Sterling Commerce
An IBM Company

Networked Warehouse Management System PCA

Implementation Guide

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WARRANTY DISCLAIMER

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Preface

This manual explains the Sterling Networked Warehouse Management System PCA and the Reference Implementation provided along with it. This manual also contains information about the various processes and solutions offered by the Sterling nWMS PCA.

Intended Audience

This manual provides information for individuals responsible for implementing and using the Sterling nWMS PCA Reference Implementation.

Structure

This document contains the following chapters:

Chapter 1, "Introduction"

This chapter introduces the Sterling nWMS PCA to you, and explains the different types of installations.

Chapter 2, "Participant Modeling"

This chapter explains the Participant Model of the Sterling nWMS PCA with the help of examples.

Chapter 3, "Catalog and Product Management"

This chapter explains the different catalog or Product Management configurations that are provided as a part of the Sterling nWMS PCA.

Chapter 4, "Warehouse Layout Configuration"

This chapter explains the standard warehouse layout configuration that is provided with the Sterling nWMS PCA.

Chapter 5, "Inventory Rules Configuration"

This chapter explains the inventory tracking attributes configured in the Sterling nWMS PCA.

Chapter 6, "Document Types"

This chapter lists the different document types that are provided in the Sterling nWMS PCA.

Chapter 7, "Productivity and Task Types"

This chapter lists the task types, productivity types and the Standard Allowable Minutes provided as a part of the configuration data in the Sterling nWMS PCA.

Chapter 8, "Receive and Putaway"

This chapter explains the Receiving process and solution offered by the Sterling nWMS PCA.

Chapter 9, "Location Mass Maintenance"

This chapter explains the process of updating the attributes of a set of locations at the same time.

Chapter 10, "Managing Activity Demands"

This chapter explains how to create, modify, and delete Activity Demands using the Sterling nWMS PCA.

Chapter 11, "Quality Control"

This chapter explains the Quality Control process and solution offered by the Sterling nWMS PCA.

Chapter 12, "Vendor Compliance"

This chapter explains the Vendor Compliance process and solution offered by the Sterling nWMS PCA.

Chapter 13, "Move Request"

This chapter explains the Move Request process and solution offered by the Sterling nWMS PCA.

Chapter 14, "Count"

This chapter explains the Count process and solution offered by the Sterling nWMS PCA.

Chapter 15, "Outbound"

This chapter explains the Outbound process and solution offered by the Sterling nWMS PCA.

Chapter 16, "Replenishment"

This chapter explains the Replenishment process and solution offered by the Sterling nWMS PCA.

Chapter 17, "Value-Added Services"

This chapter explains the VAS process and solution offered by the Sterling nWMS PCA.

Chapter 18, "Returns"

This chapter explains the Returns process and solution offered by the Sterling nWMS PCA.

Chapter 19, "Dynamic Item Velocity Calculation"

This chapter explains the process of calculation of the dynamic velocity codes for items and updating the same using the Sterling nWMS PCA. It also explains slotting if integrated with a third party slotting engine.

Chapter 20, "Integration With Slotting Engines"

This chapter explains the integrating with Slotting Engines by the Sterling nWMS PCA.

Appendix A, "Transaction Data"

This appendix explains the transaction data that has been provided as a part of the Sterling nWMS PCA.

Appendix B, "Summary of New Components for Existing Sterling Supply Chain Applications Customers"

This appendix is meant as a quick reference for individuals who are already very familiar with the Sterling Supply Chain Applications to see which components were added or modified in implementing the Sterling nWMS PCA.

Appendix C, "Customizing the Reference Implementation"

This appendix explains how to customize the Reference Implementation data provided as a part of the Sterling nWMS PCA, customize your node, use the test bed for production, and move data from your test bed to production.

Appendix D, "Localizing the Sterling nWMS PCA"

This appendix explains how to localize the Sterling nWMS PCA.

Appendix E, "Packing Using the Sterling Supply Chain Mobile Application"

This appendix explains how to pack, verify pack, and unpack using the Sterling Supply Chain Mobile Application.

Appendix F, "Menu-Level Customization for the Sterling Supply Chain Mobile Application"

This appendix explains how to avoid copying of HTMLs and JSPs while performing menu level cusotmization.

Appendix G, "XML Integration SED"

This appendix explains how XML is generated by the system which is used to file the SED as a part of the Sterling nWMS PCA.

Documentation

For more information about the Sterling Networked Warehouse Management System PCA® (Sterling nWMS PCA®) components, see the following manuals in the Sterling nWMS PCA® documentation set:

- *Sterling Networked Warehouse Management System PCA® Release Notes*

- *Sterling Networked Warehouse Management System PCA® Installation Guide*

- *Sterling Networked Warehouse Management System PCA® Overview*

- *Sterling Networked Warehouse Management System PCA® Implementation Guide*

- *Sterling Networked Warehouse Management System PCA® Reports Guide*

- *Sterling Networked Warehouse Management System PCA® Analytics Guide*

- *Sterling Networked Warehouse Management System PCA® Printed Documents Guide*

- *Sterling Networked Warehouse Management System PCA® Billing Activity Reporting Engine Guide*

- *Sterling Networked Warehouse Management System PCA® Upgrade Guide*

- *Sterling Networked Warehouse Management System PCA® Javadocs*

For more information about the Sterling Supply Chain Applications® components, see the following manuals in the Sterling Supply Chain Applications® documentation set:

- *Sterling Supply Chain Applications® Release Notes*

- *Sterling Supply Chain Applications® Installation Guide*

- *Sterling Supply Chain Applications® Upgrade Guide*

- *Sterling Supply Chain Applications® Performance Management Guide*

- *Sterling Supply Chain Applications® High Availability Guide*

- *Sterling Supply Chain Applications® System Management Guide*

- *Sterling Supply Chain Applications® Localization Guide*

- *Sterling Supply Chain Applications® Customization Guide*

- *Sterling Supply Chain Applications® Integration Guide*

- *Sterling Supply Chain Applications® Product Concepts*

- *Sterling Supply Chain Applications® Warehouse Management System Concepts Guide*

- *Sterling Supply Chain Applications® Platform Configuration Guide*

- *Sterling Supply Chain Applications® Distributed Order Management Configuration Guide*

- *Sterling Supply Chain Applications® Supply Collaboration Configuration Guide*

- *Sterling Supply Chain Applications® Product Management Configuration Guide*

- *Sterling Supply Chain Applications® Logistics Management Configuration Guide*

- *Sterling Supply Chain Applications® Reverse Logistics Configuration Guide*

- *Sterling Supply Chain Applications® Warehouse Management System Configuration Guide*

- *Sterling Supply Chain Applications® Platform User Guide*

- *Sterling Supply Chain Applications® Distributed Order Management User Guide*

- *Sterling Supply Chain Applications® Supply Collaboration User Guide*

- *Sterling Supply Chain Applications® Global Inventory Visibility Configuration Guide*
  Sterling Supply Chain Applications® Logistics Management User Guide

- *Sterling Supply Chain Applications® Reverse Logistics User Guide*

- *Sterling Supply Chain Applications® Warehouse Management System User Guide*

- *Sterling Supply Chain Applications® Mobile Application User Guide*

- *Sterling Supply Chain Applications® Analytics Guide*

- *Sterling Supply Chain Applications® Javadocs*

- *Sterling Supply Chain Applications® Glossary*

- *Sterling Supply Chain Applications® Carrier Server Guide*

- *Sterling Supply Chain Applications® Application Server Installation Guide* (for optional component)

For a description of the various documents in the Sterling nWMS PCA® documentation set, see the Sterling nWMS PCA® Documentation Home Page at:

`<YFS_HOME>/documentation/YNW_doc_home.html`

where `<YFS_HOME>` = `<YANTRA_HOME>/Runtime`

and `<YANTRA_HOME>` is the directory where this PCA and *Sterling Supply Chain Applications®* are installed.

Conventions

The following conventions may be used in this manual:

Convention	Meaning
`. . .`	An ellipsis represents information that has been omitted.
< >	Angle brackets indicate user-supplied input.
`mono-spaced text`	Mono-spaced text indicates a file name, directory path, attribute name, or an inline code example or command.
/ or \	Slashes and backslashes are file separators for Windows, UNIX and LINUX operating systems. The file separator for the Windows operating system is "\" and the file separator for Unix and Linux systems is "/". The Unix convention is used unless otherwise mentioned.
<YANTRA_HOME>	User-supplied location of the Sterling Supply Chain Applications installation directory.
<YFS_HOME>	Location of the generated <YANTRA_HOME>/Runtime directory.
<YANTRA_HOME_OLD>	User-supplied location of the Sterling Supply Chain Applications installation directory for previously installed releases. This is only applicable for Release 7.7 or above.
<YFS_HOME_OLD>	This is the <YANTRA_HOME_OLD>/Runtime directory of previously installed releases.

Part I
Sterling nWMS PCA Common Configurations

This part of the manual explains the common configurations that are needed for the Sterling Networked Warehouse Management System PCA.

The following topics are covered in detail:

- Participant Modeling

- Catalog and Product Management

- Warehouse Layout Configuration

- Inventory Rules Configuration

- Document Types

- Productivity and Task Types

1

Introduction

The Sterling nWMS PCA helps you manage operations in mid-sized Finished Goods distribution centers (DCs). Shipments may be shipped to consumers, retailers or distributors, or mom and pop stores. The execution process includes the use of mobile devices for managing operations in the warehouse. It includes support for parcel as well as less-than-truckload (LTL) shipments. Shipment consolidation or transportation optimization, customer compliance, productivity, space optimization, and so forth, are the key problems that the Sterling nWMS PCA solves.

The Sterling nWMS PCA also provides a pre-configured Reference Implementation. The Reference Implementation provides standard configurations and processes followed in a typical finished goods warehouse. Additionally, it may also include certain transactional data necessary to demonstrate its ability.

You can opt to install the Reference Implementation, and may need to integrate with third-party Distributed Order Management (DOM) or Enterprise Resource Planning (ERP) solutions. In this case, the Sterling nWMS PCA provides some default integration mechanisms to upload the information to the host systems. The host systems can be legacy systems or some other ERP systems.

Similarly, if the Sterling nWMS PCA is implemented with the Sterling Supply Chain Mobile Application, to backup the Sterling Supply Chain Mobile Application process, certain transactions are configured such that they can be performed through paper-based requests.

Installing the Sterling nWMS PCA Reference Implementation is optional. Also, there are various options when installing the Reference Implementation:

- Installing the Sterling nWMS PCA with Your Own Master Data
- Installing the Sterling nWMS PCA with Your Own Configuration Data
- Installing the Sterling nWMS PCA with Your Own Transaction data

For more information about the different options for installing the Reference Implementation, see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

1.1 Installing the Sterling nWMS PCA with Your Own Master Data

The default installation of the Sterling nWMS PCA Reference Implementation is done with the configuration data only.

To use your own master data, choose the default installation. To load the master data, you can use the Sterling Supply Chain Applications Rapid Deployment Tools (RDT). For more information about the RDT, see the *Sterling Supply Chain Applications Installation Guide*.

You can use the RDT for installing locations, installing items, and changing the equipment configuration to point to the appropriate locations.

1.2 Installing the Sterling nWMS PCA with Your Own Configuration Data

If you choose to install the Reference Implementation with your own configuration data, Sterling Commerce assumes that you understand the various concepts and configurations involved. For more information about the various concepts and configurations, see the *Sterling Warehouse Management System Concepts Guide* and the *Sterling Warehouse Management System Configuration Guide*.

For understanding the details of the processes provided with the Sterling nWMS PCA, see Part II, "Sterling nWMS PCA Processes and Features". However, remember that the data provided in the examples use the Sterling nWMS PCA Reference Implementation.

1.3 Installing the Sterling nWMS PCA with Your Own Transaction data

Using the transaction data provided with the Sterling nWMS PCA helps you to understand the processes described in Part II, "Sterling nWMS PCA Processes and Features". All examples provided in this document uses the transaction data provided with the Sterling nWMS PCA. However, if you use your own transaction data, ensure that the data is complete and in sync with the configuration and master data provided by the Sterling nWMS PCA.

2

Participant Modeling

The Participant Model of the Sterling Networked Warehouse Management System PCA maps to third-party logistics (3PL) requirements and has the ability to add new clients (Enterprises). The Hub typically sits on top of the Participant Model.

This chapter explains the Participant Model and its Reference Implementation provided by the Sterling nWMS PCA.

2.1 Participant Model

The business entities that participate as trading partners with an enterprise in the supply chain are referred to as Participants. Participants can be given different roles. For example, a participant can be an Enterprise, Seller, Buyer, Node, or Carrier.

Each role defined for a participant gives it a certain set of abilities and attributes. Participants can be granted or revoked permissions that determine how they can modify and process orders.

Each participant can have its own generic attributes defined, such as shipping and billing addresses, communication protocols, or calendars. Additionally, relationships between participants can be created by defining parent and children organizations.

If a participant is given the role of Enterprise, it can maintain its own inventory and catalog.

For more information on Participant Modeling, see the *Sterling Supply Chain Applications Product Concepts* and the *Sterling Product Management Configuration Guide*.

2.2 User Groups and Users

User groups are a collection of users who perform a similar task. For example, a group of customer service representatives might be put in a Customer Service Representative user group.

Users can belong to multiple user groups, to which permissions are assigned. A user who belongs to multiple user groups retains the least restrictive set of permissions defined by the groups they belong to. For example, if a user belongs to a user group that permits them to use the Application Consoles and they also belong to a user group that only permits them to use the Application Consoles and Configurator, the user will have access to both applications.

Each organization has its own user groups. User groups can only contain users for the same organization that the user was created for, except in the case of a user group created by the Hub organization, which can contain users of any organization.

The set of user groups and menu groups that are provided with the Sterling nWMS PCA are:

Table 2–1   Users Groups and Menus

User Group	Menu
Warehouse Manager	WMS Node Warehouse Manager Menu
Inventory Supervisor	WMS Node Inventory Supervisor Menu
Receiving Supervisor	WMS Node Receiving Supervisor Menu
Shipping Supervisor	WMS Node Shipping Supervisor Menu
Enterprise Specific Warehouse User	WMS Node User Menu
Enterprise User	Enterprise User Menu
Node User	WMS Lite Node User Menu
Mobile User	WMS Mobile User Menu
Station User	WMS Station User Menu
System Administrator	WMS System Admin Menu
Sterling nWMS PCA System Administrator	YNW System Admin Menu

2.2.1 Queue Management

Queue Management is used to create queues for different users and types of alerts. These queues can be designed to notify specified users of alerts at configured levels and times. Queue Management is also used to define how the configured users are notified.

For more information about Queue Management, see the *Sterling Product Management Configuration Guide*.

The queues provided with the Sterling nWMS PCA are:

Table 2–2   Queues

Queue	Description
INV_CONTROL	• Alerts when move requests have exceptions during release. • Alerts, for each item, when the release wave does not take the wave to the Released status. • Short Pick Alerts if short picks are recorded for an item. • Alerts when the wave gets cancelled during Wave Release. The Inventory Control alert should be consolidated based on item for a Wave. That is, If a wave contains 10 shipment with 2 distinct items, only 2 alerts should be raised in the inventory Queue.
RECEIVING	• Alerts when receipts have exceptions during receipts. • Alerts when shipments are received but not putaway within 4 hours of receipt.
SHIPPING	• Alerts if Shipments have not reached the Packed status four hours before the Requested Ship Date. • Alerts, for each shipment, when the release wave does not take the wave to the Released status.
DEFAULT	• The default queue for any other exceptions is not categorized in the above list.

2.3 Reference Implementation

This section explains the Reference Implementation for Participant Modeling, provided with the of the Sterling nWMS PCA.

2.3.1 For Participant Model (Configuration Data)

The Sterling Networked Warehouse Management System PCA comes with a pre-configured Participant Model.

The structure of the Sterling nWMS PCA Participant Model is illustrated in Figure 2–1.

Figure 2–1 Participant Model
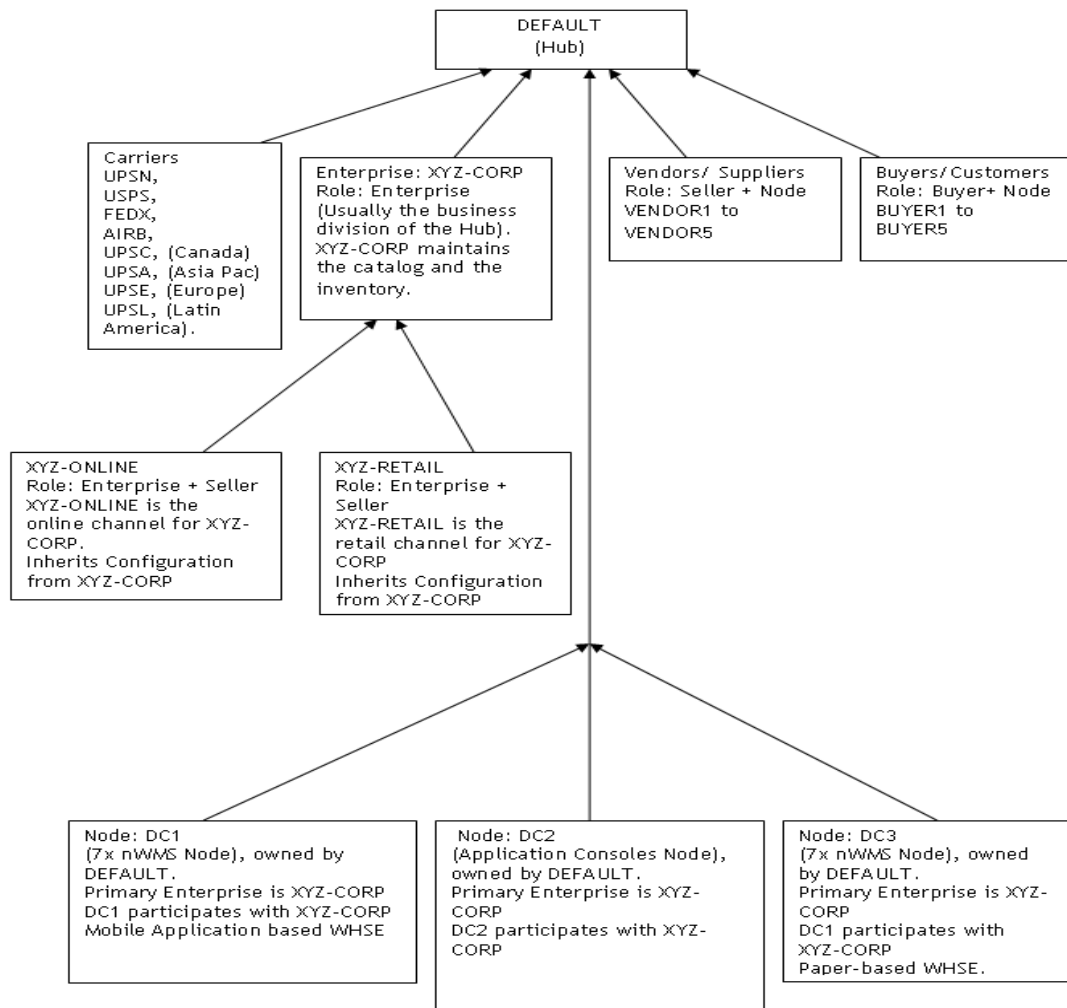
In this figure,

1. DEFAULT is the Hub.

2. XYZ-CORP is the Enterprise.

    • Enterprises have their own Inventory and Catalog Organizations.

    • XYZ-CORP is its own Inventory and Catalog Organization.

3. XYZ-RETAILER is the Enterprise and Seller

    • XYZ-RETAILER is the retail channel for XYZ-CORP

    • XYZ-RETAILER inherits configurations from XYZ-CORP

4. XYZ-ONLINE is the Enterprise and Seller

    • XYZ-ONLINE is the online channel for XYZ-CORP

    • XYZ-ONLINE inherits configurations from XYZ-CORP

5. Vendors/Suppliers are modeled as both Sellers and Nodes.

6. Buyers/Customers are modeled as both Buyers and Nodes.

7. DC1 is the nWMS node owned by DEFAULT.

    • DC1 participates with XYZ-CORP.

    • DC1 is assumed to follow a Sterling Supply Chain Mobile Application-based process.

8. DC2 is the Application Consoles node owned by DEFAULT.

    • DC2 participates with XYZ-CORP.

    • DC2 is assumed to maintain inventory externally.

9. DC3 is the nWMS node owned by DEFAULT.

    • DC3 participates with XYZ-CORP.

    • DC3 is assumed to follow a paper-based process.

10. In addition to Parcel Carriers, some major LTL and TL Carriers are provided as a part of the master data.

In addition to this factory setup, the PRO # generation logic for each of the carriers is also configured.

2.3.2 For User Groups and Users

A user group is a collection of users who perform similar tasks. User groups are created to specify screen level access permissions. Each user needs to be associated with a specific user group.

All users are provided with specific, pre-configured menus, based on the user group to which they belong.

The default password for the users is the same as the user name. This password can be changed later.

The prefix of the user name represents the node or enterprise to which the user belongs.

The set of users that are configured for warehouse operations are:

Table 2–3   Users

Users	User Group	Menu
dc1mgr dc3mgr	Warehouse Manager	WMS Node Warehouse Manager Menu
dc1invs dc3invs	Inventory Supervisor	WMS Node Inventory Supervisor Menu
dc1inbs dc3inbs	Receiving Supervisor	WMS Node Receiving Supervisor Menu
dc1shps dc3shps	Shipping Supervisor	WMS Node Shipping Supervisor Menu
dc1corpuser dc3corpuser	Enterprise Specific Warehouse User	WMS Node User Menu
xyzuser	Enterprise User	Enterprise User Menu
dc1u1 dc3u1	Node User	WMS Lite Node User Menu
dc1m1 dc3m1	Mobile User	WMS Mobile User Menu
dc1s1 dc3s1	Station User	WMS Station User Menu

Table 2–3   Users

Users	User Group	Menu
dc1admin dc3admin	System Administrator	WMS System Admin Menu
ynwadmin	Sterling nWMS PCA System Administrator	YNW System Admin Menu

2.3.3 For Saved Searches

All users are provided with favorites. These are based on individual users and are saved searches that are expected to be used most often by that user. Users can add or delete any search from these saved searches.

2.3.4 For Menu Groups

The application provides only the relevant menu options for each user, based on their profile. The default menu is filtered according to the user's roles. The Reports menu displays for all supervisors.

The different menu groups provided are:

Table 2–4   Menu groups

Menu	Permissions
WMS Node Warehouse Manager Menu	Node user menu plus the configurator menu
WMS Node Inventory Supervisor Menu	Node inventory and supply menu options
WMS Node Receiving Supervisor Menu	Inbound and inventory menu options
WMS Node Shipping Supervisor Menu	Outbound and other shipment related menu items
WMS Node User Menu	Standard node user menu
WMS Mobile User Menu	Mobile menu
WMS Station User Menu	Access to all stations and approaching consoles
Enterprise User Menu	Standard Enterprise user menu

Table 2–4   Menu groups

Menu	Permissions
WMS System Admin Menu	System Management Console, Printers, Configuring Services, Security Configurations (Users, Groups, Menu), Agent Criteria Setup, Inbound, Outbound UI's without save access.
Node Enterprise User Menu	Access to standard node and enterprise user menu

3

Catalog and Product Management

This chapter explains the different Catalog and Product Management configurations that can be performed using the Sterling Networked Warehouse Management System PCA.

This chapter explains the Product Management and its Reference Implementation provided with the Sterling nWMS PCA.

3.1 Item Classifications (Configuration Data)

Item classifications can be created to group a set of items logically. In most warehouses item classifications are used for:

- Location storage preference: allowing only particular item classifications to be stored in certain locations. For example, if the location storage code is Refrigerated.

- Counting a particular classification of items.

The item classification hierarchy depends upon the type of items stored in the warehouse.

3.2 Items

A product item is a physical unit that can be ordered, shipped, and returned. A product item is uniquely defined by its item ID and unit of measure. You can configure items, units of measure, master catalogs, categories, classifications, and additional item attributes.

For more information about configuring product item inventory rules, see the *Sterling Global Inventory Visibility Configuration Guide*.

For more information about configuring product item sourcing rules, see the *Sterling Distributed Order Management Configuration Guide*.

3.3 Reference Implementation

This section explains the Reference Implementation for Product Management, provided as a part of the Sterling nWMS PCA.

3.3.1 For Items (Master Data)

The following is the set of items that are provided with the Sterling nWMS PCA installation:

Table 3–1 Items

Description	Item ID (PREFIX-VARIABLE)	Number of Items	Comments	Size/Weight
Normal	NOR-00001	10	Normal item, neither Tag-tracked nor Serial-tracked.	5x5x5/1LBS
Tag-controlled	TAG-B-001	2	Tag-controlled item tracking Batch Number	5x5x5/1LBS
Serialized	SZ-000001	2	Serialized item tracking Serials during returns and outbound	5x5x5/1LBS
Serial-tracked	ST-000001	2	Serial-tracked item	5x5x5/1LBS
Time-sensitive	TS-000001	1	Time-sensitive item	5x5x5/1LBS
Physical Kit	PK-000001	1	Physical Kit item	5x5x5/1LBS
Logical Kit	LK-000001	1	Logical Kit item	5x5x5/1LBS
Dynamic Physical Kit	DPK-00001	1	Dynamic Physical Kit item	5x5x5/1LBS
FIFO-tracked	FIFO-0001	1	FIFO-tracked item	5x5x5/1LBS
Small container	SMALL-CONTAINER	1	Item modeled as container	10x15x10/1LBS

Table 3–1   Items

Description	Item ID (PREFIX-VARIABLE)	Number of Items	Comments	Size/Weight
Large container	LARGE-CONTAINER	1	Item modeled as container	10x15x20/2LBS
Component item	COMP-0001	5	Component item.	5x5x5/1LBS
Tag-and Serial-tracked	TAGST-L01	1	Tag- and Serial-tracked item tracking lot number.	5x5x5/1LBS

4

Warehouse Layout Configuration

This chapter explains the warehouse layout configuration and its Reference Implementation provided by the Sterling nWMS PCA.

4.1 Warehouse Layout

The warehouse layout defines the physical layout and related attributes of a warehouse.

These section describes some concepts related to the warehouse layout.

4.1.1 Nodes

A Node (also called a warehouse) is an entity that receives or ships inventory. A node belongs to an organization or enterprise, and may be shared across all enterprises. For example, nodes are used by buyer organizations for receiving inventory, and by seller organizations for shipping inventory. A carrier organization, on the other hand, uses nodes both for shipping and delivering inventory.

A node is defined for all types of warehouses including distribution centers, flow-through centers, returns or VAS centers, or third party distribution locations. For more information about defining a node, see the *Sterling Product Management Configuration Guide*.

4.1.2 Location Size Codes

A Location Size Code defines the capacity of a location. The capacity of a location is specified by its length, width, and height.

4.1.3 Location Storage Codes

A Location Storage Code indicates the storage classification for a location. Location storage code enables a warehouse to store all items of a given storage profile at the same location. For example, inflammable items are stored in locations equipped to handle fire hazards. Marking all suitable locations with a certain storage code ensures that inflammable items are stored safely at these fireproof locations.

4.1.4 Velocity Codes

Velocity Codes are attributed to a location. A velocity code associates the location to a SKUs throughput. For example, fast moving items are stored in the lower level locations or locations reachable by hand, in the bulk zone.

4.1.5 Zones

A Zone classifies a set of locations that share common properties. A warehouse is divided into multiple zones based on its attributes, like package type and velocity codes. Inventory for a SKU is either stocked in a specific zone or in multiple zones and locations. For example, case storage and unit storage make separate zones. Camcorders are stored in the lock and key zone, while television sets are stored in the bulk storage zone.

A zone enables defining constraints for putaway, retrieval, and picking of SKUs in the warehouse. Zone level constraints can also be applied on a user using task management. For example, a user dedicated to pick only in the refrigeration zone or a loose pick zone.

If a Zone contains a Location of VIRTUAL type, it is recommended that locations of other types be avoided in the same zone.

4.1.6 Locations

A Location is the physical place where inventory is stored. A location stores inventory of different sizes and classifications. For instance, a location includes attributes like aisle number, bay number, and level number. A location is classified as in-transit location, regular location, virtual staging location, and dock location.

A location is always associated with a zone and a node. A location number uniquely identifies a location in the warehouse. Typically, a location number is a combination of the zone, aisle, bay, level and the slot it belongs to.

A location is classified as:

- DOCK - when it is belongs to a dock location.

- INTRANSIT - when it is a mobile location. For example, the location associated to a forklift.

- VIRTUAL - when it is associated to inventory that is deemed as not being in the warehouse. For example, a bin location for variance quantities.

- STAGING - when it is an intermediate location for a task. For example, drop-off or floor locations.

- REGULAR - all other permanent and static storage locations.

4.1.7 Dock Scheduling

The Dock scheduling functionality of the Sterling nWMS PCA enables you to manage the dock locations in a warehouse for receiving inbound shipments and shipping outbound shipments. The dock scheduling rule enables you to specify the number of days for which you can take a dock appointment.

The dock scheduling functionality enables you to manage appointments. Dock scheduling is based on the warehouse calendar associated with the dock. This includes taking appointments for dock locations in the warehouse to receive inbound shipments and ship outbound shipments. Each appointment is assigned a unique reference number, called the Appointment Number, with which the appointment can be traced.

For more information about dock locations, see the *Sterling Warehouse Management System Configuration Guide*.

For more information about scheduling dock appointments, see the *Sterling Warehouse Management System User Guide*.

4.1.8 Equipment Types

In a warehouse, different types of equipments are used to execute various tasks. Examples of various types of equipment used in a warehouse include sorter, tote, forklift, and pallet jack.

An individual equipment is identified through an equipment ID, and categorized into one of the Equipment Types used in that warehouse. The equipment used in a warehouse may be stationary (for example, a sorter) or mobile (for example, Pallet Jack, Fork Lift, or Cart).

In the Sterling nWMS PCA, equipments are modeled in one of the following ways:

*   As a Set of Locations

    The equipment that are stationary are typically modeled as locations. Also certain mobile equipment that do not need to be tracked in inventory like Fork Lifts or Pallet Jacks are modeled as Locations.

*   As a License Plate

    Mobile equipment that are physically moved around (between different physical locations) and are required to be tracked at their current location, are modeled as license plates. Examples of such equipment include Carts and Totes.

    Equipment modeled as license plates could be modeled as a case or pallet depending on their size. For example, carts would be modeled as Pallets, while totes would typically be modeled as cases.

    Equipments modeled as license plates could have slots in them of different sizes for carrying products. This information of slots is used while s tasks that require these equipment for their execution. For example, Cart manifest batch.

    For more information about setting up an equipment type, see Setting Up an Equipment Type of the *Sterling Warehouse Management System Configuration Guide*

4.1.9 Stations

There are activities in a warehouse that are performed from stationary locations. Some examples include Packing, VAS, Receiving and Manifesting.

Each Station is associated with devices and labels or documents that are printed on demand or automatically.

4.2 Reference Implementation

This section explains the Reference Implementation for Inventory Rules Configuration, provided as a part of the Sterling nWMS PCA.

4.2.1 For Warehouse Layout Configuration (Master Data)

This template provides the standard configuration for the nWMS warehouse layout. The purpose of this template is to accelerate the implementation of the nWMS module.

The model warehouse layout is illustrated in Figure 4–1. This layout can be further customized. Track B indicates than both pallets and cases are tracked in the zone. Track N, does not track either cases or pallets.

Figure 4–1   Warehouse Layout
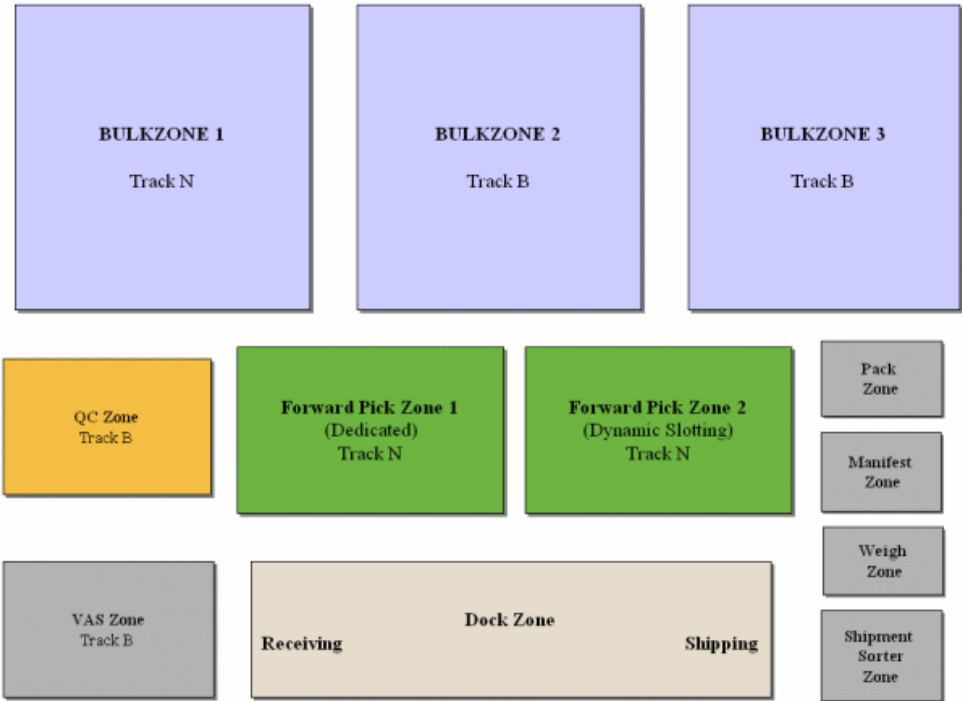
4.2.2 For Location Size Codes

Conventionally, most warehouse management system installations have standard Locations Size Codes. Location Size Codes are typically configured in terms of standard pallet size.

The following table lists the default Location Size Codes provided with the Sterling nWMS PCA:

Table 4–1   Location Size Codes

Location Size Code	Size	Weight
INFINITE	N/A	N/A
ONE-PALLET	40x48x72	1000 Pounds
TWO-PALLET	(40x48)x2x72	2000 Pounds

Table 4–1   Location Size Codes

Location Size Code	Size	Weight
EIGHT-PALLET	(40x48)x2x(72)x4 (4 Levels)	8000 Pounds
TWO-CASE-STORAGE	20x24x36	300 Pounds

4.2.3 For Location Storage Codes

Certain items stored in the warehouse may need special treatment. To facilitate this, we need locations with special Storage Codes.

The Location Storage configurations provided with the Sterling nWMS PCA are REFRIGERATED and LOCK_AND_KEY.

4.2.4 For Dock Appointments Scheduling

Conventionally, most warehouse management systems have standard calendars for taking appointments. Dock appointments are configured in terms of the standard warehouse calender.

Table 4–2 lists the default dock locations for DC1, along with their associated calendars.

Table 4–2   Dock Locations and Calendars for DC1

Dock Location	Calendar	Dock Type
D1-010101	My Calendar is enabled	Inbound and Outbound
D1-010102	My Calendar is enabled	Inbound
D1-010103	My Calendar is enabled	Outbound
D1-010104	Dock appointments cannot be scheduled for this dock location	

Table 4–3 lists the default dock locations for DC3, along with their associated calendars.

Table 4–3   Dock Locations and Calendars for DC3

Dock Location	Calendar	Dock Type
D1-010101	DC3 Calendar is enabled	Inbound and Outbound
D1-010102	DC3 Calendar is enabled	Inbound
D1-010103	DC3 Calendar is enabled	Outbound
D1-010104	Dock appointments cannot be scheduled for this dock location	

4.2.5 For Velocity Codes

Velocity codes can be used to classify items based on their rate of movement. Fast-moving items have the velocity code A.

The velocity codes provided with the Sterling nWMS PCA are A, B, and C.

4.2.6 For Zones and Locations

Most implementations use one-up sequences for Locations and Zones. The template provided by the Sterling nWMS PCA follows the same strategy to create Locations and Zones.

The following Zones are pre-configured in the Sterling nWMS PCA: BULK-ZONE1, BULK-ZONE2, BULK-ZONE3, DOCK-ZONE, PACK-ZONE, VAS-ZONE, MANIFEST-ZONE, FORWARD-PICK-ZONE1 (Dedicated), FORWARD-PICK-ZONE2 (Dynamic Slotting), and SHIP-SORT-ZONE.

Because most of our configuration data depends on Zones, they are considered to be part of the configuration data. Locations, on the other hand, are part of the master data.

4.2.7 For Equipment

The following standard equipment is considered to exist in the warehouse:

- Flat Beds
- Fork Lifts
- Grab Trucks
- Turret Trucks

- Single Slot Picking Carts

- Multi-Slot Picking Carts

- Shipment sorter.

All pieces of Equipment are associated with the same INTRANSIT location having INFINITE capacity, except for the Multi Slot Picking Cart, which has 16 locations in it, and the SHIPMENT-SORTER equipment, which has 20 locations in it.

4.2.8 For Devices

The warehouse also contains standard devices, such as printers and weighing scales.

4.2.8.1 Printers

The following printers are pre-configured with the Sterling nWMS PCA:

Table 4–4   Printers

Printer Name	Print Documents
HP-LASERJET-4300	PACKLIST, TASKLIST, VICS_BOL, COUNTSHEET, RECEIVING_WORKSHEET, LTL_MANIFEST, SHIPMENT_DOCUMENT, CERTIFICATE_OF_ORIGIN, and COMMERCIAL_INVOICE_DOCUMENT
ZEBRA-140XIII	CONTAINER_LABEL, UPS_PICKUP_SUMMARY, UPS_CARRIER_LABEL, FEDEX_CARRIER_LABEL, AIRB_CARRIER_LABEL, SPECIAL_TICKET_LABEL, WAVELABEL, AND YNW_LPN_LABEL_DOCUMENT

4.2.8.2 Weighing Scale

The following weighing scale is pre-configured with the Sterling nWMS PCA:

Table 4–5   Printers

Name	Description
Mettler Toledo	Mettler Toledo weigh Scale

4.2.9 For Stations

The standard stations provided by the Sterling nWMS PCA are:

- Pack Station
- Manifest Station
- Weigh Station
- Receive Station
- VAS Station

5

Inventory Rules Configuration

Configuring Inventory Rules helps to track inventory in the warehouse.

This chapter explains the inventory tracking attributes and its Reference Implementation provided by the Sterling nWMS PCA.

5.1 Inventory Tracking Attributes

To track inventory in the warehouse, the inventory is identified by certain attributes. This section explains these attributes.

5.1.1 Product Class

The Sterling Supply Chain Applications identify items as having a Product Class. This attribute is mandatory on an order and is the most important inventory attribute for an item.

Product Classes are typically used to indicate the condition of the inventory for an item. For example, Good Quality or Refurbished.

5.1.2 Inventory Status

Inventory Status is an additional classification of inventory at a node. The Inventory Status is directly connected to the availability of inventory. Inventory Status is applied at the time of receiving, and during packing or repair processes in a warehouse.

5.1.3 Inventory Adjustment Reasons

Inventory adjustments are associated with a reason code and reason text. These codes are used as tracking mechanisms for the exceptions

that require an adjustment. The inventory adjustment reason enables tracking and reporting of adjustments at a reason code level.

Reason code values are also interfaced to HOST to ensure that adjustments are attributed to the appropriate accounts.

Typically, inventory adjustment transactions are written for variances during cycle count or exceptions where inventory is found or not found.

5.1.4 Inventory Status Transitions

Inventory should be considered available or unavailable for certain operations based on the operations within the warehouse. For example, inventory should be unavailable for orders until putaway is complete. As soon as putaway is complete, the inventory should become available for orders automatically, without any intervention from users.

To facilitate this, Inventory Statuses are assigned to inventory. The Inventory Status of the inventory changes at different stages.

When inventory is received, it is assigned an appropriate Inventory Status to show that the inventory is awaiting inspection. When the inventory is moved to storage, the Inventory Status may change appropriately.

Inventory Statuses can be associated with zones. In this case, whenever a product moves into a particular zone, its Inventory Status gets transitioned to the Inventory Status that the zone is associated with. So, whenever a product is moved into the QC zone, its Inventory Status changes to the Inventory Status associated with the QC zone, which may indicate that the product is undergoing QC. When the product moves out of the QC zone into storage, its Inventory Status changes to the Inventory Status associated with the storage zone, which may indicate that the product is available for orders. In case of products that fail QC, they may be moved to the appropriate zone that is associated with an Inventory Status to mark the products as damaged and thus unavailable, or quarantined, or held until more QC is done on a larger sample.

If a product with the Inventory Status indicating that the product is awaiting inspection is moved directly into storage, it retains its inventory status. This is because no transition has been defined for the Inventory Status of the storage zone, when a product with that Inventory Status moves into storage. If the warehouse process so dictates, this can be overwritten by setting an appropriate Inventory Status transition. In that

case, products Putaway into the storage zone may become directly available for orders, even though they have not cleared QC as yet.

5.2 Reference Implementation

This section explains the Reference Implementation for Inventory Rules Configuration, provided as a part of the Sterling nWMS PCA.

5.2.1 For Product Class

The Product Classes configured as a part of the Sterling nWMS PCA are:

- FQ: stands for First Quality and indicates that inventory is in good condition.
- FD: stands for Factory Defects and indicates that the inventory is damaged.

5.2.2 For Inventory Status

The Sterling nWMS PCA configurations for the Inventory Status and associated Supply Type are:

Table 5–1   Inventory Statuses

Status	Description	Supply Type
AI	Awaiting-Inspection	HELD
N	Good	ONHAND
QF	QC-Failed	HELD
QH	QC-Hold	HELD
QUH	Quarantine Hold	HELD

5.2.3 For Inventory Adjustment Reasons

The default configurations for Inventory Adjustment Reasons are:

Table 5–2   Inventory Adjustment Reasons

Reason Code	Accounting bin (Y/N)	Description
SHIP		Used by the system while confirming the shipment.
RECEIPT		Used by the system while Receiving
PACK	Y	Used by the system during the pack process
INITIAL-LOAD		Used by the system while initially loading the inventory into the system.
CC	Y	Indicates that a different bin location is associated with the Cycle Count
PC	Y	Indicates that a different bin location is associated with the Physical Count
MISSING-STOCK		Indicates that the inventory is missing
OEM-DAMAGE		Indicates that the inventory is damaged by the OEM.
DATA-ENTRY		Indicates a Data Entry error.
RECEIPT-ERROR		Indicates an error during the receiving process
SHIP-ERROR		Indicates an error during the shipping process

Table 5–2   Inventory Adjustment Reasons

Reason Code	Accounting bin (Y/N)	Description
WHSE-DAMAGE		Used if the item has been damaged while performing some warehouse activities.
SCRAP		Indicates if the item has been scrapped.
PILFERAGE		Indicates if the item has been stolen.
OTHERS		Indicates that the adjustment is for any other reason

5.2.4 For Inventory Transitions

The default configuration for inventory status transitions is as shown below:

Table 5–3   Inventory Status transitions

Zones	Transition
For QC Zones	AI to QH

6

Document Types

This chapter explains the Document Types provided with the Sterling nWMS PCA.

6.1 Document Types (Configuration Data)

Document types carry information through a configured business process workflow. These documents are derived from base document types. A base document type defines the business documents that the Sterling Supply Chain Applications handle and defines a common storage structure for all derived document types.

The following base document types are defined in the Sterling Supply Chain Applications:

- Order
- Load
- General
- Count
- Container
- Wave
- Work Order

Document types are specific business documents that are derived from a base document type. For example, document types such as Sales Order and Purchase Order are derived from the Order base document type.

For detailed information on document types, see the *Sterling Product Management Configuration Guide*.

As part of the Sterling nWMS PCA, a new Document Type, Blind, has been created. This document type has configurations similar to the Purchase Order Document Type. The only difference between the two is that the Order is not available on the system for the Blind Document Type. Therefore, in case of Blind Document Type, ASNs can be created and received without the order information.

The different document types provided with the Sterling nWMS PCA are:

Table 6–1   Document Types

Document Type	Description
0001	Sales Order
0003	Return Order
0005	Purchase Order
0006	Transfer Order
0010	Blind Receipt
0011	Blind Return
1001	Load
3001	Count
4001	Outbound Picking
5001	Container
7001	Work Order

7

Productivity and Task Types

This chapter explains the Productivity and its Reference Implementation provided by the Sterling nWMS PCA.

7.1 Productivity

All the activities performed by the user are tracked at the activity level. This is measured against productivity metrics associated with the activity. This enables a warehouse to calculate labor efficiency and support activity-based compensation to all users.

Each task type is associated with a productivity type. A productivity type defines the Standard Allowable Minutes (SAM) and also enables you to choose form a pre-defined set of references, such as, Shipment, Receipt, and so forth. This helps you find out how much time it took to complete a receipt and so on. For more information about Productivity, see the *Sterling Warehouse Management System Configuration Guide*.

Based on the task that you perform using the Sterling Supply Chain Mobile Application, the system logs the productivity information. The mine productivity agent then compiles this data and presents the information grouped by logical references.

For paper-based tasks, users can report productivity at the console. This information is used by the mine productivity agent.

Standard productivity functionality has been configured for the Sterling Networked Warehouse Management System PCA. SAM is configured for each task type to represent the physical process times.

The actual values for SAM can be determined only after the application has been used in the floor of the warehouse. Rough estimates have been

provided as a starting point, and will be adjusted over time for benchmarks and challenges.

This chapter lists the task types, productivity types and the SAM provided as a part of the configuration data in the Sterling nWMS PCA.

7.2 Productivity Configurations

7.2.1 Agents

The agents configured for Productivity processing are:

- `Productivity Purge`

  This agent purges productivity data for a period greater than the lead days specified in the Productivity Purge criteria for a specific Organization Code.

  For more information about this agent, see the *Sterling Warehouse Management System Configuration Guide*.

- `Mine Productivity`

  This agent captures the productivity information for all the tasks done within the Sterling Supply Chain Applications Task management framework. This information is extracted and consolidated per user. The agent runs at some scheduled intervals, for example as a end-of-day process. Every individual task in Sterling nWMS PCA captures its start and end time automatically. The agent checks all completed tasks, that have not been mined so far, collecting productivity metrics based on productivity references relevant for that productivity type.

  For more information about this agent, see the *Sterling Warehouse Management System Configuration Guide*.

7.3 Task Configurations

7.3.1 Agents

The agents configured for Task processing are:

- `Task Purge`

  This agent moves tasks that were created prior to thirty days and that are in completed but cancelled status to the task history table. This agent runs once at the end of each working day.

- `Task History Purge`

  This agent purges tasks that were moved to the task history table prior to thirty days. This agent runs once at the end of each working day.

7.4 Reference Implementation

This section explains the Reference Implementation for Productivity, provided as a part of the Sterling nWMS PCA.

7.4.1 For Productivity Types (Configuration Data)

The consolidated list of Productivity Types is:

Table 7–1   Productivity Types

Productivity Type	Description
COUNT	Count
PACKING	Packing
VAS	Value-Added Services
RECEIVE	Receiving
PUTAWAY	Putaway
RETRIEVAL	Retrieval
PICKING_AT_BULK	Picking at bulk location
PICKING_ACTIVE_AREA	Forward pick area picking
REPLENISHMENT	Replenishment

Table 7–1   Productivity Types

Productivity Type	Description
MANIFESTING	Manifesting
TRAILER_UNLOAD	Trailer Unload

7.4.2 For Task Types

The consolidated list of Task Types is:

Table 7–2   Productivity Task Types

Task Type	Associated Productivity Type	Description
COUNT0001	COUNT	Cycle Count, Sterling Supply Chain Mobile Application-based.
COUNT0002	COUNT	Cycle Count to be performed using paper.
VARIANCE01	COUNT	Cycle Count, Variance Task, Sterling Supply Chain Mobile Application-based.
VARIANCE02	COUNT	Cycle Count, Variance Task to be performed using paper.
COUNT0003	COUNT	Physical Count Sterling Supply Chain Mobile Application-based.
COUNT0004	COUNT	Physical Count to be performed using paper.
COUNT0005	COUNT	Task Type to perform second-level Physical Count. The Count Task is performed using the Sterling Supply Chain Mobile Application.
COUNT0006	COUNT	Task Type to perform second-level Physical Count. The Count Task is performed using Printed Count Sheets.
VARIANCE03	COUNT	Physical Count, Variance Task, Sterling Supply Chain Mobile Application-based.
VARIANCE04	COUNT	Physical Count, Variance Task to be performed using paper.
REPL-0001	REPLENISHMENT	Paper-based Replenishment Task type.

Table 7–2   Productivity Task Types

Task Type	Associated Productivity Type	Description
REPL-0002	REPLENISHMENT	Sterling Supply Chain Mobile Application-based Replenishment Task Type
MOVE-0001	PUTAWAY	Paper-based Move Request Task type.
MOVE-0002	PUTAWAY	Sterling Supply Chain Mobile Application-based Move Request Task Type
PICK0001	PICKING_AT_BULK	Full Case Pick
PICK0002	PICKING_ACTIVE_AREA	Less than Case Pick
PICK0003	PICKING_AT_BULK	Pick to Pallet
PICK0004	PICKING_ACTIVE_AREA	Pick from Forward Pick Area
PICK0005	PICKING_AT_BULK	Pick for Parcel
PICK0006	PICKING_AT_BULK	Pick for LTL/TL shipments
VAS-RETR01	RETRIEVAL	VAS Retrieval, Sterling Supply Chain Mobile Application
VAS-RETR02	RETRIEVAL	VAS Retrieval paper
VAS-PUT-01	PUTAWAY	VAS Putaway, Sterling Supply Chain Mobile Application
VAS-PUT-02	PUTAWAY	VAS Putaway, paper

7.4.3 For SAM Definition (Configuration Data)

The following tables list the initial SAM values that are provided as a part of the configuration data. These are rough estimates. The actual values for SAM can be determined only after the application has been used in

the floor of the warehouse. The warehouse needs to be monitored to get the SAM for each of the productivity types.

Table 7–3   SAM Definitions

Productivity Types	SAM per source Location	SAM per target Location	SAM per Task	SAM per CASE	SAM per PALLET
COUNT	1.50	0.00	0.00	0.00	0.00
PACKING	0.00	0.00	0.00	0.50	0.50
VAS	0.00	0.00	0.00	0.00	0.00
PUTAWAY	1.00	1.5	0.00	0.75	1.50
RETRIEVAL	1.00	1.5	0.00	0.75	1.50
RECEIVE	0.00	0.00	0.00	1.50	1.50
PICKING_AT_BULK	0.75	0.00	1.00	0.00	0.00
PICKING _ACTIVE_AREA	0.75	0.00	1.00	0.00	0.00
REPLENISHMENT	1.00	1.5	0.00	0.75	1.50
MANIFESTING	0.00	0.00	0.00	0.50	0.50
TRAILER_UNLOAD	0.00	0.00	0.00	0.50	1.00

Table 7–4   More SAM Definitions

Productivity Types	SAM per UNIT	SAM per source Aisle	SAM per target Aisle	SAM per Item	SAM per productivity BATCH
COUNT	0.00	0.00	0.00	1.00	1.00
PACKING	0.00	0.00	0.00	0.00	1.00
VAS	0.50	0.00	0.00	1.00	2.00
PUTAWAY	0.00	0.25	0.50	0.00	2.00
RETRIEVAL	0.00	0.25	0.50	0.00	2.00
RECEIVE	0.00	0.00	0.00	0.50	1.00

Table 7–4   More SAM Definitions

Productivity Types	SAM per UNIT	SAM per source Aisle	SAM per target Aisle	SAM per Item	SAM per productivity BATCH
PICKING_AT_BULK	0.25	0.50	0.00	0.00	3.00
PICKING _ACTIVE_AREA	0.25	0.50	0.00	0.00	3.00
REPLENISHMENT	0.00	0.25	0.50	0.00	2.00
MANIFESTING	0.00	0.00	0.00	0.00	1.00
TRAILER_UNLOAD	0.00	0.00	0.00	0.50	1.00

Table 7–5   SAM Definitions, Planning

Productivity Types	SAM per Task	SAM per CASE	SAM per PALLET
PACKING	0.00	1.00	1.00
PICKING_AT_BULK	2.00	0.00	0.00
PICKING _ACTIVE_AREA	2.00	0.00	0.00
MANIFESTING	0.00	1.00	1.00
OUTBOUND_LABOR	0.00	1.50	0.00
VAS	0.00	0.00	0.00

Table 7–6   More SAM Definitions, Planning

Productivity Types	SAM per UNIT	SAM per Item	SAM per productivity BATCH
PACKING	0.00	0.00	2.00
PICKING_AT_BULK	0.50	0.00	4.00
PICKING _ACTIVE_AREA	0.50	1.50	4.00
MANIFESTING	0.00	0.00	2.00

Table 7–6   More SAM Definitions, Planning

Productivity Types	SAM per UNIT	SAM per Item	SAM per productivity BATCH
OUTBOUND_LABOR	0.50	0.50	4.00
VAS	1.00	2.00	3.00

7.4.4 Task Execution Exceptions

The list of Task Execution Exceptions is:

Table 7–7   Task Execution Exceptions

Exception Code	Description	Exception Type
NOINV	Inventory Not Available	Pick
SHORTPICK	Short Pick	Pick

Part II
Sterling nWMS PCA Processes and Features

This part of the manual explains all the processes that are provided with the Sterling Networked Warehouse Management System PCA solution.

The Sterling nWMS PCA provides the following features and processes in order to meet your business requirements:

- Receive and Putaway
- Location Mass Maintenance
- Managing Activity Demands
- Quality Control
- Vendor Compliance
- Move Request
- Count
- Outbound
- Replenishment
- Value-Added Services
- Returns
- Dynamic Item Velocity Calculation
- Integration With Slotting Engines

8

Receive and Putaway

The Sterling Networked Warehouse Management System PCA enables you to control the receipt process with information that is available in a warehouse. The Sterling nWMS PCA supports the least automated warehouse through paper-based processes and all warehouses up to the most automated, involving Material Handling Equipment (MHE) for receipts.

This chapter explains the Receiving process and solution offered by the Sterling nWMS PCA.

8.1 Receiving Processes

The Receiving processes followed in a mid-sized Finished Goods DC are:

* Receipts made for a PO:

  The PO can be received with or without an ASN created for it.

* Receipts made without any order:

  The warehouse receives ASNs that may be either sent through e-mail or fax, or through EDI. In this case, receipts are made against the ASN. The same process is followed for receiving Transfer Orders.

* Receipts made as Blind Receipts:

  The product arrives in the warehouse without a PO or ASN. The warehouse has the capability to record the receipt without entering the ASN information.

The arrival of the order or shipment is recorded on the system by starting the receipt of the order or shipment. A Receiving Worksheet is printed automatically when the Receipt starts.

The Sterling nWMS PCA assumes that the products received are appropriately labeled. If items are received with no LPN information, a new LPN is created and applied to the inbound product. For non-LPN based Receiving, the products are sorted into individual items from cases or pallets, for ease of counting. The counts are recorded against the Receiving Worksheet.

Containers with LPNs are scanned for receipt through a Receiving station.

The order or shipment is identified for receipt before the containers are scanned. It is expected that the lot serial information is supplied for the item in the warehouse as part of the inbound shipment. Lot or serial information is expected to be either available with the LPN or not required.

Containers with LPN are received and Putaway to a separate bulk storage zone.

> **Note:** The Receiving Process detailed in the following two sections applies to the following document types: Purchase Orders, Transfer Orders, and Blind Receipts.

8.1.1 Sterling Supply Chain Mobile Application-Based Receiving Process

Containers with LPNs are scanned for receipt using the Sterling Supply Chain Mobile Application. Orders or shipments are identified for receipt before the containers are scanned. It is expected that the lot information of the item is supplied as a part of the ASN. The lot information is expected to be either available with the LPN or not required. If the LPN is not available, a new LPN is generated and quantity received is confirmed.

Inventory is received into the location associated with the Receiving Dock and is visible through the Location Inventory Console.

The Receiving process using the Sterling Supply Chain Mobile Application is:

1. Log into the Sterling Supply Chain Mobile Application and select the shipment to receive.

   If the ASN information is not available, create a shipment with appropriate shipment lines and select the shipment to receive.

In case of Blind Receipts, you can create a shipment without any shipment line.

2. If the LPN information is available, scan the LPN from the outer box.

3. If the LPN information is not available,

- Apply a pre-printed LPN to the box.

- Scan the item, tag or serial, and quantity.

4. Close the receipt. The Putaway tasks are generated.

8.1.1.1 Opportunistic Cross-Docking

This section explains the opportunistic cross-docking feature provided by the Sterling nWMS PCA. This feature enables the warehouse manager to reduce the effort required for putaway and picking.

The opportunistic cross-docking process using the Sterling Supply Chain Mobile Application is:

1. The user receives the case or pallet.

2. The system identifies that a cross-docking opportunity exists for the case or pallet if:

- The case or pallet is not a multi-SKU container

- The case or pallet does not contain time-sensitive items

- The case or pallet does not contain FIFO-tracked items

- The case is not within a pallet

- The case or pallet does not contain child containers

- The outbound pick task is in Open or Held for Inventory Shortage status and does not have any requested tag or serial numbers

- The quantity required for the pick task is greater than or equal to the quantity received, for loose picking

- The quantity required for the pick task is equal to the quantity received, for suggested LPN

3. If a cross-docking opportunity exists for the case or pallet,

   a. The source location for the pick task is replaced by the receiving dock location

b. The system suggests the receiver to separate the case and pallet from the other receipts

c. The system suggests a deposit task.

d. The receiver deposits the case or pallet into the system-suggested location.

e. Once cross docking is done for a case or pallet, the putaway request is not generated.

> **Note:** Opportunistic cross-docking is not performed for Replenishment and Retrieval Tasks.
>
> Opportunistic cross-docking is performed only for Sterling Supply Chain Mobile Application-based warehouse.

8.1.2 Paper-Based Receiving Process

While receiving with an order, receipts are recorded through the Record/Report Receipt action available in the Order, Returns, and Receipt consoles.

While receiving with an ASN, receipts are started through the Start Receipt action available in the Shipment Console and recorded through the Receive action. For Blind Order receipts, if the shipment information is not available, you can create a shipment without any shipment line.

In both cases, the details of the receipt are entered and the receipt for the order or shipment is then marked closed in the Receipt Console. The closure of the receipt automatically triggers the generation of Putaway tasks.

In the Paper-based Receiving process, the Sterling nWMS PCA assumes that receipts are done in loose SKUs and not in LPNs. However, you may also choose to receive in LPNs.

The Receiving process using paper is:

1. The Receiving Worksheet is printed and given to the user.

2. The user records the receipt information in the Receiving Worksheet.

3. If receiving with order, the user records the receipt by clicking the Report/Record Receipt action in the Receipt console.

