QAD Enterprise Applications

User Guide

QAD Lot Trace Workbench

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Lot Trace Workbench User Guide Change Summary

The following table summarizes significant differences between this document and the previous version.

Date/Version	Description	Reference
December 2015/3.0	Revised the troubleshooting section	page 33
April 2014/2.0	Rebranded to version 2.0	--
March 2014/1.1	Initial publication	--

Chapter 1

Lot Trace Workbench

This chapter provides an overview of Lot Trace Workbench as well as information about use and navigation.

Lot Trace Workbench

Lot Trace Workbench is a powerful integrated data analysis browse that allows the user to track materials by lot, item number, or serial number, backward and forward through the production process. Included in this tracking functionality is the ability to trace data across multiple levels in the product structure. Not only can specific data be identified and collected through this workbench, but it can then be exported to Excel, where it allows the user the flexibility for further manipulation and custom report formatting.

Companies that have lot-controlled inventory require the capability to have immediate access to current inventory data, as well as to historical data. When a product is returned, recalled, or inquiries are being made, tracing all the raw materials that are used to produce that product is necessary to investigate possible root causes for issues. The Lot Trace Workbench browse allows you to answer the following questions:

- Which material has been used in production?
- From which suppliers were the raw materials purchased?

This browse also allows you to analyze the impact of potential issues:

- What are the current levels of affected inventory?
- Where has this material been used?
- Where have materials been shipped?

With Lot Trace Workbench, you can collect this valuable information and:

- Document and report on affected inventories and materials.
- Determine what to do with inventory still on hand, such as inspecting material in quality control, putting inventory in quarantine, scrapping inventory, returning material to the supplier, reworking, and so on.

Lot Trace Workbench Flowcharts

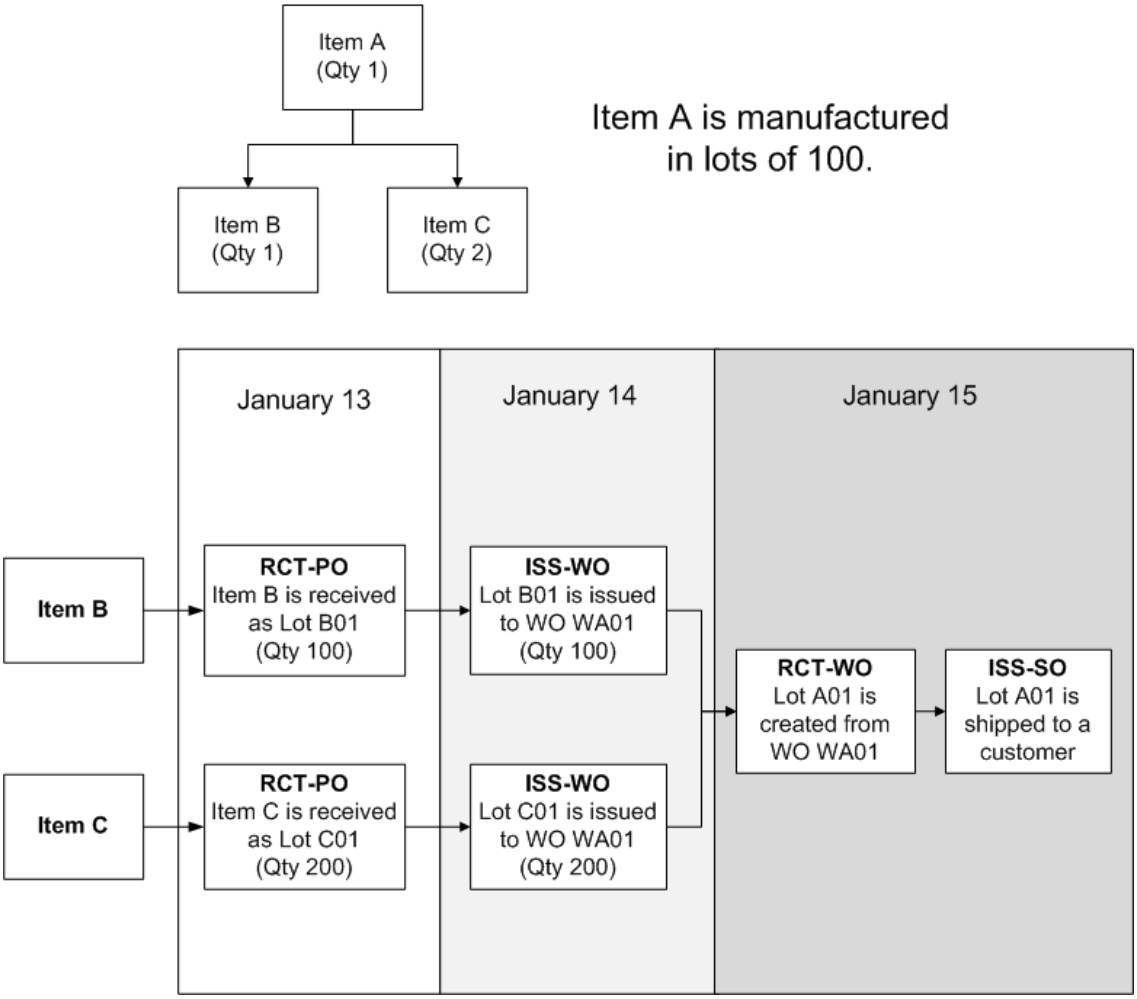
Depending on the production processes, you must be able to trace backward and forward across transactions on multiple levels in a product structure. Lot Trace Workbench allows you to navigate backward and forward in historical transaction data to track and trace inventory lots through multiple levels in the receipt, production, inventory, and shipment processes. You can extract specific data for further analysis or auditing purposes as well as save selection criteria so that you can come back to previous trails.

Tracing Backward and Forward Using LTWB

In the following example, item A is made from item B (qty 1) and item C (qty 2). Item A is manufactured in lots of 100. An ideal process flow to manufacture and ship Item A would look like Figure 1.1:

- On January 13, items B and C are received into stock as Lot B01 and Lot C01.
- On January 14, a work order is created (WO WA01) to build qty 100 Item A. Lot B01 and lot C01 are issued to WO WA01.
- On January 15, WO WA01 is completed. Lot A01 is created from WO WA01. Lot A01 is shipped to the customer.

Fig. 1.1
Example of an Item's Process Flow

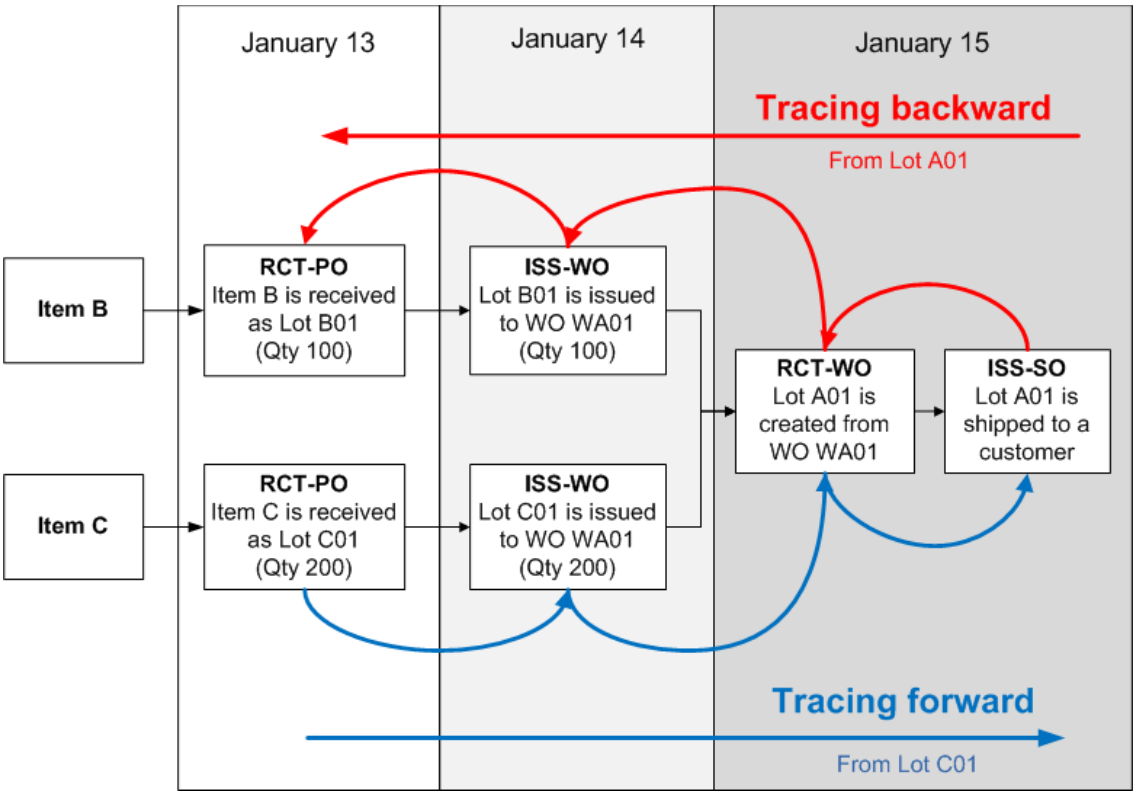


If a customer calls and reports that item A is defective, you can use Lot Trace Workbench to trace backward using either the sales order number and/or lot number that was shipped to the customer. Using the sales order number, you can find the item A lot number that was shipped to the customer, the work order that item A was manufactured on, and the item B and C lot numbers.

Note Typically, the first option is to search forward or backward from a lot number, and the second option is to search from an order number.

If a supplier calls you and reports that one or more lots for item C may have defects, you can use Lot Trace Workbench to trace forward using the purchase order number. You can find the lots for item C, the work orders that item C was issued to, and the lot numbers for manufactured items such as item A that contain the lots for item C, and shipments for the manufactured item lots to customers.

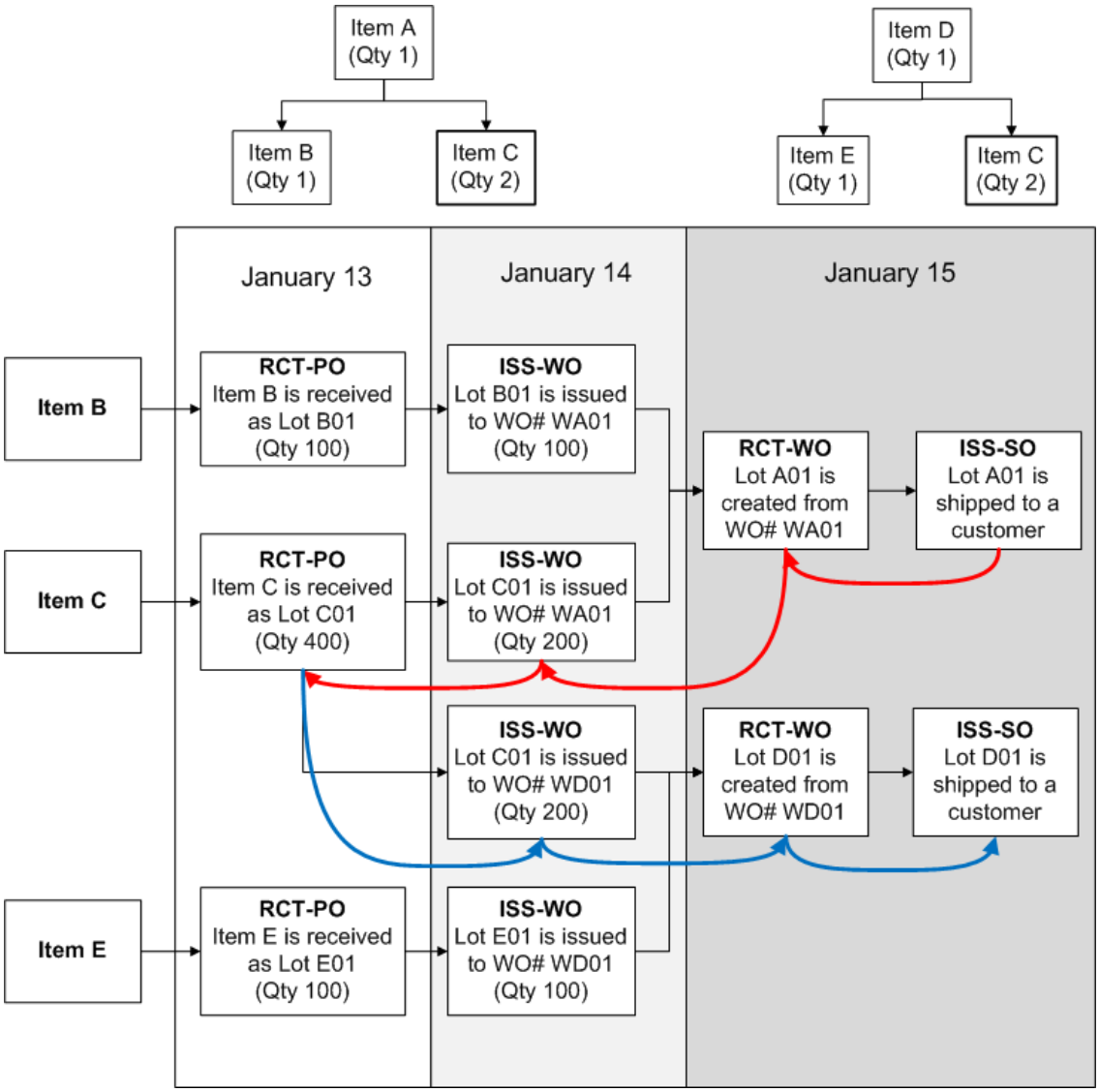
Fig. 1.2
Tracing Backward and Forward Using LTWB



Using LTWB to Trace Where Material Has Been Used

Expanding on the previous example, item C is also used to make item D. If it was discovered that item C is defective, you can use Lot Trace Workbench to trace where item C has been used. Figure 1.3 shows that you can trace backward from the sales order and find out that item C was also used in item D (lot D01).

