

Sterling Commerce
An IBM Company

Sterling Supply Chain Applications

Installation Guide

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Contents

Preface

Intended Audience	xi
Structure	xi
Sterling Supply Chain Applications Documentation.....	xiii
Conventions	xv

1 Getting Started

1.1 Before You Begin	1
1.2 Installation and Runtime Directory Structure.....	1
1.3 Installation Checklist	6

2 System Requirements

2.1 Technical Stack Matrix	10
2.2 Database Tier Requirements	10
2.3 Application Server Requirements	11
2.4 Utility Requirements	13
2.5 Internet Browser and Plugin Requirements	13
2.6 Third-Party Software Requirements	14
2.7 Sterling Supply Chain Mobile Application Requirements	15
2.8 Sterling Rich Client Application Requirements.....	16
2.8.1 Operating System Requirements	16
2.8.2 Sterling Supply Chain Applications Plugin Requirements	16
2.8.3 Third-Party Software Requirements	17

3 Creating a Security Plan

3.1	Planning Your Deployment Architecture	21
3.1.1	Current Security Infrastructure Analysis	22
3.1.2	Authentication and Authorization	23
3.1.3	Data Encryption	23
3.1.4	Network Topology	23
3.1.4.1	Deployment Over the Internet.....	24
3.1.4.2	Deployment Over a Virtual Private Network.....	24
3.1.4.3	Deployment Over a Local Area Network.....	25
3.2	Java Protocol Security Measures.....	25
3.2.1	Disabling Java Protocols	25
3.2.2	Securing Java Protocols.....	27
3.3	Web Security	30
3.3.1	Post Installation Recommendations.....	30
3.3.2	Session Security.....	30
3.3.3	Operating System Permissions	31
3.3.4	Documentation	31
3.3.5	Routing.....	31
3.3.6	Web Server Executables.....	31
3.4	Database Security	32
3.4.1	Credit Card Encryption	32
3.5	Internet Explorer Security Settings	32
3.5.1	Configuring Browser Security Settings.....	32
3.5.2	Adding Sterling Supply Chain Applications as a Trusted Website	35

4 Installing and Configuring Application Tier Software

4.1	Installing Your Application Server	37
4.2	Installing and Configuring Application Server Utilities	38
4.2.1	Installing JDK Upgrades	38
4.3	Installing and Configuring your Proxy Server.....	38
4.3.1	Configuring Proxy Server for SSL or HTTPS.....	38
4.4	Setting Up Image Server	40

5 Installing Sterling Supply Chain Applications

5.1	Before You Begin	43
5.2	Installing Sterling Supply Chain Applications on UNIX and Linux	44
5.3	Installing Sterling Supply Chain Applications on Windows	45
5.4	Installing Sterling Supply Chain Applications on a Remote Computer	46
5.5	Uninstalling Sterling Supply Chain Applications.....	47

6 Installing the Sterling Supply Chain Applications Language Pack

6.1	Installing the Language Pack	49
6.2	Setting up Properties	50
6.3	Loading the Sterling Supply Chain Applications Language Pack Factory Defaults.....	51
6.3.1	Loading the Sterling Supply Chain Applications Language Pack Translations	51
6.3.2	Switching the Sterling Supply Chain Applications Base Language	52
6.4	Creating and Deploying the Enterprise Archive	52

7 Installing and Configuring Database Tier Software

7.1	Installing Oracle.....	53
7.1.1	Oracle Database User Privileges	55
7.1.2	Configuring an Oracle database for Production	55
7.1.2.1	Running Scripts for an Oracle database	56
7.1.2.2	Enabling the Text Search Feature	58
7.2	Installing DB2.....	60
7.2.1	DB2 Database User Privileges	61
7.2.2	Configuring a DB2 Database for Production.....	61
7.2.2.1	Running Scripts for a DB2 Database	62
7.2.2.2	Enabling the Text Search Feature	62
7.3	Installing Microsoft SQL Server	63
7.3.1	SQL Server Database User Privileges	64
7.3.2	Configuring a SQL Server Database for a Production Environment.....	64
7.3.2.1	Running Scripts for a SQL Server database	64
7.3.2.2	Enabling the Text Search Feature	65

7.4	Database Sizing	66
7.4.1	Capacity Planning	66
7.4.2	Disk Estimation for the Distributed Order Management Module	67
7.4.3	Disk Estimation for the Networked Warehouse Management System Module.....	70
7.4.4	Tracking and Estimating Future Disk Requirements	75
8	Installing the Print Server	
8.1	Installation of Loftware Components	77
8.2	Define Printers on Loftware.....	78
8.3	Define Printers for Sterling WMS Installation	78
8.4	Copying Sterling WMS Standard Label Formats.....	78
8.5	Installation of JasperReports.....	79
9	Installing the Weighing Scale	
9.1	Installation of the Weighing Scale.....	81
10	Installing the Sterling Supply Chain Mobile Application	
10.1	Installation on Mobile Terminals	84
10.1.1	Ensuring Re-installation on Cold Boot.....	87
10.2 Installing on VT220 Mobile Terminals	90
10.2.1	Installing ncurses on HP-UX.....	90
10.2.2	Installing libiconv on HP-UX Itanium	91
10.2.3	Installing the Sterling Supply Chain Mobile Application on VT220 Mobile Terminals.....	91
11	Configuring Properties	
11.1	Before You Begin.....	95
11.2	Setting Up the Properties Files	95
11.3	Properties for the Sterling Supply Chain Applications Configurator.....	98
11.4	Properties to Prevent Cross-Site Script Vulnerabilities.....	99
11.5	Setting the Database Connection Properties	100
11.6	Setting the Data Migrator Properties	103
11.7	Properties for LDAP User Authentication	104

11.8	Properties for Logging.....	107
11.9	Properties for Integration and Agent Servers	109

12 Configuring Utilities

12.1	Installation Utilities	112
12.1.1	Loading the Sterling Supply Chain Applications Database Factory Defaults 112	
12.1.2	Verifying the Database.....	115
12.2	Upgrade Utilities	118
12.2.1	Data Migrator	119
12.2.1.1	Data Migrator Task Definition Files.....	119
12.2.1.2	Data Migrator Restart File.....	120
12.2.1.3	Data Migrator Log Files	121
12.3	Development Utilities.....	121
12.4	Runtime Utilities	122
12.4.1	Setting Up the Classpath for the Runtime utilities:	123
12.5	Copying a WMS Node Configuration to a New Node.....	125

13 Creating and Updating the Sterling Supply Chain Applications Runtime

13.1	Creating the Sterling Supply Chain Applications Runtime	127
13.2	Updating the Sterling Supply Chain Applications Runtime	129

14 Deploying Sterling Supply Chain Applications

14.1	Sterling Supply Chain Applications Enterprise Archive Package	132
14.1.1	Build Targets	134
14.2	Deploying Custom Classes.....	135
14.3	Support for Mixed (Secure and Unsecure) Protocols in the Sterling Supply Chain Application Consoles	136
14.3.1	Configuring and Enabling the Filter	136
14.3.2	Mechanics of the filter.....	139
14.3.3	Securing Login Information When Using Mixed Protocols.....	140
14.4	Setting Up Scripts for Creating Sterling Supply Chain Applications EAR....	141
14.5	Creating Sterling Supply Chain Applications EAR.....	141

14.6	Deploying Sterling Supply Chain Applications EAR.....	142
14.7	Deploying Sterling Supply Chain Applications on WebLogic.....	142
14.7.1	Setting Up the WebLogic Application Server	142
14.7.1.1	Preparing Your WebLogic Setup for JNDI Cleanup	145
14.7.2	Configuring WebLogic for Sterling Supply Chain Applications	146
14.7.2.1	Disabling Instrumented Stack Traces in WebLogic.....	147
14.7.2.2	Setting up WebLogic to Display Barcodes and Graphs.....	147
14.7.3	Setting up WebLogic to Use WebServices.....	148
14.7.4	Creating and Deploying the Enterprise Archive on WebLogic.....	151
14.7.5	Setting Up WebLogic to Use HTTP In-Memory Session Replication	153
14.8	Deploying Sterling Supply Chain Applications on WebSphere	154
14.8.1	Preparing WebSphere for Sterling Supply Chain Applications	154
14.8.2	Configuring WebSphere JVM Settings	155
14.8.3	Configuring a WebSphere Virtual Host for Sterling Supply Chain Applications.....	156
14.8.4	Setting Up WebSphere to Display Barcodes and Graphs.....	157
14.8.5	Creating the Enterprise Archive on WebSphere.....	157
14.8.6	Configuring the Enterprise Archive on WebSphere.....	161
14.8.7	Deploying the Enterprise Archive in WebSphere.....	161
14.8.8	Application Clients Invoking Sterling Supply Chain Applications EJBs ..	163
14.9	Setting the Client Character Display.....	163
14.10	Clearing Browser and Java Plugin Caches	164
14.11	Verifying Your Sterling Supply Chain Applications Deployment.....	164
14.12	Statistics Monitoring	165

15 Deploying and Updating the Sterling Rich Client Applications

15.1	Before You Begin.....	167
15.2	Deploying Sterling Rich Client Application	169
15.2.1	Creating the RCP_EXTN_FOLDER Folder	169
15.2.2	Configuring Locations.....	171
15.2.2.1	Creating and Configuring a New locations.ycfg XML File	171
15.2.2.2	Modifying the locations.ycfg.sample XML File.....	173
15.2.3	Localizing Bundle and Theme Files	173
15.2.4	Enabling HTTPS.....	174
15.2.5	Applying Updates	174

15.2.5.1	Type of Updates	176
15.2.6	Creating or Updating the Sterling Supply Chain Applications Runtime ..	176
15.2.7	Running the Ant Script	177
15.3	Location Configuration Settings	179
15.4	Configuring Connection Settings	181
15.4.1	Configuring Connection Settings for Fetching Images from the Server	183
15.4.2	Configuring Connection Settings for HTTPS connection	186
15.4.3	Configuring Connection Settings for Making Selective SSL Calls	187
15.5	Security Certificates	187
15.6	Adding Secure APIs for Making Selective SSL Calls	188
15.7	Compression in Sterling Rich Client Platform	189

16 Deploying Configuration Data

16.1	Concepts Regarding Configuration Data Deployment	192
16.1.1	Source and Target Environments	192
16.1.2	Configuration Groups and Driver Entities	193
16.1.3	Externally Maintained Configuration Data	194
16.1.4	Deploying Database Extensions	195
16.1.5	Deploying Custom Tables	195
16.1.6	Foreign Key Checks	196
16.1.7	Data Transformations	196
16.2	Before You Begin	197
16.2.1	System Requirements	197
16.2.2	Security Strategy	198
16.2.3	Change Management Strategy	198
16.2.4	Rollback Strategy	199
16.2.5	Upgrades and Maintenance	199
16.2.6	Externally Maintained Configuration Data	201
16.2.7	Best Practices	201
16.3	Setting Up the Configuration Deployment Tool	202
16.4	Running the Configuration Deployment Tool	206
16.5	Understanding the Configuration Deployment Tool User Interface	209
16.5.1	The Deployment Explorer	209
16.5.2	Comparison Results Window	209
16.5.3	The Status Panel	210

16.6	Specifying the Preferences Settings	211
16.7	Transforming Elements	213
16.8	Comparing Data	215
16.9	Examining Database Differences.....	217
16.10	Exporting Comparison Results	219
16.11	Generating a Report of Differences	220
16.12	Importing Configuration Differences.....	221
16.13	Deploying Your Configuration Data	222
16.14	Deploying Your Configuration Data in Command-Line Mode.....	223
16.15	Troubleshooting	225
16.15.1	Informational Messages	225
16.15.2	Warning Messages.....	226
16.15.3	Unexpected Errors.....	228
16.15.4	Exceptions While Exporting With cdtshell.cmd/sh Scripts	228
16.15.5	Data Rollback Scripts	229
16.15.5.1	Customizing the Scripts.....	229
16.15.5.2	Running the Scripts	230

Index

Preface

This manual explains how to install the various components of Sterling Supply Chain Applications and contains information relevant to new installs and upgrades of the Sterling Supply Chain Applications. It also describes the major tools and components of Sterling Supply Chain Applications and provides information on how to set them up in a typical installation.

Intended Audience

This manual provides installation and administration information for individuals responsible for installing and maintaining Sterling Supply Chain Applications.

Structure

This document contains the following sections:

Chapter 1, "Getting Started"

This chapter provides a high-level introduction to the tasks involved in installing Sterling Supply Chain Applications.

Chapter 2, "System Requirements"

This chapter describes the hardware and software requirements for installing Sterling Supply Chain Applications.

Chapter 3, "Creating a Security Plan"

This chapter provides security recommendations and guidelines.

Chapter 4, "Installing and Configuring Application Tier Software"

This chapter provides information directing you to installation instructions for specific application server software.

Chapter 5, "Installing Sterling Supply Chain Applications"

This chapter provides step-by-step instructions for installing the Sterling Supply Chain Applications on each of the supported operating systems.

Chapter 6, "Installing the Sterling Supply Chain Applications Language Pack"

This chapter provides step-by-step instructions for installing the Sterling Supply Chain Applications language pack on each of the supported operating systems.

Chapter 7, "Installing and Configuring Database Tier Software"

This chapter provides step-by-step instructions for installing and configuring your database server to run Sterling Supply Chain Applications.

Chapter 8, "Installing the Print Server"

This chapter describes the Sterling WMS specific settings for the installation and configuration of the Loftware Label Manager (LLM) and Loftware Print Server (LPS).

Chapter 9, "Installing the Weighing Scale"

This chapter describes how to install the weighing scale software used by Sterling WMS.

Chapter 10, "Installing the Sterling Supply Chain Mobile Application"

This chapter describes how to install the Sterling Supply Chain Mobile Application on PocketPC, WinCE, and VT220 mobile devices.

Chapter 11, "Configuring Properties"

This chapter describes how to configure your Sterling Supply Chain Applications implementation after installation for minimal operations and optional components such as an LDAP server for user authentication.

Chapter 12, "Configuring Utilities"

This chapter describes how to configure the utilities provided with the Sterling Supply Chain Applications, such as the installation, runtime, and migration script files.

Chapter 13, "Creating and Updating the Sterling Supply Chain Applications Runtime"

This chapter explains how to create and update Sterling Supply Chain Applications Runtime.

Chapter 14, "Deploying Sterling Supply Chain Applications"

This chapter describes how to deploy Sterling Supply Chain Applications on an application server.

Chapter 15, "Deploying and Updating the Sterling Rich Client Applications"

This chapter explains how to deploy and update the Sterling Rich Client applications such as Customer Order Management (COM) and Store Operations (SOP) Packaged Composite Applications (PCAs) in different geographical locations.

Chapter 16, "Deploying Configuration Data"

This chapter describes how and when to use the Configuration Deployment Tool, which supports the day-to-day migration of Sterling Supply Chain Applications configuration data between two Sterling Supply Chain Applications environments.

Sterling Supply Chain Applications Documentation

For more information about the Sterling Supply Chain Applications Platform[®] components, see the following manuals in the Sterling Supply Chain Applications[®] documentation set:

- *Sterling Supply Chain Applications[®] Release Notes*
- *Sterling Supply Chain Applications[®] Installation Guide*
- *Sterling Supply Chain Applications[®] Upgrade Guide*
- *Sterling Supply Chain Applications[®] Performance Management Guide*

- *Sterling Supply Chain Applications® High Availability Guide*
- *Sterling Supply Chain Applications® System Management Guide*
- *Sterling Supply Chain Applications® Localization Guide*
- *Sterling Supply Chain Applications® Customization Guide*
- *Sterling Supply Chain Applications® Integration Guide*
- *Sterling Supply Chain Applications® Product Concepts*
- *Sterling Warehouse Management System® Concepts Guide*
- *Sterling Supply Chain Applications Platform® Configuration Guide*
- *Sterling Distributed Order Management® Configuration Guide*
- *Sterling Supply Collaboration® Configuration Guide*
- *Sterling Global Inventory Visibility® Configuration Guide*
- *Sterling Product Management® Configuration Guide*
- *Sterling Logistics Management® Configuration Guide*
- *Sterling Reverse Logistics® Configuration Guide*
- *Sterling Warehouse Management System® Configuration Guide*
- *Sterling Supply Chain Applications Platform® User Guide*
- *Sterling Distributed Order Management® User Guide*
- *Sterling Supply Collaboration® User Guide*
- *Sterling Global Inventory Visibility® User Guide*
- *Sterling Logistics Management® User Guide*
- *Sterling Reverse Logistics® User Guide*
- *Sterling Warehouse Management System® User Guide*
- *Sterling Supply Chain Mobile Application® User Guide*
- *Sterling Supply Chain Analytics® Guide*
- *Sterling Supply Chain Applications® Javadocs*
- *Sterling Supply Chain Applications® Glossary*
- *Sterling Parcel Carrier Adapter® Guide*

- *Sterling Application Server® Installation Guide* (for optional component)

Conventions

In this manual, Windows refers to all supported Windows operating systems.

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, directory path, attribute name, or an inline code example or command.
/ 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.
<YANTRA_HOME>	User-supplied location of the Sterling Supply Chain Applications installation directory.
<YFS_HOME>	Location of the generated <YANTRA_HOME>/Runtime directory.
<YANTRA_HOME_OLD>	User-supplied location of the Sterling Supply Chain Applications installation directory for previously installed releases. This is only applicable for Release 7.7 or above.
<YFS_HOME_OLD>	This is the <YANTRA_HOME_OLD>/Runtime directory of previously installed releases.

Getting Started

This chapter provides a high-level introduction and checklist for the tasks involved in installing Sterling Supply Chain Applications.

1.1 Before You Begin

Before you begin installing Sterling Supply Chain Applications, read this guide thoroughly. Then define your processes for handling the following:

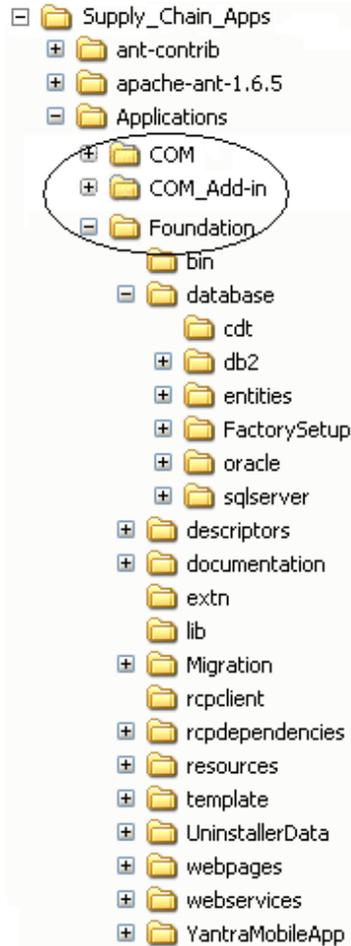
- Development and Test Environments
- Security Strategy
- Change Management Strategy
- Development and Test Procedures
- Rollback Strategy
- Upgrades and Maintenance Strategy

In addition, before beginning the installation process, read the *Sterling Supply Chain Applications Performance Management Guide* which contains information that helps you optimize the performance of your Sterling Supply Chain Applications.

1.2 Installation and Runtime Directory Structure

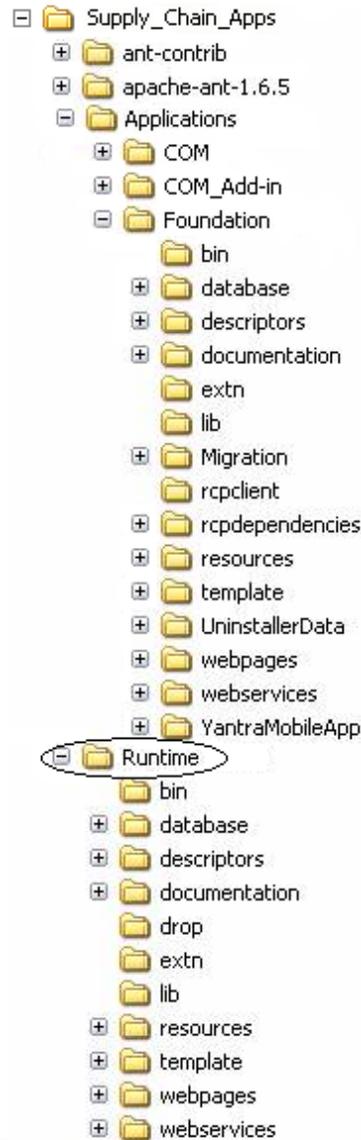
The Sterling Supply Chain Applications Installation directory has the structure illustrated in [Figure 1–1](#). This directory structure includes a separate directory for the Sterling Supply Chain Applications Foundation and each Package Composite Application (PCA) you install such as the Sterling Customer Order Management (COM) PCA under the `/Applications` directory.

Figure 1–1 *Sterling Supply Chain Applications Installation Directory Structure*



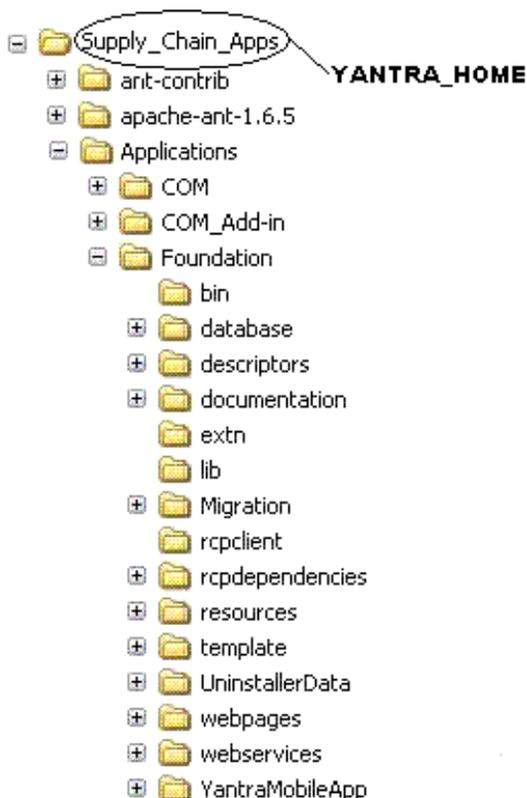
You generate the Sterling Supply Chain Applications Runtime directory by running an ant script. For more information about creating Sterling Supply Chain Applications Runtime directory, see [Chapter 13, "Creating and Updating the Sterling Supply Chain Applications Runtime"](#). After running this script, the directory has the structure depicted in [Figure 1–2](#).

Figure 1–2 Sterling Supply Chain Applications Directory Structure After Building Runtime



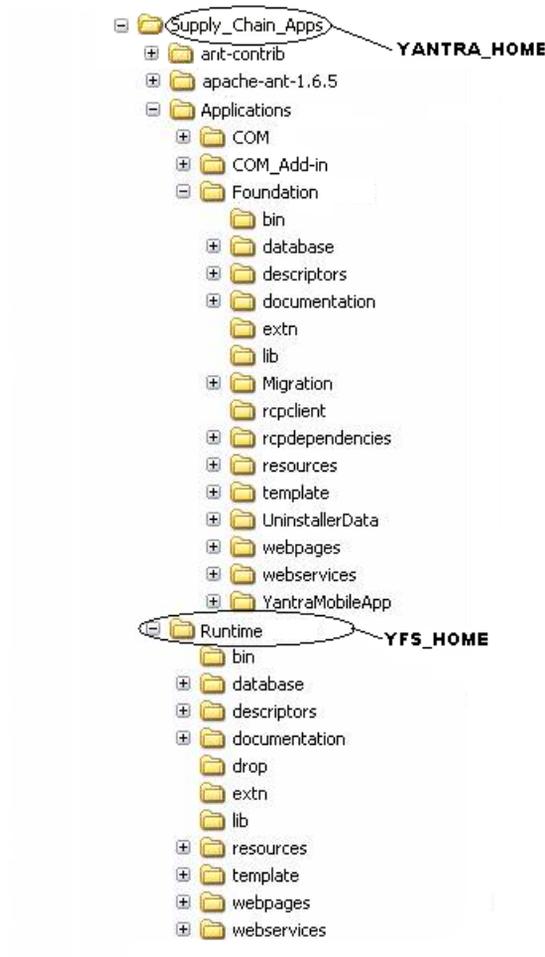
To utilize this directory structure, you must create a `YANTRA_HOME` environment variable and set it to point to the root directory where the Sterling Supply Chain Applications and associated PCAs are installed as shown in [Figure 1–3](#).

Figure 1–3 *YANTRA_HOME Environment Variable Setting*



The `YFS_HOME` environment variable must be set to point to the `<YANTRA_HOME>/Runtime` directory as shown in [Figure 1–4](#).

Figure 1–4 YFS_HOME Environment Variable Setting



Make sure that all the configurations and extensions for the Foundation or PCAs are done in the Foundation or individual PCA folder subdirectory of the `<YANTRA_HOME>/Applications` directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

Application extensions must reside in the `<YANTRA_HOME>/Applications/<specific_application_folder>/extn` directory for the application you are extending.

You must then recreate or update the `/Runtime` folder to include the configuration file modifications or application extensions you make. For more information about creating and updating the `/Runtime` directory, see [Chapter 13, "Creating and Updating the Sterling Supply Chain Applications Runtime"](#).

1.3 Installation Checklist

When installing the components used by Sterling Supply Chain Applications follow the sequence of tasks provided in the ["Checklist"](#) and additional instructions in chapters of this guide.

During the installation and set up processes, you should also frequently see the *Sterling Supply Chain Applications Performance Management Guide* which is a companion guide and should be used during each step of the process. Doing so can eliminate future problems and help you to troubleshoot errors.

Table 1–1 Installation Checklist

Checklist
<ol style="list-style-type: none">1. Ensure that you have necessary system requirements to install and run Sterling Supply Chain Applications.2. Set up your security infrastructure.3. Install and configure your application server.4. Install and configure your WebServer or Proxy Server.5. Install the Sterling Supply Chain Applications application.6. Install the Sterling Supply Chain Applications language pack (optional).7. Install and configure your database software.8. Size your database.9. Install the print server.10. Install the weighing scale software.11. Install the Sterling Supply Chain Applications Mobile application.

