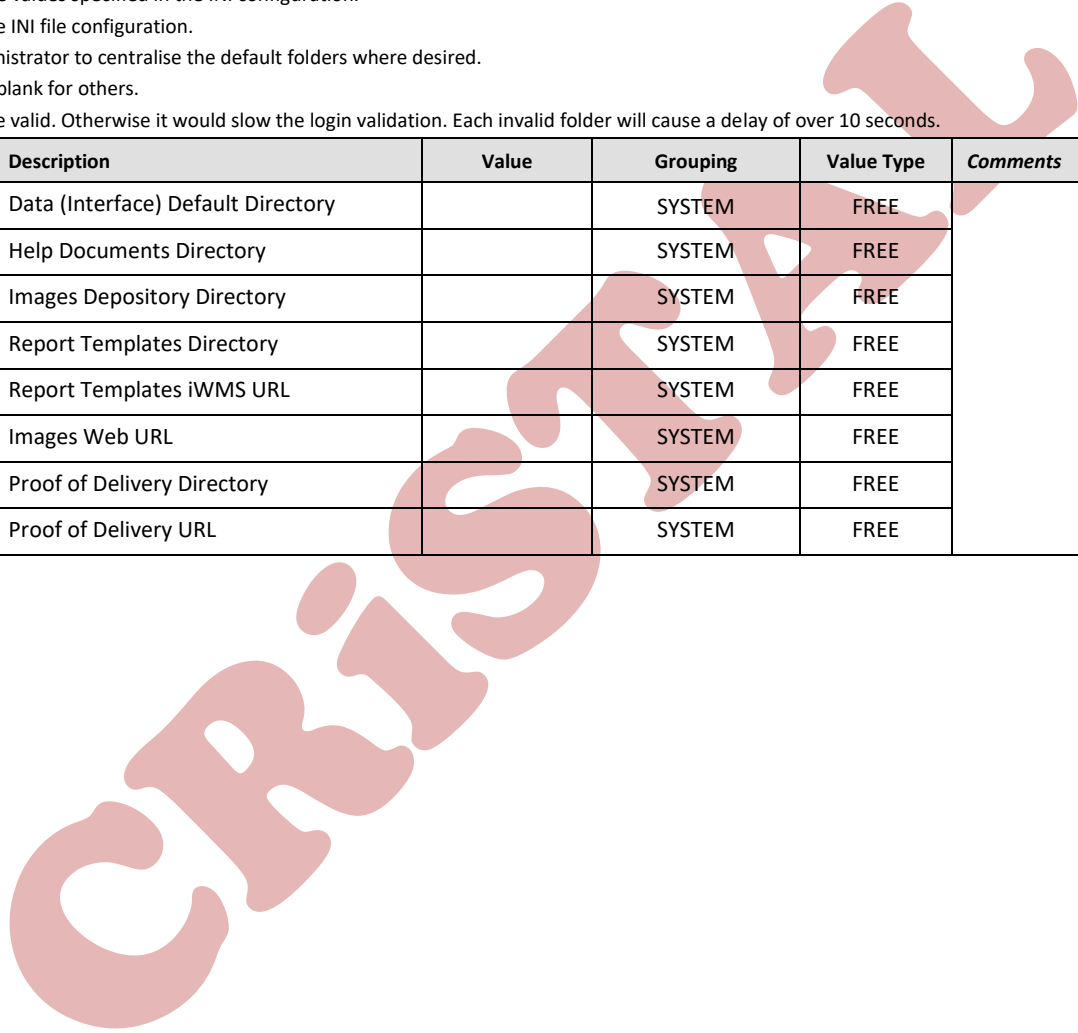
If defined, it takes precedence over the INI file configuration.

The objective of this is to enable administrator to centralise the default folders where desired.

Definition can be made some and left blank for others.

Note that the specified folders must be valid. Otherwise it would slow the login validation. Each invalid folder will cause a delay of over 10 seconds.

Configuration Code	Description	Value	Grouping	Value Type	Comments
1. DATAPATH	Data (Interface) Default Directory		SYSTEM	FREE	
2. HELPPATH	Help Documents Directory		SYSTEM	FREE	
3. IMAGEPATH	Images Depository Directory		SYSTEM	FREE	
4. REPORTPATH	Report Templates Directory		SYSTEM	FREE	
5. WMSNETPATH	Report Templates iWMS URL		SYSTEM	FREE	
6. WEBIMAGEPATH	Images Web URL		SYSTEM	FREE	
7. PODPATH	Proof of Delivery Directory		SYSTEM	FREE	
8. PODURL	Proof of Delivery URL		SYSTEM	FREE	



## Appendix N. System Enhancements Documentation

This section documents the enhancements that is incorporated in the WMS basing on each build specified:

### N.1. Excel Spread sheet Export function

This is incorporated in version 5.398 Build 753.

The ExportEXCEL procedure in the WMS ProcedureInterface module is enhancement to add some whistle and bell to the file output.

The title row of the spread sheet is enhanced as follows:

1. Font is Ariel, Bold and 9 points font size
2. The background of the cell is now default to RGB(183, 222, 232)
  - a. This can be customised by a parameter in System Configuration
    - i. There is no validation whether the RGB() string is correct. The onus on the administrator to specify a valid RGB() color code.

In addition, the procedure is enhanced to write the data into multiple work sheets basing on the value of the first column. The color of the rows can also be configured if so required together sub and grand totalling.

However, this requires manipulating at stored procedures level.

To do this, 3 (optional) columns BKGDCOLOR, GROUPSPLIT and GROUPSEQ are provided and to be appending after the required data and must in the sequence as specified:

1. BKGDCOLOR
  - a. This is to be the column right after the data column
  - b. The required color for the row is to be specified in RGB() format.
2. GROUPSPLIT
  - a. This column is to be right after BKGDCOLOR – effectively the second last column
  - b. The value is to be set to Y if the data is to be grouped into separate work sheet basing on the first column
    - i. If set to Y, the number of distinct value PLUS 1 must not exceed the number of work sheet allowed in the installed version of MS Excel.
    - ii. The last work sheet is reserved and meant to contain all the data returned by the stored procedure
  - c. The data must be sorted or ordered by the first column value
3. GROUPSEQ
  - a. This is the last column
  - b. If used, this is the second order by field (after the first column's value)

Effectively, the data are presented in the sequence returned in the record set by the stored procedure

Below is sample of the output - embedded Excel file – for reference.

Country	APN #	Description	Category	Size	Available Qty
					44122
			NOT DEFINED		23653
			CAT		20469
NOT DEFINED					34323
NOT DEFINED			NOT DEFINED		13854
NOT DEFINED			CAT		20469
NOT DEFINED	2345PR	Product 23455	NOT DEFINED		50
NOT DEFINED	2345PR	Product 23455	NOT DEFINED		3
NOT DEFINED	2345PR	Product 23455	NOT DEFINED		45
NOT DEFINED	2345PR	Product 23455	NOT DEFINED		222
NOT DEFINED	2345PR	Product 23455	NOT DEFINED		30
NOT DEFINED	ADI-123	Application Data Identifier 123	NOT DEFINED		560
NOT DEFINED	ADI-123	Application Data Identifier 123	NOT DEFINED		86
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		40
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		200
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		7
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		100
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		30
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		29
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		16
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		95
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		100
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		20
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		5
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		200
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		200
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		40
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		50
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		50
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		50
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		201
NOT DEFINED	AI-13791	AI-13791	NOT DEFINED		301
NOT DEFINED	BATCH_CONTROL	Batch Controlled Item	NOT DEFINED		1
NOT DEFINED	BATCH_CONTROL	Batch Controlled Item	NOT DEFINED		10
NOT DEFINED	BATCH_CONTROL	Batch Controlled Item	NOT DEFINED		1
NOT DEFINED	BONDED	AI-13791	NOT DEFINED		8
NOT DEFINED	CONTAINER LOADED	Loaded Container	NOT DEFINED		25
NOT DEFINED	CONTAINER LOADED	Loaded Container	NOT DEFINED		1
NOT DEFINED	CUST_ITEM	Customer Item	NOT DEFINED		1000
NOT DEFINED	CUST_ITEM	Customer Item	NOT DEFINED		100
NOT DEFINED	CUST_ITEM	Customer Item	NOT DEFINED		18
NOT DEFINED	CUST_ITEM	Customer Item	NOT DEFINED		54
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		100
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		27
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		41
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		50
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		29
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		34
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		61
NOT DEFINED	D1234	UOM TESTING	NOT DEFINED		1000
NOT DEFINED	EXPIRY_CONTROL	Expiry Controlled Item	NOT DEFINED		50
NOT DEFINED	EXPIRY_CONTROL	Expiry Controlled Item	NOT DEFINED		50
NOT DEFINED	LINEN	Linen 1	NOT DEFINED		1450

