



IBM Software Group

IBM WebSphere® Data Interchange V3.3

Mapping Hierarchical Loops



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This presentation will illustrate how to map Hierarchical Loops in Send and Receive maps.

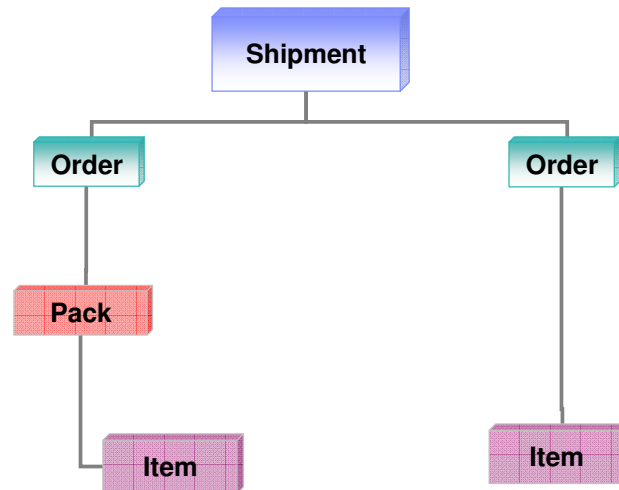
Agenda

- What is special HL Loop mapping?
- Selecting special HL Loop mapping.
- Qualification.
- Add parent child relationships.
- Summary and references



The presentation will describe Hierarchical Level (HL) Loops and describe how to use the WebSphere Data Interchange (WDI) special Hierarchical Loop Mapping commands.

Mapping Hierarchical Loops



This is an example of a hierarchy. The Shipment contains orders, orders contain packs or items, and packs contain items.

Mapping Hierarchical Loops

- What is special HL Loop Mapping?
 - ▶ The EDI HL segment contains values that identify each level of the hierarchy and the parent child relationships.
 - ▶ Specifically developed for Send (EDI target) but can be used for Receive (EDI source).
 - ▶ Should be used when your source data does not contain the values to be mapped to the HL segment.
 - ▶ WDI special HL Loop Mapping defines the hierarchy which allows the translation process to generate the HL segment values.



WDI provides special mapping functions to map the Electronic Data Interchange (EDI) standard HL segment. This special mapping is specifically for an EDI target document when the source document does not contain the values that define the hierarchy in the HL segment.

Mapping Hierarchical Loops

- Send and Receive mapping:
 - ▶ Allows you to specify unique mapping instructions for each identifiable group of structures in a hierarchical loop.
 - ▶ Can handle 16 levels of nesting within the HL loop structure.
- If special HL Loop mapping has been selected you must delete all mapping on the HL Loop to remove special HL Loop mapping.



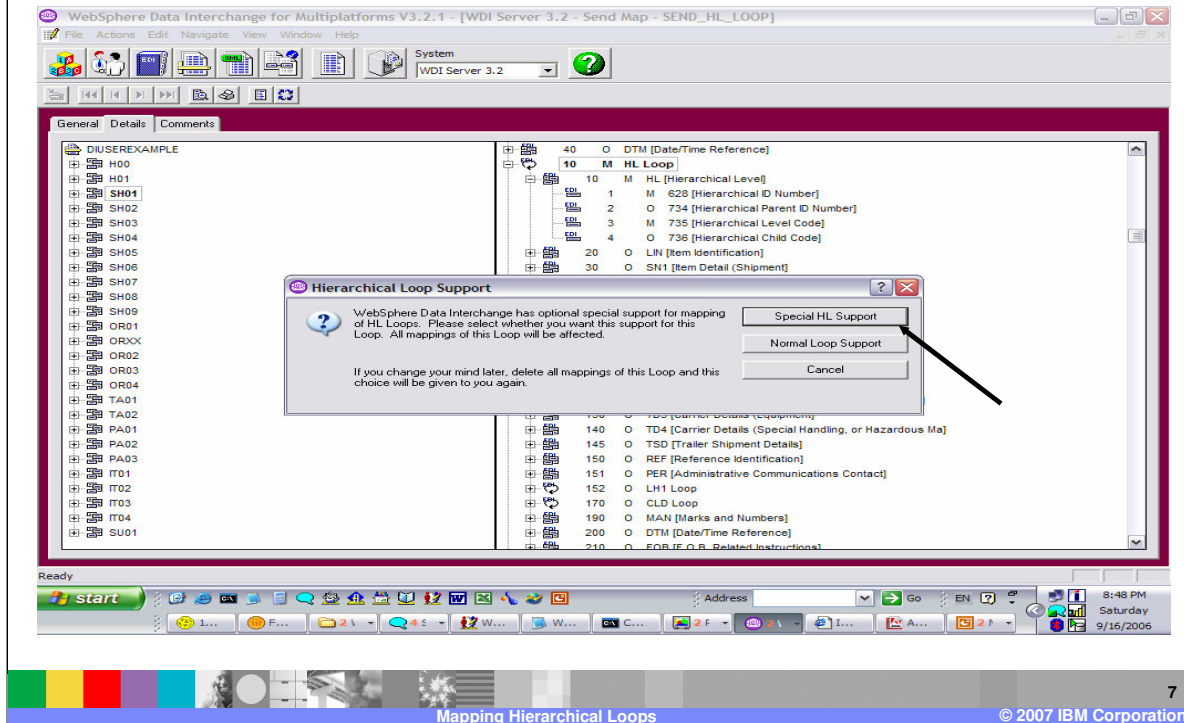
Send and Receive mapping allows you to specify unique mapping instructions for each identifiable group of structures in a hierarchical loop. The translation process can handle 16 levels of nesting within the HL loop structure. If special HL Loop mapping has been selected you must delete all mapping on the HL Loop to remove special HL Loop mapping.

Mapping Hierarchical Loops

The screenshot displays the WebSphere Data Interchange for Multiplatforms V3.2.1 interface. The title bar indicates the current map is 'SEND_HL_LOOP'. The left pane, titled 'General', shows a tree structure of source elements under 'DUUSEREXAMPLE'. The right pane shows a list of target elements, including 'HL Loop'. A callout bubble labeled 'Drag/ Drop' points to the 'SH01' element in the source tree. Another callout bubble labeled 'OR Double Click HL Loop' points to the 'HL Loop' element in the target list.

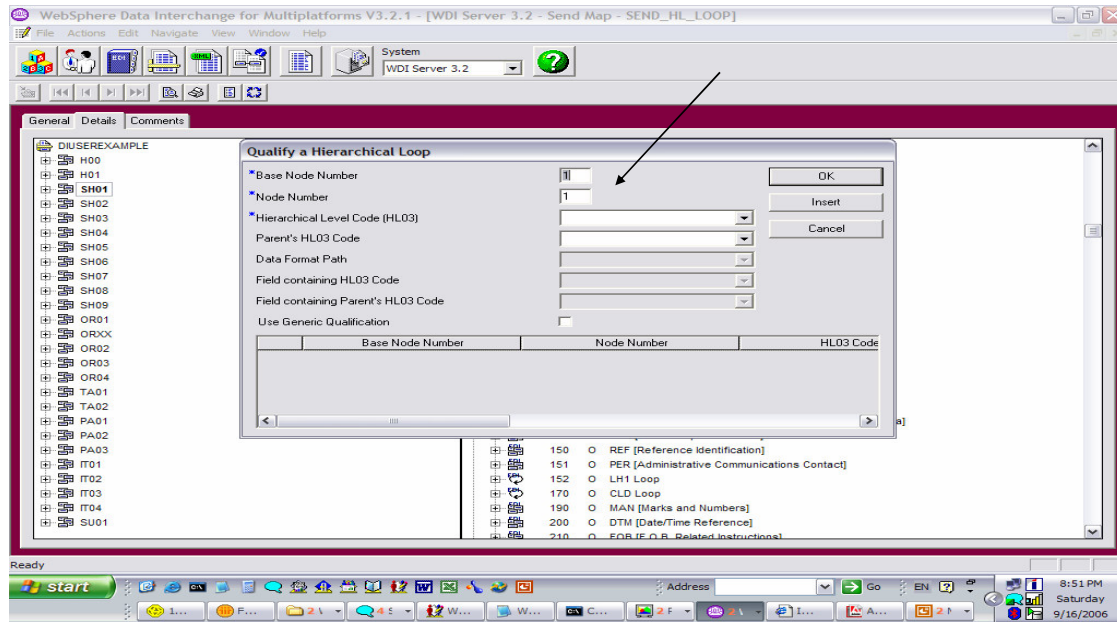
This is an example of a Send map which has EDI as the target document. To select special HL Loop mapping either use the drag and drop from the source window on the left to the target window on the right or double click the HL Loop in the right window.

Mapping Hierarchical Loops



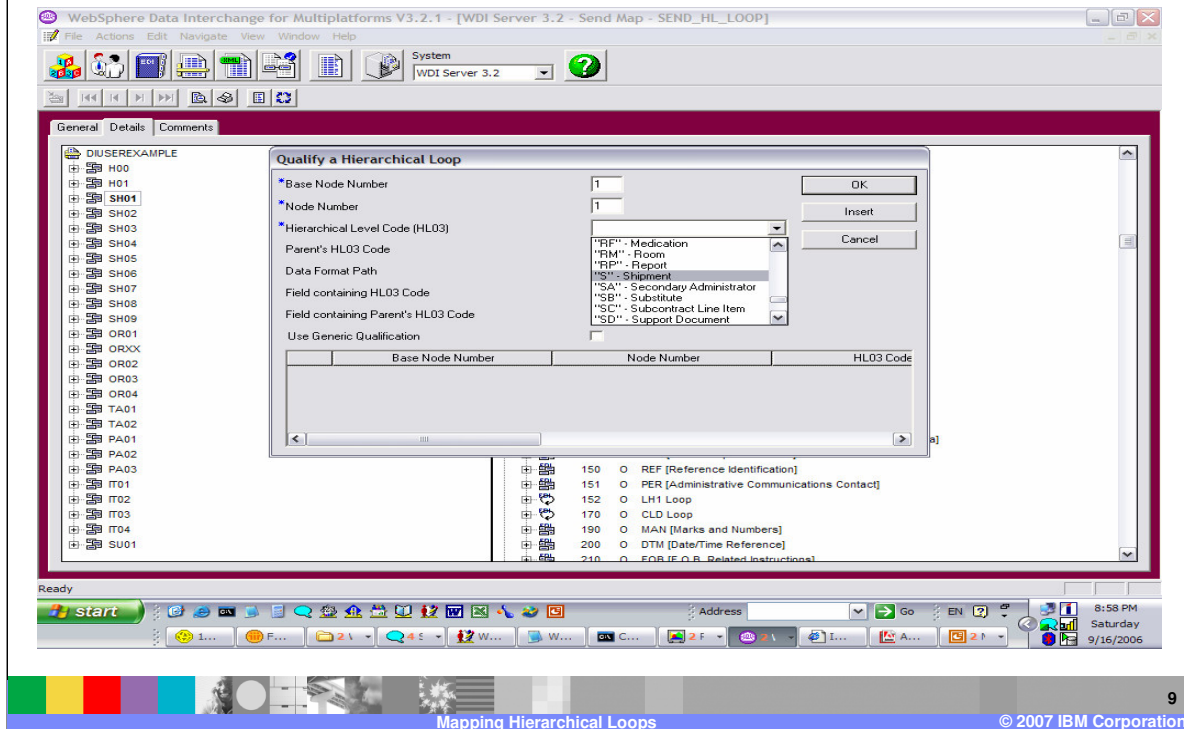
A window will display with a selection for Special HL Support.

Mapping Hierarchical Loops



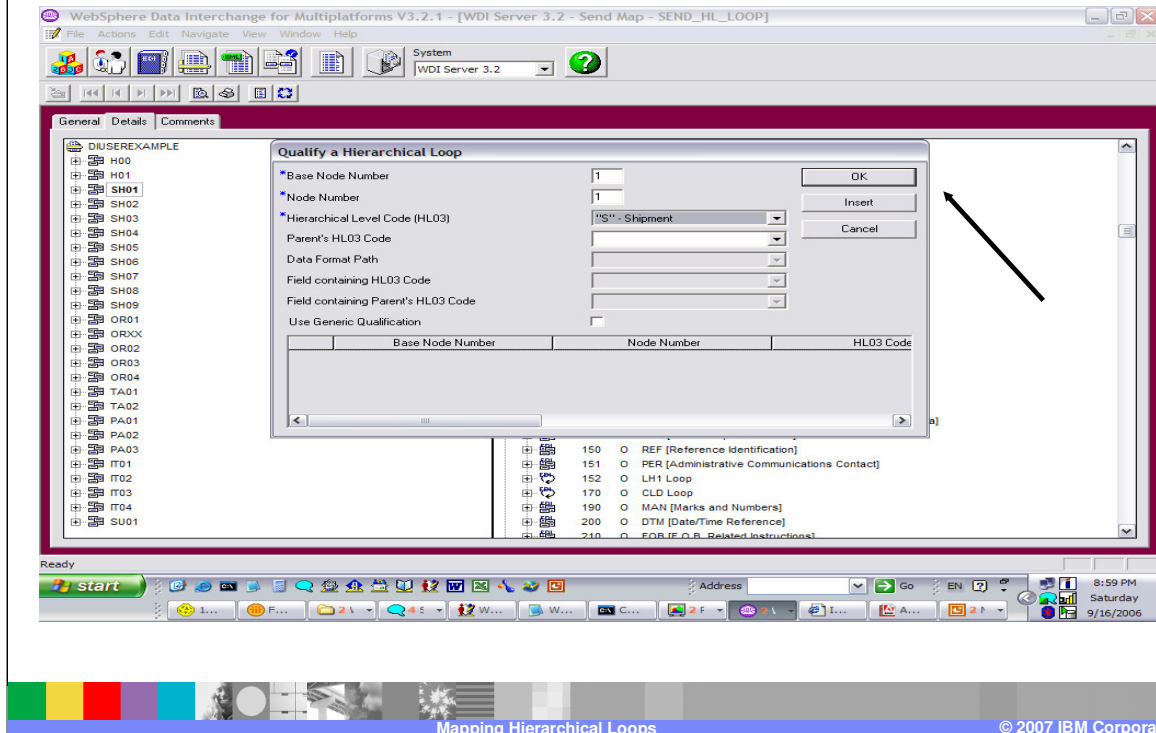
To begin, you identify the base level. This is done by specifying the Base Node Number and Node Number.

Mapping Hierarchical Loops



Next you identify the Hierarchical Level Code. The values in the drop down list come from the EDI code list for element 735.

Mapping Hierarchical Loops



Select the hierarchical level code from the list and press OK. Since this is the base level there is no parent HL Loop to define.

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.2.1 - [WDI Server 3.2 - Send Map - SEND_HL_LOOP]

System: WDI Server 3.2

General Details Comments

DIUSEREXAMPLE

- H00
- H01
- SH01
- SH02
- SH03
- SH04
- SH05
- SH06
- SH07
- SH08
- SH09
- OR01
- ORXX
- OR02
- OR03
- OR04
- TAO1
- TAO2
- PA01
- PA02
- PA03
- IT01
- IT02
- IT03
- IT04
- SU01

40 O DTM [Date/Time Reference]

10 M HL Loop: Qualified by HL Logic - Qualified by Base Node 1, Node 1, HL03 Value of 3

- 1 M 628 [Hierarchical ID Number]
- 2 O 734 [Hierarchical Parent ID Number]
- 3 M 735 [Hierarchical Level Code]
- 4 O 736 [Hierarchical Child Code]

20 O LIN [Item Identification]

30 O SN1 [Item Detail (Shipment)]

40 O SLN [Subline Item Detail]

50 O PRF [Purchase Order Reference]

60 O PO4 [Item Physical Details]

70 O PID [Product/Item Description]

80 O MEA [Measurements]

90 O PWK [Paperwork]

100 O PKG [Marking, Packaging, Loading]

110 O TD1 [Carrier Details (Quantity and Weight)]

120 O TD5 [Carrier Details (Routing Sequence/Transit Time)]

130 O TD3 [Carrier Details (Equipment)]

140 O TD4 [Carrier Details (Special Handling, or Hazardous Ma)]

145 O TSD [Trailer Shipment Details]

150 O REF [Reference Identification]

151 O PER [Administrative Communications Contact]

152 O LH1 Loop

170 O CLD Loop

190 O MAN [Marks and Numbers]

200 O DTM [Date/Time Reference]

210 O FOR IE O.R. Related Instructions

Ready

Address: Go EN 9:00 PM Saturday 9/16/2006

Mapping Hierarchical Loops

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This results in an HL Loop Qualification.

Mapping Hierarchical Loops

- The HL segment is the first segment of the HL loop
- HL*ID Number*Parent ID Number*Level Code*Child Code!
 - ▶ ID Number Sequence number for HL loop
 - ▶ Parent ID Number Sequence number of parent HL loop
 - ▶ Level Code A code used to identify the instance of the HL loop
 - ▶ Child Code 0 or 1 indicates this instance of the HL loop has children



The HL segment is the first segment of the HL loop. The ID Number is a sequence number, the parent ID number is the sequence number of the parent HL segment or loop, the level code is a code used to identify this instance of the HL loop, and the child code indicates if this instance has children.

Mapping Hierarchical Loops

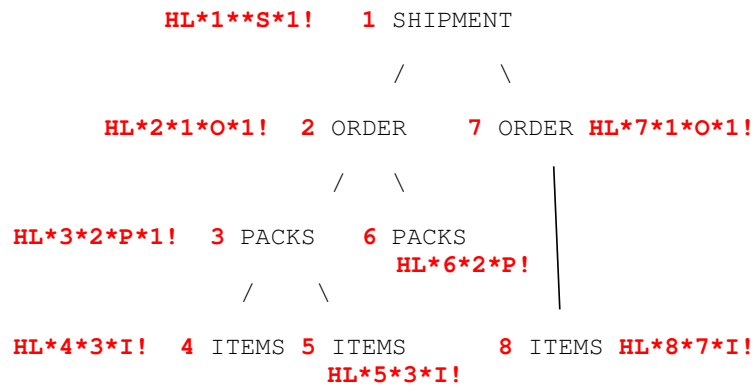
- Hierarchical Rules
 - ▶ Define hierarchical paths.
 - Number the nodes top to bottom and left to right starting with the left most node.
 - ▶ Identify base nodes.
 - Node 1 Shipment
 - ▶ Identify levels.
 - Shipment = S, Order = O, Packs = P, Items = I
 - ▶ Identify relationships
 - Is a Shipment required for an Order?



Here are some rules for defining a hierarchy before you begin mapping. You want to define the hierarchical paths, identify base nodes, and identify levels. Determine the relationships between the levels for example is a shipment level required for the order level or can the order contain an item level without a pack level.

Mapping Hierarchical Loops

- HL segment
- HL*ID Number*Parent ID Number*Level Code*Child Code!



Number the nodes top to bottom and left to right starting with the left most node.

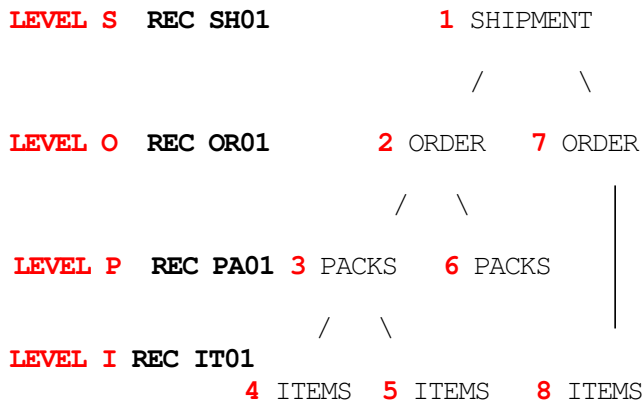
Mapping Hierarchical Loops

- Sample application data

```
H00 DIUTESTPTR      01003020VICS  940830170700000170900062921
H01 00131313131313      9407141416  0001
SH011                S
SH02CTN250000072
OR012                1          O
OR02887378
OR03B                C FOREWAY
OR04BYHLLLOOP, INC.      9 DUNSNUMBR0897
PA013 2                P
PA0200000600000000      000000000054000LB0000000000000000
IT014                3          I
IT02                                UP022222640304
IT03                0000000006EA0000000000000000006EA
```

This is an example of application data that will be mapped to the HL Loop.

Mapping Hierarchical Loops



If you use the rules and identify the levels and the relationships, the mapping process will be easier. The hierarchy defined in this example contains 2 possible hierarchies for the Order level. Orders can have Packs and Items or Items. This will require HL Loop mapping for Items when Packs is the parent and Items when Order is the parent. Therefore Items is a child of Packs. Items is a child of Order and also a sibling of Packs.

Mapping Hierarchical Loops

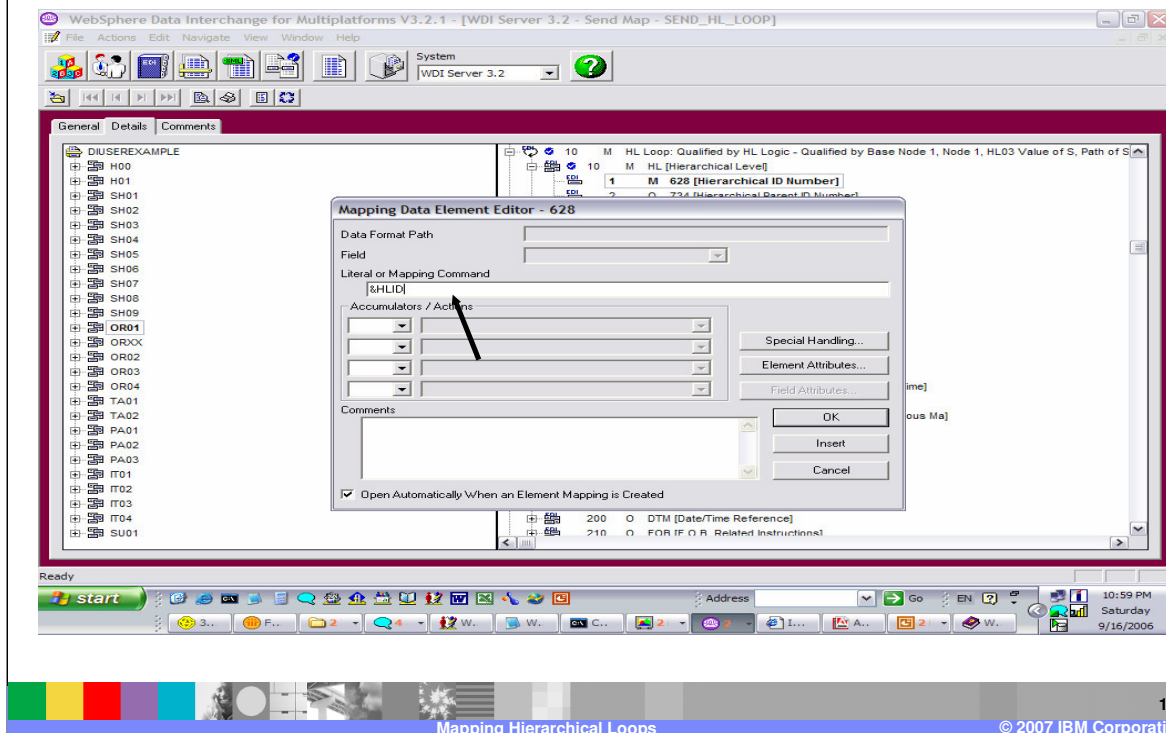
The screenshot shows the WebSphere Data Interchange for Multiplatforms V3.2.1 interface. The title bar indicates the file is 'SEND_HL_LOOP'. The interface is divided into several panes. On the left, a tree view shows a hierarchy of elements under 'DIUSEREXAMPLE', including H00, H01, SH01, SH02, SH03, SH04, SH05, SH06, SH07, SH08, SH09, OR01, OR02, OR03, OR04, TA01, TA02, PA01, PA02, PA03, IT01, IT02, IT03, IT04, and SU01. The main pane displays a list of elements with their IDs and descriptions. A blue callout bubble with the text 'Double Click' points to the 'HL Loop: Qualified by HL Logic - Qualified by Base I' section. The list of elements includes:

- 10 M HL [Hierarchical Level]
- 1 M 628 [Hierarchical ID Number]
- 2 O 734 [Hierarchical Parent ID Number]
- 3 M 735 [Hierarchical Level Code]
- 4 O 736 [Hierarchical Child Code]
- 20 O LIN [Item Identification]
- 30 O SN1 [Item Detail (Shipment)]
- 40 O SLN [Subline Item Detail]
- 50 O PRF [Purchase Order Reference]
- 60 O PO4 [Item Physical Details]
- 70 O PID [Product/Item Description]
- 80 O MEA [Measurements]
- 90 O PWW [Paperwork]
- 100 O PKG [Marking, Packaging, Loading]
- 110 O TD1 [Carrier Details (Quantity and Weight)]
- 120 O TD5 [Carrier Details (Routing Sequence/Transit Time)]
- 130 O TD3 [Carrier Details (Equipment)]
- 140 O TD4 [Carrier Details (Special Handling, or Hazardous Ma)]
- 145 O TSD [Trailer Shipment Details]
- 150 O REF [Reference Identification]
- 151 O PER [Administrative Communications Contact]
- 152 O LH1 Loop
- 170 O CLD Loop
- 190 O MAN [Marks and Numbers]
- 200 O DTM [Date/Time Reference]
- 210 O FOR IF O R Related Instructions]

The bottom of the screen shows a Windows taskbar with the Start button, several open applications, and a system clock indicating 10:52 PM on Saturday, 9/16/2006. The page number 17 is visible in the bottom right corner.

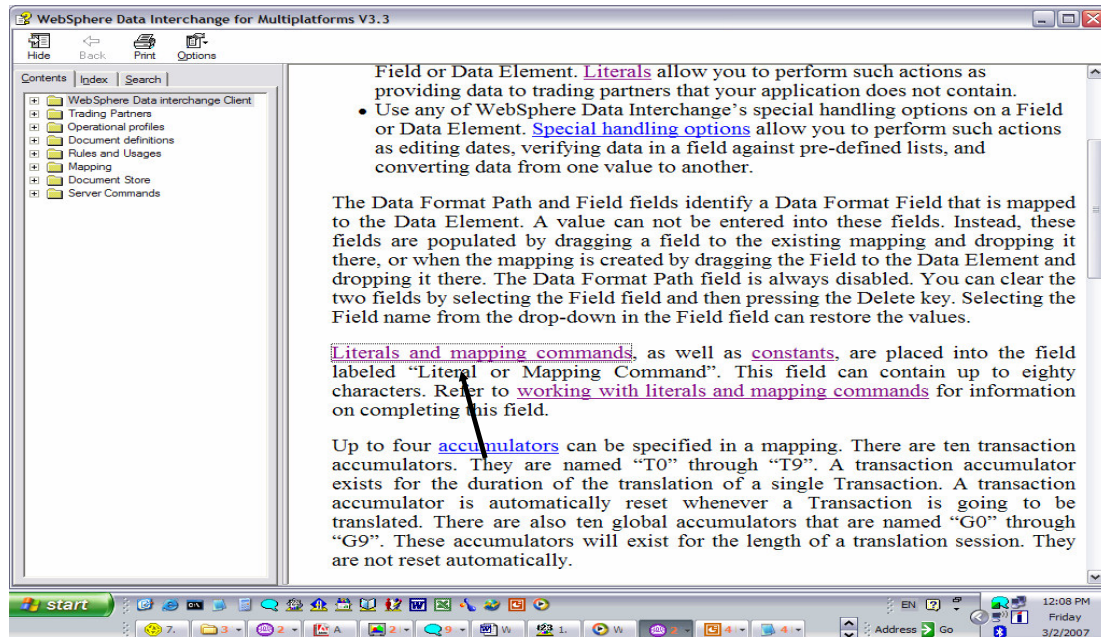
To map the elements that define the hierarchy, double click on each element.

Mapping Hierarchical Loops



WDI supplies special mapping commands to automatically map the elements in the HL segment. You can press the F1 Key on your keyboard to view the client help.

Mapping Hierarchical Loops



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Mapping Hierarchical Loops

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This example will show the WDI version 3.3 help. This help is also available using WDI version 3.2. Select Literals and mapping commands.

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.3

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WebSphere Data Interchange Client

- Trading Partners
- Operational profiles
- Document definitions
- Rules and Usages
- Mapping
- Document Store
- Server Commands

Notes: These commands are not used in Data Transformation Maps, Functional Acknowledgement Maps, and Functional Acknowledgement Maps.

&ACFIELD	&ASSERT	&DATE
&DEFERRED	&E	&ERR
&FORCE	&FORMAT	&IF
&IFDATA	&IFNODATA	&IFNOVAR
&LOOPBREAK	&LOOPCHECK	&LSAVE
&LSET	&LSID	&SAMEAS
&SAVE	&SET	&THANDLE
&TIME	&TPID	&TPNICKN
&USE	&ZEROSIG	

See also [literal keywords for the HL Segment](#).

Refer to [working with literals and mapping commands](#) for additional information.

Some mapping commands and literals can specify a data value. You can use any of the special literals that provide a data value; for example, &DATE, &TIME, &E, &ICN. This includes &T0 through &T9 and &G0 through &G9 to get the values for global and local accumulators.

start

EN 12:10 PM Friday 3/2/2007

Address Go

Mapping Hierarchical Loops

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Select Literals keywords for the HL Segment.

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.3

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Send Map/Receive Map; Literal keywords for the HL Segment

Your application data may not contain the information the translator needs to create the HL [Segment](#), but you can use the following special literals to supply the values for the HL Segment.

Keyword	Description
&HLID	Supplies a sequential number for each HL Segment created.
&HLPID	Supplies the HLID value for the parent of the current HL.
&HCODE	Supplies the hierarchical code associated with the current HL Segment
&HCHILD	Supplies the value 1 if the current HL Segment has subordinate Segments

When you [map the HL Segment](#), you can use these literal keywords by typing them in the Literal field of the [Mapping Data Element Editor](#) when you map the Data Elements. For [Send Maps](#), they will now be automatically mapped with their corresponding special literal when the HL loop is qualified. If different mappings for these elements are desired, the elements must be remapped.

