



Integration Guide

for SAP[®] R/3[®] using WebSphere Adapter for mySAP.com[®]

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This edition applies to version 5.4 of IBM[®] WebSphere[®] Commerce (Program 5724 - A18) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Introduction

This document contains information about the integration of WebSphere Commerce Version 5.4 with the SAP R/3 4.6 Enterprise Resource Planning (ERP) system, using the WebSphere Adapter for mySAP.com version 1.0.

Who should read this book?

This book is for anyone who wishes to integrate WebSphere Commerce with the SAP R/3 backend system. It will assist developers and engagement teams in installing this reference application. Additionally, demonstrators or marketing personnel who want to demonstrate this functionality can use this book.

The samples provided are for Websphere Commerce Version 5.4 Business Edition. However, the same principal and patten can apply to Webshere Commerce 5.4, Professional Edition.

Note: Knowledge of WebSphere Commerce and SAP R/3 is assumed.

Terminology used in this book

Listed below are the terms and their definitions used in this book:

Buyer or customer

A buyer is a WebSphere Commerce user who shops and creates orders. A customer is either an independent user or a business user.

Independent user

An independent user is a registered user in WebSphere Commerce with profile type 'C'.

Business user

A business user is a registered user in WebSphere Commerce with profile type 'B'.

BAPI

BAPIs (Business Application Programming Interfaces), are open business-oriented programming interfaces that can be used by external systems to access business processes and data in the SAP R/3 system.

JCA

J2EE Connector Architecture (JCA) defines a set of scaleable, secure, and transactional mechanisms that enable the integration of EIS (Enterprise Information System) with application servers and enterprise applications using the J2EE platform.

ERP

Enterprise Resource Planning (ERP) software integrates all departments and functions of an enterprise.

BOR

The Business Object Repository (BOR) is the object-oriented repository in the SAP R/3 System. It contains the SAP R/3 business object types (BO) and SAP R/3 interface types as well as their components, such as methods, attributes and events. BAPIs are defined as methods of SAP R/3 business object types (or SAP R/3 interface types) in the BOR.

EAB

Enterprise Access Builder for Transactions (EAB) consists of frameworks and tools that allow you to access the function and data assets of your Enterprise Information Systems (EIS), using Java technology.

Incoterms

Incoterms are internationally recognized terms of delivery reflecting the standards set by the International Chamber of Commerce (ICC).

Condition records

Condition records in SAP R/3 are used to determine pricing, freight, tax and other related information.

Intermediate Documents (IDocs)

Intermediate Documents (IDocs) are used to exchange data between R/3, R/2, and non-SAP systems.

WebSphere Commerce loader utility

WebSphere Commerce loader utility is used to load data in WebSphere Commerce tables. It is part of the WebSphere Catalog Manager and is shipped with WebSphere Commerce. It includes the Massloader, TextTransformer, XMLTransformer, and IDResolver utilities to load data.

Sales organization

A sales organization is an organizational unit responsible for the sale of certain products or services. The responsibility of a sales organization may include legal liability for products and customer claims. You can assign any number of distribution channels and divisions to a sales organization.

Distribution channel

Products or services reach the customer through distribution channels. Typical examples of distribution channels are wholesale, retail, direct sales or web sales. You can maintain information about customers and materials through sales organizations and distribution channels. Within a sales organization you can deliver goods to a given customer through more than one distribution channel.

Division

A division is a way of grouping materials, products, or services. The SAP system uses divisions to determine the sales areas and the business areas for a material, product, or service. For each combination of sales organization and distribution channel, you can further assign one or more of the divisions that are defined for the sales organization.

Sales area

Sales area in SAP R/3 consists of sales organization, distribution channel and division. Sales area information is required for creating an order in SAP R/3. Sales area is also related to company and plant information.

Plant and storage location

These entities in SAP R/3 represent the locations where inventory is stored. A plant can consist of multiple storage locations. Plant and storage location can be specified in the customer and material information. You can specify the plant and storage location at the time of order creation. If it is not specified, the plant and storage location specified in customer or material master is considered.

Partner functions

SAP R/3 supports the concept of partner functions, like sold-to party, ship-to party, buyer and so on. A customer can be assigned more than one partner function. These partner functions are used in sales orders to obtain information like bill-to address, ship-to address, payment mode and so on. When creating an order, the customer number for sold-to party must be specified.

Contracts

You can use contracts in WebSphere commerce to store business terms and conditions for two parties. The contracts can store pricing, shipping, payment, tax-related terms and conditions.

Schedule lines

Schedule lines are created to plan different delivery schedules for the items ordered, for an order. They are basically delivery proposals that give details about quantities to be delivered and the dates of delivery.

Reference data

Reference data is a sample set of products and items included in the reference application that can be used for demonstrations. It is included as part of the sample store, and also as a delimited file that can be loaded onto the SAP R/3 system.

Note: In this document the following are used interchangeably:

- WebSphere Commerce and WebSphere Commerce Business Edition.
- SAP or R/3 and SAP R/3 Enterprise System.

Overview

This reference application is designed to integrate SAP R/3 core business processes with the WebSphere Commerce sell-side solution, providing the e-commerce functionality of WebSphere Commerce, along with the ERP functionality of SAP R/3 enterprise system as the supplier and fulfillment center.

WebSphere Commerce further extends the scope of enterprise applications by providing a reliable, scalable, and open-standards based commerce front-end. For example, an organization using SAP R/3 for enterprise functions, when integrated with WebSphere Commerce, can easily add the Internet as a new sales channel for its products and services. In the scenario described below, the WebSphere Commerce server sell-side is an e-commerce web front-end to SAP R/3 enterprise system. This reference examples uses the IBM Websphere Adapter for mySAP.com for the connection to SAP R/3.

Business scenario - integration with the seller's backend system

In this reference application the integration of WebSphere Commerce and SAP R/3 enterprise system is achieved using WebSphere Adapters that enable synchronous communication.

WebSphere Commerce contains information about the products and services of the seller, and the profile and registration information of the customers. WebSphere Commerce processes the buyer's requests, such as placing an order, modifying profile information, checking availability, querying for the status of orders, and so on. The new customers created and material data in the SAP system will be uploaded onto WebSphere Commerce on a regular basis. The nature of transactions in this scenario allows WebSphere Commerce to be updated with material and customer data in the SAP system, and alternatively, SAP to be notified of the buyer's requests in WebSphere Commerce.

Business models enabled

In this integration, WebSphere Commerce provides an e-commerce front-end Internet sales channel to the SAP enterprise system. Any customer registered with SAP can browse and view products that are loaded from SAP onto the WebSphere Commerce site.

With this, buyers in any part of the world can shop online for products using the online stores and catalog display functionality provided by WebSphere Commerce. From the WebSphere Commerce site, buyers can place orders, check price and availability, query for tax and shipment cost, query for the status of their orders and other relevant information that is present in the SAP system. This involves the synchronization of material data, catalog prices and customer data between the two systems by updating these details from SAP to WebSphere Commerce.

Connectivity in the current implementation enables customers to query for product availability, special pricing, tax, shipping costs and orders tracking. New customers created in WebSphere Commerce can be registered in SAP by making calls to the respective business processes in the SAP system.

Features

- **Order Creation:** Buyers can create orders in WebSphere Commerce using the online store and then create these orders in SAP, by sending the shopping cart details to the SAP system.
- **Order Status:** WebSphere Commerce can query and retrieve order status information on behalf of the buyers. SAP will return the fulfillment status for the requested order.
- **Customer Create:** Buyers and buyer organizations will be allowed to register through WebSphere Commerce. When new customers are registered in WebSphere Commerce, these customers will also be created in SAP.
- **Customer Update:** Customers can update their profile in WebSphere Commerce and these changes will be updated in the SAP R/3 system as well.
- **Request price, tax and shipping cost:** Before placing an order, the buyer can retrieve the price for the order items, and also receive the tax and shipment cost calculated online for the order by the SAP system.
- **Check for availability:** WebSphere Commerce can query SAP for the availability of a product that a buyer is interested in and display the availability dates and quantities to the buyer.
- **Load materials from SAP:** You can load material information from SAP onto WebSphere Commerce. You can also update WebSphere Commerce with the changes in catalog prices, which is the list price in SAP.
- **Load customers from SAP:** New customers created in SAP can be reflected in WebSphere Commerce.

Benefits

- Easily and quickly add a new Internet sales channel to the enterprise.
- Provide customers with access to web site functions such as browsing catalogs, placing orders, and making online payments.
- Synchronize product and customer information.
- Create orders in WebSphere Commerce and send the orders to SAP for order processing and fulfillment.
- Check the status of the order with SAP.
- Check price, availability, tax and shipping details and, total cost for the orders.
- Leverage the complex business processes supported by the SAP enterprise system.
- Create online catalogs in WebSphere Commerce for SAP materials.
- Enables WebSphere Commerce features like approvals for user registration and personalization.

WebSphere Commerce, SAP interfaces

The SAP enterprise system provides business oriented programming interfaces that external applications can use to access the functions and data present in the SAP R/3 system. These interfaces are called BAPIs (Business Application Programming Interface) and are part of Business Objects in the SAP R/3 system's Business Object Repository. For example, you can use the `CREATEFROMDAT1` BAPI in the `Customer` business object to register a new customer in SAP R/3 system.

Using the WebSphere Commerce command framework, application logic can be extended to integrate with this external application. WebSphere commerce can call the BAPIs from its commands to invoke the respective business process in the enterprise system.

WebSphere Adapter for mySAP.com

WebSphere Adapter for mySAP.com is a J2EE Connector Architecture compliant resource adapter that can be used by an application server or an application client to connect to the SAP R/3 enterprise system. The connector or the resource adapter collaborates with the application server to leverage underlying mechanisms such as transactions, security and connection pooling. The resource adapter is deployed on WebSphere Application Server version 4.0.

WebSphere Commerce commands can access the resource adapter or connector deployed in WebSphere Application Server to connect to SAP R/3 system. You can generate proxy beans for business objects using the EAB tools and Access Builder for SAP R/3 provided by VisualAge for Java version 4.0. You can also generate EAB commands that can be called from WebSphere Commerce commands.

The following figure shows how WebSphere Commerce commands interact with the SAP R/3 system. The WebSphere Loader utility is used to load data into WebSphere Commerce.

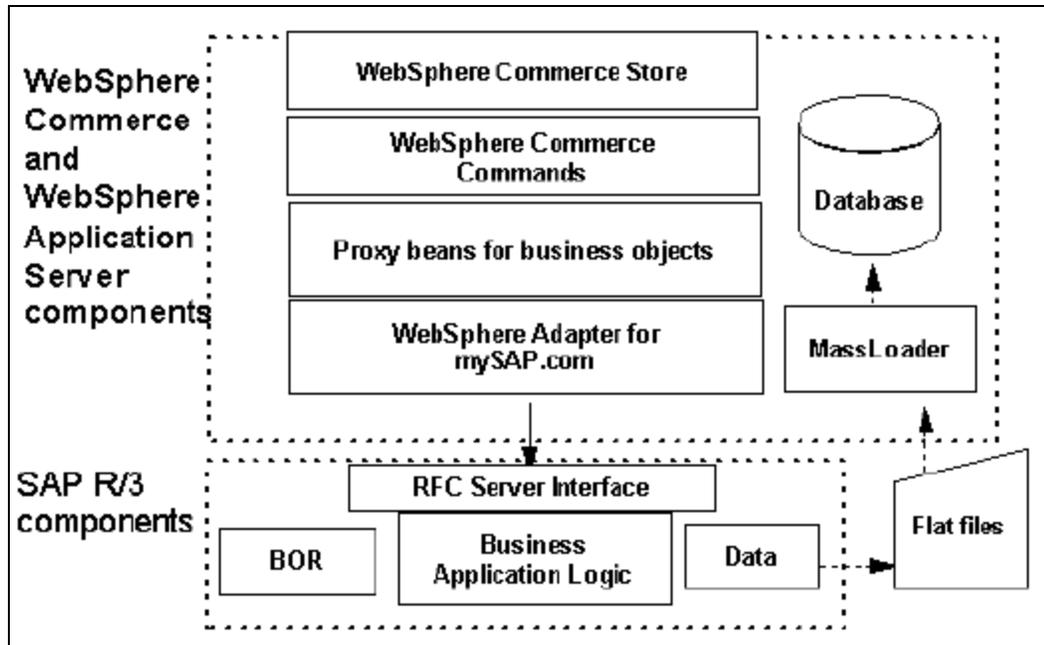


Figure 1: WebSphere Commerce commands interacting with SAP

References

Apart from this guide, the following reference documents are available with their respective products:

- WebSphere Commerce Business Edition
http://www-4.ibm.com/software/webservers/commerce/wc_be/
- SAP R/3 version 4.6
<http://help.sap.com>
- WebSphere Adapter for mySAP.com
<http://www-3.ibm.com/software/ts/mqseries/adapters/library/mysap/factsheet.html>

Chapter 2. Pre-requisites

This section covers the software components used in this application. All the software components are installed and configured on Windows 2000 operating environment.

The following are the versions of the software supported:

- WebSphere Commerce Version 5.4, Business Edition
- SAP R/3 version 4.6C
- WebSphere Adapter for mySAP.com version 1.0

WebSphere Commerce Version 5.4, Business Edition

WebSphere Commerce Version 5.4, Business Edition is an e-commerce software. This component has various subsystems, including catalog, member and order subsystems. These subsystems can interact with the business processes of the enterprise system. The WebSphere Commerce server that is deployed on the WebSphere Application Server will be able to communicate using the resource adapter deployed on the application server.

Note: The database server used in this reference application for WebSphere Commerce is DB2. The instructions provided in the Installation and Configuration chapter assume that DB2 server is used.

SAP R/3 4.6

This is an ERP system that contains the data and functions required by an enterprise. The SAP system interacts with external applications by receiving Business API (BAPI) calls and update the external application with customer and material master data in SAP.

WebSphere Adapter for mySAP.com 1.0

This adapter allows you to integrate popular packaged software with new web-based and existing WebSphere applications. It uses the J2EE Connector Architecture to integrate the applications. The VisualAge for Java component – Enterprise Access Builder for Transactions (EAB) is used to access the functions and data of the enterprise system.

Chapter 3. Enabling SAP transactions

This chapter briefly describes how to enable the different SAP transactions.

Creating a customer

Customer data is stored in both WebSphere Commerce and SAP R/3. Customers can register at the WebSphere Commerce site or can register directly in SAP R/3. The customer master data must exist on both systems and therefore must be synchronized. This synchronization enables customers to use WebSphere Commerce to create orders, check material availability and obtain the status of the orders from the SAP R/3 system.

Customers registered in WebSphere Commerce will be created in SAP R/3, using the BAPI_CUSTOMER_CREATEFROMDATA BAPI. You can use this BAPI to create both independent users and the buyer organizations. These customers will be registered in SAP with a default profile, based on the reference customer number provided in the BAPI call. For information on how to create customers in WebSphere Commerce for the customers registered at SAP R/3, see Chapter 7. Loading master data.

Note: For the input and output structure details about the BAPI used to create a customer, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction. See, Appendix I: Compensation logic for handling inconsistent state situations.

Updating a customer profile

You can update a registered customer's profile in WebSphere Commerce and SAP R/3. To update customer data and profile information in SAP for the profile updated in WebSphere Commerce, a WebSphere Commerce command calls the BAPI_CUSTOMER_CHANGEFROMDATA BAPI.

If customers are already registered in SAP R/3, you can use this BAPI to update the customer's general data and address information.

Note: For the input and output structure details about the BAPI used to update a customer profile see, Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction.

Simulating an order

A buyer can create the shopping cart in WebSphere Commerce. Before placing the order for the items, the buyer can submit the items to SAP, to obtain details about the order. A synchronous call is made to SAP R/3 from WebSphere Commerce commands to send the shopping cart details and fetch the order summary information from the sales order business process in the SAP system.

This allows buyers to retrieve online information from the backend system about the product availability, condition based pricing, shipping, and tax costs. An order simulate call will not create a transaction in SAP R/3.

To simulate an order use the BAPI_SALESORDER_SIMULATE BAPI. If you are already registered in SAP and have a customer number, then you can use this function to retrieve the details mentioned above.

In SAP, you define the pricing, tax, and freight conditions to determine the price for the order and to calculate the tax and freight charges. These conditions are part of SAP Customization. For this reference application, the following implementation and customization has been used. For more information on defining condition records refer to Chapter 6. Configuring SAP.

Price determination

In SAP you can define various pricing conditions and associate them to the customers. This enables customers to avail special prices depending on the price group they belong to. There are four different types of applicable prices for this reference application as described in the following sections:

- Prices based on a customer group for specific customers.
- A common price list based on material.
- Customer specific material prices.
- Material prices

Prices based on customer group

If a particular customer group such as an Internet customer or wholesale buyer has offers, then when creating the customer master you must specify the customer group. For that customer group, you must specify a condition record that will be maintained in SAP transaction code, VK11. This way, all customers that belong to this customer group are eligible for the special price.

A common price based on material

If customers do not have an offer, you must maintain the material prices in the price list for example, wholesale pricelist or retail pricelist. This price list must be specified when creating a customer and maintain the record in SAP transaction VK11.

Customer-specific material prices

If customers do not belong to any customer group and a pricelist is not specified in the customer master, then you can maintain prices specific to customers in the SAP transaction VK11.

Material prices

Material prices are general prices used when customers have no specific pricing offers. In sales order simulation, the SAP R/3 system first checks the customer group table for relevant records. If a relevant record is found, it is used if not, the system checks the next table, which is the pricelist. If no record is found in the pricelist, the system checks the customer specific pricing table. If a record is available it is taken. If no record is available for customer specific price, then the material price is used. For information about the access sequence for pricing, see Chapter 6. Configuring SAP.

Shipment cost – freight

The shipment cost is calculated for each item in the sales order. It is based on the following:

- The region of the delivering plant
- The region of the destination (from customer master)
- Incoterms 1 – Terms of the shipment for example, CFR
- Incoterms 2 – Mode of transport for example, RAIL or TRUCK
- Material weight

The condition type in the document is ZF00. The condition record is maintained for the above fields in transaction code VK11 and condition type ZF00. When simulating the order, the system checks for the corresponding values from the master data and transactions. It takes the region of the delivering plant from the plant configuration and the destination from the customer master. Incoterms 1 and 2 are taken from the customer master but they can be overwritten when creating the order or when calling this BAPI.

Tax

The tax calculation scheme is decided at the country level and is calculated based on the following:

- Country
- Region of the delivering plant
- Tax classification – Material, such as applicable and exempt.
- Tax classification – Customer, such as applicable and exempt.
- Region of destination (the customer)

The condition type in the document is UTXJ. For the above fields the record is maintained in transaction code VK11. During order simulate, the system checks for the corresponding values from the master data. The system takes the country from the company code settings, the delivering plant region from the plant

configuration, and the region of the destination from the customer master. Tax classification for material and customer is taken from the respective master data.

Shipping tax

The shipping tax is the tax calculated on the freight value. It is the product of the tax and freight divided by the net value.

Product availability

The product availability check is based on the ATP (Available to Promise) settings in the SAP system. The settings used in this reference application for the **WebSales** sales area is "Delivery proposal". For each order item in the order requested, the ATP function will read the requested quantity, perform the check and return the delivery proposal as schedule lines for the order item based on the current inventory, inward, and outward movement of stock. In this setting, SAP will return a delivery proposal for the entire requested quantity.

Note: For the input and output structure details about the BAPI used to simulate an order, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction.

Creating an order

Creating an order is similar to simulating an order. In this case, when a user submits an order for processing, the WebSphere Commerce command used to create an order calls the SAP R/3 business process through a BAPI function to process the order and return either a failure or confirmation message. A sales document number is created and returned, which is used later to check for the status of the order.

Use BAPI_SALESORDER_CREATEFROMDAT1 to create a sales order in SAP. The pricing, availability, tax, and freight conditions applied when simulating an order will also apply when creating an order. In addition to the confirmation message, the details of the order along with the sales document number are returned to WebSphere Commerce.

Note: For the input and output structure details about the BAPI used to create an order, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction. See, Appendix I: Compensation logic for handling inconsistent state situations.

Requesting for the order status

When you create sales orders in the SAP R/3 system for orders prepared in WebSphere Commerce, the SAP order fulfillment and inventory management business processes will fulfill the orders. At any time buyers can request for the status of the orders placed, and a BAPI request is sent to SAP R/3 to obtain the

latest status of the order. This information returned by SAP is updated in WebSphere Commerce. If the order is already in a completed state, the BAPI call will not be made. The three different statuses of the orders in SAP R/3 are:

- A – Not processed
- B – Partially processed
- C – Completely processed

You can use the BAPI_SALESORDER_GETSTATUS BAPI to find information for a sales order with regards to the processing status, for example delivery and billing status. The mandatory field you must enter in this BAPI is the Sales Document Number.

The standard BAPI, BAPI_SALESORDER_GETSTATUS gives the invoice status only for the order related billing invoices. These invoices are raised based on the sales order.

The invoice can also be based on the delivery document. Here, the status is for delivery-related billing. To support the status based on delivery related billing you must extend the standard BAPI.

Note: For the input and output structure details about the BAPI used to get the status of the order, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction.

Checking material availability

When shopping, the user can choose one or more items from the shopping cart for which, the latest product availability details can be viewed. WebSphere Commerce uses the BAPI call, BAPI_MATERIAL_AVAILABILITY to retrieve the latest availability dates of the products chosen from SAP and displays them to the buyer.

After considering the planned inward and outward movement of stock in the SAP system, the BAPI checks the ATP quantities and returns the results. This includes the availability of quantity on different dates.

Note: For the input and output structure details about the BAPI used to check for material availability, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to the SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction.

Changing an order

When shopping, the scheduled available dates, unit price, shipping, and tax costs for the order items at the time of simulating an order can be different from the dates and the total cost of the order when the user confirms the order, that is when the order is created. At this point of time, the customer can either accept

the order with the new dates and prices or choose to cancel the order. If the order is cancelled, BAPI_SALESORDER_CHANGE is called to mark the order for deletion.

Note: For the input and output structure details about the BAPI used to cancel the order, see Appendix C: Mapping information. For more information on the behavior of the BAPI, refer to SAP product documentation. See Appendix A: WebSphere Commerce commands for the commands to enable this transaction. See, Appendix I: Compensation logic for handling inconsistent state situations.

Chapter 4. Mapping entities

This section describes the mapping between WebSphere Commerce and SAP R/3 entities for this reference application. See Appendix E: Alternate data and entity mapping for other possible mappings. The following figure shows the relationship of the entities in the two systems.

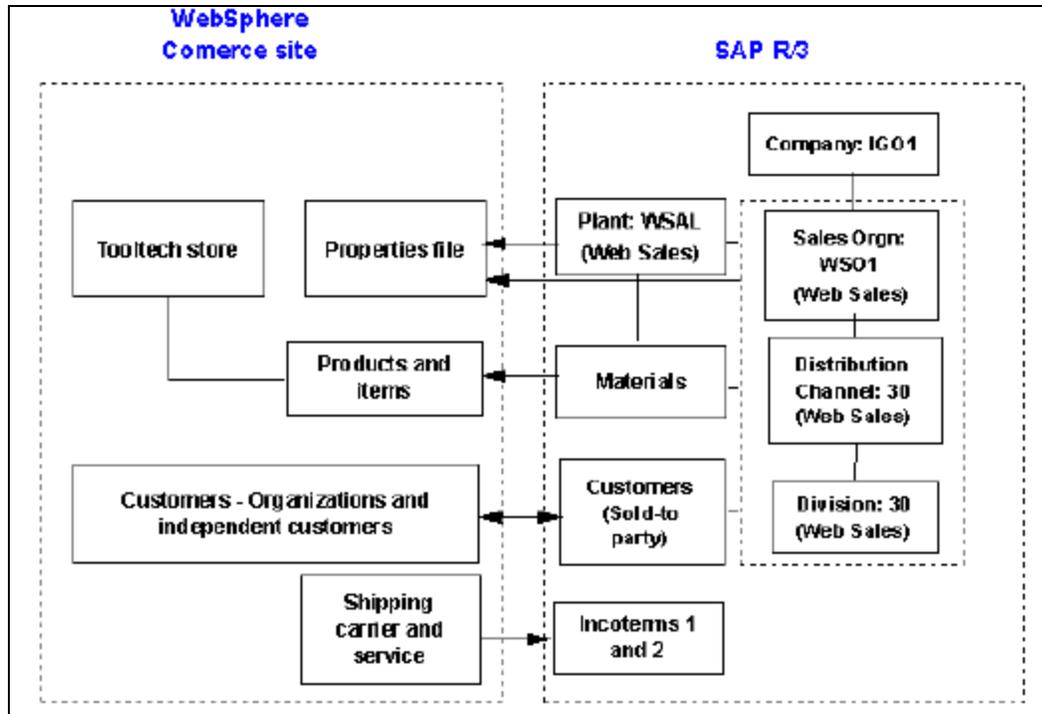


Figure 2: Entity mapping between WebSphere Commerce and SAP R/3

Dedicated sales area and plant

A dedicated sales area and plant is created in SAP R/3 for **Web Sales**. The plant contains the materials for this sales area. The ToolTech store in WebSphere Commerce corresponds to this sales area and plant. You must extend existing customers and materials that you need to migrate for web sales in SAP R/3 to the **Web Sales** sales area and plant. You must also create sales orders under this sales area in SAP R/3.