### N.1.1. Possible Issues

There are some potential issues with this new version of ExportExcel, such as:

1. Read-Write Permission of Data folder
  - a. Instead of the original 'On Error Resume Next' which simply skip error command line, 'On Error Goto ErrMsg is used as this helps in debug and resolve issue in the program. This will help to improve robustness of the system
  - b. As such the below error message will appear when the program or user does not have read-write permission to the specified folder which the generated file is to be saved



- c. This is resolved by granting full control permission for the folder to the user/program

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## Appendix O. Warehouse Utilization Reports

To help operations monitor and manage the warehouse occupancy, following reports under Management Reports group are provided in CRISTAL WMS Report Menu:

### MANAGEMENT REPORTS

- Annual Summary - Picks by Operator
- Annual Summary - Receipt by Supplier
- Billable Planned Dates Error
- Client / Customer UDF Configuration
- Client Activity Summary
- Client Activity Summary - Day
- Client Activity Summary (2)
- Item Last Receipt - Last Sales Order
- Key Performance Indices - Client
- Operator Productivity
- Product Price List
- Product Stock-Transactions Summary
- Sales Order Outstanding
- Sales Order Picks Status
- Warehouse Location Utilisation
- Warehouse Move Update Status
- Warehouse Space Requirement
- Warehouse Utilisation by Client
- Warehouse Utilisation by Client (Whole)
- Warehouse Utilisation by STORAGE Type

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## Appendix P. Display of Chinese and other Asian characters

Although CRISTAL iWMS and RF Warehouse are able to display Asian characters using Unicode capability as they are developed and written in Visual Studio.NET, the desktop version does not support Unicode characters.

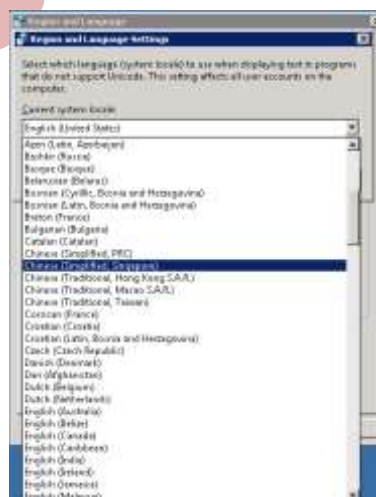
To display Asian language characters, it is necessary to set the Regional Locale to the appropriate 'Language for non-Unicode programs' in Region and Language | Administrative:



Click on 'Change system locale...' button to open Region and Language Settings window.

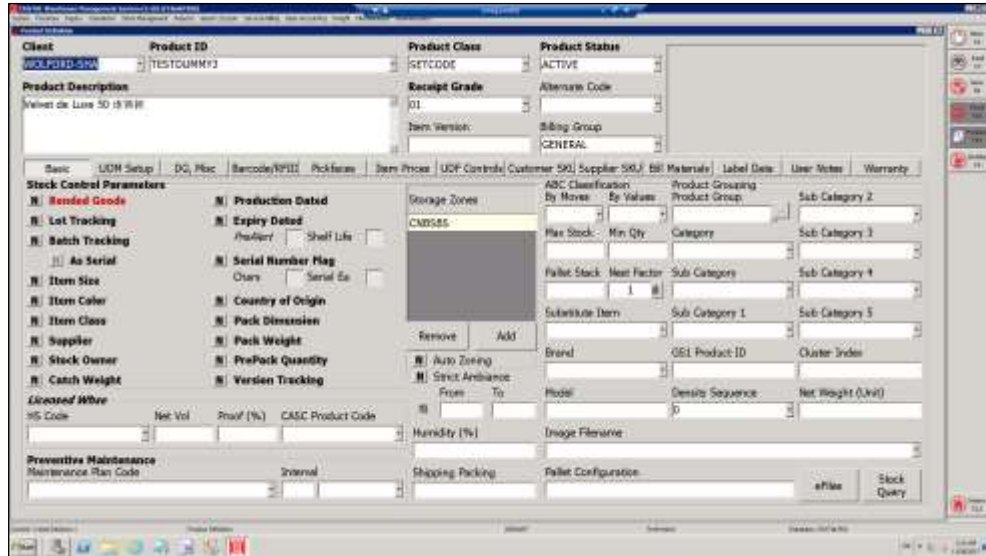


Click the dropdown button of 'Current system locale' and select the required locale and click OK



On click OK in above window, the Ok button caption on the Region and Language | Administrative window will change to 'Close'. Click 'Close' button and the system will prompt to 'Restart'.

Restart the system. After the restart, open the CRISTAL WMS:



The Asian (in this case – Chinese) will display correctly.

**P.1. Reports**

In reports, in order for the Asian language characters correctly, the appropriate font must be set for the field objects.

For example, to print the Chinese characters, the font must be to Tahoma (Western).

For Thai, it must be set to Tahoma (Thai).

It is therefore necessary to have different set of reports templates for different Asian Language.

Logwin Air – Ocean (China) Ltd.  
 PRODUCT CODE LIST as at 10-Dec-17  
 Client: WOLFORD-SHA

Print Date/Time : 10-Dec-2017 23:19:27

S/N	Item Code	Description	Item Status	Rcvd	Alternate Item Code	Grade	Substitution	Item Code	Product Classification	Customer -Owner
301	K000000000	K TEST	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 11/17/2017 2 CHSNP52 2:17:09PM 3 CHSNP52 By S/NP51 4 CHSNP5 5 CHSNP5	
1	PALLET	100.00 PCS	1,200.00	1,200.00	1.00	0.0014400000	100.00			
2	PCS	1.00 PCS	1.00	10.00	1.00	0.0000000100	1.00			
302	P000000000	P TEST	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 11/17/2017 2 CHSNP52 2:17:04PM 3 CHSNP52 By S/NP51 4 CHSNP5 5 CHSNP5	
1	PALLET	100.00 PCS	1,200.00	1,200.00	1.00	0.0014400000	1.00			
2	PCS	1.00 PCS	1.00	10.00	1.00	0.0000000100	0.01			
303	TESTDUMMY1	Velvet de Luxe 50 测试 - 测试 - 测试	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 12/1/2017 11:08:12AM By S/NP51	
0		0.00	0.00	0.00	0.00	0.0000000000	0.00			
304	TESTDUMMY2	Velvet de Luxe 50 测试 - 测试 - 测试	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 11/29/2017 10:20:42AM By S/NP51	
1	PALLET	100,000.00 PCS	2,500.00	7,000.00	2,700.00	47.2500000000	1,000.00			
2	PCS	1.00 PCS	1.00	10.00	1.00	0.0000000100	0.01			
305	TESTDUMMY3	Velvet de Luxe 50 测试 - 测试 - 测试	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 11/29/2017 10:20:13AM By S/NP51	
1	PALLET	100,000.00 PCS	2,500.00	7,000.00	2,700.00	47.2500000000	1,000.00			
2	PCS	1.00 PCS	1.00	10.00	1.00	0.0000000100	0.01			
306	TESTDUMMY4	Velvet de Luxe 50 测试 - 测试 - 测试	ACTIVE		01				PG: SC2: DG Flag: N Cat: SC3: Seq. Zone: Last Update SC: SC4: SC5: 1 CHBS5 11/29/2017 10:20:42AM By S/NP51	
1	PALLET	100,000.00 PCS	2,500.00	7,000.00	2,700.00	47.2500000000	1,000.00			

crystalwms\_PEA  
 Y:\nhlg\4001\Crystalwms\reports\5.401\Product List.rpt

Page 51 of 52

## Appendix Q. User Defined Fields

To extend the capability of CRISTAL WMS to meet requirement to record specific information that are specific to each site, UDF fields are introduced and added to the follow functions, at Orders and Details levels:

1. Purchase Orders
2. Material Returns Authorization
3. Receipts ASN
4. Receipts Check In
5. Sales Orders

In version 5.401.05 and later, the function is enhanced to enable users to define the caption of each UDF fields at Client level. This enable user to assign a UDF, say UDF1, to different purposes for different clients.