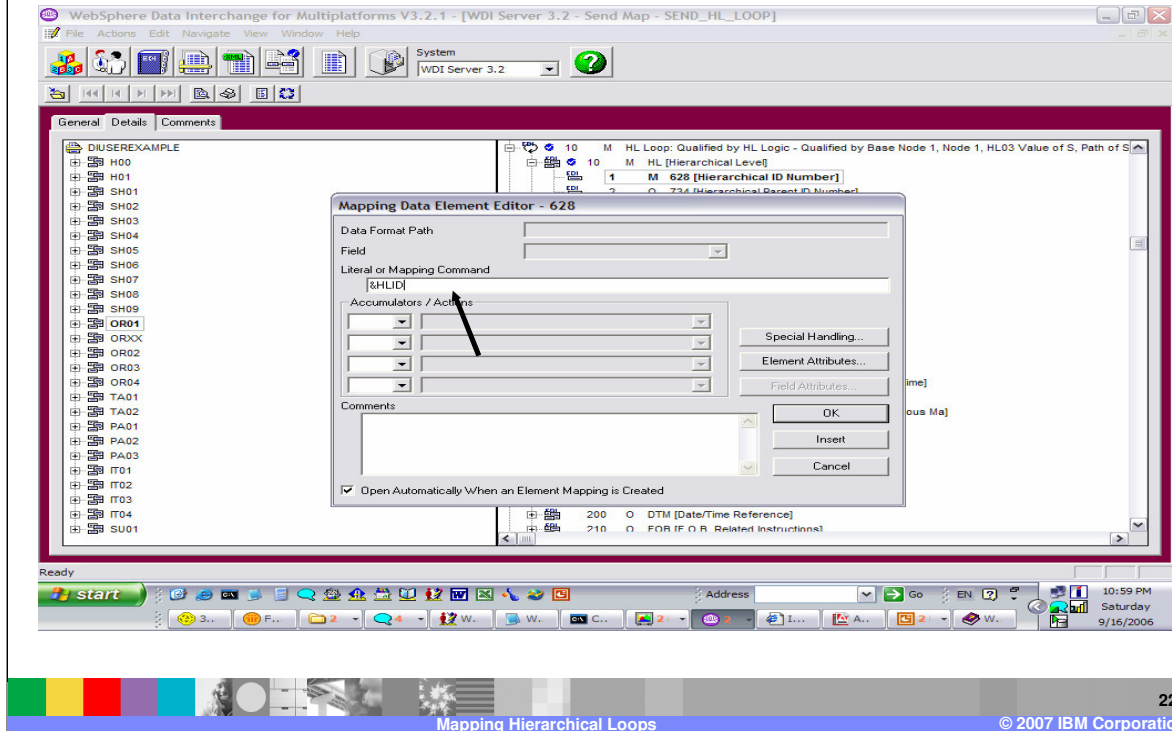
- Data Element 628 will be mapped with &HLID
- Data Element 734 will be mapped with &HLPID
- Data Element 735 will be mapped with &HCODE
- Data Element 736 will be mapped with &HCHILD

start | 7 | 3 | 2 | A | 2 | 9 | 1 | W | 1 | W | 1 | 12:11 PM Friday 3/2/2007

Mapping Hierarchical Loops © 2007 IBM Corporation 21

The &HLID keyword signals the translation to supply a sequential number for each HL segment created. &HLPID signals the translation to supply the sequence number of the parent for the current HL segment. &HCODE supplies the hierarchical code for the current HL segment. And &HCHILD supplies the value 1 if the current HL segment has children.

Mapping Hierarchical Loops



Enter the &HLID keyword to signal the translation process to generate this value.

Mapping Hierarchical Loops

The screenshot shows the WebSphere Data Interchange for Multiplatforms V3.2.1 - [WDI Server 3.2 - Send Map - SEND_HL_LOOP] application. The interface is divided into two main panes. The left pane, titled 'General', shows a tree structure of data elements under the root 'DIUSEREXAMPLE'. The right pane, titled 'Details', shows the mapping logic for the selected element 'M 628 [Hierarchical ID Number]'. The mapping logic is defined by a series of steps: 1. M 628 [Hierarchical ID Number], 2. O 734 [Hierarchical Parent ID Number], 3. M 735 [Hierarchical Level Code], 4. O 736 [Hierarchical Child Code]. The bottom of the window shows the Windows taskbar with the Start button and various application icons. The status bar at the bottom indicates 'Mapping Hierarchical Loops' and '© 2007 IBM Corporation'.

Here is the results of mapping the &HLID keyword. Continue mapping the other elements and supply the appropriate keywords for automatic generation of these values.

Mapping Hierarchical Loops

- Qualification HL Loop Send Mapping
 - ▶ Multiple Occurrence
 - ▶ Single Occurrence
 - ▶ No Value Qualification



You can add qualification for each HL mapping.

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.2.1 - [WDI Server 3.2 - Send Map - SEND_HL_LOOP]

General Details Comm

DIUSEREXAMPLE

H00

H01

SH01

SH02

SH03

SH04

SH05

SH06

SH07

SH08

SH09

OR01

ORXX

OR02

OR03

OR04

TA01

TA02

PA01

PA02

PA03

IT01

IT02

IT03

IT04

SU01

40 O DTM [Date/Time Reference]

10 M HL Loop: Qualified by HL Logic - Qualified by Base Node 1, Node 1, HL03 Value of S

1 M 628 [Hierarchical ID Number]

2 O 734 [Hierarchical Parent ID Number]

3 M 735 [Hierarchical Level Code]

4 O 736 [Hierarchical Child Code]

20 O LIN [Item Identification]

30 O SN1 [Item Detail (Shipment)]

40 O SLN [Subline Item Detail]

50 O PRF [Purchase Order Reference]

60 O PO4 [Item Physical Details]

70 O PID [Product/Item Description]

80 O MEA [Measurements]

90 O PVK [Paperwork]

100 O PKG [Marking, Packaging, Loading]

110 O TD1 [Carrier Details (Quantity and Weight)]

120 O TD5 [Carrier Details (Routing Sequence/Transit Time)]

130 O TD3 [Carrier Details (Equipment)]

140 O TD4 [Carrier Details (Special Handling, or Hazardous Ma)]

145 O TSD [Trailer Shipment Details]

150 O REF [Reference Identification]

151 O PER [Administrative Communications Contact]

152 O LHI Loop

170 O CLD Loop

190 O MAN [Marks and Numbers]

200 O DTM [Date/Time Reference]

210 O FOB [F.O.B. Related Instructions]

Ready

Start

Address

Go

EN 12

9:28 PM

Saturday

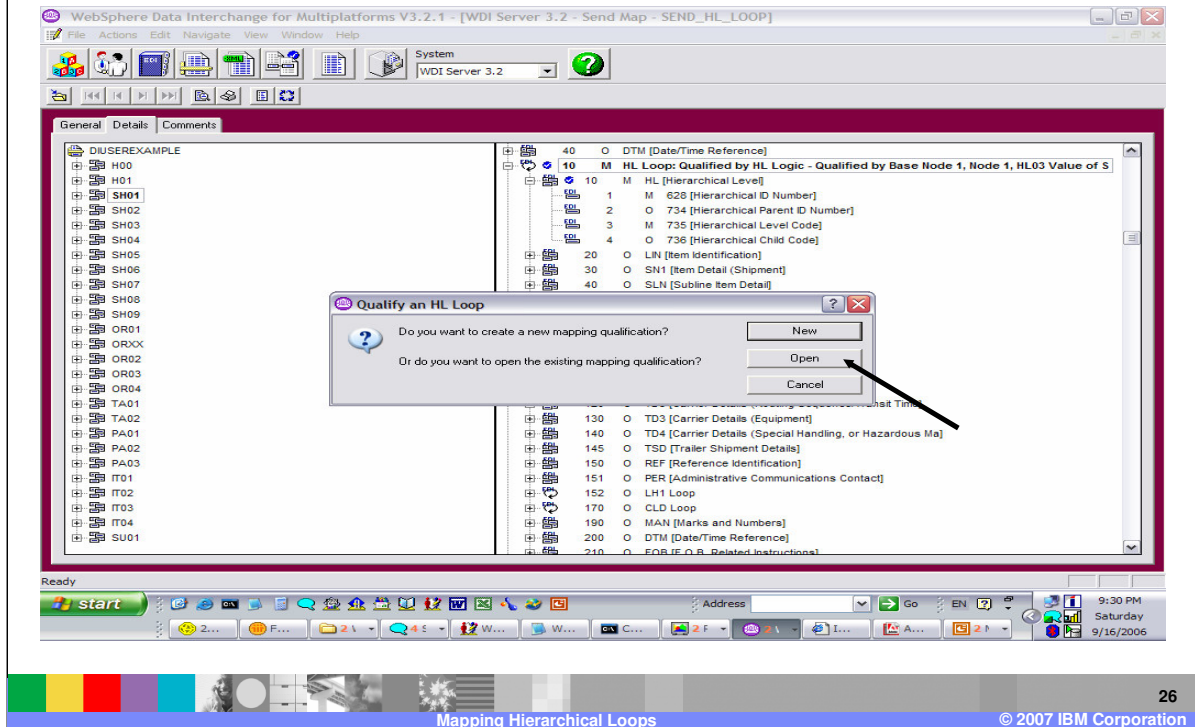
9/16/2006

Mapping Hierarchical Loops

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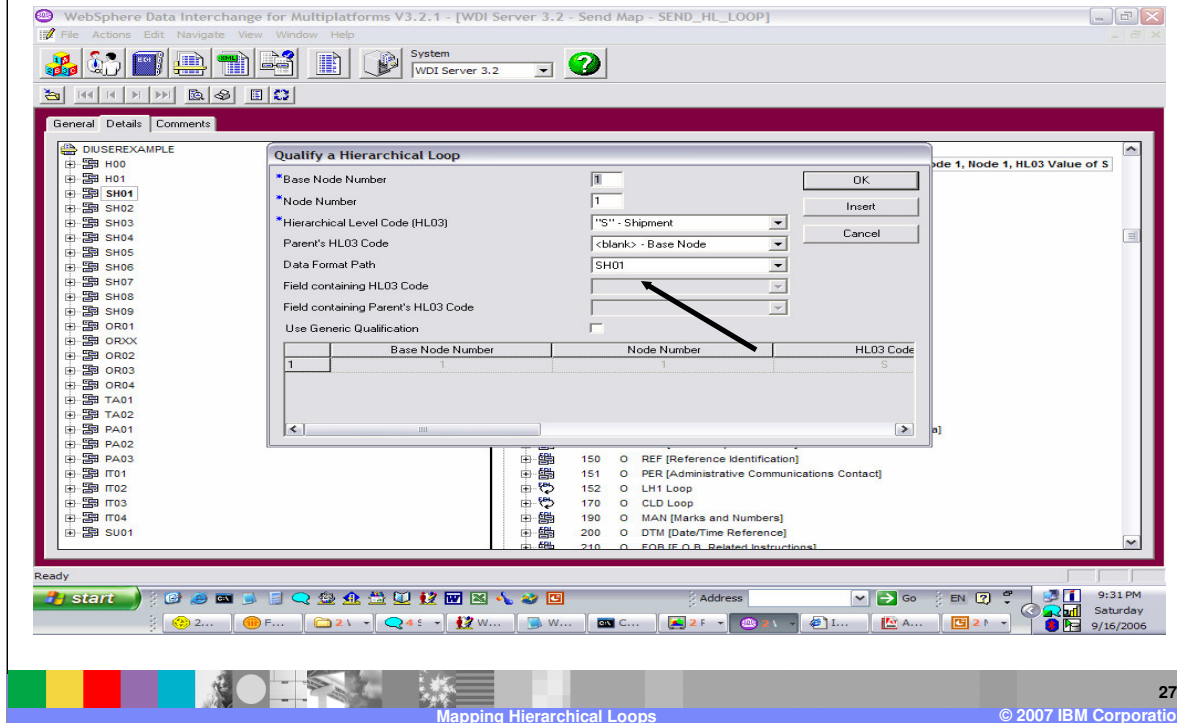
You can use drag and drop to qualify the HL Loop mapping using multiple occurrence.

Mapping Hierarchical Loops



A window will display to allow you to open the current HL Loop mapping or create a new HL Loop mapping.

Mapping Hierarchical Loops



The Data Format Path field will be populated with the source element used for the drag and drop. A single occurrence mapping would not contain a value in the Data Format Path.

Section

Adding parent/child relationship

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.2.1 - [WDI Server 3.2 - Send Map - SEND_HL_LOOP]

File Actions Edit Navigate View Window Help

System WDI Server 3.2

General Details Comments

DIUSEREXAMPLE

H00

SH01

SH02

SH03

SH04

SH05

SH06

SH07

SH08

SH09

OR01

OR02

OR03

OR04

TA01

TA02

PA01

PA02

PA03

IT01

IT02

IT03

IT04

SU01

40 O DTM [Date/Time Reference]

10 M HL Loop: Qualified by HL Logic - Qualified by Base Node 1, Node 1, HL03 Value of S, P

1 M 625 [Hierarchical ID Number]

2 O 734 [Hierarchical Parent ID Number]

3 M 735 [Hierarchical Level Code]

4 O 736 [Hierarchical Child Code]

20 O LIN [Item Identification]

30 O SN1 [Item Detail (Shipment)]

40 O SLN [Subline Item Detail]

50 O PRF [Purchase Order Reference]

60 O PO4 [Item Physical Details]

70 O PID [Product/Item Description]

80 O MEA [Measurements]

90 O PVK [Paperwork]

100 O PKG [Marking, Packaging, Loading]

110 O TD1 [Carrier Details (Quantity and Weight)]

120 O TD5 [Carrier Details (Routing Sequence/Transit Time)]

130 O TD3 [Carrier Details (Equipment)]

140 O TD4 [Carrier Details (Special Handling, or Hazardous Ma)]

145 O TSD [Trailer Shipment Details]

150 O REF [Reference Identification]

151 O PER [Administrative Communications Contact]

152 O LH1 Loop

170 O CLD Loop

190 O MAN [Marks and Numbers]

200 O NTM [Date/Time Reference]

Ready

start

Address Go EN

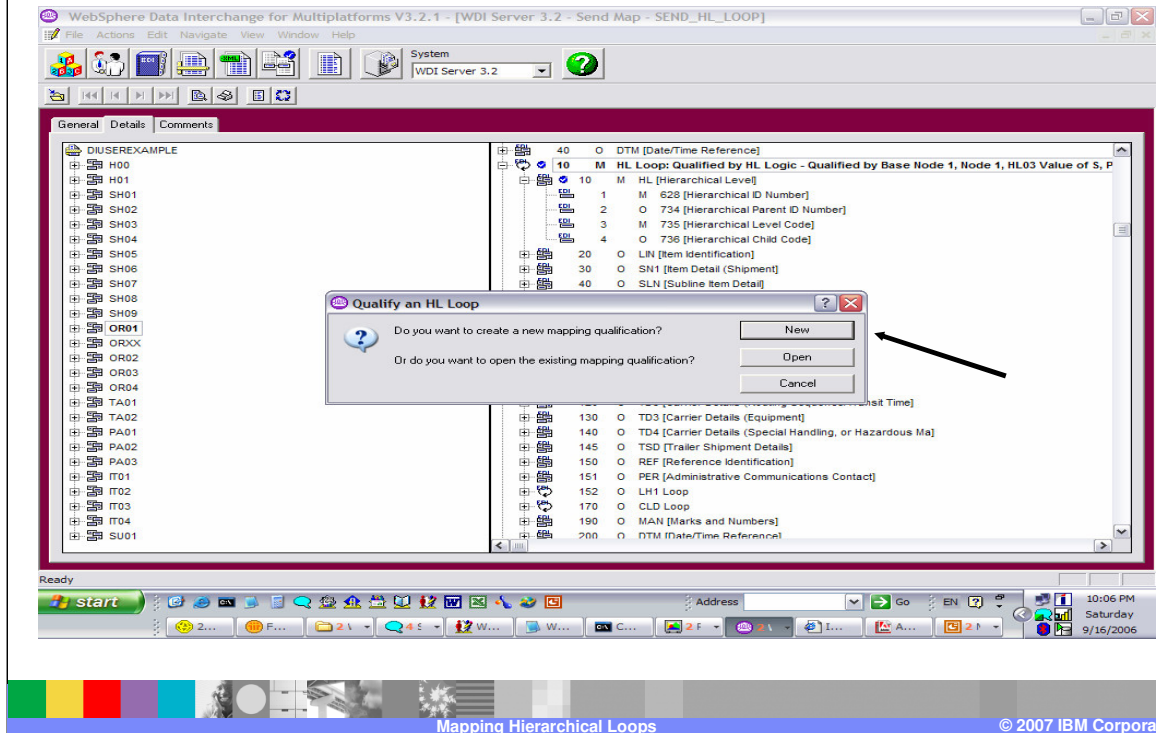
10:03 PM Saturday 9/16/2006

Mapping Hierarchical Loops

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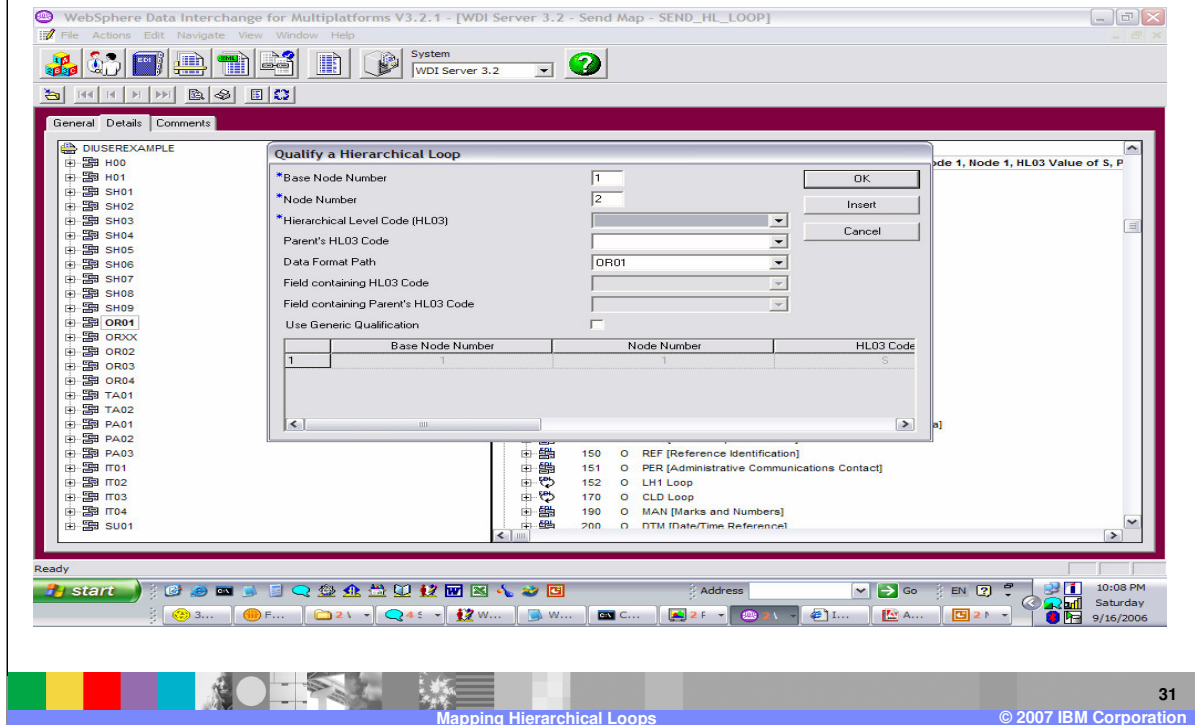
To create the underlying HL nesting levels or children for this HL level, drag and drop the next source element that will create the HL Loop level or double click on the HL Loop.

Mapping Hierarchical Loops



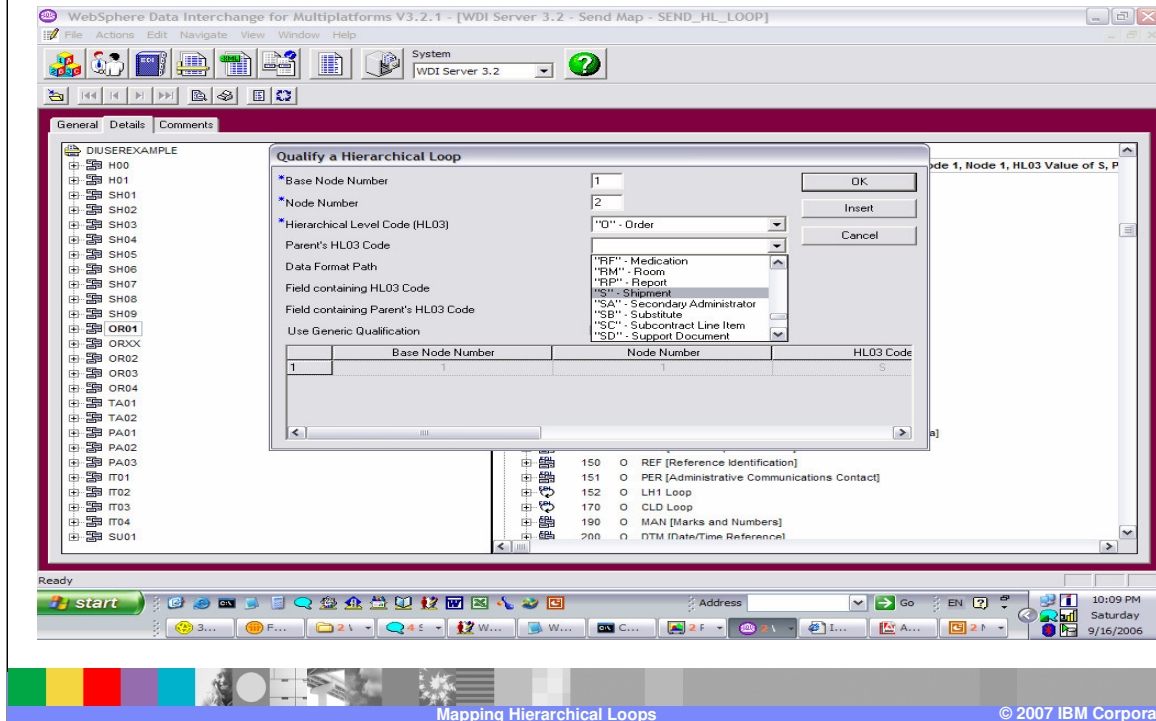
Select New.

Mapping Hierarchical Loops



If this HL Loop mapping is part of the same base mapping change the Node Number to the next level. For example this is the Order level and the base mapping is for Shipment. The Order level is a child of the Shipment level. The Shipment level is defined with base node 1 and node number 2. The order level will have base node 1 and node number 2. Select the hierarchical level code from the list.

Mapping Hierarchical Loops



Select the hierarchical level code of the parent from the drop down list.

Mapping Hierarchical Loops

WebSphere Data Interchange for Multiplatforms V3.2.1 - [WDI Server 3.2 - Send Map - SEND_HL_LOOP]

System: WDI Server 3.2

General Details Comments

DUSEREXAMPLE

- H00
- H01
- SH01
- SH02
- SH03
- SH04
- SH05
- SH06
- SH07
- SH08
- SH09
- OR01
- OR0X
- OR02
- OR03
- OR04
- TA01
- TA02
- PA01
- PA02
- PA03
- IT01
- IT02
- IT03
- IT04
- SU01

Qualify a Hierarchical Loop

Base Node Number: 1

Node Number: 2

Hierarchical Level Code (HL03): "D" - Order

Parent's HL03 Code: "S" - Shipment

Data Format Path: OR01

Field containing HL03 Code:

Field containing Parent's HL03 Code:

Use Generic Qualification: ☐

	Base Node Number	Node Number	HL03 Code
1	1	1	S
2	1	2	O

Node 1, HL03 Value of S, Path of SH01
by Base Node 1, Node 2, HL03 Value

Ready

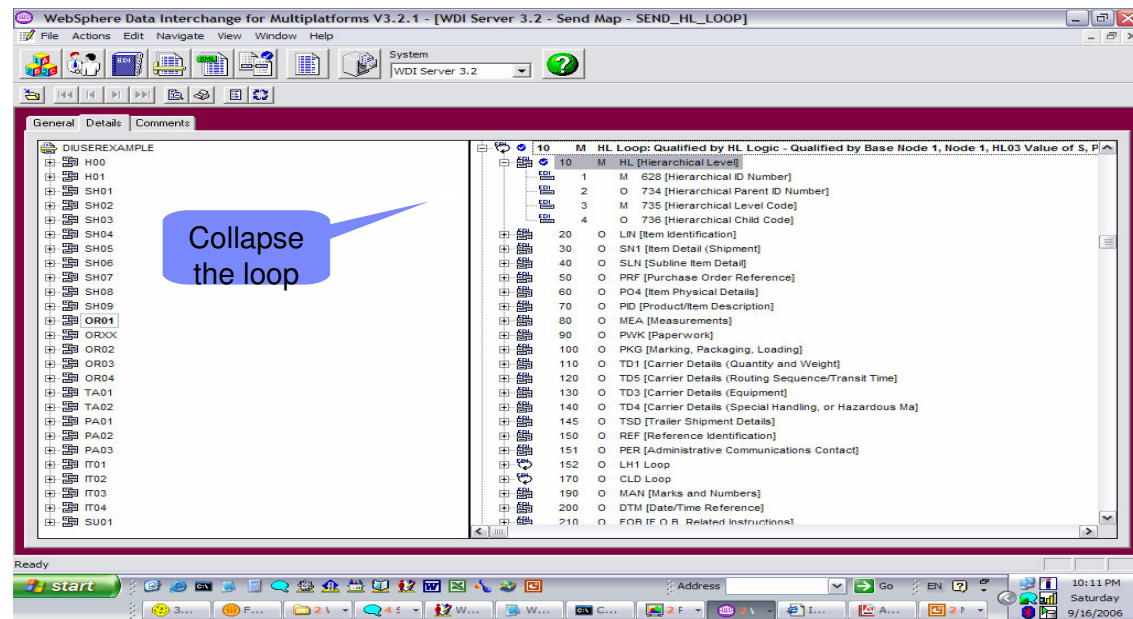
Address: Go EN 11:19 PM Saturday 9/16/2006

Mapping Hierarchical Loops

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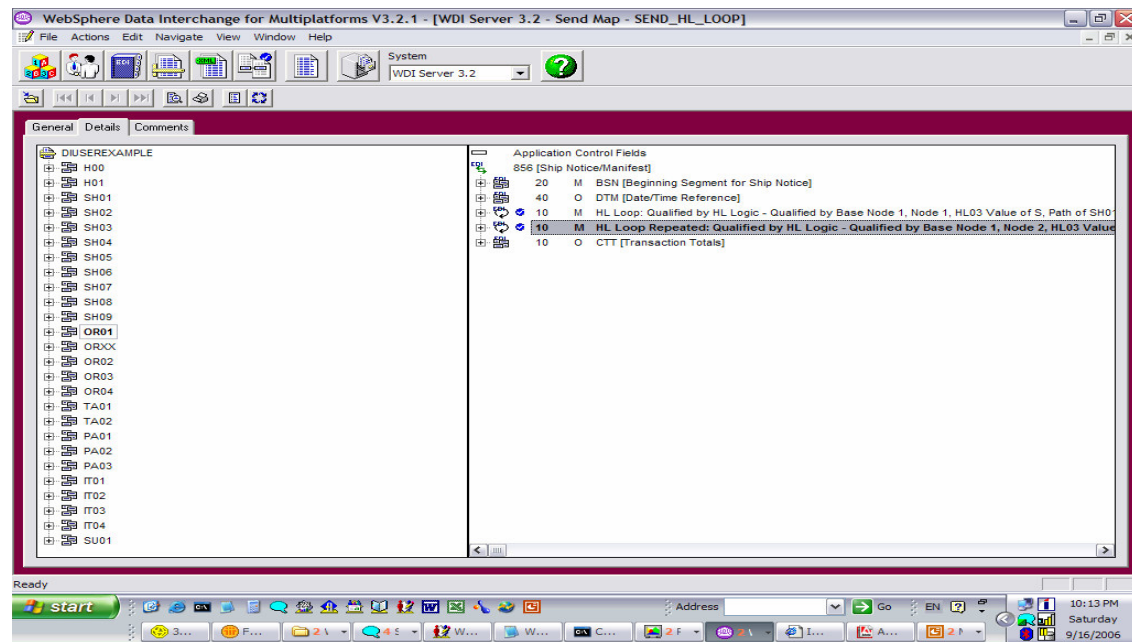
Identify the parent hierarchical level code. Order is a child of Shipment. When you are finished press OK.

Mapping Hierarchical Loops



If you collapse the loop by clicking on the minus sign, you can see the new HL Loop qualification.

