Sterling Commerce
An IBM Company

Customization Guide

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Contents

Preface

This manual explains how to develop enterprise-wide customizations to the Yantra 7x application suite.

Intended Audience

This manual is intended for use by those who are responsible for customizing Yantra 7x

Structure

Each chapter in this manual is organized in the same sequence that a user navigates through the user interface. For example, a chapter first describes how to modify the Sign In screen before it describes how to modify any other screens the user sees at a later point. However, you do not need to read the topics in sequential order, since each topic describes a separate, self-contained task. Each topic is organized in the following manner:

- Explanation of concept
- Description of default behavior
- Information about what you can and cannot modify
- Step-by-step procedures

This manual contains the following sections:

Chapter 1, "Introduction"

This chapter discusses extensibility in general terms and provides an overview of the Yantra 7x Service Definition Framework and Yantra 7x Presentation Framework.

Chapter 2, "Getting Started"

This chapter explains how to prepare your environment to perform customizations to the UI and database.

Chapter 3, "Customizing the Console JSP Interface"

This chapter walks you through the tasks required for customizing the Application Consoles User Interface.

Chapter 4, "Customizing the Configurator Swing Interface"

This chapter describes the Configurator Java Swing user interface and walks you through the tasks necessary for customizing it to suit your business needs.

Chapter 5, "Creating Custom Mobile User Interfaces"

This chapter describes the concepts and procedures for creating custom mobile device user interface applications.

Chapter 6, "Extending the Yantra 7x Database"

This chapter explains how to extend Yantra 7x tables to maintain more attributes.

Chapter 7, "Programming Transactions"

This chapter explains how to invoke Yantra 7x and extended APIs and how to program user exits and event handlers.

Appendix A, "Special Characters Reference"

This appendix contains reference material and guidelines for using special characters in Yantra 7x.

Appendix B, "Console JSP Interface Extensibility Reference"

This appendix contains reference material that enables you to customize the user interface.

Appendix C, "Mobile User Interface Extensibility Reference"

This appendix contains the supporting reference material necessary to customize mobile device user interfaces.

Yantra 7x Documentation

For more information about the Yantra® 7x components, see the following manuals in the Yantra® 7x documentation set:

- *Yantra® 7x Release Notes*
- *Yantra® 7x Installation Guide*
- *Yantra® 7x Upgrade Guide*
- *Yantra® 7x Performance Management Guide*
- *Yantra® 7x High Availability Guide*
- *Yantra® 7x System Management Guide*
- *Yantra® 7x Localization Guide*
- *Yantra® 7x Customization Guide*
- *Yantra® 7x Integration Guide*
- *Yantra® 7x Product Concepts*
- *Yantra® 7x Warehouse Management System Concepts Guide*
- *Yantra® 7x Platform Configuration Guide*
- *Yantra® 7x Distributed Order Management Configuration Guide*
- *Yantra® 7x Supply Collaboration Configuration Guide*
- *Yantra® 7x Inventory Synchronization Configuration Guide*
- *Yantra® 7x Product Management Configuration Guide*
- *Yantra® 7x Logistics Management Configuration Guide*
- *Yantra® 7x Reverse Logistics Configuration Guide*
- *Yantra® 7x Warehouse Management System Configuration Guide*
- *Yantra® 7x Platform User Guide*
- *Yantra® 7x Distributed Order Management User Guide*
- *Yantra® 7x Supply Collaboration User Guide*

- *Yantra® 7x Inventory Synchronization User Guide*
- *Yantra® 7x Logistics Management User Guide*
- *Yantra® 7x Reverse Logistics User Guide*
- *Yantra® 7x Warehouse Management System User Guide*
- *Yantra® 7x Mobile Application User Guide*
- *Yantra® 7x Analytics Guide*
- *Yantra® 7x Javadocs*
- *Yantra® 7x Glossary*
- *Yantra® 7x Carrier Server Guide*
- *Yantra® 7x Application Server Installation Guide* (for optional component)

Conventions

The following conventions may be used in this manual:

Convention	Meaning
. . .	An ellipsis represents information that has been omitted.
< >	Angle brackets indicate user-supplied input.
`mono-spaced text`	Mono-spaced text indicates a file name, an API name, or a code example.
/ or \	Slashes and backslashes are file separators for Windows, UNIX and LINUX operating systems. The file separator for the Windows operating system is "\" and the file separator for Unix and Linux systems is "/". The Unix convention is used unless otherwise mentioned.

1 Introduction

This manual describes how to customize Yantra 7x. Yantra 7x includes the following components that can be extended to meet your business needs:

- Yantra 7x Application Consoles
- Yantra 7x Configurator
- Yantra 7x Mobile Application

1.1 Yantra 7x Extensibility

This chapter introduces the types of extensibility possible through Yantra 7x. It provides an overview, describes high-level concepts, and provides technical architectural diagrams of Yantra 7x.

Look and Feel Extensibility

Yantra 7x provides a Presentation Framework toolkit that enables you to change the way information is rendered or displayed, without changing the way it functions.

Transactional Extensibility

Yantra 7x provides a Service Definition Framework, which is an infrastructure that automates the conversion and transportation of data between Yantra 7x and third-party applications, and then converts that data into formats readable by each system. The Service Definition Framework also handles logging and exceptions. It enables you to create custom transactions that extend the functionality of Yantra 7x.

Database Extensibility

In addition to customizing the user interface and transactions, you can extend the database to store additional attributes specific for your business.

Printed Documents Extensibility

You can customize printed documents. For example, you can extend the default length of bar codes.

You can use JasperReports for generating printed reports in Yantra 7x . The JasperReports installation guidelines are provided in the <YFS_ HOME>/documentation/code_examples/jasperreports/readme.html file. A sample JasperReport called sampleOrderReport.pdf is also available in the same directory.

A Jasper print component is defined in the Service Definition Framework which can be used to automatically print a document based on an event. It is a standard XML-based component that accepts XML as input and provides an output XML. For more information on this component and also the print transaction refer to the *Yantra 7x Platform Configuration Guide*.

Browser Portal Extensibility

You can export views into Yantra 7x's database that list a user's frequently used search criteria.

1.2 The Yantra 7x Application Consoles User Interface

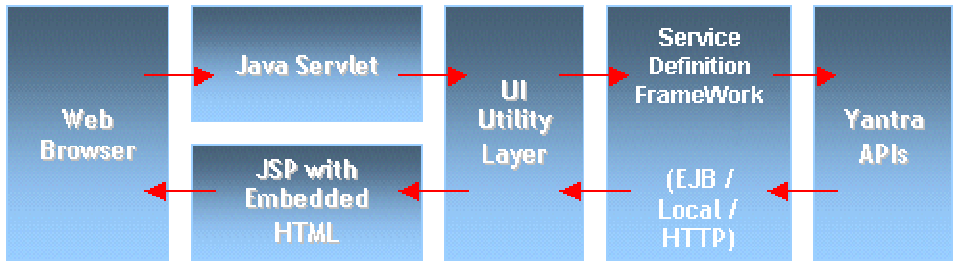
The Yantra 7x Application Consoles is the user interface for conducting and tracking day-to-day transactional business, such as orders and inventory. The Yantra 7x Application Consoles is also known by the terms Application Consoles or console.

The Application Consoles UI uses HTML within Java Server Pages (JSPs). The user interface layer accesses the exposed Yantra APIs through services defined in the Service Definition Framework, which ensures that only exposed APIs are used.

The UI layer of the Service Definition Framework uses very minimal XML manipulation. Wherever significant manipulation of XML output becomes necessary, changes to the APIs provide a more UI friendly output.

Figure 1–1 shows the technical architecture of the Application Consoles User Interface.

Figure 1–1 Application Consoles User Interface Architecture



This user interface can be extended. For detailed information about extending this user interface, see the following chapters:

- Chapter 3, "Customizing the Console JSP Interface"
- Appendix B, "Console JSP Interface Extensibility Reference"

1.3 The Yantra 7x Configurator User Interface

The Yantra 7x Configurator is the user interface for configuring the setup of an organization’s business rules and transactions. The Configurator is composed of Java Swing pages.

For detailed information about extending the Configurator user interface, see Chapter 4, "Customizing the Configurator Swing Interface".

1.4 The Yantra 7x Mobile User Interface

Yantra 7x enables you to develop and display a custom user interface for mobile devices used in warehouse operations.

The mobile architecture consists of two components: a client and a server.

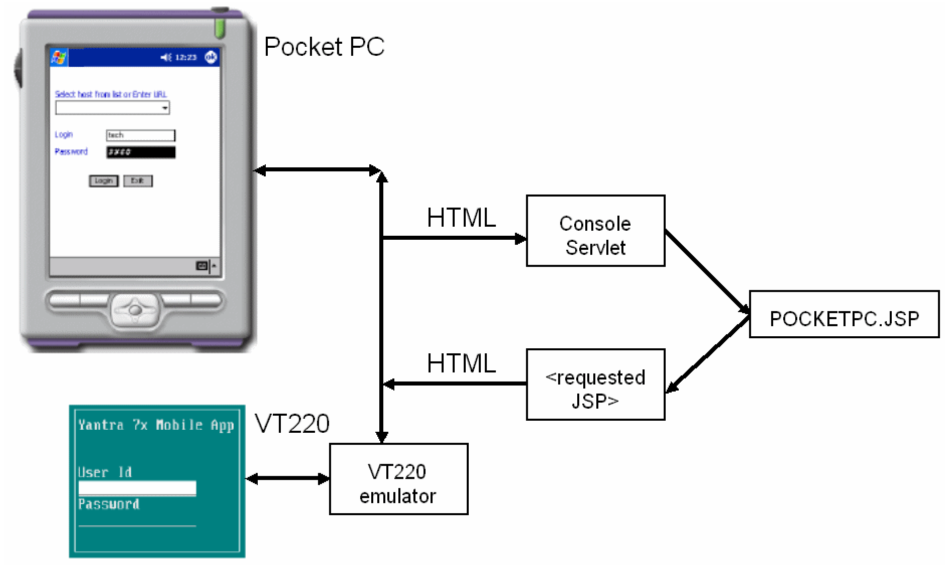
- Yantra 7x mobile client - typically a Pocket PC-based handheld device, but it can also be a VT220 emulation terminal. In this documentation, the mobile client is referred to as a *mobile device*.
- application server - Yantra 7x running on an application server.

The client and server communicate using the HTTP protocol to transfer HTML according to the request and response model. Each client request is of the type "/console/*.ppc".

The application server directs requests for any `.ppc` to the controlling servlet (called the ConsoleServlet) which in turn redirects the request to the `pocketpc.jsp` file. The `pocketpc.jsp` file in turn redirects the request to the JSP as specified in the uientity. The JSP in turn renders an HTML response, which is displayed by the Yantra 7x Mobile Client. For information on extending the mobile device screens, see Appendix C, "Mobile User Interface Extensibility Reference".

Figure 1–2, "Mobile Architecture" illustrates this architecture.

Figure 1–2 Mobile Architecture



1.5 The Yantra 7x Database

Database extensibility enables you to add columns and tables to capture additional data.

For more information, see Chapter 6, "Extending the Yantra 7x Database".

1.6 Yantra 7x Transactions

Yantra 7x provides a mechanism for processing and resolving errors during data transformation and transportation. This mechanism, called the Service Definition Framework, enables access to the following transactional processes:

- System APIs exposed by Yantra 7x
- Event handlers to route the data that is published by Yantra 7x to the transport services layer
- Time-triggered transactions that monitor and execute tasks as needed

The Service Definition Framework provides error checking through the log4j utility, which writes both trace and debug information to a log file.

In addition, you can extend Yantra 7x by creating the following types of custom code:

- Extended (custom) APIs
- User exits that override default business algorithm
- User exits that extend the business algorithm used by Yantra 7x APIs and time-triggered transactions
- Custom time-triggered transactions

2 Getting Started

Before customizing Yantra 7x, it is important to set up the environment in which you create your customizations. This chapter explains how to prepare your environment to perform customizations to the user interface and database.

2.1 Before You Begin

This guide assumes that you have already installed Yantra 7x. It also assumes that you are familiar with creating and running the `yantra.ear` file in deployment mode, as described in the *Yantra 7x Installation Guide*. It also assumes that you are familiar with the standard installation, otherwise known as the factory default installation. Throughout this guide <YFS_HOME> refers to the directory in which you have installed Yantra 7x.

2.2 Understanding the Development Environment

The development environment you need depends on the type of work you are doing.

If you intend to customize Yantra 7x, you need a test environment that enables you to ensure that your changes work as you intend. To save development time, you can customize your test environment to run Yantra 7x in *development mode*.

Development mode saves time by enabling your application server to automatically load the latest version of edited JSP files directly from specific directories rather than reading them from the `yantra.ear` file. This enables you to customize and test iteratively, without having to repeatedly create a `yantra.ear` file.

Development mode also enables you to immediately test UI customizations.

If you extend the database, include the `yfsdbextn.jar` file before the `yfscommon.jar` in the CLASSPATH in all scripts.

The way you set up the development environment depends on the application server you use.

2.3 Preparing a Development Environment on WebLogic

To enable WebLogic to run Yantra 7x directly from the installation folder, you must define an application in WebLogic with the appropriate settings and then configure your startup script to setup the CLASSPATH required by Yantra 7x.

Setting up Yantra 7x directory structure enables WebLogic to read from files directly rather than from the `yantra.ear` file. The following steps provide the necessary details on setting up the scripts to run WebLogic in exploded mode:

1. Copy the `web.xml` file and the `weblogic.xml` file from the <YFS_ HOME>`/descriptors/weblogic/WAR/WEB-INF` directory to the <YFS_ HOME>`/webpages/WEB-INF/` directory.
2. Copy the `ycpapibundle.properties` file and `ycpapibundle_<lang>_ <country>.properties` (if applicable) from the <YFS_ HOME>`/resources/` directory to the <YFS_ HOME>`/webpages/yfscommon/` directory.
3. Copy all files from the <YFS_HOME>`/resources/extn/` directory to the <YFS_ HOME>`/webpages/extn/` directory.
4. On Unix create a soft link in the <YFS_ HOME>`/webpages/WEB-INF` directory to the <YFS_ HOME>`/lib` directory as,

   ```
   ln -s <YFS_HOME>/lib lib
   ```
5. On Windows, create a lib directory in the <YFS_ HOME>`/webpages/WEB-INF` directory and copy all the *.jar files from the <YFS_HOME>/lib directory to the <YFS_ HOME>`/webpages/WEB-INF/lib` directory.

Now you need to configure WebLogic as described below. If you need further information, see the WebLogic documentation.

WebLogic must be configured to enable the server to read from the `<YFS_HOME>/webpages/` directory. The necessary steps for configuring WebLogic to run Yantra 7x in exploded (non-ear) mode for your development environment are given below:

1. Start your WebLogic server and open the WebLogic system console. It can be accessed using a URL similar to the following:

   ```
   http://<hostname or ip-address>:<port number of your WebLogic
   Server>/console
   ```

2. Logon to the console using the system administrator ID and password for your WebLogic server.
3. Remove any existing Yantra 7x deployments.
4. In the left panel, select Deployments > Web Application Modules. If yantra is displayed here, delete it.
5. In the right panel, select Deploy a New Web Application Module called "yantra" which points to the `<YFS_HOME>/webpages` directory.
6. Click the "Deploy" button and the Yantra 7x application will be deployed by Weblogic.

2.4 Preparing a Development Environment on WebSphere

When using WebSphere, you can test your Yantra 7x modifications as described in this section. The necessary steps for configuring WebSphere to run Yantra 7x in exploded (non-ear) mode for your development environment are given below:

1. Deploy the yantra.ear, using the documentation provided by IBM. During deployment, WebSphere copies all the contents of WAR and EAR files to the `<WAS Home>/AppServer/profiles/<PROFILE_ NAME>/installedApps/` directory.

   After deployment, any files copied to the `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/` directory can be modified as needed. For example, if you are extending a custom code written as part of the database extensibilty, can be directly moved to the appropriate directory under `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/` directory for testing. IBM calls this ability to modify and move files as needed "hot deployment."

The custom JSPs that are written as part of UI extensibiltiy can be directly incorporated into the `yantra.war` file.

2. Stop the application server before performing the following steps.

   a. Locate the file `yantra.jar` in the `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/<CELL_NAME>/<APP_NAME>` directory and rename the file.

   b. Create a directory named `yantra.jar` in the `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/<CELL_NAME>/<APP_NAME>` directory.

   c. Extract the jar files in `yantra.jar` file to `yantra.jar` directory using the command:

      ```
      jar -xvf yantra.jar
      ```

      This directory is specified as a root of the classpath.

   d. The custom templates and class files can be copied to this directory.

3. Copy your customized files (for example, custom transaction code, template extensions, localization literal files), to the appropriate `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/<CELL_NAME>/<APP_NAME>/yantra.jar/<Module_Name>` directory.

   For example, if you have some customizations in the Catalog module, add the files in `<WAS Home>/AppServer/profiles/<PROFILE_NAME>/installedApps/<CELL_NAME>/<APP_NAME>/yantra.jar/ycp` directory.

4. Re-package the `yantra.jar` with the following command:

   ```
   jar -cvf yantra.jar
   ```

5. Test your customizations using the following standards:

Table 2–1 WebSphere Hot Deployment Test Mode

If you modify...	In these files...	Then...
Startup parameters	properties	Restart WebSphere
UI extensibility	JSP, JavaScript, CSS, theme XML	Load dynamically
Localization literals	alertmessages and ycpapibundle properties files	Restart WebSphere
Database extensions	entity XMLs	You need to rebuild the yfsdbextn.jar file and include them in your CLASSPATH, then restart WebSphere
APIs and other template files	template XMLs	Load dynamically

2.5 Configuring the UI Cache Refresh Actions

In a standard deployment of Yantra 7x, any configuration changes made within the Resource Configurator do not take effect until the application server has been restarted. This means that testing your UI extensions can be a time-consuming activity. Therefore, Yantra 7x provides actions within the Resource Configurator that enable you to refresh the resources so that your modifications can be tested immediately.

These actions can only be enabled in a development environment. They will not work in a deployment environment. This section explains how to enable these actions. These actions should be disabled in a deployment environment.

To configure the resource cache refresh actions:

1. Open the `yfs.properties` file and set the `yfs.uidev.refreshResources` property to Y.
2. This enables the following actions on the Resource Configurator Tree in the Configurator:

   Refresh Cache icon - Refreshes all resources.

   Refresh Entity icon - Refreshes the selected entity resource and its child resources.

For instructions on using the Refresh Cache icons, see "Testing UI Customizations" on page 12.

2.6 Developing and Testing in the Development Environment

Now that you have set up your development environment, you are ready to begin customizing Yantra 7x, using the directions provided throughout this guide. This section explains how to use the icons that enable you immediately test UI customizations.

Note: After any modifications are made to the following files, the application server must be restarted:

- YFSDataType.xml file
- yfsdatatypemap.xml file

2.6.1 Testing UI Customizations

After making changes to UI Resources within the Resource Configurator, you can test your changes immediately by using the Cache Refresh icons.

To use the cache refresh icons:

1. Make changes as needed.
2. Select the refresh cache icon that fits your needs as follows:
   - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon
   - If you want to update all resources - Choose the *Refresh Cache* icon
3. Log into Yantra 7x again to test your changes.

2.7 Deploying Your Customizations

After you are satisfied with all of the customizations you have made to the UI and database, build the `yantra.ear` file on your development system and test it. Then deploy your changes to a production system and test them again. For information about deploying Yantra 7x, see the *Yantra 7x Installation Guide*.

Before deploying in production mode, ensure that the `yfs.properties` file has the correct settings. For example, ensure that the cache refresh icons specified in the `yfs.uidev.refreshResources` property is set to `N`.

2.8 Using Yantra 7x with Microsoft COM+

When using Yantra 7x with COM+, you need to create and configure a Yantra 7x application on your Windows server. You also need to create and install a client proxy.

2.8.1 Creating a Yantra 7x COM+ Application on Windows

To create a Yantra 7x COM+ application on a Windows server:

1. From the Windows Start menu, navigate to Administrative Tools > Component Services.
2. From the Component Services tree, navigate to Component Services > Computers > My Computer > COM+ Applications and then right-click COM+ Application. Select New > Application.
3. After the “Welcome to COM Application Install Wizard” appears, choose Next.
4. Choose Create an Empty Application.
5. In the Create Empty window enter the following and then choose next:
   - For Application Name enter Yantra 7x.
   - For Activation Type choose Server Application. This ensures that the components are started as dedicated processes.
6. In the Set Application Identity window choose This User and enter the appropriate Windows user name and password. This user is the identity under which the application will run. Make sure that the user belongs to the Administrators group. Choose Next and then Finish.

   The newly created Yantra 7x COM+ application appears under the Component Services tree.

Now you can add components to your Yantra 7x COM+ application.

2.8.2 Adding Components to a COM+ Application

To add components to a Yantra 7x COM+ application:

1. From the Component Services tree, navigate to Component Services > Computers > My Computer > COM+ Applications > Yantra 7x > Components and then right-click Components. Choose New > Components.
2. After the “Welcome to COM Component Install Wizard” appears, choose Next.
3. Choose Install New Component.
4. Browse to <YFS_HOME>/bin/YIFComApi.dll. Select it and choose Open. Then choose Next and then Finish.
5. Make sure that your system path contains the directories that store the following DLLs:
   - YIFJNIApi.dll
   - msvcrt.dll
   - msvcp60.dll
   - jvm.dll (usually found under <JAVA_HOME>/jre/bin/hotspot on the client machine)
6. Make sure that the <YFS_HOME>/resources directory has the following properties files:
   - yifclient.ini
   - yifclient.properties
   - yfs.properties

2.8.3 Configuring the Yantra 7x COM+ Service

To configure the Yantra 7x COM+ service:

1. From the Component Services tree, right-click the newly created Yantra 7x COM+ Application.
2. Choose Properties.

   The Yantra 7x Properties dialog box appears.
3. Choose the Advanced tab.

4. Under Server Process Shutdown panel, select Minutes Until Idle Shutdown and enter the time in minutes after which you want the process to shut down and then choose OK.
5. Double-click the Yantra 7x COM+ application.
6. Double-click Components.
7. Right-click YIFComApi.YIFComApi.1 and choose Properties.

   The YIFComApi.YIFComApi.1 Properties dialog box appears.
8. Choose the Activation tab.
9. Choose Enable object pooling.
10. In the Object pooling section, enter the Minimum and Maximum pool sizes based on the Component usage. Configure pooling to make optimal use of your hardware resources. The pool configuration can change as available hardware resources change.
11. Choose Enable Just In Time Activation.

    JIT activation activates an instance of an object just before the first call is made to it and then immediately deactivates the instance after it finishes processing its work.

2.8.4 Creating the Client Proxy

To create the client proxy:

1. Right-click your Yantra 7x COM+ application and choose Export.
2. After the "Welcome to COM Application Export Wizard” appears, choose Next.
3. In the Application Export window, enter the path and file name where the export `.MSI` file is to be created.
4. Choose Export as Application Proxy. Choose Next and then Finish.

2.8.5 Installing the Client Proxy

To install the client proxy:

1. Make sure the following DLL files are in your system path:
   - <YFS_HOME>/bin/YIFApi.dll

- <YFS_HOME>/bin/msvcrt.dll
- <YFS_HOME>/bin/msvcp60.dll, jvm.dll (located under <JAVA>/jre/bin/hotspot on the client machine)

Double-click `.MSI` file to install the component on the client.

3

Customizing the Console JSP Interface

The Yantra 7x Presentation Framework enables you to change the way information is rendered (or displayed) in the Application Consoles, without changing the way it functions.

This chapter describes how to customize the Yantra 7x Application Consoles user interface to suit your business needs. Each task is accomplished through a combination of configuration through the Yantra 7x Configurator user interface and editing HTML code in the JSP files of the screens you want to modify.

Note: The HSDE (Execution Console Framework) screens are not extensible.

For information on using the Yantra 7x Configurator, see the *Yantra 7x Platform Configuration Guide*. For information on functions used within the JSP files, see Appendix B, "Console JSP Interface Extensibility Reference".

Important: When customizing the interface, copy the standard Yantra 7x resources and then modify your copy. **Do not modify the standard Yantra 7x resources.**

Yantra 7x ships with the following applications:

- Yantra 7x Application Consoles - the standard UI for creating, tracking, and viewing orders, item inventory, and returns

- Yantra 7x Configurator - the UI for configuring Yantra 7x. For additional configuration information, see Chapter 4, "Customizing the Configurator Swing Interface".

3.1 Before You Begin

Before you begin user interface extensibility, familiarize yourself with guidelines listed in this section in order to help ensure a successful experience and enable you to work more quickly and with fewer errors.

Compare JSPs

As part of Yantra 7x's extensibility, you can extend JSP files of the current release.

When Yantra releases service packs or major releases and, in some cases, a user interface hot fix, you need to complete a JSP comparison and reconciliation. During the JSP comparison process you must compare the following files:

1. The original JSP shipped with your original Yantra 7x product version
2. The same JSP as Step 1 that you have extended for your environment
3. The same Yantra 7x JSP shipped as part of the new release

In order to facilitate the reconciliation process, Yantra recommends that you consider purchasing a difference tool that is capable of performing a 3-way comparison. For example, an inexpensive tool that can be purchased is Araxis. Please note that Yantra does not re-sell this difference tool nor do we warranty or guarantee this difference tool. It's merely provided as an example of an inexpensive tool and you are advised to do your own research on 3-way comparison tools and choose the one appropriate for your specific needs.

Prepare for Smooth Upgrades and Easy Maintainability

- Do not change the resource definitions of any of the resources shipped as part of the standard default configuration. Always make a copy through the Yantra 7x Configurator and then change the copy.
- Do not change any of the Yantra 7x-supplied JSP files, JavaScript files and icon JAR files. If you do, your changes may be lost during upgrades.

- When creating new views, consider issues regarding ease of maintenance as well as ease of creation. When you create a new view, inner panel, and so forth, it is possible to link to the JSPs supplied by Yantra 7x. But in future releases, Yantra may add more resources to these JSP, which means you must monitor software changes and update your configuration to account for these changes.

  For example, if you create a new inner panel and link it to the Order Detail Header JSP, (`/om/order/detail/order_detail_header.jsp`), this JSP file expects specific APIs to be called. Specifically, it expects the `getOrderDetails()` API to be called with certain fields in the output template and the `getScacAndServiceList()` API to be called for the Scac And Service drop-down field.

  If you use this inner panel, you must configure these two APIs with the necessary fields in the output template. Then, if Yantra adds fields to this JSP file in future releases, you may need to modify your configuration to account for these changes.

Build in Usability

- Any new views you develop should look and behave like the product views, so before you begin developing, gain an understanding of how the default views behave. For more information on the basic product look and feel, see "Introducing the Screen Layout and Behavior" on page 29.

Prepare Your Development Environment

In order to start the customization process, you must perform prepare the development environment to accommodate for your changes. See "Understanding the Development Environment" on page 7.

Understand How to Find Reference Materials

The Yantra 7x Presentation Framework consists of several JSP, JavaScript, and class files. These files contain several functions declared as `public`. However, only some of these functions are exposed. While performing user interface extensions, only the exposed functions should be used. See the following locations to determine whether a function is exposed:

- Java Classes - see the *Yantra 7x Javadocs*
- JavaScript - see "JavaScript Functions" on page 308

- JSP - see “JSP Functions” on page 260
- JSP Tags - see “JSP Tag Library” on page 297

3.2 Duplicate Request Handling and Page Tokens

In any Yantra 7x user interface that involves HTML forms, there is a possibility of duplicate requests to be unintentionally created by the browser. Problems can occur when requests that result in updating some data are unintentionally submitted multiple times. For example, a duplicate request may get generated when the browser is manually refreshed by the user. The user intended to perform the update only once, however, multiple requests for the same update can be generated.

To avoid any potential problems created by duplicate requests, the Yantra 7x infrastructure framework uses page tokens to ensure only the original request is processed. When a user logs into the Yantra 7x Application Consoles, a unique identifier called page token is assigned to the screens that are opened. This page token is validated every time an update request is sent by the browser. If the token does not match the one assigned to the screens earlier, then the request is ignored. Once a successful update request has occurred, the page token is reassigned to a new identifier. Therefore, any further requests that contained the old token will be ignored. This safeguard is built into the Yantra 7x infrastructure framework so you do not need to worry about this when performing customizations to the Yantra 7x Application Consoles.

3.3 Defining Centralized Themes

When a user successfully signs in, the standard Yantra 7x Home Page is opened. The look and feel of the Home Page is determined by the user who has signed in and the theme associated with their user ID. The theme determines the fonts and colors to use in rendering graphical user interface elements such as screens, labels, and table headers.

Yantra 7x supplies the following standard themes:

- Sapphire (default)
- Earth
- Jade

A theme is defined centrally through CSS and XML files, depending on which application uses it. This means you should not hard code colors and fonts of the user interface controls to individual screens. Instead, use the directions provided in this guide. Each theme is used throughout the Application Consoles and Configurator. Ideally when defining themes, you should create the same theme for both applications, in order to ensure a consistent user experience.

Table 3–1 Theme File Types

Application	Required Theme Files
Yantra 7x Application Consoles	• CSS - for HTML pages • XML - for displaying the colors and fonts used in graphs, charts, and maps. • _exui.xml - for displaying customized themes in the execution UIs.
Yantra 7x Configurator	• XML - throughout

Do not modify Yantra 7x's standard themes. Create your own CSS and XML files as described below. In order to determine which classes are used to define the controls for each style, see "Controls and Classes" on page 246.

If you require themes that are customized for different locales, make sure you create a new file for each of the locale codes you require. This is because for each specific theme, users can switch locales. For more information on defining and using locale codes, see "Customizing the Sign In Screen" on page 22.

To create a new theme:

1. Copy the `<YFS_HOME>/template/api/sapphire.xml` theme file to `<YFS_HOME>/template/api/`**`extn`**`/<theme>.xml`.
2. Edit your new XML file to define the values that you want to use for colors and fonts for each Color Name and Font Name element you want to display within the Yantra 7x Configurator and within any bar or pie charts.

Note: The fonts defined in the new theme XML must exist on the system you are using.

3. Copy the `<YFS_HOME>/webpages/css/sapphire.css` theme style sheet to `<YFS_HOME>/webpages/css/<theme>.css`.
4. Edit your new style file to specify the new colors and fonts added to in the new theme file.
5. Copy the `<YFS_HOME>/template/api/sapphire_exui.xml` file to `<YFS_HOME>/template/api/`**`extn`**`/<theme>_exui.xml`
6. Edit your new XML file to define the values that you want to use for colors and fonts for each Color Name and Font Name element you want to display within the Yantra 7x Configurator and within any bar or pie charts.

Note: Be aware that modifying fonts may impact other areas, requiring you to make further changes, such as to the size of fields or other UI elements that use that font. For guidance, see "CSS Theme Classes" on page 256.

7. From the Yantra 7x Configurator menu, configure the theme.

After creating the new theme, a user can choose it from a drop-down list of themes on the Yantra 7x Application Consoles user interface. For information on how users can define their own themes, see the *Yantra 7x Platform User Guide*.

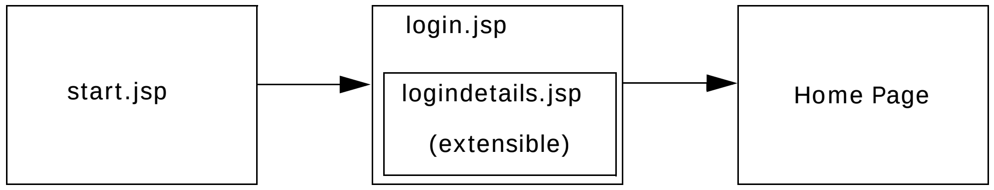
3.4 Customizing the Sign In Screen

The Sign In screen is the first page a user sees when they start Yantra 7x. The Sign In screen is made up of the following files:

- start.jsp - opens login.jsp in a new browser window and removes the browser tool bar.
- login.jsp - includes logindetails.jsp
- logindetails.jsp - is extensible

These Sign In screen files open in the manner shown in Figure 3–1:

Figure 3–1 Sign In Screen Logic



The primary purpose of the Sign In screen is to enable authorized users to log into Yantra 7x and establish their own personalized session. When the user signs in, the following properties are set up for their session:

- Locale settings
- Security access controls
- User properties such as preferred theme, organization, and so forth

3.4.1 Setting the Locale

The locale you set determines the language in which on-screen literals are displayed. The `start.jsp` file displays the Sign In screen in the default language. Then after a user logs in, the language displayed on-screen comes from the setting specified within their locale.

A multinational organization may require several languages for localization. For example, it may be the case that the standard installation is in German, and a user’s locale is French. In that instance, the `start.jsp` and `login.jsp` files are displayed in German and the user’s home page is displayed in French. The language displayed within the `login.jsp` file is determined by the resource bundle it uses.

The user’s entire session is displayed in the language specified in his profile until user selects a different locale or the session is terminated. If the user selects a different locale, Yantra 7x dynamically changes any literals associated with the new locale.

The session terminates either when the user logs out or when a connection times out. When the session terminates, the Sign In screen displays the standard language.

3.4.2 Configuring Logins for a Specific Locale

If your user community is multilingual, it makes sense to display the login page in every possible language. From the login page, the user can choose which language they want to see displayed on the Sign In screen.

To display an internationalized sign in screen:

1. Create a corporate HTML page that contains hyperlinks that correspond to each language that you want to display.
2. For each hyperlink, insert an <a href> tag to link to the locale specific page, using the syntax below:

   ```
   /yantra/console/start.jsp?LocaleCode=<locale_code>
   ```

   The <locale_code> value must match the entry specified in the Locale Code field in the Configurator. For information about the Locale Code field and its suggested syntax, see the *Yantra 7x Platform Configuration Guide*.

   For example, to open the Sign In screen in Canadian French, use the following syntax:

   ```
   /yantra/console/start.jsp?LocaleCode=fr_CA
   ```

   This shows the Sign In screen in the locale specified. After the login succeeds, the application opens in the user's default locale.

3.4.3 Configuring User Sign in from an External Application

When integrating Yantra 7x with external applications, you may need to enable a user to automatically log into Yantra 7x from an external application. You do this by configuring a link from your external application’s portal that automatically connects to Yantra 7x.

When choosing how to integrate the two applications, consider the following scenarios:

- Logging in a user and opening their home page
- Logging in a user and opening a specific view

To integrate Yantra 7x with an external application:

Within the external application's portal, insert one of the following URLs that best suits your needs:

- If you want to launch Yantra 7x, log in as a Yantra 7x user, and open their home page, use the following syntax:

  ```
  /yantra/console/start.jsp?UserId=<LoginID>&Password=<PassPhrase>
  ```

- If you want to launch Yantra 7x, log in as a Yantra 7x user, and open a specific view, use the following syntax (which illustrates opening the default order search view):

  ```
  /yantra/console/start.jsp?UserId=<LoginID>&Password=<PassPhrase>
  &Redirect=/console/order.search
  ```

In either case, if the login fails, the browser opens the Yantra 7x Sign In screen, which prompts the user to enter their Login ID and Password.

3.4.4 Supporting External Authentication

If users must log into Yantra 7x transparently using a domain password, Yantra 7x supports third-party single sign-on applications. In the event your environment does not support a single sign-on application, Yantra 7x also supports external authentication and internal authentication (by default). For information on using external authentication, see the *Yantra 7x Installation Guide*. For programming information on single sign-on, see the *Yantra 7x Javadocs*, and "Single Sign On" on page 231.

3.5 Adding Corporate Logos

The standard application conveys Yantra 7x branding logos throughout the application. You can change the branding logos displayed on screen in the following locations:

- Sign In screen
- Menu Bar
- About Box

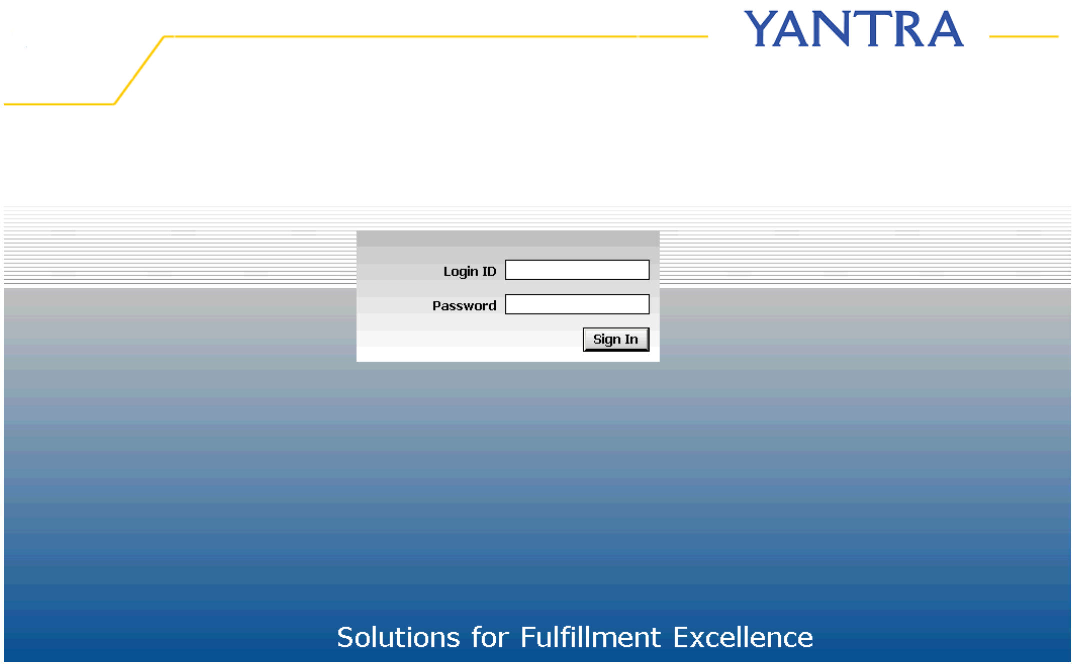
Use a unique image in each instance, since they all use images of different sizes.

For the Application Consoles, you must specify the relative URL of the image including the path as it exists in the JAR file. For example, the default icons used in the console are located in the `yantraiconsbe.jar` file. The path inside the JAR file of many of the icons is `console/icons`. Therefore, the image specified in the Resource Configurator for a console resource is `/yantra/console/icons/consoleresource.gif`.

3.5.1 Customizing the Sign In Screen Logo

The Sign In screen displays a corporate logo, which you may want to customize.

Figure 3–2 Sign In Screen



To customize the logo on the Sign In screen:

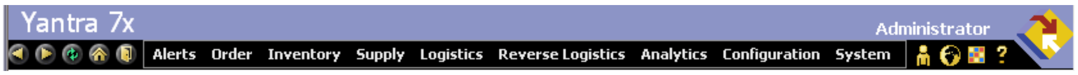
1. Copy the `<YFS_HOME>/webpages/console/logindetails.jsp` file to `<YFS_HOME>/webpages/`**`extn`**`/console/logindetails.jsp` file.

2. Open the new `logindetails.jsp` file and search for `YANTRA_ICON` to find the `<img>` tag referring to the Yantra logo. Change the `<img>` tag to point to your corporate logo, specifying the path as `/yantra/console/icons/` (for example, for `MyLogo.gif` you would use `/yantra/console/icons/MyLogo.gif`).
3. Copy your image file to the `<YFS_HOME>/webpages/extn/icons/console/icons/` directory.
4. From the `<YFS_HOME>/webpages/extn/icons/` directory, archive the entire console directory into a `yantraiconsbe.jar` file so that the path of the file inside the jar is `/console/icons`.
5. Put the `yantraiconsbe.jar` file under the `<YFS_HOME>/webpages/extn/icons/` directory.

3.5.2 Customizing the Menu Bar Logo

The Menu Bar displays on every screen that is not a pop-up dialog box.

Figure 3–3 Menu Bar



When a user logs into Yantra 7x, the `getMenuHierarchyForUser()` API is called and the output is stored in the session object. This reduces any overhead for building the menu for each screen, and it enables the Menu Bar to be configurable at the user level, (for information on configuring the Menu, see "Customizing the Menu Structure" on page 68).

To customize the logo on the Menu Bar:

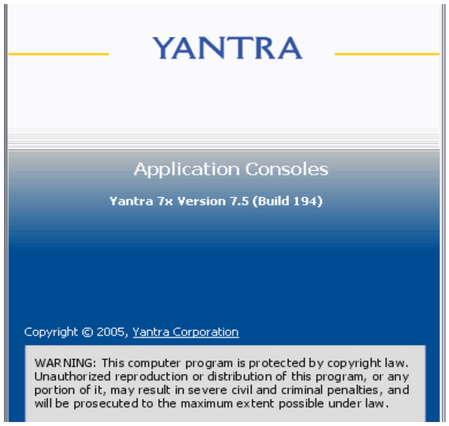
1. Copy the `<YFS_HOME>/webpages/common/menubar.jsp` file to `<YFS_HOME>/webpages/`**`extn`**`/common/menubar.jsp`.
2. Open the new `menubar.jsp` file and search for `YANTRA_LOGO` to find the `<img>` tag referring to the Yantra logo. Change the `<img>` tag to point to your corporate logo.
3. Copy your image file to the `<YFS_HOME>/webpages/extn/icons/console/icons/` directory.

4. From the `<YFS_HOME>/webpages/extn/icons/` directory, archive the entire console directory into a `yantraiconsbe.jar` file.

3.5.3 Customizing the About Box Logo

The About Box indicates the version number of an application. Yantra 7x ships with a standard About Box that a user can access by clicking the logo displayed on the Menu Bar shown in Figure 3–3. Figure 3–4, "Application Consoles About Box" shows the Application Consoles About Box.

Figure 3–4 Application Consoles About Box



Yantra 7x Version 7.5 (Build 194)

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When displaying the About Box, the application reads the version number based on a pre-determined logic. It is strongly advised that you retain the logic of displaying the version number when customizing the logo.

If you have purchased any Packaged Composite Applications (PCA) from Yantra, the version number of that product also appears in the About Box.

If you want to add corporate branding information to the About Box, you can customize the logo displayed.

To customize the logo on the About Box:

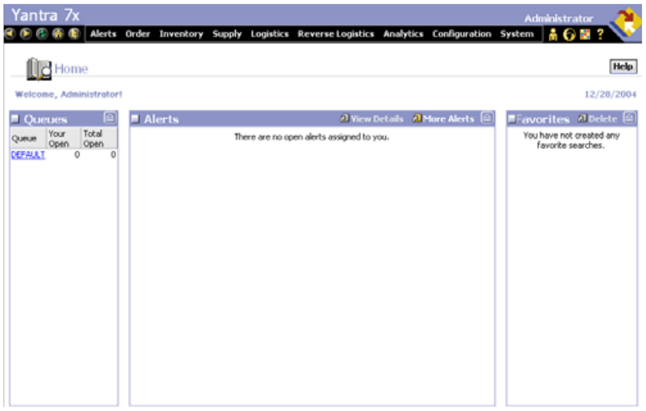
1. Copy the `<YFS_HOME>/webpages/console/about.jsp` file to `<YFS_HOME>/webpages/`**`extn`**`/console/about.jsp`.
2. Write your own HTML in your new `about.jsp` page.
3. Change your copy of the `menubar.jsp` file so that the `onclick` event of the `<img>` tag calls your new `about.jsp` file.

Tip: In order for the About Box (and other pop-up windows) to maintain an appearance and behavior that is consistent with the rest of the application, use the `window.showModaldialog()` function for displaying pop-up windows.

3.6 Introducing the Screen Layout and Behavior

In the Yantra 7x Application Consoles, a screen is made up of an ***anchor page*** which defines how a screen should display any inner panels it contains. Within Yantra 7x, anchor pages, inner panels, and the logic associated with them are referred to as ***views***. Figure 3–5 depicts the standard Home Page, which shows the components used in a search view.

Figure 3–5 Standard Home Page View



Welcome, Administrator!

12/28/2004

Queue	Your Open	Total Open
DEFAULT	0	0

There are no open alerts assigned to you.

You have not created any favorite searches.

The following types of views are available in the Yantra 7x Application Consoles:

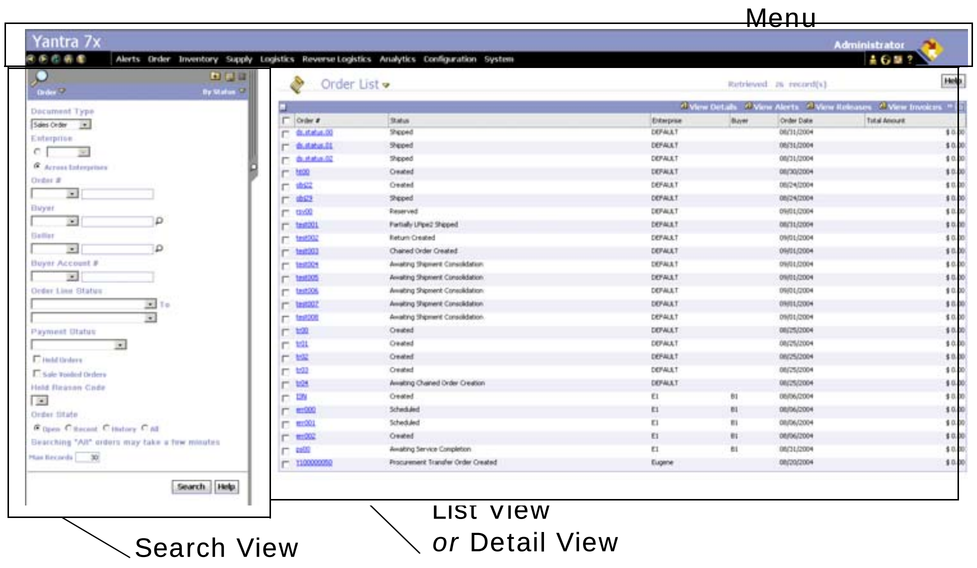
- Search view
- List view
- Detail view

For detailed descriptions of these views, see "Introducing the Types of Screens" on page 32, which describes them in detail.

3.6.1 Screen Organization

All screens follow the same overall organizational pattern. In general, the Yantra 7x application is laid out with a Menu Bar at the top and side-by-side search and list views below it. Figure 3–6 shows the typical organization of a screen.

Figure 3–6 Standard Screen Layout



Document Type: Sales Order
Enterprise: Across Enterprises
Order #
Buyer
Seller
Buyer Account #
Order Line Status To
Payment Status
Held Orders
Sale Voided Orders
Held Reason Code
Order State: [✓ Open] Recent History All
Searching "All" orders may take a few minutes
Max Records 30

Retrieved 26 record(s)

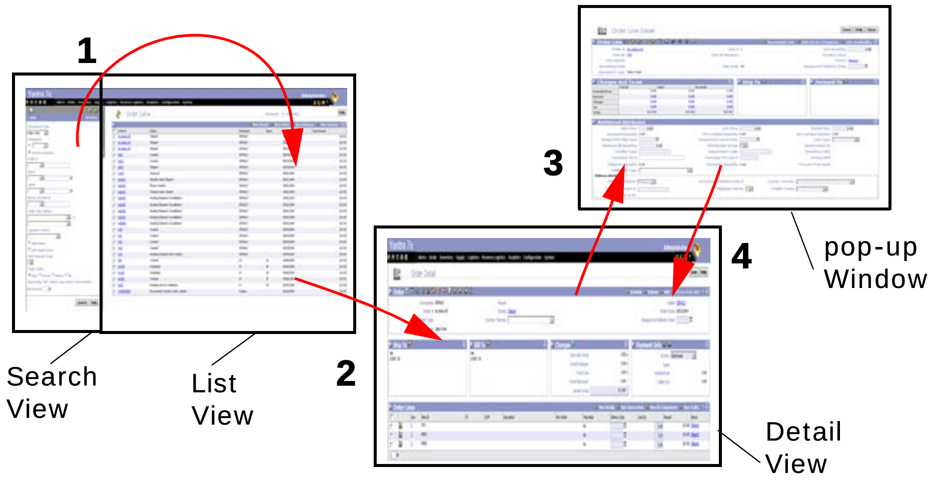
Order #	Status	Enterprise	Buyer	Order Date	Total Amount
ds.status.00	Shipped	DEFAULT		08/31/2004	$ 0.00
ds.status.01	Shipped	DEFAULT		08/31/2004	$ 0.00
ds.status.02	Shipped	DEFAULT		08/31/2004	$ 0.00
td00	Created	DEFAULT		08/30/2004	$ 0.00
sb22	Created	DEFAULT		08/24/2004	$ 0.00
sb29	Shipped	DEFAULT		08/24/2004	$ 0.00
rsv00	Reserved	DEFAULT		09/01/2004	$ 0.00
test201	Partially UPpe2 Shipped	DEFAULT		08/31/2004	$ 0.00
test202	Return Created	DEFAULT		09/01/2004	$ 0.00
test203	Chained Order Created	DEFAULT		09/01/2004	$ 0.00
test204	Awaiting Shipment Consolidation	DEFAULT		09/01/2004	$ 0.00
test205	Awaiting Shipment Consolidation	DEFAULT		09/01/2004	$ 0.00
test206	Awaiting Shipment Consolidation	DEFAULT		09/01/2004	$ 0.00
test207	Awaiting Shipment Consolidation	DEFAULT		09/01/2004	$ 0.00
test208	Awaiting Shipment Consolidation	DEFAULT		09/01/2004	$ 0.00
tr00	Created	DEFAULT		08/25/2004	$ 0.00
tr01	Created	DEFAULT		08/25/2004	$ 0.00
tr02	Created	DEFAULT		08/25/2004	$ 0.00
tr03	Created	DEFAULT		08/25/2004	$ 0.00
tr04	Awaiting Chained Order Creation	DEFAULT		08/25/2004	$ 0.00
DN	Created	E1	B1	08/06/2004	$ 0.00
err000	Scheduled	E1	B1	08/06/2004	$ 0.00
err001	Scheduled	E1	B1	08/06/2004	$ 0.00
err002	Created	E1	B1	08/06/2004	$ 0.00
ps00	Awaiting Service Completion	E1	B1	08/31/2004	$ 0.00
Y100000050	Procurement Transfer Order Created	Eugene		08/20/2004	$ 0.00

Note: Deviating from the standard organization of the screen layout, such as placing the menu on the left side of the screen, is not supported.

3.6.2 Screen Navigation Behavior

Yantra 7x's screen navigation behavior follows a standard, consistent pattern. Figure 3–7 shows the flow of navigation logic from one inner panel to the next.

Figure 3–7 Screen Navigation Behavior



1. The search view fills the left side of the screen.
2. The list view fills the right side of the same screen and displays the search results. From there you can navigate to a Details Screen.
3. The detail view fills the entire screen, replacing both the Search and list views. Links or icons in the detail view invoke a pop-up window.
4. Closing the pop-up window returns the focus to previous view.

3.6.3 Changing the Screen Navigation Behavior

By default, functions are exposed by the Yantra 7x Presentation Framework to provide hyperlinks. For a list of these functions, see Appendix B, "Console JSP Interface Extensibility Reference". Typically, the links are sufficiently configurable that you can change the view that the link points to without changing the code.

To learn how to modify the screen navigation behavior, see “Customizing Screen Navigation” on page 69.

The following sections describe the types of screens Yantra 7x contains.

3.7 Introducing the Types of Screens

The screens contained within an inner panel all have business and programmatic logic associated with them. This section first describes the business-related aspects of each view and then it describes the programming logic associated with each view.

3.7.1 Types of Extensible Business Entities

You can extend the screens of any type of ***entity***. An entity is an associated group of UI displays and program logic that pertain to specific business practices. In general, each entity has a corresponding console. Yantra 7x contains the following high-level business entities for which you can create views:

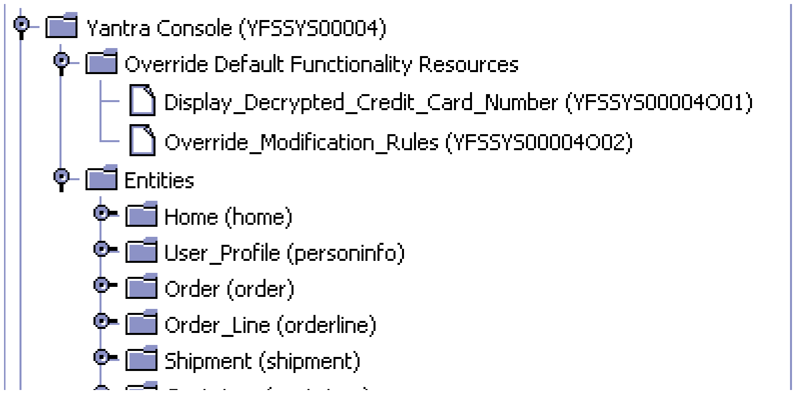
- Alert Console
- Adjust Inventory Console
- Create Order Console
- Create Picklist Console
- Create Purchase Order Console
- Create Return Console
- Create Template Console
- Exception Console
- Inbound Shipment Console
- Inventory Console

- Manifest Console
- Order Console
- Outbound Shipment Console
- Plan Console
- Purchase Order Console
- Return Console
- System Management Console
- Template Console

These business-related entities can be broken down into more granular details. For example, Order Management can be broken down to more granular entities, like order, shipment, and container. You can also create your own entities.

The Resource Configurator enables you to customize and create entities that suit your business needs. Figure 3–8 shows how entities appear in the Resource Configurator. The hierarchical order is based on the default order of navigation.

Figure 3–8 Entities within the Reource Configurator


Yantra Console (YFSSYS00004)
Override Default Functionality Resources
Display_Decrypted_Credit_Card_Number (YFSSYS00004001)
Override_Modification_Rules (YFSSYS00004002)
Entities
Home (home)
User_Profile (personinfo)
Order (order)
Order_Line (orderline)
Shipment (shipment)

Each entity has a default search view, list view, and detail view. A default view is determined by the ordering of these views within the Resource Configurator.

For example, if the Order entity has four search views, the default search view is determined as the one with the lowest resource sequence number among the four search views.

Under each entity resource, you can configure one detail API and one list API. The detail API configured is automatically called when a detail view of that entity is opened. The list API is called when a list view of that entity is opened.

You can prevent this default API from being called for a specific view by selecting the Ignore Default API parameter in the resource configuration screen.

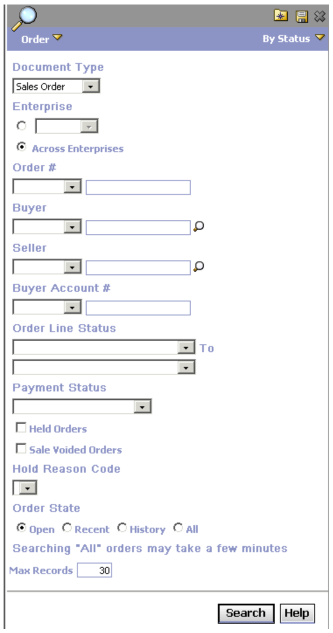
For more information about resource sequencing, see the *Yantra 7x Platform Configuration Guide*.

Note: Online help is not available for custom views. When a custom view is created, the Help button is displayed with a tool tip informing the users that help is not available. You can suppress the help for custom screens, by selecting the SuppressHelp option when configuring the resources for your screen.

3.7.2 Search Views

A search view contains a list of criteria from which to query. Figure 3–9 shows a standard search view.

Figure 3–9   Search View



Document Type: Sales Order

Enterprise: [✓ Across Enterprises]

Order State: [✓ Open] Recent History All

Max Records: 30

The search view is made of one or more of the following elements:

- JSP pages - render the screen. For detailed information on JSPs, see Appendix B, "Console JSP Interface Extensibility Reference".
- APIs - populate drop-down menus. For each API, you can specify input parameters and an output template. For more information on configuring API resources used by the Application Consoles, see the *Yantra 7x Platform Configuration Guide*.

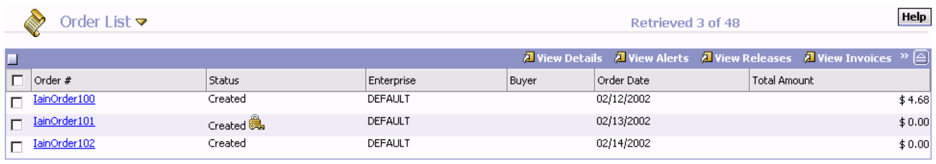
3.7.3 List Views

The results of a search are displayed in a list view. There are two types of list views: regular list views and advanced list views.

Regular List View

Figure 3–10 shows a standard list view.

Figure 3–10   List View


Order List

Retrieved 3 of 48

Help

View Details View Alerts View Releases View Invoices

Order #	Status	Enterprise	Buyer	Order Date	Total Amount
IainOrder100	Created	DEFAULT		02/12/2002	$ 4.68
IainOrder101	Created	DEFAULT		02/13/2002	$ 0.00
IainOrder102	Created	DEFAULT		02/14/2002	$ 0.00

A regular list view consists of a heading area (that permits view switching) and an Action Bar that contains the Actions and the list body. By default, the list body is set to display up to 30 records on the screen. If users want to see more results displayed on the screen, they can choose to display up to a maximum of 200 records. If you want to give all users the ability to display more than 200 records, you can set a new maximum number by editing the `yfs.properties` file as described within "Changing the Maximum Number of Records Displayed" on page 45.

A list view is made of one or more of the following elements:

- JSP pages - render the body. It is the only part of the view that doesn't belong to the Yantra 7x Presentation Framework.
- Additional APIs - are called for that list view.
- Actions - See "Types of Actions" on page 38.

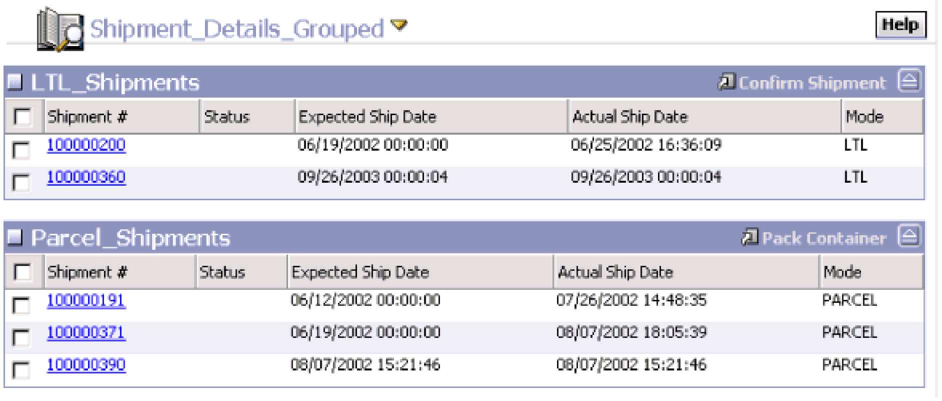
Within an entity, all subordinate list views use the same list API defined at the entity level. In addition to a list API at the entity level, you can define additional APIs for each list view. It is possible to configure a list view that does not call the default list API. In such a case, the template configured for the list view is not used (since the list API itself is not called).

Advanced List View

If additional information needs to be listed, you can create an advanced list view. To a user, an advanced list view looks similar to a regular list view. However, the advanced list view is actually defined as a detail view resource. This enables an advanced list view to have all of the same features as a standard detail view.

Figure 3–11 shows an advanced list view. To a user, an advanced list view looks and feels like a regular list view, but an advanced list view is actually a detail view, composed of multiple inner panels, a save or update feature, and an ability to provide custom hyperlinks, but without the "Showing 1 of N" component.

Figure 3–11 Advanced List View



LTL_Shipments

	Shipment #	Status	Expected Ship Date	Actual Ship Date	Mode
☐	100000200		06/19/2002 00:00:00	06/25/2002 16:36:09	LTL
☐	100000360		09/26/2003 00:00:04	09/26/2003 00:00:04	LTL

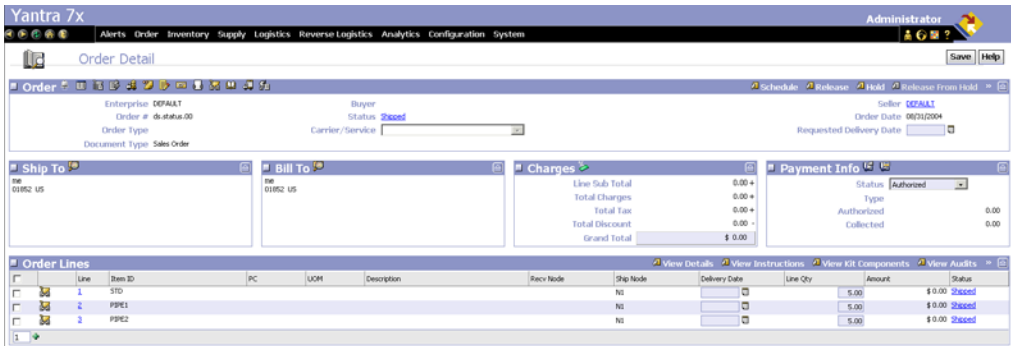
Parcel_Shipments

	Shipment #	Status	Expected Ship Date	Actual Ship Date	Mode
☐	100000191		06/12/2002 00:00:00	07/26/2002 14:48:35	PARCEL
☐	100000371		06/19/2002 00:00:00	08/07/2002 18:05:39	PARCEL
☐	100000390		08/07/2002 15:21:46	08/07/2002 15:21:46	PARCEL

3.7.4 Detail Views

A detail view shows more specific information about an entity. Figure 3–12 shows a standard detail view.

Figure 3–12 Detail View



Order

Enterprise	DEFAULT	Buyer	
Order #	ds.status.00	Status	Shipped
Order Type		Carrier/Service	
Document Type	Sales Order		

Seller	DEFAULT
Order Date	08/31/2004
Requested Delivery Date	

Ship To

me
01852 US

Bill To

me
01852 US

Charges

Line Sub Total	0.00 +
Total Charges	0.00 +
Total Tax	0.00 +
Total Discount	0.00 -
Grand Total	$ 0.00

Payment Info

Status	Authorized
Type	
Authorized	0.00
Collected	0.00

Order Lines

		Line	Item ID	PC	UOM	Description	Recv Node	Ship Node	Delivery Date	Line Qty	Amount	Status
☐		1	STD					N1		5.00	$ 0.00	Shipped
☐		2	PIPE1					N1		5.00	$ 0.00	Shipped
☐		3	PIPE2					N1		5.00	$ 0.00	Shipped

1

A detail view consists of one or more inner panels. An anchor page defines the layout of these inner panels. For example, the Order Detail anchor page includes all inner panels relevant to Order Detail and defines how they should be laid out horizontally.

The anchor page is optional. If an anchor page is not specified, the inner panels within the detail view are automatically laid out one after another vertically.

Each inner panel consists of fields along with a title bar that contains zero or more words (known as "actions") that enable the opening of a new detail window, and zero or more icons (known as "views") that enable the opening of a pop-up window. This inner panel title bar with actions and views is described as the "Action bar".

A detail view makes use of multiple APIs. These APIs are considered as follows:

1. You can define a detail API for each entity.
2. Each detail view can specify multiple APIs to call.
3. Each detail view consists of inner panels and each inner panel can specify multiple APIs to call.