Customer registration

New customers registered from WebSphere Commerce are registered under the sales area dedicated to Web sales in SAP R/3. In this reference application, organizations and independent users are registered as sold-to party customers in SAP R/3.

Legal entities in SAP R/3 like a company or an organization are registered as buyer organizations in WebSphere Commerce. Organizations that are registered using massload will have a default business user. You can register other additional business users using WebSphere Commerce tools.

Individual users in SAP R/3 are registered in WebSphere Commerce as independent users.

Materials

Material groups in SAP map to products in WebSphere Commerce, materials map to items, and material characteristics map to product attributes.

Price

Standard price maps to default offer price in WebSphere Commerce. Standard price is the default selling price for the material. You must create a condition record for this, and maintain other pricing conditions in SAP R/3 that are used to determine prices when creating and simulating orders.

Inventory

The inventory is maintained in the SAP R/3 system. The SAP system performs the product availability check.

Address

The address for organizations is the permanent address with its nickname as the organization name. The address for independent users is their permanent address with their nickname as the `logon ID`.

Shipping

This reference application uses one shipping carrier. The default shipping carrier information in the SAPToolTech sample store archive is used for shipping. You must define the corresponding incoterms and conditions in SAP R/3. Ensure that the three-character abbreviation for the carrier is stored in WebSphere Commerce. This abbreviation must be unique to the carriers, as SAP R/3 uses it as `Incoterms1`.

If new shipping carriers are introduced, decide on the unique three-character for them and create the corresponding incoterms in the SAP R/3 system.

In SAP R/3, shipping conditions are used to determine shipping costs. Shipping conditions are maintained based on the region of delivering plant, region and `Incoterms 1` and `Incoterms 2` and material weight.

Map the shipping carrier and shipping code in WebSphere Commerce with the `Incoterms 1` and `2` in SAP respectively.

Chapter 5. Installing and configuring

To use the WebSphere Commerce– SAP integration do the following:

- WebSphere Commerce Version 5.4, Business Edition
- WebSphere Adapter for mySAP.com version 1.0
- Deploying WebSphere Commerce commands
- Adding resource reference for SAP to the WebSphere Commerce Enterprise Application
- SAP properties file
- Error messages properties file
- Pre-requisites to publish the store
- Publishing sample store
- Mapping existing organizations
- WebSphere Commerce access control

Note: In addition to the above, see Chapter 6. Configuring SAP.

The configuration instructions described in this section apply to Windows NT/2000 operating environments only.

WebSphere Commerce Version 5.4, Business Edition

Install WebSphere Commerce Version 5.4, Business Edition. Refer to the product documentation for the installation steps and the post-install configuration. You must also install and configure IBM Payment Manager for WebSphere Commerce.

WebSphere Adapter for mySAP.com version 1.0

Install WebSphere Adapter for mySAP.com version 1.0. Refer to the product documentation for the installation steps and the post-install configuration.

Note: In addition to this you must apply the Corrective Service Diskette (CSD) to WebSphere Adapter for mySAP.com 1.0. For more information, refer to the `readme.txt` file available in the integration package that you have downloaded.

Adding resource reference

After you install the WebSphere Adapter for mySAP.com 1.0 and deploy it on WebSphere Application Server version 4.0.2, you must add a resource reference for SAP to the WebSphere Commerce Enterprise application. This allows the WebSphere Commerce application to use the SAP resource adapter. This resource adapter can access the SAP functions and data. To do this the web modules, `wcsstores.war` and `wcstools.war` present in the `WebSphere_AppServer_Installed_Directory\InstalledApps\WC_Enterprise_App_<instancename>.ear` directory require entries for the J2C resource reference. Update the deployment descriptor for these web modules.

Include the following segments in `ibm-web-bnd.xmi` and `web.xml` files respectively, for the web modules.

ibm-web-bnd.xmi

```
<resRefBindings xmi:id="ResourceRefBinding_1"
jndiName="eis/SAPConnectionFactory">
  <bindingResourceRef href="WEB-INF/web.xml#ResourceRef_1"/>
</resRefBindings>
```

web.xml

```
<resource-ref id="ResourceRef_1">
  <description>SAP Resource Reference</description>
  <res-ref-name>eis/SAPConnectionFactory</res-ref-name>
  <res-type>javax.resource.cci.ConnectionFactory</res-type>
  <res-auth>SERVLET</res-auth>
</resource-ref>
```

Note: Change the `jndiName`, resource reference name according to your resource adapter installation in the WebSphere Enterprise Application server. The sample `ibm-web-bnd.xmi` and `web.xml` are provided in the `samples` directory. `web.xml` is a valid XML file and you must ensure that the segment added is compliant with the DTD for `web.xml`. For information on the directory structure, refer to the `readme.txt`.

Deploying WebSphere Commerce commands

To deploy the WebSphere Commerce commands do the following:

1. Copy the following `jar` files present in the `lib` directory to the `WebSphere_AppServer_Installed_Directory\installedApps\WC_Enterprise_App_<instancename>.ear\lib` directory:

- `sapjccommands.jar`
- `sapeabcommands.jar`

- `saproxybeans.jar`
- `sapjcautil.jar`

Note: For information on the directory structure, refer to the `readme.txt` available in the integration package that you have downloaded.

2. Edit the `Manifest.mf` file present in the `WebSphere_AppServer_Installed_Directory\InstalledApps\WC_Enterprise_App_<instancename>.ear\wcsstores.war\Meta-Inf\` directory to include the following jar files in the classpath:

```
lib/sapjcacommands.jar lib/sapjcautil.jar
```

3. Set the application server classpath for `saproxybeans.jar` and `sapeabcommands.jar`. To do this,
 - a. From the WebSphere Advanced Administrative Console, go to **Nodes, Application Servers, WebSphere Commerce Server - Instance Name**, where *Instance Name* is the name of the instance in your installation.
 - b. Select the **JVM Settings** tab.
 - c. Click **Add** and add the classpath for `saproxybeans.jar`.
 - d. Click **Add** and add the classpath for `sapeabcommands.jar`.
 - e. Click **Apply** to update the changes.
4. Include the following jar files in the application server classpath:
 - a. WebSphere Adapter jar files
 - o `ccf2.jar`
 - o `ivjsap35.jar`
 - o `infobus.jar`
 - o `conn4sap.jar`
 - b. WebSphere Application Server jar files
 - o `ccf.jar`
 - o `ccf2poolmgr.jar`
 - o `eablib.jar`
 - o `recjava.jar`
 - o `jca.jar`

SAP properties files

The properties file contains the various properties that are required to establish a connection with the SAP R/3 system, and the data that is required to create customers and orders in the SAP R/3 system. Change these values according to your SAP R/3 settings. See Appendix D: SAP properties file for the complete list of properties and their descriptions.

Copy the properties files present in the `properties` directory to the `WebSphere_AppServer_Installed_Directory\InstalledApps\WC_Enterprise_App_<instancename>.ear\wcsstores.war\WEB-INF\classes` directory.

- `SAPProperties.properties`
- `SAPProperties_en_US.properties`

Error messages properties files

The properties file contains the error messages that must be displayed to the user if there is an error when processing any of the transactions.

Copy the properties files present in the `properties` directory to the `<WebSphere_AppServer_Installed_Directory>\InstalledApps\WC_Enterprise_App_<instancename>.ear\wcsstores.war\WEB-INF\classes` directory.

- `ecWCSSAPMessages.properties`
- `ecWCSSAPMessages_en_US.properties`

Pre-requisites to publish the store

Populate the units of measure and state codes in WebSphere Commerce to create a new store.

Populating the units of measure

This reference application provides a massloadable XML file to upload all the unit of measures defined in SAP into WebSphere Commerce. However, this massloadable XML file does not include the descriptions for the unit of measures. To populate the descriptions, extract them from SAP and update `UnitOfMeasure.xml` present in the `store\uom` directory. This enables you to use the unit of measures in WebSphere Commerce Accelerator. Do the following to populate the unit of measures:

1. Edit the `ImportUOM.bat` present in the `store\uom` directory, in an editor and change the class paths and database information as per your WebSphere Commerce installation. Save this file.
2. From a DB2 command window, go to the `store\uom` directory and run the following command:

```
ImportUOM -infile UnitOfMeasure.xml -method  
sqlimport
```

This populates the unit of measures in the WebSphere Commerce tables according to the standard SAP R/3 installation. The `UnitOfMeasure.xml` file is present in the `store\uom` directory.

Populating the state codes

This reference application provides a massloadable XML file to upload all of the state codes defined in SAP for United States of America, Canada and Japan to WebSphere Commerce. To populate the state codes, do the following:

1. Open the file `StateCodes.xml` present in the `store\statecode` directory in an editor and populate it with the appropriate state codes used in your SAP R/3 installation. Save the changes.

Note: This step is required only if you want to add new state codes for other countries or modify the state codes provided in the XML file.

2. Open the file `ImportStateCode.bat` present in the `store\statecode` directory in an editor and change the class paths, and database information as per your WebSphere Commerce installation. Save this file
3. From a DB2 command window, go to the `store\statecode` directory and run the following command:

```
ImportStateCode -infile StateCodes.xml -method  
sqlimport
```

This uploads the state codes to WebSphere Commerce according to your SAP R/3 installation.

Publishing a sample store

To showcase the integration, you can use the sample store provided with this reference application to publish a new store in WebSphere Commerce.

You must configure IBM Payment Manager for this sample store model. For more details about installing and configuring IBM Payment Manager refer to the *WebSphere Commerce Installation Guide*.

Note: This reference application supports the English language only.

Publishing a new store

The `SAPToolTech.sar` file for this reference application is present in the `store` directory. It is built on top of the ToolTech store model that comes as part of the WebSphere Commerce Business Edition standard installation. To create a new store in the WebSphere Commerce installation do the following:

1. Copy `SAPToolTech.sar` file and `Feature_saptooltech_en_US.html` to `<Drive>:/Commerce_Install_Path/samplestores/ToolTech` folder, where `<Drive>:/Commerce_Install_Path` is the WebSphere Commerce install path.

2. Edit

`<Drive>:/Commerce_Install_Path/xml/tools/devtools/SARRegistry.xml` to add the following lines. Add these lines just before `</SAR-properties>` and save the file.

```
<SampleSAR fileName="SAPToolTech.sar"
  relativePath="ToolTech">

  <html locale="en_US"

    featureFile="ToolTech/Feature_saptooltech_en_US.html"

    sampleSite="ToolTech/preview/en_US/index.html"/>

</SampleSAR>
```

3. Launch the store services and click **New** in the Store Archives page.
4. To create a new sar file, specify the Store Archive name, Store Directory name, select the appropriate organization as Store owner, select `SAPToolTech.sar` file, and click **OK**. This creates the sar file.
5. In the Store Archives page select the sar file created in the previous step and click **Publish** and then click **OK**. It may take a few minutes to complete publishing the sar file. When complete, the status changes from **Publishing** to **Publishing completed successfully**.
6. Select the same sar file, click **Publish Summary** and launch the store for verification.
7. Update the `STENCALUSG` table to set `CALMETHOD_ID_INI`, `CALMETHOD_ID_APP` for `STOREENT_ID = -1`, and `CALUSAGE_IDs -2, -3, -4`. To do this, run the following sql from DB2 command window.

```
UPDATE STENCALUSG SET CALMETHOD_ID_INI = NULL,
CALMETHOD_ID_APP = NULL WHERE STOREENT_ID = -1 AND
CALUSAGE_ID IN (-2, -3, -4)
```

WebSphere Commerce Administration Console files

The following Administration Console jsp files contain modifications made to accommodate the selection of state and country codes.

Note: This reference application supports the English language only.

1. Copy the following jsp files present in the `tools` directory to *WebSphere_App_Server_Installed*
Directory: `\installedApps\WC_Enterprise_App_<instancename>.ear\wctools.war\tools\adminconsole` directory:
 - `OrgEntityAddress.jsp`
 - `UserAddress.jsp`
2. Copy the contents of `adminconsole.properties` file present in the `tools` directory to the end of the following files present in *WebSphere_App_Server_Installed*
Directory: `\installedApps\WC_Enterprise_App_<instancename>.ear\properties\com\ibm\commerce\tools\adminconsole\properties` directory:
 - `AdminConsoleNLS.properties`
 - `AdminConsoleNLS_en_US.properties`
 - `OrgEntityNLS.properties`
 - `OrgEntityNLS_en_US.properties`

Mapping existing organizations

To use the existing set of buyer organizations in WebSphere Commerce do the following:

1. Register the buyer organizations in the SAP R/3 system.
2. Populate the FIELD1 column of the ORGENTITY table for these organizations with the corresponding customer ID generated in the SAP system.

Note: You must register the **Root Organization** and **Default Organization** in SAP, as they are used as reference customers when creating other user and organization records in SAP.

WebSphere Commerce access control

Adding `SAPTrackOrderStatus` command to the resource group

To add the resource to the 'AllUserCmdResourceGroup' resource group do the following:

1. Go to the **WebSphere Commerce Administration Console, Access Management** and select **Resource Groups**.
2. Select **AllUserCmdResourceGroup** resource group and click **Change**. Click **Next**.
3. Add the following resource:

`com.ibm.commerce.sap.jca.commands.SAPTrackOrderStatusCmd`

4. Click **Finish** to save the changes.

Note: Restart the WebSphere Application Server and the Commerce server instance for all the configurations to take effect.

Chapter 6. Configuring SAP

This section details how to configure the SAP R/3 system for this reference application. These include the transactions to be used, customizations to be made, and a description of creating master data. Assumptions that have been made are listed where appropriate. The following is described in this chapter:

- Organization structure
- Customizing master data
- Configuring price, freight, and tax
- Transactions – Master data

Organization structure

For this integration you must define an organization structure in SAP R/3. You can use your existing organization structure or create a new one. The following description of the organization structure includes the Company Code, Controlling Area, Sales Area, Plant, and so on.

Creating Company Code – transaction code EC01



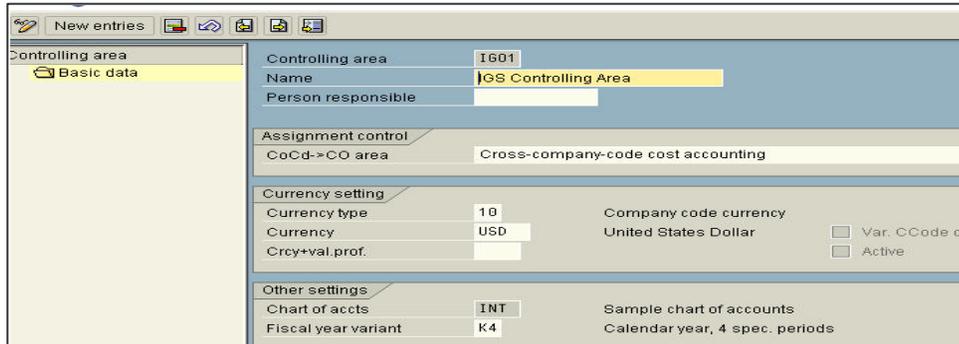
The screenshot shows the SAP EC01 transaction interface. At the top, there is a toolbar with icons for 'New entries', 'Save', 'Print', 'Help', 'Cancel', and 'Back'. Below the toolbar, the 'Company Code' field contains 'IG01' and the 'Company name' field contains 'IBM Global Services'. Underneath, there is a section titled 'Additional data' with the following fields: 'City' (Bangalore), 'Country' (IN), 'Currency' (USD), and 'Language' (EN).

Figure 3: Creating a company code

Create a new company code, IGO1 with the currency as USD. Copy it from the 0001 company code.

Creating the controlling Area – transaction code EC16

Create the new controlling area, IGO1. Copy it from the 0001 controlling area.



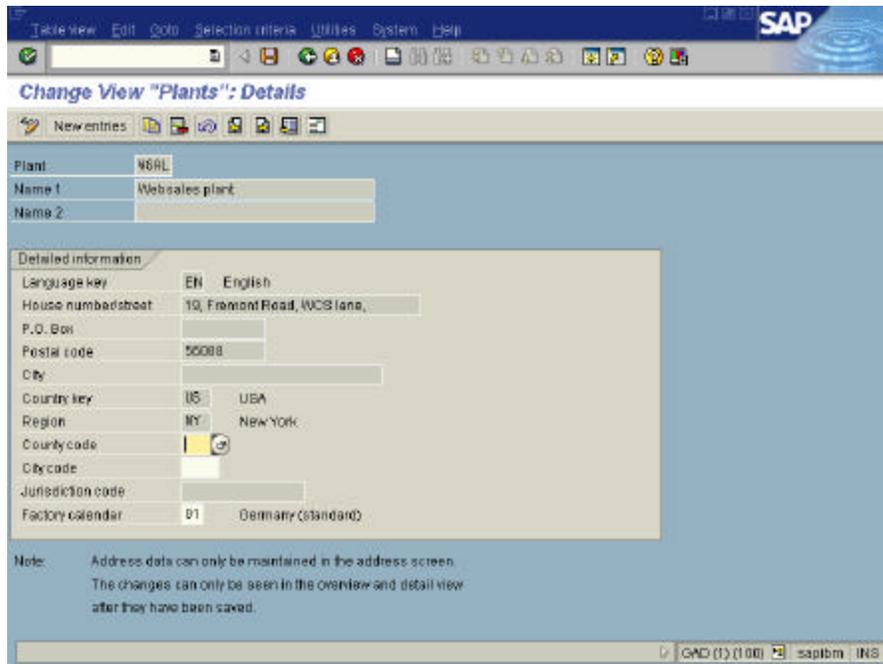
The screenshot shows the SAP transaction EC16 'Controlling area' for IGO1. The interface is divided into several sections:

- Controlling area:** IGO1
- Name:** IGS Controlling Area
- Person responsible:** (empty field)
- Assignment control:** CoCd->CO area: Cross-company-code cost accounting
- Currency setting:** Currency type: 10, Currency: USD, Company code currency: United States Dollar. Includes checkboxes for 'Var. CCode c' and 'Active'.
- Other settings:** Chart of accts: INT, Fiscal year variant: K4. Includes 'Sample chart of accounts' and 'Calendar year, 4 spec. periods'.

Figure 4: Creating the controlling area

Creating a Plant – transaction code EC02

Create a new plant, WSAL by copying it from the 0001 plant.



The screenshot shows the SAP transaction EC02 'Change View "Plants": Details' for plant WSAL. The interface includes:

- Plant:** WSAL
- Name 1:** Websales plant
- Name 2:** (empty field)
- Detailed information:** Language key: EH (English), House number/street: 10, Fremont Road, WCS Lane, P.O. Box, Postal code: 56008, City, Country key: US (USA), Region: NY (New York), County code, City code, Jurisdiction code, Factory calendar: 01 (Germany (standard)).
- Note:** Address data can only be maintained in the address screen. The changes can only be seen in the overview and detail view after they have been saved.

Figure 5: Creating a plant

Maintaining Storage location – transaction code OX09

Maintain storage location WSL2 for the WSAL plant.

Creating a Sales organization – transaction code EC04

Create a sales organization, WSO1 by copying it from the 0001 sales organization.

The screenshot shows the SAP Change View 'Sales organizations': Details for sales organization WSO1. The interface includes a toolbar with icons for 'New entries', 'Save', 'Cancel', 'Print', and 'Help'. The 'Sales organization' field is set to 'WSO1' and the 'Sales organization name' is 'Web Sales'. The 'Detailed information' section contains the following fields:

Statistics currency	INR	RelSorg SalesDivType	
Address text name	ADRS_SENDER	CustIntr-coBill	
Letter header text	ADRS_HEADER	Sales org calendar	01
Footer lines text	ADRS_FOOTER		
Greeting text name	ADRS_SIGNATURE		
Text SDS sender		<input type="checkbox"/> Rebate proc. active	

The 'ALE - Data for purchase order' section contains the following fields:

Purch. organization		Plant	
Purchasing group		Storage location	
Vendor		Movement type	
Order type			

Figure 6: Creating a sales organization

Creating a Sales division – transaction code EC06

Create a sales division 30 by copying it from the 01 sales division.

The screenshot shows the SAP Sales Division Selection screen. It displays a list of sales divisions with the following columns: Division and Name. The division '30' is selected, and its name is 'Web Sales'.

Division	Name
01	Product Division 01
10	Acme Sales
11	Lower Segment BMW
12	Higher Segment BMW
20	Normal sales
30	Web Sales
50	Maintenance Services
70	Fresh implementation
80	T&M Projects
90	Maintenance Services

Figure 7: Creating a sales division

Creating a Distribution channel – transaction code EC05

Create a distribution channel 30, by copying it from the 01 distribution channel.



Distr. channel	Name
01	Distribtn Channel 01
10	Acme Sales
11	Domestic - BMWI
12	Exports - BMWI
20	Normal Sales
22	Exports internal
30	Web Sales
33	Exports external
44	Domestic internal
55	Domestic external
99	Domestic internal

Figure 8: Creating a distribution channel

Creating shipping Point – transaction code EC07

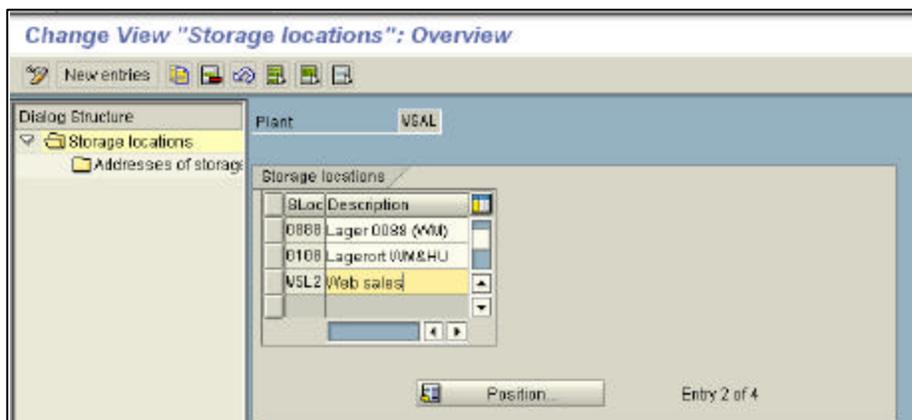


Figure 9: Maintaining storage location

Create the following assignments from transaction SPRO

From the **Enterprise Structure**, go to **Assignment** and select **Logistics, Sales and Distribution**.

1. Allocate plant to company code IG01 as shown in the following figure.



Figure 10: Allocation of plants

2. Allocate the company code to the sales organization.



Figure 11: Allocation of the company code

3. Allocate the sales organization to a division.



Figure 12: Allocating the sales organization to a division

4. Allocate the sales organization to a distribution channel.



Figure 13: Allocating the sales organization to a distribution channel

5. Create a sales area (Sales Organization, Distribution channel, and Division).



Figure 14: Creating a sales area

- Allocate a plant to the sales organization and distribution channel.



Figure 15: Allocating a plant

- Allocate the shipping point to a plant.



Figure 16: Allocating a shipping point

- Allocate the shipping point to a plant, shipping conditions, and loading group.

Change View "Shipping Point Determination": Overview

BC	LC/tp	Plant	PrShP	MShP1	MShP2	MShP3	MShP4	MShP5	MShP6	MShP7	MShP8	MShP9	MShP10	MShP11	MShP12
01	8081	0081	0001												
01	8081	1080	1000												
01	8081	1180	NSSP												
01	8081	1111	1111												
01	8081	2080	2000												
01	8081	AK6	0001												
01	8081	AK81	0001												
01	8081	MATL	0001												
01	8081	WSAL	NSSP												
01	8081	WSAL	WSSP												

Figure 17: Allocating shipping point

Define a common distribution channel and division – transaction VOR1/VOR2

Maintain the following settings for the sales organization WSO1.

SOrg	DChl Name	DCh-Cond	Name	DCh-CustM	Name
2222	33 Exports external	33	Exports external	33	Exports
2222	44 Domestic internal	44	Domestic internal	44	Domestic
2222	55 Domestic external	55	Domestic external	55	Domestic
2222	99 Domestic internal	99	Domestic internal	99	Domestic
AK6	30 Web Sales	30	Web Sales	30	Web Sales
WSO1	10 Acme Sales	20	Normal Sales	20	Normal
WSO1	20 Normal Sales	20	Normal Sales	20	Normal
WSO1	30 Web Sales	30	Web Sales	30	Web Sales

Figure 18: Distribution Channel settings

SOrg	Dv Name	DivCon	Name	DivCus	Name
2222	99 Maintenance Services	99	Maintenance Services	99	Maintenance Service
AKG	30 Web Sales	30	Web Sales	30	Web Sales
NS01	10 Acme Sales	20	Normal sales	20	Normal sales
NS01	20 Normal sales	20	Normal sales	20	Normal sales
WS01	30 Web Sales	30	Web Sales	30	Web Sales

Figure 19: Division settings

Create a new order type – transaction code VOV8

A new order type ZOR1 (Web Sales) must be created. Create this by copying it from the standard order type OR.

Note: All of the related settings (copy control and so on) are also copied. You can continue working with the standard order type “OR” when called from WebSphere Commerce. However, it is recommended not to use the standard order type, instead copy from the standard order type.

Defining the MRP Controller

Every material that is relevant to the planning run must be assigned an MRP controller number in the material master record. The MRP Controller must be entered when creating materials for the WSAL plant.

1. To do this, go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**
3. Select **Production > Material Requirement Planning > Master Data > Define MRP Controllers**.
4. Add a new entry for the WSAL plant as a copy of 0001 as shown in the following figure.

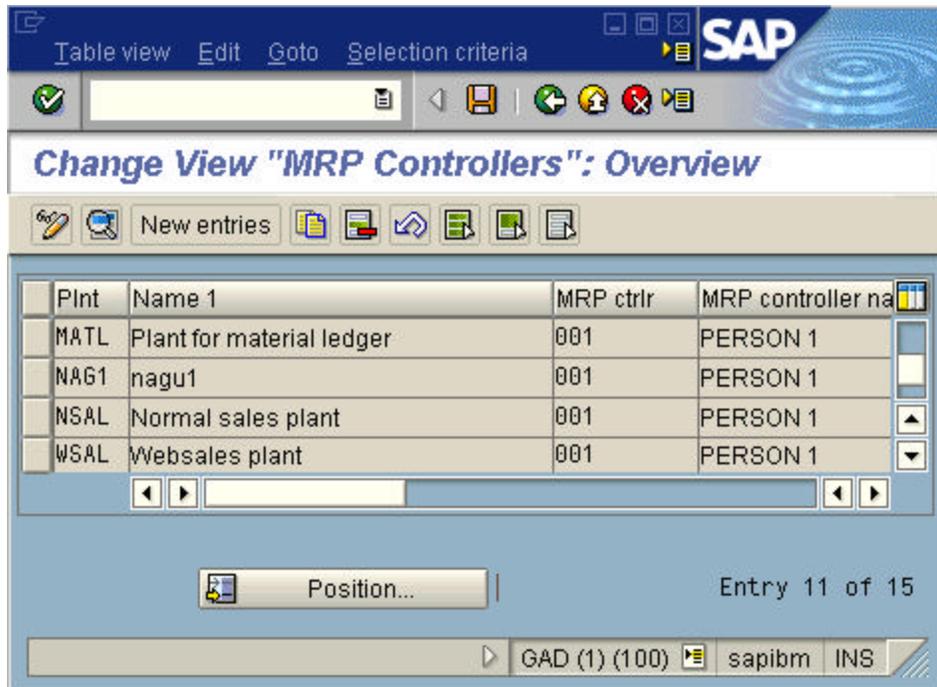


Figure 20: Defining the MRP Controller

Defining the Floats (Schedule Margin Key)

The floats are allocated to the material through the release period key in the material master record. The schedule margin key must be entered when creating materials for the WSAL plant.

1. To do this, go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**
3. Select **Production > Material Requirement Planning > Planning > Scheduling & Capacity Parameters > Define Floats (Schedule Margin Key)**.
4. Add new entries for the WSAL plant as a copy of 0001 as shown in the following figure.

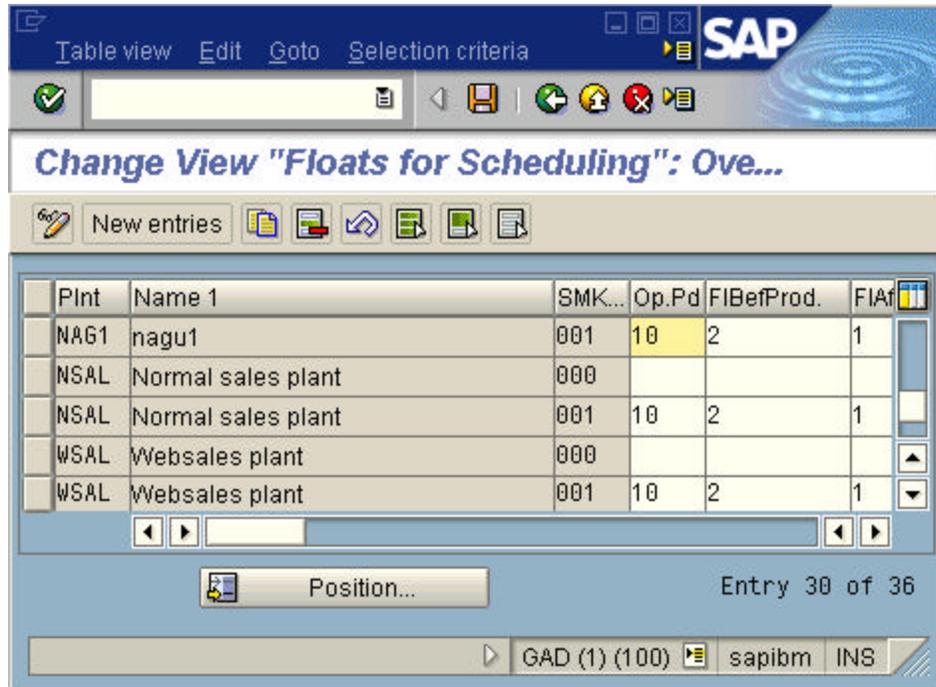


Figure 21: Defining the Floats (Schedule Margin Key)

Customizing the master data

This section describes how to create a customer account group, assign partner functions to the account group, and setting up taxes.

Creating customer account group

Create a new customer account group called 'ZINC'.

1. To do this, go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)** as shown in Figure 22.

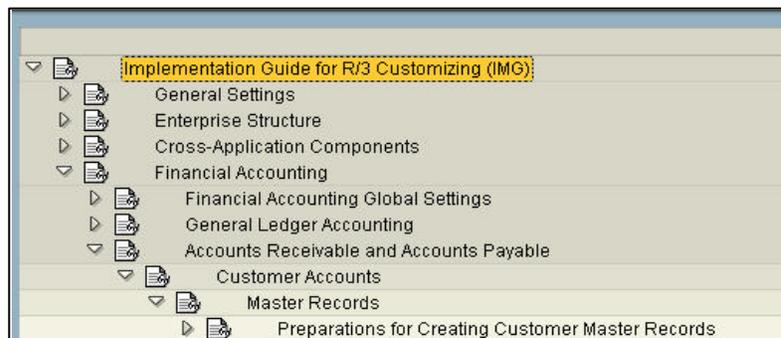
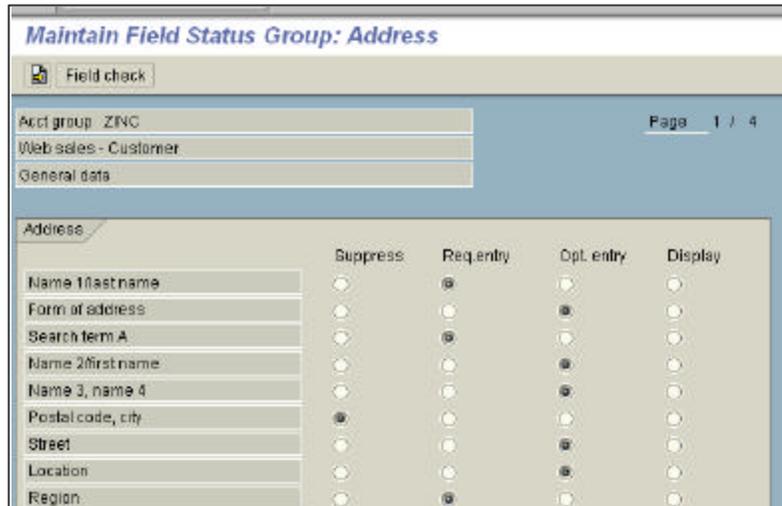


Figure 22: Customizing the master data

3. Select **Financial Accounting > Accounts Receivable & Payable > Customer Accounts > Master Records > Preparations for Creating**

Customer Master Records > Define Account Groups with screen layout (customers).

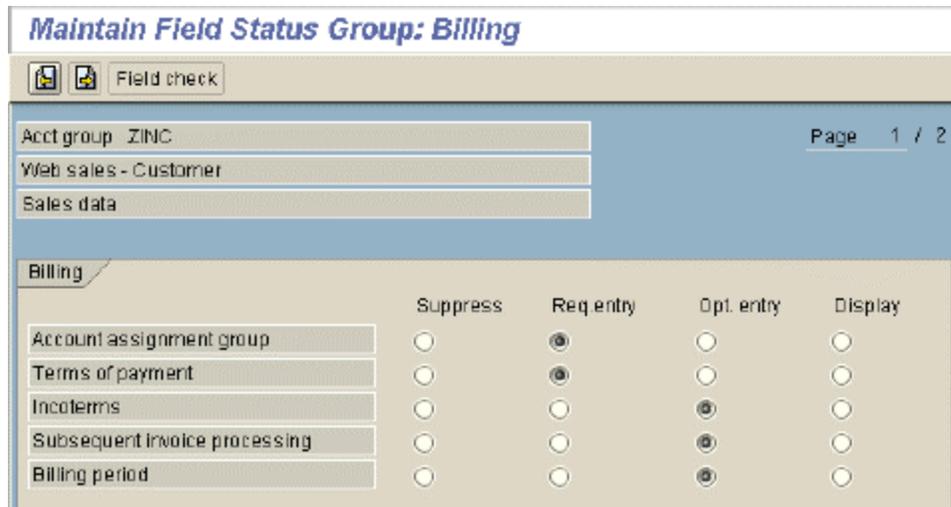
- Copy account group **0001** to **ZINC**. Change the field group **General Data**. From the address group make **Region** mandatory. This field is used to calculate taxes and freight costs.



Field	Suppress	Req. entry	Opt. entry	Display
Name 1/last name	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Form of address	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Search term A	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Name 2/first name	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Name 3, name 4	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Postalcode, city	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Street	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Location	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Region	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 23: Maintaining the field status address group

- From the field group **Sales Data**, go to the Billing group and make the **Terms of payment** field mandatory.



Field	Suppress	Req. entry	Opt. entry	Display
Account assignment group	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terms of payment	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incoterms	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Subsequent invoice processing	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Billing period	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Figure 24: Maintaining the field status sales group

Assigning partner functions to the customer account group

For the customer account group, ZINC you must assign the sold-to party, bill-to party, ship-to party, and payer partner functions.

1. To do this, go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**.
3. Select **Sales and Distribution > Basic Functions > Partner Determination Define and Assign Partner Determination Procedures**.
4. Select **Customer master** and click **Partner Functions**.
5. From the menu go to **Environment** and select **Account Group Assignment**.
6. Add **SP** (sold-to), **BP** (bill-to), **SH** (ship-to), and **PY** (payer) partner functions for the account group ZINC as shown in Figure 25.

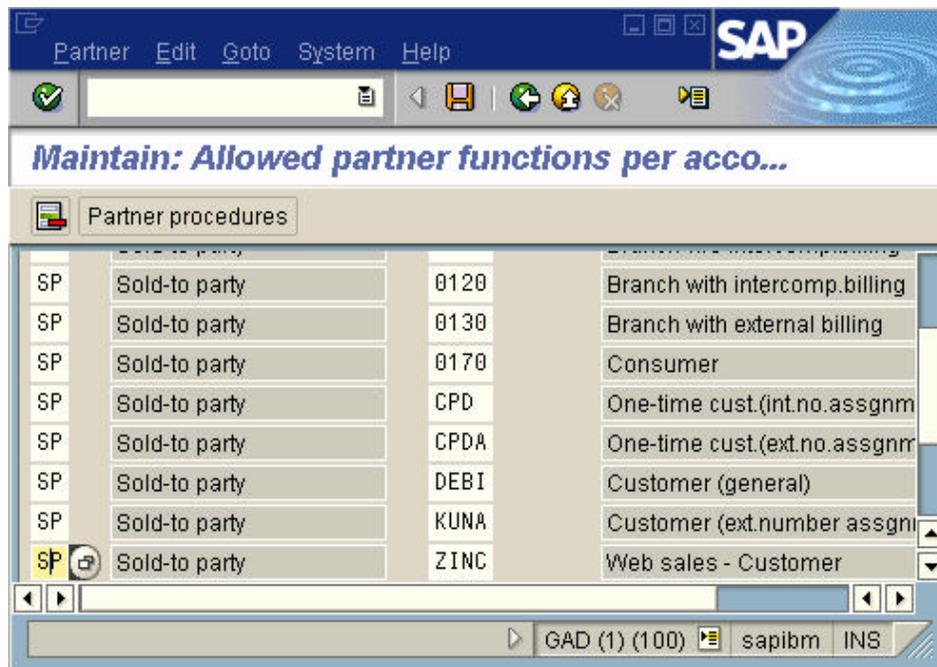


Figure 25: Assigning the partner functions

Setting up taxes

To assign a country to a tax procedure, do the following:

1. Go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**.

3. Select **Financial Accounting > Financial Accounting Global settings > Tax on Sales/Purchases > Basic Settings > Assign Country to Calculation Procedure**.
4. Assign the procedure TAXUS to country US.

To assign a delivering plant for tax determination, do the following:

1. Go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**.
3. Click **Sales and Distribution > Basic Functions > Taxes > Assign Delivering Plants for Tax Determination**.
4. Maintain plant specific settings. The region of the delivering plant is attached to the plant. Attach region NY to plant WSAL.

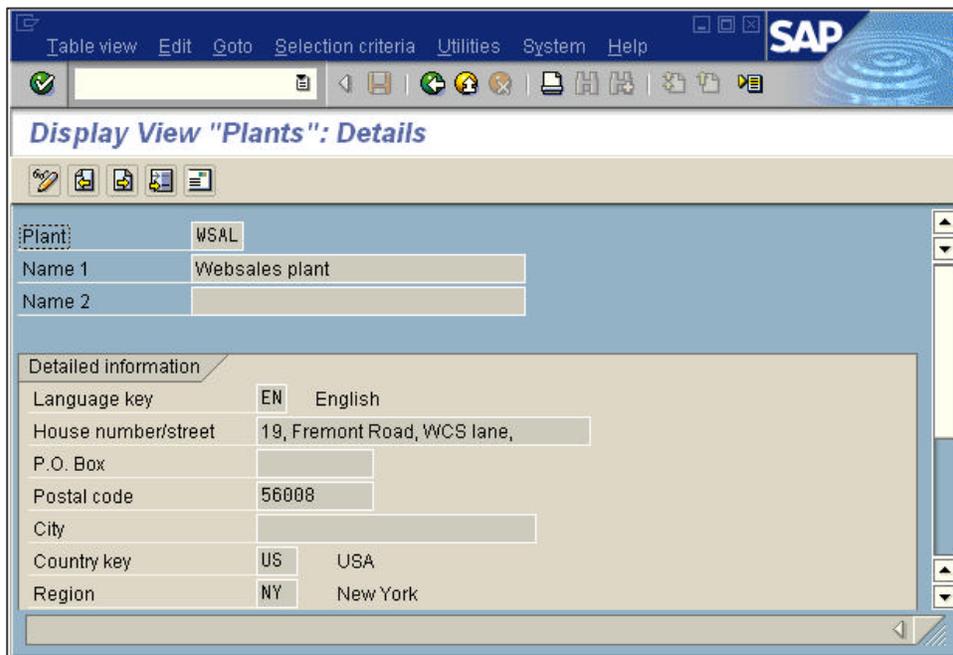


Figure 26: Maintaining plant specific settings

To maintain the tax relevancy of the master record, do the following:

1. Go to transaction code SPRO, and click **SAP Reference IMG**.
2. From the tree structure, select **Implementation Guide for R/3 Customizing (IMG)**.

3. Click **Sales and Distribution > Basic Functions > Taxes > Define tax relevancy for Master Records > Customer Taxes (or) Material Taxes**
4. Maintain customer and material tax classification, for tax category UTXJ as shown in the following figures.

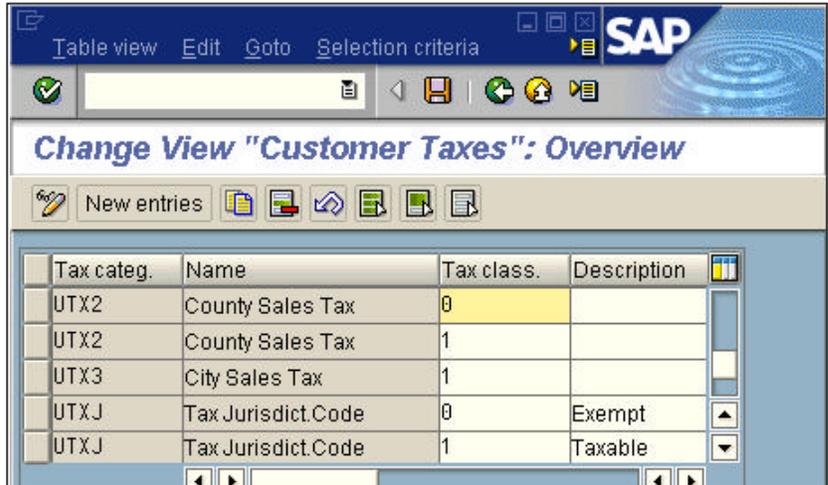


Figure 27: Maintaining tax relevancy for customers

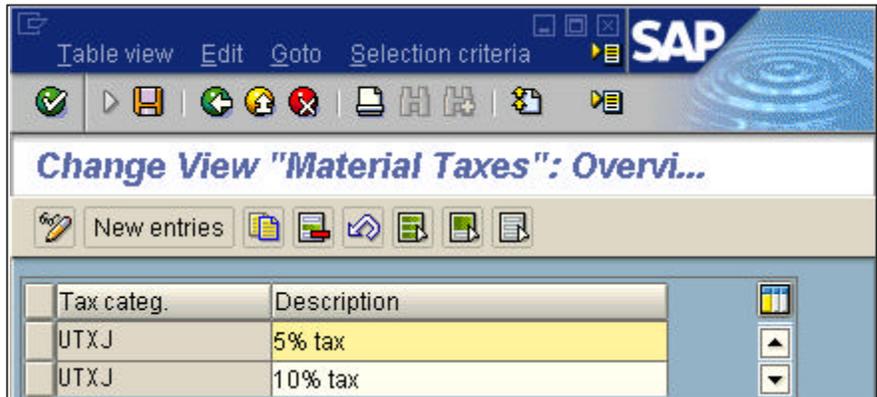


Figure 28: Maintaining tax relevance for materials

To maintain the tax codes using transaction code FTXP, do the following:

Maintain output tax codes A0 to A6 for various percentages of taxes.

- A0 -0%
- A1 – 5%
- A2-10%
- A3-4%
- A4-2%

- A5-1%
- A6-15%

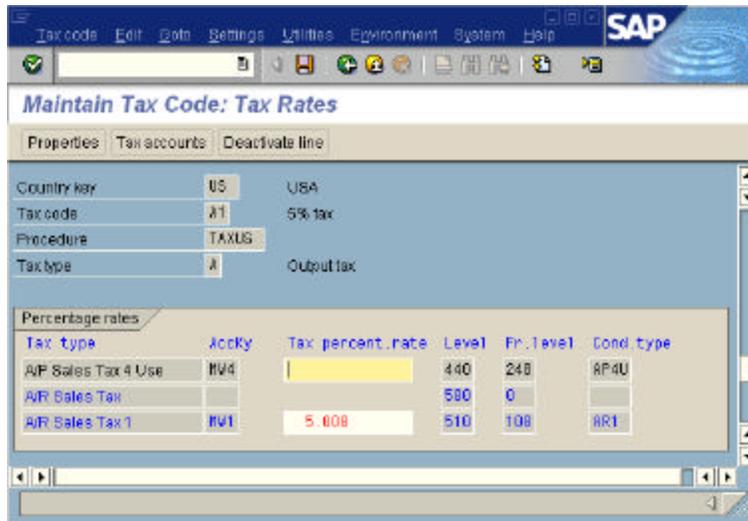


Figure 29: Maintaining tax codes for a country

Maintaining the material master related settings – transaction code OMSF

Maintain the material groups. For the reference application, two material groups 3010 and 3011 are maintained and the materials created for the plant must be associated with a material group.

3010	Matl grp 3010			
3011	Matl grp 3011			

Figure 30: Material master settings

Maintaining the customer master related setting - transaction code OVS9

Maintain the new customer groups. The customer groups are used in pricing conditions for special prices.

CGrp	Name
01	Industry
02	Retail
03	Internet Customer

Figure 31: Customer master settings

Configuring price, freight, and tax

To configure the price, freight and, tax do the following:

- Create the condition table
- Create the access sequence
- Create the condition type
- Create the pricing procedure
- Assign the pricing procedure

Creating the condition table – transaction code V/03

SAP stores condition records in the form of tables. Create the following tables for pricing records, freight cost, and tax calculations:

- Table 502 for pricing
1. Create a new condition table 502, with the fields **Sales organization**, **Distribution channel**, **Division**, **Customer group**, and **Material**.
 2. To create tables:
 - a. Go to **T.code V/05 > create**
 - b. Select the fields that are required as shown in Figure 32 to create the table and save.

The screenshot displays the 'Display Condition Table (Pricing Sales/Distribution): Field Overview' window. At the top, there are three tabs: 'Technical view', 'Other description', and 'Field attributes...'. Below the tabs, the table number '502' is entered, followed by the field list 'Sales org./Distr. ch/Division/Cust.group/Material'. There are two checkboxes: 'With validity period' (checked) and 'with release status' (unchecked). The main area is divided into two columns: 'Selected fields' and 'FieldCatlg'. The 'Selected fields' column lists: Long Key Word, Sales organization, Distribution channel, Division, Customer group, and Material. The 'FieldCatlg' column lists: Long Key Word, Accounting indicator, Act. gross inc. tax, Agreement, Base unit of measure, Batch, Bill-to party, CAP prod. group, Catalog, City code, City of deliv.plant, Commission group, and Conditn pricing date.

Figure 32: Table 502 for pricing

- Table 700 for calculating the freight

This table contains the region of the delivering plant, the region of the customer, and the Incoterms 1 and 2 fields. Incoterms 2 is in the Text field.

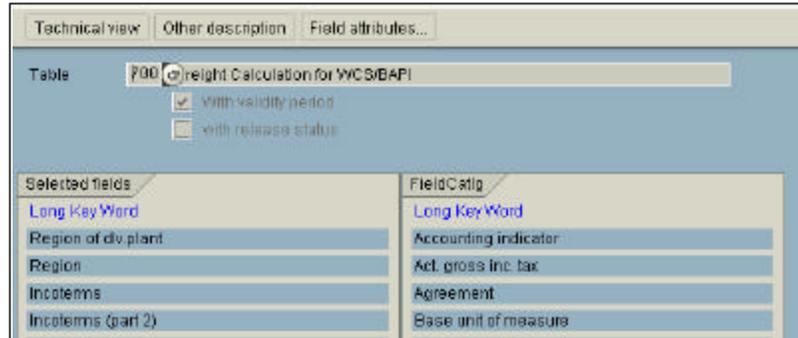


Figure 33: Table 700 to calculate the freight

- Table 699 for calculating taxes

This table contains the Country, Region of Delivering Plant, Material tax classification, Customer tax classification and Region of customer fields.