The UDFs are display in gridbox instead of the normal textbox or combo box with a common text box for input of values

UDF Caption	UDF Value
UDF2	sdfa
<b>UDF3</b>	<b>586FD</b>
UDF4	
UDF3	586FD

This approach enable addition of UDF field in the database tables without the need to modifying the UI (EXE) at the same time.

To input or edit the value of a UDF

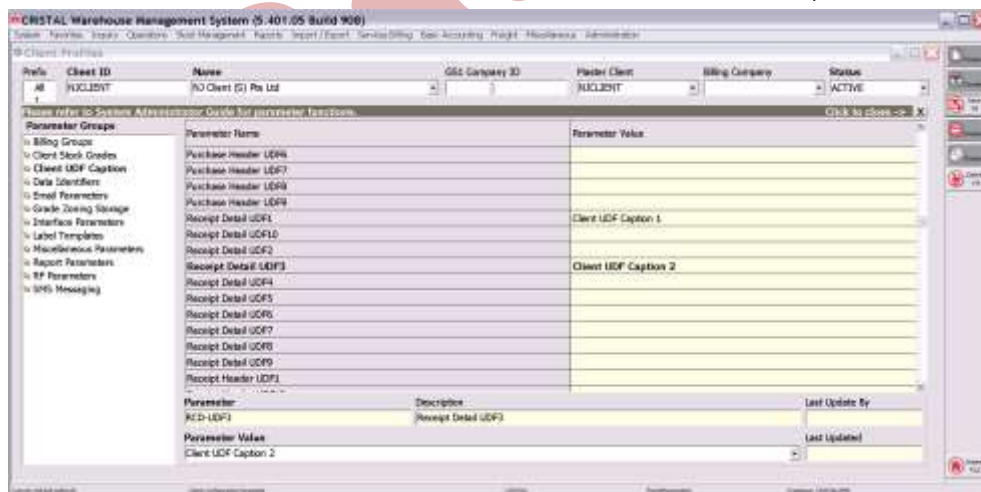
1. Click on the UDF
  - a. The caption of the select UDF will be display in the label on the left below the gridbox
2. Input the value in the textbox
  - a. Which will be mirrored in the UDF Value of the selected row

Repeat the step for the other required UDFs.

Note: the UDF values will be updated into the database table when the order header or detail line is Save.

### Q.1. Customize UDF Caption

The UDF Caption is customizable at client level via Client Profiles | UDF | Client UDF Caption. Each UDF is prefixed with the function table name. Material Returns Authorization's UDFs share the same UDFs as Purchase Orders / Details.

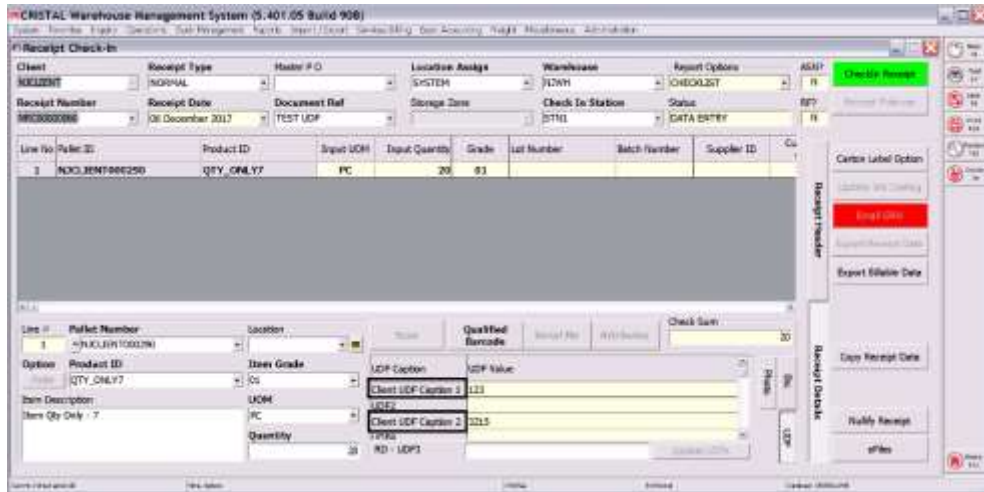


To customize a UDF caption

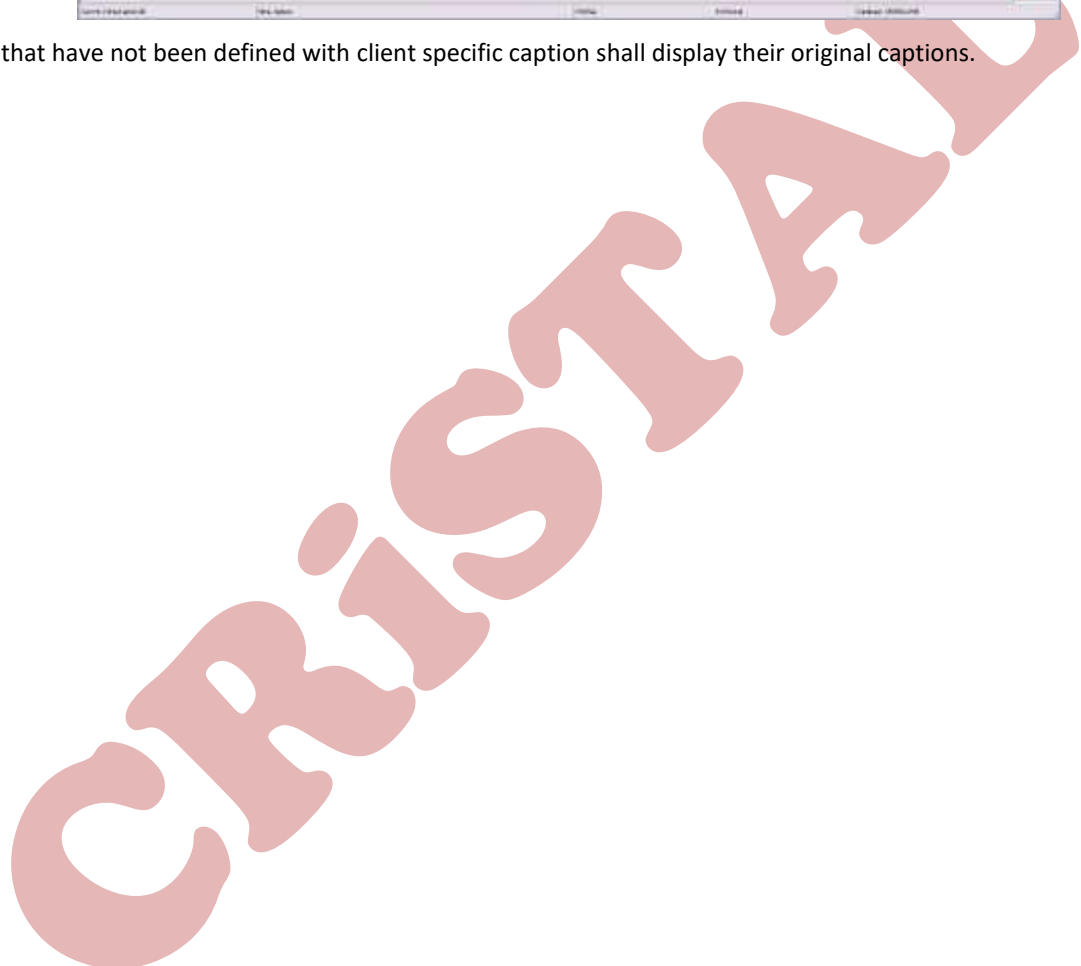
1. Select the required UDF
2. Input the caption
3. Click Save

Repeat with other required UDF.

The user defined UDF captions shall be displayed as below:



UDFs that have not been defined with client specific caption shall display their original captions.





## Appendix R. WMS Imports Guide

Although WMS Imports functions are designed to be self-explanatory, some of the functions are more complex. This section covers only Excel template imports functions that are more elaborated.

### R.1. Stock Relabel

This function is an advanced feature that is not available as a standard function. Please verify with the consultant and may be chargeable.

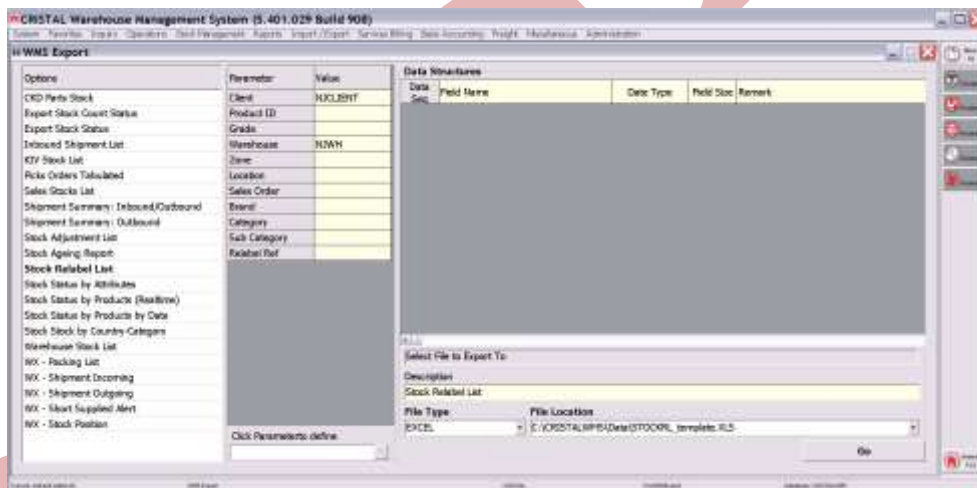
There is no excel template provided for this function as the data required need to be extracted from the system which is usually not available to end-users.

AS such the template is designed to be created using the Import / Export | WMS Export | Stock Relabel List. (In version earlier than 5.400, the option WMS Exports is under Reports)

The function comprises of 2 stages.

Stage 1: Extract the stock records to be relabel

1. Specify the select parameters
  - a. Only the Client is mandatory
  - b. Multi Product ID can be filtered for by separating the semi-colon (;) without space before and after the semi-colon
  - c. Relabel Ref is the relabel reference
    - i. If label blank, system will assign a reference
2. Specify the Path and File name
  - a. The filename prefix 'STOCKRL\_' should not be changed as it is the identifier during the imports.
3. Click 'Go' button to commence the extraction



4. Depending on the Microsoft Excel, the file can be created with XLS or XLSX extension
  - a. The file generated:

StockID	Client	DocNo	DocRef	ItemNo	ItemDesc	Unit	Quantity	Location	RelabelRef
275949	011537	00000125	00000125	000000000014	000	000	000	000	000
275949	011537	00000125	00000125	000000000015	000	000	000	000	000
275949	011537	00000125	00000125	000000000016	000	000	000	000	000
275949	011537	00000125	00000125	000000000017	000	000	000	000	000
275949	011537	00000125	00000125	000000000018	000	000	000	000	000
275949	011537	00000125	00000125	000000000019	000	000	000	000	000
275949	011537	00000125	00000125	000000000020	000	000	000	000	000

5. Edit the file
  - a. Do not amend the column names
  - b. The follow columns (fields) must also not be amended
    - i. StockID
    - ii. Client
    - iii. DocRef
    - iv. ItemNo
    - v. PalletNo
  - c. Delete unrequired rows that are not relevant
6. SAVE the file as Excel 97-2003 (.xls)
  - a. Ensure that the file name is prefixed as STOCKRL\_...



Stage 2:

1. Upload the completed file with WI Imports
2. Relocate the relabel stock as required.

**22.3.6. Stock Re-Grade**

Template is introduced to enable users to batch change of stock grade like in Quality Assurance department. The function is designed strictly for changing and limited Stock Grade only.

The template contains following columns:

Columns	Comments
1. Client	
2. DocRef	Document Reference
3. ItemNo	Product OD
4. Whse	Warehouse Code
5. Location	Location where stock is stored
6. ReqQty	Quantity to grade changed
7. GradeFR	Existing Grade
8. GradeTO	Grade to change to

The re-grade can only be applied to existing stock.

**R.2. Stock Adjustment**

This function is an advanced feature that is not available as a standard function. Please verify with the consultant and may be chargeable.

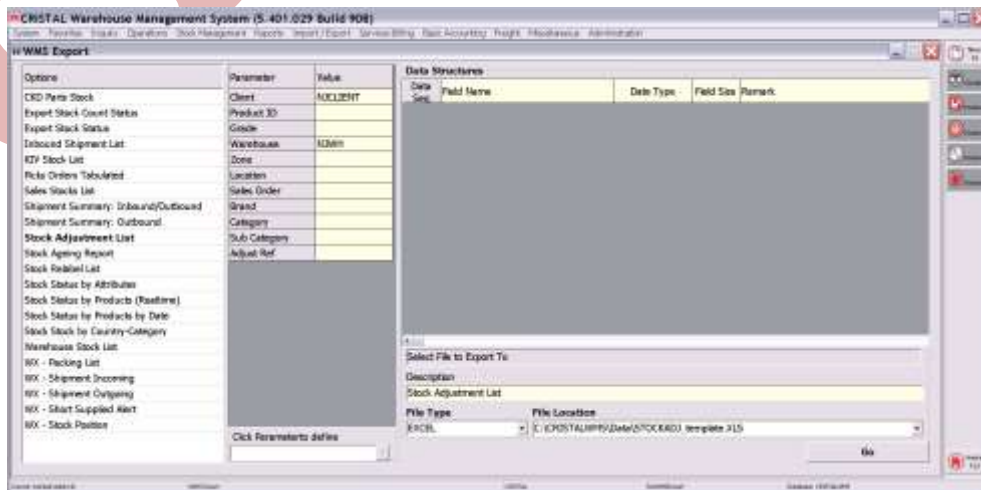
Stock Adjustment is meant for change quantity of item that already exist in the system. (Adding stock can be done using STKRECEIPT or STOCKSRL)

There is no excel template provided for this function as the data required need to be extracted from the system which is usually not available to end-users.

AS such the template is designed to be created using the Import / Export | WMS Export | Stock Adjustment List. (In version earlier than 5.400, the option WMS Exports is under Reports)

Stage 1: Extract the stock records to be relabel

1. Specify the select parameters
  - a. Only the Client is mandatory
  - b. Multi Product ID can be filtered for by separating the semi-colon (;) without space before and after the semi-colon
  - c. Adjustment Ref is the stock adjustment reference
    - i. If Adjustment blank, system will assign a reference
2. Specify the Path and File name
  - a. The filename prefix 'STOCKSDJ\_' should not be changed as it is the identifier during the imports.
3. Click 'Go' button to commence the extraction



