

*IBM WebSphere Business Integration Express for Item  
Synchronization*



# Solution Development Guide

*Version 4.3*

**Note!**

Before using this information and the product it supports, read the general information under "Notices and Trademarks" on page 59.

**(10October2003)**

This edition of this document applies to *IBM® WebSphere® Business Integration Express for Item Synchronization* Version 4.3, and to all subsequent releases and modifications until otherwise indicated in new editions.

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## Solution Development Guide

The IBM® WebSphere® Business Integration Express for Item Synchronization product workflow is composed of business objects, collaboration objects, connectors, and maps. These basic components work together to enable supply-side trading partners to automatically add items to, update or delist items within, or withdraw items from UCCnet® when item updates are made in their Enterprise Resource Planning (ERP) applications. When an update is made in a supplier's ERP system, item data is automatically validated, reformatted, and sent to the UCCnet standard registry. Suppliers can also communicate new or updated item information to subscribing trading partners via UCCnet. Thus, enterprise data is synchronized with item data sent outside the enterprise.

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### About this document

The IBM WebSphere Business Integration Express for Item Synchronization product includes InterChange Server Express, the associated Toolset Express product, the Item Synchronization Collaboration, and a set of software integration adapters. Together they provide business process integration and connectivity among leading e-business technologies and enterprise applications as well as integration with the UCCnet GLOBALregistry.

The *Solution Development Guide* describes the internal processing of the WebSphere Business Integration Express for Item Synchronization product.

### Audience

This document is intended for programmers who design and implement workflows using the product and who might participate in designing customizations to solutions that are based upon this product. It assumes that users are experienced programmers and that they understand the following concepts and have experience with the software associated with them:

- Developing collaboration objects, business objects, maps, and other related components.
- Installing, configuring, and operating the WebSphere Business Integration Express for Item Synchronization product.

Programmers must also have experience with the respective operating systems on which their implementations are installed.

### Related documents

The complete set of documentation describes the features and components common to all WebSphere Business Integration Express for Item Synchronization installations and includes reference material on specific components.

The Solution Development Guide does not contain an overview of all of the WebSphere Business Integration Express for Item Synchronization product components or how to install them. For additional information on the individual components of the product, see the IBM® WebSphere® Business Integration Express for Item Synchronization documentation library in the InfoCenter.

## New in this release

This is the first release of WebSphere Business Integration Express for Item Synchronization V4.3.

## How the Solution Development Guide is organized

The Solution Development Guide introduces the mechanics of the WebSphere Business Integration Express for Item Synchronization product by first presenting sample, high-level, step-by-step workflows of how the product handles the following scenarios:

- ItemAdd — Described in the sections “ItemAdd workflow: adding a new item to UCCnet (DTD support)” on page 4 and “ItemAdd workflow: adding a new item to UCCnet (schema support)” on page 22.
- ItemPublicationAdd — Described in the section “ItemPublicationAdd workflow: making a new item available to trading partners and processing their responses to it” on page 7 and used with DTD support. (ItemAdd and ItemPublicationAdd workflows normally occur sequentially.)
- CatalogueItemNotification\_Add — Described in the section “CatalogueItemNotification\_Add workflow” on page 24 and used with schema support. (ItemAdd and CatalogueItemNotification\_Add workflows normally occur sequentially.)
- ItemChange — Described in the sections “ItemChange workflow: updating item information in UCCnet (DTD support)” on page 11 and “ItemChange workflow: updating item information in UCCnet (schema support)” on page 26.
- ItemPublicationChange — Described in the section “ItemPublicationChange workflow: making updated item information available to trading partners and processing their responses to it” on page 14. (ItemChange and ItemPublicationChange workflows normally occur sequentially.)
- CatalogueItemNotification\_Change — Described in the section “CatalogueItemNotification\_Change workflow: making updated item information available to trading partners and processing their responses to it” on page 28 and used with schema support. (ItemAdd and CatalogueItemNotification\_Change workflows normally occur sequentially.)
- ItemDelist — Described in the sections “ItemDelist workflow: making an item permanently unavailable to trading partners (DTD support)” on page 19 and “ItemDelist workflow: making an item permanently unavailable to trading partners (schema support)” on page 30.
- ItemWithdrawal — Described in the sections “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (DTD support)” on page 20 and “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (schema support)” on page 32.

Many steps contain links to detailed conceptual information about the mechanics of the product associated with those steps. This section is useful for obtaining an overall, conceptual understanding of solution processing.

Other sections describe in detail how solution processing operates, as follows:

- “Checking that item data exists for fields required by UCCnet” on page 33 details how a UCCnet\_ItemSync collaboration object ensures that the business object to be passed to UCCnet contains data in all of the fields for which UCCnet requires data.
- “Using the PROCESSED\_GTIN table” on page 34 describes how the product populates and maintains data in the provided PROCESSED\_GTIN relational

table, which permits a UCCnet\_processWorklist collaboration object to process incoming INITIAL\_ITEM\_LOAD\_REQUEST commands without the need to communicate with the back-end ERP system.

- “Using the audit\_log table” on page 35 provides information on how the product populates and maintains data in the provided audit\_log relational table, used to track events associated with UCCnet activities to support complete end-to-end accountability.
- “Using the trading\_partner table” on page 36 identifies how the product maintains data in the provided trading\_partner relational table, which maintains the complete list of trading partners.
- “Polling UCCnet for worklists” on page 37 describes how the product obtains worklists from UCCnet.
- “Using subdiagrams” on page 38 details the logic behind the subdiagrams contained in a UCCnet\_processWorklist collaboration object.
- “Sending email” on page 43 describes how product collaboration objects alert email recipients of processing errors, and how subdiagrams within a UCCnet\_processWorklist collaboration object process email for different processing circumstances.
- “Logging” on page 47 describes the capabilities of various collaboration objects to log errors.
- “Tracing” on page 47 outlines how problems that might occur in the solution workflow can be traced and identified.
- “Use cases” on page 47 details the actors and courses of the use cases associated with the product.

### **Definitions of connector and adapter**

The term “connector” used throughout this document refers to the runtime portion of an adapter. References to specific connectors are related to specific adapters, as follows:

- “iSoftConnector” refers specifically to the runtime component of an Adapter for iSoft.
- “JTextConnector” refers specifically to the runtime component of an Adapter for JText.
- “JTextISoftConnector” refers specifically to the runtime component of an adapter based on the Adapter for JText.
- “JTextRWLConnector” refers specifically to the runtime component of an adapter based on the Adapter for JText.
- “SAPConnector” refers specifically to the runtime component of an I Adapter for mySAP.com (SAP R/3 V. 4.X).

If you are exchanging messages with UCCnet through an AS2/EDIINT interface protocol, use an iSoftConnector. If you are exchanging messages through the UCCnet Command Line Utility (CLU) or testing your installation, use a JTextISoftConnector. “AS2 channel connector” used throughout can refer to an iSoftConnector, JTextISoftConnector, depending on the protocol used to exchange messages.

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## **Processing a business object: example workflows (DTD support)**

The information in the following sections outlines at a high level how the WebSphere Business Integration Express for Item Synchronization product handles the following workflows, which support the DTD-based implementations:

- **ItemAdd** — This workflow adds a new item to UCCnet. It is described in the section “ItemAdd workflow: adding a new item to UCCnet (DTD support).”
- **ItemPublicationAdd** — This workflow makes a new item available to trading partners and processes their responses to it. It is described in the section “ItemPublicationAdd workflow: making a new item available to trading partners and processing their responses to it” on page 7. (ItemAdd and ItemPublicationAdd workflows normally occur sequentially.)
- **ItemChange** — This workflow updates item information in UCCnet. It is described in the section “ItemChange workflow: updating item information in UCCnet (DTD support)” on page 11.
- **ItemPublicationChange** — This workflow makes an updated item available to trading partners and processes their responses to it. It is described in the section “ItemPublicationChange workflow: making updated item information available to trading partners and processing their responses to it” on page 14. (ItemChange and ItemPublicationChange workflows normally occur sequentially.)
- **ItemDelist** — This workflow makes an item permanently unavailable to trading partners. It is described in the section “ItemDelist workflow: making an item permanently unavailable to trading partners (DTD support)” on page 19.
- **ItemWithdrawal** — This workflow makes an item temporarily unavailable to all or selected trading partners. It is described in the section “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (DTD support)” on page 20.

Refer to the Installation Guide for detailed information on creating port connections between collaboration objects and between collaboration objects and connectors.

UCCnet\_ItemSync, UCCnet\_requestWorklist, UCCnet\_processWorklist, and Notify\_by\_eMail collaboration objects log error messages if they encounter error situations during any stage of processing. See the section “Logging” on page 47 for detailed information. Tracing can also be enabled for all collaboration objects to record logical flaws and data processed. See the section “Tracing” on page 47 for detailed information.

**Note:** “AS2 channel server” used throughout this document, refers to the iSoft Peer-to-Peer Agent.

## **ItemAdd workflow: adding a new item to UCCnet (DTD support)**

The description below shows how high-level components of the Item Synchronization perform the ItemAdd workflow. In the ItemAdd workflow, a new item is added to UCCnet. The source of the flow is the creation of a new item in the source ERP application. This workflow does not result in notifications being sent to subscribed demand-side trading partners. Another workflow – ItemPublicationAdd detailed in the section “ItemPublicationAdd workflow: making a new item available to trading partners and processing their responses to it” on page 7 — accomplishes sending these notifications.

### **Notes:**

1. The mappings used in processing ItemAdd messages use value translation tables. The InterChange Server Express implements these tables as cross-references.



2. If you are using schema support, refer to the documentation found in “ItemAdd workflow: adding a new item to UCCnet (schema support)” on page 22
  1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
  2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with a *Create* verb by passing it through the Sa4CwItemBasic input map.
  3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
  4. The UCCnet\_ItemSync collaboration object adds an entry for the new item to the PROCESSED\_GTIN table, setting the value for the **withdrawn** field for this entry to N. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
  5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemAdd transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
  6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted into an application-specific business object, a UCCnetDTD\_envelope business object. The ItemBasic business object is converted by passing through the RouterMap\_CwItemBasic\_to\_UCCnetDTD\_envelope router map and CwItemBasic\_to\_UCCnetDTD\_envelope\_documentCommand\_item translation map.
  7. .
  8. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemAdd XML message in UCCnet format.
  9. The AS2 channel connector passes this message to the AS2 channel server.
  10. The AS2 channel server creates the digest, encrypts, and transmits the ItemAdd message to UCCnet.
  11. UCCnet generates and returns to the AS2 channel server a Message Disposition Notification (MDN) to indicate successful receipt of the ItemAdd message.
  12. The AS2 channel server delivers the MDN to the AS2 channel connector.
  13. The AS2 channel connector sends the MDN to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.
  14. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
  15. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an MDN, and dispatches it to its

SIMPLE\_RESPONSE subdiagram. See the section “SIMPLE\_RESPONSE subdiagram” on page 43 for more information on this subdiagram.

16. The SIMPLE\_RESPONSE subdiagram sends email to the recipients configured in the UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
17. UCCnet creates a worklist containing the notification response for a successful ItemAdd.
18. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

19. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
20. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope map.
21. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
22. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
23. The AS2 channel connector passes the message to the AS2 channel server.
24. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
25. UCCnet delivers the worklist containing the notification response for a successful ItemAdd to the AS2 channel server.
26. The AS2 channel server delivers the notification to the AS2 channel connector.
27. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
28. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.

29. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an ItemAdd notification, and dispatches it to its ITEM\_ADD\_CHANGE subdiagram.

As a result of the ItemAdd workflow, UCCnet has been updated with the new item information. Now, the supplier's demand-side trading partners must be made aware that the item is available. This on-going workflow, referred to as the ItemPublicationAdd workflow, is continued in the section "ItemPublicationAdd workflow: making a new item available to trading partners and processing their responses to it."

## **ItemPublicationAdd workflow: making a new item available to trading partners and processing their responses to it**

The information in this section describes how the high-level components of the Item Synchronization Collaboration perform the ItemPublicationAdd workflow. In the ItemPublicationAdd workflow, a new item that was passed to UCCnet through the ItemAdd workflow (detailed in the section "ItemAdd workflow: adding a new item to UCCnet (DTD support)" on page 4) is made available to the supplier's demand-side trading partners. The demand-side trading partners' responses to the new item are processed as well. As a result, the ItemPublicationAdd workflow is described as two subflows:

- The subflow that makes the new item available to the supplier's demand-side trading partners, described in the section "ItemPublicationAdd subflow 1: making a new item available to trading partners."
- The subflow that processes the demand-side trading partners' responses to the new item, described in the section "ItemPublicationAdd subflow 2: processing trading partners' responses to a new item" on page 9.

### **ItemPublicationAdd subflow 1: making a new item available to trading partners**

The description below describes how the ItemPublicationAdd workflow makes a new item available to a supplier's demand-side trading partners. At this point in processing, the ItemAdd workflow has completed and a UCCnetGBO\_envelope business object has arrived in the ITEM\_ADD\_CHANGE subdiagram of the UCCnet\_processWorklist collaboration object.

1. The UCCnet\_processWorklist collaboration object's ITEM\_ADD\_CHANGE subdiagram does the following:
  - a. Maps the UCCnetGBO\_envelope business object into a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through either the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope or UCCnetGBO\_envelope\_notification\_to\_UCCnetDTD\_envelope\_publishCommand router and input maps. The business object contains the corresponding ItemPublicationAdd request. This message includes a request for UCCnet to publish the item to the trading partners listed in the message.
  - b. Sends the ItemPublicationAdd request over the *ITEM\_ADD\_CHANGE* port to the AS2 channel connector.
  - c. Logs the notification in the audit\_log table. See the section "Using the audit\_log table" on page 35 for more information on the audit\_log table.