Figure 34: Table 699 to calculate taxes

Creating the access sequence – transaction code V/07

The access sequence searches for the valid condition record for a particular condition type, for example, it searches all the condition tables for the record until a valid record is found.

1. Create the access sequence ZPR0 for prices.

This access sequence contains tables 502, 305 and 6 and 4. It searches these tables for a valid record and returns the value to the transaction.

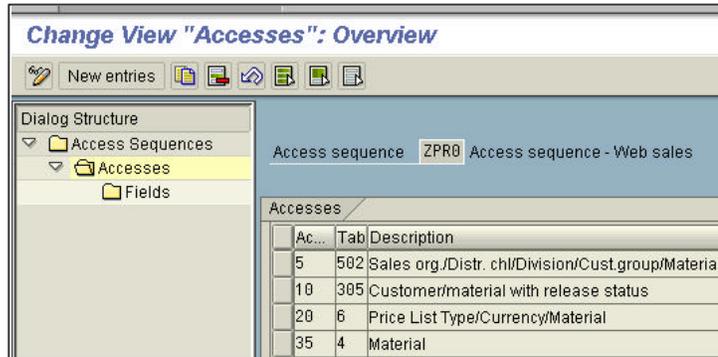


Figure 35: The access sequence that contains tables

2. Create the access sequence ZFR0 for freight (shipment costs).

This access sequence contains table 700. It searches this table for a valid record and returns the value to the transaction.



Figure 36: Access sequence ZFR0

3. Create the access sequence UTX1 for tax calculation.

This access sequence contains tables 699, 78, 40, and 2. It searches these tables for a valid record and returns the value to the transaction.

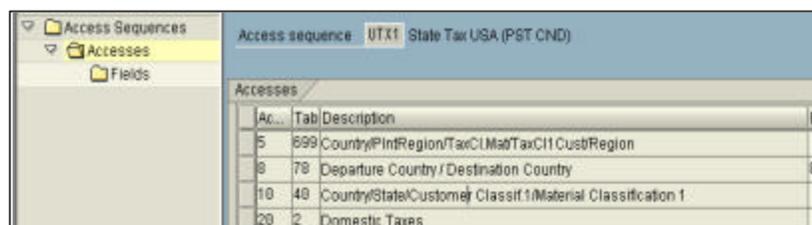


Figure 37: Access sequence UTX1

Creating the condition type – transaction code V/06

The various conditions that appear in a sales transaction such as prices, discounts, tax and, freight are recorded using the condition type. Create the following condition types:

1. Condition type ZPR0.

Condition type ZPR0 is a copy of condition type PR02. Change PR02's access sequence to ZPR0.

The screenshot shows the SAP configuration screen for condition type ZPR0. The 'Condit. type' is ZPR0 and the description is 'Web sales'. The 'Access seq.' is ZPR0, with a sub-label 'Access sequence - Web' and a button 'Records for access'. The 'Control data 1' section includes: 'Cond. class' B Prices, 'Plus/minus' positive a, 'Calculat.type' C Quantity, 'Cond.category' (empty), 'Rounding rule' Commercial, and 'StrucCond.' (empty). The 'Group condition' section has 'Group cond.' and 'RoundDiffComp' unchecked, and 'GrpCond.routine' (empty). The 'Changes which can be made' section has 'Manual entries' D 'Not possible to process manually', 'Header condit.' unchecked, 'Item condition' checked, 'Delete' unchecked, 'Amount/percent' unchecked, 'Value' unchecked, and 'Qty relation' unchecked.

Figure 38: Creating the condition type ZPRO

2. Condition type ZF00.

To create condition type ZF00 copy it from any existing freight condition. Set the access sequence to ZFR0.

The screenshot shows the SAP configuration screen for condition type ZF00. The 'Condit. type' is ZF00 and the description is 'Shipment cost'. The 'Access seq.' is ZFR0, with a sub-label 'Ac Sq for Freight Cal' and a button 'Records for access'. The 'Control data 1' section includes: 'Cond. class' A Discount or surcharge, 'Plus/minus' positive a, 'Calculat.type' B Fixed amount, 'Cond.category' F Freight, 'Rounding rule' Commercial, and 'StrucCond.' (empty). The 'Group condition' section has 'Group cond.' and 'RoundDiffComp' unchecked, and 'GrpCond.routine' (empty). The 'Changes which can be made' section has 'Manual entries' (empty) 'No limitations', 'Header condit.' checked, 'Item condition' checked, 'Delete' checked, 'Amount/percent' checked, 'Value' unchecked, 'Qty relation' unchecked, and 'Calculat.type' unchecked.

Figure 39: Creating the condition type ZF00

Creating a pricing procedure - transaction code V/08

Create a new pricing procedure called ZINSAL. This is a copy of RVA001 with the changes given below. The total price, tax, and shipping costs can be picked up from the fields KZWI1 - KZWI6.

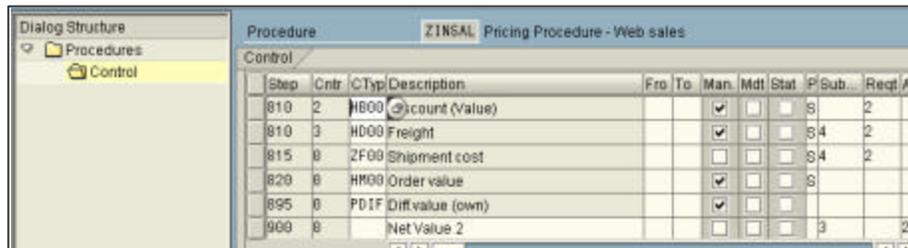


Figure 40: Creating a pricing procedure

Make the following changes in the pricing procedure:

1. In step 11 of the pricing procedure, replace PR00 by **ZPR0**.
2. In step 815, enter the condition type **ZF00** and attach the act key ERF.
3. In step 915, replace MWST by **UTXJ**. In the subtotal field select "5" (carry over values to KZW15).

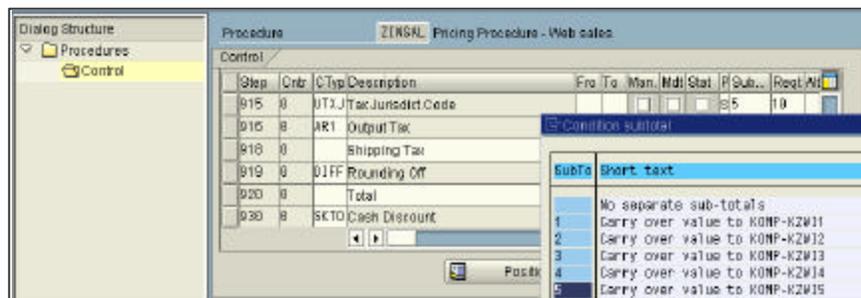


Figure 41: Step 915 for changes in pricing procedure

4. Create step 916 and enter condition type **AR1** (copy of MWST) and make all the settings in the pricing procedure as per step 915, except for the subtotal field, which you must leave blank.
5. Since the total tax shipping price is not a standard functionality in SAP, a new routine needs to be written in addition to certain pricing procedure modifications.
6. Create step 918 and enter the description as **Shipping tax**. Mark the **Stat** field. In the **Subtotal** field select "6" (carry over values to KZW16). In the **AltCTy** field enter 900. (Before this step, ensure that you have created AltCTy 900). To create AltCTy 900 do the following:
 - a. Go to T.code VOFM.
 - b. From **Formulas** select **Maintain condition values**. You will need a developer ID and access key to modify the source code.
 - c. In the **Routine number** field enter 900, with the description as Shipping tax.



Figure 42: Entering a description in the routine 900 field

- d. In the Change request window create a request.
- e. In the ABAP4 program RV64A900 enter the following code:

```
FORM FRM_KONDI_WERT_900 .
Xkwert = komp-kzwi4 * komp-kzwi5 / komp-kzwi3.
ENDFORM
```

- f. Save the routine after activation.

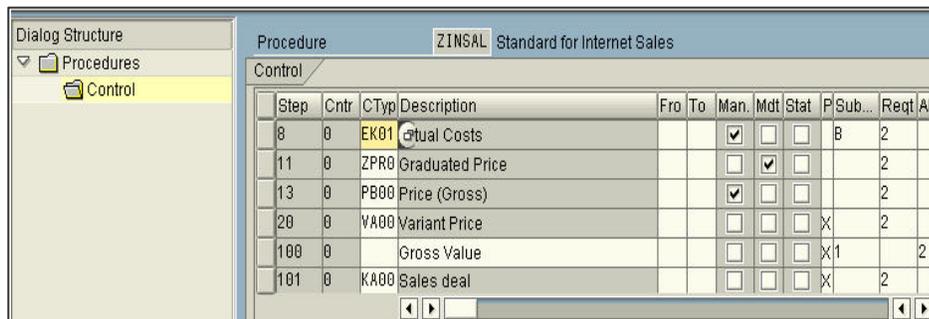


Figure 43: Saving the routine

Assigning a pricing procedure – transaction code OVKK

Assign a pricing procedure ZINSAL to Sales Organization WSO1, Distribution Channel 30, Division 30, Document Pricing Procedure A and Customer Pricing Procedure 1.

WS01	30	30 A	1	ZINSAL	Pricing Procedure - We		
WS01	30	30 A	2	ZINSAL	Pricing Procedure - We		

Figure 44: Assign pricing procedure

Account determination procedure - transaction code VKOA

Maintain the General Ledger accounts for Sales Organization WSO1 as per the standard for Chart of Accounts maintained for Sales Organization 0001.

Transactions - master data

Create the following master data:

- Pricing records - ZPRO
- Shipment cost – ZF00
- Tax - UTXJ
- Customer master
- Material master

Pricing records

To create the pricing records use transaction VK11 and do the following:

1. From the Create Condition Records initial screen, enter the **Condition type** as ZPRO and press enter. A pop-up window appears listing the tables in which the condition records can be stored. The first table is for the customer group records, the second table is for customer or material specific prices, the third table is for pricelist and the fourth table is the for material price.

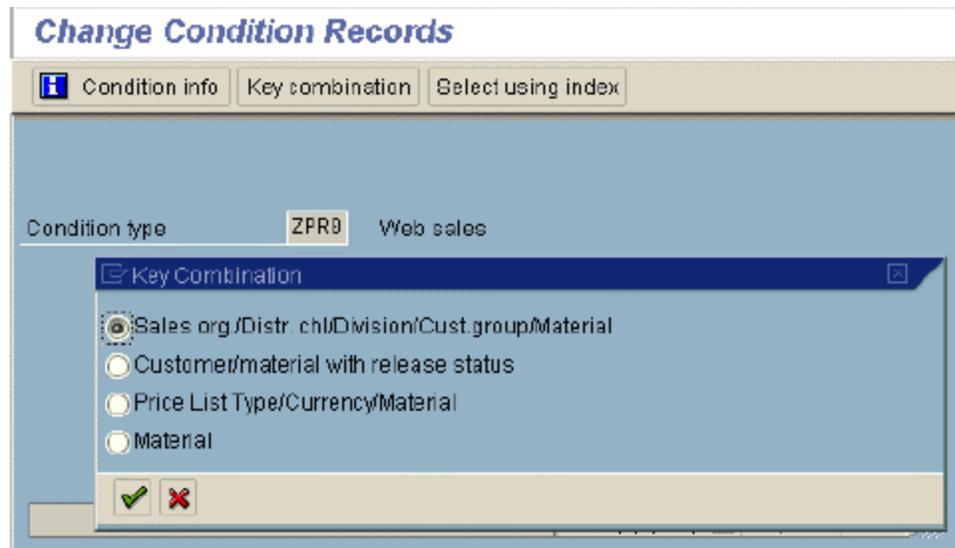


Figure 45: Creating the condition records for pricing

- a. Select the last table and press enter. Make the required entries as shown in Figure 46 and save the records.

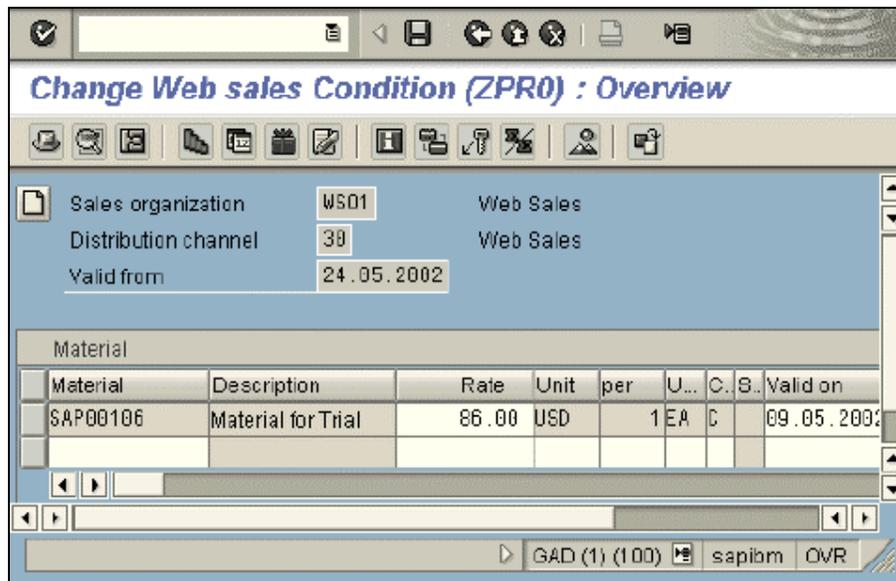


Figure 46: Creating the Web sales condition

- b. To maintain records for the other tables, select the respective table from the first screen and create the records.

Shipment cost

To maintain records for the shipping cost, enter the condition type ZF00 in the Create Shipment cost Condition initial screen, press enter, and do the following:

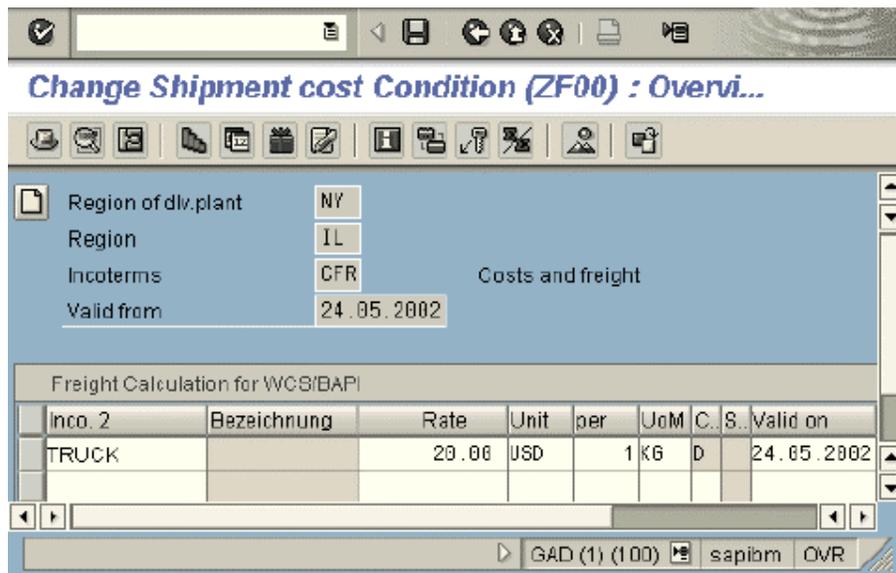


Figure 47: Creating a record for shipment cost

1. Enter the **Region of div. plant**, which is the delivering plant.
2. Enter the customer's **Region**.
3. Enter the **Incoterms**.
4. Enter the mode of transport in uppercase for Incoterms2.
5. Enter the rates for currency, unit and the validity dates. Save the record.

Tax

To maintain records for tax do the following:

1. Enter the condition type UTXJ in the Create Condition Records initial screen and press enter.
2. Select the first table as shown in Figure 48 to maintain the records and press enter.

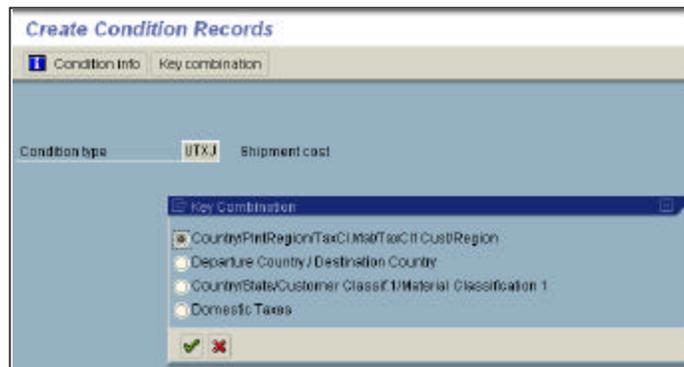


Figure 48: Creating a tax record

3. Enter the **Country, Region of div.plant, Tax class.material, TaxClass1-Cust**, which is the tax classification of the customer, region of the customer, and the tax code. Press enter and save the records

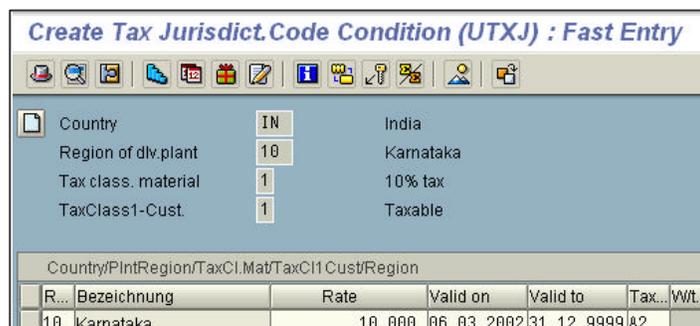


Figure 49: Creating a tax record

Customer master

1. From the SAP initial screen, go to **Logistics, Sales and Distribution, Master Data, Business partners, Customer, Create**, and select **Complete**.

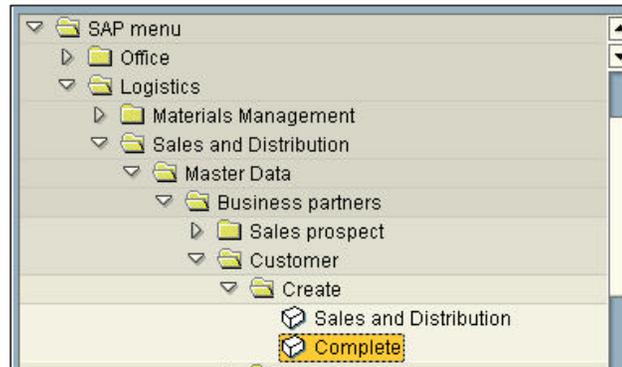


Figure 50: Creating the customer master data

2. From the Create Customer Initial Screen as shown in Figure 51 do the following:



Figure 51: Adding the customer master details

- a. Enter the **Account group** as ZINC.
 - b. Enter the **Customer**.
 - c. Enter IGO1 for the **Company code**.
 - d. Enter WSO1 for the **Sales organization**.
 - e. Enter 30 for the **Distribution channel** and **Division**.
 - f. Press enter.
3. In the Address Tab of General data, enter the **Name, Search terms, Country, Transportation zone, Region**, and so on.

Customer: INTERNAL

Address | Control data | Payment transactions | Marketing | Unloading points | Export data | Contact persons

Name: Logica Infosystems

Search terms

Search term 1/2: Logic

Street address

Street/House number: [Redacted]

Country: IN India Region: 010

Transportation zone: 0008008001

Figure 52: Entering the general information

4. Click on the Account Management tab. In the **Company code data** section, enter the **Recon. account** number. This is the reconciliation account.

Create Customer: Company code data

General data | Company code data | Sales area data

Customer: INTERNAL dt

Company code: 1601 IBM Global Services

Account management | Payment transactions | Correspondence | Insurance

Accounting information

Recon. account: 140008

Head office: [Redacted]

Authorization: [Redacted]

Cash mgmt group: [Redacted]

Value adjustment: [Redacted]

Figure 53: Creating the company code data

5. In the Sales tab of the Sales area data, enter the **Customer group** (optional) and **Currency** (This will be picked up automatically from the company code currency).

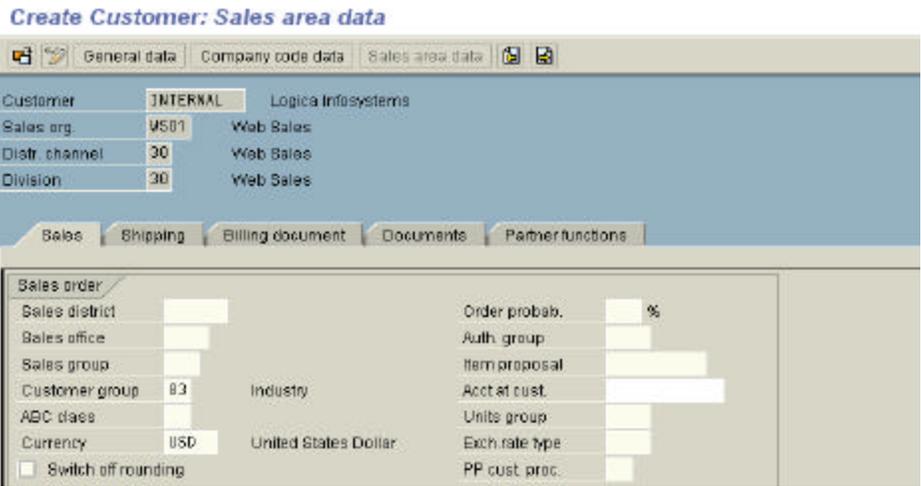


Figure 54: Entering sales area data

- 6. Click on the **Billing document** tab. In Sales Area Data, enter the **Incoterms** 1 and 2, the **Terms of payment**, and the various Taxes.

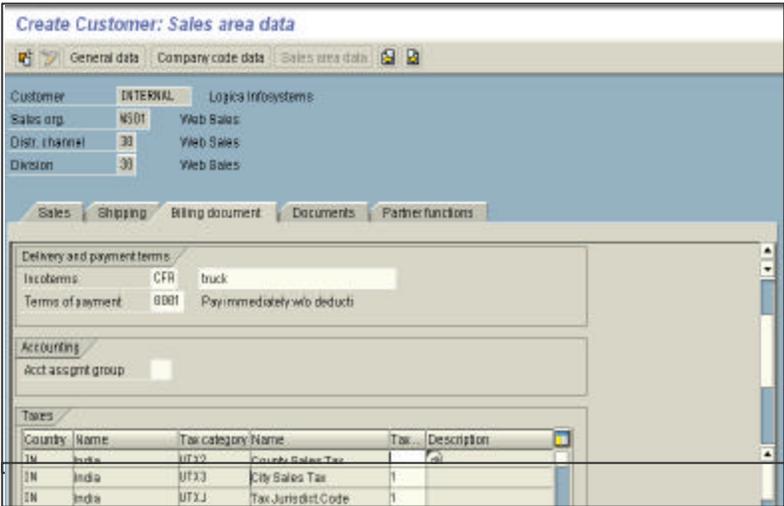


Figure 55: Entering the billing information

- 7. **Save** the customer information. If the customer data is saved successfully a message conveys the same as shown in Figure 56.



Figure 56: Saving the new customer information

Material master

1. From the SAP initial screen go to **Logistics, Materials Management, Material Master, Material, Create (General)**, and select **Immediately**.

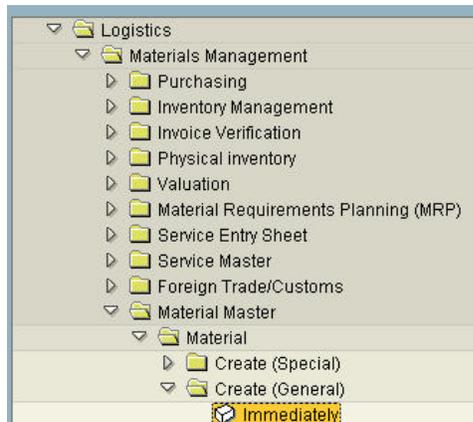


Figure 57: Creating the material master

2. In the Create Material (Initial Screen) as shown in Figure 58 enter the following:

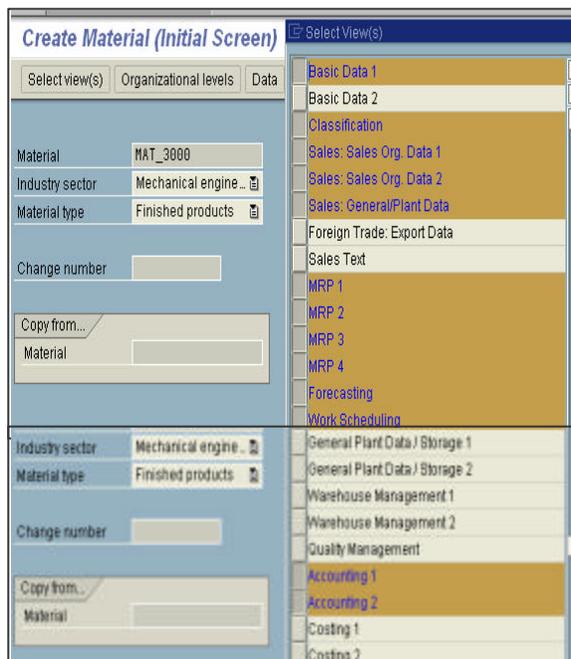


Figure 58: Entering initial data

- a. Enter mat_3000 for the **Material** number.
- b. Select Mechanical engineering for the **Industry sector**.

- c. Select Finished products for the **Material type**.
 - d. Press enter. If no entry is made against the Material field, then the system will generate a number.
 - e. Click **Select View** to select the views.
3. Select the views as shown in Figure 58. Press enter and click **Organizational levels**.
- a. In the Organizational Levels pop-up enter the following:

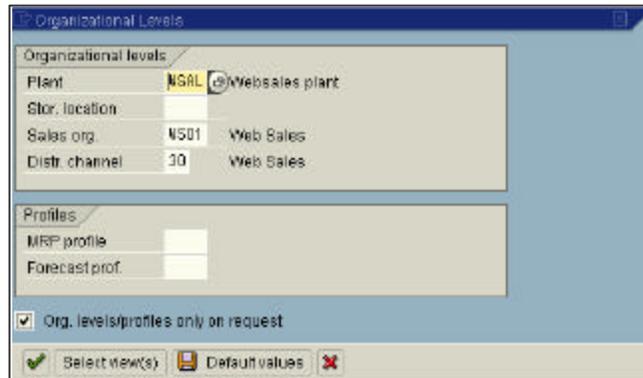


Figure 59: Entering the organizational levels details

- i) Enter WSAL as the **Plant**.
 - ii) Enter WSO1 as the **Sales org.**
 - iii) Enter 30 as the **Distr. channel** and press enter.
4. In the first screen of the material master creation, under the Basic data 1 tab, enter the **Material** description, the **Base unit of measure**, the **Material group**, **Gross weight**, **Net weight**, **Weight unit** of measure, and the dimensions as shown in Figure 60.

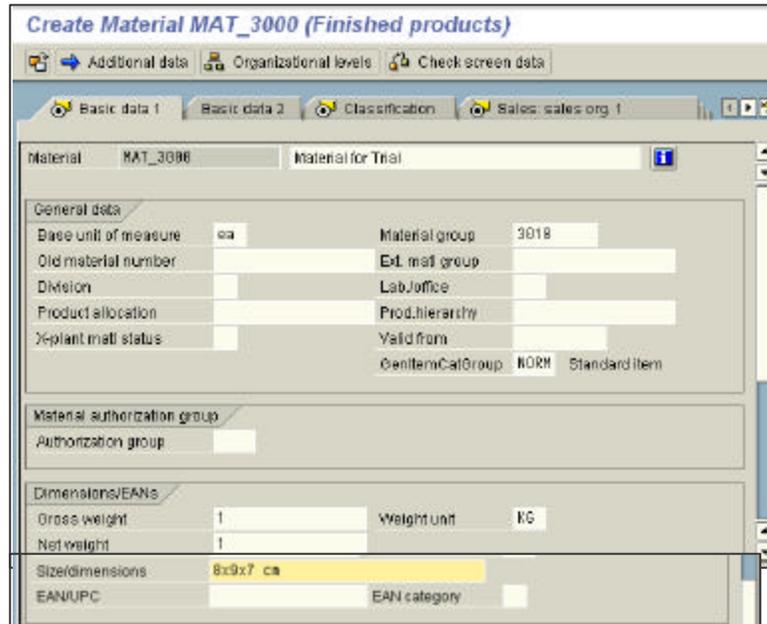


Figure 60: Entering the Basic Data 1

5. Click on the Sales: sales org.1 tab and enter the appropriate information under the Tax data field.

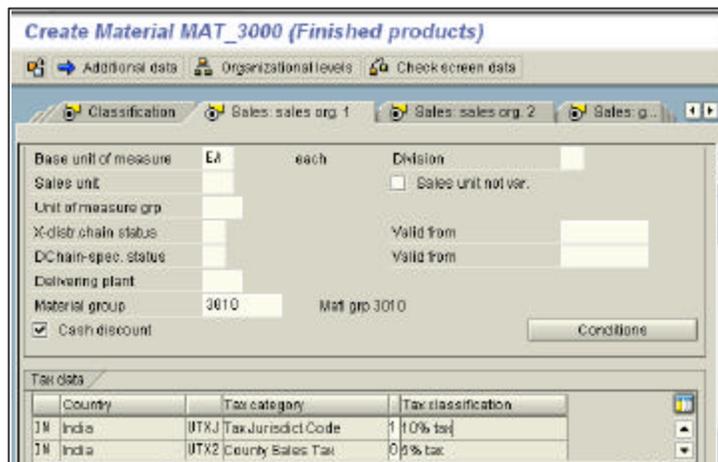


Figure 61: Entering the tax details

6. Click on the Sales: general /plant tab and enter the **Availability**, **Trans. grp** and **Loading grp**.

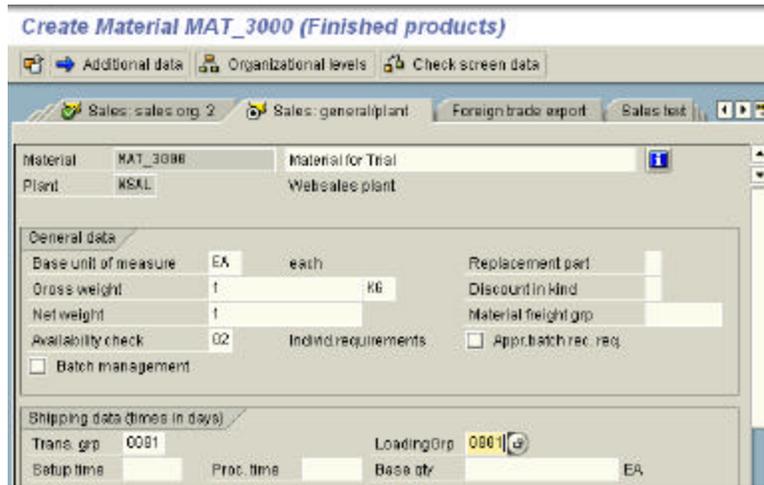
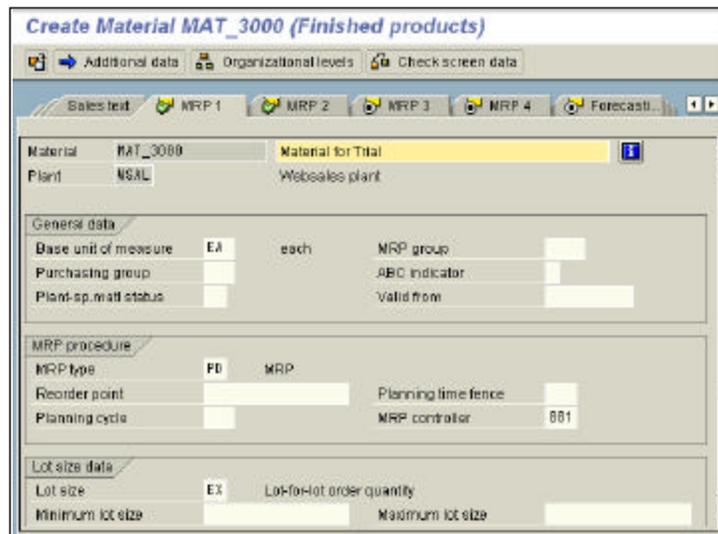


Figure 62: Entering the Sales general/plant details

7. Click on the **MRP1** tab and enter the **MRP type**, **MRP controller**, and the **Lot size** as shown in Figure 63.



8. Click on the **MRP 2** tab. Enter the number of days for **In-house production** and the **SchedMargin key**, which is the schedule margin key.

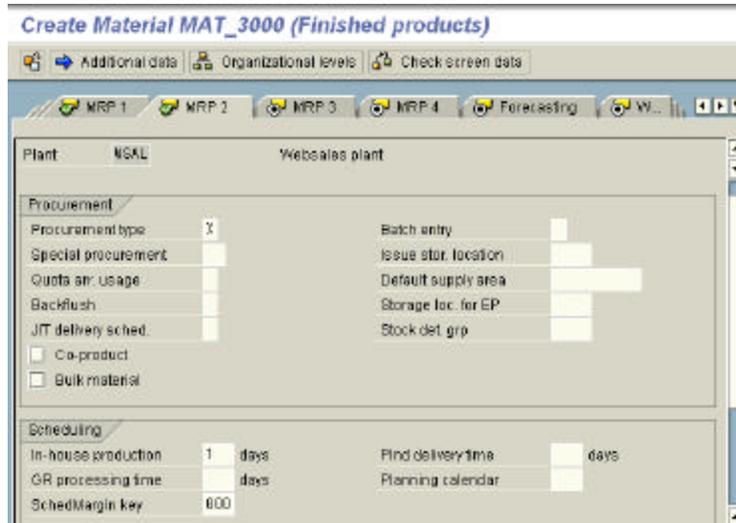
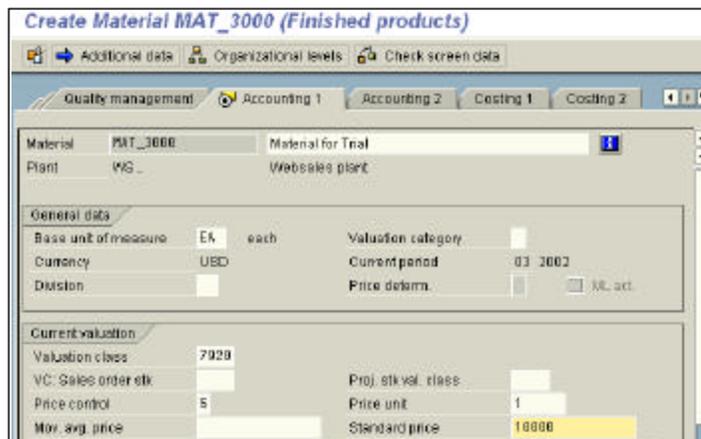


Figure 64: Entering the MRP2 details

9. Click on the **Accounting 1** tab. Enter the **Standard price** and save the details.



10. If the material is created successfully the following message appears as shown in Figure 66.

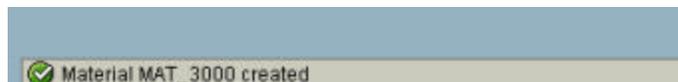


Figure 66: Confirmation message for material

Extending the customer to other sales areas

To extend the customer master to other sales areas, use transaction XD01 and do the following:

1. In the Customer Create: Initial Screen enter the following:
 - a. Enter the **Customer** number that needs to be extended.
 - b. Enter the **Company code**.
 - c. Enter the **Sales organization**.
 - d. Enter the **Distribution channel** and **Division** to suit your requirements.

The screenshot displays the 'Create Customer: Initial Screen' dialog box. The title bar reads 'Create Customer: Initial Screen'. The main area contains several sections:

- Account group:** (Select)
- Customer:** 900122
- Company code:** I601 IBM Global Services
- Sales area:**
 - Sales organization:** 0001 Sales Org. 001
 - Distribution channel:** 01 Distribtn Channel 01
 - Division:** 01 Product Division 01
- Reference:**
 - Customer:** 900122 Logica Infosystems
 - Company code:** 1g01
 - Sales organization:** ws01
 - Distribution channel:** 30
 - Reference division:** 30

At the bottom, there are two buttons: 'All sales areas...' and 'Customer's sales areas...'. A toolbar at the very bottom contains icons for save, delete, and other actions.

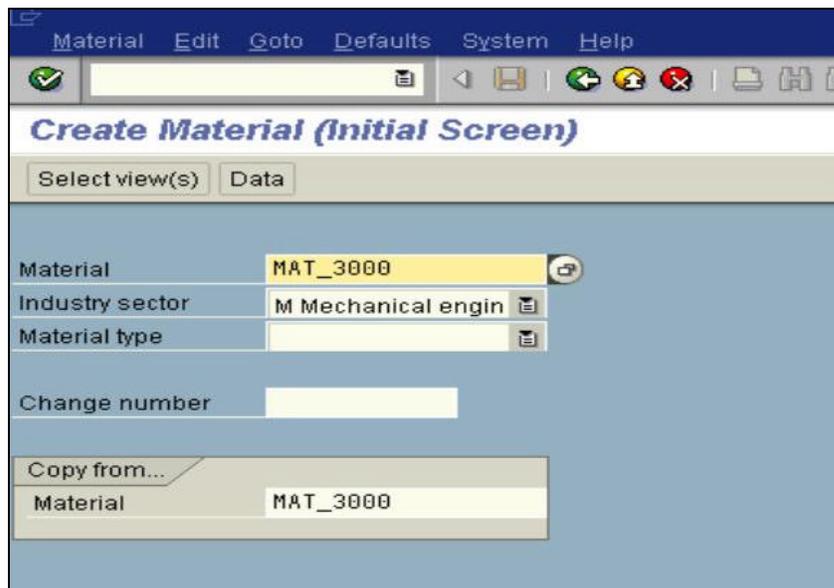
Figure 67: Create Customer: Initial Screen

2. Under the Reference section enter the number of the customer that you are extending and the customer's related information.

3. After you complete entering all the details press enter to continue. All the details from the Reference Sales Area are copied to the new sales area. Validate the values in all the screens and save the customer information in the last screen.

Extending material to other sales areas

Material master sales views (Sales Org1 and 2) are maintained for a specific sales organization or distribution channel. To extend the material master to other sales organizations or distribution channels use the transaction code MM01. Go to the Create Material (Initial Screen) as shown in Figure 68.



The screenshot shows the SAP 'Create Material (Initial Screen)' transaction code MM01. The screen displays a menu bar with 'Material', 'Edit', 'Goto', 'Defaults', 'System', and 'Help'. Below the menu bar is a toolbar with various icons. The main area is titled 'Create Material (Initial Screen)' and contains a 'Select view(s)' button and a 'Data' button. The 'Material' field is populated with 'MAT_3000'. The 'Industry sector' is 'M Mechanical engine'. The 'Material type' field is empty. The 'Change number' field is empty. Below these fields is a 'Copy from...' section with a 'Material' field containing 'MAT_3000'.

Figure 68: Create Material (Initial Screen)

1. Enter the **Material** code that must be extended. Enter this same code in the Material field from the Copy from section. Press enter.
2. Select the views as shown in Figure 69. Click **Organizational levels** and press enter.

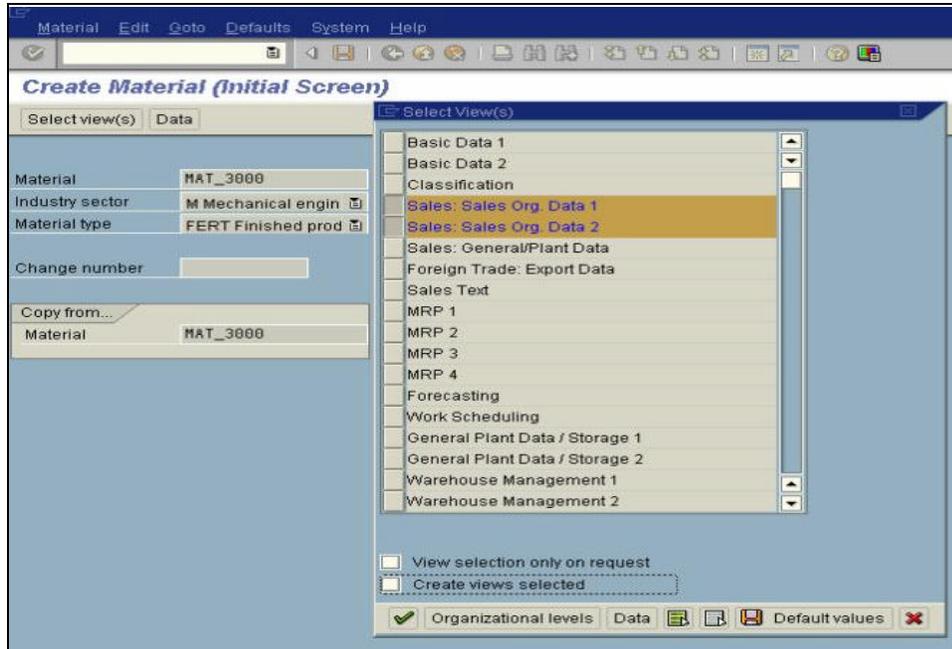
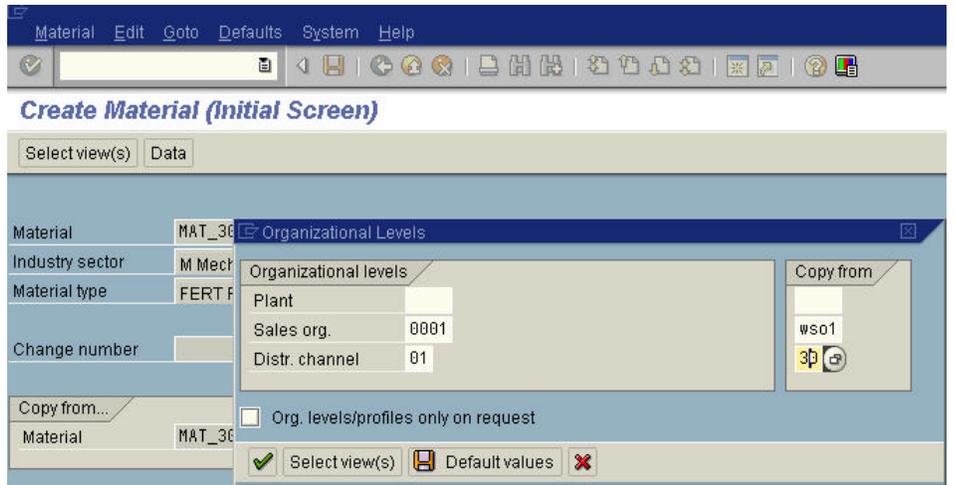


Figure 69: Selecting the views

3. Enter the following in the next screen as shown in Figure 70:
 - a. Enter the **Sales org** or **Distr.channel** to which the material must be extended.



- b. In the Copy from area, enter the Sales Org or Distr. channel. Press enter to continue. The values from the reference Sales Org or Distr. channel is copied in the different views. Check the different views and save them.

Figure 70: Entering details

Chapter 7. Loading master data

This chapter describes how to load master data and reference data. It includes:

- Loading SAP materials and customer data onto WebSphere Commerce.
- Loading reference data onto SAP.

Loading SAP materials and customer data

To synchronize material data between WebSphere Commerce and SAP, use catalog management utilities like TextTransformer, XMLTransformer, IdResolver and Massloader. For more information, refer to the WebSphere Commerce loader utility documentation.

To load files onto WebSphere Commerce you must do the following:

- Extract material data from SAP into a pre determined flat file.
- Transform the data to an XML as expected by the catalog management utilities.
- Resolve the XML for all primary key constraints and upload to WebSphere Commerce.

Extracting data from SAP

To extract material and customer master data from SAP R/3 and load it onto WebSphere Commerce, you need to write report programs in the ABAP editor (transaction code se38) and Go to Basis Components, ABAP programming, Runtime Components and select BC-ABAP programming. Identify the fields to be extracted as required by the predetermined flat file, and select the fields from the transparent tables using **Open SQL** select statements. Specify a selection criterion for the program to extract records, for example, material number(s). After this you can execute the report program and download the records from the internal tables, into a file in ASCII format by calling the function module "Download". For more information, refer to the Advanced Business Application Programming, (ABAP) documentation in the SAP Library.

You can use the same extract program to extract both independent user and organization customer data. Ensure that the profile field is set appropriately, Z1 for organization and Z2 for independent user, so that you can distinguish between the organization and independent user data. See Appendix G: Sample extract program for extracting data from SAP system.

Loading material data

To load the material data onto WebSphere Commerce using the massload scripts provided, ensure that you extract the material data from the SAP R/3 system in the following sequence with a delimiter. The delimiter expected by the

massload script is “~”. If you are using a different delimiter, you need to change this in the import schema files provided with this reference application.

Sequence no.	Data at position	Data description	Corresponding fields in SAP
1	MaterialPartNumber	Part number of the material	MARA-MATNR (Mandatory)
2	MaterialGroupPartNumber	Part number of the material group	MARA-MATKL (Mandatory)
3	Language	Language specification in SAP. An example of language specification in WCS is en_US, for English.	T002T-SPTXT (Mandatory)
4	MaterialName	Name of the material	MAKT-MAKTX (Optional)
5	MaterialShortDescription	Short description of the material.	(Optional)
6	MaterialLongDescription	Long description of the material.	(Optional)
7	MaterialImageName	Filename of the image/picture of the material.	(Optional)
8	MaterialLastUpdatedOn	Indicates the last time the material was updated.	MARA-LAEDA (Optional)
9	MaterialPrice	Amount of the material price.	MBEW-STPRS (Mandatory)
10	Currency	Currency of the material price.	T001-WAERS (Mandatory)
11	MaterialWeightMeasure	The unit of measurement for weight.	MARA-GEWEI (Optional)
12	MaterialSizeMeasure	The unit of measurement for length, width and height.	MARA-MEABM (Optional)
13	MaterialQuantityMeasure	The unit of measure for nominal quantity.	MARA-MEINS (Mandatory)
14	MaterialWeight	The nominal weight associated with the material	MARA-BRGEW (Optional)
15	MaterialLength	The nominal length associated with the material.	MARA-LAENG (Optional)
16	MaterialWidth	The nominal width associated with the material.	MARA-BREIT (Optional)
17	MaterialHeight	The nominal height associated with the material	MARA-HOEHE (Optional)

Sequence no.	Data at position	Data description	Corresponding fields in SAP
		material.	(Optional)
18	MaterialNominalQuantity	Nominal quantity for a material, used for pricing. For example, if a material is priced as "3 for a dollar", then the nominal quantity of the material is 3, and the price of the material is one dollar	MVKE-AUMNG (Mandatory)
19	MaterialDataIndicator	An indicator that specifies whether the data for that material is for CREATE or UPDATE.	CDHDR-CHANGE_IND (Mandatory)
20	ManufacturerName	The name of the manufacturer of this material	(Optional)
21	ManufacturerPartNumber	The part number used by the manufacturer to identify this material	(Optional)
22	Material group name	Name of the material group to which this material is associated	T023T-WGBEZ
23	Material group description	Description of the material group to which this material is associated	T023T-WGBEZ60

The attributes information for items in WebSphere Commerce is optional. You can load the materials without attributes. If you are loading the attributes for materials, then extract the characteristics information for these materials in the following format with the delimiter "~". If you are using a different delimiter, you need to change this in the import schema files provided with this reference application.

Sequence No.	Data at position	Data description	Corresponding fields in SAP
1	MaterialPartNumber	Part number of the material	AUSP-OBJEK (Mandatory)
2	MaterialGroupPartNumber	Part number of the material group	AUSP-KLART (Mandatory)
3	MaterialCharacteristicName	Name given to the material characteristic.	CABN-ATNAM (Mandatory)
4	MaterialCharacteristicValue	Value of the respective material characteristic name	AUSP-ATWRT (Mandatory)
5	Language	Language specification in SAP. An example of language specification in WCS is en_US, for English.	T002T-SPTXT (Mandatory)

To upload material data in the specified format do the following:

1. Use SAP transaction SE38 to execute the ABAP programs written to extract the material information and material characteristics (optional) from SAP. Move the extracted files into the `store\dataload\material` directory.
2. Open `ManifestFile.txt` present in the `store\dataload\material` directory, and replace `itabmara.txt` with the output file name derived from the material information extract program. Replace `itab.txt` with the output file name derived from the material characteristics extract program. If the program for material characteristics is not executed then delete the following lines.

```
itab.txt,attribute_schema.xml,Output.xml,Append
```

```
itab.txt,attrvalue_schema.xml,Output.xml,Append
```

Note: For information on the directory structure, refer to the `readme.txt` available in the integration package that you have downloaded.