4. Depending on the Microsoft Excel, the file can be created with XLS or XLSX extension

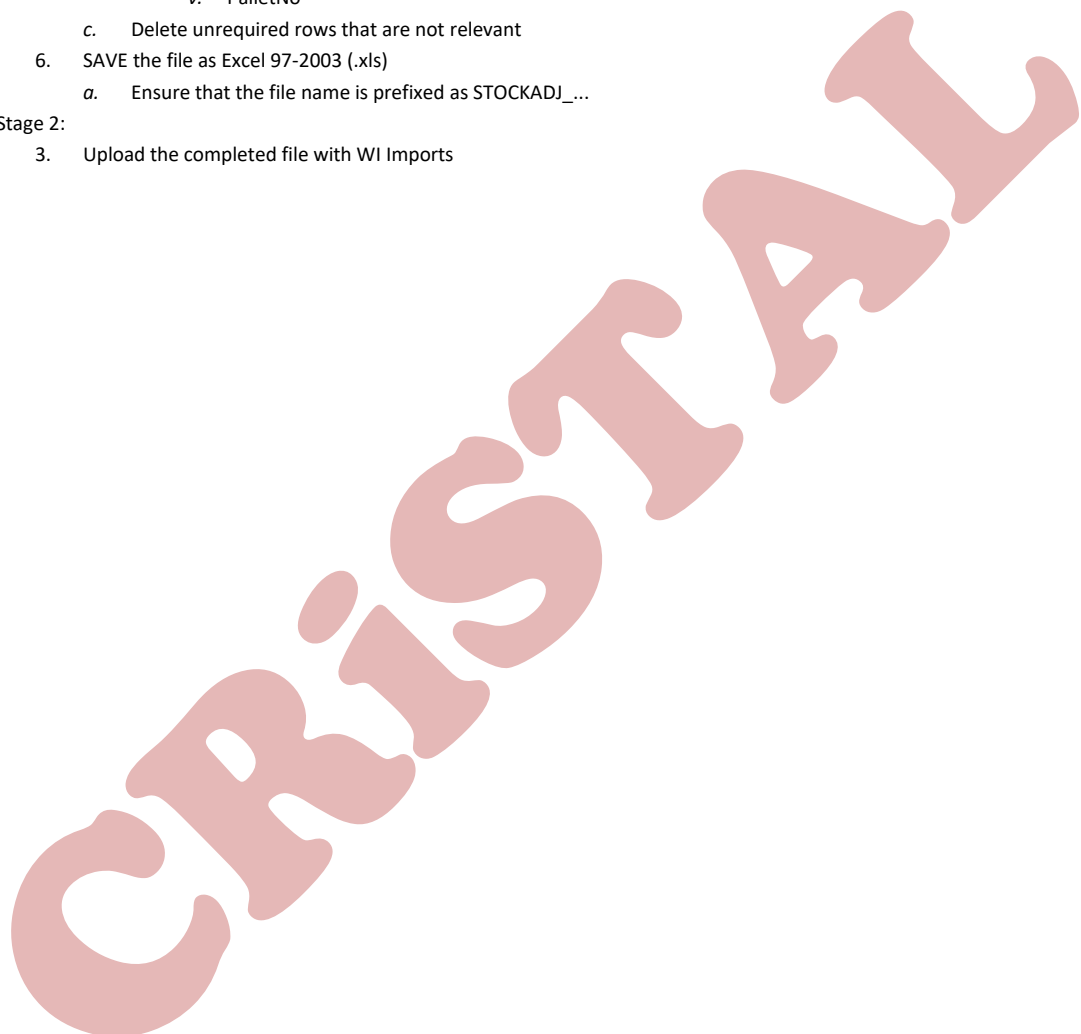
- a. The file generated:

StockID	Client	DocRef	ItemNo	PalletNo	Qty	StockID	Client	DocRef	ItemNo	PalletNo	Qty	StockID	Client	DocRef	ItemNo	PalletNo	Qty
225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946
225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946
225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946
225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946
225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946	225946	221527	20000225	0000000000	ST0000000000	225946

- 5. Edit the file
  - a. Do not amend the column names
  - b. The follow columns (fields) must also not be amended
    - i. StockID
    - ii. Client
    - iii. DocRef
    - iv. ItemNo
    - v. PalletNo
  - c. Delete unrequired rows that are not relevant
- 6. SAVE the file as Excel 97-2003 (.xls)
  - a. Ensure that the file name is prefixed as STOCKADJ\_...

Stage 2:

- 3. Upload the completed file with WI Imports



## Appendix S. Users Interfaces Designs

In Release 5.401.xxx, a major change in approach is made in the Users Interfaces designs.

The key objective of the change is to minimize the need to modify or enhance the EXE when new fields are added to cater to new function or users request.

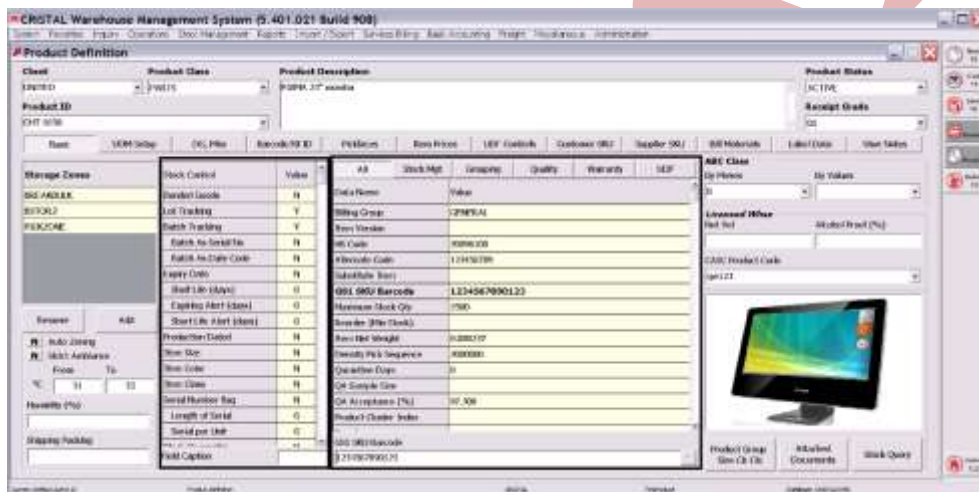
The main functions affected are:

1. Product Definition
2. Receipts
  - a. Receipt ASN
  - b. Receipt Check In
  - c. Receipt Costing
3. Sales Orders Entry

### 5.1. Product Master

The approach taken is using Gridbox control together with 1 common input textbox in place of individual text or combo box for each field. The enable us to make adding of new field a backend process – namely handled at stored procedure level.

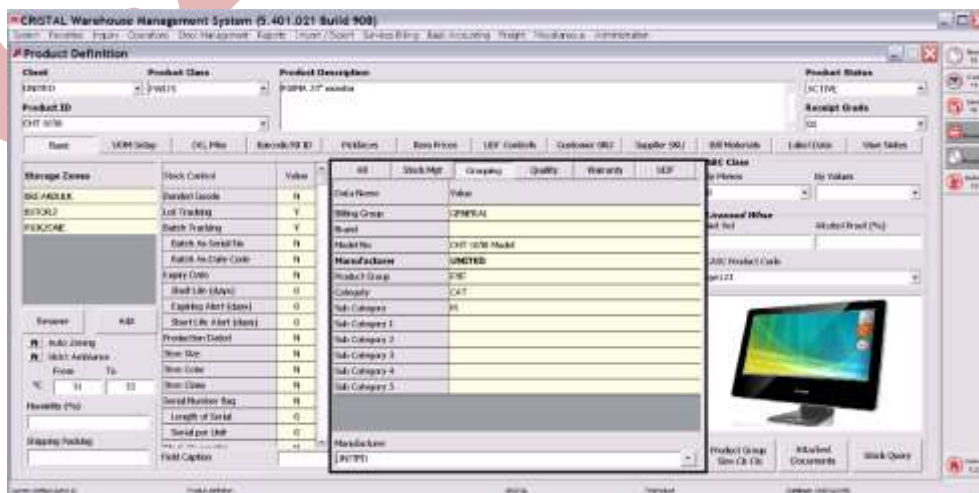
For example, in Product Master, 2 gridbox is used – 1 for the Stock Control parameter and the second for the data (information) fields. Some textboxes and Combo boxes are retained for some critical data field



For the Stock Control flag, to change the setting, simply double click on the row. The Value will toggle from N to Y or N to T to R to O where appropriate.

For the others, click on the row, the Date Name will appear in the caption of the textbox and the cursor will be position in the textbox waiting for input. If popup help or selection is available, the dropdown command button will be enabled. Clicking on the command button will open a window with the appropriate value.

As you select or type in the textbox, the input value will be mirrored in the row selected.