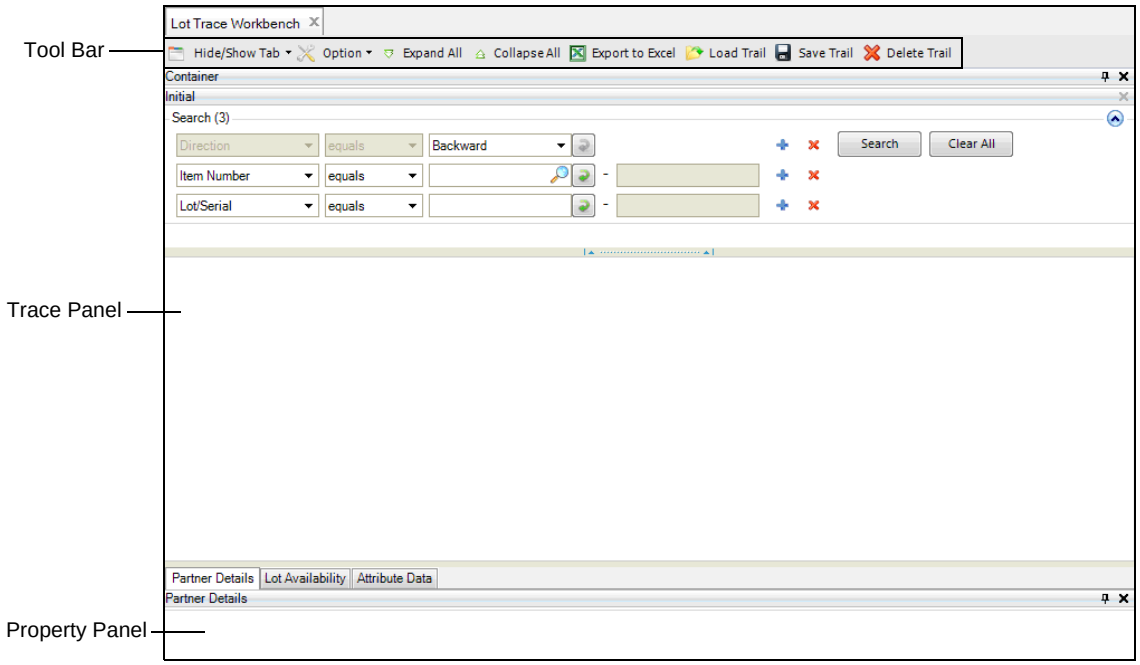
Fig. 1.3
Tracing Where Material Has Been Used



Lot Trace Workbench UI

The Lot Trace Workbench (3.22.6) browse is in Master Data |Inventory Control| Lot/Serial Number Menu |Lot Trace Workbench. The browse consists of the Tool Bar, the Trace Panel, and the Property Panel.

Fig. 1.4
Lot Trace Workbench Browse



Tool Bar

The Tool Bar at the top of the screen contains the following buttons that allow you to customize the UI and to manage the trace trail:

- **Hide/Show Tab.** This drop-down menu allows you to show or hide the Address Detail, Lot Availability, and Transaction Attribute Data tabs in the Property Panel at the bottom of the screen. By default, all tabs are visible.
- **Option.** Click to set Level and Max Workfile parameters.
  - **Level.** Enter a value from 1 to 99 to identify the lowest-level record that the code processes the trace to. The default is level 99. For example, if the level is set to 3, the code does not search for any child records lower than level 3. The result set is only from level 1 to level 3. If the level is set to 0 (zero), there is no depth limitation in processing.
  - **Max Workfile.** The default is 500. Maximum number of records allowed in the inquiry workfile. Programs that use workfiles may exceed established memory limits. If this occurs, Progress immediately exits the session. By setting the max workfile limit to a value less than the memory limit (or conversely increasing the memory limit at startup) this uncontrolled exit can be eliminated. If the max workfile is exceeded, no further workfile records are created and a message displays that the report or inquiry has been truncated. Alternately, the number of workfile records created can be reduced by narrowing the range of items selected for the inquiry or report. The workfile size increases with BOM depth, but the default value should be adequate for most installations.
- **Expand All.** Expand all search results in the trace panel to the lowest level. There are no limitations in the number of levels in the system. Note that inventory transactions, such as inventory transfers, are considered levels as well.
- **Collapse All.** Collapse all search results in the trace panel to the top level.

- **Export to Excel.** Export search criteria and all records in the trace panel to Excel. Only the visible columns in the trace panel are exported.
- **Load Trail.** Load a saved trail. The system brings you back to the original analysis scenario.
- **Save Trail.** Save the search criteria of the trace and the saved trail so that you can reload it to return directly to the original analysis scenario.
- **Delete Trail.** Delete a saved trail.

Trace Panel

Contains the search fields and displays the search results. The system organizes the search results in a tree structure, which allows you to easily navigate and analyze the results.

Property Panel

The Property Panel contains the Address Detail, Lot Availability, and Transaction Attribute Data tabs, which provide more detailed information on specific transactions.

- **Address Detail.** The Address Detail tab shows the supplier data for inbound received products or customer data for outbound shipments. This tab shows the name, address and contact information, and the related transaction number. To view the address details for a supplier, you must search on a lot number.
- **Lot Availability.** The Lot Availability tab displays the inventory details related to a specific transaction. This tab shows the item number, quantity, location, status, and the related lot-serial number.
- **Transaction Attribute Data.** When the case-specific lot attributes are associated with an item in an item profile, this tab displays the specific values related with the captured attribute values.

  Note The Transaction Attribute Data tab is only available when the Item Attributes and Quality Control products are installed. It is not necessary to have Quality Control implemented. When Item Attributes and Quality Control are not installed, only the Address Detail and Lot Availability tabs appear.

Using Lot Trace Workbench

By default, the Direction, Item Number, and Lot/Serial search fields are displayed on the startup screen. If desired, use the drop-down menus to change the search criteria or click the + or X icons to add or remove search fields.

Note The Direction search field cannot be removed.

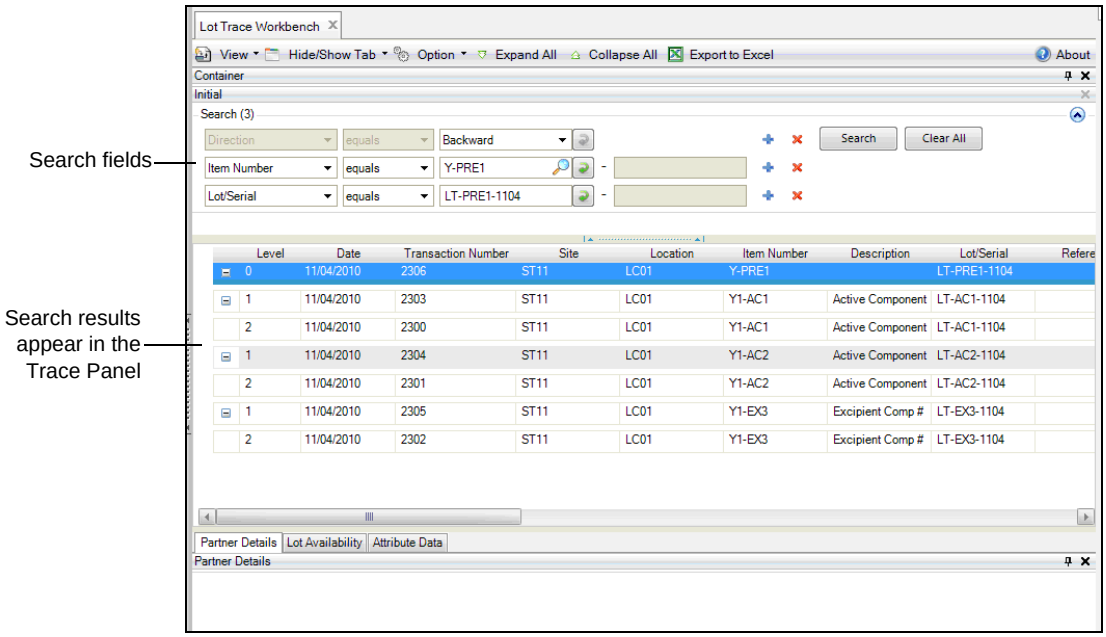
Searching for Records

Depending on the initial available information and the direction of the search, choose between a backward or forward search:

- **Backward.** Explore upstream processes back to the origin.
- **Forward.** Explore downstream processes forward to the final destination of goods.

Then add information to the search fields and click Search. The results appear in the Trace Panel.

Fig. 1.5
Search Results



Expand or Collapse Records

To expand a record, click the + icon. To expand the record to its bottom level, right-click on the record and select Expand.

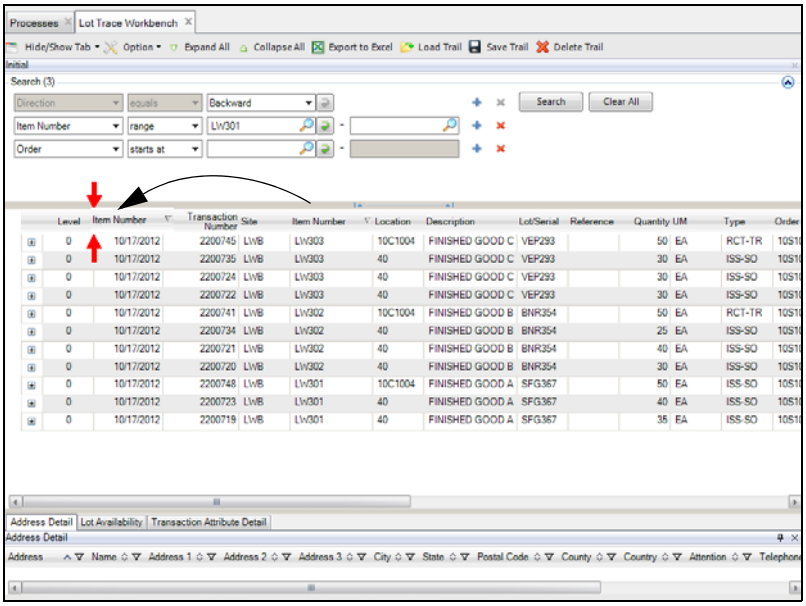
To collapse a record, click the - icon. To collapse the record to its top level, right-click on the record and select Collapse.

Moving Columns

To move a column, drag the column header into the desired location. Red arrows appear to indicate the new location.

Fig. 1.6
Moving a Column

Drag the column into the desired location.

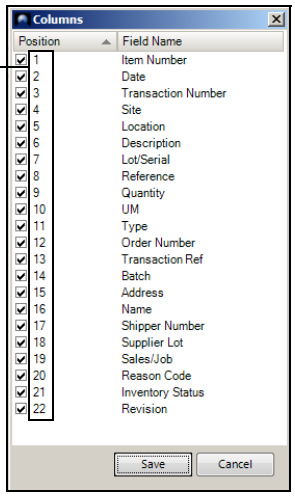


You can also move columns using the Columns window. Right-click the column, select Columns, change the position number, and then click Save.

Note When you change the column position, those changes are only applied to the current trace. When performing a new trace, the columns are in the default position.

Fig. 1.7
Moving a Column

To move a column, change the position number.



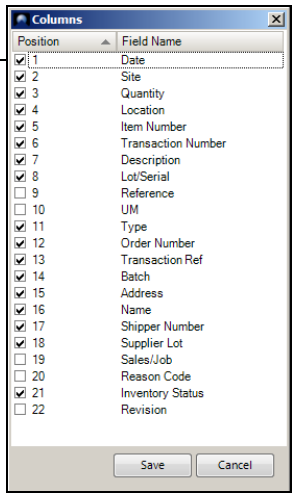
Show or Hide Columns

To hide a column, right-click the column and select Hide Column. To hide multiple columns, right-click the column, select Columns, clear the check box for the columns you want to hide, and then click Save.

To show a column, select its check box.

Fig. 1.8
Showing and Hiding Columns

Clear the check box to hide the column.

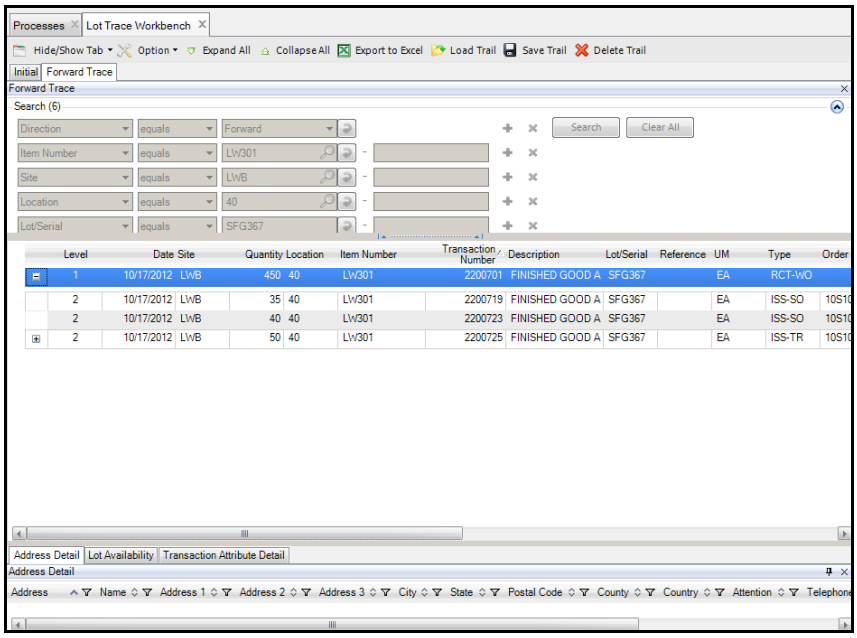


Forward Trace

To perform an additional forward trace on a record, right-click the record and select Forward Trace. The search fields for the forward trace are Item, Site, Location, Lot/Serial, and Reference.