Mapping Hierarchical Loops



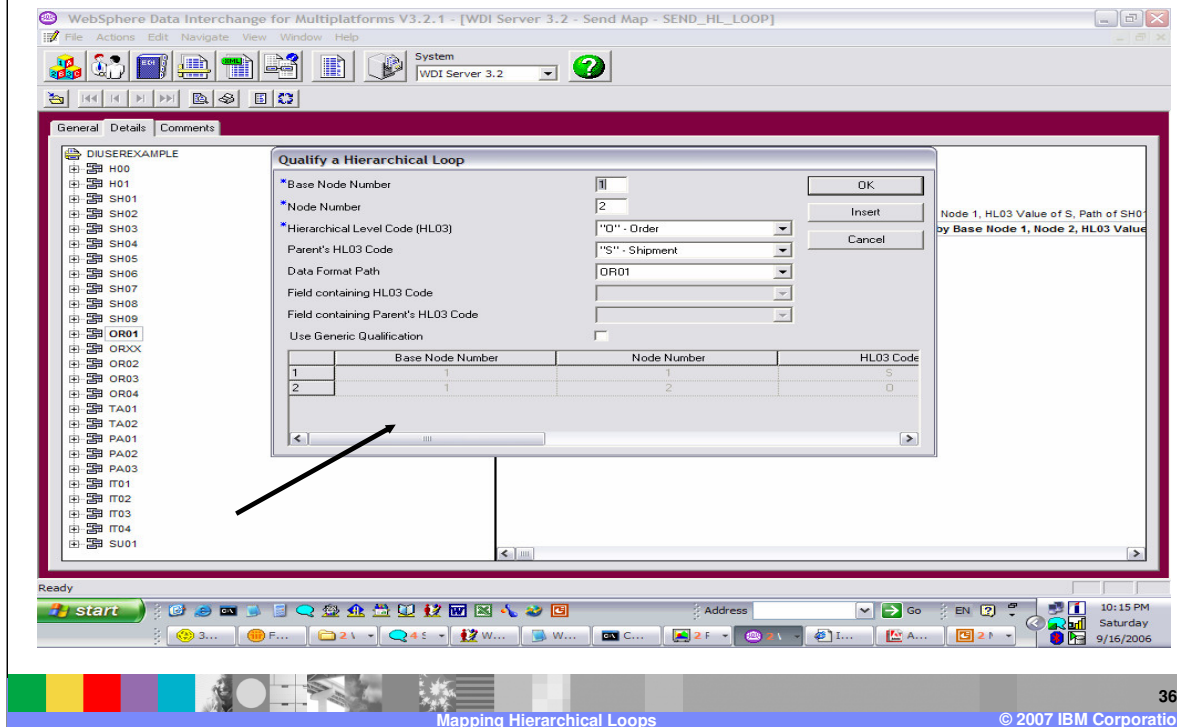
35

Mapping Hierarchical Loops

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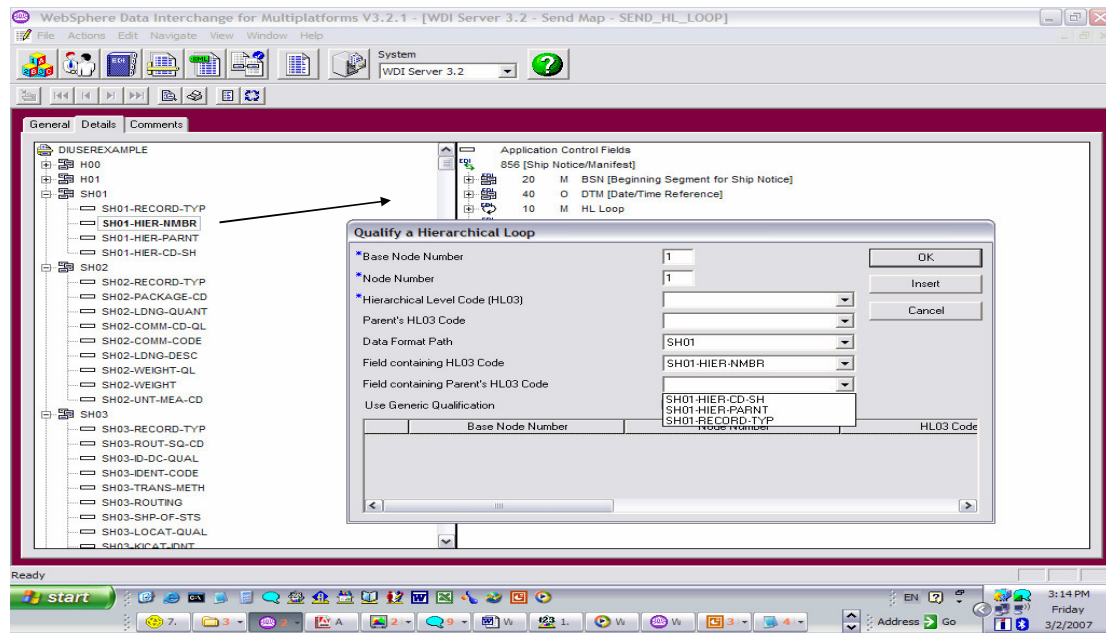
There are now 2 HL Loop qualifications.

Mapping Hierarchical Loops



As you create the HL Loop mappings, the hierarchy is displayed at the bottom of the Qualify a Hierarchical Loop window.

Mapping Hierarchical Loops



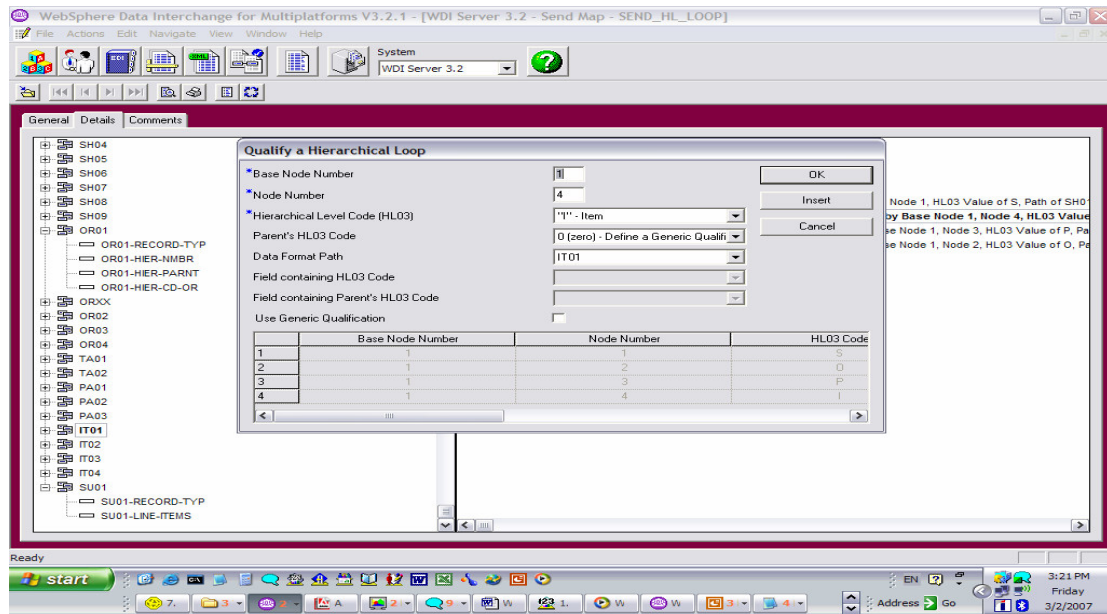
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Mapping Hierarchical Loops

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If you use a simple element in the source and drag and drop to the HL Loop, this will indicate the source data contains the HL Level code. You can then optionally select the field containing the parent's HL Level code.

Mapping Hierarchical Loops



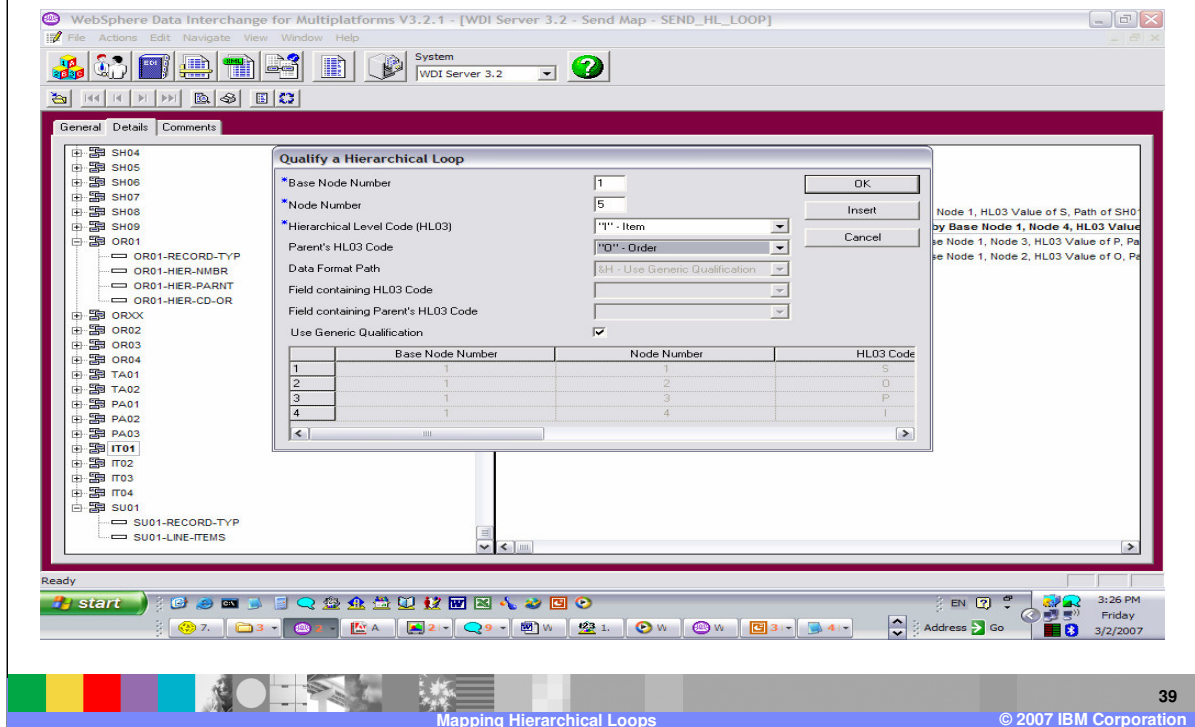
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Mapping Hierarchical Loops

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A Blank in the Parent's HL Level code will define a generic mapping. Using a generic mapping you can map a level 1 time and identify this mapping is to be used with a parent child qualification by using the Use Generic Qualification flag.

Mapping Hierarchical Loops



With this qualification the Use Generic Qualification flag is checked the Data Format Path becomes &H indicating when the Item record follows an order in the source data to use the generic mapping. This qualification does not contain any other mapping commands because the commands are within the generic qualification. Use generic qualification to define parent-child relationships for which there are no specific mapping instructions. This means that the mapping is the same for this level and the parent does not affect the mapping

Section

Receive Mapping



Mapping Hierarchical Loops

- Two choices
- DE qualification on HL CODE - HL03 (SEGMENT HL, DE 735)
- Hierarchical Loop Support
 - ▶ Mapping dependent on parent level
 - Mapping may be different depending on the parent
 - ▶ Allow Multiple hierarchies in the same map
 - EXAMPLE: Orders may or may not have Shipment level



With a Receive map you have 2 choices for mapping and qualification. Use the Hierarchical Loop mapping support or use Qualify by value and normal mapping. You should use the Hierarchical Loop support if the mapping id dependent on which level is the parent or if you need to define different hierarchies within the same map. For example Orders without a Shipment level may be a different mapping than Orders with the Shipment level as the parent.

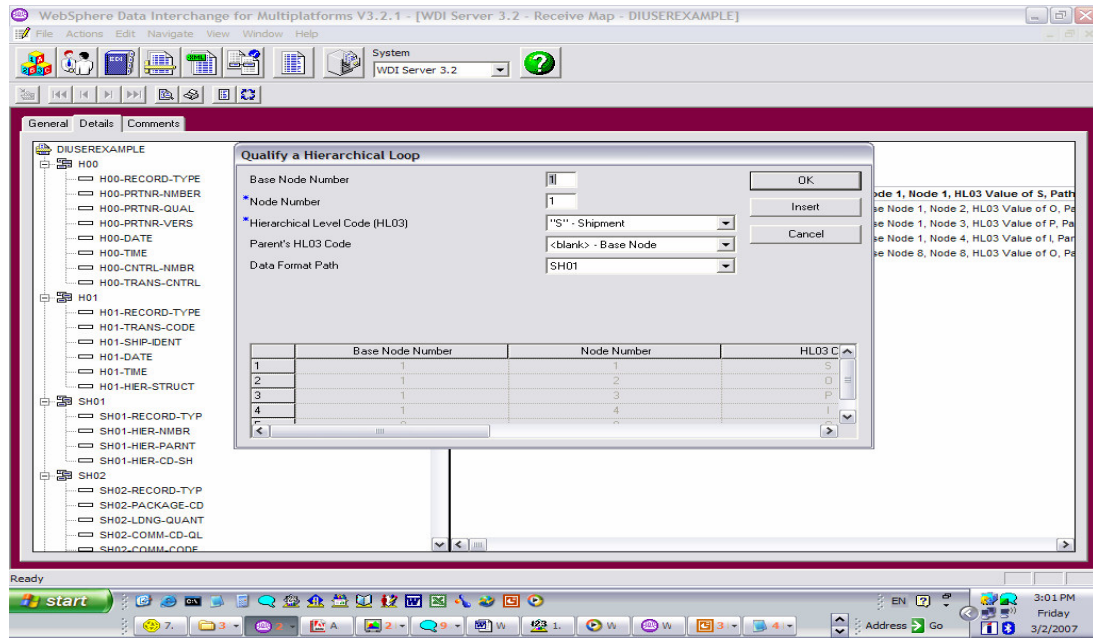
Mapping Hierarchical Loops

- The HL segment is the first segment of the HL loop
- HL*ID Number*Parent ID Number*Level Code*Child Code!
- Node ID
 - ▶ Identifies the mappings for a hierarchical loop.
 - ▶ Must be numeric.
 - ▶ HL segments define a top-down/left-right ordered structure.
- Hierarchical Level Code
 - ▶ The value in the HL03 field of the HL segment is compared to this value to determine which map to use.
- Parent Level Code
 - ▶ The hierarchical level code of the node to be the parent.
 - ▶ Zero indicates a generic mapping.
 - ▶ Blank indicates a base node for a hierarchical structure.



With a Receive map the value in the HL03 field of the HL segment is compared to the value in the map to determine which map qualification to use. This would be the same as using a Qualification using the value in the HL03 element without special HL Loop mapping. A parent level code of zero indicates a generic mapping. This means that the mapping is the same for this level and the parent does not affect the mapping. A blank in the parent level code indicates a base node.

Mapping Hierarchical Loops



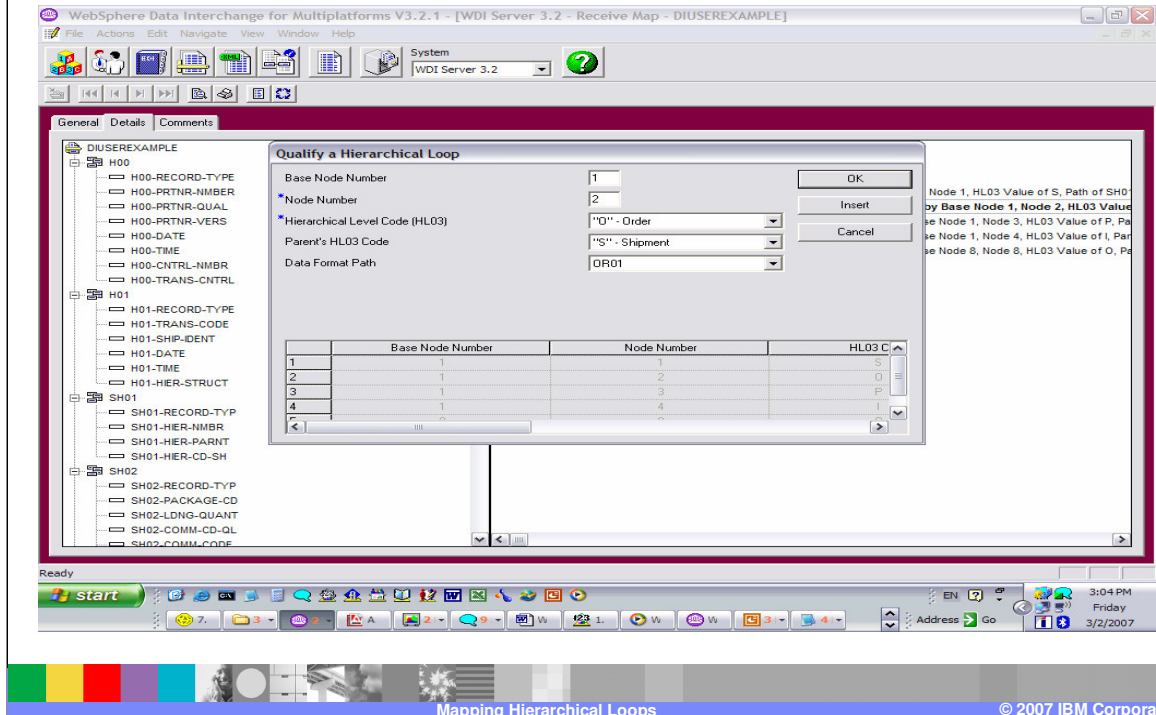
Mapping Hierarchical Loops

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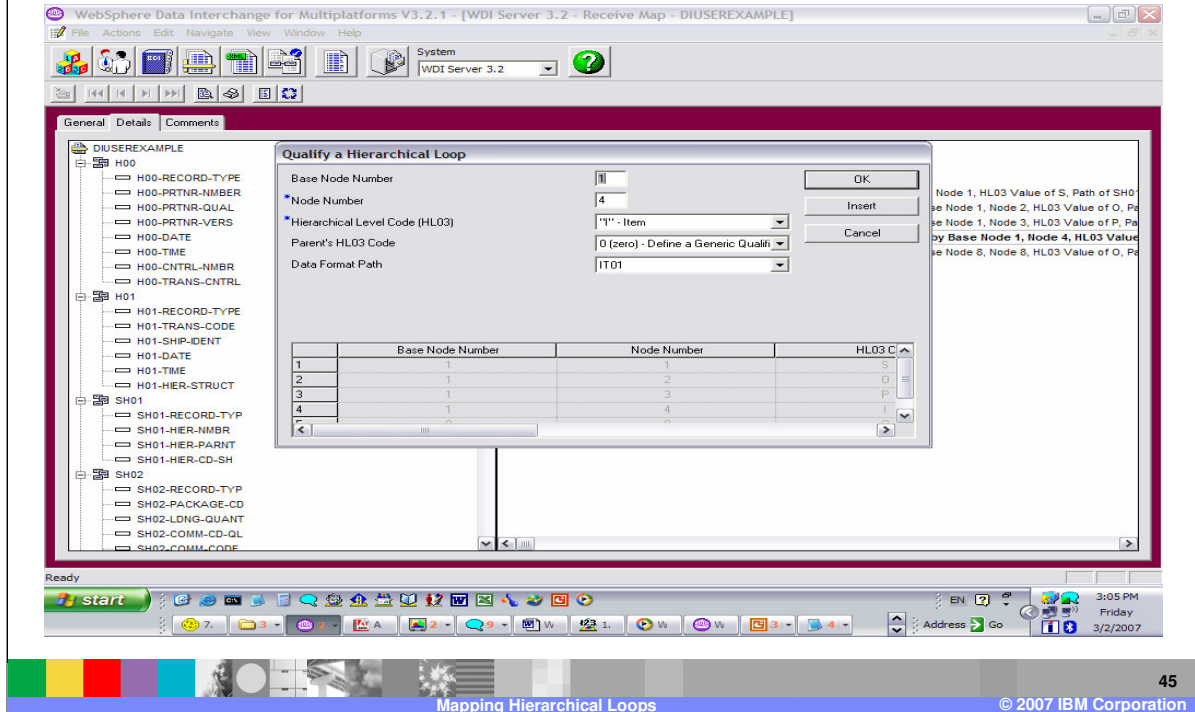
This qualification is defining the base node as Shipment.

Mapping Hierarchical Loops



This qualification is defining the Order level with a parent of Shipment.

Mapping Hierarchical Loops



This is a generic qualification because the parent level contains a value of zero. This indicates the Item level can follow or be a child of any other HL Level and the mapping should be the same regardless of the parent. Use generic qualification to define parent-child relationships for which there are no specific mapping instructions.

Summary

- Send and Receive mapping:
 - ▶ Allows you to specify unique mapping instructions for each identifiable group of structures in a hierarchical loop.
 - ▶ Can handle 16 levels of nesting within the HL loop structure.



Send and Receive mapping allows you to specify unique mapping instructions for each identifiable group of structures in a hierarchical loop. The translation process can handle 16 levels of nesting within the HL loop structure.

Reference

- More information can be found in the WDI V3.3 Mapping Guide, Appendix B. Hierarchical loops.



More information can be found in the WebSphere Data Interchange Version 3.3 Mapping Guide, Appendix B. Hierarchical loops.

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