4. If receiving with ASN, the user starts the receipt by clicking the Start Receipt action in the Shipment Console and records the receipt by clicking the Receive action.

5. The user closes the receipt manually using the Close Receipt action in the Receipt Console.

6. The Putaway tasks are generated on closing the receipt and the Putaway Batch Sheet is printed.

8.2 Receiving Configurations

This section explains the various configurations that may be done for the Receiving process.

8.2.1 Receiving Pipeline

Figure 8–1 illustrates the Receiving Pipeline.

Figure 8–1   Receiving Pipeline
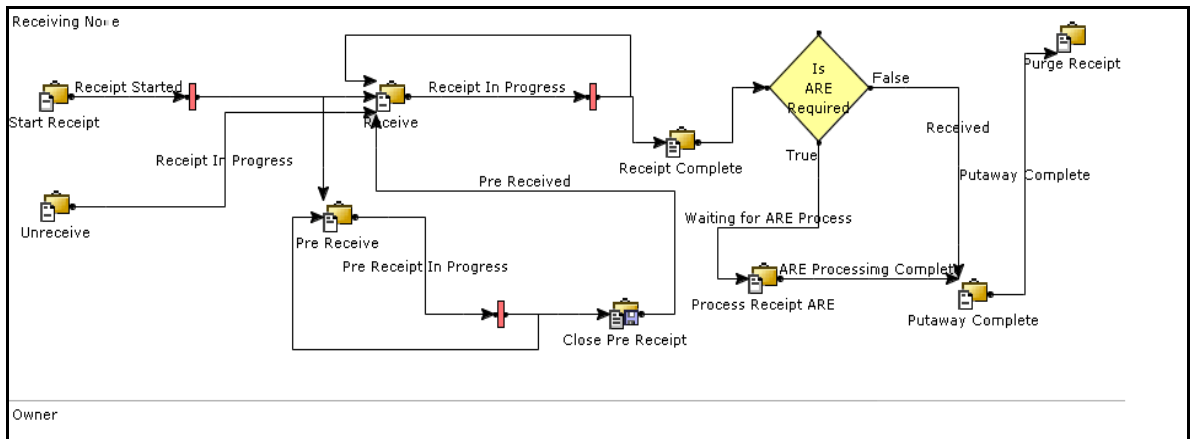
8.2.2 Activities

Activities in the warehouse are grouped into Activity Groups. The Sterling Networked Warehouse Management System PCA provides a pre-defined set of activity groups for a warehouse. Examples of activity groups include Receipt, Inspection, Value Added Services, and Packing.

Each activity group is associated with activity codes that define each activity that is performed. The Receipt activity group has these activities: Divert for Quality Check, Receive, Pre-Receive, Receive-Return, Trailer Unloading, and QC Retrieval.

Note: Activity Codes may be defined only when the WMS tree is loaded for Node and Hub combination.

8.2.3 Setting Up Receiving Preferences

This section explains how to set up your Receiving Preferences for receiving.

8.2.3.1 Enterprise-Level Configurations

To set up Enterprise-level Receiving Preferences:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. Now, from the Sterling Supply Chain Applications Configurator menu bar, select Application > Supply Collaboration.

4. From the tree in the application rules side panel, select Receiving > Receiving Preferences. The Receiving Preferences screen displays.

5. In the Search Results panel, click ✚. The Receiving Preference Details pop-up window displays.

6. Enter information into the applicable fields.

   For more information and field value descriptions, see the *Sterling Supply Collaboration Configuration Guide*.

7. Click 💾.

8.2.3.2 Node-Level Configurations

To set up Node-level Receiving Preferences:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Receiving Preferences.

5. The Receiving Preferences: Purchase Order screen displays.

6. In the top panel, select the appropriate options for building pallets, building cases, Disposition Code for receiving with QC, Disposition Code for receiving without QC, and preference for closing receipt by an agent.

   Receiving can be done on Cases, Pallets, or both. Most warehouses follow the process of not verifying the case content. The Case Content Verification can be set while creating the ASN.

   Table 8–1 lists the configurations set as a part of the Receiving Preferences.

Table 8–1   Receiving Preferences Configuration

Case/Pallet	Build Preference
Case	Optional
Pallet	Mandatory

   In addition to this, the Disposition Code is set up as follows:

   - Disposition Code for Receipt with QC: Requires Inspection

   - Disposition Code for Receipt without QC: Good

   For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. The lower panel displays the Enterprise-Level Receiving Preferences that you have set up.

8. Click 🖫.

> **Note:** Click 🦟 to view the Receiving Preferences Details screen that displays the detailed preferences set for receiving the item, along with the QC percentage set for the item.

8.2.4 Setting Up the Putaway Preferences

To set up the Putaway Preferences:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Putaway Preferences. The Putaway Preferences screen is displayed.

   Use this to set the Putaway Preferences for single SKU, multi-SKU container, and container with unknown contents.

5. Alternatively, click 📥 in the Activity Search screen to access the Putaway Preferences screen.

6. In the Putaway Preferences screen, select the appropriate tab, depending on whether you are setting up Putaway Preferences for Single SKU, Multi-SKU Container, or Container with unknown contents.

7. Click ➕. The Putaway Preference Details screen displays.

8. In the Activity Code drop-down list, select the code to move the products to storage.

9. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

10. Click 💾.

11. To configure task types for putaway, click ⊕. The Putaway Strategy screen displays. Configure the task types.

For more information about setting up putaway strategies see the *Sterling Warehouse Management System Configuration Guide*.

8.2.5 Setting up Receiving Disposition Codes

This section explains how to create Disposition Codes. It also explains how to associate the Disposition Code with a Product Class, with disposition transition statuses, for receiving with QC, and with an Inventory Status.

8.2.5.1 Creating the Receiving Disposition

This section explains how to create the Receiving Disposition.

Disposition Codes can be created to be assigned to the inventory at different stages, such as receiving, during QC, and after QC. You can have different Disposition Codes, depending upon whether the products passed QC, failed QC, and so forth.

To create the Disposition Code to assign to the items in QC:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Receiving Disposition. The Disposition List: Purchase Order screen is displayed.

5. In the Disposition List: Purchase Order screen, click 🔧 . The Disposition Details pop-up window displays.

6. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 💾 .

A receiving disposition is created that can be associated with the inventory during receiving.

8.2.5.2 Associating the Disposition Code with a Product Class

To associate the Disposition Code with a Product Class:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Supply Collaboration.

4. From the tree in the application rules side panel, select Document Specific > Receipt > Receiving Disposition. The Disposition List: Purchase Order screen displays.

5. In the Disposition List: Purchase Order screen, click ![icon]. The Disposition Details pop-up window displays.

6. In the Product Class drop-down list, select the appropriate Product Class for the Disposition Code.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click ![icon].

The selected Disposition Code is now associated with the specified Product Class. Whenever a product is dispositioned to the selected Disposition Code, the Product Class automatically changes to the Product Class that you specified here.

8.2.5.3 Associating the Disposition Code with Disposition Transition statuses

To associate the Disposition Code with disposition transition statuses:

1. Follow steps 1-5 in Section 8.2.5.2, "Associating the Disposition Code with a Product Class".

2. In the Receiving Disposition drop-down list of the Disposition Transitions pane, select the appropriate Inventory Statuses.

3. Click 🖫 .

The selected Disposition Code is now associated with the specified disposition transition statuses. The products being dispositioned to this Disposition Code are assigned these Inventory Statuses consecutively, until they reach the final disposition.

8.2.5.4 Associating a Disposition Code for Receipt with QC

To associate a Disposition Code for receiving with QC:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Receiving Preferences.

5. The Receiving Preferences: Purchase Order screen displays.

6. In the Disposition Code for Receipt with QC, enter the appropriate Disposition Code. During receiving, this Disposition Code is assigned to all items that require QC.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click 🖫.

> **Note:** Click 🔆 to view the Receiving Preferences Details screen that displays the detailed preferences set for receiving the item, along with the QC percentage set for the item.

8.2.5.5 Associating the Disposition Code with an Inventory Status

The Disposition Codes enable inspectors to utilize their own terminology, instead of understanding inventory and storage implications.

Inventory is received with the specified Product Class and Inventory Status of the Disposition Code entered.

If the Product Class is not specified, the Product Class from the Purchase Order or the default Product Class from the item is used. It is mandatory to have the Product Class specified at one of these levels.

To associate the Disposition Code with an Inventory Status:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Disposition Codes.

5. The Receiving Disposition: Purchase Order screen is displayed.

6. From the Inventory Status drop-down list, select the Inventory Status to associate with the Disposition Code.

    For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 💾.

8.2.6 Inventory Status Transitions

Inventory should be considered available or unavailable for certain operations. For example, inventory should be unavailable for orders until putaway is complete. As soon as putaway is complete, the inventory should become available for orders automatically, without any intervention from users.

To facilitate this, Inventory Statuses are assigned to inventory. The Inventory Status of the inventory changes at different stages.

When inventory is received, it is assigned an appropriate Inventory Status to show that the inventory is awaiting inspection. When the inventory is moved to storage, the Inventory Status may change appropriately.

Inventory Statuses can be associated with zones. In this case, whenever a product moves into a particular zone, its Inventory Status gets transitioned to the Inventory Status that is associated with the zone. So, whenever a product is moved into the QC zone, its Inventory Status changes to the Inventory Status associated with the QC zone, which may indicate that the product is undergoing QC. When the product moves out of the QC zone into storage, its Inventory Status changes to the Inventory Status associated with the storage zone, which may indicate that the product is available for orders. In case of products that fail QC, they may be moved to the appropriate zone that is associated with an Inventory Status to mark the products as damaged and thus unavailable, quarantined, or held until more QC is done on a larger sample.

If a product with the Inventory Status indicating that the product is awaiting inspection is moved directly into storage, it retains its Inventory Status. This is because no transition has been defined for the Inventory Status of the storage zone, when a product with that Inventory Status moves into storage. If the warehouse process so dictates, this can be overwritten by setting an appropriate Inventory Status transition. In this case, products that are putaway into the storage zone may become directly available for orders, even though they have not yet cleared QC

8.2.7 Agents

The agents configured for the Receiving processing are:

- `Purge Receipt`

  This agent purges completed receipts. This agent is generally triggered once in ten days or based on the receipt volume.

- `Receipt Complete`

  This agent completes the receipts. This agent is generally triggered once at the end of each working day.

For more information about these agents see the *Sterling Warehouse Management System Configuration Guide*.

8.2.8 Services

The services provided for the Receiving process are:

- Generate Putaway Request

  This service generates the requests for putaway tasks once receipt is completed.

- Register Activity Demand For QC

  This service computes the QC quantity (quantity of the products received that needs to be diverted to the QC Zone for QC) and creates an activity demand for it.

- Register Activity Demand and Print Receiving Worksheet

  This service computes the QC quantity and prints it on the Receiving Worksheet. It also creates an activity demand for the QC quantity.

  > **Note:** These services are already activated if you have installed the factory defaults with the events turned on.

- YNW_ Cross Dock Inventory_75

  This service identifies tasks on which opportunistic cross-docking can be performed, replaces the source location specified for the selected task with the dock location where the inventory is received, and replaces the suggested LPN for the selected task by the LPN received.

- YNW_Generate Putaway Request_ 75

  This service generates the requests for putaway tasks for cases and pallets if cross docking is not done. Associate the `YNW_CrossDockInventory_75` service if putaway has to be called for non cross-docked LPNs.

8.2.8.1 Generate Putaway Request

When a receipt is completed, the ON_RECEIPT_COMPLETE event of the RECEIPT_COMPLETE transaction is raised, which invokes the GeneratePutawayRequest service.

The GeneratePutawayRequest service then initiates the generation of the requests for putaway tasks.

To activate the `GeneratePutawayRequest` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_RECEIPT_COMPLETE` event with the action `Putaway products on receipt`, which invokes the `GeneratePutawayRequest` service.

8.2.8.2 Register Activity Demand For QC

When a receipt is started, the `ON_START_RECEIPT` event of the `START_RECEIPT` transaction is raised, which invokes the `YNW_RegisterActivityDemandForQC_75` service.

The `YNW_RegisterActivityDemandForQC_75` service initiates the computation of the quantity of product that needs to be diverted for a shipment or order, based on the QC classification and QC percentage setup. It then creates an activity demand for the same. During Putaway this quantity of the product is diverted to the QC Zone for QC.

To activate the `YNW_RegisterActivityDemandForQC_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `Register Activity Demand For QC`, which invokes the `YNW_RegisterActivityDemandForQC_ 75` service.

8.2.8.3 Register Activity Demand and Print Receiving Worksheet

When a receipt is started, the `ON_START_RECEIPT` event of the `START_RECEIPT` transaction is raised, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

The `YNW_CompositeServiceOnStartReceipt_75` service initiates the computation of the quantity of product that needs to be diverted for a shipment or order, based on the QC classification and QC percentage setup. It then creates an activity demand for the same. The QC percentage computed is then printed on the Receiving Worksheet.

To activate the `YNW_CompositeServiceOnStartReceipt_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `YNW CalcQC And Print Recv WS (75)`, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

8.2.8.4 YNW_ Cross Dock Inventory_75

The `YNW_CrossDockInventory_75` service is a synchronous service.

Associate the `YNWCrossDoc` action with `On Case Receipt` or `On Pallet Receipt` events. This action invokes the `YNW_CrossDockInventory_75` service.

The `YNW_CrossDockInventory_75` service performs the following:

1. Chooses a task based on pre-defined conditions.

   For more information about the condition. see Section 8.1.1.1, "Opportunistic Cross-Docking".

2. Replaces the source location specified for the selected task with the dock location where the inventory is received.

3. Replaces the suggested LPN for the selected task by the LPN received.

8.2.8.5 YNW_Generate Putaway Request_ 75

When a case or pallet is closed, the `ON_CASE_RECEIPT` or `ON_PALLET_RECEIPT` event of the `Receive` transaction is raised. Associate the `YNW_Putaway prodcuts on receipts` action with `On Case Receipt` or `On Pallet Receipt` events along with `YNWCrossDock` action. This action invokes the `YNW_GeneratePutawayRequest_75` service. This service generates the requests for putaway tasks for case or pallet if cross docking is not done.

Associate the `YNW_GeneratePutawayRequest_75` service with `YNW_CrossDockInventory_75` service if putaway has to be called for non cross-docked LPNs.

To activate the `YNW_GeneratePutawayRequest_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_CASE_RECEIPT` or `ON_PALLET_RECEIPT` event with the `YNW_Putaway products on receipt` action, which invokes the `YNW_GeneratePutawayRequest_75` service.

> **Note:** The `YNW_Putaway products on receipt` action should be invoked after invoking the `YNWCrossDock` action.

8.2.9 Prints

The `YNW_PrintReceivingWorkSheet_75` service has been provided, which prints the Receiving Worksheet.

8.2.10 Productivity

For all tasks, such as, Pre-Receiving, Receiving, and Putaway associated with Receiving, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

8.3 Managing the Receiving and Putaway Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Receiving and Putaway. This section explains the UI flow while performing receiving and putaway using Purchase Orders and ASNs.

8.3.1 Receiving and Putaway Flow Using an Order

The UI flow for Receiving and Putaway using an Order is explained in this section.

8.3.1.1 Receiving Process

Follow these steps in the Receiving process:

1. Start the Receipt from the Inbound Order console or Returns Console using the Report/Record Receipt action. The Start Receipt pop-up window displays.

2. Enter the details required, and start the receipt by clicking `Save`. The Receive screen displays.

   For more information about the fields see the *Sterling Warehouse Management System User Guide*.

3. In the Receive screen, enter the appropriate Disposition Code for products and click `Save`.

   This step needs to be performed using the Sterling Supply Chain Mobile Application if you are using the Sterling Supply Chain Mobile Application for receiving.

4. In the Receipt Console, close the receipt by clicking `Close Receipt`.

8.3.1.2 Putaway Process

When the receipt is closed, putaway tasks are automatically generated by the system. If you have configured the QC percentage, part of the receipt is diverted to the QC zone. The rest may be diverted to storage. If you have not configured the QC percentage, the entire receipt is diverted to storage.

8.3.2 Receiving and Putaway Flow Using ASNs

The UI flow for Receiving and Putaway using an ASN is explained in this section.

8.3.2.1 Receiving Process

Follow these steps in the Receiving process:

1. Start the Receipt from the Inbound Order Shipment Details screen in the Shipment Console using the Start Receipt action. The Start Receipt pop-up window displays.

2. Enter the details required, and start the receipt by clicking `Save`.

   Now, if you are using the Sterling Supply Chain Mobile Application for receiving, start receiving using the Sterling Supply Chain Mobile Application. Otherwise, follow the steps given below:

3. Click the Receive action. The Receive Details screen displays.

4. In the Receive screen, enter the Disposition Code for products requiring inspection (REQ-INSP) and click `Save`.

This step needs to be performed using the Sterling Supply Chain Mobile Application if you are using the Sterling Supply Chain Mobile Application for receiving.

5. In the Receipt Console, close the receipt by clicking `Close Receipt.`

8.3.2.2 Putaway Process

When the receipt is closed, putaway tasks are automatically generated by the system. If you have configured the QC percentage, part of the receipt is diverted to the QC zone. The rest may be diverted to storage. If you have not configured the QC percentage, the entire receipt is diverted to storage.

8.4 Reference Implementation for Receiving

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Receiving.

8.4.1 Inbound Rules Configuration

This section describes the inbound rules configured in the Sterling nWMS PCA.

8.4.1.1 Putaway Preferences

Once shipments are received, they are configured to automatically generate tasks for putaway. The service to generate a putaway request is configured as a part of the receipt transaction, on closure of the receipt. Tasks are configured as one-step tasks. For all the task types, the Execute Through Drop Off flag is set to "N". Warehouses may manually stage products in staging locations due to equipment constraints in the destination aisle.

The considerations for putaway include:

- Location capacity.

- Putaway sequence.

- Consolidation opportunity along with locations that have the same item, otherwise the items are placed in an empty location.

- Enterprise or other constraints.

- Location and item storage preferences based on Item Classification (For example, Storage Type is Refrigerated).

- Zone–Task type preference.

- Receiving preference for QC based on Enterprise, Vendor and Item Classification (For example, Product Line is PL001).

The Sterling nWMS PCA configurations for Putaway Preferences include:

Table 8–2   Putaway Preferences

Activity	UOM	Zones
Moving To Storage	Less than Case	FORWARD PICK ZONES
Moving To Storage	CASE	BULK ZONES Tracking Cases
Moving To Storage	PALLET	BULK ZONES Tracking Pallets

8.4.1.1.1 Putaway Task Types

The Putaway strategy created makes use of task types to execute the Putaway process.

The task types created to execute the Putaway process in the warehouse are:

Table 8–3   Putaway Task Types

Task Type	Description
MOVE-0001	Paper-based Move Request
MOVE-0002	Sterling Supply Chain Mobile Application-based Move Request

8.4.1.1.2 Putaway Strategy

For paper-based warehouses, the Task Type MOVE-0001 is used. For warehouses using the Sterling Supply Chain Mobile Application to execute the Putaway Tasks, the Putaway strategy is configured to use the MOVE-0002 Task Type.

8.4.1.2 Node Receiving Preferences

Warehouses using the Sterling Supply Chain Mobile Application can receive cases, pallets, or both. Most warehouses follow the process of not verifying the content of cases.

Table 8–4 lists the configurations set as a part of the Receiving Preferences for Purchase Orders, Transfer Orders, and Blind Receipts.

Table 8–5 lists the configurations set as a part of the Receiving Preferences for Return Orders and Blind Returns, for both paper-based warehouses and warehouses using the Sterling Supply Chain Mobile Application.

Table 8–4   Receiving Preferences Configuration for POs, Transfer Orders, and Blind Receipts

Case/Pallet	Build Preference
Case	Optional
Pallet	Mandatory

Table 8–5   Receiving Preferences Configuration for Return Orders and Blind Orders

Case/Pallet	Build Preference
Case	Optional
Pallet	Optional

8.4.1.3 Receiving Disposition Setup

Once the inventory is received into the warehouse, it can be transitioned to the appropriate Product Class and Inventory Status based on the Disposition Code. The user determines the disposition of the item and the quantity. The disposition indicates whether the inventory is saleable, requires further detailed quality checks, or should be scraped. These are appropriately translated into the corresponding Product Class and Inventory Status.

There are no Product Classes associated with the disposition codes GOOD, REQ-INSP, and QC-PASSED for the Purchase Order, Transfer Order, and Return Order document types. This is because the system needs to retain the Product Class available on the shipment line.

The standard Disposition configurations provided are:

Table 8–6   Disposition Configurations

Sl. No.	Disposition Code	Product Class	Inventory Status	Final Disposition
1	GOOD		N (Good)	Y
2	DAMAGED	FD	N (Good)	Y
3	REQ-INSP		AI (Awaiting Inspection)	N
3a	QC-FAILED	FD	N (Good)	Y
3b	QC-PASSED		N (Good)	Y

Here, QC-FAILED and QC-PASSED are the disposition transitions for the Disposition Code REQ-INSP.

9

Location Mass Maintenance

Warehouse managers can use the Sterling nWMS PCA to update the attributes of a set of locations at the same time.

Location mass maintenance enables you to choose the locations to update by selecting the criteria, such as zone, location size code, aisle number, or range of locations.

9.1 Location Mass Maintenance Process

Warehouse managers and inventory supervisors can use Location Mass Maintenance to update the attributes of a set of locations at the same time.

The location mass maintenance process is:

1. The locations are selected based on the criteria.

2. The attributes of the locations can be updated with the new values.

9.2 Location Mass Maintenance Configurations

This section explains the various configurations that are completed for Location Mass Maintenance.

> **Note:** Location Mass Maintenance can be performed only on zones where task execution, such as Picking or Putaway, is not performed.

9.2.1 Agents

The agent provided for the Location Mass Maintenance process is Location Mass Maintenance.

9.2.1.1 Location Mass Maintenance

This agent is used to perform location mass maintenance and is triggered from the Changed Attributes screen.

For more information about the Changed Attributes screen, see Section 9.3.1, "Performing Location Mass Maintenance".

> **Note:** This agent can only be triggered from the Sterling Supply Chain Application Consoles screen.

Attributes

Table 9–1 lists the attributes for this agent.

Table 9–1   Location Mass Maintenance Attributes

Attribute	Value
Transaction Name	Location Mass Maintenance
Transaction ID	LOCN_MASS_MAINT.2003.exe
Base Process Type	None
Base Document Type	None
Abstract Transaction	None
APIs Called	modifyLocation
User Exits Called	None

Criteria Parameters

Table 9–2 lists the criteria parameters for this agent.

Table 9–2   Location Mass Maintenance Criteria Parameters

Parameter	Description
Action	Required. Triggers the transaction. If left blank, it defaults to Get, the only valid value.
Number of Records	Optional. Number of records to retrieve and process at one time. If left blank or specified as 0 (zero), it defaults to 5000.
Node Required	The warehouse management ship node for which records are being processed.
AgentCriteriaGroup	The agent criteria group associated with the the warehouse management ship node for which velocities are updated.

Note: To determine the agent criteria for considering the appropriate JMS Queue, the LOCN_MASS_MAINT agent message service performs the following steps:

- It looks into the agent criteria set for the node. The node is specified by the Node parameter.

- If not found, it looks into the agent criteria that belongs to the agent criteria group for that node. The agent criteria group for the node is specified by the AgentCriteriaGroup parameter.

- If none of the above is found, it considers the default agent criteria.

Statistics Tracked
Table 9–3 lists the statistics tracked for this agent.

Table 9–3   Location Mass Maintenance Statistics

Statistic Name	Description
NumLocationChanged	Number of changed locations.

Events Raised
Table 9–4 lists the events raised by this agent.

Table 9–4   Events Raised by the Location Mass Maintenance Transaction

Transaction/Event	Key Data	Data Published	Template Support?
AGENT_COMPLETION		YNW_LOCN_MAS S_MAINT.AGENT_ COMPLETION.xml	Yes

Note: The default message queue provided for this agent is DEFAULTAGENTQUEUE. You can also associate your own message queue with the agent.

9.2.2 Services

The service provided for Location Mass Maintenance is YNW_Loc_Mass_Maint_75.

9.2.2.1 Loc Mass Maint

The YNW_Loc_Mass_Maint_75 service is an asynchronous service.

When the YNW_Loc_Mass_Maint_75 service is invoked from the Sterling Supply Chain Application Consoles screen, this services places the message XML in the JMS queue. The message XML contains the criteria to select the locations and the update values of the locations. The LOCN_MASS_MAINT agent then picks up the messages from the queue and updates the locations. On updating the locations, this agent raises the AGENT_COMPLETION event. This event invokes the YNW_LocMassMaint_75 action.

Once the YNW_LocMassMaint_75 action is invoked, an alert is raised to indicate that the agent has completed its tasks. The raised alert is then sent to the alert queue.

9.3 Managing the Location Mass Maintenance Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles to perform Location Mass Maintenance.

9.3.1 Performing Location Mass Maintenance

Warehouse managers can use the Sterling nWMS PCA to update the attributes of a set of locations at the same time.

Location mass maintenance enables you to choose the locations to update by selecting the criteria, such as zone, location size code, aisle number, or range of locations.

To update the attributes of a group of locations:

1. Log into the application as the warehouse manager or inventory supervisor.

2. From the Sterling Supply Chain Application Consolesmenu, choose Inventory > Location Mass Maintenance. The Location Mass Maintenance screen appears.

   For the field value description, see Table 9–5.

3. In the Filter Locations area of the Location Mass Maintenance screen, enter information in the applicable fields and click Proceed. The Selected Criteria and Change Attributes areas appears.

   The Selected Criteria area displays the criteria you have selected in the Filter Locations area and the Number of Filtered Location.

   For more information about the field values of the Changed Attributes area, see Table 9–6.

4. In the Change Attributes area, enter information in the applicable fields.

5. Click Save. The selected locations get updated with the new values.

Table 9–5   Location Mass Maintenance, Filter Locations

Field	Description
Node	The node that contains the locations to update.
From Location	Enter the start location for the location range to update. You can also click the ◯ icon to search for the specific location. If you enter a value for the From Location, it is mandatory to enter a value for the To Location.

Table 9–5   Location Mass Maintenance, Filter Locations

Field	Description
To Location	Enter the end location for the location range to update.
	You can also click the ◯ icon to search for the specific location.
	If you enter a value for the To Location, it is mandatory to enter a value for the From Location.
Zone	Enter the name of the zone. All locations of the zone are selected for updation.
	You can also click the ◯ icon to select the specific zone.
Location Type	Select a location type. All locations of this type are selected for updation.
	The valid values for location type are INTRANSIT (mobile locations), STAGING (floor, drop-off), VIRTUAL, REGULAR, and DOCK.
Location Size Code	Enter a location size code. All locations with this size code are selected for updation.
	You can also click the ◯ icon to select the specific location size code.
Storage Code	Select the storage code. All locations with this storage code are selected for updation.
Aisle #	Enter the aisle number of the location to update.
Bay #	Enter the bay number of the location to update.
Level #	Enter the level number of the location to update.
Freeze for Picking	Select Y to update all locations that are frozen for picking.
Pick Sequence	Enter the pick sequence of the location to update.
Out Staging Location	The location where inventory is temporarily dropped, when transferring the inventory from the storage locations.
	You can also click the ◯ icon to search the out-staging location.

Table 9–5   Location Mass Maintenance, Filter Locations

Field	Description
Freeze For Putaway	Select Y to update all locations that are frozen for putaway.
Putaway Sequence	Enter the putaway sequence of the location to update.
In Staging Location	The location where inventory is temporarily dropped when transferring the inventory to the storage location. You can also click the 🔍 icon to search the in-staging locations.
Velocity Code	Select a velocity code. All locations with this velocity code are selected for updation.

Table 9–6   Location Mass Maintenance, Change Attributes

Field	Description
Node	The node for which the attributes of the locations are changed.
Location Size Code	Enter the new location size code of the selected locations. You can also click the 🔍 icon to search for the location size code.
Storage Code	Select the new storage code of the selected locations.
Velocity Code	Select the new velocity code of the selected locations.
Aisle #	Enter the new aisle number of the selected locations.
Bay #	Enter the new bay number of the selected locations.
Level #	Enter the new level number of the selected locations.
Freeze For Picking	Select Y to mark all the selected locations as frozen for picking.
Pick Sequence	Enter the new pick sequence with which all selected locations are updated.

Table 9–6   Location Mass Maintenance, Change Attributes

Field	Description
Out Staging Location	The new location where inventory is temporarily dropped, when transferring the inventory from the storage locations. You can also click the ⚲ icon to search the out-staging location.
Freeze For Putaway	Select Y to mark all the selected locations as frozen for putaway.
Putaway Sequence	Enter the new putaway sequence with which all selected locations are updated.
In Staging Location	The new location where inventory is temporarily dropped, when transferring the inventory to storage locations. You can click the ⚲ to search the in-staging location.
Remove SKU Dedication	Check this box to remove the SKU dedication of the selected locations.

> **Note:**   When updating the location size code for a location that contains inventory, the `On Location Dimension Size Change` event gets raised automatically, which recalculates the size of the location.
>
> When updating the location size code, ensure that the `RECALC_LOCN_DIMENSIONS` and `LOCN_MASS_MAINT` agents are running.

10

Managing Activity Demands

Activity Demands are demands created for certain items. As these items are received, based on the number of items in demand, these items are diverted to a location specifically for that particular activity code.

This chapter explains how to create, modify, and delete Activity Demands using the Sterling nWMS PCA.

10.1 Creating an Activity Demand

To create an Activity Demand:

1. Log into the application as the node user.

2. From the Sterling Supply Chain Application Consoles menu, select Inbound > Create Activity Demand. The Create Activity Demand screen displays.

   For information about the field values see Table 10–1 and Table 10–2.

3. In the Activity Demand area, enter the appropriate details.

4. In the Activity Demand Info area,

   a. Enter the Demand Quantity

   b. Select the UOM

5. Click `Create Activity Demand`. The Activity Demand screen displays.

   For information about the field values see Table 10–3 and Table 10–4.

6. In Demand Location Id, enter the location to which the demanded quantity is diverted.

You can also click 🔍 to select the Demand Location Id.

7. If needed, select the Priority and enter the Demand Quantity.

8. Click Save.

Table 10–1 Create Activity Demand, Activity Demand

Field	Description
Document Type	Select the document type.
	Valid document types are Blind Return, Blind Receipt, Transfer Order, and Purchase Order.
Node	Indicates the node that ships the shipment.
Enterprise	Select the enterprise that ships the shipment.
Activity Code	Select the activity code.
Shipment #	Enter the shipment number of the shipment.
	You can also click 🔍 to select the shipment number.
PO #	Enter the purchase order number.
	You can also click 🔍 to select the PO number.
Seller	Enter the seller that sells the shipment.
	You can also click 🔍 to select the seller.
Priority	Select the priority of the activity demand being set up.
Item ID	Enter the identifier of the item.
	You can also click 🔍 to select the item ID.
	It is mandatory to enter the Item ID.
Product Class	Select the product classification for the item.
	It is mandatory to enter the Product Class.
Unit Of Measure	Select the unit of measure for the item.
	It is mandatory to enter the Unit of Measure.

Table 10–2   Create Activity Demand, Activity Demand Info

Field	Description
Demand Quantity	Enter the number of items in demand and select the UOM from the drop-down list.

> **Note:**   You can also create an Activity Demand by using the Inbound Order Shipment Details screen. Click the Create Activity Demand action in the Shipment Lines area.

10.2 Modifying An Activity Demand

To modify an Activity Demand:

1. Log into the application.

2. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > Activity Demand Console. The Activity Demand By All Attributes search screen displays.

3. Enter the appropriate search criteria and click Search.

4. The Activity Demand List screen displays.

5. In the Activity Demand List screen, click the appropriate Activity Code. The Activity Demand screen displays.

    For information about the field values see Table 10–3 and Table 10–4.

6. Enter the appropriate values.

7. Click Save to save the values entered.

Table 10–3   Activity Demand, Activity Demand

Field	Description
Document Type	Indicates the document type.
Node	Indicates the node that ships the shipment.
Enterprise	Indicates the enterprise that ships the shipment.
Activity Group	Indicates the activity group to which the activity code belongs.

Table 10–3   Activity Demand, Activity Demand

Field	Description
Activity Code	Indicates the activity code. The activity code is always 'Divert for Quality Check', when modifying a QC Profile.
Priority	Select the priority of the activity demand.
Shipment #	Indicates the shipment number of the shipment.
PO #	Indicates the purchase order number.
Demand Location ID	Enter the location to which the demanded quantity is diverted. You can also click to select the Demand Location ID.

Table 10–4   Activity Demand, Activity Demand Details

Field	Description
Item ID	Indicates the identifier of the item.
Item Description	Indicates the description of the item.
Product Class	Indicates the product classification for the item.
Demand Quantity	Enter the quantity of the item that is in demand.
Unit Of Measure	Indicates the unit of measure for the item.
Inventory Status	Indicates the inventory status of the item.
Satisfied Quantity	Indicates the quantity of the item that is satisfied.
Pallet Id	Indicates the identifier of the pallet.
Case Id	Indicates the identifier of the case.
Open Demand Qty	The demand that is yet to be satisfied.
Segment Type	The segment type of the item. A segment type indicates an inventory category, such as MTC (Made To Customer) or MTO (Made To Order).
Segment	The segment number of the item. A segment holds either the specific buyer or specific order number that requires dedication.

> **Note:** You can also modify an Activity Demand by using the Inbound Order Shipment Details screen. To view or modify an existing Activity Demand, click 🕵.

10.3 Deleting An Activity Demand

To delete an Activity Demand:

1. Log into the application.

2. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > Activity Demand Console. The Activity Demand By All Attributes search screen displays.

3. Enter the appropriate search criteria and click `Search`.

4. The Activity Demand List screen displays.

5. In the Activity Demand List screen, select the box against the appropriate Activity Code and click `Delete`.

> **Note:** You can also delete an Activity Demand by using the Inbound Order Shipment Details screen. To view or modify an existing Activity Demand, click 🕵.

10.4 Reference Implementation for Activity Demand

In the Reference Implementation for the Sterling nWMS PCA, we assume that the inventory received from VENDOR3 requires Quality Check. As per the configuration, during receipt, 20 per cent of the inventory received from VENDOR3 is sent to the QC Zone.

For the inventory received from VENDOR3, an activity demand is created for 20 per cent of the inventory received.

For more information about the Reference Implementation provided for Quality Control, see Section 11.5, "Reference Implementation for Quality Control".

11

Quality Control

In the supply chain industry today, products are being sourced from external vendors. These vendors vary from the highly sophisticated to the highly skilled, but with low access to technology. A few manufacturers have chosen to send their representatives to each facility to oversee the quality and accuracy of the operation. Others have chosen to instill a high degree of checks when the product is received into their own facilities. Retailers also perform inspection to ensure accuracy and quality of the product they receive from the manufacturers.

Quality Control (QC) helps address the quality control procedures that may be performed at a warehouse receiving products from vendors.

This chapter explains the Quality Control process and solution offered by the Sterling nWMS PCA.

11.1 Quality Control Process

Inventory received in a warehouse can be optionally sent for Quality Control. These inventory items are diverted to the QC Zone. The quantity diverted for QC can be configured. Sometimes, the entire quantity received may be diverted for QC. You can also configure only a percentage of the receipt for QC. The diversion of inventory to the QC Zone is decided based on your defined receiving preferences, such as, Vendor Classification, Item Classification, Buyer Organization, Seller Organization, and so forth. For more information about configuring the receiving preferences, see the *Sterling Supply Collaboration Configuration Guide*.

The QC process is:

1. The start of a receipt for an inbound shipment in the warehouse computes the QC quantity. QC computations are based on receiving preferences.

2. While attempting to putaway the inventory or license plates, these demands are honoured before considering the diversion of products to storage.

3. Putaway tasks are suggested to warehouse operators for moving out products from the dock to QC, Storage, Cross dock, and so forth.

4. Products brought for QC are inspected.

5. The inspection process determines the disposition of products and their Product Class and Inventory Status.

6. Based on the inspection outcome, the inspected products are either put away to storage or more inventory from storage may be called in manually for more inspection.

Note:

- The QC process is valid for the Purchase Order, Transfer Order, and Returns Order document types.

- The QC process is valid while receiving with both an ASN and PO, with an ASN but without a PO, and without an ASN but with a PO. In the first and second cases, the QC quantity is determined as a percentage of the shipment line. In the last case, the QC quantity is determined as a percentage of the order line.

- The defined QC percentage is not used in the case of Blind Receipts because there is no expected information or order.

11.2 Quality Control Configurations

This section explains the various configurations that may be done for the QC process.

11.2.1 Quality Control Pipeline

The QC process is a part of the Inbound process. To see the complete Inbound Pipeline, see Section 8.2.1, "Receiving Pipeline" in Chapter 8, "Receive and Putaway".

11.2.2 Activities

Activities in the warehouse are grouped into Activity Groups. The Sterling Networked Warehouse Management System PCA provides a pre-defined set of activity groups for a warehouse. Examples of activity groups include Receipt, Inspection, Value Added Services, and Packing.

Each activity group is associated with activity codes that define each activity that is performed. The Inspection activity group has this activity: Inspection.

> **Note:** Activity Codes may be defined only when the WMS tree is loaded for Node and Hub combination.

11.2.3 Setting Up the Quality Control Profile At the Participant Or Catalog Level

Before you can use the QC process, you need to enable Quality Control for the Enterprise and define the QC percentage. The QC percentage defined by you determines the percentage of received goods that are diverted to the QC zone for QC.

To turn on QC for an Enterprise and define the QC percentage:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Supply Collaboration.

4. From the tree in the application rules side panel, select Receiving > Receiving Preferences. The Receiving Preferences screen displays.

5. In the Search Results panel, click ➕. The Receiving Preference Details pop-up window displays.

6. Enter information into the applicable fields. For more information and field value descriptions, see the *Sterling Supply Collaboration Configuration Guide*.

7. Select the QC Required check-box.

8. In the Receiving Preference Details pop-up window, enter the QC Percentage. The default QC percentage value is 100; you can change it according to your business requirements.

9. Click 💾 .

During receipt, the quantity of received items to divert to the QC Zone, for the classifications chosen by you in this screen, is determined by the QC percentage specified here.

> **Note:** If the QC Percentage value has not been defined, it is set to 100 per cent, if the QC Required flag is set to Y. This results in the entire received quantity to be diverted to the QC Zone for QC.

11.2.4 Setting Up Disposition Codes

Disposition Codes allow inspectors to utilize their own terminology, instead of understanding inventory and storage implications.

Inventory is received with the specified Product Class and Inventory Status of the Disposition Code entered.

If the Product Class is not specified, the Product Class from the purchase order or the default Product Class from the item is used. It is mandatory to have the Product Class specified at one of these levels.

This section explains how to create Disposition Codes. It also explains how to associate the Disposition Code with a Product Class, with

Disposition Transition Statuses, for receiving with QC, and with an Inventory Status.

11.2.4.1 Enterprise-Level Disposition Setup

This section describes the Disposition Codes set up at the Enterprise level.

11.2.4.1.1 Creating the Receiving Disposition

Disposition Codes can be created to be assigned to the inventory at different stages, such as receiving, during QC, and after QC. You can have different Disposition Codes, depending upon whether the products passed QC, failed QC, and so forth.

To create the Disposition Code to assign to the items in QC:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Receiving Disposition. The Disposition List: Purchase Order screen is displayed.

5. In the Disposition List: Purchase Order screen, click 🔧 . The Disposition Details pop-up window displays.

6. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 💾 .

A receiving disposition is created that can be associated with the inventory during receiving.

11.2.4.1.2 Associating the Disposition Code with a Product Class

Disposition Codes can be associated with Product Classes. Whenever a product is dispositioned to the selected Disposition Code, the Product Class automatically changes to the Product Class that you specify here.

To associate the Disposition Code with a Product Class:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Supply Collaboration.

4. From the tree in the application rules side panel, select Document Specific > Receipt > Receiving Disposition. The Disposition List: Purchase Order screen displays.

5. In the Disposition List: Purchase Order screen, click 🦋 . The Disposition Details pop-up window displays.

6. In the Product Class drop-down list, select the appropriate Product Class for the Disposition Code.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click 💾 .

The selected Disposition Code is now associated with the specified Product Class.

11.2.4.1.3 Associating the Disposition Code with Disposition Transition Statuses

Disposition Transition Statuses aid in multi-level QC. If the product has to be inspected consecutively by multiple inspectors checking different attributes of the product, the product undergoes various inventory status

transitions, as it completes one level of inspection and enters the subsequent levels.

Disposition Codes can be associated with Disposition Transition Statuses. The products being dispositioned to this Disposition Code are assigned the Inventory Statuses specified here consecutively, until it reaches the final disposition.

To associate the Disposition Code with Disposition Transition Statuses:

1. Follow steps 1-5 in Section 11.2.4.1.2, "Associating the Disposition Code with a Product Class".

2. In the Receiving Disposition drop-down list of the Disposition Transitions pane, select the appropriate Inventory Statuses.

3. Click 🖫 .

The selected Disposition Code is now associated with the specified Disposition Transition Statuses.

11.2.4.2 Node-Level Disposition Setup

This section describes the Disposition Codes set up at the node level.

11.2.4.2.1   Associating the Disposition Code with an Inventory Status

Disposition Codes can be associated with Inventory Statuses. Whenever a product is dispositioned to the selected Disposition Code, the Inventory Status automatically changes to the status that you specify here.

To associate the Disposition Code with an Inventory Status:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Disposition Codes.

5. The Receiving Disposition: Purchase Order screen is displayed.

6. From the Inventory Status drop-down list, select the Inventory Status to associate with the Disposition Code.

For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 🖫.

11.2.4.2.2 Associating a Disposition Code for Receipt with Quality Control

Disposition Codes can be associated for Receipt with QC. During receiving, this Disposition Code is assigned to all items that require QC.

To associate a Disposition Code for receiving with QC:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Purchase Order > Receiving Preferences.

5. The Receiving Preferences: Purchase Order screen displays.

6. In the Disposition Code for Receipt with QC field, enter the appropriate Disposition Code. During receiving, this Disposition Code is assigned to all items that require QC.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click 🖫.

> **Note:** Click 🐞 to view the Receiving Preferences Details screen that displays the detailed preferences set for receiving the item, along with the QC percentage set for the item.

11.2.5 Inventory Status Transitions

Inventory should be considered available or unavailable for certain operations based on the operations within the warehouse. For example, inventory should be unavailable for orders until putaway tasks are complete. As soon as putaway is complete, the inventory should become available for orders automatically, without any intervention from users.

To facilitate this, Inventory Statuses are assigned to inventory. The Inventory Status of the inventory changes at different stages.

When inventory is received, it is assigned an appropriate Inventory Status to show that the inventory is awaiting inspection. When the inventory is moved to storage, the Inventory Status may change appropriately.

Inventory Statuses can be associated with zones. In this case, whenever a product moves into a particular zone, its Inventory Status gets transitioned to the Inventory Status with which the zone is associated. So, whenever a product is moved into the QC zone, its Inventory Status changes to the Inventory Status associated with the QC zone, which may indicate that the product is undergoing QC. When the product moves out of the QC zone into storage, its Inventory Status changes to the Inventory Status associated with the storage zone, which may indicate that the product is available for orders. Products that fail QC may be moved to the appropriate zone that is associated with an Inventory Status to mark the products as damaged and thus unavailable, or quarantined, or held until more QC is done on a larger sample.

If a product with the Inventory Status indicating that the product is awaiting inspection is moved directly into storage, it retains its Inventory Status. This is because no transition has been defined for the Inventory Status of the storage zone, when a product with that Inventory Status moves into storage. If the warehouse process so dictates, this can be overwritten by setting an appropriate Inventory Status Transition. In this case, products putaway into the storage zone may become directly available for orders, even though they have not yet cleared QC.

11.2.6 Setting Up Putaway Preferences

You can set up the Putaway preferences that are applicable while receiving, when QC is enabled.

This section explains how to set up the Putaway Preferences.

11.2.6.1 Putaway from Dock to QC Zone

To set up the Putaway Preferences for putaway from the dock to the QC Zone:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Putaway Preferences. The Putaway Preferences screen is displayed.

   Use this to set the Putaway Preferences for a single SKU, a multi-level container, and container with unknown contents.

5. Alternatively, click in the Activity Search screen to access the Putaway Preferences screen.

6. In the Putaway Preferences screen, select the appropriate tab, depending on whether you are setting up Putaway Preferences for a Single SKU, a Multi-SKU Container, or a Container with unknown contents.

7. Click . The Putaway Preference Details screen displays.

8. In the Activity Code drop-down list, select the code to divert for quality check (QC).

9. In the Inventory Status drop-down list, select the appropriate Inventory Status to indicate that the product is awaiting inspection.

10. In the Zone Priorities Panel > Zone drop-down list, select the zone where QC is performed.

11. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

12. Click 🖫.

13. To configure Task Types for Putaway, click 🔍. The Putaway Strategy screen displays. Configure the Task Types.

For more information about setting up Putaway Strategies see the *Sterling Warehouse Management System Configuration Guide*.

11.2.6.2 For Putaway from QC Zone to Storage

To set up the Putaway Preferences for Putaway from the QC Zone to storage:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Putaway Preferences. The Putaway Preferences screen is displayed.

   Use this to set the Putaway Preferences for a single SKU, a multi-level container, and a container with unknown contents.

5. Alternatively, click 🗐 in the Activity Search screen to access the Putaway Preferences screen.

6. In the Putaway Preferences screen, select the appropriate tab, depending on whether you are setting up Putaway Preferences for a Single SKU, a Multi-SKU Container, or a Container with unknown contents.

7. Click ➕. The Putaway Preference Details screen displays.

8. In the Activity Code drop-down list, select the code to move the product to the appropriate storage location.

9. In the Inventory Status drop-down list, select the appropriate Inventory Status to indicate that the product has completed QC.

10. In the Zone Priorities panel > Zone drop-down list, select the zone for storage.

11. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

12. Click 🔲.

13. To configure Task Types for putaway, click 🔎. The Putaway Strategy screen displays. Configure the Task Types.

For more information about setting up Putaway Strategies see the *Sterling Warehouse Management System Configuration Guide*.

11.2.7 Agents

No agent needs to be configured for the QC process.

11.2.8 Services

Either of the services provided for QC can be turned on.

The services provided for QC are:

• Register Activity Demand For QC

  This service computes the QC quantity (quantity of the products received that needs to be diverted to the QC Zone for QC) and creates an activity demand for it.

• Register Activity Demand and Print Receiving Worksheet

  This service computes the QC quantity and prints it on the Receiving Worksheet. It also creates an activity demand for the QC quantity.

Note: These services are already activated if you have installed the factory defaults with the events turned on.

11.2.8.1 Register Activity Demand For QC

When a receipt is started, the ON_START_RECEIPT event of the START_RECEIPT transaction is raised, which invokes the YNW_RegisterActivityDemandForQC_75 service.

The `YNW_RegisterActivityDemandForQC_75` service initiates the computation of the quantity of product that needs to be diverted for a shipment or order, based on the QC Classification and QC Percentage setup. It then creates an activity demand for the same. During Putaway this quantity of the product is diverted to the QC Zone for QC.

To activate the `YNW_RegisterActivityDemandForQC_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `Register Activity Demand For QC`, which invokes the `YNW_RegisterActivityDemandForQC_75` service.

11.2.8.2 Register Activity Demand and Print Receiving Worksheet

When a receipt is started, the `ON_START_RECEIPT` event of the `START_RECEIPT` transaction is raised, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

`YNW_CompositeServiceOnStartReceipt_75` initiates the computation of the quantity of product that needs to be diverted for a shipment or order, based on the QC classification and QC percentage setup. It then creates an activity demand for the same. The QC percentage computed is then printed on the Receiving Worksheet.

To activate the `YNW_CompositeServiceOnStartReceipt_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `YNW CalcQC And Print Recv WS (75)`, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

11.2.9 Prints

The `YNW_CompositeServiceOnStartReceipt_75` service is provided, which prints the QC Quantity in the Receiving Worksheet.

11.3 Managing the Quality Control Profile at the Transaction Level

A QC Profile enables you to define the quantity that needs to be diverted for QC. This diversion can be defined at the Item, Shipment, or PO level.

You might want to set up manual diversions for QC, for a Shipment or PO, based on some information received from the manufacturer. For example, consider a manufacturer that always supplies items from a manufacturing plant in Boston. If, for some reason, the manufacturer fulfills one PO from another plant in Chicago, you may decide to set up QC diversion for this PO. This QC diversion overrides the QC configuration previously set up for the manufacturer.

If you have manually entered a QC profile for an item in the shipment, the QC percentage previously defined for that specific item is ignored and the quantity specified by the QC profile is diverted for QC. For all other items in the shipment, the QC percentage defined previously is used to determine the quantity diverted for QC.

11.3.1 Creating a Quality Control Profile

To create a QC Profile:

1. Log into the application.

2. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > Create QC Profile. The Create Activity Demand screen displays.

   For more information about the field values see Table 11–1 and Table 11–2.

3. In the Activity Demand area, enter the appropriate details.

4. To view the current QC Profile, click `Compute QC Qty`. The current QC Profile displays in the QC Profile Info area.

5. To enter a new QC Profile, in the QC Profile Info area:

   c. Select Quantity to enter the Override QC Qty in units. Enter the Override QC Qty and select the UOM.

   d. Select Percentage to enter the Override QC Qty in percentage. Enter the Override QC percentage.

6. Click `Create Activity Demand`. The Activity Demand screen displays.

   For more information about the field values see Table 11–3 and Table 11–4.

7. In Demand Location Id, enter the location to which the demanded quantity is diverted.

   You can also click 🔍 to select the Demand Location Id.

8. If needed, select the Priority and enter the Demand Quantity.

9. Click `Save`.

Table 11–1   Create Activity Demand, Activity Demand

Field	Description
Document Type	Select the document type.
	Valid Document Types are Blind Return, Blind Receipt, Transfer Order, and Purchase Order.
Node	Indicates the node that ships the shipment.
Enterprise	Select the enterprise that ships the shipment.
Activity Code	Indicates the activity code.
	If Divert for Quality Check does not appear as the activity code, select Divert for Quality Check from the drop-down list.
Shipment #	Enter the shipment number of the shipment.
	You can also click 🔍 to select the shipment number.
PO #	Enter the Purchase Order number.
	You can also click 🔍 to select the PO number.
Seller	Enter the seller that sells the shipment.
	You can also click 🔍 to select the seller.
Priority	Select the priority of the activity demand being set up.
Item ID	Enter the identifier of the item.
	You can also click 🔍 to select the item ID.
	It is mandatory to enter the Item ID.

Table 11–1   Create Activity Demand, Activity Demand

Field	Description
Product Class	Select the Product Class of the item.
	It is mandatory to enter the Product Class.
Unit Of Measure	Select the Unit of Measure of the item.
	It is mandatory to enter the Unit of Measure.

Table 11–2   Create Activity Demand, QC Profile Info

Field	Description
QC Profile%	Indicates the current percentage to divert to QC.
Quantity Based on%	Indicates the quantity to divert to QC.
Quantity	Select the enterprise that ships the shipment.

Quantity	Select this to enter the Override QC Qty in units.
	In Override QC Qty, enter the new quantity to divert to QC and select the UOM from the drop-down list.
Percentage	Select this to enter the Override QC Qty in percentage.
	In Override QC%, enter the new percentage to divert to QC.

> **Note:** You can also create a QC Profile by using the Inbound Order Shipment Details screen. Click the Create Activity Demand action in the Shipment Lines area.

11.3.2 Modifying a Quality Control Profile

To modify a QC Profile:

1. Log into the application.

2. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > QC Profile Console. The Activity Demand By All Attributes search screen displays.

3. Enter the appropriate search criteria and click Search.

4. The Activity Demand List screen displays.

5. In the Activity Demand List screen, click the appropriate Activity Code. The Activity Demand screen displays.

   For more information about the field values see Table 11–3 and Table 11–4.

6. Enter the appropriate details.

7. Click Save to save the details entered.

Table 11–3   Activity Demand, Activity Demand

Field	Description
Document Type	Indicates the document type.
Node	Indicates the node that ships the shipment.
Enterprise	Indicates the enterprise that ships the shipment.
Activity Group	Indicates the activity group to which the activity code belongs.
Activity Code	Indicates the activity code. The activity code is always Divert for Quality Check, when modifying a QC Profile.
Priority	Select the priority of the activity demand.
Shipment #	Indicates the shipment number of the shipment.
PO #	Indicates the Purchase Order number.
Demand Location ID	Enter the location to which the demanded quantity is diverted. You can also click 🔍 to select the demand location ID.

Table 11–4   Activity Demand, Activity Demand Details

Field	Description
Item ID	Indicates the identifier of the item.
Item Description	Indicates the description of the item.
Product Class	Indicates the Product Class of the item.
Demand Quantity	Enter the quantity of the item that is in demand.
Unit Of Measure	Indicates the Unit of Measure of the item.
Inventory Status	Indicates the inventory status of the item.
Satisfied Quantity	Indicates the quantity of the item that is satisfied.
Pallet Id	Indicates the identifier of the pallet.
Case Id	Indicates the identifier of the case.
Open Demand Qty	The demand that is yet to be satisfied.
Segment Type	The segment type of the item. A segment type indicates an inventory category. Typical values are MTC (Made To Customer) and MTO (Made To Order).
Segment	The segment number of the item. A segment holds either the specific buyer or specific order number that requires dedication.

Note: You can also modify a QC Profile by using the Inbound Order Shipment Details screen. To view or modify an existing Activity Demand, click .

11.3.3 Deleting a Quality Control Profile

To modify a QC Profile:

1. Log into the application.

2. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > QC Profile Console. The Activity Demand By All Attributes search screen displays.

3. Enter the appropriate search criteria and click Search.

4. The Activity Demand List screen displays.

5. In the Activity Demand List screen, select the box against the appropriate Activity Code and click `Delete`.

> **Note:** You can also delete a QC Profile by using the Inbound Order Shipment Details screen. To view or modify an existing Activity Demand, click .

11.4 Managing the Quality Control Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Quality Control. This section explains the UI flow while receiving using Orders and ASNs.

11.4.1 Quality Control Flow For Receiving Using Order

The UI flow for QC while receiving using an Inbound or Return Order is explained in this section.

11.4.1.1 Receiving Process

Follow these steps in the Receiving process:

1. Start the Receipt from the Inbound Order console or Returns Console using the Report/Record Receipt action. The Start Receipt pop-up window displays.

2. Enter the details required, and start the receipt by clicking `Save`. The Receive screen displays.

   For more information about the field values see the *Sterling Warehouse Management System User Guide*.

3. In the Receive screen, enter the Disposition Code for products requiring inspection (REQ-INSP) and click `Save`.

   This step needs to be performed using the Sterling Supply Chain Mobile Application if you are using the Sterling Supply Chain Mobile Application for receiving.

4. In the Receipt Console, close the receipt by clicking `Close Receipt`.

11.4.1.2 Putaway Process

When the receipt is closed, Putaway tasks are automatically generated by the system. Depending upon the QC Percentage defined, part of the receipt is diverted to the QC Zone. The rest may be diverted to storage.

The inventory status of the entire receipt is set to one which indicates that the products are awaiting inspection.

11.4.1.3 Inspection Process

Follow these steps in the Inspection process:

1. To inspect the products that have been diverted to the QC Zone, navigate to the Inspect Inbound Receipt console.

2. Enter the details required, and click `Proceed`. The Inspect Inbound Receipt Details screen displays.

   For more information about the fields see the *Sterling Warehouse Management System User Guide*.

3. In the Inspect Inbound Receipt Details screen, for each shipment or order line,

   e. From the Disposition Code drop-down list, select the appropriate Disposition Code into which the product is transitioned.

   f. Enter the quantity.

4. Enter any other detail required.

   For more information about the field values, see the *Sterling Warehouse Management System User Guide*.

5. Click `Save`.

11.4.1.4 Inspection Putaway

For Putaway of the products after inspection, use the Create Move Request console or the Sterling Supply Chain Mobile Application to create Move Requests to divert the inspected products to the appropriate locations.

11.4.2 Quality Control Flow For Receiving Using ASNs

The UI flow for QC while receiving using an ASN is explained in this section.

11.4.2.1 Receiving Process

Follow these steps in the Receiving process:

1. Start the Receipt from the Inbound Order Shipment Details screen in the Shipment Console using the Start Receipt action. The Start Receipt pop-up window displays.

2. Enter the details required, and start the receipt by clicking `Save`.

   Now, if you are using the Sterling Supply Chain Mobile Application for receiving, start receiving using the Sterling Supply Chain Mobile Application. Otherwise, follow Step 3 through Step 5.

3. Click the Receive action. The Receive Details screen displays.

4. In the Receive Details screen, enter the Disposition Code for products requiring inspection (REQ-INSP) and click `Save`.

   This step needs to be performed using the Sterling Supply Chain Mobile Application if you are using the Sterling Supply Chain Mobile Application for Receiving.

5. In the Receipt Console, close the receipt by clicking `Close Receipt`.

11.4.2.2 Putaway Process

When the receipt is closed, putaway tasks are automatically generated by the system. Depending upon the QC Percentage defined, part of the receipt is diverted to the QC Zone. The rest may be diverted to storage.

The inventory status of the entire receipt is set to one which indicates that the products are awaiting inspection.

11.4.2.3 Inspection Process

Follow the same steps as specified for the QC flow, for the inspection process, while receiving using a PO. For more information about the QC flow, for the inspection process, when you are receiving using a PO, see Chapter 11.4.1.3, "Inspection Process".

11.4.2.4 Inspection Putaway

For Putaway of the products after inspection, use the Create Move Request console or the Sterling Supply Chain Mobile Application to create Move Requests to divert the inspected products to the appropriate locations.

11.5 Reference Implementation for Quality Control

In the Reference Implementation for the Sterling nWMS PCA, we assume that the inventory received from VENDOR3 requires Quality Check. As per the configuration, during receipt, 20 per cent of the inventory received from VENDOR3 is sent to the QC Zone.

The Activity Code QC is used for the QC process. Inventory for the Activity Code QC is automatically moved to the QC Zone. An appropriate Putaway strategy is created for this.

Once the goods are diverted to the QC Zone, you can use the Inspect Receipt screen to inspect the products. Upon quality inspection, a particular disposition is then applied to the product, which results in the inventory being classified into a specific Product Class and Inventory Status combination.

If a quality problem is spotted during the inspection process, additional inventory is manually retrieved to the QC Zone from storage.

After inspection, the user initiates the putting away of inventory into the storage locations.

The Sterling nWMS PCA provides Reference Implementation for the DC1 and DC3 organizations.