Note The system sets the value for the search fields based on the record that triggers the forward trace. The search criteria are not editable.

Fig. 1.9
Forward Trace

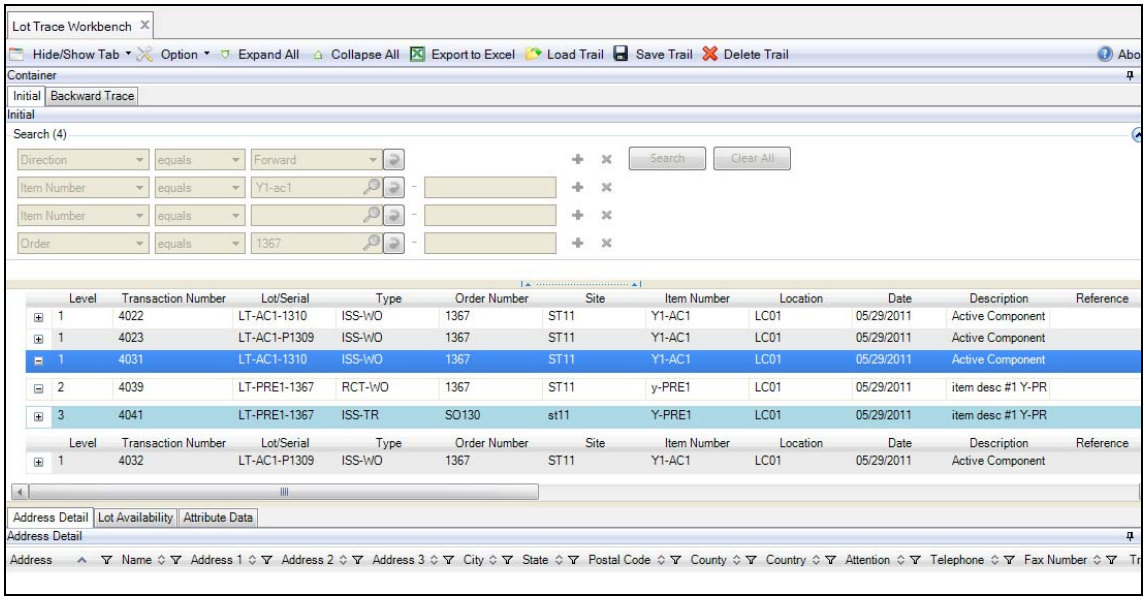


Backward Trace

To perform an additional backward trace on a record, right-click the record and select Backward Trace. The system creates a successive trace tab and highlights the next record that can be triggered. The search field for the backward trace is Transaction Number.

Note The system sets the value for the search field based on the record that triggers the backward trace. The search criteria are not editable.

Fig. 1.10
Record that Triggers the Next Trace

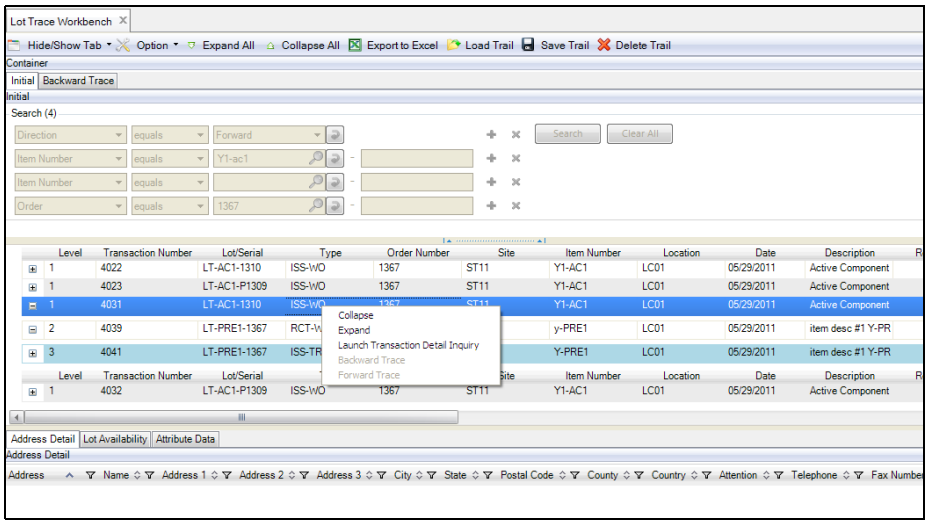


Backward and Forward Trace Tabs

When you perform a backward or forward trace, the system creates an incremental trace tab and highlights the next record that can be triggered.

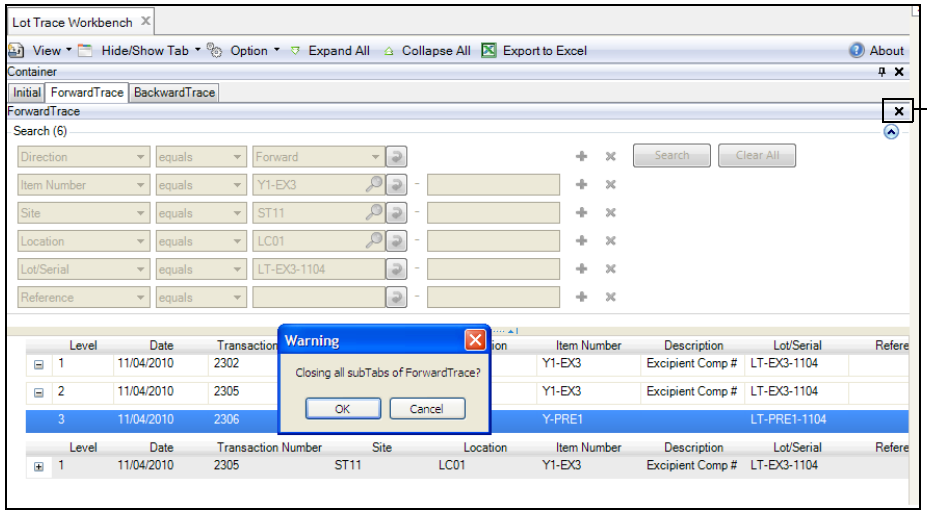
If a trace tab has a successor, another trace cannot be triggered, unless the successive trace tab is closed. In Figure 1.11, the Backward Trace tab is the successor to the Initial Trace tab. If the Backward Trace tab is open, the backward trace option is grayed out and you cannot perform a backwards trace on the Initial trace tab.

Fig. 1.11
Backward Trace Option Grayed Out



When you close a trace tab that has a successor, the system prompts you to close all the successor tabs together. Click OK to close all the successor tabs together.

Fig. 1.12
Closing a Trace Tab

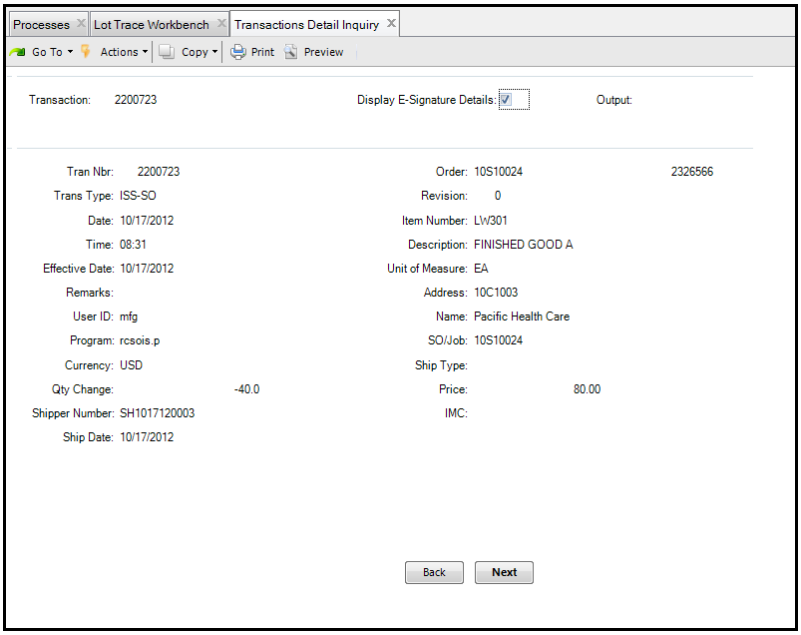


Click the X to close the trace tab.

Launch Inventory Detail Inquiry

To launch the inventory detail inquiry for the selected transaction record, right-click the record and select Launch Inventory Detail Inquiry.

Fig. 1.13
Launch Inventory Detail Inquiry



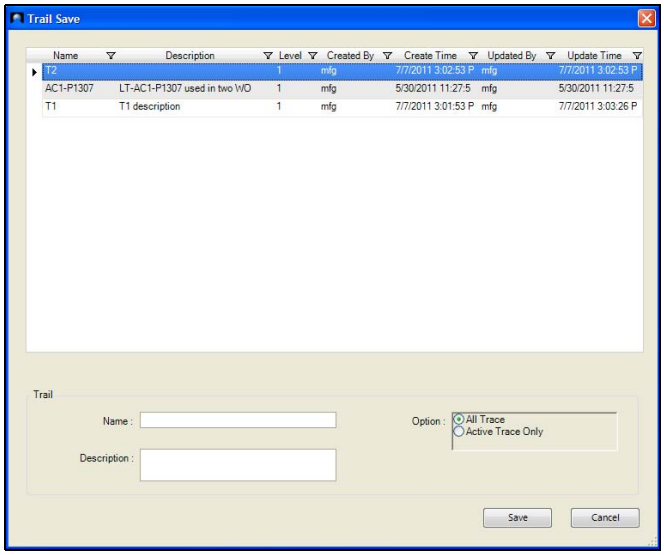
Saving a New Trail Record

Follow these steps to save a trail record:

1 On the toolbar, click Save Trail.

2 The Trail Save window, which lists all the saved trail records, opens. By default, the records are sorted by trail name.

Fig. 1.14
Trail Save



3 Enter the name of the trace trail in the Name field.

4 Enter a description of the trace trail in the Description field.

5 Select a save option:

- **All Traces.** Saves all trace tabs in the current trail.
- **Active Trace Only.** Saves the active trace tab only.

6 Click Save.

Note The Created By, Created Time, Updated By, and Updated Time columns are automatically captured.

Overwrite an Existing Trail Record

Follow these steps to overwrite an existing trail record:

1 On the toolbar, click Save Trail.

2 The Trail Save window, which lists all the saved trail records, opens. By default, the records are sorted by trail name.

3 Click the trail record that you want to overwrite or enter the name of the record in the Name field.

4 If necessary, modify the description.

5 Select a save option:

- **All Traces.** Saves all trace tabs in the current trail.
- **Active Trace Only.** Saves the active trace tab only.

6 Click Save.

7 A warning message pops up. Click OK to confirm that you want to overwrite the trail record.

Note The Update By and Update Time are automatically captured.

Deleting a Trail Record

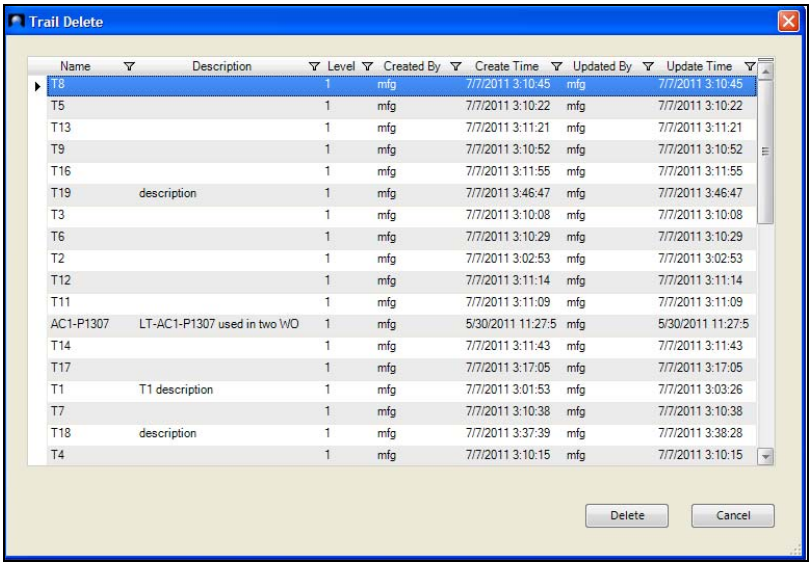
Follow these steps to delete a trail record:

1 From the toolbar, Click Delete Trail.

2 The Trail Delete window pops up.

3 Select the trail record you want to delete and click Delete.

Fig. 1.15
Trail Delete



Loading a Trail Record

Follow these steps to load a trail record:

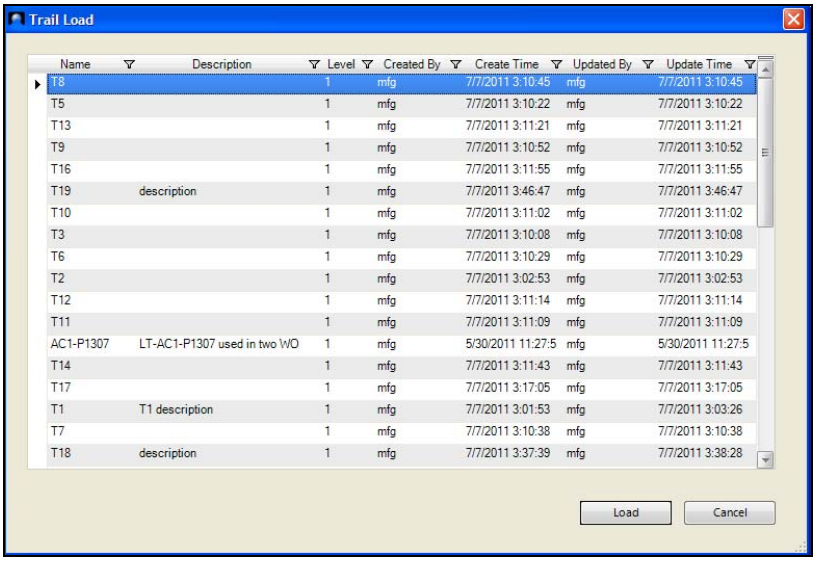
1 From the tool bar, click Load Trail.

2 The Trail Load window, which lists all the saved trail records, opens. By default, the records are sorted by trail name. The following information is shown for each trail record:

- Name
- Description
- Level
- Created By
- Created Time
- Updated By
- Updated Time

Note Every column can be used as a filter to select trail records.

Fig. 1.16
Trail Load



3 Open the trail record by double-clicking the record or selecting the record and clicking Load.

4 The trail record opens in a new Lot Trace Workbench window.

Example of Using Lot Trace Workbench

Example A customer raises a complaint related to a specific item received at the end of 2011. The following steps show how you can use Lot Trace Workbench to investigate the customer complaint to find the root causes of a product failure. In this example, you:

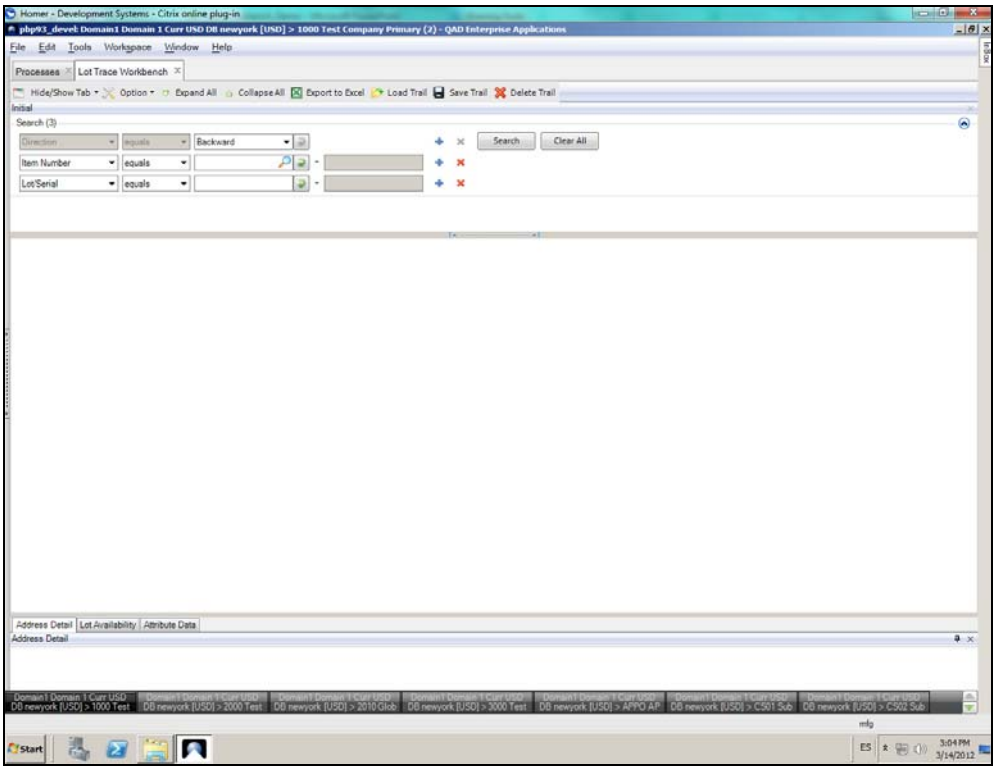
- Find out if there were other shipments sent to the same customer.
- Search for all shipments from that lot for every customer.
- Search existing inventory so that you can return any faulty parts if necessary.
- Find the batch/production order used to produce this specific lot.
- Find items/lots used for this batch order.
- Find how the product was produced and view the components issued to the work orders.
- View transaction data for the production of the item.
- Trace forward to view the total impact (view how many other work orders used this item).

1 Choose between a backward or forward search.

- **Backward.** Explore upstream processes back to the origin.
- **Forward.** Explore downstream processes forward to the final destination of goods.

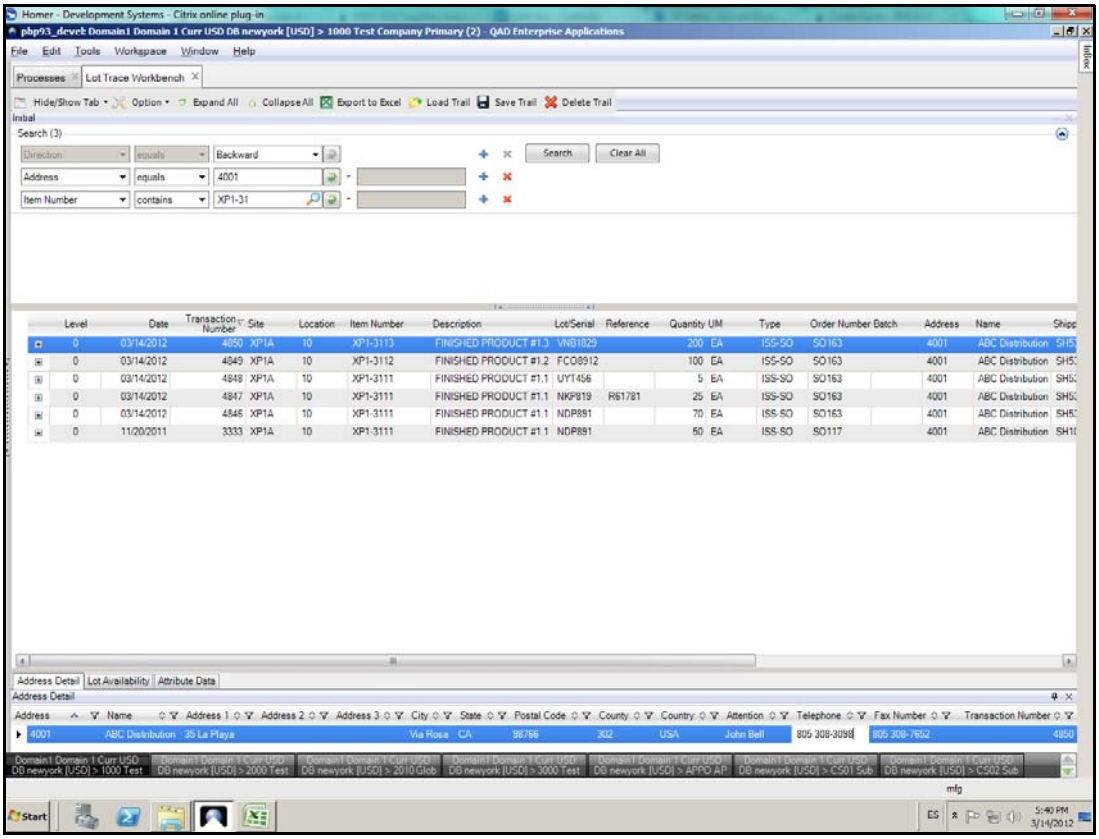
In this example, you are searching for details regarding a shipment in 2011 so you select a backward search.

Fig. 1.17
Lot Trace Workbench Initial Screen



2 Enter the customer and the item information in the search fields and click Search. The search results, which appear in the trace panel, show that there was a shipment to the customer in November 2011. This record displays the shipment information, such as the order number, the shipper name, and the lot number.

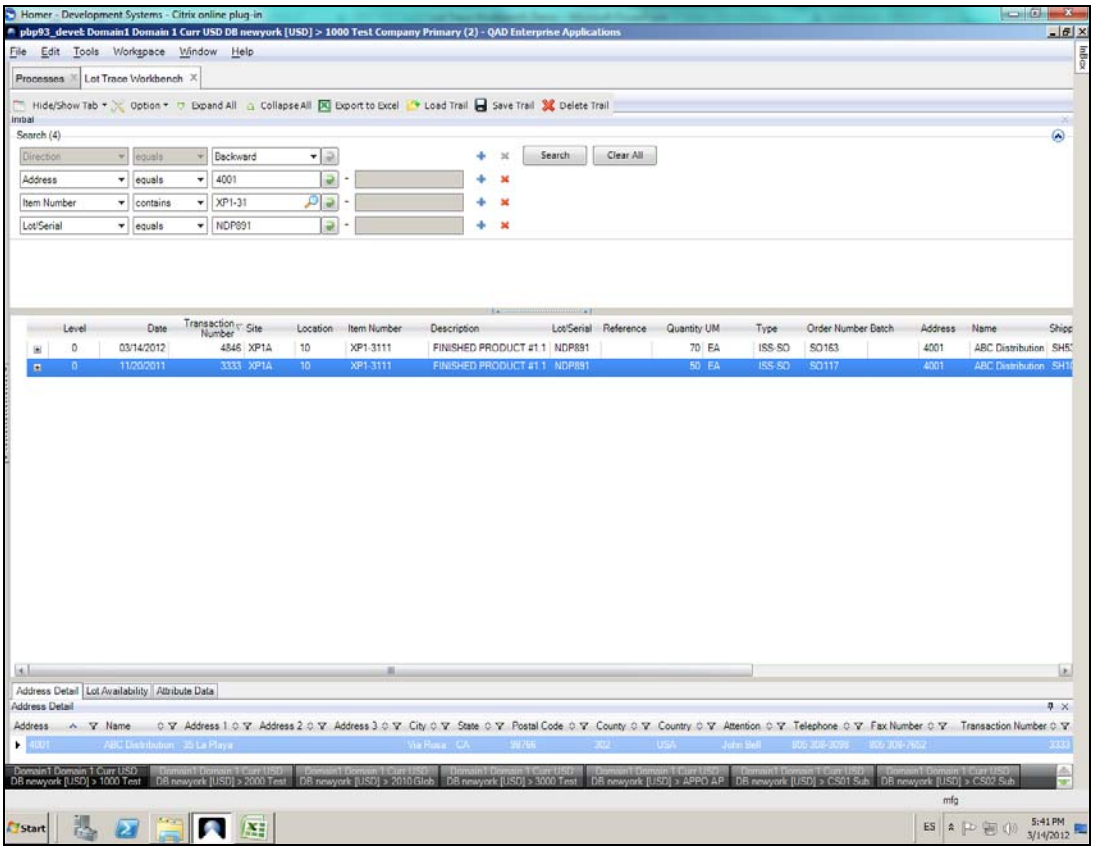
Fig. 1.18
Shipment Information for Customer Complaint



3 Add the lot number to the search criteria to find other shipments and inventory from that lot that have similar issues.

Figure 1.19 shows that the same lot was shipped at a later date to the same customer. With this information, you can contact the customer to find out if there were problems with this shipment as well.

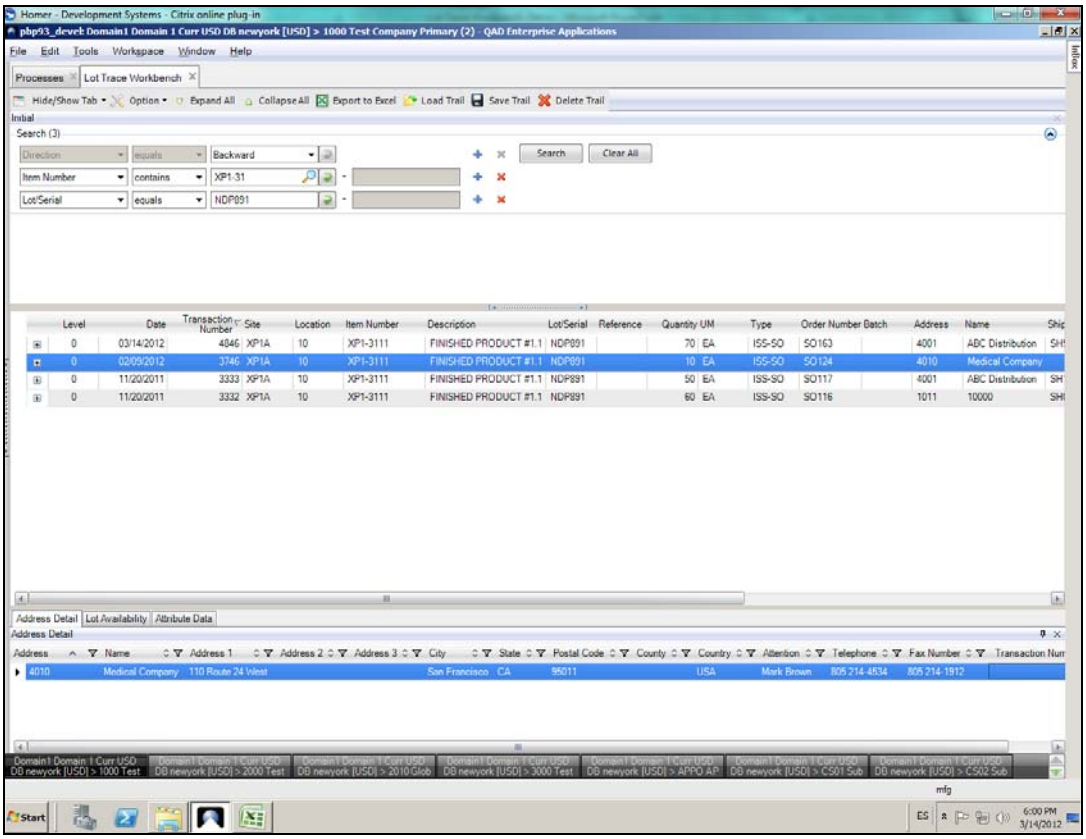
Fig. 1.19
Search Results for All Shipments to Customer



4 To search for all the customer shipments for this item-lot combination, search the item number and lot/serial number.

Figure 1.20 shows that there were four shipments for that item-lot combination that were delivered to three different customers. With this information, you can contact the other customers to determine if they have had problems with those items as well.

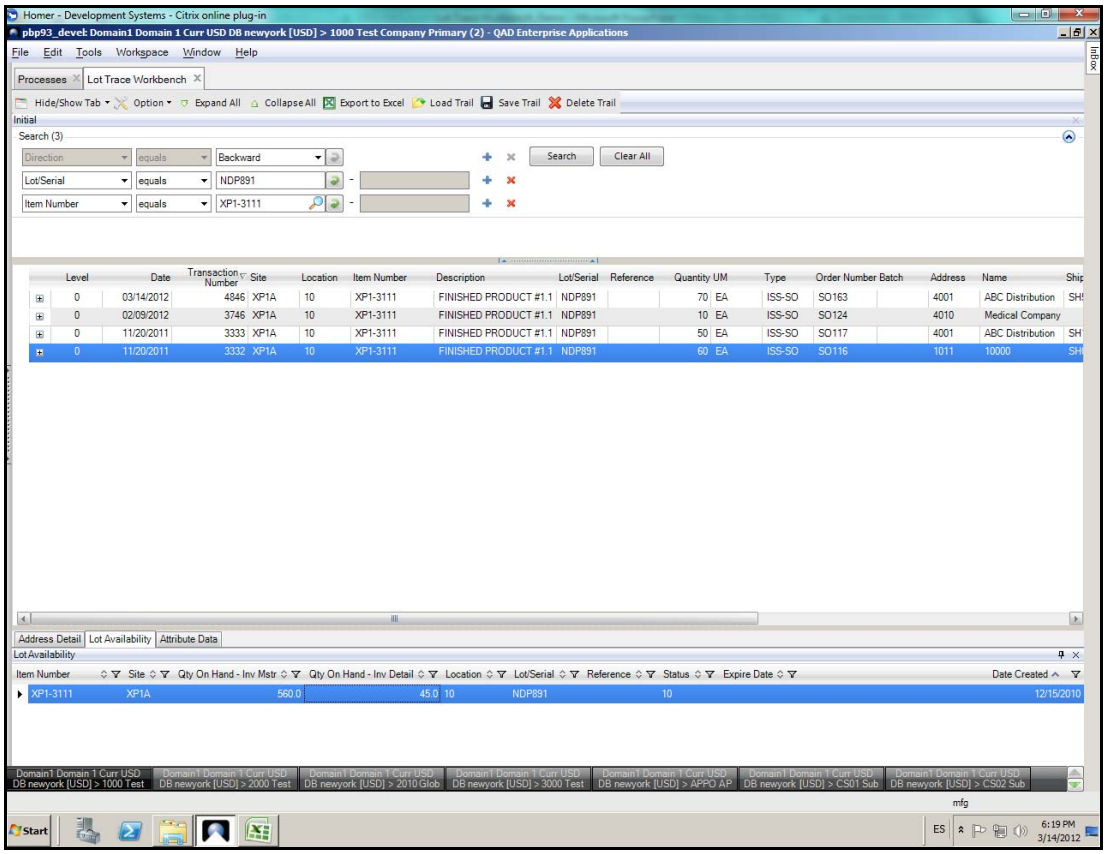
Fig. 1.20
Search Results for All Shipments to All Customers



5 If all the customers are reporting failures from that item-lot combination, then search for all the inventory that has not been shipped yet. To view the current inventory levels, search for the item-lot combination.

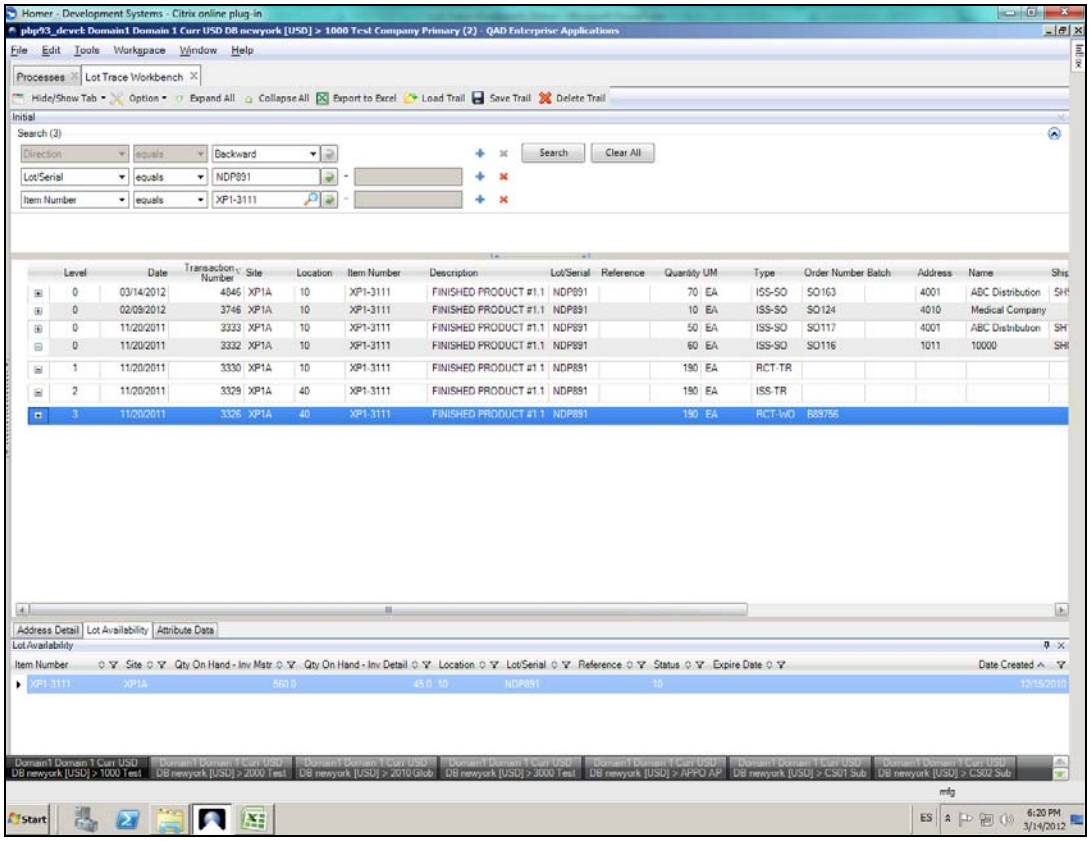
Figure 1.21 shows that there is still inventory for this item-lot combination. With this information, you can put this inventory in quarantine so that the items are not shipped to any other customers.

Fig. 1.21
Search Results for Existing Inventory



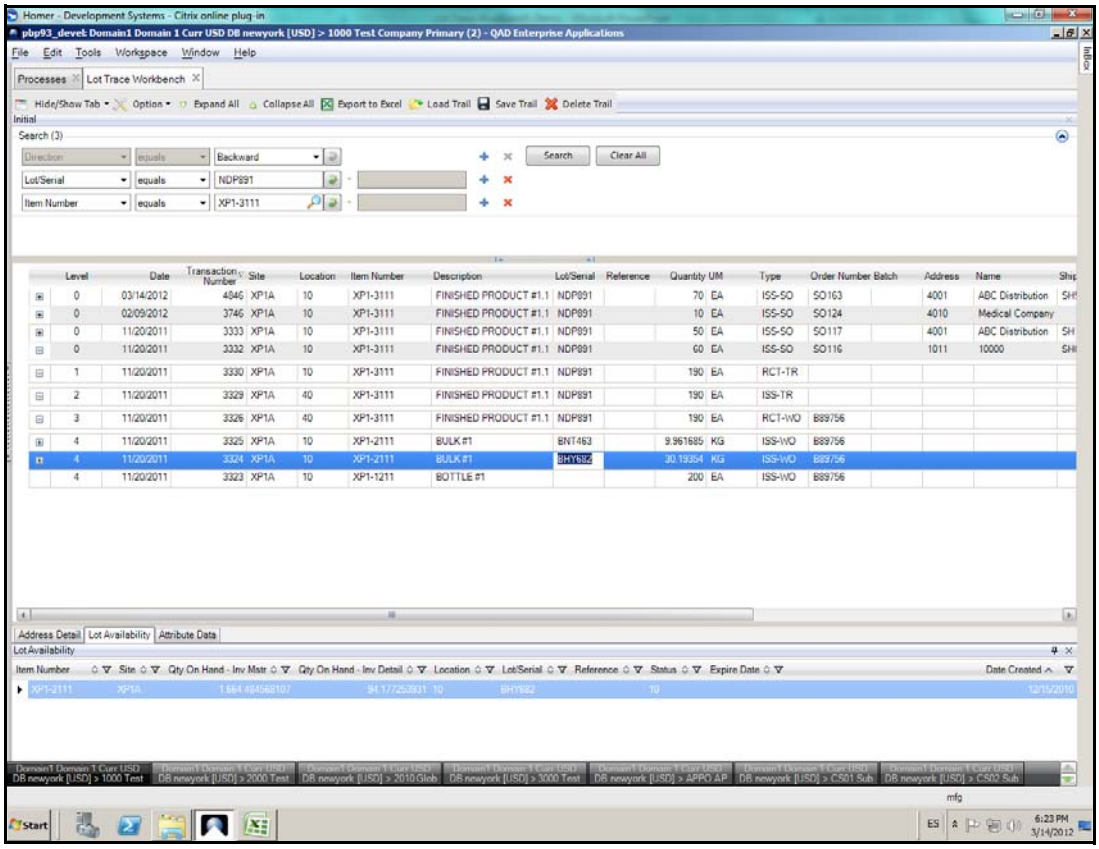
6 From the inventory details, drill down to view the transactional events for this specific lot to determine which batch or production order was used to produce this specific lot.

Fig. 1.22
Trace Back for Root-Cause Analysis: Production Order Numbers



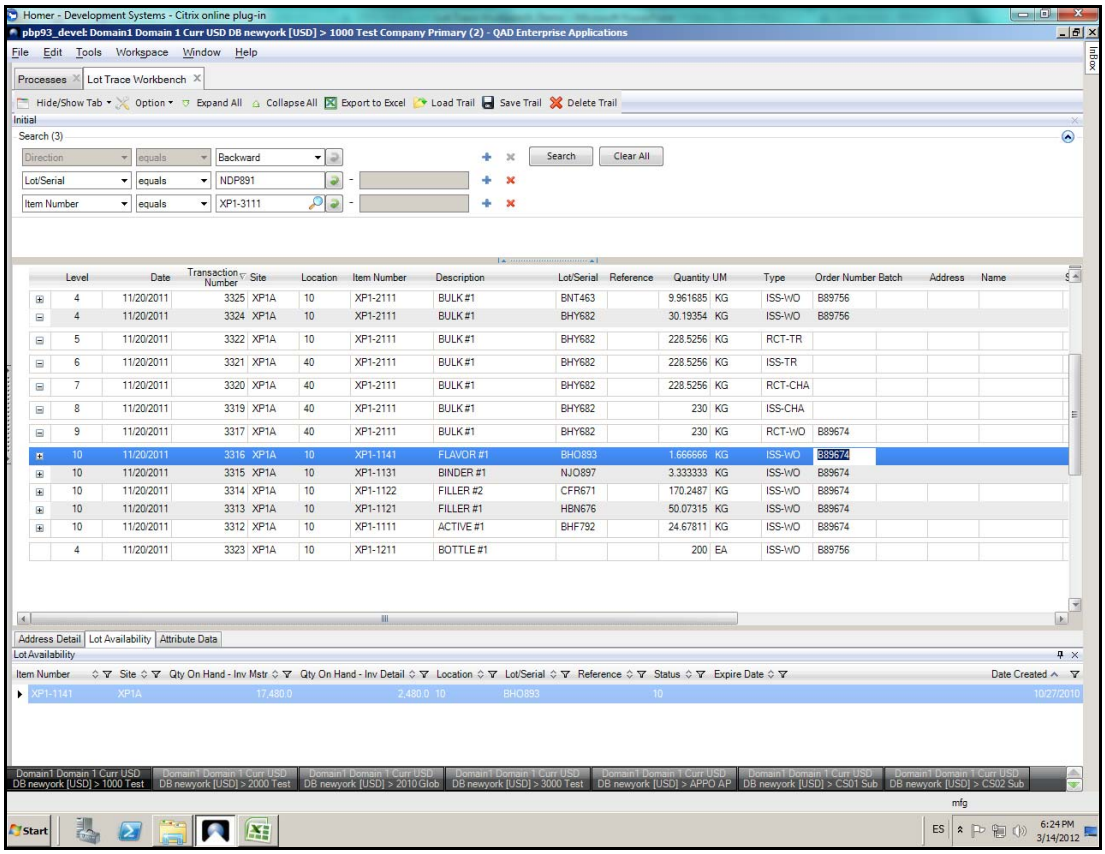
7 Drill down further to determine items and lots issued for this specific batch order.

Fig. 1.23
Trace Back for Root-Cause Analysis: Product Component Information



8 Drill down further to view how the bulk product was produced. Figure 1.24 shows the components issued to the work orders.

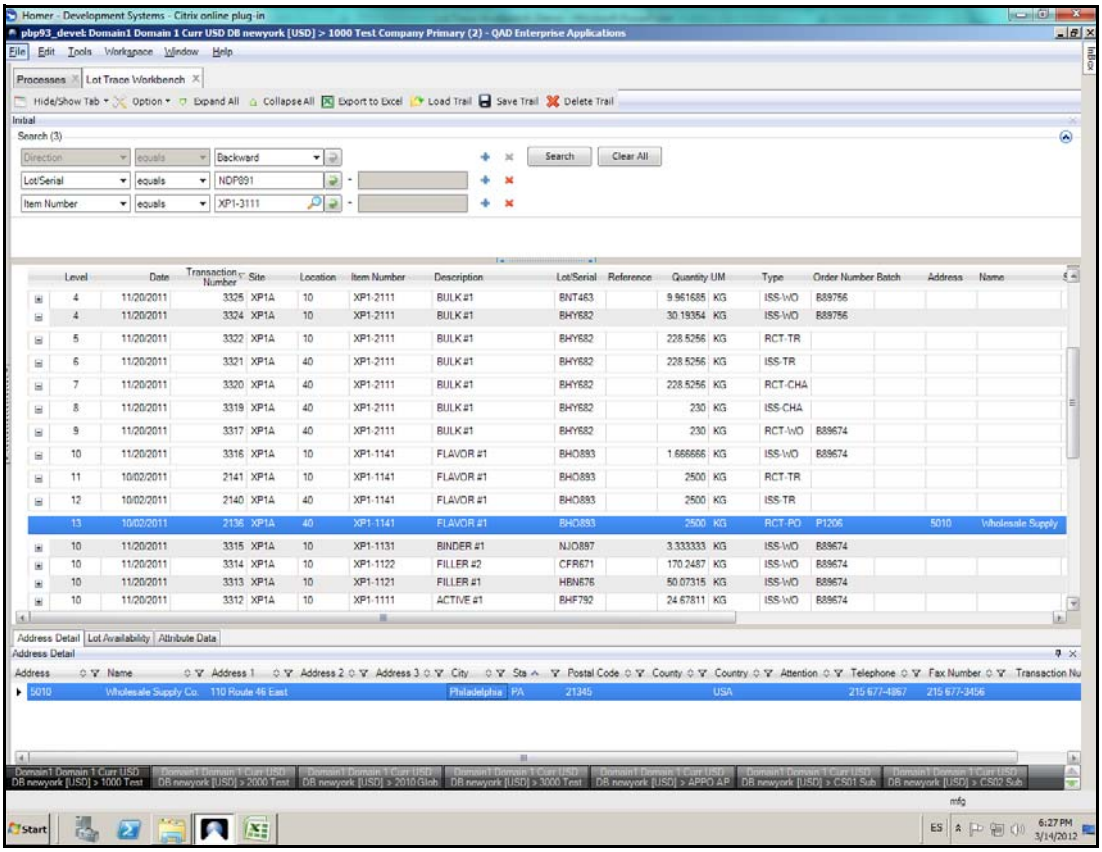
Fig. 1.24
Trace Back for Root-Cause Analysis: Detailed Production Information



9 Drill down to view the production details of the Flavor 1 component. Figure 1.25 shows the original receipt of raw materials that were used to create the Flavor 1 component as well as the supplier's name and order number.

For this example, you discover that the item fails because of a production problem and not because of a bad component.

Fig. 1.25
Trace Back for Root-Cause Analysis: Component Information



10 The next thing you must do is to view the data from the production transactions. To view the transaction data, right-click the record and select Launch Transaction Detail Inquiry.

Note You can view the existing inventory at any level of the items used in the process.

Fig. 1.26
Launch Transaction Detail Inquiry

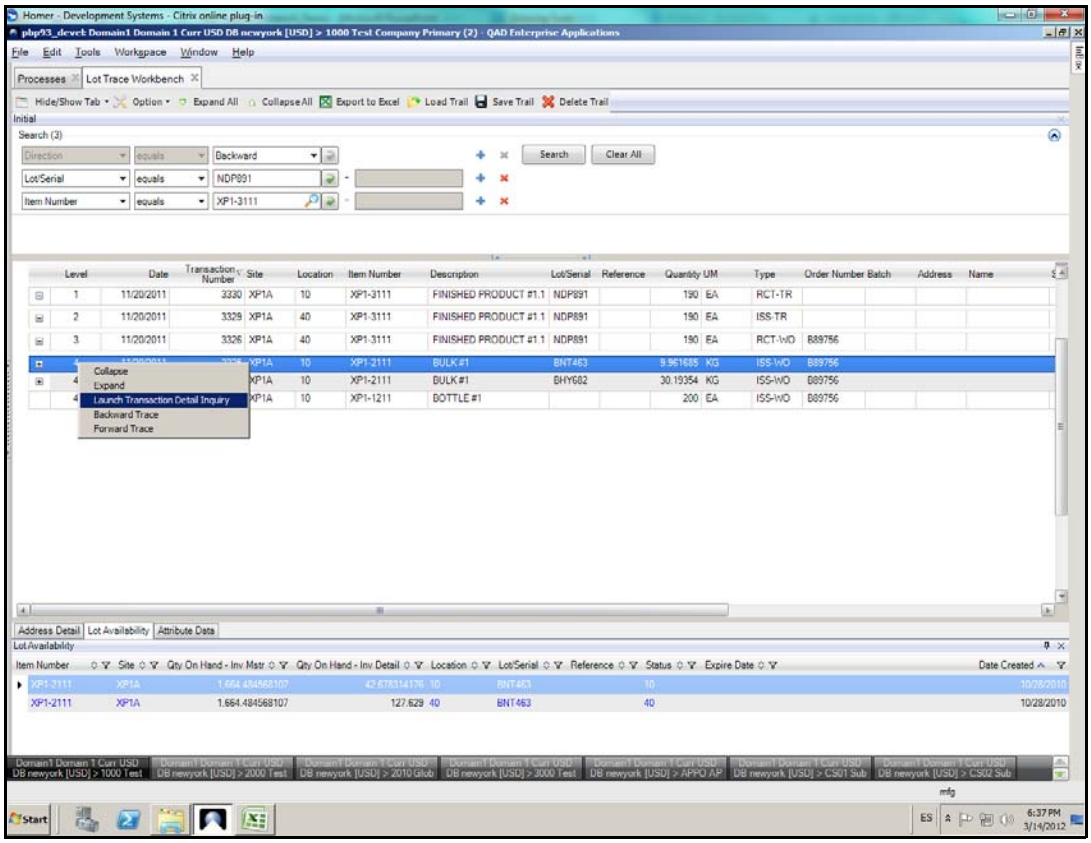
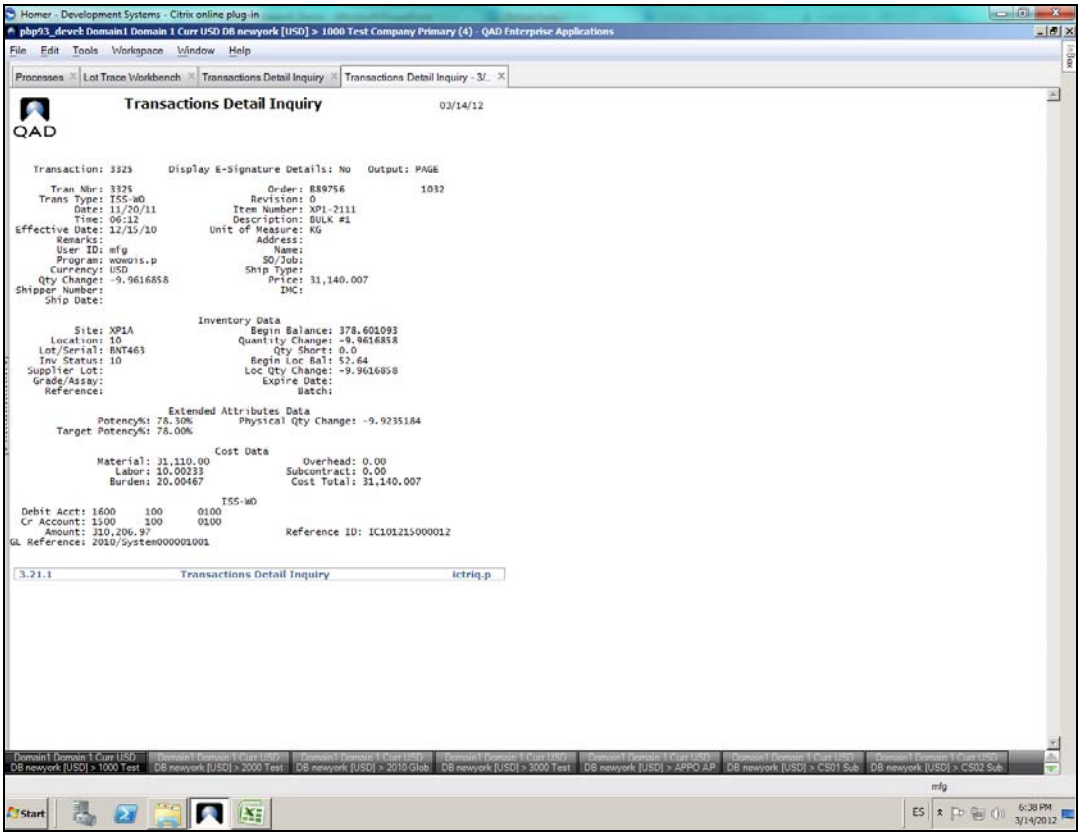


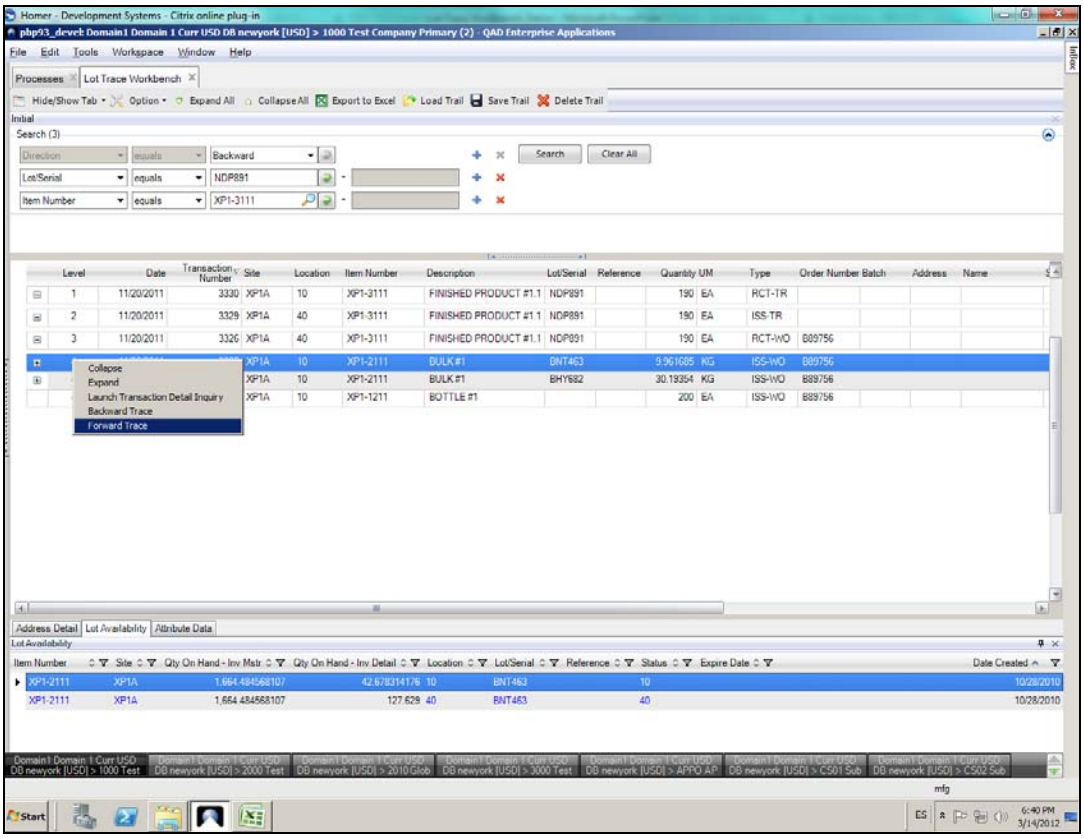
Figure 1.27 shows the transaction details that were conducted when the item was produced.

Fig. 1.27
Transaction Detail Inquiry Information



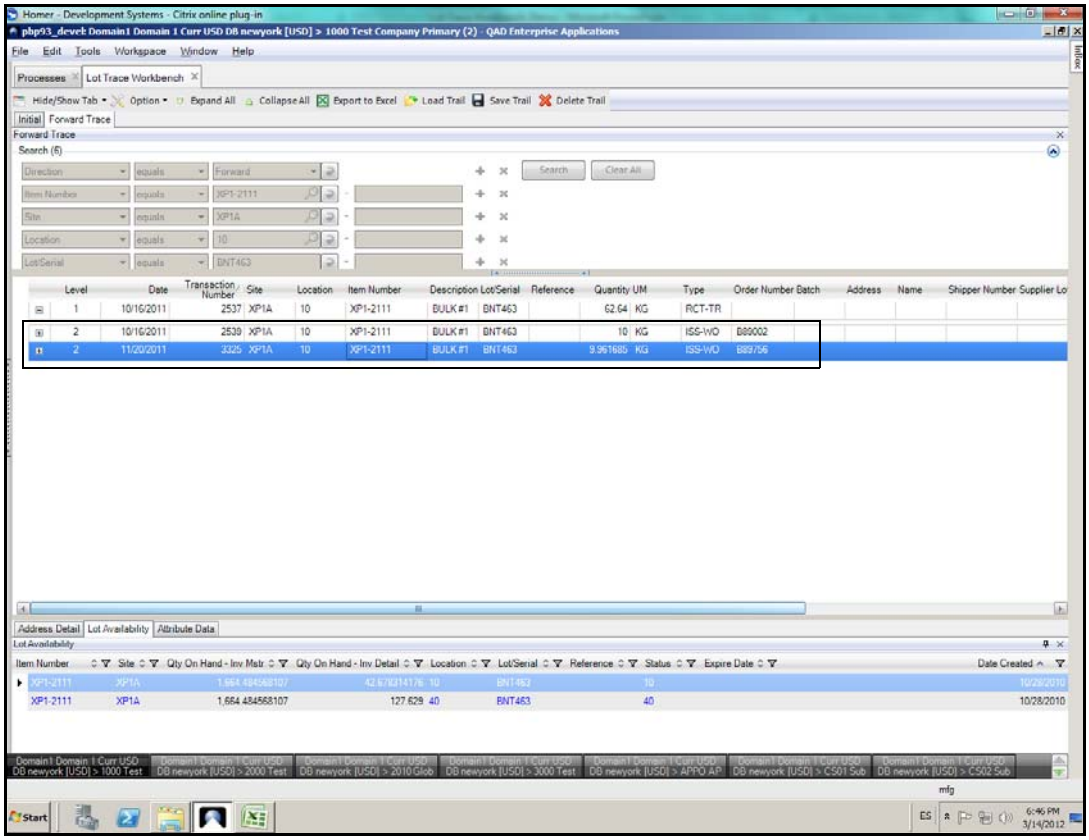
11 Once you have viewed the transaction data for the production of that item, run a forward trace to view the total impact of the production run. To run a forward trace, right-click on the record and select Forward Trace.

Fig. 1.28
Trace Forward for Impact Analysis



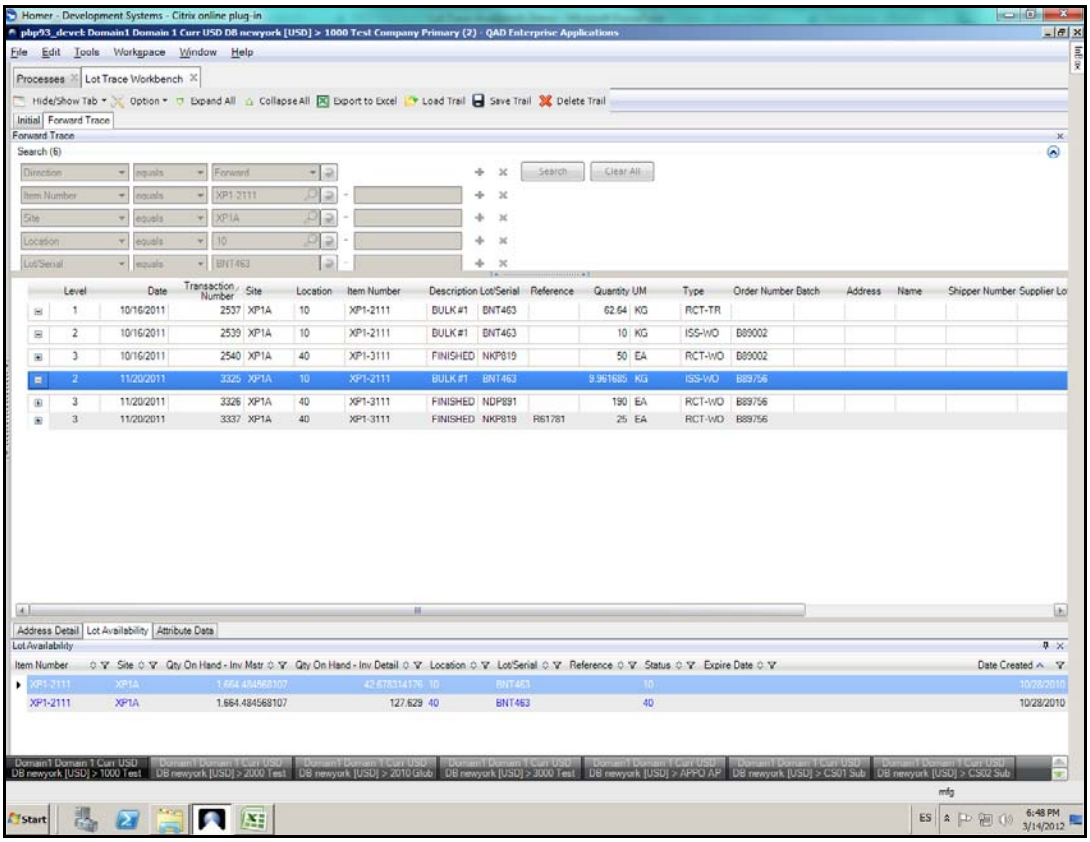
12 Figure 1.29 shows that the item was used in two different work orders. With this information, you can trace forward to see how this inventory was consumed and if finished products have been shipped to other customers.

Fig. 1.29
Trace Forward for Impact Analysis: Work Order Information



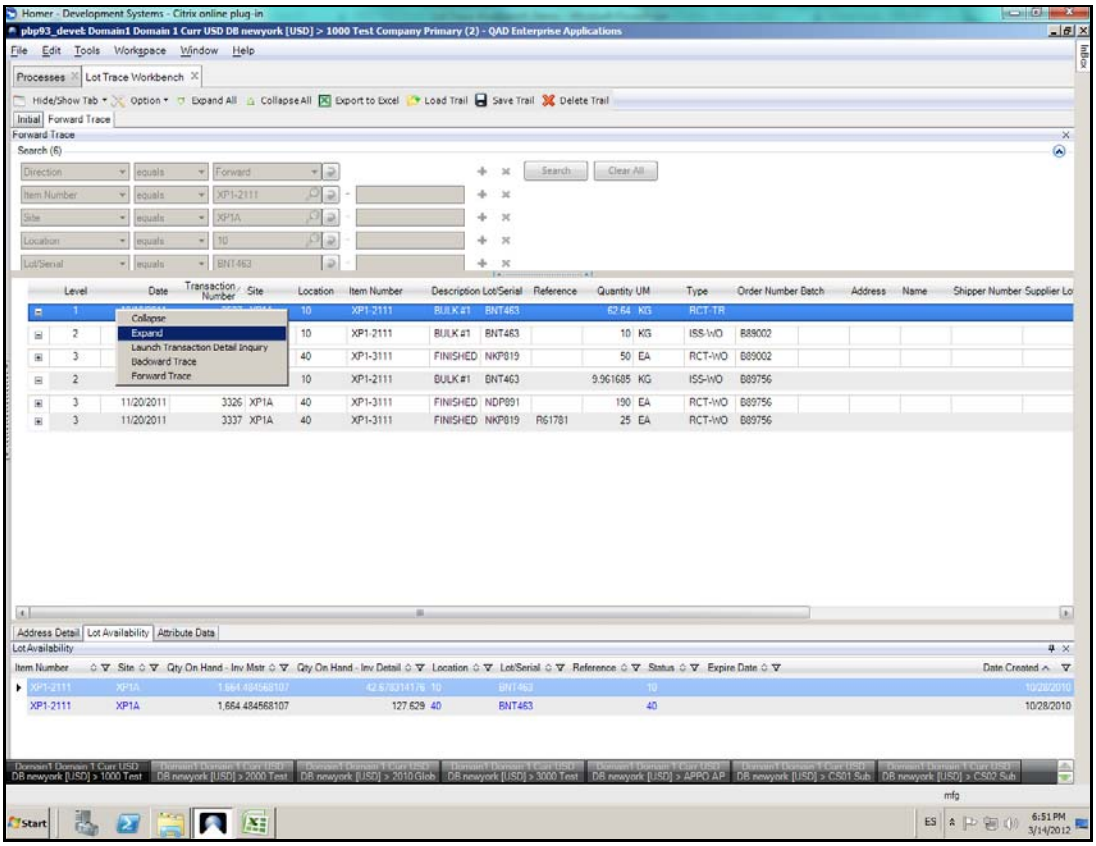
13 By drilling down, you see that these finished product work orders were used to create the same item but for three different lots. These items are related with three lot and sublot combinations of the finished product.

Fig. 1.30
Trace Forward for Impact Analysis: Work Order and Lot Information



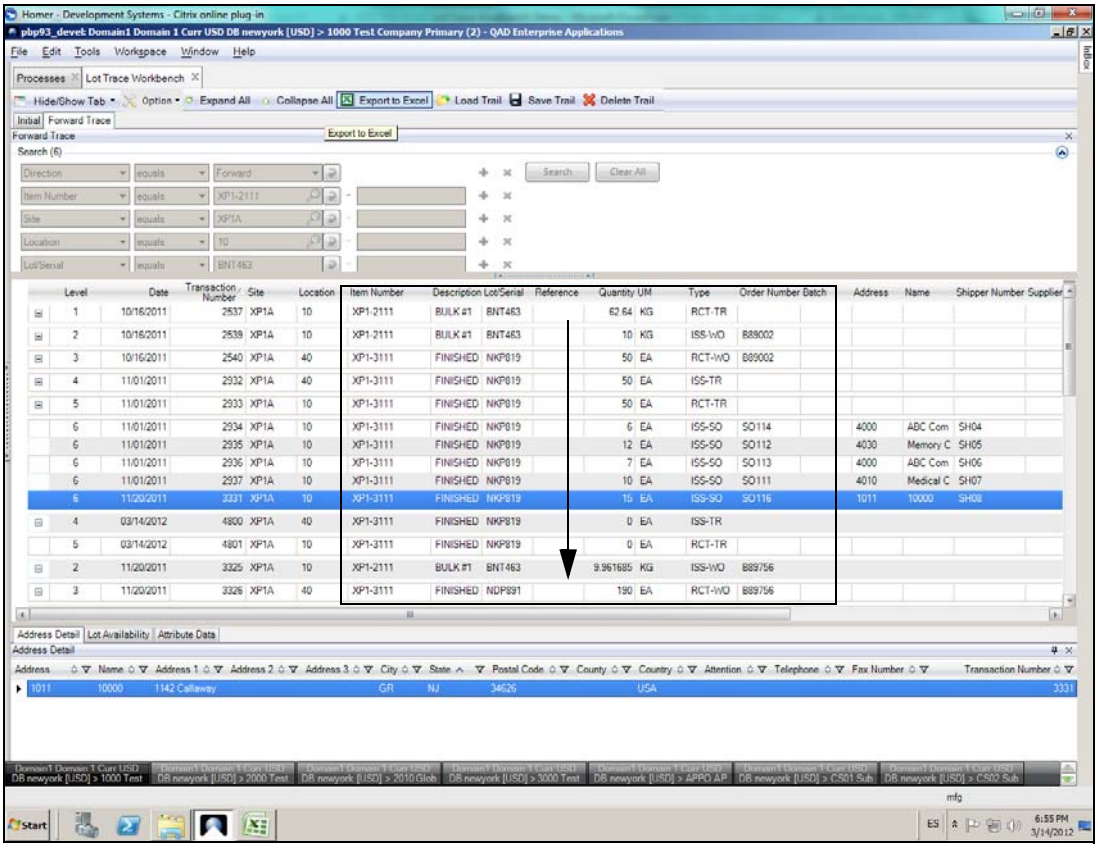
14 With this information, it is easy to determine if any of the items were shipped to other customers and if there is still inventory in stock. Right-click the record and select Expand.

Fig. 1.31
Trace Forward for Impact Analysis: Inventory and Shipment Details



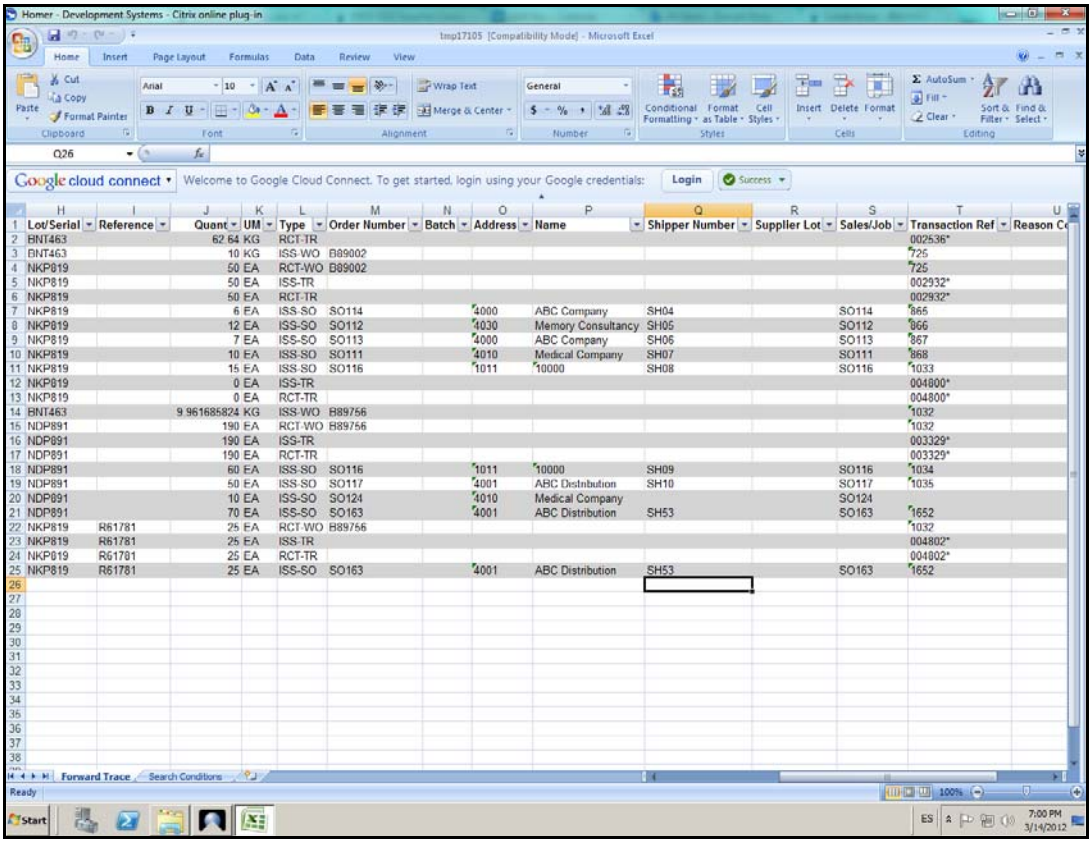
15 Verify the exact quantities available for each lot on hand and the list of forward-linked transactions starting with receipt of this specific inventory record.

Fig. 1.32
Trace Forward for Impact Analysis: Verifying Inventory and Forward-Linked Transactions



16 If desired, export the information to Excel so that you can apply more advanced filters and combinations. To export the information to Excel, click Export to Excel.

Fig. 1.33
Export to Excel



	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Lot/Serial	Reference	Quant	UM	Type	Order Number	Batch	Address	Name	Shipper Number	Supplier Lot	Sales/Job	Transaction Ref	Reason C
2	BNT463		62.64	KG	RCT-TR								002536*	
3	BNT463		10	KG	ISS-WO	B89002							725	
4	NKP819		50	EA	RCT-WO	B89002							725	
5	NKP819		50	EA	ISS-TR								002932*	
6	NKP819		50	EA	RCT-TR								002932*	
7	NKP819		6	EA	ISS-SO	SO114		4000	ABC Company	SH04		SO114	866	
8	NKP819		12	EA	ISS-SO	SO112		4030	Memory Consultancy	SH05		SO112	866	
9	NKP819		7	EA	ISS-SO	SO113		4000	ABC Company	SH06		SO113	867	
10	NKP819		10	EA	ISS-SO	SO111		4010	Medical Company	SH07		SO111	868	
11	NKP819		15	EA	ISS-SO	SO116		1011	10000	SH08		SO116	1033	
12	NKP819		0	EA	ISS-TR								004800*	
13	NKP819		0	EA	RCT-TR								004800*	
14	BNT463		9.961685824	KG	ISS-WO	B89756							1032	
15	NDP891		190	EA	RCT-WO	B89756							1032	
16	NDP891		190	EA	ISS-TR								003329*	
17	NDP891		190	EA	RCT-TR								003329*	
18	NDP891		60	EA	ISS-SO	SO116		1011	10000	SH09		SO116	1034	
19	NDP891		50	EA	ISS-SO	SO117		4001	ABC Distribution	SH10		SO117	1035	
20	NDP891		10	EA	ISS-SO	SO124		4010	Medical Company			SO124		
21	NDP891		70	EA	ISS-SO	SO163		4001	ABC Distribution	SH53		SO163	1652	
22	NKP819	R61781	25	EA	RCT-WO	B89756							1032	
23	NKP819	R61781	25	EA	ISS-TR								004802*	
24	NKP819	R61781	25	EA	RCT-TR								004802*	
25	NKP819	R61781	25	EA	ISS-SO	SO163		4001	ABC Distribution	SH53		SO163	1652	
26														

Troubleshooting Transactions Performed Out of Sequence

In an ideal manufacturing environment, inventory and manufacturing activities are recorded in real time and in the sequence in which they were performed. In an ideal process flow, POs for component parts are received before components are issued to work orders and, after the work order is completed, the WO receipt transaction is completed before the items are shipped.

In environments that use paper-based records to direct and record activities, transactions may be recorded minutes, hours, or days after the activities were completed. In environments where there are high volumes of activity, it can be difficult and sometimes impossible to assure that transactions are recorded in sequence. In some cases, when ERP actions are performed out of sequence, you may not be able to see all the required data when tracing backward.

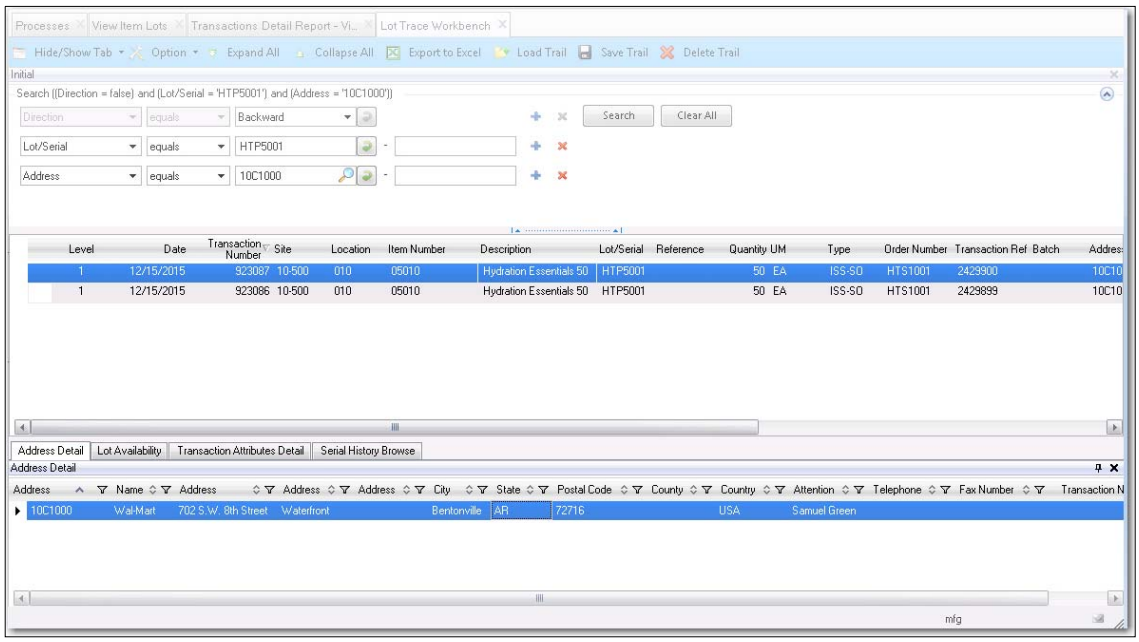
In instances when two or more transactions were recorded out of sequence, one or more of them may fail to appear as part of the lot trace record that is reconstructed by the Lot Trace Workbench.

In the following example, a lot (HTP5001) is shipped to a customer (Walmart) before the work order to create that lot is received. Some time later, a user uses Lot Trace Workbench to see the lot history for the item lot that was shipped to a Walmart. This example shows that when an item lot is shipped before a work order receipt was recorded, multiple forward and backward traces are necessary to view the full transaction history for the lot.

Figure 1.34 shows the results when performing a backward trace on lot (HTP5001) and customer (10C1000). In this example, the system fails to trace backward to the work order and prior transactions because the item lot was shipped before the work order was received.

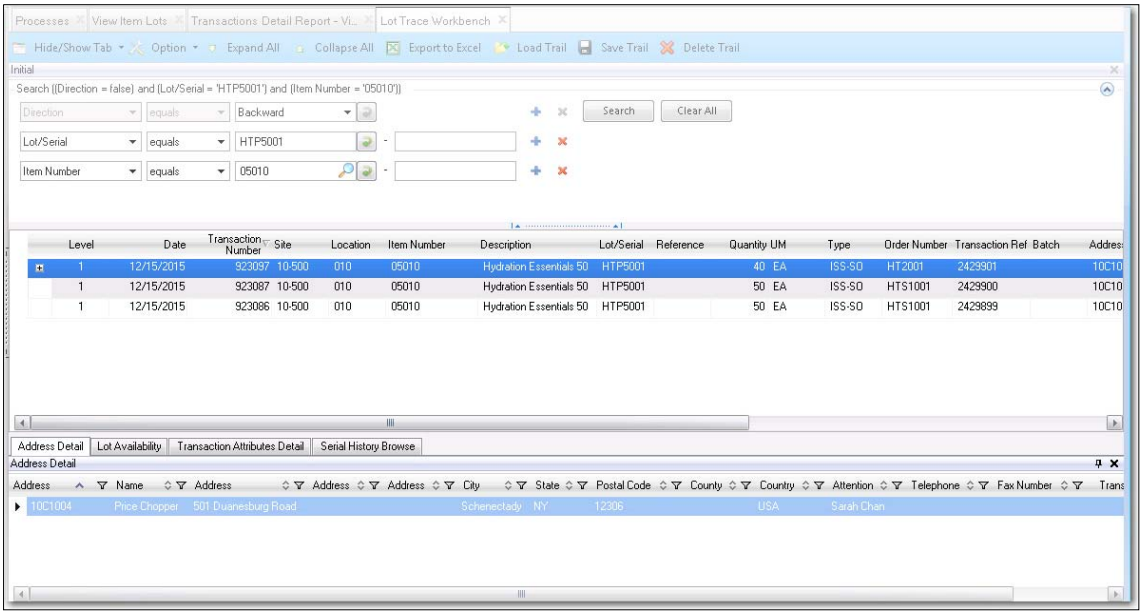
While this trace did not show the work order transactions, it does show the item number, which is used in the next backward trace.

Fig. 1.34
Tracing Backward Using Lot and Customer



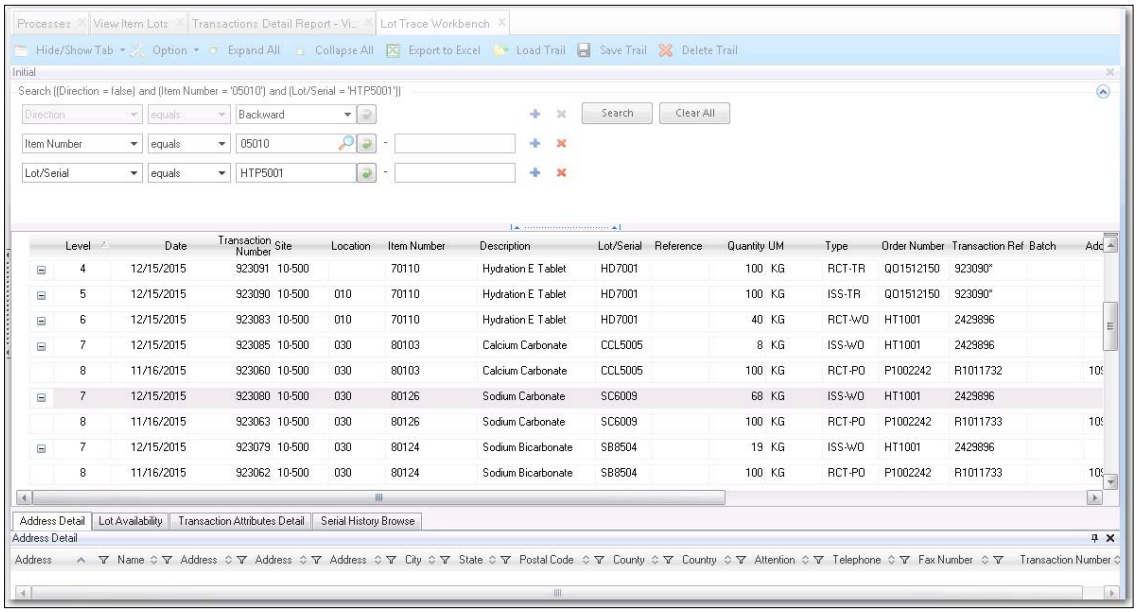
To view the missing information, you must perform an additional backward trace using only the lot number and item number (05010). In this backward trace, the system shows that the item (05010) and lot (HTP5001) were also shipped to Price Chopper. This information is shown because the shipping and work order receipt transactions for that order were completed in the correct sequence.

Fig. 1.35
Tracing Backward Using Lot and Item Number



If you expand the transactions, the system shows the transaction history for the item lot.

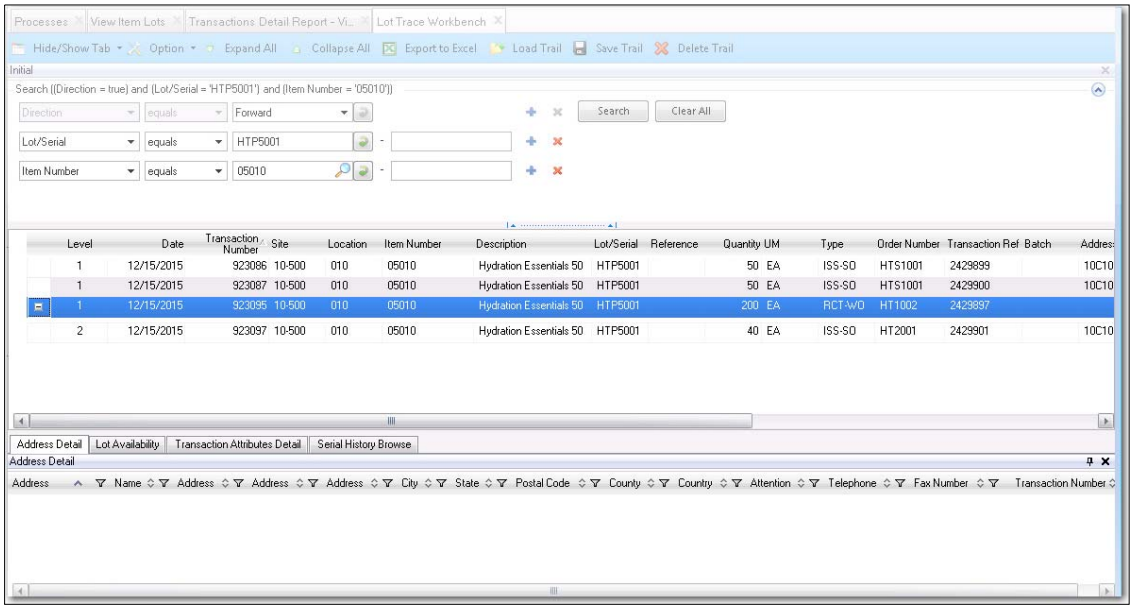
Fig. 1.36
Expanding Trace Results



Expanding on this example, when performing a forward trace using the lot number (HTP5001) and item number (05010), the system shows that the item was shipped to Price Chopper but not to Walmart.

A backward trace using the lot and item numbers showed both shipments to Price Chopper and Walmart. The forward trace using the lot and item numbers only showed the shipment to Price Chopper. This example shows that multiple forward and backward traces are necessary to view the entire transaction history for an item lot.

Fig. 1.37
Tracing Forward Using Lot and Item Number



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QAD offers a number of online resources to help you get more information about using QAD products.

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Ask questions and share information with other members of the user community, including QAD experts.

QAD Knowledgebase (knowledgebase.qad.com)*
Search for answers, tips, or solutions related to any QAD product or topic.

QAD Document Library (documentlibrary.qad.com)
Get browser-based access to user guides, release notes, training guides, and so on; use powerful search features to find the document you want, then read online, or download and print PDF.

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*Log-in required