See the section "ITEM\_ADD\_CHANGE subdiagram" on page 40 for more information on this subdiagram.

2. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemPublicationAdd XML message in UCCnet format.
3. The AS2 channel connector passes the message to the AS2 channel server.
4. The AS2 channel server creates the digest, encrypts, and transmits the ItemPublicationAdd message to UCCnet.
5. UCCnet generates and sends to the AS2 channel server an MDN indicating successful receipt of the ItemPublicationAdd message.
6. The AS2 channel server delivers the MDN to the AS2 channel connector.
7. The AS2 channel connector sends the MDN to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.
8. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
9. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an MDN, and dispatches it to its SIMPLE\_RESPONSE subdiagram. See the section “SIMPLE\_RESPONSE subdiagram” on page 43 for more information on this subdiagram.
10. The SIMPLE\_RESPONSE subdiagram sends email to the recipients configured in the UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
11. UCCnet performs a compliance check on the data and, if all data exists in the appropriate formats, creates a worklist containing a PUB\_RELEASE\_NEW\_ITEM notification to indicate a successful ItemPublicationAdd.
12. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

13. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
14. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
15. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the

- RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
16. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
  17. The AS2 channel connector passes the message to the AS2 channel server.
  18. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
  19. UCCnet delivers the worklist containing the PUB\_RELEASE\_NEW\_ITEM notification indicating a successful ItemPublicationAdd to the AS2 channel server.
  20. The AS2 channel server delivers the notification to the AS2 channel connector.
  21. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
  22. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
  23. The UCCnet\_processWorklist collaboration object receives the object on its *From* port, identifies it as a PUB\_RELEASE\_NEW\_ITEM, and dispatches it to its NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram. See the section “NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram” on page 39 for more information on this subdiagram.

As a result of this subflow of the ItemPublicationAdd workflow, a new item is made available to a supplier’s demand-side trading partners. The on-going subflow that alerts them of the item’s existence and processes their responses to it, referred to as the ItemPublicationAdd subflow 2, is continued in the section “ItemPublicationAdd subflow 2: processing trading partners’ responses to a new item.”

### **ItemPublicationAdd subflow 2: processing trading partners’ responses to a new item**

The description below describes how the ItemPublicationAdd workflow alerts demand-side trading partners that a new item is available and processes their responses to it.

At this point in processing, the first subflow of the ItemPublicationAdd workflow has completed and a UCCnetGBO\_envelope business object has arrived in the NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram of the UCCnet\_processWorklist collaboration object.

1. The UCCnet\_processWorkflow collaboration object’s NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram logic does the following:
  - a. Verifies that the GTIN value associated with the item is in the PROCESSED\_GTIN table and that the item is not withdrawn. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
  - b. Checks that the new item to be published is supplied by a trading partner listed in the trading\_partner table and verifies that the demand-side trading partners to whom notification will be sent are also in this table. See the section “Using the trading\_partner table” on page 36 for more information on the trading\_partner table.

- c. Sends the ItemPublicationAdd for the GTIN to the demand-side trading partners identified in the business object. It accomplishes this by mapping the business object into a UCCnetDTD\_envelope business object. The business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_notification\_to\_UCCnetDTD\_envelope\_publishCommand maps. The message is sent over the NEW\_ITEM\_PUBLICATION\_REQUEST port to the AS2 channel connector, from the AS2 channel connector to the AS2 channel server, and then to UCCnet.
  - d. Logs the notification in the audit\_log table. See the section “Using the audit\_log table” on page 35 for more information on the audit\_log table.
2. The trading partners can respond with any of the following responses:
- AUTHORIZE — The product information has been integrated into the demand-side user’s legacy environment and the demand-side user is ready to begin trading.
  - PEND\_PUBLICATION — The demand-side user is unsure about the proper action to take on the product. The product is being studied, but no action is possible at this time.
  - REJECT\_PUBLICATION — The demand-side user has no interest in the product.
  - PRE\_AUTHORIZATION — The demand-side user wants to begin the process of integrating the product into its legacy environment. This response might indicate that the supplier contact the demand-side user to begin the process of deciding on order quantities, pricing specifics, etc.
  - DE\_AUTHORIZATION — The demand-side user has removed the product from the assortment and wants no further updates sent for the product.

For this example, assume a demand-side trading partner responded with an AUTHORIZE response. UCCnet creates a worklist containing this notification response and delivers it to the AS2 channel server.

3. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

- 4. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
- 5. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
- 6. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The

- UCCnetGBO\_envelope business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
7. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
  8. The AS2 channel connector passes the message to the AS2 channel server.
  9. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
  10. UCCnet performs a compliance check on the data and, if all data exists in the appropriate formats, generates an AUTHORIZE notification to indicate a successful receipt. This notification is returned to the AS2 channel server.
  11. The AS2 channel server delivers the notification to the AS2 channel connector.
  12. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
  13. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
  14. The UCCnet\_processWorklist collaboration object receives the object on its *From* port, identifies it as an AUTHORIZE response, and dispatches it to its AUTHORIZATION\_RESPONSES subdiagram. See the section “AUTHORIZATION\_RESPONSES subdiagram” on page 41 for more information on this subdiagram.
  15. The AUTHORIZATION\_RESPONSES subdiagram does the following:
    - a. Sends email to the recipients configured in the UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
    - b. Logs the event in the audit\_log table. See “Using the audit\_log table” on page 35 for more information on the audit\_log table.

## ItemChange workflow: updating item information in UCCnet (DTD support)

The description below shows how high-level components of the Item Synchronization perform the ItemChange workflow. The ItemChange workflow sends updated information about an existing item to UCCnet. The source of the flow is a change to the data of an existing item in the ERP source application. Issuing a change does not result in notifications being sent to subscribed demand-side trading partners. Another workflow – ItemPublicationChange detailed in the section “ItemPublicationChange workflow: making updated item information available to trading partners and processing their responses to it” on page 14 — accomplishes sending these notifications.

### Notes:

1. The mappings used in processing ItemChange messages use value translation tables. The InterChange Server Express implements these tables as cross-references.

2. If you are using schema support, refer to the documentation found in “ItemChange workflow: updating item information in UCCnet (schema support)” on page 26
  1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
  2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with a *Update* verb by passing it through the Sa4CwItemBasic input map.
  3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
  4. The UCCnet\_ItemSync collaboration object checks if the item exists in the PROCESSED\_GTIN table and processes it, as follows:
    - If the item exists in the table and the value for its **withdrawn** field is set to N, the collaboration object continues processing it.
    - If the item exists in the table and the value for its **withdrawn** field is set to Y, the collaboration object does the following:
      - Changes the value of the entry’s **withdrawn** field to N.
      - Changes the value of the entry’s **delete** field to U.
      - Changes the business object verb to *UNWITHDRAWN*.
      - Continues processing it.
    - If the item does not exist in the table, the collaboration object changes the verb to *Create* and adds it to the PROCESSED\_GTIN table, setting the entry’s **withdrawn** field to N.

Assume for this example that the item already exists in the table and is not withdrawn. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
  5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemChange transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
  6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted into a UCCnetDTD\_envelope. The ItemBasic business object is converted by passing through the RouterMap\_CwItemBasic\_to\_UCCnetDTD\_envelope and CwItemBasic\_to\_UCCnetDTD\_envelope\_documentCommand\_item router and translation maps.
  7. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemChange XML message in UCCnet format.
  8. The AS2 channel connector passes this message to the AS2 channel server.
  9. The AS2 channel server creates the digest, encrypts, and transmits the ItemChange message to UCCnet.



10. UCCnet generates and returns to the AS2 channel server an MDN to indicate successful receipt of the ItemChange message.
11. The AS2 channel server delivers the MDN to the AS2 channel connector.
12. The AS2 channel connector sends the MDN to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.
13. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope.
14. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an MDN, and dispatches it to its SIMPLE\_RESPONSE subdiagram. See the section “SIMPLE\_RESPONSE subdiagram” on page 43 for more information on this subdiagram.
15. The SIMPLE\_RESPONSE subdiagram sends email to the recipients configured in the UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
16. UCCnet creates a worklist containing the notification response ItemChange and delivers it to the AS2 channel server.
17. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

18. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
19. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
20. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
21. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
22. The AS2 channel connector passes the message to the AS2 channel server.
23. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.

24. An ItemChange notification is generated by UCCnet to indicate a successful ItemChange. This notification is returned to the AS2 channel server.
25. The AS2 channel server delivers the notification to the AS2 channel connector.
26. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
27. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
28. The UCCnet\_processWorklist collaboration receives the business object on its *From* port, identifies it as an ItemChange notification, and dispatches it to its ITEM\_ADD\_CHANGE subdiagram.

As a result of the ItemChange workflow, UCCnet has updated the item information. Now, the supplier's demand-side trading partners must be notified that updated information about the item exists. This ongoing workflow, referred to as the ItemPublicationChange workflow, is continued in the section "ItemPublicationChange workflow: making updated item information available to trading partners and processing their responses to it."

## **ItemPublicationChange workflow: making updated item information available to trading partners and processing their responses to it**

The information in this section describes how the high-level components of the Item Synchronization perform the ItemPublicationChange workflow. In the ItemPublicationChange workflow, updated item information that was passed to UCCnet through the ItemChange workflow (detailed in the section "ItemChange workflow: updating item information in UCCnet (DTD support)" on page 11) is made available to the supplier's demand-side trading partners. The demand-side trading partners' responses to this item information must then be processed. As a result, the ItemPublicationChange workflow is described as two subflows:

- The subflow that makes updated item information available to the supplier's demand-side trading partners, described in the section "ItemPublicationChange subflow 1: making updated item information available to trading partners."
- The subflow that processes the demand-side trading partners' responses to the updated information, described in the section "ItemPublicationChange subflow 2: processing trading partners' responses to updated item information" on page 16.

### **ItemPublicationChange subflow 1: making updated item information available to trading partners**

The description below describes how the ItemPublicationChange workflow makes updated item information available to a supplier's demand-side trading partners. At this point in processing, the ItemChange workflow has completed and a UCCnetGBO\_envelope business object has arrived in the ITEM\_ADD\_CHANGE subdiagram of the UCCnet\_processWorklist collaboration object.

1. The UCCnet\_processWorklist collaboration object's ITEM\_ADD\_CHANGE subdiagram does the following:
  - a. Maps the UCCnetGBO\_envelope business object into a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the

RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_notification\_to\_UCCnetDTD\_envelope\_publishCommand router and transformation maps. The business object contains the corresponding ItemPublicationAdd request. This message includes a request for UCCnet to publish the item to the trading partners listed in the message.

- b. Sends the ItemPublicationChange request over the *ITEM\_ADD\_CHANGE* port to the AS2 channel connector.
- c. Logs the notification in the audit\_log table. See the section “Using the audit\_log table” on page 35 for more information on the audit\_log table.

See the section “ITEM\_ADD\_CHANGE subdiagram” on page 40 for more information on this subdiagram.

2. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemPublicationChange XML message in UCCnet format.
3. The AS2 channel connector passes the message to the AS2 channel server.
4. The AS2 channel server creates the digest, encrypts, and transmits the ItemPublicationChange message to UCCnet.
5. UCCnet generates and sends to the AS2 channel server an MDN indicating successful receipt of the ItemPublicationChange message.
6. The AS2 channel server delivers the MDN to the AS2 channel connector.
7. The AS2 channel connector sends the MDN to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object.
8. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
9. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an MDN, and dispatches it to its SIMPLE\_RESPONSE subdiagram. See the section “SIMPLE\_RESPONSE subdiagram” on page 43 for more information on this subdiagram.
10. The SIMPLE\_RESPONSE subdiagram sends email to the recipients configured in the UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
11. UCCnet creates a worklist containing the notification response PUB\_RELEASE\_DATA\_CHANGE and delivers it to the AS2 channel server.
12. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications from the following directory (dependent on platform) that is created during installation of the product
13. to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

14. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
15. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
16. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
17. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
18. The AS2 channel connector passes the message to the AS2 channel server.
19. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
20. UCCnet performs a compliance check on the data and, if all data exists in the appropriate formats, generates a PUB\_RELEASE\_DATA\_CHANGE notification to indicate a successful ItemPublicationChange. This notification is returned to the AS2 channel server.
21. The AS2 channel server delivers the notification to the AS2 channel connector.
22. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
23. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
24. The UCCnet\_processWorklist collaboration object receives the object on its *From* port, identifies it as a PUB\_RELEASE\_DATA\_CHANGE, and dispatches it to its NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram. See the section “NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram” on page 39 for more information on this subdiagram.

As a result of this subflow of the ItemPublicationChange workflow, updated item information is made available to a supplier’s demand-side trading partners. The on-going subflow that alerts them of the available updated information and processes their responses to it, referred to as the ItemPublicationChange subflow 2, is continued in the section “ItemPublicationChange subflow 2: processing trading partners’ responses to updated item information.”

### **ItemPublicationChange subflow 2: processing trading partners’ responses to updated item information**

The description below describes how the ItemPublicationChange workflow alerts demand-side trading partners that new item information is available and processes their responses to it.

At this point in processing, the first subflow of the ItemPublicationChange workflow has completed and a UCCnetGBO\_envelope business object has arrived in the NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram of the UCCnet\_processWorklist collaboration object.

1. The UCCnet\_processWorkflow collaboration object's NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram logic does the following:
  - a. Verifies that the GTIN value associated with the item is in the PROCESSED\_GTIN table and that the item is not withdrawn. See the section "Using the PROCESSED\_GTIN table" on page 34 for more information on the PROCESSED\_GTIN table.
  - b. Checks that the new item information to be published is supplied by a trading partner listed in the trading\_partner table and verifies that the demand-side trading partners to whom notification will be sent are also in this table. See the section "Using the trading\_partner table" on page 36 for more information on the trading\_partner table.
  - c. Sends the ItemPublicationChange for the GTIN to the demand-side trading partners identified in the business object. It accomplishes this by mapping the business object into a UCCnetDTD\_envelope business object. The business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_notification\_to\_UCCnetDTD\_envelope\_publishCommand router and transformation maps. The message is sent over the NEW\_ITEM\_PUBLICATION\_REQUEST port to the AS2 channel connector, from the AS2 channel connector to the AS2 channel server, and then to UCCnet.
  - d. Logs the notification in the audit\_log table. See the section "Using the audit\_log table" on page 35 for more information on the audit\_log table.
2. The trading partners can respond with any of the following responses:
  - AUTHORIZE — The product information has been integrated into the demand-side user's legacy environment and the demand-side user is ready to begin trading.
  - PEND\_PUBLICATION — The demand-side user is unsure about the proper action to take on the product. The product is being studied, but no action is possible at this time.
  - REJECT\_PUBLICATION — The demand-side user has no interest in the product.
  - PRE\_AUTHORIZATION — The demand-side user wants to begin the process of integrating the product into its legacy environment. This response might indicate that the supplier contact the demand-side user to begin the process of deciding on order quantities, pricing specifics, etc.
  - DE\_AUTHORIZATION — The demand-side user has removed the product from the assortment and wants no further updates sent for the product.

For this example, assume a demand-side trading partner responded with an AUTHORIZE response. UCCnet creates a worklist containing this notification response and delivers it to the AS2 channel server.

3. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

4. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
5. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
6. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The UCCnetGBO\_envelope business object is converted by passing through the RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope and UCCnetGBO\_envelope\_to\_UCCnetDTD\_envelope router and translation maps.
7. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
8. The AS2 channel connector passes the message to the AS2 channel server.
9. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
10. UCCnet performs a compliance check on the data and, if all data exists in the appropriate formats, generates an AUTHORIZE notification to indicate a successful receipt. This notification is returned to the AS2 channel server.
11. The AS2 channel server delivers the notification to the AS2 channel connector.
12. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetDTD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
13. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetDTD\_envelope\_to\_UCCnetGBO\_envelope input map.
14. The UCCnet\_processWorklist collaboration object receives the object on its *From* port, identifies it as an AUTHORIZE response, and dispatches it to its AUTHORIZATION\_RESPONSES subdiagram. See the section “AUTHORIZATION\_RESPONSES subdiagram” on page 41 for more information on this subdiagram.
15. The AUTHORIZATION\_RESPONSES subdiagram does the following:
  - a. Sends email to the recipients configured in the UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESObject collaboration object (an instance of the Notify\_by\_eMail collaboration template). See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
  - b. Logs the event in the audit\_log table. See “Using the audit\_log table” on page 35 for more information on the audit\_log table.

## ItemDelist workflow: making an item permanently unavailable to trading partners (DTD support)

The description below shows how high-level components of the Item Synchronization perform the ItemDelist workflow. The ItemDelist workflow requests that UCCnet make an item in the repository permanently unavailable. After an item has been delisted, it cannot be returned to active trading. (To remove an item from active trading only temporarily, issue an ItemWithdrawal, as discussed in the section “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (DTD support)” on page 20.) The source of the flow is the delist of an existing item in the ERP source application. This workflow does not result in notifications being sent to demand-side trading partners.

**Note:** If you are using schema support, refer to the documentation found in “ItemDelist workflow: making an item permanently unavailable to trading partners (schema support)” on page 30

1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with an *Delist* verb by passing it through the Sa4CwItemBasic input map.
3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
4. The UCCnet\_ItemSync collaboration object removes the item from the PROCESSED\_GTIN table. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemDelist transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted to a UCCnetDTD\_envelope business object. The ItemBasic business object is converted by passing through the RouterMap\_CwItemBasic\_to\_UCCnetDTD\_envelope and CwItemBasic\_to\_UCCnetDTD\_envelope\_publishCommand\_documentIdentifier router and translation maps.
7. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemDelist XML message in UCCnet format.
8. The AS2 channel connector passes this message to the AS2 channel server.
9. The AS2 channel server creates the digest, encrypts, and transmits the ItemDelist message to UCCnet.
10. UCCnet generates an MDN to indicate successful receipt of the ItemDelist message.

As a result of the ItemDelist workflow, the item has been permanently delisted in UCCnet and removed from the PROCESSED\_GTIN table.

## ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (DTD support)

The description below shows how high-level components of the Item Synchronization perform the ItemWithdrawal workflow. The ItemWithdrawal workflow requests that UCCnet make an item temporarily unavailable to all or selected trading partners. An item might be temporarily removed, for instance, if it is out of season or not in production. It might also be made available only to a specific set of demand-side trading partners as a special order item. (To remove an item from active trading permanently, issue an ItemDelist, as discussed in the section “ItemDelist workflow: making an item permanently unavailable to trading partners (DTD support)” on page 19.) The source of the flow is the withdrawal of an existing item in the ERP source application. This workflow does not result in notifications being sent to demand-side trading partners.

**Note:** If you are using schema support, refer to the documentation found in “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (schema support)” on page 32

1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with an *Withdraw* verb by passing it through the Sa4CwItemBasic input map.
3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
4. The UCCnet\_ItemSync collaboration object locates the item in the PROCESSED\_GTIN table and sets the value for the **withdrawn** field to Y. This action prevents the publication of the item in response to an incoming INITIAL\_ITEM\_LOAD\_REQUEST. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemWithdrawal transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted into a UCCnetDTD\_envelope business object. The ItemBasic business object is converted by passing through the RouterMap\_CwItemBasic\_to\_UCCnetDTD\_envelope and CwItemBasic\_to\_UCCnetDTD\_envelope\_publishCommand\_documentIdentifier router and translation maps.



7. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the ItemWithdrawal XML message in UCCnet format.
8. The AS2 channel connector passes this message to the AS2 channel server.
9. The AS2 channel server creates the digest, encrypts, and transmits the ItemWithdrawal message to UCCnet.
10. UCCnet generates and returns to the AS2 channel server an MDN to indicate successful receipt of the ItemWithdrawal message.

As a result of the ItemWithdrawal workflow, the item has been temporarily withdrawn from UCCnet and has been indicated as withdrawn in the PROCESSED\_GTIN table.

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## Processing a business object: example workflows (Schema support)

The information in the following sections outlines at a high level how the IBM WebSphere Business Integration Express for Item Synchronization product handles the following workflows, which support the schema-based implementations:

- **ItemAdd** — This workflow adds a new item to UCCnet. It is described in the section “ItemAdd workflow: adding a new item to UCCnet (schema support)” on page 22.
- **CatalogueItemNotification\_Add** — This workflow makes a new item available to trading partners and processes their responses to it. It is described in the section “CatalogueItemNotification\_Add workflow” on page 24. (ItemAdd and CatalogueItemNotification\_Add workflows normally occur sequentially.)
- **ItemChange** — This workflow updates item information in UCCnet. It is described in the section “ItemChange workflow: updating item information in UCCnet (schema support)” on page 26.
- **CatalogueItemNotification\_Change** — This workflow makes an updated item available to trading partners and processes their responses to it. It is described in the section “CatalogueItemNotification\_Change workflow: making updated item information available to trading partners and processing their responses to it” on page 28. (ItemChange and CatalogueItemNotification\_Change workflows normally occur sequentially.)
- **ItemDelist** — This workflow makes an item permanently unavailable to trading partners. It is described in the section “ItemDelist workflow: making an item permanently unavailable to trading partners (schema support)” on page 30.
- **ItemWithdrawal** — This workflow makes an item temporarily unavailable to all or selected trading partners. It is described in the section “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (schema support)” on page 32.

Refer to the Installation Guide for detailed information on creating port connections between collaboration objects and between collaboration objects and connectors.

UCCnet\_ItemSync, UCCnet\_requestWorklist, UCCnet\_processWorklist, and Notify\_by\_eMail collaboration objects log error messages if they encounter error situations during any stage of processing. See the section “Logging” on page 47 for detailed information. Tracing can also be enabled for all collaboration objects to record logical flaws and data processed. See the section “Tracing” on page 47 for detailed information.

**Note:** “AS2 channel server” used throughout this document refers to the iSoft Peer-to-Peer Agent.

## ItemAdd workflow: adding a new item to UCCnet (schema support)

The description below shows how high-level components of the Item Synchronization perform the ItemAdd workflow. In the ItemAdd workflow, a new item is added to UCCnet. The source of the flow is the creation of a new item in the source ERP application. This workflow does not result in notifications being sent to subscribed demand-side trading partners. Another workflow – CatalogueItemNotification\_Add, detailed in the section “CatalogueItemNotification\_Add workflow” on page 24 — accomplishes sending these notifications.

### Notes:

1. The mappings used in processing ItemAdd messages use value translation tables. The Interchange Server Express implements these tables as cross-references.
2. If you are not using schema support, refer to the documentation found in “ItemAdd workflow: adding a new item to UCCnet (DTD support)” on page 4.
  1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
  2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with a *Create* verb by passing it through the Sa4CwItemBasic input map.
  3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
  4. The UCCnet\_ItemSync collaboration object adds an entry for the new item to the PROCESSED\_GTIN table, setting the value for the **withdrawn** field for this entry to N. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
  5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemAdd transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
  6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the ItemCommandRouter collaboration object.
  7. The ItemCommandRouter collaboration object received the business object and determines that it represents an item to be added to the UCCnet, and passes the business object to the TO\_RCIR port.
  8. The ItemBasic business object is converted into an application-specific business object by the CwItemBasic\_to\_UCCnetXSD\_envelope\_registerCommand\_itemAddChange map.
  9. Once the conversion is complete, the business object is passed to UCCnet through the AS2 channel connector.
  10. The connector send the business object to the Data Handler for XML, which produces the ItemAdd XML message in UCCnet format.

11. The connector then passes the message to the AS2 channel server.
12. The server created the digest, encrypts, and then transmits the ItemAdd message to UCCnet.
13. UCCnet creates a worklist containing the notification response RCIR\_ADD\_Response and delivers it to the AS2 channel server.
14. A time-triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications and send them to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

15. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
16. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope by passing it the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope.
17. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its *From* port and passes it to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted into a UCCnetXSD\_envelope. The UCCnetGBO\_envelope business object is converted by passing through the UCCnetGBO\_envelope\_to\_UCCnetXSD\_envelope translation map.
18. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the SML message in UCCnet format.
19. The AS2 channel connector passes the message to the AS2 channel server.
20. The AS2 channel server creates the digest, and encrypts and transmits the message to UCCnet.
21. An RCIR\_ADD\_Response notification is generated by UCCnet to indicate a successful ItemAdd. This notification is returned to the AS2 channel server.
22. The AS2 channel server delivered the notification to the AS2 channel connector.
23. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope business object. The business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
24. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
25. The UCCnet\_processWorklist collaboration object receives the business object on its *From* port, identifies it as an RCIR\_ADD\_RESPONSE notification, and dispatches it to its RCIR\_ADD\_RESPONSE subdiagram.

As a result of the ItemAdd workflow, UCCnet has been updated with the new item information. Now, the supplier's demand-side trading partners must be made aware that the item is available. This on-going workflow, referred to as the CatalogueItemNotification\_Add workflow, is continued in the section "CatalogueItemNotification\_Add workflow."

## CatalogueItemNotification\_Add workflow

The information in this section describes how the high-level components of the Item Synchronization perform the CatalogueItemNotification\_Add workflow. In the CatalogueItemNotification\_Add workflow, a new item that was passed to UCCnet through the ItemAdd workflow (detailed in the section "ItemAdd workflow: adding a new item to UCCnet (schema support)" on page 22) is made available to the supplier's demand-side trading partners. The demand-side trading partners' responses to the new item are processed as well.

1. The UCCnet\_processWorklist collaboration object receives a UCCnetGBO\_envelope business object on its From port, identifies it as an RCIR\_ADD\_RESPONSE notification, and dispatches it to its RCIR\_ADD\_RESPONSE subdiagram.
2. The RCIR\_ADD\_RESPONSE subdiagram does the following:
  - a. Retrieves the ItemBasic business object for the received message.
  - b. Logs the notification in the audit\_log table. See the section "Using the audit\_log table" on page 35 for more information on the audit\_log table.
  - c. Sends the ItemBasic business object out through its CIN\_DISPATCHER port to the UCCnetXSD\_CIN\_Dispatcher collaboration object.

The UCCnetXSD\_CIN\_Dispatcher collaboration object receives the ItemBasic business object on its From port

3. It maps the ItemBasic business object to a UCCnetXSD\_envelope business object using the map defined in its collaboration parameters.
4. The collaboration object uses the category code from the new UCCnetXSD\_envelope to retrieve the GLNs of any trading partners that subscribe to the category found in the CIN\_DISPATCHER\_GLN\_FILE property.
5. The collaboration object sends a CatalogueItemNotification\_ADD (CIN\_ADD) business object out to the AS2 connector for each GLN found in the GLN subscription file.
6. At this point, the trading partners can respond with any of the following Catalogue Item Confirmation responses:

### REVIEW

This state is used to tell parties that an item is being reviewed by the retailer.

### REJECTED

This state is used to tell parties that an item is rejected and that no additional information is requested at this time.

### ACCEPTED

This state is used to tell initiators that an item has been accepted by the retailer, but has not yet been synchronized. This is similar to the UCCnet Pre-Authorization.

### SYNCHRONISED

This state is used to tell initiators that an item has been accepted by the retailer and will be synchronized. This is similar to the UCCnet Authorization.

The rest of this example assumes that a demand-side trading partner has responded with a SYNCHRONISED response.

7. UCCnet creates a worklist containing the notification response and delivers it to the AS2 channel server.
8. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.

9. The JTextRWLConnector received the worklist query command from its event directory and sends it to the Data Handler for XML.
10. The Data Handler for XML converts the worklist query command into a UCCnetXSD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the command related to it.
11. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, the business object is first converted to a UCCnetGBO\_envelope business object by passing it through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
12. The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its From port and passes it to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is converted to a UCCnetXSD\_envelope business object.
13. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
14. The AS2 channel connector passes the message to the AS2 channel server.
15. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
16. UCCnet performs a compliance check on the data and, if all the data exists in the appropriate format, generates a SYNCHRONISED notification to indicate a successful receipt.
17. The notification is returned to the AS2 channel server.
18. The AS2 channel server delivers the notification to the AS2 channel connector.
19. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
20. The AS2 channel connector delivers the business object to the UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing it through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
21. The UCCnet\_processWorklist collaboration object receives the object on its From port, identifies it as a CATALOGUE\_ITEM\_CONFIRMATION response, and dispatches it to its CATALOGUE\_ITEM\_CONFIRMATION subdiagram.
22. The CATALOGUE\_ITEM\_CONFIRMATION subdiagram carries out the following tasks:

- It sends an email to the recipients defined by the UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESObject business object, which is an instance of the Notify\_by\_eMail collaboration template. See “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
- It logs the event in the audit\_log table. See “Using the audit\_log table” on page 35 for more information on the audit log table.

## ItemChange workflow: updating item information in UCCnet (schema support)

The description below shows how high-level components of the Item Synchronization perform the ItemChange workflow. The ItemChange workflow sends updated information about an existing item to UCCnet. The source of the flow is a change to the data of an existing item in the ERP source application. Issuing a change does not result in notifications being sent to subscribed demand-side trading partners. Another workflow – CatalogueItemNotification\_Change, detailed in the section “CatalogueItemNotification\_Change workflow: making updated item information available to trading partners and processing their responses to it” on page 28 — accomplishes sending these notifications.

### Notes:

1. The mappings used in processing ItemChange messages use value translation tables. The InterChange Server Express implements these tables as cross-references.
2. If you are not using schema support, refer to the documentation found in “ItemChange workflow: updating item information in UCCnet (DTD support)” on page 11.
  1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
  2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with a *Create* verb by passing it through the Sa4CwItemBasic input map.
  3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
  4. The UCCnet\_ItemSync collaboration object checks if the item exists in the PROCESSED\_GTIN table and processes it, as follows:
    - If the item exists in the table and the value for its **withdrawn** field is set to N, the collaboration object continues processing it.
    - If the item exists in the table and the value for its **withdrawn** field is set to Y, the collaboration object does the following:
      - Changes the value of the entry’s **withdrawn** field to N.
      - Changes the value of the entry’s **delete** field to U.

- Changes the business object verb to *UNWITHDRAWN*.
- Continues processing it.
- If the item does not exist in the table, the collaboration object changes the verb to *Create* and adds it to the PROCESSED\_GTIN table, setting the entry's **withdrawn** field to N.

Assume for this example that the item already exists in the table and is not withdrawn. See the section "Using the PROCESSED\_GTIN table" on page 34 for more information on the PROCESSED\_GTIN table.

5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemChange transaction processed. See the section "Using the audit\_log table" on page 35 for more information about the audit\_log table.
6. The UCCnet\_ItemSync collaboration object delivered the ItemBasic business object to the ItemCommandRouter collaboration object.
7. The ItemCommandRouter collaboration object determines that the object represents an Item Change and send it to the TO\_RCIR port.
8. The ItemBasic business object is converted into an application-specific business object by using the CwItemBasic\_to\_UCCnetXSD\_envelope\_registerCommand\_itemAddChange map. It is then passed to UCCnet through the AS2 channel.
9. The AS2 channel connector send the business object to the Data Handler for XML, which produces the ItemChange XML message in UCCnet format.
10. The AS2 channel connector passes this message to the AS2 channel server.
11. The AS2 channel server creates the digest, encrypts, and transmits the ItemChange message to UCCnet.
12. UCCnet creates a worklist containing the notification response RCIR\_CHANGE\_Response and delivers it to the AS2 channel server.
13. A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered. See the section "Polling UCCnet for worklists" on page 37 for more information on this process.

14. The JTextRWLConnector retrieves the worklist query command from its event directory and sends it to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope. This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.
15. The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
16. The UCCnet\_requestWorklist collaboration object received the UCCnetGBO\_envelope business object on its From port and passes it to the AS2 channel connector over its To port. Before the business object arrives at the connector it is converted to a UCCnetXSD\_envelope by passing it through the UCCnetGBO\_envelope\_to\_UCCnetXSD\_envelope map.

17. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
18. The AS2 channel connector passes the message to the AS2 channel server.
19. The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
20. An RCIR\_CHANGE\_Response notification is generated by UCCnet to indicate a successful ItemChange. This notification is returned to the AS2 channel server.
21. The AS2 channel server delivers the notification to the AS2 channel connector.
22. The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope application-specific business object.
23. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
24. The UCCnet\_processWorklist collaboration object receives the business object on its From port, identifies it as an RCIR\_CHANGE\_RESPONSE notification, and dispatches it to its RCIR\_ADD\_RESPONSE subdiagram.

As a result of the ItemChange workflow, UCCnet has been updated with the new item information. Now, the supplier's demand-side trading partners must be notified that the item is available. This ongoing workflow, referred to as the CatalogueItemNotification\_Change workflow, is continued in the section "CatalogueItemNotification\_Change workflow: making updated item information available to trading partners and processing their responses to it."

## **CatalogueItemNotification\_Change workflow: making updated item information available to trading partners and processing their responses to it**

The information in this section describes how the high-level components of the Item Synchronization perform the CatalogueItemNotification\_Change workflow. In the CatalogueItemNotification\_Change workflow, updated item information that was passed to UCCnet through the ItemChange workflow (detailed in the section "ItemChange workflow: updating item information in UCCnet (schema support)" on page 26) is made available to the supplier's demand-side trading partners. The demand-side trading partners' responses to this item information must then be processed.

- The UCCnet\_processWorklist collaboration object receives a UCCnetGBO\_envelope business object on its From port, identifies it as an RCIR\_ADD\_RESPONSE notification, and dispatches it to its RCIR\_ADD\_RESPONSE subdiagram.
- The UCCnet\_processWorklist collaboration object receives a UCCnetGBO\_envelope business object on its From port, identifies it as an RCIR\_ADD\_RESPONSE notification, and dispatches it to its RCIR\_ADD\_RESPONSE subdiagram.
- The RCIR\_ADD\_RESPONSE subdiagram does the following:
  1. Retrieves the ItemBasic business object for the received message.
  2. Logs the notification in the audit\_log table. See the section "Using the audit\_log table" on page 35 for more information on the audit\_log table.
  3. Sends the ItemBasic business object out through its CIN\_DISPATCHER port to the UCCnetXSD\_CIN\_Dispatcher collaboration object.



- The UCCnetXSD\_CIN\_Dispatcher collaboration object receives the ItemBasic business object on its From port
- It maps the ItemBasic business object to a UCCnetXSD\_envelope business object using the map defined in its collaboration parameters.
- The collaboration object uses the category code from the new UCCnetXSD\_envelope to retrieve the GLNs of any trading partners that subscribe to the category found in the CIN\_DISPATCHER\_GLN\_FILE property.
- The collaboration object sends a CatalogueItemNotification\_CHANGE (CIN\_CHANGE) business object out to the AS2 connector for each GLN found in the GLN subscription file.
- At this point, the trading partners can respond with any of the following Catalogue Item Confirmation responses:

**REVIEW**

This state is used to tell parties that an item is being reviewed by the retailer.

**REJECTED**

This state is used to tell parties that an item is rejected and that no additional information is requested at this time.

**ACCEPTED**

This state is used to tell initiators that an items has been accepted by the retailer, but has not yet been synchronized. This is similar to the UCCnet Pre-Authorization.

**SYNCHRONISED**

This state is used to tell initiators that an item has been accepted by the retailer and will be synchronized. This is similar to the UCCnet Authorization.

The rest of this example assumes that a demand-side trading partner has responded with a SYNCHRONISED response.

- UCCnet creates a worklist containing the notification response and delivers it to the AS2 channel server.
- A chronologically triggered process must be configured to move query command messages tailored to retrieve specific UCCnet notifications to the event directory of the JTextRWLConnector:

**Note:** This process is not part of the product and must be customized by the user. The installation path is dependent on the path set when the product is installed.

- The JTextRWLConnector polls its event directory for any worklist query commands that have been delivered. See the section “Polling UCCnet for worklists” on page 37 for more information on this process.
- The JTextRWLConnector received the worklist query command from its event directory and sends it to the Data Handler for XML.
- The Data Handler for XML converts the worklist query command into a UCCnetXSD\_envelope business object. This business object contains the entire UCCnet message, including each individual data instance and the command related to it.
- The JTextRWLConnector passes the business object to a UCCnet\_requestWorklist collaboration object. However, the business object is first converted to a UCCnetGBO\_envelope business object by passing it through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.

- The UCCnet\_requestWorklist collaboration object receives the UCCnetGBO\_envelope business object on its From port and passes it to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is converted to a UCCnetXSD\_envelope business object.
- The AS2 channel connector sends the business object to the Data Handler for XML, which produces the XML message in UCCnet format.
- The AS2 channel connector passes the message to the AS2 channel server.
- The AS2 channel server creates the digest, encrypts, and transmits the message to UCCnet.
- UCCnet performs a compliance check on the data and, if all the data exists in the appropriate format, generates a SYNCHRONISED notification to indicate a successful receipt.
- The notification is returned to the AS2 channel server.
- The AS2 channel server delivers the notification to the AS2 channel connector.
- The AS2 channel connector sends the notification to the Data Handler for XML, which converts it into a UCCnetXSD\_envelope business object. This business object contains the entire UCCnet notification, including each individual data instance and the commands related to it.
- The AS2 channel connector delivers the business object to the UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing it through the UCCnetXSD\_envelope\_to\_UCCnetGBO\_envelope input map.
- The UCCnet\_processWorklist collaboration object receives the object on its From port, identifies it as a CATALOGUE\_ITEM\_CONFIRMATION response, and dispatches it to its CATALOGUE\_ITEM\_CONFIRMATION subdiagram
- The CATALOGUE\_ITEM\_CONFIRMATION subdiagram carries out the following tasks:
  - It sends an email to the recipients defined by the UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESEObject business object, which is an instance of the Notify\_by\_eMail collaboration template. See “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information on how to configure properties controlling email.
  - It logs the event in the audit\_log table. See “Using the audit\_log table” on page 35 for more information on the audit log table.

## ItemDelist workflow: making an item permanently unavailable to trading partners (schema support)

The description below shows how high-level components of the Item Synchronization perform the ItemDelist workflow. The ItemDelist workflow requests that UCCnet make an item in the repository permanently unavailable. After an item has been delisted, it cannot be returned to active trading. (To remove an item from active trading only temporarily, issue an ItemWithdrawal, as discussed in the section “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (schema support)” on page 32.) The source of the flow is the delist of an existing item in the ERP source application. This workflow does not result in notifications being sent to demand-side trading partners.

**Note:** If you are not using schema support, refer to the documentation found in “ItemDelist workflow: making an item permanently unavailable to trading partners (DTD support)” on page 19

1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with an *Delist* verb by passing it through the Sa4CwItemBasic input map.
3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
4. The UCCnet\_ItemSync collaboration object removes the item from the PROCESSED\_GTIN table. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemDelist transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
6. The UCCnet\_ItemSync collaboration object sends the ItemBasic business object through its *To* port to the ItemCommandRouter collaboration object.
7. The ItemCommandRouter receives the business object on its *From* port, and determines that the business object is being delisted.
8. The ItemCommandRouter sends the ItemBasic business object through its *TO\_CIN* port to the UCCnetXSD\_CIN\_Dispatcher collaboration object.
9. The UCCnetXSD\_CIN\_Dispatcher collaboration object receives the ItemBasic business object on its *From* port.
10. The collaboration object maps the ItemBasic business object to a UCCnetXSD\_envelope business object using the map defined by its collaboration parameters.
11. The collaboration object uses the category code from the new UCCnetXSD\_envelope to retrieve the GLNs of any trading partners that have subscribed to the categories found in the CIN\_DISPATCHER\_GLN\_FILE property of the business object.
12. The collaboration object sends a CatalogueItemNotification\_ADD (CIN\_ADD) business object to the AS2 connector for each GLN found in the GLN subscription file. Before the business objects arrive at the connector, they are converted into UCCnetXSD\_envelope business objects.
13. The AS2 channel connector sends each business object to the Data Handler for XML, which produces the CatalogueItemNotification\_delist XML message in UCCnet format.
14. The AS2 channel connector passes this message to the AS2 channel server.
15. The AS2 channel server creates the digest, encrypts, and transmits the CatalogueItemNotification\_delist message to UCCnet.
16. UCCnet generates an MDN to indicate successful receipt of the CatalogueItemNotification\_Delist message.

As a result of the ItemDelist workflow, the item has been permanently delisted in UCCnet and removed from the PROCESSED\_GTIN table.

## ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (schema support)

The description below shows how high-level components of the Item Synchronization perform the ItemWithdrawal workflow. The ItemWithdrawal workflow requests that UCCnet make an item temporarily unavailable to all or selected trading partners. An item might be temporarily removed, for instance, if it is out of season or not in production. It might also be made available only to a specific set of demand-side trading partners as a special order item. (To remove an item from active trading permanently, issue an ItemDelist, as discussed in the section “ItemDelist workflow: making an item permanently unavailable to trading partners (schema support)” on page 30.) The source of the flow is the withdrawal of an existing item in the ERP source application. This workflow does not result in notifications being sent to demand-side trading partners.

**Note:** If you are not using schema support, refer to the documentation found in “ItemWithdrawal workflow: making an item temporarily unavailable to all or selected trading partners (DTD support)” on page 20

1. A trigger from the ERP source provides the item (for example, an IDOC from SAP) to the connector portion of an adapter specific to that ERP. In this example, we use the SAPConnector. The SAPConnector converts the input from the ERP into a SAP application-specific business object.
2. The SAPConnector passes the SAP application-specific business object to a UCCnet\_ItemSync collaboration object, first transforming it into a generic ItemBasic business object with an Update verb by passing it through the Sa4CwItemBasic input map.
3. The UCCnet\_ItemSync collaboration object accepts the object on its *From* port and checks that required fields contain information, as detailed in the section “Checking that item data exists for fields required by UCCnet” on page 33. If all required fields are complete, the collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email to a configured address, as detailed in the section “Alerting email recipients of processing errors” on page 43. For this example, assume all fields are complete.
4. The UCCnet\_ItemSync collaboration object changes the **Withdrawn** column in the PROCESSED\_GTIN table to a value of Y. See the section “Using the PROCESSED\_GTIN table” on page 34 for more information on the PROCESSED\_GTIN table.
5. The UCCnet\_ItemSync collaboration object adds an entry to the audit\_log table to identify the ItemDelist transaction processed. See the section “Using the audit\_log table” on page 35 for more information about the audit\_log table.
6. The UCCnet\_ItemSync collaboration object delivers the ItemBasic business object to the *From* port of the ItemCommandRouter collaboration object by sending it out from its *To* port.
7. The ItemCommandRouter collaboration object uses a combination of the verb and the DeleteFlag field of the ItemBasic business object to determine that the business object is being withdrawn.

8. The ItemCommandRouter collaboration object sends the ItemBasic business object out from its *TO\_CIN* port to the *From* port of the UCCnetXSD\_CIN\_Dispatcher collaboration object.
9. The UCCnetXSD\_CIN\_Dispatcher collaboration object's logic does the following:
  - a. Maps from the incoming ItemBasic business object to a UCCnetXSD\_envelope business object using the map configured in the collaboration parameters.
  - b. Uses the category code from the new UCCnetXSD\_envelope business object to retrieve the GLN's of any trading partners subscribed to the category found in the CIN\_DISPATCHER\_GLN\_FILE, also a configurable collaboration property.
  - c. Sends out a CatalogueItemNotification\_ADD (CIN\_ADD) business object out to the AS2 connector for each GLN found in the GLN subscription file.
10. The UCCnetXSD\_CIN\_Dispatcher collaboration object sends the CatalogueItemNotification business object to the AS2 channel connector over its *To* port. Before the business object arrives at the connector, it is converted into a UCCnetXSD\_envelope business object. The ItemBasic business object is converted by passing through a CwItemBasic\_to\_UCCnetXSD\_envelope\_notifyCommand\_catalogueItem map.
11. The AS2 channel connector sends the business object to the Data Handler for XML, which produces the CatalogueItemNotification\_Delist XML message in UCCnet format.
12. The AS2 channel connector passes this message to the AS2 channel server.
13. The AS2 channel server creates the digest, encrypts, and transmits the CatalogueItemNotification\_Withdraw message to UCCnet.
14. UCCnet generates an MDN to indicate successful receipt of the CatalogueItemNotification\_Withdraw message.

As a result of the ItemWithdrawal workflow, the item has been temporarily withdrawn from UCCnet and has been indicated as withdrawn in the PROCESSED\_GTIN table.

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## Checking that item data exists for fields required by UCCnet

UCCnet requires its community of trading partners to provide standardized item data in particular formats to its registry. As a result, UCCnet requires requests for ItemAdd, ItemChange, ItemDelist, and ItemWithdrawal publications to have data provided for certain fields. If the data for the required fields is not present, UCCnet does not process the publications. Data might be missing if the ERP does not require information for these same fields and the ERP user is not aware of the UCCnet requirements.

To help ensure that ItemAdd, ItemChange, ItemDelist, and ItemWithdrawal publications are accepted by UCCnet, when a UCCnet\_ItemSync collaboration object accepts an ItemBasic business object, it checks that the following fields that are required by UCCnet to have data contain information (i.e., are not NULL):

- For ItemAdd and ItemChange publications:
  - gtin
  - dimension
  - height
  - volume

- productHierarchy
- barCodeId
- unitOfWgt (if either the grossWeight or netWeight fields contain values)
- For ItemDelist and ItemWithdrawal publications:
  - gtin

**Note:** The UCCnet\_ItemSync collaboration object checks only that the required fields are not NULL. It does not verify that the information within them is in the correct format for UCCnet.

If all required fields are complete, the UCCnet\_ItemSync collaboration object continues processing it. If all required fields are not complete, the collaboration object aborts processing and sends an email requesting the missing information to an email address provided in the UCCnet\_ItemSync collaboration object's SEND\_MAIL\_TO configuration property. See the section "Alerting email recipients of processing errors" on page 43 for more information on how email is handled within the product.

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## Using the PROCESSED\_GTIN table

The PROCESSED\_GTIN table is a relational table provided with the IBM WebSphere Business Integration Express for Item Synchronization product. It maintains the complete list of the supplier's items that exist in the UCCnet repository by using each item's tracking ID, or GTIN, as the primary key. This table permits a UCCnet\_processWorklist collaboration object to process incoming INITIAL\_ITEM\_LOAD\_REQUEST commands without the need to communicate with the back-end ERP system. See the section "INITIAL\_ITEM\_LOAD\_REQUEST subdiagram" on page 40 for more information on this subdiagram.

The UCCnet\_ItemSync and UCCnet\_processWorklist collaboration objects both interact with this table. A UCCnet\_ItemSync collaboration object updates the table each time it processes an ItemBasic business object. The collaboration object performs this processing only if all of the fields for which UCCnet requires data are complete (see the section "Checking that item data exists for fields required by UCCnet" on page 33 for more information). The type of processing the collaboration object performs depends on the verb attached to the ItemBasic business object, as follows:

- If the ItemBasic business object has a *Create* verb, the UCCnet\_ItemSync collaboration object checks if the item exists in the PROCESSED\_GTIN table and processes it, as follows:
  - If the item does not already exist in the PROCESSED\_GTIN table, the collaboration object adds an entry for it to the table, and sets the value for the **withdrawn** field for this entry to N.
  - If the item already exists in the table, the collaboration object changes its verb to *Update*.
- If the ItemBasic business object has an *Update* verb, the UCCnet\_ItemSync collaboration object checks if the item exists in the PROCESSED\_GTIN table and processes it, as follows:
  - If the item exists in the table and the value for its **withdrawn** field is set to N, the collaboration object continues processing it.
  - If the item exists in the table and the value for its **withdrawn** field is set to Y, the collaboration object does the following:
    - Changes the value of the entry's **withdrawn** field to N.

- Changes the value of the entry's **delete** field to U.
- Changes the business object verb to *UNWITHDRAWN*.
- Continues processing it.
- If the item does not exist in the table, the collaboration object changes the business object's verb to *Create* and adds it to the PROCESSED\_GTIN table, setting the entry's **withdrawn** field to N.
- If the ItemBasic business object has a *Delist* verb, the UCCnet\_ItemSync collaboration object removes the item from the PROCESSED\_GTIN table.
- If the ItemBasic business object has a *Withdraw* verb, the UCCnet\_ItemSync collaboration object locates the item in the PROCESSED\_GTIN table and sets the value for the entry's **withdrawn** field to Y. This action prevents the publication of the item in response to an incoming INITIAL\_ITEM\_LOAD\_REQUEST.

The UCCnet\_processWorklist collaboration object reads this table during processing, as follows:

- Its NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram verifies that specific items are in the table.
- Its INITIAL\_ITEM\_LOAD\_REQUEST subdiagram generates publication messages for all items in the table with a withdrawn value of N.

The UCCnet\_ItemSync collaboration object connects to the database through its GtinDB\_USER, GtinDB\_PASSWORD, JDBC\_DRIVER, and JDBC\_URL configuration properties; the UCCnet\_processWorklist collaboration object, through its DB\_USER, DB\_PASSWORD, JDBC\_DRIVER, and JDBC\_URL configuration properties. See Item Synchronization Collaboration for detailed information on these properties.

Connection information for the PROCESSED\_GTIN table is configured as part of the UCCnet\_ItemSync collaboration. The GTIN and WITHDRAWN columns are added to the table via running the supplied InitializeRelationshipTables.sql file for the database type (i.e., DB2<sup>®</sup>, or Microsoft<sup>®</sup> SQL Server). See the Installation Guide for installation instructions.

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## Using the audit\_log table

The audit\_log table is provided with the IBM WebSphere Business Integration Express for Item Synchronization product. It is used to track the events associated with UCCnet activities to support complete end-to-end auditing. This audit support provides irrefutable documentation that transmissions have occurred between trading partners. It also provides a profile of which trading partners are participating in the trading community and with which products that participation is associated.

The audit service is composed of three components:

- An audit\_log table that receives log entries from each participant component in the solution. A sample entry includes the following fields. Sample values are included for each:
  - LOG\_SEQ\_NO — 1
  - LOG\_SOURCE\_NAME — UCCnet2
  - GLN\_CODE — NA
  - SOURCE\_SYSTEM
  - PRODUCT\_ID — 2050000000454
  - VERB\_NAME — Create

- TRANS\_ID — SAPConnector\_1015606877187\_1
- TRANS\_TYPE — UCCnet\_processWorklist
- TRANS\_STATUS — ITEM\_ADD\_CHANGE
- MSG\_FILEPATH\_TEXT — C:\IBM\WebSphereICS\UCCnet-1051628537493.bo
- LOG\_DTTM - May 5, 2003 1:44:56 PM
- A logging framework that is utilized by Collaborations and Adapters to log critical events to the audit\_log table.
- A report generation facility to support data analysis and visualization.

UCCnet\_ItemSync and UCCnet\_processWorklist collaboration objects impact the audit\_log table. Any time an item is added to, updated or delisted within, or withdrawn from the ERP, and an ItemBasic business object is subsequently passed to a UCCnet\_ItemSync collaboration object, the collaboration object records an entry in the audit\_log table detailing the event. A UCCnet\_processWorklist collaboration object's NEW\_ITEM\_PUBLICATION\_REQUEST, INITIAL\_ITEM\_LOAD\_REQUEST, ITEM\_ADD\_CHANGE, and AUTHORIZATION\_RESPONSES subdiagrams also record entries in the audit\_log table during processing. See the sections "NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram" on page 39, "INITIAL\_ITEM\_LOAD\_REQUEST subdiagram" on page 40, "ITEM\_ADD\_CHANGE subdiagram" on page 40, and "AUTHORIZATION\_RESPONSES subdiagram" on page 41 for more information about how these subdiagrams operate. Each audit entry is associated with the value listed for the collaboration object's SUPPLIER\_NAME attribute.

Connection from the UCCnet\_ItemSync and UCCnet\_processWorklist collaboration objects to the audit\_log table is provided by the IBM JDBC Driver for DB2, or Microsoft SQL Server. Table creation is performed via running the supplied audit\_log.sql file for the database type (i.e., DB2, or Microsoft SQL Server). See the Installation guide for installation instructions.

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## Using the trading\_partner table

The trading\_partner table, or GLN table, is a relational table provided with the IBM WebSphere Business Integration Express for Item Synchronization product. It maintains the complete list of trading partners by using the Global Location Number (GLN) of each as the key.

The NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram of a UCCnet\_processWorklist collaboration object checks that a new item or updated item information to be published is supplied by a trading partner from this table. It also verifies that the demand-side trading partners to whom notification will be sent are in the table. The INITIAL\_ITEM\_LOAD\_REQUEST subdiagram of a UCCnet\_processWorklist collaboration object checks the trading\_partner table to verify that the demand-side trading partner requesting the INITIAL\_ITEM\_LOAD\_REQUEST exists. The ITEM\_ADD\_CHANGE subdiagram of a UCCnet\_processWorklist collaboration object utilizes maps that read from the trading\_partner table.

Connection information for the trading\_partner table is configured as part of the UCCnet\_processWorklist collaboration object. The following columns are added to the table via running the supplied InitializeRelationshipTables.sql file for the database type (i.e., DB2, or Microsoft SQL Server):

- gln\_code
- trading\_partner\_name



- trading\_partner\_contact
- trading\_partner\_group
- trading\_partner\_type
- initial\_load\_flag

See the Installation guide for installation instructions.

**Note:** After these columns are in place, the table must be populated manually through methods provided by the individual database.

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## Polling UCCnet for worklists

UCCnet never spontaneously sends notification messages; it must be polled for them via query command messages tailored to retrieve the specific UCCnet notifications. Specific worklist query commands are supplied with the IBM WebSphere Business Integration Express for Item Synchronization product. The commands include messages to query all notifications, all items, or the first five items.

A chronologically triggered process must be configured to move the query command messages from this directory to the event directory of the JTextRWLConnector. This process is not part of the product and must be customized by the user. The JTextRWLConnector polls its event directory for any worklist query commands that might have been delivered at a polling interval, which is set by the user. When the JTextRWLConnector finds a worklist query command, it sends it to the Data Handler for XML, which converts it into a UCCnetXXX\_envelope business object.

**Note:** In this and the following example names, the variable XXX specifies the XML definition type used (DTD or XSD).

This business object contains the entire UCCnet message, including each individual data instance and the commands related to it.

The JTextRWLConnector then passes this business object to a UCCnet\_requestWorklist collaboration object, which passes it to the AS2 channel server for transmission to UCCnet. UCCnet responds with the appropriate worklist, which initiates ongoing workflows in the solution.

The DTD\_URL and SET\_UNIQUE\_IDS properties of the UCCnet\_requestWorklist collaboration object affect the outgoing XML message in systems using the DTD XML definition type. The DocType line in the XML is set according to the value of the DTD\_URL property. If outgoing messages are required to have unique message IDs, the SET\_UNIQUE\_IDS property must be set to ALL

Both the worklist request XML and the polling interval can be changed. For example, the worklist query command XML message tailored for Authorization Notifications (query type="NOTIFICATION" with name="AUTHORIZATION\_INFORMATION" and status="UNREAD") can be used to request the worklist authorization notification contents. A similar request can be constructed to read any dead letter notifications. As an alternative, all notifications can be requested. The polling interval is set in the **PollFrequency** attribute of the JTextRWLConnector and is in milliseconds.

The UCCnet\_requestWorklist collaboration supports the notification type="PUBLICATION\_INFORMATION" for the topics PEND\_PUBLICATION, PRE\_AUTHORIZATION, AUTHORIZATION, REJECT\_PUBLICATION,

DE\_AUTHORIZATION, and in the notifications for NEW\_ITEM\_PUBLICATION\_REQUEST and ITEM\_INFORMATION (ITEM\_ADD, ITEM\_CHANGE).

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## Using subdiagrams

All messages initiated from UCCnet are in UCCnet XML format. Since the UCCnet XML format's top-level tag (<envelope>) is the same for all messages, a component is needed to distinguish among the various notification and response XML messages and return different business objects for them. An object based on the UCCnet\_processWorklist collaboration template performs this task.

A UCCnet\_processWorklist collaboration object is instantiated when the AS2 channel connector forwards to it a UCCnetGBO\_envelope business object. This business object is created from the following process:

1. The AS2 channel connector receives the UCCnet worklist document (envelope) from the AS2 channel server.
2. The AS2 channel connector sends the document to the Data Handler for XML, which converts it into a UCCnetXXX\_envelope business object. In these business object names, XXX is either DTD or XSD, depending on whether you are using a DTD XML definition or a schema-based XML definition.
3. The AS2 channel connector delivers the business object to a UCCnet\_processWorklist collaboration object. However, first the business object is converted to a UCCnetGBO\_envelope business object by passing through an input map of the form UCCnetXXX\_envelope\_to\_UCCnetGBO\_envelope.

The UCCnet\_processWorklist collaboration object parses the UCCnetGBO\_envelope business object, creating a separate UCCnetGBO\_envelope business object for each notification or response. The collaboration object routes each business object representing a single notification to the appropriate subdiagram. Each subdiagram handles a particular set of notification or response messages, as follows:

- NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram — Handles notifications associated with the single notification topic NEW\_ITEM\_PUBLICATION\_REQUEST. See the section “NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram” on page 39 for more information on this subdiagram.
- INITIAL\_ITEM\_LOAD\_REQUEST subdiagram — Handles notifications associated with the single notification topic INITIAL\_ITEM\_LOAD\_REQUEST. See the section “INITIAL\_ITEM\_LOAD\_REQUEST subdiagram” on page 40 for more information on this subdiagram.
- ITEM\_ADD\_CHANGE subdiagram — Handles notifications for the ITEM\_ADD and ITEM\_CHANGE topics. See the section “ITEM\_ADD\_CHANGE subdiagram” on page 40 for more information on this subdiagram.
- CATEGORY\_ADD\_CHANGE subdiagram — Handles notifications for the CATEGORY\_ADD and CATEGORY\_CHANGE topics. See the section “CATEGORY\_ADD\_CHANGE subdiagram” on page 41 for more information on this subdiagram.
- AUTHORIZATION\_RESPONSES subdiagram — Handles notifications for the topics AUTHORIZE, DE\_AUTHORIZATION, PEND\_PUBLICATION, PRE\_AUTHORIZATION, and REJECT\_PUBLICATION. See the section “AUTHORIZATION\_RESPONSES subdiagram” on page 41 for more information on this subdiagram.

- `DEAD_LETTER_PUB_RECEIPT` subdiagram — Handles notifications associated with the single notification topic `DEAD_LETTER_PUB_RECEIPT`. See the section “`DEAD_LETTER_PUB_RECEIPT` subdiagram” on page 41 for more information on this subdiagram.
- `CATALOGUE_ITEM_CONFIRMATION` — Handles the process of the `CATALOGUE_ITEM_CONFIRMATION` responses, received by the `UCCnet_processWorklist` collaboration object. See “`CATALOGUE_ITEM_CONFIRMATION`” on page 42 for more information.
- `RCIR_ADD_RESPONSE` — Handles notifications for the `ADD` and `CHANGE` topics. See the section “`RCIR_ADD_RESPONSE`” on page 42 for more information.
- `SIMPLE_RESPONSE` subdiagram — Handles immediate responses to commands such as MDNs from UCCnet. See the section “`SIMPLE_RESPONSE` subdiagram” on page 43 for more information on this subdiagram.
- `UNKNOWN_MESSAGES` subdiagram — Handles incoming messages not recognized as supported. See the section “`UNKNOWN_MESSAGES` subdiagram” on page 43 for more information on this subdiagram.
- `UNKNOWN_RESPONSE` subdiagram — Handles incoming messages that are recognized as notification messages, but are not supported. See the section “`UNKNOWN_RESPONSE` subdiagram” on page 43 for more information on this subdiagram.

## **NEW\_ITEM\_PUBLICATION\_REQUEST subdiagram**

This subdiagram handles notifications associated with the single notification topic `NEW_ITEM_PUBLICATION_REQUEST`. This notification is generated as a result of the following:

- A new item being added to the source ERP.
- Item data being updated in the source ERP.
- A demand-side trading partner requesting through UCCnet that a supply-side trading partner publish a specific item (GTIN) or items to it so it can synchronize them. The demand-side partner’s request produces a notification in the worklist of the supply-side trading partner. This notification has the `type="NEW_ITEM_PUBLICATION_REQUEST"`.

The logic in this subdiagram does the following:

1. Verifies that the GTIN value associated with the item is in the `PROCESSED_GTIN` table and that the item is not withdrawn. See the section “Using the `PROCESSED_GTIN` table” on page 34 for more information on the `PROCESSED_GTIN` table.
2. Checks that the new item or new item information to be published is supplied by a trading partner listed in the `trading_partner` table and verifies that the demand-side trading partners to whom notification will be sent are also in this table. See the section “Using the `trading_partner` table” on page 36 for more information on the `trading_partner` table.
3. Sends the `ItemPublicationAdd` or `ItemPublicationChange` for the GTIN to the demand-side trading partners identified in the business object. It accomplishes this by mapping the business object into an application-specific business object of the form `UCCnetXXX_envelope` business object.

**Note:** In this and the following example names, the variable `XXX` specifies the XML definition type used (DTD or XSD).

The business object is converted by passing through router and transformation maps of the forms

RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetXXX\_envelope and UCCnetGBO\_envelope\_notification\_to\_UCCnetXXX\_envelope\_publishCommand. The message is sent over the *NEW\_ITEM\_PUBLICATION\_REQUEST* port to the AS2 channel connector, from the AS2 channel connector to the AS2 channel server, and then to UCCnet.

4. Logs the notification in the audit\_log table. See the section “Using the audit\_log table” on page 35 for more information on the audit\_log table.

The follow-up workflow is that of the second subflow of either the ItemPublicationAdd or ItemPublicationChange workflow, as detailed in the sections “ItemPublicationAdd subflow 2: processing trading partners’ responses to a new item” on page 9 and “ItemPublicationChange subflow 2: processing trading partners’ responses to updated item information” on page 16.

## INITIAL\_ITEM\_LOAD\_REQUEST subdiagram

This subdiagram handles notifications associated with the single notification topic INITIAL\_ITEM\_LOAD\_REQUEST. This notification is generated as a result of a demand-side trading partner requesting through UCCnet to initiate synchronizing all the items currently traded with a given supply-side trading partner. The demand-side partner’s request produces a notification in the worklist of the supply-side trading partner.

The logic in this subdiagram does the following:

1. Writes a record to the audit\_log table indicating receipt of the INITIAL\_ITEM\_LOAD\_REQUEST. See the section “Using the audit\_log table” on page 35 for more information on the audit\_log table.
2. Checks the trading\_partner table to verify that the GLN requesting the INITIAL\_ITEM\_LOAD\_REQUEST exists. See the section “Using the trading\_partner table” on page 36 for more information on the trading\_partner table.
3. Sends the business object to UCCnet over the *INITIAL\_ITEM\_LOAD\_REQUEST* port via the AS2 channel connector.

The follow-up workflow is that of an ItemPublicationAdd subflow 1 targeted to the trading partner who initiated the flow, as detailed in the section “ItemPublicationAdd subflow 1: making a new item available to trading partners” on page 7. The PROCESSED\_GTIN table provides the list of GTINs for the ItemPublicationAdd, and the incoming message provides the trading partner’s GLN. There are no external business process steps for this flow.

## ITEM\_ADD\_CHANGE subdiagram

This subdiagram handles notifications for the ITEM\_ADD and ITEM\_CHANGE topics. These notifications are sent by UCCnet to indicate completion of a particular item synchronization request, such as one initiated by an ItemAdd or ItemChange workflow. The subdiagram logic does the following:

1. Maps the UCCnetGBO\_envelope business object into an application-specific business object of the form UCCnetXXX\_envelope business object.

**Note:** In this and the following example names, the variable XXX specifies the XML definition type used (DTD or XSD).

The UCCnetGBO\_envelope business object is converted by passing through router and transformation maps of the forms RouterMap\_UCCnetGBO\_envelope\_to\_UCCnetXXX\_envelope and UCCnetGBO\_envelope\_notification\_to\_UCCnetXXX\_envelope\_

publishCommand. The business object contains the corresponding ItemPublicationAdd or ItemPublicationChange request. This message includes a request for UCCnet to publish the item to the trading partners listed in the message.

2. Sends the ItemPublicationAdd or ItemPublicationChange request over the *ITEM\_ADD\_CHANGE* port to the AS2 channel connector.
3. Logs the notification in the audit\_log table. See the section “Using the audit\_log table” on page 35 for more information on the audit\_log table.

The follow-up workflow is that of the first subflow of either the ItemPublicationAdd or ItemPublicationChange workflow, as detailed in the sections “ItemPublicationAdd subflow 1: making a new item available to trading partners” on page 7 and “ItemPublicationChange subflow 1: making updated item information available to trading partners” on page 14.

## **CATEGORY\_ADD\_CHANGE subdiagram**

This subdiagram handles notifications for the CATEGORY\_ADD and CATEGORY\_CHANGE topics. These notifications are sent by UCCnet when a request is made by the supply-side trading partner to add or change a category to better classify or organize the items in its available inventory. The subdiagram logic sends an email containing the category maintenance information to selected recipients by instantiating a collaboration object based on the Notify\_by\_eMail collaboration template called UCCnet\_processWorklist\_CATEGORY\_ADD\_CHANGEObject. The email message, subject, and recipients are configured in this collaboration object’s EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information. There is no follow-on flow.

## **AUTHORIZATION\_RESPONSES subdiagram**

This subdiagram handles notifications for the following topics: AUTHORIZE, DE\_AUTHORIZATION, PEND\_PUBLICATION, PRE\_AUTHORIZATION, and REJECT\_PUBLICATION. UCCnet generates these notifications as a result of authorization actions taken by demand-side trading partners, which are forwarded to UCCnet. Typically they are issued in response to an ItemPublicationAdd issued by the supply-side trading partner, but they can be issued at anytime. The subdiagram logic does the following:

1. Instantiates a collaboration object based on the Notify\_by\_eMail collaboration template called UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESObject, which sends an email to selected recipient(s). The email message, subject, and recipients are configured in this collaboration object’s EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section “Sending email through UCCnet\_processWorklist collaboration object subdiagrams” on page 44 for more information.
2. Logs the event in the audit\_log table. See “Using the audit\_log table” on page 35 for more information on the audit\_log table.

## **DEAD\_LETTER\_PUB\_RECEIPT subdiagram**

This subdiagram handles notifications for the DEAD\_LETTER\_PUB\_RECEIPT topic. These notifications result from a supplier request for which a target demand-side trading partner has not subscribed. The subdiagram logic instantiates a collaboration object based on the Notify\_by\_eMail collaboration template called

UCCnet\_processWorklist\_DEAD\_LETTER\_PUB\_RECEIPTObject, which sends an email to selected recipient(s). The email message, subject, and recipients are configured in this collaboration object's EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44 for more information.

## CATALOGUE\_ITEM\_CONFIRMATION

This subdiagram handles the process of the CATALOGUE\_ITEM\_CONFIRMATION responses, received by the UCCnet\_processWorklist collaboration object. UCCnet generates these responses as a result of the authorization actions taken by demand-side trading partners. The responses can have one of the following states:

- SYNCHRONISED
- ACCEPTED
- REVIEW
- REJECTED

The responses are normally generated in answer to a request generated by the supply-side trading partner as part of the CatalogueItemNotification\_Change workflow. However, the responses can be issued at any time. This subdiagram carries out the following logic:

- It instantiates a collaboration object called UCCnet\_processWorklist\_CATALOGUE\_ITEM\_CONFIRMATIONObject, based on the Notify\_by\_eMail collaboration template. This collaboration object sends an email to a set of defined recipients. The message, subject, and recipient list are defined by the collaboration object's EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectfully. See the section "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44 for more information.
- It logs the event in the audit\_log table. See the section "Using the audit\_log table" on page 35 for more information.

## RCIR\_ADD\_RESPONSE

This subdiagram handles notifications for the ADD and CHANGE topics. These notifications are sent by UCCnet when a request is made by the supply-side trading partner to add or change an item.

The subdiagram logic first records the occurrence of the RCIR\_RESPONSE message in the audit\_log. Then, it builds a skeleton ItemBasic business object, defining only the UPCEANCODE and ITEM\_DOMAIN attributes. It next sends this ItemBasic business object out through the DestinationAppRetrieve port so that the user can respond with a completed ItemBasic Business Object. In a production environment, an additional process is required to retrieve the fully defined ItemBasic business object using the UPCEANCODE and ITEM\_DOMAIN fields, and to return it to the DestinationAppRetrieve port.

Once the fully defined ItemBasic business object has been returned, the RCIR\_ADD\_RESPONSE subdiagram sends it out through the CIN\_DISPATCHER port to the UCCnetXSD\_CIN\_Dispatcher collaboration object. This action triggers the UCCnetXSD\_CIN\_Dispatcher collaboration object to generate a CATALOGUE\_ITEM\_NOTIFICATION message and send it to any interested trading partners.

## **SIMPLE\_RESPONSE subdiagram**

This subdiagram handles immediate responses to commands such as MDNs from UCCnet. The subdiagram logic instantiates a collaboration object based on the Notify\_by\_eMail collaboration template called UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject, which sends an email to selected recipient(s). The email message, subject, and recipients are configured in this collaboration object's EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44 for more information.

## **UNKNOWN\_MESSAGES subdiagram**

This subdiagram handles incoming messages not recognized as supported. The subdiagram logic instantiates a collaboration object based on the Notify\_by\_eMail collaboration template called UCCnet\_processWorklist\_UNKNOWN\_MESSAGESObject, which sends an email to selected recipient(s). The email message, subject, and recipients are configured in this collaboration object's EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44 for more information.

## **UNKNOWN\_RESPONSE subdiagram**

This subdiagram handles incoming messages that are recognized as notification messages, but are not supported. The subdiagram logic instantiates a collaboration object based on the Notify\_by\_eMail collaboration template called UCCnet\_processWorklist\_UNKNOWN\_RESPONSEObject, which sends an email to selected recipient(s). The email message, subject, and recipients are configured in this collaboration object's EMAIL\_MESSAGE, EMAIL\_SUBJECT, and EMAIL\_NOTIFICATION\_RCPTS configuration properties, respectively. See the section "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44 for more information.

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## **Sending email**

UCCnet\_ItemSync and UCCnet\_processWorklist collaboration objects can be configured to send email to alert when processing errors occur. A UCCnet\_processWorklist collaboration object can also instantiate collaboration objects based on the Notify\_by\_eMail collaboration template to respond by email to configured recipients when specific processing circumstances occur.

For more information on these topics, see the following sections:

- "Alerting email recipients of processing errors"
- "Sending email through UCCnet\_processWorklist collaboration object subdiagrams" on page 44

## **Alerting email recipients of processing errors**

UCCnet\_ItemSync and UCCnet\_processWorklist collaboration objects can be configured to send email to alert recipients when processing errors occur.

### **UCCnet\_ItemSync collaboration object**

This collaboration object uses two configuration properties to control whether email is sent and to identify the mail recipients.

- **SEND\_EMAIL** — This property controls whether email is sent to the email address specified in the **SEND\_EMAIL\_TO** configuration property. Set the property value to all to send email or to none to not send email. If the value is left empty, no email is sent even if recipients exist in the **SEND\_EMAIL\_TO** property.
- **SEND\_EMAIL\_TO** — This property defines the email addresses to which error messages are sent. Multiple addresses can be provided in a comma-delimited list. This property must be configured by the user.

#### **UCCnet\_processWorklist collaboration object**

This collaboration object uses one configuration property to control whether email is sent and to identify the mail recipients. The **SEND\_EMAIL\_TO** property defines the email addresses to which error messages are sent. Multiple addresses can be provided in a comma-delimited list. If a value exists for this property, the collaboration object sends email. If the property is left blank, the object does not send email. This property must be configured by the user.

## **Sending email through UCCnet\_processWorklist collaboration object subdiagrams**

A **UCCnet\_processWorklist** collaboration object contains several subdiagrams that respond to specific types of workflow processing. Several of these subdiagrams include functionality that sends an email to a set of configured addresses by instantiating a collaboration object based on the **Notify\_by\_eMail** collaboration template, as follows:

- **CATEGORY\_ADD\_CHANGE** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_CATEGORY\_ADD\_CHANGEObject**.
- **AUTHORIZATION\_RESPONSES** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_AUTHORIZATION\_RESPONSESObject**.
- **DEAD\_LETTER\_PUB\_RECEIPT** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_DEAD\_LETTER\_PUB\_RECEIPTObject**.
- **CATALOGUE\_ITEM\_CONFIRMATION** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_CATALOGUE\_ITEM\_CONFIRMATION**.
- **SIMPLE\_RESPONSE** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_SIMPLE\_RESPONSEObject**.
- **UNKNOWN\_MESSAGES** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_UNKNOWN\_MESSAGESObject**.
- **UNKNOWN\_RESPONSE** subdiagram — Instantiates a collaboration object called **UCCnet\_processWorklist\_UNKNOWN\_RESPONSEObject**.

Each of these objects based on the **Notify\_by\_eMail** collaboration template can be configured to contain the email message, subject, and recipients specific to its processing situation through its **EMAIL\_MESSAGE**, **EMAIL\_SUBJECT**, and **EMAIL\_NOTIFICATION\_RCPTS** configuration properties, respectively. These properties can also contain the names of files, which permits messages, subjects, and recipients to be shared among multiple collaboration objects. Also, more than one recipient can be specified to receive email through use of a comma-delimited list. Plus, email message and subject text can be constants that contain variables. The **Notify\_by\_eMail** collaboration object substitutes data from the business object into these variables dynamically. See the following sections for more information on these features:

- “Specifying message text, subjects, and recipients in external files” on page 45



- “Specifying changing individual or multiple message recipients”
- “Using substitution variables in message and subject text” on page 46

The value of the AUTO\_RESPOND property of the UCCnet\_processWorklist collaboration object determines whether email is sent. The value of this collaboration object’s DTD\_URL property sets the DTD line in the XML in any outgoing XML message.

### **Specifying message text, subjects, and recipients in external files**

A Notify\_by\_eMail collaboration object allows the contents of its properties that specify email message text, subject text, and recipients to contain the names of files. These files contain the actual email message text, subject text, and addresses, and can be easily modified without modifying the using collaboration objects. This feature permits messages, subjects, and recipients to be shared among multiple collaboration objects. A solution’s messages, subjects, and recipients can all be contained in one easily modifiable directory.

A Notify\_by\_eMail collaboration object uses the following configuration properties to identify the email message text, subject text, and recipients:

#### **EMAIL\_MESSAGE**

Identifies the message text.

#### **EMAIL\_SUBJECT**

Identifies the subject text.

#### **EMAIL\_NOTIFICATION\_RCPTS**

Identifies the recipient or list of recipients.

The collaboration object distinguishes whether the content of a property is an actual value or filename based on whether the value is prefixed by the character @. If the value of the property is prefixed with the character @, the Notify\_by\_eMail collaboration object interprets the rest of the value as a filename. The collaboration object reads the value of the file into a String variable in preparation for further processing. Files must be identified by their fully qualified names.

For instance, if the filename containing the email recipient(s) is c:\Email\_Files\CategoryManagerRole.txt, set the value of the EMAIL\_NOTIFICATION\_RCPTS property, as follows:

```
@c:\Email_Files\CategoryManagerRole.txt
```

If the value of a property does not start with the character @, the Notify\_by\_eMail collaboration object obtains the email value directly from the attribute.

### **Specifying changing individual or multiple message recipients**

A Notify\_by\_eMail collaboration object allows all email messages to be routed to an administrator or to a specific role in an organization (like a Category Manager), without the need to maintain the email recipient’s fully qualified email address in every collaboration object that might send email. By placing the email address in an external file, if the address changes, the file can be modified without having to reconfigure the using collaboration objects. More than one recipient can be specified to receive the email through use of a comma-delimited list. The comma-delimited list can be specified in the business object attribute or in the external file pointed to by the attribute.

## Using substitution variables in message and subject text

Email message and subject text can be constants that contain variables. A collaboration object based on the Notify\_by\_eMail template substitutes data from the business object into these variables dynamically. Variables to be substituted must be enclosed in the prefix characters `{` and the suffix character `}`. As a result, the substitution variables in the email message and subject text must appear as:

`${variable_name}`

**Note:** These characters might have to be changed to meet National Language requirements.

The supported values for *variable\_name*, along with the values that the collaboration object actually inserts in the text, are as follows:

### **getRoot**

Substitutes the entire triggering business object.

### **getDate**

Substitutes the current date and time.

### **getName**

Substitutes the name of the triggering business object.

### **getVerb**

Substitutes the verb of the triggering business object.

### **Any attribute name**

Substitutes the value of the named attribute from the triggering business object.

If the value for *variable\_name* does not match one of the specific values above, the collaboration object interprets it as the name of a business object attribute. For instance, in the following sample message:

```
UCCnet_processWorklist_AUTHORIZATION_RESPONSES.mail:      \  
Date: ${getDate}                                          \  
BusinessObject: ${getName}.${getVerb}                    \  
Topic:                                                     \  
${ROOT.body[0].response.acknowledge.acknowledgement.    \  
subdocumentValid[0].subdocumentValid[0]resultList[0].   \  
notification.topic}                                       \  
GLN:                                                      \  
${ROOT.body[0].response.acknowledge.acknowledgement.    \  
subdocumentValid[0].subdocumentValid[0].resultList[0].  \  
notification.notificationDetail.transactionInformation.  \  
entityIdentification.globalLocationNumber.gln}          \  
GTIN:                                                     \  
${TLO.body.body_Wrapper1[0].response.acknowledge.       \  
acknowledgement.subdocumentValid[0].subdocumentValid[0]. \  
resultList.resultList_Wrapper1[0].notification.        \  
notificationDetail.authorizationNotification.publication. \  
item.itemInformation.globalTradeItemNumber.gtin}
```

`${getRoot}`

the following variables are filled in automatically during the generation of the message, as follows:

- `${getDate}`, with the current date and time.
- `${getName}`, with the name of the triggering business object.
- `${getVerb}`, with the verb of the triggering business object.

- All variables beginning with `${ROOT.body[0]. . .}`, with the values for those attributes.
- `${getRoot}` with the entire triggering business object.

---

## Logging

If UCCnet\_ItemSync, UCCnet\_requestWorklist, UCCnet\_processWorklist, and Notify\_by\_eMail collaboration objects encounter error situations during any stage of processing, they do the following:

- Log the error in the configured log destination.
- Return the object to the calling collaboration object through the *From* port.

**Note:** For error logging to occur, tracing must be enabled. Also, use separate files for tracing and logging. Use logging files to maintain persistent records of processed data. Use tracing files to diagnose problems and to show the flow of an item through the IBM WebSphere Business Integration Express for Item Synchronization product. The Log Viewer tool has log and trace file filters that enable users to view the log or trace records for a particular business object or collaboration object.

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## Tracing

All collaboration objects based on collaboration templates included in the IBM WebSphere Business Integration Express for Item Synchronization product provide tracing capabilities to record logical flows and data processed. Users can enable tracing for a particular collaboration object by selecting the collaboration object in the System Manager, displaying its properties, and, on the **Collaboration General Properties** tab, selecting a trace level greater than 0 from the **System trace level** field.

Enable tracing for one or more collaboration objects when a reproducible problem occurs. If a problem occurs only once during processing, leave the tracing function enabled continually so that the first occurrence of the failure is captured. However, leaving the tracing function enabled continually can degrade performance. Clear the trace file periodically to simplify viewing and filtering it.

**Note:** Use separate files for tracing and logging. Use tracing files to diagnose problems and to show the flow of an item through the IBM WebSphere Business Integration Express for Item Synchronization product. Use logging files to maintain persistent records of processed data. The Log Viewer tool has trace and log file filters that enable users to view the trace or log records for a particular business object or collaboration object.

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## Use cases

The following sections outline the actors and courses for the use cases supplied with the IBM WebSphere Business Integration Express for Item Synchronization product.

### Actors

Each use case in the IBM WebSphere Business Integration Express for Item Synchronization product uses multiple actors detailed in the table below.

Table 1. Use case actors

Actor	Description
ERP Legacy System	An Enterprise Resource Planning back-end system storing a supply-side trading partner's product information.
Supplier	The establishment participating as the supply-side trading partner in the exchange of product information.
Retailer	The establishment participating as the demand-side trading partner in the exchange of product information.
UCCnet	A subsidiary of the Uniform Code Council, Inc., that implements multi-industry standards for product identification and related electronic communications. It accomplishes these tasks by requiring its community of trading partners to provide standardized item data in particular formats to its registry. The system also includes integral compliance checks to assure the integrity of the data in all cases.

## Courses

### ItemAdd

The following table describes the main course that can be followed in the ItemAdd use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 2. ItemAdd use case description (main course) — DTD support

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides the item (e.g., an IDOC from SAP) to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its <i>To</i> port. Before the business object arrives at the connector, it is converted into an application-specific business object, a UCCnetDTD_envelope by passing through the appropriate maps. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemAdd document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.

Table 2. ItemAdd use case description (main course) — DTD support (continued)

#	Activity by the actor	System activity
M3	UCCnet sends confirmation of receipt.	The Message Disposition Notification (MDN) is generated by UCCnet and returned to the AS2 channel server.
M4	Supplier receives receipt acknowledgement.	None
M5	UCCnet checks that item data meets compliance specifications.	None
M6	If item data meets compliance specifications, UCCnet adds the item to its registry and sends the supplier confirmation of the ItemAdd.	None
M7	Supplier receives confirmation of ItemAdd.	None

Table 3. ItemAdd use case description (main course) — schema support

#	Activity by the actor	System activity
M1	Supplier assembles item data	A trigger from the ERP legacy system provides the item to the legacy application connector. For example, an IDOC from SAP is provided to the SAPConnector. A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is passed through a map to convert it into a UCCnetXSD_envelope business object. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemAdd document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	ItemCommandRouter is called.	The UCCnet_ItemSync collaboration routes the incoming ItemBasic business object to the ItemCommandRouter. The item is sent out to the TO_RCIR port for delivery to UCCnet, and gets routed through the map for delivery to UCCnet.
M4	Supplier receives receipt acknowledgement	None.
M5	UCCnet checks that the item data meets compliance specifications.	None

Table 3. ItemAdd use case description (main course) — schema support (continued)

#	Activity by the actor	System activity
M6	If item data meets compliance specifications, UCCnet adds the item to its registry and sends the supplier confirmation of the ItemAdd	None.
M7	System receives RCIR_ADD_RESPONSE confirmation of ItemAdd.	CATALOGUE_ITEM_NOTIFICATION_ADD use case begins.

### ItemPublicationAdd

The following table describes the main course that can be followed in the ItemPublicationAdd use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 4. ItemPublicationAdd use case description (main course)

#	Activity by the actor	System activity
M1	UCCnet responds to a polling request from the IBM WebSphere Business Integration Express for Item Synchronization product.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.
M2	UCCnet responds by sending any notification messages out to the AS2 channel server.	Subsequently, a worklist is delivered to the AS2 channel server from UCCnet which contains the notification (response) PUB_RELEASE_NEW_ITEM. The response document is delivered to the AS2 channel connector. The business object is delivered to the UCCnet_processWorklist collaboration object. This collaboration object identifies the business object as representing a PUB_RELEASE_NEW_ITEM. It dispatches it to its NEW_ITEM_PUBLICATION_REQUEST subdiagram, which checks the message for validity, performs audit logging, and sends the business object back to UCCnet with instructions to publish the new item to the target Retailer trading partners.
M3	The Retailer receives publication of the new item.	None
M4	The Retailer returns one of the authorization responses.	In response, these Retailers can respond with any of the following: AUTHORIZE, PEND_PUBLICATION, REJECT_PUBLICATION, PRE_AUTHORIZATION, or DE_AUTHORIZATION.
M5	UCCnet receives a polling request from the product for new notification messages.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.
M6	The response document is delivered to the AS2 channel server.	None

Table 4. ItemPublicationAdd use case description (main course) (continued)

#	Activity by the actor	System activity
M7	The product receives an Authorization response and processes it.	The business object is delivered to the UCCnet_processWorklist collaboration object, which performs audit logging and emails the configured recipients based on which type of response is received.

### CatalogueItemNotification\_Add

The following table describes the main course that can be followed in the CatalogueItemNotification\_Add use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 5. CatalogueItemNotification\_Add use case description (main course)

#	Activity by the actor	System activity
M1	UCCnet responds to a polling request from the IBM WebSphere Business Integration Express for Item Synchronization.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.
M2	UCCnet responds by sending any notification messages out to the AS2 channel server.	In response, a worklist containing the PUB_RELEASE_NEW_ITEM notification is delivered to the AS2 channel server from UCCnet. The response document is delivered to the AS2 channel connector. The business object is delivered to the UCCnet_processWorklist collaboration object. This collaboration object identifies the business object as representing a PUB_RELEASE_NEW_ITEM. The collaboration object then dispatches it to the NEW_ITEM_PUBLICATION_REQUEST subdiagram, which checks the message for validity, performs audit logging, and sends the business object back to UCCnet with instructions to publish the new item to the target Retailer trading partners.
M3	ItemCommandRouter is called.	The ItemSync collaboration object routes the incoming ItemBasic business object to the ItemCommandRouter. The item is then routed through the map and is then sent out to the TO_RCIR port for delivery to UCCnet.
M4	Supplier receives acknowledgement.	None
M5	UCCnet checks that the item data meets compliance specifications.	None
M6	If the item data is compliant, UCCnet adds the item to its registry and sends the supplier confirmation of the ItemAdd	None
M7	System receives RCIR_ADD_RESPONSE confirmation of ItemAdd.	CIN_ADD use case begins.

## ItemChange

The following table describes the main course that can be followed in the ItemChange use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

*Table 6. ItemChange use case description (main course) — DTD support*

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides a change to item information to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its <i>To</i> port. Before the business object arrives at the connector, it is converted into an application-specific business object, a UCCnetDTD_envelope business object, by passing through the appropriate maps. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemChange document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	UCCnet sends confirmation of receipt.	The MDN is generated by UCCnet and returned to the AS2 channel server.
M4	Supplier receives receipt acknowledgement.	None
M5	UCCnet checks that item data meets compliance specifications.	None
M6	If item data meets compliance specifications, UCCnet adds the item information to its registry and sends the supplier confirmation of the ItemChange.	None
M7	Supplier receives confirmation of ItemChange.	None

*Table 7. ItemChange use case description (main course) — Schema support*

#	Activity by the actor	System activity
M1	Supplier assembles item data	A trigger from the ERP legacy system provides the item to the legacy application connector. For example, an IDOC from SAP is provided to the SAPConnector. A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.



Table 7. ItemChange use case description (main course) — Schema support (continued)

#	Activity by the actor	System activity
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object sends the ItemBasic business object through its TO port to the AS2 channel connector. Before the business object arrives at the connector, it is converted into a UCCnetXSD_envelope. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemAdd document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	ItemCommandRouter is called.	The UCCnet_ItemSync collaboration routes the incoming ItemBasic business object to the ItemCommandRouter. The item is sent out to the TO_RCIR port for delivery to UCCnet, and gets routed through the map for delivery to UCCnet.
M4	Supplier receives receipt acknowledgement	None.
M5	UCCnet checks that the item data meets compliance specifications.	None
M6	If item data meets compliance specifications, UCCnet adds the item to its registry and sends the supplier confirmation of the ItemAdd	None.
M7	System receives RCIR_ADD_RESPONSE confirmation of ItemChange.	CIN_CHANGE use case begins.

### ItemPublicationChange

The following table describes the main course that can be followed in the ItemPublicationChange use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 8. ItemPublicationChange use case description (main course)

#	Activity by the actor	System activity
M1	UCCnet responds to a polling request from the IBM WebSphere Business Integration Express for Item Synchronization product.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.

Table 8. ItemPublicationChange use case description (main course) (continued)

#	Activity by the actor	System activity
M2	UCCnet responds by sending any notification messages out to the AS2 channel server.	Subsequently, a worklist is delivered to the AS2 channel server from UCCnet which contains the notification (response) PUB_RELEASE_DATA_CHANGE. The response document is delivered to the AS2 channel connector. The business object is delivered to the UCCnet_processWorklist collaboration object. This collaboration object identifies the business object as representing a PUB_RELEASE_DATA_CHANGE. It dispatches it to its NEW_ITEM_PUBLICATION_REQUEST subdiagram, which checks the message for validity, performs audit logging, and sends the business object back to UCCnet with instructions to publish the new item information to the target Retailer trading partners.
M3	A Retailer receives publication of the new item.	None
M4	The Retailer returns one of the authorization responses.	In response, these Retailers can respond with any of the following: AUTHORIZE, PEND_PUBLICATION, REJECT_PUBLICATION, PRE_AUTHORIZATION, or DE_AUTHORIZATION.
M5	UCCnet receives a polling request from the product for new notification messages.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.
M6	The response document is delivered to the AS2 channel connector.	None
M7	The product receives an Authorization response and processes it.	The business object is delivered to the UCCnet_processWorklist collaboration object, which performs audit logging and emails the configured recipients based on which type of response is received.

### CatalogueItemNotification\_Change

The following table describes the main course that can be followed in the CatalogueItemNotification\_Change use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 9. CatalogueItemNotification\_Change use case description (main course)

#	Activity by the actor	System activity
M1	UCCnet responds to a polling request from the IBM WebSphere Business Integration Express for Item Synchronization product.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.

Table 9. CatalogueItemNotification\_Change use case description (main course) (continued)

#	Activity by the actor	System activity
M2	UCCnet responds by sending any notification messages out to the AS2 channel server.	Subsequently, a worklist is delivered to the AS2 channel server from UCCnet which contains the notification (response) RCIR_CHANGE_RESPONSE. The response document is delivered to the AS2 channel connector. The business object is delivered to the UCCnetXSD_processWorklist collaboration object. This collaboration object identifies the business object as representing a RCIR_CHANGE_RESPONSE. It dispatches it to its RCIR_CHANGE_RESPONSE subdiagram, which checks the message for validity, performs audit logging. Then it sends the ItemBasic to the UCCnet_CIN_Dispatcher collaboration object, which in turn sends a CATALOGUE_ITEM_NOTIFICATION to UCCnet for each GLN interested in the modified item.
M3	The retailer receives publication of the new item.	None
M4	The Retailer returns one of the authorization responses.	In response, these Retailers can respond with any of the following: REVIEW, REJECTED, ACCEPTED, or SYNCHRONISED.
M5	UCCnet receives a polling request from the product for new notification messages.	The UCCnet_requestWorklist collaboration object polls UCCnet for the pending worklist.
M6	The response document is delivered to the AS2 channel connector.	None
M7	The product receives a response and processes it.	The business object is delivered to the UCCnet_processWorklist collaboration object, which performs audit logging and emails the configured recipients.

## ItemDelist

The following table describes the main course that can be followed in the ItemDelist use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 10. ItemDelist use case description (main course) — DTD support

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides an item delist to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.

Table 10. ItemDelist use case description (main course) — DTD support (continued)

#	Activity by the actor	System activity
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is converted into a UCCnetDTD_envelope business object by passing through the appropriate maps. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemDelist document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	UCCnet sends confirmation of receipt.	The MDN is generated by UCCnet and returned to the AS2 channel server.

Table 11. ItemDelist use case description (main course) — schema support

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides an item withdraw to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the ItemCommandRouter. The ItemCommandRouter delivers the ItemBasic business object to the UCCnetXSD_CIN_Dispatcher. The UCCnetXSD_CIN_Dispatcher builds an appropriate CIN_DELIST message for each subscribed GLN and delivers each to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is passed through a map to convert it into a UCCnetXSD_envelope. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemDelist document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	UCCnet sends confirmation of receipt.	The MDN is generated by UCCnet and returned to the AS2 channel server.

## ItemWithdrawal

The following table describes the main course that can be followed in the ItemWithdrawal use case of the IBM WebSphere Business Integration Express for Item Synchronization product.

Table 12. ItemWithdrawal use case description (main course) — DTD support

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides an item withdrawal to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.

Table 12. ItemWithdrawal use case description (main course) — DTD support (continued)

#	Activity by the actor	System activity
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is converted into an application-specific business object, a UCCnetDTD_envelope, by passing through the appropriate maps. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemWithdrawal document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	UCCnet sends confirmation of receipt.	The MDN is generated by UCCnet and returned to the AS2 channel server.

Table 13. ItemWithdrawal use case description (main course) — schema support

#	Activity by the actor	System activity
M1	Supplier assembles item data.	A trigger from the ERP legacy system provides an item withdrawal to the legacy application connector (in this solution, the SAPConnector). A map then generates the ItemBasic business object, which is passed to a UCCnet_ItemSync collaboration object.
M2	Supplier sends item data to UCCnet.	The UCCnet_ItemSync collaboration object delivers the ItemBasic business object to the ItemCommandRouter. The ItemCommandRouter delivers the ItemBasic business object to the UCCnetXSD_CIN_Dispatcher. The UCCnetXSD_CIN_Dispatcher builds an appropriate CIN_WITHDRAW message for each subscribed GLN and delivers each to the AS2 channel connector over its To port. Before the business object arrives at the connector, it is converted into an application-specific business object, a UCCnetXSD_envelope business object, by passing through the appropriate maps. The connector builds the UCCnet XML document from the incoming business object and delivers this ItemDelist document to the AS2 channel server. The AS2 channel server creates the digest, encrypts, and transmits the document to UCCnet.
M3	UCCnet sends confirmation of receipt.	The MDN is generated by UCCnet and returned to the AS2 channel server.



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