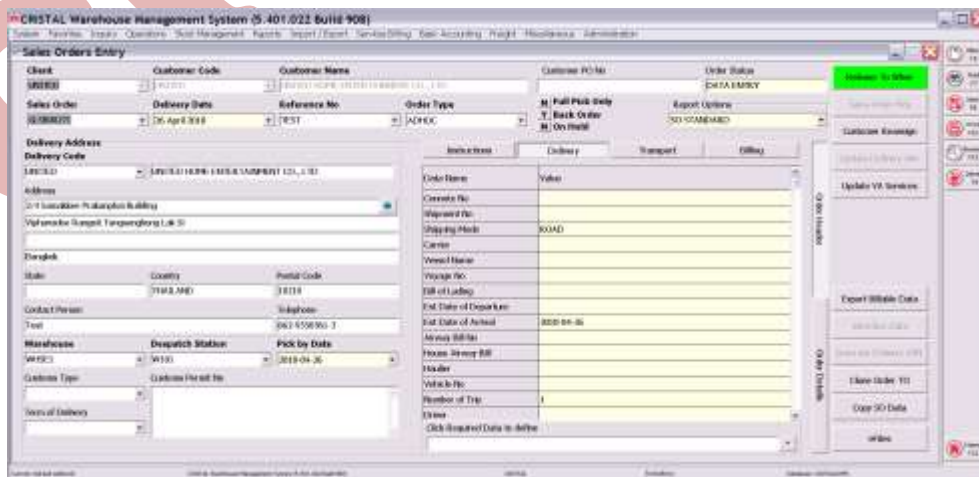
Change in the grid boxes are not propagated to the database until the Save command button is clicked.

Clicking the tab button, when available, will hide away those rows that are not in context with the selected tab. This approach is universal to the other functions.

**5.2. Receipts**



**5.3. Sales Orders**





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## Appendix T. Revision History

S No	Enhancement Ref	Date	Description
1.	2012.001	10 Nov 2012	This document is renamed from Miscellaneous Utility Help to reflect its enhanced purposes
2.	2012.002	10 Nov 2012	Incorporate System Logs Maintenance – originally in System Configuration.
3.	2012.003	10 Nov 2012	Delivery Routes Maintenance
4.	2013.004	05 Apr 2013	Revision updated
5.	2013.005	13 Apr 2013	Incorporate WMS Imports and DB Interfacing
6.	2013.006	18 Apr 2013	Added Implementation Checklist
7.	2013.007	24 Apr 2013	Adding instruction on Installing CRISTAL WMS to appendix
8.	2013.008	09 May 2013	Added pictorial view of racks storage in Warehouse Utilization.
9.	2013.009	25 May 2013	Update Stock Management – redesign UI Added Stock Location2Location relocation
10.	2013.010	27 May 2013	Added Client level parameter - Receipt – Default Production Date EQUAL Receipt Date
11.	2013-011	11 Jun 2013	Added Client level parameter : Stock Count – Post Serialised Item Variance (Y/N)
12.	2013-012	30 Jun 2013	Added section on Packing – Carton Item
13.	2013-013	21 Jul 2013	Added SMS Messaging
14.	2013-014	01 Aug 2013	Added Outbound Operations documentation
15.	2013-015	15 Aug 2013	Added Inbound Operations documentation
16.	2013-016	05 Sep 2013	Added Warehouse Operations documentation
17.	2013.017	26 Sep 2013	Upgrade Customs Lots to menu option
18.	2014.018	01 Jan 2014	Reformat of Product Definition UI and merging of Bill of Materials
19.	2014-019	01 Jul 2014	<ol style="list-style-type: none"> <li>1. Move of Location address parts and separator from System Configuration to Warehouse Setup</li> <li>2. Move Default System folders from Licensing section of System configuration to System Configuration / Parameters section. The objective is to facilitate adding of new default folders such Proof of Delivery (Desktop and URL)</li> <li>3. Product Definition – redesigned                             <ol style="list-style-type: none"> <li>a. Added page for recording of Changes Requests by Clients to Product attributes to facilitate historical reference</li> <li>b. Redesign of Prices definition to facilitate adding of user defined prices</li> </ol> </li> </ol>
20.	2014-20	01 Jul 2014	Introduction of Assets Maintenance Management module.
21.	2015-21	20 Jan 2015	Incorporate following function under Miscellaneous Tools <ol style="list-style-type: none"> <li>1. Client ID Change</li> <li>2. Customer ID Change</li> </ol>
22.	2015-22	01 Jul 2015	Incorporated Multi Orders Picks function. This is designed to enable a cheaper option for wireless devices by using Windows based tablets.
23.	2015-23	05 Oct 2015	<ol style="list-style-type: none"> <li>1. Incorporated Master Client control – release 5.400.859</li> <li>2. Incorporated Item Version for stock control</li> </ol>
24.	2015-24	01 <ar 2016	Incorporate Multi-Orders picks function using tablets
25.	2016-25	01 Jun 2016	Queries – redesigned to facilitate display of more data and future enhancements
26.	2016-26	01 Jun 2016	Revamp of Transport Management module <ul style="list-style-type: none"> <li>- Introduction of Last Mile Fulfilment management function</li> </ul>
27.	2016-27	30 Oct 2016	When reversing MOBILE Sales Order, stock is reversed to PICK PACK Location instead of original



S No	Enhancement Ref	Date	Description
28.	2017-28	02 Jan 2017	Patch to reports output printer control which is not function in Window 10 OS. <ul style="list-style-type: none"> <li>- Change control to utilize WSHOM.OCX ActiveX – which is sited in System32 folder.</li> </ul>
29.	2017-29	15 Jan 2017	Enhanced User Profile function to enable deletion of redundant User ID. <ul style="list-style-type: none"> <li>- User ID will be deleted from table if there is no activities record against it</li> <li>- If there are activities, the User ID will be flagged as DELETED and suppressed. Such User ID cannot be recycled.</li> </ul>
30.	2017-30	06 Mar 2017	Enhanced Login control by incorporated Station Registry which will block unregistered Station ID if 'Station Registry: Auto Update Station ID' in System Configuration is flagged as 'N'
31.	2017-31	01 Jun 2017	Enhance User Password Security – enable user configurable case sensitive password. This must be decided at implementation. If done after live, all password must be updated after enabling.  User who changes setting must update his password before he exit. This is to ensure at least 1 user can subsequently login to reset others' password.
32.	2017-32	03 Jun 2017	Enhancement to Item Owner Transfer to default Item data to destination client from original client. It Lot Number is specified in Original, it will also be default to Destination
33.	2017-33	08 Oct 2017	Implement block to prevent 1 Lot Number to be received against multiple Item Number that are check in with Bonded grade. This is to meet Licensed / Bonded Warehouse operations
34.	2017-34	01 Nov 2017	Change to control of print of document in Receipt ASN, Receipt Check In, Sales Order Entry..  The change enable future addition of document templates to the various function without or minimise the need to making change or modification to the User Interfaces (EXE).
35.	2017-35	26 Nov 2017	Enhancement to enable Client specific Stock / Product Grade – define in Client Profiles   UDF   Client Stock Grades (Refer to Client Profiles
36.	<a href="#">2017-36</a>	08 Dec 2017	Change to display and update of UDFs in MRA, Purchase Orders, ASN, Receipts and Sales Orders.  Enhancement to enable user defined UDFs caption (See appendix)
37.	2018-37	01 Feb 2018	Change is made to use grid box object to display data fields in place pf textboxes to facilitate and simplify future enhancement and customisation: <ol style="list-style-type: none"> <li>1. Product Definition</li> <li>2. Purchase Order Entry</li> <li>3. Material Returns Authorisations</li> <li>4. Receipt ASN</li> <li>5. Receipt Check In</li> <li>6. Sales Order Entry</li> <li>7. Report Menu</li> <li>8. Stock Query (Popup window)</li> </ol> <p>Apart from data fields, Order events, stock quantity summary and reports parameters entry are redesigned to use gridbox</p>
38.	2018-38	26 Feb 2018	Sales Orders Manage is upgraded to highlight fillable sales orders auto-select those that can completely fulfilled.  Client specific parameters (Sales Orders: Auto Assign WO on Picks create via SO Manage) and (Sales Orders: Auto Delivery Order on Picks Tasks Confirmation) are introduced which when flagged as 'Y' will auto assign and generate delivery orders.  The hardcopy of picks order and delivery order will auto print. This will require the CRISTAL Print Queue service to be deployed.  The function reduces the processing of sales orders to a single click action.
39.	2018-39	01 Mar 2018	Rename Miscellaneous Tools as Administrative Tools to reflect its purpose.

S No	Enhancement Ref	Date	Description
40.	2018-40	08 Aug 2018	Added STOCKREGRAFE excel template to WMS Imports to facilitate batch stock re-grade
41.	2018.41	26 Aug 2018	Redesign UI of Delivery Orders generate and print, using grid box to handle parameters input in place of textbox and combo box to facilitate future enhancement and minimise EXE change
42.	2018.42	26 Aug 2018	Added Production Date option to Expiry Date stock control option
43.	2018-43	30 Aug 2018	Enable deletion of pending (DATA ENTRY and WAITING) Sales Orders
44.	5.401.908.034	01 Sep 2018	Enhance PPQ Packing control
45.	5.401.908.035	03 Nov 2018	Enhanced Sales Orders Manage to Auto Assign, Confirm and generate Delivery Orders to facilitate eCommerce operations. At the same time, print (user configurable) Sales Order, Works Order and Delivery Order via PQ Server or the workstation.
46.	5.401.908.036	20 Nov 2018	Enhanced Receipt Scan to enable capturing of Lot Number, Batch Number, Production Date and Expiry Date. Default Item Size, Color, Class and Country of Origin as defined in Product Barcode.
47.	5.401.908.036	20 Nov 2018	Enhancement of Photo display to minimize picture distortion when enlarge or reduce to fit picture box.
48.	5.401.908.038	30 Nov 2018	Enhance display of Unicode characters for UOM and Product Description in non-Unicode characters OS.
49.	5.400.908.046	08 Jan 2019	Performance Optimization of following functions: <ol style="list-style-type: none"> <li>1. Receipt – ASN, Check On and Costing</li> <li>2. Sales Order Entry</li> <li>3. Warehouse Tasks</li> <li>4. Packing – Carton Item</li> </ol>
50.	5.401.908.047	06 Feb 2019	Modified Warehouse Tasks function to use grid box object to display stock attributes to facilitate minimize of need to modify UI when adding new field. Also enhanced to enable amending picks allocation after Sales order have been released for picking but before picks confirmation.
51.	5.401.908.047	10 Feb 2018	Incorporate import of data file with file extension TAB via WMS Imports function.
52.	5.401.908.050	29 Mar 2019	Enabled imports of Excel XLSX spreadsheet. Required installation of Microsoft Access20117 runtime which can be download from Microsoft website: <a href="https://www.microsoft.com/en-us/download/details.aspx?id=4438">https://www.microsoft.com/en-us/download/details.aspx?id=4438</a>
53.			Enhanced Shipment Advices Admin to enable recording of Value Add Services to capture services performed for non-stock related jobs for subsequent billing via Debit Note Entry.  Enhanced Debit Note Entry to import from VA Services as details for Receipts, Sales Orders, Shipment Advices Admin and from Billable Activities.
54.			Rename WMS Imports template SOFC to SOPCD to reflect its actual functions and enhanced program to process/complete sales orders in various state of process. Basic logic unchanged.
55.			Enhanced Delivery Order printing procedures to generate DO delivery data if they are not processed already. It ignores status and check for unprocessed records. Side effect of this change is that if DO is printed while picking is still in progress, DO will be printed for those that are completed. Balance will be processed as another DO.
56.			Enhanced WMS Exports to process reports with more than 64K records.  Added option to exports Billable Activity Report.
57.			Added function CRISTAL Camera Recorder to enable site to photo and record operation such as container unstuffing and procedure a PDF report with the photos. Requirement: TWAIN based camera app.

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## INDEX TABLE

- ABC Classification, 79
  - Picks Movements, 79
  - Product Values, 79
- Access Level, 38
- Administrative Tools, 41
- Alert Preview before Printing, 391
- Allow multi SKU to be defined for each pick face, 391
- Alternate Code, 79
- Application Data Identifiers, 336
- Application Issues and Resolutions, 376
- Application Log query, 367
- Auto Grade Change for Expiry Dated Stock, 391
- auto print, 127
- Auto Print Sales Order on Release, 391
- Auto Print Works Orders On Assigned, 391
- Auto Release Back Order on Receipt, 391
- Auto Release Due Sales Order on Receipt, 391
- Auto Release QA quarantine stock, 391
- Auto Return Single Record Help, 391
- Barcode Codes Maintenance, 83
- Batch Tracking, 78
- bonded goods, 77
- Bonded Grade Prefix, 391
- Brand and Product Group Access, 40
- Carrier and Waybill Setup, 317
- Carriers Access, 39
- Catch Weight, 79
- Check In Receipt / Confirm Receipt, 103
- Clear Despatch Grid Stock ON Despatch, 391
- Clear Item and Attributes on Next Item, 392
- Clear Item field on Next Item, 392
- Client Interface parameters, 336
- Client Specific Configuration, 334
  - Billing, 334
  - Interfaces, 336
  - Miscellaneous Parameters, 340
  - Reports, 334
- Clients Profiles, 56
- Color Coding – Status / Date, 392
- Configuring for Other Languages, 320
- cost and selling prices, 83
- Country Of Origin, 79
- Customer Item Codes, 90
- Customer UDF Parameters, 351
- Customs Lot as Permit Number, 392
- Customs Lots Registry, 303
- Cycle Count Period, 392
- Cycle Count Realtime Stock Update, 392
- Data Display Format – CURRENCY, 392
- Data Export, 42
- Data Files in Other Formats, 246
- Data Retention
  - Billing Data, 392
  - Interface Upload Data, 392
  - Logs Retention, 392
  - Pallet History Debug, 392
  - Picks Logs Data, 392
  - Stock Counts Data Retention, 392
- Database Automated Duplication, 368
- DateTime Format – Transaction, 392
- Days Prior Delivery Date – Pick Task Creation, 392
- Default Base UOM, 393
- Default Customer AS Stock Owner, 393
- Default Location Assign Option, 393
- Default Product Pallet Configuration, 393
- Default Product Status, 393
- Default Purchase order Type, 393
- default Receipt Grade, 77
- Default Receipt Grade, 393
- Default Receipt Type, 393
- Default Sales Order Type, 393
- De-Kitting Order, 146
- Density Sequence, 79
- Department Access, 41
- Despatch Labels, 384
  - Label - SO Despatch.rpt, 385
  - LabelDespatchPallet.rpt, 384
  - LabelDespatchStd.rpt, 384
  - Pallet Label -Picks.rpt, 385
- different language. *See* Alternate Description
- Digital Documents. *See* File Attachments
- Dimensions recording, 79
- Directories Location Setup, 31
- Disable Advance Sales Order Entry, 393
- Disable Authoriser Requirement, 394
- Display Welcome Message on Login, 394
- Document Reference, 24
- Duty Calculation, 83
- EAN Codes. *See* GS1 Codes
- Email – Sender Email Address, 394
- Email – Sender Name, 394
- Email – Smt Server, 394
- Email – Smt Server Debug, 394
- Email – Smt Server Port, 394
- Email Messaging Parameters, 349
- Email Send Protocol – MAPI | SMTP, 394
- Emailing of Serial Numbers, 350
- Enable Backdate of Sales Order Delivery Date*, 394
- Enable Manual Putaway During Receipt, 394
- Enable Receipt Date Change Authorisation, 394
- Enable Text To Speech, 394
- Enforce Strict Client Storage Zoning, 394
- Enforce Strict Password Reign, 394
- Entity Profiles, 54
- Excel Spread sheet Export function, 401
- Expand Treeview Menu to 2<sup>nd</sup> Level, 395
- Expiry Date, 78
- Fashion
  - Item Class, 78
  - Item Color, 78
  - Item Size, 78
- FEFO-FIFO, 64
- FEFO-FIFO SPACE OPTIMISE, 64
- Field Access, 42
- Field Length of Product Code (Max. 30), 395
- File Attachments, 296
  - Digitized copy of POD, 141
  - Product Definition, 80
  - Receipt Check In, 105
  - Sales Orders Entry, 124
- Frequent Asked Questions, 379
- Generate pallet label from Check In, 395

- Grade-Zone, 336
- GS1 Product ID, 79
- health warning labels, 87
- Individualised Pick Task Numbering, 395
- Installing CRISTAL WMS, 373
- Introduction to Crystal Reports™, 354
- inventory replenishment and management, 80
- Item Color Optional, 346
- Item Size Optional, 120, 124, 346
- Item Specific Parameters, 352
- Job Costing, 104
- Key Fields Max Length, 395
- Kitting Orders, 146
- KPI – Whse Usage Archived Data, 395
- Licensed Warehouses. *See* Customs Lots Registry
- Licensee Address, 31
- List Sales Order with Data Entry status, 396
- List Sales order with Waiting and Backorder status, 396
- List Sales Orders with Picking and Picked status, 396
- LOC\_AISLE\_DIGIT, 396
- Location Address as Pallet #, 396
- Location Address Components Separator, 396
- Location Bay – Number of Digit, 396
- Location Level – Number of Digit, 396
- Location Setup, 46
- Location Slot – Number of Digit, 396
- Locations Maintenance, 51
- Locations Setup, 50
- Logout after minutes inactive, 396
- Lot Number Client Maintenananc, 304
- Lot Tracking, 77
- Mandatory Adhoc Logistics Services Entry, 396
- Mandatory Document Reference Entry, 396
- Max Load per Task, 38
- Maximum Tasks, 38
- Menu Options, 33
- Minimum Characters for Password, 396
- Month Document Series – Debit / Credit Note, 396
- Nesting Factor, 79
- Net Weight, 79
- No of working decimal places during amount computation, 396
- No VA-Service Confirmation Code String, 396
- Nullify Receipt, 104
- Number of Days Backdating for Billing Computation, 396
- Order Types, 23
- Orders Picking
  - Pick Method, 63
- Packaging UOM Configuration, 81
- Pallet Default
  - Equivalent Qty for other UOM, 393
  - Pallet Equivalent Qty for EA / PC, 393
  - Quantity, 393
- Pallet Default Dimensions
  - Depth, 393
  - Height, 393
  - Standard Width, 396
  - Weight, 393
  - Width, 393
- Pallet ID. *See* Pallet Numbering
- Pallet Label, 104
- Pallet Numbering
  - Control Level, 397
  - Enable Recycle, 397
  - Next (New), 101
- Parts Maintenance Schedule
  - Preservation Code, 82
- Password Change, 397
- Pick from reserve - requirement exceed % pickface max, 347
- Pickfaces and Preferred Storage Locations, 83
- Picking
  - Change Location, 153
  - Change Priority, 153
- PQServer Desktop, 127
- Prefix YYMM - Credit Note (Y/N), 397
- Prefix YYMM - Debit Note (Y/N), 397
- Preview before Printing, 397
- Print Checklist on Creation, 397
- Print Good Received Note on CheckIn, 397
- Print Good Received Note on Putaway via Print Queue, 397
- Print Queue Interval, 397
- Print Short Pick Alert (Task Confirmation), 397
- Print Short Supplied Alert (Task Generation), 397
- Printer Group, 38
- Product ID – System Assugn, 343
- Product ID Scan
  - Detail Entry, 105
- Product Price Maintenance, 89
- Product Status, 77
- Production Date, 78
- Product's Billing Group, 80
- putaway to a fixed location, 381
- QA Release – Default multi-select ALL rows, 398
- QA Release – Default SELECTED Status, 398
- Qualified Barcode
  - Detail Entry, 106
- Query Sort Sequence – DESCENDING, 398
- Real Time Display – New Order Check (minutes), 398
- Real Time Display – Refresh Interval (minutes), 398
- Real Time Display – Wave file – path and name, 398
- Receipt – Enable Manual Input Date, 398
- Receipt Costing, 107
- Receipt Specific Lot Number, 306
- Replenishment
  - Manual Trigger. *See* Replenishment Transfer
- Replenishment Transfers, 149
- Reports and WMSNET Access, 40
- Resize Form Enabled, 398
- Resize Grid Enabled, 398
- RETURNS Receipt, 107
- Reuse of Password, 398
- RF Devices Register, 27
- Sales Order Picking. *See* Orders Picking
- Sales Order Picking Default Mode, 398
- Sales Order Tasks Creation at Order Entry, 399
- Sales Orders - Mandatory Document Reference, 346
- Sales Orders - Permitted Grade, 347
- Sales Orders - Pick Loose from PICKFACE ONLY, 347
- Sales Orders - Pick separate whole and loose, 347
- Sales Orders - Picks Returned Stock First, 347
- Sales orders – print on Release to Whse, 347
- Sales Orders – WHOLE Picks Only, 347
- Serial Number control, 78
- Serial Numbered Product
  - Check in, 106
- Serialized Attributes
  - Detail Entry, 106

- Site Configurable, 17
- Site Licence, 30
- Site-specific Corporate Bitmap filename, 399
- SMS Messaging, 314
- Stack Factor, 79
- Station Maintenance, 48
- Station Setup, 47
- Status Maintenance, 53
- Stock Adjustment - Authorisation Required, 346, 347
- Stock Adjustment - Ignore Location Check, 347
- Stock Control Parameters, 77, 88
- Stock Count – Post Serialised Item Variance, 348
- Stock Damaged Auto Clear, 348
- Stock Owner, 78
- Stock Owners, 85
- Stock Ownership Options, 348
- Stock Relabel - Allow QA Grade Change, 348
- Stock Status Query, 88
- Stocking Level control
  - Maximum Stock, 80
  - Reorder Level (Safety Stock), 80
- Stocktake - Include ZERO stock location, 348
- Stocktake - Initialise Count Quantity as ZERO, 348
- Storage Ambiance, 80
- Storage Ambiance, 80
- Storage Zones, 77
- Substitute Code, 79
- Supplier Item Codes, 90
- Supplier SKU, 86
- Supplier tracking, 79
- Support Contact, 31
- System Configuration, 17
- System Configuration Setting, 391
- System Generated GRN Numbering Only, 348
- System Generated SO Numbering Only, 348
- System Setting, 30
- Tasks Assignment, 38
- Time difference between Server and Workstation allowed (minutes), 399
- Transfer Released Quarantine To Storage, 399
- Truck Loading Function Required, 348
- Truckers Access, 39
- UDF Field Captions, 25
- UDF Parameters List, 20
- UDF Procedures, 28
- Unit of Measurement, 22
- UOM, 22
- UOM Setup Help, 81
- User Access Control, 32
- User configurable, 85
- User Configurable, 18
- User Define Parameters, 19
- User Group, 32
- User Language, 25
- User Profiles, 43**
- Values Add Services
  - Enforced Input when applicable, 348
  - Service Update Control Flag, 399
- Vendor Managed Inventory, 241
- Warehouse, 46
- Warehouse Setup, 46
- Warehouse Task Priorities, 26
- Warehouse Tasks, 150
  - Picks, 150
  - Putaway, 150
  - Stock Count, 150
  - Transfers, 150
- Warehouse Tasks – Enable Same Location Change, 348
- Warehouse Tasks Manage, 153
- Waybill Manage, 319
- WHOLE Picks Only, 347
- Whole Unit - Client Default, 342
- WI Import2, 245
- WI Imports
  - CSV File Structure, 249
  - Excel File Structure, 249
- Windows Service Programs, 362
- Work Areas and Tasks, 37
- Work Areas or zones accesses, 39
- Workdays, 26
- Works Orders – System Assign, 399
- XDOCK Receipt, 107
- XDOCK-B (Breakbulk), 112
- XDOCK-D, 111
- Zero Transaction Movement Class, 348
- Zone Maintenance, 48
- Zones Maintenance, 52
- Zone-Station Definition, 49