



**DS0062**

Store Transfer And  
Replenishment  
System  
(STARS)



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## Problem Definition

| <i><b>Problem Definition</b></i>  | <b>CCDA</b> |
|---|-------------|
| <p>ACME Co. fulfills inventory for their multiple stores from one central location. They are currently using an external Microsoft Access application to generate fulfillment, or shipment, recommendations. Based on a set of selection criteria (described later), the tool creates a list of item-site combinations, and a quantity to send to each location.</p> <p>The Access application sends this shipment recommendation into Dynamics GP as a set of purchase orders, one PO for each site. A 3<sup>rd</sup> party product, Nolan's Inter Site Transfers module, uses the released purchase orders as the trigger to move inventory from the main site to the stores.</p> <p>The stores do not do a physical count of the receipts, and inventory is reconciled through regular cycle counts.</p> <p>ACME recently requested to add to the system the ability to "auto-receive" the shipments, and also to provide a way to adjust the purchase orders if what was shipped was different than the PO due to warehouse stock variances.</p> <p>There are many more details to the process than what is described above, however this request raised the following general issues:</p> <ul style="list-style-type: none"> <li>• The current process requires creating the PO, releasing the PO, and then creating and posting a PO receipt. There is also an additional inventory adjustment generated by the Access application.</li> <li>• The coding required to add the requested functionality is relatively complex, and would require an additional inventory adjustment to account for fulfillment not matching the PO.</li> <li>• <b>The net effect of all of these transactions is simply to transfer inventory from</b></li> </ul> |             |

**warehouse to store.**

Our assessment was that the cost to move the Access application inside of Dynamics GP, and generate only an inventory transfer, would be cost effective relative to adding additional functionality to the Access application. Additionally, having the application running as part of Dynamics GP will allow the application to zoom to other windows in GP, as well as make it easier to deploy to users, and manage security.

POGen will be used below to refer to the Access application, while the new software will be referred to as STARS.

## Solution Overview

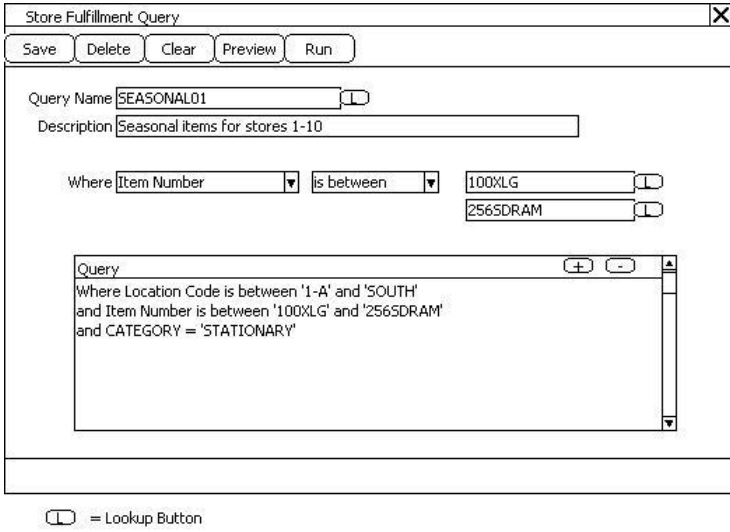
| <b><i>Solution Overview</i></b>  | <b>CCDA</b> |
|--|-------------|
| <p>The new module will be called Store Transfer And Replenishment System (STARS). This recognizes that the software will no longer be generating purchase orders, and that its function is to replenish inventory at the stores. Additionally, while the actual method used to perform the fulfillment will now be an inventory transfer, “Store Replenishment” does not rule out the possibility of adding other functionality at a later date, which might use different methods to replenish store inventory.</p> <p>The new fulfillment process will consist of three steps:</p> <ul style="list-style-type: none"> <li>• Create and execute a fulfillment query using the Store Fulfillment Query window</li> <li>• Review the query results in the Fulfillment Distribution window. This window can be used to set a specific quantity distribution to stores, or to import a distribution list from an external source</li> <li>• Print a pick ticket, enter fulfillment information, and complete the transfer using the Store Order Entry window.</li> </ul> <p>The purpose of the Store Fulfillment Query window is to generate a list of Item-Sites that need to be fulfilled. The Query can consist of multiple selection criteria using:</p> <ul style="list-style-type: none"> <li>• Item Numbers</li> <li>• Sites</li> <li>• Vendors</li> <li>• Item User Defined Values</li> <li>• Purchase Orders</li> </ul> <p>When the Query is executed it will generate a list of Item-Sites in the Fulfillment Distribution window. This window allows the user to:</p> <ul style="list-style-type: none"> <li>• Review the selected Item-Sites</li> <li>• Manually add new Item-Site combinations</li> <li>• Remove Item-Site combinations</li> </ul> |             |

- Set specific distribution quantities
- Import a CSV file containing Item-Sites or Item-Site-Quantities

When ready, the user will add the results from the Fulfillment Distribution window to a Store Order.

The Store Order Entry window is used to print a pick list, and enter actual fulfillment information. The Store Order Entry window allocates inventory as soon as items are added to the window (just like an Inventory Transfer would). When the Store Order is posted, inventory will be transferred from the warehouse to the stores. Packing lists can also be printed to accompany the shipments.

## Design Features

| <b>Store Fulfillment Query</b>  | <b>CCDA</b>   |          |            |  |             |                                       |           |   |  |
|---|---|----------|------------|--|-------------|---------------------------------------|-----------|---|--|
| <p>The Store Fulfillment Query window will be accessed from Transactions &gt;&gt; Sales &gt;&gt; Store Fulfillment. The purpose of this window is to generate a list of item-site combinations to add to the Store.</p>  <table border="1" data-bbox="189 1133 1270 1349"> <thead> <tr> <th>Field</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Query Name</td> <td>A complete query can be saved and retrieved.</td> </tr> <tr> <td>Description</td> <td>A plain text description of the Query</td> </tr> <tr> <td>Where ...</td> <td>The Query Builder fields consist of a Field selector (showing 'Item Number'), an Operator (showing 'is between'), and Values (showing '100XLG' and '256SDRAM').</td> </tr> </tbody> </table> | Field   | Function | Query Name | A complete query can be saved and retrieved. | Description | A plain text description of the Query | Where ... | The Query Builder fields consist of a Field selector (showing 'Item Number'), an Operator (showing 'is between'), and Values (showing '100XLG' and '256SDRAM'). |  |
| Field   | Function  |          |            |  |             |                                       |           |   |  |
| Query Name  | A complete query can be saved and retrieved.  |          |            |  |             |                                       |           |   |  |
| Description   | A plain text description of the Query   |          |            |  |             |                                       |           |   |  |
| Where ...   | The Query Builder fields consist of a Field selector (showing 'Item Number'), an Operator (showing 'is between'), and Values (showing '100XLG' and '256SDRAM'). |          |            |  |             |                                       |           |   |  |

|                 |   |  |
|-----------------|---|--|
|                 | <p>The Field selector contains:</p> <ul style="list-style-type: none"> <li>• Item Number</li> <li>• Site ID</li> <li>• Vendor ID</li> <li>• Purchase Order Number</li> <li>• List of Item User Defined Fields (the drop down will display the UDF names, such as Category)</li> <li>• Top 150 Items (see below)</li> </ul> <p>Operator has the following options:</p> <ul style="list-style-type: none"> <li>• Equals</li> <li>• Is Greater Than</li> <li>• Is Less Than</li> <li>• Is Greater Than or Equal To</li> <li>• Is Less Than or Equal To</li> <li>• Is Between</li> <li>• Is Not Equal To</li> <li>• Contains</li> <li>• Does not contain</li> </ul> <p>Values will have Lookup buttons to open the Lookup for whatever Field is selected.</p> <p>Top 150 Items will lock the Operator to “Is Between” and the Values fields will be Dates. The user will select a Start Date and End Date. The system will calculate the Top 150 Items sold during the selected time period based on Dollar Volume. It will also contain a restriction to only look at items that have a value in the “Order Quantity Modifiers: Minimum” field.</p> <p>NOTE: when this query option is selected it no other query elements can be added. The TOP 150 query must be Run, or the screen must be cleared.</p> |  |
| + and – buttons | Adds a query element to the query, or removes a query element from the Query window.  |  |



|         |   |
|---------|---|
| Save    | Saves the Query. NOTE: A query does not need to be saved, and can be created and executed on the fly.   |
| Delete  | Deletes the selected Query, if it belongs to the User ID.   |
| Clear   | Clears the window   |
| Preview | Executes the query and shows the results, but does not send the results to the Fulfillment Distribution window.   |
| Run     | Runs the Query and sends the results to the Fulfillment Distribution window.  |
| NOTE    | Queries are stored with the User ID who created the Query. A user can user any query saved in the system, but can only edit and delete their own queries. They cannot make changes to a query that they do not own, and they cannot delete a query they do not own. |

Each additional query element is added with “and”, so each addition further restricts the list of item-sites that will be added to the Store Order.

The “master” list, or starting point for a query, is the Item Quantities Master table (IV00102). This table contains every valid Item-Site combination. Specifying a list of discreet Item Numbers restricts the results to Item-Sites from the Item Quantities Master table where the Item Number is in the user’s specified list.

Vendor ID restricts based on valid Item-Vendor records (Item Vendor Master, IV00103). For example, specifying Vendor ID = ‘ACME’ will return only the Item-Sites where the Items are assigned to ACME in the Item Vendor Master table.

Purchase Order Number restricts to Item Numbers that are on a PO (in the PO Lines History table, POP30110).

NOTE: the Query generates results that are user specific. So, multiple users can use this window at the same time and their results will be maintained separately. Each time a Query is Run, it appends its results to a temporary, or staging table (this staging table is used to display results in the Fulfillment Distribution window.

|                                 |             |
|---------------------------------|-------------|
| <b>Fulfillment Distribution</b> | <b>CCDA</b> |
|---------------------------------|-------------|

The Fulfillment Distribution window will open automatically from Store Fulfillment Query when the RUN button is clicked. This window can also be opened directly from Transactions >> Sales >> Fulfillment Distribution.

This window displays the results of the query (a list of Item-Sites).

|  |             |              |
|--|-------------|--------------|
| Fulfillment Distribution                   |             |              |
| Save                                       | Delete      | Clear All    |
| Import                                     | Contentions | Create Order |
| Distribution ID: SEASONAL                  |             |              |
| Description: Seasonal items in stores 1-10 |             |              |
| Item Number                                | Site        | Quantity     |
| 3999796                                    | 050         | 0            |
| 3998002                                    | 050         | 0            |

= Lookup Button

Each time the Store Fulfillment Query is run, it appends results to the Fulfillment Distribution list. This process can be repeated until the Store Order is created, or the Clear All button is clicked.

| Field           | Function   |
|-----------------|--|
| Distribution ID | An identifier for a specific Distribution list. The list does not need to be saved. However, once a list of item-sites has been built using the Store Fulfillment Query window, it may be saved and reused |

|                  |   |  |
|------------------|---|--|
|                  | <p>later, eliminating the need to re-run the query.</p> <p>Also, since specific Quantities can be entered, saving a Distribution list can eliminate the need to re-enter distribution quantities.</p>   |  |
| Restrict By      | <p>Entering an Item Number will cause the window to redisplay showing only the specified item number.</p> <p>Entering a Site ID will cause the window to redisplay showing on the specified Site ID.</p> <p>Clearing the fields redisplay the complete list.</p>  |  |
| Scrolling window | <p>Rows can be removed by selecting a line then clicking Edit &gt;&gt; Delete Row.</p> <p>New rows can be added by entering valid Item-Site combinations.</p> <p>A specific distribution quantity can be entered. A quantity entered here will override the Min/Max or other fulfillment logic applied when the Store Order is created. For example, entering "10" will cause the system to ship 10-units, regardless of what is actually needed at the site.</p> |  |
| Save             | Saves the Distribution List   |  |
| Delete           | Confirms the user wants to Delete the saved list, then removes it.  |  |
| Clear All        | Clears all Item-Sites from the current Distribution. If the user is building a new distribution list and has not yet created a Store Order, Clear All might be used to delete the current list and start over.  |  |
| Import           | <p>Can be used to import a list of Item-Sites from a CSV file. The file must contain 3 columns:</p> <ul style="list-style-type: none"> <li>• Item Number</li> <li>• Site ID</li> <li>• Quantity (this can be zero)</li> </ul>   |  |
| Contentions      | This will generate a report showing all Item-Site combinations from the current Distribution list that are on another active Store Orders (Store Orders are described below). A Contention is a condition   |  |

|                     |  |  |
|---------------------|--|--|
|                     | <p>where another user is already attempting to fulfill the specified Item-Site combination, and may already have inventory allocated to the fulfillment. This condition will not prevent a user from continuing, but could result in over-fulfillment.</p>   |  |
| <p>Create Order</p> | <p>This is a drop-list button with two options:</p> <ul style="list-style-type: none"> <li>• Fulfill Min/Max</li> <li>• Fulfill All</li> </ul> <p>FULFILL MIN/MAX – this process will examine each Item-Site combination to see if the On Hand inventory is at or below the Order Point. If so, it will add the item to the Store Order, and calculate the quantity required to bring inventory back to the Order Up To Level. If On Hand is negative, it will be treated as zero, so the maximum fulfillment will be equal to the Order Up To Level.</p> <p>FULFILL ALL – this process will add all items-sites to the Store Order that have a quantity below the Order Up To Level (as contrast to Min/Max where it must be below the Order Point), and will have a Transfer Quantity calculated to bring inventory back to the Order Up To Level. Items at or above that quantity will not be added to the Store Order.</p> <p>For both fulfillment methods, any Item-Site that has a specified distribution Quantity will automatically be added to the Store Order in the specified Quantity.</p> <p><b>Store Order and Available Inventory:</b> Although the ACME system may be set to allow Adjustment and Transfer Overrides, the Store Order will act as if overrides are NOT allowed. When creating the store order the system will consider the Available Inventory in Site 900 (the “warehouse” site specified in Setup). Available Inventory will be calculated as:</p> <ul style="list-style-type: none"> <li>• On Hand – Allocated – Safety Stock</li> </ul> <p>Items have a Safety Stock Level specified on the Item Resource Planning Site Record (vs. the “all sites” record).</p> |  |

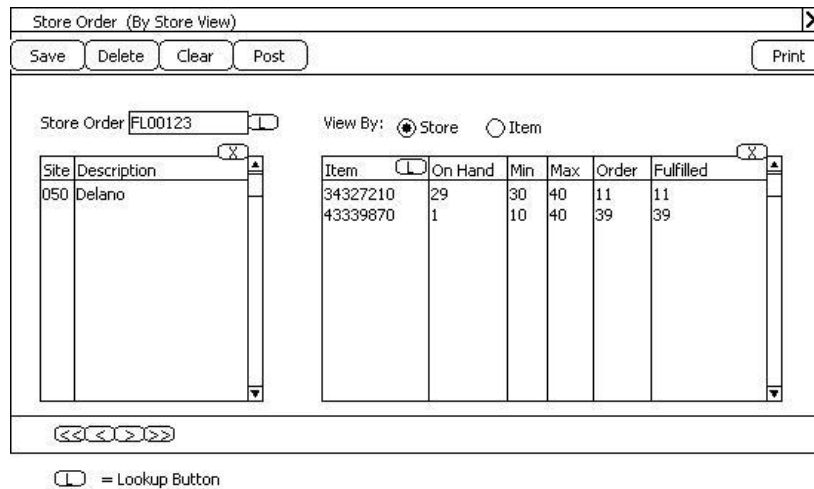
|      |  |  |
|------|--|--|
|      | <p>If an Item-Site needs to be fulfilled, it will always be added to the Store Order. However, if there is not enough Available inventory in Site 900 to cover the total requirement for an Item, all lines for that item will have an Order Quantity of ZERO. If an item-site is on the Store Order, and its Order Quantity is ZERO, this will be an indication to the user that the item needs to be fulfilled, but there was not enough inventory, and that they must perform a manual fulfillment.</p> <p>When the Store Order has been created, it will clear the Distribution list.</p> <p>The Contentions Report will also print automatically when the Store Order is created. The Contentions Report, as described above, can be run manually if desired.</p> |  |
| NOTE | <p>A saved Distribution is tied to a User ID. All users have access to all saved Distributions, but can only edit and delete their own Distributions.</p>  |  |

|                    |             |
|--------------------|-------------|
| <b>Store Order</b> | <b>CCDA</b> |
|--------------------|-------------|

The Store Order Entry window opens automatically from Fulfillment Distribution when the Create Order button is clicked, and can also be opened from Transactions >> Sales >> Store Order.

NOTE: for all references below to Available Inventory, this is the quantity available in Site 900 (the main warehouse) to fulfill a Store Order. **Available = On Hand – Allocated – Safety Stock.**

This window is used to print a pick list, packing slips, and enter actual fulfillment.

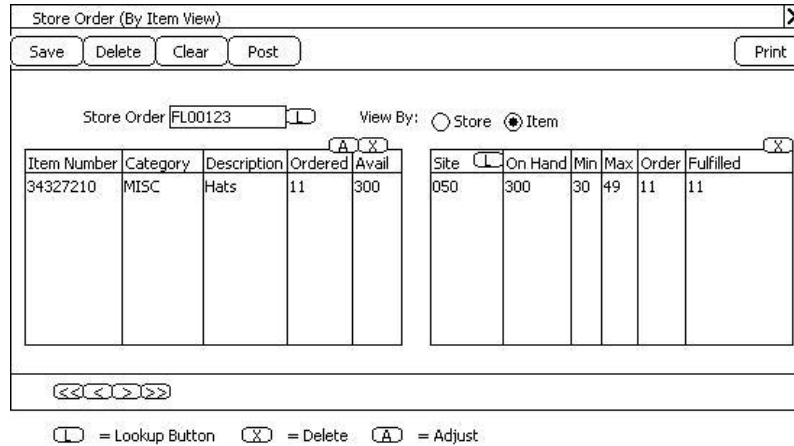


| Field              | Function  |
|--------------------|---|
| Store Order Number | The user can enter the number of an existing document, or select one from the lookup. When opened automatically from Store Fulfillment, the Store Order Number will already be populated. |

|  |  |  |
|--|--|--|
| View By  | <p>Changes the information displayed in the left (list view) window, and the right scrolling window.</p> <p>In the Store view, when a store is selected on the left, all of the inventory going to that store will be displayed in the right.</p> <p>In the Item view, when an Item is selected on the left by double-clicking on the line, all of the Stores it is going to will be shown on the right. The scrolling window on the right is editable, so the user can input/edit the Fulfilled quantity.</p> |  |
| X  | Delete button to remove a selected line.   |  |
| Save   | Saves the Store Order.   |  |
| Delete   | Deletes the entire store order, which will remove any inventory allocations related to that order.   |  |
| Clear  | Clears the window  |  |
| Post   | Posts the Store Order (see Posting below)  |  |
| Print  | Printing will be provided though another reporting tool other than the GP report writer. This button may not be present depending on the reporting solution used.  |  |
| <p>In Store view (above), the list view (left) will show all of the Sites on the Store Order. Double-clicking a Site will fill the right scrolling window with Items to be fulfilled in that site. The On Hand, Minimum (Order Point Quantity), and Maximum (Order Up To Level) come from the Item-Site values for the selected Store-Item combination. Order is the quantity calculated by the Fulfillment Method, and Fulfilled is the actual quantity fulfilled. This will default to the Order quantity so that the user only has to update items where the fulfilled quantity was different than the ordered quantity. Deleting a store from the list view will remove that store and all items assigned to it from the Store Order. Deleting an Item removes just that Item-Site from the Store Order.</p> |  |  |
| <p>The Quantity Fulfilled cannot be changed to a quantity that will drive inventory below Available inventory for that item.</p>   |  |  |
| <p>If the Ordered Quantity is ZERO, it means the Fulfillment method (described in the previous section) detected a requirement, but there was not enough Available inventory of that item in Site 900 to meet the requirement.</p>   |  |  |

In Item view (below), the list view shows all Item Numbers on the Store Order. Category is Item UDF-1, Ordered is the total quantity ordered for that item in all Stores, and Available is the total available in the main warehouse (the main warehouse is specified in Setup). The scrolling window shows the Item-Site values for the selected Item-Site combinations. See the Store View description above for Min, Max and Fulfilled quantities.

Deleting an Item from the list view will remove the item from all stores included in the Store Order. Deleting a line from the scrolling window removes just a single Store-Item combination.



| Item Number | Category | Description | Ordered | Avail | Site | On Hand | Min | Max | Order | Fulfilled |
|-------------|----------|-------------|---------|-------|------|---------|-----|-----|-------|-----------|
| 34327210    | MISC     | Hats        | 11      | 300   | 050  | 300     | 30  | 49  | 11    | 11        |

= Lookup Button   
  = Delete   
  = Adjust

The right window can also be used to add new items/stores regardless of the view.

The Store Order Lookup will allow the user to select from a list of open (un-posted) Store Orders, and restrict the display to show only orders they created.





| Order Number | Created By User | Created Date |
|--------------|-----------------|--------------|
| SF0001       | sa              | 1/1/2008     |

The typical process will be as follows:

- User makes any desired changes to the stores/items/quantities on the store order, and prints a Pick List.
- The user Saves the Store Order and performs the pick
- After the pick has been performed, the user makes any changes needed to fulfillment. For example, if there was not enough Available inventory, the quantity fulfilled might be adjusted downwards. The fulfilled quantity will default to the ordered quantity. The fulfilled quantity is what will actually be transferred.
- If necessary, the user can also Adjust inventory. **Adjusting Inventory is optional, and not required to perform a store order.** This window was added to make it easier to fix incorrect system inventory counts that are identified while doing a pick. It is a tool to automate creating an Inventory Adjustment Transaction. The user can select the item in the left window, and click the Adjust button (A). The Adjust window will open where the user can enter an Adjustment Quantity. All fields will auto-populated except for Adjustment. In the example below, the user might have discovered that after his pick of 3 (so the 3 allocations belong to his order), there were 2 left in the bin. Since Safety Stock is 2, the Quantity Available should show ZERO, so, the On Hand count must be off by 2.

Adjust ✕

Post Cancel

Item Number

Description

On Hand

Allocated

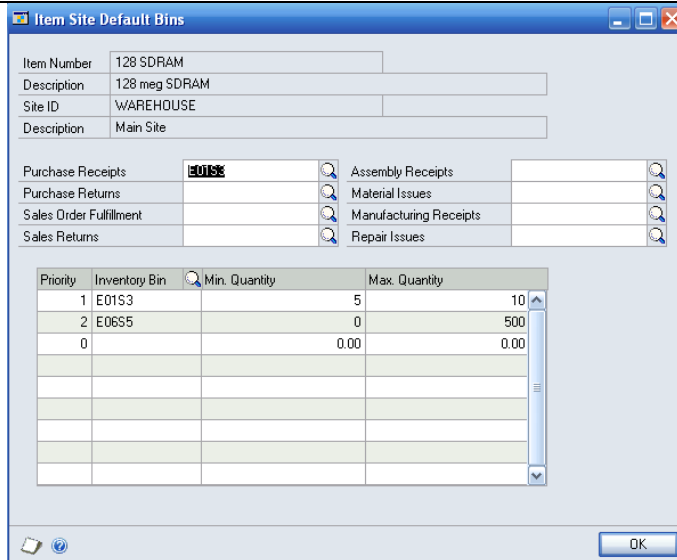
Safety Stock

Qty Available

Adjustment

- Clicking POST will create an Inventory Adjustment to update the Inventory Quantity for the selected item, and save it in a batch called STARS\_ADJ. This batch can be reviewed later prior to posting by a user with appropriate posting permissions. **The Inventory for this adjustment is always coming from the Warehouse (specified in Setup—see below).**
- When the pick is complete, the user will click POST on the Store Order. This will open the underlying Inventory Transfer in Item Transfer Entry and automatically remove it from the STARS batch so the individual transaction can be posted. The posting process will move all inventory from Warehouse to the Stores. The normal Inventory Transfer posting journals will print.

STARS will be designed to work with Inventory Multi-bin functionality. When the Store Order is created, the system will automatically select which bins to use for fulfillment. Item Site Default Bins (Cards >> Inventory >> Quantities/Site >> Bins button) will be used to specify the Bin Priority.



| Priority | Inventory Bin | Min. Quantity | Max. Quantity |
|----------|---------------|---------------|---------------|
| 1        | E01S3         | 5             | 10            |
| 2        | E06S5         | 0             | 500           |
| 0        |               | 0.00          | 0.00          |
|          |               |               |               |
|          |               |               |               |
|          |               |               |               |
|          |               |               |               |

The Priority #1 bin will be used first, then #2 and so on. The system will attempt to create a 100% from a single bin, so if the #1 bin does not have enough inventory, it will look to lower priority bins.

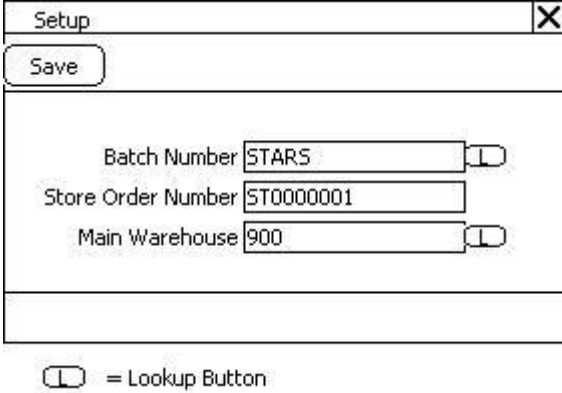

If no bin can fulfill 100% of the required quantity, the pick will be from multiple bins. As

If no bins are specified in the Priority list, it will pick the bins in alphanumeric order.

Because of the flexibility required in generating picklists, they will be generated outside of Dynamics GP. The reports will provide the ability to print pick lists using the following options:

- Order by Bin (Item Quantities Bin)
- Select discreet bins and/or ranges
- Order by Store (site)
- Select discreet stores and/or ranges
- Order by Department (Item Class)
- Select discreet departments and/or ranges
- Order by any of the 6 Item User Defined Fields, but especially Category (UDF-1)

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>• Select discreet UDF values and/or ranges.</li></ul> |  |
|---|--|

| Setup   | CCDA   |          |              |  |                    |  |                |   |  |
|---|--|----------|--------------|--|--------------------|--|----------------|---|--|
| <p>Setup is accessed from Tools &gt;&gt; Setup &gt;&gt; Sales &gt;&gt; Setup Store Orders. The window is used to specify setup options required by the module.</p>  <p>Legend:  = Lookup Button</p>  |  |          |              |  |                    |  |                |   |  |
| <table border="1"> <thead> <tr> <th>Field</th> <th>Function</th> </tr> </thead> <tbody> <tr> <td>Batch Number</td> <td>An Inventory Batch that will be used to hold un-posted Store Orders.</td> </tr> <tr> <td>Store Order Number</td> <td>Since the Store Order is actually an Inventory Transfer, the document number provided here allows the system to number the new Inventory Transfers using a different numbering sequence than a manually entered transfer using the Item Transfer Entry window.</td> </tr> <tr> <td>Main Warehouse</td> <td>The Location Code for the main warehouse. All transfers will be FROM of this location TO a store location selected with the Store Fulfillment window.</td> </tr> </tbody> </table> | Field  | Function | Batch Number | An Inventory Batch that will be used to hold un-posted Store Orders. | Store Order Number | Since the Store Order is actually an Inventory Transfer, the document number provided here allows the system to number the new Inventory Transfers using a different numbering sequence than a manually entered transfer using the Item Transfer Entry window. | Main Warehouse | The Location Code for the main warehouse. All transfers will be FROM of this location TO a store location selected with the Store Fulfillment window. |  |
| Field   | Function   |          |              |  |                    |  |                |   |  |
| Batch Number  | An Inventory Batch that will be used to hold un-posted Store Orders.   |          |              |  |                    |  |                |   |  |
| Store Order Number  | Since the Store Order is actually an Inventory Transfer, the document number provided here allows the system to number the new Inventory Transfers using a different numbering sequence than a manually entered transfer using the Item Transfer Entry window. |          |              |  |                    |  |                |   |  |
| Main Warehouse  | The Location Code for the main warehouse. All transfers will be FROM of this location TO a store location selected with the Store Fulfillment window.  |          |              |  |                    |  |                |   |  |