Additionally, you can configure a detail view so that it does not call the default detail API. For more information about configuring details see the *Yantra 7x Platform Configuration Guide*.

A detail view consists of one or more of the following elements:

- Inner panel - one or more.
- JSP page - anchor page defined by the view ID within the Resource Configurator.
- Save Action - one or more. See Section 3.7.5, "Types of Actions" on page 38.

3.7.5 Types of Actions

From the list views and the detail views, the following actions are possible:

- Go to another view - opens a view in a modal dialog
- Call a script - calls the specified JavaScript
- Call an API - calls the specified API

- Call an API in rollback-only mode - calls the specified API in a rollback-only mode. This action can be used in a "what if" kind of scenario. For example, a customer service representative can check the total price of an order by adding an additional line without committing the transaction in the database. This option can be enabled in the Resource Configurator. For more information on enabling this option refer to *Yantra 7x Platform Configuration Guide*.

You can use each action by itself but they are more useful combined together. For example, you can configure a JavaScript and an API for an action. In this scenario, the specified API is invoked only when the specified JavaScript returns `true`.

In another example, you can configure an API and a view for an action. In this scenario, the API is invoked and regardless of its success, the configured view is invoked. This view opens within the same browser window.

Note: You can resize the pop-up browser window using the JavaScript call `window.dialogWidth`, `window.dialogHeight` and specifying the width and height as required.

If you want Yantra 7x to open a view only when an API returns success, you must configure that specifically as described in this section.

To configure a view to open only on the success of an API:

1. Configure an action to call an API.

   Note: You must define your action code with a certain naming convention to avoid any discrepancy with the Yantra 7x factory default action codes. For example, the custom action code can be prefixed with a `EXTN_`.

2. Configure your JSP to detect the specified attribute in the output XML of the API and store that attribute in a specified custom attribute of the HTML.

3. On the client side, write an onLoad function that searches for the specified custom attribute and then uses the `showDetailFor()` JavaScript function to switch to the screen you want.

3.8 Customizing Views

You can either create a new view on your own or use an existing view as a template. Using a template is far easier.

3.8.1 Creating an Entirely New View

You may also choose to create entirely new resources. This method is *only* recommended for advanced users since it does not enable you to take advantage of the structure and templates provided by existing resources.

Important: You must ***completely*** understand the structure of resources before attempting to create new resources.

To create a new resource:

1. From the Yantra 7x Configurator menu choose Platform > Presentation > Resources. This displays the Resource Configurator.
2. Choose Create New.
3. Customize your new resource, keeping in mind the following rules:
   - The highest level of resource you can create is an *entity* resource.
   - Under your custom entity, it is possible to create a complete hierarchy of resources for it, which consists of views, inner panels, and so forth.
   - Generally, an entity resource should contain a corresponding list API and detail API.
   - A detail view should contain at least one inner panel.
   - An action resource must fit one of the following conditions:
     * have an API subresource
     * be configured with a view ID

* be configured with a JavaScript to call

Alternatively, if you want an easier way to customize Yantra 7x, you can create new views, actions, or icons within entities available in the Yantra 7x Application Consoles, using templates as described in the following sections.

3.8.2 Creating a View from a Template

Creating a view from a template involves copying and modifying an existing view. This is the easiest route, whether you just need a minor change to a view, or an entirely new view, as it provides the following benefits:

- Reduces the amount of work you must do
- Ensures a standard look and feel
- Ensures proper execution of application logic

Note: When customizing the views you have to ensure that the relevant property name in the `yfs.properties` file is set to "Y" before proceeding to click the refresh icon. For more information, see Section 2.5, "Configuring the UI Cache Refresh Actions"

Note: When creating new views, consider issues regarding ease of maintenance as well as ease of creation. For more information, see "Before You Begin" on page 18.

3.8.3 Customizing a Search View

Customizing a search view involves minimal changes.

To customize a search view:

1. Navigate to the screen that you want to change, so you can determine its view ID.
2. Hover your mouse pointer over the screen's view title. The view title's tool-tip indicates the view ID.

3. From the Resource Configurator, navigate to the view ID and copy it, including the sub-resources when prompted.
4. Copy the JSP file for the original view into the `<YFS_HOME>/webpages/extn/<PathOfOriginalJSP>/` directory.

> **Note**: Customizing this view may require other files to be copied into the `extn` folder. A list of these required files can be seen by right clicking on the entity and getting a JSP List

5. From the Resource Configurator, navigate to your new view. Enter the relative path to your JSP file in the JSP field. For example:

   `/extn/om/order/search/order_search_bystatus.jsp`

6. If you want your new search view to be the default view, resequence the new view so that the sequence number is a lower number than that of the original view.
7. Edit your JSP file as needed. See "Customizing JSP Files" on page 48.
8. Select the refresh cache icon that fits your needs as follows:
   - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon
   - If you want to update all resources - Choose the *Refresh Cache* icon
9. Log into Yantra 7x again to test your changes.

3.8.4 Customizing a List View

You can customize regular list views or advanced list views.

3.8.4.1 Customizing a Regular List View

Customizing a regular list view involves minimal changes. You can modify the elements displayed or the maximum number of records displayed.

To customize a regular list view:

1. Navigate to the screen that you want to change, so you can find out its view ID.

2. Hover your mouse pointer over the screen's view title. The view title's tool-tip indicates the view ID.
3. From the Resource Configurator, navigate to the view ID and copy it, including its sub-resources when prompted.
4. Copy the JSP file for the original view into the `<YFS_HOME>/webpages/extn/<PathOfOriginalJSP>/` directory.

> **Note**: Customizing this view may require other files to be copied into the `extn` folder. A list of these required files can be seen by right clicking on the entity and getting a JSP List

5. From the Resource Configurator, navigate to your new view. Enter the relative path to your JSP file in the JSP field. For example:

   `/extn/om/order/list/order_list_concise.jsp`
6. If you want your new search view to be the default view, resequence the new view such that the sequence number is a lower number than that of the original view.
7. Edit your JSP file as needed. See "Customizing JSP Files" on page 48.
8. Select the refresh cache icon that fits your needs as follows:
   - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon
   - If you want to update all resources - Choose the *Refresh Cache* icon
9. Log into Yantra 7x again to test your changes.

3.8.4.2 Customizing an Advanced List View

Customizing an advanced list view is similar to creating a custom detail view. The advanced list can be displayed for any specific search view. For search views that include an advanced list view, when a user chooses the search button, the advanced list view of the entity opens instead of the regular list view. For any other search views, the regular list view opens.

To customize an advanced list view:

1. From the Configurator, define a new search view with the Show Detail flag checked.

   When the user executes a search, the default detail view of the entity is displayed (rather than the default list view for the typical search screen).

2. Edit your JSP file as needed. See "Customizing JSP Files" on page 48.

   When using the following controls, make sure to include the corresponding Yantra 7x JSP functions when binding the input fields on the search view to an XML. This ensure that the input fields are available as input to the APIs called within the advanced list screen in the yfcSearchCriteria namespace.

   Note: The standard Yantra 7x JSPs used for search views may include functions other than those listed. When customizing an advanced list view, ensure that the controls use the functions listed here.

Table 3–2 Controls

Control	Function
Textbox	getTextOptions
Select dropdown	getComboOptions
Radio button	getRadioOptions
Check Box	getCheckBoxOptions
Hidden Inputs	getTextOptions

3. Create a custom detail JSP page as described in "Customizing a Detail View" on page 45. (This will be used as the advanced list view.)

4. Define all additional APIs needed to display the advanced list view.

   The yfcSearchCriteria namespace contains all the data needed for additional APIs, and its xml:/SearchData/@MaxRecords attribute specifies the Maximum Records value for the advanced list view.

5. Determine how the advanced list view should open.

3.8.4.3 Changing the Maximum Number of Records Displayed

By default, Yantra 7x displays a maximum of 30 records for the user. If the user wants to see more results displayed on the screen, they can choose to display as many as 200 records maximum.

If you want users to be able to display more than 200 records, you can set a new maximum number of records by editing the `yfs.properties` file. Once you set a new upper limit in the `yfs.properties` file, this system-level setting applies to all users.

The behavior of displaying 30 records by default cannot be modified.

To modify the maximum number of records displayed:

Open the `<YFS_HOME>/resources/yfs.properties` file and edit the MaxRecords value as shown below:

```
#---------------------------------------------------------------
This property sets the number of records displayed on a list
screen. Increase the application server JVM heap settings if
these parameters are increased. Change will affect search
limits for all users.
#---------------------------------------------------------------
yfs.ui.MaxRecords=200
```

Note: Increasing the upper limit to beyond 200 impacts performance. It also requires increasing the application server JVM heap.

3.8.5 Customizing a Detail View

A detail view shows more specific breakdown of information. It consists of one or more inner panels within an anchor page. Each inner panel consists of fields along with zero or more actions and zero or more icons. A detail view can make use of multiple APIs.

To customize a detail view:

1. Navigate to the screen that you want to change, so you can determine its view ID.

2. Hover your mouse pointer over the screen's view title. The view title's tool-tip indicates the view ID.

3. From the Resource Configurator, navigate to the view ID and copy it, including its sub-resources when prompted.
4. Copy the JSP file for the original view into the `<YFS_HOME>/webpages/extn/<PathOfOriginalJSP>/ directory`.

> **Note**: Customizing this view may require other files to be copied into the `extn` folder. A list of these required files can be seen by right clicking on the entity and getting a JSP List

5. If the original view uses an anchor page and you want to customize it, use the Resource Configurator to navigate to your new view. Enter the relative path of your JSP file into the JSP field.
6. Edit the anchor page JSP file as needed. See "Customizing JSP Files" on page 48.

> **Note:** Ensure that the anchor page contains the Resource IDs of all of the inner panels you want included. See the *Yantra 7x Platform Configuration Guide*.

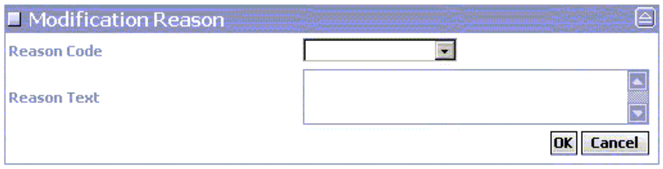
7. For each inner panel you must customize, perform the following steps:
   a. Copy the JSP file for the original inner panel into the `<YFS_HOME>/webpages/extn/<PathOfOriginalJSP>/` directory.
   b. From the Resource Configurator, navigate to your new inner panel. Enter the relative path to your JSP file in the JSP field. For example:

      ```
      /extn/om/order/detail/order_detail_header.jsp
      ```
   c. Edit your inner panel JSP file as needed. See "Customizing JSP Files" on page 48.
8. If you want your new detail view to be the default view, resequence the new view so that the sequence number is a lower number than that of the original view.

9. In order to make all links point appropriately to your new view, follow the steps in "Incorporating Your View across the Application" on page 59.
10. Select the refresh cache icon that fits your needs as follows:
    - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon
    - If you want to update all resources - Choose the *Refresh Cache* icon
11. Log into Yantra 7x again to test your changes.

3.8.5.1 Blocking the Reason Code Popup from Order Detail screen

The SAVE action for the changes you make in the Detail Screen of Yantra 7x console results in a popup asking for the Reason Code for the changes made. The Reason Code popup can be blocked from appearing only for a custom screen.



Note: The popup editing would be possible only if it is a custom screen. Yantra default screens are not editable.

To Remove the appearance of popup screen invoked by the 'SAVE' action:

1. From the Yantra 7x Configurator menu choose Platform > Presentation > Resources. This displays the Resource Configurator.
2. Choose Entity > Detail View >Action that you want to edit. In this case, SAVE is chosen as the action to be modified.
3. Remove the Java Script method that invokes the Popup screen.

3.8.6 Customizing JSP Files

JSP files contain the syntax that enable your HTML pages to display dynamically. The types of JSPs files correspond to search views, list views, and detail views. The standards for each JSP file depend on the type of screen that uses it.

JSP Files for Search Views

A JSP file for a search view typically contains tags that create input fields which permit users to enter search criteria. A search JSP file usually includes the following types of HTML controls:

- Labels
- Input fields
- Combo boxes
- Radio buttons
- Checkboxes

JSP Files for List Views

A JSP file for a list view typically contains only an HTML table with column headers and data cells. Most list views also contain checkboxes for use with the actions that can be performed on the records in the list. An XML key is usually constructed and associated with the checkboxes on table.

JSP Files for Detail Views

A JSP file for a detail view are typically the most complicated, since detail view often require a wide variety of controls. Detail views usually contain the same sort of HTML controls as a search view. In addition, detail views may also contain the following controls:

- Text areas
- Tables
- Graphs

Reminder: In order to maintain a consistent look and feel throughout the product, use the same stylesheets (CSS files) throughout all of the JSP files you customize.

3.8.7 Understanding the JSP Files Used by Yantra 7x

The JSP files provided by Yantra 7x cover every typical use case scenarios that you can encounter, so they are useful templates for developing your own JSP files. As you examine the JSP files, note that they are modular, which enables you to quickly customize a view by assembling units of code together. In addition to following the JSP file template, when you need more technical details, see Appendix B, "Console JSP Interface Extensibility Reference".

Example 3–1 shows some code from a typical order JSP file, which can be used to render an Order list view.

Example 3–1 JSP File Contents

```
<%@taglib prefix="yfc" uri="/WEB-INF/yfc.tld" %>
<%@include file="/yfsjspcommon/yfsutil.jspf"%>
<%@include file="/console/jsp/currencyutils.jspf" %>
<%@ page import="com.yantra.yfs.ui.backend.*" %>
<%@ include file="/console/jsp/modificationutils.jspf" %>

<script language="javascript"
src="/yantra/console/scripts/modificationreason.js"></script>

<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
        <tr>
            <td sortable="no" class="checkboxheader">
                <input type="hidden" name="userHasOverridePermissions"
value='<%=userHasOverridePermissions()%>'/>
                <input type="hidden" name="xml:/Order/@Override" value="N"/>
                <input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Order_#</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Status</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Enterprise</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Buyer</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Order_Date</yfc:i18n></td>
```

```
                <td class="tablecolumnheader"><yfc:i18n>Total_Amount</yfc:i18n></td>
            </tr>
        </thead>
        <tbody>
            <yfc:loopXML binding="xml:/OrderList/@Order" id="Order">
                <tr>
                    <yfc:makeXMLInput name="orderKey">
                        <yfc:makeXMLKey binding="xml:/Order/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey" />
                    </yfc:makeXMLInput>
                    <td class="checkboxcolumn">
                       <input type="checkbox" value='<%=getParameter("orderKey")%>'
name="EntityKey"/>
                    </td>
                    <td class="tablecolumn">
<a href="javascript:showDetailFor('<%=getParameter("orderKey")%>');">
<yfc:getXMLValue binding="xml:/Order/@OrderNo"/>
</a>
                    </td>
                    <td class="tablecolumn">
                        <% if (isVoid(getValue("Order", "xml:/Order/@Status"))) { %>
                            [<yfc:i18n>Draft</yfc:i18n>]
                        <% } else { %>
                            <yfc:getXMLValue binding="xml:/Order/@Status"/>
                        <% } %>
                        <% if (equals("Y", getValue("Order",
"xml:/Order/@HoldFlag"))) { %>
                            <img class="icon"
onmouseover="this.style.cursor='default'"
<%=getImageOptions(YFSUIBackendConsts.HELD_ORDER, "This_order_is_held")%>/>
                        <% } %>
                    </td>
                    <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@EnterpriseCode"/></td>
                    <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@BuyerOrganizationCode"/></td>
                    <td class="tablecolumn"
sortValue="<%=getDateValue("xml:/Order/@OrderDate")%>"><yfc:getXMLValue
binding="xml:/Order/@OrderDate"/></td>
                    <td class="numerictablecolumn"
sortValue="<%=getNumericValue("xml:/Order/PriceInfo/@TotalAmount")%>">
                        <%=displayAmount(getValue("Order",
"xml:/Order/PriceInfo/@TotalAmount"), (YFCElement)
request.getAttribute("CurrencyList"), getValue("Order",
"xml:/Order/@RulesetKey"), getValue("Order",
"xml:/Order/PriceInfo/@Currency"))%>
                    </td>
                </tr>
            </yfc:loopXML>
       </tbody>
</table>
```

This example shows *include* files at the top. In order to access most of the common public JSP functions in the Yantra 7x Presentation Framework, most JSP files only require a reference to the <YFS_Home>`/yfsjspcommon/yfsutil.jspf` file, as in the following example of an include statement:

```
<%@include file="/yfsjspcommon/yfsutil.jspf"%>
```

To access the `yfsGet*Options()` JSP functions, you must reference the <YFS_Home>`/console/jsp/modificationutils.jspf` file, as in the following example:

```
<%@ include file="/console/jsp/modificationutils.jspf" %>
```

For more information on these functions, see "JSP Functions" on page 260.

For JavaScript functions, all public functions are automatically available to your JSP file.

3.8.7.1 UI View Across Document Type

Any console screen that is an entry point to a particular set of console screens (like the order search or order create screens) may need to incorporate the common JSP used for implementing the user interface view across document type feature. This feature allows existing console screens to be used when viewing information for different document types. This common JSP can be used when the entry point screens in your entity's console require any of the following fields:

- Document Type
- Enterprise Code
- Node (only for WMS screens where node a primary important field)

3.8.7.1.1 Using the common_fields.jsp

The `common_fields.jsp` (located in the `webpages/yfscommon` directory) provides many different features for displaying the commonly required fields. The `common_fields.jsp` should be included in the top of your JSP. JSP parameters should be passed to indicate what features you need for the particular usage of the JSP. For example, if you want to show the node field, then you pass the "ShowNode" parameter as "true". Table 3–3 indicates all of the valid parameters that can be passed to the `common_fields.jsp`

Table 3–3 Valid Parameters for Common_fields.jsp

Parameter	Description
ShowDocumentType	Indicates whether the document type field should be displayed or not. Default: true
ShowEnterpriseCode	Indicates whether the enterprise code field should be displayed or not. Default: true
ShowNode	Indicates whether the node field should be displayed or not. Default: false
DocumentTypeBinding	Indicates the binding that should be set on the document type field. Default: xml:/Order/@DocumentType
EnterpriseCodeBinding	Indicates the binding that should be set on the enterprise code field. Default value: Xml:/Order/@EnterpriseCode.
NodeBinding	Indicates the binding that should be set on the node field. Default value: xml:/Order/@ShipNode.
RefreshOnDocumentType	Indicates whether the entire screen should refresh when a document type is selected. (See the "Screen Refreshing" section in this document for more information.) Default: false.
RefreshOnEnterpriseCode	Indicates whether the entire screen should refresh when an enterprise is selected. (See the "Screen Refreshing" section in this document for more information.) Default: false.
RefreshOnNode	Indicates whether the entire screen should refresh when a node is selected. (See the "Screen Refreshing" section in this document for more information.) Default: false.
ScreenType	Indicates the type of screen in which this JSP is being included. This information is used to set the appropriate classes and column layout of the fields inside the JSP. Valid values are "search" and "detail". Default: search.

Table 3–3 Valid Parameters for Common_fields.jsp

Parameter	Description
ColumnLayout	Indicates the number of columns that will be used to display the fields. The only valid values allowed are 1 and 3. Default: If ScreenType is "search", then the default column layout is 1. If ScreenType is "detail", then the default column layout is 3.
NodeLabel	Indicates what the screen label for the node field should be. Only valid when "ShowNode" is passed as "true". Default: Node.
EnterpriseListForNodeField	Indicates if the values that display in the enterprise code field should be based on the selection within the node field. This is used for WMS screens where the enterprise list must be a list of organizations that participate in the node's organization. The "RefreshOnNode" parameter should be passed as "true" when this parameter is "true" to ensure that the enterprise list will refresh when a node is selected. Only valid when "ShowNode" and "ShowEnterpriseCode" are "true". Default: false

Note: Any API called for fetching data for fields **within** the `common_fields.jsp` is done by the common JSP itself. There is no need to define resources in your screens for these APIs. For example, if you are showing the enterprise code field using the common JSP, there is no need to define the `getOrganizationList()` API within your screen's resources.

3.8.7.1.2 Screen Refreshing

For fields that depend on document type, enterprise code, or node, use the common JSP's screen refreshing features. For example, in the order search by status screen, there is a "From Status" field that displays a list of statuses for which you can search by. This list of valid statuses is different for different document types. Therefore, when the user selects a particular document type, a different list of statuses must appear in the field. Achieving this requires the following steps:

1. Include the common_fields.jsp at the top of the JSP. Pass the "RefreshOnDocumentType" parameter as "true" as follows:

```
<jsp:include page="/yfsjspcommon/common_fields.jsp" flush="true">
        <jsp:param name="DocumentTypeBinding"
value="xml:/OrderRelease/Order/@DocumentType"/>
```

```
        <jsp:param name="EnterpriseCodeBinding" 
value="xml:/OrderRelease/Order/@EnterpriseCode"/>
        <jsp:param name="RefreshOnDocumentType" value="true"/>
    </jsp:include>
```

2. In the application XML for your entity, define the `getStatusList()` API under the view. Define the API so that it is not called by the infrastructure layer when the view is displayed (set the "LoopAPI" attribute to "Y"). Specify a dynamic attribute for the DocumentType attribute so that it will pass the document type selected in the field on the screen as follows:

   `DocumentType="xml:CommonFields:/CommonFields/@DocumentType"`

3. In the JSP of your screen, call the `getStatusList()` API using the `callAPI` tag lib immediately after the common_fields.jsp is included.

Note: You can refresh the entire screen using any of the common fields (document type, enterprise code, and/or node). There is a corresponding dynamic binding that must be specified for each (`xml:CommonFields:/CommonFields/@DocumentType`, `xml:CommonFields:/CommonFields/@EnterpriseCode`, `xml:CommonFields:/CommonFields/@Node`) respectively.

3.8.7.1.3 Other Common Field Features/Notes

- When a particular field is displayed using the common_fields.jsp, the appearance of the field depends on the number of records that the field needs to display. If there is only one record to display in the field, then the field will appear as a protected input that cannot be modified by the user. If there are 2 to 20 records to display in the field, then the field will appear as a combo box. If there are more then 21 records to display, then the fields will appear as a protected text box with a lookup icon next to it. In this case, the only way to change the value of the field is through the lookup. The reason for this behavior is so that the "screen refreshing" feature can work even when there are too many records to show in a combo box.

- If a user logged into the console is a node user, the node field will appear as a protect input that cannot be modified. Otherwise, the node field will display all of the current logged in organizations owned nodes.

Screen Example

The following example shows how this common JSP would be used within a search screen where two fields on the search screen need to be refreshed whenever the enterprise code field changes.

In the JSP of all entry point screens, the common_fields.jsp will be included:

Example 3–2 Usage of JSP within a Search Screen

```
<table class="view">

    <jsp:include page="/yfsjspcommon/common_fields.jsp" flush="true">
        <jsp:param name="DocumentTypeBinding"
value="xml:/OrderRelease/Order/@DocumentType"/>
        <jsp:param name="EnterpriseCodeBinding"
value="xml:/OrderRelease/Order/@EnterpriseCode"/>
        <jsp:param name="ShowNode" value="true"/>
        <jsp:param name="NodeBinding" value="xml:/OrderRelease/Order/@Node"/>
        <jsp:param name="RefreshOnNode" value="true"/>
        <jsp:param name="RefreshOnEnterprise" value="true"/>
        <jsp:param name="EnterpriseListForNodeField" value="true"/>
    </jsp:include>
    <% // Now call the APIs that are dependent on the common fields (Doc Type,
Enterprise Code, and Node)
       // Product Classes and Unit of Measures are refreshed.
    %>
    <yfc:callAPI apiID="AP2"/>
    <yfc:callAPI apiID="AP3"/>

<tr>
    <td class="searchlabel"><yfc:i18n>field1</yfc:i18n></td>
</tr>
<tr>
    <td nowrap="true" class="searchcriteriacell">
        <select class="combobox" name="xml:/OrderRelease/@Field1QryType">
            <yfc:loopOptions
binding="xml:/QueryTypeList/StringQueryTypes/@QueryType" name="QueryTypeDesc"
value="QueryType" selected="xml:/OrderRelease/@Field1QryType "/>
```

```
        </select>
        <input type="text" class="unprotectedinput"
<%=getTextOptions("xml:/OrderRelease/@Field1")%> />
    </td>
</tr>
```

APIs are defined in the application XML:

```
<View ViewGroupID="YOMSXXX" Priority="3" Name="By_Item" ID="YOMSXXX"
JSP="/om/order/search/wms_by_item.jsp" OutputNode="Order">
       <APIList>
          <API Name="getQueryTypeList" OutputNode="QueryTypeList">
             <Input>
                <QueryType/>
             </Input>
             <Template>
                <QueryTypeList>
                   <StringQueryTypes>
                      <QueryType QueryType="" QueryTypeDesc=""/>
                   </StringQueryTypes>
                </QueryTypeList>
             </Template>
          </API>
          <API Name="getCommonCodeList" OutputNode="ProductClassList"
LoopAPI="Y">
             <Input>
                <CommonCode CodeType="PRODUCT_CLASS"
CallingOrganizationCode="xml:CommonFields:/CommonFields/@EnterpriseCode"/>
             </Input>
             <Template>
                <CommonCodeList>
                   <CommonCode CodeValue="" CodeShortDescription=""/>
                </CommonCodeList>
             </Template>
          </API>
          <API Name="getCommonCodeList" OutputNode="UnitOfMeasureList"
LoopAPI="Y">
             <Input>
                <CommonCode CodeType="UNIT_OF_MEASURE"
CallingOrganizationCode="xml:CommonFields:/CommonFields/@EnterpriseCode"/>
             </Input>
             <Template>
                <CommonCodeList>
                   <CommonCode CodeValue="" CodeShortDescription=""/>
```

```
                  </CommonCodeList>
               </Template>
            </API>
         </APIList>
      </View>
```

3.8.8 Creating Inner Panels for a Detail View

Each inner panel comes from a separate JSP file and the anchor page JSP includes these files through the `jsp:include` JSP tag. If you configure more than one inner panel for a detail view, and if they must be simply laid out one below the other, the Yantra 7x Presentation Framework provides a default anchor page to do that. In such a case, you do not have configure any JSP for the detail view.

Example 3–3 shows the typical syntax for including inner panels in an anchor page.

Example 3–3   Including Inner Panels in an Anchor Page

```
<table class="anchor" cellpadding="7px" cellSpacing="0">
<tr>
    <td colspan="2" >
        <jsp:include page="/yfc/innerpanel.jsp" flush="true" >
            <jsp:param name="CurrentInnerPanelID" value="I01"/>
        </jsp:include>
    </td>
</tr>
<tr>
    <td height="100%" width="75%">
        <jsp:include page="/yfc/innerpanel.jsp" flush="true" >
            <jsp:param name="CurrentInnerPanelID" value="I02"/>
        </jsp:include>
    </td>
    <td height="100%" width="25%" addressip="true" >
        <jsp:include page="/yfc/innerpanel.jsp" flush="true">
            <jsp:param name="CurrentInnerPanelID" value="I03"/>
            <jsp:param name="Path" value="xml:/OrderRelease/PersonInfoShipTo"/>
            <jsp:param name="DataXML" value="OrderRelease"/>
            <jsp:param name="AllowedModValue"
value='<%=getModificationAllowedValue("ShipToAddress",
"xml:/OrderRelease/AllowedModifications")%>'/>
        </jsp:include>
    </td>
</tr>
```

```
<tr>
    <td colspan="2" >
        <jsp:include page="/yfc/innerpanel.jsp" flush="true" >
            <jsp:param name="CurrentInnerPanelID" value="I04"/>
        </jsp:include>
    </td>
</tr>
</table>
```

The `innerpanel.jsp` file provided by Yantra 7x contains the title bar that needs to be displayed for each inner panel, and stores the icons and action buttons available in the title bar of each inner panel.

JSP:Param JSP Tag Parameters

You can specify the following parameters to `innerpanel.jsp` file through the `jsp:param` JSP tag.

CurrentInnerPanelID - Suffix of the inner panel resource ID over the resource ID of the detail view. For example, if the detail view's resource ID is YOMD010, the inner panel's resource ID is YOMD010I01. In this example, you pass the `I01` suffix to this JSP tag.

Title - Replaces the description of the inner panel resource ID configured.

IPHeight - Fixes the height of the inner panel. If the data grows beyond this height, a scroll bar automatically displays.

IPWidth - Fixes the width of the inner panel. If the data grows beyond this width, a scroll bar automatically displays.

Other than these attributes, the parameters that you specify here are automatically available to the JSP that is configured against the resource ID of the inner panel being included.

To create an inner panel:

1. Customize the view to which you want to add the inner panel. For details on customizing a detail view, see Section 3.8.5, "Customizing a Detail View" on page 45
2. Edit the anchor page JSP file to include the resource ID suffixes of any other inner panels you want to include.

The syntax of inner panel resource IDs <view ID's resource ID><Suffix, for example I01>.

You only need to refer to the suffix. The Yantra 7x Presentation Framework forms the complete inner panel resource ID and includes the appropriate JSP.

3. From the Yantra 7x Configurator, create the inner panel resources under the newly created view.
4. From the Yantra 7x Configurator, create the actions and links as necessary.
5. Create the inner panel's JSP file, using a standard detail inner panel JSP as a template.

3.8.9 Incorporating Your View across the Application

When you are customizing an existing view, and want your customized view to replace the existing view across the appliation, you can do so without modifying the links, actions and icons that point to the existing view.

The existing links, actions and icons point to a view group ID. However, they do not point to a specific view when a screen is navigated to, using these links, actions and icons. The screen is opened as the view that has the lowest sequence number of all views with that view group ID.

Therefore, to replace an existing view across the application, ensure that your customized view has the same group ID as the original view and it has a sequence number that is lower than the original view sequence number.

For example, if you are replacing the standard order detail view with a customized view, the customized view must have a view group ID of `YOMD010`.

If your custom view is an additional screen that is not replacing an existing view, you must add your own links, actions or icons in the appropriate places such that it can be used to navigate to your screen.

Your view should have a unique view group ID. The links, actions or icons you create should point to this view group ID.

3.9 Customizing the Home Page

The Home Page is the default detail view of the Home entity. The standard Home Page has a menu view across the top, and three side-by-side list views (User specific Queues, Alert and Favorite Searches) below it. Figure 3–5 shows the standard home page.

To customize the Home Page:

Follow either set of steps for customizing a detail view for the Home entity:

- "Customizing a Detail View" on page 45
- "Creating Inner Panels for a Detail View" on page 57

3.10 Creating a Custom Business Entity

You can create a custom entity by copying a standard entity and its sub-resources through the Resource Configurator.

Note: Yantra does not support resources with the same view group ID across entities. Hence, if you are copying entire entities for extending the screens, you must modify the view group IDs for all views, actions, links and icons for the new entities. This is to make sure that they do not conflict with the original entities you copied.

For example, if you want to create a custom business entity called Planned Order, you can use the following procedure:

To create a custom business entity:

1. From the Resource Configurator, navigate to an entity that you want to use a template. Choose an entity whose resources and sub-resources closely resemble the ones that you want to create.
2. Choose Save As to create the new set of resources for an entity, including sub-resources.

   When you save the entity, give it a unique prefix that will not conflict with any resource IDs that might ship with future releases. Yantra recommends that you choose any prefix except for one that begins with the letter *Y* (which is reserved for use by Yantra).

3. Modify the description of the new entity resource. Modify the descriptions of any sub-resources. Note that the resource descriptions appear in the console; therefore, they can be localized as needed. To ensure that literals can be localized, use the resource description entered here as the resource bundle key in all of the appropriate resource bundles.

   Create entries for these newly created resource keys in the `<YFS_HOME>/resources/extn/extnbundle.properties` file and in the corresponding properties files for each locale.

4. Repeat Step 1 through Step 3 for the Related Entities of the entity being copied.

5. Update the Related Entities Resources under the newly created entity resources to point to the newly created resources.

6. In order to make all links point appropriately to your new view, follow the steps in Section 3.8.9, "Incorporating Your View across the Application" on page 59.

3.11 Using Extended Database Columns

You can customize views to incorporate any new columns added to the database. When extending the database, follow the directions in Chapter 6, "Extending the Yantra 7x Database".

If you want to add a field to the user interface, follow the directions for the view you want to change:

- Search view - Section 3.8.3, "Customizing a Search View".
- List view - “Customizing a List View” on page 42. After following the database extensibility rules, add the field to the output template configured for the API through the Resource Configurator.
- Detail view - “Customizing a Detail View” on page 45. After following the database extensibility rules, add the field to the output template configured for the API through the Resource Configurator.

3.12 Using the Override Entity Key Attribute

Often, optimal screen layout dictates the use an editable list of records in which the user can modify the items in the list. This table format usually maps to a list of XML elements in the API that handles the update for the screen. For example, the editable list of order lines on an Order Detail screen maps to the list of OrderLine elements accepted by the `getOrderDetails()` API.

By default, any action that appears on a detail view uses the current entity key as input to any API that is called for the action. For example, the Hold action on the Order Detail screen by default passes the current order header key to the `changeOrder()` API. There is a means to override which entity key is used for a specific action using the Override Entity Key attribute on an action resource. You can construct an input (usually a hidden input or a checkbox) on the JSP, give the input a value of an entity key constructed using the `makeXMLInput` JSP tag, and specify the name of that input as the Entity Key Name of the action. When that action is executed by the user, the new key is passed instead of the current entity key.

This feature is useful when a detail view shows the *details* of one entity and also contains an inner panel that displays a *list* of records for another entity. For example, the Order Detail screen shows details for the Order entity and also has an inner panel showing a list of order lines (which is a separate entity). Any action that appears on the order lines inner panel should not pass the order header key to the API. It should pass the order line key of the selected order lines.

For example, the following code might appear in an inner panel listing order lines for an order:

Example 3–4 Inner Panel Listing of Order Lines

```
<yfc:makeXMLInput name="orderLineKey">
<yfc:makeXMLKey binding="xml:/OrderLineDetail/@OrderLineKey"
value="xml:/OrderLine/@OrderLineKey"/>
<yfc:makeXMLKey binding="xml:/OrderLineDetail/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey"/>
</yfc:makeXMLInput>
<td class="checkboxcolumn" >
<input type="checkbox" value='<%=getParameter("orderLineKey")%>'
name="chkEntityKey" />
</td>
```

This code creates a new entity key for the order line and associates this key to a checkbox named chkEntityKey. This name can then be specified in the action definition for any action appearing on the order lines inner panel, for example, the View Details action.

Note that this attribute frequently is used in conjunction with the Selection Key Name attribute that also can be defined for an action.

3.13 Posting Data for Editable Lists

APIs that take a list of elements in this way have different behavior based on the functionality that is required from the API. This different behavior must be handled by the user interface.

One way that an API may handle a list of elements is to completely replace the entire list each time the API is called. This means that the user interface must pass all attributes of each item whenever the API is called. This is accomplished by using the `IgnoreChangeNames()` JavaScript function. Calling this function when a JSP loads ensures that each single input on the screen is posted.

For example, edit your JSP file to contain the following code:

```
<script language="Javascript" >
IgnoreChangeNames();
</script>
```

In some cases an API might expect that a specific record be passed to the API only when some attribute has changed. Since the Yantra 7x Presentation Framework does not automatically post any value that has not been changed by the user, it is quite possible that the XML constructed by the Yantra 7x Service Definition Framework may contain an element with only the key attributes of a specific record. This can happen because the key attributes are usually hidden input objects in the JSP that are place within each row of the html table. Since they are hidden inputs, they are always posted to the API. Therefore, if the user does not change any of the attributes of a specific record in one row, only the key attributes are passed to the API. Some APIs consider this to be invalid input.

A Yantra 7x Presentation Framework JavaScript function can be used to ensure that records for which no change has been made are not posted to the API. The `yfcSpecialChangeNames()` function should be called when the page is unloaded.

For example, the following JSP code achieves this:

```
<script language=jscript>
window.document.body.attachEvent("onunload", processSaveRecordsForNotes)
</script>
```

The JavaScript function used in this example is defined as:

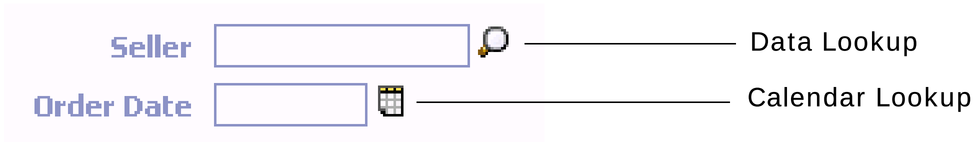
```
function processSaveRecordsForNotes() {
    yfcSpecialChangeNames("Notes", true);
}
```

In this example, the ID of the HTML table in the corresponding JSP is set to the literal `Notes`. The second parameter, `true` must be passed only if the ID `Notes` consists of a new blank row. The parameter should be set to `false` if you want to modify an existing row.

3.14 Adding a Lookup

Lookups enable users to choose from an assortment of options rather than typing in data. Figure 3–13 shows the available lookup icons and fields associated with them.

Figure 3–13 Lookup Icon



The Yantra 7x Presentation Framework supports the following types of lookups:

- Single Field Lookup - Enables a user to search an entity for a specific value, select that value, and insert it into the appropriate single input field. Use the `callLookup()` JavaScript function. See “callLookup” on page 310.

- Calendar Lookup - Enables a user to select a date from a pop-up calendar. Use the `invokeCalendar()` JavaScript function. See "invokeCalendar" on page 321.

If you need a multiple field lookup, you can use the `yfcShowSearchPopup()` JavaScript function. This example shows product class, item ID, and unit of measure to be populated from an item lookup using the `yfcShowSearchPopup()` JavaScript function.

```
//this function should be called from "onclick" event of the icon next to
//item id field.
function callItemLookup(sItemID,sProductClass,sUOM,entityname)
{
    var oItemID = document.all(sItemID);
    var oProductClass = document.all(sProductClass);
    var oUOM = document.all(sUOM);
    showItemLookupPopup(oItemID, oProductClass, oUOM, entityname);
}

function showItemLookupPopup(itemIDInput, pcInput, uomInput, entityname)
{
    var oObj = new Object();
    oObj.field1 = itemIDInput;
    oObj.field2 = pcInput;
    oObj.field3 = uomInput;
    yfcShowSearchPopup('','itemlookup',900,550,oObj,entityname);
}
```

And in the lookup list view, call the following function to populate the field from which the popup was invoked:

```
function setItemLookupValue(sItemID,sProductClass,sUOM)
{
    var Obj = window.dialogArguments
    if(Obj != null)
    {
        Obj.field1.value = sItemID;
        Obj.field2.value = sProductClass;
        Obj.field3.value = sUOM;
    }
    window.close();
}
```

Use Lookup icons only with modifiable fields. When you incorporate a Lookup on field, place the appropriate icon directly to the right of the Lookup.

3.15 Creating a User-Sortable Table

In any table, a user can click a column heading to sort the results by that column. Clicking the same column heading again results in sorting the column in reverse order.

Table sorting does not create a new call to the API, but simply results in sorting of data already being displayed by that column.

To create a user-sortable table:

1. Use `table.htc` in the style attribute for the table. If you are using the default Yantra 7x CSS files, you can use `class="table"` for the `<table>` tag.
2. The table should have `<tbody>` and `<thead>` tags that include `<td>` tags. If if you specify `sortable="no"` for any `<td>` tag in the `<thead>` tag, the column is not sortable.
3. For Date and Number, provide a separate `sortValue="<nonlocalized_value>"` in the actual `<tbody>` tag so that the data sorts properly.

Example 3–5 shows the tags needed for creating a user-sortable table.

Example 3–5 User-Sortable Table

```
<table class="table" editable="false" width="100%" cellspacing="0">
<thead>
<tr>
<td sortable="no" class="checkboxheader">
<input type="hidden" name="userHasOverridePermissions"
value='<%=userHasOverridePermissions()%>'/>
<input type="hidden" name="xml:/Order/@Override" value="N"/>
<input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Order_#</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Enterprise</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Buyer</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Order_Date</yfc:i18n></td>
```

```
        </tr>
    </thead>
    <tbody>
        <yfc:loopXML binding="xml:/OrderList/@Order" id="Order">
            <tr>
                <yfc:makeXMLInput name="orderKey">
                    <yfc:makeXMLKey binding="xml:/Order/@OrderHeaderKey"
 value="xml:/Order/@OrderHeaderKey" />
                </yfc:makeXMLInput>
                <td class="checkboxcolumn">
                    <input type="checkbox" value='<%=getParameter("orderKey")%>'
name="EntityKey"/>
                </td>
                <td class="tablecolumn"><a
href="javascript:showDetailFor('<%=getParameter("orderKey")%>');">
                <yfc:getXMLValue binding="xml:/Order/@OrderNo"/></a>
                </td>
                <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@EnterpriseCode"/></td>
                <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@BuyerOrganizationCode"/></td>
                <td class="tablecolumn"
sortValue="<%=getDateValue("xml:/Order/@OrderDate")%>"><yfc:getXMLValue
binding="xml:/Order/@OrderDate"/></td>
            </tr>
        </yfc:loopXML>
</tbody>
</table>
```

3.16 Adding Graphs and Pie Charts

Graphs and pie charts enable users to view a graphical representation of data. Graphs and charts derive their look and feel (appearance of the display colors and fonts) from the theme. For information about the theme and detailed instructions on how to modify one, see "Defining Centralized Themes" on page 20.

For displaying graphs of data, the Yantra 7x Presentation Framework uses the `jbchartx.jar` file from Visual JChart. Since their tool may change in the future version, you should perform your own evaluation of which charting tool to use. The Yantra 7x Presentation Framework does not provide a chart rendering API.

3.17 Customizing the Menu Structure

When creating customized screens, ensure that users can access them, either through a menu structure or through navigation.

Customizing the menu requires first laying out the structure of the menu through the Yantra 7x Configurator graphical user interface, and then specifying the literals in the resource bundle. A resource bundle is a file that contains all of the on-screen literals and messages. Yantra 7x provides the following standard resource bundles:

- ycpapibundle.properties - contains the literals used by the standard menu and on-screen messages. It cannot be modified.
- extnbundle.properties - contains the literals used by the custom menus. It can be customized and localized as needed.

You can create custom resource bundles that contain the modifications you make to the custom menu.

Note: When customizing the menu, ensure that the menu description does not contain spaces or any other character that cannot be a valid resource bundle key as defined by java standards.

To create a custom menu:

1. Create a new menu using the graphical user interface described in the *Yantra 7x Platform Configuration Guide*.
2. Open the `<YFS_HOME>/webpages/extn/extnbundle.properties` file and add a key=Description mapping that uses an equal sign (=) to join the Description added in Step 1 to a key. For example, Special_Tasks=Special Tasks. The application reads the key in order to determine what to display on the screen.

3.17.1 Localizing the Menu Structure

You can customize the resource bundles to enable a single installation to support multiple languages. When localizing the Yantra 7x Application Consoles, prepend `MENU_` to the menu keys you add to the resource bundle. For more information on localization, see the *Yantra 7x Localization Guide*.

Note: When localizing the menu, ensure that the menu description does not contain spaces or any other character that cannot be a valid resource bundle key as defined by java standards.

3.18 Customizing Screen Navigation

You can customize how users navigate from entity to entity by configuring link or action resources. Links and actions can point to any detail view of any entity. Often the entity that you are navigating to requires a different entity key.

For example, the Order Detail screen has a list of order lines. The users can navigate to the order line detail screen by clicking the Order Line # hyperlink, or by selecting an order line and clicking the View Details action on the order lines inner panel. Since the order line detail screen requires a different entity key than the Order Detail screen, it is necessary to create another entity key in the order lines JSP to be used in the order line detail screen. Example 3–6 shows sample code for specifying screen navigation behavior.

Example 3–6 Screen Navigation

```
<yfc:makeXMLInput name="orderLineKey">
     <yfc:makeXMLKey binding="xml:/OrderLineDetail/@OrderLineKey"
value="xml:/OrderLine/@OrderLineKey"/>
     <yfc:makeXMLKey binding="xml:/OrderLineDetail/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey"/>
     </yfc:makeXMLInput>
```

The way this entity key is passed to the order line detail screen differs for the hyperlink and action routes. For the hyperlink, this key is passed to the `getDetailHrefOptions()` function in the following manner:

```
<a <%=getDetailHrefOptions("L03", getParameter("orderLineKey"), "")%>>
   <yfc:getXMLValue binding="xml:/OrderLine/@PrimeLineNo"/></a>
```

Sometimes, you might want a detail view to behave differently based on some input parameter. For example, you might want to hide or show a field based on which is invoking the detail view.

You can call the `getDetailHrefOptions()` JSP function, using extra parameters that are passed to the target detail view. See "getDetailHrefOptions (with additional parameter)" on page 268 The format these extra parameters should be passed is name-value pairs separated by an ampersand ("&"). This is the standard format for passing parameters in a URL.

For the View Details action, the Selection Key Name must be set to the name of the checkbox that is created in the JSP. For example, in the JSP, the checkbox can be created as follows:

```
<input type="checkbox" value='<%=getParameter("orderLineKey")%>'
name="chkEntityKey"/>
```

The name of the checkbox is chkEntityKey. When configuring the action in the Resource Configurator, the Selection Key Name should be set to this to ensure the correct key is passed to the order line detail screen.

3.18.1 Disabling Direct Navigation to Detail Screens

From the Order, Purchase Order, or Return search screens provided by Yantra 7x, when the search results in only one record, the user is directed directly to the default detail view of the single record returned. This reduces the number of clicks required to get to the details of a particular record.

For example, the Order Search provided by Yantra 7x navigates directly to the Order Detail Screen if you enter a unique order number and press Search.

This type of navigation is controlled by the view definitions in the Resource Configurator. Only certain user interface entities support this type of navigation. Therefore, in the Resource Details of an entity resource, there is a "Support Direct List To Detail Navigation with One Record Returned" checkbox that indicates if a particular entity supports this feature. If an entity does support this feature, then the list view defined for that entity can turn this navigation on or off by enabling the "Support Direct List To Detail Navigation with One Record Returned" checkbox.

To disable this feature, create a copy of the existing list view, uncheck the checkbox, and ensure that the resource sequence is lower than the existing list view.

3.19 Developing Custom Event Handlers

You can create and plug in custom client-side validations to user interface controls for the following events:

- Events raised by Internet Explorer for that control or for that screen. For example, `onblur` event for input or `onunload` event for the page.
- Events raised by the Yantra 7x Service Definition Framework for the page, for example, before saving the data in a detail view or before invoking search in a search view.

3.19.1 Control-Level Event Handler

Each text box has a behavior class associated with it that dynamically attaches a validation method to the `onblur` event (lost focus).

Each XML attribute must be tied to a data type and the infrastructure determines the data type based upon the XML attribute to which a data element is bound. The data type is used for data validations. For example, numeric fields should only accept number entry.

It is recommended that you limit client-side field-level validations to a minimum level. You can directly use `onblur="myValFun();"` in your HTML pages to perform custom validations. However, there is no guarantee that your function is called before the Yantra 7x Presentation Framework function. Therefore, if you are using a numeric or date field, your function may return invalid data. You must call the Yantra 7x Presentation Framework JavaScript utility functions to *first* validate the date and number before you proceed with your validations.

To create field-level validations:

1. Customize the view. See "Customizing a Search View" on page 41 or "Customizing a Detail View" on page 45.
2. Modify the customized JSP to include an event handler for the `onblur` event of the corresponding control.
3. Place the body of the JavaScript function in a separate JS file and include the JS file in your JSP.
4. Select the refresh cache icon that fits your needs as follows:
   - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon

  – If you want to update all resources - Choose the *Refresh Cache* icon

5. Log into Yantra 7x again to test your changes.

3.19.2 Screen-Level Event Handler

The Yantra 7x Presentation Framework uses the onload event on document.body. All other events are available for your use. The Yantra 7x Presentation Framework uses the `attachEvent()` function to dynamically attach event handlers to other events (for example, onblur on input). Therefore, in your JSP code, you can use other functions. If you want to invoke your own onload function, you can still use the `attachEvent()` function inside a script tag in your JSP as follows:

```
<script language=jscript src="/yantra/extn/scripts/om.js">
</script>
<script language=jscript>
window.document.body.attachEvent("onload", myFunc)
</script>
```

This causes the `myFunc()` function to execute when the HTML is loaded. Note that the body of the myFunc function must exist within the <YFS_HOME>`/yantra/extn/scripts/om.js` file.

The Yantra 7x Presentation Framework calls the Save action for a detail view when the Save icon is clicked. If you want to plug in your own custom event handler for this event, configure the action to call your JavaScript function. The function needs to be present in the <YFS_HOME>`/webpages/extn/scripts/extn.js` file.

The Yantra 7x Presentation Framework invokes the list view when the Search icon is clicked in a search view. If you want to plug in your own custom event handler for this event, attach your JavaScript function to the onclick event of the object returned by the `yfcGetSearchHandle()` JavaScript API when the page is loaded. The example below shows how to do this:

```
<script language=jscript src="/yantra/extn/scripts/om.js">
</script>
<script language=jscript>
//Get the handle to search button.
var oObj = yfcGetSearchHandle();

//The setParentKey function is defined inside om.js.
```

```
var sVal = oObj.attachEvent("onclick",setParentKey);
</script>
```

To create screen-level validations:

1. Customize the view in which you want to plug in validations.
2. Modify the customized JSP to include the `attachEvent`
3. Select the refresh cache icon that fits your needs as follows:
   - If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon
   - If you want to update all resources - Choose the *Refresh Cache* icon
4. Log into Yantra 7x again to test your changes.

3.20 Working with Document Types

The default Order console uses the Order document type (0001). When you create a new document type, you must also create a new entity with views and so forth. For a resource of Resource Type Entity, you can specify the document type.

Literals within the I18N tag resolve in a specific order. First, the key is prefixed with the document type and is looked up in the resource bundle. If no match is found, key is looked up as is, or without a prefix.

For example, if there is a I18N literal called Order_# and the current document type is Order (0001), Yantra 7x first tries to resolve the resource key from the resource bundle for any entry for 0001_Order_#, and if not found, Order_#. This scheme enables you to reuse a specific JSP while still being able to change the literals that appear on the screen if they are specific to your document type.

To create a new set of screens for a new document type:

1. From the Resource Configurator, navigate to the Order entity (resource ID `order`).
2. Choose Save As to create the new set of resources from the Order entity, including its sub-resources.

   When you save the entity, give it a unique prefix that will not conflict with any resource IDs that might ship with future releases. Yantra recommends that you choose any prefix except for one that begins with the letter *Y* (which is reserved for use by Yantra).

Note that when copying resources for a new document type, you must copy *all* entities (including sub-resources) for the existing document type.

a. Determine which resources to copy, using the following SQL script:

```
select resource_id from yfs_resource
where resource_type='ENTITY' and document_type='0001'
```

b. Change the view group IDs for any Icons, Actions, Links and JavaScript functions that call the views. The view group ID should be changed to the new entity prefix and the view group ID that already exists.

3. Modify the description of the new entity resource to the description of your new document type. For all the sub-resources also, make appropriate modifications to the descriptions and create entries for these newly created resource keys in the `<YFS_HOME>/resources/extn/extnbundle.properties` file, and in the corresponding properties files for each locale.

4. Modify the Document Type for the new resources of resource type entity to the new Document Type.

5. Update the Related Entities Resources under the newly created entity resources to point to the newly created resources.

6. In order to make all links point appropriately to your new view, follow the steps in "Incorporating Your View across the Application" on page 59.

7. In Alert Console, if an alert is raised for an order, when you are viewing the alert details, you can click on the order and view the details. If you want that to link to also point to the main detail view of your document type, you must customize the Alert Details view.

a. Create a new Link ID under the new detail view of Alerts.

b. Point the new Link ID to go to the newly created view of your new document type.

c. Customize the JSP of the new Alert detail view to call the `getDetailHrefOptions()` JSP utility function with a Link ID parameter of the new document type.

d. Change the sequence of the new Alert detail view so that the new view becomes the default Alert detail view. For details, see the *Yantra 7x Platform Configuration Guide*.

e. In order to make all links point appropriately to your new view, follow the steps in "Incorporating Your View across the Application" on page 59.

f. In order to retrieve the Document Type of the specific order number, configure the Alert detail view to call another API (after the exception detail API) to retrieve the order details. Configure the API to ignore exception. The API is called for all exceptions with the order number as a parameter, but the API throws an error if the order number is void. Since the API is configured to ignore the exception, it is not reported to the user.

3.21 Working with Document Types and Demand Records

Yantra 7x provides consoles for viewing demands stemming from Sales Orders (document type 0001), Returns (document type 0003) and Purchase Order (document type 0005) detail view document types from the Inventory Console. The Demand detail screen contains hyperlinks to the documents that create the specified demand. When creating a new document type (and appropriate document type UI) that can create demand, you must extend the Demand list screen to add a link resource that enables the user to navigate to the detail screen for your new document type.

In order to view any custom document types that may cause demand records, the Demand detail view must be extended to correctly display the details of the demand. The Demand detail screen requires an additional link resource for the new document type. After creating a new UI for your document type, extend the view as described below.

To extended demand list view for document types:

1. Extend the detail view (YIMD215) by following the directions in "Customizing a Detail View" on page 45.

2. Add a link resource under the custom inner panel that was copied from the YIMD215I01 inner panel. The link resource should have a postfix value containing the document type code of your new document type and it should point to the view ID of the detail view for your new document type.
3. Set the Resource ID sequence so that the customized view is before that of the Yantra 7x-defined view.

3.22 Configuring Actions and Enabling Custom Transactions

Depending on your business processes, your pipeline may require an additional step that results in a status change of an entity. For example, you may want to add a security check to your order's lifecycle so that a customer service representative can manually authorize an order before shipping it.

Any custom status change transaction configured within the Scenario Modeling Configurator can be configured as an Action in the detail view of an entity. You can configure the Action to invoke the custom transaction directly, or you can invoke the custom transaction through a new custom view that permits the user to manually confirm individual transactions, as described below.

To create an action from an inner panel:

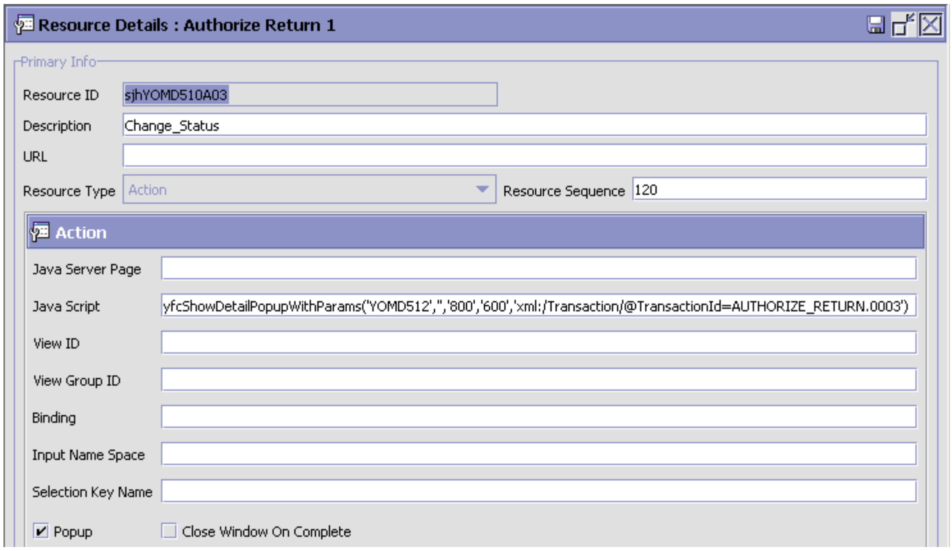
1. From the Scenario Modeling Configurator, configure a new transaction in the pipeline, along with the pick up and drop statuses that meet your requirements.
2. Under the inner panel of the custom detail view, create an Action resource that calls the `yfcShowDetailPopupWithParams()` JavaScript function. For more information on passing parameters to detail views, see "yfcShowDetailPopupWithParams" on page 351.
3. Make sure that the new transaction ID (created in Step 1) and the view resource ID specified in Table 3–4 are passes as input to the JavaScript function.

Table 3–4 Status Change Resource IDs

For This Entity...	Use This Resource ID...
Shipment	YOMD770
Load	YDMD280
Order	YOMD390
Purchase Order	YOMD3390
Returns	YOMD512

Example 3–7 Status Change Action for Authorizing Returns

The following example shows the status change action for authorizing returns.


Resource Details : Authorize Return 1

Primary Info

Resource ID	sjhYOMD510A03
Description	Change_Status
URL	
Resource Type	Action
Resource Sequence	120

Action

Java Server Page	
Java Script	yfcShowDetailPopupWithParams('YOMD512','','800','600','xml:/Transaction/@TransactionId=AUTHORIZE_RETURN.0003')
View ID	
View Group ID	
Binding	
Input Name Space	
Selection Key Name	

[✓] Popup   [ ] Close Window On Complete

3.23 XML Binding

The input and output of Yantra 7x APIs is in the form of an XML document. Using XML documents enables the Yantra 7x Presentation Framework to provide an XML binding mechanism by which a developer can form the input necessary to pass to an API and populate a screen with its output.

The binding logic is based on using the name attribute of input fields to map on to an XML attribute. The actual HTML string that needs to be formed is returned by various HTML tag-specific JSP functions and JSP tags that have been provided for that purpose. The HTML that is rendered contains the name attribute set to the appropriate XML path. When data is posted to the server, the servlet provided by the Yantra 7x Service Definition Framework captures the request and forms an XML document out of the data in the input and XML path contained in the name attribute. The XML document is then passed as input to the API that has been configured for the action being performed.

For example, you may bind an input box to the `ShortDescription` attribute of the `getItemList()` API in an Item search view.

```
<tr>
    <td class="searchlabel" ><yfc:i18n>Short_Description</yfc:i18n></td>
</tr>
<tr>
    <td nowrap="true" class="searchcriteriacell" >
        <input type="text" class="unprotectedinput"
<%=getTextOptions("xml:/Item/PrimaryInformation/@ShortDescription") %> />
    </td>
</tr>
```

After the JSP functions and JSP tags are resolved, the HTML is formed as follows:

```
<tr>
    <td class="searchlabel" >Short Description</td>
</tr>
<tr>
    <td nowrap="true" class="searchcriteriacell" >
        <input type="text" class="unprotectedinput"
name="xml:/Item/PrimaryInformation/@ShortDescription" value=""/>
    </td>
</tr>
```

Note that this example does not show all of the custom attributes returned by the JSP functions. It only shows the ones that are relevant to this topic.

In another example, the user enters `Telephone` in the input box. When the data is posted to the server, the Yantra 7x Presentation Framework forms the following XML document based on the name and the value of the input box.

```
<Item>
<PrimaryInformation ShortDescription="Telephone"/>
</Item>
```

Since the Yantra 7x Presentation Framework parses the binding string to form the XML, the binding string must follow the syntax below.

3.23.1 XML Data Binding Syntax

APIs are called with the input XML that is bound in the screen, and that XML binding should match the output of the API.

XML Binding Syntax

xml:NameSpace:/Root/Child@Attribute

The following examples show correctly structured syntax:

```
xml:/Order/PersonInfoShipTo/@Name
xml:Order:/Order/PersonInfoShipTo/@Name
```

The following examples show incorrectly structured syntax:

```
xml:/@Name
xml:/Order
xml:Order:/Order
```

XML Binding Parameters

Where the parameters are used as follows:

xml: - used literally

NameSpace - namespace containing the XML to which this binding applies. If not specified, it is take to be the root node of the path that follows. Namespace should only be included when binding to common codes.

:/Root/Child@Attribute - XML path of the attribute. If the attribute is the root node itself, specify the syntax as `/Root@Attribute`. *Root* represents the root node name in the XML to which the binding applies.

`Child` represents the child element node name. This rule applies to any level of depth.

This function parses the binding string, searches for the at ("@") character, and returns the string following the at ("@") character.

3.23.2 Special XML Binding Considerations

The XML binding for an input field on the screen enables you to uniquely bind a field to a single attribute in the XML document. The XML binding is used as the name of the HTML input object. A binding consists of the complete XML path and attribute name of the target attribute. Given this fact, it is not immediately obvious how to bind input boxes to XML attributes that exist in an XML list. For example, given the following XML:

```
<Order>
<OrderLines>
<OrderLine OrderLineKey="1000001" ShipNode="ShipNode1"/>
<OrderLine OrderLineKey="1000002" ShipNode="ShipNode2"/>
</OrderLines>
</Order>
```

3.23.3 XML Binding for Multiple Element Names

The general rule for XML binding consists of using the full path and attribute name. However, this may result in multiple input objects in the JSP with the same name. Input objects with the same name are posted as an array of objects and not be posted to the API.

To uniquely identify each input as being part of a specific XML element, you can add a postfix that contains an underscore ("_") plus a counter after the repeating element name.

For example, the binding of each ship node field on the list of order lines should be `xml:/Order/OrderLines/OrderLine/@ShipNode`. If you require a screen that contains has a list of order lines with ship node editable on each line, you can use a special XML binding convention to handle this scenario.

The repeating element is OrderLine. For each ship node input object, the special postfix is added for each line. The result is two unique XML bindings: `xml:/Order/OrderLines/OrderLine_1/@ShipNode` and `xml:/Order/OrderLines/OrderLine_2/@ShipNode`. When this data is posted, all XML bindings containing the same special postfix are combined into the same XML element in the API input.

To make using this special postfix XML binding easier, the loopXML JSP tag provides a JSP variable that contains a unique counter for each individual loop. See “loopXML” on page 305. This JSP variable that is available inside the loopXML JSP tag is the ID attribute specified in the loopXML tag plus the literal Counter. For example, use the following loopXML in your JSP:

```
<yfc:loopXML name="Order" binding="xml:/Order/OrderLines/@OrderLine"
id="OrderLine">
```

This makes the OrderLineCounter JSP variable available for use inside of the input XML bindings. For example:

```
<input type="text" <%=yfsGetTextOptions("xml:/Order/OrderLines/OrderLine_" +
OrderLineCounter + "/@ShipNode", "xml:/OrderLine/@ShipNode",
"xml:/OrderLine/AllowedModifications")%>/>
```

3.24 API Input

When customizing the user interface, you must ensure that the correct input is passed to the APIs you use. The primary way to retrieve data or perform updates in the user interface is through APIs. Making sure the right input is passed to these APIs is an important task for user interface customizations.

Yantra 7x provides various mechanisms for passing input to APIs through the user interface. Which mechanisms you should use, and in what combination, depends on the type of screen and type of API being called.

This section describes the features and advantages of the following mechanisms for passing data to APIs:

- Input namespace
- Entity key
- Dynamic attributes

Input Namespace

In many cases, data from fields on the UI must be passed directly to the API. A simple example of this is any detail screen that has editable input fields. These fields must be passed to a save API in order to update the entered data in the application's database. This save API takes a specific XML structure as input. The fields on the detail screen should have XML binding that matches the input to the API.

In the Resource Configurator, the Input Namespace field in the action resource should be set appropriately to ensure that the correct data from the console is passed to the save API. See the *Yantra 7x Platform Configuration Guide*.

Since all of the input fields on the screen have XML bindings for the input to the same API, they all have the same XML root element name in the binding. This root element name of the XML bindings is known as the *namespace* of that input field. Therefore, when that save action is executed on the user interface, an XML is formed from all of the input fields containing the namespace specified for that action in the Resource Configurator. This XML is then passed to the API configured under that save action. For more information on XML binding, see "XML Binding" on page 77.

Another place where input namespace is frequently used is for user interface screens that have search criteria that must be passed to list APIs that fetch data based on the search criteria entered. All the search criteria fields should have XML binding matching the input to the list API. The root element name of this XML is the namespace that should be specified for the list view that is shown when the user executes the search.

Entity Key

Frequently detail screens have API calling actions that only require the primary key of the current entity to be passed as the input. When a detail view is brought up in the user interface, there is always at least one entity key passed to the detail view. This entity key consists of an XML structure containing the attributes that uniquely identify that entity. For example, the entity key of the order entity always contains an attribute for order header key. This entity key is automatically passed to the detail API of that entity. When this type of action is configured on a detail view, there aren't any other steps required to ensure the right input is passed to the API.

Dynamic Attributes

Sometimes the input expected to be passed to an API is not available through an input namespace or entity key. In these cases, using dynamic attributes may be applicable. All API resources configured in the Resource Configurator have an input field whose purpose is to provide the ability to specify dynamic attributes. The value for this field should be a valid XML structure using elements and attributes. The XML structure specified here must match the exact input XML structure accepted by the called API.

One of the most common examples of using dynamic attributes is when a specific inner panel that must call multiple APIs in order to retrieve all the data it needs to display. For example, an inner panel of a detail view of the order entity might require calling the `getOrderDetails()` (the standard detail API), and the `getCommonCodeList()` API to retrieve some data for some combo box on the screen. Since common codes are stored at the rule-set level, it is mandatory to make sure the correct rule set for that order is passed as input to the `getCommonCodeList()` API. The `getOrderDetails()` API, given the correct output template, returns the rule set key for the order. This rule set key can be passed to the `getCommonCodeList()` API by referring to the output of the `getOrderDetails()` API as a dynamic attribute in the input XML of the `getCommonCodeList()`API.

For example, the `getOrderDetails()` API returns:

```
<Order OrderHeaderKey="…" OrderNo="…" RulesetKey="…"/>
```

The Input field of the API resource definition for `getCommonCodeList()`, should be:

```
<CommonCode CodeType="ORDER_TYPE" RulesetKey="xml:/Order/@RulesetKey"/>
```

Notice that the value of the RulesetKey attribute is set to an XML binding that refers to the output of the `getOrderDetails()` function. The exact same rules of XML binding that apply when binding inputs inside of a JSP also apply when using dynamic attributes. This example also shows another way dynamic attributes can be used. The CodeType attribute is also specified in the input field in the API resource definition. Here, the value of the attribute is simply set to the static value "ORDER_TYPE". This attribute and value are *always* passed to this API when it is called. Non-changing input values can be specified in this way.

Another possible value that you can use for a dynamic attribute for and API defined under a detail view is any attribute of the current entity key XML. This is useful when the input to pass to an API does not have the same XML structure of the entity key XML that has been formed in the detail screen. The XML for the current entity is available in a special namespace called SelectionKeyName.

The different mechanisms for specifying API input can be combined. For example, it may be necessary to pass the entity key AND some dynamic attribute to an API configured under a detail view action. Since passing the entity key happens automatically, you can still specify an Input under that API with the correct XML structure. Note that the XML structure of the key should match the XML structure of the input field. There are other special namespaces available for use in dynamic attributes. For more information, see "Available Dynamic Attribute Namespaces" on page 84.

3.25 Available Dynamic Attribute Namespaces

Yantra 7x has the following special namespaces available for use in dynamic attributes:

CommonFields - This namespace is only available when using the common_fields JSP. The attributes that are available depend on how the JSP is used.

CurrentUser - This namespace contains the details about the current logged in user using the `getUserDetails()` API. The exact XML available is:

```
<User Activateflag="" BillingaddressKey="" BusinessKey="" ContactaddressKey=""
Createprogid="" Createts="" Createuserid="" CreatorOrganizationKey=""
Imagefile="" Localecode="" Loginid="" Longdesc="" MenuId="" Modifyprogid=""
Modifyts="" Modifyuserid="" NoteKey="" OrganizationKey="" ParentUserKey=""
Password="" PreferenceKey="" Pwdlastchangedon="" Theme="" UserKey=""
UsergroupKey="" Username="" Usertype=""/>
```

CurrentEnterprise - If the current user belongs to an organization that is an enterprise, this namespace contains the details about that enterprise. If the current user belongs to an organization that is not an enterprise but participates in an enterprise, this namespace contains the details about the primary enterprise of the current organization. The details for the organization are retrieved from the `getOrganizationHierarchy()` API. The exact XML available is:

```
<Organization AccountWithHub="" AuthorityType="" BillingAddressKey=""
CatalogOrganizationCode="" CollectExternalThroughAr="" ContactAddressKey=""
CorporateAddressKey="" Createprogid="" Createts="" Createuserid=""
```

```
CreatorOrganizationKey="" DefaultDistributionRuleId="" DefaultPaymentRuleId=""
DunsNumber="" InterfaceTime="" InventoryKeptExternally=""
InventoryOrganizationCode="" InventoryPublished="" IsHubOrganization=""
IsSourcingKept="" IssuingAuthority="" ItemXrefRule="" LocaleCode=""
MerchantId="" Modifyprogid="" Modifyts="" Modifyuserid="" OrganizationCode=""
OrganizationKey="" OrganizationName="" ParentOrganizationCode=""
PaymentProcessingReqd="" PrimaryEnterpriseKey="" PrimarySicCode="" PrimaryUrl=""
RequiresChainedOrder="" RequiresChangeRequest="" RulesetKey="" TaxExemptFlag=""
TaxExemptionCertificate="" TaxJurisdiction="" TaxpayerId="" XrefAliasType=""
XrefOrganizationCode="">
```

CurrentOrganization - This namespace contains the details of the organization of the current logged in user using the `getOrganizationHierarchy()` API. The exact XML available is the same that is available under the CurrentEnterprise namespace.

SelectionKeyName - This namespace contains the XML that is bound to the currently active key of the current entity. Typically a list screen forms a XML key and associates that key to the checkbox (or hyperlink) which is used to navigate to the detail screen. This key is known as the current selected entity key. A detail view uses this key to call the detail API for that entity. For more details on this namespace, see “API Input” on page 81.

3.26 Posting Data to an API

By default, the data found in the editable components of a screen is not sent automatically to a save API, even if the input fields are bound to some XML. The data is only posted if the user has changed it on the screen.

However, sometimes it is necessary to pass some or all of the data in editable components, even if it did not change. For example, screens in which you are defaulting the input boxes to some default value in the JSP require all data to be posted.

If the user does not change the data in the input box, you still want the value to be passed to the API. Therefore, there is a mechanism that identifies that all data in the editable components is passed to the API for the entire JSP regardless of what was actually changed in the user interface. The following code example illustrates how to accomplish this.

```
<script language="Javascript">
IgnoreChangeNames();
```

```
    </script>
```

Note that this code typically is located at the beginning of a JSP immediately following the JSP include statements.

3.26.1 Data Types

Input boxes on an HTML page must conform to specific constraints regarding field size and data type. For example, the size of an input box should correspond to the type of data being gathered. Likewise, each input box requires validations that correspond to the type of data the field is designed to gather (such as numeric, date, string, and so forth). For example, string fields must prevent the user from entering data longer than a specific length. The attribute used for binding a text box to an API output also resolves the data type and related properties such as size, decimal digits, and so forth.

The Yantra 7x Presentation Framework has two APIs, `getTextOptions()` and `yfsGetTextOptions()`, that permit you to not have to explicitly set these attributes for each field. When you use these APIs for input boxes, they automatically take care of the data type-related attributes and validations.

These attribute definition and mappings are contained in two files:

- yfsdatatypemap.xml - maps abstract data types to XML attribute names
- YFSDataTypes.xml - defines data types

3.26.1.1 Abstract Data Type Mappings

XML attributes are mapped to abstract data types. The mappings are contained in the `<YFS_HOME>/template/api/yfsdatatypemap.xml` file.

For example, if a `Name` attribute contains the XML attribute `TaxBreakupKey`, and the `DataType` attribute contains the abstract data type key, this is defined in the `yfsdatatypemap.xml` file as follows:

```
<Attribute Name="TaxBreakupKey" DataType="Key" />
```

3.26.1.2 Abstract Data Type Definitions

The abstract data types define the database data type (DATE, VARCHAR2, and so forth), the database size, and so forth. The abstract data types are defined in the `<YFS_HOME>/template/api/YFSDataTypes.xml` file.

Below are a few sample entries from the file:

```
<DataType Name='Address' Type='VARCHAR2' Size='70'  >
<UIType Size="30" UITableSize="30"/>
</DataType>
<DataType Name='Count' Type='NUMBER' Size='5'  NegativeAllowed="false"
ZeroAllowed="true">
<UIType Size="5" />
</DataType>
<DataType Name='TimeStamp' Type='DATETIME' Size='17'  />
<DataType Name='Date' Type='DATE' Size='7'>
<UIType Size="12" UITableSize="15"/>
</DataType>
<DataType Name='Quantity' Type='NUMBER' Size='10' NegativeAllowed="false"
ZeroAllowed="true">
<XMLTypeType="QUANTITY"/>
</DataType>
```

For a definition of the standard Yantra 7x abstract data types, see the `<YFS_HOME>/template/api/YFSDataTypes.xml` file.

For a list of attributes supported `YFSDataTypes.xml`, see "Data Type Reference" on page 364.

3.26.1.3 Data Type Determination

Yantra 7x uses the `yfsdatatypemap.xml` file for data type determination. First Yantra 7x searches the file to find the string specified for binding (including the `xml:` prefix). If the entire binding string is not found, Yantra 7x searches the file for only the attribute part of the binding string.

The attribute must be able to be found in one of these two formats.

Then, using the definition in the `YFSDataTypes.xml` file, the Yantra 7x Presentation Framework API forms an appropriate HTML string with custom attributes that are then used on the client side.

3.26.1.4 Data Type Validation

A JavaScript function on the client side executes when the page loads, then reads the custom attributes and sizes the input boxes appropriately. A validation function is attached to these input boxes through the `window.attachEvent()` function. The validation function also uses the custom attributes to perform data type validations.

3.26.1.5 Customizing the Data Types Files

You can extend the attributes available to you by adding your own XML attributes and abstract data types to the `YFSDataTypes.xml` file.

To extend the data type map XML file:

1. Create a new `<YFS_HOME>/template/api/extn/yfsdatatypemap.xml` file.
2. Add an XML root node in the same way it appears in the `<YFS_HOME>/template/api/yfsdatatypemap.xml` file.
3. Add any attributes that need to be mapped in the `datatypemap.xml` file.

To extend the data type XML file:

1. Create a new `<YFS_HOME>/template/api/extn/YFSDataTypes.xml` file.
2. Add an XML root node in the same way it appears in the `<YFS_HOME>/template/api/YFSDataTypes.xml` file.
3. Add any differential values for the datatypes, including the following:
   - Add and define parameters for new datatypes
   - Modify parameters of existing datatypes

   Note: For existing datatypes, you can modify only the UI related attributes in the YFSDataTypes.xml file such as UI Size, and UITableSize.

Note: You cannot resize the Date input fields within the Yantra 7x Application Consoles across the board even if your date format is larger than the default date format used by Yantra 7x.

Note: Yantra 7x reserves the Type attribute for internal use, and so you cannot override it. All other attributes can be overridden.

3.27 Displaying Credit Card Number in a New Screen

Credit card number should be displayed only to users who have permissions to see them. Therefore, when you build a custom screen to display credit card number, use the following rules to ensure that this security is maintained:

- CurrentUser namespace contains the attribute ShowCreditCardInfo under the User node. This attribute is `true` if the current login user does have permission to see the credit card number and `false` if the current login user does not have the necessary permissions
- APIs that return credit card number normally return the encrypted credit card number. These APIs also return a DisplayCreditCardNo attribute that contains the last four digits of the credit card.
- Use the DisplayCreditCardNo attribute in conjunction with the `showEncryptedCreditCardNo()` JSP function to initially show the credit card number as asterisks (`*`) followed by the last four digits. See “showEncryptedCreditCardNo” on page 290.
- Form a hyperlink on the credit card number that displays only if the logged in user has permission to see decrypted credit card numbers. For example,

```
<% if (userHasDecryptedCreditCardPermissions()) {%>
    <yfc:makeXMLInput name="encryptedCCNoKey">
        <yfc:makeXMLKey
binding="xml:/GetDecryptedCreditCardNumber/@EncryptedCCNo"
value="xml:/PaymentMethod/@CreditCardNo"/>
        </yfc:makeXMLInput>
        <td class="protectedtext">
            <a
<%=getDetailHrefOptions(decryptedCreditCardLink,
getParameter("encryptedCCNoKey"),"")%>>

<%=showEncryptedCreditCardNo(resolveValue("xml:/PaymentMeth
od/@DisplayCreditCardNo"))%>
            </a>
        </td>
    <% } else { %>
        <td class="protectedtext">

<%=showEncryptedCreditCardNo(resolveValue("xml:/PaymentMeth
od/@DisplayCreditCardNo"))%>&nbsp;
            <yfc:getXMLValue
binding="xml:/PaymentMethod/@DisplayCreditCardNo"/>&nbsp;
        </td>
    <% } %>
```

- Then create a popup window that opens when the hyperlink is clicked.
- Call `getDecryptedCreditCardNumber()` in the popup window to decrypt the credit card, passing the DisplayFlag attribute as `true` if the current login user has permissions and `false` if the current login user does not have permissions.
- Use the output of `getDecryptedCreditCardNumber()` to display the decrypted credit card number on the screen.

When you configure the `getDecryptedCreditCardNumber()` API for your screen through the Yantra 7x Configurator, you must specify a dynamic input so that the DisplayFlag attribute is passed to the API, based on current user's permissions. Here is an example of how you could specify the Input field in the Yantra 7x Configurator:

```
<GetDecryptedCreditCardNumber
DisplayFlag="xml:CurrentUser:/User/@ShowCreditCardInfo"
EncryptedCCNo="xml:/Order/PaymentMethods/PaymentMethod/@CreditCardNo"/>
```

And specify the Template field according to the following example:

```
<GetDecryptedCreditCardNumber DecryptedCCNo=""/>
```

3.27.1 Displaying Multiple Credit Card Numbers

When displaying credit card numbers in a list, you might choose to display the DisplayCreditCardNo attribute, which is returned by the APIs that output CreditCardNo.

To append asterisks to the credit card number returned by the API, use the DisplayCreditCardNo attribute and the `showEncryptedCreditCardNo()` method.

Displaying a list of decrypted credit card numbers in a list involves calling `getDecryptedCreditCardNumber()` in a loop for each row. This can be an expensive operation, so you may want to display a list of encrypted credit card numbers (shown as `**********1234`) by using the DisplayCreditCardNo attribute. All APIs that output CreditCardNo return this attribute. Then link the encrypted credit card numbers to a popup window that displays a specified credit card number in a decrypted format.

3.28 Incorporating JSP Modifications in Yantra 7x EAR

After you customize the console user interface, you need to include these changes into the EAR file to re-deploy the Yantra 7x application to use your modifications.

To incorporate your JSP file modifications after customizing the interface as specified in this chapter, run the following script from the <YFS_HOME> directory, which creates an UI extension jar:

> `ant –buildfile bin/buildXX.xml ui-extn`, where XX represents either WLS or WS.

You can either create a new EAR or update the existing EAR after extending the UI. For more information on the various targets for building the EAR see the *Yantra 7x Installation Guide*.

4

Customizing the Configurator Swing Interface

The Yantra 7x Presentation Framework extensibility of Yantra 7x enables you to change the way information is rendered, or displayed, in the Yantra 7x Configurator, without changing the way it functions.

This chapter describes the Yantra 7x Configurator user interface and walks you through the tasks necessary for customizing it to suit your business needs. Each task is accomplished through a combination of configuration changes through the Yantra 7x Configurator and Java swing code changes.

4.1 Swing User Interface Extensibility

The main purpose of user interface extensibility is to enable any database extensions to be integrated into the graphical user interface.

Extensibility includes the following modifications:

- Adding any icons (or buttons) and labels
- Adding any text fields and checkboxes
- Hiding any non-mandatory components
- Reorganizing the components that are displayed on-screen

Note: If you extend the Swing user interface, when you install upgrades and services packs you need to read the upgrade documentation and carefully reconcile changes that have taken place in the default Yantra 7x screens. Some changes may be mandatory while some may not be.

You may modify the following types of screens:

- Search screens
- Detail screens
- List screens

The explorer screens (screens that contain only a tree) are not extensible.

4.1.1 Extending Organization and Item Detail Screens

When you extend a table used by the Item Details screen or the Organization Details screen, this adds a popup action icon to the main screen. This icon enables access to a popup screen that contains all of the relevant extended fields.

For example, when you extend the organization table, a popup access icon is added to the default organization screen. When the user clicks this icon, a popup screen displays all of the extended attributes that are relevant to this table.

Typically, extended attributes on the popup screen appear as text input boxes. In the case of the Item Detail screen, any item attribute that is specified as a classification displays as a classification lookup. This lookup enables the user to select any classification value that has been configured as described in the *Yantra 7x Product Management Configuration Guide*.

Fields on the popup screen can be grouped together. These groups are displayed in alphabetical order on the screen. Likewise, the fields within each group are displayed in alphabetical order.

To add extended attributes to a popup:

1. Edit the `Extensions.xml` file in `<YFS_ HOME>/database/entities/extensions` directory and specify a

DataType attribute for your new column. The new attribute should be a new data type that has not been defined previously in the YFSDataTypes.xml file.

2. Edit your `YFSDataTypes.xml` file in `<YFS_HOME>/template/api/extn` directory and add an entry for your new data type using the following attributes:

   - **DisplayInUI** - Required. Specifies whether the field should automatically display in the new popup screen.
   - **DisplayGroup** - Optional. Groups the display of extended fields on the new popup screen. When this field is specified, all extended fields with the same DisplayGroup attribute are grouped together and displayed in alphabetical order beneath a title that is set to the value of the DisplayGroup attribute.

   For example, attributes for the newly added ExtnMyField data type are specified as follows:

```
<DataType Name='ExtnMyField' Type='CHAR' Size='35'>
<UIType Size="30" UITableSize="30" DisplayInUI="true" DisplayGroup="My_
Group"/>
</DataType>
```

4.1.2 Extending Search and Detail Screens

The Yantra 7x Configurator menu structure contains a hierarchical collection of the following types of items:

- Menu – Contains child menu items
- Resource – Contains no child menu items, and instead, points to a resource

The Yantra 7x Configurator menu structure cannot be modified.

Note: You need Net Beans 3.2 IDE to extend search and detail screens in the Configurator.

Each screen within the Yantra 7x Configurator is associated with a Form Class and a Java Behavior Class. The Form Class is responsible for painting the controls on the screen and the Behavior Class is responsible for populating data in the screen and responding to events that occur in the screen, such as choosing Save.

When navigation to a screen within the Yantra 7x Configurator, the Form Class of the corresponding screen is loaded and the Behavior Class populates the data in the screen.

The Yantra 7x Configurator screens are defined in an XML file. This file contains the unique screen ID, Form Class, and Behavior Class for each screen. This file must be extended in order to extract the Yantra 7x Configurator screens as described in the following steps:

To extend a search or detail screen:

1. From the Yantra 7x Configurator, navigate to the screen that you want to extend.
2. After the screen loads, press CTRL-M, which displays the window with the Form Name (which is the resource ID for the screen), the Form Class name, and XML data information.
3. Note the Form Name (resource ID) and Form Class Name.
4. The `<YFS_HOME>/documentation/code_examples/configuisrc/yantrauisrc.jar` file contains the source code corresponding to all Form classes. There is a corresponding `.form` file and a `.java` file. The `.form` file is used by NetBeans and is required only if you use the NetBeans 3.2 IDE.
5. Copy the `.java` and `.form` files corresponding to the Form Class Name that you had noted into your own directory structure. The copy you make should have a different class name. Make sure you do not copy it anywhere under com.yantra because that is reserved strictly for Yantra 7x products.
6. Add the following JAR files to the CLASSPATH. This can be done in NetBeans 3.2 by mounting the JAR file.
   - jgo.jar
   - ycpui.jar
   - ycmui.jar
   - yifui.jar
   - yfcui.jar

- xercesImpl.jar

You need to do this in order to compile the Java file.

7. Add the package name to the top of the form. Put the appropriate class name in the code (should be the same Java class that you originally copied as the file name created in step 5).

   The copied Java class must extend the original.

8. Set the Variables Modifier option in Net Beans to `public`. The default value is `private`. This option can usually be found in Tools > Options > Form Objects > Expert Tab.

9. Remove `super.init()` from the `init()` function.

10. At the end of the `init()` function, add the following line:

```
checkVars();
```

11. Make the necessary changes to the new form. To set the properties of the new controls, see Table 4–1, "XML Binding". Only the following changes are permitted:

    - Rearranging any components on the user interface
    - Hiding any non-mandatory components
    - Adding any buttons and labels
    - Adding any text fields and checkboxes

12. Compile the `.java` file, create a JAR file that contains only the `.class` file, and put it in the `<YFS_HOME>/extn/ui/` directory and the `<YFS_HOME>/webpages/yfscommon/` directory. The JAR file name should be `yfsextn.jar`.

13. Rename the `<YFS_HOME>/template/configapi/extn_application.xml.sample` file to "`extn_application.xml`".

14. Edit the `extn_application.xml` file to include the Form Name (the resource ID that you noted in step 3) and the Override Form Class Name (the complete path of the new class name that will override the existing Yantra 7x class).

15. From the `<YFS_HOME>` directory, run the following script, which creates an application EAR file:

`ant –buildfile bin/buildXX.xml ui-extn create-ear`, where XX represents either WLS or WS.

You can either create a new EAR or update the existing EAR after extending the UI. For more information on the various targets for building the EAR see the *Yantra 7x Installation Guide*.

4.1.2.1 XML Binding

All the forms in the Swing user interface follow the Model-View-Controller (MVC) paradigm. The form itself acts as the View, so it only has presentation logic. All the business logic is in a separate Controller class. The model for every form is an XML-DOM Element.

To further simplify the presentation logic, the core classes in <yfs> support a form of XMLBinding of different types of controls to the DOM model. This enables the form designer to bind the different controls on a form to different parts of the DOM. At run-time the infrastructure keeps the DOM and the controls synchronized. When the DOM is changed the changes are reflected on the control, and the reverse is true as well.

The following controls can be bound:

- Javax.swing.JTextComponent (and any subclasses)
- Javax.swing.JTable

The binding semantics control are described in detail below.

4.1.2.2 Binding Common to All Controls

Given an input XML, parts of the XML can be bound to controls based on an XMLBindingString. Each string is evaluated in XSL syntax and the first match is used as the value of the binding.

Assume the bound XML is the following:

```
<Order OrderNo=’23’ OrderDate=’20010101’ >
<ShipToAddress City=’Nashua’ />
</Order>
```

Table 4–1 illustrates the XMLBinding.

Table 4–1 XML Binding

XML Binding String	Example Value
Xml:/Order/@OrderNo	23
Xml:/Order/@OrderDate	20010101
Xml:/Order/ShipToAddress/@City	Nashua
Xml:/Order/ShipToAddress	Evaluates to the ShipToAddress Node

4.1.2.3 Name Property

Every Swing control has a bean property name that can be set by using the `setName(String)` function. The value of this property should be an XMLBindingString that specifies the XMLData that is to be bound to that control.

4.1.2.4 Binding for JText Field

In addition to the Name property, the following TextField properties can be set for any text field.

Table 4–2 JTextField Properties

Property	Syntax

Data Type:
 	
Only Integer, Date and String are supported.
	txtField1.putClientProperty("YFCXMLBinding.dataType", "Integer")
	
	txtField1.putClientProperty("YFCXMLBinding.dataType", "Date")
	
	txtField1.putClientProperty("YFCXMLBinding.dataType", "String")

Associated Label: This is the JLabel associated with the text field	txtField1.putClientProperty("YFCXMLBinding.assocaitedLabel", "lblField1")
Mandatory: If Mandatory property is set to "true" and the field is left blank, the label associated with the text field changes color. This is triggered on the lostfocus event of the text field.	txtField1.putClientProperty("YFCXMLBinding.isMandatory", "true")

4.2 Extending the List Screens

You can add, remove, and re-arrange columns in the list screen within the Configurator using the following steps:

To extend list screens:

1. Copy `<YFS_HOME>/template/api/genericscreens_modifications.xml.sample` to `<YFS_HOME>/template/api/extn/genericscreens_modifications.xml`.

   For an example of the format of this file, see Example 4–1.

Example 4–1 List Modification XML File Structure

```
<ScreenModifications>
   <resourceId of the list form you want to extend>
      <ListInfo>
         <Absolute>
            <List AttributeName="" ColumnTitle="" DataType=""/>
            <List AttributeName="" ColumnTitle="" DataType=""/>
         </Absolute>
         <Add>
            <List AttributeName="" ColumnTitle="" DataType=""/>
         </Add>
         <Remove>
            <List AttributeName="" ColumnTitle="" DataType=""/>
         </Remove>
      </ListInfo>
   </resourceId of the list form you want to extend>
</ScreenModifications>
```

2. Edit the `genericscreens_modifications.xml` file and insert entries for the resource IDs that correspond with the list screens that you want to extend.

Tip: In order to determine the Resource ID for a specific list screen, use the following steps:

a. From within the Configurator, choose the User Group screen.

b. Choose the Permission tab to display a hierarchical view of all permissions.

c. Search the permission tree to find the list screen that you want to extend.

d. Hover your mouse over the node to display the Resource ID using the tool tip.

3. Enter the ListInfo element attributes, using the descriptions listed in Table 4–3, "Elements in the List Modification XML File".

Table 4–3 Elements in the List Modification XML File

ListInfo Element	Purpose
Absolute	Replaces the current columns of a list with the new columns you specify in the List elements. Overrides Add and Remove.
Add	Adds one or more columns to the list screen. Add and Remove are mutually exclusive with Absolute.
Remove	Removes one or more columns from the list screen. Add and Remove are mutually exclusive with Absolute.
List	The List element is a sub-element of the Absolute, Add, or Remove element. Adds the following attributes (which must be specified): • AttributeName - The name to display in the list attribute. • ColumnTitle - The title to display in the list in the attribute. • DataType - The data type to display in the new column. Must be a valid DataType Name within the `YFSDataTypes.xml` file.

4. Open the `<YFS_HOME>/template/api/YFS_HOME>/template/api/YFSDataTypes.xml` file to determine which data type you should specify in the DataType attribute.

5. If the data type you need is not in the file, create a new data type, filling in the element attributes using the descriptions listed in Table 4–4, "Elements in the YFSDataTypes.xml File".

Table 4–4 Elements in the YFSDataTypes.xml File

Table 1:

DataType Element	Purpose
Name	Identifier of the DataType. Must exactly match the List element DataType attribute used in the `genericscreens_modifications.xml` file.
Type	Adds the following attributes (of which, Type and Size must be specified): • CHAR - Attribute Size • DATE - Attribute Size • NUMBER - Attributes Size, DecimalDigits (optional), NegativeAllowed (optional), ZeroAllowed (optional) • VARCHAR2 - Attribute Size

6. Save your changes to the `genericscreens_modifications.xml` file and close it.

7. Select the refresh cache icon that fits your needs as follows:

   – If you want to update one entity and its child resources - Select the specific entity and choose the *Refresh Entity Cache* icon

   – If you want to update all resources - Choose the *Refresh Cache* icon

8. Run Yantra 7x again to test your changes.

4.3 Creating and Modifying User Themes

User themes determine the set of colors used for graphical user interface elements such as screens, labels, and table headers. For information on modify themes, see “Defining Centralized Themes” on page 20.

4.4 Creating and Modifying Custom Error Codes

In the Yantra 7x Configurator, you can create error codes to be thrown for any exception specified in your custom code. The associated cause, action and description defined while creating the error code should be available in your user interface. Custom error code values should not contain any Yantra 7x reserved keywords. For a list of reserved keywords see Section A.2, "Avoiding Yantra 7x Reserved Keywords" on page 241.

Custom error codes are also used for failure reasons thrown by the password validation user exits. These user exit exceptions are thrown when a user attempts to save the password changes in the console. A sample implementation of these user exits using Java's built-in MD5 routines are provided in `<YFS_HOME>/documentation/code_examples/pwcrypt` directory. For more information on these user exits refer to *Yantra 7x Javadocs*.

For more information on creating or modifying custom error codes refer to the presentation component in the *Yantra 7x Platform Configuration Guide*.

4.5 Customizing Node Type Symbols for the Fulfillment Network Model

In the Fulfillment Network Model in the Yantra 7x Configurator, node types are displayed as symbols of various shapes, colors and sizes. Using the provided `extn_mapmanager.xml.sample` file you can modify the look and feel of these node types on the Fulfillment Network Model. For more information on the Fulfillment Network Model, refer to the *Yantra 7x Platform Configuration Guide*.

To customize node type symbols:

1. Rename the `<YFS_HOME>/template/configapi/extn_mapmanager.xml.sample` file to "`extn_mapmanager.xml`".
2. Edit the `extn_mapmanager.xml` file to include the node type you are customizing and the include the applicable information.

   Valid values for ShapeType are:

   - `Ellipse`
   - `Rectangle`

- `RoundRectangle`
- `Diamond`
- `TriangleUp`
- `TriangleDown`
- `TriangleLeft`
- `TriangleRight`
- `Marker`

For `Color` and `Selected Color`, specify any hex code or standard color name.

3. Either create a new EAR or update the existing EAR after extending the UI. For more information on the various targets for building the EAR see the *Yantra 7x Installation Guide*.

5 Creating Custom Mobile User Interfaces

Yantra 7x enables you to develop and display a custom user interface for the mobile devices used in warehouse operations. This chapter describes the concepts and procedures for developing mobile device user interface applications.

Important: When customizing the interface, copy the standard Yantra 7x resources and then modify your copy, or create a completely new view. **Do not modify the standard Yantra 7x resources.**

5.1 Before You Begin

Before developing the Yantra 7x mobile user interface, familiarize yourself with guidelines listed in this section in order to help ensure a successful experience and enable you to work more quickly and with fewer errors.

Required Prerequisite Concepts

Before beginning, you need to understand how to develop HTML, JSP, and XML components, how to use Yantra 7x APIs, and how to use the Yantra 7x Console and Configurator user interfaces.

Note that the mobile device user interface differs from the Console user interface in the following ways:

- Mobile device screens use separate architecture for search and list views. If you need search view and list views functionality, model them as detail views.

- Mobile device screens can have only one detail view. Each detail view can contain only one inner panel.
- A mobile device inner panel cannot have any actions or icons.

Yantra 7x APIs return the data that needs to be displayed. For information about using Yantra 7x APIs, see Chapter 7, "Programming Transactions". For information on functions specific to mobile devices that are used within the JSP files, see Appendix C, "Mobile User Interface Extensibility Reference".

Customizing the mobile device user interface is accomplished using the Yantra 7x Configurator user interface. For more information about this UI, see the *Yantra 7x Platform Configuration Guide*.

Prepare for Smooth Upgrades and Easy Maintainability

- ***Do not*** change the resource definitions of any of the resources shipped as part of the standard default configuration. Either make a copy through the Yantra 7x Configurator and then change the copy or create your own new views.
- ***Do not*** change any of the Yantra 7x-supplied JSP files, JavaScript files and icon JAR files. If you do, your changes may be lost during upgrades.
- When creating new views, consider issues regarding ease of maintenance as well as ease of creation. When you create a new view, inner panel, and so forth, it is possible to link to the JSPs supplied by Yantra 7x. But in future releases, Yantra 7x may add more resources to these JSP, which means you must monitor software changes and update your configuration to account for these changes.

Build in Usability

Any new views you develop should look and behave like the product views, so before you begin developing, gain an understanding of how the default views behave. For more information on the basic product look and feel, see “Introducing the Screen Layout and Behavior” on page 29.

Prepare Your Development Environment

In order to start the customization process, you must perform prepare the development environment to accommodate for development and testing of the Yantra 7x mobile user interface changes. See "Understanding the Development Environment" on page 7.

5.2 Planning Your Mobile Device Screens

Create a design document, including a prototype, as described in this section.

5.2.1 Design Guidelines

In order to optimize the display of data and execution of transactions, design simple screens and simple transactions, using the following rules:

- Avoid placing a lot of information into a small space. This ensures more rapid transaction time and enables the end user to parse data visually more quickly.
- Because of the reduced screen size, if you need to display a lot of data, the display of data may need to be altered to accommodate the amount of data. In this case, the data must be persisted from one screen to the next before finally being posted. For small screens, use the TEMPQ utilities to pass data between screens.
- The TempQ utilities enables you to persist and pass data from one screen to the next. For information on the TempQ utilities, please see Appendix C, "Mobile User Interface Extensibility Reference".
- Provide text on one line and the data field on another line to accommodate for internationalization requirements.
- Validate fields only when necessary in order to optimize transaction execution time.
- Choose fast or templatized APIs that return exactly the correct type of information needed in order to optimize transaction execution time. For information creating optimized API output templates see Section 7.2.9, "Best Practices for Creating Custom Output XML Templates" on page 182.

5.2.2 Mobile Device Screen Size Dimensions

Restrict the screen size to 8 lines X 24 (or 22) characters per line. This ensures that your custom screen will also display correctly on a VT220 terminal.

A mobile device screen can contain only table.

A mobile device screen can handle a combined total of the following hidden and displayed fields as described in Table 5–1, "Mobile Device Screen Size Specifications".

Table 5–1 Mobile Device Screen Size Specifications

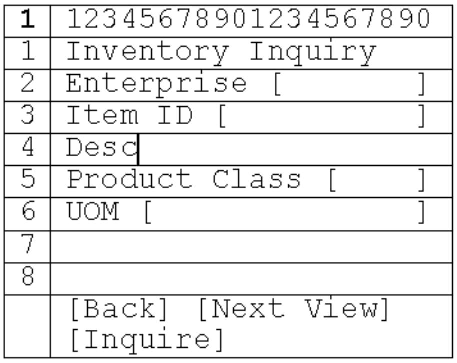
Field	Maximum Size
text and hidden fields	15
labels and protected fields	15
command buttons	5

When the maximum allowed size for a given field is violated by a user, (for example, when a user enters 20 hidden fields), the following error message is displayed: "An error was encountered while running this program: Invalid procedure call or argument".

Draw a layout of each screen. For example, creating inventory screens requires an inventory inquiry screen and an inventory detail screen.

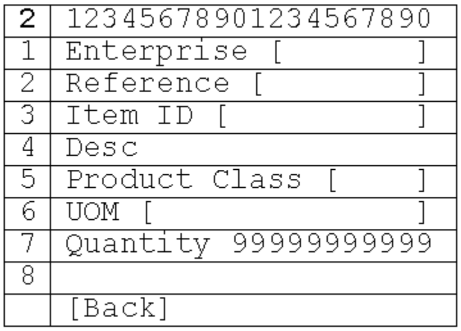
Figure 5–1 Inventory Inquiry Prototype

Screen 1:
Inventory Inquiry Screen



1	12345678901234567890
1	Inventory Inquiry
2	Enterprise [ ]
3	Item ID [ ]
4	Desc
5	Product Class [ ]
6	UOM [ ]
7	
8	
	[Back] [Next View] [Inquire]

Screen 2:
Inventory Detail Screen

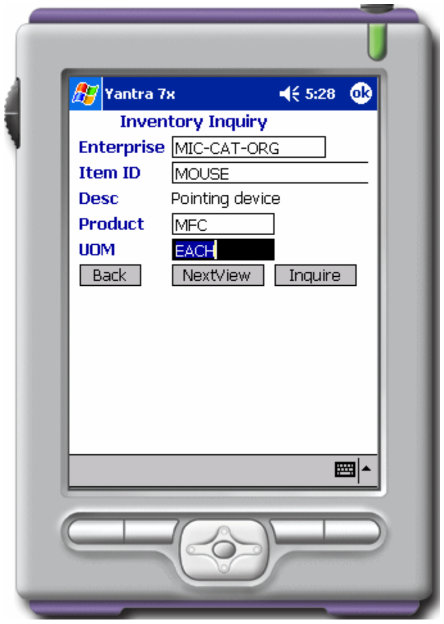


2	12345678901234567890
1	Enterprise [ ]
2	Reference [ ]
3	Item ID [ ]
4	Desc
5	Product Class [ ]
6	UOM [ ]
7	Quantity 99999999999
8	
	[Back]

Note the use of fixed width font while drawing the screen layouts. The buttons are not counted while considering the 8-row limit.

Figure 5–2 Inventory Inquiry Screens

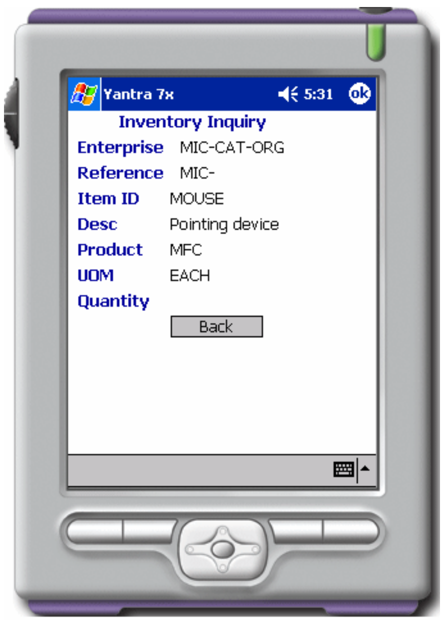
**Screen 1:
Inventory Inquiry Screen**



Inventory Inquiry

Enterprise	MIC-CAT-ORG
Item ID	MOUSE
Desc	Pointing device
Product	MFC
UOM	EACH

**Screen 2:
Inventory Detail Screen**



Inventory Inquiry

Enterprise	MIC-CAT-ORG
Reference	MIC-
Item ID	MOUSE
Desc	Pointing device
Product	MFC
UOM	EACH
Quantity	

In this example, the `getItemList()` API fetches item details based on the information submitted on the Inventory Inquiry Search Screen, and `getATP()` API fetches inventory details for the item on the Inventory Inquiry Detail screen.

List the APIs that must be called when each screen is navigated to. This should include the entire API input that will be passed and the API template that will be used for filtering the API output, if applicable.

5.3 Creating Resources in the Configurator

Mobile device screens are composed of screen resources, such as an entity, a detail view, inner panels, and APIs. These resources define the screen look and feel, screen behavior, and screen flow.

To create custom mobile device resources:

Choose Applications > Platform > Presentation > Resources > Yantra Mobile > Entities as described in *Yantra 7x Platform Configuration Guide*.

Configure the resources described in Table 5–2, "Mobile Device Resources".

Table 5–2 Mobile Device Resources

Resource	Description
Screen Entity	Controls access to transactions. It also provides the starting point (JSP name).
Detail View	Mobile device screens are modeled as details views. A screen can have only one detail view. Each detail view can contain only one inner panel. A screen can contain only table.
Inner Panel	Mobile device inner panels cannot have any actions or icons.
APIs	Required APIs can be defined under the APIList for the innerpanel.

Example 5–1 Inventory Inquiry Configurator Resources

Creating Inventory Inquiry screens requires the following user interface resources:

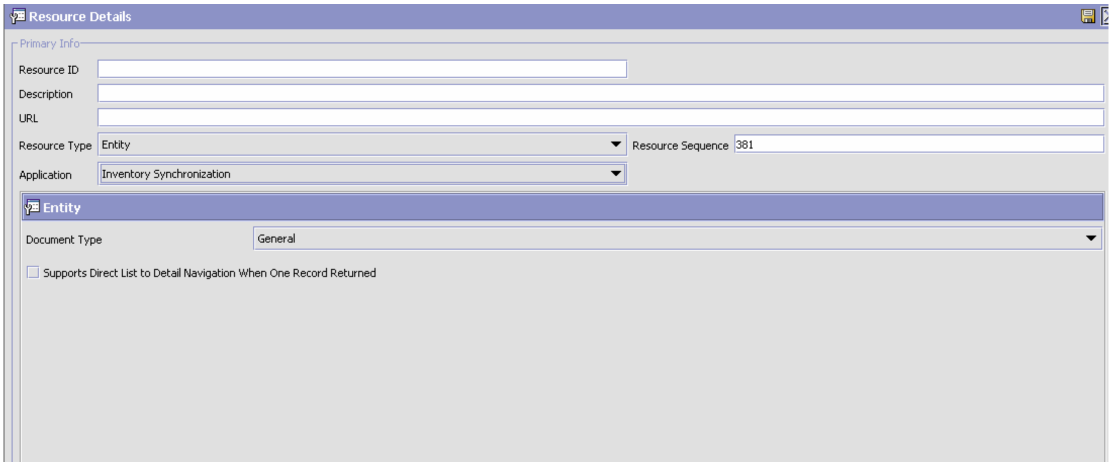
- a screen entity called rfinventory
- detail view called rfinventoryD1
- inner panel called rfinventoryIP1
- `getItemDetails()` API called rfinventoryD1IP1API

These resources are detailed in the following tables.

Mobile Device Screen Entity Resources

Right click to create resources with the following values:

Figure 5–3 Mobile Device Screen Entity Resource


Resource Details

Primary Info

Resource ID

Description

URL

Resource Type: Entity

Resource Sequence: 381

Application: Inventory Synchronization

Entity

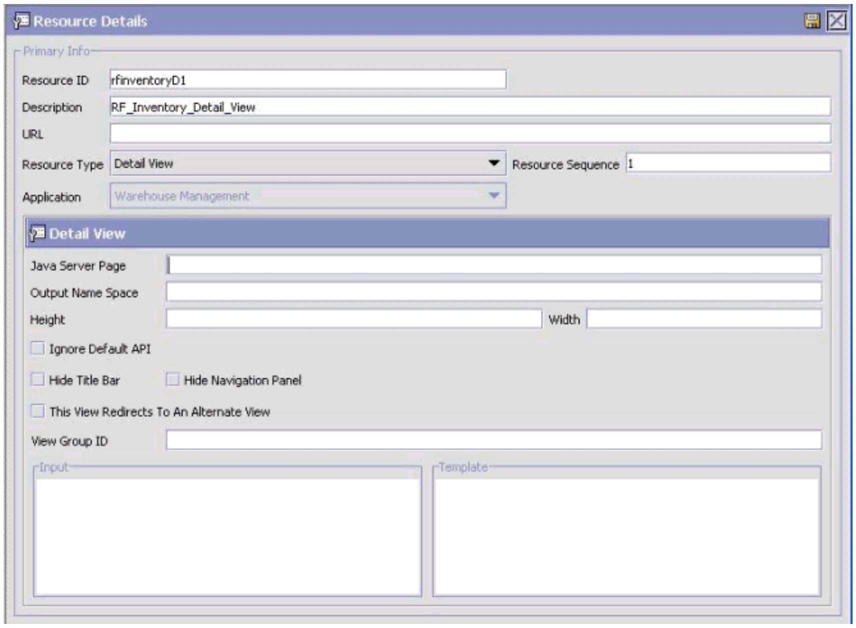
Document Type: General

☐ Supports Direct List to Detail Navigation When One Record Returned

Table 5–3 Mobile Device Screen Entity Resource Values

Name	Value
Resource ID	rfinventory
Description	RF_Inventory
Resource Type	Entity
Resource Sequence	(Default Suggested Value)
Application	Warehouse Management
Document Type	General

Figure 5–4 Mobile Device Screen Detail View



Resource ID	rfinventoryD1
Description	RF_Inventory_Detail_View
URL	
Resource Type	Detail View
Resource Sequence	1
Application	Warehouse Management

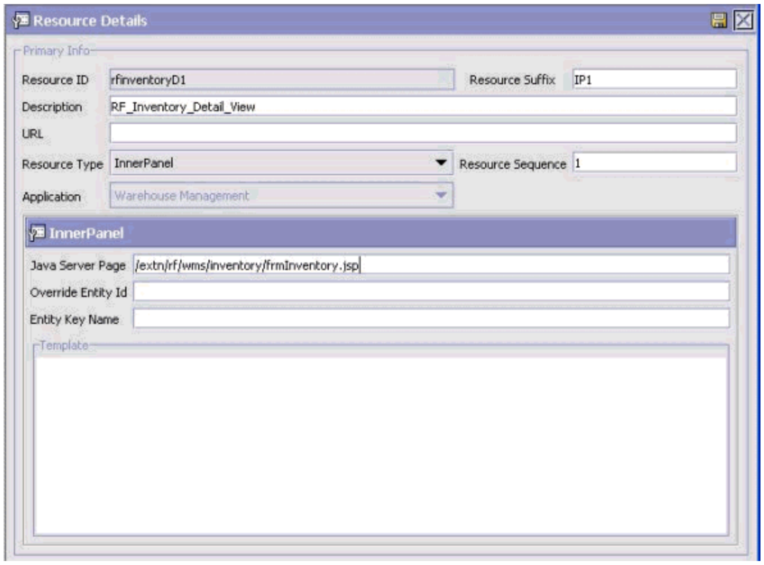
Java Server Page	
Output Name Space	
Height	
Width	
View Group ID	

☐ Ignore Default API
☐ Hide Title Bar ☐ Hide Navigation Panel
☐ This View Redirects To An Alternate View

Table 5–4 Mobile Device Screen Detail View Resource Values

Name	Value
Resource ID	rfinventoryD1
Description	RF_Inventory_Detail_View
Resource Type	Detail View
Resource Sequence	(Default Suggested Value)
Application	Warehouse Management

Figure 5–5 Mobile Device Screen Inner Panel Resource


Resource Details

Primary Info

Resource ID	rfinventoryD1
Resource Suffix	IP1
Description	RF_Inventory_Detail_View
URL	
Resource Type	InnerPanel
Resource Sequence	1
Application	Warehouse Management

InnerPanel

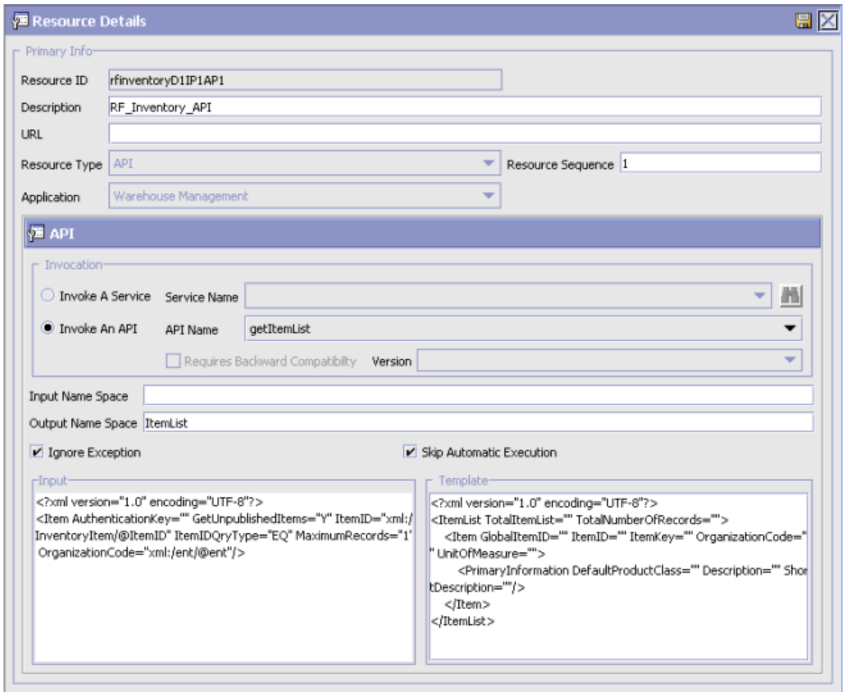
Java Server Page	/extn/rf/wms/inventory/frmInventory.jsp
Override Entity Id	
Entity Key Name	

Template

Table 5–5 Mobile Device Screen Inner Panel Resource Values

Name	Value
Resource ID	rfinventoryD1IP1
Description	RF_Inventory_Inner_Panel
Resource Type	Inner Panel
Resource Sequence	(Default Suggested Value)
Application	Warehouse Management
Java Server Page	/extn/rf/wms/inventory/frmInventory.jsp

Figure 5–6 Mobile Device Screen API Resource



Resource ID: rfinventoryD1IP1AP1
Description: RF_Inventory_API
URL:
Resource Type: API
Resource Sequence: 1
Application: Warehouse Management

( ) Invoke A Service — Service Name:
(●) Invoke An API — API Name: getItemList
☐ Requires Backward Compatibilty — Version:

Input Name Space:
Output Name Space: ItemList
☑ Ignore Exception
☑ Skip Automatic Execution

Input:

```
<?xml version="1.0" encoding="UTF-8"?>
<Item AuthenticationKey="" GetUnpublishedItems="Y" ItemID="xml:/
InventoryItem/@ItemID" ItemIDQryType="EQ" MaximumRecords="1"
 OrganizationCode="xml:/ent/@ent"/>
```

Template:

```
<?xml version="1.0" encoding="UTF-8"?>
<ItemList TotalItemList="" TotalNumberOfRecords="">
   <Item GlobalItemID="" ItemID="" ItemKey="" OrganizationCode="
" UnitOfMeasure="">
      <PrimaryInformation DefaultProductClass="" Description="" Shor
tDescription=""/>
   </Item>
</ItemList>
```

Table 5–6 Mobile Device Screen API Resource Values

Name	Value
Resource ID	rfinventoryD1IP1AP1
Description	RF_Inventory_API
Resource Type	API
Resource Sequence	(Default Suggested Value)
Application	Enter Warehouse Management.
Invoke an API	Select this radio button.
API Name	getItemList
Output Name Space	ItemList
Ignore Exception	Check this checkbox.

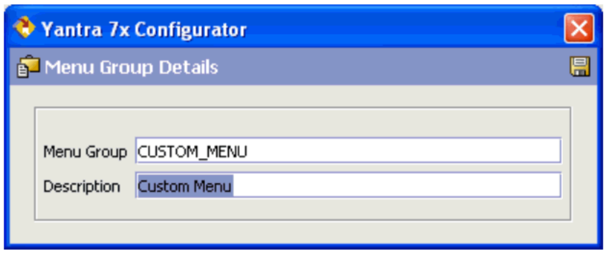
Table 5–6 Mobile Device Screen API Resource Values

Name	Value
Skip Automatic Execution	Always check this checkbox when defining a mobile device screen API resource.
Input	<?xml version="1.0" encoding="UTF-8"?><Item AuthenticationKey="" GetUnpublishedItems="Y" ItemID="xml:/InventoryItem/@ItemID" ItemIDQryType="EQ" MaximumRecords="1" OrganizationCode="xml:/ent/@ent"/>
Template	<?xml version="1.0" encoding="UTF-8"?><ItemList TotalItemList="" TotalNumberOfRecords=""> <Item GlobalItemID="" ItemID="" ItemKey="" OrganizationCode="" UnitOfMeasure=""> <PrimaryInformation DefaultProductClass="" Description="" ShortDescription=""/> </Item></ItemList>

5.4 Adding a Menu Entry

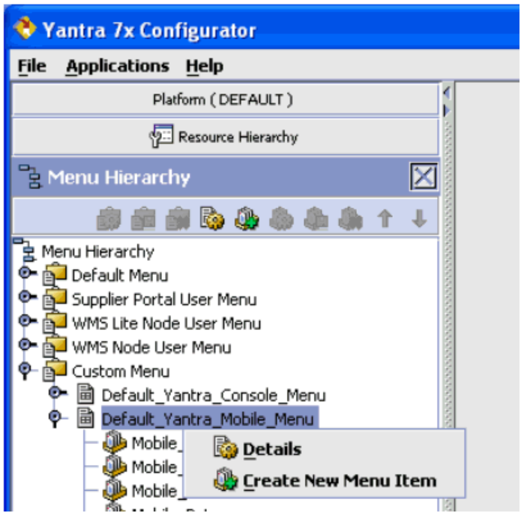
To create a mobile device menu entry

1. Create a menu entry by using the Menu Configurator. On saving the screen, a new Menu Group called “Custom Menu” is created.

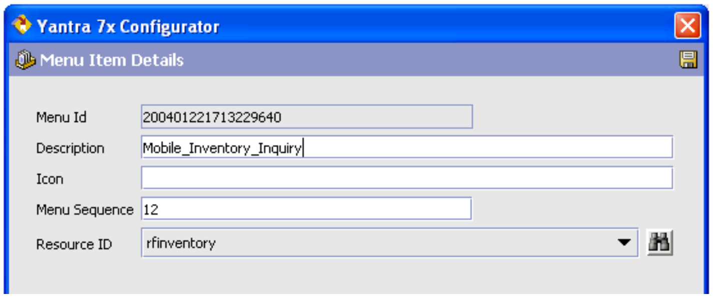


Menu Group: CUSTOM_MENU
Description: Custom Menu

2. Right click on Custom Menu > Default_Yantra_Mobile_Menu > Create New Menu Item and choose Details.

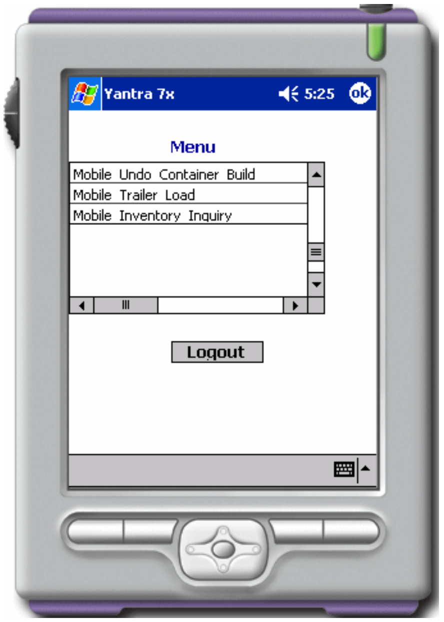


3. Add a new Menu Item with the description Mobile_Inventory_Inquiry the Resource ID `rfinventory` and the menu sequence as suggested.



Menu Id	200401221713229640
Description	Mobile_Inventory_Inquiry
Icon	
Menu Sequence	12
Resource ID	rfinventory

4. Create a bundle property for Mobile_Inventory_Inquiry with a value 'Inventory Inquiry' in the `<YFS_HOME>/webpages/extn/extnbundle.properties` file.
   This creates a mobile device menu option called Inventory Inquiry.
   For more information about creating a custom menu, see Section 3.17, "Customizing the Menu Structure" on page 68.



Choosing this Menu option eventually invokes the JSP defined in the inner panel associated with this entity.

For example, in the rfinventory UI entity, the `/extn/rf/wms/inventory/fmInventory.jsp` file relative to the Yantra 7x application base URL is invoked.

5.5 Creating a Template HTML

A template HTML enables rendering the look and feel of the mobile device screen. A template HTML defines which fields are included and how they are laid out. Each screen requires a template HTML file. The template HTML uses some custom mobile device tags in addition to the standard HTML tags.

The template HTML must adhere to the XSD defined in the `<YFS_HOME>/template/mobilescreens/rf.xsd` style sheet.

All template HTML files must reside the `<YFS_HOME>/template/extn/mobilescreens/<uientity>` directory. The name `<uientity>` refers to the screen entity resource that needs to be created for a mobile transaction.

For standard Yantra 7x HTML tags, see Appendix B, "Console JSP Interface Extensibility Reference".

For standard Yantra 7x mobile UI screen tags, see Appendix C, "Mobile User Interface Extensibility Reference"

Example 5–2 Inventory Inquiry Template HTML

The template HTML files for the inventory inquiry scenario are available for you to copy and reuse from the `<YFS_HOME>/documentation/code_examples/rfinventory/` directory.

5.6 Creating JSP Files

The JSP files call the appropriate API (if needed), pick up the appropriate template XML and pass the values returned by the API as data to the template XML.

A separate JSP file must be written for ***each*** of the following screen components:

- Screen - for invoking the HTML template and rendering the screen on the Yantra 7x mobile client.
- Validation - for performing field level validations.
- Command button - for performing actions on clicking of the command button.

5.6.1 Understanding the Structure of a JSP File

A JSP file for a mobile UI screen typically contains three sections, but not all bullets apply to every mobile JSP file:

Section 1

- Extracts values from the pageContext or Session.
- Performs setAttribute for some of the input bindings.

Section 2

- Calls an API using callAPI.

- Processes logic for the API output.

Section 3

- Sends Form or Forward Page
- Sends Error

Example 5–3 Inventory Inquiry JSP Files

The example JSP files for the inventory inquiry scenario are available for you to copy and reuse from the `<YFS_HOME>/documentation/code_examples/rfinventory/` directory.

5.6.2 JSP File Name and Directory Guidelines

When naming JSP files for mobile devices, use the following rules:

- The starting JSP file can have any name but the same name must be defined while adding the inner panel for the screen entity.
- The validation JSP file name syntax must be formName + "Val" + fieldname + ".jsp" format (for example, frmSearchValtxtItemId.jsp is invoked for validating the `txtItemId` field on the tab out of the `txtItemId` field in the `frmSearch` form).
- The name of the JSP being called on the click of a button must be named after the value of the action property in the URL. For example, if button has the URL value of `/console/rfinventory.ppc?action=frmSearchUpdCmdInquire`, then the JSP being invoked is named as `frmSearchUpdCmdInquire.jsp`.
- All JSPs must be added to the `<YFS_HOME>/webpages/extn/rf/wms/<uientity>` directory, (for example, `<YFS_HOME>/webpages/extn/rf/wms/inventory/frmInventory.jsp`).
- These JSPs use common utility methods as defined in the `<YFS_HOME>/webpages/yfc/rfutil.jspf` file. For these utility methods, see Appendix B, "Console JSP Interface Extensibility Reference".

5.7 Passing Data Between Screens

Because of the small screen size, the data may need to be persisted from one screen to the next before finally being posted. When passing data between screens, you can either use hidden text or the TempQ utilities.

We recommend the usage of TempQ. A TempQ stores the name/value pair information on one page in the session and provides for accessor methods on the subsequent pages. For details on these utilities, see Appendix C, "Mobile User Interface Extensibility Reference".

5.8 Error Handling

Error handling is taken care of by the utility method getError XML as shown in the `rfutil.jspf` file. For information on the getError XML, see Section C.3.4, "deleteFromTempQ" on page 377.

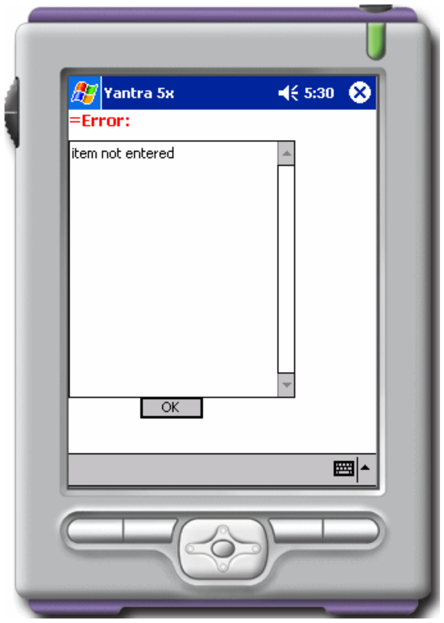
Validations performed by tabbing out of a field or by clicking a button may lead to an error. These errors are displayed in a standard error XML in the response output stream.

```
<errors>
    <error errortxt="errorDesc" focus="errorField"/>
</errors>
```

See the following Inventory Inquiry error message examples.

Figure 5–7 Error Messages Displayed

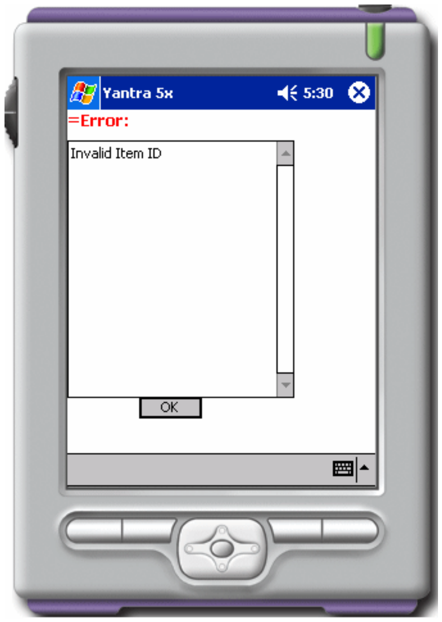
Error Condition 1:
Item ID is not entered



=Error:

item not entered

Error Condition 2:
Item ID entered is incorrect



=Error:

Invalid Item ID

6

Extending the Yantra 7x Database

Database extensibility enables you to modify Yantra 7x tables to maintain more attributes. This chapter explains the Guidelines for Extending Yantra 7x Database as well as how to modify the Yantra 7x database by:

- Adding a Column to a Standard Table
- Increasing the Size of a Standard Column
- Adding Unique Tag Identifiers or Descriptors to a Standard Table
- Adding Non-Unique Indices to a Standard Table
- Adding Foreign Key Elements to a Standard Table
- Creating Custom and Hang-off Tables

Additionally, this chapter explains:

- Generating Audit References for Entities
- Extending API Templates.
- Incorporating Database Extensibility Modifications
- Custom Code Requirements to Avoid Deadlocks
- Merging Documentation Folders

6.1 Guidelines for Extending Yantra 7x Database

Certain aspects of the Yantra 7x database cannot be modified. If you try to make these modifications, your data is not harmed, but your attempted changes are not incorporated into the Yantra 7x database. Yantra 7x does not permit modification of the following:

- Existing columns of Yantra 7x tables

- Primary keys of Yantra 7x tables
- Unique keys of Yantra 7x tables
- Views

When planning extensions to the database, consider the implications of your changes and how they may impact other areas.

> **Important:** If you modify a table and your deployment uses Yantra 7x Analytics, the view associated with the table must also be modified.

Entity Relationship Diagrams

To learn more about the Yantra 7x database, see the entity relationship diagrams (ERDs) using the `<YFS_HOME>/documentation/erd/html/erd.html` file. These ERDs provide the following information:

- Indicate which tables can be extended by adding columns.
- Indicate which tables can have hang-off relationship.
- Relationships between tables (to help you understand the relationship between logical entities such as orders, shipments, and payments).
- Indices details. Each table is indexed by a primary key. Most tables also have a unique index that is constituted of the columns that make the logical unique key. In addition, some tables have alternate indices to support queries.
- Views that indicate how several tables interact.

Entity Database XML Files

The standard tables that are shipped with Yantra 7x are defined in a set of entity XML files, also known as *database definition* XML files. Each entity XML file may contain several table definitions. To learn more about these tables, see the files in the `<YFS_HOME>/database/entities/` directory. Within these entity XML files, an entity represents a table and an attribute represents a column.

The following sections describe the general guidelines to follow when adding columns, indices and foreign key elements.

6.1.1 Guidelines for Adding Columns to a Standard Table

When extending the columns of standard Yantra 7x tables, keep the following considerations in mind:

- You can only add columns to Yantra 7x tables as specified in the ERDs.
- You cannot remove or modify any Yantra 7x columns.
- You can add columns either before or after installation of Yantra 7x.
- For all columns added to a Yantra 7x table, you must provide a default value that is relevant to the database framework.
- You cannot use nullable columns for the following fields:
  - Primary Key Attributes
  - Entity Relationships

  Hence, in the entity XML, `Nullable="true"` is allowed for all columns except the ones noted above.
- You cannot add columns with a data type of `Long`.
- When using Yantra 7x components (such as events and user exits) that read in a map or publish a map (such as the `GetOrderNoUE` user exit), extended fields in the maps are prefixed with `Extn_`.

Note: In Oracle database, the column data type `CLOB` is generated as `LONG` by the Yantra 7x framework.

6.1.2 Guidelines for Adding Non-Unique Indices to a Standard Table

When adding non-unique indices, use a naming convention that differs from Yantra 7x convention, which is `<tablename>_i<1+n>`. Using your own naming convention prevents your indices from accidentally being dropped during upgrades. The following considerations are also recommended:

- Adding a prefix that doesn't start with Y.
- Prefix your non-unique indices with `EXTN_` for easier identification.
- Unique indices are not allowed for Yantra 7x tables.

- Column names for indices must be valid.
- Index names should not exceed 18 characters.

6.1.3 Guidelines for Adding Foreign Key Elements to a Standard Table

Currently foreign key relationships in extended columns of Yantra 7x tables are restricted to only the `YFS_PERSON_INFO` table. When exposing foreign key elements, the following validations are performed:

- The parent table name must be `YFS_PERSON_INFO`.
- The parent column name must be a primary key of the `YFS_PERSON_INFO table`.

6.2 Extending the Yantra 7x Database Schema

You can extend the Yantra 7x database by:

- Adding a Column to a Standard Table
- Increasing the Size of a Standard Column
- Adding Unique Tag Identifiers or Descriptors to a Standard Table
- Adding Non-Unique Indices to a Standard Table
- Adding Foreign Key Elements to a Standard Table
- Creating Custom and Hang-off Tables

6.2.1 Adding a Column to a Standard Table

You add columns to Yantra 7x tables by modifying the entity database extension XML files and rebuilding the Yantra 7x database and JAR files. After Yantra 7x is rebuilt, the APIs recognize these columns and use them when storing and retrieving data.

To add a column to a standard table:

1. Copy the `<YFS_HOME>/database/entities/extensions/Extensions.xml.sample` file to `<your_filename>.xml` or modify your existing extension XML file.

2. Edit the <your_filename>.xml file to add a new entity tag as shown in Example 6–1 for each table you want to extend. If the tag already exists, use the existing one. For a description of the XML attributes, see Table 6–1 on page 129.

Example 6–1 Sample XML for Extending Columns

```
<!-- element exposed to create a column -->
<DBSchema>
    <Entities>
        <Entity TableName="REQUIRED">
            <Attributes>
            <Attribute ColumnName="REQUIRED" DataType="" DecimalDigits=""
            DefaultValue="" Description="" Nullable="false" Size="1"
            Type="REQUIRED" XMLName="" XMLGroup="" SqlServerDataType="" />
            </Attributes>
        </Entity>
    </Entities>
</DBSchema>
```

Table 6–1 Attributes in the XML <Attributes> Tag

Attribute	Description
ColumnName	Required. Name of the column added to this table. The ColumnName must start with EXTN_.
DataType	Optional. Valid values are available in the <YFS_HOME>/template/api/YFSDataTypes.xml file.
DecimalDigits	Optional. Number of digits of precision required after the decimal. Needed only for numeric fields.
DefaultValue	Required. Used as is for the defaults clause in your database.
Description	Optional. Description of column usage.
Nullable	Optional. Attribute used to describe the nullable value of a field. Default is false. Nullable=true is allowed for all columns except Primary Key Attributes and Entity Relationships.
Size	Size of the database column.

Table 6–1 Attributes in the XML <Attributes> Tag

Attribute	Description
Type	Required. Data type of the database column. This attribute also determines the type of attribute in the Java classes that are generated and the format of the attribute in the XML. The valid types are CHAR, VARCHAR2, NUMBER, DATE, and TIMESTAMP. If you are using SQL Server and want to specify a data type as TEXT in the database, you also need to use the SqlServerDataType attribute and specify the attribute value as TEXT. **Note:** If DATE is specified, only the calendar date is stored. If TIMESTAMP is specified, the calendar date and time are stored.
XMLName	XML name of the attribute, if it is different from the name of the attribute. Choose a name that does not conflict with the base extension. It is recommended that you use `Extn` as a prefix. It is also strongly recommended that you use the same convention for arriving at the XMLName as the Yantra 7x base product does: Make each letter following the underscore in the column name upper case, and the rest lower case. Then, remove the underscores. Thus, `Extn_Item_Id` should be: `ExtnItemId`.
XMLGroup	If present, indicates the child tag in which the attribute is present. If the attribute is not present in the XML, use the NOT_SHOWN string. The XMLGroup must be `Extn`. Thus, the data for the extended columns is in a separate element in the API XML output.
SqlServerDataType	Optional. Pertains only to SQL Server databases. If you see a warning about the row size being too long, specify one or more of your larger columns as "TEXT". Columns of type TEXT are not included in the maximum row size calculation for a table.

3. Create a new `Attribute` tag for each column you want to add to the table.

4. Manually add the columns to the database. You can also use the database verification tool `dbverify` for generating scripts to add columns to your database.

   Note: On SQL Server, the total length of all extended columns should not exceed 900 bytes. If the SQL Server throws a warning that the row size exceeds the maximum length, change the datatype of one or more of your columns to TEXT. Specify TEXT for the SqlServerDataType attribute as described in Table 6–1.

5. Extend the corresponding API templates by following the steps described in Section 6.4, "Extending API Templates".
6. Follow the steps in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

   Note: If you are adding columns to extend attributes in the YFS_ITEM table and you want to make these attributes available for classification inheritance, a duplicate entity tag must be added to your XML for the YFS_CLASS_ITEM_ATTR table.

   Additionally, `Nullable` should be set to "`true`" and `DefaultValue` should not be passed for these attributes.

   If you do not want to utilize classification inheritance functionality for these attributes, this note can be ignored.

   For more information on defining item attributes at the classification level, refer to the *Yantra 7x Product Management Configuration Guide*.

A special case of extending columns for adding unique tag identifiers or descriptors is explained in Section 6.2.3, "Adding Unique Tag Identifiers or Descriptors to a Standard Table".

6.2.2 Increasing the Size of a Standard Column

You can increase the size of the table columns by extending the yfsdatatype XML file and rebuilding the Yantra 7x database and JAR files.

After Yantra 7x is rebuilt, the APIs recognize these resized columns and use them when storing and retrieving data. This can only be done for columns of datatype VARCHAR2, and the size of the columns can only be increased, not decreased.

To increase the size of a standard column in a Yantra 7x table:

1. Copy the `<YFS_HOME>/template/api/yfsdatatype.xml` to the `<YFS_HOME>/template/api/extn` directory.
2. Extend the datatype by increasing the size attribute to the desired size as shown in Example 6–2. Only the desired changes need to be listed in this file. Do not mention datatypes that do not need to be changed.

Example 6–2 Sample Datatype for Increasing Column Size

```
<DataTypes>
    <DataType Name="TagNumber" Size="140" Type="VARCHAR2">
        <UIType Size="20" UITableSize="20"/>
    </DataType>
</DataTypes>
```

3. Manually alter the columns in the database. You can also use the database verification tool `dbverify` for generating scripts to add columns to your database.

Note: On SQL Server, the total length of all extended columns should not exceed 900 bytes. If the SQL Server throws a warning that the row size exceeds the maximum length, change the datatype of one or more of your columns to TEXT. Specify TEXT for the SqlServerDataType attribute as described in Table 6–1.

4. Follow the steps in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.2.3 Adding Unique Tag Identifiers or Descriptors to a Standard Table

The Yantra 7x default tag identifiers are Batch Number, Revision Number, and Lot Number. You may have a need to extend the Yantra 7x Database to define unique tag identifiers or descriptors.

Yantra recommends that the data type of any unique tag identifiers or descriptors that you add be CHAR or VARCHAR.

Note: Whenever you extend the tag attributes you must also extend the console because the templates for the APIs do not contain these extended tag attributes.

For example, if you work in the metal industry, you may want to use a custom tag identifier named Steel which has both Mill and Grade attributes. Since these are not supplied by default in Yantra 7x, you must extend the set of tables listed below to include the Steel tag identifier column in each table.

6.2.3.1 Extending Tables When Adding Unique Tag Identifiers

You must extend each of the following tables whenever you add unique tag identifiers to the Yantra 7x database:

- YFS_COUNT_RESULT_TAG
- YFS_COUNT_TAG
- YFS_INVENTORY_AUDIT
- YFS_INVENTORY_TAG
- YFS_ITEM_TAG - The data type to be used for this table is CHAR(2).
- YFS_MOVE_REQUEST_LINE_TAG
- YFS_ORDER_KIT_LINE_SCHEDULE
- YFS_ORDER_KIT_LINE_SCHEDULE_H
- YFS_ORDER_LINE_REQ_TAG
- YFS_ORDER_LINE_REQ_TAG_H

- YFS_ORDER_LINE_SCHEDULE
- YFS_ORDER_LINE_SCHEDULE_H
- YFS_RECEIPT_LINE
- YFS_RECEIPT_LINE_H
- YFS_SHIPMENT_LINE_REQ_TAG
- YFS_SHIPMENT_LINE_REQ_TAG_H
- YFS_SHIPMENT_TAG_SERIAL
- YFS_SHIPMENT_TAG_SERIAL_H
- YFS_WORK_ORDER_COMP_TAG
- YFS_WORK_ORDER_COMP_TAG_H
- YFS_WORK_ORDER_TAG
- YFS_WORK_ORDER_TAG_H

6.2.3.2 Extending Tables When Adding Unique Tag Descriptors

You must extend each of the following tables whenever you add unique tag descriptors to the Yantra 7x database:

- YFS_COUNT_RESULT_TAG
- YFS_COUNT_TAG
- YFS_INVENTORY_TAG
- YFS_ITEM_TAG The data type to be used for this table is CHAR(2).
- YFS_ORDER_LINE_REQ_TAG
- YFS_ORDER_LINE_REQ_TAG_H
- YFS_RECEIPT_LINE
- YFS_RECEIPT_LINE_H
- YFS_SHIPMENT_LINE_REQ_TAG
- YFS_SHIPMENT_LINE_REQ_TAG_H
- YFS_SHIPMENT_TAG_SERIAL
- YFS_SHIPMENT_TAG_SERIAL_H

- YFS_WORK_ORDER_COMP_TAG
- YFS_WORK_ORDER_COMP_TAG_H
- YFS_WORK_ORDER_TAG
- YFS_WORK_ORDER_TAG_H

6.2.4 Adding Non-Unique Indices to a Standard Table

You can add non-unique indices to Yantra 7x entities. You add indices to a standard Yantra 7x table, by adding an Index element in the extension XML for that table.

To add non-unique indices to a standard table:

1. Copy the <YFS_HOME>/database/entities/extensions/Extensions.xml.sample file to <your_filename>.xml or modify your existing extension XML file.
2. Edit the <your_filename>.xml file to add non-unique indices as shown in Example 6–3 for each table you want to extend. For a description of the XML attributes, see Table 6–2 on page 136.

Example 6–3 Sample XML for Adding Non-Unique Indices

```
<!-- element exposed to create index -->
<DBSchema>
<Entities>
   <Entity TableName="REQUIRED">
   .
   .
      <Indices>
         <Index Name="REQUIRED" >
            <Column Name="REQUIRED" />
            .
            .
         </Index>
         .
         .
      </Indices>
      .
      .
   </Entity>
</Entities>
```

```
</DBSchema>
```

Table 6–2 Creating Non-Unique Indices on Yantra 7x tables

Attribute	Description
Entity	
TableName	Required. Name of the table for which the indices are added, For example: `YFS_ITEM`.
Entity/Index	
Name	Required. The name of the custom index. Name should start with a prefix EXTN_
Entity/Index/Column	
Name	Required. The name of the column for which the index is added. Create a new `<Column Name/>` for each column for which the index is added.

3. Create a new Index tag for each index you want to add to the column.
4. Extend the corresponding API templates to include the non-unique indices by following the instructions in Section 6.4, "Extending API Templates".
5. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.2.5 Adding Foreign Key Elements to a Standard Table

A foreign key relationship is a relationship between an extended column in any Yantra 7x table and the `YFS_PERSON_INFO` table. You can create foreign key elements to establish relationship between an extended column and the `YFS_PERSON_INFO` table.

Note: Currently, the YFS_PERSON_INFO is the only table which supports a relationship to foreign key extensions within Yantra 7x database.

To add foreign key elements to a standard table:

1. Copy the <YFS_HOME>/database/entities/extensions/Extensions.xml.sample file to <your_filename>.xml or modify your existing extension XML file.
2. Edit the <your_filename>.xml file to add foreign key elements as shown in Example 6–4 for each table you want to extend. For a description of the XML attributes, see Table 6–3 on page 138.

Example 6–4 Sample XML for Adding Foreign Key Elements

```
<!-- element exposed to create foreign key relationship -->
<DBSchema>
  <Entities>
        <Entity TableName="REQUIRED">
         .
         .
          <!-- element exposed to create relationship with PERSON_INFO table -->
            <ForeignKeys>
              <ForeignKey ParentTableName="YFS_PERSON_INFO"
              XMLName="YFSName1" >
                <Attribute ColumnName="REQUIRED"
                 ParentColumnName="PERSON_INFO_KEY" />
              </ForeignKey>
              <ForeignKey ParentTableName="YFS_PERSON_INFO"
              XMLName="YFSName2" >
                <Attribute ColumnName="REQUIRED"
                 ParentColumnName="PERSON_INFO_KEY" />
              </ForeignKey>
             .
             .
            </ForeignKeys>
         .
         .
        </Entity>
      </Entities>
    </DBSchema>
```

Table 6–3 Creating ForeignKey elements on YFS_PERSON_INFO table

Attribute	Description
Entity	
TableName	Required. Name of the table for which the foreign key elements are added; For example: `YFS_ITEM`.
Entity/ForeignKeys/ForeignKey	
ParentTableName	The name of the parent table for this foreign key element. **Note**: This value must be YFS_PERSON_INFO which is the only table that currently supports foreign key relationships.
XMLName	You can specify the XML representation of the element name. It must start with the prefix of the parent entity. For example, if `ParentTableName` is prefixed with YFS then the `XMlName` must start with `YFS`. By default the parent table name is assumed.
Entity/ForeignKeys/ForeignKey/Attribute	
ColumnName	Specifies the extended column name of the Entity.
ParentColumnName	The column name of the YFS_PERSON_INFO that has a foreign key element relationship.

3. Create a new `ForeignKey` tag for each foreign key relationship you want to add.
4. Multiple foreign key elements can be related to the same parent table.
5. Extend the corresponding API templates to include the foreign key elements by following the instructions in Section 6.4, "Extending API Templates".
6. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.2.6 Creating Custom and Hang-off Tables

With the Yantra 7x Database Framework you can also extend the Yantra 7x database by creating custom or hang-off tables.

A **custom table** is an independent table and cannot be modeled as an extension to standard Yantra 7x tables.

A **hang-off** table is a table with many to one relationship with a standard Yantra 7x table.

Creating a custom or hang-off entity enables you to:

- Create a relationship between a Yantra 7x standard table and a hang-off table.
- Invoke Extensible APIs that store and retrieve data from hang-off tables.
- Invoke `dbverify` and `dbdiff` for generating appropriate SQL scripts to create or alter tables for custom or hang-off entities.
- Audit item and organization tables.

The ability to purge data from hang-off tables is discussed in Section 6.2.6.2.1. Keep in mind the following which apply to the creation of custom or hang-off tables:

- You can only determine if an entity is enabled for hang-off by referencing the associated Entity Relationship Diagram (ERD) located in the `<YFS_HOME>/ProductFiles/documentation/ERD` directory.
- Currently only order, order line, work order, shipment, item, and organization tables are marked as hang-off enabled.
- Custom and hang-off table names must not start with a `Y.`
- Primary key name must not start with a Y.
- Entity names must start with the prefix provided in the entity definition.
- The YIFApi interface does not extend APIs for custom/hang-off tables. Therefore, the APIs for these tables must be configured as services.
- Javadocs are not created for the APIs created by the infrastructure to support custom and hang-off tables.

  However, you can create javadocs or ERDs for your custom or hang-off tables by running a documentation merging tool discussed in Section 6.7, "Merging Documentation Folders".
- XSD generation and validation is not done for custom or hang-off tables.

- Every custom or hang-off entity must have a primary key.
- Every custom or hang-off entity must have the following columns described in Table 6–4:

Table 6–4 Required Columns for Custom or Hang-off Tables

Column Name	Data Type	Default Value
Key-Column	Key	' ' (space)
CREATETS	TimeStamp	sysdate
MODIFYTS	TimeStamp	sysdate
CREATEUSERID	UserId	' ' (space)
MODIFYUSERID	UserId	' ' (space)
CREATEPROGID	ProgramID	' ' (space)
MODIFYPROGID	ProgramID	' ' (space)
LOCKID	Lockid	0 (zero)

6.2.6.1 Steps to create a custom table

1. Copy the <YFS_HOME>/database/entities/extensions/Extensions.xml.sample file to <your_filename>.xml or modify your existing extension XML file. For example, assume that ABC_CUSTOMER_ORDER_LINE is a custom table.
2. Edit the <your_filename>.xml file to create custom tables as shown in Example 6–5. For a description of the XML attributes, see Table 6–5 on page 142.

Example 6–5 Sample XML for Creating Custom Tables

```
<DBSchema>
    <Entities>
        <Entity ApiNeeded="Y/N" AuditRequired="Y" Description=""
        HasHistory="True/False" Prefix="ABC"
        TableName="ABC_CUSTOMER_ORDER_LINE" >
        <!-- table columns -->
        <Attributes>
            <Attribute ColumnName="CREATETS" DataType="TimeStamp"
            DefaultValue="sysdate" Description="Create TimeStamp" />
            <Attribute ColumnName="MODIFYTS" DataType="TimeStamp"
            DefaultValue="sysdate" Description="Modify TimeStamp" />
            <Attribute ColumnName="CREATEUSERID" DataType="UserId"
            DefaultValue="&apos; &apos;" Description="Creating User ID" />
            <Attribute ColumnName="MODIFYUSERID" DataType="UserId"
            DefaultValue="&apos; &apos;" Description="Modifying User ID" />
            <Attribute ColumnName="CREATEPROGID" DataType="ProgramID"
            DefaultValue="&apos; &apos;" Description="Creating Program ID" />
            <Attribute ColumnName="MODIFYPROGID" DataType="ProgramID"
            DefaultValue="&apos; &apos;" Description="Modifying Program ID" />
            <Attribute ColumnName="LOCKID" DataType="Lockid" DefaultValue="0"
            Description="Lock ID" />
            <Attribute ColumnName="TABLE_KEY" DataType="Key" DefaultValue=" "
            Description="" Nullable="True/False" XMLName="TableKey" />
            .
            .
        </Attributes>
        <!-- PrimaryKey is a mandatory attribute in entity definition. This
        element can have ONLY ONE attribute element -->
        <PrimaryKey Name="TABLE_NAME_PK">
            <Attribute ColumnName="TABLE_KEY" />
        </PrimaryKey>
        <!-- Indices -->
        <Indices>
            <Index Name="INDEX_I1" Unique="True/False" >
            <Column Name="Attribute2" />
            .
            .
            </Index>
            .
            .
        </Indices>
        <!-- Relationship -->
        <Parent ParentTableName="YFS_ORDER_LINE" XMLName="YFSOrderLine" >
            <Attribute ColumnName="CUSTOM_ORDER_KEY" ParentColumnName="ORDER_
            LINE_KEY" />
            .
            .
        </Parent>
        <!-- ForeignKeys -->
        <ForeignKeys>
            <ForeignKey ParentTableName="PARENT_ORDER_LINE"
            XMLName="PARENTName1" >
            <Attribute ColumnName="CUSTOM_ORDER_KEY" ParentColumnName="PARENT_
            COLUMN_KEY" />
            .
```

```
                .
                </ForeignKey>
                .
                .
            </ForeignKeys>
            <!-- AuditReferences -->
            <AuditReferences>
                <Reference ColumnName="TABLE_KEY" />
                .
                .
            </AuditReferences>
            </Entity>
        </Entities>
</DBSchema>
```

3. The following table explain the attributes in the entity XML:

Table 6–5 Entity XML Definitions for Custom Tables

Attribute	Description
Entity	

ApiNeeded	Indicate whether or not APIs should be generated. Valid values are Y or `N.` A default set of API's are generated if Y is passed.
	
	For example in the `ABC_CUSTOMER_ORDER_LINE` table, Yantra 7x creates the following API's when the database extension jar file is generated:
	
	`listABCCustomerOrderLine()`
	
	`getABCCustomerOrderLine()`
	
	`createABCCustomerOrderLine()`
	
	`modifyABCCustomerOrderLine()`
	
	`deleteABCCustomerOrderLine()`
	
	These APIs can be accessed as services using Yantra 7x Service Definition Framework. For more information see, Section 6.4.3, "Configuring Services for Custom and Hang-off APIs".

AuditRequired	If set to Y audit record for this entity are created. Generating audit for entities is described in Section 6.3, "Generating Audit References for Entities".

Table 6–5 Entity XML Definitions for Custom Tables

Attribute	**Description**
Description	A description of the entity that could be used in javadocs or ERD.
HasHistory	This flag denotes whether the custom table can have an associated history table. The default value is `False`. If the flag is set to `True` then the appropriate scripts for generating database scripts for creating and altering the history table is generated by `dbdiff`. For a custom table, the `HasHistory` flag must be set to `True` for generating history tables. However if a `Parent` relationship is defined in the entity XML, this flag will be copied from parent table definition. Child entities cannot override this flag.
Prefix	The prefix added to your custom tables. It is recommended that you do not use a prefix starting with `Y`.
TableName	The name given to your custom table.
Entity/Attributes/Attribute	
ColumnName	The names of the column that comprise the table.
DataType	The data type of the column. Valid data types are given in <YFS_ HOME>`/template/api/YFSDataTypes.xml` file.
DefaultValue	Default value for the column.
Description	A description of the columns that could be used in javadocs or ERD.
Nullable	Optional. Attribute used to describe the nullable value of a field. Default is false. `Nullable=true` is allowed for all columns except Primary Key Attributes and Entity Relationships.

Table 6–5 Entity XML Definitions for Custom Tables

Attribute	**Description**
XMLName	Optional. XML name of the attribute, if it is different from the name of the attribute. Choose a name that does not conflict with the base extension. It is recommended that you use `Extn` as a prefix. It is also strongly recommended that you use the same convention for arriving at the XMLName as the Yantra 7x base product does: Make each letter following the underscore in the column name upper case, and the rest lower case. Then, remove the underscores. Thus, `Extn_Item_Id` should be: `ExtnItemId`.
Entity/PrimaryKey	
Name	Name of the unique index created for the primary key. This value cannot exceed 18 characters. **Note:** The name of the primary key in the extenstion XML should end with _PK.
ColumnName	The name of the table column that is identified as the primary key.
Entity/Indices/Index	
Name	The index name. This value cannot exceed 18 characters.
Unique	This key is present only for custom entities. Valid values are `True` or `False`. If `True` an unique index is created.
Column/ Name	The table column name associated with the index.
Entity/Parent	
ParentTableName	Name of the other table this entity has foreign key relationship.
XMLName	The XML name of the parent attribute. It should start with the prefix mentioned in the parent table. By default the parent table name is assumed.
Parent/Attribute Level	

Table 6–5 Entity XML Definitions for Custom Tables

Attribute	Description
ParentColumnName	Column name in the parent table. Note: To create relationships among entities, the data type of parent column must be of type CHAR or VARCHAR.
ColumnName	Column name in this custom entity.
Entity/ForeignKeys/ForeignKey	
ParentTableName	The name of the table with which the entity has a foreign key relationship.
XMLName	XML representation of the element name. By default the parent table name is assumed.
Entity/ForeignKeys/ForeignKey/Attribute	
ParentColumnName	Column name of the parent table. Note: To create foreign keys among entities, the data type of parent column must be of type CHAR or VARCHAR.
ColumnName	Column name in this custom entity.
Entity/AuditReferences/Reference	
ColumnName	Reference Column name in the audit table.

Note: In entity definition, relationship can be defined under `Parent` and `ForeignKey` elements.

4. The relationship defined under the `ForeignKey` element indicates:

   a. If the foreign table is a Yantra 7x table, for a single record in the foreign table, zero or many records in this custom table may exist.

   b. This is a read-only relationship, hence deletion of a record from the foreign table does not result in the deletion of a matching record from this custom table.

5. The relationship defined under the `Parent` element indicates:

   a. For a single record in the parent table, multiple child records may exist.

   b. Deletion of a record from the parent table will result in the deletion of matching records from the child table, if any.

6. Extend the corresponding API templates (for example, `getOrderDetails()`API) by following the instructions in Section 6.4, "Extending API Templates".

> **Note:** The APIs generated by the Yantra 7x for the custom tables can be invoked only as a service. For more information see Section 6.4.3, "Configuring Services for Custom and Hang-off APIs" on page 158.

7. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.2.6.2 Steps to create a hang-off table

1. Copy the `<YFS_HOME>/database/entities/extensions/Extensions.xml.sample` file to `<your_filename>.xml` or modify your existing extension XML file. For example, assume that `ABC_CUSTOMER_ORDER_LINE` is an hang-off table.

2. Edit the `<your_filename>.xml` file to create hang-off tables as shown in Example 6–6. For a description of the XML attributes, see Table 6–6 on page 142.

Example 6–6 Sample XML for Creating Hang-off Tables

```
<DBSchema>
   <Entities>
      <Entity ApiNeeded="Y/N" AuditRequired="Y" Description=""
         HasHistory="True/False" Prefix="ABC"
         TableName="ABC_CUSTOMER_ORDER_LINE" >
        <!-- table columns -->
        <Attributes>
            <Attribute ColumnName="CREATETS" DataType="TimeStamp"
            DefaultValue="sysdate" Description="Create TimeStamp" />
            <Attribute ColumnName="MODIFYTS" DataType="TimeStamp"
            DefaultValue="sysdate" Description="Modify TimeStamp" />
```

```
    <Attribute ColumnName="CREATEUSERID" DataType="UserId"
    DefaultValue="&apos; &apos;" Description="Creating User ID" />
    <Attribute ColumnName="MODIFYUSERID" DataType="UserId"
    DefaultValue="&apos; &apos;" Description="Modifying User ID" />
    <Attribute ColumnName="CREATEPROGID" DataType="ProgramID"
    DefaultValue="&apos; &apos;" Description="Creating Program ID" />
    <Attribute ColumnName="MODIFYPROGID" DataType="ProgramID"
    DefaultValue="&apos; &apos;" Description="Modifying Program ID" />
    <Attribute ColumnName="LOCKID" DataType="Lockid" DefaultValue="0"
    Description="Lock ID" />
    <Attribute ColumnName="TABLE_KEY" DataType="Key" DefaultValue=" "
    Description="" Nullable="True/False" XMLName="TableKey" />
    .
    .
</Attributes>
<!-- PrimaryKey is a mandatory attribute in entity definition. This
element can have ONLY ONE attribute element -->
 <PrimaryKey Name="TABLE_NAME_PK">
    <Attribute ColumnName="TABLE_KEY" />
 </PrimaryKey>
<!-- Indices -->
 <Indices>
    <Index Name="INDEX_I1" Unique="True/False" >
    <Column Name="Attribute2" />
    .
    .
    </Index>
    .
    .
 </Indices>
<!-- Relationship -->
 <Parent ParentTableName="YFS_ORDER_LINE" XMLName="YFSOrderLine" >
    <Attribute ColumnName="CUSTOM_ORDER_KEY"
    ParentColumnName="ORDER_LINE_KEY" />
    .
    .
 </Parent>
 <ForeignKeys>
    <ForeignKey ParentTableName="PARENT_ORDER_LINE"
    XMLName="PARENTName1" >
       <Attribute ColumnName="CUSTOM_ORDER_KEY"
       ParentColumnName="PARENT_COLUMN_KEY" />
      .
      .
    </ForeignKey>
```

```
                .
                .
              </ForeignKeys>
          <!-- AuditReferences -->
           <AuditReferences>
              <Reference ColumnName="TABLE_KEY" />
              .
              .
           </AuditReferences>
        </Entity>
     </Entities>
  </DBSchema>
```

3. The following table explain the attributes in the entity XML:

Table 6–6 Entity XML Definitions for Hang-off Tables

Attribute	Description
Entity	

ApiNeeded	Indicate whether or not APIs should be generated. Valid values are Y or N. A default set of API's are generated if Y is passed.
	For example in the ABC_CUSTOMER_ORDER_LINE table, Yantra 7x creates the following API's when the database extension jar file is generated:
	`listABCCustomerOrderLine()`
	`getABCCustomerOrderLine()`
	`createABCCustomerOrderLine()`
	`modifyABCCustomerOrderLine()`
	`deleteABCCustomerOrderLine()`
	These APIs can be accessed as services using Yantra 7x Service Definition Framework. For more information see, Section 6.4.3, "Configuring Services for Custom and Hang-off APIs".

Table 6–6 Entity XML Definitions for Hang-off Tables

Attribute	**Description**
AuditRequired	If set to Y audit record for this entity are created. Generating audit for entities is described in Section 6.3, "Generating Audit References for Entities". Note: This attribute must not be passed when you are creating a hang-off for order related tables. In this case, the audits are automatically inserted into the `YFS_ORDER_AUDIT` table.
Description	A description of the entity that could be used in javadocs or ERD.
HasHistory	This flag is automatically inherited from the parent table. For example, let us assume that `ABC_ORDER_HEADER` table is created as an hang-off table for `YFS_ORDER_HEADER`, which has an associated history table. Then `ABC_ORDER_HEADER_H` is automatically generated by the database framework.
Prefix	The prefix added to your custom tables. It is recommended that you do not use a prefix starting with `Y.`
TableName	The name given to your hang-off table.
Entity/Attributes/Attribute	
ColumnName	The names of the column that comprise the table.
DataType	The data type of the column. Valid data types are given in `<YFS_HOME>/template/api/YFSDataTypes.xml` file.
DefaultValue	Default value for the column
Description	A description of the columns that could be used in javadocs or ERD.
Nullable	Optional. Attribute used to describe the nullable value of a field. Default is false. `Nullable=true` is allowed for all columns except Primary Key Attributes and Entity Relationships.

Table 6–6 Entity XML Definitions for Hang-off Tables

Attribute	Description
XMLName	Optional. XML name of the attribute, if it is different from the name of the attribute. Choose a name that does not conflict with the base extension. It is recommended that you use `Extn` as a prefix. It is also strongly recommended that you use the same convention for arriving at the XMLName as the Yantra 7x base product does: Make each letter following the underscore in the column name upper case, and the rest lower case. Then, remove the underscores. Thus, `Extn_Item_Id` should be: `ExtnItemId`.
Entity/PrimaryKey	
Name	Name of the unique index created for the primary key. This value cannot exceed 18 characters. **Note:** The name of the primary key in the extenstion XML should end with _PK.
ColumnName	The name of the table column that is identified as the primary key.
Entity/Indices/Index	
Name	The index name. This value cannot exceed 18 characters.
Unique	This key is present only for custom entities. Valid values are `True` or `False`. If `True` an unique index is created.
Column/ Name	The table column name associated with the index.
Entity/Parent	
ParentTableName	Name of the other table this entity has foreign key relationship.
XMLName	The XML name of the parent attribute. It should start with the prefix mentioned in the parent table. By default the parent table name is assumed.
Parent/Attribute Level	

Table 6–6 Entity XML Definitions for Hang-off Tables

Attribute	Description
ParentColumnName	Column name in the parent table. Note: To create relationships among entities, the data type of parent column must be of type CHAR or VARCHAR.
ColumnName	Column name in this custom entity.
Entity/ForeignKeys/ForeignKey	
ParentTableName	The name of the table with which the entity has a foreign key relationship.
XMLName	XML representation of the element name. By default the parent table name is assumed.
Entity/ForeignKeys/ForeignKey/Attribute	
ParentColumnName	Column name of the parent table. Note: To create foreign keys among entities, the data type of parent column must be of type CHAR or VARCHAR.
ColumnName	Column name in this hang-off entity.
Entity/AuditReferences/Reference	
ColumnName	Reference Column name in the audit table.

Note: In entity definition, relationship can be defined under `ForeignKey` elements.

4. The relationship defined under the `ForeignKey` element indicates:

   a. If the foreign table is a Yantra 7x table, for a single record in the foreign table, zero or many records in this hang-off table may exist.

   b. This is a read-only relationship, hence deletion of a record from the foreign table does not result in the deletion of a matching record from this hang-off table.

5. Extend the corresponding API templates (for example, `getOrderDetails` API) by following the instructions in Section 6.4, "Extending API Templates".

> **Note:** The APIs generated by the Yantra 7x for the hang-off tables can be invoked only as a service. For more information see Section 6.4.3, "Configuring Services for Custom and Hang-off APIs" on page 158.

6. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.2.6.2.1 Purging Data from Hang-Off Tables

Currently, the Purge agent moves records to history tables. With the custom or hang-off entities enabled, the Purge agent also deletes records from hang-off tables. However, the data from a hang-off table can be purged only if its parent elements are also purged. If a history table exists, records are added to the history table. The records are deleted from the history table using the History Purge agent.

In order to purge the custom and hang-off entities you need to include the `yfsdbextn.jar` file in the classpath of the agent server. For more information on setting up an agent server, see *Yantra 7x Installation Guide*.

6.3 Generating Audit References for Entities

If the `AuditRequired` flag is enabled in the entity XML, audit records are added to the YFS_AUDIT table. The default for this flag is Y, for item and organization tables. However, the audit flag and audit references can be overridden by the extension XML file.

Only item and organization header-level audit records are inserted in the YFS_AUDIT_HEADER table. The audit references refer to the columns of the entity being audited.

The audits can be generated for the hang-off and custom tables, by modifying the entity table name and audit reference column names.

To generate audit references for entities:

1. Edit the <your_filename>.xml file in the YFS_ HOME/database/entities/extensions directory to enable audit record generation for desired entities. The following example explains the elements to be added to the database schema:

Example 6–7 Sample XML for Creating Audit References

```
<DBSchema>
   <Entities>
      <Entity TableName="YFS_ITEM" AuditRequired="Y" >
         .
         .
         <AuditReferences>
            <Reference ColumnName="ItemId" />
            .
            .
         </AuditReferences>
         .
         .
      </Entity>
   </Entities>
</DBSchema>
```

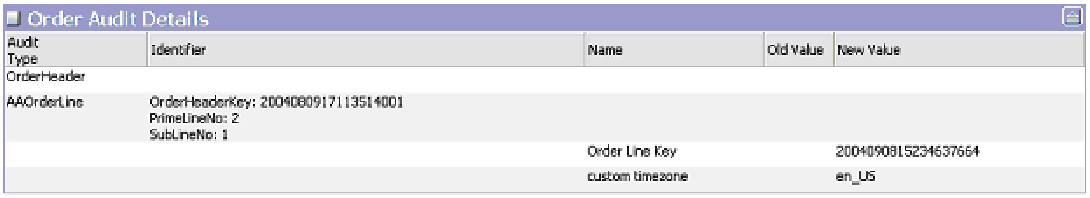
Table 6–7 Generating audits for entities

Attribute	**Description**
Entity	
TableName	The table name to be audited.
AuditRequired	If this flag is set to Y the audit references are entered in the YFS_AUDIT table. Note: This attribute must not be passed when you are creating a hang-off for order related tables. In this case, the audits are automatically inserted into the related order audit tables.
Entity/AuditReferences/Reference	
ColumnName	The column name in this entity which has audit references. This name must be valid for the entity.

2. Create a new Reference tag for each audit reference you want to add.

3. The hang-off of an order table audits can be viewed with the associated order audits.

   For example, the audit entries for `AAOrderLine` which is an hang-off of `YFS_ORDER_HEADER` table can be viewed with the Order Audit Details screen as shown below:



Order Audit Details

Audit Type	Identifier	Name	Old Value	New Value
OrderHeader				
AAOrderLine	OrderHeaderKey: 20040809171135l4001 PrimeLineNo: 2 SubLineNo: 1			
		Order Line Key		20040908152346376664
		custom timezone		en_US

   For more information on the field details of the order audits, see *Yantra 7x Distributed Order Management User Guide*.

4. The audits for custom tables and hang-off tables not related to the Yantra 7x order entities are stored in `YFS_AUDIT` table and can be obtained using `getAuditList` API.

5. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.4 Extending API Templates

Each template-based API delivers different output, depending on the template passed to it. To verify whether an API is template-based or not, see the *Yantra 7x Javadocs*.

If your table modifications impact any APIs, you must extend the templates of those APIs. For information on extending API templates by creating custom templates, see Section 7.2.6, "API Output XML Files" on page 180.

To find out which APIs are impacted by table modifications:

1. Note the `XMLName` attribute of the table being modified in the `entity` tag inside the database entity XML files (which contains the definition of all the Yantra 7x tables). These database entity XML files are located in `<YFS_HOME>/Database/entities` directory.

2. Search for the pattern of that XMLName attribute in the <YFS_HOME>/template/api directory. The search, results in finding exposed and internal APIs impacted by the table modifications or extensions.

For example, consider that you want to extend an attribute in the YFS_CHARGE_CATEGORY table. The XMLName for this table as specified in <YFS_HOME>/Database/entities/omp_tables.xml is ChargeCategory. Now search for the attribute ChargeCategory in <YFS_HOME>/template/api directory to find the APIs impacted by this extension.

6.4.1 Including Extended Attributes in the API Template

The extended attributes appear as a separate <Extn> element under the primary element.

For example, in the default output XML template of the getItemDetails() API, the Item attributes have the following structure:

```
<?xml version="1.0" encoding="UTF-8"?>
  <Item .. Item attributes >
    <PrimaryInformation .... PrimaryInformation attributes />
    <ItemServiceSkillList .. ItemServiceSkillList attributes/>
    <ItemAliasList ... ItemAliasList attributes />
    .
    .
  </Item>
```

After extending the Item header, the getItemDetails() API can output the following XML:

```
<?xml version="1.0" encoding="UTF-8"?>
  <Item .. Item attributes >
    <PrimaryInformation .... PrimaryInformation attributes />
    <Extn ExtnAltQty="2004082010344469490" ..... extnded attributes />
    <YFSPersonInfo .... PersonInfoKey="2004082010344469490" ..... />
    <ItemServiceSkillList .. ItemServiceSkillList attributes/>
    <ItemAliasList ... ItemAliasList attributes />
    .
    .
  </Item>
```

Note: Foreign Key variables for the extended column appear as a PersonInfoKey attribute of the YFSPersonInfo element. The relationship can be validated if the extended column and the PersonInfoKey have the same value.

The extended attribute is retrieved from the XMLName attribute of the <your_filename>.xml file that you edited in the previous sections, when extending a standard table. Place your extended templates in the <YFS_HOME>/template/api/extn directory.

6.4.2 Including Custom and Hang-Off Entities in the API Template

The standard APIs can be extended to provide information from the custom or hang-off tables. A tool specifically provided for generating the template XML's, templateXmlGen.xml is located in the <YFS_HOME>/bin directory.

1. Run the template XML generation tool from your <YFS_HOME> directory by using the following command:

   ```
   ant -Dtable=<TABLE_NAME> -f bin/templateXmlGen.xml
   ```

2. Once the command is executed, the sample XML files are placed in the <YFS_HOME>/extn/sampleXML directory as <TABLE_NAME>_sample.xml.

   For example, consider HF_Order_Header is an hang-off of YFS_Order_Header table. The generated HF_Order_Header_sample.xml is as follows:

   ```
   <HFOrderHeader Createprogid=" " Description=" " DocumentType=" "
   EnterpriseKey=" "OrderHeaderKey=" " OrderName=" " OrderNo=" " .... >
   </HFOrderHeader>
   ```

3. A sample XML for including the above attributes in a standard API can be generated by passing the YFS table that has relationship with the hang-off table you are interested.

   For example, assume HF_Order_Header is a hang-off table with a relationship to the YFS_Order_Header table. The XML template generated by the tool when TABLE_NAME=YFS_Order_Header is passed:

```
<Order>
   <OrderLines>
      <OrderLine ........>
         <Extn extended attributes >
            <HFOrderHeaderList>
               <HFOrderHeader Createprogid=" " Description=" " ......... >
               </HFOrderHeader>
            </HFOrderHeaderList>
         </Extn>
      </OrderLine>
   </OrderLines>
</Order>
```

Note: You can modify the attributes only within your custom or hang-off element.

You can prune this sample XML to include your custom attributes in an API template, such as getOrderDetails output template. However, you cannot modify any of the YFS elements or attributes.

Note: The sample XMLs are also automatically generated when you create the database extension jar file, and are posted in the <YFS_HOME>/extn/sampleXML directory. However, if you need to create a sample template as described in Step 3, you must run the template XML generation tool separately by specifying the corresponding YFS table name.

4. An hang-off table can be deleted by passing an Operation attribute in the change or modify APIs. For example, HF_Order_Header element can be deleted in a changeOrder API as:

```
<Order>
   <OrderLines>
      <OrderLine ........>
         <Extn extended attributes >
            <HFOrderHeaderList>
               <HFOrderHeader Operation="Delete" Createprogid=" " ....... >
```

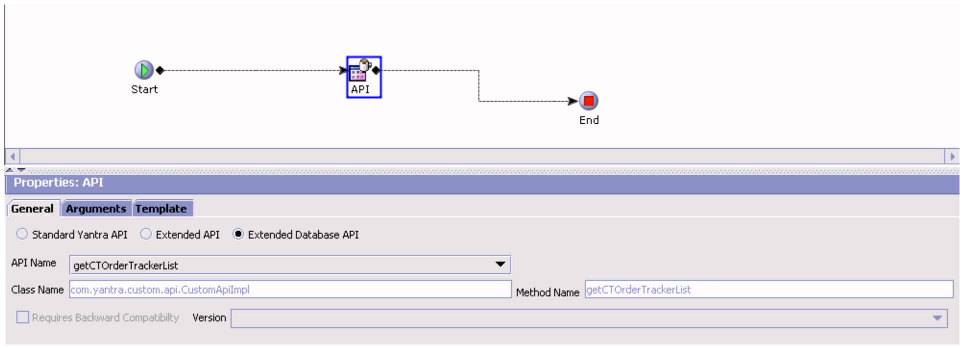
```
                    </HFOrderHeader>
                 </HFOrderHeaderList>
              </Extn>
           </OrderLine>
        </OrderLines>
</Order>
```

The operations such as **Create** and **Modify** are executed by default. If an entry for that element exists, the API modifies the entries with the recent value. In the case where that element does not exist it creates a new entry.

5. Follow the instructions in Section 6.5, "Incorporating Database Extensibility Modifications" to implement your modifications.

6.4.3 Configuring Services for Custom and Hang-off APIs

The APIs generated for custom or hang-off entities by the Yantra 7x can be invoked only as a service. The service configuration user interface has to be enabled to configure these APIs. For more information on creating a service definition see the *Yantra 7x Platform Configuration Guide*.



Standard Yantra API [✓ Extended Database API] Extended API

API Name: getCTOrderTrackerList

Class Name: com.yantra.custom.api.CustomApiImpl

Method Name: getCTOrderTrackerList

Requires Backward Compatibilty

Version:

For including custom APIs you can create a service definition as shown in the figure. The configuration fields are explained in Table 6–8.

Table 6–8 API Configuration Properties

Field Name	Description
General Tab	
Standard Yantra API	Select this option if a standard Yantra 7x API is to be invoked. If selected, a Standard Yantra 7x API Name drop down list is displayed. For each API, the Class Name and Method Name are provided and cannot be edited.
Extended API	Select this option if a custom java code is to be invoked.
Extended Database API	Select this option if the service invokes a custom or hang-off API. If selected, a custom API Name drop-down list is displayed. For each API, the Class Name and Method Name are provided and cannot be edited.
API Name	Select the custom API to be invoked.
Class Name	Specifies the class to be called. This field cannot be edited.
Method Name	Specifies the method to be called. This field cannot be edited.
Requires Backward Compatibility	This field is not supported in this release.
Version	This drop-down list specifies the version supported for backward compatibility. This cannot be edited as it is not supported in this release.
Arguments Tab	
Argument Name	You can pass name/value pairs to the API by entering the values in the Arguments Tab. In order for custom APIs to access custom values, the API should implement the interface `com.yantra.interop.japi.YIFCustomApi`. If entered, these name/value pairs are passed to the `YIFCustomApi` interface as a properties object.
Argument Value	Enter the argument value to be passed.
Template Tab	

Table 6–8 API Configuration Properties

Field Name	Description
XML Template	When the custom APIs are invoked, you can specify an output template to be used by the API. Select this option to construct a new XML file to be used for the API output. Enter the template root element name and click OK. You can then construct the XML.
File Name	Select this option to enter the filename of an existing XML file to be used as the API output template. This file should also exist in your CLASSPATH.

6.5 Incorporating Database Extensibility Modifications

After making all of your required database extensibility changes, you need to use the ANT utility to generate a `yfsdbextn.jar` file and then use that JAR file to generate a `yantra.ear` file.

To incorporate database extensibility modifications:

1. Place extension files into the `<YFS_ HOME>/Database/Entities/Extensions` directory, if they are not already there.
2. Execute the `dbverify` tool from `<YFS_HOME>/bin/dbverify.sh` (`.cmd` in Windows) to generate the SQL scripts required for your custom and hang-off tables.

> **Note:** For more information on using `dbverify` see *Yantra 7x Installation Guide*.

3. Set or export the following `YFS_HOME` environment variable to the Yantra 7x installation directory based on your operating system (`set` for Windows and `export` for UNIX or LINUX operating systems):

   ```
   YFS_HOME=<path_to_your_installation_directory>
   ```

4. Set or export the following `ANT_OPTS` environment variable based on your operating system:

a. For UNIX and Linux:

```
export ANT_OPTS='-Xmx768m -Xms768m -XX:MaxPermSize=128m'
```

b. For Windows:

```
set ANT_OPTS=-Xmx768m -Xms768m -XX:MaxPermSize=128m
```

> **Note:** For IBM-AIX, or any envionrment using the IBM JVM, the parameter `-XX:MaxPermSize=128m` should not be used. Use the command:
>
> `export ANT_OPTS='-Xmx768m -Xms768m'.`

5. From the <YFS_HOME> directory, create the database JAR file using the following command applicable for your application server:
   - For WebLogic, run `ant -f bin/buildWLS.xml db-extn`
   - For WebSphere, run `ant -f bin/buildWS.xml db-extn`

   This creates a `yfsdbextn.jar` file in the `<YFS_HOME>/extn/` directory.

> **Note:** If you are running Yantra 7x on SQL Server, create the database JAR file using the following command:
>
> For WebLogic, run
>
> ```
> ant -f bin/buildWLS.xml db-extn-sqlserver
> ```
>
> For WebSphere, run
>
> ```
> ant -f bin/buildWS.xml db-extn-sqlserver
> ```

6. Place any extended API templates in the `<YFS_HOME>/template/api/extn` directory.
7. From the <YFS_HOME> directory, create the EAR file using the following command applicable for your application server:
   - For WebLogic, run `ant -f bin/buildWLS.xml create-ear`
   - For WebSphere, run `ant -f bin/buildWS.xml create-ear`

   Instead of creating the EAR after extending the database, you can choose to update the EJBs and EAR. For more information on the various targets for the building the EAR see the *Yantra 7x Installation Guide*.

8. Modify the `agentserver.sh` script (or `.cmd` file on Windows) to include the `<YFS_HOME>/extn/yfsdbextn.jar` file in the beginning the CLASSPATH environment variable. For more details about this script, see the *Yantra 7x Installation Guide*.
9. Deploy the new `yantra.ear` file according to your application server documentation.

If you want to include your custom or extended entity XMLs into the ERD descriptions, see Section 6.7, "Merging Documentation Folders" for more information on merging.

6.6 Custom Code Requirements to Avoid Deadlocks

Deadlock refers to a specific condition in a database, when two processes are waiting for the other process to release a resource. For example when one client application holds a lock on a table and attempts to obtain the lock on a second table that is held by another client application, this may lead to a deadlock if the other application attempts to obtain the lock that is held by the first application.

To circumvent the deadlock problem, Yantra recommends that you need to sort the information to be accessed in a certain order before grabbing locks. This is applicable to situations where you need to grab multiple inventory item locks within a single transaction boundary. However, you do not need to sort if you call the APIs to process single items per transaction commit.

Reading Uncommitted data in DB2 Database

In DB2, when you select a record from a table, a read lock is obtained on the record. If the record being selected has been updated but not committed, the thread will wait until it commits the changes. Alternatively you could read the record with Uncommitted Read (UR) in which case the latest value that has been updated is provided to the user.

You can read uncommitted data from any list API by enabling the ReadUnCommitted attribute to Y in its input XML. As a result the locking scenario is circumvented in DB2 database.

This behavior is different from Oracle, hence if you are writing custom code on DB2 you should understand this behavior to avoid lock escalations.

6.7 Merging Documentation Folders

You can merge the documenation folder of selective PCAs with the Yantra 7x documentation folder to have a single source of information across applications. You can also use the information discussed in this section to merge your extension XML files into the ERDs and javadocs of Yantra 7x.

This merged structure is based on a new documentation source directory availble in your product CD:

- `<YFS_HOME>/documentation/source/foundation/online_help`
- `<YFS_HOME>/documentation/source/foundation/xmlstruct`
- `<YFS_HOME>/documentation/source/foundation/api_javadocs`
- `<YFS_HOME>/documentation/source/foundation/core_javadocs`
- `<YFS_HOME>/documentation/source/foundation/code_examples`
- `<YFS_HOME>/documentation/source/<PCACode>/online_help`
- `<YFS_HOME>/documentation/source/<PCACode>/xmlstruct`
- `<YFS_HOME>/documentation/source/<PCACode>/api_javadocs`
- `<YFS_HOME>/documentation/source/<PCACode>/code_examples`

Note: Each installed PCA is maintained in its own directory.

An ant script, `mergedocs.xml`, is provided to merge the foundation and any PCA documents in the `<YFS_HOME>/documentation/source` directory. To delete all the existing files and regenerate everything, you need to run the following default target from your `<YFS_HOME>/documentation/source` directory:

```
ant -f mergedocs.xml docmerge
```

To get a list of targets, run:

```
ant -f mergedocs.xml -projecthelp
```

However, before running the ANT command, set the JAVA_HOME environment variable to the correct java version. Refer to the *Yantra 7x Installation Guide* for the versions of ANT and JDK supported for your operating system.

7 Programming Transactions

You can extend Yantra 7x programmatically both to enhance the functionality of your implementation of Yantra 7x and to integrate with external systems.

This chapter describes how to achieve extensibility programmatically, using these mechanisms. For guidelines on using Yantra 7x's naming conventions in your extensions, see Appendix A, "Special Characters Reference". Transaction processing mechanisms in Yantra 7x can be classified into two basic categories:

- Synchronous (on demand) or asynchronous (message driven) services
- Time-triggered transactions

7.1 Services

In Yantra 7x terminology, a service is core business logic component that is stateless and does not contain presentation logic. Each service (either provided out-of-the-box by Yantra 7x or those that are custom created using the Yantra 7x Service Definition Framework) represents a logical unit of processing that can be independently performed without any loss of data integrity and within one transaction boundary. Using the Yantra 7x Service Definition Framework, one or more services can be aggregated into larger composite services which can in turn be used to create other services. This provides a way to build small reusable components that can be linked together to provide complex business processing.

All services within the Yantra 7x Service Definition Framework can be invoked bi-directionally—either through internal Yantra 7x business processes or through external systems. Services deployed in the Yantra 7x Service Definition Framework are stateless, each having their own transaction commitment boundaries.

A service can be invoked by Yantra 7x by associating the service with an event through an action. You can use a standard interoperability event handler or implement your own custom event handler. You can then configure Yantra 7x to invoke the event handlers when certain events are raised and conditions are met. For more information about configuring events, conditions, and actions, see the *Yantra 7x Platform Configuration Guide*.

Yantra 7x provides several user exits to extend business logic. User exits invoked from within transactions can be associated to a service when configuring transactions. Note that templates are not supported for user exits. For more information on configuring user exits, see the *Yantra 7x Platform Configuration Guide*.

Once services have been configured, they can also be invoked programmatically by a client.

The service invocation configuration depends on the location of the client invoking the service in relation to the location of the Yantra 7x installation, as described in the following situations:

- If the invoking client ***does not*** have Yantra 7x installed - configure for remote invocation.
- If the invoking client ***does*** have Yantra 7x installed - configure for local invocation.

7.1.1 Method of Invocation

Depending upon the mode of invocation, services can be classified into two major categories:

- Synchronously invoked (on demand) - These services can perform all their processing and return the result in single call.
- Asynchronous (message driven)

Synchronously invoked

These services can perform all their processing and return the result in a single call, on demand.

Asynchronous

These services automatically perform all their processing whenever triggered by a message from an external system or from within Yantra 7x. The trigger could be in the form of a file, a database record or a message in a message queue depending upon the mode of integration. These services do not return any value and are purely used for background processing such as sending out emails or automatically receiving updates from or sending updates to an external system.

In general, asynchronous services provide a lower cost to performance ratio than synchronous services and should be preferred wherever possible. However, asynchronous services queue up and process messages in the order they are received. The time to process a certain transaction after it's been queued can vary widely depending upon peaks in your processing cycle and a host of other factors. Therefore, they are not suitable for certain specific scenarios where an SLA (service level agreement) requires that a transaction has to be processed within a specified short time frame. However, these scenarios are rare for most businesses and business processes and asynchronous processing is efficient enough for the majority of transactions at a significantly lower cost while still providing a high service level.

7.1.2 The Business Function Library

A service typically consists of one or more messaging components (or components that define how messages to and from the service are handled), one or more utility components (such as email or alert handlers) and one or more business processing components. For information about the utility and messaging components available for services defined in Yantra 7x, see the *Yantra 7x Platform Configuration Guide*. This section describes how to work with service, customize and extending the business processing components, and make them usable in services.

Yantra 7x ships with an extensive out-of-the-box business function library. Each function in this library is known as a standard API. For detailed information on the input, output, and behavior of each standard API, see the *Yantra 7x Javadocs*.

This chapter discusses common programming, customization and extensibility patterns that are applicable to large portions of the Yantra 7x business function library.

You can also write your own business functions and use them in services. Each such function is known as an extended API.

While standard Yantra 7x APIs can be aggregated and linked together to form more complex services, for most cases the API provides all the functionality that is required for a business transaction and is therefore not required to be linked together with other components or APIs. To ease working with this most common scenario, all of the standard APIs are automatically available for synchronous invocation without the need to model each one as a service using the Yantra 7x Service Definition Framework. You can think of these APIs as "automatically defined" synchronous services. However, extended APIs and asynchronous invocation of these APIs requires that you explicitly model them as services first using the Yantra 7x Service Definition Framework.

7.1.3 Message Size

If a database table reaches its maximum size and a send( ) function attempts to insert a message in the table, the Yantra 7x Service Definition Framework throws an exception. See the size limitations noted in the Table 7–1:

Table 7–1 Message Size for Asychronous Transports

Mechanism	Data Type	Size
Database (Oracle)	LONG	2 GB
Database (SQL Server)	TEXT	4 GB
JMS Queue	TextMessage	4 GB
MSMQ Queue	Message	2 GB

7.1.4 Exception Handling

The Alert Console displays all exceptions logged by the Yantra 7x Service Definition Framework. It also enables you to reprocess exceptions that occur in transactions configured to be asynchronous. When using a database or queue, calls are asynchronous.

The Yantra 7x Service Definition Framework uses the log4j utility for logging exception information. The log4j utility writes both trace and debug information to a log file. You can configure the logger to send different categories of messages to different destinations. Categories are organized hierarchically, which permits inheritance. Each category can be configured with a priority indicating a severity level. If a category is not configured with a priority, it inherits the priority of its closest ancestor with an assigned priority.

All exceptions that occur during an API call or during use of an event handler are logged.

7.2 APIs

You can use both standard APIs that are supplied by Yantra 7x and any extended (custom) APIs that you have created. Yantra 7x provides standard APIs to handle the most common business scenarios. For example, there are APIs that create an order, allocate an order, and report shipment confirmation. Standard APIs can be invoked directly or aggregated into more complex services.

7.2.1 API Behavior

Each API takes an XML document as input and returns another XML document as output. The `YFSEnvironment` input parameter represents a runtime state under which this API is being invoked. It is used by Yantra 7x for the following tasks:

- Security audits and logging
- Transaction control
- Achieving invocation-specific API behavior

For an asynchronous service, Yantra 7x automatically creates an instance of this object and passes it to each API part of the service. To programmatically invoke a synchronous service, you have to create an instance of this environment by calling the `createEnvironment()` API.

Note: In general, input to APIs should not contain any "BLANK" elements or attributes. A blank element can be defined as an element containing all the attributes with blank values. If a blank element is passed, the API behavior is unpredictable.

All APIs (whether standard or extended) have the same signature with respect to input parameters and return values. This signature is of the form

```
org.w3c.dom.Document APIName(YFSEnvironment env, org.w3c.dom.Document input);
```

In order for custom APIs to access custom values, the API should implement the `com.yantra.interop.japi.YIFCustomApi` interface. If entered, these name/value pairs are passed to the Custom API as a Properties object. See the *Yantra 7x Javadocs* for more information about the `com.yantra.interop.japi.YIFCustomApi` interface.

7.2.2 Types of Yantra 7x APIs

An API processes records based on key attribute values, processing records with a primary key first. If the primary key is not found, the API then searches for the logical keys and then processes those records. For example, the `ChangeOrder()` API first looks for the OrderHeaderKey key attribute and then for the combination of the OrderNo and EnterpriseCode key attributes.

Yantra 7x APIs can be classified as one of the following types:

- Select APIs
- List APIs
- Update APIs

Select APIs

Typically prefixed with `get`, select APIs return one record for an entity (for example, the `getOrderDetails()` API returns the details of one order). They do not update the database.

Since select APIs return only one record, they require unique key attributes to be passed in the input XML. If a unique key attribute is not passed in the input XML, the API uses blanks for those attributes in the criteria to select the record. There can be more than one unique key combination, and in that combination you must pass any one of the multiple combinations.

For example, an order is uniquely identified either by the `OrderHeaderKey` key attribute or by a combination of the `OrderNo` and `EnterpriseCode` attributes. So, when calling the `getOrderDetails()` API, you must pass either the `OrderHeaderKey` attribute or the combination of the `OrderNo`, `EnterpriseCode` and `DocumentType` key attributes. If you pass only `OrderNo`, the API returns the order that matches `OrderNo` and has a blank enterprise code. In order to identify the unique key combinations for each API, see the *Yantra 7x Javadocs*.

However, `getOrderDetails()` API uses a select for update on YFS_ ORDER_HEADER so that its internal processes such as user exits, events, etc., have a lock on the order elements while the thread working on it is active. This enables to maintain a transaction cache until the final commit. Hence, you need to avoid using nested transactions to overcome the locking mechanism by performing:

1. Commit or rollback only once for all event of the order. Keep in mind, that all the events are set to rollback if one of them fails.
2. Select the order for each event and process. Also keep in mind, that if age of the orders having multiple events are higher it could have an impact on the performance.

List APIs

Typically prefixed with `get`, list APIs return a list of records for an entity that match the criteria specified through the input XML (for example, the `getOrderList()` API returns a list of orders). For more information on specifying search criteria, see Section 7.2.5, "Forming Queries in the Input XML of List APIs" on page 178. If any attribute in the input XML has a blank value, it is ignored. List APIs do not update the database.

Update APIs

Update APIs insert new records into the database. They also modify or delete existing records in the database. Update APIs that modify or delete existing records use the same logic as select APIs to identify which record to update. If no record is found, update APIs throw an exception.

7.2.3 Date-Time Handling

Yantra 7x handles values for both date-time and date. Date-time refers to values that contains a date and time component, where Date refers to values that contain only a date component.

Date values can be made nullable by specifying `Nullable="true"` in the entity XML. Thereby the Date values in the table is blanked out. The expected behavior of a date column is marked as Y is described in Table 7–2.

Table 7–2   Nullable Date Behavior

Action	Description
Insert	When the field is not populated in a database object (is null), the database infrastructure automatically inserts a null value into the column in the database.
Update	When the application nulls out a date, it sets the corresponding field to null value in the database.
Select or List	When a column is defined as nullable and the date from the database is returned as null, it is automatically nulled out. So, the corresponding get method returns a null.
Search by date	Can pass null value as needed when specified to do so.

Note: If you have specified the date value as 01/01/2400 in versions prior to Release 7.5 SP1, those values are now treated as null. The dates with special significance are:

- Null date - 01/01/2400
- High date - 01/01/2500
- Low date - 01/01/1900

7.2.3.1 Specifying Time Zones

Dates and times are time zone aware. Time zones are relative to the Coordinated Universal Time (UTC).

For example, if an order is created on the system on 06/15/2003 at 16:00:00 in New York, (USA/New York time zone) a user in Chicago who examines that the order will see that the order creation date-time as 06/15/2003 at 15:00:00, (USA/Chicago time zone).

For a time published from Boston that is -5:00 hours from UTC, the string literal "-5:00" is appended to the current date-time attribute published from Yantra 7x APIs. The input "2003-04-23T14:15:32-05:00" gives the date, time, and time zone reference for a transaction.

The Yantra 7x time zone is specified by the `yfs.install.localecode` parameter in the `yfs.properties` file (for example, `yfs.install.localecode=`EN_US_EST).

7.2.3.2 Using Date-Time Syntax

All APIs, user exits, and events that use date-time fields have a uniform syntax (a combination of the basic and extended formats of the ISO 8601 specification). This syntax is the expected format for all input as well as output. For details on the values this format uses, see Section B.4.8, "getDateValue" on page 265.

Date Only Syntax

YYYY-MM-DD

Date-Time Syntax

YYYY-MM-DDTHH**:**MI:SS±HH:MM

Values in bold are placeholders for literals. For example, the format for March 5, 2003, 11:30:59 p.m. is 2003-03-05T23:30:59.

Syntax Parameters

YYYY - Required. Four-digit year. Used in both date-time and date fields.

MM - Required. Two-digit month. Used in both date-time and date fields.

DD - Required. Two-digit day of the month. Used in both date-time and date fields.

T - Required. The literal value T, which separates the date and time component. Used only in date-time fields.

HH - Required. Two-digit hour of the day. For example, 11 p.m. is displayed as 23:00:00. Used only in date-time fields.

MI - Required. Two-digit minutes of the hour. For example, 59 minutes is displayed as 00:59:00. Used only in date-time fields.

SS - Required. Two-digit seconds of the minute. For example, 21 seconds is displayed as 00:00:21. Used only in date-time fields.

±**HH:MI** - Optional. Two-digit hours and minutes, separated by a colon (":"). Indicates how many hours from UTC, using - to indicate earlier than UTC and + to indicate later than UTC. If this value is not passed in input, the time zone of the Yantra 7x is assumed.

7.2.4 API Input XML Files

Yantra 7x APIs retrieve data using input XML files that define which records need to be selected or used. When extending the database to include additional fields, you need to also extend the input XML to populate those fields.

Caution: Do not pass a blank element (an element containing all the attributes with blank values) to an API. Also, do not pass attributes that have leading or trailing spaces. The result of either situation is not predictable.

Example 7–1 shows an input XML modification.

Example 7–1 Example of Input XML Modification

The following example modifies the input XML file for the YFS_createOrder() API:

```
<Orders AuthenticationKey="">
   <Order EnterpriseCode="DEFAULT" OrderNo="DB04" OrderName="DB04"
OrderDate="20010803" OrderType="Phone" PriorityCode="1" PriorityNumber="1"
ReqDeliveryDate="20010810" ReqCancelDate="" ReqShipDate="20010810"
SCAC="FEDEX" CarrierServiceCode="Express Saver Pak" CarrierAccountNo="112255"
NotifyAfterShipmentFlag="N" NotificationType="FAX" NotificationReference=""
ShipCompleteFlag="N" EnteredBy="Iain " ChargeActualFreightFlag="Y"
```

```
CustomerEMailID="ent@yantra.com" AORFlag="Y" SearchCriteria1="Search"
SearchCriteria2="Search Again" >
      <OrderLines>
         <OrderLine PrimeLineNo="1" SubLineNo="1" OrderedQty="1"
ReqDeliveryDate="20010810" ReqCancelDate="20010810" ReqShipDate="20010810"
SCAC="FEDEX" CarrierServiceCode="Express Saver Pak" PickableFlag="Y"
HoldFlag="N" CustomerPONo="11" >
            <Extn ExtnAcmeLineType="Type1"/>
            <Item ItemID="ITEM1" ProductClass="A" ItemWeight="1"
ItemDesc="paintball gun" ItemShortDesc="pball gun" UnitOfMeasure="EACH"
CustomerItem="Spectra Flex" CustomerItemDesc="GEGRG" SupplierItem="Spectra
Flex @ supplier" SupplierItemDesc="Spectra Flex Desc @ supplier"
UnitCost="15.99"  CountryOfOrigin="CA"/>
            <PersonInfoShipTo Title="Mr" FirstName="Quigley" MiddleName="Al"
LastName="Johns" Company="Company" JobTitle="Project Clert"
AddressLine1="Address Line 1 -3 Main Street" AddressLine2="ShipTo Address
line 2" AddressLine3="ShipTo Address line 3" AddressLine4="ShipTo Address
line 4" AddressLine5="ShipTo Address line 5" AddressLine6="ShipTo Address
line 6" City="Acton" State="MA" ZipCode="01720" Country="US"
DayPhone="978-635-9242" EveningPhone="978-635-9252"
MobilePhone="978-888-8888" Beeper="" OtherPhone="other555-5555" DayFaxNo=""
EveningFaxNo="" EMailID="jquigley@maine.com"
AlternateEmailID="hfournier@ontario.com" ShipToID=""/>
         </OrderLine>
         <NumberOfOrderLines/>
      </OrderLines>
      <PersonInfoShipTo Title="MR" FirstName="s" MiddleName="X" LastName="T"
Suffix="T" Department="T" Company="SD" JobTitle="SS" AddressLine1="SS"
AddressLine2="SS" AddressLine3="SS" AddressLine4="SS" AddressLine5="SS"
AddressLine6="SS" City="REDWOOD" State="CA" ZipCode="01852" Country="USA"
DayPhone="3456789234" EveningPhone="3456789234" MobilePhone=""
EveningFaxNo="SS" />
       <PersonInfoBillTo Title="mj" FirstName="m" MiddleName="JJ"
LastName="KK" Suffix="lll" Department="l" Company="kj" JobTitle="k"
AddressLine1="HJHKK" AddressLine2="HJKHK" AddressLine3="HKHJ" AddressLine4=""
AddressLine5="" AddressLine6="" City="UUU" State="IUI" ZipCode="78787"
Country="USA"  />
  </Order>
  <NumberOfOrders/>
</Orders>
```

Important: In order for the factory setup scripts to operate properly, when you add a column to a database table, be sure that the column is not null and that it has a default value. If you need to make the column nullable, the default value must not be present.

Also, when you are specifying XML Name and XML Group, keep in mind that the values should be valid Document Object Model (DOM) strings. (The values must not contain spaces or special characters that are not supported by the DOM specification.)

The following example XML file adds a column to the YFS_ORDER_LINE table:

```
<?xml version="1.0" encoding="UTF-8" ?>
<DBSchema>
  <Entities>
    <Entity TableName="YFS_ORDER_LINE">
      <Attributes>
        <Attribute ColumnName="EXTN_ACME_LINE_TYPE" DecimalDigits="" Default
         Value="' '" Size="10" Type="CHAR" XMLGroup="Extn"
         XMLName="ExtnAcmeLineType"/>
      </Attributes>
    </Entity>
  </Entities>
</DBSchema>
```

7.2.5 Forming Queries in the Input XML of List APIs

The input XML of list APIs enable queries on conditions such as *starts with*, *contains*, *is greater than*, and so forth. Example 7–2 shows a fragment of the input XML that returns a list of items at a specific shipping node that fall within a specific weight range and to be shipped during a specific date range.

Example 7–2 getOrderList API Input XML with Query Type Values

```
<Order ReqShipDateQryType="DATERANGE" FromReqShipDate="20010113"
ToReqShipDate="20030113" /Order>
<OrderLine ShipNode="Atlantic" /OrderLine>
<Item ItemWeightQryType="BETWEEN" FromItemWeight="2" ToItemWeight="20"/>
```

```
<OrderRelease CarrierServiceCodeQryType="FLIKE" CarrierServiceCode="Priority" />
```

To form queries:

1. Edit the custom input XML of any list API, and append `QryType` to any attribute you want to query on. Any attribute that is not appended with `QryType` can also be queried on, using the default query type value EQ, as shown for `ShipNode` in Example 7–2.
2. For attributes appended with `QryType`, specify a query type value from Table 7–3. This is case sensitive.
3. Specify the values that are applicable to your search criteria.

The values for the `QryType` attributes vary depending on the datatype of the field. Table 7–3 lists the supported query type values for each datatype.

Table 7–3 Query Type Values Used by List APIs

Field DataType	Supported Query Type Values
Char/VarChar2	• EQ - Equal to • FLIKE - Starts with • LIKE - Contains • GT - Greater than • LT - Less than
Number	• BETWEEN - Range of values • EQ - Equal to • GE - Greater than or equal to • GT - Greater than • LE - Less than or equal to • LT - Less than • NE - Not equal to

Table 7–3 Query Type Values Used by List APIs

Field DataType	Supported Query Type Values
Date	• DATERANGE - Range of dates • EQ - Equals • GE - Greater than or equal to • GT - Greater than • LE - Less than or equal to • LT - Less than • NE - Not equal to
Date-Time	• BETWEEN - Range of dates • EQ - Equals • GE - Greater than or equal to • GT - Greater than • LE - Less than or equal to • LT - Less than • NE - Not equal to
Null	• ISNULL - Return records that are null. • NOTNULL - Return records that are not null. **Note:** These two query types are used when the column or attribute is set to Nullable in the entity XML.

7.2.6 API Output XML Files

Yantra 7x APIs return data using two types of output XML files that define which elements and attributes are required by an API.

- Output XML File - Defines the outer limits of the data an API can return. Do **not** modify output XML files.
- Template XML File - Defines the data returned by an API for the record specified in the input XML file and restricts the amount of data to a subset of the output XML. You can modify this file to incorporate a subset of the attributes and elements from the output XML.

7.2.7 Output XML Templates

Many Yantra 7x APIs use a corresponding output template. The output template is in XML format and is read in by an API in order to determine the elements and attributes for which it should return. The standard output template defines the elements and attributes returned for any specific API. (To see the entire range of possible values an API can return, see its output XML in *Yantra 7x Javadocs*.) The standard template can be a subset of the entire range of values returned, as determined by the output XML in the *Yantra 7x Javadocs*.

Note: Ensure that when adding elements and attributes to the output template, use ***only*** those that are documented in the *Yantra 7x Javadocs*. While the APIs can output additional elements and attributes, only those that are documented in the *Yantra 7x Javadocs* are supported.

For example, the standard output template of the `getOrderList()` API returns the header-level information of an order and the standard output template of the `getOrderDetails()` API returns in depth information about an order.

Besides the standard output XML template, you can create custom output templates for APIs to use for your own business requirements, such as different output for different document types.

Document Types

If you use a variety of business-related document types such as orders, planned orders, purchase orders, and returns, you can use custom templates that enable an API to return the values that pertain to each unique document type.

For example, you can use one template with the `getOrderDetails()` API to return information about Planned Orders and another template for the `getOrderDetails()` API to return different information about Orders.

Standard Output Template Behavior

The set of values that the standard output template returns covers a variety of business scenarios. With such a large range of possibilities, an API using the standard output template may return much more data than you need for your business purposes (and take much more time to process than you prefer).

If you want to customize the information returned by an API, you can do so by creating and using a custom template, using our guidelines and procedures.

7.2.8 Extending an Output XML Template

Many APIs use an output XML template to define what is returned. Each API has its own XML template, which is picked up from the `<YFS_HOME>/template/api/<apiName>.xml` file. The files in this directory are part of the product and should not be altered. However, these templates can be overridden by implementing template extensions.

To extend a template file:

1. Copy the template `<YFS_HOME>/template/api/<apiName>.xml` file, to the `<YFS_HOME>/template/api/extn/` directory, keeping the same file name.
2. Modify the copied file, as needed. To extend a template file, add the `Extn` tag under the entity tag. For example, if you have added a column `EXTN_COLOR` to `YFS_ITEM` table, you also must add the tag `Extn` under the tag `Item` in the `getItemDetails.xml` file as follows:

```
<Item ItemKey=""....>
  <PrimaryInfo MasterCatalogID="" .../>
  ...
  <Extn ExtnColor=""/>
</Item>
```

7.2.9 Best Practices for Creating Custom Output XML Templates

Whenever you call an API, you need to pass your own customized template, not the sample provided by Yantra 7x. This section helps guide your decision-making processes in planning how to design custom output templates.

Gather Information Relevant to the API

Custom output templates provide the flexibility to return whatever data you wish, so it is important to understand that it is possible to modify an output template in such a way that it returns information that is not quite relevant to the API.

For example, it is possible to modify the output template of the `getOrderList()` API in such a way that it returns detailed information about an order rather than just header-level information. You should modify an output template in such a way that it takes advantage of the unique aspects of its corresponding API. Keeping each template unique to its API prevents any ambiguity about which API to use in any specific situation.

Gather Information Relevant to Your Business Needs

Since the standard output template returns all attributes, even for empty elements in the template, you might want to tailor information to your specific business needs. If you don't exclude the attributes you don't require, you receive more data than you need and the extra data may slow the performance of the API.

For example, if you are using the `getOrderDetails()`API to return only `OrderLine` attributes but your custom output template includes `Schedule` attributes, all attributes for `OrderLine` and `Schedule` are returned.

Choose an Appropriate Template Mechanism

In general, the format of any template should follow the same structure as the standard template. Keeping this general rule in mind, there are two ways to customize the standard template, differentiated by the amount of data they return and how they can be called:

- Static templates
- Dynamic templates

Static templates provide the ability to add new elements but not remove any of the defaults. A static template is pervasive, as it is picked up by default by an API whenever that API is invoked.

Dynamic templates provide the ability to add new elements and remove any of the default elements from the standard template. A dynamic template is an instance, as it is picked up only for a specific API call, such as when configured to do so during user interface extensibility.

A comparison of the differences between the two types of template mechanisms is summarized in Table 7–4.

Table 7–4 Comparison of API Output Template Mechanisms

Template Types	Allowed XML Elements	Behavior
Static Template	Default template elements cannot be removed. New elements can be added.	Pervasive. Picked up by default by an API.
Dynamic Template	Default template elements can be removed. New elements can be added.	Instance. Picked for a specific API call, as configured during user interface extensibility.

Choose which of these mechanisms best fits your business needs and adhere to it.

Remember that when you define a dynamic template, all possible values are returned. In order to return the smallest amount of data for an element, when you are pruning away elements you don't need, you need to include its parent with at least one of its attributes.

If you leave an element blank or include unwanted attributes in the parent element all values are returned, as illustrated in Example 7–3.

Example 7–3 A Poorly Pruned Dynamic Template

```
<!-- getOrderDetails Output XML -->
<Order>
   <OrderLines>
   <!--1 or more order line-->
      <OrderLine>
         <Item CountryOfOrigin="" ItemDesc="" ItemID=""/>
         <Schedules>
         <Schedule Attr1 ...... />
         </Schedules>
      </OrderLine>
   </OrderLines>
<Order>
```

Since Example 7–3 specifies all `OrderLine` attributes as well as a few `Item` and `Schedule` attributes, the API returns values similar to those in Example 7–4.

Example 7–4 Values Returned by a Poorly Pruned Dynamic Template

```
<OrderLine AllocationDate="03/28/2002" CarrierAccountNo="112233"
```

```
CarrierServiceCode="Next Day Air" Createprogid="YantraTester"
Createts="03/28/2002" Createuserid="YantraTester" CustomerLinePONo="999"
CustomerPONo="111" DeliveryCode="AIR" DepartmentCode="Clothing" ExtendedFlag=""
ExternalReference1="" ExternalReference2="" ExternalReference3=""
ExternalReference4="" ExternalReference5="" FreightTerms="Buyer" HoldFlag="N"
HoldReasonCode="HoldReas" ImportLicenseExpDate="08/08/2002"
ImportLicenseNo="225588" InternalReference1="" InternalReference2=""
InternalReference3="" InternalReference4="" InternalReference5="" KitCode=""
LineClass="" LineSeqNo="1.1" LineType="Single" Lockid="1" MarkForKey=""
Modifyprogid="YantraTester" Modifyts="03/28/2002" Modifyuserid="YantraTester"
OrderClass="NEW" OrderHeaderKey="200203281036245174"
OrderLineKey="200203281036245175" OrderedQty="5.00" OrigOrderLineKey=""
OriginalOrderedQty="5.00" OtherCharges="0.00" OtherChargesPerLine="0.00"
OtherChargesPerUnit="0.00" PackListType="Bill" PersonalizeCode="PersCode"
PersonalizeFlag="" PickableFlag="Y" PricingDate="01/01/2500" PrimeLineNo="1"
Purpose="Purpose" ReceivingNode="B1N1" ReqCancelDate="01/01/2500"
ReqDeliveryDate="04/04/2002" ReqShipDate="03/30/2002" ReservationID=""
ReservationPool="" SCAC="UPS" ShipNode="E1N1" ShipToID="" ShipToKey=""
ShipTogetherNo="Y" SplitQty="0.00" SubLineNo="1" TotalDiscountAmount="0.00"
TotalOtherCharges="0.00">
<Item CountryOfOrigin="" ItemDesc="" ItemID=""/>
<Schedules>
<Schedule ExpectedDeliveryDate="" ExpectedShipmentDate="" TagNumber=""
OrderHeaderKey="" OrderLineKey="" OrderLineScheduleKey="" ScheduleNo=""
ShipByDate="" Quantity=""  PromisedApptStartDate="" PromisedApptEndDate=""/>
</Schedules>
</OrderLine>
</OrderLines>
</Order>
```

In Example 7–5, the dynamic template has been trimmed down, keeping in mind the following guidelines:

- The structure of the custom output template mirrors the structure of the standard output template.
- Excess elements (regarding kits, schedules, addresses, and so forth) are pruned away.
- Parent elements are populated with one attribute in order to suppress excess detail. For example, specifying the `OrderNo` attribute for the Order element suppresses all of the other Order attributes.

Example 7–5   A Carefully Pruned Custom Output Template

```
<!-- getOrderDetails Output XML -->
```

```
<Order OrderNo="">
   <OrderLines>
      <!--1 or more order line-->
      <OrderLine PrimeLineNo="">
         <Item CountryOfOrigin="" ItemDesc="" ItemID=""/>
      </OrderLine>
   </OrderLines>
</Order>
```

Since Example 7–5, "A Carefully Pruned Custom Output Template" specifies only a few Item attributes, and only one attribute for its parent element, the `getOrderDetails()` API returns only the values shown in Example 7–6.

Example 7–6 Values Returned by a Carefully Pruned Output Template

```
<?xml version="1.0" encoding="UTF-8" ?>
<Order OrderNo=Y00000765>
   <OrderLines>
      <OrderLine PrimeLineNo="1">
         <Item CountryOfOrigin="IN" Item Description" ItemDesc="Green Sari"
         ItemID="GNSARI5LT" />
      </OrderLine>
      <OrderLine PrimeLineNo="3">
         <Item CountryOfOrigin="CA" ItemDesc="Pink Scarf" ItemID="PKSCARF4LT" />
      </OrderLine>
   </OrderLines>
</Order>
```

This method of pruning the templates will improve the performance as database access to order schedules and other unwanted elements has been prevented.

Develop Useful Templates

The supplied templates located in the <YFS_HOME>`/template/api/` directory are sample guides. Use them to help you develop your own output XML templates. Using your own customized templates gives you much more flexibility, greater performance, and more assurance of appropriate data output. You can either pass your template through the env or put it in the extension folder.

Keep Performance Needs in Mind

Besides tailoring the templates to your business needs, it is important to keep technological considerations in mind. For performance-related information about using output, see the *Yantra 7x Performance Management Guide*.

7.2.10 Customizing an Output Template

In general, when you customize an output template, you do so by editing a copy of the standard template. You cannot modify the standard output template.

There are two ways of customizing and calling the output template. Which function you choose depends on the size and type of the data set you want returned by the API.

If you want a set of data that is *equal to or greater than* the standard output template contains, see Section 7.2.11, "Defining and Deploying a Static Template" on page 187. If you want a set of data that is *less than or greater than* that which the standard output template contains, see Section 7.2.12, "Defining and Deploying a Dynamic Template" on page 188.

7.2.11 Defining and Deploying a Static Template

If you want to use a template that has more elements in addition to those in the standard output template, create a static output template. This function enables you to create a template that includes all of the elements in the standard output template *plus* any new ones you add. For example, you may need to add UI fields for any database columns you have added. Note that if you use this function, you *cannot* remove any elements that exist in the standard template.

To define and deploy a static template:

1. Copy the standard output template for the API that you want to modify from the `<YFS_HOME>/template/api/<FileName>.xml` file to `<YFS_HOME>/template/api/extn/<FileName>[.<DocType>].xml`.

    - Keep the file name of your new template the same as the standard template.

      The name of the output template corresponds with the name of the API or event associated with it. For example, the getOrderDetails() API takes the output template file getOrderDetails.xml.

- If the template references a document type, include the document type code in the filename.

  For example, to create an output template for the getOrderDetails() API for an Order (0001) document type, the name of the template XML is getOrderDetails.0001.xml.

2. Modify the copied template in the /template/api/extn/ directory as required, keeping in mind the guidelines described in Section 7.2.9, "Best Practices for Creating Custom Output XML Templates" on page 182.

   Note: You may add any elements you wish, but you cannot remove any of the elements present in the standard output template.

3. Call the API as typical and it automatically picks up the custom output template from the directory containing the custom templates.

7.2.12 Defining and Deploying a Dynamic Template

If you want to use a template that contains a subset of the elements in the standard output template, create a dynamic output template. If you want the ability to remove some elements from the standard template and perhaps add your own elements, you do that by passing your XML data or a file name into the YFSEnvironment object.

To define and deploy a dynamic template:

1. Copy the standard output template for the API that you want to modify from the <YFS_HOME>/template/api/<FileName>.xml file to <YFS_HOME>/template/api/extn/extn_<FileName>.xml.

   When naming your new template file, use the same name as the standard template and you *must* prefix it with extn_ to indicate that it is an extension.

   The name of the output template corresponds with the name of the API or event associated with it. For example, the getOrderDetails() API takes the output template file getOrderDetails.xml.

2. Modify the copied template in the `/template/api/extn/` directory as required, keeping in mind the guidelines described in Section 7.2.9, "Best Practices for Creating Custom Output XML Templates" on page 182.

3. During user interface extensibility, call the `setApiTemplate()` function on the YFSEnvironment object. This enables you to specify an output template before calling an API, using one of the following functions:

   – XML ***data*** as a variable - as in the following example:

```
YFSEnvironment env = createEnv();
Document doc = getTemplateDocument();
env.setApiTemplate("getOrderDetails", doc);
private YFSEnvironment createEnv() {
//create new environment by passing the user id, program id, etc.
}
private Document getTemplateDocument() {
//create a Document object containing the desired template XML.
}
```

   – XML ***file*** as a variable - as in the following example:

```
YFSEnvironment env = createEnv();
env.clearApiTemplates();
env.setApiTemplate("getOrderDetails", "extn_myOrderDetails.xml");
private YFSEnvironment createEnv() {
//create new environment by passing the user id, program id, etc.
}
```

The API then uses the template passed in through YFSEnvironment to produce the output XML document. For details about the YFSEnvironment interface, see the *Yantra 7x Javadocs*.

7.2.13 Understanding the Output XML Templates

Since Yantra 7x enables you to define multiple types of templates, in addition to the standard templates that you cannot modify, it is important to understand the order of precedence Yantra 7x implements when reading templates. This section describes how Yantra 7x uses the API and event templates.

7.2.13.1 API Templates

Table 7–5, "Output Template Order of Precedence" shows the sequence of precedence for determining which output template is used by an API. Events use a similar sequence of precedence, using the directories described in Section 7.2.13.2, "Event Templates" on page 190. Note that templates are not supported for user exits.

Table 7–5 Output Template Order of Precedence

Priority	Output Template Path and File Name
1	setApiTemplate(<file>|<xmlDocument>) to YFSEnvironment When a file is specified, it is picked up from the <YFS_HOME>/template/api/extn/ directory.
2	<YFS_HOME>/template/api/extn/apiName.docType.xml
3	<YFS_HOME>/template/api/apiName.docType.xml. (Yantra 7x sample template; not for use in production.)
4	<YFS_HOME>/template/api/extn/apiName.xml
5	<YFS_HOME>/template/api/apiName.xml (Yantra 7x sample template; not for use in production.)

7.2.13.2 Event Templates

Event templates help determine what elements and attributes should be present in the output XML of an event. For events raised, see the relevant transactions in the *Yantra 7x Javadocs*.

To see which events take output templates, see the files in the <YFS_HOME>/template/event/ directory. These templates can be overridden by files you place in the <YFS_HOME>/template/event/extn/ directory.

The naming convention for templates is BaseTxnName.eventName.xml. For example, the on_success event of the createOrder() API uses the ORDER_CREATE.ON_SUCCESS.xml event template.

Note that templates are not supported for user exits.

7.2.14 DTD and XSD Generator

Every Yantra 7x API uses standard input, output, and error XMLs. These XMLs conform to the related Document Type Definition (DTD). For example, consider the following XML:

```
<?xml version="1.0" encoding="UTF-8">
<Order EnterpriseCode="DEFAULT" OrderNo="S100" />
```

The corresponding DTD for this XML is:

```
<!ELEMENT Order>
<!ATTLIST Order OrderNo CDATA #IMPLIED>
<!ATTLIST Order EnterpriseCode CDATA #REQUIRED>
```

To create such DTDs for the extended Yantra 7x XML, a tool called the `xsdGenerator.xml` is provided in the <YFS_HOME>`/bin` directory. This tool converts a specially-formatted XML file into a DTD and XML schema definition (XSD). The command for running the tool is:

```
  ant -f xsdGenerator.xml generate
```

You can also specify the following properties in the <YFS_HOME>`/bin/yantra.properties` file:

Table 7–6   XSD Generator Properties

Fields	Description
<YFS_HOME>	Required. Specify the path to the directory where you have Yantra 7x installed.
xsdgen.use.targetnamespace	Optional. The default value is Y. If set to Y, the XSD files are generated with a defined target namespace.
xsdgen.use.datatypeimport	Optional. The default value is Y. If set to Y, all the XSD files reference a single common XSD file containing all the common data type definitions. If set to N, each XSD file is created with a copy of the database definitions embedded within it.

The input XML files are located in the <YFS_HOME>`/documentation/extn/input` directory. The resulting DTD and XSD files are placed in the <YFS_HOME>`/documentation/extn/output/dtd` and <YFS_HOME>`/documentation/extn/output/xsd` directories respectively.

Consider the following sample XML that can be placed in the input directory:

Example 7–7   Sample XML for Converting to an XSD and DTD

```
<Item yfc:DTDOccurrence="REQUIRED" ItemKey="" ItemID="REQUIRED"
```

```
OrganizationCode="REQUIRED" UnitOfMeasure="">
  <PrimaryInformation Description="" ItemType="" />
  <AdditionalAttributeList>
    <AdditionalAttribute Name="" Value=""/>
  </AdditionalAttributeList>
  <Extn ExtnAttr1="" ExtnRefId="">
    <CSTItemDataList yfc:DTDOccurrence="ZeroOrOne">
      <CSTItemData yfc:DTDOccurrence="ZeroOrMany" ItemDataKey=""
      Description="">
      <CSTItemExtraData yfc:DTDOccurrence="ZeroOrOne" CodeType="" DataType=""
      />
      <YFSCommonCode yfc:DTDOccurrence="REQUIRED" CodeName="" CodeType=""
      CodeValue="" />
      </CSTItemData>
    </CSTItemDataList>
  </Extn>
</Item>
```

Table 7–7 Special Attributes in your XML

Fields	Description
yfc:QryTypeSupported	This attribute determines whether or not the query type functionality is supported for the attributes in this element. If set to Y, it takes effect for all the elements.
yfc:ComplexQuerySupported	This attribute specifies whether or not a complex query type is supported. This attribute can only be present in the root element.
yfc:XSDType	The name of the type to use for the root element schema definition.
yfc:DTDOccurrence	This attribute can contain any of the following values: • REQUIRED - This element must be present if the parent element is present. • ZeroOrOne - This element is optional, but may occur only once. • ZeroOrMany - This element is optional, but may occur multiple times. • OneOrMany - This element is required, and may occur multiple times.
xmlns	The namespace to use for the targetNameSpace in the output XSD. This attribute takes effect only if it is present in the root element.

The attributes with values of `REQUIRED` are generated as required attributes in the DTD and XSD. However, an existing required attribute cannot be marked as optional.

The attribute values can also be specified to supply additional constraints. A list of options is separated by a vertical bar (|). The value of the attribute must be one of the given options. This is only supported for data types based on strings. All the values are trimmed of the whitespace character unless the value itself is entirely spaces, in which case the enumerated option remains unchanged.

For example, SomeAttr="A | B | C | |" results in valid options of "A", "B", "C", " ", and "".

Note: The DTDs do not support enumerated values containing only whitespace characters. Therefore, restrictions of this type cannot be represented in the DTD.

The default input and output XMLs that can act as a base for your custom XML are located in the `<YFS_HOME>/documentation/xmlstruct/` directory. Also note that the `DTDOccurrence` and `REQUIRED` data provided for the standard Yantra 7x tables are inferred from the base file in the `xmlstruct` directory and do not need to be supplied. If they are provided, the existing information is overridden by any new information present in the custom XMLs. Any required datatype and relationship information are obtained from the entity XMLs.

Note: Do not put your custom XMLs in the `xmlstruct` directory.

Therefore, when the tool is run these base XML files serve as a default to your custom XML files, which need only contain the changes made by you such as the extended elements and attributes. This allows future upgrades to safely modify the XML files in the `xmlstruct` directory. Re-running the XSD generation tool automatically picks up these updates.

The appropriate XML file in the xmlstruct directory associated with your custom XML is identified by the file name. Your custom XML may start with an optional prefix followed by an under-score and the base file name. For example, a custom XML file named Custom_File_YFS_getOrderDetails_input.xml refers to the YFS_getOrderDetails_input.xml file in the xmlstruct directory.

However, the naming convention is optional. For example, you can also name your custom XML sampleCustomApi.xml but no base file is used. In this case, the tool outputs an informational message to indicate that no base XML is found.

Note: If you want to use our base XML file for conversion, the naming convention of your custom XML must be suffixed appropriately. For example, Custom_File_YFS_getOrderDetails_input.xml would use the base file named YFS_getOrderDetails_input.xml.

The generated XSD specifies the target namespace as shown below:

```
<xsd:schema attributeFormDefault="unqualified"
elementFormDefault="qualified"
targetNamespace="http://www.yantra.com/documentation"
xmlns:xsd=http://www.w3.org/2001/XMLSchema
xmlns:yfc="http://www.yantra.com/documentation">
```

This namespace is picked up from the xmlns attribute on the root element of the input XML and defaults to http://www.yantra.com/documentation.

The XSD and DTD files contain query type attributes used in list APIs when QryTypeSupported="Y" is set in the root element of the input XML. Similarly, the complex query types defined for getItemList() and getOrganizationList() APIs are represented in the XSD and DTD files when ComplexQuerySupported="Y" is set.

However, in Yantra 7x APIs the following exceptions are exhibited in the DTDs since these constraints cannot be represented in a pure DTD, XSD or both:

- If an XML contains multiple Extn attributes, the generated DTD-only (not generated XSD) defines a single Extn element which appears as the union of all possible Extn elements.

- Conditionally required attributes. For example, you need to specify a group of attributes or another group of attributes such as `OrderHeaderKey` or `EnterpriseCode/OrderNo`.
- Mandatory condition of a node depends on some attribute value. For example in the `createOrder()` API, the `OrderLine` node is required if the `DraftOrderFlag="N"`.

7.2.15 Defining Complex Queries

Complex queries help to narrow a detailed listing obtained as output from an API. To generate the desired output, you can pass queries using `And` or `Or` operators in the input XML of an API.

For example, you can query the `getItemList` API based on the unit of measure, item group code or any parameters provided in the API definition, using the complex query operators, `And` or `Or`.

Complex queries are supported for the following APIs:

- getItemList
- getOrganizationList
- getOrderList
- getOrderLineList
- getShipmentList

Note: Only item, organization, order, order line, shipment and shipment line entities are supported for performing complex queries. The attributes for complex query must be a valid database columns of these entities and should be at the same level.

For more information about these APIs, see *Yantra 7x Javadocs*. For more information on valid database columns, see Yantra 7x ERDs.

Consider the following scenario for adding complex queries to the `getItemList` API.

The `getItemList` API returns a list of items based on the selection criteria specified in the input XML such as item attributes, aliases, category, and so on. You can create complex queries in the getItemList input XML as shown in Example 7–8.

Example 7–8 Adding Complex Queries in getItemList API

```
<Item OrganizationCode="DEFAULT" ItemGroupCode="PS" >
  <PrimaryInformation PricingQuantityStrategy="IQTY">
  <ComplexQuery Operator="OR">
    <And>
      <Or>
      <Exp Name="UnitOfMeasure" Value="EACH"/>
      <Exp Name="UnitOfMeasure" Value="HR"/>
      </Or>
      <And>
      <Exp Name="ManufacturerName" Value="YANTRA"/>
      </And>
    </And>
  </ComplexQuery>
  </PrimaryInformation>
</Item>
```

The OrganizationCode and ItemGroupCode are the two attributes of the <Item> element and PricingQuantityStrategy is the attribute of the <PrimaryInformation> element considered in this example. However you can include any or all of the attributes in the getItemList API. All the attributes in the API are interpreted with an implied And along with the complex query operator.

Apply the following rules when including complex queries:

- You can define only one ComplexQuery under a single element. For example, you cannot have two ComplexQuery operator under an Item element.
- You cannot add a single complex query against two different tables. For example, in getShipmentList API you cannot use ChainedFromOrderHeaderKey and ShipmentLineNo in the same query, since the former belongs to YFS_ORDER_LINE table and the latter is an attribute of the YFS_SHIPMENT_LINE table.
- The attribute with no value is not considered in the complex query, like Attribute="".

- There can be only one element under the ComplexQuery namely, And or Or.
- And or Or elements can have one or many child elements as required.
- And or Or elements can have other And or Or expression elements as child elements.

This example can be interpreted as the following logical expression:

```
(OrganizationCode="DEFAULT" AND ItemGroupCode="PS" ) AND
((PricingQuantityStrategy="IQTY") OR ( ( UnitOfMeasure =
"EACH" OR UnitOfMeasure="HR" ) AND ( ManufacturerName =
"YANTRA") ))
```

Thus by following the above example you can include complex queries to achieve desired results from your database using the above mentioned APIs.

7.3 Time Triggered Transactions

A time-triggered transaction, or agent, is a program that performs a variety of individual functions, automatically and at specific time intervals. It is not triggered by conditions, events, or user input.

There are three types of time-triggered transactions:

- Business process transactions - responsible for processing day-to-day transactions
- Monitors - watch and send alerts for processing delays and exceptions
- Purges - clear out data that may be discarded after having been processed

For information on using the time triggered transactions provided by Yantra 7x, see the *Yantra 7x Platform Configuration Guide*. For information on creating custom time-triggered transactions, see Section 7.2, "APIs" on page 171.

7.3.1 Extending Standard Transactions

You can extend the following the transactions provided by Yantra 7x by using one of the following mechanisms:

- User exits
- Event handlers

7.3.2 Using User Exits to Extend Standard Transactions

Yantra 7x provides the ability to extend or override key business algorithms. This is accomplished through user exits that are invoked when the algorithms are executed.

A typical user exit can:

- Override application logic by providing its own logic.
- Extend application logic by providing more inputs to the application algorithm.

For example, if an order is split into multiple shipments, you may need to compute the order price differently for each shipment. In order to change the way Yantra 7x computes the order prices, you can override the specific computation or algorithm in the `repriceOrder` user exit.

Each user exit is a separate Java interface. You may choose to implement only those user exits where you want to override or augment the business logic.

Note: When the API or time-triggered transaction is executing the default algorithm, the user exit is called. If your implementation of the function throws an exception, the current transaction is rolled back.

For detailed descriptions of each user exit, see the following packages in *Yantra 7x Javadocs*:

- com.yantra.ycm.japi.ue
- com.yantra.ycp.japi.ue
- com.yantra.ydm.japi.ue
- com.yantra.yfs.japi.ue

7.3.2.1 Implementing and Deploying User Exits

All user exit classes should be deployed as a JAR file that is available in the CLASSPATH of the agent adapter script and in the `yantra.ear` file deployed in your application server.For more information about implementing user exits, see the *Yantra 7x Platform Configuration Guide*.

For information on creating and deploying custom classes, see the *Yantra 7x Installation Guide*.

7.3.2.2 Guidelines for Usage of User Exits

The following guideline has to be kept in mind when you are using User Exits within Yantra 7x API:

- User Exits are structured to return specific information and hence their usage must be restricted for such purpose alone.
- From the user exits, you cannot invoke Yantra 7x APIs that modify the data. This is to ensure that errors do not occur because of the data that is getting modified in the parent transaction (the transaction that calls the user exit), and the same data getting modified in the user exit custom code. For example, you cannot invoke a `changeOrder()` API from an user exit that obtains information related to the same order.

  However, APIs that do not modify the data (like select APIs) can be invoked in the user exits. For example, you can call `getOrderDetails()` API from an user exit.

7.3.3 Using Event Handlers to Extend Standard Transactions

Yantra 7x raises events at specific moments in processing. Yantra 7x enables you to define an action to be performed when a specific event occurs.

In Yantra 7x configuration, an event is defined to invoke the Yantra 7x event handler. The event handler performs special processing on data published by the event before being transported to the transport services layer.

As part of the event configuration, services can be invoked. When such services are invoked, some of Yantra 7x events, like INVENTORY_CHANGE pass data as a map whereas the other events pass data as an

XML. In the event of data being passed as a map, when the service is configured for such an event the data map is converted to an XML as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<YantraXML>
    <XML AccountNo="" AdjustmentType="ADJUSTMENT"
        EnterpriseCode="DEFAULT" ItemID="ITEM1"
        ItemKey="2005030116023851364" ...... />
</YantraXML>
```

7.3.4 Configuring Events

In Release 5.0 and later, you associate an action to a service to perform special processing required. For example, the event PUBLISH_SHIP_ADVICE could invoke the Yantra 7x event handler to call a custom Java class. The Java class can augment the publish ship advice XML. The Yantra 7x Service Definition Framework can transport the enriched XML data to the transport services layer.

For more information on configuring actions and associating the actions to events, see the *Yantra 7x Platform Configuration Guide*.

For more information on the various components you use to build a service, see the *Yantra 7x Platform Configuration Guide*.

The event handlers that can be invoked from an action (configured in the Other tab) are described below.

Note: The following event handlers are provided exclusively for backward compatibility purposes.

7.3.4.1 E-Mail Message Event Handler

Yantra 7x provides a standard Send Email event handler for sending e-mail messages on various events. For example, when a line is shipped, you can send shipment information. SMTP-based e-mail is supported for these messages. When configured in the Other tab when configuring an Action, the e-mail is sent synchronously. If the mail server is not available, an exception is thrown. For sending an event notification in the form of an e-mail message using a service, see the *Yantra 7x Platform Configuration Guide*.

7.3.4.2 E-Mail Templates

E-mail templates enable you format e-mail messages. The E-mail node receives XML data and merges it with the XSL template you specify. You can configure an E-mail node in the Service Builder to use an e-mail template.

To create and use a custom e-mail template:

1. Copy the `<YFS_HOME>/template/email/orders_mail.xsl` template file.
2. Modify the file as needed, rename it, and save it within the same directory. You can save it to another directory, but using the standard directory structure supplied by Yantra 7x helps ensure consistency.
3. From the Service Builder, configure an E-mail node to use your custom e-mail template. In the Body Template field specify either the file name or the path:
   - If you want to specify the ***path***, use the relative path from `<YFS_HOME>`. For example, if your template is in the `<YFS_HOME>/template/email/` directory, specify `template/email/<custom_email_template>.xsl`.
   - If you want to specify the ***file name***, ensure that your CLASSPATH contains the path to the template. For example, if you save the template to the `template/email/` directory, your CLASSPATH must contain `YFS_HOME/template/email/`.

Note that using the `<YFS_HOME>/template/email/<file_name>.mlt` file with Actions to accomplish the same purpose has been deprecated as of Release 5.0. Use the E-mail node and an XSL file instead.

7.3.5 Alert Console Event Handler

Yantra 7x supports standard event handlers sending exception alerts to the Alert Console. These exceptions are redirected to a specific user or to an exception queue for a group of users. For example, you can send an exception alert to the customer service representative queue when authorization fails so the customer service representative can contact the buyer in person. For more information about the Alert Console, see the *Yantra 7x Platform User Guide*.

7.3.6 Exception Alert Templates

Exception alert templates enable you to supply additional text to alerts raised. This enables you to make error message more descriptive and easy to understand. They also provide a means of supplying a hyperlink to the resolution screens from the Alert console. For example, for any alert created for an order, shipment, or load document type, a hyperlink is created and displays in the "Created For" column on the Alert List screens. In the Exception Alert Template you can customize this hyperlink or create any other hyperlinks. The input data to the alert node is merged with the template you specify and then posted as the description of the alert raised.

Events that publish data in data buffer format use an ECT template, which are text files that contain tags. These tags are replaced by actual data at run time. All tags use the |#YFS_<tagname>| syntax.

For example, use the tag |#YFS_OrderNo| to have the actual order number appear in its place (if OrderNo is published as a part of the data buffer). Any of the data elements published in the data buffer can be used in the template.

For the exception console, there are two templates. One template is used for determining the DETAIL_DESCRIPTION field of the YFS_INBOX table. The other template is used for determining the LIST_DESCRIPTION field of the YFS_INBOX table. The templates are merged with the data published (by an event) and the resulting string is populated to the corresponding field.

To create and use a custom exception template:

1. Copy the `<YFS_HOME>/template/exception_console/example_exception_console.xsl` template file.
2. Modify the file as needed, rename it, and save it within the same directory. You can save it to another directory, but using the standard directory structure supplied by Yantra 7x helps ensure consistency.
3. From the Service Builder, configure an Alert node to use your custom exception console template. In the XSL Template field, specify either the file name or the path:
   - If you want to specify the ***path***, use the relative path from <YFS_HOME>. For example, if your template is in the <YFS_

HOME>/template/exception_console/ directory, specify template/exception_console/<custom_alert_template>.xsl.

- If you want to specify the ***file name***, ensure that your CLASSPATH contains the path to the template. For example, if you save the template to the template/exception_console/ directory, include <YFS_HOME>/template/exception_console/ in your CLASSPATH.

Note that using the <YFS_HOME>/template/exception_console/<file_name>.ect file with Actions to accomplish the same purpose has been deprecated as of Release 5.0. Use the Alert node and an XSL file instead.

7.3.7 Publish Event Handler

Yantra 7x enables the publishing of data by the event manager to external systems for interoperability. You can configure any event to publish data to other systems. For example, upon the event ON_SUCCESS of the SHIP_CONFIRM transaction, you may want to publish data to an external financial system.

When configuring the Publish event handler, you must provide a set of system IDs separated by semicolons (for example, SYSTEM1;System2;TestSystem). These are IDs of time-triggered Transactions that are expected to read and process the data. The event manager writes the data provided by the transaction to the YFS_EXPORT table and writes one record for each system ID configured.

For publishing data using a service, use a Database transport node. For more information, see the *Yantra 7x Platform Configuration Guide*.

7.3.8 Execute Event Handler

The Execute event handler tells the event manager to execute the specified program. Yantra 7x looks for this program in the PATH. Data is passed to the program as the first command line argument. Like the Publish event handler, the Execute event handler is executed asynchronously. This is achieved by using a custom API that executes the program in a service.

7.3.9 Java Extension

Java extensions enable you to implement event handlers as Java classes. With each action, you can associate one Java event handler. The Java class you create must implement the `com.yantra.yfs.japi.util.YFSEventHandlerEx` interface. This is achieved by using a custom API which actually executes the program in a service.

7.3.10 Database Extension Using Stored Procedures

If you configure an event handler as an Oracle stored procedure, the stored procedure is invoked with the following parameters:

```
PROCEDURE DO_ACTION(TRANID IN VARCHAR2,ACTIONCODE IN VARCHAR2,KEY_DATA IN
VARCHAR2,DATA_TYPE IN NUMBER,DATA_BUFFER1 IN VARCHAR2,DATA_BUFFER2 IN
VARCHAR2,DATA_BUFFER3 IN VARCHAR2,DATA_BUFFER4 IN VARCHAR2,DATA_BUFFER5 IN
VARCHAR2,DATA_COMPLETE IN NUMBER,SHIP_NODE IN VARCHAR2,RETURN_VALUE IN OUT
NUMBER)
```

PL/SQL limits the maximum size of a VARCHAR2 variable to 2,000 bytes, so 2,000 bytes is the maximum length of the string passed in data buffers. If the input is greater than 10,000 characters, the buffer is truncated and the parameter DATA_COMPLETE has a value of 0 (zero). If the buffer is less than 10,000 bytes and is completely passed to the stored procedure, DATA_COMPLETE is passed as 1.

Important: You must not do a commit or a rollback in the stored procedure at any time in a stored procedure associated to a event handler.

Execution of stored procedures is not a supported service component.

7.3.11 HTTP Extension

If you configure an event handler as an HTTP extension, Yantra 7x sends data using the `post()` function to the specified URL. Data is posted using the variables in Table 7–8.

Table 7–8 Variables Associated with HTTP Extensions

Variable	Description
sTranID	ID of the transaction raising the event.
iDataType	If iDataType is set to 1, XML data is published with the event and sData contains the entire XML string. Otherwise, iData Type is set to 0 and sData contains a name=value pair. To see what the name=value pair contains, see the DBD file associated with the event in *Yantra 7x Javadocs*.
sData	See iDataType description.
sShipNode	Ship node ID, if available.

A service can be configured to post data using the HTTP protocol. For details, see the *Yantra 7x Platform Configuration Guide*.

7.3.12 COM Extension

Using COM requires setting up your server and runtime clients as described in Using Yantra 7x with Microsoft COM+.

If you define an event handler as a COM extension, Yantra 7x calls the COM component you specify as the COM object. The COM component you create must expose the IDispatch interface and a pre-identified function `doAction()` as part of the interface. The signature of the `doAction()` function should be as follows:

```
[IDL Syntax]
doAction ( [in] BSTR sTranID, [in] BSTR sActionCode, [in] BSTR sKeyData,
[in]long DataType, [in] BSTR sData, [in] BSTR ShipNode, [Out] long *Retval);
```

Because Yantra 7x accesses this function through the IDispatch interface, you can write your COM component either in the Visual Basic or C++ programming language. The function signature that you must expose through Visual Basic is:

```
Public Function doAction(ByVal bsTranID As String, ByVal boActionCode As String,
ByVal bsKeyData As String, ByVal DataType As Long, ByVal bsData As String, ByVal
ShipNode As String, retVal as Long) As Long
```

The function signature that you must expose through C++ is:

```
STDMETHODIMP COMActionImpl::doAction(BSTR sTranID, BSTR sActionCode, BSTR
sKeyData, long DataType, BSTR sData, BSTR Node, long *RetVal)
```

`COMActionImpl` is the class name that implements the `doAction()` function. While configuring the event handler, you must specify the Program ID of the COM component to be invoked.

7.3.13 Event Chaining

Some event handlers support invocation of APIs. These APIs can retrieve more data pertinent to the event being raised, or they may direct to perform a business computation or transaction. In turn, the transaction can raise other events, thus resulting in event chaining. For example, one of the event handlers for the ORDER_CREATE event can check the validity of an order and call an API to HOLD the order. This results in the triggering of the HOLD event, which sends an e-mail message to a customer service representative. Event chaining provides an extensibility mechanism that is required for complex business processing.

Important: Actions that are configured to be invoked by the ON_FAILURE event must not perform any database updates. Any database updates performed by an action invoked by the ON_FAILURE event is rolled back.

To access data published by Yantra 7x, you must implement the `YFSEventHandlerEx()` interface, which provides the `handleEvent()` function to implement as follows:

```
public boolean handleEvent (YFSEnvironment oEnv, String sTranID, String
  sActionCode, Map sKeyData, int iDataType, Object sData, String sShipNode,
  String [] parms) throws Exception
```

Important: While it is possible to implement an API that causes an event that is associated with an action in Yantra 7x to call the same API, take care to avoid this situation. It creates an infinite loop.

The class name must be configured as the Java object on the Action Configuration screen in Yantra 7x transaction configuration. For more information, see the *Yantra 7x Platform Configuration Guide*.

All parameters for the `handleEvent()` function are input parameters with values inserted by Yantra 7x. The last parameter in this function is the `parms` parameter, which is an array of String constants. The values of these string constants are the values of the string constants specified after the class name during the action configuration in Yantra 7x.

Note: For details on the *YFSEventHandlerEx* interface, see the *Yantra 7x Javadocs*.

7.4 Customizing Condition Builder Fields

The Yantra 7x condition builder is used as a part of the service definition framework or in pipeline definitions. This can be used if you want to define dynamic conditions but also use some static set of attributes present in the condition builder. The following section explains the use of the fields that can be customized in the condition builder.

The following features can be customized while creating conditions:

- Adding Custom Attributes by Process Type
- Adding Custom Attributes during Condition Definition
- Providing Condition Properties in Dynamic Condition

Note: All the string comparisons made in the condition builder are case sensitive.

For more information on defining conditions and using condition builder for services, refer to *Yantra 7x Platform Configuration Guide*.

7.4.1 Adding Custom Attributes by Process Type

You can add custom attributes in the statement builder, based on the process types such as order fulfillment, outbound shipment and so forth. This customization is useful when you want to evaluate a condition based on an attribute that is not provided as a pre-defined set in the condition builder. These custom attributes are added in the condition builder when you create a condition. For more information on creating conditions refer to *Yantra 7x Platform Configuration Guide*.

The custom attributes can be added by creating a custom XML file as below:

1. Create a directory named `extn` in `<YFS_HOME>/template/configapi` directory.

2. Create a file named `extn_conditionbuilder.xml` in `<YFS_HOME>/template/configapi/extn` directory. The format of a sample XML file is given in Example 7–9.

   Note: For customizing condition builders for order hold types create a file called `holdtype_extn_conditionbuilder.xml` and follow the same procedure outlined in this section.

   Note: You must restart your application server, every time you add conditions in the `extn_conditionbuilder.xml` file, for the changes to appear in the configurator screen.

   The sample file creates conditions for extended order number, shipping information and order details. The extended order details has further sub-elements such as, `CustomItemId` and `ExtnOrderType`.

   The Id attribute must be identical to the element name. For example, the element `ExtnOrderNo` must contain the attribute `Id="ExtnOrderNo"`.

Example 7–9 Sample File for Adding Custom Attributes

```
<CustomConditionAttributes>
  <ProcessType Name="ORDER_FULFILLMENT">
    <ExtnOrderNo Id="ExtnOrderNo" DisplayName="Extended Order Number"
    DataType="Text-40" Type="Leaf"/>
    <ExtnShiptoId Id="ExtnShiptoId" DisplayName="Extended Ship To Id"
    DataType="Text-40" Type="Leaf"/>
    <CustomOrderDetails Id="CustomOrderDetails" DisplayName="Custom Order
    Details">
      <CustomItemId Id="CustomItemId" DisplayName="Custom Item Id"
      DataType="Text-100" Type="Leaf"/>
      <ExtnOrderType Id="ExtnOrderType" DisplayName="Extended Order Type"
      DataType="Text-100" Type="Leaf"/>
    </CustomOrderDetails>
  </ProcessType>
</CustomConditionAttributes>
```

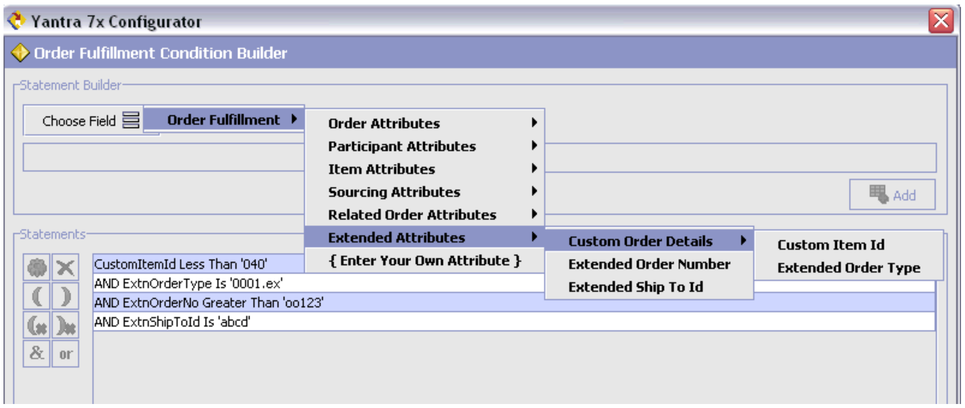
Table 7–9 Attributes Details

Attribute	Description
ProcessType	
Name	Required. Specify the name of the Process type where you are creating the condition.
Elements	
DisplayName	Required. Specify the display name for this attribute in the condition builder screen.
DataType	Required. Specify the data type needed for this attribute. For example, the pre-defined attribute BillToId has a data type of "ID-40". The data type can be any one of the types provided in the <YFS_HOME>`/template/api/DataTypes.xml` file.

Table 7–9 Attributes Details

Attribute	Description
Id	Required. Specify the ID you want this condition to be associated. By default this is same as the element name.
Type	Required. Specify the type of this attribute. For example "Leaf" type identifies the attribute as part of a menu item. If it is not specified, the attribute is considered to be a menu header leading to a sub menu. In Example 7–9 the element `CustomOrderDetails` does not have a type defined, since it has leading sub-menus such as `CustomItemId` and `ExtnOrderType`.

3. The elements like `ExtnOrderNo`, `ExtnShipToId`, etc., as shown in Example 7–9, are used to define the conditions when it is saved in the database. Therefore, the element name must be unique for a single process type.
4. This XML file content is merged with the pre-defined static attributes by process type and displayed on the screen as shown below:



CustomItemId Less Than '040'
AND ExtnOrderType Is '0001.ex'
AND ExtnOrderNo Greater Than 'oo123'
AND ExtnShipToId Is 'abcd'

5. However, upon clicking OK in the statement builder window, the display name of the XML is shown in the condition detail window.
6. The display names are replaced with their element names once the condition is saved. These element names along with their conditions

is referred as the condition value in the database table `YFS_CONIDITION`.

7. These custom attributes is shown in a similar way as the current static attributes in condition builder.

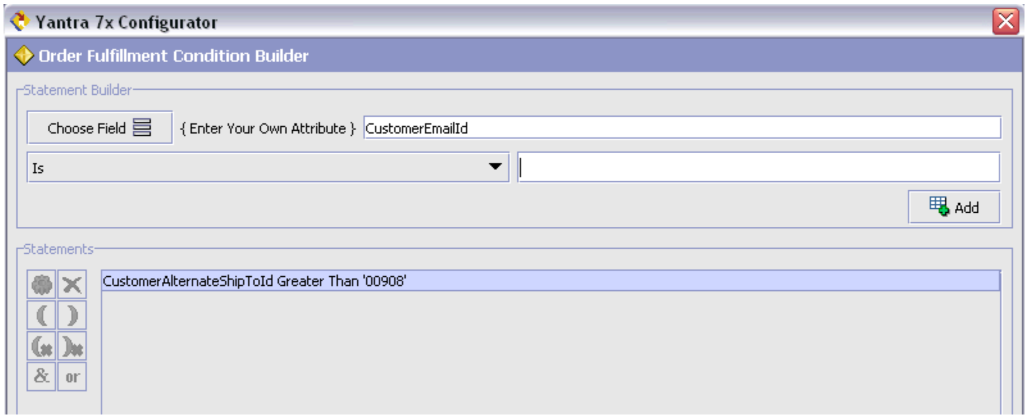
   The custom attributes defined in this manner can be used as part of the service definition framework or in pipeline definitions for creating events or conditions.

> **Note:** However, custom attributes cannot be used to evaluate conditions in pipeline determination rules.

7.4.2 Adding Custom Attributes during Condition Definition

When you define conditions for a particular order, you can optionally choose to add your own custom attributes to be evaluated as part of the condition.

1. The custom attributes can be added in the condition builder by clicking `Choose Field` and selecting `Enter Your Own Attribute` option in the statement builder window.
2. Enter the attribute name you want to be included in the condition as shown below, and click Add.



{ Enter Your Own Attribute } CustomerEmailId

Is

CustomerAlternateShipToId Greater Than '00908'

For example, if you want to include a attribute named `CustomerEmailId`, enter that attribute in the text box provided and continue with your statement creation.This attribute is included in evaluating the condition.

Note: This field is limited only to unexposed key attributes that are pre-defined by Yantra 7x as opposed to any XML attribute that you can enter.

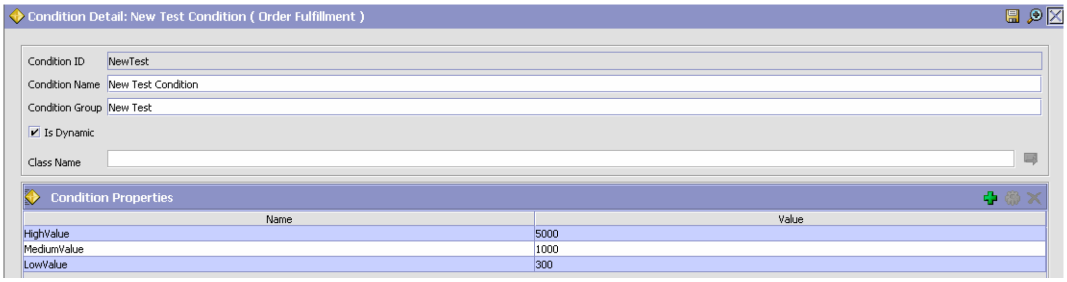
3. Once the name is entered, the rest of the condition can be built in the same way as the pre-defined attributes. For more information on how to create a condition using pre-defined attributes, see *Yantra 7x Platform Configuration Guide*.

   The custom attributes created during condition definition can be used as part of the service definition framework or in pipeline definitions for creating events or conditions.

Note: Custom attributes defined in this manner is available only when defining this condition. The attribute entered is not available for re-use in other conditions.

7.4.3 Providing Condition Properties in Dynamic Condition

The condition definition enables you to create static or dynamic conditions. When creating dynamic conditions you must check `IsDynamic` field and mention the class name to be executed to evaluate the condition. This creation of dynamic condition is extended to include configuration of custom name, value properties. These properties are set into the java class before evaluating the condition.


Condition Detail: New Test Condition (Order Fulfillment)

Condition ID: NewTest
Condition Name: New Test Condition
Condition Group: New Test
[✓] Is Dynamic
Class Name:

Condition Properties

Name	Value
HighValue	5000
MediumValue	1000
LowValue	300

To enable these attributes the dynamic condition class should be implemented a YCPDynamicConditionEx interface. The definition of this interface is as follows:

Example 7–10 Implementing YCPDynamicConditionEx Interface

```
public interface YCPDnamicConditionEx {
   boolean evaluateCondition(YFSEnvironment env, String name, Map mapData,
   Document doc);
   void setProperties(Map map);
}
```

The parameter name passed to the interface refers to the Condition Name configured during definition.

For more information on this interface and explanation of the parameters, see *Yantra 7x Javadocs*.

7.5 Dynamic Configuration Using Variables

You can dynamically configure certain properties belonging to actions, agents and services configuration to cut back on your implemention time. For example, you can provide a dynamic way of configuring network properties such as provider URLs, E-mail server, and Sender addresses. These properties can be configured as variables in one place and can be resolved at runtime when these properties are being used.

You can provide variables in place of file or directory names wherever a file name or path can be entered in the Yantra 7x Configurator. This variable substitution is based on an entry in the yfs.properties file and is resolved during runtime.

You can use variable names in the following components of Yantra 7x Configurator:

- Yantra 7x Service Definition Framework
  - All transport types such as JMS queue name, Initial Context Factory, QCF lookup and Provider URL. File Sender and Receiver, FTP source and destination for sender and receiver directories and HTTP and Webservice transport types.
  - In the e-mail component, where you can specify, the email server, subject, listener port, and From addresses. The dynamic configuration can also be used for specifying the email protocol.

- Actions
  - In call HTTP extention and Execute Program.
- Agent criteria details
  - JMS Queue Name, Initial Context Factory, QCF Lookup and Provider URL.

- Printer Devices, Print Documents, and Print Components
- Purge Criteria's log file name
- In Yantra 7x System Management console:
  - You can use variables to specify installation rules such as e-mail server name, server IP address, server listener port, and e-mail protocol.
  - You can provide variables for the JMS monitoring configuration fields, which include: WebLogic Provider URL, WebSphere Channel name, host name, port number and queue manager name.

For the fields identified above, you can define the values as ${VARIABLE_NAME} in `<YFS_HOME\resources\yfs.properties` file. It is stored in the database as is and at runtime when the variables are used, a lookup is performed in the `yfs.properties` file to decipher the value. Since, the values for these variables are fetched from the `yfs.properties` file, they are specifc to a particular JVM.

Note: The value of this variable cannot be seen in the health monitor agent details, since the value depends on the JVM on which it is deployed. You have to click on the server details of the monitor agent to view the value of the variable.

For example, if you want to set the File IO Receiver's directory structure to a common variable say `ffbase`, then the incoming directory should be set to `${ffbase}/incoming`. The variable `ffbase` must be defined in the file as:

```
ffbase=C:/FileIODir/Receiver
```

This `${ffbase}/incoming` value is stored in the database, and when processing the file adapter, the variable is resolved to `C:/FileIODir/Receiver/incoming`.

The following conditions are assumed for the usage of this variable:

- All the variables when referenced must be in the following format:
  - ${variable_name}
- All variables should be properly formed. If a variable is not found, no substitution takes place.
- Variables must not contain the '}' character.
- Variables must not begin or end with a whitespace.
- Templates do not support variables for filenames since they are always resolved within the classpath.

7.6 Creating Custom Transactions

You can create the following custom transactions:

- Custom APIs and services
- Time-triggered Transactions

7.7 Creating Extended APIs

Extended APIs are APIs that you provide; they are sometimes called custom APIs. You can use an extended API to invoke a Yantra 7x or third-party API, as well as to perform custom processing through the Yantra 7x Service Definition Framework.

To invoke an extended API:

1. Code a class.
2. Code a function that has exactly two parameters of types YFSEnvironment and Document and ensure that the function returns a document.

```
public Document <method-name> (YFSEnvironment env, Document doc)
```

3. Configure a service that contains an API node. When configuring an API node, use the properties described in Table 7–10.

Table 7–10 API Node Configuration Properties

Property	Description
General Tab	
Extended API	Select this option if a custom API is to be invoked.
API Name	Select or enter the API to be called. **Note:** This field is for integration purposes only.
Class Name	Specifies the class you coded in Step 1.
Method Name	Specifies the function to be called as coded in Step 2.
Arguments Tab	
Argument Name	You can pass name/value pairs to the API by entering the values in the Arguments Tab. In order for custom APIs to access custom values, the API should implement the interface `com.yantra.interop.japi.YIFCustomApi`. If entered, these name/value pairs are passed to the custom API as a properties object.
Argument Value	Enter the argument value.

When connecting the nodes within a service, keep in mind the API node connection properties as listed in Table 7–11:

Table 7–11 API Node Connection Properties

Connection	Node Connection Rules
Can be the first node after the start node	Only for services invoked synchronously
Can be placed before	• Any transport node except FTP or File IO • Any other component node
Can be placed after	• Start node • Any transport node except FTP or File IO • Any other component node
Passes data unchanged	Yes

4. Make sure the class is in the CLASSPATH of the Yantra 7x Service Definition Framework.
5. Make sure that the class implements a method with a signature that takes in exactly two parameters, a YFSEnvironment and a Document.

   The following example shows how to implement a class:

```
import com.yantra.yfs.japi.YFSEnvironment;
import org.w3c.dom.Document;
public class Bar {
   public Bar () {
      }
   public Document foo(YFSEnvironment env, Document doc)
      {
      //write your implementation code here
      }
}
```

6. To access the extended API you created, invoke the service containing your extended API.

   For details and sample code that show how to access properties specified when the custom API is configured, see the `YIFCustomAPI` interface in *Yantra 7x Javadocs*.

7.7.1 Implementing the Error Sequence User Exit

You can configure the Yantra 7x Service Definition Framework to call a user exit that checks for prior errors for the exception group to which the API belongs. This user exit is called before any processing of the message starts. A Java interface is supplied for its implementation. This interface definition is in the `com.yantra.interop.japi.YIFErrorSequenceUE` class. The user exit computes the Message Key based on user defined custom code.

`YIFErrorSequenceUE` defines two functions. The function definitions are:

```
1) public Document getExceptionGroupReference(Document document, String apiName)
throws Exception
2) public void setExceptionGroupFinder (YIFExceptionGroupFinder finder)
```

The `getExceptionGroupReference()` function takes two parameters:

- Document - The input XML document retrieved by the Integration Adapter
- String - The API for which the Integration Adapter retrieved the XML

The `setExceptionGroupFinder()` function sets the `YIFExceptionGroupFinder()` interface. Use the implementation of this interface to retrieve the `exceptionGroupId` if prior errors exist.

An example implementation of this function is:

```
public void setExceptionGroupFinder (YIFExceptionGroupFinder finder){
 this.finder = finder;
}
```

7.7.2 Implementing the YIFExceptionGroupFinder Interface

This interface defines the `findExistingError()` function that takes in `Document` as the input parameter.

For example, the input XML document that the user exit passes to the `findExistingError()` function would contain:

```
<?xml version="1.0"?>
<ExceptionGroupReference messageKey="xyz"/>
```

7.7.3 Exception Handling in Extended APIs

The client always has the option of throwing an exception to the Yantra 7x Service Definition Framework instead of handling it when it occurs. Depending on the configuration, the Yantra 7x Service Definition Framework either sends the exception to the Alert Console or logs the exception.

7.8 Creating Custom Time-Triggered Transactions

Yantra 7x provides an infrastructure that enables you to write your own time-triggered transactions. You invoke and schedule these time-triggered transactions in much the same manner as you invoke and schedule Yantra 7x's standard time-triggered transactions. For information on how to configure Yantra 7x's standard time-triggered transactions, see the *Yantra 7x Platform Configuration Guide*.

Depending upon the way time-triggered transactions determine the list of tasks to be processed (their work load), they can be classified into one of the following categories:

- Non task-based (generic) - these time-triggered transactions use custom logic to determine the work they have to perform. They may or may not use the centralized Task Queue.
- Task-based (specific) - these time-triggered transactions use the Task Queue to determine their work.

Yantra 7x provides infrastructure to create both types of custom time-triggered transactions.

The ability to write non task-based time-triggered transactions is provided using the `com.yantra.ycp.japi.util.YCPBaseAgent` class. This class provides a generic infrastructure irrespective of whether the Task Queue is used or not and therefore can be used to write any time-triggered transaction.

Task-based time-triggered transactions can be programmed by subclassing the `com.yantra.ycp.japi.util.YCPBaseTaskAgent` class.

If your transaction is Task Queue based, it is suggested that you use the infrastructure provided specifically to write task-based transactions. This infrastructure automatically determines work for your custom agent from the Task Queue, thus reducing the amount of design and development required for your transaction.

All custom agents written to Yantra 7x specifications are subclassed from the `com.yantra.ycp.japi.util.YCPBaseAgent` class, which has two abstract functions. When you implement these functions, they provide the processing capabilities of a time-triggered transaction.

getJobs() Abstract Function

The `getJobs()abstract function uses Env`, a pre-created instance of a `YFSEnvironment` object that can be passed to Yantra 7x APIs and `inXML` is an `org.w3c.dom.Document` object, which contains the input XML. The implementation of this function should obtain jobs (from the database) that need to be executed, construct a list of org.w3c.dom.Document objects, and return the list. See the following signature:

```
public List getJobs(YFSEnvironment Env, Document inXML)
```

executeJobs() Abstract Function

Each document in the List returned by the `getJobs()` function is passed to this function for execution. If this function throws an exception, the exception is logged and the transaction is rolled back, otherwise it is committed. See the following signature:

```
public Document executeJob(YFSEnvironment Env, Document inXML)
```

After all of the documents have been processed by the `executeJob()` function, Yantra 7x invokes the `getJobs()` function again to obtain the next set of tasks that need to be processed by the `executeJob()` function. This repeats until no more jobs are returned by the `getJobs()` function.

For examples of the input XML, see the YCPBaseTaskAgent class in the *Yantra 7x Javadocs*.

The `com.yantra.ycp.japi.util.YCPBaseAgent` also provides utility functions for trace logging and timer information with the following signatures:

- public void log(String classMethodName, String message);
- public startTimer(String timerName);
- public endTimer(String timerName);

7.8.1 Creating Custom Non Task-Based Time-Triggered Transactions

Custom non task-based time-triggered transactions should be written as subclasses of the `com.yantra.ycp.japi.util.YCPBaseAgent` class. For a sample custom time-triggered transaction, see the `com.yantra.ycp.japi.util.YCPBaseAgent` class in *Yantra 7x Javadocs*.

To write a custom non-task based time-triggered transaction:

1. Subclass `com.yantra.ycp.japi.util.YCPBaseAgent`.
2. Implement the `executeJob()` and `getJobs()` functions in this class.
3. From the Configurator, configure a time-triggered transaction and assign an Agent Server to it. For details about configuring

time-triggered transactions see the *Yantra 7x Platform Configuration Guide*.

4. Schedule and run your custom time-triggered transaction according to the instructions in the *Yantra 7x Installation Guide*.

7.8.2 Creating Custom Task-Based Time-Triggered Transactions

Task-based custom time-triggered transactions are written as subclasses of the `com.yantra.ycp.japi.util.YCPBaseTaskAgent` class, which is a subclass of `com.yantra.ycp.japi.util.YCPBaseAgent` with the `getJobs()` and `executeJob()` functions already implemented. Creating a task-based custom time-triggered transaction by subclassing this class involves implementing the `executeTask()` function to process one task queue record passed to you as input.

Note: If the `executeTask()` function throws an exception, the exception is logged and the transaction is rolled back, otherwise it is committed.

The logging and timing utility functions available are similar to the ones provided by the `com.yantra.ycp.japi.util.YCPBaseAgent` class. The signature of the `executeTask()` function is `public Document executeTask(YFSEnvironment oEnv, Document inXML);Env` is a pre-created instance of a `YFSEnvironment` object that can be passed to Yantra 7x APIs and `InXML` is the `org.w3c.dom.Document` object, which contains the custom task XML. The custom task XML also contains a TransactionFilters Node, which contains all the parameters passed to the task-based custom time-triggered transaction. This node is below the root node of the input XML. For example, see an example for a task-based custom time-triggered transaction.

```
<?xml version="1.0" encoding="UTF-8"?>
<TaskQueue TaskQKey="" TransactionKey="" DataKey="" DataType="" AvailableDate=""
    Lockid="" Createts="" Createprogid="" Createuserid=""
Modifyts="" Modifyprogid="" Modifyuserid="" >
             <TransactionFilters   AgentName=""  TransactionKey=""
           CurrentThread="" NumRecordsToBuffer="" TotalThreads=""/>
</TaskQueue>
```

For a sample custom task-based time-triggered transaction, see the `com.yantra.ycp.japi.util.YCPBaseTaskAgent` class in *Yantra 7x Javadocs*.

To write a task-based custom time-triggered transaction:

1. Subclass `com.yantra.ycp.japi.util.YCPBaseTaskAgent`.
2. Implement the `executeTask()` function in this class.
3. From the Configurator, configure a time-triggered transaction and assign an Agent Server to it. For details about configuring time-triggered transactions see the *Yantra 7x Platform Configuration Guide*.

Schedule and run your custom time-triggered transaction according to the instructions in the *Yantra 7x Installation Guide*.

7.9 External Transaction Coordination

Yantra 7x provides the capability to execute external code either by raising an event, calling a user exit, or invoking a custom API or service. During these invocations, the external systems can begin a transaction. Since the external transaction is not part of the Yantra 7x transaction it could lead to data inconsistencies if the Yantra 7x transaction is rolled back but not the external transaction.

External transaction coordination lets the external systems register their transactions with Yantra 7x. When Yantra 7x is ready to commit its transaction, the `YFSTxnCoordinatorUE` user exit is invoked which lets Yantra 7x handle the commits and rollbacks on the external transactions.

To implement external transaction coordination:

1. Create the custom API that you want to implement your external transaction process, but DO NOT commit the external transactions. Instead, register the external transaction object with the YFSEnvironment by calling the `(YFSEnvironment)env.setTxnObject(String ID, Object txnObj)`.

   The String ID is a unique name used by the user exit implementation class to identify the custom transaction object.

   The following example illustrates a simple custom API.

Example 7–11   External Transaction Coordination of a Custom API

```
public class doSomethingAPI
{
private YFCLogCategory cat = YFCLogCategory.instance("DoSomethingAPI");

public doSomethingAPI()  // constructor is empty
{
}
public void writeToDB (String key, YFSEnvironment oEnv)
{

try
{
Driver aDriver =
(Driver)Class.forName("oracle.jdbc.OracleDriver").newInstance();
        String url = "jdbc:oracle:thin:@127.0.0.1:1521:qotree2";
        Connection conn = DriverManager.getConnection(url, "Scott", "Tiger");
conn.setAutoCommit(false);
        String sql = "insert into TxnTest (key) values ('" + key + "')";
        Statement stmt = conn.createStatement();
        stmt.executeUpdate(sql);
        oEnv.setTxnObject("YDBconn", conn);
}
catch (Exception e)
{
System.out.println ("Caught Exception :\n" + e);
}
    }
public Document doSomething(YFSEnvironment env, Document doc) throws
Exception
{
      System.out.println("Executing doSomething method..........");
writeToDB ("doSomething", env);
return doc;
    }
}
```

2. Implement the `com.yantra.yfs.japi.ue.YFSTTxnCoordinatorUE` user exit interface to commit the external transactions either before or after Yantra 7x does it's commits. Then implement the rollback method so that if the Yantra 7x transaction triggers a rollback, the `afterYantraTxnRollback(YFSEnvironment oEnv)` method is called to rollback the external transactions as well. Implement the following methods to accomplish this:

- `beforeYantraTxnCommit(YFSEnvironment oEnv)`
- `afterYantraTxnCommit(YFSEnvironment oEnv)`
- `afterYantraTxnRollback(YFSEnvironment oEnv)`

Note: You can use either the `beforeYantraTxnCommit` or the `afterYantraTxnCommit` user exit to synchronize commits, depending on your integration requirements.

Calling `(YFSEnvironment)env.getTxnObject(ID)`enables these methods to obtain the handle to the external transaction object that was previously registered by the `(YFSEnvironment)env.setTxnObject(String ID, Object txnObj)`. Note the ID is the same in both the `getTxnObject` call and the `setTxnObject` call.

The following is an example of the `YFSTTxnCoordinatorUE` user exit interface implementation.

Example 7–12 Sample Interface Implementation

```
public class afterTxnCommit implements YFSTxnCoordinatorUE
{

public void beforeYantraTxnCommit (YFSEnvironment oEnv) throws
YFSUserExitException
{
// before method is not implemented because after method is implemented.
}
public void afterYantraTxnCommit (YFSEnvironment oEnv) throws
YFSUserExitException
{
System.out.println ("Entering method afterYantraTxnCommit.........");
try
{
    Connection ydbConn = (Connection)oEnv.getTxnObject("YDBconn");
    ydbConn.commit();
}
catch (Exception e)
{
System.out.println ("Caught Exception :\n" + e);
}
}
```

```
public void afterYantraTxnRollback (YFSEnvironment oEnv) throws
YFSUserExitException
{
System.out.println ("Entering method afterYantraTxnRollback........");

try
{
    Connection ydbConn = (Connection)oEnv.getTxnObject("YDBconn");
    ydbConn.rollback();
}
catch (Exception e)
{
System.out.println ("Caught Exception :\n" + e);
}

}
```

3. Launch the Yantra 7x Configurator and navigate to System Administration > User Exit Management to configure the YFSTxnCoordinatorUE Implementation class as described in the *Yantra 7x Platform Configuration Guide*.

For more information about the YFSTxnCoordinatorUE user exit interface definition and other detailed information, see the *Yantra 7x Javadocs*.

7.10 Invoking APIs and Services

You can invoke Yantra 7x APIs and Services from the client environment or programmatically.

7.10.1 Invoking APIs from the Client Environment

In order to call standard APIs from the client, ensure that the client environment is set up correctly. The client environment must have appropriate CLASSPATH settings and the JAR files as described in this section.

The <YFS_HOME>`/resources/` directory must contain the `yifclient.properties` file.

If you are calling in local mode, the client CLASSPATH must contain the following Yantra 7x files:

- `yompbe.jar`

- `yimbe.jar`
- `yfcbe.jar`
- `ydmbe.jar`
- `ycsbe.jar`
- `ycpbe.jar`
- `ycmbe.jar`
- `yantraiconsbe.jar`
- `wmsbe.jar`
- `vasbe.jar`
- `yantrashared.jar`
- `yfsclient.jar`
- `log4j-1.2.11.jar`
- `yfcbe.jar`
- `xercesImpl.jar`
- `xml-apis.jar`

When running on WebSphere in EJB or HTTP mode, the client CLASSPATH should contain the following WebSphere files in <`WAS_HOME`>`/properties` directory:

- `yfsclient.jar`
- `log4j-1.2.11.jar`
- `yfcbe.jar`
- `xercesImpl.jar`
- `xml-apis.jar`

When running on the WebLogic application server in EJB mode, the client CLASSPATH should have the `weblogic.jar` WebLogic file.

When running on IBM JDK 1.4.* prepend the xercesImpl.jar, xml-apis.jar and xalan.jar files to the bootclasspath. For example in UNIX, the classpath is prepended as follows:

```
-Xbootclasspath/p:<YFS_HOME>/lib/xercesImpl.jar:<YFS_
HOME>/lib/xml-apis.jar:<YFS_HOME>/lib/xalan.jar
```

7.10.2 Invoking Services and APIs

Yantra 7x provides sample code that demonstrates how the Yantra 7x standard APIs and services can be invoked programmatically. See the sample files in the `<YFS_HOME>/documentation/code_examples/` directory.

Note: Use the `executeFlow()` method of the YIFApi interface to execute a service defined within the Yantra 7x Service Definition Framework.

When calling APIs in LOCAL mode, copying the management.properties file to your local `<YFS_HOME>/resources/` directory enables the database cache to refresh when required. For more information about the `managment.properties` file, see the *Yantra 7x Installation Guide*.

API and service transactions that are outbound from Yantra 7x can be configured through the Service Builder, as described in the *Yantra 7x Platform Configuration Guide*.

API and service transactions that are inbound to Yantra 7x can be invoked through the following protocols:

- EJB
- HTTP and HTTPS
- LOCAL
- Web Services
- COM+

EJB

Use EJB for server-side execution of code. Java call. All the methods in Yantra 7x take a `YFSEnvironment` and a `document` and returns a `document`. Since EJBs are designed to be called remotely, each of these documents is serialized on one end and unserialized on the other. However, Yantra 7x uses an EJB, where each API takes two string parameters and returns a string. Thereby, forcing any document implementation to serialize and unserialize using a standard well-defined interface.

For example, a new EJB is created with method signatures like:

```
String createOrder(String env, String inputXML) throws
YFSException, RemoteException;
```

where env is an XML that should be a valid input to `createEnvironment` variable. The return value is the output XML.

When calling an API using `YIFClientFactory.getInstance().getApi("EJB")` the call is made using this String-based EJB. With this type of call you can pass a `YFSEnvironment` and `document`, and get a `document` in return. The Yantra 7x code does the conversion transparently.

Note: The DOM-based EJB is deprecated. Hence, moving forward you need to use the String-based EJB for server-side execution.

HTTP

Use HTTP for server side execution of code. Java call.

LOCAL

Use Local for client side execution of code. COM **or** Java call.

Web Services

Use Web Services for client side execution of code. COM **or** Java call.

COM+

Use COM for client side execution of VB or C++ code. COM **or** Java call.

Using COM requires setting up your server and runtime clients as described in "Using Yantra 7x with Microsoft COM+" on page 13.

Note: Exceptions encountered when making synchronous API calls through EJB, COM, or HTTP transport protocols are not queued for reprocessing.

To configure service invocation:

1. Copy the `<YFS_HOME>/resources/yifclient.properties.sample` file to `<YFS_HOME>/resources/yifclient.properties`.
2. Set your CLASSPATH to include the directory containing the resources directory and the following files:
    - log4j-1.2.11.jar
    - xercesImpl.jar
    - yfcbe.jar
    - yfsclient.jar
3. Set your java command line property to `-Dlog4j.configuration=resources/log4jconfig.xml`.
4. Make sure that the <YFS_HOME> directory is in your CLASSPATH.
5. Set the log4j properties in the `log4jconfig.xml` file to the appropriate values for your environment. If these properties are not specified correctly, the Yantra 7x Service Definition Framework does not initialize correctly.
    - If you are using the EJB protocol and *WebLogic*, make sure that `weblogic.jar` is in your CLASSPATH environment variable. In addition, `xercesImpl.jar` and `xalan.jar` must precede `weblogic.jar` in your CLASSPATH.
    - If you are using the EJB protocol and *WebSphere*, make sure that the CLASSPATH environment variable contains the following JAR files and directories:
        - `<WAS_HOME>/lib/namingclient.jar`
        - `<WAS_HOME>/lib/runtime.jar`
        - `<WAS_HOME>/lib/messaging.jar`
        - `<WAS_HOME>/installedApps/yantra.jar`
        - `<WAS_HOME>/properties/`

– If you are configuring a COM+ protocol call, use one of the following COM signatures that you need:

```
createEnvironment(VARIANT *lEnvHandle, BSTR sProgID, BSTR sUserID, int
*iRetval)
```

Signature for calling standard Yantra 7x APIs:

```
<StandardYantraApi>(VARIANT *lEnvHandle, BSTR inXML, VARIANT *outXML,
VARIANT *errXML, int *retval)
```

Signature for calling services:

```
executeFlow(VARIANT *lEnvHandle, BSTR flowName, BSTR flowMsg, VARIANT
*outXML, VARIANT *errXML, int *retval)
```

For examples of VB code, see the samples in the `<YFS_HOME>/documentation/code_examples/complus` directory.

7.11 Transactional Data Security

Security issues involve controlling who has access to what data, how much they can see, and what they can do with it. Yantra 7x provides to mechanisms that address the following security issues:

- User access control
- Single sign on
- Data encryption

7.11.1 User Access Control

Through an access control mechanism of user group permissions, logins, and order modification permissions, Yantra 7x provides security measures for multiple levels of customer service and administrative organizations.

APIs control access to different areas of system functionality. It is the responsibility of the caller to ensure that the invoking user has access rights for the function being invoked. Yantra 7x provides security manager APIs to help in this effort. See the `com.yantra.api.ycp.security` package in the *Yantra 7x Javadocs*.

7.11.2 Single Sign On

If a single sign on mechanism is required within the Yantra 7x application, implement the interface `com.yantra.ycp.japi.util.YCPSSOManager`, which has a `getUserData()` function that returns a `String(UserId)`. For more detailed information, see the *Yantra 7x Javadocs*.

7.11.3 Data Encryption

Encryption ensures that sensitive data is not viewed by unauthorized people. Yantra 7x provides APIs that enable you to encrypt data such as user names, passwords, and credit card numbers.

In addition, encryption and decryption is only applied after it has been specified within the Configurator. For example, only user exits that have been passed credit card information can access decrypted credit card numbers.

7.11.4 Encryption Logic in Yantra 7x

Yantra 7x exposes the `com.yantra.ycp.japi.util.YCPEncrypter` interface to handle encryption logic. All of Yantra 7x's encryption and decryption is handled by an encrypter class that implements this interface. This class is specified by the `yfs.encrypter.class` and `yfs.propertyencrypter.class` properties in the `yfs.properties` file. Both classes must implement the `com.yantra.ycp.japi.util.YCPEncrypter` interface.

The `com.yantra.ycp.japi.util.YCPEncrypter` interface has the following two functions:

- public java.lang.String encrypt(java.lang.String sData) - sData is the data passed by Yantra 7x to the implementing class for encryption. The return value is the encrypted string.
- public java.lang.String decrypt(java.lang.String sData) - sData is the data which is required to be decrypted.

For information on writing your own property encrypter class, see the YCPEncrypter interface in the *Yantra 7x Javadocs*.

Encryption and decryption functions in this interface are invoked multiple times by Yantra 7x. Yantra 7x does not distinguish between clear text and encrypted information. Therefore, the encrypt function may be invoked with previously encrypted data. In order to avoid double encryption, it is important for the encrypt function to be able to distinguish between clear text and previously encrypted information. If previously encrypted information is passed to the function, your implementation of this function should return what is passed into it without encrypting it again.

The decrypt function also should be able to distinguish between clear text and previously encrypted text.

7.11.5 Disabling Encryption and Decryption

To disable encryption (or decryption), implement the encrypt (or decrypt) function to return the same value it is passed as input without any processing.

7.11.6 Choosing a Deployment Strategy

There are multiple deployment options when choosing an encryption strategy. The most typical options are:

- No encryption or decryption
- Both encryption and decryption
- No decryption

Use the following explanation to guide your decision-making process:

No Encryption or Decryption

If you operate in a secure and trusted environment which is protected physically and electronically and you do not display credit card numbers on the Yantra 7x Application Consoles, you may choose not to implement any encryption logic. Credit Card numbers are be encrypted in this case and are stored in clear text. This is not a recommended option except in the following scenarios:

- Your business does not accept, process, or store credit card numbers or other sensitive information.
- Yantra 7x is always passed externally encrypted credit card numbers. All encryption and decryption is handled externally.

Both Encryption and Decryption

Yantra 7x encrypts and decrypts credit card numbers automatically as required. Access to clear text credit card numbers is available on the Yantra 7x Application Consoles based on user authorization levels.

No Decryption

If your business requires Yantra 7x to store credit card numbers, but you never want Yantra 7x to automatically decrypt them under any circumstances, you may want to enable only the encrypt function and disable the decrypt function.

This way, Yantra 7x encrypts credit card numbers passed in as clear text but never converts them back. Once Yantra 7x encrypts the information, all your custom extensions are passed encrypted credit card numbers and must handle decryption externally. It is important to note that a few user exits in Yantra 7x (for example, `YFSbeforeCreateOrderUE`) are invoked *before* the credit card number is encrypted, so it still has access to the clear text number.

7.11.7 Encryption Usage in Yantra 7x

Yantra 7x supports encryption for the following places:

- Properties specified in the yfs.properties, yif.properties, management.properties files
- Credit Card Numbers

Properties Specified in the yfs.properties File

Properties such as the JDBC URL, database User ID and Password can be stored encrypted in the `yfs.properties` file. Because Yantra 7x needs this information to connect to the database, these values must be decrypted by Yantra 7x. If you do not wish Yantra 7x to ever decrypt data, these properties cannot be stored encrypted.

Credit Card Numbers

Yantra 7x can encrypt Credit Card numbers before storing them in the database. Unlike the properties specified in the `yfs.properties` file, decrypted credit card numbers are never required by Yantra 7x for default processing. However, you may extend Yantra 7x by implementing a user exit that requires decrypted credit card numbers for charging or storing user preferences. If you don’t want Yantra 7x to decrypt information automatically, you must decrypt these credit card numbers in your implementation of the user exit.

7.11.8 Encrypting Credit Card Numbers

If you implement encryption, Yantra 7x encrypts the credit card number in the following situations:

- When returned by an API
- When published as a part of event data
- When stored anywhere in the database
- When displayed on the user interface (although the user interface may have an option to override this behavior based on user access)

Credit Card Encryption APIs

Yantra 7x provides the following APIs that enable you to encrypt and decrypt credit card numbers assuming that both encryption and decryption algorithms have been implemented by the Encrypter class:

- getEncryptedCreditCardNumber() - returns an encrypted credit card number
- getEncryptedString() - accepts a string passed to it and returns the string encrypted
- getDecryptedCreditCardNumber() - returns the credit card number that had been encrypted using the getEncryptedCreditCardNumber() API
- getDecryptedString() - accepts an encrypted string and returns the string decrypted

Credit Card Encryption User Exits

Only user exits that are passed credit card information can access decrypted credit card numbers. Yantra 7x provides the following user exits for passing credit card data. For detailed information about these user exits, see the *Yantra 7x Javadocs*.

7.11.9 Encrypting Properties

Some properties relay sensitive data such as user IDs and passwords, which you may want to encrypt. Any property (except for the `yfs.propertyencrypter.class` property in the yfs.properties file), can be encrypted as needed within the following files:

- yfs.properties
- yif.properties
- management.properties

To encrypt properties

When encrypting properties, you need to:

1. Append the property you want to encrypt with ".encrypted". Note that you cannot encrypt the `yfs.propertyencrypter.class` property.
2. Ensure that the `yfs.propertyencrypter.class` property is accessible through the CLASSPATH environment variable
3. Implement the YCPEncrypter interface. For details about this interface, see the *Yantra 7x Javadocs*.

These properties ending with `.encrypted` are automatically decrypted at run-time.

7.12 Deploying

Note: At times, mechanisms supplied by Yantra 7x such as time-triggered transactions, APIs, and user exits are replaced by improved mechanisms. When these mechanism are replaced, they are designated as “deprecated.” Whenever possible, use the new mechanisms rather than the deprecated ones.

If you do need to use a deprecated mechanism, it must be run in backward compatibility mode. In addition, note that deprecated mechanisms are supported for two major software versions, and then they are removed from the product.

When you create any custom code (user exits, extended APIs, custom implementations of supplied Java interfaces, and so forth), you must add them to a JAR file in the `<YFS_HOME>/extn/` directory and the `yantra.ear` file must be rebuilt and re-deployed as described in the *Yantra 7x Installation Guide*.

A

Special Characters Reference

Yantra 7x reserves keywords and special characters that are only used internally. This appendix details the use and handling of the special characters in the following situations:

- Naming Files - see page 241
- Avoiding Yantra 7x Reserved Keywords - see page 241
- Forming API Input - see page 242
- Using Multi-Byte Characters - see page 244

For more details about using special characters, see the *Yantra 7x Localization Guide*.

A.1 Naming Files

When naming files, Yantra 7x recommends that you choose characters from the standard English-based character set, such as A through Z and 0 (zero) through 9. That way, if you need to localize the application in languages other than English, you do not need to rename files.

When creating files in order to extend the user interface, see the standards noted in Appendix B, "Console JSP Interface Extensibility Reference".

A.2 Avoiding Yantra 7x Reserved Keywords

Some keywords are reserved for use by Yantra 7x and are important to keep in mind when programming with APIs and creating error codes. Do not create file names or error codes that start with the following:

- DCS

- INV
- OMD
- OMP
- OMR
- OMS
- SYS
- WMS
- YCM
- YCP
- YDM
- YFC
- YFE
- YFS
- YFX
- YIF
- YRET

A.3 Forming API Input

When coding API input parameters, follow the guidelines in this section for using literals and formatting API input.

Caution: Do not pass a blank element (an element containing all the attributes with blank values) to an API. Also, do not pass attributes that have leading or trailing spaces. The result of either situation is not predictable.

A.3.1 Using Literals in Maps and XMLs

Use literals in maps and XMLs. Using literals enables you to write code with fewer bugs because the compiler catches the use of incorrect names in the <name>=<value> pair. In addition, using literals simplifies the maintenance of your code; if you change the <name>, all you need to do is recompile your code instead of editing one or more <name>s within it first.

A.3.2 Using Special Characters

Fields that are part of a logical key for any record in the Yantra 7x schema (such as ItemID, OrganizationCode, and OrderNo) have specific restrictions. For these fields, Yantra 7x ***does not*** support use of the following special characters:

- Ampersand (&)
- Greater than symbol (>)
- Less than symbol (<)
- Percent sign (%)
- Quotation mark (")
- Plus sign (+)
- Apostrophe (')

In addition, Yantra 7x advises avoiding the use of third-party vendors' reserved special characters. For example, in certain situations, data with underscore characters ("_") on an Oracle database could result in unexpectedly slow query performance because the database deciphers the underscore as a single character wild-card.

The following fields have no restrictions and support all characters:

- All description fields (for example, item description)
- All name fields (for example, organization name)
- All address fields (for example, billing address)

> **Note:** However when creating address fields through the UI, the information entered after the quotation mark (") is truncated and will appear as a new entry in `YFS_PERSON_INFO` table. To work around this problem, use apostrophe (') instead of quotations.

- All instruction fields (for example, gift wrapping)

- All text fields (for example, reasons and comments)

XML-Based APIs

The following table lists all of the following special characters that should follow the XML escape format.

Table A–1 Special Characters in Attributes of XML-Based APIs
Table A–2

For This Character	Enter This Sequence
quotation mark (")	&quot;
single quotation (')	&apos;
greater than symbol (>)	&gt;
less than symbol (<)	&lt;
ampersand (&)	&amp;

A.4 Using Multi-Byte Characters

If you want to use multi-byte characters, your database must be configured to support multi-byte characters. For more information about multi-byte characters and localization, see the *Yantra 7x Localization Guide*.

B

Console JSP Interface Extensibility Reference

Customizing the user interface requires writing scripts that determine how the user interface renders the screen and passes data. This chapter contains the supporting reference material necessary for customizing the user interface, as described in Chapter 3, "Customizing the Console JSP Interface".

Note: The HSDE screens are not extensible.

This chapter contains the following resources for your reference while developing the user interface:

- User Interface Style Reference
- Programming Standards
- JSP Functions
- JSP Tag Library
- JavaScript Functions
- Data Type Reference

Also, as when doing any sort of programming, see Appendix A, "Special Characters Reference".

B.1 User Interface Style Reference

The style reference helps you maintain consistency and enables easy code reusability.

B.1.1 Controls and Classes

This section is a quick reference list of the most common types of HTML controls and their corresponding CSS class tags. The typical controls and the corresponding CSS classes used in a JSP file are listed in Table B–1.

Table B–1 Typical Controls and Tags

Control and Tag	Available Classes	Description
Buttons	button	For all buttons.
Checkboxes	checkboxcolumn	For checkboxes displayed in a column of a table.
	checkboxheader	For checkboxes displayed in the header of a table. Use this class at the <td> cell level, not the <input> tag level.
Comboboxes/ Selects	combobox	For all combo boxes.
Icons	columnicon	For icons in a table column.
	icon	For icons not in a table column.
	lookupicon	For lookup icons appearing to the right of certain editable input texts.
Input Boxes	dateinput	For editable date input.
	numericprotectedinput	For non-editable numeric input. Right-aligned. Surrounding <td> tag should have class="protectednumber".
	numericunprotectedinput	For editable numeric input. Right-aligned.
	protectedinput	For non-editable input. Surrounding <td> tag should have class="protectedtext".
	unprotectedinput	For editable input.

Table B–1 Typical Controls and Tags

Control and Tag	Available Classes	Description
Labels	N/A	Takes the same font as specified by the table class in which it resides. Use detail labels for a detail view and search labels for a search view.
Radio Buttons	radiobutton	For all radio buttons.
Tables (non-tab ular data)	view	For detail views. This class is attached to `view.htc`, which dynamically sets column widths when the HTML page loads.
Tables (tabular data)	table	For all tables of the tabular data type. Specify the following attributes for the table element: • editable="true" • deleteAllowed="true" • addAllowed="true" The heading row must be included in a <thead> tag. Heading cells must be in <td> tag and not the <th> tag. The body rows must be included in a <tbody> tag. If the table is an editable list that permits add, specify a template row in a <tfoot> tag. Specify the following attributes for the template row <tr> tag: • "style="display:none" • TemplateRow="true" • ByPassRowColoring="true"
Text	numerictablecolumn	For displaying text in a table column. Right-aligned.
	protectednumber	For displaying numeric data. Right-aligned.
	protectedtext	For displaying text.

Table B–1 Typical Controls and Tags

Control and Tag	Available Classes	Description
	searchcriteriacell	For the bottom <td> tag of each search criteria. **Note**: all <td> tags using class as searchcriteriacell must specify nowrap="true". This prevents the lookup icon from wrapping to the next line when used with text boxes, input boxes, and query combo boxes.
	tablecolumn	For displaying non-editable text in a table column.
	tablecolumnheader	For displaying text in a table column header.
Textarea	textarea	For keeping text areas consistent. See also `getTextAreaOptions()`.
Total fields	totaltext	Shows text in a different color to identify a total field.

B.1.2 Page Layout

The following table describes the guidelines to follow when customizing screens in the Yantra 7x Application Consoles.

Table B–2 Page Layout Style Guidelines

Object	Standards
Anchor Page	Defines the layout of the inner panels to be included on a screen. For example, the Order Detail anchor page includes all inner panels relevant to Order Detail and defines how they should be laid out. Each entity should have its own anchor page. Use the following standards when developing anchor pages: Table tags - The outermost, or container, <table> tag should contain `cellspacing="0"` and `cellpadding="0"` attributes as the spacing is achieved through the classes used for the inner panels themselves. If these attributes are not set to "0" the amount of spacing and padding could potentially be inconsistent. Cell tags - <td> tags within the same <tr> tag should contain `height="100%"` to ensure the horizontally aligned cells are the same height.
Inner Panel Title-bars	Access to available popup windows granted through left-aligned icons in the title-bar. Available actions included in the right-aligned drop-down in the title-bar. Both of the above are achieved through the Yantra 7x Service Definition Framework.
Insets	Should be laid out symmetrically and consistent with other screens. Should be spaced five pixels from each other and from the edge of the main page. Apply this spacing to the inner panels, starting with the top inner panel and working down and to the right. For each individual inner panel, apply spacing to the top, left side, right side and then the bottom. Be careful not to add more spacing than necessary. For example, if there are two inner panels horizontally aligned and the left panel has been specific a right spacing of 5px, the right panel does not require left spacing of 5px, as this would result in total spacing of 10px.

Table B–2 Page Layout Style Guidelines

Object	Standards
Labels and Inputs	Specific names for labels on the screen should be the same as the names used in the Yantra 7x Configurator. If not used in the Yantra 7x Configurator, the labels should be the same as console in previous releases. Should be vertically spaced 5 pixels from one another. There is no default value for padding or spacing.
List Checkboxes	Checkboxes that appear in lists to enable the user to select specific rows. These should appear to the left of each row and is coded within the JSP that displays them.
Lists	All columns displaying numeric values should be right aligned.
Menu Bar	Should be displayed at the top of all pages that are not popup windows.
Page Title-bars	Should describe the current page and contain a list of available views when there is more than one view available.
Search Criteria	All available search criteria text inputs should be preceded by a combobox. For text search fields, provide combobox options for *is*, *starts with*, and *contains*. For numeric search fields, provide combobox options for *less than*, *greater than*, and *equal to*. Lookups should be provided to the right of the text inputs.

B.1.3 Hypertext Links

When a screen has a field that is a logical reference to another entity, hyperlink the data of that field to the entity to which it refers. For example, hyperlink the Order# field on the Order Line Detail screen to the Order screen.

B.2 Programming Standards

Follow these programming standards to help you create and maintain files that are consistent, easy-to-read, and reusable.

B.2.1 Standards for Creating Well-Formed JSP Files

Although HTML code is embedded in Java Server Pages, strive to write JSP code that is easily readable. If you require some special XML manipulation that cannot be incorporated in the APIs, include a separate JSP file, so that HTML tags and Java code do not become mixed together.

Use the following standards when writing JSP files:

- Tab spacing - Set the editor tab spacing to 4.
- JavaScript files - Do not include any JavaScript in the JSP file. Put all JavaScript into a separate JS file.
- HTML tags - Type all HTML tags and attributes in lowercase letters.
- HTML attributes - Enclose all HTML element attribute values in double quotes. Single quotes and no quotes may work, but the standard is to use double quotes.
- HTML tables - Minimize the number of tables in HTML pages. Especially, reduce the number of nested tables (a table within another table).
- Tags - Close all tags, whether required or not.
- Control elements - For each control element, add the `get…Options` attribute as the last attribute for that control element.
- Comments - Enclose all comments in the following manner: `<%/*……..*/%>`

Tip: When finished coding a form, open it in any visual HTML editor to validate that the HTML is well-formed.

B.2.2 Valid HTML Tags and Attributes

Follow this HTML reference material to help guide you in using the HTML attributes as they are used by Yantra 7x.

Note: You can also use any other HTML attributes, as long as you devise your own set of standards.

Table B–3 lists the recommended standard HTML tags and their attributes. For each HTML tag, use only the attributes listed in the Tag Attribute column.

Table B–3 Recommended Standard HTML Tags and Attributes

HTML Tag	Tag Attributes
<% %>	keep at the top of the JSP wherever possible
<a>	href
<imp>	alt
	border
	name
	src
	style
<input>	class
	maxlength
	name
	onblur
	style
	value
<option>	binding
	selected
	type
	value
<select>	class
	name
<table>	editable

Table B–3 Recommended Standard HTML Tags and Attributes

HTML Tag	Tag Attributes
	cellPadding
	cellspacing
	class
	style
<tbody>	N/A
<td>	class
	colspan
	nowrap
	onclick
	rowspan
	sortable
	sortValue
	style
<tfoot>	N/A
<thead>	N/A
<tr>	style
	templateRow (true/false)

B.2.3 Conventions for Naming JSP Files and Directories

As you populate directories with JSP files, adhere to a consistent hierarchical directory structure and a consistent file naming convention.

Use the following rules when choosing names for JSP files:

- Do not use any capital letters.
- Use underscores, not hyphens, to separate words.
- If the JSP file is an anchor page, include the word *anchor* in the name.

Directory and File Name Syntax

<module>/<entity>_<screen_type>_<viewdesc|"anchor">.jsp

Example

`om/orderline/search/orderline_search_bydate.jsp`

<**module**> represents a two-character module code. For example:

- cm - Catalog Management
- em - Alert Management
- im - Inventory Management
- om - Order Management
- pm - Participant Management

<**entity**> represents the resource ID of the entity. For example:

- order - Order entity
- orderline - Order Line entity
- orderrelease - Order Release entity

<**screen_type**> represents the resource type of the view. For example:

- list - List views
- detail - Detail views
- search - Search views

<**viewdesc**> represents an abbreviated description of the view or the inner panel. For example:

- primaryinfo - Primary Information
- paymentinfo - Payment Information
- collectiondtl - Collection Details

B.2.4 Conventions for Naming Controls

When using the Yantra 7x Presentation Framework function for XML binding the input controls in your JSP, you should not set the name attribute for that control. In general, avoid naming each control. Instead, try to access the control through the HTML object or DOM hierarchy. If you do need to name a control, keep in mind that the name must be unique within each page.

B.2.5 Internationalization

Yantra 7x Presentation Framework enables you to write an internationalized application by providing the following features that can be customized to be *locale-specific*:

- i18n JSP tag for literals
- Graphics and images
- Client-side error messages
- Date and number validations
- Themes (which includes fonts that support language character sets)

B.2.6 Validating Your HTML and CCS Files

Validate both your HTML and CSS files. You can use any commercial software package or free, online application, such as the following World Wide Web Consortium (W3C) validators:

- W3C CSS Validator at http://jigsaw.w3.org/css-validator/
- W3C HTML Validator at http://validator.w3.org/

As an alterative, when you finish coding a form, you can open it in any visual HTML editor to validate that the HTML is well-formed.

B.3 CSS Theme File Reference

This section contains reference material to help guide you when modifying the CCS files.

The standard Yantra 7x themes use the Tahoma font as specified within the CSS files. If you need to use a different sized font, you may encounter display problems, such as truncation of the drop-down list items. In this event, you can can edit the CSS file and specify properties that will enable the screen to display correctly. Use the classes and properties described in Table B–4.

Table B–4 CSS Theme Classes

Class	Description
favouritespopuprowhighlight	Drop-down list items under the Favorite folder icon to highlight during mouse over actions. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the favouritespopuprownormal class. • charwidth - horizontal size of character. Use the same value as specified for the favouritespopuprownormal class.
favouritespopuprownormal	Drop-down lists under the Favorite folder icon. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the favouritespopuprowhighlight class. • charwidth - horizontal size of character. Use the same value as specified for the favouritespopuprowhighlight class.
ipactionspopuprowhighlight	Drop-down list items on detail views to highlight during mouse over actions. Contains both header and line information. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the ipactionspopuprownormal class. • charwidth - horizontal size of character. Use the same value as specified for the ipactionspopuprownormal class.

Table B–4 CSS Theme Classes

Class	Description
ipactionspopuprownormal	Drop-down list items on detail views. Contains both header and line information. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the ipactionspopuprowhighlight class. • charwidth - horizontal size of character. Use the same value as specified for the ipactionspopuprowhighlight class.
listactionspopuphighlight	Drop-down list items on list views to highlight during mouse over actions. On list views. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the listactionspopupnormal class. • charwidth - horizontal size of character. Use the same value as specified for the listactionspopupnormal class.
listactionspopupnormal	Drop-down list items on list views. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the listactionspopuphighlight class. • charwidth - horizontal size of character. Use the same value as specified for the listactionspopuphighlight class.

Table B–4 CSS Theme Classes

Class	Description
menuitempopuprowhighlight	Drop-down list items on the menu bar to highlight during mouse over actions. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the menuitempopuprownormal class. • charwidth - horizontal size of character. Use the same value as specified for the menuitempopuprownormal class.
menuitempopuprownormal	Drop-down list items on the menu bar. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the menuitempopuprowhighlight class. • charwidth - horizontal size of character. Use the same value as specified for the menuitempopuprowhighlight class.
menulevel1hl	Menu bar items to highlight during mouse over actions. Has the following properties: • height - background vertical size.
menulevel1norm	Menu bar items. For example Order, Supply, System Management, and so forth: Has the following properties: • height - background vertical size.

Table B–4 CSS Theme Classes

Class	Description
searchentitiespopuprowhighlig ht	Drop-down list items (left side) on search views to highlight during mouse over actions. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the searchentitiespopuprownormal class. • charwidth - horizontal size of character. Use the same value as specified for the searchentitiespopuprownormal class.
searchentitiespopuprownormal	Drop-down list items (left side) on search views. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the searchentitiespopuprowhighlight class. • charwidth - horizontal size of character. Use the same value as specified for the searchentitiespopuprowhighlight class.

Table B–4 CSS Theme Classes

Class	Description
searchviewspopuprowhighlight	Drop-down list items (right side) on search views to highlight during mouse over actions. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the searchviewspopuprownormal class. • charwidth - horizontal size of character. Use the same value as specified for the searchviewspopuprownormal class.
searchviewspopuprownormal	Drop-down list items (right side) on search views. Has the following properties: • charheight - vertical size of character. Use the same value as specified for the searchviewspopuprowhighlight class. • charwidth - horizontal size of character. Use the same value as specified for the searchviewspopuprowhighlight class.

B.4 JSP Functions

This section describes the JSP functions that you can use.

B.4.1 changeSessionLocale

While locale is configured at the user level, you can also dynamically switch to a specific locale by using this JSP function.

Syntax

void changeSessionLocale(String localecode)

Input Parameters

localecode - Locale you want to switch to.

B.4.2 equals

This JSP function is a cover over Java's equal function that takes care of the situation when either of the objects are null or contain zero or more white spaces. In all of those situations, the two objects are considered equal.

Syntax

boolean equals(Object obj1, Object obj2)

Input Parameters

obj1, obj2 - Required. The two objects that must be compared.

Example

This example shows how this function makes string comparisons.

```
<% String sAvailable="";
if(equals(resolveValue("xml:/InventoryInformation/Item/@TrackedEverywhere"),"N")
)
        sAvailable=getI18N("Available") + ": " + getI18N("INFINITE");
    else
        sAvailable=getI18N("Available") + ": "
+resolveValue("xml:/InventoryInformation/Item/@AvailableToSell");
%>
```

B.4.3 getCheckBoxOptions

This JSP function is a standard function to XML bind checkboxes when modification rules do not need to be considered.

Syntax

String getCheckBoxOptions(String name)

String getCheckBoxOptions(String name,String a_checked, String a_value)

Input Parameters

name - Required. Value of the name attribute for the checkbox input. Can be a binding or a literal.

checked - Required. When the value of the value attribute is equal to this value, the CHECKED attribute is set to true.

value - Required. Value of the value attribute for the checkbox input. Can be a binding or a literal.

Note: If only the name parameter is passed, value defaults to the same value passed to the name parameter.

JSP Usage

```
<input type="checkbox"
<%=getCheckBoxOptions("xml:Order:/Order/Addlinfo/@Country" ,"IND",
"xml:Order:/Order/Addlinfo/@Country" )%></yfc:i18n>India</yfc:i18n></input>
```

Resultant HTML

```
<input type="checkbox" name="xml:Order:/OrderAddlinfo/@Country"
value="IND">India</input>
```

B.4.4 getColor

This JSP function returns the HTML color in hexidecimal code based on the specific color object.

Syntax

public String getColor(java.awt.Color color)

Input Parameters

color - Required. Color object.

B.4.5 getComboOptions

This JSP function provides a standard function to XML bind combo boxes when modification rules do not need to be considered.

Syntax

String getComboOptions(String name)

String getComboOptions(String name, String value)

Input Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Presentation Framework, the target XML is then passed to the appropriate API.

value - Required. Specifies the value to be selected in the combobox. Can be a binding or a literal.

JSP Usage

This example shows how to render the enterprise code combobox in the Order Entry screen. The API is used in conjunction with the `loopOptions` JSP tag.

```
            <select class="combobox" onChange="updateCurrentView()"
<%=getComboOptions("xml:/Order/@EnterpriseCode",enterpriseCode)%>>
                <yfc:loopOptions binding="xml:/OrganizationList/@Organization"
name="OrganizationCode"
                value="OrganizationCode" selected="xml:/Order/@EnterpriseCode"/>
            </select>
```

B.4.6 getComboText

This JSP function provides a standard function to get description from a list of values.

Syntax

String getComboText(String binding, String name, String value, String selected)

String getComboText(String binding, String name, String value, String selected,boolean localized)

Input Parameters

binding - Required. Binding string that points to the repeating element in the API output. The repeating element must be one fixed with the at character ("@").

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Presentation Framework, the target XML is then passed to the appropriate API..

value - Required. Specifies the value to be selected in the combobox. Can be a binding or a literal.

selected - Optional. Binding string that must be evaluated and set as the default selected value. This is matched with the value attribute, not the description attribute. Defaults to blanks, for example, space (" ").

localized - Optional. If passed as true, it fetches the localized description to be displayed.

JSP Usage

This example shows how to render the enterprise code combobox in the Order Entry screen. The API is used in conjunction with the `loopOptions` JSP tag.

```
<%=getComboText("xml:TaxNameList:/CommonCodeList/@CommonCode","CodeShortDescript
ion","CodeValue","xml:/HeaderTax/@TaxName",true)%>
```

B.4.7 getDateOrTimePart

This JSP function returns a string representing the date or time portion of a timestamp value.

Syntax

String getDateOrTimePart(String type, String value);

Input Parameters

type - Required. Specifies whether to display the date or time. Pass YFCDATE to return the date portion of the timestamp. Pass YFCTIME to return the time portion of the timestamp.

value - Required. String containing a timestamp value in the current login user’s locale’s timestamp format.

Output Parameters

A string representing the date or time portion of the timestamp attribute.

Example

This example uses the `getDateOrTimePart()` function to return the date portion of the attribute referred to in the `xml:/OrderRelease/@HasDerivedParent` binding.

```
getDateOrTimePart("YFCDATE",
resolveValue("xml:DeliveryPlan:/DeliveryPlan/@DeliveryPlanDate));
```

B.4.8 getDateValue

This JSP function retrieves the date from an XML in XML format, and not in the format of current locale. This is typically used for storing a custom `sortValue` attribute in a column for sorting a table.

Syntax

String getDateValue(String bindingStr);

Input Parameters

bindingStr - Required. Binding string that must be resolved into a date string.

Output Parameters

Date string (YYYYMMDDHH24MISS structure), with the following values:

YYYY - Required. Four-digit display of year (for example, 2002).

MM - Required. Two-digit display of month (for example, 05 for May).

DD - Required. Two-digit display of date (for example, 05 for 5th).

HH24 - Required. Two-digit display of hour on a 24-hour scale (for example, 16 for 4 PM).

MI - Required. Two-digit display of minutes.

SS - Required. Two-digit display of seconds.

Example

This example shows how the `getDateValue()` function stores the date in this format for subsequent client-side sorting by the user on the list of alerts for an order.

```
<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
```

```
        <tr>
            <td class="tablecolumnheader"><yfc:i18n>Alert_ID</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Raised_On</yfc:i18n></td>
        </tr>
    </thead>
    <tbody>
        <yfc:loopXML binding="xml:/InboxList/@Inbox" id="Inbox">
            <tr>
                <td class="tablecolumn">
                        <yfc:getXMLValue binding="xml:/Inbox/@InboxKey"/>
                </td>
                <td class="tablecolumn"
sortValue="<%=getDateValue("xml:Inbox:/Inbox/@GeneratedOn")%>">
<yfc:getXMLValue binding="xml:/Inbox/@GeneratedOn"/>
</td>
            </tr>
        </yfc:loopXML>
   </tbody>
</table>
```

B.4.9 getDBString

This JSP function returns a string representing the localized version of the input string. The input to this method should be a data string that has been translated in the YFS_LOCALIZED_STRINGS table.

Syntax

String getDBString(String inString)

Input Parameters

inString - Required. The string to be translated. This string should be translated in the YFS_LOCALIZED_STRINGS table.

Example

This example shows how to display the translated version of the Description attribte of the singleDocType element.

```
<%=getDBString(singleDocType.getAttribute("Description"))%>
```

B.4.10 getDetailHrefOptions

This JSP function is typically used to form a link in an inner panel that opens another detail view. A link is modeled as a resource of type Link. The resource can point to any other detail view, and you can configure this through the resource configurator. Use this function inside an <a> tag. This function can be used only in an inner panel (and therefore only in a detail view).

Syntax

String getDetailHrefOptions(String linkIdSuffix, String entityKey, String extraParams)

Input Parameters

linkIdSuffix - Required. Link ID suffix. A resource of type Link is named as <current inner panel's Resource ID><suffix>. For instance, if the current inner panel's Resource ID is YOMD010I01, a link ID is YOMD010I01L01 and the suffix is `L01`. Pass only the suffix `L01`.

entityKey - Required. Key (formed through the `makeXMLInput` JSP tag) that must be passed on to the view that is invoked by selecting this link.

extraParams - Required. String containing extra parameters that are appended to the URL that is formed for the <a href> tag. The String should start with an ampersand ("&") and should contain name-value pairs in the `<name>=<value>` format. Restrict the use of this parameter only to cases where it is absolutely necessary because there is a size limit of what can be passed in a URL. Typically, each view should only take the key and retrieve other details from an API based on that key.

Output Parameters

A string containing `href=""` and `onclick=""` attributes must be plugged into a <a> tag in HTML.

The resource of type link is not permission controlled. However, the view to which a link points is permission controlled. Still, since this function is called inside an <a> tag, the link is formed regardless of whether or not the user has permissions for the view to which the link points. If the user selects the link, the view that is displayed gives an Access Denied message.

Example

This example shows how the `getDetailHrefOptions()` function forms a hyperlink to the Alert Detail view from a list of alerts for an order.

```
<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
        <tr>
            <td sortable="no" class="checkboxheader">
                <input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Alert_ID</yfc:i18n></td>
        </tr>
    </thead>
    <tbody>
        <yfc:loopXML binding="xml:/InboxList/@Inbox" id="Inbox">
            <tr>
                <yfc:makeXMLInput name="inboxKey">
                    <yfc:makeXMLKey binding="xml:/Inbox/@InboxKey"
value="xml:/Inbox/@InboxKey"/>
                </yfc:makeXMLInput>
                <td>
                   <input type="checkbox" value='<%=getParameter("inboxKey")%>'
name="EntityKey"/>
                </td>
                <td class="tablecolumn">
                    <a <%=getDetailHrefOptions("L01",
getParameter("inboxKey"),"")%> >
                        <yfc:getXMLValue binding="xml:/Inbox/@InboxKey"/>
                    </a>
                </td>
            </tr>
        </yfc:loopXML>
   </tbody>
</table>
```

B.4.11 getDetailHrefOptions (with additional parameter)

This JSP function is similar to the getDetailHrefOptions() function, except that it takes an additional parameter. This additional parameter enables you conditionally link to different views with the same hyperlink. First, configure multiple link resources under the same inner panel that have the same link ID except for a conditional suffix. For example, configure one link with ID YOMD010I01L010001 that points to one view and another link with ID YOMD010I01L010002 that points to a different view. Then, in the JSP, you can use this function within an <a> tag to conditionally link to different views by passing different values for the conditionalLinkId parameter.

Syntax

getDetailHrefOptions(String linkIdSuffix, String conditionalLinkId, String entityKey, String extraParams)

Input Parameters

linkIdSuffix - Required. Link ID suffix. A resource of type Link is named as <current inner panel's Resource ID><suffix>. For instance, if the current inner panel's Resource ID is YOMD010I01, a link ID is YOMD010I01L01 and the suffix is `L01`. Pass only the suffix `L01`.

conditionalLinkId - Required. Portion of the suffix of the link ID. Used to conditionally link to different views.

entityKey - Required. Key (formed through the `makeXMLInput` JSP tag) that must be passed on to the view that is invoked by selecting this link.

extraParams - Required. String containing extra parameters that are appended to the URL that is formed for the <a href> tag. The string should start with an ampersand (&) and contain name value pairs in the syntax <name>=<value>. Because there is a size limit on what can be passed in a URL, use this parameter only when absolutely necessary. Typically, each view should only take the key and retrieve other details from an API based on that key.

Output Parameters

A string containing `href=""` and `onclick=""` attributes that must be plugged into a <a> tag in HTML.

The resource of type link is not permission controlled. However, the view to which a link points is permission controlled. Still since this function is called inside an <a> tag, the link is formed regardless of whether or not the user has permissions for the view to which the link points. If the user selects the link, the view that is displayed gives an Access Denied message.

Example

This function is useful when a specific hyperlink on a screen must link across document types. For example, a list of shipments on a Delivery Plan screen could be shipments for different document types (order and purchase order shipments). The detail view that must be shown for the two types of shipments is different. The document type of the shipment can be used as the conditionalLinkId.

```
<a <%=getDetailHrefOptions("L01", getValue("Shipment",
"xml:/Shipment/@DocumentType"), getParameter("shipmentKey"), "")%>>
<yfc:getXMLValue binding="xml:/Shipment/@ShipmentNo"/>
</a>
```

This example shows the call to the `getValue()` function returns the document type of the shipment that is used as the conditionalLinkId. For this example to work, the inner panel using this JSP should have to link resources defined with the following properties:

```
Link 1: ID="YDMD100I02L010001" View ID="YOMD330"
Link 2: ID="YDMD100I02L010005" View ID="YOMD7330"
getDoubleFromLocalizedString -
```

B.4.12 getDoubleFromLocalizedString

This JSP function returns a double value that is represented in a string containing the number in the format used by a particular locale.

This function does the reverse of the `getLocalizedStringFromDouble()` function. See "getLocalizedStringFromDouble" on page 274.

Syntax

double getDoubleFromLocalizedString(YFCLocale aLocale, String sVal)

Input Parameters

aLocale - Required. The YFCLocale object for which you want the number formatted for a specific locale.

sVal - Required. The string containing the formatted representation of the number.

Output Parameters

A double containing the unformatted number.

JSP Usage

This example shows how the string variable containing a formatted double called `sTotalInternalUnassignedDemand` is compared to zero by first converting it into the double value.

```
<% if ((getDoubleFromLocalizedString(getLocale(),
sTotalInternalUnassignedDemand)) > 0) {%>
   <table  border="1" style="border-color:Black" cellspacing="2" cellpadding="2"
   bgcolor="<yfc:getXMLValue
   binding="xml:/InventoryInformation/Item/InventoryTotals/Demands/@Total
   InternalUnassignedDemand" />">
        <tr>
     <td style="height:10px;width:15px"></td>
        </tr>
   </table>
<%}%>
```

B.4.13 getElement

This JSP function gets the YFCElement object that resides in a specific namespace. You can use this function to obtain a handle to the YFCElement and subsequently manipulate the XML in the YFCElement object.

YFCElement is part of Yantra 7x DOM utility package. To see the APIs available in this package, see the *Yantra 7x Javadocs*.

Syntax

YFCElement getElement(String nameSpace)

Input Parameters

nameSpace - Required. Namespace that contains the YFCElement needs to be returned.

Output Parameters

YFCElement - Required. YFCElement object that resides in the namespace provided.

Example

This example shows how the Return detail view controls whether the active or inactive state of the Schedule operation uses this function.

The Schedule operation is not valid for draft orders.

The getOrderDetail() API returns DraftOrderFlag attribute in the XML.

This flag is Y when the order is draft order, and N otherwise.

This must be converted into another flag that is opposite in meaning. As a result, use an attribute called ConfirmedFlag, which is N when the order is a draft order and Y when the order is no longer a draft order.

```
<%
    YFCElement elem=getElement("Order");
    if (elem != null) {
        //Flip the draft order flag into confirmed flag.
        elem.setAttribute("ConfirmedFlag",
!isTrue("xml:/Order/@DraftOrderFlag"));
    }
%>
```

B.4.14 getImageOptions

This is the JSP function used for building an image tag in HTML.

A Java constants file keeps the image path and icon centralized. If the path starts with /yantra/console/icons, the image file is first searched for inside /webpages/extn/icons/yantraiconsbe.jar (or the localized icons JAR file) and then inside the /webpages/yfscommon/yantraiconsbe.jar (or the localized icons JAR file). The path to be specified is the path of the image file inside the JAR file.

If the path does not start with /yantra/console/icons, it retrieves the file from the location specified in the EAR file. It is strongly advised that you place your images under the /console/icons/ directory in the custom icons JAR file (yantraiconsbe.jar).

The path to be specified is the path of the image file inside the JAR file.

If you want to use an image that may be hidden based on modification rule considerations, use the yfsgetImageOptions() function. See "yfsGetImageOptions" on page 292.

Syntax

getImageOptions(imgfilewithpath, alt)

Input Parameters

imgfilewithpath - Required. Full path to the file of the image.

alt - Required. String to use as the alt attribute for the image. This string is displayed when the image cannot be rendered on screen.

JSP Usage

```
<img class="lookupicon" name="search"
<%=getImageOptions("/yantra/console/icons/shipnode.gif" "Search_for_
Organization") %> />
```

B.4.15 getLocale

This JSP function returns a YFCLocale object that represents the locale of the user logged into Yantra 7x.

Syntax

YFCLocale getLocale()

Input Parameters

None.

Output Parameters

The YFCLocale object that represents the locale of the logged in user.

JSP Usage

This example shows how the `getLocale` function can be used in conjunction with the getDoubleFromLocalizedString function. See "getDoubleFromLocalizedString" on page 270.

```
<% if ((getDoubleFromLocalizedString(getLocale(),
sTotalInternalUnassignedDemand)) > 0) {%>
   <table  border="1" style="border-color:Black" cellspacing="2" cellpadding="2"
   bgcolor="<yfc:getXMLValue
   binding="xml:/InventoryInformation/Item/InventoryTotals/Demands/@TotalInter
   nalUnassignedDemand" />">
      <tr>
         <td style="height:10px;width:15px"></td>
      </tr>
   </table>
<%}%>
```

B.4.16 getLocalizedStringFromDouble

This JSP function returns a representation of a string value and displays it in the correct format for a specific locale.

Yantra 7x always display numeric data in the format specific to the locale of the logged in user. If you have a decimal value that you need to display to the user that is not formated in any locale, use this function to get a string representing the correctly formatted representation of the decimal value.

This function does the reverse of the `getDoubleFromLocalizedString()` function. See "getDoubleFromLocalizedString" on page 270.

Syntax

String getLocalizedStringFromDouble(YFCLocale aLocale, double aDblVal)

Input Parameters

aLocale - Required. The YFCLocale object for which you want the number formatted for a specific locale.

aDblVal - Required. The number (which can include decimals) you want formatted for a specific locale.

Output Parameters

A string containing the correctly formatted representation of the number.

JSP Usage

This example shows how to get the localized format of the number 2500.75. If the locale used is en_US, then the sBalance variable is 25,00.75.

```
String sBalance = getLocalizedStringFromDouble(locale, 2500.75);
```

B.4.17 getLocalizedStringFromInt

This JSP function returns a representation of an integer value and displays it in the correct format for a specific locale.

Yantra 7x always displays numeric data in the format specific to the locale of the logged in user. If you have a decimal value that you need to display to the user that is not formated in any locale, use this function to get a string representing the correctly formatted representation of the integer value.

Syntax

String getLocalizedStringFromInt(YFCLocale aLocale, int intVal)

Input Parameters

aLocale - Required. The YFCLocale object for which you want the number formatted for a specific locale.

intVal - Required. The integer you want formatted for a specific locale.

Output Parameters

A string containing the correctly formatted representation of the number.

JSP Usage

This example shows to display an integer variable called `quantity` within a <td> tag.

```
<td class="protectednumber">
   <%=getLocalizedStringFromInt(getLocale(), quantity)%>
</td>
```

B.4.18 getLoopingElementList

This JSP function can be used as an alternative to the loopXML JSP tag. See “loopXML” on page 305.

If your application servers only supports up to JSP specification version 1.1, and you need to include another JSP (using `jsp:include`) within the loop, use this function.

Syntax

ArrayList getLoopingElementList(String binding)

Input Parameters

binding - Required. The XML binding to the element within an XML that you want to repeat.

Output Parameters

An ArrayList containing the list of elements that you can then use in a loop.

JSP Usage

This example loops on the `xml:PromiseList:/Promise/Options/@Option` element. For each iteration of the loop, it includes the `/om/lineschedule/list/lineschedule_list_option.jsp` JSP file.

Note that loop element is set into an attribute of the pageContext so that it will be available within the included JSP.

```
<td colspan="6" style="border:1px ridge black">
    <%  ArrayList optList =
getLoopingElementList("xml:PromiseList:/Promise/Options/@Option");
for (int OptionCounter = 0; OptionCounter < optList.size(); OptionCounter++) {

   YFCElement singleOpt = (YFCElement) optList.get(OptionCounter);
   pageContext.setAttribute("Option", singleOpt); %>

<% request.setAttribute("Option",
(YFCElement)pageContext.getAttribute("Option")); %>
<jsp:include page="/om/lineschedule/list/lineschedule_list_option.jsp"
flush="true">
</jsp:include>
    <% } %>
</td>
```

B.4.19 getNumericValue

This JSP function retrieves a number from an XML output in the original XML format, and not in the format of current locale. This is typically used for storing a custom `sortValue` attribute in a column for sorting a table.

Syntax

String getNumericValue(String bindingStr)

Input Parameters

bindingStr - Required. Binding string that must be resolved into a number string.

Output Parameters

Number string in Yantra 7x's XML format, with decimals.

Example

This example shows how the getNumericValue() function is used to store the priority in XML format for subsequent client-side sorting by user on the list of alerts for an order.

```
<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
        <tr>
            <td sortable="no" class="checkboxheader">
                <input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Alert_ID</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Priority</yfc:i18n></td>
        </tr>
    </thead>
    <tbody>
        <yfc:loopXML binding="xml:/InboxList/@Inbox" id="Inbox">
            <tr>
                <yfc:makeXMLInput name="inboxKey">
                    <yfc:makeXMLKey binding="xml:/Inbox/@InboxKey"
value="xml:/Inbox/@InboxKey"/>
                </yfc:makeXMLInput>
                <td>
                   <input type="checkbox" value='<%=getParameter("inboxKey")%>'
name="EntityKey"/>
                </td>
                <td class="tablecolumn">
                    <a <%=getDetailHrefOptions("L01",
getParameter("inboxKey"),"")%> >
                        <yfc:getXMLValue binding="xml:/Inbox/@InboxKey"/>
                    </a>
                </td>
                <td class="tablecolumn"
sortValue="<%=getNumericValue("xml:Inbox:/Inbox/@Priority")%>"><yfc:getXMLValue
binding="xml:/Inbox/@Priority"/>
</td>
            </tr>
        </yfc:loopXML>
   </tbody>
</table>
```

B.4.20 getParameter

This JSP function obtains the value of the parameter requested from the pageContext() function and requests in the following order:

pageContext.getAttribute() -> If not found -> request.getAttribute() -> If not found ->request.getParameter().

This function is typically used to extract the parameters specified while using various Yantra 7x Presentation Framework JSP tags such as yfc:makeXMLKey and yfc:loopXML.

Syntax

String getParameter(String paramName);

Input Parameters

paramName - Required. Name of the parameter whose value is required.

Example

This example shows how an order list view shows a hyperlinked order number that opens the default detail view. The yfc:makeXMLInput JSP tag uses the keys specified to prepare and stores the XML. The XML can be extracted using the getParameter() function.

```
<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
        <tr>
            <td sortable="no" class="checkboxheader">
                <input type="checkbox" name="checkbox" value="checkbox" 
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Order_#</yfc:i18n></td>
            <td class="tablecolumnheader"><yfc:i18n>Enterprise</yfc:i18n></td>
        </tr>
    </thead>
    <tbody>
        <yfc:loopXML binding="xml:/OrderList/@Order" id="Order">
            <tr>
                <yfc:makeXMLInput name="orderKey">
                    <yfc:makeXMLKey binding="xml:/Order/@OrderHeaderKey" 
value="xml:/Order/@OrderHeaderKey" />
                </yfc:makeXMLInput>
                <td class="checkboxcolumn">
                   <input type="checkbox" value='<%=getParameter("orderKey")%>'
name="EntityKey"/>
                </td>
                <td class="tablecolumn"><a
href="javascript:showDetailFor('<%=getParameter("orderKey")%>');">
                    <yfc:getXMLValue binding="xml:/Order/@OrderNo"/></a>
                </td>
                <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@EnterpriseCode"/></td>
            </tr>
        </yfc:loopXML>
   </tbody>
</table>
```

B.4.21 getRadioOptions

This JSP function XML binds radio buttons when modification rules do not need to be considered.

Syntax

String getRadioOptions(String name)

String getRadioOptions(String name, String checked)

String getRadioOptions(String name, String a_checked, String a_value)

Input Parameters

name - Required. Value of the name attribute for the radio input. Can be a binding or a literal.

checked - Required. Sets the checked attribute for the element with the matching ID. Must be a literal.

value - Required. Value of the value attribute for the radio input. Can be a binding or a literal.

Note: If only the name parameter is passed, the value of the value parameter defaults to the same value passed to the name parameter.

JSP Usage

```
<input type="radio" <%=getRadioOptions("xml:Order:/OrderAddlinfo/@Country"
,"US", "xml:Order:/OrderAddlinfo/@Country" )%>>United States</input>
```

Resultant HTML

```
<input type="radio" name="US" value="US" CHECKED>United States</input>
```

B.4.22 getRequestDOM

This JSP function constructs a YFCElement containing all of the XML elements that could be created out of the request parameters that are available when this function is called. When a particular screen is "posted", the input fields on the screen that are bound to XML values can be accessed via this function. The YFCElement that is constructed contains the following structure:

```
<root>
   <namespace1 ... />
   <namespace2 ... />
   ...
</root>
```

This function is useful when you need to access the posted XML values in the proper XML structure for some JSP processing.

Syntax

String getRequestDOM()

Input Parameters

None.

Output Parameters

A YFCElement containing all of the XMLs that could be created out of the request parameters that were available when this function was called.

JSP Usage

The following example shows the output of getRequestDOM if the following input fields are posted:

```
<input type="hidden" name="xml:/Order/@OrderNo" value="Order0001"/>
<input type="hidden" name="xml:/Order/@OrderType" value="Customer"/>
```

```
<input type="hidden" name="xml:/User/@UserName" value="user01"/>
```

Ouput of getRequestDOM is:

```
<root>
    <Order OrderNo="Order0001" OrderType="Customer"/>
    <User UserName="user01"/>
</root>
```

B.4.23 getSearchCriteriaValueWithDefaulting

This JSP function handles the situation where you want to use a default value in the search criteria fields. This special function is required because it is necessary to distinguish between when the user has come to a screen intially versus when a saved search has been loaded and this attribute has specifically been saved as "blank" in the saved search. In that this type of saved search is being loaded into the search view, then the defaulting should not take place.

Syntax

String getSearchCriteriaValueWithDefaulting(String binding, String defaultBinding)

Input Parameters

binding - Required. The target XML binding of the search criteria field that needs to have its value defaulted accordingly.

defaultBinding - Required. The XML binding (or static value) from where the default value should come from when the user is navigating to that search screen for the first time.

Output Parameters

A string containing the value that will be displayed in that search criteria field.

JSP Usage

This example shows how an "enterprise code" combo box on an order search screen can be defaulted to the primary enteprise code of the logged in user's organization.

```
<td class="<%=inputTdClass%>" nowrap="true">
    <select class="combobox" <%=getComboOptions(enterpriseCodeBinding)%>>
```

```
<yfc:loopOptions
binding="xml:CommonEnterpriseList:/OrganizationList/@Organization"
name="OrganizationCode"
value="OrganizationCode"
selected='<%=getSearchCriteriaValueWithDefaulting("xml:/Order/@EnterpriseCode",
"xml:CurrentOrganization:/Organization/@PrimaryEnterpriseKey")%>'/>
    </select>
</td>
```

B.4.24 getTextAreaOptions

This JSP function XML binds a text area when modification rules do not need to be considered.

Syntax

getTextAreaOptions(String name)

Input Parameters

name - Required. Value of the name attribute for the Text Area Box input. Can be a binding or a literal.

JSP Usage

```
<=%getTexAreaOptions("xml:/Order/Instructions/Instruction/@InstructionText")%>
```

B.4.25 getTextOptions

This JSP function XML binds text input fields when modification rules do not need to be considered.

Syntax

String getTextOptions(String name)

String getTextOptions(String name, String value)

String getTextOptions(String name, String value, String defaultValue)

Inserting this function enables setting the value of a text input when it is displayed and setting the path and attribute in an XML to where the value should go when the form is posted.

If the value and default value are not given, the default value is blanks and value defaults to name.

Input Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. The target XML is then passed to the appropriate API through the Yantra 7x Service Definition Framework.

value - Required. Specifies what to display as the input text. Can be a binding or a literal. Default is name.

defaultValue - Required. This can be a binding or a literal that is defaulted to in the case that the value binding returns nothing. Default is blanks.

Example

This example results in a input text that displays the value of a bound attribute and sets the value of a bound attribute when the form is posted. This is the XML referenced by the bindings:

```
<Order>
    <addlInfo Country="US"></addlInfo>
</Order>
```

JSP Usage

```
<input type="text" <%=getTextOptions("xml:Order:/OrderAddlinfo/@Country"
,"xml:Order:/OrderAddlinfo/@Country", "USA")%> />
```

HTML Results

When the value binding is found:

```
<input type="text" name=" xml:Order:/OrderAddlinfo/@Country " value="US"
Datatype='' size="10" Decimal='' OldValue="United States"/>
```

When the name binding is not found:

```
<input type="text" name="US" value="USA" Datatype='' size="10" Decimal=''
OldValue="United States"/>
```

Using getTextOptions within an editable list:

- An underscore ("_") and a counter must be appended to the first parameter of getTextOptions.
- The name of the counter is the value of the `ID` attribute specified in the loopXML tag. Set the `ID` attribute to be the same as the name of the child node on which you are looping.

Example

Inserting a Text Box.

```
<input type="text" class="unprotectedinput"
<%=getTextOptions("xml:/Order/OrderLines/OrderLine_" + OrderLineCounter +
"/@ShipNode", "xml:/OrderLine/@ShipNode")%>/>
```

B.4.26 getUITableSize

This JSP function returns the UI width of the attribute passed as input. This can be used to set the column width of tables within your screens to achieve consistent sizing of the columns throughout the application. The width that is used comes from the data type definition of the attribute. See the extending datatypes.

Syntax

getUITableSize(String binding)

Parameters

Path to the current attribute in XML.

Note: this should be used in the style attribute of all <td> tags within all <thead> tags of list tables.

JSP Usage

```
style="width:<%=getUITableSize("xml:/Order/@OrderDate")%>"
```

B.4.27 getValue

This JSP function gets the value of the binding string provided from the XML namespace provided.

Syntax

String getValue(String xmlName,String binding)

Input Parameters

xmlName - Required. Namespace of the XML. Even if the binding string contains the namespace, this must be provided.

binding - Required. Binding string.

Example

This example shows how the supply type is extracted from the output of the API in the Inventory Adjustment screen.

```
<%
    String
supplyType=getValue("Item","xml:/Item/Supplies/InventorySupply/@SupplyType");
%>
```

B.4.28 getValue - Overloaded

Deprecated in Yantra 7x release 4.5. Replaced by “getValue” on page 284. This JSP function gets the value of the binding string provided from the YFCElement.

Syntax

String getValue(YFCElement element, String binding)

Input Parameters

element - Required. YFCElement from which the attribute must be extracted.

binding - Required. Binding string.

Example

This example shows how the supply type could be extracted from the output of the API in the Inventory Adjustment screen.

```
<%
    YFCElement elem=getParameter("Item");
    String
supplyType=getValue(elem,"xml:/Item/Supplies/InventorySupply/@SupplyType");
%>
```

B.4.29 goToDetailView

This JSP function can be used to conditionally display different detail views based on the logic specificed within a JSP page. This function can only be used in conjunction with detail views that have been defined as "redirector views" . This function is useful when you need to conditionally navigation to a different detail view based on some logic (possibly determined by the output of an API call). In the JSP anchor page of a redirector view, use this function to ultimately navigate to the detail view that will be shown to the user.

Syntax

void goToDetailView(HttpServletResponseresponse, String viewGroupId)

Input Parameters

response - Required. The response object. Pass the "response" object as is from your redirector JSP.

viewGroupId - Required. The view group ID that will be shown to the end user.

Output Parameters

None.

JSP Usage

This example shows the complete JSP that is the anchor page of the shipment detail redirector view. If the shipment that will be displayed is a shipment for a provided service, then a different detail view is displayed. Note that the output of the `getShipmentDetails()` API is used to determine which view should be displayed.

```
<%@include file="/yfsjspcommon/yfsutil.jspf"%>
<%
    String sViewGrp = "YOMD710";
    if (isTrue("xml:/Shipment/@IsProvidedService")) {
        sViewGrp = "YOMD333";
    }
    goToDetailView(response, sViewGrp);
%>
```

B.4.30 isModificationAllowed

This JSP function is used to determine if modification is permitted for a certain attribute for the current entity.

Syntax

boolean isModificationAllowed(String name, String allowModBinding)

Input Parameters

name - Required. Path in the target XML attribute. If this attribute is modifiable for the current entity’s status, the function returns *true*. If it is not modifiable, the function returns *false*.

allowModBinding - Required. Binding string that points to a set of elements containing modification types that are permitted for the current status.

JSP Usage

This example shows how the table footer containing the dynamic add rows feature can be included in a page based on whether or not add rows is permitted for the current order.

```
    <%if
(isModificationAllowed("xml:/@AddInstruction","xml:/Order/AllowedModifications")
) {%>
    <tr>
    <td nowrap="true" colspan="3">
    <jsp:include page="/common/editabletbl.jsp" >
    </jsp:include>
    </td>
    </tr>
    <%}%>
```

B.4.31 isPopupWindow

This JSP function determines whether or not the current window is displayed in a popup window. Use this function when the logic in your screen must differ when it appears in a popup window.

Syntax

isPopupWindow()

Input Parameters

None.

Output Parameters

A boolean indicating whether or not the current window is displayed in a popup window.

JSP Usage

In this example, the selected value that appears in the combobox is different depending on whether this screen is being shown within a popup window.

```
<select name="xml:/Shipment/@EnterpriseCode" class="combobox">
   <% if (isPopupWindow()) { %>
      <yfc:loopOptions
      binding="xml:EnterpriseList:/OrganizationList/@Organization"
      name="OrganizationCode"
      value="OrganizationCode" selected="xml:/Shipment/@EnterpriseCode" />
   <% } else { %>
      <yfc:loopOptions
      binding="xml:EnterpriseList:/OrganizationList/@Organization"
      name="OrganizationCode"
      value="OrganizationCode"
      selected='<%=getSelectedValue("xml:/Shipment/@EnterpriseCode")%>' />
   <% } %>
</select>
```

B.4.32 isTrue

This JSP function returns *true* if the attribute specified in the input parameter has a value of Y, or *true*. Otherwise, it returns *false*. It is not case sensitive.

Syntax

boolean isTrue(String bindingStr);

Input Parameters

bindingStr - Required. Binding string that specifies which attribute to evaluate.

Output Parameters

A boolean indicating if the attribute being evaluated has a value of Y or *true*.

Example

This example uses the `isTrue()` function to find out the value of the attribute referred to in the `xml:/OrderRelease/@HasDerivedParent` binding.

```
boolean isAgainstOrder=isTrue("xml:/OrderRelease/@HasDerivedParent");
```

B.4.33 isVoid

This JSP function determines whether the object passed is null or contains only white spaces.

Syntax

boolean isVoid(Object obj)

Input Parameters

obj - Required. Object that must be checked for null or white spaces.

Example

This example shows how this function is used to check if a specific attribute is void.

```
<% if (!isVoid(getParameter("ShowShipNode"))) {%>
<tr>
    <td class="detaillabel" ><yfc:i18n>Ship_Node</yfc:i18n></td>
    <td class="protectedtext"><yfc:getXMLValue
binding="xml:/InventoryInformation/Item/@ShipNode"
name="InventoryInformation"></yfc:getXMLValue></td>
</tr>
<%}%>
```

B.4.34 resolveValue

This JSP function gets the value of the binding string provided from the `YFCElement` provided.

Syntax

String resolveValue(String binding)

Input Parameters

binding - Required. Binding string. Binding string can contain the namespace.

Example

This example shows how this function is used to resolve the value pointed to by a binding string.

```
<%
String reqshipdate=resolveValue("xml:OrderEntry:/Order/@ReqShipDate");
%>
```

B.4.35 showEncryptedCreditCardNo

This JSP function returns a value to the display that represents an encrypted credit card number.

Syntax

showEncryptedCreditCardNo(String CreditCardNo)

Input Parameters

CreditCardNo - Required. String containing the last four digits of a credit card number.

Example

```
<%=showEncryptedCreditCardNo(resolveValue("xml:/PaymentMethod/@Disp
layCreditCardNo"))%>
```

B.4.36 userHasOverridePermissions

This JSP function determines whether or not the current login user has permission to override the modifications rules configuration.

Syntax

boolean userHasOverridePermissions()

B.4.37 yfsGetCheckBoxOptions

This JSP function XML binds checkboxes when modification rules need to be considered.

Syntax

String yfsGetCheckBoxOptions(String name,String a_checked, String a_
value, String allowModBinding)

Input Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Service Definition Framework, the target XML is then passed to the appropriate API.

checked - Required. When the value of the value attribute is equal to this value, the checked attribute is set to true.

value - Required. Value of the value attribute for the checkbox input. Can be a binding or a literal.

allowModBinding - Required. Binding string that points to a set of elements containing modification types that are permitted for the current status.

JSP Usage

```
<input class="checkbox" type="checkbox"
<%=yfsGetCheckBoxOptions("xml:/Order/@ChargeActualFreightFlag","xml:/Order/@Char
geActualFreightFlag","Y","xml:/ Order/AllowedModifications")%>/>
```

B.4.38 yfsGetComboOptions

This JSP function XML binds combo boxes when modification rules need to be considered.

Syntax

String yfsGetComboOptions(String name, String allowModBinding)

String yfsGetComboOptions(String name, String value, String allowModBinding)

Input Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Service Definition Framework, the target XML is then passed to the appropriate API.

value - Required. Specifies what to display as the input text. Can be a binding or a literal.

allowModBinding - Required. Binding string that points to a set of elements containing modification types that are permitted for the current status.

JSP Usage

```
<select <% if (isVoid(modifyView)) {%> <%=getProtectedComboOptions()%> <%}%>
<%=yfsGetComboOptions("xml:/Order/@ScacAndServiceKey",
"xml:/Order/AllowedModifications")%>>
    <yfc:loopOptions binding="xml:/ScacAndServiceList/@ScacAndService"
name="ScacAndServiceDesc"
    value="ScacAndServiceKey" selected="xml:/Order/@ScacAndServiceKey"/>
</select>
```

B.4.39 yfsGetImageOptions

This JSP function builds an image tag in HTML. The image may be *hidden*, based on whether the modification of the XML attribute passed as a parameter is permitted or not, unlike the `getImageOptions()` function. See "getImageOptions" on page 272.

A Java constants file keeps the image path and icon centralized. If the path starts with `/yantra/console/icons`, the image file is first searched for inside `/webpages/extn/icons/yantraiconsbe.jar` (or the localized icons JAR file) and then inside the `/webpages/yfscommon/yantraiconsbe.jar` (or the localized icons JAR file). The path to be specified is the path of the image file inside the JAR file.

If the path does not start with `/yantra/console/icons`, it picks up the file from the location in the EAR file. It is strongly advised that you place your images under `/console/icons` in the custom icons JAR file (`yantraiconsbe.jar`).

The path to be specified is the path of the image file inside the JAR file.

Syntax

String yfsGetImageOptions(String src, String alt, String name, String allowModBinding)

Parameters

src - Required. Image file name, including the path, within the icons JAR file.

alt - Required. Tooltip to use for the image.

name - Required. Path in the target XML attribute. This function shows the image only when modification of this attribute is permitted based on the status of the current entity.

allowModBinding - Required. Binding string that points to a set of elements containing modification types that are permitted for the current order status.

JSP Usage

```
<img class="lookupicon" name="search" onclick="invokeCalendar(this);return
false"  <%=yfsGetImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON, "Calendar",
"xml:/Order/@ReqShipDate",  "xml:/Order/AllowedModifications")%>/>
```

B.4.40 yfsGetTemplateRowOptions

This JSP function XML binds input fields when the field appears within an editable table's template row. The template row appears when the plus icon ("+") is selected in an editable table.

Syntax

String yfsGetTemplateRowOptions(String name, String allowModBinding, String modType, String controlType)

Input Parameters

name - Required. Value of the name attribute for the input. Can be a binding or a literal.

allowModBinding - Required. Binding string that resolves to a list of elements containing all modification types permitted for the current status of the entity.

modType - Required. Modification type associated with the current control.

controlType - Required. Type of control. Can be a textbox, checkbox or textarea.

JSP Usage

```
<input type="text" <%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_
/Item/@ItemID",  "xml:/Order/AllowedModifications", "ADD_LINE", "text")%>/>
```

Example

This example shows how this function is used to store a template row in the list of order lines for an order in the Order detail view.

```
    <tfoot>
        <tr style='display:none' TemplateRow="true">
            <td class="checkboxcolumn">
                <input type="hidden"
<%=getTextOptions("xml:/Order/OrderLines/OrderLine_/@Action", "",  "CREATE")%>
/>
            </td>
            <td class="tablecolumn">&nbsp;</td>
            <td class="tablecolumn">&nbsp;</td>
            <td class="tablecolumn" nowrap="true">
                <input type="text"
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_/Item/@ItemID",
"xml:/Order/AllowedModifications", "ADD_LINE", "text")%>/>
                <img class="lookupicon"
onclick="templateRowCallItemLookup(this,'ItemID','ProductClass','UnitOfMeasure',
'item')"  <%=getImageOptions(YFSUIBackendConsts.LOOKUP_ICON, "Search_for_
Item")%>/>
            </td>
            <td class="tablecolumn">
                <select
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_
/Item/@ProductClass",  "xml:/Order/AllowedModifications", "ADD_LINE",
"combo")%>>
                    <yfc:loopOptions
binding="xml:ProductClassList:/CommonCodeList/@CommonCode"  name="CodeValue"
                    value="CodeValue"
selected="xml:/Order/OrderLine/Item/@ProductClass"/>
                </select>
            </td>
            <td class="tablecolumn">
                <select
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_
/Item/@UnitOfMeasure",  "xml:/Order/AllowedModifications", "ADD_LINE",
"combo")%>>
                    <yfc:loopOptions
binding="xml:UnitOfMeasureList:/CommonCodeList/@CommonCode"  name="CodeValue"
                    value="CodeValue"
selected="xml:/Order/OrderLine/Item/@UnitOfMeasure"/>
                </select>
            </td>
            <td class="tablecolumn">&nbsp;</td>
            <td class="tablecolumn" nowrap="true">
                <input type="text"
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_/@ReceivingNode",
"xml:/Order/AllowedModifications", "ADD_LINE", "text")%>/>
                <img class="lookupicon" onclick="callLookup(this,'shipnode')"
<%=getImageOptions(YFSUIBackendConsts.LOOKUP_ICON, "Search_for_Recieving_
Node")%>/>
            </td>
            <td class="tablecolumn" nowrap="true">
                <input type="text"
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_/@ShipNode",
"xml:/Order/AllowedModifications", "ADD_LINE", "text")%>/>
                <img class="lookupicon" onclick="callLookup(this,'shipnode')"
<%=getImageOptions(YFSUIBackendConsts.LOOKUP_ICON, "Search_for_Ship_Node")%>/>
            </td>
            <td class="tablecolumn" nowrap="true">
                <input type="text"
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_/@ReqShipDate",
"xml:/Order/AllowedModifications", "ADD_LINE", "text")%>/>
                <img class="lookupicon" onclick="invokeCalendar(this)"
<%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON, "Calendar")%>/>
            </td>
            <td class="numerictablecolumn">
                <input type="text"
<%=yfsGetTemplateRowOptions("xml:/Order/OrderLines/OrderLine_/@OrderedQty",
"xml:/Order/AllowedModifications", "ADD_LINE", "text")%>>
            </td>
            <td class="tablecolumn">&nbsp;</td>
            <td class="tablecolumn">&nbsp;</td>
        </tr>
<%if (isModificationAllowed("xml:/@AddLine","xml:/Order/AllowedModifications"))
{ %>
        <tr>
        <td nowrap="true" colspan="13">
        <jsp:include page="/common/editabletbl.jsp" >
        </jsp:include>
        </td>
        </tr>
        <%}%>
    </tfoot>
```

B.4.41 yfsGetTextAreaOptions

This JSP function XML binds text areas when modification rules need to be considered.

Syntax

String yfsGetTextAreaOptions(String name, String a_value, String allowModBinding)

String yfsGetTextAreaOptions(String name, String allowModBinding)

Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Service Definition Framework, the target XML is then passed to the appropriate API.

value - Required. Specifies what to display as the input text. Can be a binding or a literal.

allowModBinding - Required. Binding string that points to a set of elements containing modification types that are permitted for the current status.

JSP Usage

```
<textarea class="unprotectedtextareainput" rows="3" cols="100"
<%=yfsGetTextAreaOptions("xml:/Order/Instructions/Instruction_" +
InstructionCounter +  "/@InstructionText","xml:/Instruction/@InstructionText",
"xml:/Order/AllowedModifications")%>><yfc:getXMLValue
binding="xml:/Instruction/@InstructionText"/></textarea>
```

B.4.42 yfsGetTextOptions

This JSP function XML binds text input fields when modification rules need to be considered.

Syntax

String yfsGetTextOptions(String name, String allowModBinding)

String yfsGetTextOptions(String name, String value, String allowModBinding)

String yfsGetTextOptions(String name, String value, String defaultValue, String allowModBinding)

Input Parameters

name - Required. Path in the target XML to which the value in the input text is sent when the form is posted. Through the Yantra 7x Service Definition Framework, the target XML is then passed to the appropriate API.

value - Required. Specifies what to display as the input text. Can be a binding or a literal.

defaultValue - Required. This can be a binding or a literal that is defaulted to in the case that the value binding returns nothing.

allowModBinding - Required. This is a binding string that points to a set of elements containing modification types that are permitted for the current status.

JSP Usage

```
<input type="text" <%=yfsGetTextOptions("xml:/Order/@ReqShipDate",
"xml:/Order/AllowedModifications")%>/>
```

B.5 JSP Tag Library

Use these Yantra 7x-supplied tags to serve your dynamic web pages.

B.5.1 callApi

The callApi JSP tag calls an API from within the JSP file. In most cases, it is not necessary to make an API call from inside a JSP file. However, occasionally there is no other option. For example, when an API must be called multiple times within a loop, use the callApi JSP tag.

When you use this JSP tag on a view, you may enable the Skip Automatic Execution checkbox on the Resource configuration screen for the API Resource that you intend to call. This prevents the API from being called when the view is initially opened. This option is *not* available for API resources that are created directly under an entity resource.

Attributes

apiID - Required. Postfix of the resource ID of the API to be called. When an API resource is configured through the Resource Configurator, a postfix must be supplied for the resource ID. This is the postfix value that must be used.

Body

None.

Example

In this example, the callAPI is used to retrieve additional attributes about an item using the `getItemDetails()` API defined in the API resource containing the API in the ID. Note that the API input or template is not specified anywhere in the JSP. This is configured in the API resource definition just like every other API.

```
<yfc:loopXML binding="xml:/OrderLineStatusList/@OrderStatus" id="OrderStatus">
    <tr>
        <yfc:makeXMLInput name="orderLineKey">
            <yfc:makeXMLKey binding="xml:/OrderLineDetail/@OrderLineKey"
value="xml:/OrderStatus/OrderLine/@OrderLineKey"/>
  <yfc:callAPI apiID='AP1'/>
  < ... >
           </tr>
```

After the `callApi` JSP tag is used in the JSP, the output is available in the corresponding output namespace.

B.5.2 callAPI (Alternative Method)

The callAPI JSP tag also supports a way to call APIs within JSPs without defining the API in the Resource Configurator. If called in this way, different attributes needs to be passed as input to the tag. This alternative method should be used when the input or template of an API call needs to be dynamic based on some conditions within the JSP. Addtionally, this alternative method may be used if the input to the API is complicated and cannot be formed using the traditional techniques.

Attributes

apiName - Optional. The name of the API that will be called. When using this alternative method of callAPI either apiName ***or*** serviceName is required.

serviceName - Optional. The name of the service (from Yantra 7x Service Definition Framework) that will be called. Calling a service does not support passing templates. When using this alternative method of callAPI, either serviceName ***or*** apiName is required.

inputElement - Required when using this alternative method. A YFCElement representing the input element that is to be passed to the API.

templateElement - Conditionally required. A YFCElement representing the output template expected for the API. When using this alternative method, if the apiName attribute is used, then templateElement is required. If serviceName is used, then templateElement is ignored.

outputNamespace - Optional. The namespace under which the output of the API will be placed.

The output of the API is saved in this namespace. Namespace is optional, but if it is not specified, it is defaulted to the root node name of the XML under consideration. Therefore, while referring to the output of the API, even if namespace is not specified here, it can be assumed to be the same as the root node name of the output.

A namespace is a tag that can be used to identify a specific XML. The Yantra 7x Presentation Framework enables you to call multiple APIs and store the outputs in different namespaces. In your JSP or in the input to an API, you can refer to values from any namespace that is available at that point.

inputNamespace - Optional. The input namespace is used to dynamically resolve additional input to the API. For more information about input namespace see Section 3.24, "API Input" on page 81.

Body

None.

Example

The following example shows how the `getOrderDetails()` API can be called from within a JSP without defining an API resource in the Resource Configurator. Note how the input and template elements are formed in the JSP before the callAPI tag is used. After the callAPI tag call, the output of the `getOrderDetails()` API is available in the `RelatedFromOrderDetails` namespace that can be used later on within the JSP.

```
<%
   YFCDocument inputDoc = YFCDocument.parse("<Order
OrderHeaderKey=\"xml:/Document/@RelatedFromOrderHeaderKey\"/>");
YFCDocument templateDoc = YFCDocument.parse("<Order EnterpriseCode=\"\"
OrderHeaderKey=\"\" OrderNo=\"\"
   Status=\"\" BuyerOrganizationCode=\"\" SellerOrganizationCode=\"\"
OrderDate=\"\" RulesetKey=\"\" HoldFlag=\"\" DocumentType=\"\"
isHistory=\"\"/>");
%>
<yfc:callAPI apiName='getOrderDetails'
inputElement='<%=inputDoc.getDocumentElement()%>'
templateElement='<%=templateDoc.getDocumentElement()%>'
outputNamespace='RelatedFromOrderDetails'/>
```

B.5.3 getXMLValue

The getXMLValue JSP tag returns the value of an XML attribute specific to an XML binding.

Attributes

name - Optional. String containing the namespace of the XML from which a value must be obtained. If this parameter is not used, the value is picked up from the binding. For example, if you specify `xml:/Menu/@MenuDescription` as the binding, the value for name defaults to *Menu*. Or in another example, if you specify `xml:/mymenu:/Menu/@MenuDescription` as the binding, the name defaults to *mymenu*.

binding - Required. String containing the XML path that points to the attribute of the requested value.

Body

None.

Example

```
<td class="protectedtext"><yfc:getXMLValue binding="xml:/Category/@CategoryID"
name="Category" /></td>
```

B.5.4 getXMLValueI18NDB

The getXMLValueI18NDB JSP tag returns the localized value of an XML attribute specific to an XML binding based on the user's locale.

Attributes

name - Optional. String containing the namespace of the XML from which a value must be obtained. If this parameter is not used, the value is picked up from the binding. For example, if you specify `xml:/Menu/@MenuDescription` as the binding, the value for name defaults to *Menu*. Or in another example, if you specify `xml:/mymenu:/Menu/@MenuDescription` as the binding, the name defaults to *mymenu*.

binding - Required. String containing the XML path that points to the attribute of the requested value.

Body

None.

Example

```
<td class="protectedtext"><yfc:getXMLValueI18NDB
binding="xml:/Category/@Description" name="Category" /></td>
```

B.5.5 hasXMLNode

The hasXMLNode JSP tag is used to determine if a specific XML element or attribute is returned by the API.

Attributes

binding - Required. String containing the XML path of the element or attribute to seek. If the binding string contains an attribute, this tag does not permit its body to be processed if the attribute is void, even if the element exists.

Body

Can contain HTML that is written only if the hasXMLNode evalues to true.

Example

This example shows how a kit icon is shown for those lines belonging to an order release that contain kits.

```
<td class="tablecolumn" nowrap="true">
                <yfc:hasXMLNode binding="xml:/OrderLine/KitLines/KitLine">
                    <a <%=getDetailHrefOptions("L03",
getParameter("orderLineKey"), "")%>>
                        <img class="columnicon"
<%=getImageOptions(YFSUIBackendConsts.KIT_COMPONENTS_COLUMN,  "Kit_
Components")%>>
                    </a>
                </yfc:hasXMLNode>
            </td>

This example shows how a parent kit line icon is shown for those lines that have
a parent kit line.

<yfc:hasXMLNode binding="xml:/OrderLine/@OrigOrderLineKey">
<a <%=getDetailHrefOptions("L05", getParameter("origOrderLineKey"), "")%>>
<img class="columnicon" <%=getImageOptions(YFSUIBackendConsts.DERIVED_
ORDERLINES_COLUMN, "Kit_Parent_Line")%>>
</a>
</yfc:hasXMLNode>
```

B.5.6 i18n

The i18n JSP tag retrieves the localized description of the key from the resource bundles. Use this for all literals in the HTML.

Attributes

None.

Body

Key that must be resolved into the localized string. For more information on how the system uses locale-specific resource bundles, see the *Yantra 7x Localization Guide*.

Example

This example shows how query types (is, starts with, contains) are shown in a select tag from the output of an API.

```
<tr>
    <td class="searchlabel" ><yfc:i18n>Product_Class</yfc:i18n></td>
</tr>
```

B.5.7 i18ndb

The i18ndb JSP tag retrieves the localized description of the value from the YFS_LOCALIZED_STRING table based on the user's locale. Use this to get the localized database descriptions in the HTML.

Attributes

None.

Body

Key that must be resolved into the localized string. For more information on how the system uses locale-specific resource bundles, see the *Yantra 7x Localization Guide*.

Example

This example shows how query types (is, starts with, contains) are shown in a select tag from the output of an API.

```
<tr>
    <td>
        <yfc:i18ndb><%=resolveValue("xml:/Shipment/Status/@StatusName")%>
        </yfc:i18ndb>
    </td>
</tr>
```

B.5.8 loopOptions

The loopOptions JSP tag builds the options belonging to the HTML select tag.

Attributes

binding - Required. Binding string that points to the repeating element in the API output. The repeating element must be one fixed with the at character ("@").

name - Optional. Attribute name within the binding element to be used for the description visible to the user in the option tag. If not passed, defaults to *name*, which means that Yantra 7x searches for an attribute called *name*.

value - Optional. Attribute name within the binding element to be used for the value attribute of the option tag. If not passed, it defaults to *value*, which means that Yantra 7x searches for an attribute called *value*.

selected - Optional. Binding string that must be evaluated and set as the default selected value. This is matched with the value attribute, not the description attribute. Defaults to blanks, for example, space (" ").

isLocalized - Optional. If passed as "Y" it obtains the localized description to be displayed based on the user's locale from the `YFS_LOCALIZED_STRINGS` table.

targetBinding - Optional. If the target binding of the select is different than the source binding, you must specify the target binding as input when using loopOptions. This will ensure that data entered by the end user will not be lost even when an exception is generated in the API.

Body

None.

Examples

This example shows how query types (is, starts with, contains) are shown in a select tag from the output of an API.

```
    <td nowrap="true" class="searchcriteriacell" >
        <select name="xml:/Item/@ItemIDQryType" class="combobox" >
            <yfc:loopOptions
binding="xml:/QueryTypeList/StringQueryTypes/@QueryType"
                name="QueryTypeDesc" value="QueryType"
```

```
selected="xml:/Item/@ItemIDQryType"/>
        </select>
        <input type="text" class="unprotectedinput"
<%=getTextOptions("xml:/Item/@ItemID") %> />
    </td>
```

This example uses combo boxes within an editable list:

- An underscore character ("_") and a counter must be appended to the name attribute of the select element.
- The name of the counter is the value of the `ID` attribute specified in the `loopXML` tag. The `ID` attribute should always be set to the same as the child node name on which you are looping.

```
<select name="xml:/Order/Instructions/Instruction_
<%=InstructionCounter%>/@InstructionType" class="combobox">
<yfc:loopOptions binding="xml:InstructionTypeList:/CommonCodeList/@CommonCode"
name="CodeShortDescription"
            value="CodeValue" selected="xml:/Instruction/@InstructionType"/>
</select>
```

B.5.9 loopXML

The loopXML JSP tag loops through a specific repeating element in a source XML.

Note: If your application server only supports up to JSP specification version 1.1, it does not support using `jsp:include` within a custom JSP tag that contains a body tag. Using the `loopXML` tag results in a run-time JSP error that indicates "Illegal to flush within a custom tag".

To avoid this run-time error, use the `getLoopingElementList()` function instead of the `loopXML` tag. See "getLoopingElementList" on page 275.

Attributes

binding - Required. Path to the element through which you want to loop within the source XML. The repeating element must be one fixed with the at character ("@").

name - Optional. Name of the source XML. If this parameter is not used, the value is picked up from the binding. For example, if you specify `xml:/Menu/@MenuDescription` as the binding, the value for name defaults to *Menu*. Or in another example, if you specify `xml:/mymenu:/Menu/@MenuDescription` as the binding, the name defaults to *mymenu*.

id - Optional. Name of the created YFCElement that holds the element resolved from the binding. If not specified, the Element NodeName pointed to by the binding parameter is used. For example, if the binding is `xml:/ItemList/@Item` and is not passed, the value for id defaults to *Item*.

Body

Can contain HTML that is written for each iteration in the loop.

Example

This example shows how the `loopXML` JSP tag is used to display the list of items in item lookup.

```
<tbody>
    <yfc:loopXML name="ItemList" binding="xml:/ItemList/@Item" id="item">
    <tr>
        <td class="tablecolumn">
            <img class="icon"
onclick="setItemLookupValue('<%=resolveValue("xml:item:/Item/@ItemID")%>','<%=re
solveValue("xml:item:/Item/Prim
aryInformation/@DefaultProductClass")%>','<%=resolveValue("xml:item:/Item/@UnitO
fMeasure")%>')"   value="<%=resolveValue("xml:item:/Item/@ItemID")%>"
<%=getImageOptions(YFSUIBackendConsts.GO_ICON,"Click_to_select")%> />
        </td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/@ItemID"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/PrimaryInformation/@DefaultProductClass"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/@UnitOfMeasure"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/PrimaryInformation/@ShortDescription"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/PrimaryInformation/@MasterCatalogID"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="item"
binding="xml:/Item/@OrganizationCode"/></td>
```

```
    </tr>
    </yfc:loopXML>
</tbody>
```

B.5.10 makeXMLInput

The makeXMLInput JSP tag is used in conjunction with makeXMLKey to form a hidden key that is used to pass data from list to detail screens.

Attributes

name - Required. The name of the hidden input HTML tag that gets formed as a result of this JSP tag.

Body

Can contain multiple makeXMLKey JSP tags. The output of the makeXMLKey JSP tags are concatenated into a single hidden input.

Example

This example shows how this JSP tag is used in conjunction with the makeXMLKey JSP tag to form a hidden input to pass inventory key data from the Inventory list view to the Inventory detail view.

```
<tbody>
    <yfc:loopXML name="InventoryList"
binding="xml:/InventoryList/@InventoryItem" id="InventoryItem"
keyName="InventoryItemKey" >
    <tr>
        <yfc:makeXMLInput name="inventoryItemKey">
            <yfc:makeXMLKey binding="xml:/InventoryItem/@ItemID"
value="xml:/InventoryItem/@ItemID" />
            <yfc:makeXMLKey binding="xml:/InventoryItem/@UnitOfMeasure"
value="xml:/InventoryItem/@UnitOfMeasure" />
            <yfc:makeXMLKey binding="xml:/InventoryItem/@ProductClass"
value="xml:/InventoryItem/@ProductClass"  />
            <yfc:makeXMLKey binding="xml:/InventoryItem/@OrganizationCode"
value="xml:InventoryList:/InventoryList/@OrganizationCode" />
        </yfc:makeXMLInput>
        <td class="checkboxcolumn">
           <input type="checkbox" value='<%=getParameter("inventoryItemKey")%>'
name="EntityKey"/>
        </td>
        <td class="tablecolumn">
```

```
            <a 
href="javascript:showDetailFor('<%=getParameter("inventoryItemKey")%>');"><yfc:g
etXMLValue  name="InventoryItem" binding="xml:/InventoryItem/@ItemID"/></a>
        </td>
        <td class="tablecolumn"><yfc:getXMLValue name="InventoryItem" 
binding="xml:/InventoryItem/@ProductClass"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="InventoryItem" 
binding="xml:/InventoryItem/@UnitOfMeasure"/></td>
        <td class="tablecolumn"><yfc:getXMLValue name="InventoryItem" 
binding="xml:/InventoryItem/Item/PrimaryInformation/@Description"/></td>
    </tr>
    </yfc:loopXML>
</tbody>
```

B.5.11 makeXMLKey

The makeXMLKey JSP tag is used in conjunction with makeXMLInput to form a hidden key that is used to pass data from list to detail screens.

Attributes

binding - Required. The binding string that must be resolved and stored in the hidden input to be passed on to the detail screen.

Body

None.

Example

Refer to the example in “makeXMLInput” on page 307.

B.6 JavaScript Functions

The Yantra 7x UI uses JavaScript functions to perform client-side operations such as opening popup windows, switching views, validating user input, and so forth. Most of the JavaScripts used in the UI are provided by the UI infrastructer layer. You can use the same functions while performing your UI extensions. This section describes JavaScript functions supplied by Yantra 7x’s UI layer.

Note that Yantra 7x also uses JavaScript functions that are not supplied by the UI infrastructure. These functions usually perform some specific action for some specific screen and are not required to be used during your UI extensions.

In addition, if you require additional logic for your screen for which Yantra 7x's UI infrastructure does not provide JavaScript functions, you can write and use your own as needed.

Lookup

- callLookup - see page 310. Uses [GET]
- invokeCalendar - see page 321. Uses [GET]
- yfcShowSearchPopup - see page 356. Uses [GET]

Control Name

- ignoreChangeNames - see page 320
- yfcDoNotPromptForChanges - see page 336
- yfcDoNotPromptForChangesForActions - see page 337
- yfcHasControlChanged - see page 339
- yfcSetControlAsUnchanged - see page 345
- yfcSpecialChangeNames - see page 357

Event Handler

- validateControlValues - see page 329
- yfcBodyOnLoad - see page 331
- yfcGetSaveSearchHandle - see page 338
- yfcGetSearchHandle - see page 339
- yfcValidateMandatoryNodes - see page 362

Show Detail

- showDetailFor - see page 323. Uses [GET]
- showPopupDetailFor - see page 327. Uses [GET]
- yfcChangeDetailView - see page 332. Uses [POST]
- yfcShowDefaultDetailPopupForEntity - see page 346. Uses [GET]
- yfcShowDetailPopupWithDynamicKey - see page 348
- yfcShowDetailPopupWithKeys - see page 350. Uses [GET]
- yfcShowDetailPopupWithParams - see page 351

Show List Popup

yfcShowListPopupWithParams - see page 354. Uses [GET]

Other

doCheckAll - see page 311
doCheckFirstLevel on page 312
expandCollapseDetails - see page 313
getAttributeNameFromBinding - see page 316
getCurrentSearchViewId on page 316
getCurrentViewId - see page 317
getObjectByAttrName - see page 318
goToURL - see page 320
showHelp - see page 326. Uses [GET]
ycfAllowSingleSelection - see page 330
yfcDisplayOnlySelectedLines - see page 334
setRetrievedRecordCount - see page 363

B.6.1 callLookup

This JavaScript function displays a lookup screen that enables the user to search for and select a record to use in the current screen. For example, an organization lookup on the order entry screen enables the user to select a buyer organization. Typically, you should attach this function to the `onclick` event of an image within your JSP page.

Syntax

callLookup(obj,entityname,extraParams)

Input Parameters

entityname - Optional. Entity to search for in the lookup screen. If not passed, defaults to the name of the current entity.

obj - Required. Handle to the image being selected.

extraParams - Optional. Passes extra parameters to the lookup screen. The format of the parameter is name/value pairs in URL format. If passed, the parameters are passed to the lookup screen.

Output Parameters

None.

Example

This example shows how to show an organization lookup that defaults the display of the seller role in the buyer Role field on the lookup:

```
<img class="lookupicon"
onclick="callLookup(this,'organization','xml:/Organization/OrgRoleList/OrgRole/@
RoleKey=BUYER')" name="search" <%=getImageOptions(YFSUIBackendConsts.LOOKUP_
ICON, "Search_for_Buyer") %> />
```

B.6.2 doCheckAll

This JavaScript function toggles the state of all the checkboxes in a table, using the following assumptions:

- The table must have separate head and body sections.
- Checkboxes within the body section must have the same column index as the specified checkbox object. Cells containing multiple checkboxes are all toggled.

Syntax

doCheckAll(obj)

Input Parameters

obj - Optional. Handle to the checkbox object (in HTML object hierarchy) on a table header. If the object is not passed, the function just returns.

Return Values

None.

Example

This example shows how an order list view showing order number and enterprise would handle the check all and uncheck all option in the table header row.

```
<table class="table" editable="false" width="100%" cellspacing="0">
<thead>
<tr>
<td sortable="no" class="checkboxheader">
```

```
<input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
</td>
<td class="tablecolumnheader"><yfc:i18n>Order_#</yfc:i18n></td>
<td class="tablecolumnheader"><yfc:i18n>Enterprise</yfc:i18n></td>
</tr>
</thead>
<tbody>
<yfc:loopXML binding="xml:/OrderList/@Order" id="Order">
<tr>
<yfc:makeXMLInput name="orderKey">
<yfc:makeXMLKey binding="xml:/Order/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey" />
</yfc:makeXMLInput>
                <td class="checkboxcolumn">
<input type="checkbox" value='<%=getParameter("orderKey")%>' name="EntityKey"/>
</td>
<td class="tablecolumn"><a
href="javascript:showDetailFor('<%=getParameter("orderKey")%>');">
<yfc:getXMLValue binding="xml:/Order/@OrderNo"/></a>
</td>
<td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@EnterpriseCode"/></td>
</tr>
</yfc:loopXML>
</tbody>
</table>
```

B.6.3 doCheckFirstLevel

This JavaScript function is used on the onclick event of a checkbox in the table column header. The function checks or unchecks all checkboxes in the ***first*** level of checkboxes in the table. This function is very similar to the doCheckAll JavaScript function, except that doCheckAll checks or unchecks ***all*** checkboxes within the specified HTML table.

Use this function for HTML tables the require this "(un)check all" functionality and also have one or more unrelated checkboxes inside the table that should not be affected by the selection checkboxes.

Syntax

doCheckFirstLevel(obj)

Input Parameters

obj - Optional. Handle to the checkbox object (in HTML object hierarchy) on a table header. If the object is not passed, the function does nothing.

Output Parameters

None.

Example

This example shows the table header definition for a list of items containing a checkbox where the user can select one or more items in the table. The header row of the table contains a checkbox. When this checkbox is selected, all of the first level check boxes within the HTML table are checked or unchecked.

```
<table class="table" cellspacing="0" width="100%">
    <thead>
        <tr>
            <td class="checkboxheader" sortable="no" style="width:10px">
                <input type="checkbox" value="checkbox" name="checkbox" 
onclick="doCheckFirstLevel(this);"/>
            </td>
            <td class="tablecolumnheader" 
style="width:30px"><yfc:i18n>Options</yfc:i18n></td>
            <td class="tablecolumnheader" 
style="width:<%=getUITableSize("xml:AdditionalServiceItem:/OrderLine/AdditionalS
erviceItems/Item/@ItemID")%>"><yfc:i18n>Item_ID</yfc:i18n></td>
            <td class="tablecolumnheader" 
style="width:<%=getUITableSize("xml:AdditionalServiceItem:/OrderLine/AdditionalS
erviceItems/Item/@UnitOfMeasure")%>"><yfc:i18n>UOM</yfc:i18n></td>
            <td class="tablecolumnheader" 
style="width:<%=getUITableSize("xml:AdditionalServiceItem:/OrderLine/AdditionalS
erviceItems/Item/PrimaryInformation/@Description")%>"><yfc:i18n>Item_
Description</yfc:i18n></td>
            <td class="tablecolumnheader" 
style="width:<%=getUITableSize("xml:AdditionalServiceItem:/OrderLine/AdditionalS
erviceItems/Item/@Price")%>"><yfc:i18n>Price</yfc:i18n></td>
        </tr>
    </thead>
```

B.6.4 expandCollapseDetails

This JavaScript function toggles the display state of the specified tags that have expanded and collapsed views.

Syntax

expandCollapseDetails(div_id, expandAlt, collapseAlt, expandgif, collapsegif)

Input Parameters

div_id - Required. Identifier of the object to expand or collapse.

expandAlt - Required. Tooltip to show for expanding a selection. This tooltip shows when the object is in a collapsed state.

collapseAlt - Required. Tooltip to show for collapsing a selection. Available when the object is an expanded state.

expandgif - Required. Image to show when the selection is in a collapsed state.

collapsegif - Required. Image to show when the selection is in an expanded state.

Return Value

None.

Example

This example shows how the `expandCollapseDetails()` function can be used in a table to hide some advanced information that the user can retrieve by selecting a special icon at line level. The example shows how payment collection details, such as credit card number, can be viewed by selecting the plus (+) icon. The example also shows div, which enables you to specify whether to hide or show information. By default, the div is hidden (`display:none`).

```
<tbody>
<yfc:loopXML
binding="xml:/Order/ChargeTransactionDetails/@ChargeTransactionDetail"
id="ChargeTransactionDetail">
<%request.setAttribute("ChargeTransactionDetail",
(YFCElement)pageContext.getAttribute("ChargeTransactionDetail"));%>
        <yfc:makeXMLInput name="InvoiceKey">
            <yfc:makeXMLKey binding="xml:/GetOrderInvoiceDetails/@InvoiceKey"
value="xml:/ChargeTransactionDetail/@OrderInvoiceKey" />
        </yfc:makeXMLInput>
        <tr>
            <td class="tablecolumn"
```

```
sortValue="<%=getDateValue("xml:ChargeTransactionDetail:/ChargeTransactionDetail
/@Createts")%>">
                <yfc:getXMLValue
binding="xml:/ChargeTransactionDetail/@Createts"/>
            </td>
            <td class="tablecolumn">
                <yfc:getXMLValue
binding="xml:/ChargeTransactionDetail/@ChargeType"/>
                <% if
(equals("AUTHORIZATION",getValue("ChargeTransactionDetail","xml:/ChargeTransacti
onDetail/@ChargeType")) ||
equals("CHARGE",getValue("ChargeTransactionDetail","xml:/ChargeTransactionDetail
/@ChargeType"))) {%>
                    <% String divToDisplay="yfsPaymentInfo_" +
ChargeTransactionDetailCounter; %>
                    <img
onclick="expandCollapseDetails('<%=divToDisplay%>','<%=getI18N("Click_To_See_
Payment_Info")%>','<%=getI18N("Click_To_Hide_Payment_
Info")%>','<%=YFSUIBackendConsts.FOLDER_
COLLAPSE%>','<%=YFSUIBackendConsts.FOLDER_EXPAND%>')" style="cursor:hand"
<%=getImageOptions(YFSUIBackendConsts.FOLDER,"Click_To_See_Payment_Info")%>/>
                    <div id=<%=divToDisplay%>
style="display:none;padding-top:5px">
                        <table width="100%" class="view">
                            <tr>
                                <td height="100%">
                                    <jsp:include page="/om/Orderdetail/order_
detail_paymenttype_collections.jsp">
                                        <jsp:param name="PrePathId"
value="ChargeTransactionDetail"/>
                                        <jsp:param name="ShowAdditionalParams"
value="Y"/>
                                        <jsp:param
name="DecryptedCreditCardLink" value="L02"/>
                                    </jsp:include>
                                </td>
                            </tr>
                        </table>
                    </div>
                <%}%>
            </td>
            <td class="numerictablecolumn"
sortValue="<%=getNumericValue("xml:ChargeTransactionDetail:/ChargeTransactionDet
ail/@CreditAmount")%>">
                <yfc:getXMLValue
```

```
binding="xml:/ChargeTransactionDetail/@CreditAmount"/>
            </td>
        </tr>
    </yfc:loopXML>
</tbody>
```

B.6.5 getAttributeNameFromBinding

This JavaScript function parses the binding string passed as input and returns the attribute from the string.

Syntax

getAttributeNameFromBinding(str)

Input Parameters

str - Optional. String containing the binding string. If not passed, the function returns null.

Return Value

Attribute portion of the binding string.

B.6.6 getCurrentSearchViewId

This JavaScript function retrieves the Resource ID of the current search view. This function can be used only for search views. To get the Resource ID of the current detail view, use the `getCurrentViewId` JavaScript function on the detail view JSP page. See "getCurrentViewId" on page 317.

Syntax

getCurrentSearchViewId()

Input Parameters

None.

Return Value

Resource ID of the current search view.

Example

This example shows how to refresh the current search view when a value is selected from a combo box by obtaining the current View ID.

```
<select class="combobox" onChange="changeSearchView(getCurrentSearchViewId())"
<%=getComboOptions(documentTypeBinding)%>>
    <yfc:loopOptions
binding="xml:CommonDocumentTypeList:/DocumentParamsList/@DocumentParams"
name="Description"
    value="DocumentType" selected="<%=selectedDocumentType%>"/>
</select>
```

B.6.7 getCurrentViewId

This JavaScript function retrieves the Resource ID of the current detail view.

Syntax

getCurrentViewId()

Input Parameters

None.

Return Value

Resource ID of the current detail view.

Example

This example shows how to refresh the current view by obtaining the current View ID.

```
<td class="detaillabel" ><yfc:i18n>Horizon_End_Date</yfc:i18n></td>
<td class="protectedtext" nowrap="true">
    <input type="text" class="dateinput" onkeydown="return checkKeyPress(event)"
<%=getTextOptions("xml:/InventoryInformation/Item/@EndDate","xml:/InventoryInfor
mation/Item/@EndDate","")%> />
    <img class="lookupicon"  onclick="invokeCalendar(this);return false"
<%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON,"View_Calendar")%> />
    <input type="button" class="button" value="GO"
onclick="if(validateControlValues())changeDetailView(getCurrentViewId())"/>
</td>
```

B.6.8 getObjectByAttrName

This JavaScript function returns the object that is bound to the specified attribute.

Binding is achieved through the use of a JSP function such as getTextOptions or getComboOptions. For more information on binding JSP functions, see "yfsGetTextOptions" on page 296 or "yfsGetComboOptions" on page 291.

Once a field is bound, the name attribute of that field contains the binding XML path. This JavaScript function searches for all input and combo boxes and text areas within the specified HTML tag, and matches the attribute portion of the name attribute. The first match is returned.

The attribute portion is separated from the rest of the name attribute by the at (@) separator. For example, if the name is `xml:/Order/@ChargeNameKey`, the attribute portion is `ChargeNameKey`.

Syntax

getObjectByAttrName(obj, attributeName)

Input Parameters

obj - Required. Handle to the HTML object under which the search is to be conducted.

attributeName - Optional. Attribute name for search to be conducted under the object specified. If not passed, the function returns null.

Return Value

Handle to the object that is bound to the attribute specified. If no such object is found, null is returned.

Example

This example shows how to enable and disable the charge name field on line taxes, based on the checking of a checkbox.

```
function setAsPriceCharge(thisCheckbox) {
 var checkboxName=thisCheckbox.name
 var trNode=getParentObject(thisCheckbox, "TR");
 var sel=getObjectByAttrName(trNode, "ChargeNameKey");

 if (sel != null) {
  if (thisCheckbox.checked) {
   sel.disabled=true;
   sel.value="";
  } else {
   sel.disabled=false;
  }
 }
}
```

B.6.9 getParentObject

This JavaScript function gets the first occurrence of the tag specified in the HTML ancestry of the passed object.

Syntax

getParentObject(obj, tag)

Input Parameters

obj - Required. Handle to an object in HTML object hierarchy.

tag - Optional. String containing the name of the ancestor node used in a search. If not passed, the function returns null.

Return Values

The first occurrence of the tag specified in the HTML ancestry of the passed object.

Example

This example shows how to code a client-side deletion to execute when the user selects a Delete icon in a table row. In this example, element refers to the object that the user selects.

```
function deleteRow(element) {
var row=getParentObject(element, "TR");

oTable=getParentObject(row, "TABLE");

row.parentNode.deleteRow(row.rowIndex - 1);

fireRowsChanged(oTable);

    return false;
}
```

B.6.10 goToURL

This JavaScript function opens a specified URL in a new window.

Syntax

goToURL(URLInput)

Input Parameters

URLInputObj - Optional. Name of the input tag that contains the URL specified by the user. If not passed, the function just returns.

Return Value

None.

Example

This example shows how the goToUrl() function opens the order instruction screen in a new window.

```
<td>
    <input type="text"
<%=yfsGetTextOptions("xml:/Order/Instructions/Instruction_" + InstructionCounter
+ "/@InstructionURL",
"xml:/Instruction/@InstructionURL","xml:/Order/AllowedModifications")%>/>
    <input type="button" class="button" value="GO"
onclick="javascript:goToURL('xml:/Order/Instructions/Instruction_
<%=InstructionCounter%>/@InstructionURL');"/>
</td>
```

B.6.11 ignoreChangeNames

Whenever any detail view is posted, the Yantra 7x Presentation Framework checks for data changed through the screen controls. For controls that have no changes, the name attribute is changed to "old" + [current name]. By doing this, the data in these controls does not make it to the APIs. This results in improved performance, since unchanged data does not need to be updated. However, some APIs are designed to work in replace mode. They take a complete snapshot of information (including unchanged part) and replace the all of it in the database. For such APIs, all data from the screen must be passed as input.

To achieve this, this function can be called in the onload event. This function sets a custom property in the window object. When the screen is posted, the Yantra 7x Presentation Framework checks for this custom property. If the property is set, the automatic name changing does not happen.

The Yantra 7x Presentation Framework helps the user remember to save data they have input. When a user has changed some data and begins to navigate away from a page, the Yantra 7x Presentation Framework detects the changed data and prompts the user to save their work. This function does not change the behavior of this feature in any way. It simply makes sure that the name property of the controls that have no changes are retained. In this way, this function differs from yfcDoNotPromptForChanges(). See "yfcDoNotPromptForChanges" on page 336.

Syntax

ignoreChangeNames()

Input Parameters

None.

Return Value

None.

Example

The example attaches this function to the onload event.

```
<script language="javascript">
window.attachEvent("onload", IgnoreChangeNames);
</script>
```

B.6.12 invokeCalendar

This JavaScript function invokes the calendar lookup. This function assumes that the previous object to the one passed (in the DOM hierarchy of the HTML) is the one that must be populated with the date selected in the lookup.

Syntax

invokeCalendar(obj)

Input Parameters

obj - Required. Handle to the image object that was selected to invoke the calendar.

Output Parameters

None.

Example

This example shows how the Calendar Lookup is invoked from the Horizon End Date field in the Inventory detail view.

```
    <td class="detaillabel" ><yfc:i18n>Horizon_End_Date</yfc:i18n></td>
    <td class="protectedtext" nowrap="true">
        <input type="text" class="dateinput" onkeydown="return 
checkKeyPress(event)"
<%=getTextOptions("xml:/InventoryInformation/Item/@EndDate","xml:/InventoryInfor
mation/Item/@EndDate","")%> />
        <img class="lookupicon"  onclick="invokeCalendar(this);return false"
<%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON,"View_Calendar")%> />
        <input type="button" class="button" value="GO" 
onclick="if(validateControlValues())changeDetailView(getCurrentViewId())"/>
    </td>
```

B.6.13 invokeTimeLookup

This JavaScript function invokes the time lookup. The function assumes that the previous object to the one passed (in the DOM hierarchy of the HTML) is the one that must be populated with the date selected in the lookup.

Syntax

invokeTimeLookup(obj)

Input Parameters

obj - handle to the image object that was clicked to invoke the calendar.

Output Parameters

None.

Example

This example shows how the time lookup is used in a date and time search critieria field.

```
<tr>
   <td nowrap="true">
     <input class="dateinput" type="text"
<%=getTextOptions("xml:/Shipment/@FromExpectedShipmentDate_YFCDATE")%>/>
     <img class="lookupicon" name="search" onclick="invokeCalendar(this);return
false" <%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON, "Calendar") %> />
     <input class="dateinput" type="text"
<%=getTextOptions("xml:/Shipment/@FromExpectedShipmentDate_YFCTIME")%>/>
     <img class="lookupicon" name="search"
onclick="invokeTimeLookup(this);return false"
<%=getImageOptions(YFSUIBackendConsts.TIME_LOOKUP_ICON, "Time_Lookup") %> />
    <yfc:i18n>To</yfc:i18n>
   </td>
</tr>
<tr>
   <td>
     <input class="dateinput" type="text"
<%=getTextOptions("xml:/Shipment/@ToExpectedShipmentDate_YFCDATE")%>/>
     <img class="lookupicon" name="search" onclick="invokeCalendar(this);return
false" <%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON, "Calendar") %> />
     <input class="dateinput" type="text"
<%=getTextOptions("xml:/Shipment/@ToExpectedShipmentDate_YFCTIME")%>/>
     <img class="lookupicon" name="search"
onclick="invokeTimeLookup(this);return false"
     <%=getImageOptions(YFSUIBackendConsts.TIME_LOOKUP_ICON, "Time_Lookup") %>/>
   </td>
</tr>
```

B.6.14 showDetailFor

This JavaScript function changes the current page to show the default view of the current entity. The resulting screen opens in the same browser window, not in a new window. You typically use the `showDetailFor()` function to move from the list view to the detail view. Then after the detail view opens, this function is not used, because subsequent views are typically invoked as popup windows and this function does not do that.

If you do choose to use this function in a detail screen, the following behavior must be kept in mind. This function does a [get] and not a [post]. Therefore, if you see the Next or Previous icons on your screen and you use this function to switch to the default view, the icons are lost. The icons disappear because the hidden input in the current page that contain information regarding the Next or Previous views are lost when this function does a [get].

In a list screen, this function is used in conjunction with the `yfc:makeXMLInput` JSP tag. The `makeXMLInput` JSP tag prepares an XML containing the key attributes. That XML must be passed to the default detail view.

Syntax

showDetailFor(entityKey)

Input Parameters

entityKey - Required. String containing a URL-encoded XML that contains the key attributes required by the detail view.

Output Parameters

None.

Example

This example shows an Order list view that contains two columns: Order Number and Enterprise Code. Order Number is hyperlinked to open the default detail view of Order. Notice that `yfc:makeXMLInput` prepares an XML that is later used as the input parameter to the `showDetailFor()` function by using the `getParameter()` JSP function.

```
<table class="table" editable="false" width="100%" cellspacing="0">
    <thead>
        <tr>
            <td sortable="no" class="checkboxheader">
                <input type="checkbox" name="checkbox" value="checkbox"
onclick="doCheckAll(this);"/>
            </td>
            <td class="tablecolumnheader"><yfc:i18n>Order_#</yfc:i18n></td>
```

```
                <td class="tablecolumnheader"><yfc:i18n>Enterprise</yfc:i18n></td>
            </tr>
        </thead>
        <tbody>
            <yfc:loopXML binding="xml:/OrderList/@Order" id="Order">
                <tr>
                    <yfc:makeXMLInput name="orderKey">
                        <yfc:makeXMLKey binding="xml:/Order/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey" />
                    </yfc:makeXMLInput>
                    <td class="checkboxcolumn">
                       <input type="checkbox" value='<%=getParameter("orderKey")%>'
name="EntityKey"/>
                    </td>
                    <td class="tablecolumn"><a
href="javascript:showDetailFor('<%=getParameter("orderKey")%>');">
                        <yfc:getXMLValue binding="xml:/Order/@OrderNo"/></a>
                    </td>
                    <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/Order/@EnterpriseCode"/></td>
                </tr>
            </yfc:loopXML>
       </tbody>
</table>
```

B.6.15 showDetailForViewGroupId

This JavaScript function changes the current page to show the default view of the given View Group ID (The View ID with the least Resource Sequence number is the default view for a particular View Group Id). The resulting screen opens in the same browser window. Use the `showDetailForViewGroupId()`function to move from the list view to the detail view. When the detail view opens, this function is not used, because subsequent views are invoked as popup windows and this function does not do that.

In the list screen, this function is used in conjunction with the `yfc:makeXMLInput` JSP tag. The `makeXMLInput` JSP tag creates an XML containing the key attributes. That XML must be passed to the default detail view.

Syntax

showDetailForViewGroupId (entityname, viewGroupId, entityKey, extraParameters)

Input Parameters

entityName - Required. Entity to search in the detail screen.

viewGroupId - Required. The view group ID shown to the user.

entityKey - Required. String containing a URL-encoded XML that contains key attributes required by the detail view.

Output Parameters

None.

Example

```
<td class="tablecolumn">
     <a href = "javascript:showDetailForViewGroupId
('load','YDMD200','<%=getParameter("loadKey")%>');">   <yfc:getXMLValue
binding="xml:/Load/@LoadNo"/>
     </a>
</td>
```

B.6.16 showHelp

This JavaScript function invokes online help in a new window.

Online help can be internationalized.

Syntax

showHelp()

Input Parameters

None.

Returns

None.

Examples

The following example shows how online help is invoked when the help icon is selected from the menu bar and it opens to the table of contents.

```
<img alt="<%=getI18N("Help")%>" src="<%=YFSUIBackendConsts.YANTRA_HELP%>"
onclick='showHelp();'/>
```

> **Note:** The screen-level Help is available only for system-defined search, list, and detail views. The functionality for custom views is provided through a different internal javascript function. This `showHelp` function is exposed mainly for use from the menu bar, which is customizable. From the menu, you will typically want only the overall system help and not the screen-level context sensitive help.

B.6.17 showPopupDetailFor

This JavaScript function shows the default view of the current entity in a popup window (modal dialog). It is a blocking call. It does not return until the modal dialog is closed.

Syntax

showPopupDetailFor(key, name, width, height, argument)

Input Parameters

key - Required. Entity key that is required by the detail view. If not passed, the current entity's key is automatically passed to the popup window.

name - Required. Pass as blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Required. Anything passed in this field is available in the modal dialog through the `window.dialogArguments` attribute.

Returns

None.

Example

This example shows how the inventory audit detail is invoked from the inventory audit list screen.

The same list screen is used in a list view, as well as in a detail popup window. When you select the transaction date, if the current screen is a popup window, another popup window is invoked with the audit details. If the current view is list view, the audit detail screen comes up in the same window.

```
<tbody>
    <yfc:loopXML name="InventoryAudits"
binding="xml:/InventoryAudits/@InventoryAudit" id="InventoryAudit">
    <tr>
        <yfc:makeXMLInput name="inventoryAuditKey">
            <yfc:makeXMLKey binding="xml:/InventoryAudit/@InventoryAuditKey"
value="xml:/InventoryAudit/@InventoryAuditKey" />
            <yfc:makeXMLKey binding="xml:/InventoryAudit/@OrganizationCode"
value="xml:/InventoryAudit/@InventoryOrganizationCode" />
        </yfc:makeXMLInput>
        <td class="checkboxcolumn">
            <input type="checkbox"
value='<%=getParameter("inventoryAuditKey")%>' name="EntityKey"/>
        </td>
        <td class="tablecolumn"
sortValue="<%=getDateValue("xml:/InventoryAudit/@Modifyts")%>">
            <%if ( "Y".equals(request.getParameter(YFCUIBackendConsts.YFC_IN_
POPUP)) ) {%>
            <a href=""
onClick="showPopupDetailFor('<%=getParameter("inventoryAuditKey")%>',
'','900','550',window.dialogArguments);return false;" >
                <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@Modifyts"/>
            </a>
            <%} else {%>
                <a
href="javascript:showDetailFor('<%=getParameter("inventoryAuditKey")%>');">
                    <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@Modifyts"/>
                </a>
            <%}%>
        </td>
        <td class="tablecolumn">
            <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@ItemID"/>
        </td>
        <td class="tablecolumn">
            <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@ProductClass"/>
        </td>
        <td class="tablecolumn">
            <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@UnitOfMeasure"/>
        </td>
        <td class="tablecolumn">
            <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@TransactionType"/>
        </td>
        <td class="tablecolumn">
            <yfc:getXMLValue name="InventoryAudit"
binding="xml:/InventoryAudit/@ShipNode"/>
        </td>
    </tr>
    </yfc:loopXML>
</tbody>
```

B.6.18 validateControlValues

This JavaScript function checks for client-side validation errors. When the user enters invalid data in an input field, the Yantra 7x Presentation Framework flags the field as in error. When the user submits data in the page, this function should be called to make sure that invalid data is not posted.

Syntax

validateControlValues()

Input Parameters

None.

Return Values

true - No errors were found.

false - One or more errors were found.

Example

This example shows how to check for errors before you submit the current page.

```
<td class="detaillabel" ><yfc:i18n>Horizon_End_Date</yfc:i18n></td>
<td class="protectedtext" nowrap="true">
    <input type="text" class="dateinput" onkeydown="return checkKeyPress(event)"
<%=getTextOptions("xml:/InventoryInformation/Item/@EndDate","xml:/InventoryInfor
mation/Item/@EndDate","")%> />
    <img class="lookupicon"  onclick="invokeCalendar(this);return false"
<%=getImageOptions(YFSUIBackendConsts.DATE_LOOKUP_ICON,"View_Calendar")%> />
    <input type="button" class="button" value="GO"
onclick="if(validateControlValues())changeDetailView(getCurrentViewId())"/>
</td>
```

B.6.19 yfcAllowSingleSelection

Some operations can be performed on only one record at a time. However, the user interface typically permits multiple options to be checked before an operation is selected. Therefore, the operations that do not support multiple selections must themselves validate that not more than one record has been selected for processing. This function does that validation.

Syntax

yfcAllowSingleSelection(chkName)

Input Parameters

chkName - Optional. Name of the set of checkbox controls, one of which must be checked before an operation is performed. If the value is not passed or is blanks, it defaults to *EntityKey*.

Output Parameters

true - Zero or one record was selected.

false - More than one record was selected.

Examples

Receiving intransit updates can only be done one stop at a time. Therefore, the operation for receiving intransit updates is configured to first call the JavaScript function `yfcAllowSingleSelection()` and then to invoke the `receiveIntransitUpdates()` API.

This example performs an action if one, and only one, selection was made for checkboxes that have the name set to the value passed in the sKeyName variable.

```
function goToOrderLineSchedules(sSearchViewID, sKeyName, bPopup)
{
  if(yfcAllowSingleSelection(sKeyName))
  {
   …
  }
  }
```

B.6.20 yfcBodyOnLoad

This JavaScript function is called whenever any page is loaded. Typically, it is automatically called when the page is loaded. However, if your page must do something special on the onload event, you can call this function first and then call your own `window.onload()` function.

Syntax

yfcBodyOnLoad()

Input Parameters

None.

Return Value

None.

Example

This example shows how the onload event can be taken by your custom JSP rather than let the Yantra 7x Presentation Framework take it.

```
function window.onload(){
    if (!yfcBodyOnLoad() && (!document.all('YFCDetailError'))) {
        return;
    }
//Do your special processing here
}
```

B.6.21 yfcChangeDetailView

This JavaScript function switches to a specific detail view. This function uses the POST function to switch the view.

Syntax

yfcChangeDetailView(viewID)

Input Parameters

viewID - Required. Resource ID of the detail view to which you wish to switch.

Return Values

None.

Example

This example shows how to use the `yfcChangeDetailView()` function in order charges and the taxes summary in order to refresh the page to the current view when a combobox value is changed.

```
<select name="chargeType" class="combobox"
onchange="yfcChangeDetailView(getCurrentViewId());">
    <option value="Overall" <%if (equals(chargeType,"Overall")) {%> selected
<%}%>><yfc:i18n>Ordered</yfc:i18n></option>
    <option value="Remaining" <%if (equals(chargeType,"Remaining")) {%> selected
<%}%>><yfc:i18n>Open</yfc:i18n></option>
    <option value="Invoiced" <%if (equals(chargeType,"Invoiced")) {%> selected
<%}%>><yfc:i18n>Invoiced</yfc:i18n></option>
</select>
```

B.6.22 yfcChangeListView

This JavaScript function switches the current view to a list view. The list view is expected to have a pre-determined filter criteria, since this function does not accept any additional filter criteria.

Syntax

function yfcChangeListView(entity, searchViewId,maxrecords)

Input Parameters

entity - Required. Entity to which the searchViewId belongs.

searchViewId - Required. Identifier of the search view to which you wish to switch.

maxrecords - Optional. Maximum number of records to display in the list view. To enhance performance, use this parameter. If this is not passed, it defaults to the value specified in the yfs.properties file.

Output Parameters

None.

Example

The home page shows a list of alerts, up to a certain number, that has been set as the maximum number to display. To see a complete list of all alerts, the user can select the More Alerts operation. This operation is configured to call the `yfcChangeListView()` JavaScript function.

B.6.23 yfcCheckAllToSingleAPI

Deprecated in Yantra 7x version 5 SP1. On list views that have a Check All checkbox in the column header row, this function makes a single API call that takes in the multiple selections. Attach this function to the `onclick` event of the Check All checkbox.

This function works in conjunction with the `yfcMultiSelectToSingleAPI()` JavaScript function, which was also deprecated in Yantra 7x version 5 SP1. For more information, see "yfcMultiSelectToSingleAPI" on page 341 or its replacement "yfcMultiSelectToSingleAPIOnAction" on page 343.

Syntax

yfcCheckAllToSingleAPI(checkAllObject)

Input Parameters

checkAllObject - Required. Handle to the Check All checkbox in the table header.

Return Values

None.

Example

This example shows how to call this function when the Check All checkbox is selected.

```
<td sortable="no" class="checkboxheader">
            <input type="checkbox" name="checkbox" value="checkbox"
onclick='yfcCheckAllToSingleAPI(this)'/>
</td>
```

B.6.24 yfcDisplayOnlySelectedLines

This JavaScript function is for situations when the user needs to select multiple records from a list in screen A and those records must be passed on to screen B. In screen B, the selected records are displayed, possibly with additional information for each record. In such cases, the logic is that the same set of APIs that were used to build screen A could be called to also build screen B, and on the client side, a filtration process limits the display to only those selected in screen A.

This function requires that each row in the table that is under consideration must have an attribute called `yfcSelectionKey` set to the URL encoded XML (formed using `yfc:makeXMLInput` JSP tag).

Syntax

yfcDisplayOnlySelectedLines(tableId)

Input Parameters

tableId - Required. Identifier attribute of the table whose content must be limited to that selected from the previous screen.

Output Parameters

None.

Example

The following example shows how the create order line dependency screen limits the results in the order lines list to the specific lines that are selected in the order detail screen. First, this function must be called in the onload event.

```
<script language="javascript">
    function window.onload() {
        if (!yfcBodyOnLoad() && (!document.all('YFCDetailError'))) {
            return;
        }
        yfcDisplayOnlySelectedLines("DependentLines");
    }
</script>
```

Second, each <tr> tag must contain the yfcSelectionKey attribute.

```
            <tbody>
                <yfc:loopXML name="Order"
binding="xml:/Order/OrderLines/@OrderLine" id="OrderLine">
                        <yfc:makeXMLInput name="orderLineKey">
                            <yfc:makeXMLKey
binding="xml:/OrderLineDetail/@OrderLineKey"
value="xml:/OrderLine/@OrderLineKey"/>
                            <yfc:makeXMLKey
binding="xml:/OrderLineDetail/@OrderHeaderKey"
value="xml:/Order/@OrderHeaderKey"/>
                        </yfc:makeXMLInput>
                    <tr yfcSelectionKey="<%=getParameter("orderLineKey")%>">
                        <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/OrderLine/Item/@ItemID"/></td>
                        <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/OrderLine/Item/@ProductClass"/></td>
                        <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/OrderLine/Item/@UnitOfMeasure"/></td>
                        <td class="tablecolumn"><yfc:getXMLValue
binding="xml:/OrderLine/Item/@ItemDesc"/></td>
                    </tr>
                </yfc:loopXML>
            </tbody>
        </table>
```

B.6.25 yfcDoNotPromptForChanges

This JavaScript function turns off the automatic prompts that remind the user to save changes to their data. By default on any screen, if a user enters data and then starts to navigate away without saving the data, the Yantra 7x Presentation Framework catches this and alerts the user to save their data.

When you call this function it sets a parameter on the window object. This parameter is checked during the onunload event and if the parameter is set through this function, the user is not warned.

When you call this function to turn off prompting, all data in the screen is passed to the API during save.

This JavaScript function does not turn off the prompts that remind a user to save changes to their data when executing inner panel actions.

If you call an API on an inner panel and do not want the user to be prompted to save changes, you must also use either the yfcSetControlAsUnchanged or the yfcDoNotPromptForChangesForActions function. See yfcSetControlAsUnchanged on page 345 or yfcDoNotPromptForChangesForActions on page 337.

Syntax

yfcDoNotPromptForChanges(value)

Input Parameters

value - Required. Determines whether or not the user should be prompted to save any new data they have input that has not yet been saved. Valid values are true and false. If specified as true, the user is not prompted to save. If specified as false, the user is prompted to save the data.

Return Value

None.

Example

This example shows how this function turns off the automatic prompts for the manifest detail screen.

```
<script language="javascript">
```

```
yfcDoNotPromptForChanges(true);
</script>
```

B.6.26 yfcDoNotPromptForChangesForActions

This JavaScript function can be used when you want to skip the "Changes made to the current screen will be lost" validation that is done when the user clicks actions on an inner panel. Normally, inner panel actions in the Yantra 7x Application Consoles are not used with the editable fields on a screen. Therefore, when the user changes an input field and clicks an action, the warning message will be displayed by default. Call this javascript method to avoid this validation. You can call this method for an all actions on a view by calling it in your JSP in a script tag. Alternatively, you can call this method for a specific action by calling it as part of the javascript property of the action resource.

Syntax

yfcDoNotPromptForChangesForActions(value)

Input Parameters

value - Required. Pass 'true' to skip the "changes made" validation. Pass 'false' to turn the validation on. By default, the validation is on.

Return Value

None.

Example

This example shows how to call the `yfcDoNotPromptForChangesForActions` function from a JSP to turn the "changes made" validation off for all actions on the view:

```
<script language="Javascript" >
    yfcDoNotPromptForChangesForActions(true);
</script>
```

B.6.27 yfcGetCurrentStyleSheet

This JavaScript function retrieves name of the style sheet for the current window.

Syntax

yfcGetCurrentStyleSheet()

Input Parameters

None.

Output Parameters

currentStyleSheet - The name of the style sheet for the current window. The full name of the style sheet is returned, including the file extension (for example, `sapphire.css`).

Example

This example shows how to get the current style sheet of the window.

```
var currentStyleSheet = yfcGetCurrentStyleSheet();
```

B.6.28 yfcGetSaveSearchHandle

This JavaScript function provides a handle to the Save Search icon on the search view. This handle then can be used for attaching events to achieve custom behavior. To change the behavior associated with the Search icon, see "yfcGetSearchHandle" on page 339.

Syntax

var oObj=yfcGetSaveSearchHandle();

Input Parameters

None.

Output Parameters

var - Handle to the Save Search icon on the search view.

Example

This example shows how to have the application perform custom processing when the user selects the Save Search icon.

```
<script language="javascript">
function attachBehaviorFn()
{
        ...
var oObj1=yfcGetSaveSearchHandle();
var sVal1=oObj1.attachEvent("onclick",fixDerivedFromReturnSearch);
}
    window.attachEvent("onload",attachBehaviourFn);
...
```

B.6.29 yfcGetSearchHandle

This JavaScript function provides a handle to the Search icon on a search view. This handle then can be used for attaching events in order to achieve custom behavior. To affect the behavior associated with the Save Search icon, see "yfcGetSaveSearchHandle" on page 338.

Syntax

var oObj=yfcGetSearchHandle();

Input Parameters

None.

Output Parameters

var - Handle to the Search icon on the search view.

Example

This example shows how to have the application perform custom processing when the user selects the Search icon.

```
<script language="javascript">
function attachBehaviourFn()
{
var oObj=yfcGetSearchHandle();
var sVal=oObj.attachEvent("onclick",fixDerivedFromReturnSearch);
        ...
}
    window.attachEvent("onload",attachBehaviourFn);
...
```

B.6.30 yfcHasControlChanged

This JavaScript function determines if the contents of a specific control have been modified by the user since the page loaded.

This is accomplished by comparing the current value of a specific control with the custom attribute OldValue stored in the control when the page is loaded.

In the case of checkboxes and radio buttons, the custom attribute is oldchecked.

Syntax

yfcHasControlChanged(ctrl)

Input Parameters

ctrl - Required. Object in the HTML object hierarchy.

Return Values

true - Value of the specified control is different from when the page was first loaded.

false - Value of the specified control is the same as when the page was first loaded.

Example

This example shows how the Order Modification Reasons popup window uses this function to set the Override Flag in a hidden field.

The hidden field is passed to the changeOrder() API only when a specific field (for example, requested ship date) that is permitted to be changed only by users with special override permissions is changed by the user. This function detects if any of the input in the screen has changed.

```
function setOverrideFlag(overrideFlagBinding) {

    var overrideFlagInput=document.all(overrideFlagBinding);

    var docInputs=document.getElementsByTagName("input");
    for (var i=0;i<docInputs.length;i++) {
        var docInput=docInputs.item(i);
        if (docInput.getAttribute("yfsoverride") == "true") {
            if (yfcHasControlChanged(docInput)) {
                overrideFlagInput.value="Y";
                return;
            }
        }
    }

    var docSelects=document.getElementsByTagName("select");
    for (var i=0;i<docSelects.length;i++) {
        var docSelect=docSelects.item(i);
        if (docSelect.getAttribute("yfsoverride") == "true") {
            if (yfcHasControlChanged(docSelect)) {
                overrideFlagInput.value="Y";
                return;
            }
        }
    }
}
```

B.6.31 yfcMultiSelectToSingleAPI

Deprecated in Yantra 7x version 5 SP1. Replaced by "yfcMultiSelectToSingleAPIOnAction" on page 343.

This JavaScript function enables you to make a single API call using multiple selections in a list. By default, when an action that calls an API on a list screen is executed while multiple selections have been made by the user, the API is invoked once for each selected record. This function enables you to configure an action that calls and API that is executed only once for all selected records. This function should be attached to the onclick event of each of the selection checkboxes of a list screen. This function will create hidden inputs on the list screen for the record being selected. Assuming that the input namespace of the action has been defined correctly, the API is called and all selected records are passed.

Syntax

yfcMultiSelectToSingleAPI(checkboxObject, counter, keyAttributeName, keyAttributeValue, parentNodePrefix, parentNodePostfix)

Input Parameters

checkboxObject - Required. Handle to the checkbox object (in HTML object hierarchy) on a table header.

counter - Required. Counter that uniquely identifies the row containing the checkbox object passed in the first parameter.

keyAttributeName - Required. Name of the attribute to be passed to the API.

keyAttributeValue - Required. Value of the attribute name specified in the keyAttributeName parameter.

parentNodePrefix - Required. Portion of the XML binding, up to and including the repeating XML element, to be passed to the API.

parentNodePostfix - Optional. Portion of the XML binding between the repeating XML element of the API input up to the final element in which the attribute specified in the keyAttributeName parameter is to be passed. Use this parameter only when the attribute specified in the keyAttributeName parameter is located under a child XML element of the repeating XML element. If not passed, it is assumed that the attribute specified in the keyAttributeName parameter is directly under the repeating element.

Return Values

None.

Example

This example shows how an Add to Shipment action can be processed in an Order Release list view.

In this example, the JSP code loops through a list of order releases and places a checkbox in the first <td> tag of the row. The checkbox's onclick event calls the `yfcMultiSelectToSingleAPI()` JavaScript function, which creates the hidden inputs required for the Add to Shipment action.

Note that the `yfcMultiSelectToSingleAPI()` JavaScript function is called twice to create two hidden inputs required by the API.

```
<yfc:loopXML binding="xml:/OrderReleaseList/@OrderRelease" id="OrderRelease">
        <tr>
            <yfc:makeXMLInput name="orderReleaseKey">
                <yfc:makeXMLKey
binding="xml:/OrderReleaseDetail/@OrderReleaseKey"
value="xml:/OrderRelease/@OrderReleaseKey" />
                <yfc:makeXMLKey
binding="xml:/OrderReleaseDetail/@OrderHeaderKey"
value="xml:/OrderRelease/@OrderHeaderKey" />
                <yfc:makeXMLKey binding="xml:/OrderReleaseDetail/@ReleaseNo"
value="xml:/OrderRelease/@ReleaseNo" />
            </yfc:makeXMLInput>
            <td class="checkboxcolumn"><input type="checkbox"
```

```
value='<%=getParameter("orderReleaseKey")%>' name="EntityKey"
                onclick=' yfcMultiSelectToSingleAPI (this ,
"<%=OrderReleaseCounter%>", "OrderReleaseKey", "<%=getValue("OrderRelease",
"xml:/OrderRelease/@OrderReleaseKey")%>",
"xml:/Shipment/OrderReleases/OrderRelease", null);
                yfcMultiSelectToSingleAPI (this , "<%=OrderReleaseCounter%>",
"OrderHeaderKey", "<%=getValue("OrderRelease",
"xml:/OrderRelease/@OrderHeaderKey")%>",
"xml:/Shipment/OrderReleases/OrderRelease", null)/>
            </td>
            <…>
    </tr>
</yfc:loopXML>
```

B.6.32 yfcMultiSelectToSingleAPIOnAction

This JavaScript function replaces the `yfcMultiSelectToSingleAPI()` JavaScript function, which was deprecated in Yantra 7x version 5 SP1.

This function makes a single API call using multiple selections in a list. By default, when an action that calls an API on a list screen is executed while multiple selections have been made by the user, the API executes once for each selected record. This function enables you to configure an action that calls an API that executes only *once* for *all* selected records.

Attach this function to the action resource. This function creates hidden inputs on the list screen for each record that the user selects. Assuming that the input namespace of the action has been defined correctly, the API is called once and all selected records are passed.

Syntax

yfcMultiSelectToSingleAPIOnAction(checkBoxName, counterAttrName, valueAttrName, keyAttributeName, parentNodePrefix, parentNodePostfix)

Input Parameters

checkBoxName - Required. Name of the checkbox object within the JSP where the action is defined.

counterAttrName - Required. Name of the HTML attribute on the checkbox object that contains the counter value that uniquely identifies this row within the table. It is recommended that you always use the string `yfcMultiSelectCounter` for this parameter.

valueAttrName - Required. Name of the HTML attribute on the checkbox object that contains the value that should be set into the attribute passed in the keyAttributeName parameter. It is recommended that you prefix the value with the `yfcMultiSelectValue` string. For more details, see the example.

keyAttributeName - Required. Name of the attribute that should be passed to the API.

parentNodePrefix - Required. The portion of the XML binding up to and including the repeating XML element that is to be passed as input to the API.

parentNodePostfix - Optional. The portion of the XML binding between the repeating XML element of the API input up to the final element in which the attribute specified in the keyAttributeName parameter is to be passed.

Output Parameters

None.

Example

This example shows a Create Shipment action that has been defined on a Order Release list view. The following shows how the checkbox object is created within the JSP:

```
<td class="checkboxcolumn"><input type="checkbox"
value='<%=getParameter("orderReleaseKey")%>' name="EntityKey"
yfcMultiSelectCounter='<%=OrderReleaseCounter%>'
yfcMultiSelectValue1='<%=getValue("OrderRelease",
"xml:/OrderRelease/@OrderReleaseKey")%>'
yfcMultiSelectValue2='Add'/>
</td>
```

Additionally, the Create Shipment action has the JavaScript field set to the following:

```
yfcMultiSelectToSingleAPIOnAction('EntityKey', 'yfcMultiSelectCounter',
'yfcMultiSelectValue1', 'OrderReleaseKey',
'xml:/Shipment/OrderReleases/OrderRelease',
null);yfcMultiSelectToSingleAPIOnAction('EntityKey', 'yfcMultiSelectCounter',
'yfcMultiSelectValue2', 'AssociationAction',
'xml:/Shipment/OrderReleases/OrderRelease', null);
```

Note that the `yfcMultiSelectToSingleAPIOnAction` function is called *twice* to create two hidden inputs required by the API.

B.6.33 yfcSetControlAsUnchanged

This JavaScript function eliminates prompting the user to save data. when controls are placed on an inner panel. Achieves this by setting controls as "not changed." The something function sets the prompt "Changes made to the data on screen will be lost" from appearing. For more information on users' changes to controls, see "ignoreChangeNames" on page 320.

After configuring all controls on a page to use this function, call this function for each control on a page before invoking an action.

If an inner panel uses an Action and has modifiable controls that take input required for the Action, you can use this function to prevent the "Changes made to ..." message.

When using this function, you must also call the `yfcDoNotPromptForChanges()` function in the JSP containing the Action. For more information about user prompts, see "yfcDoNotPromptForChanges" on page 336.

Syntax

yfcSetControlAsUnchanged (control)

Input Parameters

control - Required. Object in the HTML object hierarchy.

Return Value

None.

Example

This example shows how to call the `CallSetControl()` function from Action:

```
<script language="javascript"> yfcDoNotPromptForChanges(true) </script>
<script language="javascript">
function CallSetControl() {
 var myControl=document.all("xml:/InventoryItem/SKU/@OldSKU");
 var myControl_1=document.all("xml:/InventoryItem/SKU/@NewSKU");
var myControl_2=document.all("xml:/InventoryItem/@EMailID");

yfcSetControlAsUnchanged(myControl);
yfcSetControlAsUnchanged(myControl_1);
yfcSetControlAsUnchanged(myControl_2);
return(true);
}
</script>
```

B.6.34 yfcShowDefaultDetailPopupForEntity

This JavaScript function shows the default detail view of an entity in a popup window (modal dialog). The entity for which the view is displayed must be specified in the yfsTargetEntity attribute of the checkbox object whose name is passed as input. It is a blocking call. It does not return until the modal dialog is closed.

Syntax

yfcShowDefaultDetailPopupForEntity(checkBoxName)

Input Parameters

checkBoxName – Required. Name of one or more checkbox objects with the yfsTargetEntity attribute containing the ID of the entity for which the default detail view is to be displayed.

Return Values

None.

Example

This example shows how a view details action on an Order List screen could use this function to bring up the default detail view of the order entity.

JSP code for the checkbox:

```
<td class="checkboxcolumn">
<input type="checkbox" value='<%=getParameter("orderKey")%>'
name="chkRelatedKey" yfsTargetEntity="order"/>
</td>
```

The view details action should be defined with these properties:

```
ID="<Some ID>"
Name="View_Details"
Javascript="showDefaultDetailPopupForEntity('chkRelatedKey')"
Selection Key Name="chkRelatedKey"
```

B.6.35 yfcShowDetailPopup

This JavaScript function shows a specific view ID in a popup window, which is modal. It is a blocking call; it does not return until the modal dialog box is closed.

Syntax

yfcShowDetailPopup(viewID, name, width, height, argument, entity, key)

Input Parameters

viewID - Required. Resource ID of the detail view to be shown as a popup window. If passed as an empty string, the popup window displays the default detail view of the entity specified in the entity parameter.

name - Required. Pass as blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Required. Anything passed in this field is available in the modal dialog through the `window.dialogArguments` attribute.

entity - Optional. The entity of the detail view that is to be opened. If not passed, defaults to the same entity of the view that is currently being displayed.

key - Optional. Entity key that is required by the detail view. If not passed, the key of the current entity is passed to popup window.

Return Values

None.

Example

This example shows how the Modification Reason Code popup window displays when Save is selected on the Order Detail screen.

```
function enterActionModificationReason(modReasonViewID, modReasonCodeBinding,
modReasonTextBinding) {

    var myObject=new Object();
    myObject.currentWindow=window;
    myObject.reasonCodeInput=document.all(modReasonCodeBinding);
    myObject.reasonTextInput=document.all(modReasonTextBinding);

    // If the current screen has a hidden input for draft order flag
    // and the value of the input is "Y", don't show the modification
    // reason window.
    var draftOrderInput=document.all("hiddenDraftOrderFlag");
    if (draftOrderInput != null) {
        if ("Y" == draftOrderInput.value) {
            return (true);
        }
    }

    yfcShowDetailPopup(modReasonViewID, "", "550", "255", myObject);

    if (getOKClickedAttribute() == "true") {
        window.document.documentElement.setAttribute("OKClicked", "false");
        return (true);
    }
    else {
        window.document.documentElement.setAttribute("OKClicked", "false");
        return (false);
    }
}
```

B.6.36 yfcShowDetailPopupWithDynamicKey

When called with a specific object (in the HTML object hierarchy this JavaScript function prepares a URL-encoded XML containing all the values under the object (recursively). Only the values to be posted are considered. The XML then is passed on to a popup window as a parameter to show the specified view.

Syntax

yfcShowDetailPopupWithDynamicKey(obj, view, entity, inputNodeName, winObj)

Input Parameters

obj - Required. Handle to the object based on which the key is dynamically prepared. For the specific object, this function traverses up the HTML hierarchy to find the nearest <table> tag. From that <table> tag, this function then searches for all input and checkboxes. Based on the binding for these controls, a URL encoded XML is formed which is then passed as the entity key to the detail view being invoked.

viewID - Required. Resource ID of the detail view to be shown as a popup window. If passed as an empty string, the default detail view of the specified entity is shown in the popup window.

entity - Optional. Resource ID of the entity of the detail view to be shown. If not passed, defaults to the current entity.

inputNodeName - Required. Root node name of the XML to be prepared to be passed to the detail view.

winObj - Optional. Anything passed in this field becomes available in the modal dialog through the `window.dialogArguments` attribute. If this parameter is not passed, an empty object is passed to the popup window.

Return Value

None.

Example

This example shows how to use this function to invoke list of order lines that can be added to a return. The list of order lines requires an order number to be specified, but this number is editable by the user. Hence, the input cannot be formed on the server side through a makeXMLInput JSP tag. Therefore, the input is prepared on the client side using this function. The following example contains a `doClick()` function that must be configured to be called when you select a Proceed icon as `doClick(this);`. This way, the button object itself is passed as a parameter to the `doClick()` function. For this to work, the button object must be in the same <table> tag that contains the order number input box.

```
function okClick(obj) {
 yfcShowDetailPopupWithDynamicKey(obj, 'YOMD2002', 'return', 'Order',new
Object());
}
```

B.6.37 yfcShowDetailPopupWithKeys

This JavaScript functions shows a specific view ID in a popup window (modal dialog). It is a blocking call. It does not return until the modal dialog is closed.

Use this function in situations where the default key generated by the Yantra 7x Presentation Framework to be passed on the detail view is not accepted by the detail view being invoked.

Syntax

yfcShowDetailPopupWithKeys(viewID, name, width, height, argument, keyName, entity, selectionKeyName)

Input Parameters

viewID - Required. Resource ID of the detail view to be shown as a popup window. If passed as an empty string, the default detail view of the specified entity is displayed.

name - Required. Pass as blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Optional. Passed as the `argument` parameter to the `showModalDialog()` function that is used to show the popup window. This then becomes available in the modal dialog through the `window.dialogArguments` attribute. If not passed, a new Object is created and passed to the popup window.

keyName - Required. Name attribute of a control that contains the Entity Key that is required by the detail view. If it is not passed, defaults to the value `EntityKey`.

entity - Optional. Resource ID for the detail view being shown. If not passed, defaults to the current entity.

selectionKeyName - Optional. Name of the checkbox control that must be checked by the user before the popup window is invoked. If this name is not passed (or is passed as null), the check is not performed, and the popup window is invoked immediately.

Return Value

None.

Example

This example shows how to invoke the modify address dialog from an inner panel that specifies its own entity key.

```
function doModifyAddressDialogWithKeys(source, viewID, entityKeyName){
    var myObject=new Object();
    myObject.currentwindow=window;
    myObject.currentsource=source;

    if(viewID == null) {
        viewID="YADD001";
    }
    if (entityKeyName == null) {
        entityKeyName="EntityKey";
    }
    yfcShowDetailPopupWithKeys(viewID, "", "600", "425", myObject,
entityKeyName);
}
```

B.6.38 yfcShowDetailPopupWithParams

This JavaScript function invokes a specified detail view within a modal dialog. You can pass parameters to the detail view by forming a string in the format of name1=value1&name2=value2 and passing this string as a parameter to this function.

This function appends the passed string to the URL that is used to invoke the view. Thus, the passed parameters are available in the request object to the called view.

Syntax

yfcShowDetailPopupWithParams(viewID,name,width,height,params,entity,key, argument)

Input Parameters

viewID - Required. Resource ID of the detail view to be shown as a popup window. If passed as empty string, the default detail view of the specified entity is displayed.

name - Required. Not used. However an empty string must be passed.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

params - Required. String containing parameters to be passed to the detail view being invoked. Use the syntax "name1=value1&name2=value2". This appends the string to the URL invoking the detail view which enables the parameters to be available to the detail view of the requested object.

entity - Optional. Resource ID corresponding the detail view. If not passed, defaults to the current entity.

key - Optional. Value of the key to be passed as a parameter to the detail view. If not passed, the current view's key is passed to the detail view being invoked.

argument - Optional. Passed as the argument parameter to the `showModalDialog()` function that is used to show the popup window. This then becomes available in the modal dialog through the `window.dialogArguments` attribute. If this is not passed, an empty object is passed to the modal dialog.

Return Value

None.

Example

This example shows how the notes popup window is displayed using this function. The *notes* popup window detail view requires certain parameters to be passed to it. For instance, an XML binding pointing to attributes that control if notes are editable for the current order status or not. To accomplish this, the following example forms a string containing these parameters and invokes this JavaScript function.

```
var
extraParams="allowedBinding=xml:/Order/AllowedModification&getBinding=xml:/Order
&saveBinding=xml:/Order";
yfcShowDetailPopupWithParams('YOMD020', '', "800", "600", extraParams);
```

B.6.39 yfcShowDetailPopupWithKeysAndParams

This JavaScript function invokes a specified detail view within a modal dialog. You can pass parameters to the detail view by forming a string in the format of `name1=value1&name2=value2` and passing this string as a parameter to this function.

This function appends the passed string to the URL that is used to invoke the view. Thus, the passed parameters are available in the request object to the called view.

Use this function in situations where the default key generated by the Yantra 7x Presentation Framework to be passed on the detail view is not accepted by the detail view being invoked.

Syntax

yfcShowDetailPopupWithKeysAndParams(viewID, name, width, height, argument,keyName, entity, selectionKeyName, params)

Input Parameters

viewID - Required. Resource ID of the detail view to be shown as a popup window. If passed as an empty string, the default detail view of the specified entity is displayed.

name - Required. Pass as blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Optional. Passed as the `argument` parameter to the `showModalDialog()` function that is used to show the popup window. This then becomes available in the modal dialog through the `window.dialogArguments` attribute. If not passed, a new Object is created and passed to the popup window.

keyName - Required. Name attribute of a control that contains the Entity Key that is required by the detail view. If it is not passed, defaults to the value `EntityKey`.

entity - Optional. Resource ID for the detail view being shown. If not passed, defaults to the current entity.

selectionKeyName - Optional. Name of the checkbox control that must be checked by the user before the popup window is invoked. If this name is not passed (or is passed as null), the check is not performed, and the popup window is invoked immediately.

params - Required. String containing parameters to be passed to the detail view being invoked. Use the syntax `name1=value1&name2=value2`. This appends the string to the URL invoking the detail view which enables the parameters to be available to the detail view of the requested object.

Return Value

None.

Example

This example opens a custom detail page and passes some custom parameters to it.

```
yfcShowDetailPopupWithKeysAndParams('CSTOrder012','',800,600,new
Object(),'EntityKey','order','EntityKey','CustParam1=xml:/Order&CustParam2=proce
ss')
```

B.6.40 yfcShowListPopupWithParams

This JavaScript function shows a specified list view in a popup window (modal dialog). This is a blocking call. The function does not return until the window is closed.

Syntax

yfcShowListPopupWithParams(viewID, name, width, height, argument, entity, params)

Input Parameters

viewID - Required. Resource ID of the list view to be shown as a popup window. If passed as an empty string, the default list view of the specified entity is displayed.

name - Required. Pass as a blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Required. Value passed as the `argument` parameter to `showModalDialog()` function that is used to show the popup window. This then becomes available in the modal dialog through the `window.dialogArguments` attribute.

entity - Optional. Resource ID for the detail view being shown. If not passed, defaults to the current entity.

params - Optional. String starting with an ampersand (&) and containing any extra parameters based on which the search is to be performed. The parameters passed become available to the list view being invoked as request parameters.

Return Value

None.

Example

This example shows how an inventory audit list is invoked directly from the Inventory Summary screen for a specified Organization, Item, UOM and Product Class.

```
function showInvAuditSearch(sViewID,sItemID,sUOM,sProductClass,sOrgCode)
{
       var ItemID=document.all(sItemID).value;
       var UOM=document.all(sUOM).value;
       var PC=document.all(sProductClass).value;
       var Org=document.all(sOrgCode).value;
       var entity="inventoryaudit";
       var
sAddnParams="&xml:/InventoryAudit/@ItemID="+ItemID+"&xml:/InventoryAudit/@UnitOf
Measure="+UOM;
       sAddnParams=sAddnParams +
"&xml:/InventoryAudit/@ProductClass="+PC+"&xml:/InventoryAudit/@OrganizationCode
="+Org;

       yfcShowListPopupWithParams(sViewID,"",'900', '500','',entity,
sAddnParams);
}
```

B.6.41 yfcShowSearchPopup

This function invokes the specified search view in a popup window. This function can be used to display lookup results.

Syntax

yfcShowSearchPopup(viewID, name, width, height, argument, entity)

Input Parameters

viewID - Required. Resource ID of the search view to be shown as a popup window. If passed as an empty string, the default detail view of the specified entity is displayed.

name - Required. Pass as a blank space (" "). Not used.

width - Required. Horizontal size of the popup window. Measured in pixels. If passed as 0, a certain default width is used.

height - Required. Vertical size of the popup window. Measured in pixels. If passed as 0, a certain default height is used.

argument - Required. Value passed as the `argument` parameter to the `showModalDialog()` function that is used to show the popup window. This then becomes available in the modal dialog through the window.dialogArguments attribute.

entity - Optional. Resource ID corresponding to the entity being searched for. If not passed, defaults to the name of the current entity.

Return Value

None.

Example

This example shows how to invoke a single field lookup. The `callLookup()` function invokes a search popup window.

From the search popup window, when the user selects a row, the `setLookupValue()`function is called with the selected value as a parameter.

The `setLookupValue()` function populates the value in the text field and closes the lookup search window.

```
function setLookupValue(sVal)
```

```
{
    var Obj=window.dialogArguments
    if(Obj != null)
        Obj.field1.value=sVal;
    window.close();
}

//obj is to be passed as "this",
// which would be the icon that was selected for lookup.
//This function assumes that the lookup icon is placed
// immediately after the text field on which lookup is requested.
//entityname is the entity name of the search view
// that needs to be shown in the lookup.
function callLookup(obj,entityname)
{
var oObj=new Object();
var oField=obj.previousSibling;
while(oField != null && oField.type != "text" && oField.type != "TEXT")
{
oField=oField.previousSibling;
}
oObj.field1=oField;
yfcShowSearchPopup('','lookup',900,550,oObj,entityname);
}
```

B.6.42 yfcSpecialChangeNames

This JavaScript function must be called when an API requires that the entire row is passed if the key is passed.

Syntax

yfcSpecialChangeNames(id, checkOnlyBlankRow)

Input Parameters

id - Required. ID of the HTML tag under which the name changing must be performed.

checkOnlyBlankRow - Optional. If this is passed as `true`, only new blank rows (where all inputs and selects are void) are considered for changing names. If this is passed as `false`, then all the exisiting rows under the object whose ID is passed are considered. If not passed, the value defaults to `false`.

Return Value

None.

B.6.43 yfcSplitLine

This JavaScript function splits a specific row into two rows.

Syntax

yfcSplitLine(imageNode)

Input Parameters

imageNode - Required. Object pointer to the image that is selected in response to which this function is called.

Output Parameters

None.

Table B–5 lists the attributes to use at each cell level for determining the behavior of the newly created rows.

Table B–5 Cell Attributes

Attribute	Behavior
ShouldCopy	Determines whether or not to copy the contents of the cell, including child cells. If specified as true, the contents are copied. If specified as false, the contents are not copied and an empty cell is created. Defaults to false.
NewName	Determines whether a new cell acquires an automatically generated name. The generated name is derived from the name and row count of the current object being copied. If specified as true, the new cell acquires a new name. If specified as false, no name is generated. Defaults to false. The name generating logic requires that the original name contain an "_<integer>" at the spot where the row count must be inserted. For example, if the original name is `xml:/InspectOrder/ReceiptLines/FromReceiptLine_1/@ReceiptLineNo`, the new row has an object with the name as `xml:/InspectOrder/ReceiptLines/FromReceiptLine_2/@ReceiptLineNo`.
NewClassName	Class of the new copy of the object. For example, if the class of the original object is `unprotectedinput`, but if you want the new copy to be protected, specify the new class as protectedinput. If not used, the class of the original object is used in the copy.
NewDisabled	Determines whether or not controls are created in a disabled state. For some HTML controls (such as <img> tags), this means disabling all actions on the control. If specified as true, the property named `disabled` is set to true. If specified as false, the disabled property is not be set. Defaults to false.
NewResetValue	Determines the state of the value attribute for the new object. If this is set to true, the new object's value attribute is voided. For most HTML controls, this results in the contents of the control being blanked out. If specified as false, the value of the original control is set in the copy. Defaults to false.

Table B–5 Cell Attributes

Attribute	Behavior
NewContentEditable	Optional. Determines whether or not the new object inherits the `ContentEditable` property of the current object. If this is specified, the `ContentEditable` property of the current object also becomes the new object's `ContentEditable` property. For some HTML controls (such as text box), this property controls whether or not the control is editable. The value you specify becomes the value set in the ContentEditable attribute in the copy. If this is not specified, the new object inherits the current object's `ContentEditable` property.
NewTRClassName	Optional. Specify the class of a new row that is formed after a line split. If this attribute is not passed, the default behavior is seen. For example, if a TR had `classname="oddrow"` specified as the class and you want to retain the same class in the new row after a line split, then instead of `<tr classname="oddrow" >` the JSP should contain `<tr classname="oddrow" NewTRClassName = "oddrow">.`

Example

This example shows how you can split a line on the client side during returns inspection so that a specific receipt line can be given multiple dispositions.

```
<yfc:loopXML binding="xml:/ReceiptLines/@ReceiptLine" id="ReceiptLine">
<tr>
    <yfc:makeXMLInput name="receiptLineKey">
        <yfc:makeXMLKey binding="xml:/ReceiptLine/@ReceiptLineKey"
value="xml:/ReceiptLine/@ReceiptLineKey"/>
    </yfc:makeXMLInput>

    <td class="checkboxcolumn" ShouldCopy="false" nowrap="true">
        <input type="checkbox" value='<%=getParameter("receiptLineKey")%>'
name="chkEntityKey"/>
    </td>
    <td class="checkboxcolumn" nowrap="true" ShouldCopy="false" >
        <img class="columnicon" <%=getImageOptions(YFSUIBackendConsts.RECEIPT_
LINE_HISTORY, "Disposition_History")%>></a>
    </td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="false" ><yfc:getXMLValue
binding="xml:/ReceiptLine/@SerialNo"/></td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="false" ><yfc:getXMLValue
binding="xml:/ReceiptLine/@LotNumber"/></td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="false" ><yfc:getXMLValue
binding="xml:/ReceiptLine/@ShipByDate"/></td>
    <td class="numerictablecolumn" nowrap="true" ShouldCopy="false"
><yfc:getXMLValue binding="xml:/ReceiptLine/@AvailableForTranQuantity"/></td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="false" ><yfc:getXMLValue
binding="xml:/ReceiptLine/@DispositionCode"/></td></td>
    <td class="tablecolumn" ShouldCopy="false" >
        <yfc:getXMLValue binding="xml:/ReceiptLine/@InspectionComments"/>
    </td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="true" >
        <img IconName="addSplitLine" src="../console/icons/add.gif"
               <% if
(getNumericValue("xml:/ReceiptLine/@AvailableForTranQuantity") > 1) { %>
               class="lookupicon" onclick="yfcSplitLine(this)"
               <%} else {%>

style="filter:progid:DXImageTransform.Microsoft.BasicImage(grayScale=1)"
               <%}%>
               />
        <input type="hidden"
<%=getTextOptions("xml:/InspectOrder/ReceiptLines/FromReceiptLine_" +
ReceiptLineCounter + "/@ReceiptHeaderKey",
"xml:/ReceiptLine/@ReceiptHeaderKey")%>/>
        <input type="hidden"
<%=getTextOptions("xml:/InspectOrder/ReceiptLines/FromReceiptLine_" +
ReceiptLineCounter + "/@ReceiptLineNo", "xml:/ReceiptLine/@ReceiptLineNo")%>/>
        <select NewName="true" NewClassName="unprotectedinput"
NewContentEditable="true" NewResetValue="true"
            class="combobox"
<%=getComboOptions("xml:/InspectOrder/ReceiptLines/FromReceiptLine_" +
ReceiptLineCounter + "/ToReceiptLines/ToReceiptLine_1/@DispositionCode")%>>
       <yfc:loopOptions binding="xml:/ReturnDispositionList/@ReturnDisposition"
name="Description"
            value="DispositionCode"
selected="xml:/ReceiptLine/@DispositionCode"/>
        </select>
    </td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="true" >
       <input type="text" NewName="true" NewClassName="numericunprotectedinput"
```

```
NewContentEditable="true" NewResetValue="true"
            class="numericunprotectedinput"
<%=getTextOptions("xml:/InspectOrder/ReceiptLines/FromReceiptLine_" +
ReceiptLineCounter + "/ToReceiptLines/ToReceiptLine_1/@Quantity", "")%>/>
    </td>
    <td class="tablecolumn" nowrap="true" ShouldCopy="true" >
        <input type="text" NewName="true" NewClassName="unprotectedinput"
NewContentEditable="true" NewResetValue="true"
            class="unprotectedinput"
<%=getTextOptions("xml:/InspectOrder/ReceiptLines/FromReceiptLine_" +
ReceiptLineCounter + "/ToReceiptLines/ToReceiptLine_1/@InspectionComments",
"")%>/>
    </td>
</tr>
</yfc:loopXML>
</tbody>
```

B.6.44 yfcValidateMandatoryNodes

This JavaScript function validates mandatory sections of a screen. The function parses through all the TABLE elements in a page, and for each of the tables, looks for the presence of the `yfcMandatoryMessage` attribute. If this attribute is found, the function looks into the contents of the table. If the contents have not changed, the function alerts the message set within the `yfcMandatoryMessage` attribute for the corresponding <table> tag.

Syntax

yfcValidateMandatoryNodes()

Input Parameters

None.

Output Parameters

None.

Example

The following example shows how mandatory validation is performed before Save in the case of return receiving. First, the Save Operation is configured to call the `yfcValidateMandatoryNodes()` function.

Second, in the inner panel JSP, the following attribute is set for the table that requires a validation check:

```
<table class="table" ID="ReceiveLines" width="100%" editable="true"
 yfcMandatoryMessage="<yfc:i18n>Receipt_information_must_be_entered</yfc:i18n>">
```

B.6.45 yfcFindErrorsOnPage

This JavaScript function can be used within JSPs. This function is used to find errors on a page. On finding an error, this function raises an appropriate alert message.

Syntax

yfcFindErrorsOnPage()

Input Parameters

None.

Return Value

None.

Example

This example shows how to call the yfcFindErrorsOnPage() function from a JSP. While adding a dynamic row inside a JSP, this function checks if the JSP has any errors on a page. On finding an error, an appropriate alert message is displayed:

```
function addRows(element) {

if(yfcFindErrorsOnPage())
return;
}
```

B.6.46 setRetrievedRecordCount

This JavaScript function can be used within JSPs created for list views. All list view screens typically have a message next to the title of the screen that indicates how many records were retreived. For example, the message will display "Retrieved 2 record(s)" when the list view shows 2 records. You can use this javascript to set the count within this message dynamically. Typically, the UI infrastructure will automatically display the correct message based on the output of the "List" API defined under the entity resource for this list view.

However, in some instances the "List" API cannot be used for a specific list view. In these cases, the list view as been set to ignore the default list API, and instead, calls its own API either by defining a different API under the list view resource or within its own JSP through the `callAPI` taglib. In this case, the UI infrastructure cannot automatically display the correct message.

Syntax

setRetrievedRecordCount (recordCount)

Input Parameters

recordCount - Required. The correct record count to display in the "Retrieved X record(s)" message.

Return Value

None.

Example

This example shows how to call the setRetrievedRecordCount() function from a JSP defined for a list view. The correct count is computed as JSP code. Then, this result is passed to the setRetrievedRecordCount method which is called inside a script tag:

```
<%
    YFCElement root = (YFCElement)request.getAttribute("OrganizationList");
    int countElem = countChildElements(root);
%>
<script language="javascript">
    setRetrievedRecordCount(<%=countElem%>);
</script>
```

B.7 Data Type Reference

The `DataType` node contains UIType and XMLType nodes. For the Yantra 7x Presentation Framework, attributes specified in UIType override those specified in XMLType, which in turn override those specified in DataType.

Table B–6 lists which nodes are supported by specific datatype attributes.

Table B–6 Nodes Supporting DataType Attributes

Attribute	Description	Nodes Supported In
Name	Unique identifier of the abstract data type.	DataType Type
Type	Can take values NUMBER, VARCHAR2, DATE, DATETIME, QUANTITY. If Type is selected as QUANTITY, it may or may not take decimal values, based on the `yfs.install.displaydoublequantity=N` setting specified in the `yfs.properties` file.	DataType XMLType UIType
Size	If specified in the DataType node, it is taken as the maximum number of characters that can be entered in the input boxes. If specified the UIType node it is multiplied by 5, and the result is taken as the number of pixels to use for as the length of the input box.	DataType XMLType UIType
PpcSize	If specified in the DataType node, it is taken as the maximum number of characters that can be entered in the input boxes in the RF UI screens. If specified the UIType node it is multiplied by 5, and the result is taken as the number of pixels to use for as the length of the input box in the RF UI screens. In instances where the PpcSize attribute is not specified, the Size attribute is considered.	DataType XMLType UIType
ZeroAllowed	Used only for numeric fields.	DataType XMLType UIType

Table B–6 Nodes Supporting DataType Attributes

Attribute	**Description**	**Nodes Supported In**
UITableSize	The value specified here is multiplied by 5 and the result is used as the width in pixels. This specific attribute is available only upon special request. Use the `getUITableSize()` JSP function to eve this value.	UIType
NegativeAllowed	Used only for numeric fields.	DataType XMLType UIType

C

Mobile User Interface Extensibility Reference

Mobile device user interface extensibility is accomplished through scripts that determine how the user interface renders the screen and passes data. This chapter contains the following resources for you reference while developing the user interface:

- User Interface Style Reference
- Programming Standards
- JSP Functions

Also, as when doing any sort of development, see Appendix A, "Special Characters Reference".

C.1 User Interface Style Reference

The style reference helps you maintain consistency and enables easy code reusability.

C.1.1 Yantra 7x Mobile UI HTML Tags

The Yantra 7x mobile UI uses the following HTML tags:

Table C–1 Mobile Device Screen HTML Tags

Tag	Valid values / Detail
type	Valid values are: text, hidden, or button.
subtype	Text type tags use the following values: • Label - Static text. • ProtectedText - Non-editable input. • Text - Input text box. Hidden type tags use the value Hidden. Button type tags use the following values: • Command - HTML button. • CommandLogout - Logs the user out and displays the login prompt. • CommandBack - Switches to the previous view. • CommandNextView - Switches to the next view.
name	Name of the field. Cannot contain spaces.
value	Value of the field (Internationalized string from the resource bundle)
size	Length of the field.
maxlen	Maximum length of the field.
row	Row in which the field should appear.
col	Column in which the field should start.
validate	Input data validated by the server. Valid values are: • Always - validate input data in all cases. • True - validate input data only if the old value if different from the new value. • False - do not validate input data.

Table C–1 Mobile Device Screen HTML Tags

Tag	Valid values / Detail
mandatory	Field usage validated by the server. Valid values are: • True - the user is required to specify a value for the field. • False - the user is not required to specify a value for the field.
tag	Binding for the field recognized by infrastructure. The tag syntax is "binding=x", where 'x' is an XML binding (similar to the ones in Console screens).
url	Specified only for "button/Command" field type/subtype. If set, the request is forwarded to the value of this attribute. It should always be of the form `target + "?action=" + calledFormName` where target is the values of attribute "target" in the "form" element of the HMTL while calledFormName is the name of the JSP to be invoked without the ".jsp" extension.

C.1.2 JSP Tag Library

The Yantra 7x mobile UI screens use the same JSP tags listed in Appendix B, "Console JSP Interface Extensibility Reference".

C.1.3 JavaScript Functions

The Yantra 7x mobile UI screens use the JavaScript functions listed in the <YFS_HOME>/webpages/yfcscripts/mobile.js file.

The Yantra 7x mobile UI can use any of the Console functions if necessary. See in Appendix B, "Console JSP Interface Extensibility Reference".

C.1.4 Data Type Reference

The Yantra 7x mobile UI uses the same datatypes listed in Appendix B, "Console JSP Interface Extensibility Reference".

C.2 Programming Standards

Follow these programming standards to help you create and maintain files that are consistent, easy-to-read, and reusable.

C.2.1 Standards for Creating Well-Formed JSP Files

Although HTML code is embedded in Java Server Pages, strive to write JSP code that is easily readable. If you require some special XML manipulation that cannot be incorporated in the APIs, include a separate JSP file, so that HTML tags and Java code do not become mixed together.

Use the following standards when writing JSP files:

- Tab spacing - Set the editor tab spacing to 4.
- JavaScript files - Do not include any JavaScript in the JSP file. Put all JavaScript into a separate JS file.
- HTML tags - Type all HTML tags and attributes in lowercase letters.
- HTML attributes - Enclose all HTML element attribute values in double quotes. Single quotes and no quotes may work, but the standard is to use double quotes.
- HTML tables - Strictly adheres to XSD defined.
- Tags - Close all tags, whether required or not.
- Comments - Enclose all comments in the following manner: `<%/*……..*/%>`

Tip: When finished coding a form, open it in any visual HTML editor to validate that the HTML is well-formed.

C.2.2 Internationalization

Yantra 7x Presentation Framework enables you to write an internationalized application by providing the following features that can be customized to be *locale-specific*:

- i18n JSP tag for literals
- Server-side error messages

C.2.3 Validating Your HTML Files

Validate your HTML files. You can use any commercial software package or free, online application, such as the World Wide Web Consortium (W3C) HTML Validator at http://validator.w3.org/. As an alterative, when you finish coding a form, you can open it in any visual HTML editor to validate that the HTML is well-formed.

Additionally, validate the HTML files against the XSD files.

C.3 JSP Functions

Any of the following functions in the <YFS_HOME>/yfc/rfutil.jspf file can be included in any JSP for extending the Yantra 7x mobile UI. These functions are listed in alphabetical order.

You can use the following JSP functions:

addToTempQ - see page 375
clearTempQ - see page 376
deleteAllFromTempQ - see page 377
deleteFromTempQ - see page 377
getErrorXML - see page 378
getField - see page 379
getForm - see page 379
getStoredElement - see page 380
getTempQ - see page 380
getTempQValue - see page 381
replaceInTempQ - see page 382
resetAttribute - see page 382
sendForm - see page 383

C.3.1 addToTempQ

This mobile device JSP function adds the keyName and keyValue pair to TempQ in order to persistence data across JSPs. The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

This function also enables support of multiple duplicate key names.

Syntax

public void addToTempQ (String keyName, String keyValue, boolean allowDuplicates) throws Exception

public void addToTempQ (String keyName, String keyValue, Map m, boolean allowDuplicates) throws Exception

Input Parameters

keyName - Required. Name of the key to be stored in the TempQ.

keyValue - Required. Value of the key to be stored in the TempQ.

allowDuplicates - Required. Determines whether or not duplicate objects are allowed to be added to the TempQ.

m - Optional. Enables you to provide a map of name/value pairs in a java.util.map.

Example

This example shows how the addToTempQ function can be used when multiple cases have to be scanned and multiple CaseIDs have to be stored in a TempQ.

```
addToTempQ("Case", "Case", caseMap, true);
```

C.3.2 clearTempQ

This mobile device JSP function clears the TempQ. This is the first function to invoke before persisting any information in the TempQ. The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

public void clearTempQ() throws Exception

Input Parameters

None.

Example

The following example shows how this function can be used to clear the TempQ:

```
clearTempQ();
```

C.3.3 deleteAllFromTempQ

This mobile device JSP function deletes entries from TempQ for a given keyName. Use this after an exception to clear CaseIds stored so far.

The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

public void deleteAllFromTempQ(String keyName) throws Exception

Input Parameters

keyName - Required. This is the key for which TempQ entries will be deleted.

Example

This example shows how the `deleteAllFromTempQ` function can be used to remove all TempQ entries that correspond with the keyName CaseScanned.

```
deleteAllFromTempQ("CaseScanned");
```

C.3.4 deleteFromTempQ

This mobile device JSP function deletes the TempQ entry for a given keyName and keyValue pair.

The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

public void deleteFromTempQ(String keyName, String keyValue) throws Exception

Input Parameters

keyName - Required. Name of the key in the TempQ that requires deletion.

keyValue - Required. Value of the key in the TempQ that requires deletion.

Example

This example shows how the `getLocale` function can be used in conjunction with the getDoubleFromLocalizedString function.

```
deleteFromTempQ("Case","Case");
```

C.3.5 getErrorXML

This mobile device JSP function returns an XML representation of error. The mobile device interprets this XML and renders an error page.

Syntax

public String getErrorXML(String error, String errorField)

public String getErrorXML(String error, String errorField, String severity)

Input Parameters

error - Required. Error description for the error to be shown to the user. This is usually derived by invoking the `checkForError()` function.

errorField - Required. Form field where the focus must be transferred to on clearing the error page.

severity - Optional. Displays the degree of error present. Recommended values in ascending order are: info, error, warning.

Example

The following example shows how this function can be used to get the error XML for rendering an error message on a mobile UI screen.

```
errorXML=getErrorXML(errorDesc, errorfield)
```

C.3.6 getField

This mobile device JSP function is used in conjunction with the `getForm()` function.

Syntax

public YFCElement getField(YFCDocument formDoc, String fieldName) throws Exception

Input Parameters

formDoc - Required. Name of the YFCDocument from which the element must be extracted.

fieldName - Required. Name of the form field for which the other attributes need to be set.

Example

This example shows the `getField` function.

Consider a form with formName as formName. The following code creates a YFCDocument from the XHTML form.

```
YFCDocument ydoc=getForm(formName);
```

Prior to setting the attributes of the form for a specific element, getField can be called as:

```
YFCElement dropoffLocationElem = getField(ydoc,"lblDropoffLocation");
```

To set the type and subtype attributes for the dropoffLocationElem, use:

```
dropoffLocationElem.setAttribute("type","hidden");
dropoffLocationElem.setAttribute("subtype","Hidden");
```

C.3.7 getForm

This mobile device JSP function reads the XHTML form for a given form name and returns a YFCDocument. The currentEntity name is prefixed to the formname and .html is suffixed. It looks for the file in the <YFS_HOME>`/template/mobilescreens/` directory.

The `getForm()` function is always used in conjuction with the `getField()` function.

Syntax

public YFCDocument getForm(String formName) throws Exception

Input Parameters

formName - Required. Name of the XHTML form.

Example

The following example shows how this function can be used to return a YFCDocument for the form "formName".

```
YFCDocument ydoc=getForm()
```

C.3.8 getStoredElement

This mobile device JSP function returns the XML Element for all TempQ entries. Each keyName and keyValue entry can be obtained by traversing the Element.

Syntax

private YFCElement getStoredElement(YFCDocument ydoc, String keyName, String keyValue) throws Exception

Input Parameters

ydoc - Required. YFCDocument representation of the XHTML form.

keyName - Required. Name of the key in the TempQ.

keyValue - Required. Value of the key in the TempQ.

Example

The following example shows the `getStoredElement` function.

```
YFCElement criteria = getStoredElement(getTempQ(),"Criteria", "criteria");
```

C.3.9 getTempQ

This mobile device JSP function retrieves the TempQ document object from Session. If a TempQ document does not exist, this function creates one. Since the return type of this function is YFCDocument, it is used to get a handle to the TempQ and thereafter iis used to get its elements or attributes for some of its elements.

The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

public YFCDocument getTempQ() throws Exception

Input Parameters

None.

Example

The following example shows how this function can be used to first get the TempQ documents and then later to get the node list for elements with the tag name "LPN".

```
YFCNodeList lpnlist=()((getTempQ()), getElementsByTagName("LPN"));
```

C.3.10 getTempQValue

This mobile device JSP function returns the value of the TempQ for a specific key. The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

private String getTempQValue(String keyName) throws Exception

Input Parameters

keyName - Required. Name of the key for which the TempQ value is to be returned.

Example

This example shows how the `getTempQValue` function can be used to return the keyValue corresponding to the CaseScanned key from the TempQ.

```
getTempQValue("CaseScanned");
```

C.3.11 replaceInTempQ

This mobile device JSP function replaces the value in TempQ for a given key. The TempQ utilities store name/value pair information on one page in the session and provide methods for accessing them on the subsequent screens.

Syntax

public void replaceInTempQ(String keyName, String keyValue) throws Exception

public void replaceInTempQ(String keyName, String keyValue, String newKeyValue) throws Exception

public void replaceInTempQ(String keyName, String keyValue, Map m) throws Exception

Input Parameters

keyName - Required. Name of the key in the TempQ that is being replaced.

keyValue - Required. Value of the key in the TempQ that is being replaced.

newKeyValue - Optional. The new value of the key in TempQ that replaces the old value.

m - Optional. Map that should replace the existing keyValue.

Example

The following example shows how this function can be used to change the value of RecordCount from "1" to "resultMap".

```
replaceInTempQ("RecordCountResult","1",resultMap);
```

C.3.12 resetAttribute

This mobile device JSP function removes the named attribute from request and PageContext.

Note: It is a good coding practice to reset an attribute before using it in the code.

Syntax

public void resetAttribute(String name)

public void resetAttribute(String name, Object value)

Input Parameters

name - Required. The name of the request attribute that needs to be reset.

value - Optional. The value of the request attribute that the attribute should be reset to.

Example

This example shows how the `restAttribute` JSP function removes the named attribute from request and PageContext.

```
resetAttribute("TaskList","");
```

C.3.13 sendForm

This mobile device JSP function posts an HTML form and provides focus on a specific field on a subsequent JSP form. Three versions of syntax enable you to customize how data should display.

Syntax

public String sendForm(String formName, String focusField) throws Exception

public String sendForm(String formName, String focusField, boolean sendData) throws Exception

public String sendForm(YFCDocument formDoc, String focusField, boolean sendData) throws Exception

Input Parameters

formDoc - Required. Either formName of formDoc must be provided.

formName - Required. Either formName of formDoc must be provided.

focusField - Required. Form field where the focus must be transferred to in the invoked JSP.

sendData - Optional. Valid values: true and false.

Example

This example shows how the sendForm function can be used so that the form corresponding to the YFCDocument ydoc is posted. On invocation of the subsequent JSP, the focus is transferred to the txtLocationId field and data is posted.

```
sendForm(ydoc, "txtLocationId", true)
```

Index