Checklist

12. [Configure the Sterling Supply Chain Applications properties](#) to use with the database, agent servers, LDAP servers, logging, and so on.
 13. [Configure the Sterling Supply Chain Applications utilities](#) for installation, runtime, migration, and production.
 14. Create the [Sterling Supply Chain Applications Runtime](#).
 15. Set up the [application server](#) for use with Sterling Supply Chain Applications .
 16. [Build your Enterprise Archive \(EAR\)](#).
 17. [Deploy the EAR](#) to your application server as appropriate.
 18. Optionally [deploy and update the Sterling Rich Client applications](#).
 19. Optionally run the [configuration deployment tool](#) to migrate your configuration data.
-

System Requirements

Sterling Supply Chain Applications are n-tier applications, using a combination of application server, web server, and database server software. This chapter lists all supported operating systems and the required software used in the deployment of Sterling Supply Chain Applications. Before installing Sterling Supply Chain Applications, verify that you have already installed the applicable software listed in this chapter.

This chapter also provides the information required to complete [Step 1](#) as indicated on the Installation Checklist on page 6.

Minimum Requirements

This chapter describes the *minimum* supported options, for which Sterling Supply Chain Applications are already tuned for optimal performance. Your own results are derived from your specific hardware, data volumes, and user activities.

Obtaining Maximum Performance

For information on how to obtain *maximum* performance of Sterling Supply Chain Applications on this supported hardware and software, you must thoroughly read, evaluate, and apply any relevant recommendations described in the *Sterling Supply Chain Applications Performance Management Guide*. For example, Sterling Supply Chain Applications predefine a set of indices but also expects your Database Administrator to monitor the system and add or remove indices as necessary.

Note: You cannot remove any *unique* indices that are provided by Sterling Supply Chain Applications in order to avoid data integrity issues.

2.1 Technical Stack Matrix

The Sterling Supply Chain Applications technical stack consists of the various tiered hardware and software required by the Sterling Supply Chain Applications. The technical stack consists of a specific application server, JDK, and database server. You can select various supported configurations from the matrix to create a supported technical stack by following these rules and instructions:

- Select one Database Server.
- Select one Application Server.
- Find a match for the operating system based on the your selections of the database and application server.

For example, you may use an Oracle 10.2.0.1 database server on a Sun Solaris 2.10 operating system with WebSphere on Redhat Linux 4.0 ES or AS.

- Although heterogeneous stacks are supported, when possible, one should consider a homogeneous stack to eliminate having to manage multiple vendors.
- MS SQL Server is supported as a low volume platform with less than 20,000 order lines that can be processed at peak hours.
- RedHat is the only Linux vendor supported.
- Oracle RAC is supported only on 2-node configurations.

2.2 Database Tier Requirements

This section describes the minimum supported options for the database tier supported in Sterling Supply Chain Applications. You can select one database server based on your choice of operating system as shown in [Table 2–1, "Supported Database Tier"](#).

Table 2–1 Supported Database Tier

Database Version	Operating System
Oracle 10.2.0.1	HP-UX 11i v2 on Itanium
	HP-UX 11i v2 on PA-RISC
	IBM AIX 5.3 ML4
	Sun Solaris 2.10
	Redhat Linux 4.0 ES or AS on Intel 32 or 64 bit Xeon or AMD processor
	Windows 2003
DB2 8.2.3	IBM AIX 5.3 ML4
MS SQL Server 2000 SP4 with Opta 6.05 driver	Windows 2003
	The Opta driver can be obtained from http://www.inetsoftware.de .
Note: Oracle RAC is supported only on 2-node configurations.	

2.3 Application Server Requirements

This section describes the minimum supported requirements for the agent and application server tier. You can select one application server based on your choice of operating system and Java Messaging Service (JMS) as shown in [Table 2–2](#).

Note: Install the JDK that is shipped with your application server, unless otherwise noted.

Table 2–2 Supported Application Server Tier

Application Server	Operating System	JMS	JDK
BEA WebLogic 9.2	HP-UX 11i v2 on PA-RISC	Default JMS server that comes with the application server	HP JDK 5.0.01 (32 bit)
	HP-UX 11i v2 on Itanium	Default JMS server that comes with the application server	HP JDK 5.0.01 (32 bit)
	IBM AIX 5.3 ML4	Default JMS server that comes with the application server	IBM JDK 5.0 (32 bit) (Service Refresh 2)
	Sun Solaris 2.10	Default JMS server that comes with the application server	Sun JDK 5.0 (32 bit) with the Java HotSpot™ Client and Server VMs version 1.5.0_08
	Redhat Linux 4.0 ES or AS on Intel 32 or 64 bit Xeon or AMD processor	Default JMS server that comes with the application server	JRockit 5.0 (R26.0.0) (32-bit) shipped with WebLogic Server.
	Windows 2003	Default JMS server that comes with the application server	Sun JDK 5.0 (32 bit) version 1.5.0_08
IBM WebSphere 6.0.2.7	IBM AIX 5.3 ML4	IBM WebSphere MQ 6.0 or default messaging provider that comes with the application server	IBM 1.4.2_04-bo5
	Sun Solaris 2.10	IBM WebSphere MQ 6.0 or default messaging provider that comes with the application server	IBM 1.4.2_04-bo5
	Redhat Linux 4.0 ES or AS on Intel 32 or 64 bit Xeon or AMD processor	IBM WebSphere MQ 6.0 or default messaging provider that comes with the application server	IBM 1.4.2_04-bo5

You can install the web server or proxy server that is specified by the application server you choose, to use load balancing and achieve failover.

2.4 Utility Requirements

This section describes which JDKs are required to run utilities on different operating systems.

Table 2–3 JDK Requirements for Utilities

Utility	JDK
Runtime Utilities	
Integration Server	<ul style="list-style-type: none"> For WebSphere, use a JDK from the WebSphere Application Client that has the same version number as the application server. For WebLogic, use the JDK that comes with the WebLogic Server
Agent Server	
Agent Trigger	
Installation Utilities	
loadDefaults	Use the same JDK as your agent server.
All steps after the installer through ear precompilation (e.g. merge, ear compilation)	Use the same JDK as your agent server.
Upgrade Utilities	
MigrationValidator	Use the same JDK as your agent server.
migrator	Use the same JDK as your agent server.
Development Utilities	
Configuration Deployment Tool	<p>This utility is only able to be run on Windows.</p> <ul style="list-style-type: none"> If your application server is WebLogic, use Sun JDK 5.0 (32 bit) version 1.5.0_08 If your application server is WebSphere, use Sun JDK 1.4.2_11
Transaction Data Truncation Tool	Use the same JDK as your agent server.

2.5 Internet Browser and Plugin Requirements

The minimum requirements for the internet browser and java plugin are shown in [Table 2–4, "Supported Browser and Sterling Supply Chain Applications Client"](#).

Table 2–4 Supported Browser and Sterling Supply Chain Applications Client

Internet Browser	Operating System	JRE
MS Internet Explorer 6.0 SP1	Windows 2000, Windows XP, or Windows 2003	Java Plugin 1.4.2_03

Note: Set the java plugin memory to 256M when using the Fulfillment Network Model. For more information on the Fulfillment Network Model see the *Sterling Distributed Order Management Configuration Guide*.

Note: For better visibility of the menu options in the Sterling Supply Chain Application Consoles, ensure that the dpi setting is 96 dpi.

2.6 Third-Party Software Requirements

The requirements for third-party systems such as Cognos Reports, Loftware Print Server, weighing scale, and so forth are provided in [Table 2–5](#). The software mentioned in the table is supported for all of the operating systems unless otherwise noted.

Table 2–5 Supported Third-Party Software

Name	Version
Build tools	ANT 1.6.5, ANT-CONTRIB (bundled with Sterling Supply Chain Applications)
Analytics Reports	Cognos ReportNet 1.1 MR3
Analytics Cubes	Cognos 7.3 MR1 (Windows Only)
Connectship	ConnectShip version 5.5
FedEx	FXRS 0764
FedEx Printer	Eltron LP2844
Jasper Reports	jasperreports-1.2.0.jar
Loftware Print Server	Loftware 8.4
Weighing Scale	Mettler-Toledo PS30, PS60, or equivalent.
RFID	Gen 96 Bit Alien Squiggle

2.7 Sterling Supply Chain Mobile Application Requirements

The minimum system requirements supported for installing the Sterling Supply Chain Mobile Application are shown in [Table 2–6, "Supported Devices to Run the Sterling Supply Chain Mobile Application"](#).

Gen 96 Bit Alien Squiggle

Table 2–6 Supported Devices to Run the Sterling Supply Chain Mobile Application

Terminals	Supported
Mobile Terminals	Pocket PC 2003 OS on .NET 1.0 SP3
	Windows CE 4.1 on .NET 1.0 SP3
	Windows CE 5.0 on .NET 2.0 SP1
	VT220 emulation software
ncurses (VT220 emulation software)	Version 5.3
ncurses build utilities	gcc-3.3.2, bison-1.875, make-3.80, and flex-2.5.4a. These utilities are available in the binary format at http://hpux.cs.utah.edu .
Note: Sterling Supply Chain Applications are specifically tested with Symbol PPT8846, Symbol PDT8146, and Symbol VRC7900 series, Denso BHT400B, Denso BHT-260Q series.	

The device requirements such as memory, screen resolution, keys, and network connectivity are described in [Table 2–7, "Device Requirements"](#).

Table 2–7 Device Requirements

Options	Description
Keys	Space, Backspace, Tab, Enter, arrow keys, 0-9, A-Z, a-z, function keys (F1-F12), and special symbols such as !@#\$%^&*()-_+=[]\<>?/.,. The special symbols are required only if the data (for fields such as Item ID, Location ID, and Shipment Number) contains special characters.
Barcode Scanner	This device should be equipped with an integrated barcode scanner and should have the ability to send a TAB character after the scanned data.
Note: Microsoft ActiveSync 3.7 or above is required to synchronize the PC with the mobile terminal to run the Sterling Supply Chain Mobile Application. Microsoft ActiveSync 3.7 can be installed on any PC. For more information about Microsoft ActiveSync, and related system requirements go to http://www.microsoft.com .	

Table 2–7 Device Requirements

Options	Description
Screen Resolution	Width:240, Height:320. Screens are designed for this resolution. Screen performance on devices with other resolutions may be sub-optimal. For VT220 screens, the Sterling Supply Chain Applications assume 8 rows by 20 columns.
Network Connectivity	802.11x (802.11b or higher).
Memory	Minimum of 32MB RAM.
Note: Microsoft ActiveSync 3.7 or above is required to synchronize the PC with the mobile terminal to run the Sterling Supply Chain Mobile Application. Microsoft ActiveSync 3.7 can be installed on any PC. For more information about Microsoft ActiveSync, and related system requirements go to http://www.microsoft.com .	

2.8 Sterling Rich Client Application Requirements

This section lists all supported operating systems and the required software used in the deployment of Sterling Rich Client application. Before installing Sterling Rich Client application, verify that you have already installed the applicable software listed in this chapter.

2.8.1 Operating System Requirements

The minimum operating system requirements supported for installing Sterling Rich Client application are shown in [Table 2–8, "Supported Operating Systems"](#).

Table 2–8 Supported Operating Systems

Name	Version
Windows	Windows 2000, Windows XP, or Windows 2003
Linux	Red Hat Enterprise Linux WS 4

2.8.2 Sterling Supply Chain Applications Plugin Requirements

The Sterling Supply Chain Applications plugins supported for installing Sterling Rich Client application are shown in [Table 2–9, "Supported Sterling Supply Chain Applications Plugins"](#).

Table 2–9 Supported Sterling Supply Chain Applications Plugins

Name	Version
Sterling RCP plugin	Sterling RCP Plugin 1.0.0
Sterling RCP Tools plugin	Sterling RCP Tools Plugin 1.1.0

2.8.3 Third-Party Software Requirements

The third-party softwares such as Eclipse SDK and its related plugins, JDK, etc., are provided in [Table 2–10, "Supported Third-Party Softwares"](#). The softwares mentioned in the table are supported for all the operating systems except where noted.

Table 2–10 Supported Third-Party Softwares

Name	Version								
Eclipse SDK	<p>Eclipse SDK 3.2</p> <p>The following table lists the eclipse-related plugins and their versions that Sterling Supply Chain Applications support:</p> <table border="1" data-bbox="611 447 1248 644"> <thead> <tr> <th data-bbox="618 454 896 494">Name</th> <th data-bbox="901 454 1240 494">Version</th> </tr> </thead> <tbody> <tr> <td data-bbox="618 499 896 534">GEF plugin</td> <td data-bbox="901 499 1240 534">GEF Plugin 3.2, SDK</td> </tr> <tr> <td data-bbox="618 539 896 604">EMF plugin</td> <td data-bbox="901 539 1240 604">EMF Plugin 2.2.0, SDK (includes EMF, SDO, XSD)</td> </tr> <tr> <td data-bbox="618 609 896 644">VE plugin</td> <td data-bbox="901 609 1240 644">Visual Editor Plugin 1.2, SDK</td> </tr> </tbody> </table>	Name	Version	GEF plugin	GEF Plugin 3.2, SDK	EMF plugin	EMF Plugin 2.2.0, SDK (includes EMF, SDO, XSD)	VE plugin	Visual Editor Plugin 1.2, SDK
Name	Version								
GEF plugin	GEF Plugin 3.2, SDK								
EMF plugin	EMF Plugin 2.2.0, SDK (includes EMF, SDO, XSD)								
VE plugin	Visual Editor Plugin 1.2, SDK								
JDK	JDK 1.4.2_05								
JRE	<p>JRE 1.4.2_11</p> <p>Note: When installing JRE, ensure that you install it under the following directory path for your operating system: <code><YANTRA_HOME>/Applications/Foundation/rcpd dependencies/<OS_gtk.linux.x86_or_windows>/</code></p> <p>Then remove the empty jre directory that is provided with Sterling Supply Chain Applications as a placeholder and rename the jre_<version> directory that the installer creates to "jre" without any versioning appended to it. The resultant directory path must be: <code><YANTRA_HOME>/Applications/Foundation/rcpd dependencies/gtk.linux.x86/jre</code></p> <p>or <code><YANTRA_HOME>/Applications/Foundation/rcpd dependencies/windows/jre</code></p> <p>dependent on your operating system.</p>								

To install the Eclipse SDK and its related plugins, go to the following link: <http://www.eclipse.org/downloads/> and download the appropriate version of Eclipse SDK and its related plugins for the appropriate operating system.

To install the JDK/JRE, go to the following link:
<http://java.sun.com/downloads/> and download the appropriate version of the JDK.

3

Creating a Security Plan

This chapter provides security recommendations and guidelines for running the Sterling Supply Chain Applications. It is intended to help you create a reasonably secure implementation of the application.

This chapter also provides the information required to complete [Step 2](#) indicated on the Installation Checklist on page 6.

Because we recognize that you may have unique business or operational requirements, Sterling Supply Chain Applications cannot provide a specific set of instructions you can follow to completion for creating a security plan. Typically, it is not possible to configure a system solely for security at the detriment of other engineering or business realities.

Sterling Commerce strongly recommends that you also refer to the following documents:

- The Rhino9 Team, *The Modern Hackers Desk Reference*; available from <http://www.f4.ca/text/mhdr.html>.
- Tom Bialaski and Michael Haines, *Solaris and LDAP Naming Services, Deploying LDAP in the Enterprise*; Prentice Hall PTR, 2001.

3.1 Planning Your Deployment Architecture

Prior to procuring and implementing the hardware and software that make up the Sterling Supply Chain Applications, you need to plan your deployment architecture by completing the following tasks:

- Conduct an analysis of the current security infrastructure in your organization. For more information on identifying the correct security infrastructure in the Sterling Supply Chain Applications, see [Section 3.1.1, "Current Security Infrastructure Analysis"](#) on page 22.

- Conduct an analysis of authentication and authorization mechanisms in your organization to identify the steps needed to incorporate them into the Sterling Supply Chain Applications. For more information on the mechanism used for authentication in the Sterling Supply Chain Applications, see [Section 3.1.2, "Authentication and Authorization"](#) on page 23.
- Conduct an analysis of your data encryption mechanisms for deploying Sterling Supply Chain Applications over the internet. For more information on the different variations of the data encryption mechanisms, refer to [Section 3.1.3, "Data Encryption"](#) on page 23.
- Conduct an analysis of your organization's network topology required to deploy Sterling Supply Chain Applications. For more information on the various methods to deploy the application, refer to [Section 3.1.4, "Network Topology"](#) on page 23.

Completing these tasks enables you to:

- Estimate your server requirements.
- List the major security software and hardware needed to implement Sterling Supply Chain Applications.

3.1.1 Current Security Infrastructure Analysis

In order to ensure that your Sterling Supply Chain Applications are secure web applications there are many factors involved. Be sure to answer the following questions before you start your Sterling Supply Chain Applications implementation.

- Does your organization have security personnel? If not, you may wish to seek input from an Internet security company in your area.
- Do you own a network scanner such as Internet Security Systems System Scanner or Internet Scanner? Products like these help you identify common problems with servers that are exposed to the Internet.
- Do you own an intrusion detection system such as Symantec Intruder Alert? This type of product works with your firewall to stop an intrusion before mission-critical data or systems are tampered with.

3.1.2 Authentication and Authorization

Authentication and authorization are vital to security. Due to the constantly changing authentication methodologies including biometrics, public key infrastructure (PKI), and ever-increasing encryption algorithms, Sterling Supply Chain Applications provide documentation on implementing a lightweight directory access protocol (LDAP) or any Java Authentication and Authorization Service (JAAS) compliant security module for authentication. With LDAP user and password management can be centralized. For information on deploying Sterling Supply Chain Applications and integrating with LDAP, see [Section 11.7, "Properties for LDAP User Authentication"](#) on page 104. The default authentication mechanism is implemented against the Sterling Supply Chain Applications database.

3.1.3 Data Encryption

Due to the differences in the nature of businesses, you may implement different security measures when implementing a web application. How you plan to deploy the application and what security measures are taken are unique to each business. Most security measures come at a cost of performance. The Internet is a public network. Sensitive data should be encrypted while traveling across it. Encrypting information that travels across the Internet has an associated cost. If Sterling Supply Chain Applications are not to be deployed on the Internet then encryption may not be necessary and the cost is thereby negated.

The data encryption mechanism recommended for Sterling Supply Chain Applications are:

- SSL - 128-bit encryption is the recommended encryption level.
- VPN - 3DES is the recommended encryption algorithm.

3.1.4 Network Topology

Where are the Sterling Supply Chain Applications being deployed?

- Internet?
- Virtual private network (VPN)?
- Local area network (LAN)?

3.1.4.1 Deployment Over the Internet

If you are deploying Sterling Supply Chain Applications over the Internet, you must first understand how much of your data is considered confidential. In most cases all application data about customers, vendors, and so forth is considered confidential and requires encryption. If all of the data being passed through Sterling Supply Chain Applications is to be passed through a secure socket layer (SSL), you may wish to consider purchasing an off board SSL Accelerator to offset the inherent run-time cost of encrypting information. Sterling Commerce recommends deploying 128-bit encryption.

Purchasing an SSL Accelerator can be very cost effective. For example, the run-time cost of 40-bit encryption costs 25% or more CPU utilization. What this translates to depends on your configuration and initial sizing. If your application server initial sizing was for a 4 CPU machine, and you expected to deploy 40-bit encryption, you would need one additional processor. This entails purchasing an additional processor for your application server and an additional license for that CPU. The cost of that is typically higher than purchasing an SSL Accelerator. Sterling Commerce tests 128-bit encryption and releases the percent increase as it becomes available.

3.1.4.2 Deployment Over a Virtual Private Network

If you are deploying Sterling Supply Chain Applications over a virtual private network (VPN), the major factor in security and performance is the VPN encryption. Many firewall providers offer encryption and decryption accelerators that can be added directly to their firewalls. Checkpoint's FireWall-1, VPN-1 Accelerator Card II, is an example of this. However, one consideration for purchasing accelerator cards is how many VPN tunnels are needed. You also need to determine if the VPN is being set up for site-to-site implementation or if each individual user opens their own tunnel. If you decide on a site-to-site VPN, typically memory in the firewall is the greatest concern. If each user opens their own tunnel, processor speed is the largest concern.

In many cases the deciding factor is the speed at which your VPN is connected. If you have a T1 line, a single processor machine may suit your needs. If you plan to deploy over a T3 line, you may wish to consider a multiple-processor machine. Most firewall and VPN vendors can help you size the machine you purchase from them for optimal security and performance.

3.1.4.3 Deployment Over a Local Area Network

If you are deploying Sterling Supply Chain Applications over a local area network (LAN), there may not be a performance or security trade-off. You merely need to determine whether or not the data traveling across the LAN needs to be encrypted. If it does, then the encryption method needs to be defined.

3.2 Java Protocol Security Measures

As with the usage of any protocol technology there are certain associated risks. Sterling Supply Chain Applications APIs are exposed over various protocols. Therefore, Sterling Commerce strongly recommends that you disable protocols that you do not use.

3.2.1 Disabling Java Protocols

Each of the following sections provide instructions to disable the respective protocols not used.

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime as instructed in [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

EJB

To disable Enterprise JavaBeans (EJB) from the Sterling Supply Chain Applications, comment out the "session" element in the XML descriptor file,

```
<YANTRA_HOME>/Applications/Foundation/descriptors/<App_Server>/EJB/META-INF/ejb-jar.xml.
```

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications.

Important: To avoid an error when deploying the `ejb-jar.xml` for WebLogic, you must comment out the following session bean of the xml file:

```
<session>
  <display-name>The Sterling Supply Chain Applications
  DOM API Session bean</display-name>
  <ejb-name>interop.services.ejb.InteropEJBApi</ejb-name
  >
  <home>com.yantra.interop.services.ejb.InteropEJBHome<
  /home>
  <remote>com.yantra.interop.services.ejb.InteropEJBApi</
  remote>
  <ejb-class>com.yantra.interop.services.ejb.InteropEJBImp
  l</ejb-class>
  <session-type>Stateless</session-type>
  <transaction-type>Bean</transaction-type>
</session>
```

This session of the `ejb-jar.xml` is deprecated as of Release 7.7.

HTTP

To disable Hypertext Transfer Protocol (HTTP) as the means to enter API information in the Sterling Supply Chain Applications, the deployment descriptor needs to be modified. The deployment descriptor, `web.xml`, is defined by the servlet specification from Sun Microsystems. This deployment descriptor can be used to deploy a web application on any J2EE-compliant application server. The deployment descriptor for the Sterling Supply Chain Applications are stored in the `<YANTRA_HOME>/Applications/Foundation/descriptors/<App_Server>/WAR/WEB-INF` directory. The deployment descriptor for the `InteropHttpServlet` needs to be removed from the `web.xml` file to disable

the servlet. Remember to remove both the `servlet-name` and the `servlet-mapping` entries from this file.

where `<YANTRA_HOME>` refers to the directory where you have installed the Sterling Supply Chain Applications.

JMS

In order to use the Java Messaging Service (JMS) features of the Sterling Supply Chain Applications, there must be a JMS server. There must be queues set up both on the JMS Server and within the Sterling Supply Chain Applications.

To ensure that JMS is not used without authorization there should be appropriate permissions on the JMS server and in the Sterling Supply Chain Applications. You may limit the ability of users to enable JMS by disabling permissions using Process Modeling in the Sterling Supply Chain Applications Configurator. For more information about enabling and disabling permissions, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

3.2.2 Securing Java Protocols

Protocols are specified in the `yifclient.properties` file. To secure the protocols that you use, copy the `<YANTRA_HOME>/Applications/Foundation/resources/yifclient.properties.sample` file and rename to `yifclient.properties`. Ensure that this file contains the phrase `yif.apifactory.protocol=LOCAL`.

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime as instructed in [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

EJB

When Sterling Supply Chain Applications APIs are deployed through EJB, they use a Java Naming and Directory Interface (JNDI) lookup for a context to call the EJB Objects. JNDI looks up a context that is a handle to the EJB Object or API. The APIs do not have authentication or authorization. However, security principal and credentials can be supplied by specifying them in the `yifclient.properties` configuration file. The server can be set up to validate the passed security credentials.

Sterling Supply Chain Applications HTTP/HTTPS Interface uses JavaServer Pages (JSPs) installed on the application server and does not need access to JNDI. There are two ways to protect Sterling Supply Chain Applications APIs over EJB:

- WebLogic allows JNDI and remote method invocation (RMI) to be tunneled over HTTP. In your architecture there should be a proxy to inspect all requests for "Sterling Supply Chain Applications" this ensures that all requests are for HTML, and not tunneled RMI or JNDI over HTTP.
- If the Sterling Supply Chain Applications are deployed on WebLogic, a security realm should be set up to protect JNDI resources. This does not affect any screens that are packaged with the Sterling Supply Chain Applications or any screens that extend Sterling Supply Chain Applications.

If the application is deployed on WebSphere, EJB method permissions should be set up. This does not affect any standard screens that are

packaged with the Sterling Supply Chain Applications or any custom screens you create.

Important: If you try to run Sterling Supply Chain Applications using HTTPS, the Configurator will not open.

If a custom user interface is being built using Sterling Supply Chain Applications APIs through EJB and not extending Sterling Supply Chain Applications Presentation Framework, you cannot use the client wrapper supplied with Sterling Supply Chain Applications because it currently is incapable of passing credentials. This also applies to any use of the `YIFAPIFactory` class.

HTTP API Tester

The HTTP API tester is provided *only* to test APIs in development mode. Authentication and authorization are not used in this utility. If you plan to provide access to this page in production, you should secure access to it.

To secure access to Sterling Supply Chain Applications `httpapitester` the deployment descriptor needs to be modified. The deployment descriptor's `web.xml` is defined by the servlet specification from Sun Microsystems. This deployment descriptor can be used to deploy a web application on any J2EE-compliant application server. The deployment descriptor for Sterling Supply Chain Applications are stored in the `<YANTRA_HOME>/Applications/Foundation/descriptors/<App_Server>/WAR/WEB-INF` directory. By using the `security-constraint` element with the `web-resource-collection` element, you can set up authorization to protect this page from unauthorized access. For more information about the `web.xml` deployment descriptor, see the documentation for your application server.

COM+

The extended Component Object Model (COM+) specification covers security in great detail. Any COM+ object deployed on a server complies with this standard. For information on setting up security for COM+ objects, see *The Microsoft Developers Network* article available at http://msdn.microsoft.com/library/default.asp?url=/library/en-us/cos sdk/htm/pgservices_security_32ih.asp

3.3 Web Security

Sterling Commerce highly recommends that a security audit is made prior to deployment.