To run through the QC feature provided:

1. Ensure that the Sterling nWMS PCA is installed with transaction data. For more information about installing the Sterling nWMS PCA with transaction data see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

2. In the Shipment console, select a shipment coming from VENDOR3.

3. Start Receipt and execute the Receipt process.

4. As per the QC process set, 20 percent of the inbound quantity is diverted to the QC Zone for QC.

As the inventory moves to and from the QC Zone, the changes in the inventory status are:

1. When the inventory arrives, its Inventory Status is initially set to AI (Awaiting Inspection).

2. Once the inspector completes the inspection, the inventory status may be changed to:

   • QC Passed: The product passed QC and is moved back to storage. The product quantity is available to the system.

   • QC Failed: The products are written off and the quantity becomes unavailable to the system.

Note: When the product is moved to the QC Zone, the entire shipment is marked Awaiting Inspection, even though only a part of it is diverted for QC. Once the product passes QC, the entire shipment is marked GOOD.

11.5.1 Putaway Preference Configuration

The Zone priorities defined as a part of the Sterling nWMS PCA Reference Implementation are:

Table 11–5 Zone Priorities

Priority	Zone
100	QC-ZONE

12

Vendor Compliance

Retailers are increasingly mandating stricter requirements and pushing for better vendor performance. Consequently, Vendor Compliance is very important to reduce operating expenses and streamline the supply chain.

To improve and ensure good Vendor Compliance, users can record, view, modify, and delete shipment discrepancies at the shipment, container, or item level. Users can also record any additional information, such as the extra time spent due to non-compliance, and add brief notes on the observations.

A shipment reference is mandatory to record the discrepancy details. The discrepancy details recorded can be associated with the pricing information and used to compute the charge back or fee that the vendors need to pay for not adhering to the retailer's compliance.

This chapter explains the Vendor Compliance process and solution provided with the Sterling nWMS PCA.

12.1 Vendor Compliance Process

After inventory is received into a warehouse, if the vendor compliance has not been met, the discrepancies are recorded in the system. This information may be used to calculate the charge back or fee that the vendors need to pay for non-compliance.

The Vendor Compliance process is:

1. Before the receipt starts, the user records the non-compliance details, if any, for the shipment, container, or item. For example, the user may record the non-compliance before starting the receipt if there is information from the ASN regarding the shipment level non-compliance.

2. During receipt, the user records the non-compliance details, if any, for the shipment, container, or item. For example, the user may record the non-compliance during the receipt process if the non-compliance is observed while receiving items.

3. After the receipt is completed, the user records the non-compliance details, if any, for the shipment, container, or item. For example, the user may manually compute an audit for the non-compliance details and record it against the shipment.

The discrepancy details recorded are sent to an external system and may be associated with the pricing information. This is used to compute the charge back that the vendors need to pay, for not adhering to the retailer's compliance.

12.2 Vendor Compliance Configurations

This section explains the configurations that may be done for the Vendor Compliance process.

12.2.1 Setting Up the Discrepancy Codes

Discrepancy codes indicate the nature of the discrepancy. Discrepancy codes can be set up at the Shipment, Container, and Unit or Item levels.

To set up the Discrepancy Codes:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Platform.

4. From the tree in the application rules side panel, select Presentation > Custom Common Codes.

5. The Custom Common Codes screen displays.

6. Select the Common Code Type to edit. The Common Code Values pop-up window displays.

7. To edit an existing Discrepancy Code, select the appropriate code value. To add a custom Discrepancy Code, click 🞧. The Discrepancy Details pop-up window displays.

8. Edit or enter the appropriate values.

9. Click 🖫.

12.3 Managing the Vendor Compliance Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles to perform Vendor Compliance.

12.3.1 Adding Discrepancy Details

To add Vendor Compliance discrepancy details:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles menu, select Inbound > Inbound Shipment Console. The Inbound Order Shipment By Status search screen displays.

3. Enter the search criteria for the inbound shipments required and click Search. The Inbound Order Shipment List screen displays.

   For more information about the field descriptions for inbound order shipments, see the *Sterling Warehouse Management System User Guide*.

4. Select the appropriate shipment and click Record Discrepancy. The Discrepancy screen displays.

   For information about the field values see Table 12–1 to Table 12–5.

5. In the Discrepancy screen do one or more of the following, as necessary:

   • Click 🞧 in the Shipment Level Discrepancy area to enter shipment level discrepancy details

   • Click 🞧 in the Container Level Discrepancy area to enter container level discrepancy details

- Click ➕ in the Item Level Discrepancy area to enter item or unit level discrepancy details

A new row displays that enables you to enter the discrepancy details.

6. Enter the appropriate details.

7. Click Record Discrepancy to record the discrepancy.

> **Note:** To delete a row of details that you have just entered and not saved, click the ✖ icon next to that row.

Table 12–1 Discrepancy, Shipment Information

Field	Description
Shipment #	Indicates the shipment number of the shipment.
Order #	Indicates the order number of the shipment.
Status	Indicates the status of the shipment.
Enterprise	Indicates the enterprise associated with the shipment.
Buyer	Indicates the buyer associated with the shipment.
Seller	Indicates the seller associated with the shipment.
Ship Node	Indicates the node from where the shipment ships.
Receiving Node	Indicates the node that receives the shipment.
Carrier	Indicates the carrier for the shipment.

Table 12–2 Discrepancy, Quantity Discrepancy

Field	Description
Order #	Indicates the order number of the shipment.
Line	Indicates the order line number of the shipment.
Item ID	Indicates the item identifier of the item for which the discrepancy exists.
Product Class	Indicates the product classification for the item for which the discrepancy exists.

Table 12–2   Discrepancy, Quantity Discrepancy

Field	Description
Unit Of Measure	Indicates the unit of measure for the item for which the discrepancy exists.
Discrepancy Type	Indicates the type of discrepancy. Typical values are Under Receipt, Over Receipt, and Damaged.
Discrepancy Quantity	Indicates the number of units of the item for which the discrepancy exists.

Table 12–3   Discrepancy, Shipment Level Discrepancy

Action	Description
Delete	This action button deletes the selected shipment level discrepancies.
Field	**Description**
Discrepancy Code	Select the nature of the discrepancy.
Notes	Enter notes, if any.
Effort	Enter the additional time required to work around the discrepancy.
Compliance Checked By	Enter the user who verified the discrepancy.
Date Checked	Enter the date on which the discrepancy was observed. You can also click to select the date.
Responsible	Select Carrier if the carrier is responsible for the discrepancy. Select Seller if the seller is responsible for the discrepancy.

Table 12–4   Discrepancy, Container Level Discrepancy

Action	Description
Delete	This action button deletes the selected container level discrepancies.
Field	**Description**
Discrepancy Code	Select the nature of the discrepancy.
Quantity	Enter the number of units of the item for which the discrepancy exists.
UOM	Select the unit of measure for the item for which the discrepancy exists.
Notes	Enter notes, if any.
Effort	Enter the additional time required to work around the discrepancy.
Compliance Checked By	Enter the user who verified the discrepancy. You can also click 🔍 to select the user.
Date Checked	Enter the date on which the discrepancy was observed. You can also click 📅 to select the date.
Responsible	Select Carrier if the carrier is responsible for the discrepancy. Select Seller if the seller is responsible for the discrepancy.

Table 12–5   Discrepancy, Item Level Discrepancy

Action	Description
Delete	This action button deletes the selected item level discrepancies.
Field	**Description**
Discrepancy Code	Select the nature of the discrepancy.
Item ID	Enter the item identifier of the item for which the discrepancy exists. You can also click 🔍 to select the Item ID.

Table 12–5   Discrepancy, Item Level Discrepancy

UOM	Select the Unit of Measure of the item for which the discrepancy exists.
Quantity	Enter the number of units of the item for which the discrepancy exists.
Notes	Enter notes, if any.
Effort	Enter the additional time required to work around the discrepancy.
Compliance Checked By	Enter the user who verified the discrepancy. You can also click ⬭ to select the user.
Date Checked	Enter the date on which the discrepancy was observed. You can also click ▦ to select the date.
Responsible	Select Carrier if the carrier is responsible for the discrepancy. Select Seller if the seller is responsible for the discrepancy.

12.3.2 Editing Discrepancy Details

1. Complete Step 1 through Step 4 in Section 12.3.1, "Adding Discrepancy Details".

2. Select the discrepancies to edit.

3. Edit the appropriate field values.

4. Click `Record Discrepancy` to record the revised discrepancy.

12.3.3 Deleting Discrepancy Details

1. Complete Step 1 through Step 4 in Section 12.3.1, "Adding Discrepancy Details".

2. Select the discrepancies to delete.

3. To delete the selected discrepancies, do one or more of the following, as necessary:

   - Click `Delete` in the Shipment Level Discrepancy area to delete shipment level discrepancy details

- Click `Delete` in the Container Level Discrepancy area to delete container level discrepancy details

- Click `Delete` in the Item Level Discrepancy area to delete item or unit level discrepancy details

12.4 Reference Implementation for Vendor Compliance

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Vendor Compliance.

12.4.1 Discrepancy Codes Configuration

This section describes the custom common codes configured in the Sterling nWMS PCA.

The following Custom Common Codes support Vendor Compliance been added as a part of this feature:

- Shipment Discrepancy

- Container Discrepancy

- Item Discrepancy

For each discrepancy level a specific set of discrepancy codes are provided. Users can use the Sterling Supply Chain Applications Configurator to add more non-compliance codes.

Shipment Level

The discrepancy or non-compliance checks that are supported at the shipment level are listed in Table 12–6.

Table 12–6   Shipment Level Discrepancy Codes

Discrepancy Codes	Description
ASN_NOT_SENT	No ASN Sent
DELAYED_SHIPMENT	Delayed Shipment
EARLY_ARRIVAL	Early Arrival
INCORRECT_CARRIER	Incorrect Carrier

Table 12–6   Shipment Level Discrepancy Codes

Discrepancy Codes	Description
INCORRECTLY_LABELED	Incorrect Labels
INCORRECT_BOL_PRO_NO	Incorrect Bill of Lading or Pro Number
INCORRECT_FREIGHT_TERMS	Incorrect Freight Terms
INCORRECT_ITEMS	Incorrect Items
INCORRECT_ORDER_REFERENCE	Incorrect Order Reference
INCORRECT_PACK_LIST	Incorrect Pack List
INCORRECT_PALLETIZATION	Incorrect Palletization
LATE_ARRIVAL	Late Arrival
MISSING_BOL_PRO_NO	Missing Bill of Lading or Pro Number
MISSING_LABELS	Missing Labels
MISSING_MSDS	Missing Hazmat Material Safety Data Sheets (MSDS)
MISSING_PACK_LIST	Missing Pack List
NOT_PALLETIZED	Products Not Palletized
NO_APPOINTMNENT	No Appointment
QUANTITY_DISCREPANCY	Quantity Discrepancy

Container Level

The discrepancy or non-compliance checks that are supported at the container (case or pallet) level are listed in Table 12–7.

Table 12–7   Container Level Discrepancy Codes

Discrepancy Codes	Description
DAMAGED_PALLET	Damaged Pallet
DAMAGED_UPC_CODE	Damaged UPC code
INCORRECT_CARTON_SIZE	Incorrect Carton Size
INCORRECT_PALLET_NUMBERING	Incorrect Pallet Numbering
MIXED_SKU_LPN	Mixed SKU LPN
NON_STANDARD_CASE	Non Standard case

Table 12–7 Container Level Discrepancy Codes

Discrepancy Codes	Description
NON_STANDARD_PALLET	Non Standard Pallet
NOT_MARKED_RETURNABLE	Not Marked Returnable
NOT_SCANNABLE_UPC_CODE	UPC Code Not Scannable
NO_CASE_LABELS	No Case Labels
NO_PALLET_LABELS	No Pallet Labels
OVER_LOADED_PALLET	Overloaded Pallet
PALLET_NOT_SHRINK_WRAPPED	Pallet not wrapped
UPC_CODE_UNREADABLE	UPC Code Not Readable
UPC_NOT_IN_ORDER	UPC Code Not in Order
INCORRECT_UPC_CODE	Incorrect UPC Code

Item or Unit Level

The discrepancy or non-compliance checks that are supported at the item or unit level are listed in Table 12–8.

Table 12–8 Item or Unit Level Discrepancy Codes

Discrepancy Codes	Description
INCORRECT_SKU	Incorrect SKU
INCORRECT_TICKET_ LABELS	Incorrect Ticket Labels
INCORRECT_UPC	Incorrect UPC Code
ITEM_ATTRIBUTES_MISSING	Item Attributes Missing
MISSING_TICKET_LABELS	Missing Ticket Labels
OVER_SHIPPED_QUANTITY	Over Shipped Quantity
SHORT_SHIPPED_QUANTITY	Short Shipped Quantity

13

Move Request

Move requests are created to ensure that inventory is moved from one to location to another, within a warehouse, in an automated manner. These are not representative of transfers between warehouses, which are actual shipments.

This chapter explains the Move Request process and solution offered by the Sterling nWMS PCA.

13.1 Move Request Process

The Sterling nWMS PCA utilizes the Move Request framework to create tasks for warehouse processes, including Receiving and Work Order processing (VAS). This is used in the operations for quality recall or to move products from processing areas back to stocking locations.

13.1.1 Sterling Supply Chain Mobile Application-Based Move Request Process

The Move Request process using the Sterling Supply Chain Mobile Application is:

1. The user selects the Putaway menu option on the mobile terminal.

2. The user scans an item or LPN to move.

3. If the system suggests to putaway more inventory, the user scans another item or LPN to move.

4. The user performs Step 3 until either the equipment is full or the system does not suggest any more putaway tasks.

5. The system indicates to the user that the next step is to deposit the inventory.

6. The system presents the location to move the LPN into, based on the item and location characteristics.

7. The user confirms the location where the deposit is completed.

13.1.2 Paper-Based Move Request Process

When moving using paper, a batch sheet is created for the move requests that have been created for the paper-based process. If an LPN is being moved, the LPN is also printed on the batch sheet. Users can confirm the completion of the move using the Confirm Batch console screen.

13.2 Move Request Configurations

This section explains the various configurations that may be done for the Move Request process.

13.2.1 Agents

The agent configured for the Move Request processing is:

```
Move Request Purge
```

This agent deletes the move request from the system. This agent is run every day. It deletes move requests that were created thirty days prior to the current date.

For more information about this agent see the *Sterling Warehouse Management System Configuration Guide*.

13.2.2 Services

The services provided for the Move Request process are:

• Print Move Tickets

This service prints move tickets in a paper-based warehouse.

- Generate Min Max Replenishment Move Request

  This service creates Replenishment tasks with normal priority when the inventory goes below the minimum level. For paper-based warehouses, it also prints Move Tickets.

- Generate Top Off Replenishment Move Request

  This service creates Replenishment tasks with low priority when the inventory falls below the maximum level. For paper-based warehouses, it also prints Move Tickets.

13.2.2.1 Print Move Tickets

When a Move Request is released, the ON_SUCCESS event of the RELEASE_MOVE_REQUEST transaction is raised, which invokes the PrintMoveTickets service.

The PrintMoveTickets service then prints the Move Tickets in a paper-based warehouse. These Move Tickets are used for performing Putaway tasks.

To activate the PrintMoveTickets service:

1. Navigate to the Move Request Transaction repository.

2. Associate the ON_SUCCESS event of the RELEASE_MOVE_REQUEST transaction with the action Print Move Tickets, which invokes the PrintMoveTickets service.

> **Note:** This service is already activated if you have installed the factory defaults with the events turned on.

13.2.2.2 Generate Min Max Replenishment Move Request

When the inventory falls below the minimum level, the LOCN_INV_MONITOR agent calls the YNW_GenerateMinMaxRplMR_75 service.

This service then creates Replenishment tasks with normal priority. For paper-based warehouses, it also prints Move Tickets.

13.2.2.3 Generate Top Off Replenishment Move Request

When the inventory goes below the maximum level, the `LOCN_INV_MONITOR` agent calls the `YNW_GenerateTopOffRplMR_75` service.

This service then creates replenishment tasks with low priority. For paper-based warehouses, it also prints Move Tickets.

13.2.3 Prints

The `PrintMoveTickets` service is provided, which prints the Move Tickets.

13.2.4 Productivity

For all tasks associated with Move Requests, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

13.3 Managing the Move Request Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Move Requests. This section explains the UI flow for performing move tasks.

13.3.1 Performing Move Tasks

The UI flow for performing Move Tasks depends on whether the warehouse is paper-based or Sterling Supply Chain Mobile Application-based.

13.3.1.1 Using the Sterling Supply Chain Mobile Application

Follow these steps in the Move Request process:

1. Log into the Sterling Supply Chain Mobile Application.

2. From the menu, select the Putaway menu option.

3. The system suggests the available tasks.

4. Scan the source location, appropriate inventory, and quantity.

5. Scan the target location.

6. Click Deposit. The move task is completed.

7. If more tasks exists, the system suggests them to the user. Otherwise, the message "No Open Tasks" is displayed.

13.3.1.2 Using Paper

Follow these steps in the Move Request process:

1. Users are provided putaway batch sheets that contain information about the inventory to move.

2. Log into the Sterling Supply Chain Application Consoles.

3. From the Sterling Supply Chain Application Consoles navigation bar, select Task > Confirm Batch. The Batch Confirmation screen displays.

4. Enter the batch number and target location.

5. Click Confirm. The paper-based move is confirmed.

13.4 Reference Implementation for Move Requests

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Move Requests.

13.4.1 Move Request Task Types

The move request task types provided are:

Table 13–1   Move request Task Types

Task Type	Description
MOVE-0001	Paper Based move request Task type.
MOVE-0002	Sterling Supply Chain Mobile Application-Based move request Task Type

13.4.2 Move Request Cancellation Reasons

The different Move Request cancellation reasons provided by the Sterling nWMS PCA are: Default, Miscellaneous, and Data Entry Error.

13.4.3 Putaway Preferences

Once shipments are received, they are configured to automatically generate tasks for Putaway. The service to generate a Putaway request is configured as a part of the receipt transaction, on closure of the receipt. Tasks are configured as one-step tasks. For all the task types, the Execute through Drop off Flag is set to "N". Warehouses may manually stage products in staging locations due to equipment constraints in the destination aisle.

The considerations for putaway include:

- Location capacity.

- Putaway sequence.

- Consolidation opportunity along with locations that have the same item, otherwise the items are placed in an empty location.

- Enterprise or other constraints.

- Location and item storage preferences based on Item Classification (For example, Storage Type is Refrigerated).

- Zone and Task Type preferences.

- Receiving preferences for QC based on Enterprise, Vendor and Item Classification (For example, Product Line is PL001).

The Sterling nWMS PCA configurations for Putaway Preferences include:

Table 13–2   Putaway Preferences

Activity	UOM	Zones
Moving To Storage	Less than Case	FORWARD PICK ZONES
Moving To Storage	CASE	BULK ZONES Tracking Cases
Moving To Storage	PALLET	BULK ZONES Tracking Pallets

13.4.3.1 Putaway Strategy

For paper-based warehouses, the Task Type MOVE-0001 is used. For warehouses using the Sterling Supply Chain Mobile Application to execute the Putaway Tasks, the Putaway strategy is configured to use the MOVE-0002 Task Type.

14

Count

A count system enables you to execute counts in a planned or ad hoc manner. One common type of count employed is counting year-end inventories, which, although exhaustive and time consuming, does not ensure accuracy throughout the year. The other method is to only count items based on velocity or price, every quarter. However, the best method is to ensure that count is performed periodically in the system.

Counts are typically done to eliminate mismatches between the system and the actual inventory.

Count tasks may be either generated for a cycle count program or requested by the inventory control department ad hoc. Count tasks may also be initiated through system events that occur at a location level. This events may include an exception being recorded while performing an activity, such as putaway, retrieval or pick, a location quantity dropping below minimum levels or reaching zero, and so forth.

This chapter explains the Count processes and solution offered by the Sterling nWMS PCA.

14.1 Count Processes

The types of Count processes that may be followed are:

- Cycle Count Process
- Physical Count Process

14.1.1 Cycle Count Process

Cycle Counts are done for a group of locations, on a daily basis, to ensure that location inventory mismatches are eliminated. The

procedures available in count include the ability to generate tasks based on zones, product classes, or item classifications. For example, Velocity code is A, B, or C.

Count requests are generated on a periodic basis. Count tasks are generated for the count requests created. The count tasks are then executed through count sheets or through the Sterling Supply Chain Mobile Application.

As part of the Reference Implementation, a separate pipeline has been configured for the Cycle Count process.

The simplified Cycle Count process is:

1. The users perform the first level count tasks.

2. If no variance is found, the count is purged.

3. If variances are found,

   - Other users perform the variance tasks.

   - Variances, if any, are accepted.

   - The count is purged.

14.1.2 Physical Count Process

Physical Counts are performed to synchronize the physical and system inventory and are required as a part of the corporate policy or client requirements. During the physical count process, the warehouse is closed and no other activity is performed.

Count tasks are generated for all the locations in the warehouse. The Count tasks are then performed using count sheets or the Sterling Supply Chain Mobile Application.

As part of the Reference Implementation, a separate pipeline has been configured for the Physical Count process.

The Physical Count process is:

1. A group of users perform the first level count tasks using batch sheets generated. The data is then entered into the system.

2. If no variance is found, the count is purged.

3. If variances are found:

- A different group of users perform the second level variance tasks for those locations found with a variance.

- A random set of second level variance count sheets is identified and locations corresponding to these are counted and the count quantity is entered.

- Variances, if any, are accepted.

- The count is purged.

14.1.2.1 Preparing for a Physical Count

To ensure a proper physical count, follow the steps and recommendations in the following sections.

Configuration-Level Changes

The configuration-level changes that need to be performed when preparing for a physical count are:

1. Creating a Pipeline-Related Configuration

2. Configuring a New Synchronous Service

3. Configuring a Task Type

4. Configuring Inventory Adjustment Reasons

5. Configuring Prints

Creating a Pipeline-Related Configuration

To create the pipeline-related configuration:

1. Log into the application as the system administrator.

2. Navigate to the Count Execution Repository.

3. Navigate to the Pipelines Repository.

4. Look for the Physical Count Execution Pipeline. To do this:

   a. Open the existing pipeline and Save As the new physical count pipeline.

   b. Modify this pipeline to reflect all the transactions and statuses exactly as shown in Figure 14–3.

   c. Click Save.

> **Note:** Sterling Commerce recommends that you do not modify this pipeline once the physical count process begins.

Configuring a New Synchronous Service

To configure a new synchronous service, a new action, and enable the ON_SUCCESS event:

1. Navigate to the Count Execution Services Repository.

2. Create a new synchronous service called YNW_CallPIBatchingService as shown in Figure 14–1.

Figure 14–1 YNW_CallPIBatchingService

3. Click the XSL Translator component of the YNW_CallPIBatchingService service. Configure it to invoke the YNWMakeCreateBatchForReferencesInput.xsl file. The XSL component is located in the <YFS_HOME>/template/xsl/ynw directory.

4. Click the API component of the service. Select Standard Sterling Supply Chain API and select the createBatchForReferences API from the drop-down list. Click Save.

5. Navigate to the Count Execution Action Repository.

6. Select Batching and click ⊕ to create a new action called InvokePIBatching.

7. In the Invoked Services tab, click ⊕. The Service List pop-up window displays. Select the YNW_CallPIBatchingService synchronous service and click 🔲. In the Action Detail screen, click 🖫.

8. Navigate to Transactions Repository.

9. For each of the following transactions, configure the ON_SUCCESS event to invoke the InvokePIBatching action and click Save:

- **–** `Create Count Tasks`

- **–** `Create Variance Tasks`

Configuring a Task Type

To configure task type configuration:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Warehouse Management for the corresponding node.

2. From the tree in the application rules side panel, select Task Management > Task Types. The Task Type screen displays.

3. Configure the Count Task types for the Activity group called `COUNT` and select Use *Sterling Warehouse Management System Concepts Guide* to plan trips by batching tasks. Execute the tasks using Printed Tickets. The number of count requests allowed is 1. To arrive at an optimal number of tasks for each batch, refer to the example provided in Section 14.1.2.3.

Configuring Inventory Adjustment Reasons

To establish Inventory Adjustment-related configuration:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Warehouse Management.

2. From the tree in the application rules side panel, select Inventory > Inventory Adjustment Reasons.

3. The Inventory Adjustment Reasons screen displays. Ensure that the Inventory Adjustment Reason code for the physical count is associated with an accounting bin.

> **Note:** This associated accounting bin MUST be in a zone that tracks LPN.

Configuring Prints

To establish print-related configuration:

1. From the tree in the application rules side panel, select System Administration > Devices. The Device Setup screen displays.

2. Ensure that the printer is configured to the "PICOUNTSHEET" Print Document type. To do this, select your printer displayed in the Device

Setup screen. Click the Details tab. The Device Sub Type screen displays. Select the Print Document Type as "PICOUNTSHEET". Click Save.

3. Copy the following files, located in the `<YFS_HOME>/template/prints/label` directory, to the print label directory set up for labels on your Loftware print server: `PI_CountSheet.lwl`, `PI_CountSheet_Last.lwl`, `PI_CountSheet_Mid.lwl`, `PICountSheetMap.xml`.

4. Navigate to the Task Execution Repository.

5. Navigate to the Transaction Repository.

6. Ensure that the `BATCH_CREATED` event is configured in the Create Batch transaction. To do this, double-click on the `BATCH_CREATED` event. Modify the displayed `Print Count Sheet` action to invoke the `PIPrintTaskList` service instead of the `PrintTaskList` service. Click Save.

Transaction-Level Changes

The transaction-level changes that need to be performed when preparing for a physical count are:

1. Searching for Staging Locations, Docks, and Shipping Lanes

2. Cleaning Up the Inventory in Virtual Locations

3. Searching for ASNs in Open Status

4. Searching for Shipments in Open Status

5. Cleaning Up the Inventory in Staging Locations, Docks, and Shipping Lanes

Searching for Staging Locations, Docks, and Shipping Lanes

To search for all staging locations, docks, and shipping lanes:

1. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

2. From the Sterling Supply Chain Applications Configurator menu bar, select Warehouse Management > Warehouse Layout. Perform a search for a Location and specify the Location Type as Staging to retrieve all staging locations and shipping lanes. Likewise, enter the

Location type as Dock and Intransit to retrieve dock and intransit locations respectively. Record all these retrieved locations on a paper.

3. Log out of the application and log in again as the node user.

4. Ensure that all staging locations, docks, and shipping lanes are empty. To do this, from the Sterling Supply Chain Application Consoles menu bar, select Inventory > Location Inventory Console and perform a search for all the staging locations, docks, and shipping lanes.

Cleaning Up the Inventory in Virtual Locations

Warehouses clean out the inventory in the virtual or accounting bin locations at the beginning of a cycle or physical count process. For more information about cleaning up the inventory in accounting bin locations, see the *Sterling Warehouse Management System User Guide*.

Searching for ASNs in Open Status

Ensure that all open ASNs for any quantity received is completely received and closed as follows:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Task Console and search for all move tasks such as putaway, ad hoc, replenishment, and kitting. The search should not return any records.

> **Note:** Step 1 can be achieved by running the `ynw_pre_pi_checks.xml` script with the menu option "Count of Open Tasks by Activity Code and Task Type".
>
> For more information about the `ynw_pre_pi_checks.xml` script, see Section 14.1.2.2, "Running the Pre-Physical Inventory Script".

2. If the above search returns records, then all such tasks should either be completed or canceled.

3. From the Sterling Supply Chain Application Consoles menu bar, select Inbound > Inbound Receipt Console and search for receipts in Receipt Started and Receipt In Progress statuses. The search should not return any records.

> **Note:** Step 3 can be achieved by running the
> `ynw_pre_pi_checks.xml` script with the menu option
> "Count of Open Receipts by Status.".
>
> For more information about the `ynw_pre_pi_checks.xml`
> script, see Section 14.1.2.2, "Running the Pre-Physical
> Inventory Script".

4. If the above search returns records, then all such receipts should be closed.

Searching for Shipments in Open Status

Ensure that no shipments are in Incomplete status. To do this:

1. From the Sterling Supply Chain Application Consoles menu bar, select Outbound > Outbound Shipment Console.

2. Perform a search for shipments between the statuses.

   This search should not return any records. If the search returns records, all such shipments should either reach Shipment shipped or Shipment canceled status.

   > **Note:** You can also ensure that no shipments are
   > Incomplete by running the `ynw_pre_pi_checks.xml` script
   > with the menu option "Count of Open Shipments by
   > Status".
   >
   > For more information about the `ynw_pre_pi_checks.xml`
   > script, see Section 14.1.2.2, "Running the Pre-Physical
   > Inventory Script".

Cleaning Up the Inventory in Staging Locations, Docks, and Shipping Lanes

To clean up the inventory in staging locations, docks, and shipping lanes:

1. From the Sterling Supply Chain Application Consoles menu bar, select Inventory > Move Request Console.

2. Perform a search for Move Requests in Released status.

This search should not return any records. If the search returns records, then all such Move Requests should either reach Closed status or Canceled status.

> **Note:** You can clean up the inventory in staging locations, docks, and shipping lanes by running the `ynw_pre_pi_checks.xml` script with the menu option "Count of Open Move Requests By Status".
>
> For more information about the `ynw_pre_pi_checks.xml` script, see Section 14.1.2.2, "Running the Pre-Physical Inventory Script".

3. Before you begin the physical inventory count, ensure that no background agents are running. Only the following count-related agents should be running:

- Create Count Tasks

- Create Variance Tasks

- Auto Accept Variance

- Purge Count Request

14.1.2.2 Running the Pre-Physical Inventory Script

The `ynw_pre_pi_checks.xml` script helps you to generate a report on all open tasks, and in the inventory available in the staging, virtual, and in-transit locations. This report is generated in the `pi_checks <Node>.html` file in the `<YFS_HOME>/bin/directory` directory.

The `ynw_pre_pi_checks.xml` script is available in the `<YFS_HOME>/bin` directory.

To run the pre-physical inventory script:

1. Navigate to `<YFS_HOME>/bin`

Execute the following command:

`${ANT_HOME}/bin/ant -f ynw_pre_pi_checks.xml -DNode = <Node>`

You need to specify the node for which you want to execute the report as a parameter.

2. The above script generates a report in the `pi_checks <Node>.html` file in the `<YFS_HOME>/bin` directory. This file contains the following sections:

a. Staging and Virtual Location with Inventory

b. Count of Open Tasks by Activity Code and Task Type

c. Count of Open Shipments by Status

d. Count of Open Receipts by Status

e. Count of Open Move Requests By Status

14.1.2.3 Optimal Batch Sizes and Configuration Considerations

A warehouse has zones with locations of different size codes. Depending on the size of the locations, the number of items or LPNs stored for each location varies. Considering that each batch sheet is given to one single user, it is important to ensure that the number of batches or count sheets generated represent an equivalent distribution of work. The following example illustrates this point:

Consider location size codes LS1, LS2, LS3, and LS4, capable of accommodating a maximum of 1 LPN, 5 LPNs, 10 LPNs, and 20 LPNs, respectively.

First-Level Count Tasks are generated at the location level. In a count sheet, each row has a location, an LPN Number, and an Item.

Consider the following parameters:

- The approximate number of rows for each page = 10

- The number of tasks for each batch = 10

- The total number of rows = (Number of LPNs for each location x Number of tasks per batch)

- Number of sheets for each batch = (Total Rows/ Rows per page)

Table 14–1 shows the count strategy used for each of the location size code.

Table 14–1   Count Strategy for Various Location Size Codes

Location Size Codes	Number of Rows	Number of Sheets per Batch
LS1	1 x 10 = 10	10/10 = 1
LS2	5 x 10 = 50	50/10 = 5
LS3	10 X 10 = 100	100/10 = 10
LS4	20 x 10 = 200	200/10 = 20

Because each of the count sheets is given to one count operator, there is variation in the quantum of work. To equalize this for all count operators, you need to set up count strategies at the location size code levels. Ensure that you keep the number of sheets for each batch to an optimal level.

Now, configure separate location size codes for LS1, LS2, LS3, and LS4 with the corresponding count strategies CS1, CS2, CS3, and CS4. Each count strategy maps to a task type that takes into account the size of the location. The greater the location size, the smaller the number of tasks for each batch. To achieve this, you should configure four task types: T1, T2, T3, and T4 where the only variable parameter for each of this task type is the limit on the number of tasks for each batch.

The number of tasks for each batch can be 10 for LS1, 2 for LS2, 1 for LS3, and 1 for LS4.

Table 14–2 shows the minimum number of sheets for each batch using this strategy and configuration.

Table 14–2   Count Strategy for Various Location Size Codes-II

Location Size Code	Number of Rows	Number of Sheets per Batch
LS1	1 x 10 = 10	10/10 = 1
LS2	5 x 2 = 10	10/10 = 1
LS3	10 x 1 = 10	10/10 = 1
LS4	20 x 1 = 20	20/10 = 2

14.1.2.4 Estimating the Personnel Requirements for Count Sheet Data Entry During a Physical Count

The personnel requirements for data entry depends on various factors. This section presents some guidelines on how to determine your specific requirements and the factors that need consideration.

In one test that Sterling Commerce conducted, 10 locations (count tasks) for each batch (count request) were configured and count sheets were generated. The kind of location inventory profile used for this sample was that every location had either one LPN or one item. These sheets were used to perform the actual count and the data related to actual inventory was recorded on them. These count sheets were then handed over to a person who transferred the data from the sheet to the system by searching for the count request number from the Sterling Supply Chain Application Consoles.

Tests were conducted for different types of batches. Samples included batches that had a variance for 30% of its locations, some that did not have a variance for any of its locations, and some that had locations with inventory across multiple enterprises. The average time for data entry was about 2 minutes for each batch sheet.

However, when actual count entries are done, the following factors also need to be considered:

1. Regardless of the experience level of the count operator, there might be clarifications they would need when they perform the actual physical count. This clarification adds to the total time taken.

2. An operator who starts the day entering data spending two minutes for each count sheet cannot be expected to be as efficient throughout an entire eight- or ten-hour day. Fatigue sets in as the day progresses.

3. If more variances are found, the time for the overall count entry increases.

4. Considering the above three factors, Sterling Commerce recommends that you add a time buffer of about 50% over the average of 2 minutes for each count sheet. This results in allotting 3 minutes for each count sheet.

14.1.2.4.1 Calculations for a Warehouse with 15000 Locations and One Task for Each Location

1. 10 locations for each count sheet results in to 15000/10 = 1500 count sheets.

2. If it takes 3 minutes for each count sheet, then it amounts to 1500 x 3 = 4500 minutes (75 person hours) for count sheet entry for the first round count sheet data entry.

3. Assuming 1 person day = 8 person hours, it amounts to 75/8 = 9.5 person days or 10 person days approximately.

4. Assuming that 30% of the tasks have variances, you have 15000 x 0.3 = 4500 tasks.

5. This amount may go up depending on the number of locations having multiple items. Variance (second) count tasks are generated at the location-item level as opposed to the Count (first) tasks that are generated at the location level. To accommodate for this factor, multiply it by a factor of 20% which amounts to 4500 x 1.2 = 5400 tasks.

6. 5400 tasks translates into 5400/10 = 540 count sheets. Assuming that variance count entry takes roughly the same time as count entry, this will take 540 x 3= 1620 minutes.

7. Assuming 1 person day = 8 person hours, it amounts to 1620/60 x 8 = 3.5 person days or approximately 4 person days to enter data for the second round counting.

    Thus, it takes approximately 10 person days for the first count and 4 person days for the variance count.

Note: The above description is just an example. You need to consider other factors specific to your warehouse, which have a bearing on data entry.

14.1.2.5 Getting Started

It is good practice to have all users logged out of the Sterling nWMS PCA before starting the physical count process.

Note: Sterling Commerce recommends generating physical count requests at the zone level.

To generate the physical count:

1. From the Sterling Supply Chain Application Consoles menu, select Inventory > Create Count Request Console.

2. Create a count request for the Request Type "PHYSICAL COUNT" for a zone ID.

3. When the Create Count Task agent runs, count tasks are created and the batch number is stamped on them. Corresponding count sheets are printed automatically on the configured printer.

4. Assign a group of count operators to count each zone. This is a manual assignment where the user is instructed to count a certain zone.

14.1.2.6 Count Sheet-Based Counting Process

The Count Sheet-Based process is:

1. The count operator collects the count sheets.

2. The count operator visits each location printed on the count sheet, locates the item, and records the total quantity.

3. If a location has LPNs, the operator records the LPN quantity against the LPN Number printed on the count sheet.

4. If a new LPN or loose item is found, the operator records the information in the additional count sheet. For more information about the template for the additional count sheet, see the *Sterling Networked Warehouse Management System PCA Printed Documents Guide*.

> **Note:** The additional count sheet cannot be printed from the Sterling Supply Chain Application Consoles. Instead, use the Physical Count Sheet provided in the *Sterling Networked Warehouse Management System PCA Printed Documents Guide*.

5. The count operator hands over the count sheet to the data entry operators to enter data into the system.

   In the additional count sheet, enter the batch number, location, item, LPN number, and so forth. Mark the additional page numbers on

these count sheets. The page number of the first additional count sheet should succeed the page number of the last page in the printed count sheet. For example, if Batch Number 40000 has a total of 10 pages, the additional count sheet is marked as 11.

> **Note:** The modify variance count feature is also available after completing all the count tasks in a batch. However, it should not be used to modify the count results.

14.1.2.7 Recording Quantity on Count Sheets

To record quantity on count sheets:

1. Each count sheet printed has the Batch Number stamped on it. Use that number as a Control Number.

2. Count operators with Count Sheets should enter their user ID in the "COUNTED BY" space at the top of the sheet.

3. For each Location on the Count Sheet, enter the Count Quantity counted for each item or LPNs listed.

4. If an additional item or a new LPN is found in a Location, besides the ones listed on the Count Sheet, use the additional count sheet provided to enter the Location, LPN, Item, and Count Quantity. For more information about the template for the additional count sheet, see the *Sterling Networked Warehouse Management System PCA Printed Documents Guide*.

14.1.2.8 Completing Count Tasks

Once the count operator hands over the count sheets to the data entry operators, the counted data is entered into the system. To complete a count task from the Sterling Supply Chain Application Consoles do the following:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Confirm Batch.

2. Enter the Batch Number printed on the count sheet and select Confirm. The Record Count Result Details screen displays for the first task as part of the count sheet.

3. Enter the count quantity matching the items or LPNs as mentioned on the count sheet. Click Save.

4. Click if the count sheet has more than one task to complete.

5. After you enter the data for all the tasks as part of the count request, the status of the count request changes from Count Task Created to Count Task Completed or Count Task Completed With No Variance.

> **Note:** If the count operator records one or more new LPNs in any location when counting, record the new LPNs as loose inventory upon completion of the count tasks.

14.1.2.9 Variance Count Process

The Variance Count process is:

1. When the Create Variance Task agent runs, the variance tasks are generated for the locations found with a variance.

2. A new Batch Number is stamped on the count sheet and the count sheets are printed automatically.

3. The count operator picks up the count sheet generated for the variance tasks and visits each location.

4. When executing the variance tasks, the count operator locates the item, and records the total quantity.

5. If a location has LPNs, the count operator records the LPN quantity against the LPN Number printed on the sheet.

6. The count operator records the quantity of any loose inventory separately on the printed count sheet.

7. When recording the variance tasks on the Record Count Result Details screen, the system displays the system inventory similar to the details shown during the first level count task. The variance tasks generated must be completed like the first count tasks from the Sterling Supply Chain Application Consoles.

> **Note:** The Sterling Supply Chain Applications provide the ability to modify variance count in a batch. The modify variance count feature can be used to modify the variance tasks by updating the record count results.

14.1.2.10 Completing Variance Tasks

Once the count operator hands over the count sheets to the data entry operators, the counted data is entered into the system. To enter the counted data into the system from the Sterling Supply Chain Application Consoles:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Confirm Batch.

2. Enter the Batch Number printed on the count sheet and select Confirm. The Record Count Result Details screen displays for the first task as part of the count sheet.

3. Enter the count quantity matching the items or LPNs as entered on the count sheet. Click Save.

4. Click ▷ if the count sheet has more than one task to complete.

5. Once you enter the count quantity for all of the tasks as part of the count request, the status of the count request changes from Variance Task Created to Variance Task Completed, Variance Task Completed With No Variance, or Variance Task Completed With Resolvable Variance.

14.1.2.11 Reprinting Count Sheets

If count operators decide to do a recount for some of the items found with a variance, they need to reprint the count sheets. To do this:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Task Console.

2. Select Task > Batch.

3. Enter the Batch Number and click Search. The Batch List screen displays.

4. Select the entered Batch Number.

5. Click Print. The Print Dialog displays.

6. Select the Print Service name as `PIPrintTaskList`.

7. Select the configured printer.

8. Select the number of copies as 1.

9. The count sheet is printed with the Batch Number stamped on it.

All the records of the printed count sheets are similar to the ones that were printed during the variance task creation. If you are not counting all of the items, specify only those items on the count sheet that need to be counted. This is a manual activity where the count operator is instructed to count certain items. Subsequently, the count sheets are handed over to another count operator for recounting.

14.1.2.12 Recording Count Data

Once the count operator completes the counting and hands over the count sheets to the data entry operators, the counted data is entered into the system. To do this:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Confirm Batch.

2. Enter the Batch Number printed on the count sheet and select Confirm. The Update Count Result Details screen displays for the first task as part of the count sheet.

3. Enter the count quantity for the recounted items. Click Save.

4. Click ⯈ if the count sheet has more than one task to complete.

5. Once you enter the count quantity for all of the tasks as part of the count request, the status of the count request does not change.

> **Note:** The status of the count request remains the same as it was during the variance task completion.

14.1.2.13 Post Physical Count

The physical inventory count ends only when all of the first count entry and variance (recount) tasks have been completed. To ensure this:

1. From the Sterling Supply Chain Application Consoles menu bar, select Task > Task Console and search for all open tasks for the Activity Group "COUNT". This search should not return any records. If the search returns records, then all such count tasks should be Completed.

2. If a count operator has to record a new LPN in a location. The operator can use the Ad hoc Move option in the Sterling Supply Chain Mobile Application to convert the loose inventory recorded at the time

of count results in the Sterling Supply Chain Applications into the new LPN record. To perform this warehouse operation:

   a. Log into the Sterling Supply Chain Mobile Application as the RF or mobile application user.

   b. From the Sterling Supply Chain Mobile Application menu bar, select Ad hoc Move.

   c. Enter the source location and the item.

   d. In the deposit screen, scan the item and quantity.

   e. In the location field, scan the new LPN found and press Tab.

   f. Scan the deposit location which is the same as the source location in the location field.

   g. Press F3 to confirm.

   h. Press F10 to log out.

Note: Repeat Step a through Step f. for each LPN found.

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3. To clean up the virtual accounting bin locations associated with the Inventory Adjustment Reason code used during the physical count:

   a. Set or export the `YFS_HOME` environment variable to `<YANTRA_HOME>/Runtime` directory.

   b. Open the `inputForcleanBinLocationInventory.xml` file from the `<YANTRA_HOME>/Applications/nWMS/bin` directory. Edit this file to provide the appropriate values for the `EnterpriseCode`, `Node`, `LocationId`, `ReasonCode`, and `ReasonText` attributes.

Note: The `ReasonCode` entered in the file should not be associated with any accounting bin.

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   c. Ensure that the `jms.jar` for WebSphere or `weblogic.jar` for WebLogic in your `<YANTRA_HOME>/Applications/nWMS/lib` directory is available.

> **Note:** Delete these jar files once you run the `ant -f cleanBinLocationInventory.xml` command.

    d. From the `<YFS_HOME>/bin` directory, run the following ANT command:

    `ant -f cleanBinLocationInventory.xml`

4. Once all of the physical inventory tasks are complete, from the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

5. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Platform.

6. From the tree in the application rules side panel, select Process Modeling. The Process Modeling screen displays.

7. In the Process Modeling screen, click General.

8. Navigate to the Transaction Repository and modify the `Print Count Sheet` action associated with the `BATCH_CREATED` event to invoke the `PrintTaskList` service instead of the `PIPrintTaskList` service. To do this:

    a. Select the Invoked Services tab in the Action Detail screen.

    b. Select the `PIPrintTaskList` and click .

    c. Click the Service List po-up window displays. Select `PrintTaskList` and click .

    d. Save and close the Action Detail screen.

    e. Save and close the Transaction Detail screen.

9. Navigate to the Count Execution Repository.

10. Navigate to the Transaction Repository.

11. For each of the following transactions, disable the `ON_SUCCESS` event to invoke the `InvokePIBatching` Action:

- `Create Count Tasks`

- `Create Variance Tasks`

12. Navigate to the Count Execution Services Repository.

13. Select `YNW_CallPIBatchingService` and delete it.

14. Navigate to the Actions Repository.

15. Select Batching and delete the `InvokePIBatching` action.

14.1.2.14 Canceling Physical Count

If you cancel a count request, the Sterling nWMS PCA cancels all count tasks without updating any information.

14.1.3 Sterling Supply Chain Mobile Application-Based Count Process

To perform the Count process using the Sterling Supply Chain Mobile Application:

1. The operator logs into the Sterling Supply Chain Mobile Application.

2. The system suggests the location to count.

3. The user scans the location and LPN, or the item and quantity.

4. If the count does not match, the user either confirms the count or rescans the location and LPN, or the item and quantity.

5. Any variance reported is stored.

6. The system may suggest the next location to count if there are more count tasks to be performed.

7. After the Count is completed, the supervisor logs into the Sterling Supply Chain Mobile Application.

8. The system lists the locations with Count variances.

9. The supervisor goes to a location and selects a variance task.

10. The system displays the location, item, and count quantity.

11. The supervisor counts the item and enters the lot information and quantity.

12. The system is updated with the correct inventory picture.

13. The inventory adjustments are uploaded to the host system.

14.2 Count Configurations

This section explains the various configurations that may be done for the Count process.

14.2.1 Count Pipelines

This section illustrates the various count pipelines.

14.2.1.1 Cycle Count Pipeline

Figure 14–2 illustrates the Cycle Count Pipeline.

Figure 14–2   Cycle Count Pipeline

14.2.1.2 Physical Count Pipeline

Figure 14–3 illustrates the Physical Count Pipeline.

Figure 14−3   Physical Count Pipeline
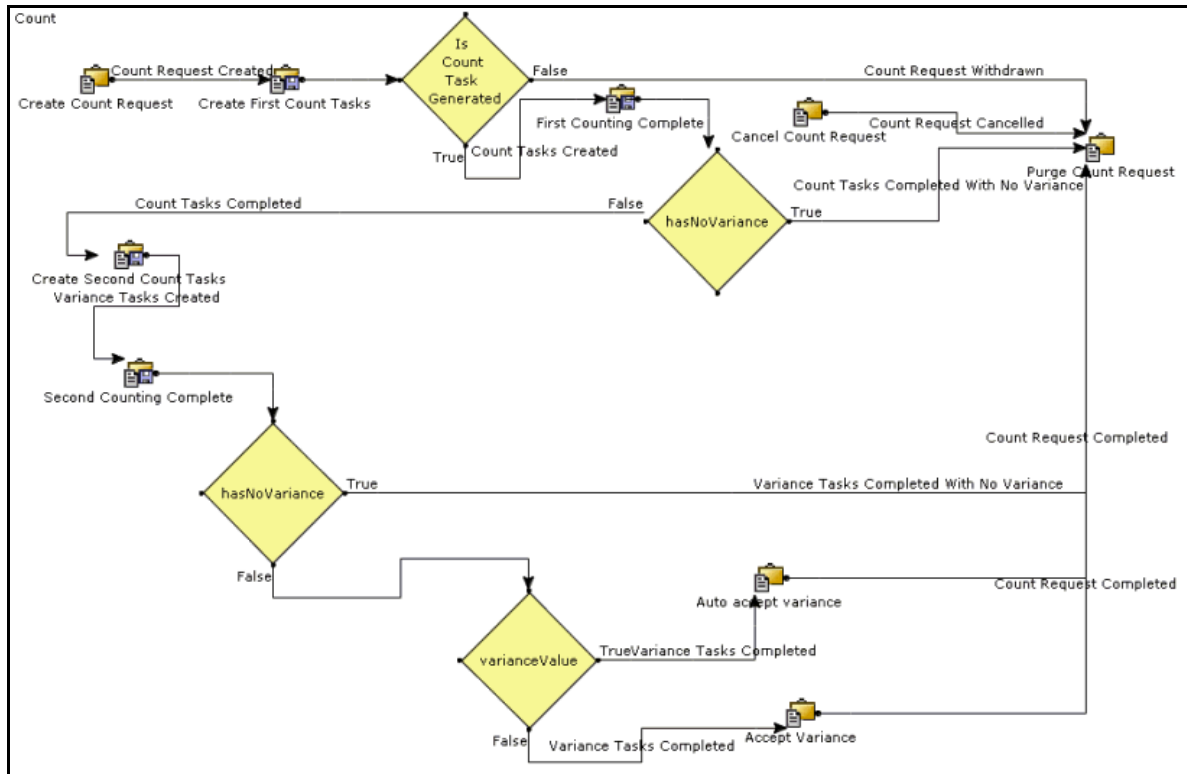
14.2.2 Agents

The agents configured for the Count process are:

- `Execute Count Program`

  This agent creates count requests based on the count program defined. It also considers the count calender for generating tasks. This agent is run once every day.

- `Create Count Tasks`

  This agent creates new count tasks from the count requests that have been generated.

- `Create Second Tasks`

  This agent creates second count tasks at the request level for count requests that have been generated.

- `Create Variance Tasks`

  This agent creates variance-level tasks for count requests.

- `Create Third Count Tasks`

  This agent creates third count tasks at the variance level for count requests that have been generated.

- `Auto Accept Variance`

  This agent accepts the variance of the count requests that have been completed.

- `Purge Count Request`

  This agent purges the completed count requests that were created thirty days prior to the current date. It also purges the corresponding count results of these count requests.

- `Purge Corporate Count Request`

  This agent purges the corporate count program.

For detailed information about the agents and setting up the agent criteria, see the *Sterling Warehouse Management System Configuration Guide*.

14.2.3 Prints

The `ON_SUCCESS` event of the `CREATE_BATCH` transaction prints the Count Batch Sheet.

> **Note:** This event is already activated if you have installed the factory defaults with the events turned on.

14.2.4 Productivity

For all tasks, such as count and variance, associated with the Count process, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

14.3 Managing the Count Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Count tasks. This section explains the flow while performing cycle count.

14.3.1 Flow For Performing Cycle Count

The flow for performing cycle count is:

1. Run the `Execute Count Program` agent. Count requests are generated.

2. Run the `Create Count Tasks` agent. Count tasks are generated.

3. Complete the count tasks using either the Sterling Supply Chain Mobile Application or paper.

4. Run the `Create Variance Tasks` agent. Variance tasks are created.

5. Perform the variance tasks.

6. Run the `Auto Accept Variance` agent. The variances are accepted and the inventory is adjusted.

14.4 Reference Implementation for Count Processes

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Count Processes.

14.4.1 Count Program

A default count program and calendar is provided.

The calender is marked with the days on which the warehouse is open. These working days can also be changed by the supervisor.

Based on the working days in the calender and the Count Program Conditions set, Count tasks are generated on the appropriate days.

14.4.1.1 Count Calendar

This configuration is provided as a part of the Reference Implementation of the Sterling nWMS PCA.

Table 14–3 Count Calendar Configurations

Days	Time	Working Day
Monday to Sunday	00:00 to 23:59	Yes

To change your working days and shift times, you can create a new calendar and associate it with the Count program. For more information about creating a new calendar, see the *Sterling Warehouse Management System Configuration Guide*.

14.4.1.2 Count Program Conditions

The count program condition provided by the Sterling nWMS PCA is Count Bulk Zones 156 times a Year.

14.4.2 Count Request Cancellation Reasons

The different Count request cancellation reasons provided by the Sterling nWMS PCA are: Default, Miscellaneous, and Data Entry Error.

14.4.3 Count Task Types

Different Task Types must be created for Cycle and Physical Count. Count tasks can be performed either through paper-based task types or through mobile devices.

Table 14–4 lists the various Task Types that are created to facilitate the Count processes.

Table 14–4   Count Task Types

Task Type	Description
COUNT0001	Cycle Count to be performed using the Sterling Supply Chain Mobile Application.
COUNT0002	Cycle Count to be performed using paper.
VARIANCE01	Cycle Count and Variance Task to be performed using the Sterling Supply Chain Mobile Application.
VARIANCE02	Cycle Count and Variance Task to be performed using paper.
COUNT0003	Physical Count to be performed using the Sterling Supply Chain Mobile Application.
COUNT0004	Physical Count to be performed using paper.
COUNT0005	Task Type to perform Second level Physical Count. The Count Task is performed using the Sterling Supply Chain Mobile Application.
COUNT0006	Task Type to perform Second level Physical Count. The Count Task is performed using printed Count Sheets.
VARIANCE03	Physical Count and Variance Task to be performed using the Sterling Supply Chain Mobile Application.
VARIANCE04	Physical Count and Variance Task to be performed using paper.

14.4.4 Count Strategy

Count strategies are provided by the Sterling nWMS PCA for the distribution centers DC1 and DC3.

Table 14–5 lists the Count strategies for DC1.

Table 14–5   Count Strategies for DC1

Count Strategy	Task Type	Request Type
RF-Based Cycle Count	COUNT0001	
RF-Based Cycle Count	COUNT0001	Cycle Count

Table 14–5   Count Strategies for DC1

Count Strategy	Task Type	Request Type
Physical Count RF Based	COUNT0003	Physical Count
Second Level Physical Count RF Based	COUNT0005	Physical Count
Cycle Count RF Based Second Level	COUNT0005	Cycle Count
Variance Physical Count RF Based	VARIANCE03	Physical Count
Cycle Count Variance RF Based	VARIANCE01	
RF Based Variance Tasks	VARIANCE01	Cycle Count

Table 14–6 lists the Count strategies for DC3.

Table 14–6   Count Strategies for DC3

Count Strategy	Task Type	Request Type
Cycle Count Paper Based	COUNT0002	
Cycle Count Paper Based	COUNT0002	Cycle Count
Physical Count Paper Based	COUNT0004	Physical Count
Second Level Physical Count paper Based	COUNT0006	Physical Count
Variance Physical Count Paper Based	VARIANCE04	Physical Count
Cycle Count Variance Task Paper Based	VARIANCE02	
Variance Task Paper based	VARIANCE02	Cycle Count

15

Outbound

The Outbound execution process starts from the point when pick tasks are released for an outbound shipment and ends at the point where the packages are loaded into trailers.

Seamless and flawless execution of this process is an integral part of how reduced order turnaround time and inventory accuracy is achieved. The ability of a system to mirror the routing of inventory in order to comply with the customer and item requirements are key to reducing turnaround time.

This chapter explains the Outbound process and solution offered by the Sterling nWMS PCA.

15.1 Outbound Process

The Outbound process includes managing and controlling outgoing materials starting from the download of orders through to the shipping of products from the warehouse. It combines the order download, wave creation or release, pick, pack, and ship processes.

The Outbound process starts with routing the shipments. In this version of the Sterling nWMS PCA, routing is considered to be a part of the Master Data and the routing information should be installed separately.

The Outbound rules configuration starts when the shipment status is Sent To Node. We assume that, as a part of the Sterling nWMS PCA, the routing information is handled explicitly.

Picking tasks are executed using the Sterling Supply Chain Mobile Application, batch sheets, or Material Handling Equipments (MHE). During picking, additional attributes, such as serial numbers can be

captured. The Pick process differs, based on which of these methods is used for execution.

15.1.1 Sterling Supply Chain Mobile Application-Based Pick and Pack Process

This section explains the Pick and Pack process for parcel shipments and LTL/TL shipments in a Sterling Supply Chain Mobile Application-Based warehouse.

15.1.1.1 For Parcel Shipments

Orders are picked in a batch mode to allow for a 'pick and sort' type of picking. They are then processed through a wave. The Sterling Supply Chain Mobile Application Cart Manifest batch picking is also configured. In warehouses that use the Sterling Supply Chain Mobile Application, all types of picks are executed using the application.

Expedited orders are picked using the wave method. The use of this model enables immediate release. This pick is executed using the Sterling Supply Chain Mobile Application.

Containerization (volume and quantity) is performed by the system during wave release and the items are picked directly into the shipping container. The container is packed automatically as it is being picked.

The Cart Manifest Pick Execution process using the Sterling Supply Chain Mobile Application is:

1. The user, with the appropriate skill set, logs into the Sterling Supply Chain Mobile Application.

2. The system suggests the pick location and quantity to the user.

3. The user scans the tote number or cart number.

4. The user scans an LPN that matches the quantity asked.

5. The user is presented the next task to pick.

6. The shipment is dropped off at the location suggested and the location is scanned for confirmation.

For Parcel shipments, picking and packing can be done using either:

• Full Case Pick and Pack Process

- Less than Case Pick and Pack Process

15.1.1.1.1 Full Case Pick and Pack Process

In this process, the user picks full cases from the bulk storage.

Though packing is not required for full case picking, the inventory is brought into the weigh station to print the labels and add some dunnage materials, if any. This is where the inventory container is converted into an outbound container.

The Full Case Pick and Pack process using the Sterling Supply Chain Mobile Application is:

1. The system releases the wave.

2. Pick tasks are generated and suggested to the user. Nothing is printed during the wave release.

3. The user logs into the Sterling Supply Chain Mobile Application and scans the pallet.

4. The user performs the suggested case pick tasks.

5. The user picks the case, scans the pre-printed LPN label available on the case, and places the case onto the pallet.

6. The user repeats Step 4 and Step 5 until either the pallet is full or all the tasks are completed.

7. If either the pallet is full or all the tasks are completed, the inventory is deposited at the weigh station.

8. The user scans the pre-printed SCM and completes the pack process of the case manually by scanning the container at the Weigh Station.

9. Shipping labels are printed for the containers and the Pack List is printed for the last container.

15.1.1.1.2 Less than Case Pick and Pack Process

The Cart Manifest Batch Pick process provided by the Sterling Supply Chain Mobile Application is used to pick loose SKUs from the forward pick area. Products are considered to be picked and then sorted.

The Less than Case Pick and Pack process using the Sterling Supply Chain Mobile Application is:

1. The system releases the wave.

2. Pick tasks are generated.

3. The system containerizes and batches the wave. Batch sheets are printed.

4. The user, with appropriate skill set, logs into the Sterling Supply Chain Mobile Application and associates a cart with a batch number.

5. The user scans the containers.

6. The system suggests tasks to the user. The user scans the pick location, item identifier, and quantity.

7. The system suggests the sort location and the user sorts the item to the containers. Then the system suggests next sort location until all picked items are sorted.

8. The user repeats Step 6 and Step 7 until either the cart is full or all the tasks are completed

9. If either the cart is full or all the tasks are completed, the inventory is deposited at the weigh station.

10. The user scans the container SCM and completes the pack process of the case manually by scanning the container at the Weigh Station.

11. Shipping labels are printed for the containers and the Pack List is printed for the last container.

15.1.1.2 For LTL/TL Shipments

LTL/TL shipments can be picked either from the Bulk or Forward Pick areas based on the inventory availability. Tasks are most often suggested to pick from the Bulk Storage. The Pick to Pallet Task Type is used to pick from the Bulk Storage. If there are one or more picks from the Forward Pick area, the inventory is finally consolidated at the shipment sort locations.

Containerization (volume and quantity) is not performed by the system for LTL/TL shipments.

The Sterling Supply Chain Mobile Application-Based Pick and Pack Process for LTL/TL shipments follows the batch picking strategy, limiting the number of shipments per batch to one. This ideally behaves like an order picking scenario.

15.1.1.2.1 Pick to Pallet Process

The Pick to Pallet process, for LTL and TL shipments, using the Sterling Supply Chain Mobile Application is:

1. The user picks the empty pallet, SCM label roll, and Fork Lift.

2. The user logs into the Sterling Supply Chain Mobile Application.

3. The user scans the Fork Lift number (Equipment ID) in the Sterling Supply Chain Mobile Application.

4. The user applies the SCM label on the pallet and scans the new pallet SCM.

5. The user scans the location from which he or she is picking.

6. The user scans the LPN.

7. The user repeats Step 5 and Step 6 until either the pallet becomes full or the pick for the order is complete.

8. The user deposits the pallet at the deposit location (usually the weigh station).

9. The pallet is diverted to the pallet shrink wrap location once the weight is captured.

Pallet Shrink Wrap Process

The Pallet Shrink Wrap process is:

1. The pallet is brought to the Pallet Shrink Wrap station and the user scans the pallet.

2. The user shrink wraps the pallet and adds some dunnage material, if any.

3. On shrink wrapping the pallet, the container or shipping label gets printed. The user affixes the container or shipping label to the pallet.

4. The pallet is then manually moved to the shipment sorter location, where the pallet is sorted based on the shipment. The pallet is then loaded into the trailer.

15.1.1.2.2 Pick from Forward Pick Area Process

An order pick process is used to pick from the Forward Pick Area.

The Pick from Forward Pick process, for LTL and TL shipments, using the Sterling Supply Chain Mobile Application is:

1. The user picks an empty case and SCM label roll.

2. The user logs into the Sterling Supply Chain Mobile Application.

3. The user scans the equipment ID used for picking.

4. The user scans the case.

5. The user scans the location from which he or she is picking.

6. The user scans the item number and enters the quantity.

7. The user repeats Step 5 and Step 6 until either the case becomes full or the pick for the order is complete.

8. The user deposits the case at the deposit location (usually the weigh station).

9. The user manually completes the pack process of the case by scanning the container at the Confirm Carton Pack Complete station. The shipping label gets generated for the container.

10. Once the weight has been captured, the case is manually moved to the shipment sorter location. At the shipment sorter location, the inventory is sorted by shipment and shipped out in the appropriate carrier.

15.1.2 Paper-Based Pick and Pack Processes

This section explains the Full Case and Less Than Case Pick and Pack process for parcel shipments in a paper-based warehouse.

15.1.2.1 Full Case Pick and Pack Process for Parcel Shipments

The paper-based full case pick and pack process for parcel shipments follows the batch picking strategy. System-suggested containerization is used for this process.

The Full Case Pick and Pack Process for Parcel Shipments in a paper-based warehouse is:

1. The wave is released in the system.

2. As part of the wave release, the consolidated Batch Sheet and container labels are printed for all shipments in the wave.

3. The supervisor hands over the Batch Sheet and container labels to the user.

4. If the quantity to pick is equal to the case quantity, the user picks the container and affixes the label.

   If the quantity to pick is greater than the case quantity, the user picks an empty container that can accommodate the quantity specified in the label. The user then places the appropriate quantity into the container and affixes the label to the container.

5. The user deposits the inventory at the appropriate location (usually the Manifest station).

6. Later, the user confirms the batch. As a part of this batch confirmation, the picking and packing are recorded on the system.

15.1.2.2 Less than Case Pick and Pack Process for Parcel Shipments

This section explains the paper-based pick and pack process for parcel shipments.

15.1.2.2.1 Pick Process

The less than case pick process for parcel shipments in a paper-based warehouse follows the batch picking strategy.

System-suggested containerization is not used for this picking process.

The Less Than Case Pick Process for Parcel Shipments in a paper-based warehouse is:

1. The wave is released in the system.

2. As part of the wave release, the Batch Sheet is printed for picking to Parcel Shipments at the Forward Pick Area.

3. The supervisor hands over the Batch Sheet to the user.

4. The user carries the Batch Sheet and picks against the Batch Sheet.

5. The user deposits the inventory at the appropriate location (usually the Pack Station).

6. Later, the user confirms the batch. As a part of this batch confirmation, picking is recorded on the system.

15.1.2.2.2 Pack Process

The Less Than Case Pack process for Parcel Shipments in a paper-based warehouse is:

1. The user scans the shipment information available on the Batch Sheet.

2. The user clicks on the New Case or New Pallet action in the Pack Station and adds the content into the container.

3. When the container is completely packed, the user manually closes the container. On closing each container, the shipping label for the particular container gets printed. Upon closing the last container of the shipment, the packing slip gets printed.

15.1.2.3 Manifest Process

This section describes the manifest process for Parcel shipments.

15.1.2.3.1 Parcel Manifest

The standard Manifest process is followed for manifesting Parcel Containers. Appropriate carrier labels are printed at the Manifest Station for parcel containers. By default, FEDX integration is provided out-of-the-box.

15.1.2.4 Pick and Pack Process for LTL/TL Shipments

This section explains the paper-based pick and pack process for LTL/TL shipments.

15.1.2.4.1 Pick Process

The paper-based pick process for LTL/TL shipments follows the batch picking strategy, limiting the number of shipments per batch to one. This ideally behaves like an order picking scenario.

System-suggested containerization is not used for this process.

The paper-based pick process for LTL/TL shipments is:

1. The wave is released in the system.

2. As part of the wave release, separate Batch Sheets are printed for each shipment included in the wave.

3. The supervisor hands over the Batch Sheet to the user.

4. The user picks the inventory from the location suggested in the Batch Sheet (from the Bulk Area as well as the Forward Pick Area).

5. The user deposits the inventory at the appropriate location (usually the Pack station).

6. Later, the user confirms the batch. As a part of this batch confirmation, picking is recorded on the system.

15.1.2.4.2 Pack Process

The paper-based pack process for LTL/TL shipments is:

1. The user scans the shipment information available on the Batch Sheet.

2. The user clicks on the New Case or New Pallet action in the Pack Station.

3. When the container is completely packed, the user manually closes the container. On closing each container, the shipping label for the particular container gets printed. Upon closing the last container of the shipment, the packing slip gets printed.

15.1.3 Material Handling Equipment-Based Pick Process

The MHE-based pick process enables picking using external systems, such as, Pick to Light and Pick to Voice systems.

When a wave is released, if there are tasks designated for execution using external systems, the MHE adapter generates interface files for integration with these external systems. Each equipment type used for picking has one interface file.

The Sterling nWMS PCA sends this interface file to the external system and also prints the appropriate labels, batch sheet, or packing list.

The Pick process for an MHE-based warehouse is:

1. The wave is released and recorded in the Sterling nWMS PCA system.

2. As part of the wave release, the Sterling nWMS PCA sends interface files for each task (to be executed using the external system) to the MHE.

Table 15–1 provides information about the details contained in the interface files sent to the MHE.

3. The operator scans the barcode (Batch #, Carton #, or Shipment #) on the external system.

4. The external system indicates the item and quantity to pick, for the barcode scanned. For example, Pick To Light systems light up the appropriate location with the quantity display.

5. The operator picks the items specified, deposits them in the destination location, and indicates to the external system that the picking is complete.

6. The external system sends back an interface file to the Sterling nWMS PCA to confirm completion of the pick.

   Confirmation can be sent at various levels, such as CartonNo, BatchNo, or ShipmentNo (task references).

   Table 15–2 provides information about the details contained in the interface files received from the MHE.

7. The Sterling nWMS PCA marks the tasks as completed. When all the tasks of a batch are completed, the Sterling nWMS PCA marks the batch as completed.

The same process is also followed for Parcel and LTL/TL shipments.

Table 15–1   Interface File Sent to the MHE

Field	Description	Start Position	End Position
TaskHDR	The record identifier.	1	7
TaskId	The task identifier.	8	47
BatchNo	The batch number.	48	87
ShipmentNo	The shipment number.	88	127
CartonNo	The carton number.	128	167
ItemId	The item identifier.	168	207
Quantity	The quantity.	208	221
UnitOfMeasure	The unit of measure.	222	261
SourceZoneId	The source zone.	262	301

Table 15–1   Interface File Sent to the MHE

Field	Description	Start Position	End Position
SourceLocationId	The source location.	302	341
TargetLocationId	The target location.	342	381
PrimaryTaskReference	The task reference.	382	421
ContainerScm	The outbound container SCM	422	441

Note: The interface file sent to the MHE is preceded by "Start Here" and terminated by "All Done".

Table 15–2   Interface File Received From the MHE

Field	Description	Start Position	End Position
TaskHDR	The record identifier.	1	7
TaskId	The task identifier.	8	47
BatchNo	The batch number.	48	87
ShipmentNo	The shipment number.	88	127
PickToContainer	Either the outbound container SCM or a container number.	128	167
ItemId	The item identifier.	168	207
Quantity	The quantity.	208	221
UnitOfMeasure	The unit of measure.	222	261
PickFromContainer	The inventory container SCM.	262	301
AssignedToUserId	The user identifier. It is mandatory to pass this parameter.	302	341
TargetLocationId	The target location. It is mandatory to pass this parameter.	342	381
PrimaryTaskReference	The task reference.	382	421

> **Note:** Ensure that the start position and end position of each field in the interface file is as specified in Table 15–2. Failure to do so causes the Sterling nWMS PCA to be unable to read the downloaded interface file.

15.1.4 Resource Planning Process

The Resource Planning tool provides warehouses the ability to plan for expected workload and determine the number of resources required to complete each activity. Having visibility to expected resources enables a warehouse to accurately plan for overtime, temporary staffing, moving demands to different dates, and so forth, thus optimizing the resource costs.

This section explains the resource planning process with an example.

1. Consider that 5200 shipments must be shipped on 5/25/2006 to multiple carriers and customers. A "Shipping" resource pool is associated with the "Shipping" activity.

2. These shipments must be picked, packed, manifested, and shipped. Each of these activities are associated to a resource pool with one or more resources (operators) in the pool. For example, one or more pickers are resources associated with the "Picking" resource pool. Similarly, each resource pool has a set of resources. Consider there is a shortage of resources in the warehouse for completing the "Shipping" activity.

3. The outbound supervisor or warehouse manager who plans the "Shipping" activity for 5/25/2006 logs in to the Sterling Supply Chain Application Consoles, views the resource availability, and identifies shortages in some resource pools.

4. The supervisor resolves the shortage by:

   - Moving resources from other resource pools—If there is a less demand for packers on 5/25/2006, the supervisor can move few packers to the pickers resource pool to increase its capacity.

   - Extending the shift timings by few hours—If the "Manifesting" activity requires two extra hours of work by the available capacity, the supervisor can extend the shift timings to meet the additional requirement.

- Moving a few shipments to a future date—The supervisor can move shipments to few customers to a future date, say 5/29/2006, by searching for shipments using multiple criteria on the resource planning consoles.

5. The supervisor views the modified resource plan.

   This is an iterative process. The supervisor revises the resource plan till the demand and available capacity in all resource pools are balanced.

6. The supervisor confirms the plan.

   The final resource plan may have 4600 shipments ready to be shipped on 5/25/2006 and 600 shipments moved to a future date.

15.1.5 Pack and Hold Process

Orders to be shipped in the future can be packed in advance. For example, during certain seasons, orders may be placed in bulk. In such cases, the shipments are picked and packed in advance to avoid overload on the actual shipping day. Shipments that are packed and stored away to be retrieved on the actual shipping day are known as Pack and Hold shipments.

The Pack and Hold process using the Sterling nWMS PCA is:

1. For warehouses that perform Pack and Hold, orders expected to be shipped in the future are packed in advance, if the Pack and Hold flag is checked for the shipments.

2. Putaway tasks are automatically generated by the system, when the shipment pack is complete.

   The Sterling nWMS PCA provides a putaway service to create a move request in order to move the shipment from the Pack Station or Weigh Station to a designated Pack and Hold location.

3. The shipping supervisor or warehouse manager selects the shipments or loads containing shipments that are in Pack and Hold status.

4. Once the shipment or load is selected, the shipper manually retrieves the shipments or loads to a selected location.

15.1.6 Electronic Shipper's Export Declaration Process

Any shipper shipping international shipments from the United States of America needs to file an electronic shipper's export declaration (SED) for Schedule B items with a value greater than $2500. The U.S. Census Bureau and the U.S. Customs Service together offer an electronic method for filing the SED, known as the Automated Export System (AES). Participants in the AES include the United States Principal Parties in Interest (USPPI).

After the electronic SED is filed through the AES, the Internal Transaction Number (ITN) is generated.

The electronic SED filed is used for compiling the official U.S. export statistics and for export control.

The Electronic SED process is as follows:

1. The shipments or loads included in an SED are kept on hold for filing the SED.

2. The shipper submits the electronic SED to AES Direct using the AES Direct Web Link or through Electronic Data Interchange (EDI).

3. After filing the SED through AES, the shipper gets the ITN.

4. For shipments, the shipper enters the ITN in the Shipment Details screen. For loads, the shipper enters the ITN in the Load Details screen.

   After entering the ITN, the hold gets resolved.

5. For shipments, the containers carrier labels have the ITN stamped on them when manifesting.

   For loads, the shipper manually enters the ITN on the Load Bill Of Lading (BOL).

15.2 Outbound Configurations

This section explains the various configurations that may be completed for the Outbound execution process.

15.2.1 Outbound Pipeline

This section illustrates the various Outbound pipelines.

15.2.1.1 Outbound Pick Process Pipeline

illustrates the Outbound Pick process Pipeline.

Figure 15–1   Outbound Pick Process Pipeline
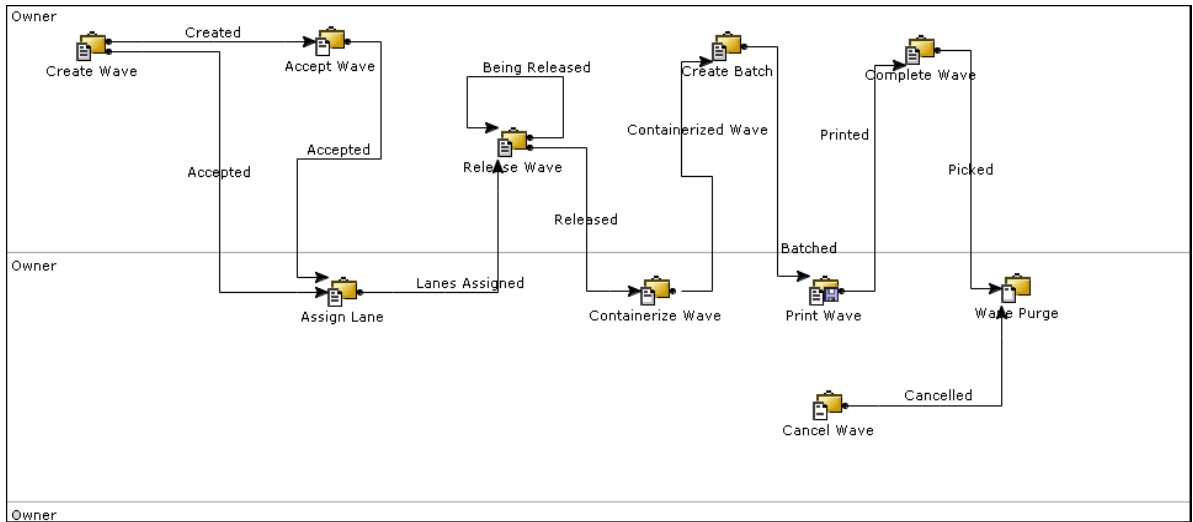
15.2.1.2 Outbound Container Pipeline for Outermost Cases

illustrates the Outbound Container Pipeline for outermost cases.

Figure 15–2   Outbound Container Pipeline for Outermost Cases
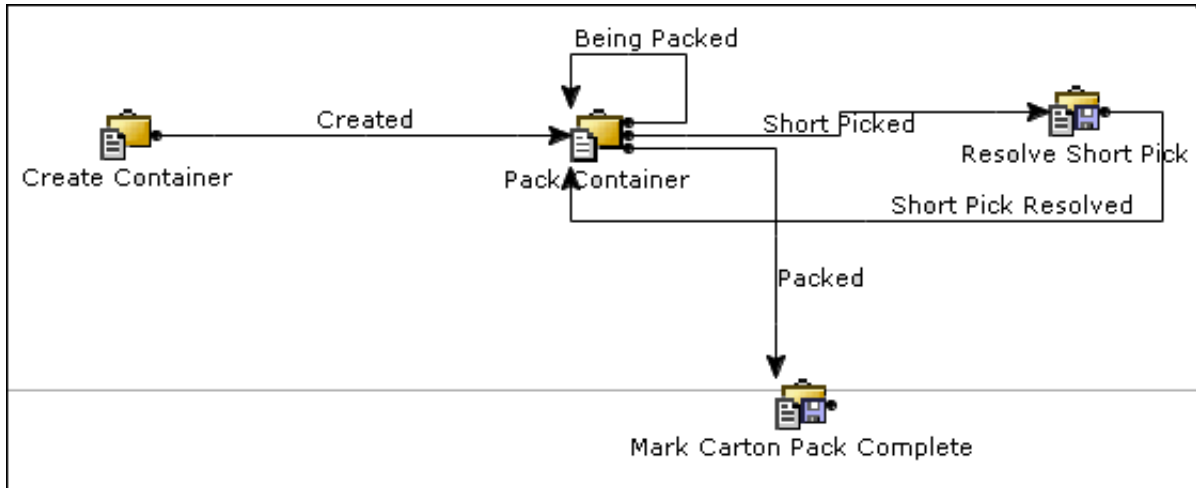
15.2.1.3 Outbound Container Pipeline for Parcel Cases

Figure 15–3 illustrates the Outbound Container Pipeline for parcel cases.

Figure 15–3   Outbound Container Pipeline for Parcel Cases
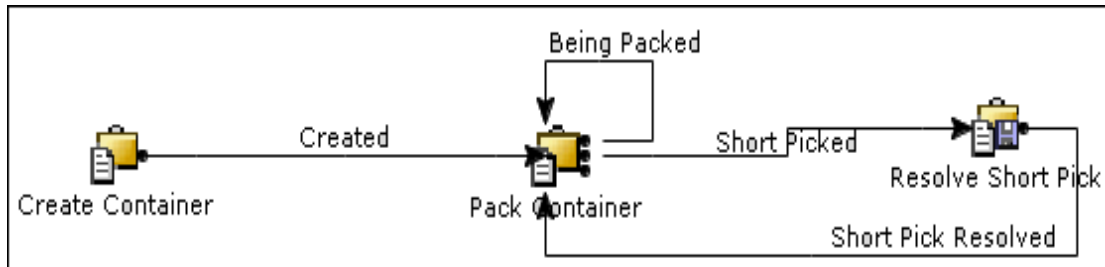
15.2.1.4 Outbound Container Pipeline for Pallets

Figure 15–4 illustrates the Outbound Container Pipeline for pallets.

Figure 15–4   Outbound Container Pipeline for Pallets
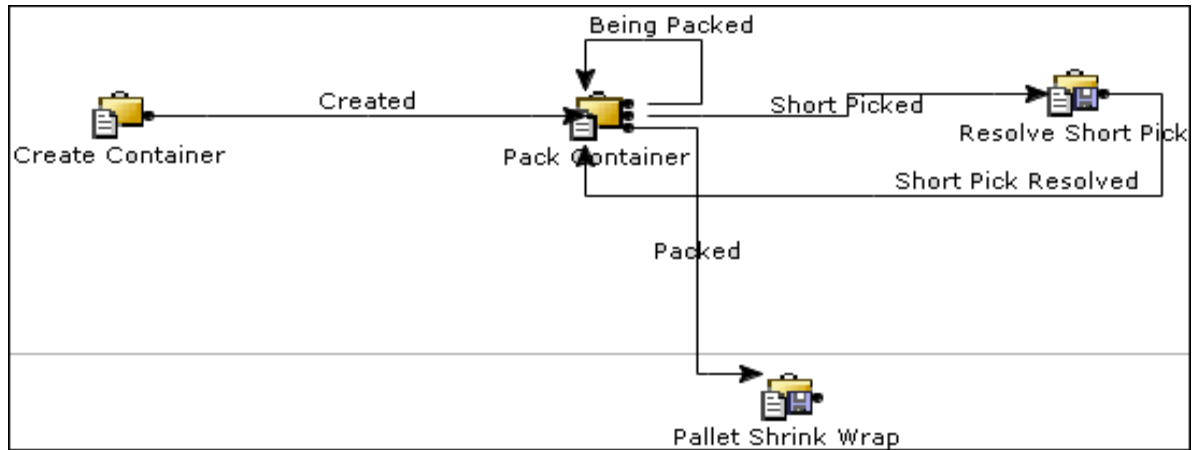
15.2.1.5 Outbound Shipment Pipeline

Figure 15–5 illustrates the Outbound shipment Pipeline.

Figure 15–5   Outbound shipment Pipeline
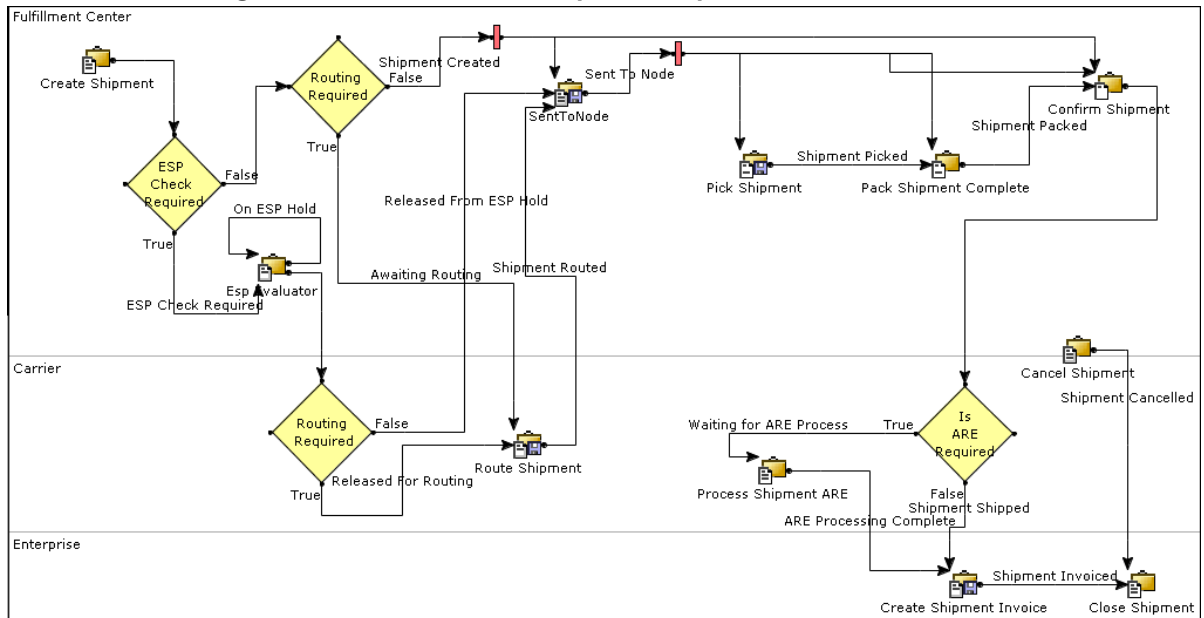
15.2.1.6 Load Pipeline

Figure 15–6 illustrates the load pipeline.

Figure 15–6   Load Pipeline
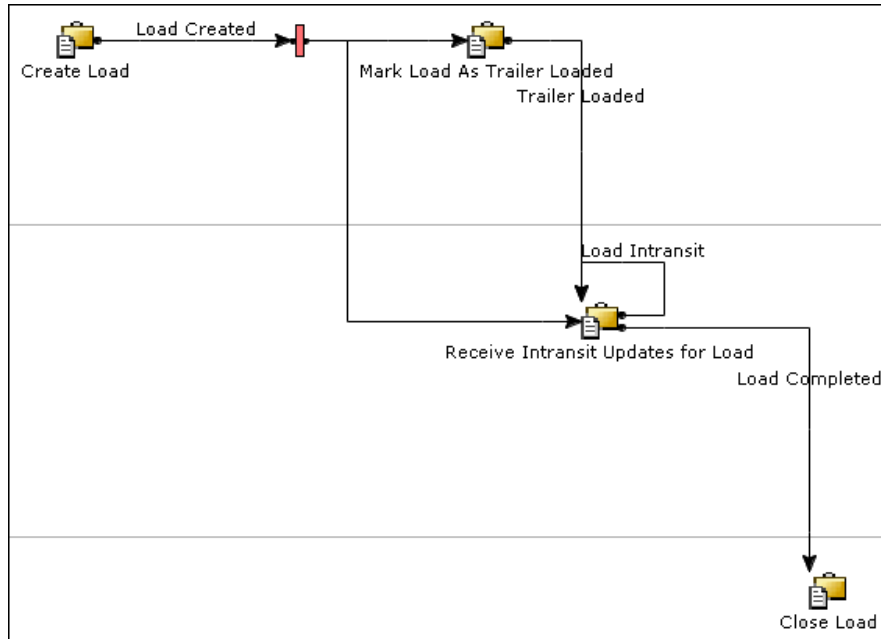
15.2.2 Activities

Activities in the warehouse are grouped into Activity Groups. The Sterling Networked Warehouse Management System PCA provides a pre-defined set of activity groups for a warehouse. Examples of activity groups include Receipt, Inspection, Value Added Services, and Packing.

Each activity group is associated with activity codes that define each activity that is performed. The Packing activity group has these activities: Pack and Resolve short pick, Pallet Shrink Wrap, and Carton Pack Complete.

> **Note:**   Activity Codes may be defined only when the WMS tree is loaded for a Node and Hub combination.

15.2.3 Agents

The agents configured for the Outbound processing are:

- `Sent To Node`

  This agent changes the status of the shipment to Sent to Node.

- `Create Wave`

  This agent creates waves based on the shipment selectors provided.

- `Assign Lane`

  This agent assigns the lane for a shipment.

- `Release Wave`

  This agent releases the waves and creates pick tasks for the shipments.

- `Containerize Wave`

  This agent creates system-suggested containers for the shipment.

- `Batch Wave`

  This agent creates batches for tasks that require batching.

- `Print Wave`

  This agent prints the various documents required for the wave, such as, shipment labels, task lists, and so forth.

- `Purge Wave`

  This agent deletes the wave from the shipment.

For detailed information about the agents and setting up the agent criteria, see the *Sterling Warehouse Management System Configuration Guide*.

15.2.4 Services

This section describes the services provided for the Outbound process.

15.2.4.1 Change Shipment Status To Picked

When picking is completed for a shipment, the `SHIPMENT_PICKED` event of the `COMPLETE_TASK` transaction is raised, which invokes the `YNW_changeShipmentStatusToPicked_75` service.

The `YNW_changeShipmentStatusToPicked_75` service then changes the shipment status to Picked.

To activate the `YNW_changeShipmentStatusToPicked_75` service:

1. Navigate to the Task execution process.

2. Navigate to the Transaction repository.

3. Associate the `SHIPMENT_PICKED` event of the `COMPLETE_TASK` transaction with the action `Change Shipment Status`, which invokes the `YNW_changeShipmentStatusToPicked_75` service.

> **Note:** This service is already activated if you have installed the factory defaults with the events turned on.

15.2.4.2 Print Load BOL

When the load is confirmed, the `ON_SUCCESS` event of the `RECEIVE_INTRANSIT_UPDATE` transaction is raised, which invokes the `YNW_PrintLoadBOL_75` service. This service then prints the Bill of Lading (BOL) of the load.

To activate the `PrintLoadBOL` service:

1. Navigate to the Load execution process.

2. Navigate to the Transaction repository.

3. Associate the `ON_SUCCESS` event of the `RECEIVE_INTRANSIT_UPDATE` transaction with the action `YNW Print Load BOL(75)`, which invokes the `PrintLoadBOL` service.

> **Note:** This service is already activated if you have installed the factory defaults with the events turned on.

15.2.4.3 Alert Pro Number Set Expiration

When the PRO number reaches a certain threshold value, an alert is raised by the service `AlertProNumberSetExpiration`.

To activate the `AlertProNumberSetExpiration` service:

1. Navigate to the Platform > Participant Modelling.

2. Select the node.

3. In the Node Attributes tab, click LTL Carrier Preferences.

4. Select any carrier from the list.

5. Click . The PRO Number Generation Scheme pop-up window displays.

6. In the Notification Service drop-down list, select `AlertProNumberSetExpiration.`

> **Note:**   This service is already activated by default.

15.2.4.4 Upload File To MHE

When the wave is released, the `ON_SUCCESS` event of the `PRINT_WAVE.4001` transaction is raised. Add the service `YNW_UploadFileToMHE_75` to the action `YNW Print Wave(75).` This service then sends the interface file to the MHE.

To activate the `YNW_UploadFileToMHE_75` service:

1. Navigate to the Outbound Picking Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_SUCCESS` event of the `PRINT_WAVE.4001` transaction with the action `YNW Print Wave(75),` which invokes the `YNW_UploadFileToMHE_75` service.

> **Note:** It is mandatory that you modify the yfs.properties file in the `<YANTRA_HOME>/Applications/Foundation/resources` directory, and set the following dynamic variables to point to the appropriate locations:
>
> - outputdirectory: Set this variable to point to the directory where the Sterling nWMS PCA places the interface file for the MHE.
> - workingdirectory: Set this directory to point to the directory where the file is processed.
>
> In addition, you also need to create the directories that these variables point to, in your computer.
>
> After making the changes, update the Sterling Supply Chain Applications runtime. For more information about updating the Sterling Supply Chain Applications runtime, see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

> **Note:** This service is already activated by default.

15.2.4.5 Download File From MHE

The `YNW_DownloadFileFromMHE_75` is an asynchronous service.

The `DownloadMHE` server polls the incoming directory frequently, based on the polling frequency configured. If the `DownloadMHE` server locates an interface file in the incoming directory, it marks the task specified in the interface file complete. When all the tasks of a batch are complete, it marks the batch as completed.

The Argument tab of the Custom API component indicates the flow to be invoked if the input file has only task references.

Note: It is mandatory that you modify the yfs.properties file in the
`<YANTRA_HOME>/Applications/Foundation/resources` directory, and set the following dynamic variables to point to the appropriate locations:

- inputdirectory: Set this variable to point to the directory where the MHE places the interface file.

- completedirectory: Set this variable to point to the directory where the Sterling nWMS PCA places the interface file after the tasks are completed.

- errordirectory: Set this variable to point to the directory where error logs, if any, are placed.

- workingdirectory: Set this variable to point to the directory where the file is processed.

- providerURLforMHE: Set this variable to point to the appropriate provider URL.

- MHE_QCF: Set this variable to point to the appropriate Queue Connection Factory.

- DownloadToMHEQueue: Set this variable to point to the queue where the service queues up the tasks that need to be completed.

In addition, you also need to create the directories that these variables point to, in your computer.

After making the changes, update the Sterling Supply Chain Applications runtime. For more information about updating the Sterling Supply Chain Applications runtime, see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

Note: This service is already activated by default.

15.2.4.6 Download File To MHE With Reference

The `YNW_DownloadFileToMHEWithReference_75` is a synchronous service.

When the MHE passes some reference instead of the task ID in the interface file, this service inserts the tasks completed by the MHE into the DownloadToMHEQueue.

If the name of this service changes, you also need to make the corresponding change in the Arguments tab of the Custom API component for the `YNW_DownloadFileFromMHE_75` service. In the Arguments tab, edit the Argument Value to the new name of the service `YNW_DownloadFileToMHEWithReference_75`.

> **Note:** This service is already activated by default.

15.2.4.7 Register Task Completion

The YNW_RegisterTaskCompletion_75 is an asynchronous service.

When this service is invoked, the MHEIntegrationJMSServer picks the tasks to complete from the DownloadToMHEQueue and sends it to the RegisterTaskCompletion API.

> **Note:** This service is already activated by default.

15.2.4.8 Putaway Pack And Hold Shipment

When the packing for a shipment is complete and the shipment is moved from the Pack Station or Weigh Station to the Pack and Hold location, the `PackAndHold` hold type is applied to the Pack and Hold shipment, if the hold type is configured. If the hold type is not configured, the hold is not applied.

When all the containers of the shipment are packed the `ON_SHIPMENT_PACK_PROCESS_COMPLETE` event is raised, which invokes the `YNW_PutAwayPackAndHoldShipment_75`service.

The `YNW_PutAwayPackAndHoldShipment_75` service creates one move request for Pack and Hold shipments and one move request line for each outermost container of the shipment. This move request generates the tasks that move the outermost containers of the shipment from the Pack

Station or Weigh Station to the Pack and Hold location, according to the putaway preferences configured for the PACK activity group. The move request cannot be created unless the activities are properly set.

To activate the `YNW_PutAwayShipment_75` service:

1. Navigate to the Pack Process Repository.

2. Navigate to the Transaction Repository.

3. Enable the `ON_SHIPMENT_PACK_PROCESS_COMPLETE` event of the `CHANGE_CONTAINER_STATUS` or `PACK_CONTAINER` transaction.

4. Associate the `ON_SHIPMENT_PACK_PROCESS_COMPLETE` event with the `PutawayPackAndHoldShipment_75` action, which invokes the `YNW_PutAwayPackAndHoldShipment_75` service.

> **Note:** You need to manually activate this service after installing the factory defaults.

> **Note:** If you are following the Pack while Pick process, for Pack and Hold shipments, Sterling Commerce recommends that you bring the container to the Weigh Station before starting the putaway.

15.2.4.9 Send Retrieve Shipment Request

The `YNW_SendRetrieveShipmentRequest_75` service is an asynchronous service. This service places a request to retrieve a shipment from the `PACK_HOLD_QUEUE` queue. When the user clicks the `Retrieve Pack & Hold Shipments` action in the Shipment List screen or the OK button in the Retrieve Pack & Hold Shipments pop-up window, the `YNW_SendRetrieveShipmentRequest_75` service is invoked.

15.2.4.10 Retrieve Pack and Hold Shipments

The `YNW_RetrievePackAndHoldShipments_75` is an asynchronous service.

When this service is invoked, the `RetrievePackAndHoldShipments` integration server picks messages that are in the `PACK_HOLD_QUEUE` queue and creates moves requests to move the outermost containers of the Pack and Hold shipment into the requested location.

> **Note:** It is mandatory that you modify the yfs.properties file in the
> `<YANTRA_HOME>/Applications/Foundation/resources`
> directory, and set the following variables to point to the appropriate locations:
>
> - PACK_AND_HOLD_QUEUE: Set this variable to point to the queue where the service queues up the tasks to be completed.
>
> - Provider_URL: Set this variable to point to the appropriate URL.
>
> - PackandHold_QCF: Set this variable to point to the appropriate Queue Connection Factory.
>
> In addition, you also need to create the directories that these variables point to, in your computer.
>
> After making these changes, update the Sterling Supply Chain Applications runtime. For more information about updating the Sterling Supply Chain Applications runtime, see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

15.2.4.11 Process Retrieval For Pack and Hold Load

The `YNW_ProcessRetrievalForPackAndHoldLoad_75` is an asynchronous service.

When the user clicks the `Retrieve Pack & Hold Shipments` action in the Load List screen, the `YNW_ProcessRetrievalForPackAndHoldLoad_75` service is invoked.

This service gets a lists of all shipments included in the load and internally calls the `YNW_RetrievePackAndHoldShipments_75` service.

If you change the name of this service, you also need to make the corresponding change in the Arguments tab of the Custom API component for the `YNW_ProcessRetrievalForPackAndHoldLoad_75` service. In the Arguments tab, edit the Argument Value to the new name of the `YNW_SendRetrieveShipmentRequest_75` service.

15.2.4.12 SED Filing

The electronic SED can be filed for a shipment or load based on the condition mentioned in Section 15.2.9.1.1, "Hold Condition", using the xml obtained as an output of the `YNW_SEDFiling_75` service.

When the `YNW SED Filing(75)` action is associated with the `ON SUCCESS` event of the shipment level transaction, such as the `ON_SHIPMENT_PACK_PROCESS_COMPLETE` transaction, the `YNW_SEDFiling_75` service gets invoked.

To activate the `YNW_SEDFiling_ 75` service:

1. Navigate to the Outbound Shipment Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_SUCCESS` event of the appropriate transaction in the Shipment pipeline, such as the `ON_SHIPMENT_PACK_PROCESS_COMPLETE` transaction, with the `YNW SED Filing(75)` action. This invokes the `YNW_SEDFiling_ 75` service.

> **Note:** You can associate the `ON_SUCCESS` event of the appropriate transaction in the Shipment pipeline, other than the Confirm Shipment transaction.

15.2.4.13 SED Hold Resolution

When the ITN is generated after filing an SED, the user needs to enter the ITN on the Shipment Details or Load Details console screen.

After the ITN is stamped on the Shipment Details or Load Details console screen, the `ON SUCCESS` event of the `Change Shipment` or `Modify Load` transaction is raised, which associates the `YNW_SEDHoldResolution_ 75` service with the `YNW SED Hold Resolution(75)` action.

To activate the `YNW_SEDHoldResolution_ 75` service:

1. Navigate to the Outbound Shipment Repository.

2. Navigate to the Transaction repository.

3. Associate the `YNW SED Hold Resolution(75)` action with the `ON_SUCCESS` event of the `Change Shipment` transaction (for shipments) or the `Modify Load` transaction (for loads). This invokes the `YNW_SEDHoldResolution_ 75` service for resolving the SED hold.

15.2.5 Shipment Monitor

This time-triggered transaction reports on the states of a shipment, based on rules in the YFS_MONITOR_RULE table. This transaction enables you to monitor the following situations:

- If the Shipment has been in a status for more than a specified amount of time

- If the Shipment did not reach a status:
  – n hours before a specified date
  – n hours after a specified date
  – n hours after reaching another status

- If the Shipment reached a status:
  – n hours before a specified date
  – n hours after a specified date
  – n hours after reaching another status

- If the current time is:
  – n hours before a specified date
  – n hours after a specified date
  – n hours after Shipment has reached a specified status

- If a specified date that is associated with the shipment is:
  – n hours before another specified date
  – n hours after another specified date
  – n hours not before another specified date
  – n hours not after another specified date

Monitoring rules can be configured for the shipment's origin and destination points. They cannot be configured for a shipment's intermediate pickup and drop off points. A shipment has intermediate pickup or drop off only if it has multiple pickup or drop off points. For example, a shipment has more than one load carrying it. The shipment status on first load deposit, second load deposit, and so forth cannot be monitored.

Once the last load deposits the shipment at its destination, then the shipment status can be marked and monitored.

This is not a pipeline transaction. It also does not work from the task queue.

For more information about milestones, date types, and monitoring rules, see the *Sterling Supply Chain Applications Platform Configuration Guide*

This section describes the shipment monitor provided in the Outbound process.

15.2.5.1 Packing Delayed

The YNW_PACKING_DELAYED_75 event is raised whenever shipments which are due for shipping in two hours have not yet been packed. This event invokes the service YNW_RaiseDelayInShipmentPackProcess_75, which raises an alert to the SHIPPING queue.

15.2.6 Productivity

For all tasks, such as Picking and Packing associated with Outbound, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

15.2.7 Resource Planning

This section explains the various configurations that must be completed for the resource planning process.

15.2.7.1 Enabling Resource Planning for a Node

Before you can use the resource planning feature for "Shipping", you must enable resource planning for the node.

To configure the primary node attributes:

1. Log in to the application console as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Platform.

4. From the tree in the application rules side panel, select Participant Modeling > Participant Setup. The Organization Search window appears in the work area.

5. In the Organization Details window, select the Roles and Participation tab > Node Attributes/Primary Info (on the right).

6. Select the Resource Planning Enabled checkbox to enable the planning of resources and activities.

7. Enter other information in the applicable fields.

   For more information about field value descriptions, see *Sterling Supply Chain Applications Platform Configuration Guide*.

8. Click 💾.

15.2.7.2 Configuring the Node for Planning

Configuring the node for planning is the initial step of resource planning. This enables you to set up the planning calendar, shifts, and work days for a ship node.

To configure the node for resource planning:

1. Log in to the application console as an Administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

4. From the tree in the applications rule side panel, select Resource Planning > Node Planning Attributes. The Node Attributes for Planning screen appears.

5. Enter information in the applicable fields.

   For more information about field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

6. Click 💾.

15.2.7.3 Creating Resource Pools

A resource pool defines a set of resources that perform similar operations in the warehouse.

To create a resource pool for "Shipping":

1. Log in to the application console as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

4. From the tree in the applications rule side panel, select Resource Planning > Resource Pools. The Resource Pool Search screen appears.

5. In the Resource Pool window, click ![icon]. The Resource Pool Details screen appears.

6. Enter "Shipping" as the Resource Pool ID.

7. Enter information in the applicable fields.

    For more information about field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

8. Click ![icon].

15.2.7.4 Associating Resources to Resource Pools

You should assign resources to resource pools based on the requirement.

To associate resources to the "Shipping" resource pool:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

2. From the tree in the applications rule side panel, select Resource Planning > Resource Pools. The Resource Pool Search screen appears.

3. Select the "Shipping" resource pool. The Resource Pool Details screen appears.

4. Click ![icon] to add users to that resource pool. The Find User to Add to Resource Pool screen appears.

5. Click ![icon] icon to select users.

> **Note:** A user can belong to only one resource pool at a time. If a user is moved from one pool to another, the default pool under which the user was originally accounted changes.

15.2.7.4.1 Assigning Shifts to Resources

To assign shifts to resources:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

2. From the tree in the applications rule side panel, select Resource Planning > Resource Pools. The Resource Pool Search screen appears.

3. Select the "Shipping" resource pool. The Resource Pool Details screen appears.

4. Select a particular resource. The Resource Details screen appears.

5. Choose the Shift Assignments tab.

6. Enter information in the applicable fields.

   For more information and field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

7. Click 🖫.

15.2.7.4.2 Setting Resource Efficiency

You can set efficiencies for a resource within a particular resource pool. This aids in tracking efficiency of each resource against various resource pools.

To set efficiencies for a resource within the "Shipping" resource pool:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

2. From the tree in the applications rule side panel, select Resource Planning > Resource Pools. The Resource Pool Search screen appears.

3. Select the "Shipping" resource pool. The Resource Pool Details screen appears.

4. Select a particular resource. The Resource Details screen appears.

5. Choose the Efficiencies tab.

6. Enter information in the applicable fields.

   For more information about field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

7. Click 🖫.

15.2.7.5 Creating Task Type Resource Pool Associations

Task types are associated with a set of resource pools that are required to perform a particular task. You can define conditions on various attributes of a demand and associate a set of task types to this condition. You can define a list of conditions within a condition set. Logically, each condition represents related activities involved in fulfilling a demand. The estimated capacity for fulfilling a demand is evaluated from the SAM definitions associated with a task type.

You can create a new task type-resource pool association for "Shipping".

To create a task type-resource pool association:

1. Log in to the application console as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

4. From the tree in the applications rule side panel, select Resource Planning > Task Type Associations. The Task Type screen appears.

5. Select the Task Type Resource Pool Association Tab.

6. Click ➕. The Task Type Resource Pool Association screen appears.

7. Enter information in the applicable fields.

   For more information and field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

8. Click 🖫.

15.2.7.6 Creating Condition Sets

To create a condition set:

1. Log in to the application console as an Administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

4. From the tree in the applications rule side panel, select Resource Planning > Task Type Associations. The Task Type Association screen appears.

5. Click ![plus icon] . The Associate Resource Pools with Task Type screen appears.

6. Enter information in the applicable fields.

7. Choose the Condition Task Type Association tab. The Condition Task Type Association screen appears.

8. Click ![plus icon]. The condition set pop-up window appears.

9. Enter information in the applicable fields.

   For more information about field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

10. Click ![save icon].

15.2.7.7 Creating Planned Task Conditions

The planned task conditions are created within a condition set.

To create a planned task condition:

1. From the Sterling Supply Chain Applications Configurator menu bar, select Applications > Warehouse Management.

2. From the tree in the applications rule side panel, select Resource Planning > Task Type Associations. The Task Type Association screen appears.

3. Choose the Condition Task Type Association tab. The Condition Task Type Association screen appears.

4. Select the appropriate condition set and click ![icon]. The Planned Task Condition screen appears.

5. Enter information in the applicable fields.

   For more information and field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

6. Click ![icon].

15.2.7.7.1 Creating Conditions

You can create condition names.

To create a condition name:

1. From the tree in the applications rule side panel, select Resource Planning > Task Type Associations. The Task Type Association screen appears.

2. Choose the Condition Task Type tab. The Condition Task Type Association screen appears.

3. Choose the appropriate condition set and click ![icon]. The Planned Task Condition screen appears.

4. Click ![icon]. The Condition Detail screen appears.

5. Enter information in the applicable fields.

   For more information about field value descriptions, see *Sterling Warehouse Management System Configuration Guide*.

6. Click ![icon].

15.2.8 Task Generation for Pack and Hold Shipments

Orders to be shipped in the future can be packed in advance. For example, during occasional seasons, orders may be placed in bulk. In such cases, the shipments are picked and packed in advance to avoid overload on the actual shipping day. Shipments that are packed and stored away to be retrieved on the actual shipping day are known as Pack and Hold shipments.

When the packing for a shipment is complete, putaway tasks are automatically generated by the system. The Sterling nWMS PCA provides a service to create putaway tasks in order to move the outermost

containers of the Pack and Hold shipment from the Pack Station or Weigh Station to the Pack and Hold location.

To configure putaway and retrieval of pack and hold shipments, you can create a hold type and configure activity constraints.

15.2.8.1 Creating a Hold Type

When shipments are packed, the `PackAndHold` hold type is applied to all shipments marked as Pack and Hold, if the `PackAndHold` hold type is configured. The shipments to which this hold type is applied cannot be shipped unless the hold type is resolved. The hold type is automatically resolved once the shipments are retrieved.

The hold provided by the Sterling nWMS PCA is for the DEFAULT enterprise. Your enterprise should either inherit configurations from the DEFAULT enterprise, or have a copy of this hold type implemented.

For more information about Creating a Hold Type see the *Sterling Logistics Management Configuration Guide*.

15.2.8.2 Configuring Activity Constraints

Activities in the warehouse are grouped together in Activity Groups. Each activity group is associated with activity codes that define each activity that is performed.

To configure activity constraints:

1. Log into the Sterling Supply Chain Applications as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the tree in the application rules side panel, select Warehouse Management > Packing > Activities. The Activities screen appears.

4. Select the PACK activity code or any other activity code that you have configured.

5. Click . The Putaway Preferences screen appears.

6. Select the Container with unknown contents tab.

7. Perform any one of the following:

   a. To configure a pallet, click the Pallet tab.

b. To configure a case, click the Case tab.

8. Click ![icon]. The Putaway Preference Details: Container with unknown contents: Pallet or Putaway Preference Details: Container with unknown contents: Case screen appears.

9. In Activity Code, select Moving to Storage.

10. In the Zone Priorities area, enter the appropriate Priority, and select the appropriate Zone and Storage Code.

11. Click ![icon]. The Applicable Putaway Strategies screen appears.

12. From the Putaway Strategies tree in the application rules side panel, select Putaway to Storage. The Putaway Strategy Details screen appears.

13. In the System Directed Putaway Task Types area, select the appropriate Target Zone and Task Type.

14. Click ![icon].

For more information about defining activity constraints, see the *Sterling Warehouse Management System Configuration Guide*.

15.2.9 Electronic Shipper's Export Declaration

Shippers of international shipments need to file the SED based on certain conditions. The shipments or loads included in an SED are kept on hold for filing the SED.

15.2.9.1 Creating a Hold Type

Shippers need to create the `SEDHold` hold type for both shipments and loads. Shipments or loads to which this hold type is applied cannot be shipped until the hold type is resolved. The hold type is resolved by the system when the ITN is provided for the shipments or loads in the Shipment Details or Load Details screens.

Shipments

To create a hold type for shipments:

1. Log into the Sterling Supply Chain Applications as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the tree in the application rules side panel, select Logistic Management > Document Specific (Shipping) > Sales Order > Hold Types. The Hold Types : Sales Order (DEFAULT) screen appears.

4. Click ✚ . The Hold Type pop-up window appears.

5. In Hold Type, enter the hold type.

6. In Hold Type Description, enter the description of the hold.

7. Select the Hold Effects tab.

8. Click 🐞 . The Transaction List pop-up window appears.

9. In the Available area:

    a. Select the appropriate Process Type.

    b. Use the right arrow to move the available modification types you want to associate with the hold type.

10. Click 💾 .

For more information about creating a hold type see the *Sterling Logistics Management Configuration Guide*.

Loads

 To create a hold type for loads:

1. Log into the Sterling Supply Chain Applications as an administrator.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the tree in the application rules side panel, select Logistic Management > Document Specific (Load) > Hold Types. The Hold Types : Sales Order (DEFAULT) screen appears.

4. Click ✚ . The Hold Type pop-up window appears.

5. In Hold Type, enter the hold type.

6. In Hold Type Description, enter the description of the hold.

7. Select the Hold Effects tab.

8. Click 🦟 . The Transaction List pop-up window appears.

9. From the Available area:

    a. Select the appropriate Process Type.

    b. Use the right arrow to move the available modification types you want to associate with the hold type.

10. Click 💾 .

For more information about creating a hold type see the *Sterling Logistics Management Configuration Guide*.

15.2.9.1.1   Hold Condition

The hold condition is an advanced XML condition. This condition displays an advanced XML in the configurator with readable text. The values of the variables are customizable. When the hold condition is met for a shipment or load, the SEDHold is applied to the load or shipment.

For more information about the XML generated by the system, see the Chapter G, "XML Integration SED".

The shipper needs to file an electronic SED if the total cost of the Schedule B items is greater than $2500 and the source and destination countries are as specified in Table 15–3.

Table 15–3   Countries Requiring SED

From Country	To Country
United States	Canada (only if licence is required)
United States	Foreign Countries
Puerto Rico	United States
Puerto Rico	Foreign Countries
Puerto Rico	US Virgin Island
US Virgin Island	Foreign Countries

The shipper does not need to file an electronic SED for the source and destination countries specified in Table 15–4.

Table 15–4   Countries Not Requiring SED

From Country	To Country
United States	Canada (unless an export licence is required)
US Virgin Islands	United States
US Virgin Islands	Puerto Rico

15.3 Managing the Outbound Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform the Outbound Process. This section explains the UI flow for performing Outbound tasks.

15.3.1 Performing Outbound

The UI flow for performing Outbound consists of:

- Resource Planning
- Picking
- Packing
- Verify Packing
- Unpacking
- Converting Inventory Container to Outbound Container at the Weigh Station
- Pallet Shrink Wrapping
- Manifesting Parcel Containers
- Confirming LTL/TL Loads
- Pack and Hold
- Electronic SED

15.3.1.1 Resource Planning

Use the Sterling Supply Chain Application Consoles to plan resources.

Resource Planning involves a combination of the following tasks, which are explained in this section:

- Defining Standard Capacity
- Viewing Capacity Details
    - Overriding Planned Capacity
    - Transferring Resources Temporarily
    - Extending Shifts for Resources
- Viewing Demand Details
    - Moving Shipments
- Confirming a Plan

15.3.1.1.1 Defining Standard Capacity

To define the standard capacity for the "Shipping" resource pool:

1. From the navigation bar, select Outbound > Define Standard Capacity. The Defining Standard Capacity screen appears.

2. Select the "Shipping" resource pool and click Standard Capacity. The Resource Pool Current Standard Capacity Details screen appears.

3. Enter information in the applicable fields.

4. Click Save.

For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

15.3.1.1.2 Viewing Capacity Details

To view the capacity details for various resource pools:

1. From the navigation bar, select Outbound > Resource Planning. The RPCapacity Search By Date screen appears.

2. In Start Date, enter the date for which you want to begin planning resources.

3. In #of days, enter the total number of days for which you want to plan resources.

4. Within the Show Demand and Capacity Data in panel, choose the unit of measure in which you want the capacity and demand to be displayed.

5. Check the Consider Pending Task box, if you want to consider the pending tasks to be completed as a backlog for the chosen date.

6. Click Search. The Resource Planning screen appears.

7. Within the Plan Resources Panel, when a capacity is chosen for a resource pool on a specific date, the Capacity Details screen appears.

Overriding Planned Capacity

You can override the standard capacity allocated to an activity, according to demand variations.

To change the planned capacity:

1. Open the Resource Planning screen.

2. Within the Other Resource Pools panel, click ⊞ against the resource pool for which you want to change the standard capacity.

3. Enter the new capacity values in the expanded view.

4. Click Save. The Override Capacity pop-up appears.

5. Enter the appropriate reason.

6. Click OK.

   For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

Transferring Resources Temporarily

Use the Capacity Details screen to transfer resources from other resource pools.

To transfer resources to the "Shipping" resource pool, from other resource pools:

1. Open the Capacity Details screen.

2. Within the Other Resource Pools panel, choose the resources you want to transfer and click Pull Resources. The Transfer Resources screen appears.

3. Enter information in the applicable fields.

4. Click Save.

For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

Extending Shifts for Resources

You can extend shifts for a resource by assigning extra shifts, within a resource pool.

To assign shifts to resources within the resource pool:

1. Open the Capacity Details screen.

2. Within the Member Resources panel, choose the resource you want to assign to the shifts and click Assign Shifts. The Assign Shifts screen appears.

3. Click ✚ to add new shifts and enter information in the applicable fields.

4. Click Save.

For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

15.3.1.1.3 Viewing Demand Details

You can view the resource demand details.

To view the resource demand details:

1. From the navigation bar, select Outbound > Resource Planning. The RPCapacity Search By Date screen appears.

2. In Start Date, enter the date for which you want to begin planning resources.

3. In #of days, enter the total number of days for which you want to plan resources.

4. Within the Show Demand and Capacity Data in panel, choose the unit of measure in which you want the capacity and demand to be displayed.

5. Check the Consider Pending Task box, if you want to consider the pending tasks to be completed as a backlog for the chosen date.

6. Click Search. The Resource Planning screen appears.

7. Choose the demand for a selected date against an appropriate resource pool, the Demand Details screen appears.

Moving Shipments

You can move shipments to an appropriate date.

To move shipments to a later date:

1. Click against the appropriate date. The Move screen appears.

2. Enter information in the applicable fields.

3. Click Move.

   For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

15.3.1.1.4 Confirming a Plan

You can confirm a plan for resources.

To confirm the plan:

1. From the navigation bar, select Outbound > Resource Planning. The RPCapacity Search By Date screen appears.

2. In Start Date, enter the date for which you want to begin planning resources.

3. In #of days, enter the total number of days for which you want to plan resources.

4. Within the Show Demand and Capacity Data in panel, choose the unit of measure in which you want the capacity and demand to be displayed.

5. Check the Consider Pending Task box, if you want to consider the pending tasks to be completed as a backlog for the chosen date.

6. Click Search. The Resource Planning screen appears.

7. Click View Details. The Planning Summary screen appears.

8. Click Confirm Plan.

   For more information about field value descriptions, see *Sterling Warehouse Management System User Guide*.

15.3.1.2 Picking

This section describes the picking process followed on the warehouse floor.

15.3.1.2.1 Using the Sterling Supply Chain Mobile Application

With the Sterling Supply Chain Mobile Application you can pick using one of the following picking processes:

- Picking
- Cart Manifest Picking

Picking

The picking process using the Sterling Supply Chain Mobile Application is:

1. Log into the Sterling Supply Chain Mobile Application.

2. From the Menu page, select Outbound Pick and press Enter. The Criteria screen displays, which lets you enter the start location.

3. If you are picking a pallet or case and the system suggests to verify the source location, verify the location.

4. If you are picking a non-license plated product, or a license plated pallet or case, enter the SKU pick quantity.

   If you are picking a non-license plated product by applying the license plate, enter or scan the pre-printed license plate number.

5. If the system suggests SKU pick to a pallet, pick the SKU to a pallet.

   If the system suggests SKU pick to a case, pick the SKU to a case.

6. If the system suggests a deposit task, deposit the pallet, case or SKU into the system-suggested location.

For more information about field descriptions, see the *Sterling Supply Chain Mobile Application User Guide*.

Cart Manifest Picking

The Sterling Supply Chain Mobile Application Cart Manifest picking process enables you to associate a cart that is used for picking inventory with a batch number. This process is called inducting a cart.

The Cart Manifest picking process using the Sterling Supply Chain Mobile Application is:

1. Log into the Sterling Supply Chain Mobile Application.
2. From the Menu page, select Induct Cart and press Enter. The Induct Cart screen appears.
3. Scan the Cart ID and Batch # and associate the cart identifier with the batch number.
4. The Cart Pick screen appears.
5. The system suggests the pick location, item identifier, and quantity.
6. Enter or scan the pick location, item identifier, and quantity.
7. The Sort screen appears, which suggests a slot location and quantity.
8. Scan the SCM of the container that is placed in the slot location and sort the suggested quantity.
9. Repeat Step 7 and Step 8 until the sorting is complete.
10. Repeat Step 4 to Step 9 until the pick for the cart is complete.
11. The Deposit screen appears, which suggests the weighing location.
12. Click Deposit All. The inventory is deposited at the weigh station.

    Complete the pack process of the case manually by scanning the container at the Weigh Station.

For more information about field value descriptions, see the *Sterling Supply Chain Mobile Application User Guide*.

15.3.1.2.2 Using Printed Batch Sheets

Follow these steps in the Picking process:

1. Users are provided printed batch sheets that contain information about the inventory to move.
2. Log into the Sterling Supply Chain Application Consoles.
3. From the Sterling Supply Chain Application Consoles navigation bar, select Task > Confirm Batch. The Batch Confirmation screen displays.
4. Enter the batch number and target location.
5. Click Confirm. The paper-based pick is confirmed.

15.3.1.2.3 Using Material Handling Equipment

The Sterling nWMS PCA automatically sends the interface file to the MHE, if external equipments are used for picking. However, in case of exceptions, follow these steps to resend the interface file to the MHE:

1. Log into the Sterling Supply Chain Application Consoles as the warehouse manager or the shipping supervisor.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Wave Console. The Wave By Status search screen displays.

3. Enter the search criteria and click Search. The Wave List screen displays.

4. In the Wave List screen do either of the following:
   - Select the check box against the appropriate wave
   - Click the appropriate Wave #

5. Click Send To MHE. The interface file is re-sent to the Material Handling Equipment.

15.3.1.3 Packing

This section explains the pack process followed in a warehouse floor.

15.3.1.3.1 Execution Console-Based Packing

To perform pack:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Pack Station. The Pack Details screen displays.

3. Enter or scan the appropriate information.

4. Click the Save action or press Alt+A to save the container properties detail and packing notes, if entered.

5. Click the Reset action or press Alt+R to clear the information that you entered or scanned.

6. After completing packing the container, click the Close Container action to close the container.

For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

15.3.1.3.2 Sterling Supply Chain Mobile Application-Based Packing

You can perform pack in the following two ways using the Sterling Supply Chain Mobile Application:

- Shipment-Driven Packing
- Item-Driven Packing

Shipment-Driven Packing

You can perform Shipment-Driven Packing using the Sterling Supply Chain Mobile Application.

For more information about performing Shipment-Driven Packing using the Sterling Supply Chain Mobile Application, see inSection E.2.1, "Shipment-Driven Packing" of Appendix E, "Packing Using the Sterling Supply Chain Mobile Application".

Item-Driven Packing

You can perform Item-Driven Packing using the Sterling Supply Chain Mobile Application.

For more information about the packing process, see in Section E.2.2, "Item-Driven Packing" of Appendix E, "Packing Using the Sterling Supply Chain Mobile Application".

15.3.1.4 Verify Packing

You can verify packing for containers using the Sterling Supply Chain Mobile Application.

To verify packing:

1. Log into the Sterling Supply Chain Mobile Application.
2. From the Menu, select Verify Pack and press Enter.
3. If the system suggests you to scan the pack location, scan the location.
4. The Container Entry screen appears.

5. Enter or scan the container SCM.

6. If the system suggests you to scan the total number of units of items in the container, scan the total number of units of items.

7. If the system shows you a mismatch, accept the mismatch or rescan the total number of units of items.

8. If the system suggests you to scan total number of items in the container, scan the total number of items.

9. If the system shows you a mismatch, accept the mismatch or rescan the total number of items.

10. If the system suggests you to scan the item ID and item details, scan the item ID and details.

11. If the system shows you a mismatch, accept the mismatch or rescan the item ID and its details.

For more information about field value descriptions, see in Section E.3, "Pack Verification" of Appendix E, "Packing Using the Sterling Supply Chain Mobile Application".

15.3.1.5 Unpacking
You can perform unpacking in the following two ways:

15.3.1.5.1 Execution Console-Based Unpacking

To unpack a container:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Pack Station. The Pack Details screen displays.

3. Enter or scan the appropriate information.

4. Click the Unpack action to unpack the container whose details have been entered.

For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

15.3.1.5.2 Sterling Supply Chain Mobile Application-Based Unpacking

To perform unpack using the Sterling Supply Chain Mobile Application:

1. Log into the Sterling Supply Chain Mobile Application.

2. From the Menu, select Unpack and press Enter. The Location Entry screen appears which enables you to scan the location of unpack.

3. Enter or scan the location of unpack. The Container Entry screen appears.

4. Enter or scan the container SCM.

5. The Unpack Criteria screen appears which enables you to scan the carton SCM or item ID to be unpacked.

6. Enter or scan the carton SCM or item ID that you want to unpack.

7. If the system suggests you to scan the serial number for an item, scan the serial number.

8. If the system suggests you to scan the lot number for an item, scan the lot number.

9. If the system suggests you to scan the expiry date for an item, scan the expiry date.

10. If the system suggests you to scan the quantity of an item unpacked, scan the quantity.

For more information about field value descriptions, see in Section E.4, "Unpacking" of Appendix E, "Packing Using the Sterling Supply Chain Mobile Application".

15.3.1.6 Converting Inventory Container to Outbound Container at the Weigh Station

Follow these steps to convert an inventory container into an outbound container:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Weigh Station. The Weigh Station screen displays.

3. Enter or scan the appropriate information.

4. In Location, select the weigh station location.

5. In Scan Identifier, enter or scan the shipment number.

6. In Scan Identifier, enter or scan the inventory LPN. The system automatically converts the inventory container into an outbound container.

For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

15.3.1.7 Pallet Shrink Wrapping

Follow these steps in the pallet shrink wrapping process:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Pallet Shrink Wrap. The Pallet Shrink Wrap screen displays.

3. Enter or scan the pallet to shrink wrap.

4. Click Save. The pallet gets shrink wrapped.

15.3.1.8 Manifesting Parcel Containers

Follow these steps in the manifesting process:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Add to Manifest. The Add to Manifest screen displays.

3. Enter or scan the parcel container.

4. Click the Add to Manifest action. The parcel container is manifested.

15.3.1.9 Confirming LTL/TL Loads

Follow these steps in the confirmation process:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Outbound > Load Console. The Load Search by Status screen displays.

3. Enter the criteria for searching the appropriate load.

4. From the Load List screen, select the load to confirm.

5. Click the Confirm Shipment action. The load is confirmed and the BOL is printed.

15.3.1.10 Pack and Hold

This section explains the pack and hold process of the shipments and loads.

15.3.1.10.1 Retrieval of Pack and Hold Shipments

Once a shipment is moved to a Pack and Hold location, the shipment needs to be retrieved manually. The shipment supervisor or warehouse manager looks for a Pack and Hold shipment being shipped that day and retrieves the shipment containers to a location.

You can retrieve shipments using either the Retrieve Pack and Hold Shipments screen or the Shipment List screen.

To retrieve shipments using the Retrieve Pack and Hold Shipments screen:

1. Log into the Sterling Supply Chain Applications as a warehouse manager or shipping supervisor.

2. Navigate to Outbound > Retrieve Pack And Hold Shipments. The Retrieve Pack & Hold Shipments screen appears.

For field value descriptions, see Table 15–5.

3. Enter information in the applicable fields and click Retrieve. The Retrieve Pack & Hold Shipments pop-up window appears.

For field value descriptions see Table 15–6 and Table 15–7.

4. In the Retrieve Pack And Hold Shipments area, enter information in the applicable fields and click OK. The move request is generated for the shipments.

Table 15–5   Retrieve Pack & Hold Shipments

Field	Description
Node	The node for which the Pack and Hold shipments are retrieved.
Enterprise	Select an enterprise. All pack and hold shipments of this enterprise are selected to retrieve.

Table 15–5   Retrieve Pack & Hold Shipments

Field	Description
Buyer	Select a buyer. All pack and hold shipments of this buyer are selected to retrieve.
Seller	Select a seller. All pack and hold shipments of this seller are selected to retrieve.
Shipment Mode	Select a shipment mode. All pack and hold shipments of this shipment mode are selected to retrieve.
Service	Select the name of the carrier service. All pack and hold shipments of the service are selected to retrieve.
Order #	Select an order number. All pack and hold shipments for this order number are selected to retrieve. You can also click the ⬭ icon to select the order number.
Load #	Select a load number. All pack and hold shipments for this load number are selected to retrieve. You can also click the ⬭ icon to select the load number.
BOL #	Select a Bill Of Lading number. All pack and hold shipments for this BOL number are selected to retrieve.
PRO #	Select a PRO Number. All pack and hold shipments for this PRO number are selected to retrieve.
TRAILER #	Select a trailer number. All pack and hold shipments for this trailer number are selected to retrieve.
Held On	Select a hold type. All shipments of this hold type for the selected enterprise are listed. All pack and hold shipments for this hold type are selected to retrieve.
Expected Ship Date	Enter the start expected ship date and time and the end expected ship date and time. All pack and hold shipments between this dates and times are selected to retrieve. You can also click the 🗓 icons to choose the date.

Table 15–6   Retrieve Pack & Hold Shipments, Shipments Summary

Field	Description
Number of Shipments	The number of shipments satisfying the entered criteria.
Number Of Shipment Lines	The total number of shipment lines satisfying the entered criteria.
No. of Pallets	The number of pallets satisfying the entered criteria.
No. of Cases	The number of cases satisfying the entered criteria.
Total Volume (CIN)	The total volume of the shipments in cubic inches satisfying the entered criteria.
Total Weight (LBS)	The total weight of the shipments (in pounds) satisfying the entered criteria.

Table 15–7   Retrieve Pack & Hold Shipments, Retrieve Pack And Hold Shipments

Field	Description
Location	Enter the location into which you want to retrieve the shipment. You can also click the ⊙ icon to search for the location. It is mandatory to enter a value in this field.
Start No Earlier Than	Enter the date and time to start the retrieval process You can also click the ▦ icons to choose the date.
Finish No Later Than	Enter the date and time to complete the retrieval process. You can also click the ▦ icons to choose the date.

To retrieve shipments that are in Pack and Hold status from the Shipment List screen:

1. Log into the Sterling Supply Chain Applications as a warehouse manager or shipping supervisor.

2. Navigate to Outbound > Outbound Shipment Console. The Shipment By Status search screen appears.

3. Enter the appropriate details and click Search. The Shipment List screen appears.

4. Check the boxes against the shipments to retrieve.

5. Select the Retrieve Pack & Hold Shipments action. The Retrieve Pack & Hold Shipments pop-up window appears.

6. Enter information in the applicable fields.

   For field value descriptions, see Table 15–9.

7. Click OK. The move request is generated for the loads.

Table 15–8   Retrieve Pack & Hold Shipments

Field	Description
Location	Enter the location into which you want to retrieve the shipment. You can also click the 🔍 icon to search for the location. It is mandatory to enter a value in this field.
Start No Earlier Than	Enter the date and time to start the retrieving process. You can also click the 🗓 icons to choose the date.
Finish No Later Than	Enter the date and time to complete the retrieving process. You can also click the 🗓 icons to choose the date.

Note: Only the outermost containers of the Pack and Hold shipments are considered for retrieving. These shipments should have inventory in the Pack and Hold location and should not have Putaway tasks already generated for them.

15.3.1.10.2   Retrieval of Pack And Hold Loads

You can consolidate shipments that are in Pack and Hold status into a load. You need to retrieve such loads manually to a location.

To retrieve loads using the Sterling Supply Chain Applications:

1. Log into the Sterling Supply Chain Applications as a warehouse manager or shipping supervisor.

2. Navigate to Outbound > Load Console. The Load By Status search screen appears.

3. Enter the appropriate details and click Search. The Load List screen appears.

4. Check the boxes against the loads to retrieve.

5. Select the Retrieve Pack & Hold Shipments action. The Retrieve Pack & Hold Shipments pop-up window appears.

6. Enter information in the applicable fields.

   For more information about the field value descriptions, see Table 15–9.

7. Click OK. The move request is generated for the loads.

Table 15–9   Retrieve Pack And Hold Shipments

Field	Description
Location	Enter the location into which you want to retrieve the load. You can also click the 🔍 icon to search for the location.
	It is mandatory to enter a value in this field.
Start No Earlier Than	Enter the date and time to start the retrieving process.
	You can also click the 📅 icons to choose the date.
Finish No Later Than	Enter the date and time to complete the retrieving process.
	You can also click the 📅 icons to choose the date.

Note: Only the outermost containers of the Pack and Hold shipments present in the load are considered for retrieving. These shipments should have inventory in the Pack and Hold location and should not have Putaway tasks already generated for them.

15.3.1.11 Electronic SED

The shipments or loads included in an SED are kept on hold for filing the SED. After the electronic SED is filed for a shipment or load through AES Direct, the ITN is generated. You need to enter the ITN for the shipments or loads in the Shipment Details or Load Details screen.

15.3.1.11.1 Entering the ITN

This section explains how to enter the ITN for the following:

- Shipments
- Loads

Shipments

To enter the ITN for a shipment:

1. Log into the Sterling Supply Chain Applications as a warehouse manager.
2. Navigate to Outbound > Outbound Shipment Console. The Shipment By Status search screen appears.
3. Check Held Shipments and click Search. The Shipment List screen appears.
4. Click the appropriate shipment number hyperlink. The Shipment Details screen appears.
5. In ITN #, enter the ITN number generated for the SED to which the shipment belongs. The hold gets resolved for the selected shipment.

   For field value descriptions of the Shipment Details screen, see the *Sterling Warehouse Management System User Guide*.

Loads

To enter the ITN for a load:

1. Log into the Sterling Supply Chain Applications as a warehouse manager.
2. Navigate to Inbound > Load Console. The Load By Status search screen appears.
3. Check Held Loads and click Search. The Load Console Summary screen appears.

4. Check the box against the appropriate load and click View Details. The Load List screen appears.

5. Click the appropriate load number hyperlink. The Load Details screen appears.

6. In ITN #, enter the ITN number generated for the SED to which the load belongs. The hold gets resolved for the selected load.

For field value descriptions of the Load Details screen, see the *Sterling Logistics Management User Guide*.

15.4 Reference Implementation for Outbound Processes

This section explains the Reference Implementation provided by the Sterling nWMS PCA for outbound processes.

15.4.1 Shipment Groups

A shipment group can have multiple shipment selectors assigned to it. A shipment selector consists of shipment item attributes used to distinguish and group shipments.

The shipment selector criteria includes:

- Shipment attributes, including document type, Enterprise, priority, order type, shipment value, Buyer, and receiving node.

- Delivery attributes, including mode and type of shipment, SCAC, and service.

- Ship To attributes, including country and zip code.

- Turnaround time attributes, including requested ship date and cancel dates.

- Item classifications. For example, Storage Code Refrigerated.

A shipment selector is a combination of all the attributes defined.

These constraints applied to each shipment are rolled up to a shipment group level in order to limit the number of shipments released together. A wave is created based on the defined constraints.

The Shipment Groups created for the Sterling nWMS PCA include:

Table 15–10   Shipment Groups

Shipment Group	Description	Priority
Expedited	Created for Emergency Waves.	10
Parcel	All Shipments with the Ship Mode Parcel are grouped into a single wave.	20
LTL-TL	All Shipments with the Ship Mode LTL/TL are grouped together.	30
Catch all	Catch all does not have any shipment selector configured. Shipments that does not belong to the Expedited, Parcel, or LTL-TL shipment group are captured in this group.	40

15.4.2 Pick Location Assignment Configuration

Pick Location Assignment (PLA) assigns warehouse locations to the demand placed. PLA is defined at a shipment group level and can be shared across multiple shipment groups. PLA rules are defined at the item classification and UOM levels.

A list of zones are specified for a combination of item level attributes, such as classifications and UOM. Multiple PLA rules may be specified to ensure that the zone-level constraints are unique to the item classification and UOM combination, or the item classification or UOM. For example, for SKUs stocked in pallets, cases, and loose units, it is advisable to have three distinct rules to cover zones that are applicable for each UOM.

The PLA algorithm checks for inventory in the zones that are configured for picking.

The PLA configurations provided in the Sterling nWMS PCA are:

Table 15–11   PLA configurations

UOM	ZONE
EACH (Less than Case)	Forward Pick Zone and Dynamic Slotting Zone
CASE	BULK-ZONEs
PALLET	BULK-ZONEs

15.4.3 Task Types

This section describes the Task Types for Parcel and LTL/TL shipments, Paper-Based picking, and Resource Planning.

15.4.3.1 Parcel Shipments

The Task Types used for the Sterling Supply Chain Mobile Application-based picking process are:

Table 15–12   Parcel Shipments Task Type

Task Type	Description	Pick Type	Pick into	Tasks Performed through	Pack while Pick	System Suggested Containerization
PICK0001	Full Case Pick	BatchPick	Inventory Pallet	Mobile Device	N	N
PICK0002	Cart Manifest Batch Pick Using Mobile	BatchPick	Container (Case)	Mobile Device	Y	Y

15.4.3.2 LTL/TL Shipments

The various Task Types that are created for picking LTL/TL shipments are:

Table 15–13   LTL/TL Shipments Task Type

Task Type	Description	Pick Type	Pick into	Tasks Performed through	Pack while Pick	System Suggested Containerization
PICK0003	Pick to Pallet	OrderPick	Outbound Container (Pallet)	Mobile Device	Y	N
PICK0004	Pick from Forward Pick Area	OrderPick	Outbound Container (Case)	Mobile Device	Y	N

15.4.3.3 Paper-Based Pick

The various Task Types that are created for Paper-Based picking are:

Table 15–14   Paper-based Picking Task Type

Task Type	Description	Pick Type	Pick into	Tasks Performed through	Pack while Pick	System Suggested Containerization
PICK00009	Full Case Pick for Parcel	BatchPick	Outbound Container (None)	Printed Tickets	Y	Y
PICK00010	Pick for Parcel at FPA	BatchPick	Outbound Container (None)	Printed Tickets	N	N
PICK00011	Pick LTL/TL Shipment wise	BatchPick	Outbound Container (None)	Printed Tickets	N	N

15.4.4 Pick Exceptions

The pick exceptions that have been configured as a part of the Reference Implementation in the Sterling Networked Warehouse Management System PCA are:

Table 15–15   Pick Exceptions

Exception Code	Description	Configuration
SHORTPICK	Short Pick	Suggest alternate pick location.
NOINV	Inventory not Found	Hold Task.

15.4.5 Activity Constraints Configuration

Activities in the warehouse are performed based on the attributes of the inventory. The attributes considered are single-SKU inventory, multi-SKU inventory, and container. Activity constraints define the constraints that are in place for these activities.

Location priorities have been defined as a part of the Sterling nWMS PCA Reference Implementation.

15.4.5.1 Packing

This section explains the location priorities for Packing activities.

15.4.5.1.1 Non-Standard Single-SKU Container

Table 15–16 illustrates the location priorities for a Non-Standard Single-SKU Container.

Table 15–16   Location Priorities

Priority	Location
1	P1-000001
2	P1-000002
3	W1-000001
4	W1-000002

15.4.5.1.2 Standard Single-SKU Container

Table 15–17 illustrates the location priorities for a Standard Single-SKU Container.

Table 15–17   Location Priorities

Priority	Location
100	W1-000001
200	W1-000002

15.4.5.1.3 Multi-SKU or Multi Level Container

Table 15–18 illustrates the location priorities for a Multi-SKU or Multi-Level Container:

Table 15–18   Location Priorities

Priority	Location
1	W1-000001
2	W1-000002

15.4.5.2 Pallet Shrink Wrap

Table 15–19 illustrates the location priorities for Pallet Shrink Wrap activities.

Table 15–19   Location Priorities

Priority	Location
10	W1-000001
20	W1-000002

15.4.5.3 Carton Pack Complete

Table 15–20 illustrates the location priorities for Carton Pack Complete activities.

Table 15–20   Location Priorities

Priority	Location
100	W1-000001
200	W1-000002

15.4.6 Resource Planning

This section explains the Reference Implementation provided by the Sterling nWMS PCA for resource planning.

15.4.6.1 Node Planning Attributes

Configuring the node attributes is the initial step for resource planning. It enables you to set up the calendar, shifts, service slots, and work days for a ship node.

Table 15–21 lists the shifts and their timings set for the DC1 node.

Table 15–21   Shifts

Shifts	Timings
Morning	08:00 - 16:00
Evening	16:00 - 23:59
Night	00:00 - 08:00

15.4.6.2 Resource Pool

A resource pool defines a set of resources that perform similar operations in the warehouse. A resource pool is an aggregate collection of resources.

The different resource pools for DC1 include:

- Weighing
- Picking
- Packing
- VAS
- Shipping
- Pack Station
- Weigh Station
- Manifest Station
- Fork Lift
- Cart

Each resource pool is associated with a certain type of activity and has one or multiple resources allocated to it. Resource pools defined for Stations and Equipments are considered to be resources in the warehouse and no other resources are allocated to these resource pools.

The capacity for each resource pool is calculated taking various factors into account, such as the number of default users for that resource pool, number of users who are pulled into that resource pool and their efficiencies, and the period of their shift.

Table 15–22 lists the users associated with the Weighing resource pool and the shift allotted to them. This table also displays the efficiency of the user for each activity related to the other resource pools. All the users are assumed to be efficient within the Weighing resource pool, which is allotted to them.

Table 15–22   Weighing Resource Pool

Users	**Shift**	**Resource Pool**	**Efficiency**
DC1Weigher1 (Weighing Operator)	Night Shift	Weighing	100
		Picking	30
		Packing	70
		VAS	20
		Shipping	90
DC1Weigher2 (Weighing Operator)	Morning Shift	Weighing	100
		Picking	20
		Packing	100
		Shipping	80

Table 15–23 lists the users associated with the Picking resource pool and the shift allotted to them. This table also displays the efficiency of the user for each activity related to the other resource pools. All the users are assumed to be efficient within the Picking resource pool, which is allotted to them.

Table 15–23   Picking Resource Pool

Users	Shift	Resource Pool	Efficiency
DC1Picker1 (Picker)	Night Shift	Weighing	20
		Picking	100
		VAS	10
		Shipping	40
DC1Picker2 (Picker)	Night Shift	Weighing	60
		Picking	100
		Packing	30
		VAS	40
		Shipping	50
DC1Picker3 (Picker)	Morning Shift	Weighing	40
		Picking	100
		Packing	30
		VAS	60
		Shipping	70
DC1Picker4(Picker)	Evening Shift	Weighing	30
		Picking	100
		Packing	20
		VAS	10
DC1Picker5 (Picker)	Evening Shift	Picking	100

Table 15–24 lists the users associated with the Packing resource pool and the shift allotted to them. This table also displays the efficiency of the user for each activity related to the other resource pools. All the users are assumed to be efficient within the Packing resource pool, which is allotted to them.

Table 15–24   Packing Resource Pool

Users	Shift	Resource Pool	Efficiency
DC1Packer1 (Packer)	Night Shift	Weighing	100
		Picking	10
		Packing	100
		VAS	80
		Shipping	20
DC1Packer2 (Packer)	Morning Shift	Weighing	80
		Picking	30
		Packing	100
		VAS	90
		Shipping	10

Table 15–25 lists the users associated with the VAS Station Operator resource pool and the shift allotted to them. This table also displays the efficiency of the user for each activity related to the other resource pools. All the users are assumed to be efficient within the VAS Station Operator resource pool, which is allotted to them.

Table 15–25   VAS Station Operator Resource Pool

Users	Shift	Resource Pool	Efficiency
DC1Vas1 (Vas Station Operator)	Morning Shift	Weighing	30
		Picking	20
		Packing	90
		VAS	100
DC1Vas2 (Vas Station Operator)	Evening Shift	Packing	80
		VAS	100

Table 15–26 lists the users associated with the Shipping resource pool and the shift allotted to them. This table also displays the efficiency of the user for each activity related to the other resource pools. All the

users are assumed to be efficient within the Shipping resource pool, which is allotted to them.

Table 15–26   Shipping Resource Pool

Users	Shift	Resource Pool	Efficiency
DC1Shipper1 (Shipper)	Morning Shift	Weighing	80
		Shipping	100
DC1Shipper2 (Shipper)	Evening Shift	Weighing	60
		Picking	30
		Packing	20
		VAS	10
		Shipping	100

15.4.6.3 Task Type Associations

A task type represents a process in the warehouse and is associated with one or more set of resource pools that are required when performing a particular task.

Table 15–27 lists the task types provided with the Sterling nWMS PCA along with their resource pools.

Table 15–27   Task Types

Task Type	Tasks Type Defined	Productivity Type	Resource Pools
PICK0001	Full Case Pick using mobile	Picking at bulk	Picking, Forklift
PICK0002	Cart Manifest Batch Pick using mobile	Picking active area	Picking, Cart
PICK0003	Pick to Pallet	Picking at bulk	Picking, Fork Lift
PICK0004	Pick from Forward Pick Area using mobile	Picking active area	Picking, Fork Lift
PACKING	Packing	Packing	Packing, Pack Station

Table 15–27   Task Types

Task Type	Tasks Type Defined	Productivity Type	Resource Pools
MANIFEST	Manifesting	Manifesting	Shipping, Manifest station
VAS	Value Added Service	VAS	VAS Station, VAS
Trailer001	Manifesting	Load Trailer	Weighing, Weigh Station

15.4.6.4 Condition for Task Type Association

A condition set has lists of defined conditions. Each condition represents related activities involved in fulfilling a demand. You can define conditions based on various attributes of the shipment and a set of task types associated with a condition.

Task types are associated with a set of resource pools that are required to perform a particular task.

The estimated capacity for fulfilling a demand is evaluated from the SAM definitions associated with a task type.

There are two sets of conditions for estimating the effort:

- VAS
- Non-VAS

Table 15–28 lists the condition sets for Task Type Association.

Table 15–28   Conditions for Task Type Association

Condition Set	Condition Name	Condition Value	Associate Task type
VAS	Identifying VAS requirement	Kit Code Is PK	

Table 15–28   Conditions for Task Type Association

Condition Set	Condition Name	Condition Value	Associate Task type
Non-VAS	Bulk Pick for PARCEL (Pack Later)	ShipNode is DC1, ShipMode is Parcel, and CASE or PALLET is the UOM	PICK0001 PACKING MANIFESTING
	Loose Pick for PARCEL (Pack while Pick)	ShipNode is DC1, ShipMode is Parcel, and EACH is the UOM	PICK0002 MANIFESTING
	Bulk Pick for LTL/TL (Pack while Pick)	ShipNode is DC1, ShipMode is LTL or TL, and CASE or PALLET is the UOM	PICK0003 TRAILER001
	Loose Pick for LTL/TL (Pack while Pick)	ShipNode is DC1, ShipMode is LTL or TL, and EACH is the UOM	PICK0004 TRAILER'001

Note: The system evaluates conditions in accordance with the condition set sequence defined. The conditions in the first condition set are evaluated, and if any of the conditions are satisfied, the system moves on to the next condition set and evaluates the conditions there. For each condition that is satisfied, the system associates the relevant task type to the resource pool.**:**

15.4.7 Prints

This section lists the different documents that are printed as a part of the Reference Implementation of the Sterling Networked Warehouse Management System PCA.

15.4.7.1 Prints for Sterling Supply Chain Mobile Application-Based Parcel Shipments

This section lists the documents printed for Sterling Supply Chain Mobile Application-based Parcel Shipments

15.4.7.1.1 Full Case Pick

The documents printed for Full Case pick using the Sterling Supply Chain Mobile Application are:

Table 15–29   Prints for Full Case Pick

Document	Printed During
UCC 128 Shipping Label	Packing
FedEx Carrier Label	Manifesting
Pack Slip	Packing

15.4.7.1.2 Less Than Case Pick

The documents printed for Less Than Case pick using the Sterling Supply Chain Mobile Application are:

Table 15–30   Prints for Less Than Case Pick

Document	Printed During
Cart Manifest Batch Sheet	Wave release
UCC 128 Shipping Label	Wave release
FedEx Carrier Label	Manifesting
Pack Slip	Packing

15.4.7.2 Prints for Sterling Supply Chain Mobile Application-Based LTL/TL Shipments

The documents printed for LTL/TL shipments are:

Table 15–31   Prints for LTL/TL Shipments

Document	Printed During
UCC 128 Shipping Label	Packing
Bill of Lading	Load confirmation
Pack Slip	Packing

15.4.7.3 Prints for Paper-Based Parcel Shipments

The documents for printed for paper-based Parcel Shipments are:

Table 15–32   Prints for Paper-Based Parcel Shipments

Document	Printed During
Batch Sheets	Wave release
UCC 128 Shipping Label	Packing--for user-defined containerization Wave Release--for system-defined containerization.
FedEx Carrier Label	Manifesting
Pack Slip	Packing

15.4.7.4 Prints for Paper-Based LTL/TL Shipments

The documents for printed for paper-based LTL/TL Shipments are:

Table 15–33   Prints for Paper-Based LTL/TL Shipments

Document	Printed at
Batch Sheets	Wave release
UCC 128 Shipping Label	Packing
FedEx Carrier Label	Manifesting
Bill of Lading	Load confirmation
Pack Slip	Packing

16

Replenishment

In a warehouse, as a product is removed from the Forward Pick Area, the inventory in that location requires re-stocking. This process is called Replenishment.

This chapter explains the Replenishment process and solution offered by the Sterling nWMS PCA.

16.1 Replenishment Process

The Replenishment process provided by the Sterling nWMS PCA is a single-step and demand-based only process. Dedicated locations are used as replenishment locations.

The Replenishment process used by warehouses may be either Sterling Supply Chain Mobile Application-based or paper-based.

16.1.1 Sterling Supply Chain Mobile Application-Based Replenishment Process

When replenishing using the Sterling Supply Chain Mobile Application:

1. Replenishment tasks are created and made available on the mobile device.
2. The user logs in to the Sterling Supply Chain Mobile Application.
3. The system suggests available replenishment tasks to the user.
4. The system suggests the source location and the inventory.
5. The user picks the suggested inventory.
6. The system suggests the deposit location.

7. The user deposits the inventory and completes the tasks using the Sterling Supply Chain Mobile Application.

16.1.2 Paper-Based Replenishment Process

When replenishing using paper:

1. Batch sheets are printed by the system, indicating moves.

2. The user completes the tasks specified, and notes exceptions, if any.

3. The Batch is confirmed on the console.

16.2 Replenishment Configurations

This section explains the various configurations that may be done for the Replenishment process.

16.2.1 Replenishment Strategy

When the UOM is EACH, CASE, or PALLET, for replenishment, look in Bulk Zones that track inventory.

16.2.2 Agents

The agent configured for the Replenishment processing is:

```
Move Request Purge
```

This agent deletes the move request from the system. This agent is run every day. It deletes move requests that were created thirty days prior to the current date.

For more information about this agent see the *Sterling Warehouse Management System Configuration Guide*.

16.2.3 Services

The services provided for the Replenishment process are:

- Print Move Tickets

This service prints Move Tickets in a paper-based warehouse.

- Generate Min Max Replenishment Move Request

  This service creates replenishment tasks with normal priority when the inventory falls below the minimum level. For paper-based warehouses, it also prints Move Tickets.

  This service is a part of the Reference Implementation provided with the Sterling nWMS PCA.

- Generate Top Off Replenishment Move Request

  This service creates replenishment tasks with low priority when the inventory falls below the maximum level. For paper-based warehouses, it also prints Move Tickets.

  This service is a part of the Reference Implementation provided with the Sterling nWMS PCA.

16.2.3.1 Print Move Tickets

When a move request is released, the `ON_SUCCESS` event of the `RELEASE_MOVE_REQUEST` transaction is raised, which invokes the `PrintMoveTickets` service.

The `PrintMoveTickets` service then prints the replenishment Move Tickets in a paper-based warehouse. These Move Tickets are used for performing replenishment tasks.

To activate the `PrintMoveTickets` service:

1. Log into the application as the `Enterprise` user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Move Request > Inventory.

5. Navigate to the Transaction repository.

6. Associate the `ON_SUCCESS` event of the `RELEASE_MOVE_REQUEST` transaction with the action `Print Move Tickets`, which invokes the `PrintMoveTickets` service.

> **Note:** This service is already activated if you have installed the factory defaults with the events turned on.

16.2.3.2 **Generate Min Max Replenishment Move Request**

When the inventory falls below the minimum level, the `LOCN_INV_MONITOR` agent calls the `YNW_GenerateMinMaxRplMR_75` service.

This service then creates replenishment tasks with normal priority. For paper-based warehouses, it also prints Move Tickets.

This service is a part of the Reference Implementation provided with the Sterling nWMS PCA.

16.2.3.3 **Generate Top Off Replenishment Move Request**

When the inventory falls below the maximum level, the `LOCN_INV_MONITOR` agent calls the `YNW_GenerateTopOffRplMR_75` service.

This service then creates replenishment tasks with low priority. For paper-based warehouses, it also prints Move Tickets.

This service is a part of the Reference Implementation provided with the Sterling nWMS PCA.

16.2.4 Prints

The `PrintMoveTickets` service has been provided, which prints the Move Tickets.

16.2.5 Productivity

For all tasks associated with Replenishment, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

16.3 Managing the Replenishment Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Replenishment. This section explains the UI flow for performing Replenishment.

16.3.1 Performing Replenishment

The UI flow for performing replenishment depends on whether the warehouse is paper-based or Sterling Supply Chain Mobile Application-based.

16.3.1.1 Using the Sterling Supply Chain Mobile Application

Follow these steps in the Replenishment process:

1. Log into the Sterling Supply Chain Mobile Application.

2. From the menu, select the Replenishment menu option.

3. The system suggests the available tasks to the user.

4. Scan the source location, appropriate inventory, and quantity.

5. Scan the target location.

6. Click Deposit. The move task is completed.

7. If more tasks exists, the system suggests them to the user. Otherwise, the message "No Open Tasks" is displayed.

16.3.1.2 Using Paper

Follow these steps in the replenishment process:

1. Users are provided putaway batch sheets which contain information about the inventory to move.

2. Log into the Sterling Supply Chain Application Consoles.

3. From the Sterling Supply Chain Application Consoles navigation bar, select Task > Confirm Batch. The Batch Confirmation screen displays.

4. Enter the batch number and target location.

5. Click Confirm. The paper-based move is confirmed.

16.4 Reference Implementation for Replenishment

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Replenishment.

16.4.1 Location Monitoring Rules

Inventory levels are periodically checked through the inventory monitor. The strategy used for inventory level-based Replenishment is based on:

- Minimum and Maximum-Level Triggers

- Top-Off Replenishment Triggers

16.4.1.1 Minimum and Maximum-Level Triggers

For minimum and maximum Replenishment of a zone, the inventory monitor raises an event when the net inventory at a location falls below the minimum level.

A request is then placed for retrieval. This request is based on the event to replenish the location to the maximum level. That is, Replenishment Quantity = Max Capacity – Net Inventory

When the Min-Max Replenishment event is raised, replenishment tasks are created with normal priority.

16.4.1.2 Top-Off Replenishment Triggers

For Top-off Replenishment, the inventory monitor raises an event when the net inventory at a location falls below the maximum level.

A request is then placed for retrieval. This request is based on the event to replenish the location to the maximum level. That is, Replenishment Quantity = Max Capacity – Net Inventory

When the Top-off Replenishment event is raised, replenishment tasks are created with low priority.

> **Note:** It is recommended that Min-Max Replenishment is run more often than Top-Off Replenishment. As a part of the Sterling nWMS PCA Reference Implementation, Min-Max Replenishment is run every four hours while Top-Off Replenishment is run once every day.

16.4.2 Replenishment Task Types

The Replenishment task types provided are:

Table 16–1   Replenishment Task Types

Task Type	Description
REPL-0001	Paper-Based Replenishment Task type.
REPL-0002	Sterling Supply Chain Mobile Application-Based Replenishment Task Type

17

Value-Added Services

Value-Added Services (VAS) are performed to meet customer demands. These can be activities performed on a product before the product is delivered to the customer or a provided service that is performed at the customer site.

VAS is performed in the warehouse on an ad hoc basis. The different types of services include Kitting and Compliance Services.

This chapter explains the VAS process and solution offered by the Sterling nWMS PCA.

17.1 VAS Process

This section describes the two VAS Processes:

- Kitting Process
- Compliance Service Process

17.1.1 Kitting Process

Kitting is the assembling of components to form an item. The Kitting process involves the retrieval of goods from regular inventory and the movement of the goods into a VAS zone.

For this purpose, a Work Order is created with the service group Kitting. The user specifies the item and quantity that has been requested. The individual component items are also specified when creating the Work Order.

17.1.1.1 Kitting Process in a Sterling Supply Chain Mobile Application-Based Warehouse

The user creates, allocates, and releases a Work Order for the service item with the activity group Kitting. Once the Work Order is allocated and released, Sterling Supply Chain Mobile Application-based Retrieval tasks are created. The inventory is retrieved from the bulk storage area or from the loose products area, based on the UOM required and moved to the appropriate VAS zone.

The user then confirms the Work Order for the quantity created. Upon confirmation, the system automatically consumes the inventory for the components and creates inventory for the final item.

Putaway tasks are then automatically created and suggested in the Sterling Supply Chain Mobile Application, to move the final inventory out of the VAS zone and back into the stocking area.

17.1.1.1.1 VAS Execution Process

The process followed for Value-Added Services in a warehouse using the Sterling Supply Chain Mobile Application is:

1. The user creates a Work Order for the service item with Kitting as the service group.

2. The user allocates the Work Order and releases it.

3. The user, with the appropriate skill set, logs into the Task Controller.

4. The Retrieval task is presented to the user.

5. The location, LPN, or item and quantity combination to pick are scanned.

6. The quantity is dropped off at the destination location suggested. LPN tracking is disabled at this location.

7. The Work Order is confirmed at the VAS Station with appropriate quantity against an activity.

8. The Work Order closes automatically when all quantity is confirmed.

9. Putaway tasks are automatically generated for the kit quantities.

The user uses the Sterling Supply Chain Mobile Application to complete the Putaway tasks.

17.1.1.2 Kitting Process in a Paper-Based Warehouse

The user creates, allocates, and releases a Work Order for the service item with activity group Kitting. Once the Work Order is allocated and released, a Batch Sheet is created for retrieving inventory from the storage area and moving it to the VAS zone. The inventory is retrieved from the bulk storage area or from the loose products area, based on the UOM required and moved to the appropriate VAS zone.

The user then confirms the Work Order for the quantity created. Upon confirmation, the system automatically consumes the inventory for the components and creates inventory for the final item.

Putaway tasks are then automatically created and Batch Sheets are printed to move the final inventory out of the VAS zone and back into the stocking area.

17.1.1.2.1 VAS Execution Process

The process followed for Value-Added Services in a warehouse using paper is:

1. The user creates a Work Order for the service item with Kitting as the service group.
2. The user allocates the Work Order and releases it.
3. The Batch Sheet is created for the moves.
4. The user completes the moves.
5. The user confirms the batch through the Confirm Batch action in the console.
6. The Work Order is confirmed at the VAS Station, with appropriate quantity against an activity.
7. The Work Order closes automatically when all quantity is confirmed.
8. Putaway tasks are automatically generated for the kit quantities.

17.1.2 Compliance Service Process

The compliance service is used in made-to-customer orders. Compliance service is done to meet specific buyer requirements.

The Work Order is either automatically created while scheduling the order containing the compliance service or manually created in the Create Work Order console.

17.1.2.1 Compliance Service Process in a Sterling Supply Chain Mobile Application-Based Warehouse

The user creates, allocates, and releases a Work Order for the service item with activity group Inventory Compliance. Once the Work Order is allocated and released, Sterling Supply Chain Mobile Application-based Retrieval tasks are created. The inventory is retrieved from the bulk storage area or from the loose products area, based on the UOM required and moved to the appropriate VAS zone.

The user then confirms the Work Order for the quantity created. Upon confirmation, the system automatically consumes the inventory for the components and creates inventory for the final item.

Putaway tasks are then automatically created and suggested in the Sterling Supply Chain Mobile Application, to move the final inventory out of the VAS zone and back into the stocking area.

17.1.2.1.1 VAS Execution Process

The process followed for Value-Added Services in a warehouse using the Sterling Supply Chain Mobile Application is as follows:

1. The user creates a Work Order for the service item with Inventory Compliance as the service group.

2. The user allocates the Work Order and releases it.

3. The user, with the appropriate skill set, logs into the Task Controller.

4. The Retrieval task is presented to the user.

5. The location, LPN, or item and quantity combination to pick are scanned.

6. The quantity is dropped off at the destination location suggested. LPN tracking is disabled at this location.

7. The Work Order is confirmed at the VAS Station with appropriate quantity against an activity. The inventory attribute changes to the appropriate segment type and segment number on confirming the Work Order.

8. The Work Order closes automatically when all quantity is confirmed.

9. Putaway tasks are automatically generated for the inventory on which the compliance service has been performed.

The user uses the Sterling Supply Chain Mobile Application to complete the Putaway tasks.

17.1.2.2 Compliance Service Process in a Paper-Based Warehouse

The user creates, allocates, and releases a Work Order for the service item with activity group Inbound Compliance. Once the Work Order is allocated and released, a Batch Sheet is created for retrieving inventory from the storage area and moving it to the VAS zone. The inventory is retrieved from the bulk storage area or from the loose products area, based on the UOM required and moved to the appropriate VAS zone.

The user then confirms the Work Order for the quantity created. Upon confirmation, the system automatically consumes the inventory for the components and creates inventory for the final item.

Putaway tasks are then automatically created and Batch Sheets are printed to move the final inventory out of the VAS zone and back into the stocking area.

17.1.2.2.1 VAS Execution Process

The process followed for Value-Added Services in a warehouse using paper is:

1. The user creates a Work Order for the service item with Inventory Compliance as the service group.

2. The user allocates the Work Order and releases it.

3. The Batch Sheet is created for the moves.

4. The user completes the moves.

5. The user confirms the batch through the Confirm Batch action in the console.

6. The Work Order is confirmed at the VAS Station with appropriate quantity against an activity. The Inventory attribute changes to the appropriate segment type and segment number on confirming the Work Order.

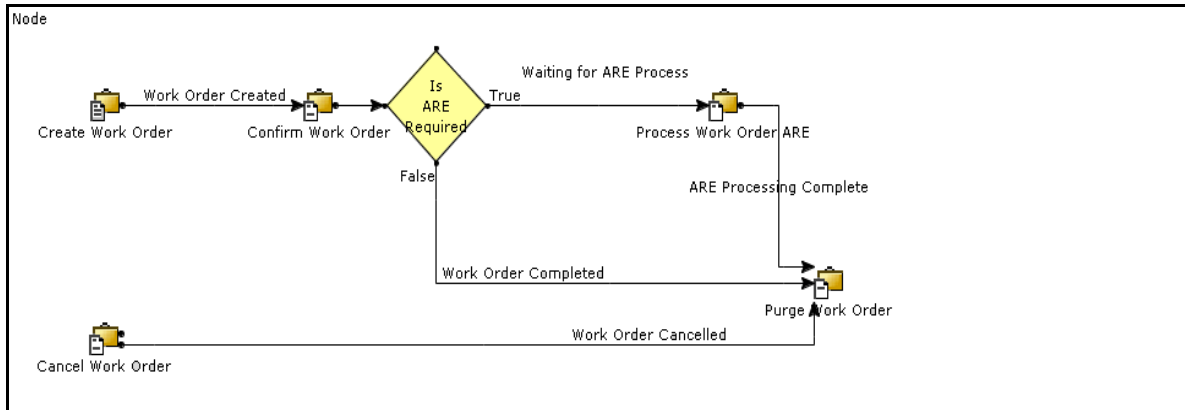7. Putaway tasks are automatically generated for the inventory on which the compliance service has been performed.

17.2 VAS Configurations

This section explains the various configurations that may be done for the VAS process.

17.2.1 VAS Pipeline

Figure 17–1 illustrates the VAS Pipeline.

Figure 17–1   VAS Pipeline

17.2.2 Activities

Activities in the warehouse are grouped into Activity Groups. The Sterling Networked Warehouse Management System PCA provides a pre-defined set of activity groups for a warehouse. Examples of activity groups include Receipt, Inspection, Value Added Services, and Packing.

Each activity group is associated with activity codes that define each activity that is performed. The VAS activity group has Kitting, Inbound-Compliance, and Value Added Service.

> **Note:** Activity Codes may be defined only when the WMS tree is loaded for Node and Hub combination.

17.2.3 Agents

No agent needs to be explicitly configured for the VAS Process.

The agents used for VAS processing are:

- `Purge Work Order`

  This agent moves work orders that were created one month ago to the history table. This agent is generally triggered once at the end of each working day.

- `Purge Work Order History`

  This agent purges the work order history that were created one month ago. This agent is generally triggered once at the end of each working day.

- `Synchronize Task Queue`

  This agent represents the process of synching the order fulfillment task queue. This agent is generally triggered once at the end of each working day.

- `Work Order Monitor`

  This agent monitors the work orders that have been created for VAS. This agent is generally triggered once at the end of each working day, depending upon the monitor rule.

  For more information about these agents see the *Sterling Warehouse Management System Configuration Guide*.

17.2.4 Service

The service provided for the VAS process is explained in this section.

17.2.4.1 Generate Putaway Request For Work Order

When the Work Order is completed, one of the following events of the `CONFIRM_WORK_ORDER` transaction is raised:

- `LPN_ACTIVITIES_COMPLETED`: On completion of LPN activities

- `SKU_ACTIVITIES_COMPLETED`: On completion of SKU activities

- `SNO_ACTIVITIES_COMPLETED`: On completion of serial number activities

The `CONFIRM_WORK_ORDER` transaction invokes the `YNW_GeneratePutawayRequestForWorkOrder_75` service.

The `YNW_GeneratePutawayRequestForWorkOrder_75` service then initiates the generation of the requests for putaway tasks.

You can also choose to putaway inventory from the VAS location only on completion of all activities (that is, LPN activities, SKU activities, and serial number activities). For this, activate the `ON_WORK_ORDER_COMPLETION` event to raise the `CONFIRM_WORK_ORDER` transaction, which invokes the `YNW_GeneratePutawayRequestForWorkOrder_75` service.

To activate the `YNW_GeneratePutawayRequestForWorkOrder_75` service:

1. Navigate to the VAS process model.

2. Navigate to the transaction repository.

3. Associate the `LPN_ACTIVITIES_COMPLETED`, `SKU_ACTIVITIES_COMPLETED`, `SNO_ACTIVITIES_COMPLETED` and `ON_WORK_ORDER_COMPLETION` events with the action `YNW Work Order Putaway 75`, which invokes the `YNW_GeneratePutawayRequestForWorkOrder_75` service.

> **Note:** This service is already activated if you have installed the factory defaults with the events turned on.

17.2.5 Prints

The `PrintMoveTickets` service is provided, which prints the Move Tickets.

17.2.6 Productivity

For all tasks associated with VAS, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

17.3 Managing the VAS Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform VAS. This section explains the UI flow for performing VAS.

17.3.1 Performing VAS

The UI flow for performing VAS includes creating work orders and confirming work orders.

17.3.1.1 Creating a Work Order Manually

Follow these steps for creating a work order manually:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select VAS > Create Work Order. The Create Work Order screen displays.

3. Enter the details required and click Proceed. The Create Work Order screen displays.

   For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

4. Enter the appropriate components or activities and click Save.

   The work order gets created.

17.3.1.2 Confirming a Work Order

Follow these steps for confirming a work order:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select VAS > Work Order Console. The Work Order search By Item screen displays.

3. Enter the criteria for searching the appropriate work order.

4. From the Work Order list screen, select the work order to confirm.

5. Click the Confirm action. The VAS Station screen displays.

6. Scan or enter the appropriate fields.

7. Click Confirm.

8. The work order gets confirmed.

17.4 Reference Implementation for VAS

This section explains the Reference Implementation provided by the Sterling nWMS PCA for VAS.

17.4.1 Item Configuration

A physical kit item (PK-000001) is provided as a part of the Reference Implementation.

This kit item consists of two component items:

Table 17–1   Physical Kit Items

Component Items	Kit Quantity
COMP-0001	1
COMP-0002	2

17.4.2 Kitting Service Item Configuration

A service item is provided with these configurations for kitting services:

Table 17–2   Kitting Services

Service Item ID	Service Activities
Kitting	KITTING

17.4.3 Retrieval Strategy

The inventory is retrieved from the bulk storage area or from the loose products area, based on the UOM required, and moved to the appropriate VAS zone. This is based on the retrieval strategy.

The Retrieval strategies configured for VAS are:

Table 17–3   Retrieval Strategies

Description	UOM	Zones	Task Type
Bulk Zones Retrieval	CASE, PALLET	BULK-ZONE1 BULK-ZONE2 BULK-ZONE3	VAS-RETR01 (Sterling Supply Chain Mobile Application) VAS-RETR02 (Paper)
Active Zone Retrieval	EACH	FORWARD-PICK DYNAMIC-SLOT	VAS-RETR01 (Sterling Supply Chain Mobile Application) VAS-RETR02 (Paper)

17.4.4 Putaway Strategy

For Work Orders that are related to a Sales Order, that is, for build-to-order Work Orders, Putaway need not be done. In this case, the Purpose of the Work Order, in the console, is displayed as Order. Once the Work Order is confirmed, the supply of the kitted item increases. When the wave is released, pick tasks are created to move the kitted item to the Pack Station. The item then gets shipped out of the warehouse.

For a build-to-stock Work Order, Putaway is suggested to the appropriate storage areas. In this case, the Purpose of the Work Order, in the console, is displayed as Stocked. On confirming such Work Orders, Putaway tasks are generated to move the kitted item to appropriate storage areas.

The Putaway strategies configured for VAS are:

Table 17–4   Putaway Strategies

Description	UOM	Zones	Task Type
Putaway to Active Zone	EACH	FORWARD-PICK-ZONE1 FORWARD-PICK-ZONE2	VAS-PUT01 (Sterling Supply Chain Mobile Application) VAS-PUT02 (Paper)
Putaway to Bulk Zones	CASE, PALLET	BULK-ZONE1 BULK-ZONE2 BULK-ZONE3	VAS-PUT01 (Sterling Supply Chain Mobile Application) VAS-PUT02 (Paper)

17.4.5 Compliance Service Item Configuration

A service item is created with these configurations for compliance services:

Table 17–5   Configuration Services

Service Item ID	Service Activities
Special-Ticketing	SPECIAL-TICKETING

17.4.6 Activity Constraints Configuration

Location priorities have been defined as a part of the Sterling nWMS PCA Reference Implementation.

The location priorities defined are:

Table 17–6   Location Priorities

Priority	Location
10	V1-000001
20	V1-000002

18

Returns

A return is the process of handling the return of products from a customer to the distribution center (DC). Returns can be either created against a Return Order or created without an Order reference. Return Orders are created on the application console. Once a Return Order is created and confirmed, a supervisor usually authorizes the return.

It is assumed that a returns receipt is always done using a paper-based process. This also applies to warehouses following Sterling Supply Chain Mobile Application-based processes.

18.1 Returns Process

The Sterling Networked Warehouse Management System PCA supports paper based receiving process for returns. This process is explained in the following section.

18.1.1 Paper-Based Returns Process

When receiving returns with an Return Order, receipts are recorded through the Record/Report Receipt action available in the Returns Console.

The details of the receipt are entered and the receipt for the Return Order is then marked Closed. The closure of the receipt automatically triggers the generation of Putaway tasks.

In the Paper-based Returns process, it is assumed that receipts are done in loose SKUs and not in LPNs.

The Returns process is:

1. The Receiving Worksheet is printed and given to the user.

2. The user records the receipt information on the worksheet.

3. The user selects the Report/Record Receipt action in the application console and records the receipt on the system.

4. The user closes the receipt manually using the Close Receipt action.

5. The Putaway tasks are generated on closing the receipt.

18.2 Returns Configurations

This section explains the various configurations that may be done for the Returns process.

18.2.1 Returns Pipeline

Figure 18–1 illustrates the Returns Pipeline.

Figure 18–1   Returns Pipeline

18.2.2 Setting Up the Receiving Preferences for Returns

This section explains how to set up the Receiving Preferences for Returns.

18.2.2.1 Enterprise-Level Configurations

To set up the Enterprise-level Receiving Preferences:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Reverse Logistics.

4. From the tree in the application rules side panel, select Receipt > Receiving Preferences. The Receiving Preferences screen displays.

5. In the Search Results panel, click ➕. The Receiving Preference Details pop-up screen displays.

6. Enter information into the applicable fields.`

   For more information and field value descriptions, see the *Sterling Supply Collaboration Configuration Guide*.

7. Click 🖫.

18.2.2.2 Node-Level Configurations

To set up the Node-level Receiving Preferences:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receipt > Document Specific > Return Order > Receiving Preferences.

5. The Receiving Preferences: Return Order screen displays.

6. In the top panel, select the appropriate options for building pallets, building cases, Disposition Code for receiving with QC, Disposition Code for receiving without QC, and preference for closing receipt by an agent.

For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. The lower panel displays the Enterprise-Level Receiving Preferences that you have set up.

8. Click 🖫.

> **Note:** Click 🌼 to view the Receiving Preferences Details screen that displays the detailed preferences set for receiving the item, along with the QC percentage set for the item.

18.2.3 Setting Up the Putaway Preferences for Returns

To set up the Putaway Preferences for Returns:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Putaway Preferences. The Putaway Preferences screen is displayed.

   Use this to set the Putaway Preferences for a single-SKU, multi-SKU container, and container with unknown contents.

5. Alternatively, click 🦺 in the Activity Search screen to access the Putaway Preferences screen.

6. In the Putaway Preferences screen, select the appropriate tab, depending on whether you are setting up Putaway Preferences for a Single SKU, Multi-SKU Container, or Container with unknown contents.

7. Click ➕. The Putaway Preference Details screen displays.

8. In the Activity Code drop-down list, select the code to move the products to storage.

9. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

10. Click 💾.

11. To configure task types for putaway, click 🔎. The Putaway Strategy screen displays. Configure the task types.

For more information about setting up putaway strategies see the *Sterling Warehouse Management System Configuration Guide*.

18.2.4 Setting Up the Receiving Disposition Codes for Returns

This section explains how to create Disposition Codes. It also explains how to associate the Disposition Code with a Product Class, with Disposition Transition Statuses, for receiving with QC, and with an Inventory Status.

18.2.4.1 Creating the Receiving Disposition

This section explains how to create the Receiving Disposition.

Disposition Codes can be created to be assigned to the inventory at different stages, such as receiving, during QC, and after QC. You can have different Disposition Codes, depending upon whether the products passed QC, failed QC, and so forth.

To create the Disposition Code to assign to items in QC:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new screen.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Return Order > Receiving Disposition. The Disposition List: Return Order screen is displayed.

5. In the Disposition List: Return Order screen, click 🗂. The Disposition Details pop-up screen displays.

6. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 🖫 .

A receiving disposition is created that can be associated to the inventory while receiving returns.

18.2.4.2 Associating the Disposition Code with a Product Class

To associate the Disposition Code with a Product Class:

1. Log into the application as the Enterprise user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new screen.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Reverse Logistics.

4. From the tree in the application rules side panel, select Document Specific > Receipt > Receiving Disposition. The Disposition List: Return Order screen displays.

5. In the Disposition List: Return Order screen, click 🦺 . The Disposition Details pop-up screen displays.

6. In the Product Class drop-down list, select the appropriate Product Class for the Disposition Code.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click 🖫 .

The selected Disposition Code is now associated with the specified Product Class. Whenever a product is dispositioned to the selected Disposition Code, the Product Class automatically changes to the Product Class that you specified here.

18.2.4.3 Associating the Disposition Code with Disposition Transition statuses

To associate the Disposition Code with disposition transition statuses:

1. Follow Step 1 to Step 5 in Section 18.2.4.2, "Associating the Disposition Code with a Product Class".

2. In the Receiving Disposition drop-down list of the Disposition Transitions pane, select the appropriate Inventory Statuses.

3. Click 💾 .

The selected Disposition Code is now associated with the specified disposition transition statuses. The products being dispositioned to this Disposition Code are assigned these Inventory Statuses consecutively, until it reaches the final disposition.

18.2.4.4 Associating a Disposition Code for Receipt with QC

To associate a Disposition Code for receiving with QC:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Return Order > Receiving Preferences.

5. The Receiving Preferences: Return Order screen displays.

6. In the Disposition Code for Receipt with QC, enter the appropriate Disposition Code. During receiving, this Disposition Code is assigned to all items that require QC.

7. Enter information into the other applicable fields. For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

8. Click 💾.

> **Note:** Click 🌸 to view the Receiving Preferences Details screen that displays the detailed preferences set for receiving the item, along with the QC percentage set for the item.

18.2.4.5 Associating the Disposition Code with an Inventory Status

The Disposition Codes allow inspectors to utilize their own terminology, instead of understanding inventory and storage implications.

Inventory is received with the specified Product Class and Inventory Status of the Disposition Code entered.

If the Product Class is not specified, the Product Class from the Return Order or the default Product Class from the item is used. It is mandatory to have the Product Class specified at one of these levels.

To associate the Disposition Code with an Inventory Status:

1. Log into the application as the Node user.

2. From the Sterling Supply Chain Application Consoles menu bar, select Configuration > Launch Configurator. The Sterling Supply Chain Applications Configurator opens in a new window.

3. From the Sterling Supply Chain Applications Configurator menu bar, select Application > Warehouse Management.

4. From the tree in the application rules side panel, select Receiving > Document Specific > Return Order > Disposition Codes.

5. The Receiving Disposition: Return Order screen is displayed.

6. From the Inventory Status drop-down list, select the Inventory Status to associate with the Disposition Code.

   For more information and field value descriptions, see the *Sterling Warehouse Management System Configuration Guide*.

7. Click 💾.

18.2.5 Inventory Status Transitions

Inventory should be considered available or unavailable for certain operations. For example, inventory should be unavailable for orders until putaway is complete. As soon as putaway is complete, the inventory should become available for orders automatically, without any intervention from users.

To facilitate this, Inventory Statuses are assigned to inventory. The Inventory Status of the inventory changes at different stages.

During returns, when inventory is received, it is assigned an appropriate Inventory Status to show that the inventory is awaiting inspection. When the inventory is moved to storage, the Inventory Status may change appropriately.

Inventory Statuses can be associated with zones. In this case, whenever a product moves into a particular zone, its Inventory Status gets transitioned to the Inventory Status that the zone is associated with. So, whenever a product is moved into the QC zone, its Inventory Status changes to the Inventory Status associated with the QC zone, which may indicate that the product is undergoing QC. When the product moves out of the QC zone into storage, its Inventory Status changes to the Inventory Status associated with the storage zone, which may indicate that the product is available for orders. In case of products that fail QC, they may be moved to the appropriate zone that is associated with an Inventory Status to mark the products as damaged and thus unavailable, or quarantined, or held until more QC is done on a larger sample.

If a product with the Inventory Status indicating that the product is awaiting inspection is moved directly into storage, it retains its Inventory Status. This is because no transition has been defined for the Inventory Status of the storage zone, when a product with that Inventory Status moves into storage. If the warehouse process so dictates, this can be overwritten by setting an appropriate Inventory Status transition. In that case, products putaway into the storage zone may become directly available for orders, even though they have not cleared QC as yet.

18.2.6 Agents

The agents configured for the Returns processing are:

- `Purge Receipt`

  This agent purges completed receipts. This agent is generally triggered once in ten days or based on the receipt volume.

- `Receipt Complete`

  This agent completes the receipts. This agent is generally triggered once at the end of each working day.

For more information about these agents see the *Sterling Warehouse Management System Configuration Guide*.

18.2.7 Services

The services provided for the Returns process are:

- GeneratePutawayRequest Service

  This service generates the requests for putaway tasks once receipt is completed.

- Register Activity Demand For QC Service

  This service computes the QC quantity (quantity of the products received that needs to be diverted to the QC Zone for QC) and creates an activity demand for it.

- Register Activity Demand and Print Receiving Worksheet

  This service computes the QC quantity and prints it on the Receiving Worksheet. It also creates an activity demand for the QC quantity.

  Note: These services are already activated if you have installed the factory defaults with the events turned on.

18.2.7.1 GeneratePutawayRequest Service

When a receipt is completed, the `ON_RECEIPT_COMPLETE` event of the `RECEIPT_COMPLETE` transaction is raised, which invokes the `GeneratePutawayRequest` service.

The `GeneratePutawayRequest` service then initiates the generation of the requests for putaway tasks.

To activate the `GeneratePutawayRequest` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_RECEIPT_COMPLETE` event with the action `Putaway products on receipt`, which invokes the `GeneratePutawayRequest` service.

18.2.7.2 Register Activity Demand For QC Service

When a receipt is started, the `ON_START_RECEIPT` event of the `START_RECEIPT` transaction is raised. This invokes the `YNW_RegisterActivityDemandForQC_75` service.

The `YNW_RegisterActivityDemandForQC_75` service initiates the computation of the quantity of product that needs to be diverted for an order, based on the QC classification and QC percentage setup. It then creates an activity demand for the same. During Putaway this quantity of the product is diverted to the QC Zone for QC.

To activate the `YNW_RegisterActivityDemandForQC_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the Transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `Register Activity Demand For QC`, which invokes the `YNW_RegisterActivityDemandForQC_75` service.

18.2.7.3 Register Activity Demand and Print Receiving Worksheet

YNW_CompositeServiceOnStartReceipt_75 Service

When a receipt is started, the `ON_START_RECEIPT` event of the `START_RECEIPT` transaction is raised, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

The `YNW_CompositeServiceOnStartReceipt_75` service initiates the computation of the quantity of product that needs to be diverted for an order, based on the QC classification and QC percentage setup. It then

creates an activity demand for the same. The QC percentage computed is then printed on the Receiving Worksheet.

To activate the `YNW_CompositeServiceOnStartReceipt_75` service:

1. Navigate to the Purchase Order Receipt Repository.

2. Navigate to the transaction repository.

3. Associate the `ON_START_RECEIPT` event with the action `YNW CalcQC And Print Recv WS (75)`, which invokes the `YNW_CompositeServiceOnStartReceipt_75` service.

18.2.8 Prints

The `YNW_PrintReceivingWorkSheet_75` service is provided, which prints the Receiving Worksheet.

18.2.9 Productivity

For all tasks, such as, Pre-Receiving, Receiving, and Putaway associated with Returns, the productivity can be determined, based on the Standard Allowable Minutes (SAM).

For more information about Productivity, see Chapter 7, "Productivity and Task Types".

18.3 Managing the Returns Process on the Warehouse Floor

You can use the Sterling Supply Chain Application Consoles and the Sterling Supply Chain Mobile Application to perform Returns. This section explains the UI flow for performing Returns.

18.3.1 Performing Returns

The UI flow for creating and authorizing returns is explained in this section.

18.3.1.1 Creating and Authorizing Returns Process

Follow these steps for creating and authorizing returns:

1. Log into the Sterling Supply Chain Application Consoles.

2. From the Sterling Supply Chain Application Consoles navigation bar, select Reverse Logistics > Create Return Order. The Return Entry screen displays.

3. Enter the appropriate information and click `Create Return`. The Return Detail screen displays.

   For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

4. Enter appropriate information and Click `Save` to save the details entered.

   For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

5. Click the Confirm action to confirm the return order.

6. Click the Authorize action to authorize the return order. The Authorize Return screen displays.

7. In the Authorization Details Pane > Authorize Drop Status field, select Authorized.

   For more information about the field descriptions, see the *Sterling Warehouse Management System User Guide*.

8. Click `Save`. The return order gets authorized.

18.4 Reference Implementation for Returns

This section explains the Reference Implementation provided by the Sterling nWMS PCA for Returns.

18.4.1 Inbound Rules Configuration for Returns

This section describes the inbound rules configured in the Sterling nWMS PCA.

18.4.1.1 Putaway Preferences

Once shipments are received, they are configured to automatically generate tasks for putaway. The service to generate a putaway request is configured as a part of the receipt transaction, on closure of the receipt. Tasks are configured as one-step tasks. For all the task types, the Execute through Drop off Flag is set to "N". Warehouses may

manually stage products in staging locations due to equipment constraints in the destination aisle.

The considerations for putaway include:

- Location capacity.
- Putaway sequence.
- Consolidation opportunity along with locations that have the same item, otherwise the items are placed in an empty location.
- Enterprise or other constraints.
- Location and item storage preferences based on Item Classification (For example, Storage Type is Refrigerated).
- Zone–Task type preference.
- Receiving preference for QC based on Enterprise, Vendor and Item Classification (For example, Product Line is PL001).

The Sterling nWMS PCA configurations for Putaway Preferences include:

Table 18–1   Putaway Preferences

Activity	UOM	Zones
Moving To Storage	Less than Case	FORWARD PICK ZONES
Moving To Storage	CASE	BULK ZONES Tracking Cases
Moving To Storage	PALLET	BULK ZONES Tracking Pallets

18.4.1.1.1 Putaway Task Types

The Putaway strategy created makes use of task types to execute the Putaway process.

The task types created to execute the Putaway process in the warehouse are:

Table 18–2   Putaway Task Types

Task Type	Description
MOVE-0001	Paper-based Move Request
MOVE-0002	Sterling Supply Chain Mobile Application-based Move Request

18.4.1.1.2 Putaway Strategy

For paper-based warehouses, the Task Type MOVE-0001 is used. For warehouses using the Sterling Supply Chain Mobile Application to execute the Putaway tasks, the Putaway strategy is configured to use the MOVE-0002 Task Type.

18.4.1.2 Node Receiving Preferences

Warehouses can receive cases, pallets, or both. Most warehouses follow the process of not verifying the content of cases.

The Node Receiving Preferences provided are:

Table 18–3   Receiving Preferences

Case/Pallet	Receiving Preference
Case	Do not Verify Contents
Pallet	Verify Contents

18.4.1.3 Receiving Disposition Setup

Once the inventory is received into the warehouse, it can be transitional to the appropriate Product Class and Inventory Status based on the Disposition Code. The user determines the disposition of the item and the quantity. The disposition indicates whether the inventory is saleable, requires further detailed quality checks, or should be scraped. These are translated into the appropriate Product Class and Inventory Status.

The standard Disposition Configurations provided are:

Table 18–4   Disposition Configurations

Sl. No.	Disposition Code	Product Class	Inventory Status	Final Disposition
1	GOOD		N (Good)	Y
2	DAMAGED	FD	N (Good)	Y
3	REQ-INSP		AI (Awaiting Inspection)	N
3a	QC-FAILED	FD	N (Good)	Y
3b	QC-PASSED		N (Good)	Y

Here, QC-FAILED and QC-PASSED are the disposition transitions for the Disposition Code REQ-INSP.

19

Dynamic Item Velocity Calculation

The velocity code of a product is a measure of its movement in the supply chain. Products are classified as having a velocity code A, B, or C. Velocity code A indicates fast moving items and C indicates slow moving items. The speed at which an item moves varies by regions, seasons, and other parameters. For example, during winter, snow jackets can sell more on the east coast of the US than on the west coast.

Presently, warehouses manually change the velocity codes for items based on seasonality, recent past, or forecast for the near future. Dynamic Item Velocity Calculation enables the system to update the velocity codes for items automatically, without much manual intervention.

The fast moving items are typically stored in active locations in a warehouse to reduce the picking cost and time and improve the picking efficiency. Therefore, warehouses would prefer to slot active areas based on seasonal data.

> **Note:** Dynamic Item Velocity Calculation and Slotting are performed for zones where picking or putaway tasks are not executed.

19.1 Determining the Velocity Code

Warehouse managers and inventory supervisors use the Dynamic Item Velocity Calculation feature of the Sterling nWMS PCA to intelligently determine the velocity codes of items.

The Sterling nWMS PCA arrives at the velocity codes for items using the following:

- **Historical Data-Analysis of Prior Outbound Shipments**

  Dynamic Item Velocity Calculation involves the analysis of outbound shipments. Historical data such as the number of outbound shipments, number of outbound shipment lines, number of units, number of cases, and number of pallets shipped for an item, for a specific period of time, is used to determine how fast an item has moved for that period of time.

  > **Note:** Set the value of the `yfs.VelocityCode.AnalysisLevel` property in the `yfs.properties` file to decide on the criteria to determine the dynamic velocity. The value of the `yfs.VelocityCode.AnalysisLevel` property can be set to `NoOfUnits, NoOfShipmentLines, NoOfShipments, NoOfPallets, or NoOfCases`.
  >
  > For example, if you want to predict the velocity for items based on the number of shipments shipped in a specific period of time, set `yfs.VelocityCode.AnalysisLevel= NoOfShipmentLines` in the `yfs.properties` file.
  >
  > The default value of the `yfs.VelocityCode.AnalysisLevel property` is `NoOfUnits`.

- **Forecast Data**

  The velocity codes of the items can also be determined based on the number of orders or shipments predicted for the current season. The Sterling nWMS PCA enables you to load forecasted data using the Item Statistics Data Loader service. For more information about the Item Statistics Data Loader service, see Section 19.2.3.4, "Item Statistics Data Loader".

- **Suggesting Cutoff Percentages**

  Based on historical or forecast data, the velocity codes of the items can be determined based on the percentage share of each item that is part of the total number of units of items shipped. The items are arranged in descending order of their percentage share and a cumulative percentage share of each item is calculated. The pattern of cumulative item percentages is observed and a cutoff percentage

is suggested based on this data. Each cutoff percentage corresponds to a velocity code for the items. The items are grouped as fast-, medium-, or slow-moving items based on the cutoff percentage range in which their cumulative percentage falls.

The warehouse manager or inventory supervisor can override the suggested cutoff percentages and accordingly update the item velocity codes. For more information about overriding the cutoff percentages, seeStep 2 of Section 19.3.4, "Updating Item Velocity Code".

- **Slotting**

   The Sterling nWMS PCA provides the ability to integrate with external slotting engines to re-slot active areas based on the velocity codes of the items taking the historical data into consideration.

19.2 Dynamic Item Velocity Calculation Configurations

This section explains the various default configurations provided for the Dynamic Item Velocity Calculation feature.

19.2.1 Agents

The agent configured for dynamic item velocity calculation is the Dynamic Velocity Calculator agent.

This agent is triggered from the Sterling Supply Chain Application Consoles. It takes the criteria specified in the Sterling Supply Chain Application Consoles and translates it into actual dates understood by the database. It gets the data regarding the number of shipments, number of shipment lines, number of units, number of pallets, and number of cases of items shipped in the specified date range, computes the velocity codes for items, and updates the velocity codes.

> **Note:** If slotting is integrated with Dynamic Item Velocity Calculation, a message to perform slotting along with Dynamic Item Velocity Calculation is placed in the JMS queue. This message is picked up by the Dynamic Velocity Calculator agent to perform both Dynamic Item Velocity Calculation and slotting.

Attributes

Table 19–1 lists the attributes for this agent.

Table 19–1   Dynamic Velocity Calculator Agent Attributes

Attribute	Value
Transaction Name	Dynamic Velocity Calculator
Transaction ID	DYNAMIC_VELOCITY_CALC
Base Process Type	None
Base Document Type	None
Abstract Transaction	None
APIs Called	modifyItemNodeDefn performSlotting, if you have integrated with slotting engines.
User Exits Called	None

Criteria Parameters

Table 19–2 lists the criteria parameters for this agent.

Table 19–2   Dynamic Velocity Calculator Agent Criteria Parameters

Parameter	Description
Action	Required. Triggers the transaction. If this parameter is left blank, it defaults to Get, the only valid value.
ShipNodeKey	The warehouse management ship node for which velocities are updated. This field is mandatory.

Table 19–2   Dynamic Velocity Calculator Agent Criteria Parameters

Parameter	Description
AgentCriteriaGroup	The agent criteria group associated with the the warehouse management ship node for which velocities are updated.
GetPendingJobs	If this parameter is set to 'N', the agent does not collect information on the pending jobs for this monitor. The pending job information is used for monitoring the monitor in the Sterling nWMS PCA.

Note: To determine the agent criteria for considering the appropriate JMS Queue, the Enqueue Dynamic Velocity Code Calc Agent Message service performs the following steps:

- It looks into the agent criteria set for the node. The node is specified by the ShipNodeKey parameter.

- If not found, it looks into the agent criteria that belongs to the agent criteria group for that node. The agent criteria group for the node is specified by the AgentCriteriaGroup parameter.

- If none of the above is found, it considers the default agent criteria for the node.

For more information about the Enqueue Dynamic Velocity Code Calc Agent Message service, see Section 19.2.3.3, "Enqueue Dynamic Velocity Code Calc Agent Message".

Events Raised

Table 19–3 lists the events raised by this agent.

Table 19–3   Events Raised by the Dynamic Velocity Calculator Agent

Event ID	Key Data	Data Published	Template Support?
AGENT_START	None	None	None
AGENT_COMPLETION	None	None	None

> **Note:** The default message queue provided for this agent is DEFAULTAGENTQUEUE. You can also associate your own message queue with the agent.

19.2.2 Events

The events provided for the Dynamic Velocity Calculator agent are:

19.2.2.1 Agent Start

This event is raised when the user submits a request to update the velocity codes from the Sterling Supply Chain Application Consoles. This event raises an alert in the open status, along with the time period criteria entered in the Sterling Supply Chain Application Consoles. The alert is routed to the DEFAULT queue.

19.2.2.2 Agent Completion

This event is raised when the Dynamic Velocity Calculator agent completes the process of updating the item velocity codes for all items that qualify the time period criteria. This service closes the open alert raised by the Agent Start event.

19.2.3 Services

The services provided for the Dynamic Item Velocity Calculation process are:

Get Shipment Item Statistics

This service submits a request to update the item statistics for each shipment and places a message regarding the shipment in the JMS queue.

Update Item Statistics

This service completes the request for updating the item statistics for a shipment. When there is a message in the JMS queue, this service picks up the message from the queue, gets statistics of items present in the shipment, and updates the item statistics in the YFS_ITEM_STATISTICS table.

Enqueue Dynamic Velocity Code Calc Agent Message

This service is invoked from the Sterling Supply Chain Application Consoles. It takes the XML input from the UI and translates it into a suitable format using the XSL translator and the processAgentMessage API. This service then places a message in the JMS queue to be picked up by the Dynamic Velocity Calculator agent.

Item Statistics Data Loader

This service is used to load item statistics from external systems. It converts a data text file into XML format and calls the manageItemStatistics API to load data into the system.

YNW_RaiseAlertForItemVelocityCodeAgentStart_75

This service raises an alert when a request to change the item velocity codes is submitted from the Sterling Supply Chain Application Consoles. This service is invoked by the Agent Start event.

YNW_ResolveAlertForItemVelocityCodeAgent_75

This service resolves the open alert raised by the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service when the Dynamic Velocity Calculator agent completes the process of updating new velocity codes for the items.

19.2.3.1 Get Shipment Item Statistics

When a shipment enters the shipped status, the ON_SUCCESS event of the Confirm Shipment or Close Shipment transaction invokes the Get Shipment Item Statistics service. This service then places a message into the JMS queue. This message contains details regarding the shipment.

> **Note:** Ensure that you configure an action that invokes the Get Shipment Item Statistics service. Associate the action with the ON_SUCCESS event of the Confirm Shipment transaction.
>
> For more information about configuring an action, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

To activate the Get Shipment Item Statistics service:

1. Navigate to the Outbound Shipment repository.

2. Navigate to the Transaction repository.

3. Associate the ON_SUCCESS event of the Confirm Shipment transaction with the action that you created for Dynamic Item Velocity Calculation. This invokes the Get Shipment Item Statistics service.

> **Note:** Ensure that you configure a separate JMS queue and associate the Get Shipment Item Statistics service with that message queue to enable the service to put messages in that message queue.
>
> The default message queue provided is DEFAULTAGENTQUEUE.

19.2.3.2 Update Item Statistics

When there is a message in the JMS queue, the Update Item Statistics service is invoked. This service:

1. Picks the message from the message queue.

2. Calls the getShipmentItemStatistics API to get the statistics of the items belonging to the shipment that is shipped.

3. Calls the incrementItemStatistics API to update the statistics of the items in the YFS_ITEM_STATISTICS table.

To invoke the Update Item Statistics service, launch the Integration Server.

> **Note:** Ensure that you configure a separate JMS queue and associate the Update Item Statistics service with that message queue.
>
> The default message queue provided is DEFAULTAGENTQUEUE.

19.2.3.3 Enqueue Dynamic Velocity Code Calc Agent Message

The Enqueue Dynamic Velocity Code Calc Agent Message service is invoked from the Sterling Supply Chain Application Consoles when updating the item velocity code. This service:

1. Takes the data from the UI in XML format.

2. Translates the XML data into an appropriate format for the message queue.

3. Places the data in the message queue.

> **Note:** Ensure that you configure a separate JMS queue and associate the Enqueue Dynamic Velocity Code Calc Agent Message service with that message queue.
>
> The default message queue provided is DEFAULTAGENTQUEUE.

19.2.3.4 Item Statistics Data Loader

The Item Statistics Data Loader service is a data loading service. It is used to get information about item statistics from an external system. This service:

1. Converts a text file containing item statistics from an external system into an XML file.

2. Passes the XML data as the input to the manageItemStatistics API, which updates the item statistics records.

To invoke the Item Statistics Data Loader, launch the Integration Server.

Table 19–4 provides information about the details contained in the text file used as input by the Item Statistics Data Loader service.

Table 19–4   Text File Format

Field	Description	Field Number
ITEMSTATISTICSHEDR	The record identifier.	1
ItemId	The item identifier.	2
Uom	The Unit Of Measure of the item.	3
ProductClass	Product Class of the item.	4
EnterpriseCode	The enterprise identifier.	5
ShipNodeKey	The node identifier.	6
IsForcastedData	Indicates that the statistics are based on forecasted data.	7
ShipYear	The year of shipping.	8
ShipMonth	The month of shipping.	9
ShipDate	The day of shipping.	10
NoOfUnits	Total number of units of the item.	11
NoOfLooseUnits	Number of loose units of the item.	12
NoOfCases	Number of case units of the item.	13
NoOfPallets	Number of pallet units of the item.	14
NoOfShipmentLines	Number of shipment lines containing the item.	15
NoOfShipments	Number of shipments containing the item.	16
EstimatedNoOfLooseTasks	Estimated number of tasks for the item from the forward pick area.	17

It is mandatory to provide values for the ItemId, Uom, EnterpriseCode, ShipNodeKey, ShipYear, ProductClass, and ShipMonth parameters. The default values for the non-mandatory parameters, IsForecastedData, NoOfUnits, NoOfLooseUnits, NoOfCases, NoOfPallets,

NoOfShipmentLines, NoOfShipments, and EstimatedNoOfLooseTasks are N, 0, 0, 0, 0, 0, 0, and 0. The value of ShipDate is defaulted to the first day of the provided ship month.

19.2.3.5 YNW_RaiseAlertForItemVelocityCodeAgentStart_75

When the Dynamic Velocity Calculator agent starts, the Agent Start event of the agent invokes the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service. The service then raises an open alert that stores the passed criteria.

To activate the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service:

1. Navigate to the General repository.

2. Navigate to the General Process Types.

3. Navigate to the Transaction repository.

4. Associate the Agent Start event of the Dynamic Velocity Calculator agent with the Raise Agent Start Alert action which invokes the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service.

> **Note:** This service is already activated if you have installed the factory defaults with events turned on.

19.2.3.6 YNW_ResolveAlertForItemVelocityCodeAgent_75

When the Dynamic Velocity Calculator agent completes the process of updating the item velocity codes for the items, the Agent Completion event of the agent invokes the YNW_ResolveAlertForItemVelocityCodeAgent_75 service. This service then resolves the open alert raised by the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service when the Dynamic Velocity Calculator agent started.

To activate the YNW_ResolveAlertForItemVelocityCodeAgent_75:

1. Navigate to the General repository.

2. Navigate to the General Process Types.

3. Navigate to the Transaction repository.

4. Associate the Agent Completion event of the Dynamic Velocity Calculator agent with the Resolve Agent Alert action, which invokes the YNW_ResolveAlertForItemVelocityCodeAgentStart_75 service.

19.2.4 Mining Item Statistics for Pre-Existing Shipments

A tool has been provided to mine the item statistics in the YFS_ITEM_STATISTICS table for all pre-existing shipments. To mine item statistics for the pre-existing shipments:

1. Set or export the YFS_HOME environment variable to the <YANTRA_HOME>/Runtime directory.

2. Ensure that the inputFormineItemStatistics.xml file is present in the <YFS_HOME>/bin directory.

3. From the <YFS_HOME>/bin directory, run the following ANT command:

```
ant -f mineItemStatistics.xml
```

> **Note:** This command takes a long time to execute if the number of shipments to be mined is large.

19.3 Calculating Dynamic Item Velocity

This section explains how to calculate dynamic velocity for items.

19.3.1 Setting the Time Period for Dynamic Item Velocity Calculation

You can use the Sterling nWMS PCA to perform Dynamic Item Velocity Calculation. This section explains how to set the time period that is used to calculate dynamic velocity.

To set the time period:

1. Log into the Sterling Supply Chain Application Consoles as a warehouse manager or an inventory supervisor.

2. From the Sterling Supply Chain Application Consoles menu, select Inventory > Recalculate Item Velocity Code. The Recalculate Item

Velocity Code screen displays. For field value descriptions, see Table 19–5 and Table 19–6.

3. In theSelect Time Period panel, select the time period to perform the analysis.

Table 19–5   Recalculate Item Velocity Code, Select Time Period

Action	Description
Show Graph	Click this action to view the Cumulative Item Share (Analysis Level) graph. For field value descriptions, see Table 19–7.
History	Click this action to view the history of Item Velocity Code Change requests. For field value descriptions, see Table 19–8.
Field	**Description**
Node	Indicates the current node of the user.
Consider Shipments Shipped between <start month> and <end month> over the last <number of years> year(s)	From the first drop-down list, select the start month. From the second drop-down list, select the end month. In the text box, enter the number of previous years to be included in the analysis.
Consider Current Year	Check this box to consider the current year for the analysis.

Table 19–6   Recalculate Item Velocity Code, CutOff Percentages

Action	Description
Update Item Velocity Code	Click this action to initiate the calculation of velocity codes for items and update the new velocity codes.
Field	**Description**
Velocity Code	Indicates the velocity codes.

Table 19–6   Recalculate Item Velocity Code, CutOff Percentages

Suggested CutOff%	Indicates the system-suggested cutoff percentages. The cutoff percentages are shown on clicking the Show Graph action. For more information about viewing the Cumulative Item Share(Analysis Level) Graph, see Section 19.3.2, "Viewing the Cumulative Item Share (Analysis Level) Graph".
CutOff%	Enter the cutoff percentages, based on which the velocity codes are calculated.

19.3.2 Viewing the Cumulative Item Share (Analysis Level) Graph

This section explains how to view the Cumulative Item Share (Analysis Level) Graph. This graph indicates the cumulative item percentages and the number of items in percentage that contribute towards those percentages for a specific analysis level.

To view the Cumulative Item Share (Analysis Level) Graph:

1. Perform Step 1 through Step 3 of Section 19.3.1, "Setting the Time Period for Dynamic Item Velocity Calculation".

2. In the Select Time Frame panel, click the Show Graph action to view the Cumulative Item Percentages (Analysis Level) graph, which shows the cut off percentages for different items.

    Figure 19–1 illustrates the Cumulative Item Share (Analysis Level) Graph. Table 19–7 explains the fields of the Cumulative Item Share (Analysis Level) Graph.

    The CutOff Percentages panel displays the system-suggested cutoff percentages for different velocity codes. You can also enter the cutoff percentages, which are used for calculation of new velocity codes. For field value descriptions, see Table 19–6.

Figure 19–1   Cumulative Item Share (Analysis Level) Graph
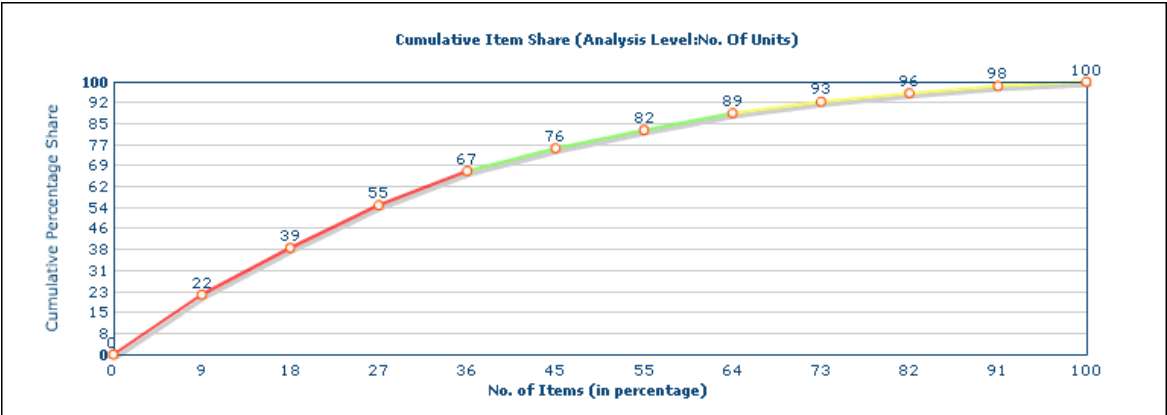
Table 19–7   Cumulative Item Share (Analysis Level) Graph

Field	Description
Cumulative Percentage	Indicates the sum of item percentages for all the items.
No. of Items (in percentage)	Indicates the number of items in percentage out of the total number of items considered, which contribute towards a certain cumulative percentage share at any point the graph.

19.3.3 Viewing Item Velocity Code Change Requests History

You can view the history of alerts raised by the YNW_RaiseAlertForItemVelocityCodeAgentStart_75 service, so that you can determine how you need to change the item velocity codes.

To view the history of item velocity code change requests:

1. Perform Step 1 through Step 3 of Section 19.3.1, "Setting the Time Period for Dynamic Item Velocity Calculation".

2. In the Select Time Frame panel, choose History to view the history of Item Velocity Code Change Requests. For field value descriptions, see Table 19–8.

Table 19–8   Item Velocity Code Change Requests Fields

Action	Description
View Details	Click this action to view the Alert Details screen, which displays details about the raised alert. For more information about the Alert Detail screen, see the *Sterling Supply Chain Applications Platform User Guide*.
Field	**Description**
Alert ID	Indicates the identifier of the alert raised.
Suggested CutOff%	Indicates the system-suggested cutoff percentages.
Type	Indicates the type of alert raised.
Status	Indicates that status of the alert.
Request Submitted By	Indicates the person who submitted the request to change the item velocity code.
Start Time	Indicates the time the alert is raised.
End Time	Indicates the time the alert is closed.

> **Note:**   The alerts raised are arranged in the descending order of their time of creation, that is, the most recent raised alert is present first.

19.3.4 Updating Item Velocity Code

This section explains how to update the velocity codes of the items.

To update the velocity codes of the items:

1. Perform Step 1 through Step 3 of Section 19.3.1, "Setting the Time Period for Dynamic Item Velocity Calculation".

2. In the CutOff Percentages panel, enter the cutoff percentages for your own velocity codes. If the cumulative percentage of an item lies in the range of cutoff percentages entered for velocity codes, the velocity codes of the items are categorized as your own velocity codes. The first velocity code corresponds to the fastest moving item.

   For field value descriptions, see Table 19–6.

3. Click the Update Item Velocity Codes action to update the velocity codes of the items, based on the new cutoff percentages specified.

   > **Note:** It is mandatory to enter values for all the fields in the Item Velocity Code Calculation screen.
   >
   > A new request to update item velocity codes for a node can be submitted only if the previous requests are processed.

   • If you have integrated with a slotting engine to perform slotting, the Zone List pop-up window appears, which enables you to re-slot active areas. For field value descriptions, see Section 19.3.5, "Selecting Zones for Slotting".

   > **Note:** The Zone List pop-up displays after you click the Update Item Velocity Code action if the `ynw.slotting.engine` property is set in the `ynw.slotting.properties` file. For more information about configuring the `ynw.slotting.properties` file, see Section 20.3.2, "Slotting Configurations" of Chapter 20, "Integration With Slotting Engines".

19.3.5 Selecting Zones for Slotting

This section explains how to select the zones to perform slotting.

To select the zones for slotting:

1. Perform Step 1 through Step 3 of Section 19.3.4, "Updating Item Velocity Code". The Select Zone for Slotting pop-up window displays.

2. In the Zone List pop-up window, select the zones for slotting from the list of forward pick zones. For field value descriptions, see Table 19–9.

3. To create move tasks to move the items based on slotting assignments, check Create Moves.

4. Perform either of the following:

   - Choose the Apply results from slotting option to apply slotting assignments returned by the Slotting Engine.

   - Otherwise, choose the Save results without applying option. This saves all files generated by the Slotting Engine on that particular date for future references. The files are saved in the following folder:

     ```
     <folder name configured in the properties files>/<Node
     name>/<Date>
     ```

5. Click Reslot and Recalculate Item Velocity to apply or save the slotting results.

Table 19–9   Zone List

Field	Description
Zone Id	Indicates the name of the forward pick zone.
Zone Description	Indicates the description for the zone.
Create Moves	Check this to create move tasks based on the item-location dedications.
Apply results from slotting	Choose this option to apply slotting results returned by the Slotting Engine without saving them.
Save results without applying	Choose this option to save all files generated by the Slotting Engine on that particular date for future references. When this option is chosen, the results returned are not applied.

Note: When performing slotting, if there are no default preferences for the node, the preferences are picked up from the template xml provide by the Sterling nWMS PCA.

19.3.6 Applying Saved Results for Slotting

This section explains how to apply the saved slotting files to slot the location-item pairs.

To apply saved slotting files:

1. Log into the Sterling Supply Chain Application Consoles as a warehouse manager or an inventory supervisor.

2. From the Sterling Supply Chain Application Consoles menu, select Inventory > Apply Slotting Suggestions. The Apply Slotting Suggestions screen displays.

3. Select the date from the 'Apply Slotting using files generated on' drop-down. The slotting files generated on this date are used to slot location-item pairs.

4. Check 'Use Preferences from the Selected Date as Default' option if you want to use the slotting preferences, goals, and constraints file generated on this date as the default preferences. When preferences are set as default, the same preferences are used when slotting is performed the next time.

5. Click the Apply Slotting action to apply the slotting results generated on the selected date.

   For more information about action descriptions, see Table 19–10.

Table 19–10   Apply Slotting

Action	Description
Apply Slotting	Click this action to apply the slotting results generated on a particular date.
Field	**Description**
Apply Slotting using the files generated on	Select the date on which the slotting results are generated from the drop-down.
Use Preference from the Selected Date as Default	Check this box to keep the current slotting preferences as default preferences for the node. These preferences are used when re-slotting is performed.

20

Integration With Slotting Engines

Warehouses re-slot forward pick zones every season to utilize the most cost-effective and efficient locations to store inventory. Slotting is performed based on the velocity of the items. Slotting ensures that items with highest velocity are placed in locations belonging to the Golden zone. Locations in the Golden zone are easily accessible. Therefore, the picking efficiency of the picker is increased when picking inventory in this zone.

20.1 Slotting Engines

Slotting tools are often used by warehouses to increase space utilization and picking efficiency, thus reducing storage and product retrieval costs.

Slotting engines use data, such as warehouse preferences, constraints, goals, items to be slotted, slots, and historical data to create location assignments for fast moving items.

Slotting engines also generate a list of moves based on the differences between the current assignments and the optimized assignments. The generated Moves List could also be a chain of dependent moves that should be executed in a specific order.

20.2 Slotting Using the Sterling nWMS PCA

The Sterling nWMS PCA provides the ability to integrate with third-party slotting solutions. For example, the Sterling nWMS PCA has provided an integration with Optislot™, a popular slotting engine from Optricity™.

The Sterling nWMS PCA enables you to perform slotting of forward pick zones on a seasonal basis. Slotting in the Sterling nWMS PCA is performed along with Dynamic Item Velocity Calculation and is triggered

from the Recalculate Item Velocity Code screen. For more information about the Recalculate Item Velocity Code screen, see Section 19.3, "Calculating Dynamic Item Velocity" of Chapter 19, "Dynamic Item Velocity Calculation".

> **Note:**   Slotting is performed only for those zones where picking or putaway tasks are not executed.

20.3 Integration

The following section explains how the Sterling nWMS PCA integrates with slotting engines and the configurations required for the integration.

20.3.1 Interfacing with Slotting Engines

The Sterling nWMS PCA provides the performSlotting API, which invokes methods on the slotting adapter to perform slotting. The slotting adapter initializes the third-party slotting engine. The slotting adapter takes data, such as item details, location details, slotting preferences, goals, and current dedications using APIs and modifies it to a format understood by the third-party slotting engine*.* The modified data is sent to the third-party slotting engine. The third-party slotting engine slots the locations based on these preferences, goals, and constraints and sends new slotting assignments back to the slotting adapter. Optionally, if requested, the third-party slotting engine sends a list of move suggestions, which contain suggestions to move the inventory from the existing source location to a target location. The move suggestions are generated by differentiating between the existing slotting assignments and optimized slotting assignments. The slotting adapter receives the slotting assignments and the moves list. After the output from the slotting adapter is obtained as a list of moves or assignments for each slot and item, the performSlotting API resets the existing dedications and creates new dedications for the Forward Pick zones. Optionally, you can create move tasks to move inventory from the existing location to the assigned location, if required. For more information about the performSlotting API, see the *Sterling Networked Warehouse Management System PCA Javadocs*.

Figure 20–1 illustrates how the Sterling nWMS PCA interfaces with third-party slotting engines.

Figure 20–1   Interfacing with Third-Party Slotting Engines
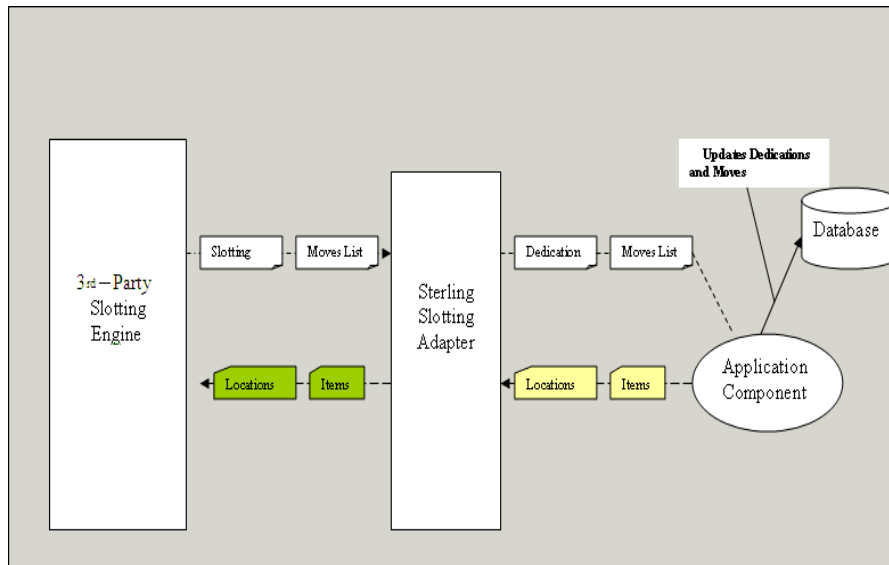
Slotting results obtained by integrating with slotting engines can be saved in a folder to be reviewed and applied later. During the review process, the preferences, constraints, and so forth contained in these files could be modified.

The applySlotting API is used to apply slotting results obtained from the slotting engine and optionally apply the slotting preferences from the saved files. When invoked from the Sterling Supply Chain Application Consoles, the YNW_ApplySlotting_7.5 service puts a message in the JMS Queue. The message contains information about the folder containing the slotting assignments generated on a date, which you want to apply. This message is picked up by the service YNW_AppSlotPickMsg_7.5, which is invoked by the server Slotting. The message is then provided to applySlotting API. If slotting preferences used by the slotting engine on a particular date are made the default preferences, the preferences are saved and the same preferences are used when re-slotting is performed again for the same node. For more information about the applySlotting API, see the *Sterling Networked Warehouse Management System PCA Javadocs.*

> **Note:** The server Slotting is started by the integration server.
>
> Ensure that you configure a separate JMS queue and associate it with the YNW_ApplySlotting_7.5 and YNW_AppSlotPickMsg_7.5 services.

To interface with slotting engines, an adapter class that implements the YNWSlottinIntfc Interface needs to be registered with the Sterling nWMS PCA. For more information about implementing the YNWSlottinIntfc interface and registering it with the Sterling nWMS PCA, see the *Sterling Networked Warehouse Management System PCA Javadocs*.

20.3.2 Slotting Configurations

This section explains the various configurations that are performed for the slotting integration process.

> **Note:** Before performing slotting, ensure that there are no open tasks with the forward pick locations as the source or target locations.

20.3.2.1 Configuring to integrate with Slotting Engines

To integrate slotting using the Sterling nWMS PCA:

1. Navigate to the YANTRA_HOME/Applications/nWMS_Add-in/resources directory.

2. Rename the ynw.slotting.properties.sample file to ynw.slotting.properties.

3. In the ynw.slotting.properties file:

   a. Rename the ynw.slotting.engine property to the name of the slotting engine being used. Sterling Commerce recommends that you do not use special characters in this property and that it is a single word.

   b. Set the ynw.slotting.<Slotting Engine Name>.class property to the appropriate class name. This class implements the

YNWSlottingIntfc interface. Ensure that this class is present in your CLASSPATH environment variable.

c. Rename the `ynw.slotting.<Slotting Engine Name>.folder` property to the name of the folder that stores the files generated by the slotting engine.

> **Note:** Ensure that the custom class is present in both the CLASSPATH environment variable and the Agent Server classpath when installing the Slotting Engine. Also, ensure that you regenerate the Runtime after making the above changes, while installing the Sterling nWMS PCA.

20.3.2.2 Configuring the Queue for Server Slotting

A seperate queue is to be configured for the server Slotting. The configurations are:

1. Navigate to `YFS_HOME/resources` directory.

2. Rename the `yfs.properties.sample` file to `yfs.properties`.

3. In the `yfs.properties` file:

a. Add new parameters `APPLY_SLOTTING_QUEUE`, `ApplySlotting_QCF`, and `Provider_URL`.

b. Set the value of these parameters to the name of the JMS queue, QCF and provider URL.

20.4 Reference Implementation

For a reference implementation, the Sterling nWMS PCA has integrated with OptiSlot™ from Optricity™ to provide slotting solutions. OptiSlot™ is a slotting engine that enables warehouses to perform slotting based on various constraints. The Sterling nWMS PCA supports slotting only if the following conditions are satisfied for the zones that are being slotted:

- The forward pick zone is not dedicated to an enterprise.

- The Max No of Locations Per SKU for each zone is set to zero when slotting multiple forward pick zones at the same time. The Max No of Locations Per SKU is defined for zones while configuring Warehouse Layout.

For more information about configuring the Warehouse Layout, see the *Sterling Warehouse Management System Configuration Guide*.

Additionally, when creating move tasks, slotting happens only whenthe forward pick zone does not track LPNs and stores inventory in multiples of EACH. The forward pick zone should also not allow mixing of SKUs and Product Class for a location and should always allow the remaining mix constraints for a location.

> **Note:** It is recommended that you reslot the same set of forward pick zones every time. Selecting different set of zones might lead to creation of duplicate slot assignments.

> **Note:** To integrate with OptiSlot™, install OptiSlot™ along with the Sterling nWMS PCA. For more information about installing OptiSlot™, see the *Sterling Networked Warehouse Management System PCA Installation Guide*.

20.4.1 Reference Implementation Integration Strategy

OptiSlot™ uses three XML files to slot location-item pairs, namely, the Project file, Slots file, and Items file. The Sterling nWMS PCA mandates that the names of the files be Project.xml, location.xml, and item.xml.

The Slots file contains information about zones and locations. This file also contains statistics, such as the number of times a location is accessed. The information in the Slots file is used by OptiSlot™ in performing slotting.

The Items file contains information about case and pallet dimensions, quantity of items, velocity of items, stacking pattern of items in a location, and so forth.

The Project file contains information about existing SKU dedications, goals, preferences, and constraints on the basis of which slotting is performed. The Project file is generated based on the template file provided by the Sterling nWMS PCA. The template file contains preferences for slotting. This template file is located in the `YFS_HOME/template/slotting/OptiSlot` directory.

After these files are sent to OptiSlot™, OptiSlot™ slots the different locations of the zone provided in the Slots file and assigns these slots to the different SKUs provided in the Items file, based on the goals, preferences, and constraints present in the Project file. Slot assignments are returned by OptiSlot™, and these assignments are included as a part of Project xml.

You can choose to apply these assignments or save them in a folder so that they can be used when re-slotting is done in future. The Project xml is saved along with the item xml and location xml in the following folder:

```
<folder name configured in the properties files>/<Node
name>/<Date>
```

The slotting preferences and slotting results can be seen in the OptiSlot™ UI. If the results are not satisfactory, the preferences and constraints can be modified, regenerated, and saved once satisfactory in the OptiSlot™ UI. For more information about launching the OptiSlot™ UI, see the OptiSlot™ documentation.

Based on the location-item assignments, location dedications and move tasks may be generated to move the items to the assigned locations. Move tasks are generated using the Moves List provided by OptiSlot™. The Moves List contains a chain of moves and a task is created for each move in the chain, with the previous move in the chain as a predecessor task. The first move task in the chain is released and the rest are held. Each successor task is initiated only when the predecessor task is completed.

Items that are unslotted are putaway to storage.

20.4.2 Slotting Configurations for OptiSlot™

This section explains the various configurations that are provided for integrating with OptiSlot™.

To integrate using the Sterling nWMS PCA:

1. Navigate to the `YANTRA_HOME/Applications/nWMS_Add-in/resources` directory.

2. Rename the `ynw.slotting.properties.sample` file to `ynw.slotting.properties`.

3. In the `ynw.slotting.properties` file:

    a. Rename the `ynw.slotting.engine` property to `OptiSlot`.

    b. Set the `ynw.slotting.OptiSlot.class` property to
`com.yantra.pca.ynw.slotting.YNWOptiSlotImpl.`

    c. Rename the `ynw.slotting.OptiSlot.folder` property to the
name of the folder that stores the files generated by OptiSlot™.

A

Transaction Data

Transaction data is required to demonstrate the capabilities of the Sterling nWMS PCA. In addition to that, installation validations are done with the help of the transaction data. The transaction data is configured such that the basic processes explained in the documentation are fulfilled.

Transaction Data can be optionally run at the time of installing the Sterling nWMS PCA. If the user opts to install the Sterling nWMS PCA along with the transaction data, the following transaction data is created. Otherwise, some template XMLs files are provided that can be used later to install the transaction data.

This appendix explains the transaction data that is provided as a part of the Sterling Networked Warehouse Management System PCA.

A.1 Inbound

The following scenarios are captured as a part of the transaction data. The inbound process is based on a separate set of items that are not used in inventory or outbound.

- PO Based Receipt

- ASN Based

- Blind Receipts

- Transfer Order Shipments (Order not on System)

A.1.1 PO-Based Receipt

The transaction data contains the setup for 5 to 6 Purchase Orders. Each Purchase Order contains multiple items. Receipts are not created. Users can log into the application and start receiving against the PO.

ASNs are generally sent out by the vendor to the warehouse or DC.

The following assumptions are made in terms of the transaction:

- VENDOR1 sends ASN information
- VENDOR2 does not send ASN information

A.1.2 ASN-Based Receipts

ASNs are sent out by VENDOR1. For ease of demonstration, a couple of ASNs from VENDOR1, with item-level details, have been created.

A.1.3 Transfer Order Shipments

For the Transfer shipments, it is assumed that the ASN is sent with PLD (Package Level Details).

A.2 Inventory

For inventory data, it is assumed that the warehouse tries not to mix SKUs at the locations. Therefore, preferably, no more than one item should be stored at the BULK/Forward Pick locations. The inventory data is made in such a way that inventory is sufficient for all the outbound shipments created.

It is assumed that five items are put in storage and inventory is created for items NOR-00001 to NOR-00005. The Forward Pick Area with dedicated locations is set up for items NOR-00001 to NOR-00005. In addition to this, some inventory is added for serialized and tag-controlled items.

The inventory at the Forward Pick Area is set up in such a way that:

1. If the Min-Max Replenishment is run, there are some Replenishment Tasks created.

2. When running the Top-Off Replenishment after running Min-Max Replenishment, some Replenishment Tasks are created.

A.3 Outbound

The transaction data for outbound varies based on the availability of the Sterling Distributed Order Management application. If Sterling Distributed Order Management is available, the process starts with creating an order.

The categories of the shipment are:

- 200 parcel shipments

- 25 LTL shipments

- 2 TL shipments

For the paper-based warehouses, the volumes of shipments are:

- 50 parcel shipments

- 5 to 10 LTL shipments

- 1 TL shipments

Shipments are created in such a way that for Parcels, at least a few shipments use both Full Case and Less than Case Pick processes. Similarly, LTL shipments are created in such a way that the pick is made from both Bulk and Forward Pick Area.

Shipments contain one item for which inventory is not existing in the warehouse. This is to ensure that on release of the wave, appropriate alerts are raised.

Routing is configured as a part of the Reference Implementation. On installing the transaction data, the ROUTE_SHIPMENT and SENT_TO_NODE agents are automatically executed. The shipment status starts from the Sent To Node status.

The outbound transaction data is set up so that waves are created as soon as the agent is run.

B

Summary of New Components for Existing Sterling Supply Chain Applications Customers

This appendix is meant as a quick reference for individuals who are already very familiar with the Sterling Supply Chain Applications to see which components were added or modified when implementing the Sterling nWMS PCA.

Click on one of the categories below to view the components that were introduced or modified from the Sterling Supply Chain Applications to Sterling nWMS PCA:

- APIs and User Exits
- Services
- Monitor Events
- Transactions
- Events

B.1 APIs and User Exits

This table lists the APIs and User Exits introduced in the Sterling nWMS PCA, along with the features that they affect:

Table 20–1   APIs and User Exits

API or User Exit	Feature Affected
registerActivityDemandForQC()	QC Divert Capability Based on Percentage
modifyPackListUE()	Packing Slip for B2C shipments Print
getShipmentDiscrepancyList()	Vendor Compliance
manageShipmentDiscrepancy()	Vendor Compliance
getAREActivityAuditList()	Billing Activity based Reporting Engine
getAREActivityCodeDetails()	Billing Activity based Reporting Engine
getAREActivityCodeList()	Billing Activity based Reporting Engine
getAREActivityDetails()	Billing Activity based Reporting Engine
getAREActivityList()	Billing Activity based Reporting Engine
manageAREActivity()	Billing Activity based Reporting Engine
manageAREActivityCode()	Billing Activity based Reporting Engine
YNWBeforeCreateAREActivityUE	Billing Activity based Reporting Engine
manageItemStatistics	Dynamic Item Velocity Calculation
incrementItemStatistics	Dynamic Item Velocity Calculation
getShipmentItemStatistics	Dynamic Item Velocity Calculation
getItemStatisticsGraphData	Dynamic Item Velocity Calculation

For more information on the APIs and user exits mentioned above, refer to the *Sterling Networked Warehouse Management System PCA Javadocs.*

B.2 Services

This section lists the services that are new in the Sterling nWMS PCA, and can be found in the service definitions.

B.2.1 Receiving or QC Related Services

Table 20–2   Receiving or QC Related Services

Service	Features Affected
YNW_RegisterActivityDemandForQC_75	QC Divert Capability Based on Percentage
YNW_PrintReceivingWorkSheet_75	Receiving Worksheet Print
YNW_CompositeServiceOnStartReceipt_75	QC Divert Capability Based on Percentage
	Receiving Worksheet Print
YNW_GetDataReceivingWorkSheet_75	Receiving Worksheet Print
YNW_GetDataForUPCCaseCodeLabel_75	UPC Case Code Label Print
YNW_GetLPNDataForAdditionalPrint_75	License Plate Label Manual Print
YNW_LPNTranslator_75	License Plate Label Print
YNW_PrintAdditionalLPNLabels_75	License Plate Label Manual Print
YNW_PrintLPNLabelsOnStartReceipt_75	License Plate Label Print, when receipt is started.
YNW_PrintUPCCaseCodeLabel_75	UPC Case Code Label Print
Get Shipment Item Statistics	Dynamic Item Velocity Calculation
Update Item Statistics	Dynamic Item Velocity Calculation
Enqueue Dynamic Velocity Code Calc Agent Message	Dynamic Item Velocity Calculation
Item Statistics Data Loader	Dynamic Item Velocity Calculation
Item Statistics Mining service	Dynamic Item Velocity Calculation
YNW_RaiseAlertForItemVeloctiyCodeAgentStart_75	Dynamic Item Velocity Calculation
YNW_ResolveAlertForItemVeloctiyCodeAgentStart_75	Dynamic Item Velocity Calculation

B.2.2 Move Request Services

Table 20–3   Move Request Services

Service	Features Affected
YNW_GenerateTopOffRplMR_75	Replenishments (Reference Implementation)
YNW_GenerateMinMaxRplMR_75	Replenishments (Reference Implementation)
YNW_RaiseMoveRequestException_75	Alerts for Move Request Release Failures
YNW_GeneratePutawayRequestForWorkOrder_75	Automatic Generation of Putaway Task After Work Order Completion (Reference Implementation)

B.2.3 Shipment Processing Services

Table 20–4   Shipment Processing Services

Service	Feature Affected
YNW_RaiseDelayInShipmentPackProcess_75	Alerts for Delayed Outbound Shipments
YNW_changeShipmentStatusToPicked_75	Shipment Pipeline Configuration includes Picked Status
YNW_ConditionForPrintingSpecialTicket_75	Special Ticket Label Print
YNW_GetB2CPackListData_75	Packing Slip for B2C shipments Print
YNW_GetLoadDetailsForInternationalShipments_75	International shipments labels (Certificate of Origin, NAFTA Certificate of Origin, Commercial Invoice) Print
YNW_GetLoadDetailsForShippersExportDeclaration_75	Shippers Export Declaration Print
YNW_GetPackListPLDData_75	Packing Slip with Package Level Details Print

Table 20–4   Shipment Processing Services

Service	Feature Affected
YNW_GetShipmentDetailsForInternationalShipments_75	International shipments labels (Certificate of Origin, NAFTA Certificate of Origin, Commercial Invoice) Print
YNW_GetShipmentDetailsForShippersExportDeclaration_75	Shippers Export Declaration Print
YNW_PrintCertificateOfOriginForLoads_75	Certificate of Origin Print for Loads
YNW_PrintCertificateOfOriginForShipments_75	Certificate of Origin Print for Shipments
YNW_PrintCommercialInvoiceForLoads_75	Commercial Invoice Print for Loads
YNW_PrintCommercialInvoiceForShipments_75	Commercial Invoice Print for Shipments
YNW_PrintCombinedPickingPackingSlip_75	Combined Picking and Packing Slip Print
YNW_PrintPackListPLD_75	Packing Slip with Package Level Details Print
YNW_PrintShippersExportDeclarationForLoads_75	Shippers Export Declaration Print
YNW_PrintShippersExportDeclarationForShipments_75	Shippers Export Declaration Print
YNW_PrintSpecialTicketLabels_75	Special Ticket Labels Print
YNW_getXrefItemDetails_75	Special Ticket Labels Print
YNW_GetPackListData_75	Packing Slip Print
YNW_GetRFIDData_75	RFID Slap and Ship Label Print
YNW_GetShippingLabelData_75	Shipping Label Print
YNW_PrintRFIDLabel_75	RFID Slap and Ship label Print
YNW_PrintShippingLabel_75	Shipping Label Print
YNW_PrintLoadBOL_75	Bill of Lading Print for Load
YNW_GetLoadBOLData_75	Bill of Lading for Load
YNW_GetShipmentBOLData_75	Bill of Lading Print for Shipment

Table 20–4   Shipment Processing Services

Service	Feature Affected
YNW_PrintShipmentContainerLabels_75	Shipping Label Print
YNW_PrintShipmentRFIDLabels_75	RFID Slap and Ship Label Print
YNW_PrintShipmentBOL_75	Bill of Lading Print for Shipment
YNW_PrintPackList_75	Packing Slip Print

B.2.4 Wave Processing Services

Table 20–5   Wave Processing Services

Service	Feature Affected
YNW_RaiseAlertForInventoryShortage_75	Alerts For Inventory Exceptions During Outbound Processes
YNW_RaiseAlertForShipmentInvShortage_75	Alerts For Inventory Exceptions During Outbound Processes
YNW_RaiseAlertForItemInvShortage_75	Alerts For Inventory Exceptions During Outbound Processes
YNW_RaiseInventoryShortageForLocationAndItem_75	Alerts For Inventory Exceptions During Outbound Processes
YNW_RaiseInventoryShortageForItem_75	Alerts For Inventory Exceptions During Outbound Processes
YNW_DownloadFileFromMHE_75	Download of the interface file sent by external MHEs.
YNW_DownloadFileToMHEWithReference_v	Download of the interface file, containing additional reference data, sent by external MHEs.
YNW_GetDataForWaveSummary_75	Wave Summary Print
YNW_PrintWave_75	Wave Summary Print

Table 20–5   Wave Processing Services

Service	Feature Affected
YNW_RegisterTaskCompletion_75	Download of the interface file, containing additional reference data, sent by external MHEs.
YNW_UploadFileToMHE_75	Upload of the interface file sent to external MHEs.
YNWPrintShippingLabel_75	Shipping Label Print

B.3 Monitor Events

This table lists the monitor events are new in the Sterling nWMS PCA:

Table 20–6   Monitor Events

Monitor Event	Feature Affected
YNW_PACKING_DELAYED_75	Alerts for Delayed Outbound Shipments

B.4 Transactions

These transactions are introduced in the Sterling nWMS PCA:

Table 20–7   Transactions

Transaction	Feature Affected	Events
Create Second Count Tasks	Physical Count	On Success No Tasks Created
Pallet Shrink Wrap	Pack Process for Pallets	On Success
Putaway Complete	Receiving	On Success
VERIFY PACK	Verifying Pack	VERIFICATION DONE, DISCREPANCY FOUND

B.5 Events

These events have been implemented in the Sterling nWMS PCA:

Table 20–8   Events

Transaction	Event
Start Receipt	On Success
Close Receipt	On Success
Create Batch	On Success
Complete Task	Shipment Picked
Release Wave	Shortages Detected
Release Move Request	On Success
Release Move Request	Has Exceptions
Confirm Work Order	LPN Activities Completed
Confirm Work Order	SKU Activities completed
Confirm Work Order	Serial Number Activities completed
Print Wave	On Success
Confirm Shipment	On Success
Receive Intransit Updates for Load	On Success
VERIFY PACK	VERIFICATION DONE
VERIFY PACK	DISCREPANCY FOUND

Table 20–9   Events

Agent	Event
DYNAMIC_VELOCTIY_CALC	AGENT_START
DYNAMIC_VELOCTIY_CALC	AGENT_COMPLETION

C

Customizing the Reference Implementation

This appendix explains how to customize the Reference Implementation data provided as a part of the Sterling nWMS PCA, customize your node, use the test environment for production, and move data from your test environment to production.

C.1 Customizing Reference Implementation Data

Now that you are familiar with the Reference Implementation provided as a part of the Sterling nWMS PCA, you can use the data provided in the Reference Implementation as a starting point. This section explains how to customize the Reference Implementation to meet your needs.

C.1.1 Loading Your Own Master Data

You can load your own master data to go with our configuration data. This master data can be based upon the master data that has been provided as a part of the Reference Implementation of the Sterling nWMS PCA, which is located in:

```
<YANTRA_HOME>/Applications/nWMS/database/FactorySetup/ri/defau
ltri/ demo/MasterData
```

Where, `<YANTRA_HOME>` points to the Sterling Supply Chain Applications software installation directory.

C.1.1.1 Item

You can use the item data load capability to load your own master data. For more information about initial data loading services and rapid deployment features, see the *Sterling Supply Chain Applications Integration Guide*.

Ensure that you use the following values that are already available in the configuration:

- Velocity codes

- Storage code

- Item-UOM

- Product Class

C.1.1.2 Location

You can either create your own locations or look at the locations provided under the master data and create similar locations in your warehouse. For more information about initial data loading services and rapid deployment features, see the *Sterling Supply Chain Applications Integration Guide*.

Ensure that you use the following values that are already available in the configuration:

- Zones (most rules are tied to zones)

- Storage Type

- Storage classification

- Size codes

C.1.1.3 Equipment

You can either create your own equipment pointing to these locations or look at the equipment provided under the master data and create similar equipment pointing to locations in your warehouse.

C.1.2 Loading Your Own Transaction Data

You can choose to load your own transaction data to go with our configuration data and master data. This transaction data can be based

upon the transaction data that has been provided as a part of the Reference Implementation of the Sterling nWMS PCA, which is located in:

`<YANTRA_HOME>/Applications/nWMS/database/FactorySetup/ynw/ri/defaultri/TransactionData`

Where, `<YANTRA_HOME>` points to the Sterling Supply Chain Applications software installation directory.

C.1.2.1 Location Inventory

If you chose to load your own master data, you would most likely need to use the initial data loading service to load the inventory data. For more information about initial data loading services and rapid deployment features, see the *Sterling Supply Chain Applications Integration Guide*.

C.2 Customizing Your Node

You can use the node data that has been provided to explore around and fine tune some configurations. However, Sterling Commerce recommends that you use the copy node functionality to copy the node data to a node of your choice before modifying the data. This enables you to retain a copy of the original Reference Implementation. You can look into this if you cannot get something working after fine tuning some of the configurations. For more information about copying and deleting configurations for node or enterprise' participation information, see the *Sterling Warehouse Management System Configuration Guide*.

C.2.1 Copying Node Configuration

To copy the node configurations from one node to another:

1. Copy the node data using the copy node functionality from the Sterling Supply Chain Applications Configurator.

2. Follow the steps to customize your new node that are provided in the *Sterling Supply Chain Applications Installation Guide*.

C.2.2 Onboarding Clients (Enterprises)

On-boarding new clients is similar to customizing nodes; you can choose to either use the enterprise provided with the Sterling nWMS PCA, or just

copy over the enterprise-related setup to another client. The new client may source from an existing warehouse as well as a new warehouse.

To on-board a new client:

1. Create a backup of the Master Configuration using the Configuration Deployment Tool.

2. Create a new Enterprise in the participant model. Copy or Inherit the configuration from the existing enterprise.

Figure 20–2   Creating a New Enterprise

For more information about creating a new enterprise, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

3. Create a new warehouse using the copy node functionality in the Sterling Supply Chain Applications Configurator.

Figure 20–3   Creating a New Warehouse Using Copy Node
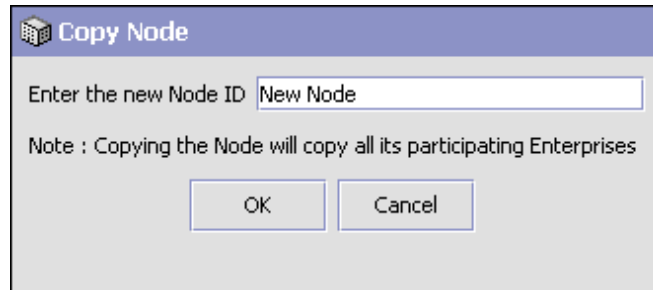
For more information about copying an existing node to a new node, see the *Sterling Warehouse Management System Configuration Guide*.

4. On-board the new client to the new warehouse.

Figure 20–4   On-Boarding a New Client

For more information about on-boarding an enterprise to a node, see the *Sterling Warehouse Management System Configuration Guide*.

5. Remove (off-board) other enterprises from the new warehouse if you do not want these enterprises to participate with the new warehouse.

Figure 20–5   Off-Boarding an Enterprise
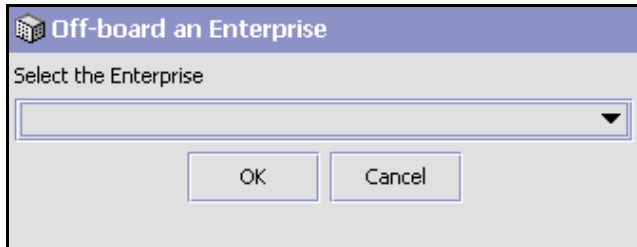
For more information about off-boarding an enterprise from a node, see the *Sterling Warehouse Management System Configuration Guide.*

6. On-board the new client to the existing warehouse.

Figure 20–6   On-Boarding a New Client

For more information about on-boarding an enterprise to a node, see the *Sterling Warehouse Management System Configuration Guide.*

7. Test the new client operations in the existing and as well as new warehouses.

8. Deploy the configurations as follows:

    d. Compare the configurations between the production and test environments using the Configuration Deployment Tool.

Figure 20–7   Comparing Configurations

    The configuration differences appear in the Comparison Results screen, as illustrated in Figure 20–8.

    e. Migrate the new configuration to the production environment, by selecting the appropriate difference and clicking Deploy.

Figure 20–8   Deploying Configurations
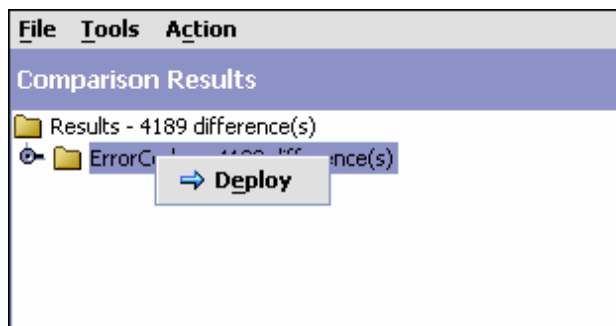
C.2.3 Offboarding Clients (Enterprises)

You can choose to off board the enterprises from the node provided with the Sterling nWMS PCA that has been shipped out-of-the-box. This can be done by using the off-board enterprise functionality.

Figure 20–9   Off-Boarding an Enterprise
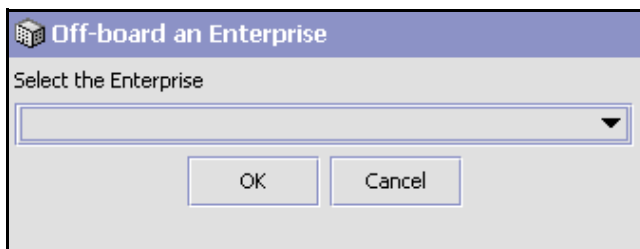
For more information about off-boarding an enterprise from a node, see the *Sterling Warehouse Management System Configuration Guide*.

C.2.4 Deleting a Node

You can delete the data that the Sterling nWMS PCA provides by using the delete node functionality. However, before you do this, you should off-board the clients.

For more information about deleting the current node, see the *Sterling Warehouse Management System Configuration Guide*.

C.3 Using the Test Environment for Production

Once you have configured the system to model your network warehouse and completed the User Acceptance Test (UAT) using the data, to go live into production with the test bed, truncate all transaction data by executing the following ant script:

```
ant -f ynw_load_defaults.xml truncatetransactiondata
```

C.4 Moving Data from the Test Environment to Production

Once you have configured the system to model your network warehouse and completed the User Acceptance Test (UAT) using the data, to go into production on a machine different from the test environment, use the Sterling Supply Chain Applications Configuration Deployment Tool to copy over the configuration from one schema to another. For more details about Deploying Configuration Data, see the *Sterling Supply Chain Applications Installation Guide*.

D

Localizing the Sterling nWMS PCA

All Sterling nWMS PCA components use a common resource bundle that contains literals displayed on the screen. The Sterling nWMS PCA enables you to customize and localize resource bundles as needed.

In addition, literals used in customized screens have their own resource bundle and should also be considered during the localization process. For information about localizing your customization to the Sterling nWMS PCA, see the *Sterling Supply Chain Applications Customization Guide*.

> **Note:** Literals cannot be localized in the following places:
> - Condition Builder
> - Order/Shipment Monitor
> - Hard-coded literals in APIs

This appendix explains how to localize the Sterling nWMS PCA.

D.1 Resource Bundles

The Sterling nWMS PCA always releases complete resource bundles in the `ynwbundle.properties` file with the localized versions of the Sterling nWMS PCA. Incremental updates are not provided. If you localize the Sterling nWMS PCA, it is your responsibility (or that of your third-party localization company) to compare and validate the differences between the resource bundles shipped with the product to those you have localized.

The resource bundles of the Sterling nWMS PCA application are located in the `<YNW_HOME>/resources/ynwbundle.properties` file.

For more information about localizing the resource bundles, see the *Sterling Supply Chain Applications Localization Guide*.

E

Packing Using the Sterling Supply Chain Mobile Application

The Sterling Supply Chain Mobile Application enables you to perform pack processes in a warehouse.

You can use the Sterling Supply Chain Mobile Application for:

- Packing without recording item details.
- Packing with the system identifying item details.
- Packing with the user recording item details.
- Verify packing.
- Unpacking.

This appendix explains the processes of packing, verifying pack, and unpacking using the Sterling Supply Chain Mobile Application.

For more information about the Sterling Supply Chain Mobile Application console framework, see the *Sterling Supply Chain Mobile Application User Guide*.

E.1 Understanding the Pack Processes Supported by the Sterling Supply Chain Mobile Application

Packing in a warehouse depends on the way the inventory is picked and the reference available to the packer. Packing also depends on the containerization process.

E.1.1 Packing Based on Picking

This section explains the various ways of packing, depending upon the different picking methods.

Sterling Supply Chain Mobile Application Cart Manifest Pick

Here, inventory is picked using the Sterling Supply Chain Mobile Application and sorted into cart locations, based on the shipments to which they belong.

- If the packlist is available to the packer, the packer scans the shipment number from the packlist to identify the shipment to pack.

- If the packlist is not available to the packer, the packer scans the cart ID first and then the cart location associated with the shipment to pack.

Paper-Based Cart Manifest Pick

Here, inventory is picked using a batch sheet and sorted into cart locations based on the shipments to which they belong.

- If the packlist is available to the packer, the packer scans the shipment number from the packlist to identify the shipment to pack.

- If the packlist is not available to the packer, the packer scans the batch sheet number first and then the cart location associated with the shipment to pack.

Sterling Supply Chain Mobile Application Cart Manifest Pick using Totes

Here, inventory is picked using the Sterling Supply Chain Mobile Application and sorted into different totes. Each tote is associated with a shipment.

The packer scans the tote ID to identify the shipment to pack.

Sterling Supply Chain Mobile Application Pick using a Pallet

Here, inventory for each shipment is picked into a separate pallet using the Sterling Supply Chain Mobile Application.

If the packlist is not available to identify the shipment to pack, the packer scans the pallet ID.

Paper-Based Pick using a Pallet or Case

Here, each shipment is picked into a pallet or a case using a batch sheet.

- If the pick confirmation is done after picking at the batch console, the packer scans the pallet ID or the case ID to identify the shipment.

- If the pick confirmation is done at the pack station without the pallet or the case, the packer scans the batch sheet number to identify the shipment.

- If the pick confirmation is not done at all, the packer scans the batch sheet number to identify the shipment.

E.1.2 Packing Based on Containerization

This section explains the various ways of packing based on the containerization methods supported by the Sterling Supply Chain Mobile Application.

E.1.2.1 User-Directed Containerization

In this type of containerization, the packer decides on the appropriate container to use for packing, based on the dimension of the container.

To pack a container:

1. Select the container in which you want to pack.

2. Apply a pre-printed container SCM to the container.

3. Scan the container SCM. You can alternately ask the system to generate a SCM for you.

4. Pack inventory in the container.

5. To pack more containers, repeat Step 1 through Step 4 until you have packed all containers for all the shipments.

E.1.2.2 System-Directed Containerization

In this type of containerization, the system suggests the appropriate container for packing, based on the dimension of the container.

To pack a container:

1. Use the container suggested by the Sterling Supply Chain Mobile Application.

2. Apply a pre-printed container SCM to the container.

3. Scan the container SCM. You can alternately ask the system to generate a SCM for you.

4. Pack inventory in the container.

5. To pack more containers, repeat Step 1 through Step 4 until you have packed all containers for all the shipments.

E.2 Pack Strategies

There are two strategies for packing: Shipment-Driven and Item-Driven. This section explains these two pack strategies.

E.2.1 Shipment-Driven Packing

In this type of pack, the shipment is packed after identifying the shipment number. Shipment-Driven packing is further categorized into User-Directed Packing and System-Directed Packing.

> **Note:** Multi-level container packing is not supported in Shipment-Driven Packing.

E.2.1.1 User-Directed Packing

In this type of packing, the packer selects the appropriate container for packing.

There are three ways of performing this type of packing.

- Packing Without Recording Item Details

- Packing With the System Identifying Item Details

- Packing With the User Recording Item Details

Figure 20–10 illustrates the Shipment-Driven, User-Directed Packing. Figure 20–11 illustrates capturing the item attributes.

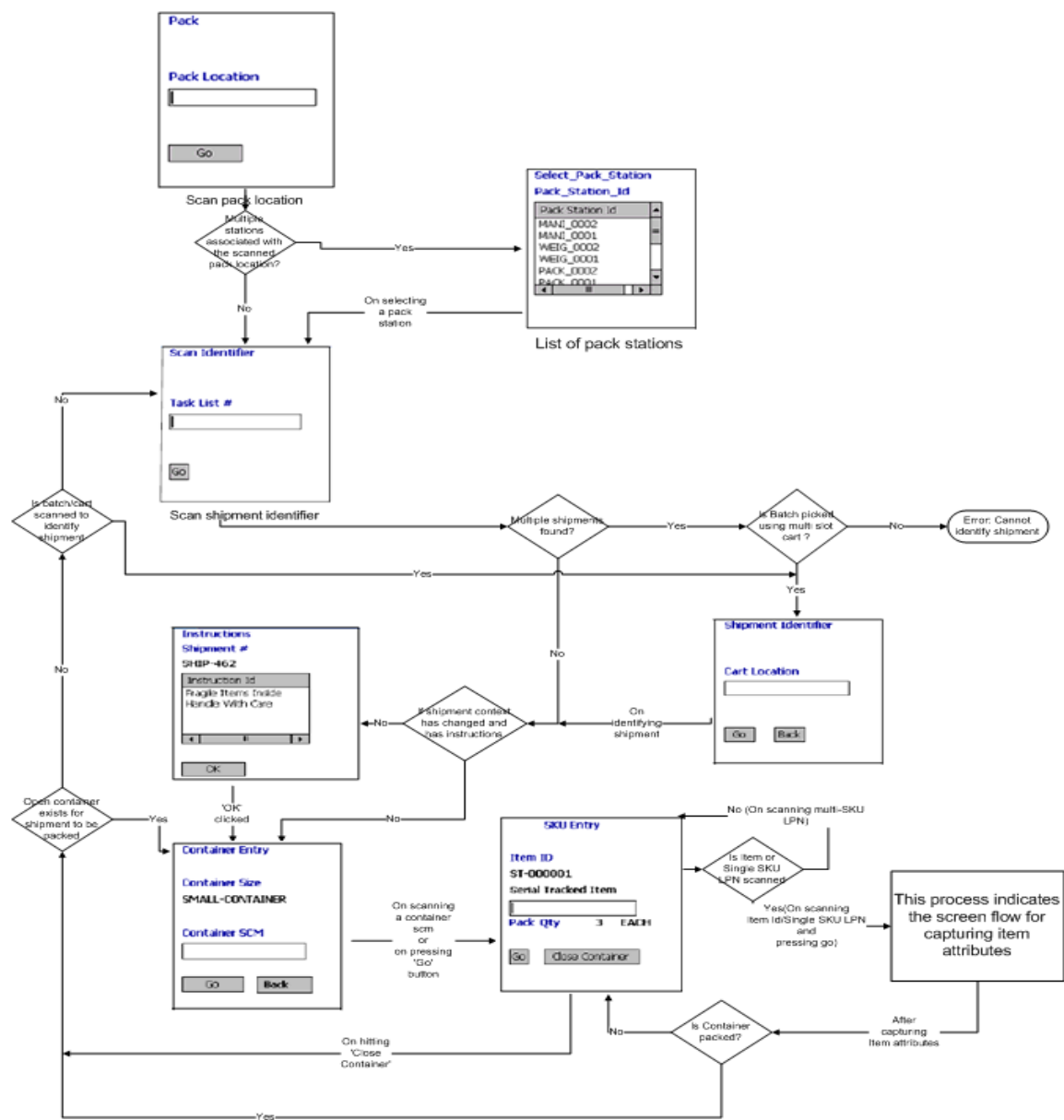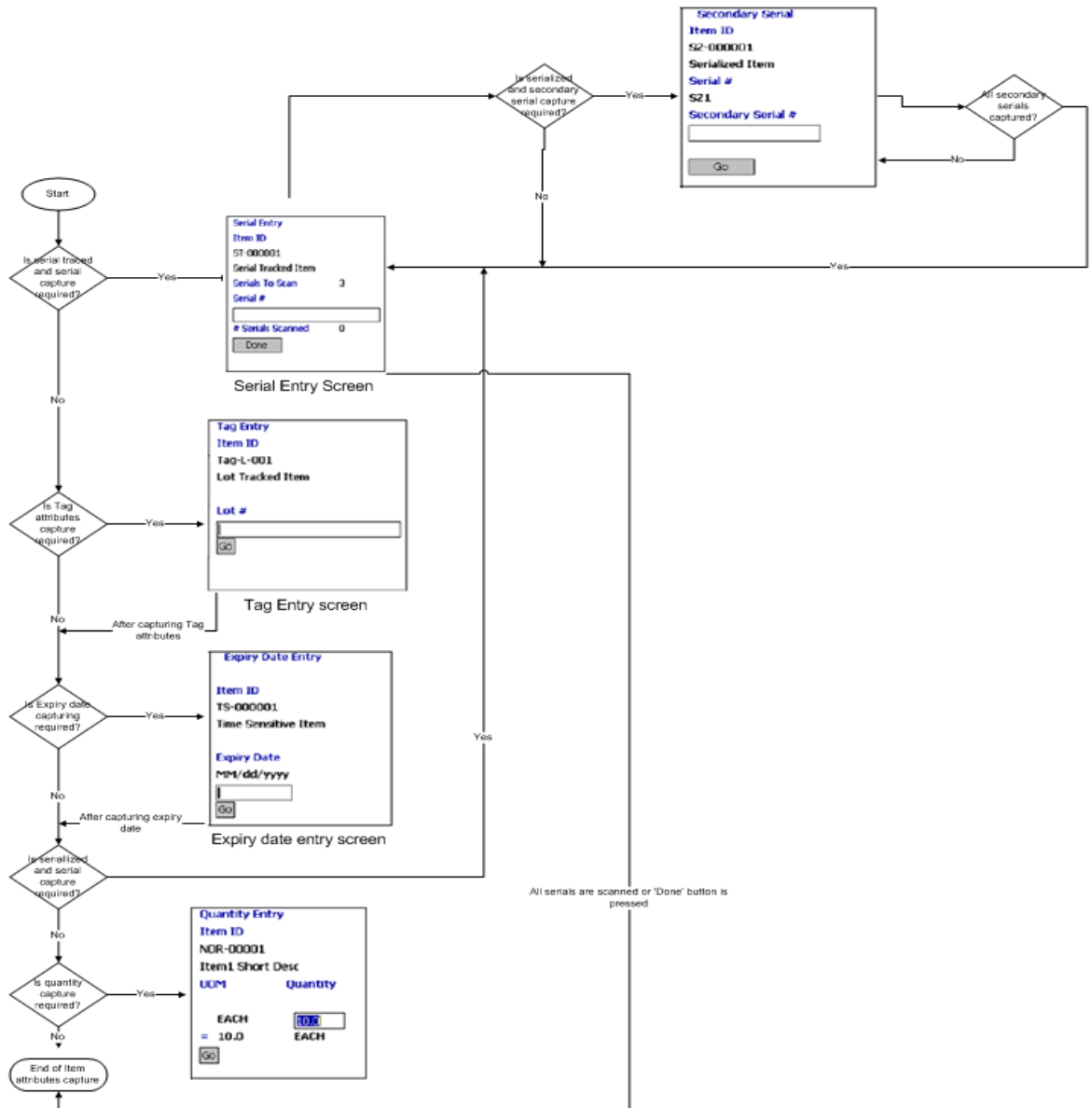*Figure 20–10   Shipment-Driven, User-Directed Packing*
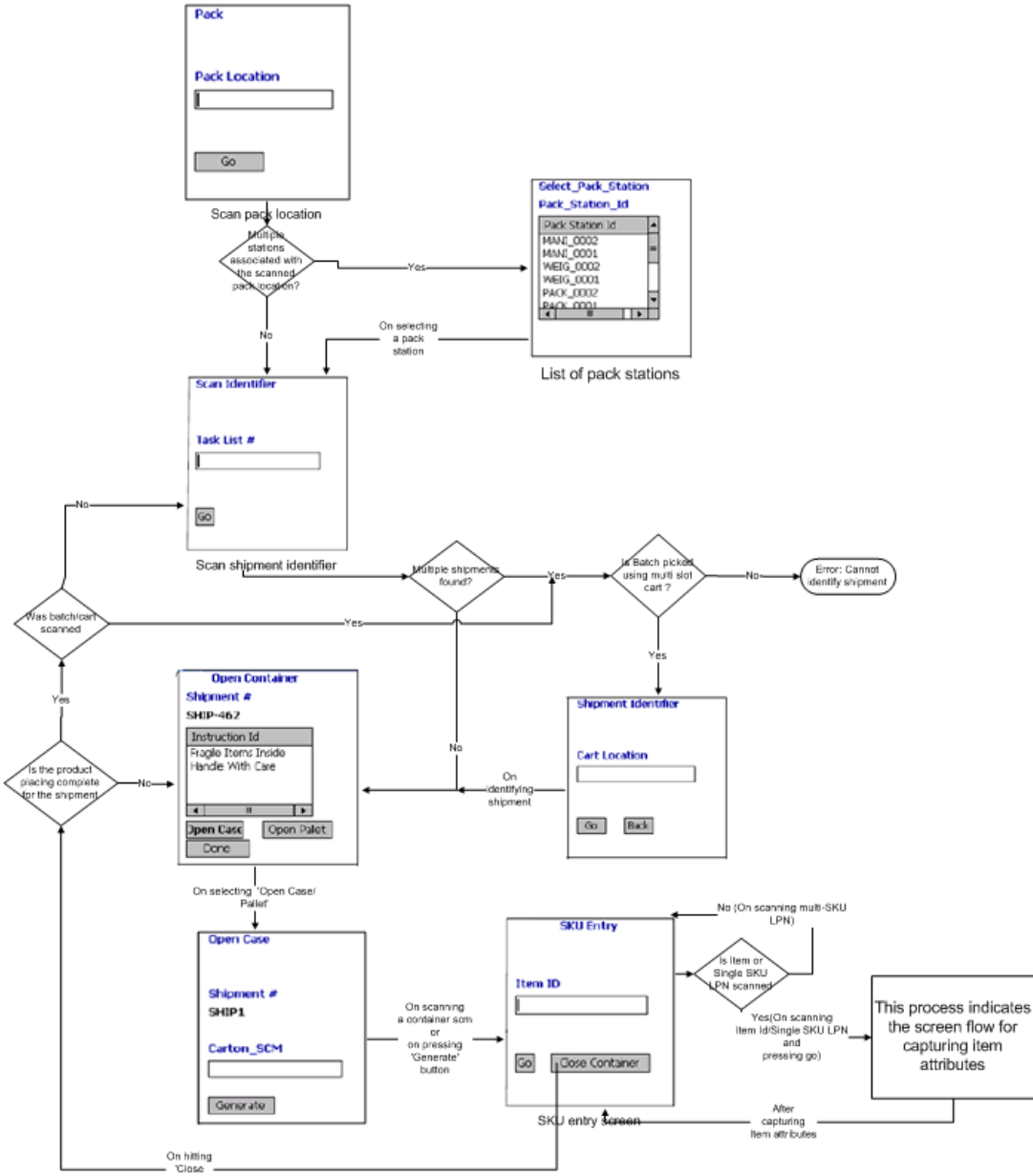
Figure 20–11   Capturing Item Attributes
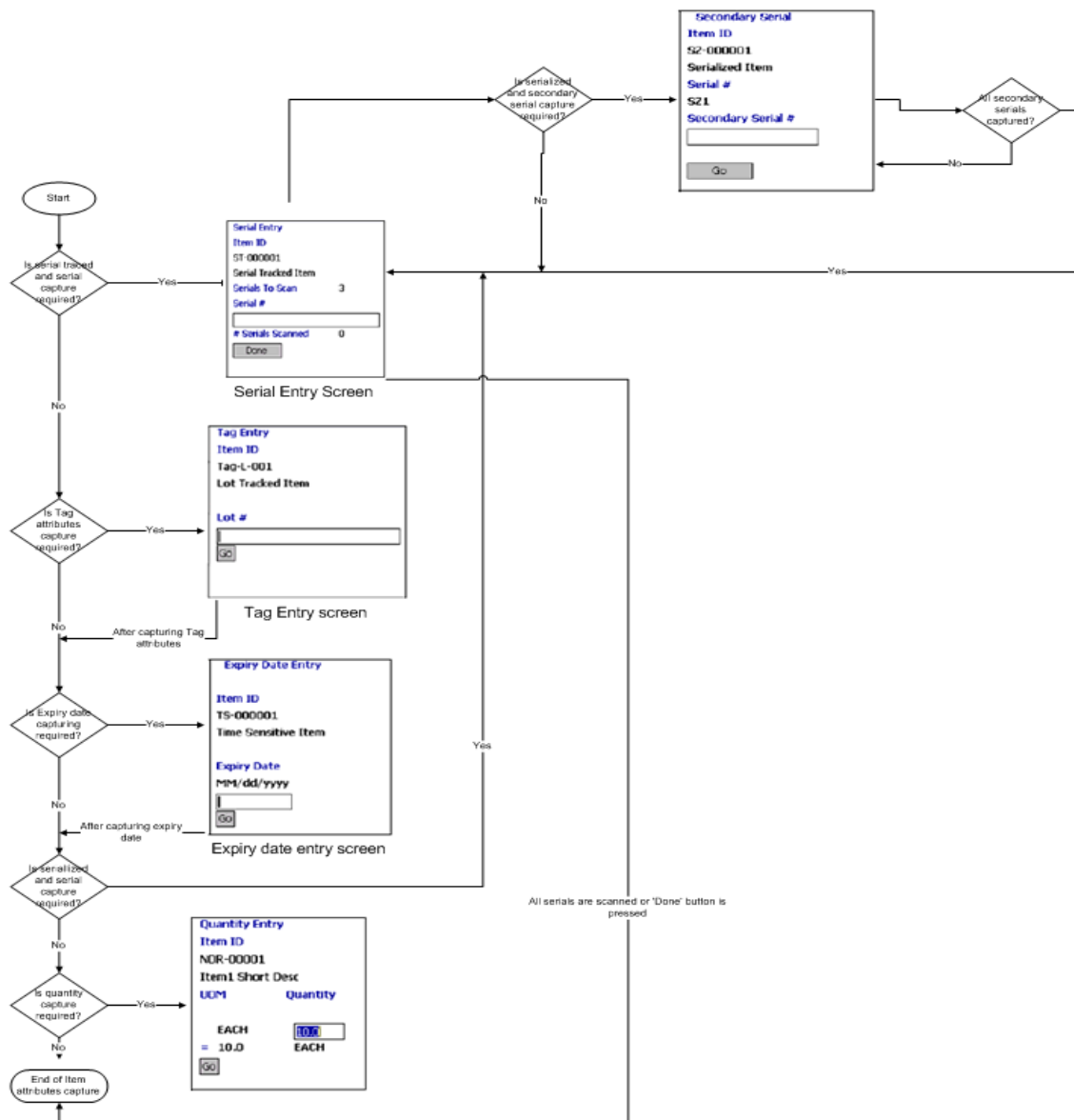
E.2.1.1.1 Packing Without Recording Item Details

The Sterling Supply Chain Mobile Application enables you to pack items without capturing the item details.

To pack items without recording the item details:

1. From the Menu page, select Pack Shipment and press Enter. The Pack screen displays, which enables you to scan the pack location. For more information about scanning the pack location, see Section E.2.3, "Scanning a Pack Location".

   • If there is more than one pack station associated with a pack location, the Select Pack Station screen displays, which enables you to select the appropriate pack station. For more information about selecting a pack station, see Section E.2.4, "Selecting a Pack Station".

2. The Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

   • If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

      In the Shipment Identifier screen:

      – If you want to continue packing, choose Go. The Open Container screen displays, which enables you to open a case or a pallet. For more information about opening a new container, see Section E.2.1.1.4, "Opening a Container".

      – To identify a new shipment for packing, choose Back. The Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

   • Otherwise, the Open Container screen displays, which enables you to open a case or a pallet. For more information about opening a new container, see Section E.2.1.1.4, "Opening a Container".

3. In the Open Container screen:

- To pack in a pallet or case, choose Open Case or Open Pallet. The Open Case or Open Pallet screen displays which enables you to open a pallet or a case. For more information about opening a case or a pallet, see Section E.2.1.1.5, "Opening a Case or a Pallet".

- Choose Done to pack for a new shipment.

  – If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

  – Otherwise, The Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

4. In the Open Case or Open Pallet screen, scan the container SCM or choose Generate. The Open Container screen displays. For more information about opening a case or a pallet, see Section E.2.1.1.5, "Opening a Case or a Pallet".

5. Repeat Step 3 through Step 4 to pack more containers for the shipment.

6. Repeat Step 2 through Step 4 to pack more shipments.

7. After packing all the shipments, press F10 to go back to the main menu.

E.2.1.1.2 Packing With the System Identifying Item Details

In this type of packing, the system automatically identifies the details of the items.

To perform this type of pack, follow all the steps in Section E.2.1.1.1, "Packing Without Recording Item Details".

> **Note:**   The inventory sorted in a container is packed in an outbound container for the shipment. When you press Open Case or Open Pallet in the Open Container screen after packing the inventory for the shipment, empty containers are generated for the shipment.

> **Note:** To extend the pack functionality provided by the Sterling nWMS PCA to enable the system to record item details automatically:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfpackshpmt resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value>.
>
> - Set the value for the AutoRecordContents attribute to 'Y'.
>
> For more information about creating a new resource and adding a new menu entry, see *Sterling Supply Chain Applications Customization Guide*.

E.2.1.1.3 Packing With the User Recording Item Details

The Sterling Supply Chain Mobile Application enables you to pack recording item details.

To pack with recording item details:

1. Perform Step 1 of Section E.2.1.1.1, "Packing Without Recording Item Details".

2. The Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

   - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

     In the Shipment Identifier screen:

     — If you want to continue packing, choose Go. The Open Container screen displays, which enables you to open a case or a pallet. For more information about opening a new container, see Section E.2.1.1.4, "Opening a Container".

- To identify a new shipment for packing, choose Back. The Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

- Otherwise, the Open Container screen displays, which enables you to open a case or a pallet. For more information about opening a new container, see Section E.2.1.1.4, "Opening a Container".

3. In the Open Container screen:

- To pack in a pallet or case, choose Open Case or Open Pallet. The Open Case or Open Pallet screen displays which enables you to open a pallet or a case. For more information about opening a case or a pallet, see Section E.2.1.1.5, "Opening a Case or a Pallet".

- Choose Done to pack for a new shipment.

  - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

  - Otherwise, the Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

4. In the Open Case or Open Pallet screen, scan the container SCM or choose Generate to pack in a case or a pallet. The SKU Entry screen displays. For more information about scanning an item ID, see Scanning an Item ID.

5. In the SKU Entry screen, choose Go to capture item details.

6. Repeat Step 3 through Step 5 to pack more containers for a shipment.

7. Repeat Step 2 through Step 5 to pack more shipments.

8. After packing all the shipments, press F10 to go back to the main menu.

Scanning an Item ID
In the SKU Entry screen:

1. Scan the item ID.

```
              SKU Entry


    Item ID
    [                        ]




    [Go]  [ Close Container ]
```

2. Do either of the following:

   • Choose Go.

     – If there are more than one Inventory UOM, Product Class, or Inventory Status associated with the item, the Select SKU screen displays, which enables you to select the Inventory UOM, Product Class, and Inventory Status of the item. For more information about selecting the Inventory UOM, Product Class, and Inventory Status, see Section E.2.6, "Selecting a SKU".

     – If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

     Note: You can also scan the serial number of an item in the SKU Entry screen. The Serial Entry screen does not appear.

     – If you scan a serialized item with a secondary serial number, the Secondary Serial Entry screen displays which enables you to scan a secondary serial number. For more information about scanning a secondary serial number, see Section E.2.7, "Scanning the Secondary Serial Number".

> **Note:** If you scan a serial-tracked item with a secondary serial number in the SKU Entry screen, the Secondary Serial Entry screen does not appear.

- If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

- If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- Otherwise, the Quantity Entry screen displays, which enables you to enter quantity of items packed in a container. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- Choose Close Cntr. The Open Container screen displays, which enables you to open a new container for packing. For more information about opening a container, see Section E.2.1.1.4, "Opening a Container".

Table 20–10   Criteria Parameters

Field	Description
Item ID	Enter or scan the item ID of the item. You can also scan the UPC Case Code of the item.

Table 20–11   Barcode Types

Field	Barcode Type
Item ID	ItemOrInventoryContainer

E.2.1.1.4   Opening a Container

In the Open Container screen, do either of the following:

- Choose Open Case or Open Pallet to pack in a case or a pallet. The Open Case or Open Pallet screen displays, which enables you to open a new case or pallet for packing. For more information about opening a case, see Section E.2.1.1.5, "Opening a Case or a Pallet".

- Choose Done.

  - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

  - Otherwise, the Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

Table 20–12   Criteria Parameters

Fields	Description
Shipment #	Shipment to be packed.
Instructions	Instructions associated with pack.

> **Note:** The instructions displayed contain a maximum of twenty characters.

E.2.1.1.5 Opening a Case or a Pallet

In the Open Case or Open Pallet screen:

1. Scan the carton or pallet SCM and press tab or choose Generate if you want the system to generate a SCM.

   - If you are packing without recording item details, the Open Container screen displays, which enables you to open a new container for packing. For more information about opening a container, see Section E.2.1.1.4, "Opening a Container".

   - Otherwise, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Scanning an Item ID.

Open Case

Shipment #
SHIP1

Carton_SCM

[   ]

[Generate]

Table 20–13   Criteria Parameters

Fields	Description
Shipment #	Shipment number to be packed.
Carton SCM	Enter or scan the carton or pallet SCM of the carton to be packed.

Table 20–14   Barcode Types

Field	Barcode Type
Carton SCM	CartonSCMscan

> **Note:**   If you are packing partially or completely unpacked containers for a shipment and you have scanned an outbound container SCM as a task list identifier in the Scan Identifier screen, the scanned container SCM is suggested in the Open Case or Open Pallet screen.

E.2.1.2 System-Directed Packing

In this type of pack, the system suggests containers for packing.

In System-Directed Pack, the packer can pack by capturing the item details. This section explains the System-Directed Pack.

Figure 20–12 illustrates the Shipment-Driven, System-Directed Packing.

Figure 20–13 illustrates capturing item attributes.

Figure 20–12   Shipment-Driven, System-Directed Packing

Figure 20–13   Captruing Item Attributes

E.2.1.2.1 Packing With the User Recording Item Details

The Sterling Supply Chain Mobile Application enables you to record item details while packing.

To pack by recording item details:

1. Perform Step 1 of Section E.2.1.1.1, "Packing Without Recording Item Details".

2. The Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

   - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

   - If there are any instructions associated with the shipment, the Instructions screen displays. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

   - Otherwise, the Container Entry screen displays which enables you to scan a container SCM. For more information about scanning container SCM, see Scanning the Container SCM.

3. In Container Entry screen, scan the container SCM and press Go. The SKU Entry screen displays which enables you to scan an item ID. For more information about scanning a SKU, see Scanning a SKU.

4. In the SKU Entry screen:

   - Choose Go to continue capture item details for the shipment.

   - Choose Close Cntr if you have done a short picking for the item.

5. Repeat Step 3 through Step 4 to pack more containers for a shipment.

6. Repeat Step 2 through Step 4 to pack more shipments.

7. After packing all the shipments, press F10 to go back to the main menu.

Scanning the Container SCM

To scan Container SCM:

1. In the Container Entry screen, scan the container SCM.

```
Container Entry

Container Size
SMALL-CONTAINER

Container SCM

┌─────────────────────┐
│                     │
└─────────────────────┘

   ┌────────┐   ┌────────┐
   │   Go   │   │  Back  │
   └────────┘   └────────┘
```

2. Do either of the following:

- Choose Go. The SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning a SKU, see Scanning a SKU.

- Choose Back.

  – If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

  – Otherwise, the Scan Identifier screen displays. For more information about scanning a task list number, see Section E.2.1.3, "Scanning the Task List Number".

Table 20–15   Criteria Parameters

Fields	Description
Container Size	System suggested container size.
Container SCM	Enter or scan the container SCM.

Table 20–16   Barcode Types

Field	Barcode Type
Container SCM	CartonSCMscan

> **Note:** If you are packing partially or completely unpacked containers for a shipment and you have scanned an outbound container SCM as a task list identifier in the Scan Identifier screen, the scanned container SCM is suggested in the Container Entry screen.

Scanning a SKU

In the SKU Entry screen,

1. Scan the item ID.

```
        SKU Entry

Item ID
ST-000001
Serial Tracked Item
[                    ]
Pack Qty      3    EACH

[Go]  [ Close Container ]
```

2. Do either of the following:

- Choose Go.

    - If there are more than one Inventory UOM, Product Class, or Inventory Status associated with the item, the Select SKU screen displays, which enables you to select the Inventory UOM, Product Class, and Inventory Status of the item. For more information about selecting the Inventory UOM, Product

Class, and Inventory Status, see Section E.2.6, "Selecting a SKU".

- If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

Note: You can also scan the serial number of an item in the SKU Entry screen. The Serial Entry screen does not appear on choosing Go.

- If you scan a serialized item with a secondary serial number, the Secondary Serial Entry screen displays which enables you to scan a secondary serial number. For more information about scanning a secondary serial number, see Section E.2.7, "Scanning the Secondary Serial Number".

Note: If you scan a serial-tracked item with a secondary serial number in the SKU Entry screen, the Secondary Serial Entry screen does not appear on choosing Go.

- If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

- If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- If the item scanned is a normal item, or if quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- If you want to pack more items in the same container, the SKU Entry screen displays.

- Choose Close Cntr.

    - If there are more containers to be packed for the shipment, the Container Entry screen displays, which enables you to scan a new container for packing. For more information about scanning the container SCM, see Scanning the Container SCM.

    - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

    - Otherwise, the Scan Identifier screen displays which enables you to scan a task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

> **Note:** Choosing Close Cntr indicates that the container is packed with number of units less than the suggested number of units of items. The status of the container changes to 'Short Picked'.

Table 20–17   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
	When performing a single-level LPN packing, enter or scan the item ID of an item. You can also scan the UPC Case Code of the item.
	When performing multi-level LPN packing, enter or scan the case ID of the case to be packed for a shipment.
Pack Qty	Number of units of item to be packed.

Table 20–18   Barcode Types
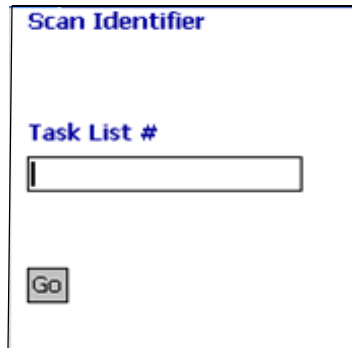
Field	Barcode Type
Item ID	ItemOrInventoryContainer

E.2.1.3 Scanning the Task List Number

To scan the task list number:

1. In the Scan Identifier screen, scan the task list number.

2. Choose Go.

- When performing a Shipment-Driven, User-Directed Pack:

    – If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

    – Otherwise, the Open Container screen displays, which enables you to open a new container to perform packing. For more information about opening a container, see Section E.2.1.1.4, "Opening a Container".

- When performing a Shipment-Driven, System-Directed Pack:

    – If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

    – If there are instructions to be viewed for the shipment, the Instructions screen displays, which enables you to view instructions. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

 — Otherwise, the Container Entry screen displays which enables you to scan a container SCM. For more information about scanning container SCM, see Scanning the Container SCM.

Table 20–19   Criteria Parameters

Field	Description
Task List #	Enter or scan the shipment number, tote ID, batch number, pallet ID or case ID, or the multi sort cart ID.
	Enter or scan an outbound container SCM if you are packing partially or completely unpacked container for a shipment.

Table 20–20   Barcode Types

Field	Barcode Type
Task List #	TaskListScan

> **Note:**   The Sterling nWMS PCA recommends that you use Shipment-Driven Packing to pack partially or completely unpacked containers for a shipment.

E.2.1.4 Scanning the Cart Location

To scan the cart location:

1. In the Shipment Identifier screen, scan the cart location associated with the shipment.

2. Do either of the following:

- Choose Go.

  When performing a Shipment-Driven, User-Directed pack:

  – The Open Container screen displays, which enables you to open a new container to perform pack. For more information about opening a container, see Section E.2.1.1.4, "Opening a Container".

  When performing a Shipment-Driven, System-Directed pack:

  – If there are instructions to be viewed for the shipment, the Instructions screen displays, which enables you to view instructions. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

  – Otherwise, the Container Entry screen displays, which enables you to scan container SCM. For more information about scanning a container SCM, see Scanning the Container SCM.

- Choose Back. The Scan Identifier screen displays, which enables you to scan the task list number. For more information about scanning task list number, see Section E.2.1.3, "Scanning the Task List Number".

Table 20–21   Criteria Parameters

Field	Description
Cart Location	Enter or scan the cart location associated with the shipment being packed.

Table 20–22   Barcode Types

Field	Barcode Type
Cart Location	CartLocation

E.2.2 Item-Driven Packing

In this case, the shipment to be packed is identified using item details of an item belonging to that shipment. Once the shipment is identified, it is packed.

Item-Driven packing is further categorized into User-Directed Packing and System-Directed Packing.

> **Note:** Multi-level container packing is not supported in Item-Driven Packing.

E.2.2.1 User-Directed Packing

In this type of packing, the packer selects the appropriate container for packing. The packer can pack shipments containing only one item.

There are two ways of performing this type of packing:

- Packing With the System Identifying Item Details
- Packing With the User Recording Item Details

Figure 20–14 illustrates the Item-Driven, User-Directed Packing.

Figure 20–15 illustrates capturing item attributes.

Figure 20–14   Item-Driven, User-Directed Packing
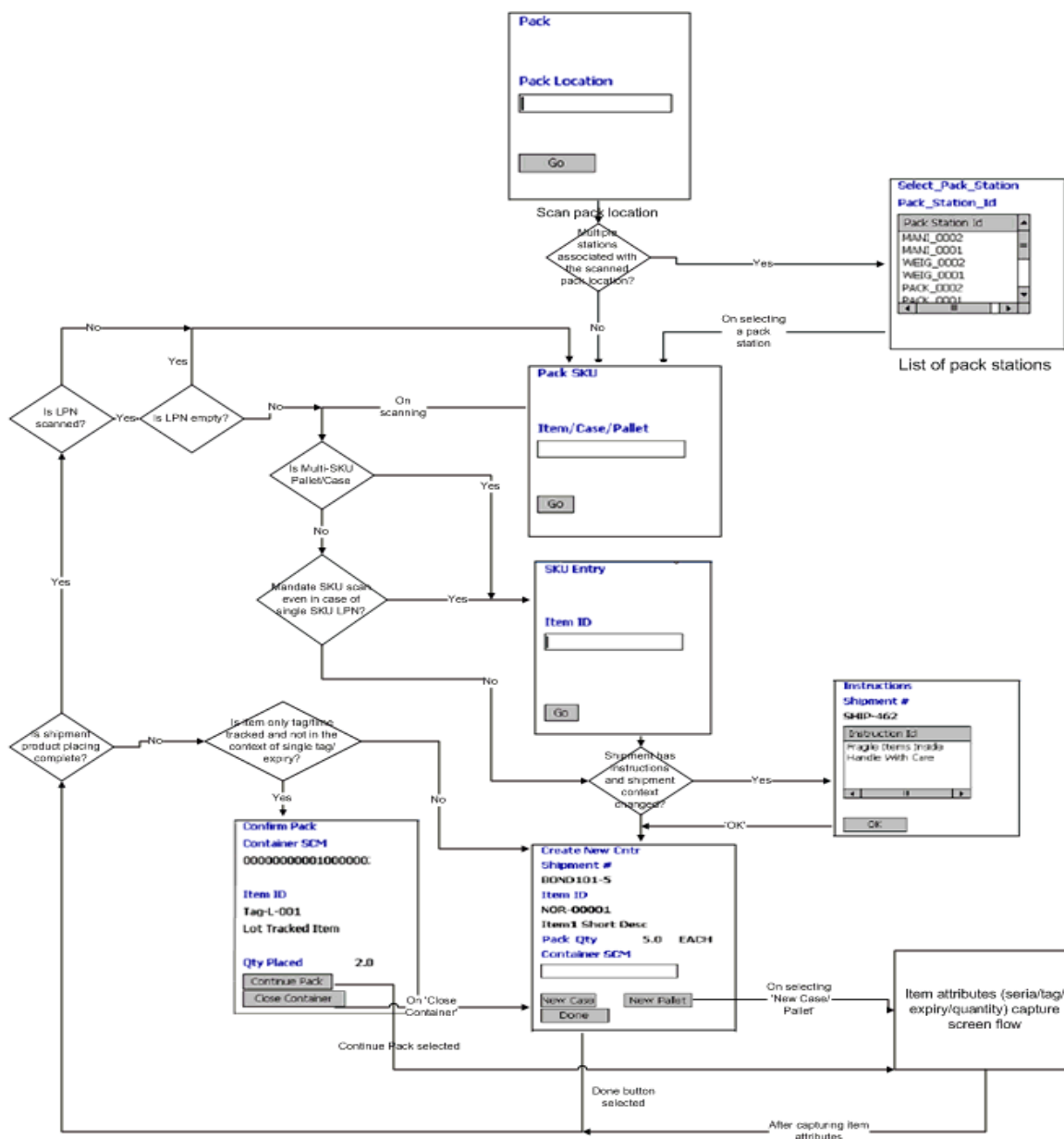
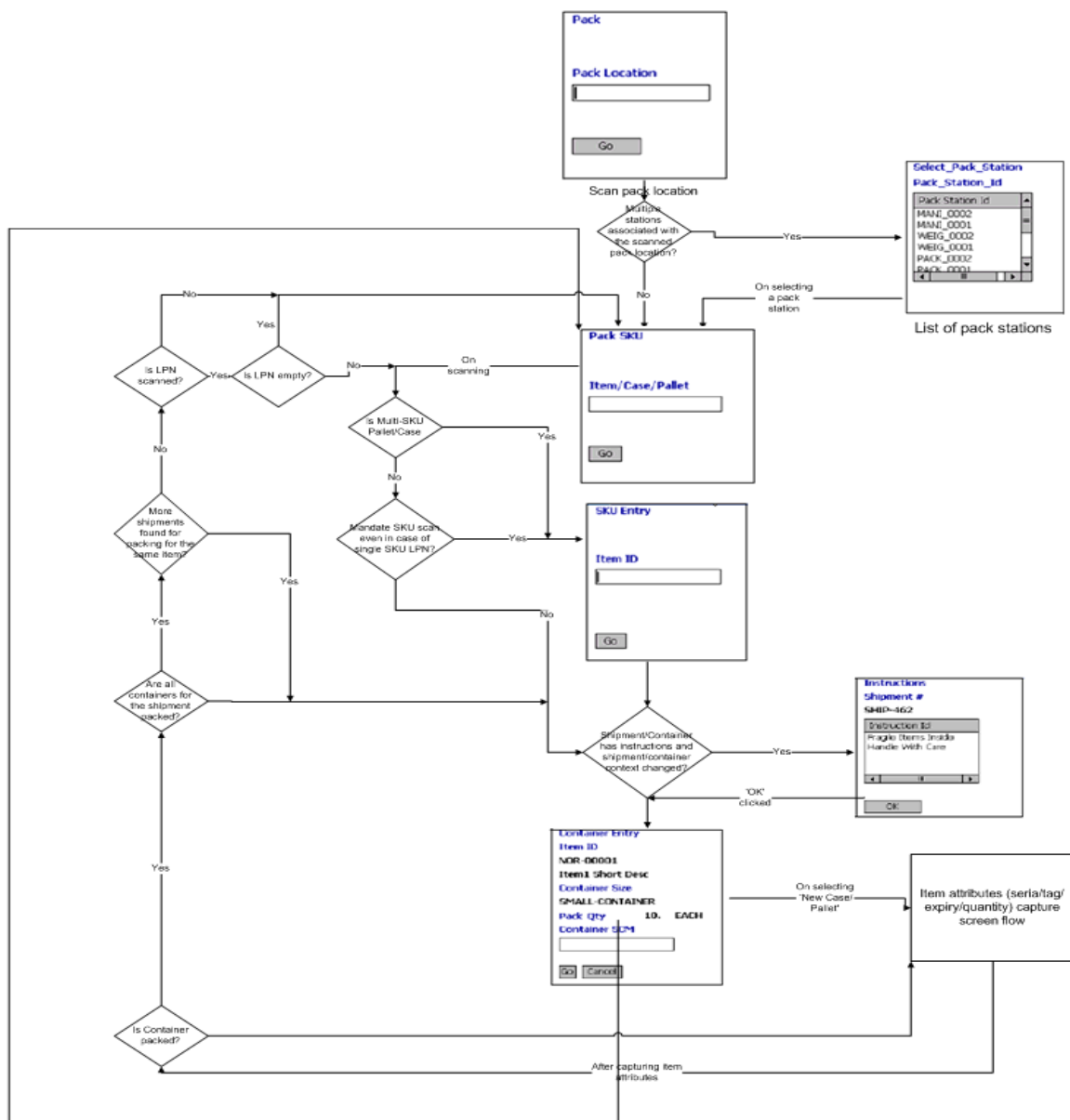*Figure 20–15   Capturing Item Attributes*
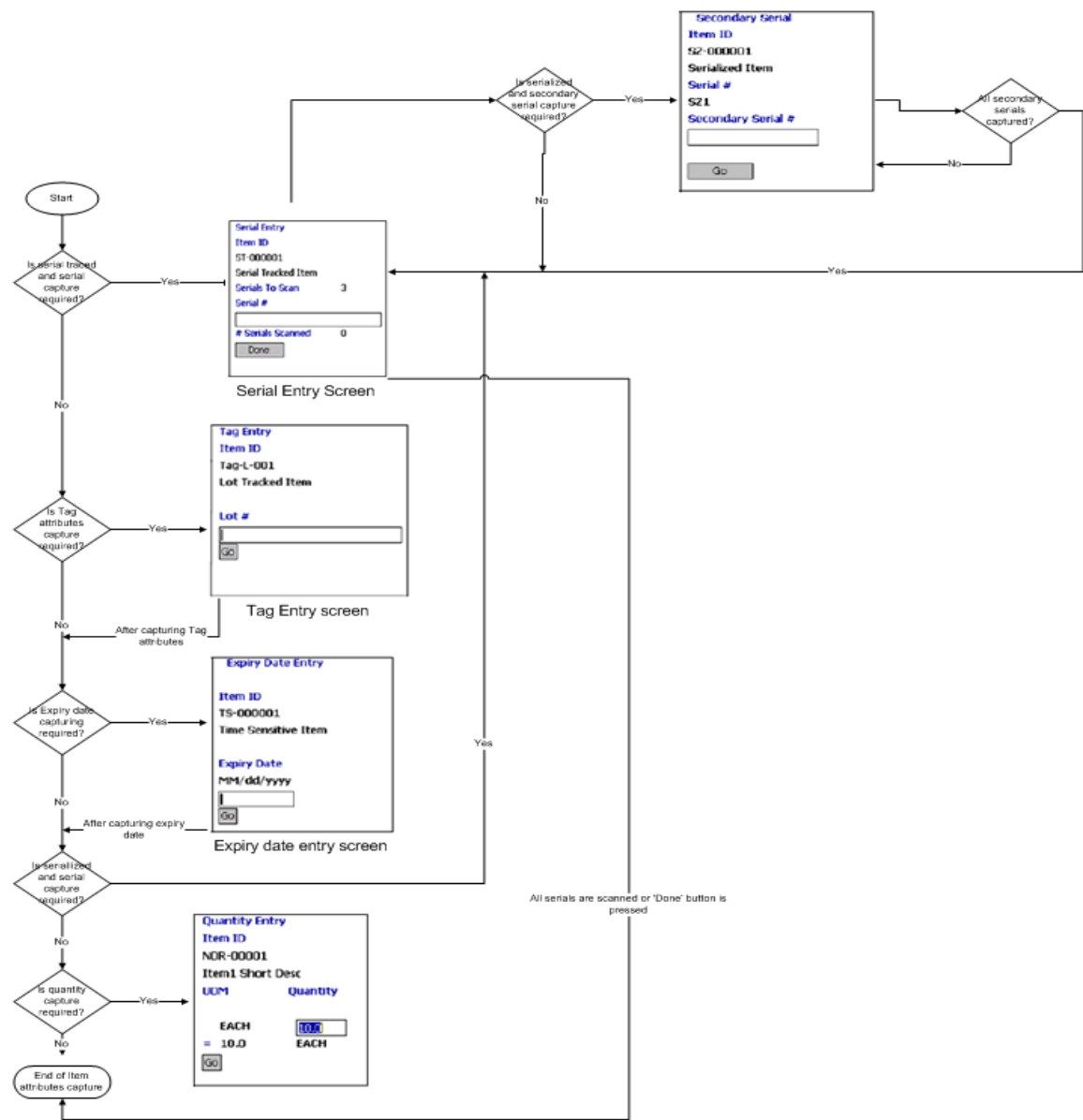
E.2.2.1.1 Packing With the System Identifying Item Details

In this type of packing, the system automatically identifies the details of the items.

To perform packing with system recording item details:

1. From the Menu page, select Pack SKU and press Enter. The Pack screen displays, which enables you to scan the pack location. For more information about scanning the pack location, see Section E.2.3, "Scanning a Pack Location".

   - If there is more than one pack station associated with a pack location, the Select Pack Station screen displays, which enables you to select the appropriate pack station. For more information about selecting a pack station, see Section E.2.4, "Selecting a Pack Station".

2. The Pack SKU screen displays, which enables you to scan an item ID, pallet, or case to pack. For more information about scanning an item ID, pallet, or case, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

   - If a pallet or case is scanned and you want to capture the item in it, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.2.2.4, "Scanning a SKU".

Note: When an item is scanned in the Pack SKU screen or the SKU Entry screen, the shipment to which the item belongs is identified using the Shipment barcode source. The system also displays an appropriate message if there are no shipments found for the scanned item in the pack station.

Note: To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:

- In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>

- Set the value for the MandateSKUScan attribute to 'Y'.

For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

Note: You can also scan the serial number of an item in the Pack SKU screen if the item is present as a loose SKU at the pack location.

You can also scan a 2D barcode in the Item, Case, or Pallet field. If a 2D barcode is captured in the SKU field, the information present as a part of the barcode is not captured again and relevant screens do not appear.

For example, if a tag-tracked item with lot number "L" has tag information from the barcode translation that the item belongs to lot "L", the Tag Entry window does not display.

- If the item has more that one Inventory UOM, Product Class, or Inventory Status, the Select SKU screen displays, which enables

you to select the UOM, Product Class, and Inventory Status of an item. For more information about selecting the UOM, Product Class, and Inventory Status of an item, see Section E.2.6, "Selecting a SKU".

- • If there are any instructions for the pack, the Instructions screen displays, which enables to view instructions related to packing. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

3. The Create New Cntr screen displays, which enables you to scan a container SCM. For more information about scanning container SCM, see Section E.2.2.1.3, "Creating a New Container".

4. Follow Step 3 of Section E.2.2.1.2, "Packing With the User Recording Item Details" if Sterling Supply Chain Mobile Application asks you to enter item details.

5. Repeat Step 3 to pack more containers for a shipment.

6. Repeat Step 2 through Step 3 to pack more shipments.

7. After packing for all the shipments, press F10 to go back to the main menu.

Note: The inventory sorted in a container is packed in an outbound container for the shipment. When you press Open Case or Open Pallet in the Open Container screen after packing the inventory for the shipment, empty containers are generated for the shipment.

> **Note:** To extend the pack functionality provided by the Sterling nWMS PCA to enable the system to record item details automatically:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfpackshpmt resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value>.
>
> Set the value for the AutoRecordContents attribute to 'Y'.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

E.2.2.1.2 Packing With the User Recording Item Details

In this type of packing, you can record item details.

To pack by recording item details:

1. Perform Step 1 of Section E.2.2.1.1, "Packing With the System Identifying Item Details".

2. The pack SKU screen displays, which enables you to scan an item ID, pallet, or case to pack. For more information about scanning an item ID, pallet, or case, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

   - If a pallet or case is scanned and you want to capture the item in it, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.2.2.4, "Scanning a SKU".

> **Note:** When an item is scanned in the Pack SKU screen or the SKU Entry screen, the shipment to which the item belongs is identified using the Shipment barcode source. The system also displays an appropriate message if there are no shipments found for the scanned item in the pack station.

> **Note:** To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>
>
> - Set the value for the MandateSKUScan attribute to 'Y'.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

- If the item has more than one Inventory UOM, Product Class, or Inventory Status, the Select SKU screen displays, which enables you to select the UOM, Product Class, and Inventory Status of an item. For more information about selecting the UOM, Product Class, and Inventory Status of an item, see Section E.2.6, "Selecting a SKU".

- If there are any instructions for packing, the Instructions screen displays, which enables to view instructions related to packing. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

3. The Create New Cntr screen displays, which enables you to scan a container SCM. For more information about scanning container SCM, see Section E.2.2.1.3, "Creating a New Container".

   In the Create New Cntr screen:

- To pack in a new case or a pallet, choose New Case or New Pallet.

    - If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number of the item. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

    > **Note:** You can also scan the serial number of an item in the Pack SKU screen if it is present as loose SKU in the pack location. For more information about scanning a serial number in the Pack SKU screen, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

    - If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

    - If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

    - Otherwise, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- To identify a new shipment to pack, choose Done.

    - If a pallet or case is scanned and you want to capture the item in it, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.2.2.4, "Scanning a SKU".

    - Otherwise, the pack SKU screen displays, which enables you to scan an item ID, pallet, or case to pack. For more information about scanning an item ID, pallet, or case, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

4. Repeat Step 3 to pack more containers for a shipment.

5. Repeat Step 2 through Step 3 to pack more shipments.

6. After packing for the entire shipments, press F10 to go back to the main menu.

Confirming the Pack

In the Confirm Pack screen, do either of the following:

- Choose Continue Pack to pack more items for a shipment.

  – If there is a tag attribute with the item, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

  – If there is an expiration date with the item, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

  – Otherwise, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- Choose Close Container if you have completed packing for a container. The Create New Cntr screen displays, which enables you to pack in a new case or pallet. For more information about

scanning container SCM, see Section E.2.2.1.3, "Creating a New Container".

Table 20–23   Criteria Parameters

Fields	Description
Container SCM	SCM of the container being packed.
Item ID	ID of the item being packed.
Qty Placed	Number of units of item placed in a container.

E.2.2.1.3   Creating a New Container

To create a new container:

```
Create New Cntr
Shipment #
BOND101-5
Item ID
NOR-00001
Item1 Short Desc
Pack Qty      5.0    EACH
Container SCM

[                    ]

[New Case]    [New Pallet]
   [ Done ]
```

1. In the Create New Cntr screen, scan Container SCM and press tab.

   - If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number of the item. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

   - If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

- If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- Otherwise, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

2. Do either of the following:

- Choose New Case or New Pallet if you want to pack in a case or pallet.

   - If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number of the item. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

   - If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

   - If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

   - Otherwise, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- Choose Done.

   - If a pallet is scanned and there are more items in the pallet to be packed, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning a SKU, see Section E.2.2.4, "Scanning a SKU".

> **Note:** To extend the pack functionality provided by the
> Sterling nWMS PCA to mandate SKU scan in single-SKU or
> multi-SKU pallet or case:
>
> - In the Sterling Supply Chain Applications Configurator,
>   copy and save the rfpacksku resource. The following
>   displays in the Java Server Page (JSP) field:
>   /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?Au
>   toRecordContents=<Value> &
>   MandateSKUScan=<Value>
>
> - Set the value for the MandateSKUScan attribute to 'Y.'
>
> For more information about creating a new resource and
> adding a new menu entry, see the *Sterling Supply Chain
> Applications Customization Guide*.

- — Otherwise, the Pack SKU screen displays, which enables you
  to scan a new pallet, case, or item ID. For more information
  about scanning a pallet, case, or item ID, see Section E.2.2.3,
  "Scanning a Pallet, Case, or Item ID".

Table 20–24   Criteria Parameters

Fields	Description
Shipment #	Shipment to be packed.
Item ID	ID and description of the item to be packed.
Pack Qty	The number of units of item to be packed.
Container SCM	Enter or scan the container SCM.

Table 20–25   Barcode Types

Field	Barcode Type
Container SCM	CartonSCMscan

E.2.2.2 System-Directed Packing

In this type of packing, the system suggests containers for packing.

In System-Directed Packing, the packer can pack shipments containing only one item. The packing is done by user recording item details.

Figure 20–16 illustrates the Item-Driven, System-Directed Packing.

Figure 20–17 illustrates capturing item attributes.

Figure 20–16   Item-Driven, System-Directed Packing

Figure 20–17   Capturing Item Attributes
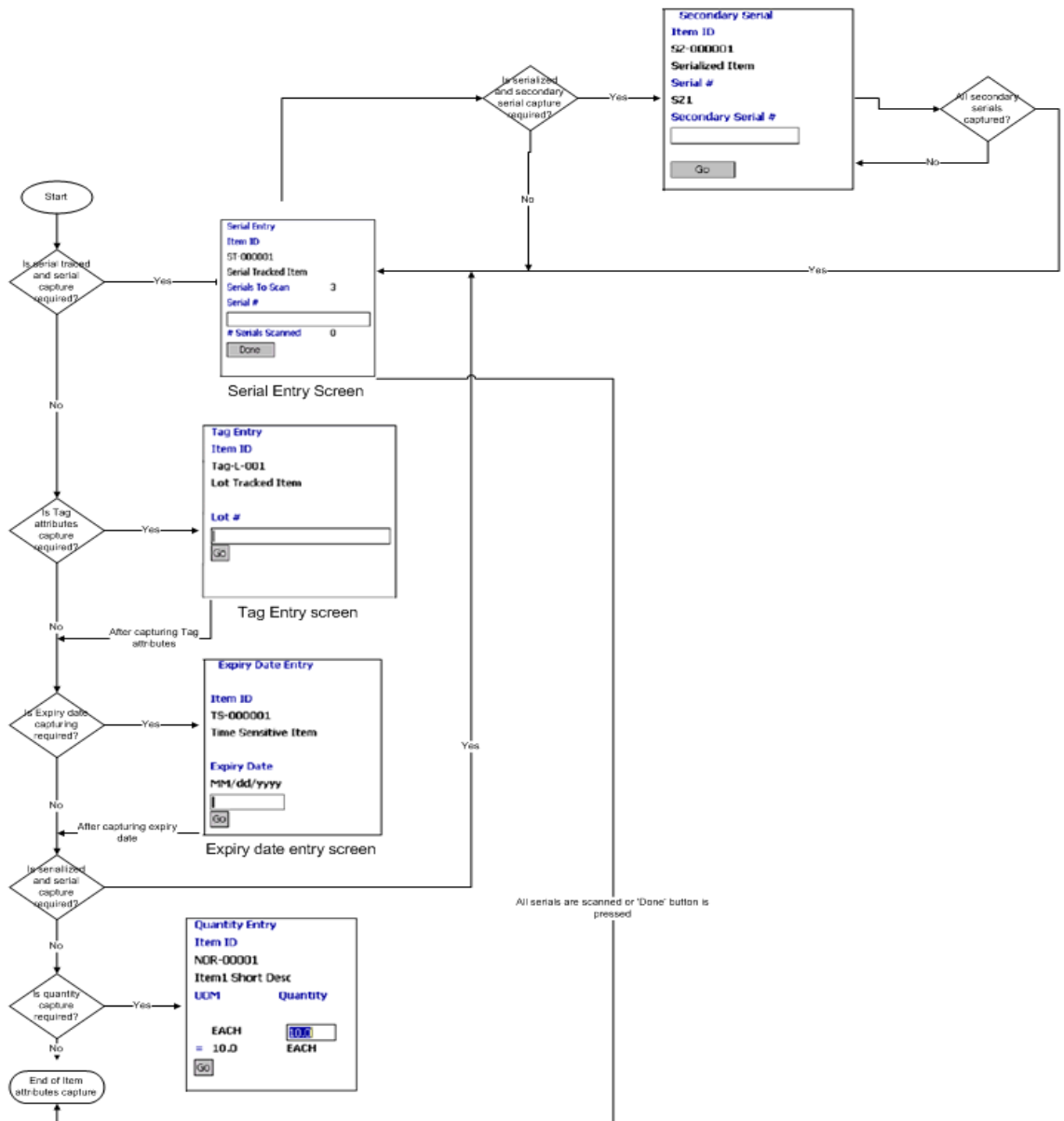
E.2.2.2.1 Packing With the User Recording Item Details

In this type of pack, you can record item details.

To perform pack by recording item details:

1. From the Menu page, select Pack SKU and press Enter. The Pack screen displays, which enables you to scan the pack location. For more information about scanning the pack location, see Section E.2.3, "Scanning a Pack Location".

   - If there is more than one pack station associated with a pack location, the Select Pack Station screen displays, which enables you to select the appropriate pack station. For more information about selecting a pack station, see Section E.2.4, "Selecting a Pack Station".

2. The Pack SKU screen displays, which enables you to scan an item ID, pallet, or case to pack. For more information about scanning an item ID, pallet, or case, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

   - If a pallet or case is scanned and you want to capture the item in it, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.2.2.4, "Scanning a SKU".

> **Note:** When an item is scanned in the Pack SKU screen or the SKU Entry screen, the shipment to which the item belongs is identified using the Shipment barcode source. The system also displays an appropriate message if there are no shipments found for the scanned item in the pack station.

> **Note:** To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>
>
> - Set the value for the MandateSKUScan attribute to 'Y'.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

- If the item has more than one Inventory UOM, Product Class, or Inventory Status, the Select SKU screen displays, which enables you to select the UOM, Product Class, and Inventory Status of an item. For more information about selecting the UOM, Product Class, and Inventory Status of an item, see Section E.2.6, "Selecting a SKU".

- If there are any instructions for packing, the Instructions screen displays, which enables to view instructions related to packing. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

3. The Container Entry screen displays, which enables you to scan a container SCM. For more information about scanning a container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

In the Container Entry screen:

- To continue packing, choose Go.

  - If the item has a serial number, the Serial Entry screen displays, which enables you to scan a serial number. For more information about scanning a serial number, see Section E.6, "Scanning the Serial Number".
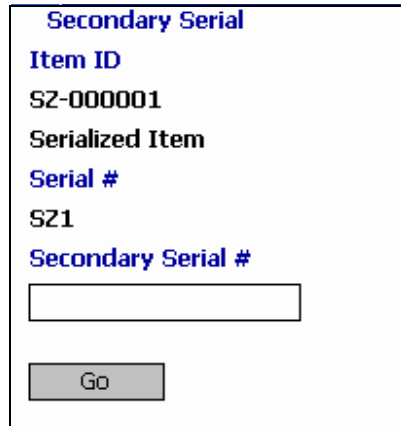
    > **Note:** You can also scan the serial number of an item in the Pack SKU screen if it is present as loose SKU in the pack location. For more information about scanning a serial number in the Pack SKU screen, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

  - If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

  - If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

  - If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

  - If there are more containers to be packed for the shipment, the Container Entry screen displays.

  - If a pallet or case is scanned and you want to capture the item in it, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.2.2.4, "Scanning a SKU".

  - The Pack SKU screen displays, which enables you to scan an item ID, pallet, or case to pack. For more information about scanning an item ID, pallet, or case, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

4. Repeat Step 3 to pack more containers for a shipment.

5. Repeat Step 2 through Step 3 to pack new shipment.

6. After packing all shipments, press F10 to go back to main menu.

E.2.2.2.2 Scanning a Container SCM

To scan a container SCM:

1. In the Container Entry screen, scan the container SCM.

2. In the Container Entry screen:

   • Choose Go to continue pack for the shipment.

     – If the item has a serial number, the Serial Entry screen displays, which enables you to scan a serial number. For more information about scanning a serial number, see Section E.6, "Scanning the Serial Number".

     – If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

     – If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- **—** If you have scanned the UPC Case Code of an item in the Pack SKU or SKU Entry screen, which has quantity of items greater than the shipment quantity, or if the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- Choose Cancel to pack a new shipment. The Pack SKU screen displays, which enables you to pack a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

Table 20–26   Criteria Parameters

Fields	Description
Container Size	System suggested container size.
Pack Qty	The number of units of item to be packed.
Container SCM	Enter or scan the container SCM.

Table 20–27   Barcode Types

Field	Barcode Type
Container SCM	CartonSCMscan

E.2.2.3 Scanning a Pallet, Case, or Item ID

To scan a pallet, case, or item ID:

1. In the Pack SKU screen, scan the item ID, pallet ID, case ID, UPC Code, or UPC Case Code of the item.

Pack SKU

Item/Case/Pallet

[ ]

[Go]

2. Choose Go.

- If a multi-SKU pallet is scanned or if you have mandated to capture the SKU when a single-SKU pallet is scanned, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning a SKU, see Section E.2.2.4, "Scanning a SKU".

- If there are any instructions for the packing, the Instructions screen displays, which enables to view instructions related to packing. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

- Otherwise, either of the following screens displays:

  - When performing an Item-Driven, User-Directed Pack, the Create New Cntr screen displays, which enables you to scan a container SCM. For more information about scanning a container SCM, see Section E.2.2.1.3, "Creating a New Container".

  - When performing an Item-Driven, System-Directed Pack, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning a container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

Table 20–28   Criteria Parameters

Field	Description
Item ID, Pallet or Case	Enter or scan the item ID, pallet ID, case ID, UPC Code, or UPC Case Code of the item to be packed.

Table 20–29   Barcode Types

Field	Barcode Type
Item ID/Case/Pallet	ItemorInventoryContainer

Note: You can also scan a 2D barcode in the Item, Case, or Pallet field. If a 2D barcode is captured in the SKU field, the information present as a part of the barcode is not captured again and relevant screens do not appear.

For example, if a tag-tracked item with lot number "L" has tag information from the barcode translation that the item belongs to lot "L", the Tag Entry window does not display.

Note: If you have scanned the UPC Case Code or 2D barcode of an item, the system will suggest only those shipments to pack, in which the quantity of item is less than or equal to the scanned UPC Case Code or 2D barcode quantity.

E.2.2.4 Scanning a SKU

In the SKU Entry screen:

1. Scan the item ID, UPC Code, or the UPC Case Code of the item.

SKU Entry

Item ID

```
┌──────────────────────────┐
│                          │
└──────────────────────────┘
```

```
┌──────┐
│  Go  │
└──────┘
```

2. Choose Go.

- If there are more than one Inventory UOM, Product Class, or Inventory Status associated with the item, the Select SKU screen displays, which enables you to select the Inventory UOM, Product Class, and Inventory Status of the item. For more information about selecting the Inventory UOM, Product Class, and Inventory Status, see Section E.2.6, "Selecting a SKU".

- If there are any instructions for the packing, the Instructions screen displays, which enables to view instructions related to packing. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

- Otherwise, either of the following screens displays:

  – When performing an Item-Driven, User-Directed Pack, the Create New Cntr screen displays, which enables you to scan a container SCM. For more information about scanning a container SCM, see Section E.2.2.1.3, "Creating a New Container".

  – When performing an Item-Driven, System-Directed Pack, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning a container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

Note: To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:

- In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>.

- Set the value for the MandateSKUScan attribute to 'Y'.

For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

Note: You can also scan a 2D barcode in the Item, Case, or Pallet field. If a 2D barcode is captured in the SKU field, the information present as a part of the barcode is not captured again and relevant screens do not appear.

For example, if a tag-tracked item with lot number "L" has tag information from the barcode translation that the item belongs to lot "L", the Tag Entry window does not display.

Note: If you have scanned the UPC Case Code or 2D barcode of an item, the system will suggest only those shipments to pack, in which the quantity of item is less than or equal to the scanned UPC Case Code or 2D bar code quantity.

Table 20–30 Criteria Parameters

Field	Description
Item ID	Enter or scan the item ID, UPC Code, or the UPC Case Code of the item to be packed.

Table 20–31   Barcode Types

Field	Barcode Type
Item ID	Item

> **Note:**   When performing Item-Driven Packing:
>
> If you have used item pick tasks to pick items and deposit the picked items in the pack location, at least one item pick task should be completed, in order to identify the shipment to be packed on scanning the item.
>
> In case of split pick tasks, where you have used an item pick task to deposit the picked items in a staging location and order pick tasks are generated from the staging location to the pack location, the shipment can be identified only if the order pick tasks are completed.

E.2.3 Scanning a Pack Location

To scan a pack location:

1.   In Pack screen, scan the pack location.

2.   Choose Go.

- If there is more than one pack station for the scanned pack location, the Select Pack Station screen displays, which enables you to select the pack station. For more information about selecting the pack station, see Section E.2.4, "Selecting a Pack Station".

- Otherwise, either of the following screens appear:

  — When performing a Shipment-Driven Pack, the Scan Identifier screen displays, which enables you to scan the task list number. For more information about scanning the identifier, see Section E.2.1.3, "Scanning the Task List Number".

  — When performing an Item-Driven Pack, the Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

Table 20–32   Criteria Parameters

Field	Description
Pack Location	Enter or scan the pack location.

Table 20–33   Barcode Types

Field	Barcode Type
Pack Location	Location

> **Note:**   You can also choose Go or press F3 without scanning a pack location. The Select Pack Station screen displays, which shows a list of all the pack stations.

E.2.4 Selecting a Pack Station

To select a pack station:

1. In the Select Pack Station screen, select required pack station ID from the list and tab out.

   - When performing Shipment-Driven Packing:

The Scan Identifier screen displays, which enables you to scan the task list number for the shipment. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

- When performing Item-Driven Packing:

The Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".
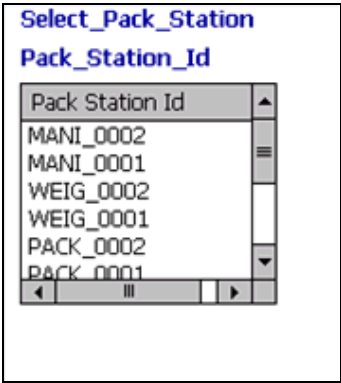
Table 20–34   Criteria Parameters

Field	Description
Pack Station ID	Select the appropriate pack station.

E.2.5 Viewing Instructions

To view instructions:

1. In the Instructions screen, press Ok after viewing the instructions.

   - When performing Shipment-Driven, System-Directed Packing:

   The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning a container SCM, see Scanning the Container SCM.

   - When performing Item-Driven, User-Directed Packing:

> The Create New Cntr screen displays, which enables you to scan the container SCM. For more information about scanning a container SCM, see Section E.2.2.1.3, "Creating a New Container".

- When perforrming Item-Driven, System-Directed Packing:

    The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

Table 20–35   Criteria Parameters

Field	Description
Shipment #	Shipment to be packed.
Instructions	Shipment instructions associated with pack.

> **Note:** The instructions displayed contain a maximum of twenty characters.

E.2.6 Selecting a SKU

To select the UOM, Product Class, and Inventory Status of an item:

1. In the Select SKU screen, select the UOM, Product Class, and Inventory Status for an item.

```
Select SKU
Item ID
NOR-00001
Item1 Short Desc
┌──────┬─────┬─────┬───┐
│ UOM  │ Pr..│ In..│ It│
├──────┼─────┼─────┼───┤
│ CASE │ FQ  │ N   │ N │
│ EACH │ FQ  │     │ N │
│      │     │     │   │
│      │     │     │   │
├──────┴─────┴─────┴───┤
│ ◄  │  Ⅲ  │      │ ► │
├──────────────────────┤
│    Go                │
└──────────────────────┘
```

2. Choose Go.

   • When performing Shipment-Driven, User-Directed packing:

     – If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

     – If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

     – If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

     – Otherwise, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

   • When performing Shipment-Driven, System-Directed packing:

     – If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number. For

more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

— If the item has a tag attribute, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

— If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

— If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

— Otherwise, the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Scanning a SKU.

- When performing Item-Driven, User-Directed packing:

  — If there are any instructions for packing, the Instructions screen displays, which enables to view instructions related to pack. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

  — Otherwise, the Create New Cntr screen displays, which enables you to scan a container SCM. For more information about scanning a container SCM, see Section E.2.2.1.3, "Creating a New Container".

- When performing Item-Driven, System-Directed packing:

  — If there are any instructions for packing, the Instructions screen displays, which enables to view instructions related to pack. For more information about viewing instructions, see Section E.2.5, "Viewing Instructions".

  — Otherwise, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

E.2.7 Scanning the Secondary Serial Number

To scan the secondary serial number:

1. In the Secondary Serial screen, scan the secondary serial number.

```
Secondary Serial
Item ID
SZ-000001
Serialized Item
Serial #
SZ1
Secondary Serial #
[                    ]

      Go
```

2. Choose Go. The Serial Entry screen displays, which enables you to scan a new serial. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

Table 20–36   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
Serial #	The serial number of the item.
Secondary Serial #	Enter or scan the secondary serial number associated with the serial.

> **Note:**   The Secondary Serial screen displays on scanning
> the primary serial number only if the item is a serialized
> item and has a secondary serial number.

E.3 Pack Verification

Pack verification can be done in any one or combination of the following
ways:

- By confirming the presence of the packed container in the pack
  location.

- By comparing the total number of units of items in the container
  with the value of the total number of units of items in the system.

- By comparing the total number of different items present in the
  container with the value of the total number of items in the
  system.

- By scanning each item and comparing the item details.

Figure 20–18 illustrates the Pack Verification process.

Figure 20–18   Pack Verification
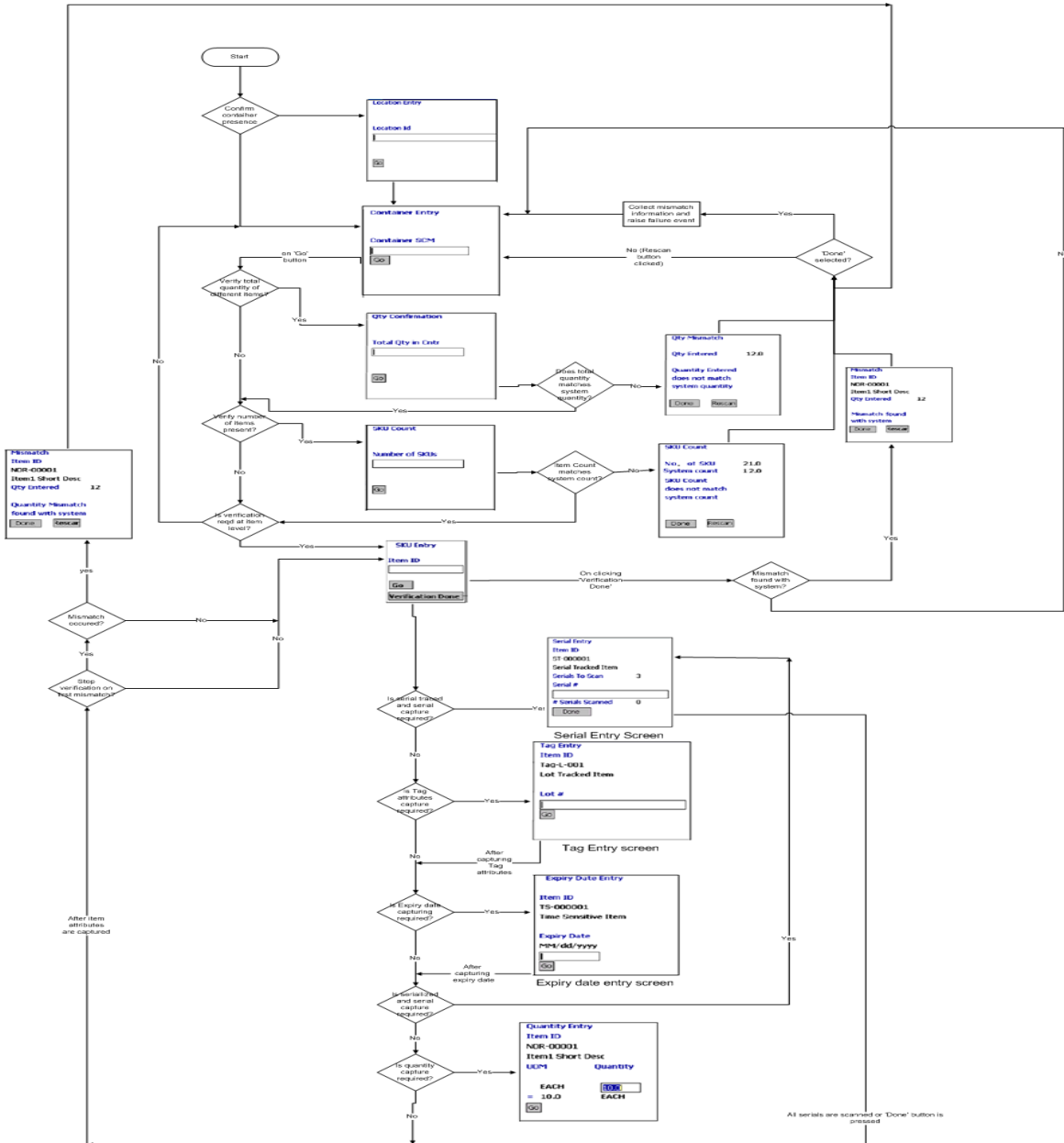
> **Note:** To verify packing, the VERIFY_PACK transaction is provided. This transaction has two events: VERIFICATION_DONE and DISCREPANCY_FOUND.
>
> Whenever a pack verification process is completed successfully, the VERIFICATION_DONE event is raised. This event generates an xml that contains details of the successfully verified pack containers. The details provided in the xml are container location, container SCM, container type, and the shipment to which the container belongs.
>
> Whenever there is any mismatch found during the pack verification process, the DISCREPANCY_FOUND event is raised. This event generates an xml that contains details of the container for which the mismatch is found. The details provided in the xml are the container location, container SCM, container type, pipeline key, shipment to which the container belongs, item ID, product class, UOM, quantity of an item verified in the container, and serial or tag number of an item.

> **Note:**   To extend the Verify Pack functionality provided by the Sterling nWMS PCA:
>
> • In the Sterling Supply Chain Applications Configurator, copy and save the rfverifypack resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packverify/frmInitiatePackVerify.jsp?ConfirmContainerPresence=<Value>&VerifyTotalQty=<Value>&VerifyItemCount=<Value>&DetailVerification=<Value>&ValidateContainerPickUpStatus=<Value>&StopOnFirstMismatch=<Value>
>
> • Set the values for the ConfirmContainerPresence, VerifyTotalQty, VerifyItemCount, DetailVerification, ValidateContainerPickUpStatus, and StopOnFirstMismatch attributes. The default value of ConfirmContainerPresence, VerifyItemCount, and DetailVerification is 'Y'. The default value of VerifyTotalQty, ValidateContainerPickUpStatus, and StopOnFirstMismatch is 'N'.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

> **Note:** The behavior of the system when the ConfirmContainerPresence, VerifyTotalQty, VerifyItemCount, and DetailVerification parameters are set to 'Y' or 'N' is as follows:
>
> - The Sterling Supply Chain Mobile Application asks you to verify the container location if ConfirmContainerPresence is set to 'Y'. Otherwise, you are not asked to verify the container location.
>
> - The Sterling Supply Chain Mobile Application asks you to verify the total number of units in the container if VerifyTotalQty is set to 'Y'. Otherwise, you are not asked to verify total quantity of units in the container.
>
> - The Sterling Supply Chain Mobile Application asks you to verify the total number of items present in the container if VerifyItemCount is set to 'Y'. Otherwise, you are not asked to verify the total number of items in the container.
>
> - The Sterling Supply Chain Mobile Application asks you to verify each item and its details if DetailVerification is set to 'Y'. Otherwise, you are not asked to verify each item and its details.
>
> By default, the Sterling Supply Chain Mobile Application asks you to verify the container location, total number of items in the container, and each item with its details.

You can verify packing for innermost containers only.

To verify packing:

1. From the Menu page, select Verify Pack and press Enter.

   - If pack verification is done by confirming the presence of the packed container in the pack station, the Location Entry screen displays, which enables you to scan a location. For more information about scanning a location, see Section E.5, "Scanning a Location".

- Otherwise, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container, see Section E.7, "Scanning the Container SCM".

Note: When verifying the packing, if you scan a location for a container, and the container location in the system does not match with the location you scanned, the system automatically changes the system value of the container location to the location you scanned.

---

2. In the Container Entry screen, scan the container SCM and choose Go.

   - If pack verification is done by scanning the total number of units of items in the container, the Quantity Confirmation screen displays, which enables you to scan the total quantity. For more information about scanning the total quantity, see Section E.3.1, "Confirming the Quantity".

   - If pack verification is done by scanning the number of items in the container, the SKU Count screen displays, which enables you to scan the number of items. For more information about scanning the total number of items, see Section E.3.3, "Scanning the Number of SKUs".

   - If pack verification is done by scanning each item in the container, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning the item ID, see Section E.3.5, "Scanning a SKU".

3. Repeat Step 2 to verify packing for more containers.

4. After verifying the packing of all shipments in a location, with or without verifying container presence, press F10 to go back to the main menu.

> **Note:** If you want the pack verification process as a part of the container pipeline, add the VERIFY PACK transaction to your container pipeline. Also, set the value of the ValidateContainerPickUpStatus parameter to 'Y' as follows:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfverifypack resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packverify/frmInitiatePackVerify.jsp?ConfirmContainerPresence=<Value>&VerifyTotalQty=<Value>&VerifyItemCount=<Value>&DetailVerification=<Value>&ValidateContainerPickUpStatus=<Value>&StopOnFirstMismatch=<Value>.
>
> - Set the value of ValidateContainerPickUpStatus to 'Y'.
>
> This enables the system to ensure that the container is in a valid pickup status for the VERIFY PACK transaction to pick up. If there is any change in the drop status of the transaction, the container status is updated to the new status.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

E.3.1 Confirming the Quantity

To confirm the quantity:

1. In the Quantity Confirmation screen, scan the total quantity in the container.

Qty Confirmation

Total Qty in Cntr

⌷

Go

2. Choose Go.

- If there is a mismatch between the system quantity and the quantity scanned by you, the Qty Mismatch screen displays, which enables you to handle the quantity mismatch. For more information about handling the quantity mismatch, see Section E.3.2, "Handling the Quantity Mismatch".

- If you scan without any mismatch and if pack verification is done by scanning the number of items in the container, the SKU Count screen displays, which enables you to scan the number of items. For more information about scanning the total number of items, see Section E.3.3, "Scanning the Number of SKUs".

- If you scan without any mismatch and if pack verification is done by scanning each item in the container, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning the item ID, see Section E.3.5, "Scanning a SKU".

- Otherwise, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–37   Criteria Parameters

Field	Description
Total Qty in Cntr	Enter or scan the total number of units of items.

E.3.2 Handling the Quantity Mismatch

To handle the quantity mismatch:

1. In Qty Mismatch screen, view the quantity mismatch message.
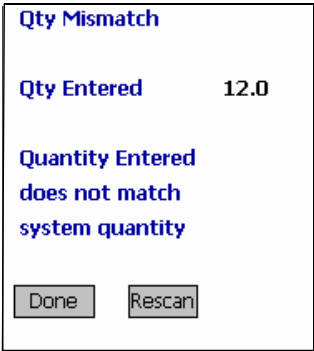
2. Choose Done or Rescan. The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".
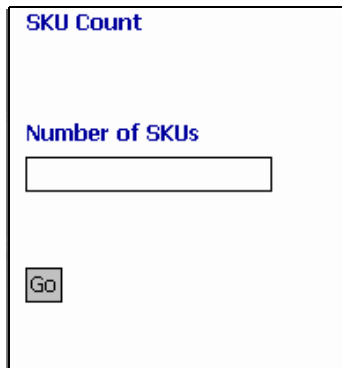
Table 20–38   Criteria Parameters

Field	Description
Qty Entered	The total number of units of all items you scanned.

E.3.3 Scanning the Number of SKUs

To scan the number of SKUs:

1. In the SKU Count screen, scan the number of SKUs.

2. Choose Go.

- If there is a mismatch between the system SKU count and the count scanned by you, the SKU Count Mismatch screen displays, which enables you to handle the SKU count mismatch. For more information about handling the SKU count mismatch, see Section E.3.4, "Handling the SKU Count Mismatch".

- If you scan without any mismatch and if pack verification is done by scanning each item in the container, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning the item ID, see Section E.3.5, "Scanning a SKU".

- Otherwise, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–39   Criteria Parameters

Field	Description
Number of SKUs	Enter or scan the total number of items in the container.

E.3.4 Handling the SKU Count Mismatch

To handle the SKU count mismatch:

1. In the SKU Count Mismatch screen, view the message for SKU count mismatch.

```
SKU Count

No. of SKU      21.0
System count    12.0

SKU Count
does not match
system count

[Done]  [Rescan]
```

2. Choose Done or Rescan. The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–40   Criteria Parameters

Field	Description
No. of SKU	The total number items you scanned.
System Count	The total number of items registered in the system.

E.3.5 Scanning a SKU

To scan a SKU, in the SKU Entry screen, do either of the following:

- Scan the item ID and choose Go.

```
SKU Entry

Item ID

[            ]

[Go]
[Verification Done]
```

- If pack verification is done by scanning the item details and if the item is a normal item, the Quantity Entry screen displays, which enables you to scan the quantity of an item inside a container. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

- If pack verification is done by scanning the item details and if the item is a serial-tracked or a serialized item, the Serial Entry screen displays, which enables you to scan the serial number of the item. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

- If pack verification is done by scanning the item details and if the item is tag-tracked, the Tag Entry screen displays, which enables you to scan the tag attribute. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

- If pack verification is done by scanning the item details and if the item is a time-sensitive item, the Expiry Date screen displays, which enables you to scan the expiration date. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- If you have scanned a wrong item ID and if you set have the value of the StopOnFirstMismatch to 'Y' to capture mismatch after every item scan, the Mismatch screen displays. For more information about handling mismatch, see Section E.3.6, "Handling the Mismatch".

> **Note:** You can configure the Sterling Supply Chain Mobile Application to show mismatches after the first mismatch. To see the mismatches:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfverifypack resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packverify/frmInitiatePackVerify.jsp?ConfirmContainerPresence=<Value>&VerifyTotalQty=<Value>&VerifyItemCount=<Value>&DetailVerification=<Value>&ValidateContainerPickUpStatus=<Value>&StopOnFirstMismatch=<Value>
>
> - Set the value of DetailVerification and StopOnFirstMismatch parameters to 'Y'.
>
> If the StopOnFirstMismatch parameter is set to 'Y', the verification happens after every item and its details are captured. If there is any mismatch after you scan each item, upon clicking 'Done' the pack verification process fails for the container. The Container Entry screen displays, which enables you to carry out pack verification for another container. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".
>
> If the StopOnFirstMismatch parameter is not set to 'N', then all the discrepancies found for each item are captured through the process. The validation in this case happens after you have scanned all the items and click 'Done' in the SKU Entry screen. If there is a mismatch through the process, the Mismatch screen displays, which shows an error message. For more information about handlinging the mismatch, see Section E.3.6, "Handling the Mismatch".
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

- Choose Verification Done if you have scanned all the SKUs in the container.

The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–41   Criteria Parameters

Field	Description
Item ID	Enter or scan the item ID.

Table 20–42   Barcode Types

Field	Barcode Type
Item ID	ItemorOutboundCarton

E.3.6 Handling the Mismatch

To handle the mismatch:

1. In the Mismatch screen, view the mismatch found between the system and the details you scanned.

2. Do either of the following:

   - Choose Rescan or Done. The Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–43   Criteria Parameters

Field	Description
Item ID	ID and description of the item packed.
Qty Scanned	Total number of units of item scanned.

Note: The Mismatch screen shows appropriate mismatch messages. For example, when there is a mismatch in the quantity of a serial-tracked or a serialized item, a message for the serial-tracked or serialized item is displayed.

The Mismatch screen displays after every item scan only if the 'StopOnFirstMismatch' parameter is set to 'Y'.

E.4 Unpacking

You can unpack containers using the Sterling Supply Chain Mobile Application. This section explains the unpacking process using the Sterling Supply Chain Mobile Application.

Figure 20–19 illustrates the Unpacking process.

Figure 20–19   Unpacking
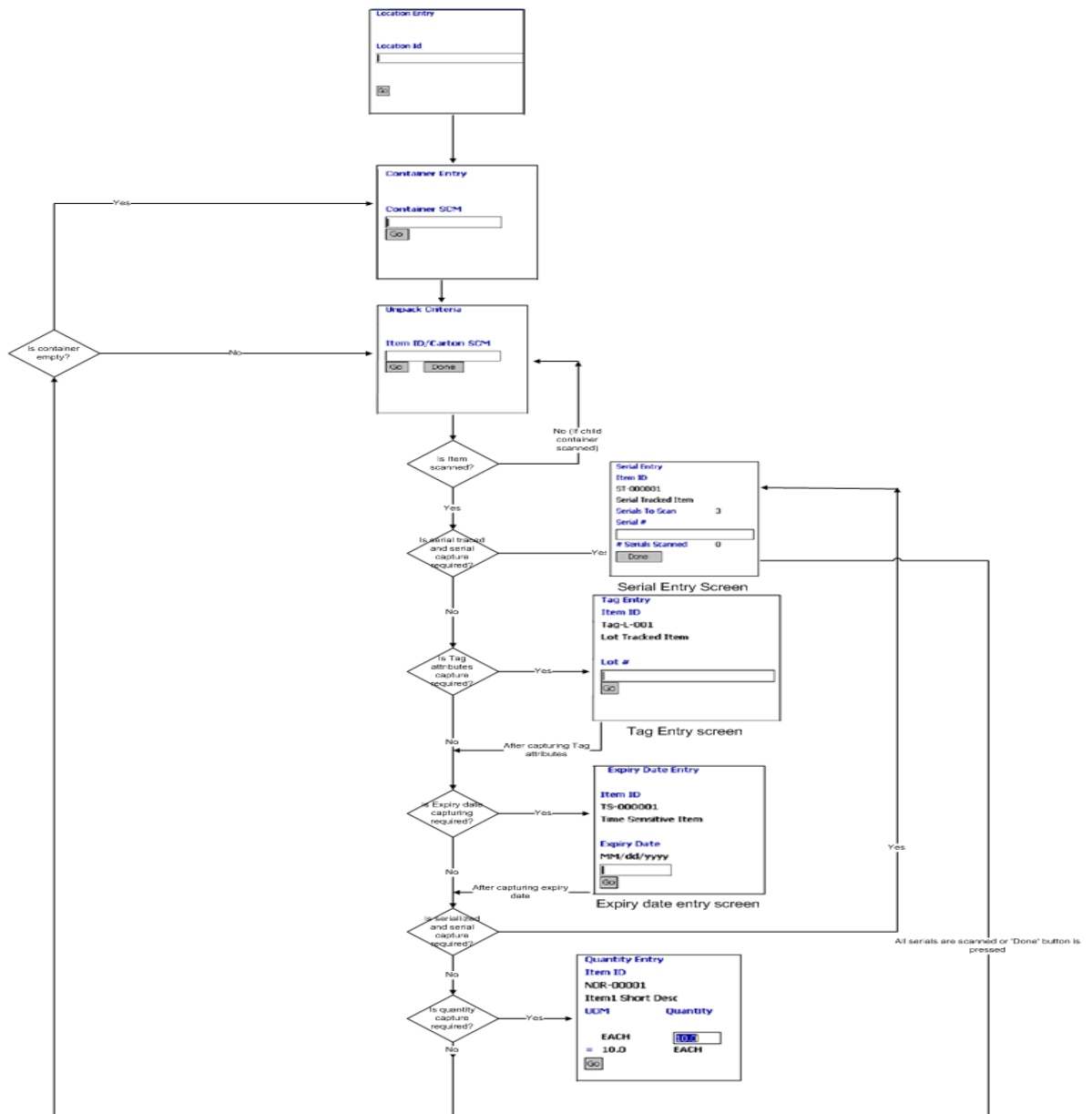
To unpack using the Sterling Supply Chain Mobile Application:

1. From the Menu page, select Unpack and press Enter. The Location Entry screen displays, which enables you to scan an unpack location. For more information about scanning the location, see Section E.5, "Scanning a Location".

2. The Container Entry screen displays, which enables you to scan the SCM of the container that you want to unpack. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

> **Note:** When unpacking, if you scan a location for a container, and if the container location in the system does not match with the location you scanned, the system automatically changes the system value of the container location to the location you scanned.

3. The Unpack Criteria screen displays, which enables you to scan the carton SCM for a child carton or the item you want to unpack. For more information about scanning the unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

   In the Unpack Criteria screen:

   - To record item details, choose Go.

     - If an item is scanned and the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number of the item. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

     - If an item is scanned and it has multiple tag attributes, the Tag Entry screen displays, which enables you to scan the tag attribute of the item. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

     - If an item is scanned and it has multiple expiration dates, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- If an item is scanned and the quantity of unpacked items is to be captured, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

- To unpack a new container, choose Done. The Container Entry screen displays, which enables you to scan the SCM of the container that you want to unpack. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

4. Repeat Step 1 through Step 3 to unpack more containers.

5. After unpacking all containers, press F10 to go back to the main menu.

Note: You can also perform an undo container build using Unpack. You can remove selected cases from an overpacked inventory or outbound container. To remove cases from a container:

- In the Container Entry screen, enter or scan the parent container SCM and choose Go. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

- In the Unpack Criteria screen, enter or scan the child case LPN you want to remove from the container and choose Go. For more information about scanning the unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

- If there is more than one child container in the parent container, the Unpack Criteria screen displays. Enter or scan the container SCM for the remaining child containers. For more information about scanning the unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

E.4.1 Scanning the Unpack Criteria

To scan the item ID or carton SCM to unpack:

1. In the Unpack Criteria screen, scan the item ID or carton SCM.

2. Do either of the following:

- Choose Done if you unpacked a carton. The Container Entry screen displays, which enables you to scan another container to unpack. For more information about scanning a container SCM, see Section E.7, "Scanning the Container SCM"

- Choose Go to record the item details.

    − If the item has a serial number, the Serial Entry screen displays, which enables you to scan the serial number. For more information about scanning the serial number, see Section E.6, "Scanning the Serial Number".

    − If the item has multiple tag attributes, the Tag Entry screen displays, which enables you to scan the tag attribute. For more information about scanning the tag attribute, see Section E.8, "Scanning the Tag Attribute".

    − If the item has multiple expiration dates, the Expiry Date Entry screen displays, which enables you to scan the expiration date. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

    − If the quantity of unpacked items is to be captured, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning quantity, see Section E.10, "Scanning the Quantity".

Table 20–44   Criteria Parameters

Field	Description
Item ID or Carton SCM	Enter or scan the item ID or carton SCM to be unpacked.

Table 20–45   Barcode Types

Field	Barcode Type
Item ID/ Carton SCM	ItemOrOutboundCarton

E.5 Scanning a Location

To scan a location:

1. In the Location Entry screen, scan the location ID.

2. Choose Go. The Container Entry screen displays. For more information about scanning a container, see Section E.7, "Scanning the Container SCM".

Table 20–46   Criteria Parameters

Field	Description
Location ID	Enter or scan the pack location.

Table 20–47   Barcode Types

Field	Barcode Type
Location Id	Location

E.6 Scanning the Serial Number

To scan the serial number:

1. In the Serial Entry screen, scan the serial number.

Serial Entry

Item ID

ST-000001

Serial Tracked Item

Serials To Scan   3

Serial #

[   ]

 # Serials Scanned   0

[Done]

2. Choose Done.

- When performing Shipment-Driven, User-Directed Packing:

  − If there is a secondary serial number with the item, the Secondary Serial screen displays, which enables you to scan the secondary serial number of the item. For more information about scanning secondary serial number, see Section E.2.7, "Scanning the Secondary Serial Number".

  − Otherwise, the SKU Entry screen displays, which enables you to scan a new item ID. For more information about scanning an item ID, see Scanning an Item ID.

- When performing Shipment-Driven, System-Directed Packing:

   − If you want to pack more items in the same container, the SKU
     Entry screen displays, which enables you to scan the item ID.
     For more information about scanning the item ID, see
     Scanning a SKU.

   − If you want to pack more containers for the shipment, the
     Container Entry screen displays, which enables you to scan
     the container SCM. For more information about scanning the
     container SCM, see Scanning the Container SCM.

   − Otherwise, the Scan Identifier screen displays, which enables
     you to scan the task list number. For more information about
     scanning task list number, see Section E.2.1.3, "Scanning the
     Task List Number".

● When performing Item-Driven, User-Directed Packing:

   − If you scan a serialized item with a secondary serial number,
     the Secondary Serial Entry screen displays which enables you
     to scan a secondary serial number. For more information about
     scanning a secondary serial number, see Section E.2.7,
     "Scanning the Secondary Serial Number".

   Note: If you scan a serial-tracked item with a secondary
   serial number, the Secondary Serial Entry screen does not
   appear on choosing Done.

   − If you want to pack more containers for the same shipment,
     Container Entry screen displays, which enables you to scan a
     container SCM. For more information about scanning the
     container SCM, see Section E.2.2.1.3, "Creating a New
     Container".

   − If you have scanned a pallet or case and you want to scan
     more items in it, the SKU Entry screen displays, which enables
     you to scan the item ID. For more information about scanning
     item ID, see Section E.2.2.4, "Scanning a SKU".

> **Note:** To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:
>
> - In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>
>
> - Set the value for the MandateSKUScan attribute to 'Y'.
>
> For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

  - Otherwise, the Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

- When performing Item-Driven, System-Directed Packing:

  - If you scan a serialized item with a secondary serial number, the Secondary Serial Entry screen displays which enables you to scan a secondary serial number. For more information about scanning a secondary serial number, see Section E.2.7, "Scanning the Secondary Serial Number".

> **Note:** If you scan a serial-tracked item with a secondary serial number, the Secondary Serial Entry screen does not appear on choosing Done.

  - If you want to pack more containers for the same shipment, the Container Entry screen displays, which enables you to scan container SCM. For more information about scanning container SCM, see Section E.2.2.2.2, "Scanning a Container SCM".

- — If you have scanned a pallet or case and you want to scan more items in it, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning item ID, see Section E.2.2.4, "Scanning a SKU".

Note: To extend the pack functionality provided by the Sterling nWMS PCA to mandate SKU scan in single-SKU or multi-SKU pallet or case:

- In the Sterling Supply Chain Applications Configurator, copy and save the rfpacksku resource. The following displays in the Java Server Page (JSP) field: /rf/ynw/packshpmt/frmInitiatePackLocationScan.jsp?AutoRecordContents=<Value> & MandateSKUScan=<Value>

- Set the value for the MandateSKUScan attribute to 'Y'.

For more information about creating a new resource and adding a new menu entry, see the *Sterling Supply Chain Applications Customization Guide*.

- — Otherwise, the Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

- When verifying the packing:

  - — If there is any mismatch between the item details scanned by you and the item details in the system and if the StopOnFirstMismatch is 'Y', the Mismatch screen displays, which enables you to handle the mismatch. For more information about handling mismatch, see Section E.3.6, "Handling the Mismatch".

  - — If there is no mismatch between the item details scanned by you and the item details in the system or if there is a mismatch between the item details scanned by you and the item details in the system, and the StopOnFirstMismatch is 'N', the Serial Entry screen displays, which enables you to scan more serials.

> **Note:** If you scan a serial-tracked and tag-controlled,
> serial-tracked and time-sensitive, serialized and
> tag-controlled, or serialized and time-sensitive item in the
> Serial Entry screen, the system does not ask you to scan
> the tag attribute or the expiry date of the item.

- When unpacking:
  - If there are more items to be unpacked for a container, the
    Unpack Criteria screen displays, which enables you to scan an
    item ID or carton SCM for the container. For more information
    about scanning an item ID or carton SCM, see Section E.4.1,
    "Scanning the Unpack Criteria".
  - Otherwise, the Container Entry screen displays, which enables
    you to scan a new container to be unpacked. For more
    information about scanning container SCM, see Section E.7,
    "Scanning the Container SCM".

Table 20–48   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
Serials to Scan	Number of serials left to be scanned.
Serial #	Enter or scan the serial number of the item.
# Serials Scanned	Number of serials left to be scanned.

E.7 Scanning the Container SCM

To scan the container SCM:

1. In the Container Entry screen, scan the container SCM.

Container Entry

Container SCM

[   ]

[Go]

2. Choose Go.

- When verifying the packing:

  - If the container is not present in the scanned location, an error displays.

  - If the pack verification is done by scanning the total units of items in a container, the Quantity Confirmation screen displays, which enables you to scan the total quantity. For more information about scanning the total quantity, see Section E.3.1, "Confirming the Quantity".

  - If the pack verification is done by scanning the number of different items in the container, the SKU Count screen displays, which enables you to scan the number of items. For more information about scanning the number of items, see Section E.3.3, "Scanning the Number of SKUs".

  - If the pack verification is done by capturing the item details, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning the item ID, see Section E.3.5, "Scanning a SKU".

- When unpacking:

  The Unpack Criteria screen displays, which enables you to scan the item ID or carton SCM that you want to unpack. For more

information about scanning the item ID or carton SCM, see Section E.4.1, "Scanning the Unpack Criteria".

Table 20–49   Criteria Parameters

Field	Description
Container SCM	Enter or scan the container SCM.

Table 20–50   Barcode Types

Field	Barcode Type
Container SCM	OutboundContainer

E.8 Scanning the Tag Attribute

To scan the tag attribute:

1. In the Tag Entry screen, scan the tag attribute.

2. Choose Go.

   - When performing Shipment-Driven, User-Directed Packing:

     – If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- Otherwise, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

- When performing Shipment-Driven, System-Directed packing:

  - If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

  - If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

  - If there are more items to be packed for a container, the SKU Entry screen displays, which enables you to scan an item. For more information about scanning an item, see Scanning a SKU.

  - If you want to pack a new container, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Scanning the Container SCM.

  - If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

  - Otherwise, the Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

- When performing Item-Driven, User-Directed Packing:

  - If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- — Otherwise, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

- • When performing Item-Driven, System-Directed Packing:

  - — If the item has an expiration date, the Expiry Date Entry screen displays, which enables you to scan the expiration date of the item. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

  - — If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

  - — If you have scanned a pallet or case and you want to pack more items in it, the SKU Entry screen displays, which enables you to scan the item ID. For more information about the scanning item ID, see Section E.2.2.4, "Scanning a SKU".

  - — Otherwise, the Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

- • When verifying the packing:

  - — If there is any mismatch between the item details scanned by you and the item details in the system, and if the value of StopOnFirstMismatch is 'Y', the Mismatch screen displays, which enables you to handle the mismatch. For more information about handling the mismatch, see Section E.3.6, "Handling the Mismatch".

  - — If the item has an expiration date, the Expiry Date Entry screen displays when there is no mismatch between the item details scanned by you and the item details in the system. The Expiry Date Entry screen also displays when there is a mismatch between the item details scanned by you and the item details in the system, and the value of StopOnFirstMismatch is 'N'. The Expiry Date Entry screen enables you to scan the expiration date. For more information

about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

- — If there is no mismatch between the item details scanned by you and the item details in the system or if there is a mismatch between the item details scanned by you and the item details in the system, and the value of StopOnFirstMismatch is 'N', the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container, see Section E.7, "Scanning the Container SCM".

- • When unpacking:

  - — If the item has multiple expiration dates, the Expiry Date Entry screen displays, which enables you to scan the expiration date. For more information about scanning the expiration date, see Section E.9, "Scanning the Expiration Date".

  - — If the quantity of unpacked items is to be captured, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

  - — If capturing quantity is not required and if you have more items to be unpacked for the container, the Unpack Criteria screen displays, which enables you to scan the item ID or the carton SCM. For more information about scanning the unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

  - — Otherwise, the Container Entry screen displays, which enables you to scan a new container SCM to be unpacked. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–51   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
Lot #	Enter or scan the tag attribute of the item. You can scan other tag attributes in this field, like batch number, and so forth.

> **Note:** YOu can scan other tag attributes in the Tag Entry screen. If the tag-tracked item has a batch number, you are asked to scan the batch number.

E.9 Scanning the Expiration Date

To scan the expiration date:

1. In the Expiry Date Entry screen, scan the expiration date.

Expiry Date Entry

Item ID
TS-000001
Time Sensitive Item

Expiry Date
MM/dd/yyyy

Go

2. Choose Go.

- When performing Shipment-Driven, User-Directed Packing, the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

- When performing Shipment-Driven, System-Directed Packing:

  - If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

  - If there are more items to be packed for a container, the SKU Entry screen displays, which enables you to scan an item. For

more information about scanning an item, see Scanning a SKU.

  – If you want to pack a new container, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Scanning the Container SCM.

  – Otherwise, the Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

  – Otherwise, the Scan Identifier screen displays, which enables you to enter or scan the task list number. For more information about scanning the task list number, see Section E.2.1.3, "Scanning the Task List Number".

• When performing Item-Driven, User-Directed Packing, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

• When performing Item-Driven, System-Directed Packing:

  – If the quantity of items packed is recorded, the Quantity screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

  – If you have scanned a pallet or case and you want to pack more items in it, the SKU Entry screen displays, which enables you to scan the item ID. For more information about scanning the item ID, see Section E.2.2.4, "Scanning a SKU".

  – Otherwise, the Pack SKU screen displays, which enables you to scan a pallet, case, or item ID. For more information about scanning a pallet, case, or item ID, see Section E.2.2.3, "Scanning a Pallet, Case, or Item ID".

• When verifying the packing:

  – If there is any mismatch between the item details you scanned and the item details in the system, and if the StopOnFirstMismatch is 'Y', the Mismatch screen displays, which enables you to handle the mismatch. For more

information about handling the mismatch, see Section E.3.6, "Handling the Mismatch".

— If there is no mismatch between the item details scanned by you and the item details in the system or if there is a mismatch between the item details scanned by you and the item details in the system, and the value of StopOnFirstMismatch is 'N', the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

• When unpacking:

— If the quantity of unpacked items is to be captured, the Quantity Entry screen displays, which enables you to scan the quantity. For more information about scanning the quantity, see Section E.10, "Scanning the Quantity".

— If capturing quantity is not required and if you have more items to be unpacked for the container, the Unpack Criteria screen displays, which enables you to scan the item ID or the carton SCM. For more information about scanning the unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

— Otherwise, the Container Entry screen displays, which enables you to scan a new container SCM to be unpacked. For more information about scanning the container SCM, see Section E.7, "Scanning the Container SCM".

Table 20–52   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
Expiry Date	Enter or scan the expiration date of the item in the shown locale.

E.10 Scanning the Quantity

To scan the quantity:

1. In the Quantity Entry screen, scan the quantity of the items in a container counted in inventory or alternate UOM.

Quantity Entry

Item ID

NOR-00001

Item1 Short Desc

UOM	**Quantity**

EACH 10.0

= 10.0 EACH

Go

2. Choose Go.

• When performing Shipment-Driven, User-Directed Packing:

The SKU Entry screen displays, which enables you to scan the same item or a new item ID for packing. For more information about scanning an item ID, see Scanning an Item ID.

• When performing Shipment-Driven, System-Directed Packing:

– If there are more items to be packed in the same container, the SKU Entry screen displays, which enables you to scan more items. For more information about scanning the item ID, see Scanning a SKU.

– If you have more containers to be packed for a shipment, the Container Entry screen displays, which enables you to scan the container SCM. For more information about scanning the container SCM, see Scanning the Container SCM.

– If multiple shipments are found with the same task list number, and if you scan a cart identifier, the Shipment Identifier screen displays, which enables you to scan the cart location. For more information about scanning the cart location, see Section E.2.1.4, "Scanning the Cart Location".

– Otherwise, the Scan Identifier screen displays, which enables you to enter or scan the task list number. For more

information about scanning the task list number, see
Section E.2.1.3, "Scanning the Task List Number".

- When performing Item-Driven, User-Directed Packing:

  – If there are more items to be packed for a shipment and if the
    items have a tag attribute or an expiration date with them, the
    Confirm Pack screen displays, which enables you to confirm
    your pack. For more information about confirming pack, see
    Confirming the Pack.

  – If there are more containers to pack for the shipment, the
    Create New Cntr screen displays, which enables you to scan
    the container SCM. For more information about scanning a
    container SCM, see Section E.2.2.1.3, "Creating a New
    Container".

  – If you have scanned a pallet or case and you want to pack
    more items in it, the SKU Entry screen displays, which enables
    you to scan the item ID. For more information about scanning
    the item ID, see Section E.2.2.4, "Scanning a SKU".

  – Otherwise, the Pack SKU screen displays, which enables you
    to scan a pallet, case, or item ID. For more information about
    scanning a pallet, case, or item ID, see Section E.2.2.3,
    "Scanning a Pallet, Case, or Item ID".

- When performing Item-Driven, System-Directed Packing:

  – If there are more containers to pack for the shipment, the
    Container Entry screen displays, which enables you to scan
    the container SCM. For more information about scanning a
    container SCM, see Section E.2.2.2.2, "Scanning a Container
    SCM"

  – If you have scanned a pallet or case and you want to pack
    more items in it, the SKU Entry screen displays, which enables
    you to scan the item ID. For more information about scanning
    the item ID, see Section E.2.2.4, "Scanning a SKU".

  – Otherwise, the Pack SKU screen displays, which enables you
    to scan a pallet, case, or item ID. For more information about
    scanning a pallet, case, or item ID, see Section E.2.2.3,
    "Scanning a Pallet, Case, or Item ID".

- When Verifying Pack:

- If there is any mismatch between the number of units of an item for a container entered by you and the number of units of the item for a container in the system, and if the StopOnFirstMismatch parameter is 'Y', the Mismatch screen displays, which enables you to handle the mismatch. For more information about handling the mismatch, see Section E.3.6, "Handling the Mismatch".

- If there is no mismatch between the number of units of an item for a container entered by you and the number of units of the item for the container in the system or if there is a mismatch between the number of units of an item for a container entered by you and the number of units of the item for a container in the system, and the StopOnFirstMismatch is 'N', the SKU Entry screen displays, which enables you to scan an item ID. For more information about scanning an item ID, see Section E.3.5, "Scanning a SKU".

- When Unpacking:

  - If you have more items to be unpacked for the container, the Unpack Criteria screen displays, which enables you to scan the item ID or the carton SCM. For more information about scanning unpack criteria, see Section E.4.1, "Scanning the Unpack Criteria".

  - Otherwise, the Container Entry screen displays, which enables you to scan a new container SCM to be unpacked. For more information about scanning a container, see Section E.7, "Scanning the Container SCM".

Table 20–53   Criteria Parameters

Fields	Description
Item ID	ID and description of the item.
UOM	Unit of Measure of the item.
Quantity	Enter the quantity of items packed. Quantity is expressed in terms of inventory or alternate UOM of the item.
Total	Total number of units of item packed.

F

Menu-Level Customization for the Sterling Supply Chain Mobile Application

There are occasions when a warehouse needs to set up different menu options for the Sterling Supply Chain Mobile Application to specify resource-level parameters for different behaviors. For example, a new Pack Shipment menu is created to enable automatic recording of item details in the container being packed or a new Ad hoc move menu is created for a particular activity code and activity group.

When customizing the Sterling Supply Chain Mobile Application, the JSPs and HTMLs are mostly changed. Therefore, a new resource ID for the new customized version is created. All the JSP and HTML files corresponding to the factory shipped resource IDs are copied into new directories corresponding to the new resource ID. These newly created directories are at the same level as the old directories from which the JSP and HTML files are copied. The HTML files are modified by replacing the occurrence of <resourceId>.ppc with <new resourceId>.ppc. The new resource ID is then associated with a new menu item.

F.1 Menu-Level Customization

When performing menu-level customizations, the JSP and HTML files are not modified. The Sterling nWMS PCA enables you to create a new menu for the Sterling Supply Chain Mobile Application and associate it with a new resource ID, without making copies of the JSP and HTML files.

The following sections explain how to avoid copying the JSP and HTML files when performing menu-level customizations.

F.1.1 Avoiding Copying of HTML Files

To avoid copying of HTML files:

1. Save the factory-shipped resource with a new ID by adding a prefix that ends with a hypen (-) to the old resource ID.

   For example, to create a new Ad hoc move, save the resource "manualmove" with a prefix "1-". The new resource ID is "1-manualmove".

2. Create a new menu and associate the new resource ID with it.

This ensures that the newly created resource also accesses the same HTML files accessed by the factory-shipped resource.

F.1.2 Avoiding Copying of JSP Files

To avoid copying of JSP files:

1. Save the factory-shipped resource with a new ID.

2. In the resource details, the JavaServerPage parameter appears. Remove "/extn" from the JavaServerPage parameter.

3. Create a new menu and associate the new resource ID with it.

This ensures that the newly created resource also accesses the same JSP files accessed by the factory-shipped resource.

G

XML Integration SED

The XML generated by the system which is used to file the SED through the third party integration has the following format.

Table 20–54   Mapping of SED Header Attributes

Attribute Name	Description
ShipmentReferenceNo	The transportation reference number.
FileSED	SED can be filed only when this attribute has the value **Y**.
ExportationDate	The exportation date of the shipment.
OrderNo	Concatenates the order number of all the orders included in the shipment.
CustomerID	Set to BuyerOrganizationCode if available, Otherwise set to Receiving Node.
Shipnode	The ShipNode, shipping the shipment.
SellerOrganisationCode	The SellerOrganizationCode.
SellerTaxPayer	This attributes is set to Seller Organization or Tax payerId.
EnterpriseCode	The EnterpriseCode.
BuyerOrganisationCode	The BuyerOrganizationCode.
ExportTaxPayerID	The ExportTaxPayerID.

Table 20–54   Mapping of SED Header Attributes

Attribute Name	Description
PackageType	Set the value of this atttribute to PARCEL if CarrierType = PARCEL. Else set to 'CARTON'.
FromAddressLine1	This attributes concatenates the first name and last name of the USPPI, if company name is not available.
FromAddressLine2	It concatenates AddressLine1 and AddressLine2 of the USPPI.
FromAddres Line3	It concatenates the City, State, and Zip Code of the USSPI.
FromCountry	The country of the USSPI, from which the shipments is shipped.
ToCountry	The country of the Ultimate Destination, to which the shipments is shipped.
Related	It signifies whether parties to transaction are related or not.
FromZip	The ZipCode of the country of the USSPI, from where the shipment is shipped.
FromState	The state of origin of USPPI.
Mode	The method of transportation.
isNo Vessel	It signifies whether the shipment is containerized, it is always set to Y.
IsHazardous	It signifies whether the shipment contains the hazardous materials.
Export LicenceNo	The licence number.

Table 20–55   Mapping of SED Detail Attributes

Attribute Name	Description
ItemID	The identifier of item
ItemDesc	The decription of the item

Table 20–55   Mapping of SED Detail Attributes

Attribute Name	Description
UnitofMeasure	The unit of measure of the item
UnitCost	The cost per unit
CostCurrency	The cost in U.S. dollars.
ExportType	Set to **D** if the items is domestic or else set to **F**.
Schedule_B_Code	It identifies the Schedule B number.
UnitWeight	The unit weight of the item.
UnitWeightUOM	The unit of measure of the unit weight.
QuantityWithUOM	The quantity of the Schedule B units.
TotalCost	The total cost in U.S. dollars.
TotalWeight	The total shipping weight.

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