3. Save and close this file.
4. Open the batch file `MaterialUpload.bat` present in the `store\dataload\material` directory, in an editor and change the following parameters according to your installation:

`DB_NAME` - Database type 'db2'.

`WCS_DBNAME` – WebSphere Commerce instance database name for example, **mall**.

`WCS_DBUSER` - Database user ID.

`WCS_DBPWD` - Database user password.

5. Edit the following line to include your WebSphere Commerce installation path:

```
<Drive:>\Commerce_Install_Path\bin\setenv.bat
```

6. Change the following literal as per your installation.

```
set DB2_HOME=D:\Websphere\sqliib
```

7. Change the parameter values passed to the XMLTransformer according to your installation. You can find the values for these parameters in the WebSphere Commerce database tables.

`MemberIdValue` - Identifier of the store owner
(`ORGENCY.ORGENTITY_ID`).

`TradingPositionName` - Trading position name associated with the store
(`TRADEPOSCN.NAME`).

CatalogName - Catalog identifier of the store (CATALOG.IDENTIFIER).

ImportLocation=<Drive:>\Commerce_Install_Path\schema\xml\wcs.dtd. This is the location of the wcs.dtd file in WebSphere Commerce.

StoreIdentifier – Identifier of the store published to showcase this reference application (STORE.STORE_ID).

FulfillmentCenterName – The fulfillment center name that is associated with the store (FFMCENTER.NAME).

8. Save the changes made and run the MaterialUpload.bat batch file from a DB2 command window.
9. Launch the store and check for the products and items under **SAP Products** -> **SAP Category 1** hierarchy.

Note: Any item that is not specifically grouped under a product in SAP can be found under the product SAP10001 in the same hierarchy.

When manufacturer details are not present for a product, by default the product takes “SAP Tools” as the manufacturer name and product part number as the manufacturer part number.

When the short description details are not present for a product, by default it takes the material name as the short description.

When massloading the material data, only names of the product images are loaded. To view the product images on the corresponding page of the store you must manually copy the image files into the following directory:

Application_server_install_path\installedApps\WC_Enterprise_App_Instance_Name.ear\wcstores.war\Store_Name\images.

Where, *Instance_Name.ear* is the name of the commerce instance in your installation and *Store_Name* is the name of the store to which the materials were uploaded.

Loading customer data

You can load the independent user or organization data using the massload scripts provided. Ensure that the customer data is in the following sequence and delimited by “~”. If you are using a different delimiter, you must change it in the import schema files provided with this reference application.

Sequence. No.	Data field	Data description	Corresponding fields in SAP
1	LogonId	Independent User: LogonID of the user	KUNNR (mandatory)

Sequence No.	Data field	Data description	Corresponding fields in SAP
		Organization: Customer number for the default user of this organization	
2	Password	Independent User: Password with the LogonId for authentication. Organization: Password for the default user created for this organization	SORTL (mandatory) This field has been mapped to SORTL, which is a mandatory field in SAP. You can use any other field for this purpose. Instead of mapping to an existing field you can generate a password before loading the customer data.
3	Title	Title of the person to which this address applies.	ANRED (optional)
4	LastName	Independent user: Last name of the Customer Organization: First part of Business Category name of Organization is considered as the last name for the default user	NAME1 (mandatory)
5	MiddleName	Independent User: Middle name of the Customer Organization: Second part of Business Category name of Organization is considered as the middle name for the default user	NAME3 (optional)
6	FirstName	Independent User: First name of the Customer. Organization: This is the organization name and the userID of the default user for this organization	NAME2 (optional)
7	Address1		STRAS (mandatory)
8	City		ORT01 (mandatory)
9	State		REGIO (mandatory)
10	ZipCode		PSTLZ (mandatory)
11	Country		LAND1 (mandatory)
12	Phone1		TELF1 (optional)
13	Phone2		TELF2 (optional)

Sequence No.	Data field	Data description	Corresponding fields in SAP
14	Fax1		TELFX (optional)
15	Profile	Z1 (Organization data) Z2 (Independent user data)	GFORM (mandatory)
16	Preferred Currency		UWAER (optional)
17	Preferred Language		SPTXT (optional)
18	Preferred Delivery		INCO2 (optional)

Note: The data field, Profile is required to massload the customer data. If this information is not present in SAP, then edit the file extracted from SAP that contains the customer master information to include the Profile field. The value expected in the Profile field is Z1 for organization data and Z2 for independent user data.

When you create or update customer data in the SAP system, the data entered in the SORTL field is converted to uppercase.

To upload the customer master data do the following:

1. Use SAP transaction SE38 to execute the ABAP programs written to extract customer information from SAP. Move these extracted files to the `store\dataload\customer` directory.
2. Open `ManifestFile.txt` present in the `store\dataload\customer` directory, and replace `itabkna2.txt` with the output file name derived from the customer information extract program.
3. Open the batch file `CustomerUpload.bat` present in the `store\dataload\customer` directory in an editor and change the following parameters according to your installation:

`DB_NAME` - Database type 'db2'.

`WCS_DBNAME` - WebSphere Commerce instance database name for example, **mall**.

`WCS_DBUSER` - Database user ID.

`WCS_DBPWD` - Database user password.

4. Edit the following line to include your WebSphere Commerce installation path:

```
<Drive:>\Commerce_Install_Path\bin\setenv.bat
```

5. Change the following literal as per your installation.

```
set DB2_HOME=D:\WebSphere\sqllib
```

6. Change the following parameter values passed to the XMLTransformer according to your installation.

```
ImportLocation=<Drive:>\Commerce_Install_Path\schema\xml\wcs.dtd. This is the location of the wcs.dtd file in WebSphere Commerce.
```

7. Open and edit the password.bat file present in the store\dataload\customer directory to include your WebSphere Commerce installation path:

```
<Drive:>\Commerce_Install_Path\bin\setenv.bat
```

8. Save all the changes made and run the batch file CustomerUpload.bat from a DB2 command window as:

```
CustomerUpload.bat <MerchantKey>
```

Where, MerchantKey is the unique merchant key provided when creating the WebSphere Commerce instance.

9. To verify the upload of customer data launch the store and login to check the validity of the user that was uploaded.

Note: During customer data load, USERREG.PASSWORDEXPIRED is set to 1. These users will have to change the password when they login for the first time.

Possible errors when loading initial data

If the initial data loading fails, then refer to the following list of error messages and corresponding solutions. This applies to both material and customer data.

Redirect the output of the MaterialUpload.bat or CustomerUpload.bat to a log file. Check for the following error(s) in the log file:

1. The system cannot find the path specified.

This error could be due to some problem when specifying the directory locations for loaderdir, libdir, configdir, and sqllibDir. Ensure that the path settings specified in MaterialUpload.bat or CustomerUpload.bat are pointing to the correct directory in the target machine.

2. "<Database_Name>" is not a valid database name

Ensure that you have specified a correct value for WCS_DBNAME in MaterialUpload.bat or CustomerUpload.bat.

3. Error: <FileName> (The system cannot find the file specified)

Ensure that the paths provided for the input files in `ManifestFile.txt` are correct.

4. The username and/or password supplied are incorrect.

Ensure that the user ID and password supplied have access to your database.

5. Resolution control file not found, going with unique indexes

If this is the error, then the `IDKEYS.properties` is not found or the file name specified for `ID_PROPERTIES_File` in `MaterialUpload.bat` or `CustomerUpload.bat` does not match with the one in the host machine.

If there are any other errors, then it could be due to the invalid values for some of the parameters in the batch file or the input data file is incorrect.

Loading reference data onto SAP

To demonstrate this integration you can also use the reference data provided with this reference application. A portion of the sample store model items is packaged as reference data. You must import this data into the SAP R/3 system. This will allow the synchronization of WebSphere Commerce and SAP R/3 material data.

`BDC_MaterialInput.txt` present in the `store\dataload\referencedata` directory contains the material reference data in the following format that you must load onto SAP using a Batch Data Conversion (BDC) program.

The pre-requisite to load material data is to define the material groups in the SAP R/3 system. Use "SAP Customizing" to do this.

Serial number	Description	Data element as in SAP	Length	Depends on existent SAP configurations and data
1	Material Number	MATNR	18	No
2	Industry Sector	MBRSH	1	Yes
3	Material Type	MTART	4	Yes
4	Plant	WERKS	4	Yes
5	Sales Organization	VKORG	4	Yes

Serial number	Description	Data element as in SAP	Length	Depends on existent SAP configurations and data
6	Distribution Channel	VTWEG	2	Yes
7	Material Description	MAKTX	40	No
8	Unit of Measure	MEINS	3	Yes
9	Material Group	MATKL	9	Yes, you need to define this using SAP customizing
10	General Item Category Group	MTPOS_MARA	4	Yes
11	Gross Weight	BRGEW	17	No
12	Weight Unit	GEWEI	3	Yes
13	Net Weight	NTGEW	17	No
14	Size/Dimensions	GROES	32	No
15	Description Language	DESC_LANGU_GDTXT	16	Yes
16	Document Number	ZEINR	22	No
17	Class Type	KLART	3	Yes
18	Class Number	CLASS	18	Yes
19	Cash Discount Indicator	SKTOF	1	No
20	First Entry Displayed	PAGPOS	3	No
21	Delivering Plant	DWERK	4	Yes
22	Item Category Group from Mat master	MTPOS	4	Yes
23	Checking Group for availability Check	MTVFP	2	Yes
24	Transportation Group	TRAGR	4	Yes
25	Loading Group	LADGR	4	Yes
26	MRP Type	DISMM	2	Yes

Serial number	Description	Data element as in SAP	Length	Depends on existent SAP configurations and data
27	MRP Controller	DISPO	3	Yes
28	Lot Size	DISLS	2	No
29	Procurement Type	BESKZ	1	Yes
30	In-house Production Line	DZEIT	3	No
31	Scheduling Margin Key for Floats	FHORI	3	Yes
32	Period Indicator	PERKZ	1	No
33	Planning Strategy group	STRGR	2	No
34	Total Replenishment Lead Time	WZEIT	3	No
35	Valuation Class	BKLAS	4	Yes
36	Price Control Indicator	VPRSV	1	No
37	Price Unit	PEINH	6	No
38	Standard Price	STPRS	15	No

BDC_SellingPriceInput.txt present in the store\data\load\referencedata directory contains the standard price for material reference data in the following format that you must load onto SAP using a BDC program.

The pre-requisite to load this data is to define the price condition in SAP system.

Serial number	Description	Data element as in SAP	Length	Depends on existent SAP configurations
1	Pricing Condition Type	KSCHL	4	Yes
2	Material Number	MATNR	18	No
3	Material Selling Price	KBETR	16	No

Serial number	Description	Data element as in SAP	Length	Depends on existent SAP configurations
4	Currency	KONWA	5	No

To import reference data into SAP as a batch process from the input file, you need a Batch Data Conversion (BDC) program. This program requires you to record the transaction to load the data. To do this, use transaction SHDB and do the following:

1. Using the SAP client, from the SAP Easy Access screen go to SHDB transaction and enter the record name. Follow the onscreen instructions to record MM01 transaction and then record VK12 transaction.
2. Based on the values in your SAP installation, make the necessary changes to the data in the reference data files before importing. Use transaction SE38 to execute the recorded programs. See, Appendix H: Sample BDC program for a sample Batch Data Conversion program.
3. After loading the reference data, you have to create the inventory records before placing any orders for these materials.

Chapter 8. Verification procedure

Use the following steps to determine if your WebSphere Commerce Business Edition – integration with SAP, setup is working properly. Ensure that the necessary configuration in the WebSphere Commerce and SAP R/3 system has been performed and that the following services are running:

- WebSphere Commerce Business Edition instance
- IBM Payment Manager
- SAP R/3 server

Running the servers

The following sections describe how to start the WebSphere Commerce instance and IBM Payment Manager.

WebSphere Commerce instance

You can start the WebSphere Commerce instance from the Administrative Console of the WebSphere Application Server. Ensure that the WebSphere Administrator Server is running and the instance has been created. To start the WebSphere Commerce instance, expand the tree for the host name where WebSphere Commerce is installed. Select the instance name and click the **Start** icon.

IBM Payment Manager

The IBM Payment Manager must be configured for the current store. Ensure that IBM Payment Manager has been started. If not, then to start the IBM Payment Manager, do the following:

1. Open the WebSphere Administrator's Console and expand the tree with the host name where IBM Payment Manager is installed.
2. Select **WebSphere Payment Manager** and click the **Start** icon.
3. Run the command `IBMPayServer` in a command window from the directory where IBM Payment Manager is installed.

Verifying the SAP transactions

Creating a customer

Users can be registered either from the SAP ToolTech store or from the WebSphere Commerce Administration Console. The buyer organizations can be registered only from the WebSphere Commerce Administration Console. To

verify the registrations from WebSphere Commerce Administration Console do the following:

1. Logon to the WebSphere Commerce Administration Console. Select the site option and go to the Site Administration Console.
2. To register an Organization, select **Organizations** from the Access Management menu. Click **New** from the Organizations page and enter the organization's data in the screens that follow. Save the information. When the buyer organization is registered, the FIELD1 column of the ORGENTITY table must contain the SAP customer number. The customer number is generated by SAP for this customer.
3. To register an independent user, select **Users** from the Access Management menu. Click **New** and enter the required information in the screens that follow. Save this information. When the independent user is registered, the FIELD1 column of the USERS table must contain the SAP customer number. The customer number is generated by SAP for this customer.

To verify the registrations from the SAP ToolTech store do the following:

1. To register an independent user, go to the Logon page of the SAP ToolTech Store and click the **Register** link. In the Registration page that appears enter the required information. Leave the Buyer Organization field empty and click **Submit**.
2. To verify the customer data registered from the stores or the WebSphere Administration Console do the following:
 - a. Logon to SAP and run the transaction xd03.
 - b. In the DISPLAY Customer screen enter the SAP customer number. This is the customer number updated in the database table. See Appendix C: Mapping information for the details of the customer number field mapping.

Changing customer profile

Customer information can be changed either from the SAP ToolTech store or from the WebSphere Commerce Administration Console. The buyer organization information can be changed only from the WebSphere Commerce Administration Console. To verify the changes in customer information made from the WebSphere Commerce Administration console do the following:

1. Login to the WebSphere Commerce Administration Console. Select the site option and go to the **Site Administration Console**.
2. To modify the buyer organization's data select **Organizations** from the Access Management menu. Select the organization for which the data must be changed. From the right pane click **Change**. Change the data in the screens that follow and save your changes.

3. To modify an independent user's data, select **Users** from the Access Management menu. Select the user whose data must be changed. From the right pane click **Change**. Change the data in the screens that follow and save your changes.

To verify the changes in customer information made from the SAP ToolTech store do the following:

1. Login to the SAP ToolTech store with the registered user's `logon ID` and `Password`.
2. From the home page, click the **Account** link to go to Account Page. Click **Change Personal Information**.
3. In the Update Registration Page change the information and click **Update**.
4. To verify the changes made do the following:
 - a. Logon to SAP and run transaction `xd03`.
 - b. In the DISPLAY Customer screen enter the customer number to view the customer details updated in SAP.

Simulating an order

1. From the SAP ToolTech store, select any of the items uploaded from SAP or the reference data by going to Browse Catalog, and **Add** them to the shopping cart. Select **Default Contract** while adding items to shopping cart. Click **Next** in the Your Order page.
2. In the Billing and Shipping Information page click **Next**. This invokes the `SAPOrderSimulate` command. The Product Availability Page will display the possible shipping dates and the available quantities for each order item.
3. When you click **Continue** the Order Summary page must display the price, tax, shipping, and shipping tax details.
4. Verify the values for `PRICE`, `ESTAVAILTIME`, `PROMISEDAVAILTIME`, `TAXAMOUNT`, `SHIPCHARGE`, and `SHIPTAXAMOUNT` in the `ORDERITEMS` table with the data returned by SAP, and `TOTALPRODUCT`, `TOTALTAX`, `TOTALSHIPPING`, and `TOTALTAXSHIPPING` fields in the `ORDERS` table.
5. If SAP cannot fulfill the required quantity for an order item at one time, it gives schedule lines. If more than one schedule line is received, the order items should be split according to the availability dates. Check the `ALLOCQUANTITY`, `NEEDEDQUANTITY`, `QUANTITY`, `ESTAVAILTIME`, `PROMISEDAVAILTIME`, and `CORRELATIONGROUP` columns in the `ORDERITEMS` table. For the ordered items that are split, the `QUANTITY` must be same as `ALLOCQUANTITY` and `CORRELATIONGROUP` must be the `ORDERITEMS.ORDERITEMS_ID` from which it was originally split.

Creating an order

1. From the SAP ToolTech store, select any of the items uploaded from SAP or the reference data, and add them to the shopping cart. Click **Next** in the Your Order page.
2. In the Billing and Shipping Information page click **Next**. This invokes the `SAPOrderSimulate` command. The Product Availability Page will display the possible shipping dates and the available quantities for each order item.
3. When you click **Continue** the Order Summary page must display the price, tax, shipping, and shipping tax details.
5. In the Order Summary page, enter the payment information and click **Order Now**. This invokes the `SAPOrderCreate` command.
6. On successful completion of the order, an Order confirmation page displays. Check the following fields in the ORDERS table:
 - ORMORDER - sales order document number created by SAP
 - STATUS - "G"
 - Verify if there is a row corresponding to each order item in the ORDISTAT table.
 - Verify if there is a corresponding row in ORDSTAT table for the order created.
7. To verify in SAP, do the following:
 - a. Logon to SAP and run transaction "va03".
 - b. Enter the sales order number that is available in ORDERS.ORMORDER. The order details should be displayed.

Requesting for the order status

1. Login to the SAP ToolTech store from the store home page and click the **Order Status** link.
2. The order status page displays a list of orders for the customer in the following categories:
 - Orders not processed
 - Orders partially processed
 - Orders completely processed

Click any one of the links with the order number from the displayed list.

3. The Order Details page displays with the details of the selected order.
4. Verify the status of the order from ORDSTAT.OSSTATUS and ORDISTAT.OISTATUS fields. These tables are updated based on the results returned by SAP for the status of the order.

Checking material availability

1. From the SAP ToolTech store add one or more items to the shopping cart. Ensure that the items added to the shopping cart are the ones loaded into WebSphere Commerce from SAP or are part of the reference data. From the Your Order page select the items for which you want to check availability.
2. Click **Check Availability**. The availability quantities and dates of the selected products should display.

Verifying the master data upload

Loading material data

1. Extract the data from SAP into a delimited file in accordance with the format defined in Chapter 7. Loading master data. Modify the `ManifestFile.txt` and `MaterialUpload.bat` as mentioned in Chapter 7. Loading master data.
2. Run the `MaterialUpload.bat` from a DB2 command window. This populates the CATGROUP, STORECGRP, CATTOGRP, CATGRPRL, QTYUNIT, BASEITEM, ITEMSPC, OFFERPRICE, CATGPENREL, STORECENT, CATENTDESC, LISTPRICE, CATENTSHIP, CATENTREL, ATTRIBUTE, ATTRVALUE, OFFER, and INVENTORY table.
3. You should be able to view the products and items in the catalog, under the top category **SAP Products**.

Loading customer or organization data

1. Extract the data from SAP into a delimited file in accordance with the format defined in Chapter 7. Loading master data.
2. In the extracted file for each customer record, the **Profile** field for the customer data of an organization must have the value Z1 and Z2 for the customer data of an independent user,. If this information is not available in SAP ensure that you edit the extracted file to include this before loading the data into WebSphere Commerce.
3. Modify the `ManifestFile.txt` and `CustomerUpload.bat` as mentioned in Chapter 7. Loading master data and run the `CustomerUpload.bat` from a DB2 command window.
4. To verify, login to the SAP ToolTech store with the `logon ID`, which is the customer number registered in SAP and the `Password`, which is the value

that is entered in the "Search term 1" text field when registering the customer in SAP. If the login is successful, you will be prompted to change your password.

5. If the customer is an organization, MEMBER, ORGENTITY, MBRREL, ADDRESS, ADDRBOOK database tables are populated. If the customer is an individual user, MEMBER, USERS, USERREG, ADDRESSBOOK, ADDRESS, BUSPROF, USERPROF and USERDEMO tables are populated.

Chapter 9: Store customizations

This reference application is built on top of the ToolTech store model. The reference store contains catalog data and web assets in the English language only. For more information, refer to the *Store Developer's Guide*.

The following changes are made to the ToolTech store to achieve the SAP integration functionality:

1. **Reference Data:** The catalog related XMLs are modified to populate the reference data. The list of XMLs includes `catalog.xml`, `en_US/catalog.xml`, `offer.xml`, and so on. The ATP related tables, RECEIPT, RA, and RADETAIL are not populated for the reference catalog items.
2. **Commands:** The `Command.xml` is updated to specify the newly created and updated task, controller, and view commands required for this reference application.
3. **Access Control:** The `AccessControl.xml` is modified to add the resource category for the new controller command, `SAPTrackOrderStatusCmd` and action for the new view command, `OrderConfirmView`.
4. **Store Language:** The `store.xml` is updated to support the English language only. Only `en_US` locale specific properties are provided for this reference application.
5. **Registration pages:** Modifications to `UserRegistrationNew.jsp`, `UserRegistrationUpdate.jsp`, and `Address.jsp` are made to provide a selection box to select the country and statecodes.
6. **Shopping Cart:** Modifications are made to the `Shoppingcart.jsp` to include check boxes and a button to provide check inventory availability function.
7. **Shipping page:** Modifications are made to the `Shipping.jsp` to specify `OrderPrepare` as the redirection URL to the `OrderCopy` command. This is required to prepare the order details in SAP before displaying the availability details. ATP parameters are set to `*n` during `OrderPrepare` since the allocation and check inventory is made at the SAP end.
8. **Check Availability:** The check availability page is created to display the availability details retrieved from the check material availability function. The `OrderItemDisplay.jsp` is modified to include the `checkavailability.jsp` on a condition, as the URL used for the check availability is `OrderItemDisplay`.
9. **Order Prepare Details:** The `OrderPrepareDetails.jsp` is created to display the availability details of order items retrieved from SAP using the `SAPOrderSimulate` command. This contains three links - click **Continue**

to place the order, which displays the summary page for the order. Click **Cancel** to cancel the order preparation and to merge the order items that were split when simulating the order. Click **Remove** corresponding to each order item that you want to remove from order. The `AllocationCheck.jsp` has been modified to invoke the `OrderPrepareDetails.jsp` instead of `checkProdAvail.jsp`.

10. **Order Summary Details:** The `OrderDisplayPending.jsp` has been modified to remove the Order Schedule functionality.
11. **Order Confirmation:** The `Confirmation.jsp` has been modified to include order subtotals in addition to the order details that are currently displayed.
12. **OrderProcessDetails:** The `OrderProcessDetails.jsp` is created to display the summary of the order details retrieved from SAP using the order create BAPI. This page displays only when the availability of order items or price details in SAP during creating of an order is different from the one retrieved when simulating an order. It contains two links - click **Continue** to invoke `OrderProcess` command to process the order in WebSphere Commerce with the new availability or price details. Click **Cancel** to invoke the order change BAPI to delete the order and return to the home page.
13. **Track Order Status:** Modifications to the `TrackOrderStatus.jsp` allows you to retrieve the list of orders for a user, based on details available in `ORDSTAT` tables. The possible status values of the orders are: A (Not Processed), B (Partially Processed), C (Completely Processed). A link is provided for each of the orders in the list to view the detailed order status. When a particular order is selected for more details, the latest status is retrieved from the SAP system. The call to SAP system is made only when the status value is either A or B.
14. **Order Status Details:** Modification to `OrderDetail.jsp` displays the detailed order status available in the order status tables. The latest details are retrieved from SAP if the current status of the order is A or B and the same is updated in the WebSphere Commerce order status tables before the details are displayed to the user. The Order Status Details page gives the delivery status of the order and order items.
15. **Shipping Modes:** `Shipping.xml` is modified to replace the shipping codes A1, A2, A3 with TRUCK, RAIL, AIR respectively, and shipping carrier 'XYZ Carrier' with CFR. `en_US/Shipping.xml` is modified to set the description for the above shipping modes to 'CFR-TRUCK', 'CFR-RAIL', and 'CFR-AIR' respectively. These shipping modes can be used while placing the order using default contract. If any other contracts are created, then you can use these shipping modes while defining terms and conditions, otherwise create new shipping modes before they are used in terms and conditions. For more details, refer to WebSphere Commerce documentation.

Other customizations

The `OrgentityAddress.jsp` and `UserAddress.jsp` are modified in the WebSphere site administration console to provide selection boxes, to select the state and country codes in the files.

Chapter 10. Adding new SAP transactions

This chapter covers the steps necessary to enable a new SAP transaction. For complete details on each of these sections refer to the VisualAge for Java online documentation for J2EE connectors, and the IBM WebSphere Commerce Programmer's Guide.

Generating the proxy bean

Use the **Access Builder for SAP R/3** to view the business objects and RFC modules that are in the Business Object Repository. The Business Object Repository can be located locally on your system or you can connect to your SAP R/3 system. In the existing SAP R/3 versions, BAPI methods are implemented through RFC modules. To generate proxy beans do the following:

1. Identify the required SAP R/3 data and business logic.
2. Identify the appropriate RFC modules or BAPIs to access the data or business logic.
3. Ensure that the Access Builder for SAP R/3 is configured to generate the RFC proxy beans for J2EE connector in SAP R/3.
4. Generate the proxy beans for the required modules with the Access Builder.

Creating EAB commands

The Enterprise Access Builder for Transactions tools can be used to model and implement interactions with Enterprise Information Systems. You can create the EAB commands for the proxy beans generated in the previous section. These commands can be directly included in the WebSphere Commerce application. To create the EAB commands do the following:

1. Go to Enterprise Access Builder, Create command, and choose the proxy bean created in the previous section.
2. Set the Connection Information and the Interaction Spec. For further details refer to the VisualAge for Java online documentation.
3. Set the input and output beans. For the J2EE connector for SAP R/3, these beans must be of the same type. Therefore, set the generated proxy beans to be both the input and output beans.

Creating or extending WebSphere Commerce commands

WebSphere Commerce commands framework allows you to add new controller and task commands. You can also customize the existing commands to extend the existing business logic or override this to suit your requirements.

To include the EAB commands in the WebSphere Commerce commands, you must either extend or create new commands. For complete information on how to implement the commands refer to the *IBM WebSphere Commerce Programmer's Guide*.

Deploying WebSphere Commerce commands

For information on deploying WebSphere Commerce commands see, "Deploying WebSphere Commerce commands", in Chapter 6.

Updating the command registry

WebSphere commerce supports a command registry to maintain the mapping for the command interface and its implementation class. This allows you to customize the commands of an interface on a per store basis. You must register the new or extended controller and task commands in the command registry. For more information about the command registration, refer to the *IBM WebSphere Commerce Programmer's Guide*.

Chapter 11. Enabling guest user shopping

This chapter describes how to enable a guest user to create orders. It involves creating one-time customers in the SAP system (CPD customers) and using the CPD customer type in WebSphere Commerce for guest shoppers.

Configuring SAP

Before creating an order for one-time customers do the following in the SAP system:

1. From the SAP Easy Access client go to **SPRO --> Sales & Distribution --> Basic Functions --> Partner Determination --> Define Partner Functions.**

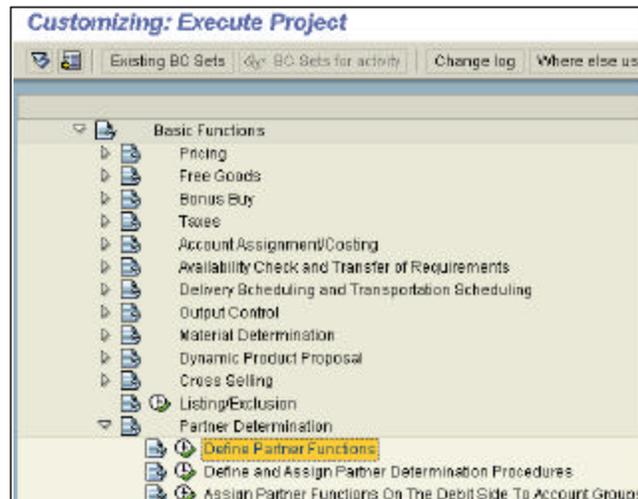


Figure 71: SAP Customizing: Execute Project

2. From the Partner functions initial screen, select **Sales document header** and click **Partner Functions** as shown in Figure 72.

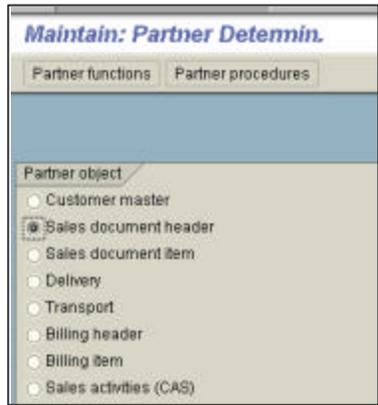


Figure 72: Selecting the sales document header

- 3. From the Maintain Partner Function initial screen click **SP** and go to **Environment** and select **Acct grp assignment**.

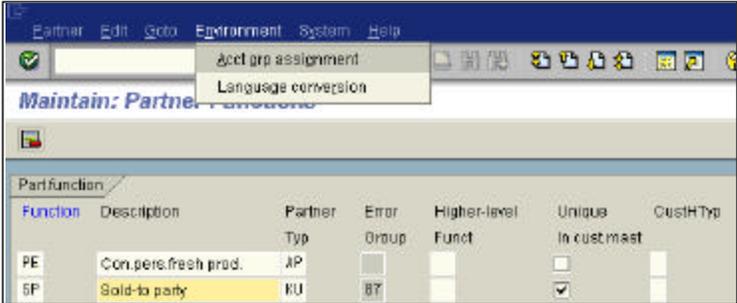


Figure 73: Selecting Acct grp assignment

- 4. From Maintain Allowed partner functions per account group, assign CPD / CPDA to SP, SH, BP and PY.



Figure 74: Assigning CPD/CPDA

5. After enabling the account group with the relevant partner functions, you can create orders for the CPD customers. Use transaction code XD01 to create CPD customers.

Creating orders for guest shoppers

To create orders for guest shoppers in WebSphere Commerce, you must submit the shopping cart to SAP with a CPD customer number. This notifies SAP that the sales order to be created is for a one-time customer and that there is no master data maintained for this customer.

The guest shopper must also provide the address information along with the order. The WebSphere Commerce commands must send the order request with a CPD customer number and the guest shopper's address.

To handle multiple concurrent guest shopper requests, it is recommended to have a pool of CPD customers created in SAP, and use the CPD customer pool in WebSphere Commerce to handle the concurrent requests.

Appendix A: WebSphere Commerce commands

This section describes the WebSphere Commerce commands that are added or extended to enable the integration of WebSphere Commerce with SAP.

Creating a customer or updating a customer profile

The customer data is stored in both WebSphere Commerce and SAP R/3. Customers can register at the WebSphere Commerce site or can register directly in SAP R/3. The customer master data must exist on both systems and for that reason must be synchronized. Use the following commands to create a customer or update a customer profile:

Commands for customer registration

Command	Type	New or WebSphere Commerce Command extended	Description
CustomerCreateBapi	EAB command	New	Command to call BAPI_CUSTOMERCREATEFROM DATA
CustomerChangeBapi	EAB Command	New	Command to call BAPI_CUSTOMERCHANGEFROM DATA
AddSAPUserRegistrationCmdImpl	Task command	New	To register user in SAP
SAPExtUserRegistrationAddCmdImpl	Task command	PostUserRegistrationAddCmd	Invokes AddSAPUserRegistrationCmdImpl
SAPExtUserRegistrationAdminAddCmdImpl	Task command	PostUserRegistrationAdminAddCmd	Invokes AddSAPUserRegistrationCmdImpl
AddSAPOrgEntityCmdImpl	Task command	New	To register the organization in SAP
SAPExtPostOrgEntityAddCmdImpl	Task command	PostOrgEntityAddCmd	Invokes AddSapOrgEntityCmd
UpdateSAPUserRegistrationCmdImpl	Task command	New	To update customer profile in SAP
SAPExtUserRegistrationUpdateCmdImpl	Task command	PostUserRegistrationUpdateCmd	Invokes UpdateSapUserRegistrationCmd
SAPExtAddressUpdateCmdImpl	Task command	Post AddressUpdateCmd	Invokes UpdateSapAddressCmd

Command	Type	New or WebSphere Commerce Command extended	Description
UpdateSAPAddressCmdImpl	Task command	New	To update the customer's primary address in SAP
SAPExtUserRegistrationAdminUpdateCmdImpl	Task command	PostUserRegistrationAdminUpdateCmd	Invokes UpdateSapUserRegistrationCmd
UpdateSAPOrgEntityCmdImpl	Task command	New	To update organization profile in SAP
SAPExtPostOrgEntityUpdateCmdImpl	Task command	PostOrgEntityUpdateCmd	Invokes UpdateSapOrgEntityCmd

Simulating an order

The order simulate command is used to simulate a sales order in the SAP system. It retrieves the product price, tax, shipment cost, and product availability information. Each command is initiated when you submit the shopping cart to get the order summary. The behavior of the command includes:

- The extended `PrepareOrder` task command gathers the order information and executes the EAB command to call the BAPI. SAP computes and returns the order details.
- Based on the results returned, an order item is split into multiple order items according to the schedule lines returned for each order item. The freight, shipping and tax charges are updated in WebSphere Commerce.
- The order summary page displays with the details mentioned above. At this point, you have two options. To continue with the creation of the order, or to edit the shopping cart.
- If you choose to proceed with the order, then the `OrderProcess` commands are called to process the order. Otherwise, the shopping cart page is displayed wherein the order items that were split according to schedule lines are merged.

Order simulate commands

Command	Type	New or WebSphere Commerce Command extended	Description
OrderSimulateBapi	EAB command	New	Command to call BAPI_SALESORDER_SIMULATE

Command	Type	New or WebSphere Commerce Command extended	Description
SAPOrderSimulateCmdImpl	Task command	PrepareOrderCmd	To call the Order Simulate BAPI and then prepare the order
SAPGetBaseUnitPriceCmdImpl	Task command	GetBaseUnitPriceCmd	Null Implementation (Price is determined at SAP)

Creating an order

The order create command is used to create a sales order in the SAP system. It is initiated when the user proceeds to process an order as part of the order simulate. The behavior of the command includes:

- The extended `ProcessOrder` command executes the EAB command to call the BAPI to create the sales order in the SAP system.
- The SAP system creates the sales order, and returns the sales document number, the order, and order item details.
- The schedule lines returned by SAP may be different from what was requested. If they are the same, then the order process is completed.
- If the schedule lines are different, then you are notified of the changes, and you can choose to either accept or reject the changes.
- If you choose to reject, the order is cancelled in the SAP system.

Process order commands

Command	Type	New or WebSphere Commerce Command extended	Description
OrderCreateBapi	EAB command	New	Command to call BAPI_SALESORDER_CREATEFR OMDAT1
OrderCancelBapi	EAB command	New	Command to call BAPI_SALESORDER_CHANGE
SAPOrderCancel	Class		Wrapper class to call the OrderCancel BAPI
SAPOrderCreateCmdImpl	Task command	ProcessOrderCmd	To call Order Create BAPI and then process or cancel the order
SAPAllocateExistingInventoryCmdImpl	Task command	AllocateExistingInventory Cmd	Null Implementation (Inventory allocation happens in SAP)
SAPAllocateExpected	Task	AllocateExpectedInventor	Null Implementation (Inventory

Command	Type	New or WebSphere Commerce Command extended	Description
dInventoryCmdImpl	command	yCmd	allocation happens in SAP)
SAPDeallocateExistingInventoryCmdImpl	Task command	DeallocateExistingInventoryCmd	Null Implementation (Inventory allocation happens in SAP)
SAPDeallocateExpectedInventoryCmdImpl	Task command	DeallocateExpectedInventoryCmd	Null Implementation (Inventory allocation happens in SAP)
SAPGetBaseUnitPriceCmdImpl	Task command	GetBaseUnitPriceCmd	Null Implementation (Price is determined at SAP)

Requesting for the order status

The order status command is used to retrieve the detailed status of the order from the SAP R/3 system. The command is initiated when the user or customer desires to check the status of a particular order from the list of orders. The behavior of the command includes:

- The user selects the order for which the detailed status is required.
- If the order state is complete, then the order status is not retrieved from SAP, but retrieved from WebSphere Commerce tables. To do this, redirect the request to a different view.
- If the order status is not complete, execute the EAB command to call the SAP order status BAPI from the WebSphere Commerce command. Update the status of the order in WebSphere Commerce for the results returned by SAP. Use the `OrderStatusCmd` to do this.
- Displays the details of the order from the data available in WebSphere Commerce.

Order status commands

Command	Type	New or WebSphere Commerce Cmd extended	Description
OrderStatusBapi	EAB command	New	Calls BAPI_SALESORDER_GETSTATUS
SAPTrackOrderStatusCmdImpl	Controller command	New	Invoked from the JSP
SAPStatusOrderCmdImpl	Task command	New	To retrieve the status information from SAP and update the status in

Command	Type	New or WebSphere Commerce Cmd extended	Description
derCmdImpl			WebSphere Commerce

Checking material availability

The material availability command is used to retrieve the availability details (ATP information) of the materials from SAP. It is initiated when the user selects one or more items in the shopping cart and requests for the availability check. The behavior of the command includes:

- When you select the list of items to be checked, the `OrderItemDisplay` command is called with the check parameters containing the order items to be checked for availability.
- This command executes the `CheckInventoryAvailability` command. The extended `CheckInventoryAvailability` command executes the EAB command to invoke the SAP BAPI for each item in the checklist.
- The results returned by SAP are added to the response that will be used to display the availability dates and quantities to the buyer.

Material availability commands

Command	Type	New or WebSphere Commerce Command extended	Description
MaterialAvailabilityBapi	EAB command	New	Command to call BAPI_MATERIAL_AVAILABILITY
SAPCheckInventoryAvailabilityCmdImpl	Task command	CheckInventoryAvailabilityCmd	Override existing CheckInventoryAvailabilitycmd for retrieving material availability details from SAP

Appendix B: SAP Business APIs

The following table contains the list of business transactions enabled in WebSphere Commerce and the corresponding SAP Business API used:

Business transaction	Business API
Customer Registration	BAPI_CUSTOMER_CREATEFROMDATA
Customer Update	BAPI_CUSTOMER_CHANGEFROMDATA
Availability check	BAPI_MATERIAL_AVAILABILITY
Sales Order Simulate	BAPI_SALESORDER_SIMULATE
Sales Order Create	BAPI_SALESORDER_CREATEFROMDATA1
Sales Order cancel	BAPI_SALESORDER_CHANGE
Sales Order Status	BAPI_SALESORDER_GETSTATUS

Appendix C: Mapping information

This section covers the field mapping between the BAPI fields and WebSphere Commerce fields. It contains details about the input and output parameters for the BAPIs. Tables and structure types are used to represent the import and export parameters in the BAPI.

Refer to the SAP product documentation for complete details about BAPIs' input and output parameters, tables, structures and its descriptions.

BAPI_CUSTOMER_CREATEFROMDATA

The following are the input and output parameters and structures for the customer create Business API.

Input parameters

SAP R/3 field	WebSphere Commerce -SAP Properties File	WebSphere Commerce Database table or column
PI_ADDRESS (type – structure)		ADDRESS table
PI_COPYREFERENCE (type – structure)	(Contains general information like Sales Area, Distribution Channel, Division and Reference Customer number)	

Structure: PI_ADDRESS

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
FIRST_NAME		FIRSTNAME (ADDRESS table)
NAME		LASTNAME (ADDRESS table)
STREET		ADDRESS1 + ADDRESS2 + ADDRESS3 (ADDRESS table)
POSTL_CODE		ZIPCODE (ADDRESS table)
CITY		CITY (ADDRESS table)
LA		LANGUAGE_ID (USERS table)
REGION		STATECODE (STATECODE table)

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
COU		COUNTRY (COUNTRY table)

Structure: PI_COPYREFERENCE

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
SALE	_SALES_ORG	
DI	_DISTRIBUTION_CHANNEL	
DI	_DIVISION	
REF_CUSTMR		FIELD1 (ORGENITY table)

Output parameters

R/3 field	WebSphere Commerce database column
CUSTOMERNO	FIELD 1 (USERS table) FIELD 1 (ORGENITY table)

BAPI_CUSTOMER_CHANGEFROMDATA

The following are the input and output structures and parameters for the customer update Business API.

Input parameters

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PI_ADDRESS (type - structure)		ADDRESS table
PI_SALESORG	_SALES_ORG	
PI_DISTR_CHAN	_DISTRIBUTION_CHANNEL	

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PI_DIVISION	_DIVISION	
CUSTOMERNO		USERS.FIELD1 ORGENCY.FIELD1

Structure: PI_ADDRESS

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
FIRST_NAME		FIRSTNAME (ADDRESS table)
NAME		LASTNAME (ADDRESS table)
STREET		ADDRESS1 + ADDRESS2 + ADDRESS3 (ADDRESS table)
POSTL_CODE		ZIPCODE (ADDRESS table)
CITY		CITY (ADDRESS table)
LA		LANGUAGE_ID (USERS table)
REGION		STATECODE (STATE CODE table)
COU		COUNTRY (COUNTRY table)

BAPI_MATERIAL_AVAILABILITY

The following are the input and output structures and parameters for the material availability Business API.

Input parameters

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PLANT	_PLANT	
MATERIAL		PARTNUMBER (ORDERITEMS table)
UNIT		QUANTITYMEASURE (RASITEM table)

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
		(BASEITEM table)
WMDVSX (type – table)	(Rows of requested schedules for the item)	

Table: WMDVSX

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
REQ_QTY		QUANTITY (ORDERITEMS table)

Output parameters

R/3 field	WebSphere Commerce database column
WMDVEX (type – table)	
DIALOGFLAG	

Table: WMDVEX

R/3 field	WebSphere Commerce database column
COM_QTY	
COM_DATE	

BAPI_SALESORDER_SIMULATE

The following are the input and output parameters and structures for the order simulate BAPI.

Input parameters

Structure: ORDER_HEADER_IN

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
DOC_TYPE	_DOC_TYPE	
SALES_AREA	_SALES_AREA	
DISTR_CHAN	DISTRIBUTION CHANNEL	
DIVISION	_DIVISION	
REQ_DATE_H		System date
PURCH_NO		ORDERS_ID (ORDERS table)
PURCH_DATE		System date
INCOTERMS1		CARRIER (SHIPMODE table)
INCOTERMS2		CODE (SHIPMODE table)
CURRENCY		CURRENCY (ORDERS table)

Table: ORDER_ITEMS_IN

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PO_ITM_NO		ORDERITEMS_ID (ORDERITEMS table)
MATERIAL		PARTNUMBER (CATENTRY table)
PLANT	_PLANT	
REQ_QTY		QUANTITY (ORDERITEMS table)
REQ_DATE		System date
INCOTERMS1		CARRIER (SHIPMODE table)
INCOTERMS2		CODE (SHIPMODE table)

Table: ORDER_PARTNERS

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PARTN_ROLE	_PART_ROLE	
PARTN_NUMB		FIELD1 (USERS table)
STREET		ADDRESS1 (ADDRESS table)
CITY		CITY (ADDRESS table)
REGION		STATE (ADDRESS table)
COUNTRY		COUNTRY (ADDRESS table)
POSTALCODE		ZIPCODE (ADDRESS table)

Output parameters

Table: ORDER_ITEMS_OUT

R/3 field	WebSphere Commerce database column
SUBTOTAL1	TOTALPRODUCT (ORDERITEMS table)
SUBTOTAL4	SHIPCHARGE (ORDERITEMS table)
SUBTOTAL5	TAXAMOUNT (ORDERITEMS table)
SUBTOTAL6	SHIPTAXAMOUNT (ORDERITEMS table)

Table: ORDER_SCHEDULE_EX

R/3 field	WebSphere Commerce database column
MS_DATE	PROMISEDAVAILTIME (ORDERITEMS table)
CONFIR_QTY	ALLOCQUANTITY (ORDERITEMS table)

BAPI_SALESORDER_CREATEFROMDAT1

The following are the input and output parameters and their corresponding tables and structures for create sales order BAPI.

Input parameters

Structure: ORDER_HEADER_IN

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
DOC_TYPE	_DOC_TYPE	
SALES_ORG	_SALES_AREA	
DISTR_CHAN	_DISTRIBUTION CHANNEL	
DIVISION	_DIVISION	
REQ_DATE_H		System date
PURCH_NO		ORDERS.ORDERS_ID
PURCH_DATE		System date
INCOTERMS1		CARRIER (SHIPMODE table)
INCOTERMS2		CODE (SHIPMODE table)
CURRENCY		CURRENCY (ORDERS table)

Table: ORDER_ITEMS_IN

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PO_ITM_NO		ORDERITEMS_ID (ORDERITEMS table)
MATERIAL		PARTNUMBER (CATENTRY table)
PLANT	_PLANT	
REQ_QTY		QUANTITY (ORDERITEMS table)

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
REQ_DATE		System date
INCOTERMS1		CARRIER (SHIPMODE table)
INCOTERMS2		CODE (SHIPMODE table)

Table: ORDER_PARTNERS

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
PARTN_ROLE	_PART_ROLE	
PARTN_NUMB		FIELD1 (USERS table) FIELD1 (ORGENTITY table)
STREET		ADDRESS1 (ADDRESS table)
CITY		CITY (ADDRESS table)
REGION		STATE (ADDRESS table)
COUNTRY		COUNTRY (ADDRESS table)
POSTALCODE		ZIPCODE (ADDRESS table)

Output parameters

R/3 field	WebSphere Commerce database column
SALESDOCUMENT	ORMORDER (ORDERS table)

Table: ORDER_SCHEDULE_EX

R/3 field	WebSphere Commerce database column
MS_DATE	PROMISEDAVAILTIME (ORDERITEMS table)
CONFIR_QTY	ALLOCQUANTITY (ORDERITEMS table)

Table: ORDER_ITEMS_OUT

R/3 field	WebSphere Commerce database column
SUBTOTAL1	TOTALPRODUCT (ORDERITEMS table)
SUBTOTAL4	SHIPCHARGE (ORDERITEMS table)
SUBTOTAL5	TAXAMOUNT (ORDERITEMS table)
SUBTOTAL6	SHIPTAXAMOUNT (ORDERITEMS table)

BAPI_SALESORDER_CHANGE

The following are the input parameters and structure for the cancel sales order BAPI.

Input parameters

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
SALESDOCUMENT		ORMORDER (ORDERS table)
ORDER_HEADER_INX (type – table)		

Table 1: ORDER_HEADER_INX

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
UPDATEFLAG		Value "X"

BAPI_SALESORDER_GETSTATUS

The following are the input and output parameters and structures for the order status BAPI.

Input parameters

R/3 field	WebSphere Commerce-SAP properties file	WebSphere Commerce database column
SALESDOCUMENT		ORMORDER (ORDERS table)

Output parameters

Table: StatusInfo

R/3 field	WebSphere Commerce database column
DOC_NUMBER	OSMORDER (ORDSTAT table)
DOC_DATE	OSPLTIME (ORDSTAT table)
REQ_DATE_H	OSRSTIME (ORDSTAT table)
DLV_STAT_H	OSSTATUS (ORDSTAT table)
ITM_NU	OIMITEM (ORDISTAT table)
CON	OIUOFM (ORDISTAT table)
MATERIAL	PARTNUMBER (ORDISTAT table)
REQ_DATE	OIRSTIME (ORDISTAT table)
REQ_QTY	OIQTREQUEST (ORDISTAT table)

R/3 field	WebSphere Commerce database column
CUM_CF_QTY	OIQTCONFIRM (ORDISTAT table)
DELIV_DATE	OIASTIME (ORDISTAT table)
DELIV_QTY	OIQTSHIP (ORDISTAT table)
DLV_STAT_I	OISTATUS (ORDISTAT table)

Appendix D: SAP properties file

This section describes the SAP properties files used in this reference application.

Name	Value	Description
_USERID	anurag	Logon UserID for SAP
_PASSWD	wcssapwc	Password for the above user
_LANG	E	Represents the language that the user has logged in
_JNDI_RESOURCE	java:comp/env/eis/SAPConnectionFactory	JNDI name for the resource reference
_INITIAL_CONTEXT_FACTORY	com.ibm.websphere.naming.WsnInitialContextFactory	Initial context factory
_PROVIDER_URL =	iiop://localhost:900	Provider URL
_SALES_ORGANIZATION	WSO1	The sales organization for WebSales
_DISTRIBUTION_CHANNEL	30	Distribution channel for WebSales
_DIVISION	30	Division for WebSales
_PLANT	WSAL	Plant for WebSales
_DOC_TYPE	ZOR1	Represents the Websales Order type
_PART_ROLE_SP	SP	Sold-to-party partner role
_PART_ROLE_SH	SH	Ship-to-party partner role
_PART_ROLE_BP	BP	Bill-to-party partner role
SAPLANG_1	E	Language IDs to SAP
_PRODUCT_VENDOR	SAP	Product vendor

Appendix E: Alternate data and entity mapping

This section describes the possibilities of how the data and entities can be mapped or modeled in WebSphere Commerce Business Edition and SAP R/3. For the mapping used in this reference application, refer to Chapter 4. Mapping entities.

Modelling organizations

This section describes how to model organizations registered in WebSphere Commerce.

Buyer organization

A buyer organization registered in WebSphere Commerce is registered as a 'customer with sold-to party business partner role' in R/3. Orders in R/3 can be created only for sold to parties. When a customer is registered in R/3, partner functions are automatically assigned according to the configuration in R/3. SAP R/3 assigns sold-to party, ship-to party, bill-to party and payer partner profiles by default to registered customers.

Owner organization of Tooltech store

The organization that owns the ToolTech store in WebSphere Commerce is registered in R/3 as a customer with sold-to party partner function. It serves as the reference customer for WebSphere Commerce independent users registered in R/3. This helps when the WebSphere Commerce organization structure must be replicated in R/3.

In this reference application the owner organization, which is the default WebSphere Commerce organization is registered in R/3.

Buyer organization unit

An organization unit can be registered in SAP R/3 as a 'sold-to party'. The ID of its parent organization will be the reference customer number for the organization unit. This helps when the WebSphere Commerce organization hierarchy must be represented in SAP R/3.

Modelling sales area and plant

This section describes how to model the salesarea and plant in WebSphere Commerce.

Note: The sales area includes the sales organization, the distribution channel, and the division.

Possible solutions

1. A single sales area for all WebSphere Commerce Business Edition customers.

You can maintain the sales area details in WebSphere Commerce as part of the configuration information that will be used to register customers and create orders.

2. Map each customer to a particular sales area.

You must maintain a one-to-one mapping between the customers and sales areas in WebSphere Commerce. The sales area information for each customer can be maintained as part of the user or address information. When the initial customer data is loaded from SAP R/3 into WebSphere Commerce, it helps retain the customer and sales area associations present in SAP R/3 for existing customers.

3. Support multiple sales areas for each customer

SAP R/3 allows multiple sales areas for each customer. However, the enablement of this in WebSphere Commerce is not clear. Customers don't have the option to choose the sales area for the order, as they are unaware of the sales areas. So, when creating an order for a customer from WebSphere Commerce, the sales area that must be applied to create the order needs to be resolved.

In SAP R/3 one or more plants can be associated to a sales organization and distribution channel. When the order is created the sales area information is provided, and any of the plants associated with the corresponding sales organization and distribution channel can be used to fulfill the order if the plant contains the material. The plant can be specified for each order item when placing the order. An order can contain only those materials whose plants are associated with the sales area for the order. This requires the sales area, plant, customer, and material associations to be stored in WebSphere Commerce, so that WebSphere Commerce can check for above constraints. Do the following to enable multiple sales areas for each customer:

- Store information about the availability of material and the plants in WebSphere Commerce.
- Store eligible sales areas for each customer in WebSphere Commerce.
- Store eligible plants for each sales area in WebSphere Commerce. This is used to check if an order has order items that can be fulfilled for the sales area of the customer.
- Use contracts to store sales area and plant information. See Appendix F: Using contracts .

Alternate mapping for the buyer organization hierarchy

This section explores the possible mapping for the buyer organization hierarchy in WebSphere Commerce and SAP R/3.

Buyer organization hierarchy

The use of organization hierarchy is different in SAP R/3 and WebSphere Commerce. In SAP, the customer hierarchy is helpful in pricing and partner determination. In WebSphere Commerce, the membership hierarchy is useful in providing access control and approvals. Replicating the organization hierarchy enables the approval functionality for orders and customer registration. However, the following are some issues in supporting hierarchy information:

- Synchronization

Replicate the organization hierarchy in SAP R/3 to WebSphere Commerce. You can do this manually or by extracting the hierarchy information in flat files and massloading them. The extracted hierarchy information must indicate if it is an organization, organization entity and a business user, and the parent node for each node.

Assignments in a hierarchy in SAP have validity periods. When the hierarchy changes, it must be synchronized in WebSphere Commerce.

When an organization or an organization entity is registered in WebSphere Commerce, the corresponding organization hierarchy in SAP must be created or updated. BAPIs are available to update the hierarchy and to retrieve hierarchy information.

- Partner functions

Orders can be created for sold-to party customers only. You can specify bill-to party, ship-to party and other partner functions for an order. When the order is created in WebSphere Commerce, the buyer must be allowed to select the organization entity from the hierarchy that must be set as 'sold-to party' for the order. The buyer must be able to specify the bill-to party or ship-to party for the order. This requires storing the valid partner functions for the organization entities, and allowing the buyer to select them for different partner functions in the store. There must be at least one sold-to party in the hierarchy chain of the buyer.

- Sales area

The sales area is helpful for accounting purposes in R/3. The sales area can be assigned to an order as follows:

- The business user can be allowed to select the organization entity from the hierarchy that must be set as 'sold-to party' for the order, so that the sales area of the sold-to party can be specified for the order. The sales area to which the organization entity belongs can be

different from the sales area of the business user. In R/3, the customers in the hierarchy can be in different sales areas.

- o Or when a business user creates an order, the sales area of the parent organization or organization unit can be used.

The owner of the orders in WebSphere Commerce must correspond to customers with sold-to party partner function in SAP.

The administrator must decide if a node in the SAP R/3 hierarchy must be registered as an organization, organization unit or a business user in WebSphere Commerce, based on the organization structure in SAP.

The following diagram illustrates a possible mapping.

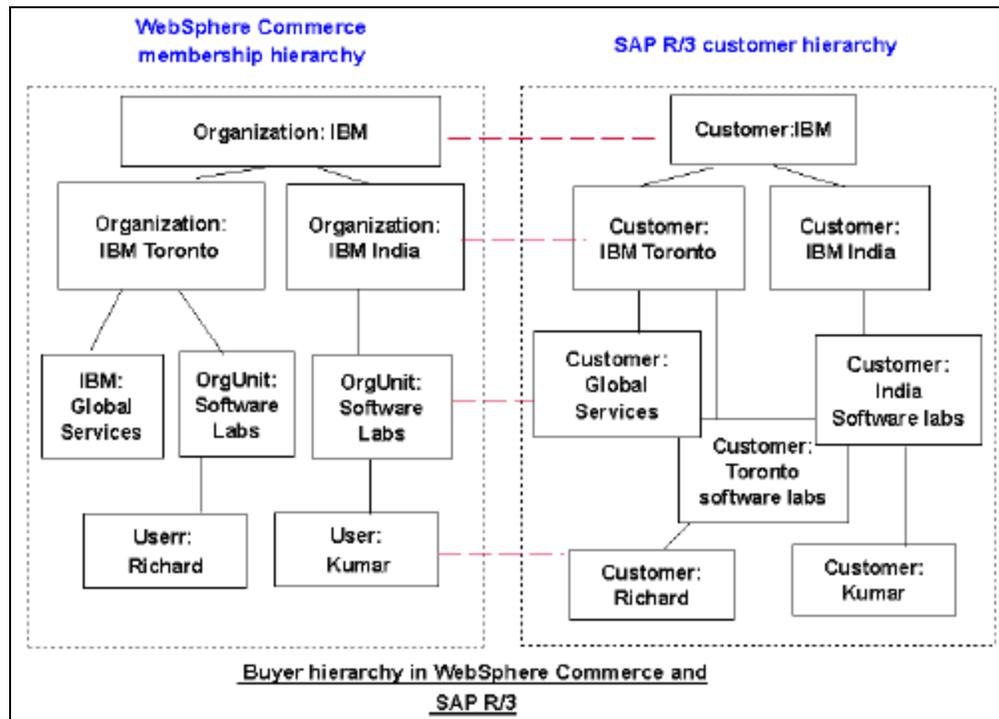


Figure 75: Buyer hierarchy in WebSphere Commerce and SAP R/3

Modelling the seller organization

The following diagram illustrates the possible mapping of organization entities for the seller organization.

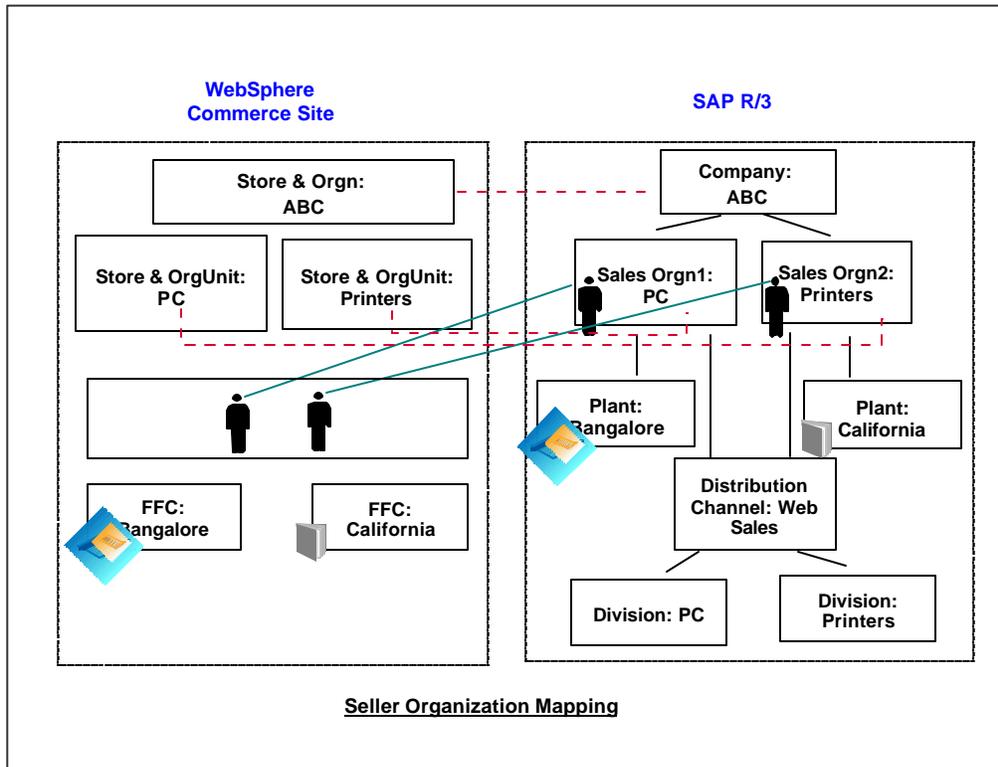


Figure 76: Organization mapping for ABC

The ABC company exists in many countries and must have a sales area for every country that it operates in. The diagram above shows two sales areas.

Sales area 1 consists of the following:

Sales organization	PC
Distribution channel	Web sales or Internet sales
Divisions	PC

Sales area 2 consists of the following:

Sales organization	Printers
Distribution channel	Web sales or Internet sales
Divisions	Printers

Each sales area has its own web site. The customers can be associated with one or more sales areas.

In WebSphere Commerce you can register the company, ABC as an organization. Register each sales organization as an organization unit. Each

organization unit can have a dedicated store. A single store can represent the global ABC organizations from where you can have links to other stores for the organization units.

If inventory information is to be stored in WebSphere Commerce, map each plant to fulfillment centers in WebSphere Commerce. Associate these fulfillment centers with stores for the relevant organization unit.

Register customers and store their associated sales areas with WebSphere Commerce. When loading material information, the WebSphere Commerce store catalogs must contain only those materials that are applicable to the corresponding sales areas.

Use of TradingPositionContainer

A TradingPositionContainer contains offers and is associated with member groups. This can be associated with a combination of price list or a customer group, or sales area in SAP R/3. This helps map the prices being loaded or updated from SAP R/3 to the default offer prices in WebSphere Commerce.

Note: A store can be associated with multiple contracts. The store is associated with the TradingPositionContainer through member groups. An offer is related to the TradingPositionContainer and catalog entries.

Modelling plants as fulfillment centers

In SAP R/3, the inventory is kept in plants and storage locations. A plant contains storage locations. If inventory information needs to be stored in WebSphere Commerce, then you can map plants to fulfillment centers in WebSphere Commerce. For a simpler implementation configure SAP to have a dedicated plant and storage location for web sales, and map this combination of plant and storage location to the default fulfillment center in WebSphere Commerce. In SAP, movement of goods is at the plant level and is not related to the sales organization.

ATP

Using the ATP feature in WebSphere Commerce will enable resolving the fulfillment center, order splitting and supporting backorders.

Resolving fulfillment centers

- In WebSphere Commerce

The fulfillment center resolution in WebSphere Commerce is useful when there are more than one fulfillment center to plant mapping. If more than one fulfillment center is used to fulfill the order item, then the corresponding plant must be specified for the order items. Each SAP plant must be mapped to a fulfillment center in WebSphere Commerce and the inventory for each plant

must be loaded onto WebSphere Commerce. As a result this WebSphere Commerce feature can be used to split orders based on the inventory availability from different fulfillment centers, which in-turn will result in multiple order lineitems for an item, where each lineitem is associated to a specific plant.

- In SAP R/3

Standard SAP R/3 does not provide the logic to resolve the plant. SAP R/3 can be customized to build the logic for resolving the plant that can fulfill the order request by writing userexits.

Reserving inventory in SAP R/3

In SAP, goods will be reserved only after invoking the OrderCreate BAPI. As a result, we cannot guarantee that the inventory information as obtained from the OrderSimulate BAPI will be same when the OrderCreate BAPI is called. To reserve inventory in R/3 on order simulate, you can write a user exit.

Order splitting

Order splitting is splitting the order items into more than one lineitems based on availability.

The availability information is obtained from SAP through the order simulate call. Schedule lines can be created in SAP R/3 to split the order items based on availability. Orders in WebSphere Commerce can be split based on schedule line information.

If the inventory is maintained in WebSphere Commerce and availability decisions are taken in WebSphere Commerce, then the orders can be split and the corresponding schedule lines can be created in SAP R/3 provided you use the BAPI_SALESORDER_CREATEFROMDAT2. This contains the data structure, OrderSchedulesIn where the schedule line data can be specified.

Note: If SAP R/3 is configured for the *Delivery Proposal*, schedule lines or partial deliveries can be created by the SAP R/3 system. If SAP R/3 is configured for *Complete Delivery*, then SAP R/3 proposes the possible delivery date when complete delivery is possible. If SAP R/3 is configured for *one time delivery*, it tries for a complete delivery on the requested date.

Backorders

- Initiated from WebSphere Commerce

This requires loading RA (Replishment advice table), details from SAP into WebSphere Commerce so that the expected inventory information is available in WebSphere Commerce for creating backorders. The backordered items constitute different lineitems in the SAP R/3 order, and the schedule lines are created in SAP R/3 for backorders.

- Initiated from SAP R/3

R/3 can create schedule lines for an order based on the availability and replenishment advice. The schedule lines information is obtained as part of order simulate and create. It can be used to create backorders in WebSphere Commerce.

Payment methods

To integrate WebSphere Commerce payment processing with SAP you must enable the credit management component in SAP. This reference application does not use the credit management feature.

Appendix F: Using contracts

This section describes how to use contracts to store R/3 information such as sales area and so on. To model multiple sales areas in WebSphere Commerce, refer to “Modelling sales area and plant”.

The advantages of using contracts to store R/3 information are:

- If multiple sales areas and plants are used in WebSphere Commerce, information about them can be stored in different contracts.
- When customers login, they can choose a contract. Customers can be shown the contracts corresponding to the sales areas that they are eligible for.
- Different contracts can be used for different order items, as these order items may be associated with different plants.
- In a multiple supplier scenario contracts can store supplier specific information including sales area, plant and so on.

To enable this functionality do the following:

- Determine the R/3 information that must be stored in WebSphere Commerce such as, sales area, plant, pricing conditions, price list, and so on.
- Create terms and conditions for each piece of R/3 information. Refer to the *IBM WebSphere Commerce Programmer's Guide* for details on how to add a term and condition. This requires creating EJBs and access beans for each new term and condition.
- Create contracts that include these terms and conditions. Contracts must be associated with business accounts. You need contracts for the stores specific to the suppliers. Refer to the *IBM WebSphere Commerce Programmer's Guide* and online documentation on how to create contracts using XML.

Note: It is recommended to use a dedicated sales area and plant for reasons mentioned in the “Modelling sales area and plant”, section.

Appendix G: Sample extract program

The following is a sample program to extract the material number and material group from an SAP system:

```
REPORT ZRAYMARA LINE-SIZE 300 NO STANDARD PAGE HEADING.
TABLES:
  MARA,          "General Material Data
  MARC.
SELECT-OPTIONS:
  MATNUM FOR MARA-MATNR.          "Material number
DATA:
  BEGIN OF ITAB OCCURS 0,
    MATNR LIKE MARA-MATNR,        "Material number
    MATKL LIKE MARA-MATKL,        "Material group
  END OF ITAB,
  BEGIN OF ITAB1 OCCURS 0,
    MATNR LIKE MARA-MATNR,        "Material number
    DEL1 VALUE '~',
    MATKL LIKE MARA-MATKL,        "Material group
  END OF ITAB1.
SELECT MATNR MATKL INTO CORRESPONDING FIELDS OF TABLE
ITAB FROM MARA
WHERE MATNR IN MATNUM.
LOOP AT ITAB.
  MOVE-CORRESPONDING ITAB TO ITAB1.
  APPEND ITAB1.
  CLEAR ITAB.
ENDLOOP.

CALL FUNCTION 'DOWNLOAD'
  EXPORTING
    CODEPAGE          = 'IBM'
    FILENAME          = 'c:\itabmara.txt'
    FILETYPE          = 'ASC'
  TABLES
    DATA_TAB         = ITAB1
  EXCEPTIONS
    INVALID_FILESIZE = 1
    INVALID_TABLE_WIDTH = 2
    INVALID_TYPE      = 3
    NO_BATCH          = 4
    UNKNOWN_ERROR     = 5
    GUI_REFUSE_FILETRANSFER = 6
    CUSTOMER_ERROR    = 7
    OTHERS             = 8.
```

Appendix H: Sample BDC program

The following is a sample BDC program to import data into SAP system:

```
report zraybdcvk12 .
data :
  bdcdata like bdcdata occurs 0 with header line,
  messtab like bdcmsgcoll occurs 0 with header line,
  pid like rmmg1-matnr,
  begin of line_itab,
    kschl(4)," like rv13a-kschl,
    low(18)," like all18-matnr,
    kbetr(14)," like konp-kbetr,
    konwa(5)," like konp-konwa,
  end of line_itab,
  itab like standard table of line_itab with header line,
  begin of upload_line,
    data(285) type c,
  end of upload_line,
  upload_itab like standard table of upload_line with header
line.
parameters:
  file like rlgrap-filename default 'C:\TESTBDC5.TXT',
  delim(1) type c default '~'.

call function 'UPLOAD'
  exporting
    filename                = file
    filetype                 = 'ASC'
  tables
    data_tab                = upload_itab.
if sy-subrc <> 0.
  message id sy-msgid type sy-msgty number sy-msgno
    with sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4.
endif.
loop at upload_itab.
  if not upload_itab is initial.
    split upload_itab-data at delim into itab-kschl itab-low
itab-kbetr
itab-konwa.
  append itab.
  endif.
  clear itab.
  clear upload_itab.
endloop.
loop at itab.
check not itab is initial.
  perform chngscr using 'SAPMV13A' '0100'.
  perform chngfld using 'BDC_OKCODE' '/00'.
  perform chngfld using 'RV13A-KSCHL' itab-kschl.
  perform chngscr using 'SAPLV14A' '0100'.
  perform chngfld using 'BDC_CURSOR' 'RV130-SELKZ(04)'.
  perform chngfld using 'BDC_OKCODE' '=WEIT'.
  perform chngfld using 'RV130-SELKZ(01)' ' '.
```

```

perform chngfld using 'RV130-SELKZ(04)' 'X'.
perform chngscr using 'RV13A004' '1000'.
perform chngfld using 'BDC_OKCODE' '=ONLI'.
perform chngfld using 'F003-LOW' itab-low.
perform chngfld using 'F001' 'WSO1'.
perform chngfld using 'F002' '30'.
perform chngfld using 'SEL_DATE' sy-datum.
perform chngscr using 'SAPMV13A' '1004'.
perform chngfld using 'BDC_OKCODE' '/00'.
perform chngfld using 'KOMG-VKORG' 'WSO1'.
perform chngfld using 'KOMG-VTWEG' '30'.
perform chngfld using 'KOMG-MATNR(01)' itab-low.
perform chngfld using 'KONP-KBETR(01)' itab-kbetr.
perform chngfld using 'KONP-KONWA(01)' itab-konwa.
perform chngscr using 'SAPMV13A' '1004'.
perform chngfld using 'BDC_OKCODE' '=SICH'.
perform calltran using 'VK12'.
clear itab.
endloop.
form chngscr using      p_prog
                      p_dynpro.

clear bdcdata.
bdcdata-program = p_prog.
bdcdata-dynpro = p_dynpro.
bdcdata-dynbegin = 'X'.
append bdcdata.
endform.
form chngfld using fnam fval.
clear bdcdata.
bdcdata-fnam = fnam.
bdcdata-fval = fval.
append bdcdata.
endform.
form calltran using      tran.
refresh messtab.
call transaction tran using bdcdata
                        mode 'E'
                        update 'L'
                        messages into messtab.

if sy-subrc eq 0.
    get parameter id 'MAT' field pid.
    write : / 'The material Number AFFECTED is ',pid.
elseif sy-subrc <> 0.
    message i001(zray) with sy-subrc 'Program not
successful'.
    exit.
endif.
endform.

```

Appendix I: Compensation logic

This section covers the inconsistent state situations and the possible compensation logic to address these situations.

The WebSphere Commerce commands invoke the SAP Business API to process the buyer's request. After executing the BAPI, the commands continue to process the request further. The results returned by SAP are updated in WebSphere Commerce and other WebSphere Commerce commands are called to return the results to the buyer. All these activities are executed in a single transaction being maintained by the Web Controller in WebSphere Commerce. If a transaction rollback exception occurs, the Web Controller will rollback the current transaction, that is the unit of work being done in the current transaction.

However, the Web Controller will not rollback the updates made in the SAP system. This results in an inconsistent state that needs to be handled. The following table lists the situations where compensation logic can be added, or manual intervention is required to handle the inconsistent state.

Note: The compensation logic will make the manual steps unnecessary in most of cases. Only when the compensation logic that you have added, fails, you must manually repair the state.

For more information on WebController transactions and transaction rollback exception, refer to the *IBM WebSphere Commerce Programmer's Guide*.

Transaction	Action or suggestion
Order created in SAP is not completed in WebSphere Commerce due to some error	Cancel the order in SAP by calling the order cancel BAPI. If it fails to cancel, manually delete the order in SAP. The error message in the logs will contain the details of the order created in SAP.
Order cancel failed in SAP R/3 but is cancelled in WebSphere Commerce	Retry to cancel the order using the scheduler commands in WebSphere Commerce. If it fails, then you must manually cancel the order.
Customer is created in SAP but an error occurs in WebSphere Commerce	Delete the customer created in SAP by calling the BAPI to remove the customer. If it fails, then you must manually delete the customer record. The error message in the logs will contain the details of the customer created in SAP.

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