Sterling Commerce also recommends that you write log files to several servers. There are several applications that do this with no specific need for Sterling Supply Chain Applications to duplicate their efforts. Additionally, products like Symantec's Intruder Alert monitor log files for authentication failures and alert an administrator if a threshold is exceeded.

3.3.1 Post Installation Recommendations

After installation of Sterling Supply Chain Applications be sure to complete the following for ensured security:

1. Change the password of the default user (admin).
2. Delete the database directory. It exposes the data model.
3. Sterling Supply Chain Applications supply web pages that help you test your implementation while running Sterling Supply Chain Applications in development mode. The `yantrahttpapitester.jsp` web page should be removed from systems running in production mode. If you plan to provide access to this page in production, secure access to it as described in "[HTTP API Tester](#)" on page 29.
4. Change permissions on `<YANTRA_HOME>/Applications/Foundation/bin/migrator.*` files to non-executable.

where `<YANTRA_HOME>` refers to the directory where you have installed the Sterling Supply Chain Applications.
5. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating the Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

3.3.2 Session Security

Session security is handled by the application server, and is stored in a non-persistent cookie on the client.

3.3.3 Operating System Permissions

The following files contain confidential information, such as user name and password combinations stored in clear text. These files should be secured through operating system permissions:

- `management.properties`
- `weblogic.log`
- `yfs.properties`
- `yifclient.properties`

3.3.4 Documentation

All documentation files for Sterling Supply Chain Applications and third-party software should be removed from any production servers.

3.3.5 Routing

Routing should not be enabled on a production web server.

3.3.6 Web Server Executables

Web servers should *not* be run as `root`. This ensures that if someone compromises any software associated with the deployment through a bug, they don't have root privileges to damage the server. Web servers allow you to access files on their host machines and as `root` any of those files can be modified for a deeper attack or deleted to make your web servers unavailable.

It is acceptable, although not recommended, to start the web server as `root`. A proxy server can be placed to accept HTTP traffic and redirect it to a port above 1024 on a UNIX system. If a proxy is not available and the web server must be started on port 80 it is necessary to start the web server as `root`. The web server then calls `setuid` to transfer root privileges to a generic unprivileged account. The web server's configuration file should allow you to specify what user it runs as. Any user may own the binary. The `setuid` bit should not be set on the web server binary.

3.4 Database Security

Set up separate accounts on the database server for installing Sterling Supply Chain Applications schema and for accessing the application database.

If using an Oracle database on the production database server, the Oracle parameter `DBLINK_ENCRYPT_LOGIN` in your `init.ora` file should be set to `TRUE`. This ensures that all connections to the database are not sent as clear text.

3.4.1 Credit Card Encryption

If you want to ensure that credit card numbers are encrypted at the database level, you configure that functionality when setting Hub attributes in the Sterling Supply Chain Applications Configurator. When setting Hub attributes, make sure that the credit card number encrypting option is checked. For more information and specific instructions for setting up security, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

Sterling Supply Chain Applications also supply APIs and user exits to encrypt and decrypt credit card and other secure information. For more information about these APIs, user exits, and other data encryption, see the *Sterling Supply Chain Applications Customization Guide* and the *Sterling Supply Chain Applications Javadocs*.

3.5 Internet Explorer Security Settings

When using Sterling Supply Chain Applications without any customizations, you may need to set security or privacy settings for your Internet Explorer in order to obtain the best browser performance.

3.5.1 Configuring Browser Security Settings

To configure the Internet Explorer security and privacy settings:

1. From the Internet Explorer menu, select Tools > Internet Options > Security.
2. Select the Web content zone from which Sterling Supply Chain Applications are accessed.

3. Choose Default Level and set the security level to High.
4. Depending on the version of Internet Explorer you have installed, choose Custom Level and set your security settings according to one of the following:
 - [Table 3–1, "Internet Explorer Version 6.0 Security Settings for Sterling Supply Chain Applications"](#)
 - [Table 3–2, "Internet Explorer Version 6.0 Privacy Settings for Sterling Supply Chain Applications"](#) on page 35

Table 3–1 Internet Explorer Version 6.0 Security Settings for Sterling Supply Chain Applications

Internet Explorer Security Setting	Sterling Supply Chain Applications
ActiveX Controls and Plugins	
Download signed ActiveX controls	Prompt/Enable
Download unsigned ActiveX controls	Disable
Initialize and script ActiveX controls not marked as safe	Disable
Run ActiveX controls and plug-ins	Prompt/Enable
Script ActiveX controls marked as safe for scripting	Enable
Cookies	
Allow cookies that are stored on your computer	Disable (Enable only if you are using Sterling Supply Chain Analytics)
Allow per-session cookies	Enable
Downloads	
File download	Enable
Font download	Prompt
Microsoft VM	
Java permissions	High Safety
Miscellaneous	

Table 3–1 Internet Explorer Version 6.0 Security Settings for Sterling Supply Chain Applications

Internet Explorer Security Setting	Sterling Supply Chain Applications
Access data sources across domains	Disable
Allow META REFRESH	Disable
Display mixed content	Prompt
Do not prompt for client certificate selection when no certificates or only one certificate exists	Disable
Drag and drop or copy and paste files	Prompt
Installation of desktop items	Disable
Launching programs and files in an IFRAME	Disable
Navigate sub-frames across different domains	Disable
Software channel permissions	High Safety
Submit non-encrypted form data	Prompt
Userdata persistence	Disable
Scripting	
Active scripting	Enable
Allow paste operations via script	Enable
Scripting of Java applets	Enable
User Authentication	
Logon	Prompt for user name and password

Table 3–2 Internet Explorer Version 6.0 Privacy Settings for Sterling Supply Chain Applications

Advanced Privacy Setting	Sterling Supply Chain Applications
Override automatic cookie handling	Yes
First-Party Cookies	Block
Third-Party Cookies	Block
Always allow session cookies	Yes

3.5.2 Adding Sterling Supply Chain Applications as a Trusted Website

You should set Sterling Supply Chain Applications to be recognized as a trusted website. Not doing so could cause certain pop-up windows such as date and time selection to display a status bar, thereby hiding certain action buttons.

To add Sterling Supply Chain Applications to the list of trusted websites:

1. In the Internet Explorer menu bar, select Tools > Internet Options. The Internet Options pop-up window is displayed.
2. In the Internet Options pop-up window, select the Security tab.
3. Click the Trusted Sites icon.
4. Click the Sites action button. The Trusted Sites pop-up window is displayed.
5. In the 'Add this Web site to the zone' text box, enter the server address where the Sterling Supply Chain Application Consoles are installed. The port number does not need to be specified.
6. Uncheck the 'Require server verification (https:) for all sites in this zone' checkbox.
7. Click OK. This takes you back to the Internet Options pop-up window.
8. Click OK.

4

Installing and Configuring Application Tier Software

Before installing a application server, ensure that you have installed the required software mentioned in [Chapter 2, "System Requirements"](#), noting any recommendations supplied by the software provider and by Sterling Commerce, Inc.. This chapter supplies information to help you install software on the application server and web server tier.

Note: Before proceeding with the steps in this chapter ensure you know the precise location for Sterling Supply Chain Applications (referred to as <YANTRA_HOME>).

This chapter also provides the information required to complete [Step 3](#) and [Step 4](#) indicated on the "Installation Checklist" on page 6.

4.1 Installing Your Application Server

Before installing your application server, check the requirements in [Chapter 2, "System Requirements"](#) to make sure you have the applicable hardware and software versions installed.

If you purchased the Sterling Application Server, see the *Sterling Application Server Installation Guide*, located on the Sterling Application Server product CD-ROM disk, for installation instructions.

If you purchased BEA WebLogic directly from BEA, see the *Installing BEA WebLogic Platform*, located on the BEA WebLogic product CD-ROM disk, for installation instructions.

If you purchased WebSphere directly from IBM, see the *WebSphere Installation Guide*, located on the WebSphere product CD-ROM disk, for installation instructions.

4.2 Installing and Configuring Application Server Utilities

You need to configure certain application server utilities before installing Sterling Supply Chain Applications.

4.2.1 Installing JDK Upgrades

You should install the Java Development Kit (JDK) that is shipped with your application server. When upgrading the JDK, be sure to set the correct JAVE_HOME environment variable and update the PATH.

4.3 Installing and Configuring your Proxy Server

Installing a proxy web server on a dedicated hardware provides:

- Additional network security layers.
- Additional processing power for data encryption protocols.
- Additional options for high availability for your application.

You can install a proxy or web server to avoid any bottlenecks that might occur when systems try to access Sterling Supply Chain Applications installed on your application server. Sterling Commerce recommends that you install and configure the web server version as specified in your application server.

4.3.1 Configuring Proxy Server for SSL or HTTPS

This section explains how to set up a web server as an SSL proxy and a load balancer. The SSL proxy allows the web server to manage the SSL encryption load and pass clear text back to application servers. It also divides the workload among the available application servers using the "round-robin load balancing" algorithm. The web server allows users to use one secure URL to access any number of application servers that run Sterling applications.

By configuring a proxy server for SSL or HTTPS, an SSL or HTTPS connection is set up between the client and web server, which allows cleartext connection between the web server and application server. This reduces the network traffic between the web server and application server.

To configure a proxy server for SSL or HTTPS using Apache HTTP Server and BEA WebLogic:

1. Install and run the Sterling Supply Chain Applications on the application servers.
2. Copy the appropriate
`$<WL_HOME>/server/lib/linux/i686/mod_wl_20.so` plug-in to the
`/etc/httpd/modules` directory.
 where `<WL_HOME>` refers to the WebLogic installation directory.
 - For i686, copy the WLS plug-in.
 - For x86_64, copy the 64-bit plug-in. The 64-bit plug-in must be requested from BEA Customer Service.
3. To enable the WebLogic plug-in for load-balancing using HTTP or HTTPS, modify the `httpd.conf` file and add the following:

```
LoadModule weblogic_module /etc/httpd/modules/mod_wl_20.so
```

Note: To enable an SSL, ensure to add "include conf.d/ssl.conf" as instructed by Apache. By default, RHAS3 has "Include conf.d/*", which includes ssl.conf.

For a HTTP proxy, outside any VirtualHost, add the following section:

```
<IfModule mod_weblogic.c>
    WebLogicCluster 10.10.46.55:9003,10.10.46.55:9005
    DynamicServerList OFF
    Debug ON
    IdemPotent OFF
</IfModule>
<Location /yantra>
    SetHandler weblogic-handler
</Location>
```

4. Modify the `ssl.conf` file and add the following lines to the `<VirtualHost _default_:443>` section:

```
<IfModule mod_weblogic.c>
    WebLogicCluster 10.10.46.55:9003,10.10.46.55:9005
    DynamicServerList OFF
    Debug ON
    Idempotent OFF
</IfModule>
<Location /yantra>
    SetHandler weblogic-handler
</Location>
```

5. Create security or SSL certificate, if necessary. If you do not have a CA-signed certificate, you can get one from the Certificate Authority companies such as VeriSign. For more information about security or SSL certificates, see [Section 15.5, "Security Certificates"](#) on page 187.
6. Copy the security certificate to `<RCP_EXTENSIONS_FOLDER>/truststore` directory.
7. Restart Apache, and verify access with any browser.
8. Build windows client.
9. Edit the `locations.ycfg` file and modify the protocol, server, and port attributes of the Config element. Ensure that these attributes point to the proxy.
10. Start client.

4.4 Setting Up Image Server

You need to set up the image server before you configure the connection settings for fetching the images from the image server. You need to set up the image server only if you are fetching images for the Rich Client Platform (RCP) based PCAs such as Sterling COM PCA, Sterling SOP PCA, and so forth. You can set up any server as your image server such as Apache server etc.

To set up the image server do the following:

1. Install a web server on any system on which you intend to host the images. For example, you can install Apache server on a windows system.

2. Use the default port # 80 (or any available port #) while installing the Image Server & exclude this port from the OS firewall, if required.
3. Store the images in any convenient location under the <IMAGE_SERVER_HOME> directory. For example, you can store the images under the following directory:

```
<IMAGE_SERVER_HOME>/icons/rcp
```

where <IMAGE_SERVER_HOME> refers to the name of the directory to which the web server that you have installed points to.

For more information about configuring connection settings to fetch images from the server, see [Chapter 15.4.1, "Configuring Connection Settings for Fetching Images from the Server"](#) on page 183.

For example, if you install Apache as the web server, then to configure it as the image server, do the following:

- Edit the httpd.conf file to define an alias directive. You will find this file under the following directory structure:

```
<APACHE_HOME>/conf/httpd.conf
```

where <APACHE_HOME> refers to the name of the directory where you have installed Apache.

Sample entry from the httpd.conf file:

```
Alias /icons "<YANTRA_HOME>/Applications/COM/images/icons/"
<Directory "<YANTRA_HOME>/Applications/COM/images/icons">
AllowOverride None
Order allow, deny
Allow from all
</Directory>
```

where /icons is the <virtual dir path> that points to the <YANTRA_HOME>/Applications/COM/images/icons/ directory.

For more information on how to define alias directive, go to http://httpd.apache.org/docs/2.2/mod/mod_alias.html#alias. This link provides information about alias directives for Apache version 2.2.

- Add a new entry or edit the existing entry for configuring port. For example, add a new entry: Listen 80 in the `httpd.conf` file. This will set up the server to listen to port number 80 (default setting).
- Restart the web server.

When we apply the above config, the URL:

`http://<IMAGE_SERVER_HOST_NAME>:<port>/icons` points to the local directory `<YANTRA_HOME>/Applications/COM/images/icons/` and the contents in the local directory are served by the web server.

Note: Make sure that the images are accessible through the browser. For example, `http://<IMAGE_SERVER_HOST_NAME>:<port>/<virtual dir path>/rcp/<IMAGE_FILE_NAME>` from any system. If the images are not displayed, then the image server is not configured properly.

5

Installing Sterling Supply Chain Applications

This chapter explains how to install Sterling Supply Chain Applications on each supported operating system. This chapter also provides the information required to complete [Step 5](#) indicated on the “[Installation Checklist](#)” on page 6.

The Sterling Parcel Carrier Adapter (Carrier Adapter) and Sterling Supply Chain Analytics are integrated with Sterling Supply Chain Applications. For more information on configuring Carrier Adapter based on your needs see the *Sterling Parcel Carrier Adapter Guide*. For more information on configuring reports see the *Sterling Supply Chain Analytics Guide*.

5.1 Before You Begin

If you are upgrading from a prior release, see the appropriate *Sterling Supply Chain Applications Upgrade Guide* that applies to your implementation **before** continuing with the installation of Sterling Supply Chain Applications.

Before installing Sterling Supply Chain Applications, ensure that you already have installed the appropriate software listed in [Chapter 2, "System Requirements"](#). In addition, please review the additional criteria described below.

Throughout the whole document <YANTRA_HOME> refers to the directory where you install Sterling Supply Chain Applications. For example, <YANTRA_HOME>=C:/Supply_Chain_Apps. It will contain Applications and Runtime folders. <YFS_HOME> refers to the Runtime folder in the <YANTRA_HOME> directory. For example, <YFS_HOME>=C:/Supply_Chain_Apps/Runtime

UNIX Criteria

You can install Sterling Supply Chain Applications locally in an X Windows environment or remotely in a text-based console environment.

5.2 Installing Sterling Supply Chain Applications on UNIX and Linux

To install Sterling Supply Chain Applications on UNIX and Linux:

1. Insert the CD-ROM that is appropriate for your operating system into your CD-ROM drive and locate the `setup.bin` file found in the root directory.

You can set the display environment in UNIX using the following command:

```
export DISPLAY=<IP_address_of_XWindows_server>:0.0
```

2. From the root directory, run the `./setup.bin` command.

Note: The installer also provides you with various upgrade options. If you are upgrading from a previously installed version, you can select the appropriate upgrade option. The various upgrade options are upgrade from Release 7.3, upgrade from Release 7.3 SP1, upgrade from Release 7.5, and so forth. If you select any of the upgrade options, the installer prompts you to enter the location of the installation folder for the release from which you want to upgrade.

If you are not upgrading, select the No Upgrade option.

3. After the installer finishes, you can check for any errors that may have occurred during the installation process by reviewing the `<YANTRA_HOME>/Sterling_Supply_Chain_Applications_InstallLog.log` file (where `<YANTRA_HOME>` points to the Sterling Supply Chain Applications software installation directory). To locate error notations in the file, search for the string "ERROR", or more specifically, a string such as "Status: ERROR".

4. If you received any language CDs from Sterling Commerce, insert the CD-ROM into your CD-ROM drive, open the root directory, and run the `./setup.bin` command.
5. To access the printable Sterling Supply Chain Applications documentation set, insert the Sterling Supply Chain Applications Documentation CD into your CD-ROM drive, open the Documentation directory, and, if desired, copy the PDF files to an appropriate location.
6. Configure Sterling Supply Chain Applications as described in [Chapter 11, "Configuring Properties"](#).

Note: After installing Sterling Supply Chain Applications on Linux, you must create a symbolic link for the `sh` file in `/usr/bin` folder. This file exists in `/bin` folder.

5.3 Installing Sterling Supply Chain Applications on Windows

To install Sterling Supply Chain Applications on Windows:

1. Insert the CD-ROM that is appropriate for your operating system into your CD-ROM drive and the installer automatically runs. You can also run the installer manually from the root directory's `setup.exe` command.
2. When the installer window opens, follow the directions.

Note: Use the backward slash (`\`) as a file separator when specifying any file paths. However, you should use the forward slash (`/`) file separator for specifying the paths in the `<YANTRA_HOME>/Applications/Foundation/resources` files.

Note: The installer also provides you with various upgrade options. If you are upgrading from a previously installed version, you can select the appropriate upgrade option. The various upgrade options are upgrade from Yantra v7.3, upgrade from Yantra v7.3 SP1, upgrade from Yantra v7.5, and so forth. If you select any of the upgrade options, the installer asks for the location of the installation folder for the release from which you want to upgrade.

If its not an upgrade, select the No Upgrade option.

3. After the installer finishes, you can verify if there were any errors during the installation process by reviewing the `<YANTRA_HOME>/Sterling_Supply_Chain_Applications_InstallLog.log` file (where `<YANTRA_HOME>` points to the Sterling Supply Chain Applications software installation directory). To locate any notations of errors in this file, search for the string "error".
4. Configure Sterling Supply Chain Applications as described in [Chapter 11, "Configuring Properties"](#).

5.4 Installing Sterling Supply Chain Applications on a Remote Computer

You can install Sterling Supply Chain Applications onto any supported remote UNIX server. You cannot install Sterling Supply Chain Applications onto a remote Windows server.

To install Sterling Supply Chain Applications on a remote UNIX server:

1. FTP the `setup.bin` file from the CD-ROM to the remote UNIX server.

Note: Typically, if the `setup.bin` file is copied from a Windows environment to a UNIX environment, the permissions are changed. To ensure that the proper permissions are set, run the following command:

```
chmod 755 setup.bin
```

2. Start the installation procedure using the `./setup.bin -i` console command and follow the directions in [Section 5.2, "Installing Sterling Supply Chain Applications on UNIX and Linux"](#) on page 44.

Note: After installing Sterling Supply Chain Applications on a remote UNIX server, you must create a symbolic link for the `sh` file in `/usr/bin` folder. This file exists in `/bin` folder.

5.5 Uninstalling Sterling Supply Chain Applications

To uninstall Sterling Supply Chain Applications, run the Uninstall Sterling Supply Chain Applications executable (`Uninstall Sterling Supply Chain Applications.exe` in Windows). This file is located in the `<YANTRA_HOME>/UninstallerData` directory.

6

Installing the Sterling Supply Chain Applications Language Pack

This chapter explains how to install, load the factory defaults, and check the import mode of Sterling Supply Chain Applications language packs. This chapter also provides the information required to complete [Step 6](#) indicated on the “Installation Checklist” on page 6.

6.1 Installing the Language Pack

The instructions for installing the language packs for the operating systems supported by Sterling Supply Chain Applications are provided below.

Note: Before installing the language pack be sure that you have successfully installed Sterling Supply Chain Applications Release 7.9.

To install the Sterling Supply Chain Applications language pack on UNIX/LINUX:

Insert the language CDs that you received from Sterling Commerce into your CD-ROM drive and open the directory that is appropriate for your Unix operating system as follows:

- If you are using AIX - open the AIX directory and run the `./setup.bin` command.
- If you are using HP-UX - open the HP directory and run the `./setup.bin` command.

- If you are using Solaris - open the Sun directory and run the `./setup.bin` command.
- If you are using RedHat Linux - open the Linux directory and run the `./setup.bin` command.

To install the Sterling Supply Chain Applications language pack on Windows:

Insert the language CDs that you received from Sterling Commerce into your CD-ROM drive, open the "Win" directory, and run the `./setup.exe` command.

To install the Sterling Supply Chain Applications language pack on a Remote Computer:

You can install the Sterling Supply Chain Applications Language Packs onto any supported remote UNIX server. You cannot install the Sterling Supply Chain Applications Language Packs onto a remote Windows server.

If you received any language CDs from Sterling Commerce, FTP the `setup.bin` file from the appropriate operating system directory of the CD-ROM to the remote UNIX server.

Once the FTP is completed, start the installation procedure using the `./setup.bin -i console` command and follow the directions in [Section 5.2, "Installing Sterling Supply Chain Applications on UNIX and Linux"](#) on page 44.

6.2 Setting up Properties

You should configure the required parameters in your `yantra.properties.sample` file in the `<YANTRA_HOME>/Applications/Foundation/bin` directory before you run the factory defaults. The parameters to be configured include:

```
YFS_HOME=<directory>
DB_DRIVER_CLASS=<JDBC driver class>
DB_URL=<url>
DB_USER=<User ID>
DB_PASSWORD=<Password>
ANT_OPTS=-ms96m -mx512m
log4j.configuration=/resources/log4jconfig.xml
```

```
yfs.install.localecode=<your locale code>
```

Save the modified file as `yantra.properties` in the same directory.

After configuring the required parameters, you must Update the Sterling Supply Chain Applications Runtime. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

6.3 Loading the Sterling Supply Chain Applications Language Pack Factory Defaults

To load the language-specific factory defaults run the `loadDefaults.sh` script for Unix and Linux or the `loadDefaults.cmd` script for Windows available in the `<YFS_HOME>/bin` directory and pass the locale-specific installer file. For example:

```
loadDefaults.cmd <YFS_HOME>/database/FactorySetup/install/  
<language>_<country>_locale_installer.xml
```

The default locale that is shipped with the CD is `ja_JP`. If you want to define additional locales, see the *Sterling Supply Chain Applications Platform Configuration Guide* for information on setting up the locale.

For more information on the configuration steps to load the factory defaults see [Section 12.1.1, "Loading the Sterling Supply Chain Applications Database Factory Defaults"](#) on page 112.

6.3.1 Loading the Sterling Supply Chain Applications Language Pack Translations

Prior to loading the Sterling Supply Chain Applications Language Pack factory defaults, be sure that you have successfully completed all instructions in [Chapter 7, "Installing and Configuring Database Tier Software"](#).

To load the language pack translation with custom localization literals, run the `LocalizedStringReconciler` tool in the `IMPORT` mode from the `<YFS_HOME>/bin` directory as follows:

```
ant -f localizedstringreconciler.xml import  
-Dsrc=<YFS_HOME>/database/FactorySetup/XMLS
```

This tool first inserts the value specified in the `<from_language>_<from_country>_ycplocalizedstrings_<to_language>_<to_country>.properties` file present in the `<YFS_HOME>/database/FactorySetup/XMLS/<language>_<country>` directory into the database.

Important: Verify that your locale settings such as currency, time format, date, and so forth, are correct.

6.3.2 Switching the Sterling Supply Chain Applications Base Language

The base language for the Sterling Supply Chain Applications Configurator can be switched only once. For more information on switching the base language and performing the switch test, see the *Sterling Supply Chain Applications Localization Guide*.

6.4 Creating and Deploying the Enterprise Archive

If you are installing both the Sterling Supply Chain Applications and the language pack together, it is sufficient if you create and deploy the EAR once. If you already have deployed your application and are later installing the language pack you need to re-create and re-deploy the EAR file.

For more information on creating and deploying the EAR file for your chosen application server see [Section 14.5, "Creating Sterling Supply Chain Applications EAR"](#) on page 141 and [Section 14.6, "Deploying Sterling Supply Chain Applications EAR"](#) on page 142, respectively.

Installing and Configuring Database Tier Software

This chapter describes how to install and configure the database tier software to run Sterling Supply Chain Applications.

This chapter also provides the information required to complete [Step 7](#) and [Step 8](#) indicated on the "Installation Checklist" on page 6.

Before installing your database server, verify that you have the applicable software versions. For more information see [Chapter 2, "System Requirements"](#).

7.1 Installing Oracle

You can use an Oracle database for maintaining information on Sterling Supply Chain Applications. The following sections provide the necessary steps to install and configure an Oracle database for production.

To install Oracle:

Follow the steps below to install Oracle with single or multiple byte characters:

1. If you do not have Oracle installed, follow the installation procedures in your Oracle Installation manuals.
2. Run the create instance procedure. Use a character set appropriate for your desired language.

```
CHARACTER SET "UTF8"
```

3. Configure the INIT<INSTANCE_NAME>.ORA file for Oracle as follows:

```
open_cursors= <set to appropriate value>
```

For example, the minimum value for WebLogic equals number of threads (across all application servers) + (connection pool size X prepared statement pool size)

```
cursor_sharing=similar
compatible=<10.2.0.1>
timed_statistics=true
db_block_size=8192
optimizer_mode=CHOOSE
```

If you are using multi-byte character set, set the following and restart Oracle:

```
nls_length_semantics=CHAR
```

Alternatively you can run:

```
alter session set nls_length_semantics = CHAR
```

prior to running any create table scripts.

Setting this attribute ensures that the field sizes are not impacted by the number of bytes a data type can store. For example, Varchar(40) would now be able to store 40 Japanese characters instead of 40/3 bytes in the UTF-8 character set.

Note: When you change the multi-byte character set to CHAR by setting `nls_length_semantics = CHAR`, Oracle reserves space equivalent to 'n' chars, which is more than 'n' bytes. Therefore, when you run the `dbverify.cmd` command, the reduced entries in table columns are printed in the `Yantra_TableDrops.sql` file.

4. Download the Oracle JDBC driver `ojdbc14.jar` from the Oracle website and copy to `<YANTRA_HOME>/Applications/Foundation/lib/` on your application server machine.

The Oracle JDBC driver can be found at:

http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html

Download the `ojdbc14.jar` file for Oracle 10.2.0.1.

7.1.1 Oracle Database User Privileges

Unless specifically stated for a given task, the Sterling Supply Chain Applications user does not require database administrator (DBA) privileges.

The following are some of the basic privileges that are given to the Sterling Supply Chain Applications administrative user who is involved in creating and modifying the Oracle database:

- ALTER SESSION
- CREATE PROCEDURE
- CREATE SEQUENCE
- CREATE SESSION
- CREATE SYNONYM
- CREATE TABLE
- CREATE VIEW
- EXECUTE ANY PROCEDURE
- INSERT ANY TABLE
- UPDATE ANY TABLE
- SELECT ANY TABLE

The following are some of the basic privileges given to the application user whose involvement is restricted just to running the application:

- ALTER SESSION
- EXECUTE ANY PROCEDURE
- INSERT ANY TABLE
- UPDATE ANY TABLE
- SELECT ANY TABLE

7.1.2 Configuring an Oracle database for Production

You need to configure your Oracle database for running in a production environment with Sterling Supply Chain Applications. To configure an Oracle database for a production environment, you must:

- [Size the database](#) by estimating the required disk space.
- [Run the database scripts](#) to create tables, indexes and so forth for the Oracle database.
- Create views and db_link or synonyms for integrating with the Sterling Warehouse Management System installation.
- Set the [database connection](#) properties.

Note: The Oracle schema having Sterling Supply Chain Applications database objects must have the "QUERY REWRITE" system privilege to create the function-based indexes provided in
<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/yfs_addnl_index.sql on the YFS_PERSON_INFO table.

In addition, in order for Oracle to use such function-based indexes in queries, the QUERY_REWRITE_ENABLED parameter must be set to TRUE, and the QUERY_REWRITE_INTEGRITY parameter must be set to TRUSTED.

To create the oracle database to handle multiple byte characters:

1. Do not modify Sterling Supply Chain Applications DDL.
2. Choose the correct data encoding format for your language. See "[To install Oracle:](#)" on page 53 for more information.
3. Choose the character set suitable for your language. See "[To install Oracle:](#)" on page 53 for specific settings to ensure the database field sizes.

7.1.2.1 Running Scripts for an Oracle database

To configure your Oracle database for your production environment, you must set up and run a series of scripts to create the tables, indices, sequences and so forth for your schema.

These script files reside in the

<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/ directory. The yfs_master_db_script.sql script is the master script

that calls all other scripts required for creating tables, indexes, and so forth.

To set up scripts:

If you are using locally managed tablespace or another utility to size your database, complete the following:

1. Create tablespaces where the Sterling Supply Chain Applications tables and indexes reside.
2. Modify the `yfs_tables.sql` file to reference your newly created tablespaces.
3. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

The DDLs in the Sterling Supply Chain Applications scripts create a standard set of indexes. You may need to create additional indexes or modify existing indexes according to your business practice.

To run the scripts:

1. Log into the Oracle server manager as `sysdba`.
2. Create the user that is the designated schema owner.
3. Grant the privileges listed in [Section 1.3, "Installation Checklist"](#) on page 6 to the newly created user.
4. Log out of the Oracle Server Manager and log back in as the newly created user.
5. From the
`<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/` directory, run the `yfs_master_db_script.sql` script. This creates the tables, indexes and sequences.

The master script also creates the CustomDB views defined in the `<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/CustomDBViews` directory.

6. Examine the
`<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/yfs_master_db_script.log` file for database creation errors.

7. Validate the database as described in [Section 12.1.2, "Verifying the Database"](#) on page 115.
8. Load the Sterling Supply Chain Applications database factory defaults as described in [Section 12.1.1, "Loading the Sterling Supply Chain Applications Database Factory Defaults"](#) on page 112.
9. Check for the degree of parallelism, using information from the *Sterling Supply Chain Applications Performance Management Guide*.

7.1.2.2 Enabling the Text Search Feature

Sterling Supply Chain Applications support two types of text search indices on Oracle database: CTXCAT and CONTEXT. The CTXCAT index supports automatic updation of text search indices whereas, the CONTEXT index does not support automatic updation of text search indices. Sterling Commerce recommends to use the CTXCAT index.

For information on how to create the text search indices, refer to *Sterling Supply Chain Applications Customization Guide*.

Note: After making modifications to the properties file, you must create or update the Sterling Supply Chain Applications Runtime for these modifications as instructed in [Chapter 13, "Creating and Updating the Sterling Supply Chain Applications Runtime"](#). Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

This section explains the following:

- [Enabling the Text Search Feature for CTXCAT Index](#)
- [Enabling the Text Search Feature for CONTEXT Index:](#)

7.1.2.2.1 Enabling the Text Search Feature for CTXCAT Index

The CTXCAT index automatically updates text search indices. Therefore, the DBA need not manually run the `update.sql` script to update text search indices.

To enable the text search feature on an Oracle database using the CTXCAT index:

1. Make sure that the Oracle database is configured with the Oracle Text feature.
2. Log in to the Oracle server with a user ID having the CTXAPP privilege.
3. From the `<YANTRA_HOME>/Applications/Foundation/database/oracle/scripts/textsearch` directory, run: `create.sql` script to create the new CTXCAT type text search index.

Note: You must perform [Step 4](#) only if the text search index creation is successful.

4. Edit the `yfs.properties` file that is located in the `<YANTRA_HOME>/Applications/Foundation/resources/` directory. Set the value of the `yfs.db.textsearch` property to "Y".
5. Make sure that the value of the `yfs.db.textsearch.oracle.contexttype` property in the `yfs.properties` file is set to "ctxcat".

7.1.2.2.2 Enabling the Text Search Feature for CONTEXT Index:

The CONTEXT index does not automatically update text search indices. Therefore, the DBA has to manually update text search indices by running the `update.sql` script.

To enable the text search feature on Oracle database using the CONTEXT index:

1. Make sure that the Oracle database is configured with the Oracle Text feature.
2. Log in to the Oracle server with a user ID having the CTXAPP privilege.

3. From the `<YANTRA_HOME>/Applications/Foundation/database/oracle/textsearch/` directory, run: `create.sql` script to create the new CONTEXT type text search index.

Note: The CONTEXT type text search indices that are created on Oracle database using `create.sql` script are not updated automatically. The DBA has to run `update.sql` script to update the CONTEXT type text search indices, whenever required using scheduled jobs. The frequency of these scheduled jobs can be decided by the DBA.

Note: You must perform [Step 4](#) only if the text search index creation is successful.

4. Edit the `yfs.properties` file that is located in the `<YANTRA_HOME>/Applications/Foundation/resources/` directory. Set the value of the `yfs.db.textsearch` property to "Y".
5. Make sure that the value of the `yfs.db.textsearch.oracle.contexttype` property in the `yfs.properties` file is set to "context".

7.2 Installing DB2

You can use a DB2 database for maintaining information on Sterling Supply Chain Applications. The following sections provide the necessary steps to install and configure a DB2 database for production.

To install DB2:

1. If you do not have DB2 installed, follow the installation procedures in your DB2 Installation manual.

Note: When creating the DB2 database, the appropriate codepage needs to be selected for international language characters (for example, UTF-8).

2. Copy the <DB2_HOME>/sql1lib/java/db2jcc.jar database driver file and the db2jcc_license_cu.jar license file on your database server to the <YANTRA_HOME>/Applications/Foundation/lib/ directory on your application server machine.

Note: Various Sterling Supply Chain Applications scripts, such as the one used for loading the factory defaults, specify a DB_Driver. The DB_Driver specified must include **both** of these JAR files.

3. You need to set the following parameter to avoid memory leaks and DB2 crashes:

```
db2set DB2_NUM_CKPW_DAEMONS=0
```

7.2.1 DB2 Database User Privileges

The DBADM role is required for performing administrative operations in the DB2 database.

7.2.2 Configuring a DB2 Database for Production

You need to configure your DB2 database for running in a production environment with Sterling Supply Chain Applications. To configure a DB2 database for a production environment, you must:

- [Size the database](#) by estimating the required disk space.
- [Run the database scripts](#) to create tables, indexes and so forth for the DB2 database.
- Set the [database connection](#) properties.

7.2.2.1 Running Scripts for a DB2 Database

To configure your DB2 database for your production environment, you must set up and run a series of scripts to create the tables, indexes, sequences, and so forth for your schema.

These script files reside in the

<YANTRA_HOME>/Applications/Foundation/database/db2/scripts/ directory.

Note: The `yfs_tables.sql` script creates tables and indexes. Certain tables require a page size of 16K. You should have a tablespace to accommodate such tables. The `yfs_tables.sql` script can be modified to specify tablespaces for tables, indexes, and so forth. If not, DB2 automatically places tables and indexes in the available tablespaces using its internal logic.

To run the scripts:

1. Run the `yfs_tables.sql` script followed by the `yfs_seq_db2.sql` script located in the <YFS_HOME>/database/db2/scripts/ directory, using the following DB2 command line processor utility:

```
db2 -tvf <filename>
```

where <YFS_HOME> refers to the Runtime folder in the <YANTRA_HOME> directory.

2. Once the `yfs_tables.sql` and `yfs_seq_db2.sql` scripts are executed, run the scripts located in the <YFS_HOME>/database/db2/scripts/CustomDBViews directory.

7.2.2.2 Enabling the Text Search Feature

To enable the text search feature on DB2 database:

1. Make sure that the DB2 database is configured with the Net Search Extender plug-in.
2. Log in to the DB2 server using the Command Editor or Command Line Processor with a user ID having DBA privileges.
3. From the <YANTRA_HOME>/Applications/Foundation/database/db2/scripts/

textsearch/ directory, run: `create.sql` script to create new text search indices.

Note: The text search indices that are created on DB2 database using `create.sql` script are automatically updated every 6 hours. The DBA can modify this script to change this frequency, if necessary. Before running the `create.sql` script, the DBA must update the `"/*Database*/"` string in the `create.sql` script and specify the database name.

Note: You must perform [Step 4](#) only if the text search index creation is successful.

4. Edit the `yfs.properties` file that is located in the `<YANTRA_HOME>/Applications/Foundation/resources/` directory. Set the value of the `yfs.db.textsearch` property to "Y".

For information on how to create the text search indices, see the *Sterling Supply Chain Applications Customization Guide*.
5. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

7.3 Installing Microsoft SQL Server

You can use a SQL Server database for maintaining information on Sterling Supply Chain Applications. If you do not have SQL Server installed, follow the installation procedures in your SQL Server Installation manual.

Note: Ensure that Named Pipes & TCP/IP protocols are enabled in the network utility of the SQL Server.

To create a database, ensure that the collation property you select supports all the characters for your database.

Note: Set the SQL Server database to run in the case-insensitive mode.

To find the character set to be used in JDBC a URL

1. Find the character set corresponding to the chosen collation property. You can find the code page of the collation property by using the following SQL statement:

```
select collationproperty ('<your collation property>', 'codepage')
```

2. Find the JAVA character set corresponding to the codepage to use with the JDBC URL. Refer to the [FAQ](#) page of i-net software to find the character set.
3. Copy the SQL Server JDBC driver file (Opa.jar) to your <YANTRA_HOME>/Applications/Foundation/lib directory.

7.3.1 SQL Server Database User Privileges

The DB_DDLADMIN role is required for creating objects in the SQL Server database.

7.3.2 Configuring a SQL Server Database for a Production Environment

You need to configure your SQL Server database for running in a production environment with Sterling Supply Chain Applications. To configure a SQL Server database for a production environment, you must:

- [Size the database](#) by estimating the required disk space.
- [Run the database scripts](#) to create tables, indices and so forth for the SQL Server database.
- Set the [database connection](#) properties.

7.3.2.1 Running Scripts for a SQL Server database

To run the scripts:

1. Make sure you have a SQL Server client installed on your computer.

- From the `<TANTRA_HOME>/Applications/Foundation/database/sqlserver/scripts` directory, run the `yfssqlserver_master_db_script.cmd` script, and pass the `ServerName`, `DatabaseName`, `UserID`, and `Password` parameters.

The master script also creates the CustomDB views defined in the `<YANTRA_HOME>/Applications/Foundation/database/sqlserver/scripts/CustomDBViews` directory.

- Examine the log files for errors.

7.3.2.2 Enabling the Text Search Feature

To enable the text search feature on the SQL Server database:

- Make sure that the Microsoft Search service is running on the machine on which the SQL Server is installed.

Note: By default, the full-text engine automatically runs as a service named Microsoft Search on Microsoft Windows, NT® Server 4.0, and Windows® 2000.

- Log in to the SQL Server manager with a user ID having DBA privileges.
- From the `<YANTRA_HOME>/Applications/Foundation/database/sqlserver/scripts/textsearch/` directory, run: `create.sql` script to create new text search indices.

Note: The text search indices that are created on the SQL Server using `create.sql` script are not automatically updated. Before running the `create.sql` script, the DBA must update the `"/*Database*/"` string in the `create.sql` script and specify the database name.

Note: You must perform [Step 4](#) only if the text search index creation is successful.

4. From the `<YANTRA_HOME>/Applications/Foundation/database/sqlserver/textsearch/` directory, run: `modify.sql` script to enable the text search indices to be incrementally updated when a text search enabled column is modified.
5. Edit the `yfs.properties` file that is located in the `<YANTRA_HOME>/Applications/Foundation/Applications/Foundation/resources/` directory. Set the value of the `yfs.db.textsearch` property to "Y".

For information on how to create the text search indices, see the *Sterling Supply Chain Applications Customization Guide*.
6. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

7.4 Database Sizing

Database sizing is designed to give you estimates of the database growth and to assist in planning the disk requirements. The planning of the capacity required in your company and the steps to estimate the disk size are described in [Section 7.4.1, "Capacity Planning"](#) on page 66, [Section 7.4.2, "Disk Estimation for the Distributed Order Management Module"](#) on page 67 and [Section 7.4.3, "Disk Estimation for the Networked Warehouse Management System Module"](#) on page 70.

7.4.1 Capacity Planning

There are many factors to consider when estimating the amount of disk space that will be required for the Sterling Supply Chain Applications. As a result, trying to consider all growth factors is impractical because the user may not know the answers to many questions that are required to do a detailed forecast. Over the years the cost of disks has dramatically decreased, and the capacity and speed of disks has increased. The method of how information system managers order disk capacity has also changed from purchasing disk arrays that are dedicated to a particular database server and project to the concept of SANS.

Sterling Supply Chain Applications provide a methodology to estimate your initial disk requirements. Consider the confidence that you have in

your data estimates when making the final purchase decision and adjust accordingly. After the initial purchase and production deployment, disk growth should be tracked for future purchase forecasts.

If you use or are planning to use both Distributed Order Management (DOM) and networked Warehouse Management System (nWMS) modules, please use [Table 7–1, "Steps for Disk Space Estimation for the Order Management Module"](#) on page 69 and [Table 7–2, "Steps for Disk Space Estimation for the Networked WMS Module - If you have both DOM and nWMS"](#) on page 72. However, if you are planning to use only the nWMS module use [Table 7–3, "Steps for Disk Space Estimation for Networked WMS Module - If you have only nWMS"](#) on page 74.

7.4.2 Disk Estimation for the Distributed Order Management Module

The disk estimation provided here pertains to the Order Management module of the Sterling Supply Chain Applications.

The estimation methodology consists of three parts:

1. Estimate the number of orders and order lines you expect to keep in the database.
2. Multiply the number obtained in [Step 1](#) mentioned above, by a storage usage factor.
3. Finally add a minimum base amount.

However, the following information is essential to keep in mind before calculating the estimated disk space:

Note 1

You need to gather some information about the amount of time required to maintain the database, such as:

1. How long do you plan to keep data in the main transactional database before orders are purged to the transactional database?
2. How long are orders kept in the history database before they are purged?
3. Are you purchasing the storage for the first few years into the implementation?

Consider the following examples to achieve answers for the above mentioned questions.

Case 1 You need to purchase storage for the first 3 years of the implementation, and your company's data retention policy says that you have to keep data online in the main transactional database for 1 year and in the history database for another 5 years. Orders that are older than 6 years are purged from the system.

The following solution lets you achieve this goal:

If you need to purchase storage to cover the first 3 years of implementation, that storage has to be sufficient for 3 years worth of data. At the end of year 3, your database will have the data for the third year in the main transactional database while the data for the first and second years is in the history. In this example, you should enter the number 3 as the number of years worth of orders that you expect to keep in the database.

Case 2 The Sterling Supply Chain Applications have been in production for 10 years and your company's data retention policy says that you have to keep data online in the main transactional database for 1 year and in the history database for another 5 years. Orders that are older than 6 years are purged from the system. Given the same data retention policy as above, how much storage is required?

At the end of the tenth year, the database will have the data for the tenth year in the main transactional database and the data for the fifth, sixth, seventh, eighth and ninth years in the history. Therefore, the database has six years (as dictated by the data retention policy) in the database. In this example, you should enter the number 6 as the number of years worth of orders that you expect to be kept in the database.

Note 2

The order discussed in [Table 7–1, "Steps for Disk Space Estimation for the Order Management Module"](#) on page 69 includes sales, transfer, return, and work orders.

Note 3

This storage estimate is for work-in-progress tables that are used as part of order processing. When the orders are processed, the records in these

tables can be purged from the system. These tables include the YFS_IMPORT, YFS_EXPORT, and so forth. **You are strongly urged to aggressively purge data from these tables.**

Note 4

When procuring your storage, ensure that the storage device has at least the amount of usable space specified in [Step 8 of Table 7–1, "Steps for Disk Space Estimation for the Order Management Module"](#). This table provides an idea of the usable space for the storage device in your company. However, the actual amount you might need to order, is a factor of Redundant Array of Inexpensive Disks (RAID) set up. This disk subsystem is composed of more than one disk drive to provide improved reliability, response time, and storage capacity.

Now that you have noted the above points you can proceed to the estimation of required disk space as outlined in [Table 7–1](#).

Table 7–1 Steps for Disk Space Estimation for the Order Management Module

1.	Enter the number of years worth of information to be kept in the system (retention time). For example, the number of orders. For a more detailed example, refer to "Note 1".	_____
2.	Enter the number of orders you expect to be in the system during the time period specified in Step 1 . For the different types of orders refer to "Note 2".	_____
3.	Enter the number of order lines present in a typical order.	_____
4.	Enter the number of order lines that are to be stored in the database (multiply the values provided in Step 2 and Step 3).	_____
5.	Enter the order line multiplier: Choose one of the following storage factors that most closely approximates a description of your Sterling Supply Chain Applications system: (a) 30 KB - This is primarily used for order management with very little customization. (b) 35 KB - This is primarily used for order management with moderate amount of customization.	_____
6.	Multiply the expected number of order lines from Step 4 and the storage factor from Step 5 .	_____
7.	The minimum base storage requirement.	150 MB

Table 7–1 Steps for Disk Space Estimation for the Order Management Module

-
- | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 8. | The minimum operational storage requirements for the Sterling Supply Chain Applications. For more information on the storage estimate, refer to "Note 3". | 500 MB |
| 9. | Enter the total estimated storage obtained by adding the values from Step 6, Step 7, and Step 8. For more information on the amount of usable space, refer to "Note 4". | _____ |
-

7.4.3 Disk Estimation for the Networked Warehouse Management System Module

The disk estimation discussed in this section pertains to the networked WMS module of the Sterling Supply Chain Applications.

This estimation methodology consists of three parts:

1. Estimate the number of shipment lines you expect to keep in the database.
2. Multiply the number obtained in [Step 1](#) by a storage usage factor depending on the specifics of your implementation.
3. Add a minimum base amount for each warehouse or stockroom that you have defined.

If you are planning to use both Sterling Supply Chain Applications DOM and nWMS modules use [Table 7–2, "Steps for Disk Space Estimation for the Networked WMS Module - If you have both DOM and nWMS"](#) on page 72 or else if you are planning to use only the nWMS module use [Table 7–3, "Steps for Disk Space Estimation for Networked WMS Module - If you have only nWMS"](#) on page 74.

However, the following information is essential to keep in mind before calculating the estimated disk space:

Note 1

You need to gather some information about the amount of time required to maintain the database, such as:

1. How long do you plan to keep data in the main transactional database before shipment data is purged to the transactional database?

2. How long is the shipment data kept in the history database before it is purged?
3. Are you purchasing the storage for the first few years into the implementation?

Consider the following example to achieve answers for the above mentioned questions.

Case 1 You need to purchase storage for the first 2 years of the implementation, and your company's data retention policy says that you have to keep data online in the main transactional database for 1 year and in the history database for another year. Shipments that are older than 2 years are purged from the system.

The following solution lets you achieve this goal:

If you need to purchase storage to cover the first 2 years of implementation, that storage has to be sufficient for 2 years worth of data. At the end of year 2, your database will have data from the second year in the main transactional database while the data from the first year is in the history. In this example, you should enter the number 2 as the number of years worth of shipment-related data that you expect to keep in the database.

Note 2

The shipment lines discussed in [Table 7–2](#) and [Table 7–3](#) on page 74 include space requirements for demand-based replenishment.

Note 3

This storage estimate is for work-in-progress tables that are used as part of the shipment and receipt processing. When the shipments are processed, the records in these tables can be purged from the system. These tables include the `YFS_IMPORT`, `YFS_EXPORT`, `YFS_TASK`, `YFS_TASK_STATUS_AUDIT`, and so forth. ***You are strongly urged to aggressively purge data from these tables.***

Note 4

When procuring your storage, ensure that the storage device has at least the amount of usable space specified in the last step of [Table 7–2](#) or [Table 7–3](#) on page 74. These tables provides an idea of the usable space for the storage device in your company. However, the actual amount you

might need is a factor of Redundant Array of Inexpensive Disks (RAID) set up. This disk subsystem is composed of more than one disk drive to provide improved reliability, response time and storage capacity.

Now that you have noted the above points you can proceed to the on page 74 estimation of required disk space as outlined in [Table 7-2](#) or [Table 7-3](#) on page 74.

Table 7-2 Steps for Disk Space Estimation for the Networked WMS Module - If you have both DOM and nWMS

-
1. Enter the number of years worth of information to be kept in the system (retention time). For example, the number of shipments. For a more detailed example, refer to "Note 1". _____
 2. Enter the number of shipment lines you expect to be in the system during the time period specified in [Step 1](#). For the different types of shipments, refer to "Note 2". _____
 3. Enter the shipment line multiplier. This includes demand-based replenishment. Choose one of the following storage factors that most closely approximates a description of your Sterling Supply Chain Applications system: _____
 - (a) 10 KB - for warehouses using no tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and more than 80% PARCEL shipping.
 - (b) 12 KB - for warehouses using no tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and PARCEL as well as TL - LTL shipping.
 - (c) 15 KB - for warehouses using tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and more than 80% TL - LTL shipping.
 - (d) 20 KB - for warehouses using no tag-controlled items, no serial tracking, largely CASE LPNs, and more than 80% PARCEL shipping.
 - (e) 25 KB - for warehouses using tag-controlled items, serial tracking, largely CASE LPNs, and PARCEL as well as TL - LTL shipping.
 - (f) 30 KB - for warehouses using tag-controlled items, serial tracking, largely CASE LPNs, and more than 80% TL - LTL shipping.
 4. Multiply the expected number of shipment lines from [Step 2](#) and the storage factor from [Step 3](#). _____

Table 7–2 Steps for Disk Space Estimation for the Networked WMS Module - If you have both DOM and nWMS

5.	Enter the number of receipt lines you expect to be in the system during the time period specified in Step 1 .	_____
6.	Enter the receipt line multiplier. Choose one of the following storage factors that most closely approximates a description of your Sterling Supply Chain Applications system: (a) 25 KB - for warehouses using no tag-controlled items, no serial tracking, and no LNPNs. (b) 27 KB - for warehouses using no tag-controlled items, no serial tracking, and no LNPNs or only Pallet LPNs. (c) 35 KB - for warehouses using no tag-controlled items, no serial tracking, and more than 80% CASE LPNs. (d) 40 KB - for warehouses using tag-controlled items, serial tracking, and more than 80% CASE LPNs.	_____
7.	Multiply the expected number of receipt lines from Step 5 and the storage factor from Step 6 .	_____
8.	Enter the number of warehouses planned: (a) Enter the number of stores or stock rooms planned. (b) Enter the number of other warehouses planned.	_____ _____
9.	Calculate the minimum space required for your set up based on the data in Step 8 and the minimum storage requirement given below: (a) 20 MB for each store or stock room. (b) 50 MB for each other warehouse.	_____ _____
10.	The minimum operational storage requirements for Sterling Supply Chain Applications. For more information on the storage estimates refer to the " Note 3 ".	500 MB
11.	Enter the total estimated storage obtained by adding the values from Step 4 , Step 7 , Step 8 , Step 9 and Step 10 . For more information on the amount of usable space, refer to " Note 4 ".	_____
12.	Enter the value of Step 9 from Table 7–1 on page 69.	_____
13.	Enter the total estimated storage obtained by adding the values from Step 11 and Step 12 . For more information on the amount of usable space, refer to " Note 4 ".	_____

Table 7–3 Steps for Disk Space Estimation for Networked WMS Module - If you have only nWMS

-
1. Enter the number of years worth of information to be kept in the system (retention time). For example, the number of shipments. For a more detailed example, refer to "Note 1". _____

 2. Enter the number of shipment lines you expect to be in the system during the time period specified in [Step 1](#). For the different types of shipments, refer to "Note 2". _____

 3. Enter the shipment line multiplier. This factor includes demand-based replenishment. Choose from one of the following storage factors that most closely approximates a description of your Sterling Supply Chain Applications system: _____
 - (a) 25 KB - for warehouses using no tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and more than 80% PARCEL shipping.
 - (b) 27 KB - for warehouses using no tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and PARCEL as well as TL - LTL shipping.
 - (c) 30 KB - for warehouses using tag-controlled items, no serial tracking, no LNPNs or only Pallet LPNs, and more than 80% TL - LTL shipping.
 - (d) 35 KB - for warehouses using no tag-controlled items, no serial tracking, largely CASE LPNs, and more than 80% PARCEL shipping.
 - (e) 40 KB - for warehouses using tag-controlled items, serial tracking, largely CASE LPNs, and PARCEL as well as TL - LTL shipping.
 - (f) 50 KB - for warehouses using tag-controlled items, serial tracking, largely CASE LPNs, and more than 80% TL - LTL shipping.

 4. Multiply the expected number of shipment lines from [Step 2](#) and the storage factor from [Step 3](#). _____

 5. Enter the number of receipt lines you expect to be in the system during the time period specified in [Step 1](#). _____

Table 7–3 Steps for Disk Space Estimation for Networked WMS Module - If you have only nWMS

6.	Enter the receipt line multiplier. Choose from one of the following storage factors that most closely approximates a description of your Sterling Supply Chain Applications system:	_____
	(a) 25 KB - for warehouses using no tag-controlled items, no serial tracking, and no LNPNs.	
	(b) 27 KB - for warehouses using no tag-controlled items, no serial tracking, and no LNPNs or only Pallet LPNs.	
	(c) 35 KB - for warehouses using no tag-controlled items, no serial tracking, and more than 80% CASE LPNs.	
	(d) 40 KB - for warehouses using tag-controlled items, serial tracking, and more than 80% CASE LPNs.	
7.	Multiply the expected number of receipt lines from Step 5 and the storage factor from Step 6 .	_____
8.	Enter the number of warehouses planned:	
	(a) Enter the number of stores or stock rooms planned.	_____
	(b) Enter the number of other warehouses planned.	_____
9.	Calculate the minimum space required for your set up based on the data in Step 8 and the minimum storage requirement given below:	
	(a) 20 MB for each store or stock room.	_____
	(b) 50 MB for each other warehouse.	_____
10.	The minimum operational storage requirements for the Sterling Supply Chain Applications. For more information on the storage estimates refer to " Note 3 ".	500 MB
11.	Enter the total estimated storage obtained by adding the values from Step 4 , Step 7 , Step 8 , Step 9 and Step 10 . For more information on the amount of usable space, refer to " Note 4 ".	_____

7.4.4 Tracking and Estimating Future Disk Requirements

You should track your actual database storage usage and the number of database records regularly. Correlating these two metrics enabled you to plan your future disk requirements. Moreover, determining the average amount of space used for each order line or shipment line, enables you to accurately predict your future growth requirements.

Installing the Print Server

This chapter explains how to install and configure the Loftware Label Manager (LLM) and Loftware Print Server (LPS).

This chapter also provides the information required to complete [Step 9](#) indicated on the “Installation Checklist” on page 6.

For more information about configuring the Loftware Label Manager and Print Server, see the *Loftware Label Manager User's Guide* and the *Loftware Print Server User's Guide*.

For more information about Performance Considerations for setting up the Loftware Print Server (LPS) see the *Loftware Print Server User's Guide*.

8.1 Installation of Loftware Components

The Loftware Print Server manages bar code label print requests between applications and hundreds of networked printers. As a general guideline, you should configure a maximum of 200 printers for each Loftware Print Server you install. For more information about server requirements and installation instructions, see the *Loftware Print Server User's Guide*. Contact your Loftware support representative for additional sizing and configuration support.

The Loftware Label Manager, used for designing labels, may be installed on any compatible PC. For more information about server requirements and installation guidelines, see the *Loftware Label Manager User's Guide*.

Sterling Supply Chain Applications support printing in the following modes:

- File Copy Mode

- TCP/IP Sockets Mode

The `yfs.loftware.tcpip.sockets` attribute in the `yfs.properties` file determines the mode used for printing. By default this boolean property is set to 'N' for File Copy Mode.

To configure the Loftware printing in the TCP/IP Sockets Mode, this property should be set to 'Y'.

Sterling Supply Chain Applications require following settings in the Loftware Print Server Configuration Utility:

- In Directory Set up, ensure that the 'Pass Files' option is selected.
- **When using File Copy Mode:** In Directory Set up, ensure that the 'Enable Polling (Disable Event File Trigger)' option is selected. It is recommended that the Poll Interval value is set to 500 Milliseconds.

Note: In File Copy Mode, SAMBA should be configured when using a UNIX version of the application server.

The Drop Directories of the printers configured in Loftware need to be mounted on to the UNIX server using SAMBA.

8.2 Define Printers on Loftware

Configure printers on Loftware using the Loftware Design 32 tool. For more information about configuring printers using the Loftware Design 32 tool, see the *Loftware Label Manager User's Guide*.

8.3 Define Printers for Sterling WMS Installation

For more information about configuring printers for Sterling WMS, see the *Sterling Warehouse Management System Configuration Guide*.

8.4 Copying Sterling WMS Standard Label Formats

Sterling WMS provides Loftware Label Manager template (*.lwl) files which should be copied in the directory set up for labels using the Loftware Design 32 tool.

Also, copy the `YCP_LABEL_FIELDS.LST` file to the directory where the Software Label Manager has been installed. This file is available in the `Runtime/Template/Prints/Label` directory.

8.5 Installation of JasperReports

JasperReports is an open source Java reporting tool that delivers rich content on the screen, to the printer or in the format of a PDF, HTML etc,. You can use JasperReports with Sterling Supply Chain Applications for printing or generating PDF objects for order reports, labels and so forth. The installation procedure and sample files are located in `<YFS_HOME>/documentation/code_examples/jasperreports` directory Or `<YANTRA_HOME>/Applications/Foundation/documentation/code_examples/jasperreports` directory.

Note: For JasperReports, Sterling Supply Chain Applications use the `jasperreports-1.2.0.jar` file. For more information about JasperReports and supporting jars and components, see the `readme.html` file located either in the `<YFS_HOME>/documentation/code_examples/jasperreports` directory or `<YANTRA_HOME>/Applications/Foundation/documentation/code_examples/jasperreports` directory.

Installing the Weighing Scale

Weighing scales are typically used at packing or manifest stations. This chapter describes the installation of weighing scales for use with Sterling WMS.

This chapter also provides the information required to complete [Step 10](#) indicated on the ["Installation Checklist"](#) on page 6.

For more information regarding the Mettler-Toledo PS Weighing Scale, see the *Mettler-Toledo PS Weighing Scale User Guide*.

9.1 Installation of the Weighing Scale

The weighing scale is installed at each pack or manifest station requiring weighing scale integration.

To install the weighing scale, follow these steps on each client machine:

1. Launch your Internet Explorer browser.
2. In the Address bar, type
`http://<hostname>:<PortId>/yantra/yfscommon/win32com.dll`
and press Enter. The File Download window appears.
3. Choose Save. The Save As window appears.
4. Save the file in any directory present in the System Class path. For example, on Windows NT, go to `C:/WINNT/system32`.

For more information about setting up the weighing scale and associating it with a station, see the Equipment section of the *Sterling Warehouse Management System Configuration Guide*.

For more information about system requirements, see [Chapter 2, "System Requirements"](#).

10

Installing the Sterling Supply Chain Mobile Application

This chapter describes how to install the Sterling Supply Chain Mobile Application for use on PocketPC, WinCE, and VT220 mobile terminals.

This chapter also provides the information required to complete [Step 11](#) indicated on the "[Installation Checklist](#)" on page 6.

For information on PocketPC and WinCE mobile terminal system requirements, see [Chapter 2, "System Requirements"](#).

Important: Install the Microsoft .NET Compact Framework on your local PC, BEFORE installing the Sterling Supply Chain Mobile Application. For more information about the supported versions for the Microsoft .NET Compact Framework, see [Section 2.7, "Sterling Supply Chain Mobile Application Requirements"](#). This may be downloaded from <http://www.microsoft.com>.

Installing the Microsoft .NET Compact Framework creates multiple .CAB files on the system, for multiple operating systems and processors of the device.

10.1 Installation on Mobile Terminals

To set up the PC with the Sterling Supply Chain Mobile Application for the Symbol Mobile Terminal, follow these steps:

1. Connect the Mobile Terminal to the PC that has ActiveSync installed. For more information, refer to the Communications section of the *Symbol Installation Guide*.

Note: It is suggested that ActiveSync be used to copy the files.

Alternatively, you may transfer the file over the network, if the device is already configured to access the LAN, or you may serve the .CAB file through a webserver and use the Internet Explorer browser on the device to download it.

If Sterling WMS is installed on a UNIX server, it may be required to copy the files from the UNIX server to the PC before launching ActiveSync.

2. Choose Start > Programs > ActiveSync on the PC.
3. Choose File > Get Connected, if not already connected.
4. Choose the Explore icon. This brings up the File Explorer for the Mobile Terminal.

5. Go to \Application folder.
6. In the File Explorer window, click the Folders icon to bring up folders in the left panel.
7. Copy the +MobileApp_xxx.CAB file from the <YANTRA_HOME>/Applications/Foundation/YantraMobileApp folder on the PC to the \Application folder on the mobile terminal.

Here, xxx refers to PPC.ARM, PPC.ARMV4, WCE4.ARMV4, or WCE4.ARMV4T.

Ensure that you choose the .CAB file that is relevant to the operating system and processor of your mobile terminal.

8. Double-click on the YantraMobileApp_xxx.CAB file, on your mobile terminal. This installs the application on the mobile terminal.

Note: This file is automatically deleted upon successful installation.

9. The sample file <YANTRA_HOME>/Applications/Foundation/YantraMobileApp\YantraHostList.xml includes application servers with Loopback, Production, QA and Test names. Replace these with the application servers along with their IP addresses and port numbers. The application server names entered here will be listed in the Servers drop-down list to which you can get connected when you launch the Sterling Supply Chain Mobile Application on the PocketPC or WinCE mobile terminals.

Note: Yo use the above listed attributes, refer YantraHostList.xml.sample file provided with the application.

If you want to run the application on https, you need to configure securemode and provide secureURL attributes. The applicable values of securemode are 'all', 'loginonly', and 'none'.

If you set securemode to:

- 'all', the application will run on https.

- 'loginonly', only the login page will run on https and the rest of the application on http.
- 'none', secureURL will be ignored and the application will run on http.

Note: This step is not valid for VT220 mobile terminal.

Note: Servers include application servers used for production, test, and other environments, if applicable.

10. If you are using a PocketPC mobile terminal, rename the `YMAProperties.ppc.xml` file to `YMAProperties.xml`. If you are using a Symbol VRC7900 series truck mount device, rename the `YMAProperties.vrc7900.xml` file to `YMAProperties.xml`.
11. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.
12. Stop ActiveSync.

For additional information on replication of the Sterling Supply Chain Mobile Application to multiple mobile devices, see the *Symbol Device Installation* documentation.

The *Symbol Device Installation* documentation also provides additional details on re-installation.

Note: To display clear and appropriate error messages, a locale specific "System_SR_<locale>.cab" resource file is needed. For more information about the locale specific resource file, contact your PocketPC product support at <http://support.microsoft.com>.

10.1.1 Ensuring Re-installation on Cold Boot

On a PocketPC Mobile Terminal

To ensure that the Microsoft .NET Compact Framework and the Sterling Supply Chain Mobile Application are installed automatically on cold boot, the following instructions must be followed as a one-time measure:

1. Install the Microsoft .NET Compact Framework on the mobile terminal, BEFORE installing the Sterling Supply Chain Mobile Application. This may be downloaded from <http://www.microsoft.com>.
2. Install the Sterling Supply Chain Mobile Application. For more information, see [Section 10.1, "Installation on Mobile Terminals"](#) on page 84.
3. Copy the Microsoft .NET Compact Framework installation CAB file from the local PC to the \Application folder on the mobile device.
4. Copy all the files under <YANTRA_HOME>/Applications/Foundation/YantraMobileApp to the \Application\YantraMobileApp folder.
5. Copy the file YantraMobileApp.lnk from the \Windows\Start Menu\Programs folder to the \Application folder.
6. Edit the following line in the yantra.cpy file located in the <YANTRA_HOME>/Applications/Foundation/YantraMobileApp folder:

```
\Application\netcf.core.ppc3.ARM.cab >
\Windows\startup\netcf.core.ppc3.ARM.cab
```

Here, rename the netcf.core.ppc3.ARM.cab file to the CAB file name as appropriate for your handheld device.

7. Change all occurrences of Program Files to <YANTRA_HOME>, as applicable in all lines of the yantra.cpy file.

8. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.
9. Save the modified `yantra.cpy` file under the `\Application` folder on the mobile device.

This ensures that the Microsoft .NET Compact Framework and the Sterling Supply Chain Mobile Application are installed on cold boot. When cold booting the system, the `yantra.cpy` file copies the installation files to the start directory.

On a Symbol VRC7900 WinCE Mobile Terminal

Symbol VRC7900 supports installation of software during cold boot by putting the installation `.cab` files in the `\FlashFx\CAB` folder.

All files that need to be copied to the folder `<Install_Folder>\YantraMobileApp` folder in the RAM file system must be placed under `\FlashFx\CopyToRam\Root\<Install_Folder>\YantraMobileApp`.

To ensure that the Microsoft .NET Compact Framework and Sterling Supply Chain Mobile Application are installed automatically on cold boot, the following instructions must be followed as a one-time measure:

1. Install the Microsoft .NET Compact Framework on the mobile terminal, BEFORE installing the Sterling Supply Chain Mobile Application. This may be downloaded from <http://www.microsoft.com>.
2. Install the Sterling Supply Chain Mobile Application. For more information, see [Section 10.1, "Installation on Mobile Terminals"](#) on page 84.
3. Copy the Microsoft .NET Compact Framework installation CAB file, `netcf.core.WINCE.ARMV4.cab`, from the local PC to the `\FlashFx\CAB` folder on the mobile device.
4. Copy all the files (including the hidden file `vsd_setup.dll`) under the `<Install_Folder>\YantraMobileApp` folder to the `\FlashFx\CopyToRam\Root\<Install_Folder>\YantraMobileApp` folder.

5. If a desktop shortcut has been created, copy the corresponding shortcut file (with .lnk extension) to the \FlashFx\CopyToRam\System\Desktop folder.
6. Copy the \Windows\My Company YantraMobileApp.unload file to the \FlashFx\CopyToRam\System folder.

This ensures that the Microsoft .NET Compact Framework and the Sterling Supply Chain Mobile Application are installed on cold boot.

On a Denso BHT400B Win CE 5.0 Mobile Terminal

To ensure that the Microsoft .NET Compact Framework and Sterling Supply Chain Mobile Application are automatically installed on cold-boot, follow these instructions as a one-time measure:

1. Install the Microsoft .NET Compact Framework 2.0 SP1 on the mobile terminal, prior to installing the Sterling Supply Chain Mobile Application. This can be downloaded from <http://www.microsoft.com>.
2. Install the Sterling Supply Chain Mobile Application. For more information about installing the Sterling Supply Chain Mobile Application, see [Section 10.1, "Installation on Mobile Terminals"](#).

Note: Cold-booting of the mobile terminal erases the data stored in RAM. Therefore, copy the installation files into a folder whose contents are retained even after performing a cold-boot. See the Mobile Terminal Operator's guide provided by the manufacturer to identify the appropriate folder.

For Win CE 5.0 mobile terminals manufactured by Denso Corporation, contents of the '\Flash' folder are retained after cold-booting. If you are using any other mobile terminal, locate the folder and replace all occurrences of '\Flash' with the located folder in the following steps:

3. Copy the Microsoft .NET Compact Framework 2.0 SP1 installation CAB file from the local PC to the '\Flash' folder on the mobile terminal.
4. Copy the relevant Sterling Supply Chain Mobile Application CAB file from the local PC to the '\Flash' folder on the mobile terminal.
5. Create the YantraMobileApp under '\Flash' folder. Copy the following files from the directory where Sterling Supply Chain Mobile

Application is installed (\Program Files\YantraMobileApp) to \Flash\YantraMobileApp folder:

- YantraHostList.xml
 - YMAProperties.xml
6. Edit yantra_wce50.bat file located in the <YANTRA_HOME>/Applications/Foundation/YantraMobileApp folder for the following changes:
- Change all the occurrences of NETCFv2.wce4.ARMV4.cab to the Microsoft .NET Compact Framework 2.0 SP1 CAB file appropriate for your mobile terminal.
 - Change all the occurrences of YantraMobileApp_WCE4.ARMV4.CAB to the Sterling Supply Chain Mobile Application CAB file appropriate for your mobile terminal.
7. Save the modified yantra_wce50.bat file under the \Flash\StartUp folder on the mobile terminal. The contents of the StartUp folder are executed automatically when you perform a cold boot. Refer to the Mobile Terminal Operator's guide provided by the manufacturer to identify this folder.

This ensures that the Microsoft .NET Compact Framework and the Sterling Supply Chain Mobile Application are installed on cold-booting of the mobile terminal.

10.2 Installing on VT220 Mobile Terminals

This section describes how to install the Sterling Supply Chain Mobile Application for use on VT220 mobile terminals.

The Sterling Supply Chain Mobile Application can be accessed from any VT220 emulation terminal.

HP-UX operating systems require the installation of `ncurses` to enable you to change the function key sequence mapping.

10.2.1 Installing `ncurses` on HP-UX

The VT220 client on HP-UX requires `tic` from `ncurses` distribution, to prepare `TERMINFO` for a VT220.

Installing `ncurses` is a multiple step process which involves ensuring that the required build utilities are already installed. These utilities need to be installed prior to the installation of `ncurses`.

Specifically, you need `gcc`, `bison`, `make` and `flex` as minimum system requirements. For more information on the `ncurses` and the build utility versions see, [Chapter 2, "System Requirements"](#).

These must be installed in the following order:

1. `bison`
2. `flex`
3. `make`
4. `gcc`

Once these underlying utilities are installed, you can compile or build `ncurses`.

10.2.2 Installing `libiconv` on HP-UX Itanium

The `libiconv` libraries for HP-UX Itanium B.11.23 need to be installed for running VT220 on the HP-UX Itanium platform.

Note: `libiconv` library has run-time dependencies on `libgcc` and `gettext`. Therefore, you must install these packages while installing `libiconv`.

10.2.3 Installing the Sterling Supply Chain Mobile Application on VT220 Mobile Terminals

The Sterling Supply Chain Mobile Application can be installed on AIX, HP-UX, Linux, or Solaris operating systems. The VT220 terminal emulation software is installed along with the Sterling Supply Chain Mobile Application as described in this document for the respective operating systems.

To install the Sterling Supply Chain Mobile Application for VT220 terminal emulation:

1. The Sterling Supply Chain Mobile Application for VT220 terminal emulation is installed under the directory `<YANTRA_`

HOME>/Applications/Foundation/YantraMobileApp/vt220/<OS-name>; where <OS-name> is the applicable operating system from the following: aix, hpux, linux, or solaris. This installation location is referenced as <VT220_HOME>.

2. Grant execute permission to <VT220_HOME>/yantramobileapp and <VT220_HOME>/keyseq.
3. Set up the VT220 emulation terminal as described in "[Setting Up The Terminal](#)" on page 92. Using the <VT220_HOME>/keyseq binary, verify that the keys F1 through F12 display the respective keys on the keyseq program output.

Setting Up The Terminal

When setting up a terminal for use with the Sterling Supply Chain Mobile Application for VT220 terminal emulation, you must perform the following preliminary actions:

1. Set your environment variable TERM to vt220.
2. Under the <VT220_HOME> directory, create a directory called terminfo.
3. If running VT220 emulation on an HP-UX system, install ncurses as directed in [Section 10.2.1, "Installing ncurses on HP-UX"](#) on page 90 and complete [Step 4](#) through [Step 6](#). Otherwise, skip to [Step 7](#).
4. From the terminfo directory use the infocmp command to define your terminal information as:

```
$<ncurses_home>/infocmp > vt220.ti,
```

where <ncurses_home> is the ncurses binaries installation location.

Note: If an installation location is not specified during the ncurses installation, the ncurses binaries are installed in the /usr/bin folder.

The infocmp command de-compiles the terminal information, and the resulting file can be edited to map the keystrokes observed by running keyseq.

5. You must define a `TERMINFO` variable (if you do not already have one) to tell the terminal where to find information on a particular terminal type. On BASH type systems, this is done using the following command:

```
$ export TERMINFO=<path to some directory that contains
the .ti file>
```

6. Now run the ncurses `tic` command as follows to compile your newly built terminal information file:

```
$ <ncurses_home>/tic vt220.ti
```

where `<ncurses_home>` is the ncurses binaries installation location.

Note: If an installation location is not specified during the ncurses installation, the ncurses binaries are installed in the `/usr/local/bin` folder.

The `tic` command places the compiled version in the appropriate place under the `$TERMINFO` directory.

7. To ensure that all function keys are properly mapped, use the `<VT220_HOME>/keyseq` program. This shows you what key sequence is returned when a key is pressed. Execute it and press the function keys when prompted.

For example, if the F1 key is pressed and:

```
Press a key (Return to end): Key Value returned: 27
```

```
Press a key (Return to end): Key Value returned: 91
```

```
Press a key (Return to end): Key Value returned: 49
```

```
Press a key (Return to end): Key Value returned: 49
```

```
Press a key (Return to end): Key Value returned: 126
```

is printed to `STDOUT`. These values are decimal values.

Convert these values to their HEX equivalents. Then, using the "Hexadecimal - character" set from the `man ascii` command on UNIX, edit the `vt220.ti` file created above. Use [Table 10–1, "Terminal Information - Common Keys and Codes"](#) on page 94 to decide which values to edit.

In the example above, the F1 key maps to kf1 (from [Table 10–1](#)). Therefore, you must change the value of kf1 in the `vt220.ti` file (generated in [Step 4](#)) to:

```
\E[11~
```

8. Repeat [Step 7](#) for all the keys you want to map.
9. Re-compile the edited `vt220.ti` file as directed in [Step 6](#).
10. Once you have edited and compiled your terminal information file, test the changes you made by running `keyseq` again. If all keys are properly defined, `keyseq` returns a string description and the numeric value of the key.

The most common keys and their codes in the terminal information file are in [Table 10–1](#):

Table 10–1 Terminal Information - Common Keys and Codes

Code	Key
kcub1	Left arrow
kcuf1	Right arrow
kcuu1	Up arrow
kcud1	Down arrow
kf1 – kf12	F1 – F12 keys

To launch the Sterling Supply Chain Mobile Application using the VT220 emulation terminal and access online help:

1. Set an environment variable `VT220_HOME` pointing to the folder containing the VT220 executable. This environment variable must be set in the shell from where the `yantramobileapp` executable will be invoked.
2. To launch the application, type the following command in the operating system shell:
`yantramobileapp -i <ip_address> -p <port_number>`

11

Configuring Properties

After installing the Sterling Supply Chain Applications, you must set up a few property and script files in order for it run properly. This chapter describes the properties you must set up before configuring Sterling Supply Chain Applications to run according to your business needs.

This chapter also provides the information required to complete [Step 12](#) indicated on the "[Installation Checklist](#)" on page 6.

If you are upgrading from a prior release, see the *Sterling Supply Chain Applications Upgrade Guide* that applies to your implementation **before** continuing with the setup of Sterling Supply Chain Applications.

11.1 Before You Begin

Before you start setting up the properties and script files to run the Sterling Supply Chain Applications, make sure that you have installed Sterling Supply Chain Applications. For more information about installing Sterling Supply Chain Applications, see [Chapter 5, "Installing Sterling Supply Chain Applications"](#).

When you install individual PCA application (1 or more - Order does not matter), individual directories for each PCA you install gets created under the Applications folder. For example, COM, NWMS, and so forth. For more information on how to install the PCA, refer to individual PCA's Installation Guide.

11.2 Setting Up the Properties Files

Sterling Supply Chain Applications supply sample properties files that you must customize before using. The properties files are located in the `<YANTRA_HOME>/Applications/Foundation/resources/` directory and

should remain accessible through your `<classpath>/resources/` directory.

where `<YANTRA_HOME>` refers to the directory where you have installed the Sterling Supply Chain Applications.

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime for these modifications as instructed in [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the `<YANTRA_HOME>/Applications` directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

The sample properties files are:

1. `yfs.properties.sample`
2. `yifclient.properties.sample`
3. `management.properties.sample`
4. `log4jconfig.xml.sample`
5. `ycs.properties.sample`
6. `migrator.properties.sample`

Some properties relay sensitive data such as user IDs and passwords, which you may want to encrypt. Any property (except for the `yfs.propertyencryptor.class` property in the `yfs.properties` file), can be encrypted as needed within the following files:

- `management.properties`
- `ycs.properties`
- `yfs.properties`
- `yifclient.properties`

For more information on the usage of encryption mechanisms, see [Chapter 3, "Creating a Security Plan"](#). To get more information about the encrypter interface used in Sterling Supply Chain Applications, see the `YCPDecrypter` class in *Sterling Supply Chain Applications Javadocs*.

The log4jconfig.xml File

The `log4jconfig.xml` file specifies the logging parameters for the log4j utility.

The management.properties File

The `management.properties` file specifies how Sterling Supply Chain Applications processes (such as agent servers, integration servers, and the application server) communicate with each other. The properties in this file are used to connect to the JNDI registry to enable cached data change propagation, enable and disable traces, and enable the management of these processes through the system management console.

The migrator.properties File

The `migrator.properties` file contains information about the database XML files, log files generated while loading the factory defaults, output error messages, and any output statistics available.

The ycs.properties File

The `ycs.properties` file contains configuration information for carrier integration. For more information on this properties file see the *Sterling Parcel Carrier Adapter Guide*.

The yfs.properties File

The `yfs.properties` file contains overall settings for Sterling Supply Chain Applications, such as your database connectivity properties and settings that enable your implementation to work in backward compatibility mode. Sterling Commerce supplies a sample properties file that has pre-configured settings for these and other parameters.

The yifclient.properties File

The `yifclient.properties` file contains parameters for client programs and user interface components that access the Sterling Supply Chain Applications APIs.

To set up a properties file:

1. Rename the relevant properties file in the `<YANTRA_HOME>/Applications/Foundation/resources/` directory, by removing the `.sample` extension.
2. Edit the file by uncommenting properties and adding values as needed, using the descriptions as provided in this guide and as noted within each properties file.

Note: Examples in the sample file may contain backslashes ("`\`"). When specifying your own parameters, use slashes ("`/`") instead of backslashes.

3. When encrypting properties:
 - a. Append the property you want to encrypt with `".encrypted"`. Note that you cannot encrypt the `yfs.propertyencryptor.class` property.
 - b. Ensure that the class specified for the `yfs.propertyencryptor.class` property is accessible through the `CLASSPATH` environment variable. For more information about setting up the classpath for the runtime utilities, see [Section 12.4.1, "Setting Up the Classpath for the Runtime utilities:"](#) on page 123.
 - c. Implement the `YCPDecrypter` interface. For details about this interface, see the *Sterling Supply Chain Applications Javadocs*.

All properties ending with `.encrypted` are automatically decrypted at runtime.

11.3 Properties for the Sterling Supply Chain Applications Configurator

Your Sterling Supply Chain Applications environment and associated business processes are set up through the Sterling Supply Chain Applications Configurator user interface.

The Sterling Supply Chain Applications Configurator runs as a Java Applet and by default it requires access to the Internet. If Internet access is not available to those using the Sterling Supply Chain Applications

Configurator, download the Java plugin version from <http://java.sun.com/j2se/1.4.2/download.html> and install it locally on the computer of each Sterling Supply Chain Applications Configurator user.

Then change the `yfs.config.java.plugin.codebase` property in the `yfs.properties` file to point to that location as follows:

```
yfs.config.java.plugin.codebase=<network location of java plugin>
```

Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Important: If you run Sterling Supply Chain Applications using HTTPS, the Sterling Supply Chain Applications Configurator does not open. However, if running on WebLogic, you can run Sterling Supply Chain Applications using mixed protocols. For more information about using mixed protocols, see [Section 14.3, "Support for Mixed \(Secure and Unsecure\) Protocols in the Sterling Supply Chain Application Consoles"](#) on page 136.

11.4 Properties to Prevent Cross-Site Script Vulnerabilities

In some cases, data to and from Sterling Supply Chain Applications can contain HTML characters that impact the display and the original intent of the input. In addition, data can be input that contains malicious HTML, such as commands embedded within `<SCRIPT>`, `<OBJECT>`, `<APPLET>`, and `<EMBED>` tags.

In Sterling Supply Chain Applications, potentially malicious data being output to the browser can be rendered harmless by implementing the provided encoding mechanism. This prevents these malicious scripts from being run by the browser.

To prevent cross-site scripting, enable the `yfs.htmlencoding.triggers` property in the `yfs.properties` file and specify the following characters:

- Greater than symbol ("`>`")

- Less than symbol ("<")
- Right parenthesis (")")
- Right bracket ("]")
- Any other characters necessary for your specific implementation

Any presence of these characters triggers Sterling Supply Chain Applications to safely encode the data.

For more detailed information about malicious scripts, see the following articles:

- CERT Advisory, *Malicious HTML Tags Embedded in Client Web Requests*. Available from <http://www.cert.org/advisories/CA-2000-02.html>.
- CERT Advisory, *Frequently Asked Questions About Malicious Web Scripts Redirected by Web Sites*. Available from http://www.cert.org/tech_tips/malicious_code_FAQ.html.

11.5 Setting the Database Connection Properties

You can set the database connection properties by specifying the login parameters in the `<YANTRA_HOME>/Applications/Foundation/resources/yfs.properties` file.

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime for these modifications as instructed in [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

Edit the `yfs.properties` file and set the values of the properties as described in [Table 11–1, "Database Connection Property Settings"](#):

Table 11–1 Database Connection Property Settings

Property	Description
yfs.dblogin.dbtype	<p>Set the type of your database to:</p> <ul style="list-style-type: none"> yfs.dblogin.dbtype=oracle. yfs.dblogin.dbtype=db2. yfs.dblogin.dbtype=sqlserver.
yfs.dblogin.driverclass	<p>Set the database driver class to:</p> <ul style="list-style-type: none"> oracle.jdbc.OracleDriver. com.ibm.db2.jcc.DB2Driver. com.inet.tds.TdsDriver.
yfs.dblogin.jdbcurl	<p>Set the JDBC URL to:</p> <ul style="list-style-type: none"> jdbc:oracle:thin:@<Database Server Hostname/IPaddress>:<TNS Listener Port Number>:<Database SID> jdbc:db2://<Database Server Hostname>:<Port Number>/<Database name> jdbc:inetdae7:<Database Server HostName/IPaddress>:<Port Number>?<database=Database Name>&charset=<your charset>
yfs.dblogin.userid	Specify the database user ID.
yfs.dblogin.password	Specify the password associated with the user ID for the database.
yfs.dblogin.yantraschema.name	<p>This is not a mandatory field.</p> <p>If you are using only DB2 and if a user is associated to more than one database schema, specify the name of Sterling Supply Chain Applications database schema owner.</p>
yfs.dblogin.datasource.name	If you are using a BEA WebLogic or IBM WebSphereJDBC datasource, set the same name as the datasource name.

Note: Remember to comment the `dbtype`, `driverclass` and `jdbcurl` that does not pertain to your configuration.

To enable database connection pooling, create the pool, configure the data source entry for JNDI, and specify it as the `datasource` name. For more information on BEA WebLogic JDBC connection pooling, see the *Sterling Supply Chain Applications Performance Management Guide*. For connection pooling used by other application servers refer to the vendor's manual on connection pooling.

The `yfs.properties` file specifies the default properties used by Sterling Supply Chain Applications. You can override properties for a specific Sterling Supply Chain Applications process by creating an override properties file and invoking the process with `-Dyantra.override.properties.file=<your_filename>` as an option to the Java VM.

11.6 Setting the Data Migrator Properties

In addition to reading the properties files of Sterling Supply Chain Applications, the Data Migrator reads additional values from the `migrator.properties` file. A sample `migrator.properties` file is provided.

The `migrator.properties` file contains information about the location of the following Data Migrator files:

- Input XMLs to load into the database
- Log files
- Output error messages
- Output statistics

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime for these modifications as instructed in [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

The `migrator.properties` file should be accessible to the Data Migrator through the CLASSPATH. Therefore, your CLASSPATH should contain the <YANTRA_HOME> directory for resolving the `migrator.properties` file.

Table 11–2 Data Migrator Connection Property Settings

Property	Description
<code>yfs.migrator.xml.directory</code>	Set the factory defaults entity XML directory as <YANTRA_HOME>/Applications/Foundation/database/FactorySetup/XMLS.
<code>yfs.migrator.error.log.file</code>	Set the name of the migrator error log file. For example, <code>migrator_errors.log</code> .
<code>yfs.migrator.statistics.file</code>	Set the migrator statistics log file name. For example, <code>migrator_statistics.log</code> .
<code>yfs.migrator.log.dir</code>	Specify the directory for the above mentioned log files. For example, <code>C:\SupplyChainAppMigratorLogs</code> .

11.7 Properties for LDAP User Authentication

This section assumes you understand how LDAP servers work. Sterling Commerce also recommends that you read the following documents on LDAP technology:

- W. Yeong, T. Howes, and S. Kille, *RFC 1777 - Lightweight Directory Access Protocol*. March 1995. Available at <http://rfc.sunsite.dk/rfc/rfc1777.html>.

- Mark Wilcox, *Implementing LDAP*. Wrox Press, 1999.

By default, all authentication is performed against the Sterling Supply Chain Applications database. When a user enters a login ID and password, it is validated against the login ID and password that is stored in the database. This requires the administrator of the Sterling Supply Chain Applications system to set up login IDs and passwords for each user.

Alternatively, the Sterling Supply Chain Application Consoles support LDAP-based user authentication. You may choose to use an LDAP server for authentication. When using LDAP, the users, user groups, and access control must be set up in the Sterling Supply Chain Applications system.

Sterling Supply Chain Applications also support password expiration through LDAP. Your custom code for user authentication is interfaced with the Sterling Supply Chain Applications authentication mechanism. If your custom code contains `ExpireInDays` with a numeric value of `<X>`, then a message to reset the password appears in the Sterling Supply Chain Applications home page. If the map contains `ChangePasswordLink` then the message contains a link to the location specified. Clicking on the link opens a new window with the given `ChangePasswordLink`.

Since the various implementations of LDAP, handle password expiration differently a sample `YFSLDAPAuthenticator` is modified to provide an example of one particular implementation. This is located in the `<YANTRA_HOME>/Applications/Foundation/documentation/code_examples` directory.

To set properties for LDAP-based authentication:

1. Install the LDAP server (see the installation instructions from your LDAP server vendor).
2. If a JAAS-compliant provider is used, create a JAAS configuration file with the following lines:

```
LDAP
{
    // refer to the JAAS compliant service provider for the login
    module details.
    <Class Name of the Login Module as specified by the Security
    provider> required
    debug=true;
};
```

3. Specify the LDAP properties described in [Table 11–3, "LDAP-Based Authentication Properties"](#).

4. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Table 11–3 LDAP-Based Authentication Properties

Property	Description
In the yfs.properties file, uncomment and specify:	
yfs.security.authenticator	If the default implementation is used, set this property value to <code>com.yantra.yfs.util.YFSLdapAuthenticator</code> . Note: This property is deprecated.
yfs.security.ldap.factory	If the default implementation is used, this property specifies the LDAP context factory classname as in your LDAP Server configuration. Set this property value to <code>com.sun.jndi.ldap.LdapCtxFactory</code> .
yfs.security.ldap.url	If the default implementation is used, this property specifies the URL used to access your LDAP Server. For example, <code>yfs.security.ldap.url=ldap://MyServer:800.</code>
yfs.security.ldap.o	If the default implementation is used, this property specifies the Sterling Supply Chain Applications organization in your LDAP Server configuration.
yfs.security.ldap.ou	If the default implementation is used, this property specifies the Sterling Supply Chain Applications organizational unit in your LDAP Server configuration.
yfs.jaas.loginmodule	If using JAAS, set this property value to LDAP.
yfs.security.authenticator	If using JASS, set this property value to <code>com.yantra.interop.services.security</code> .
WebLogic startWLS startup file	
-Djava.security.auth.login.config	If you are using JAAS and WebLogic, specify the full path to your JAAS configuration file.
In the Configurator UI	
Configure organizations, organization units, and users.	All users who need to access the Sterling Supply Chain Applications system must be set up under the LDAP server. All Sterling Supply Chain Applications users must belong to the same organizational unit.

11.8 Properties for Logging

Before setting up the logging parameters, ensure that you understand the log4j utility.

For detailed information about this utility, see <http://jakarta.apache.org/log4j>.

To set properties for logging:

1. Copy the `<YANTRA_HOME>/Applications/Foundation/resources/log4jconfig.xml.sample` file and rename it to any appropriate file name.
2. Edit the properties as described in [Table 11–4, "Logging Properties"](#).
3. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Table 11–4 Logging Properties

Property	Description
In the log4j configuration XML File	
<priority> subelement of the <root> element	<p>Specify the level of logging desired. Sterling Commerce recommends that you set the value of this attribute to ERROR.</p> <p>The following are valid values for logging levels:</p> <ul style="list-style-type: none"> • ERRORDTL • ERROR • WARN • INFO • TIMER • SQLDEBUG • DEBUG • VERBOSE
<appender> subelement	<p>At the root level, this attribute specifies the associated name and class attribute. Choose a valid log4j appender class.</p> <p>Each subelement can also specify the layout of the message through the <layout> subelement and can filter for levels through the <filter> subelement.</p> <p>Instead of hardcoding the absolute path for the log file under the appender you plan to use, Sterling Commerce recommends that customers should also use a <code>{LOG_DIRECTORY}</code> parameter in the <code>log4jconfig.xml</code> and invoke the JVM with a <code>-DLOG_DIRECTORY=<application_log_directory>/<logFileName></code> option.</p>
In the yfs.properties File	
log4j.configuration	Specify the path to the log4j XML file. For example, <code>log4j.configuration=/resources/MyLog4J.xml</code> .

Note: You cannot have non-Sterling Supply Chain Applications files (such as log files) in the <YANTRA_HOME> directory or its subdirectories while setting up a fresh installation or upgrading from previous versions of Sterling Supply Chain Applications. It is recommended to have these files in a separate directory outside <YANTRA_HOME>.

11.9 Properties for Integration and Agent Servers

This section describes how to set properties for an integration or agent server. For information on running an integration or agent server, see the *Sterling Supply Chain Applications System Management Guide*.

To set up an integration or a agent server, specify the values as described in [Table 11–5, "Integration and Agent Server Set up Properties"](#). The properties files are located in the <YANTRA_HOME>/Applications/Foundation/resources/ directory and the script files are located in the <YANTRA_HOME>/Applications/Foundation/bin/ directory.

After making changes to the properties files, you must update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Table 11–5 Integration and Agent Server Set up Properties

Property	Description
In the yfs.properties File	
yfs.context.timeout	The default value is 600 seconds. For more information, see the <i>Sterling Supply Chain Applications Performance Management Guide</i> .
yfs.context.reaptime	The default value is 600 seconds. For more information, see the <i>Sterling Supply Chain Applications Performance Management Guide</i> .
In the management.properties file	

Table 11–5 Integration and Agent Server Set up Properties

Property	Description
yfs.remote.pingtime	Set this property to a value equal to the number of seconds after which the integration or agent server polls the Remote Manager for a live connection. The minimum (and default) value is 600 seconds.
yfs.remote.reconnecttime	Set this property to a value equal to the number of seconds before the integration or agent server attempts to reconnect if the initial connection with the Remote Manager fails. The minimum (and default) value is 600 seconds.

In the Configurator UI

Transactions and services	Determines how the integration server processes messages. For details about configuring transactions and services, see the Time-Triggered Transactions Reference in the <i>Sterling Supply Chain Applications Platform Configuration Guide</i> .
---------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Note: Agent servers do not use connection pooling, instead they manage the connections internally using one connection for each thread. The required properties can be set as shown in [Table 11–5](#) on page 109. For more information on the agent server connection properties see *Sterling Supply Chain Applications Performance Management Guide*.

12

Configuring Utilities

Sterling Supply Chain Applications supply sample script files (.sh for UNIX and .cmd for Windows) that you must customize, using the directions provided in this chapter.

This chapter describes all the utilities supplied by Sterling Supply Chain Applications, organized by the order in which you are likely to use them. It describes generic customizations that apply to most or all utilities. Further details specific to each utility are provided throughout the rest of this guide.

This chapter also provides the information required to complete [Step 13](#) indicated on the “[Installation Checklist](#)” on page 6.

To set up the Sterling Supply Chain Applications utility script files:

1. Edit the appropriate utility in the `<YANTRA_HOME>/Applications/Foundation/bin/` directory to specify the following parameters as needed. Note that based on these parameters, the scripts automatically determine the Sterling Supply Chain Applications-required CLASSPATH used by the JVM:
 - YANTRA_HOME - the directory in which Sterling Supply Chain Applications are installed.
 - DB_DRIVER - the fully qualified name of the JAR file containing the JDBC database driver.
 - Add any additional parameters to the CLASSPATH to include any JAR files containing your custom classes.

Note: On UNIX, all utilities within the `<YANTRA_HOME>/Applications/Foundation/bin/` directory must have permissions set to 755.

2. Within the script of any specific utility, add values unique to it as described in this guide.
3. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

12.1 Installation Utilities

Installation utilities enable you to install Sterling Supply Chain Applications. These utilities are present in the `<YANTRA_HOME>/Applications/Foundation/bin` directory. Some of the utilities used for installing the various configurations of Sterling Supply Chain Applications are `"loadDefaults"` and `"dbverify"`.

loadDefaults

This utility loads the standard installation database configuration, known as the "factory defaults". For detailed information, see [Section 12.1.1, "Loading the Sterling Supply Chain Applications Database Factory Defaults"](#) on page 112.

dbverify

This utility verifies the changes between your database setup and the entity XML files. For detailed information, see [Section 12.1.2, "Verifying the Database"](#) on page 115.

12.1.1 Loading the Sterling Supply Chain Applications Database Factory Defaults

When loading the database factory defaults, Sterling Supply Chain Applications use the Data Migrator described in [Section 12.2.1, "Data Migrator"](#) on page 119. To load the Sterling Supply Chain Applications database factory defaults:

1. Ensure that the path to the Java executable is in your system path.
2. Rename the `<YANTRA_HOME>/Applications/Foundation/resources/log4jconfig.xml.sample` file to any file name appropriate for your environment.
3. Rename `<YANTRA_HOME>/Applications/Foundation/resources/migrator.properties.sample` to `migrator.properties`.
4. Edit the `migrator.properties` file and set the following properties:

Figure 12–1 Setting up the Migrator Properties

Property	Description
<code><YFS_HOME></code>	Specify as <code><YANTRA_HOME>/Runtime</code> directory.
<code>yfs.migrator.xml.directoy</code>	Specify as <code><YFS_HOME>/database/FactorySetup/XMLS</code> .
<code>yfs.migrator.log.dir</code>	Specify the full path to the log file directory.

5. Edit the script applicable to your operating system (`<YANTRA_HOME>/Applications/Foundation/bin/loadDefaults.cmd` on Windows) or `<YANTRA_HOME>/Applications/Foundation/bin/loadDefaults.sh` on UNIX and LINUX) and set the following properties:

Figure 12–2 Setting up the loadDefaults Properties

Property	Description
<code><YFS_HOME></code>	Specify as <code><YANTRA_HOME>/Runtime</code> directory.
<code>DB_DRIVER</code>	Specify as the full path to your database driver.
<code>CLASSPATH</code>	Add the <code><YFS_HOME>/extn/yfsdbextn.jar</code> file to this property.

6. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.
7. Load the defaults, using the script applicable to your operating system. From the command line, run the `loadDefaults.sh` on UNIX

and Linux or `loadDefaults.cmd` on Windows and pass the absolute file path to the installer:

```
loadDefaults.sh <YFS_HOME>/database/FactorySetup/install/installer.xml
```

Note: If the factory default installation stops before it is finished, a file name "installer.xml.restart" is created. This file records the location where the installation was stopped, and it is used the next time the factory defaults are installed.

8. If you plan to assign ship nodes based on US region definitions, you can also load US Region Schema defaults to populate the regions tables. To do this, run the `RegionSchema-US.sql` script located in the `<YFS_HOME>/database/FactorySetup/Optional/<database_type>/RegionSchema-US` directory that is applicable to your database.

where `<YFS_HOME>` refers to the `<YANTRA_HOME>/Runtime` directory.

For example, if you are using a SQL Server database, the `RegionSchema-US.sql` script can be found at

```
<YFS_HOME>/database/FactorySetup/Optional/sqlserver/RegionSchema-US
```

For information about configuring organizations and their addresses as well as how to configure region schemas, see the *Sterling Supply Chain Applications Platform Configuration Guide*. For more information about specifying regions when configuring sourcing rules, see the *Sterling Distributed Order Management Configuration Guide*.

9. If you plan to assign ship nodes based on a specific US geography location, you can also load US Zip Code defaults to populate the zip code tables. To do this, run the `US_ZipcodeLocation.sql` script located in the `<YFS_HOME>/database/FactorySetup/Optional/<database_type>/ZipcodeLocation` directory that is applicable to your database.

For example, if you are using a SQL Server database, the `US_ZipcodeLocation.sql` script can be found at

```
<YFS_HOME>/database/FactorySetup/Optional/sqlserver/ZipcodeLocation
```

For information about configuring organizations and their addresses, see the *Sterling Supply Chain Applications Platform Configuration Guide*.

12.1.2 Verifying the Database

Sterling Supply Chain Applications provide a database verification and correction tool to ensure database schema integrity. To set up the Database Verification Tool:

1. Set the following properties in the `dbverify.sh` script (`.cmd` on Windows) located in the `<YANTRA_HOME>/Application/Foundation/bin/` directory:
 - `YFS_HOME` - `<YANTRA_HOME>/Runtime` directory. `<YANTRA_HOME>` refers to the Sterling Supply Chain Applications installation directory.
 - `DB_DRIVER` - Database driver JAR file.
 - `URL` - Database JDBC URL, refer to the `yfs.properties.sample` for the `yfs.dblogin.jdbcurl` property.
 - `JAVA_HOME` - Your JDK installation directory.
2. From the command line, run the `dbverify.sh` script and pass the `userId` and `password` parameters as follows:

```
dbverify.sh <userId> <password>
```

Note: When using Oracle, modify the `yfs.tables.sql` file to reference your newly created tablespaces.

3. If you want to ignore the third-party tables when verifying the database, modify the `dbverify.sh` (or `.cmd` on Windows) script, which is located in the `<YANTRA_HOME>/Applications/Foundation/bin/` folder.

Add the `"-DIgnore3rdPartyTables=Y"` parameter as specified in the below example. The third-party tables are not defined in the Sterling Supply Chain Applications entity XML or extension XML file. For example,

```
%JAVA_HOME%\bin\java -DIgnore3rdPartyTables=Y
```

```
com.yantra.tools.dbverify.DbVerifyCommandLine -b %YFS_HOME% -u
%USERNAME% -p %PASSWD% -d %DRIVER% -url %URL% -g Y -DT
%YFS_HOME%/template/api/YFSDataTypes.xml
```

Note: If you have custom or third-party tables in your database and you receive an exception while running the `dbverify.sh` (or `.cmd` on Windows) script, use this parameter to ignore the custom or third-party tables.

4. If you have enabled the text search feature, edit the `<YANTRA_HOME>/Applications/Foundation/bin/dbverify.sh` (or `.cmd` on Windows) script. Add the `"-DBNAME <database_name>"` parameter as mentioned below. For example

```
%JAVA_HOME%\bin\java com.yantra.tools.dbverify.DbVerifyCommandLine -b
%YFS_HOME% -u %USERNAME% -p %PASSWD% -d %DRIVER% -url %URL% -g Y -DT
%YFS_HOME%/template/api/YFSDataTypes.xml -DBNAME <database_name>
```

where `<database_name>` refers to the name of the database for which text search feature is enabled. The `"-DBNAME"` parameter is required only for MS SQL and DB2 databases.

and add the `"-TSIT"` parameter as mentioned below. For example:

```
%JAVA_HOME%\bin\java com.yantra.tools.dbverify.DbVerifyCommandLine -b
%YFS_HOME% -u %USERNAME% -p %PASSWD% -d %DRIVER% -url %URL% -g Y -DT
%YFS_HOME%/template/api/YFSDataTypes.xml -TSIT <tsindex_type>
```

`<tsindex_type>` refers to the type of text search indices you have created such as `ctxcat` or `context`. The `"-TSIT"` parameter is required only for Oracle database.

Note: If you change the text search index type in Oracle from `ctxcat` to `context` or vice-versa, the updated create and drop SQL scripts can be found in the `Yantra_TextIndexUpdates.sql` file.

5. The differences between the entity XMLs and the database are generated in the form of SQL scripts, which can be run against the

database to rectify the differences. The following scripts are generated:

- `Yantra_Sequence.sql` - This script creates all of the additional sequences that need to be created.

Note: If you are using a SQL Server database, `Yantra_Sequence.sql` is not created when you run the `dbverify` command.

Note: When reducing the size of a column, a comment will be logged in the `Yantra_TableDrops.sql` rather than a `sql` statement in the `Yantra_TableAlters.sql`.

- `Yantra_TableChanges.sql` - This script contains all the table column differences that need to be applied on the database schema. Modify this file to reference your tablespaces.
- `Yantra_TableDrops.sql` - This script removes any extra tables in the database.
- `Yantra_IndexAdds.sql` - This script adds all of the indexes that need to be created in the database. Modify this file to reference your tablespaces.
- `Yantra_IndexDrops.sql` - This script removes any extra indexes in the database.
- `Yantra_TextIndexAdds.sql` - This script adds new text search indexes that need to be created in the database.
- `Yantra_TextIndexDrops.sql` - This script removes text search indexes from the database.
- `Yantra_TextIndexModify.sql` - This script updates the text search indexes in the database.
- `Yantra_TextIndexUpdates.sql` - This script contains all the text search indexes related differences that need to be applied on the database schema.

Note: The `*Drops.sql` scripts indicate extra objects in the database. These extra objects could be custom objects or objects that are dropped as the result of a schema change or an upgrade. Please look through this script carefully.

6. Run the applicable scripts to apply changes to the database. You need to run these scripts in a particular sequence.

Note: The order in which these scripts are run determines their success or failure.

For example, if there is a mismatch in the size of a datatype for a column [varchar2(20) to varchar2(40)] that has an associated index, the DBVerify generates SQL statements for:

- Dropping the Index
- Creating the new Index and
- Changing the size of the datatype for the column

All three SQL statements listed above appear in different `*.sql` files. The appropriate `*.sql` files must be run in a proper order as follows:

- a. Run the `Yantra_IndexDrops.sql` for dropping the index.
- b. Run `Yantra_TableChanges.sql` for altering the size of the datatype for a column.
- c. Run the `Yantra_IndexAdds.sql` for creating a new index.

If the SQL statements are not run in the sequence as mentioned above, it results in script failure.

12.2 Upgrade Utilities

Upgrade utilities enable you to upgrade Sterling Supply Chain Applications. The upgrade-related utilities are described in depth in the *Sterling Supply Chain Applications Upgrade Guides*.

MigrationValidator

For more information see the *Sterling Supply Chain Applications Upgrade Guide*.

migrator

The Data Migrator migrates your data. It has a properties file and takes in an XML file as a option.

12.2.1 Data Migrator

Sterling Supply Chain Applications provide a Data Migrator to ease the aspects of application configuration when loading factory defaults.

The Data Migrator reads in a task definition file which is passed to it as a parameter. These files are located in the

`<YANTRA_HOME>/Applications/Foundation/Migration` subfolders.

12.2.1.1 Data Migrator Task Definition Files

The Sterling Supply Chain Applications installation provides a task definition file that is run by the Data Migrator.

A typical task definition has the following structure:

```
<Task Class="" When="">
<TaskInfo Completed="N">
...Task specific information...
</TaskInfo>
<ChildTasks>
<Task/>
</ChildTasks>
</Task>
```

The important elements and attributes in the task definition file are described in the following sections for informational purposes only. Do not modify the task definition file.

Task Element

The `<Task>` element identifies one task to be processed by the Data Migrator. The attributes of the `<Task>` element are:

- **Class** - Attribute for specifying the name of the Java Class responsible to process this task. While processing this task, the Data Migrator

invokes a pre-defined method in this Class and passes it the TaskInfo element as a parameter to the method. This element can be used by the Class to store and retrieve task-specific information. It is not possible to write your own implementation for this class.

- When - Attribute that sequences a group of related tasks. Valid values are:
 - First - Value that specifies which task to invoke first, before processing any related tasks (defined in the ChildTasks element). If a task defined as First fails, the related tasks defined under ChildTasks are not processed.
 - AfterChildren - Value that specifies a task is to be processed only *after* all tasks defined under ChildTasks have been successfully processed.

TaskInfo Element

The <TaskInfo> element contains task specific information and is dependent on the implementation of the class responsible for the task.

For example, Sterling Supply Chain Applications uses a class called the `XMLMigrator` to load and configure data into tables from XML files. This class stores a list of Entities that it needs to load into the database under the TaskInfo object. This class is used extensively in the task definition files shipped with the software.

ChildTasks Element

The <ChildTasks> element contains a list of tasks that need to be sequenced (either before or after) with respect to the containing task.

12.2.1.2 Data Migrator Restart File

While processing tasks defined in the input file, the Data Migrator periodically writes status information to a restart file in the same directory as the input task definition file. This file enables the Data Migrator to recover from incomplete runs without the need to process all defined tasks again.

If one or more tasks fail, or if the Data Migrator terminates abnormally, this file is used to complete the remaining tasks. In most cases, this file is used just for performance enhancement and individual tasks can be rerun.

It is strongly recommended that you preserve restart files across runs of the Data Migrator.

12.2.1.3 Data Migrator Log Files

Data Migrator data-related errors or warnings are logged in the error file configured in the `log4jconfig.xml` file. These errors usually result from business validation failures or contain instructions about data that the Data Migrator could not automatically process and requires manual correction. All other errors are output to the Sterling Supply Chain Applications log files.

12.3 Development Utilities

Development utilities enable you to customize Sterling Supply Chain Applications to suit your business needs. They are for use while running Sterling Supply Chain Applications in development mode.

Configuration Deployment Tool

The Configuration Deployment Tool enables you to migrate configuration data from your development environment to your production environment. The tool is designed to migrate data modified as part of normal day-to-day operations.

Note that the Configuration Deployment Tool can be used to deploy configuration data that is the result of an upgrade, but it should **not** be used to perform the data upgrade itself.

For more information about the configuration deployment tool, see [Chapter 16, "Deploying Configuration Data"](#).

Transaction Data Truncation Tool

When deploying Sterling Supply Chain Applications to a production environment, you may not want to include all of your transaction data. Sterling Supply Chain Applications provide a utility through which you can generate a script to remove transaction data prior to moving into your production environment.

To truncate transaction data:

1. Create your Sterling Supply Chain Applications Runtime environment. For more information about creating Sterling Supply Chain

Applications Runtime, see [Chapter 13.1, "Creating the Sterling Supply Chain Applications Runtime"](#).

2. Set the <YFS_HOME> environment variable to the generated <YANTRA_HOME>/Runtime directory, where <YANTRA_HOME> is the Sterling Supply Chain Applications installation directory.
3. Set or export the ANT_HOME environment variable to the <YANTRA_HOME>/apache-ant-1.6.5 directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
4. From the <YFS_HOME> directory use the following command appropriate for your database:

For Oracle and SQL Server:

```
ant -f bin/generateTruncateTransactionData.xml
```

For DB2:

```
ant -Ddbtype=DB2 -f bin/generateTruncateTransactionData.xml
```

5. The TruncateTransactionTables.sql script is generated and placed in the current directory.
6. To truncate your transaction data, run the newly generated TruncateTransactionTables.sql script against your database.

12.4 Runtime Utilities

These utilities start processes that run in the background. The setup of these utilities is described in detail in [Chapter 11, "Configuring Properties"](#).

Integration Server

An integration Server is a process that manages asynchronous services, such as messages to and from external systems. You can run the integration server using the <YFS_HOME>/bin/startIntegrationServer script.

The Sterling Supply Chain Applications Integration Server allows Sterling Supply Chain Applications to collaborate with different systems, organizations, and businesses all through a standard, uniform interface to all systems. The Sterling Supply Chain Applications Integration Server

runs in its own Java Virtual Machine (JVM) environment, separate from your application server.

Agent Server

The agent server utility starts processes responsible for processing transactions generated by the time-triggered transactions (agents). You can start multiple instances of an agent server using the `<YFS_HOME>/bin/agentserver.sh <server_name>` script as many times as needed.

Agent Trigger

The trigger agent utility is used for scheduling time-triggered transactions.

You can override the agent criteria attributes only in the Real-time Availability Monitor. The command for triggering the Real-time Availability Monitor with override abilities is:

```
triggeragent.sh <criteriaID> -<AgentCriteriaAttribute>
<OverriddenValue>
```

To enable this override, you should pass the `AgentCriteriaAttribute` and `OverriddenValue` as additional parameters to the java class in the `triggeragent.cmd` (or `.sh`) file as follows:

```
java com.yantra.ycp.agent.server.YCPAgentTrigger -criteria %*
```

Therefore, when you invoke:

```
triggerAgent CustomCriteria -MyOverriddenParam DynamicValue
```

all the values are passed to the java class.

However, do not modify the parameters passed to the java class in the default `triggeragent.cmd` (or `.sh`) file. Make these changes in the file which you have copied and renamed from the `triggeragent.cmd` (or `.sh`). Also, the agent criteria XML code must have the flag `AllowedOverriddenCriteria` set to `Y`.

12.4.1 Setting Up the Classpath for the Runtime utilities:

The CLASSPATH for the `startIntegrationServer`, `agentServer` and `triggerAgent` scripts is:

- **Must** include: log4j-1.2.11.jar, *be.jar, activation.jar, bsf.jar, bsfengines.jar, mail.jar, yantrashared.jar, xalan.jar, xercesImpl.jar, xml-apis.jar, comm.jar, commons-collections-3.1.jar, commons-pool-1.2.jar, yantrautil.jar, NetComponents-1.3.8.jar, and the driver jar file applicable to your database.

Note: Ensure that the yfcbe.jar and ycpbe.jar files are added before the other *.be jars. If you are using the dbextn.jar file, this must be added before the yantrashared.jar file.

- If you are using WebLogic or WebSphere MQ, include their relevant JAR files and patches.
 - If you are using WebLogic with WebSphere MQ JMS, include: weblogic.jar, com.ibm.mq.jar, com.ibm.mqjms.jar, connector.jar, jms.jar, jta.jar, fscontext.jar, providerutil.jar
 - If you are using WebSphere:
 - * WebSphere MQ to include
\$(MQ_HOME)/lib/com.ibm.mqbind.jar
 - * WebSphere MQ and the *IIOP provider* URL, include:
namingclient.jar, runtime.jar, com.ibm.mq.jar, com.ibm.mqjms.jar, connector.jar, jms.jar.
 - * WebSphere MQ and the file provider URL, include:
naming.jar, runtime.jar, messaging.jar, fscontext.jar, providerutil.jar, com.ibm.mq.jar, com.ibm.mqjms.jar, connector.jar, jms.jar, jta.jar
 - * WebSphere classpath to include:
\${WAS_HOME}/lib/naming.jar; \${WAS_HOME}/lib/ras.jar;
\${WAS_HOME}/lib/wsexception.jar;
\${WAS_HOME}/lib/bootstrap.jar;
\${WAS_HOME}/lib/emf.jar; \${WAS_HOME}/lib/ecutils.jar;
\${WAS_HOME}/lib/iwsorb.jar;
\${WAS_HOME}/lib/namingclient.jar;
\${WAS_HOME}/lib/runtime.jar; \${WAS_HOME}/lib/idl.jar;
\${WAS_HOME}/lib/ffdc.jar; \${WAS_HOME}/lib/utils.jar;

```

${WAS_HOME}/properties;
${WAS_HOME}/lib/messaging.jar;
$(WAS_HOME)/lib/j2ee.jar

```

- Must **not** include: *ui.jar.
- If you have developed custom Java classes (user exits, event handlers, and so forth), archive them to a JAR file in the <YANTRA_HOME>/Applications/Foundation/extn/ directory and specify this JAR file.
- If you plan to extend your database, the yfsdbextn.jar should be at the beginning of your CLASSPATH to facilitate the purge agent to purge the custom and hang-off records.
- If the integration or agent server is running on IBM JDK1.5.0.* prepend the xercesImpl.jar, xml-apis.jar, and xalan.jar files to your BOOTCLASSPATH. For example on UNIX, the CLASSPATH is prepended as follows:
 BOOTCLASSPATH="-Xbootclasspath/p:<YFS_HOME>/lib/xercesImpl.jar:<YFS_HOME>/lib/xml-apis.jar:<YFS_HOME>/lib/xalan.jar"
 where <YFS_HOME> refers to the <YANTRA_HOME>/Runtime directory.

12.5 Copying a WMS Node Configuration to a New Node

Sterling Supply Chain Applications enable you to copy the configuration of an existing WMS node to a new WMS node, along with all the participating enterprises of the existing node. This feature also allows the deletion of an existing node, provided it is the current node.

The Rapid Deployment Tool (RDT) feature also enables the onboarding of an enterprise to a node (creating a new participation), or the offboarding of an enterprise from a node (removing an existing participation).

These RDT features may be accessed through the application rules side panel of Sterling Warehouse Management System in the Sterling Supply Chain Applications Configurator.

For more information about copying a WMS Node Configuration to a new Node, or Onboarding and Offboarding an Enterprise, see the *Sterling Warehouse Management System Configuration Guide*.

Creating and Updating the Sterling Supply Chain Applications Runtime

After setting up the property and script files in order for Sterling Supply Chain Applications to run properly, you must create the Sterling Supply Chain Applications Runtime directory (also referred to as <YFS_HOME>). Likewise, after making modifications to the property or script files, you must update the Sterling Supply Chain Applications Runtime directory.

This chapter also provides the information required to complete [Step 14](#) indicated on the “[Installation Checklist](#)” on page 6.

If you are upgrading from a prior release, see the *Sterling Supply Chain Applications Upgrade Guide* that applies to your implementation **before** continuing with the setup of Sterling Supply Chain Applications.

13.1 Creating the Sterling Supply Chain Applications Runtime

After setting the properties files for the first time, you must create the Sterling Supply Chain Applications Runtime directory (also referred to as <YFS_HOME>).

To create the Sterling Supply Chain Applications Runtime, you need to do the following:

1. Set or export the `YANTRA_HOME` environment variable to the Sterling Supply Chain Applications installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems):

```
YANTRA_HOME=<path_to_your_installation_directory>
```

2. Set or export the ANT_OPTS environment variable based on your operating system (set for Windows and export for UNIX or LINUX operating systems) and JVM vendor as follows:

```
ANT_OPTS=-Xmx768m -Xms768m -XX:MaxPermSize=256m for Sun and HP JVMs
```

```
ANT_OPTS=-Xmx768m -Xms768m for IBM and JRockit JVMs
```

```
ANT_OPTS=-Xmx768m -Xms768m -DDisableNativeCopy=Y for Linux (Red Hat Version 4.0)
```

3. Set or export the JAVA_HOME environment variable to the Java installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
4. Set or export the YANTRA_HOME environment variable to the Sterling Supply Chain Applications installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems)
5. Set or export the ANT_HOME environment variable to the <YANTRA_HOME>/apache-ant-1.6.5 directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
6. Run the ant script with the ant target as "merge" from the <YANTRA_HOME>/Applications/Foundation directory. For example,

```
ant -f bin/buildRT.xml merge
```

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications.

Note: You can run the application server against the `/Runtime` directory, but before creating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for your Foundation or PCAs are completed in the Foundation or individual PCA folder in the `<YANTRA_HOME>/Applications` directory. This enables you to recreate the Sterling Supply Chain Applications Runtime without losing your configurations and extensions.

The ant script creates the `<YANTRA_HOME>/Runtime` folder (`<YFS_HOME>`). The ant script merges the individual Foundation and PCA folders and places them in the Runtime directory. During the merging process, the `db-extn` ant target is automatically run. But if you are using the SQL server you must run the `buildXX.xml` file with the `"db-extn-sqlserver"` target from the `<YFS_HOME>/Runtime/bin` folder to create the database extensions. For more information on how to run build targets, see [Section 14.1.1, "Build Targets"](#) on page 134.

Note: Before running the merge ant command again, make sure that you remove the `/Runtime` directory.

13.2 Updating the Sterling Supply Chain Applications Runtime

After you modify properties files, utility configuration files, default xml files, extensions, and so forth in the applicable `<YANTRA_HOME>/Applications/` directory, you must update the Sterling Supply Chain Applications Runtime directory (also referred to as `<YFS_HOME>`).

1. To update the Sterling Supply Chain Applications Runtime after modifications in the `<YANTRA_HOME>/Applications/<Foundation_or_PCA>/bin` directory:

Run the following ant command from the `<YANTRA_HOME>/Applications/Foundation` directory:

```
ant -f bin/buildRT.xml mergebin
```

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications.

This ant script updates the <YFS_HOME>/bin directory.

2. To update the Sterling Supply Chain Applications Runtime after modifications in the <YANTRA_HOME>/Applications/<Foundation_or_PCA>/**resources** directory:

Run the following ant command from the <YANTRA_HOME>/Applications/Foundation directory:

```
ant -f bin/buildRT.xml mergeresources
```

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications.

This ant script updates the <YFS_HOME>/resources directory.

3. To update the Sterling Supply Chain Applications Runtime after modifications in any other <YANTRA_HOME>/Applications/<Foundation_or_PCA>/<**subdirectory**> directory, remove the /Runtime directory and recreate the Sterling Supply Chain Applications Runtime as described in [Section 13.1, "Creating the Sterling Supply Chain Applications Runtime"](#) on page 127.

Deploying Sterling Supply Chain Applications

After configuring Sterling Supply Chain Applications according to your business needs, you must deploy it into production as required by your application server. This chapter describes how to deploy Sterling Supply Chain Applications on WebLogic and WebSphere.

This chapter also provides the information required to complete [Step 14](#), [Step 15](#), and [Step 16](#) indicated on the “[Installation Checklist](#)” on page 6.

If you need to deploy Sterling Supply Chain Applications in a development environment using exploded (non-ear) mode, see the *Sterling Supply Chain Applications Customization Guide*.

Before deployment, be sure that you have applied all concepts that pertain to your environment and have completed the Performance Recommendations Checklist as described in the *Sterling Supply Chain Applications Performance Management Guide*.

Tip: To enable faster loading of a JSP page, pre-compile your JSP files. For information on how to do this, see the JSP Pre-compilation section of the *Sterling Supply Chain Applications Performance Management Guide*.

Note: If you are planning on installing any of the Sterling Supply Chain Applications Packaged Composite Application (PCA), you may want to consider delaying the building of your Enterprise Archive (EAR) until all of your PCAs are installed. Building the EAR now and for each PCA installation will not cause harm, but you will save time if you build your EAR only once after all PCAs are installed.

14.1 Sterling Supply Chain Applications Enterprise Archive Package

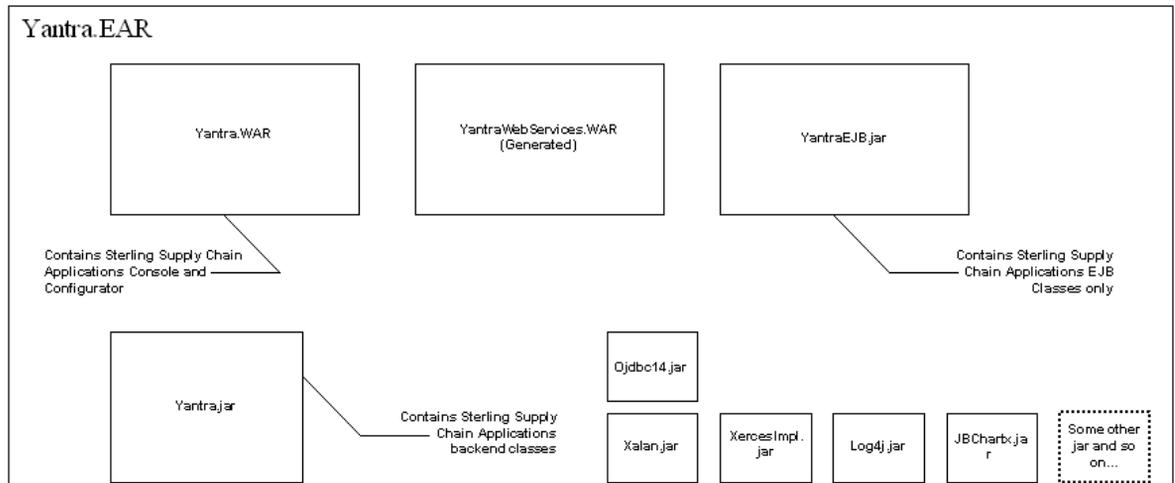
When deploying Sterling Supply Chain Applications on WebLogic or WebSphere, the `yantra.ear` file consists of the following files:

- `yantra.jar` - Application module that contains all of the Sterling Supply Chain Applications Java classes that encapsulate the core business logic.
- `yantra.war` - Web module that contains all of the Sterling Supply Chain Applications JSPs and other web application components.
- `yantrawebseervices.war` - Web module that contains all of the Sterling Supply Chain Applications webservice interface classes.
- `yantraejb.jar` - The EJB module that contains all Sterling Supply Chain Applications EJBs.

Each of the third-party JAR files are left as is and in the manifest of the `yantra.jar` each file is indicated as a dependency. For example, `log4j` files are represented separately as `log4j-1.2.11.jar` with a dependency in `yantra.jar`.

A schematic representation of the Sterling Supply Chain Applications EAR on WebLogic and WebSphere is illustrated in [Figure 14–1, "EAR Package in Sterling Supply Chain Applications"](#):

Figure 14–1 EAR Package in Sterling Supply Chain Applications



The Sterling Supply Chain Applications online help documentation is built as a separate EAR file called `Yantradocs.ear` using the command:

```
ant -f bin/buildXX.xml create-docear, where XX represents the
WebLogic or WebSphere build file.
```

- For WebLogic, use the following command:

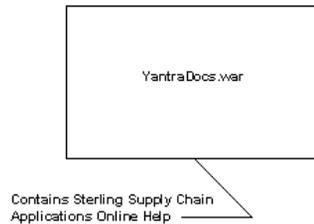
```
ant -f bin/buildWLS.xml create-docear
```
- For Websphere, use the following command:

```
ant -f bin/buildWS.xml create-docear
```

A schematic representation is illustrated in [Figure 14–2, "Sterling Supply Chain Applications Documentation Package"](#):

Figure 14–2 Sterling Supply Chain Applications Documentation Package

Yantradocs.EAR



If you want to make use of the documentation and the online help files associated with Sterling Supply Chain Applications, the Yantradocs.ear should be deployed in all of the same locations where the yantra.ear is deployed.

14.1.1 Build Targets

The build files for deploying Sterling Supply Chain Applications on WebLogic and WebSphere are `buildWLS.xml` and `buildWS.xml` respectively. These files can be accessed from the `<YFS_HOME>/bin` directory. The EAR can be created in the `<YFS_HOME>` directory using the following command:

```
ant -f bin/buildXX.xml create-ear, where XX represents the
WebLogic or WebSphere build file.
```

where `<YFS_HOME>` refers to the `<YANTRA_HOME>/Runtime` directory.

- For Weblogic, use the following command:

```
ant -f bin/buildWLS.xml create-docear
```
- For WebSphere, use the following command:

```
ant -f bin/buildWS.xml create-docear
```

To execute the `buildXX.xml`, the `<YANTRA_HOME>/Applications/Foundation/bin/build.properties` file should be configured with the appropriate application server's lib directory.

Some of the main targets for the build file are represented in [Table 14–1, "Some Targets for Creating an EAR on WebLogic and WebSphere"](#). You can view the list of targets using the following command:

```
ant -f bin/buildXX.xml -projecthelp
```

Table 14–1 *Some Targets for Creating an EAR on WebLogic and WebSphere*

Main Target	Description
create-ear	Creates the Sterling Supply Chain Applications Enterprise Application Archive (EAR) file and the Sterling Supply Chain Applications documentation EAR. This is the default target.
create-docear	Creates Sterling Supply Chain Applications documentation EAR.
create-ejb	Creates the Sterling Supply Chain Applications Enterprise JavaBeans (EJB) jar file.
create-war	Creates the Sterling Supply Chain Applications Web Application Archive (WAR) file.
db-extn	Creates database extensions.
db-extn-sqlserver	Creates database extensions on SQL Server.
webservice-extn	Creates the Sterling Supply Chain Applications webservices extensibility.
servicegen	Instruments the EAR for exposing Sterling Supply Chain Applications EJB as webservices.
update-ear	Updates the Sterling Supply Chain Applications EAR file.
update-docear	Updates the Sterling Supply Chain Applications documentation EAR file.
update-ejb	Updates the Sterling Supply Chain Applications EJB.
update-war	Updates the WAR file.

14.2 Deploying Custom Classes

When deploying Sterling Supply Chain Applications on either WebLogic or WebSphere, if you have developed custom Java classes (user exits, event handlers, and so forth) you need to deploy them in order for them to be available to Sterling Supply Chain Applications at runtime.

To ensure that your custom classes get invoked:

1. Create a JAR file with all your custom classes.
2. Place this JAR file in the
<YANTRA_HOME>/Applications/Foundation/extn/ directory.
3. Include this JAR file as part of the CLASSPATH environment variable in the following scripts:
 - startIntegrationServer.sh
 - agentserver.sh

These classes are automatically included in the `yantra.ear` built for your application server.

14.3 Support for Mixed (Secure and Unsecure) Protocols in the Sterling Supply Chain Application Consoles

Sterling Supply Chain Applications provide an optional filter that can be configured to enforce secure (https) access to certain pages and resources, such as the login page, order detail screens, or almost any other screen in the console. The only limitation is while using JavaScript and this limitation is detailed in [Section 14.3.1, "Configuring and Enabling the Filter"](#). This filter can specify patterns for URLs that need to be secured through the https protocol.

14.3.1 Configuring and Enabling the Filter

To configure the filter, copy the `web.xml` file to your
<YANTRA_HOME>/Applications/Foundation/extn directory and enable the filter by specifying the configuration shown in [Example 14–1, "Enabling the Filter in web.xml File"](#). The default `web.xml` file is located in the
<YANTRA_HOME>/Applications/Foundation/descriptors/weblogic/WAR/WEB-INF directory for WebLogic installations, and the
<YANTRA_HOME>/Applications/Foundation/descriptors/websphere/WAR/WEB-INF/ directory for WebSphere installations.

After making changes to the `web.xml` file, you must update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime,

see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Example 14–1 Enabling the Filter in web.xml File

```

<filter>
  <filter-name>SupplyChainSSLFilter</filter-name>
  <display-name>SupplyChain SSL Filter</display-name>
  <description>This filter will secure certain
  pages</description>
  <filter-class>com.yantra.yfc.ui.backend.filters.YFCSSEFilter</filter-class>
  <init-param>
    <param-name>HTTPListenPort</param-name>
    <param-value>7777</param-value>
  </init-param>
  <init-param>
    <param-name>HTTPSListenPort</param-name>
    <param-value>7778</param-value>
  </init-param>
  <init-param>
    <param-name>SecuredURLPatterns</param-name>
    <param-value>login.jsp;personinfo.detail</param-value>
  </init-param>
  <init-param>
    <param-name>UnsecuredURLPatterns</param-name>
    <param-value>home.detail;order.detail;.search</param-value>
  </init-param>
  <init-param>
    <param-name>UnchangedQueryStringPatterns</param-name>
    <param-value>SaveAction=Y;ID=YADD</param-value>
  </init-param>
  <init-param>
    <param-name>SecuredQueryStringPatterns</param-name>
    <param-value>ID=YOMD140;ID=YOMD141;ID=YOMD143;ID=YOMD146
    ;ID=YOMD150;ID=YPMD010</param-value>
  </init-param>
  <init-param>
    <param-name>UnsecuredQueryStringPatterns</param-name>
    <param-value></param-value>
  </init-param>
</filter>
<filter-mapping>
  <filter-name>YantraSSLFilter</filter-name>

```

```
<url-pattern>/*</url-pattern>
</filter-mapping>
```

For details about the filter element and the `web.xml` file, refer to the Servlet 2.3 specification from Sun Microsystems. The filter should be mapped to intercept all requests to resources in the Sterling Supply Chain Applications. Therefore, the standard filter-mapping element should be configured with a `/*` URL pattern.

The filter takes the following initialization parameters:

Table 14–2 Filter Initialization Parameters

Parameters	Description
HTTPListenPort	If your application is available to users on the standard HTTP port (80), you do not need to specify this parameter. If your web application is available to users on a non-standard port, specify the port being used as this parameter value.
HTTPSListenPort	If your application is available to users on the standard HTTPS port (443), you do not need to specify this parameter. If your web application is available to users on a non-standard port, specify the port being used as this parameter value. Note: If your deployment uses a reverse proxy for load balancing or failover in the application server cluster, these listen ports are the same as the proxy's ports.
SecuredURLPatterns	A semicolon-separated list of patterns that, if matched, would force the use of the HTTPS protocol for accessing the requested resource. This parameter does not accept wild cards or regular expressions like standard servlet URL patterns supported by application servers. The usage of this parameter is Sterling Supply Chain Applications-specific. To evaluate if a URL matches any of the specified parameters, Sterling Supply Chain Applications automatically treat each pattern as a regular expression with wild card characters on either side. For example, a pattern specified as "login" is implicitly evaluated as "*login*". Therefore, <code>/yantra/console/login.jsp</code> matches this pattern as does <code>/yantra/console/extn/myloginpage.jsp</code> . However, if the pattern is specified as "login.jsp", <code>/yantra/console/login.jsp</code> is treated as a match, while <code>/yantra/console/extn/myloginpage.jsp</code> is not.

Table 14–2 Filter Initialization Parameters

Parameters	Description
UnsecuredURLPatterns	A semicolon-separated list of patterns that, if matched, would force the use of the HTTP protocol for accessing the requested resource.
SecuredQueryStringPatterns and UnsecuredQueryStringPatterns	A semicolon-separated list of patterns that match against the query string of the requested resource as opposed to the base URL. The pop-up screens use the <code>CurrentDetailViewID</code> and <code>ActionID</code> in their query strings so they can match specific view IDs. The secured or unsecured query string specifies the IDs that need to use the HTTPS and HTTP protocols respectively. In these cases, you can switch between HTTP & HTTPS.
UnchangedQueryStringPatterns	A semicolon-separated list of patterns that match against the query string of the requested resource. This parameter is used in some cases where you specifically do not want the switch from HTTP to HTTPS to take place. For example, when saving a form, the save should take place over the same channel as the screen itself. If a query string matches one of the specified patterns, the mode does not change from HTTP to HTTPS or vice-versa.

Note: If JavaScript is used to communicate between an HTTP and an HTTPS screen, a runtime error is raised, because the HTTP to HTTPS conversion is not supported along these boundaries.

For example, the address popup cannot be made secure. However, a custom secure popup may still work.

14.3.2 Mechanics of the filter

The filter intercepts requests for Sterling Supply Chain Applications Console resources and validates that the resource is being requested in a secure manner if it is so configured. Additionally, if a resource is configured as unsecured, the filter ensures that the resource is indeed being accessed through HTTP. If the resource is being requested using a protocol other than that determined by the filter, the filter redirects the request to the same resource using the desired protocol. Therefore, by

the configuration depicted in the XML [Example 14–1, "Enabling the Filter in web.xml File"](#) on page 137, if the `login.jsp` page is requested through HTTP, the filter would automatically redirect the browser to a secure version of the page using HTTPS on the `HTTPSListenPort`. After the secure logon is completed successfully, the browser requests the home page using the HTTPS protocol. When the filter gets that request, it determines that the home page is configured to be an unsecured resource and redirects the browser to an unsecured version of the page using the specified `HTTPListenPort`.

This filter is only useful for mixed protocol environments where only a few resources need to be secured. It is not required for deployments where there is no need to mix protocols.

Note: This filter has been tested for the standard Apache/WebLogic and Apache/WebSphere proxies supported by Sterling Supply Chain Applications. It also works for deployments that do not utilize a reverse proxy. While it is expected to handle deployments with most proxy servers, other proxy servers and more complex deployment models with multiple access paths and firewalls may hide actual request URLs from the filter. Therefore, Sterling Commerce recommends that you certify this filter for use in your deployment before using it.

14.3.3 Securing Login Information When Using Mixed Protocols

The Sterling Supply Chain Application Consoles login information is protected when using mixed protocols. However, the Sterling Supply Chain Applications Configurator and Sterling Supply Chain System Management passwords are not secure. Therefore, you should configure these user interfaces to suppress the password prompt.

In order to suppress the password prompt set the `yfs.config.password.noprompt` property in the `<YANTRA_HOME>/Applications/Foundation/resources/yfs.properties`

file to γ . If you then try to use the Configurator and System Management consoles after a session time-out, you are asked to log back in through the Sterling Supply Chain Application Consoles

This property is set to `yfs.config.password.noprompt=N` as a default, or if not specified.

After making changes to the `web.xml` file, you must update the Sterling Supply Chain Applications Runtime. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

14.4 Setting Up Scripts for Creating Sterling Supply Chain Applications EAR

You need to set up certain scripts and classpath in your application server to create the EAR file for Sterling Supply Chain Applications.

- For WebLogic-specific settings see:
 - ["Setting Up the WebLogic Application Server"](#) on page 142,
 - ["Configuring WebLogic for Sterling Supply Chain Applications"](#) on page 146 and
 - ["Setting up WebLogic to Use WebServices"](#) on page 148.
- For WebSphere-specific settings see:
 - ["Preparing WebSphere for Sterling Supply Chain Applications"](#) on page 154,
 - ["Configuring WebSphere JVM Settings"](#) on page 155,
 - ["Configuring a WebSphere Virtual Host for Sterling Supply Chain Applications"](#) on page 156, and
 - ["Setting Up WebSphere to Display Barcodes and Graphs"](#) on page 157.

14.5 Creating Sterling Supply Chain Applications EAR

In order to create the Sterling Supply Chain Applications EAR see the following sections for application server-specific information:

- For creating the EAR on WebLogic, see "[Creating and Deploying the Enterprise Archive on WebLogic](#)" on page 151
- For creating the EAR on WebSphere, see "[Creating the Enterprise Archive on WebSphere](#)" on page 157 and "[Configuring the Enterprise Archive on WebSphere](#)" on page 161.

14.6 Deploying Sterling Supply Chain Applications EAR

The following sections provide indepth information specific to an application server for deploying Sterling Supply Chain Applications:

- For deploying on WebLogic, see "[Creating and Deploying the Enterprise Archive on WebLogic](#)" on page 151.
- For deploying on WebSphere, see "[Deploying the Enterprise Archive in WebSphere](#)" on page 161.

14.7 Deploying Sterling Supply Chain Applications on WebLogic

You can pre-compile the JSPs, using the WebLogic utility `weblogic.appc`. To pre-compile the Sterling Supply Chain Applications JSPs, the Java CLASSPATH of the `weblogic.appc` utility must be the same as the CLASSPATH you used to start the WebLogic server for Sterling Supply Chain Applications.

14.7.1 Setting Up the WebLogic Application Server

If you are using HP-UX 11i v2, verify that your kernel parameters are set according to BEA's recommendations before you set up the WebLogic Application Server. For these recommendations, go to http://e-docs.bea.com/platform/suppconfigs/configs/hpux/hpux_11iv2_92.html

To set up the WebLogic script file:

1. Edit the `startWebLogic.sh` file supplied by BEA as follows:

Table 14–3 WebLogic Script File Properties

Property	Description
YANTRA_HOME	Specify the path to your Sterling Supply Chain Applications installation directory.

Table 14–3 WebLogic Script File Properties

Property	Description
CLASSPATH	<p>Modify this environment variable to include:</p> <ul style="list-style-type: none"> • <code><YANTRA_HOME>/Applications/Foundation/lib/bsf.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/bsfengines.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/ojdbc14.jar</code> (for Oracle) or <code><YANTRA_HOME>/Applications/Foundation/lib/db2jcc.jar</code> and <code>db2jcc_license_cu.jar</code> (for DB2) or <code><YANTRA_HOME>/Applications/Foundation/lib/Opta.jar</code> (for SQL Server) • <code><YANTRA_HOME>/Applications/Foundation/lib/xercesImpl.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/xml-apis.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/xalan.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/commons.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/commons-collections-3.1.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/commons-pool-1.2.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/yfcremote.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/log4j-1.2.11.jar</code> • <code><YANTRA_HOME>/Applications/Foundation/lib/JBCHartX.jar</code> • <code><WEBLOGIC_HOME>/weblogic81/server/lib/weblogic.jar</code> <p>Note: The <code>yfcremote.jar</code> should exist only in the CLASSPATH of the admin server, and not for the managed server. In instances where the admin server and the managed server are the same, the <code>yfcremote.jar</code> must exist in the CLASSPATH.</p>

Table 14–3 WebLogic Script File Properties

Property	Description
JAVA_OPTIONS	<p>Depending on your JVM vendor, specify as follows:</p> <ul style="list-style-type: none"> For IBM, set this value to <code>-Xms512m -Xmx512m</code> For JRockit, set this value to <code>-Xms512m -Xmx512m</code> For HP, set this value to <code>-XX:MaxPermSize=256m -Xms512m -Xmx512m</code> For Sun, set this value to <code>-XX:MaxPermSize=256m -Xms512m -Xmx512m</code> <p>Note: For JRockit, the <code>-Xnoopt</code> argument must be added to avoid a <code>StackOverflowError</code>.</p>
-Dfile.encoding	<p>To ensure that all Sterling Supply Chain Applications UI screens display UTF-8 characters, specify as follows for java commands:</p> <p><code>-Dfile.encoding=UTF-8</code></p> <p>Note: This is applicable to all Sterling Supply Chain Applications java start-up scripts.</p>

- If you are using an HTTPS transport, download the Secure Socket Extension (JSSE) 1.0.3 package from <http://java.sun.com> and add the following files to the `<JAVA_HOME>/jre/lib/extn/` directory:

- `jnet.jar`
- `jcrt.jar`
- `jsse.jar`

14.7.1.1 Preparing Your WebLogic Setup for JNDI Cleanup

The JNDI registry records an entry for each WebLogic application server and each Sterling Supply Chain Applications server that starts up. These entries enable Sterling Supply Chain Applications to manage servers and to broadcast cached data updates to them. When a Sterling Supply Chain Applications server is shut down normally, the corresponding entry in the JNDI registry is removed.

When a Sterling Supply Chain Applications server ends abnormally (or whenever an application server ends) the corresponding entry remains in the JNDI registry, even though it no longer points to a valid running server. These pointers to servers that are no longer running are known

as "stale entries." Stale entries may cause significant slowdown when managing servers through the System Administration Console and when broadcasting cache updates of configuration changes from the Sterling Supply Chain Applications Configurator.

To eliminate stale entries from the JNDI tree, Sterling Supply Chain Applications automatically tries to remove them during the initialization phase of any server start up. On WebLogic, this process can remove active entries as well as stale entries. This behavior may result in conditions ranging from benign (such as an inability to see a server in the System Administration Console) to potentially serious data integrity issues resulting from failed cache updates.

Sterling Supply Chain Applications supply a script that enables you to maintain an accurate JNDI registry, using the following procedure. This script is extremely lightweight and does not require significant resources or separate sizing estimates.

To maintain accurate entries in the JNDI registry:

1. Edit the `<YANTRA_HOME>/Applications/Foundation/resources/management.properties` file and set the `jndi.nocleanup` property to `true`. For example, `jndi.nocleanup=true`.
2. Ensure that the `CLASSPATH` environment variable includes the `weblogic.jar` file.
3. Schedule and run the `<YANTRA_HOME>/Applications/Foundation/bin/jndicleanup.sh` as needed. Sterling Commerce recommends running this script every 30 minutes in your production environment.

14.7.2 Configuring WebLogic for Sterling Supply Chain Applications

You must configure WebLogic to run properly with Sterling Supply Chain Applications.

To configure WebLogic:

1. From the WebLogic Console menu, choose `Services > XML Registries`.
2. Click `New`.

Note: You do *not* need to set an XML registry parameter for UTF-8. This is predefined.

3. Change the Document Builder Factory, SAX Parser Factory, and Transformer Factory to start with "org" instead of "weblogic".
4. Click Next. Select the WebLogic application server or cluster to which you would like to deploy this XML Registry.
5. Click Finish.

14.7.2.1 Disabling Instrumented Stack Traces in WebLogic

You can eliminate additional stack traces resulting from an error on an API call in EJB mode.

To eliminate stack traces:

1. From the WebLogic System Administration Console, select each server on which the Sterling Supply Chain Applications are deployed.
2. Select Logging.
3. Uncheck the checkbox for Instrument Stack Traces and choose Apply.

14.7.2.2 Setting up WebLogic to Display Barcodes and Graphs

Sterling Supply Chain Applications use the X-windows functionality to display barcodes and dynamic graphical images (such as inventory supply & demand graphs) in a UNIX environment.

The following configuration is required to enable the X-windows environment in UNIX systems for WebLogic application server:

1. If your UNIX server is also an X Windows client, edit the `startWebLogic.sh` script, and set the `DISPLAY` environment variable as follows:


```
export DISPLAY=<IP_address_of_XWindows_server>:0.0.
```
2. If you are using UNIX, run the `xhost +` command to remove access control for your X Windows server.

You can run X-server on the same server in which you run Sterling Supply Chain Applications. However, you need to be logged to the server console.

14.7.3 Setting up WebLogic to Use WebServices

You can have Sterling Supply Chain Applications run services as webservices on WebLogic and group APIs and Service Definitions into separate WAR files for load balancing. Each WAR file can be assigned to a different WebLogic server to share the load between multiple servers. This does not, however, provide fault tolerance; if a server is down, the webservices served by that server are no longer available. A single API or Service may be included in multiple WAR files.

To have Sterling Supply Chain Applications run services as webservices on WebLogic:

1. Edit the

`<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml` file to remove any Sterling Supply Chain Applications APIs that you do not want exposed as named webservices and include the Services you want to expose as named webservices. All Sterling Supply Chain Applications APIs are automatically available as webservices by default.

If you plan to have Sterling Supply Chain Applications run services as webservices on WebLogic, you need to copy the

`<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml.sample` file to `<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml` and edit it to include the services you want to expose as named webservices.

In this file you can also name specific Sterling Supply Chain Applications APIs that you want to expose as webservices. To expose only some APIs as webservices, set the `ExposeAllAPIs` attribute value to "N" and specify each API you want to expose in a `Api/Name` attribute. If you want to expose all Sterling Supply Chain Applications APIs as webservices, you can set the `ExposeAllAPIs` attribute value to "Y". If the `ExposeAllAPIs` attribute is set to "Y", all `<Api>` node attributes are ignored.

This file is included by the `buildWLS.xml` file and ultimately included in your Sterling Supply Chain Applications Enterprise Archive (EAR) file. [Table 14–4, "WebServices Properties on WebLogic"](#) describes the properties you can set in the `namedwebservices.xml` file.

Table 14–4 WebServices Properties on WebLogic

Property	Description
ServiceName	The name of the service that you configured using the Sterling Supply Chain Applications Service Builder.
ExposedName	The name that is used in the Web Services Description Language (WSDL) file. This is the name that is used to call the webservice programmatically. When specifying a service name for ExposedName, choose a literal that does not match any of the standard Sterling Supply Chain Applications API names.

2. Generate the `ycpwsbe.jar` file by executing:

```
ant -buildfile bin/buildWLS.xml webservice-extn
```

The `ycpwsbe.jar` file is located in the `<YFS_HOME>/extn` directory.

where `<YFS_HOME>` refers to the `<YANTRA_HOME>/Runtime` directory.

3. Copy the `<YANTRA_HOME>/Applications/Foundation/webservices/weblogic/WEB-INF` directory to a temporary directory, such as `/tmp/WEB-INF`.
4. Edit the `/tmp/WEB-INF/weblogic.xml` file. Change the `context-root` value to your custom name.

This is the Uniform Resource Identifier (URI) that is entered into the browser to call the webservice.
5. Edit the `/tmp/WEB-INF/web-services.xml` file as follows:
 - a. Change the URI attribute of the `web-service` element to match the `context-root` entered in [Step 4](#) (above).
 - b. Remove all APIs and Services from this file that are to be excluded. For example, if the resulting WAR file is to contain only order-related APIs and Services, remove all others from this file.
6. Use `jar` or `Winzip` to create a WAR file with the `/WEB-INF` directory in the pathname.

7. The newly created WAR file should remain in the `<YFS_HOME>/extn` directory.
8. Repeat [Step 3](#) through [Step 7](#) for each WAR file you want to create.
9. Copy the `<YANTRA_HOME>/Applications/Foundation/descriptors/weblogic/EAR/META-INF/application.xml` file to the `<YANTRA_HOME>/Applications/Foundation/extn` directory.
10. Edit the `<YANTRA_HOME>/Applications/Foundation/extn/application.xml` file to add the following element for each WAR file you created:

```
<module> <web> <web-uri>custom war filename from </web-uri>
<context-root>custom webservice name from </context-root> </web> </module>
```
11. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.
12. Create the `yantra.ear` as described in [Section 14.7.4, "Creating and Deploying the Enterprise Archive on WebLogic"](#) on page 151, passing the `create-ear` parameter into the `build.sh` script.

Thus, you can have Sterling Supply Chain Applications run as webservices by following the above mentioned steps.

To expose Sterling Supply Chain Applications EJBs as Webservices:

In WebLogic, you can instrument the EAR to expose Sterling Supply Chain Applications EJBs as webservices using the ANT task, `ServiceGenTask`. You can create the EJBs as webservices using the target `servicegen` in the `buildWLS.xml` located in the `<YFS_HOME>/bin` directory.

Note: The `buildWLS.xml` is setup to ignore the ANT version that ships with WebLogic when running the `servicegen` task and use the ANT version that is specified in [Chapter 2, "System Requirements"](#).

However, the system classpath should be unset in the calling environment. As the properties are read-only in ANT, the classpath cannot be overwritten.

14.7.4 Creating and Deploying the Enterprise Archive on WebLogic

Note: Set the number of file descriptors (`ulimit -n`) for the user creating the EAR to be greater than 8192.

If you are deploying on HP set `ulimit unlimited` for the user creating the EAR to be greater than 8192.

To create a `yantra.ear` file:

1. Set the `YANTRA_HOME` environment variable to the Sterling Supply Chain Applications installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
2. Set the `YFS_HOME` environment variable to the `<YANTRA_HOME>/Runtime` directory.

Note: If you do not define `YFS_HOME`, you may see the error "taskdef class com.yantra.tools.ant.ForEach cannot be found".

3. Set or export the `JAVA_HOME` environment variable to the Java installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
4. Set or export the `ANT_HOME` environment variable to the `<YANTRA_HOME>/apache-ant-1.6.5` directory based on your

operating system (set for Windows and export for UNIX or LINUX operating systems).

5. Make sure `$ANT_HOME/bin` is in the `PATH` environment variable.
6. Set or export the `ANT_OPTS` environment variable based on your operating system set for Windows and export for UNIX or LINUX operating systems) and JVM vendor as follows:

```
ANT_OPTS=-Xmx768m -Xms768m -XX:MaxPermSize=256m for Sun and HP JVMs
```

```
ANT_OPTS=-Xmx768m -Xms768m for IBM and JRockit JVMs
```

7. Ensure that you run all ANT commands mentioned here from the `<YFS_HOME>` directory.

If you are running Sterling Supply Chain Applications services as webservices on WebLogic, run `ant` as follows:

```
ant -buildfile bin/buildWLS.xml webservice-extn
```

where `<YFS_HOME>` refers to the `<YANTRA_HOME>/Runtime` directory.

This creates the webservices JAR file called `ycpwsbe.jar` in the `<YFS_HOME>/extn` directory.

8. If you have extended your database, run the following command from the `<YFS_HOME>`:

```
ant -f bin/buildWLS.xml db-extn
```

Note: If you are running Sterling Supply Chain Applications on SQL Server, then you need to run the `db-extn-sqlserver` target before creating the `yantra.ear` file. To execute the `db-extn-sqlserver` run the following command from `<YFS_HOME>`:

```
ant -f bin/buildWLS.xml db-extn-sqlserver
```

This creates a database extension JAR file in the `<YFS_HOME>/extn` directory. For more information on extending your database, see the *Sterling Supply Chain Applications Customization Guide*.

9. From the `<YFS_HOME>` directory, run the following command:

```
ant -buildfile bin/buildWLS.xml create-ear
```

This creates the `yantra.ear` file in the `<YFS_HOME>/drop/` directory.

Otherwise, if you are **NOT** running Sterling Supply Chain Applications services as webservice on WebLogic, run `ant` as follows:

```
ant -Ddonot-create-webservice=YES -buildfile
bin/buildWLS.xml create-ear
```

10. Deploy your newly created `yantra.ear` file as described in your application server documentation.

14.7.5 Setting Up WebLogic to Use HTTP In-Memory Session Replication

The Sterling Supply Chain Applications support HTTP in-memory session replication on the following configuration:

- WebLogic on HP-UX 11i v2
- Apache 2.0.44 with the WebLogic plug-in as the proxy server with `idempotent` set to OFF

We advise testing session replication if you are using a different proxy.

Note: The `idempotent` flag must be set to OFF. In rare cases, for example when a transaction completes and commits but was unable to post the response to the proxy server, the proxy server could retransmit the transaction. For some update transactions, this could result in duplicate update entries.

The `weblogic.xml` file should be edited to set up WebLogic for in-memory session replication as follows:

1. Copy the `<YANTRA_HOME>/Applications/Foundation/descriptors/weblogic/WAR/WEB-INF/weblogic.xml` file to the `<YANTRA_HOME>/Applications/Foundation/extn` directory.
2. Add the following lines to the `<YFS-HOME>/extn/weblogic.xml` file:

```
<session-descriptor>
  <session-param>
    <param-name>PersistentStoreType</param-name>
    <param-value>replicated</param-value>
```

```
</session-param>  
</session-descriptor>
```

3. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

14.8 Deploying Sterling Supply Chain Applications on WebSphere

In order to deploy Sterling Supply Chain Applications on WebSphere, you need to perform the following tasks:

- Configure options relevant to the WebSphere application server
- Create and deploy a `yantra.ear` file for WebSphere
- Clear the browser and Java Plugin cache on client computers

14.8.1 Preparing WebSphere for Sterling Supply Chain Applications

Before configuring WebSphere, Sterling Commerce recommends that you start the WebSphere administrative server with the following memory parameters:

- `-Xms512 MB` or higher
- `-Xmx512 MB` or higher

To avoid the warning messages regarding direct datasource lookups that occurs at run time:

1. From the WebSphere Administrative Console, expand `Troubleshooting` in the left panel and click on `Logs` and `Trace`.
2. Select each server that hosts Sterling Supply Chain Applications and choose `Change Log Detail Levels` in the `General Properties`.
3. In the `Components` panel, select the class, `com.ibm.ejs.j2c.ConnectionFactoryBuilderImpl`, and specify the log level as `severe`.

14.8.2 Configuring WebSphere JVM Settings

You need to use the WebSphere Administrative Console to specify the JVM settings. These JVM settings must be set on **all** servers in a cluster (if you are using a cluster).

To configure JVM setting on WebSphere:

1. From the WebSphere Administrative Console, select the application server specified for Sterling Supply Chain Applications.
2. For IBM servers with IBM JDK 1.4.2:
 - a. Select Server Infrastructure > Java and Process Management > Process Definition > Environment Entries.
 - b. Choose *New* and specify the following values and then choose OK:

Table 14–5 *WebSphere Properties for JVM Settings*

Name	Value	Description
PSALLOC	early	PSALLOC
NODISCLAIM	true	NODISCLAIM

3. Select Server Infrastructure > Java and Process Management > Process Definition > Java Virtual Machine.
4. In the Java Virtual Machine, edit the CLASSPATH field to include the following:
 - <YANTRA_HOME>/Applications/Foundation/lib/xml-apis.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/xercesImpl.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/xalan.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/bsf.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/bsfengines.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/comm.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/commons-collections-3.1.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/commons-pool-1.2.jar

- Path to your database driver

You must set these properties on EVERY application server that you plan to use. You may choose to set these properties on one server and create other servers using this server as the template. The classpath listed in the bulleted list are contiguous and are separated by a ":". For example,

```
<YANTRA_HOME>:<YANTRA_HOME>/Applications/Foundation/lib/xml-apis.jar.
```

5. Under the Custom Properties section, set the JVM settings to the following values:

Table 14–6 Custom Properties for JVM Settings

Name	Value	Description
client.encoding.override	UTF-8	Enables the use of special characters.

6. Restart the application server to enable these changes to take effect.

14.8.3 Configuring a WebSphere Virtual Host for Sterling Supply Chain Applications

You need to use the WebSphere Administrative Console to specify the server port numbers to configure a virtual host for Sterling Supply Chain Applications.

To configure a virtual host in WebSphere:

1. From the WebSphere Administrative Console, select the application server specified for Sterling Supply Chain Applications.
2. Select Container Settings > Web Container Settings > Web Container Transport Chains.
3. Create a new transport chain. Specify any name of your choice and select the `webContainer` template. Click Next.
4. Specify a port name. Specify `host=*` and specify a port number that corresponds to one of the port numbers configured for the desired virtual host previously created.
5. Confirm the selected details and click `Finish`.

14.8.4 Setting Up WebSphere to Display Barcodes and Graphs

Sterling Supply Chain Applications use the X-windows functionality to display barcodes and dynamic graphical images (such as inventory supply & demand graphs) in a UNIX environment.

The following configuration is required to enable the X-windows environment in UNIX systems for the WebSphere application server:

1. From the WebSphere Administrative Console, go to Servers > Application Server and select the application server specified for Sterling Supply Chain Applications.
2. On the Configuration tab, select Java and Process Management under Server Infrastructure option.
3. Select Process Definition.
4. On the configuration, go to Additional Properties and select Environment Entries.
5. Select New.
6. On the General Properties enter the Name as `DISPLAY` and the value as `<IP_address_of_XWindows_server>:0.0`. Do make sure that the X-Windows accept requests from this client.
7. If you are using UNIX, run the `xhost+` command to remove access control for your X Windows server.

You can run X-server on the same server in which you run Sterling Supply Chain Applications. However, you need to be logged to the server console.

Restart the application server for the `DISPLAY` variable to take effect.

14.8.5 Creating the Enterprise Archive on WebSphere

If you plan to have Sterling Supply Chain Applications run services as webservices on WebSphere, you need to copy the `<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml.sample` file to `<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml` and edit it to include the services you want to expose as named webservices.

In this file you can also name specific Sterling Supply Chain Applications APIs that you want to expose as webservices. To expose only some APIs as webservices, set the `ExposeAllAPIs` attribute value to `N` and specify each API you want to expose in an `Api/Name` attribute. If you want to expose all Sterling Supply Chain Applications APIs as webservices, you can set the `ExposeAllAPIs` attribute value to `Y`. If the `ExposeAllAPIs` attribute is set to `Y`, all `<Api>` node attributes are ignored.

This file is included in the `buildWS.xml` file and ultimately included in the Sterling Supply Chain Applications Enterprise Archive (EAR) file. Therefore, you must edit the attributes of the `namedwebservices.xml` file, as described in [Table 14–7, "WebServices Properties on WebSphere"](#), **before** you create your `yantra.ear` file.

Note: After making modifications to the required files, you must create or update the Sterling Supply Chain Applications Runtime these modifications as instructed in [Section 13.1, "Creating the Sterling Supply Chain Applications Runtime"](#) on page 127. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the `<YANTRA_HOME>/Applications` directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

Table 14–7 WebServices Properties on WebSphere

Property	Description
ServiceName	The name of the service that you configured using the Sterling Supply Chain Applications Service Builder.
ExposedName	The name that is used in the Web Services Description Language (WSDL) file. This is the name that is used to call the webservice programmatically. When specifying a service name for ExposedName, choose a literal that does not match any of the standard Sterling Supply Chain Applications API names.

To expose Sterling Supply Chain Applications EJB's as Webservices:

In WebSphere, you can expose Sterling Supply Chain Applications EJBs as webservices using the ANT task `servicegen` provided in `buildWS.xml` located in the `<YANTRA_HOME>/Applications/Foundation/bin` directory.

You can configure Sterling Supply Chain Applications as webservices by:

1. Renaming the `<YANTRA_HOME>/Applications/Foundation/webservices/namedwebservices.xml.sample` to `namedwebservices.xml`.
2. Editing the XML file to update the exposed names to start with a lowercase letter.
3. Running the following ant targets from `<YFS_HOME>` directory:

```
ant -f bin/buildWS.xml create-ear
ant -f bin/buildWS.xml servicegen
```

However, the system classpath should be unset in the calling environment. As the properties are read-only in ANT, the classpath cannot be overwritten.

To create a yantra.ear file:

1. