SYNAPSE

Modern Warehouse Management

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SYNAPSE Synapse is a modern warehouse management system suited for use by Third Party Logistics organizations as well as stand-alone operators. Its deep, highly configurable functionality allow it to handle extremely varied requirements and support the most demanding distribution models. With Synapse, your company can take advantage of the best modern distribution technology has to offer.

I - Synapse Major Features

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Software Solutions

Web Synapse

Inventory   Orders   Reports   Administration   Logoff   Help

Inquiry   Customer: Chipper's Rush CD Distributor(2112)

| Save | Start over |

Item	Alias	Description	Product Group	Facility	Total Quantity	Available Quantity
CD101	CD00101	Jewel Case for CDs		CF1	168	63
CD202		2 Disc CD Case		CF1	200	0
KINGS		Farewell to Kings CD's		CF1	0	0
WAVES		Permanent Waves CD's		CF1	0	0

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Application : WEBSYNAPSE V: 1.5.0 (Date Update : October 22, 2003) (Local Server:zethcon.dyndns.org) (Server Time:Apr 9, 2004 10:52 AM)

Internet Enabled
To facilitate improved accessibility to the system, Synapse provides rich functionality via standard web browsers. Users can enter orders, view inventory, and even run reports online. This allows both your employees and customers to have immediate access to critical information regarding your operation.

Real-time RF
While Synapse can be configured to support Label-based and Paper-based activities, true real-time information can be maintained by using RF-enabled transactions. You may select from a wide variety of suppliers of RF equipment. RF hardware and software products have been integrated with Synapse to enable real-time inventory processing.

Barcode Technology
Synapse provides support for scanning and generating various barcode symbologies, including, UCC-128, Code 128, Code 3 of 9, Interleaved 2 of 5, UPC (A and E), and EAN/JAN (13 and 8). Synapse can support retail compliance labeling utilizing pre-defined or custom templates

Pick & Pack
Synapse supports flexible 'pick & pack' options such as picking to container, serpentine pick or batch picking quantities and routing the picked items to sortation/packing stations. The system can suggest appropriate containers, display order-specific packing instructions, print carton and order-specific documents and labels, force confirmation of carton picking accuracy and route cartons/orders to weighing and manifesting stations for consolidation and shipping.

Automated Material Handling System Integration
Synapse can be integrated with automated material handling systems including Pick to Light, Carousel Pick and Conveyor Flow Control systems.

Returned Goods Processing
The system provides customizable "return to vendor" status codes that can be captured during the returned goods receiving process. System directed sortation ensures that returned products can be routed for inspection, quality control, rework, repackaging, re-inventorying, salvage, destruction or "return to vendor" using pre-defined return disposition codes. Salvageable returned goods can be segregated into inventory classes including "regular", "rework", "returned merchandise - sellable" and "returned merchandise - scrap". These inventory classes may be used to filter order allocations based on customer preferences.

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Backorder and Item Substitution

Synapse provides options for processing 'short' orders and line items. Backorder rules can be set at both the customer and item level, providing automatic backorder generation for selected or all items. Synapse can also track valid "substitute items" for all or select items to prevent order 'shorts'. Notification of shipment backorder and substitution details can be electronically transmitted to the customer's host system. Additionally, automated crossdocking of backordered products allows for immediate shipping of backordered items.

Inventory Cost and Retail Price Tracking

Synapse can track the cost and retail price of each individual item, providing powerful capabilities that allow a customer to easily retrieve real-time inventory cost and/or retail price of a particular item, a subset of items, or the entire inventory.

Activity and Performance Monitoring

Synapse maintains application error logs to detect, record and notify system administrators of uncharacteristic processing events. Third party monitoring tools are used to similarly monitor database, host and RF communication events.

Kitting and Assembly

Synapse automates the process of creating 'new' items from multiple individual items and handles the inventory management associated with these kitting processes. Synapse provides both 'make-to-stock' and 'make-to-order' kitting capabilities.

QC and Product Inspection

Synapse can route selected merchandise to pre-defined locations during the receiving process for quality control and inspection. Quality control and inspection products are placed on hold until a status change makes them available for order allocation.

Custom Label and Document Generation

Customized labels (bar coded and non-bar coded) and packing/shipping documents can be printed during pre-defined business events to meet customer and consignee requirements. Such 'postponement' of product labeling can provide customers with significant inventory carrying and warehousing cost reduction opportunities.

Shipping Documents

Bill of Ladings, Master Bill of Ladings and packing lists can be customized to meet individual customer or consignee required formats.

Synapse Data Dictionary

Synapse can be configured to use the customer's in-house terminology throughout the application. For instance, one 3PL customer may refer to a 'lot number' as a 'batch number', while another may refer to the same data as a 'manufacture run'. Synapse's data dictionary provides capabilities to display these data elements using the customer's terminology. The data dictionary assists the 3PL provider in identifying and receiving products that bear unique markings for that customer. This dictionary feature also allows the customer to view their in-house terminology when accessing Synapse via the Internet.

Enterprise Host Integration

Synapse can be interfaced to each 3PL customers' host and ERP systems to provide batch or real-time asynchronous or bisynchronous communication of receipt, shipment, inventory, and other data.

Synapse supports ANSI X.12 and EDIFACT EDI transaction sets, including:
- 204 Motor Carrier Shipment Information

- 210 Motor Carrier Freight Details and Invoice
- 214 Transportation Carrier Shipment Status Message
- 812 Credit/Debit Adjustment
- 846 Inventory Inquire/Advice
- 850 Purchase Order
- 852 Product Activity Data
- 856 Ship Notice/Manifest
- 864 Text Message
- 870 Order Status Report
- 875 Grocery Products Purchase Order
- 888 Item Maintenance
- 940 Warehouse Shipping Order
- 941 Warehouse Inventory Status Report
- 942 Warehouse Activity Report
- 943 Warehouse Stock Transfer Shipment Advice
- 944 Warehouse Stock Transfer Receipt Advice
- 945 Warehouse Shipping Advice
- 947 Warehouse Inventory Adjustment Advice
- 994 Administrative Message
- 997 Functional Acknowledgment
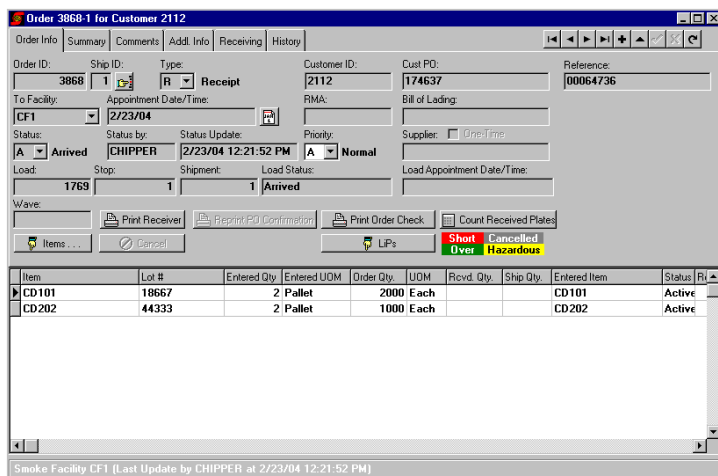- 999 Acceptance/Rejection Advice

Synapse Hardware and Software Platforms

Zethcon has designed Synapse in a multi-tiered environment. Synapse data is maintained in an Oracle database running on any Unix or Linux hardware platform. The client application is written in Delphi to provide a Graphical User Interface (GUI) and is deployed to multiple facilities over networks. Desktop client hardware consists of PCs and Winterm thin client terminals.

The system can also be configured to use standalone computers in each physical facility. The RF infrastructure is comprised of various RF terminals, access points, antennas and controllers.

Customized Reporting and Electronic Distribution

While Synapse provides a variety of standard reports, custom reports can easily be created and saved for future use. Standard inventory reports can be generated by product, consignee, date range and/or by location range. Synapse can automatically generate and transmit (via fax and/or email) customized reports to multiple supply chain partners when certain pre-defined business events occur.

II - Synapse Inbound

Receipt Process Overview

Most distribution professionals would agree that the inbound receipt process is the most critical component in maintaining accurate inventory. If inventory is not initially received accurately, then the thought of maintaining accurate 'system of record' inventory is almost unattainable.

Beyond the obvious item/quantity/unit of measure receipt requirements, Synapse

can be configured to capture a variety of inventory traceable elements during the detailed receipt process. These elements can include lot numbers, manufacture dates, expiration dates, serial numbers, and additional user defined fields. Synapse business event triggers can then be configured to display these inventory attributes to guide warehouse CRT and RF associates and print these traceable attributes on designated reports.

Synapse provides enormous flexibility within the receiving process. Configuration parameters include:

- Single, multiple, or "non-existent" P.O. tracking per load
- Receipt header and item level RF warehouse associate notes
- Various inventory receipt status options such as "available", "damaged", "inspection", "on hold", "QC hold"
- Default receipt status rules for certain items (e.g., item 123 must always be received as "QC hold" and routed to an inspection station)
- Custom label generation, by item, for product requiring labeling during the inbound process
- Immediate availability of items to fill backorders and cross-docks
- Routing of items to special staging for 'hot SKUs' and to fill existing released orders that are "short" inventory
- Immediate re-direction of received items for 'emergency' replenishments
- Prompt warehouse associates to record customer-required inventory traceable attributes during the inbound process
- Capabilities to receive, track and identify 'unknown' items discovered during the receipt process
- Operator directed and system directed palletization options
- Receipt and re-direction of returned merchandise
- Receipt exception flagging (e.g. pre-receipt line items not matching detailed receipt line items) to allow receipt discrepancies to be reconciled prior to the receipt close
- Receipt close business events can trigger automatic generation and electronic notification (e.g. fax, email, EDI, host upload) of receipt information

Pre-Receipt Notification

Synapse receiving begins with the 'pre-receipt' process. All inbound products and receipts flow through the pre-receipt process to enable real-time, RF receiving and put-away functions. History has shown that electronic notification of pre-receipt information reduces receiving errors and minimizes costs. Receiving 'against' these pre-receipt records enhances inventory reliability. There are three methods that Synapse can use for the pre-receipt process:

- **EDI/File Transfer Pre-receipt Notification** – Synapse can receive pre-receipt information electronically via EDI or file transfer from its customers and their vendors, suppliers and carriers. To reduce or eliminate the need for systems changes for our customers and their vendors and suppliers, Synapse can be configured to adapt to a wide variety of EDI and file transfer processes and formats.
- **Internet/Host Integration Pre-receipt Notification** - In the event that customers or their vendors and suppliers cannot provide pre-receipt data via EDI or file transfer, Synapse can provide alternative pre-receipt options including Internet pre-receipt entry or host integration solutions to facilitate the pre-receipt process. Scope and costs of these customized solutions vary based on customer requirements.
- **Tally Sheet / Manual Key-entry Receiving** - Finally, pre-receipt information can be captured "blind" upon receipt arrival via paper tally sheets and manual key-entry into Synapse.

Receipt/Load Arrival

The actual receiving process can begin once the pre-receipt data has been loaded into Synapse. Synapse can schedule receipt/load appointments in advance and reserve related dock doors and staging areas.

When a receipt/load arrives, the warehouse coordinator directs the load to the appropriate dock door and assigns an unload staging area for that load. Next, the warehouse coordinator prints the receipt's 'bar-coded receiver' document at a designated warehouse floor printer.

The warehouse coordinator then directs a RF-enabled warehouse associate to the appropriate dock door to begin receiving activities. The warehouse associate then retrieves the bar-coded receiver and proceeds to the dock door to begin the receiving process. Synapse will verify that the warehouse associate is at the correct dock door and is unloading the correct load utilizing information from the bar-coded receiver.

Bar-coded Receiver

The bar-coded receiver is a report that includes all pertinent receiving and load detail regarding a specific receipt. Since many customer products are not pre-labeled with item identification barcodes, the report includes bar-coded information for each item on the receipt. The bar-coded receiver serves as a receipt aid and eliminates or greatly reduces warehouse associate manual key-entry requirements and reduces labeling costs by eliminating the need to label each individual item. The bar-coded receiver is generated from information that was created during the pre-receipt process.

Detailed Receiving

Once an inbound receipt/load arrival process has been completed, the warehouse associate will begin the process of detailed receiving. Synapse supports two methods of detailed receiving, termed "1-Step Receiving" and "2-Step Receiving". The primary difference between these two detailed receiving methods is that 1-Step Receiving allows the warehouse associate to put the product directly away into storage, while 2-Step Receiving requires the warehouse associate to stage the product prior to put-away.
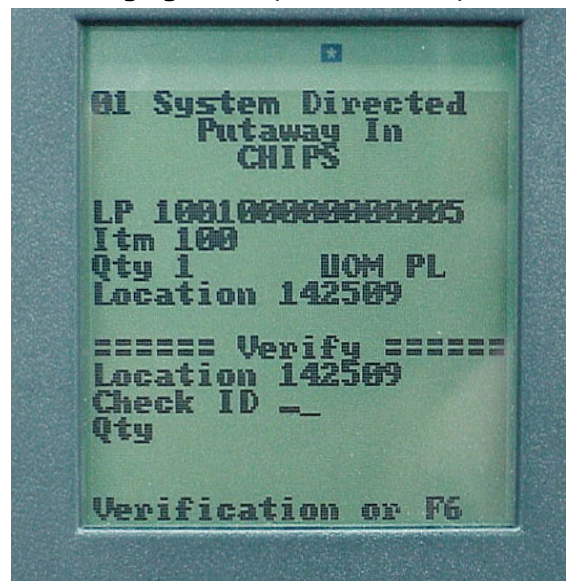
- **1-Step Receiving** - Some customers' products can be more efficiently received by eliminating receipt staging and putting each received item directly into storage. This process could apply to very large items that can only be moved in small numbers, or to smaller items that must be palletized prior to put-away into storage. The 1-Step Receiving function is controlled by Synapse configuration options.

- **2-Step Receiving** - There are circumstances which dictate that a receipt/load be unloaded and staged versus being put directly into storage. These circumstances may be driven by warehouse operational issues such as the need to quickly 'bulk' receive a load to free up the load's dock door or by customer receipt requirements such as the need to segregate and palletize mixed product receipts by item or Purchase Order.

License Plates

Synapse uses a 'license plate' barcode labeling scheme to track product throughout the entire warehousing and distribution process. During the detailed receiving process, the warehouse associate applies a license plate (LP) to each 'container' that is received. An LP container may be applied to each individual item, to groups of items (e.g. a pallet), or to other container types that will 'hold' items.

Put-away

Synapse customer configuration settings will determine whether the operator utilizes 1-Step or 2-Step put-away rules. Synapse supports both operator-directed and system-directed put-away methods. Synapse also can be configured to handle multi-stop, system-directed put-aways, routing the warehouse associate on the

most efficient put-away tour. Operator-directed put-away allows the warehouse associate to indicate when he or she is ready to begin a put-away task and allows the associate to 'tell' Synapse where product was stored. Put-aways are confirmed by entering the location's check digit (system-directed put-away) or by entering the location ID (operator-directed put-away) when placing an LP into a warehouse storage location.

Trailer and Receipt Close
After a receipt/load has been completely unloaded, the warehouse operator will use the RF terminal to indicate that the trailer has been emptied. The 'trailer empty' business event triggers several Synapse processes. First, the warehouse coordinator can review the receipt for any exceptions (over, short, damage, etc). These exceptions are color-coded on the CRT for easy identification and can be 'drilled down into' in order to view specific details about the receipt/load feature. The warehouse coordinator notifies the inventory control supervisor of any receipt exceptions. The inventory control supervisor must reconcile any receipt exceptions prior to the receipt close event. Once all exceptions have been reconciled, the warehouse coordinator will 'close' the load/receipt. This business event may be configured to trigger a number of Synapse actions, including automatic electronic receipt confirmation (e.g., EDI transactions, host integration uploads, fax or email) to the customer and other supply chain partners. The dock door and stage areas can then be made 'available' for other receipts/loads or shipments.

III - Synapse Outbound

Outbound Appointments
Synapse can receive outbound appointments electronically (e.g., EDI transactions, host integration downloads and Internet) or the warehouse coordinator or customer service representative may manually enter them.

Order Entry
Synapse order entry options are similar to the 'pre-receipt' receiving process options in that orders may be received electronically via EDI, file transfer, Internet or host integration. Orders may also be received via non-electronic means and entered manually.

All orders are subjected to validation tests to ensure that system and customer required data fields are populated and to check for potential order duplication. Electronically received orders failing these validation tests are flagged as exceptions and are promptly reviewed by the appropriate customer service representative for resolution.

Order Adds, Changes and Deletions
 Customers may add, change and delete order line items or entire orders. These adds, changes, and deletes may be submitted electronically via EDI, file transfer, Internet or host integration or non-electronically by contacting a customer service representative who can manually update the order. Line items may be changed or deleted anytime prior to the line items being loaded onto an outbound trailer. New line items may be added anytime prior to the order being shipped. The entire order may be cancelled anytime prior to the order being shipped. Like most processes found throughout Synapse, an audit trail of all adds, changes and deletes is maintained.

Wave Maintenance
Synapse Wave Maintenance is a sophisticated process that allows orders to be selected, planned and released to warehouse floor associates for picking. Wave Maintenance also provides capabilities to monitor released waves and warehouse associate task queues. Wave "plans" can be saved as templates and even setup to execute automatically at pre-defined dates and times. Wave Planning functions can also assist warehouse managers in adjusting staffing requirements to accommodate fluctuations in daily

workloads.

The Wave Maintenance process consists of four steps:

- First, the wave coordinator begins with the **Wave Planning** process by selecting orders into logical release units, usually grouping orders with similar characteristics together (e.g., all "FedEx orders that must ship by 4:00pm") and assessing the potential wave's impact on warehouse staffing capabilities.
- Once the wave coordinator has created a potential wave, the potential wave is submitted to the **Wave Planning Engine** where Synapse analyzes various parameters including identification and location of available inventory and required replenishment tasks required to meet the potential wave's inventory demands. The Wave Planning Engine returns the potential wave's results, including a more refined estimate of wave workload estimates. The wave coordinator may then adjust the results by adding, changing or deleting potential wave items to meet order and workload requirements.
- Next, the adjusted wave is released for picking, where RF-enabled warehouse associates receive optimized pick tour tasks.
- Finally, the wave coordinator monitors the status of all released waves and warehouse associate task queues, releasing new waves and adjusting warehouse associate staffing needs.

Replenishment
Synapse provides three methods to meet warehouse location replenishment demands.

- **Demand Based Replenishment**, a system directed replenishment method, analyzes forward pick locations to determine if enough inventory exists in each location where the Wave Planning Engine expects to allocate inventory. Synapse automatically generates pick pre-requisite replenishment requirements and schedules these activities to be completed in advance of the corresponding pick tasks.
- **Emergency Replenishment**, a system directed replenishment method, generates replenishment tasks whenever location quantities fall between a predefined min/max level.
- **Site-Directed Replenishment**, an operator directed replenishment method, allows warehouse associates to pick from a location and then 'top off' the inventory at that location at the operator's discretion.

Synapse enforces pre-defined inventory stock rotation requirements (e.g., FIFO) for all replenishment methods.

Product Picking
The Synapse picking process can be configured by customer and by product to provide simple or relatively complex picking capabilities. Synapse can be configured to utilize three major pick methods: 1) RF-based Picking, 2) Label-based Picking and 3) Paper-based Picking.

RF-based Picking - Synapse can be configured to consider a variety of pick constraint parameters when planning pick tours, including:

- Whether or not a warehouse associate is authorized to service a particular customer account
- The vehicle type that the warehouse associate is operating
- The current physical location of the warehouse associate
- The warehouse associate's operator mode (e.g., system directed versus operator directed)
- The picking mode that the warehouse associate is using

Warehouse associate RF terminals can display both order header and line item pick instructions that detail special handling requirements.

Various pick strategies can be employed to meet individual customer and consignee requirements, including:

- **Order Picking** – A system directed strategy where a warehouse associate picks an entire order. Synapse can suggest the appropriate number and size of cartons required, optimize the pick tour, require warehouse associate pick confirmation, allow the warehouse associate to override a suggested pick location (while logging operator overrides and reason codes), direct the warehouse associate to the appropriate packing station, and print customer or consignee required labels using customized business event triggers.
- **Line Picking** – Similar to Order Picking, except that the warehouse associates pick tour is setup to pick specific lines on an order (versus picking the entire order) and then is directed to a consolidation staging area.
- **Cluster Picking** – Similar to Order Picking, except that the warehouse associate will pick multiple orders into multiple cartons during the pick tour.
- **Batch Picking** – Similar to Order Picking, except that the warehouse associate will pick lines and orders, then is directed to a sortation area where the picks are sorted into individual orders.
- **Zone Picking** – Similar to Order Picking, except that the warehouse associate is directed to pick items from a pre-defined zone, then is directed to either deliver the picks to a sortation area or to another 'pick and pass drop off' zone where pick activities are continued by another warehouse associate (e.g., "assembly line" picking).
- **Label-based Picking**- Synapse can be configured to print pick labels for certain orders that have been released during the Wave Maintenance process. Label-based picking can be configured to utilize Order Picking, Batch Picking or Zone Picking strategies. Label-based picking can be employed with or without the assistance of an RF warehouse terminal. Synapse optimizes the pick tour and the label pick document is printed. The warehouse associate then picks the order, batch or zone and applies labels to the product as the picks are made.
- **Paper-based Picking**- Synapse can be configured to support non-RF picking activities using the Paper-based Picking method. Paper-based picking, which supports only the Order Picking strategy, prints an optimized pick tour pick list for a specific order. Exceptions during the pick list must be noted manually on the pick document and manually entered into Synapse prior to generation of the final shipping documents.

    Combinations of RF-based, label-based and paper-based picking methods can be deployed within the same facility.

Packing

Synapse can drive the process of packing, inspecting, labeling, routing and manifesting outbound orders per specific customer or consignee requirements. During the packing process, Synapse requires that the associate scan the carton or tote for identification, verify that the proper items have been picked into the carton or tote and display specific packing instructions. Depending on customer and consignee requirements and Synapse configurable business event triggers, UCC 128 labels, compliance labels, shipping labels, packing lists and customer-defined labels and documents are generated and applied, while Synapse builds the appropriate information for required electronic shipment notification (e.g., ASN EDI transactions, host integration uploads, fax or email). The packaged items can then be routed to the appropriate outbound staging area. Synapse can also be integrated with small package manifest systems to meet small package carrier requirements.

Staging, Order Checking and Loading

Staging locations are defined by the system administrator at the warehouse level. The warehouse or wave coordinator may assign stage locations for orders during the Outbound Appointment process or Wave Maintenance process. All pick deliveries to stage locations are confirmed either by RF or CRT acknowledgements. These pick deliveries update the status of these staged items to "picked

complete/staged". Synapse may be configured so that all orders for a customer, or specific customer orders bound for specific consignees, are double-checked. Synapse can also be configured to load product directly on a trailer, bypassing the staging and double-checking process.

Once all items have been staged (and checked where applicable), Synapse notifies the warehouse coordinator that the order is ready to load. The warehouse coordinator will then direct a warehouse associate to load the order onto the trailer.

Outbound Order and Trailer Close

Once an RF-enabled warehouse associate has been directed to load a specific order, Synapse will guide the associate through the loading process, directing the associate to the appropriate staging areas (taking into account any multi-stop and multi-order load requirements), verifying the correct LPs are loaded at the correct dock door and trailer via RF confirmation. The status of an order item is changed to "loaded" as each LP or carton containing that item is loaded onto the trailer. When the last of the items has been loaded onto the trailer, the order status changes to "loaded". Synapse will then notify the warehouse associate via RF when all items for the order have been loaded. The warehouse associate will then close the trailer, apply the trailer seal and update Synapse with the seal number and other "trailer close" information.

Shipping Document Generation

After the warehouse associate declares that a trailer has been "closed", Synapse notifies the warehouse coordinator, who will then print the appropriate shipping documents. Synapse supports various shipping documents including Bill of Ladings, Master Bill of Ladings, HAZMAT requirements, packing lists, as well as customized shipping documents. After the appropriate shipping documents have been printed and the driver signs for the load, the warehouse coordinator changes the status of the load to "shipped", which automatically decrements appropriate inventory balances accordingly. Various business event triggers can be associated with this "shipped" status change, including automatic generation of shipped order reports and electronic shipment confirmations (e.g., EDI transactions, host integration uploads, fax or email) to the customer and other supply chain partners.

IV - Synapse Core Functions

General Inventory Maintenance

In order to provide maximum flexibility, Synapse provides general inventory maintenance capabilities that include:

- Provision for "alias" definitions for each item
- Item substitution rules
- Item ID conversion (e.g., change item "123" to "124") based on customer or consignee item requirements
- Warehouse "campus" logic, to provide WMS control for multi-warehouse sites grouped within close geographical proximity
- Foreign Trade Zone special processing rules

Inventory Adjustments

Inventory control personnel are notified of all inventory discrepancies, including differences that occur during cycle count events. Inventory control personnel with appropriate Synapse security levels can adjust inventory levels of items as necessary. All inventory adjustments require an appropriate reason code and are tracked in the adjustment history log. Inventory control personnel can also edit Item IDs. Synapse can provide all inventory adjustment data to the customer at pre-defined intervals via electronic

means or standard reports.

Placing Product on Hold

Various operational needs may arise where an item or subset of items needs to be placed on 'hold'. Synapse can place product on hold by filtering items by any of the inventory stock rotation attributes (refer to Stock Rotation Methods). Specific LPs may also be placed on hold. Items with 'hold' status are prohibited from being allocated to any orders.

Kitting and Product Conversion

Synapse provides kitting functions by creating work orders that direct warehouse associates to combine different items to form a new item or convert an item to a new item based on customer requirements. Listings of kitting orders and kit components can be received electronically from the customer host system or Synapse can create kits during the picking process using pre-defined business rules. Kitting components can be directed to destination work areas where the kits are to be assembled. Synapse decrements kitting component inventory quantities as it increments the kit item inventory. Kitting component shortages automatically create demand replenishment activities. "De-Kitting" can also be supported to process returned kitted merchandise and place the salvageable kit components back into inventory.

Stock Rotation Methods

Synapse is configurable to support a variety of stock rotation requirements, including FIFO, LIFO, lot number, receipt date, manufacture date, expiration date as well as support for serial number tracking. The system can force the capture of these attributes, including three user-definable fields, during the receiving process. Orders can identify specific serial numbers of items to be picked, or Synapse can force serial number capture during the outbound process for situations where product is not ordered by specific serial number but serial number capture during shipment is required.

Cycle Counting

Cycle counts can be scheduled at regular, customer-required intervals (e.g., every *n* days). Cycle counts can be configured for counts by locations, by items, or by product velocities (e.g. A, B, and C movers). Cycle count tasks are generated immediately for all pick discrepancies. A "zero verification" cycle count is generated automatically during pick tasks to verify when locations are picked "clean". Finally, inventory control personnel can use queries to generate manual cycle counts. Cycle count statistics and results are logged for report generation purposes.

Performing Physical Inventories

Inventory Control personnel using cycle counts generated via queries can initiate physical inventories. Physical inventories can be completed using RF-based or Paper-based methods. The physical inventory process maintains both "before" and "after" inventory data for post physical inventory discrepancy and variance reporting. Discrepancy and variance reports containing inventory cost and retail price data may be produced and electronically transmitted (e.g., EDI transactions, host integration uploads, fax or email) to the customer.

Once all physical inventory data has been validated, Synapse can 'automatically' update its inventory with

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the validated inventory data.

Inventory Reporting
Since the WMS supports custom reporting, Synapse can generate and automatically deliver virtually an unlimited number of inventory related reports. Standard Synapse inventory reports include:

- Inventory On Hand, by Item, LP, Product, Location, or Facility
- Inventory Activity Report
- Cycle Count Activity Report
- Inventory Aging Report
- Inventory Velocity Report

Inventory History Transaction Logs
Synapse logs all activity related to inventory inbound, outbound and internal warehouse movement. These logs can be reviewed and reports can be generated to provide a complete audit trail of inventory changes.

Inter-Warehouse Transfers
Synapse supports movement from one facility to another. Using its LP tracking capabilities, consolidating products from multiple facilities into one facility or transferring product from one facility to another can be easily accomplished.

Product Moves and Re-warehousing
3PL operations often dictate that products be rearranged within a facility. Synapse supports these product moves (re-warehousing) via RF-based and Paper-based functions.

System Security
Synapse system administrators enforce system security by individual user and group login accounts. System security is used to determine which screens a user/group may access and what privileges that user/group has for each screen. Users/group security can be further restricted to limit access by specific facilities and customer accounts.

V - Synapse Billing

Introduction
The ability to provide flexible, accurate revenue capture and billing capabilities for services rendered is perhaps the most critical litmus test for any WMS claiming to provide true 3PL functionality. Unlike many WMS vendors who have attempted to 'bolt on' 3PL features to their existing WMS package, Synapse was designed specifically to meet the challenges of complex distribution requirements typically found in the 3PL industry. Synapse 3PL billing is unique with respect to what types of charges can be captured, when these charges can be captured, and when and how these charges are presented on customer invoices. Furthermore, 3PL firms often find themselves absorbing costs incurred on the behalf of their customers due to an unforeseen and immediate change in a customer's needs.

Synapse provides revenue and billing options that transcend traditional 3PL WMS billing capabilities and allow 3PL providers to accurately recoup these unexpected or out-of-scope operational costs.

Types of Charges
Synapse can be configured to automatically generate invoices at a central site, or force Customer Service Representatives to approve and print invoices individually. Synapse can capture revenue for services rendered through four charge-capture methods.

- **Automatic Charges**: These are charges that Synapse automatically calculates and accumulates for

generation on a specific invoice without user intervention. An example of this type of charge would be a 'handling' charge for a received item that would appear on the Receipt Invoice.

- **Operator Prompted Charges**: Operator prompted charges are charges captured by prompting the RF-enabled warehouse associate when a pre-defined business event occurs. Synapse accumulates these charges for generation on specific invoices. An example of this type of charge would be a 'miscellaneous' charge for pictures taken after a warehouse associate indicated that a trailer being received contained damaged product.

- **Customer Service Representative Prompted Charges**: These are charges that Synapse routinely 'asks' a CSR about when generating specific types of invoices. An example of this type of charge would be a 'miscellaneous' charge for monthly long distance charges incurred on the behalf of the customer.

- **Manually Added Charges**: Manually added charges are discretionary charges that may be added to a specific invoice.

Types of Invoices

Synapse divides the invoicing process into four distinct invoice types.

- **Receipt Invoice**: Receipt invoices typically detail receipt handling, receipt storage and miscellaneous receipt-related charges applicable to specific inbound shipments. Receipt invoice charges are captured each time an inbound shipment is received. Synapse provides receipt invoice options that allow receipt invoices to be printed individually or grouped together at pre-defined intervals into consolidated bills.

- **Renewal Invoice**: Renewal invoices detail customer storage charges incurred beyond any initial receipt storage charges that may have already been applied. Renewal storage charges and invoices are typically generated monthly on a pre-defined day of the month.

- **Outbound Accessorial Invoice**: These invoices detail outbound related charges that are captured for pre-defined shipment related events.

- **Miscellaneous Invoice**: Miscellaneous invoices detail any additional charges that are captured for one-time or very rarely occurring events. These charges may be created at anytime and do not have to necessarily be inventory specific.

Other Billing Features

Synapse offers many powerful 3PL billing features that are beyond

the scope of this document. A few of the major billing features are summarized below:

- **Customized Receipt Storage Charges:** 'Grace Periods' can be defined at the customer/item level so that products that are received and shipped within the grace period are not billed receipt storage charges. Where no grace period is defined, receipt storage charges can be calculated at the full monthly storage rate or at a user-defined 'split month' storage rate (so receipt storage can be more fairly calculated for product received late in the month).

- **Billing Period Options:** Renewal storage periods can be customized to meet customer requirements. Synapse provides 'Standard Month' renewal cycles (where renewal invoices are generated the 1st day of the month and 'split month' rates apply for all receipts after the 16th of the month) and 'Custom Month' renewal cycles (where the month beginning and split month days of the month are user-defined).

- **Minimum Charges:** Synapse supports various 'minimum' billing charge calculations that are applied when total charges for a particular billing event do not meet the specified minimum charge. Minimum storage charges can be applied per invoice, by item per invoice and by batch per receipt. Minimum receipt charges per receipt can also be set.

- **Business Event Charges:** Charges can be configured and tied to specific, user-definable business events. Examples of these events and charges include label generation and application, flat rate receipt charges, item related receipt charges, batch related receipt charges, damage related handling charges, palletization and tie high related handling charges.

- **Customized Invoices:** Synapse produces industry standard invoicing and billing formats; however, each of these documents can be customized to meet specific customer needs. Invoices can be consolidated into master or summary bills that generate at customer-preferred intervals. Individual receipt, renewal, accessorial and miscellaneous billing addresses can be maintained for customers requiring separate billing addresses for each invoice type.

- **Rate Groups**: Rate groups are utilized to group similar items with similar billing attributes together. These rate groups are then applied to individual customer items.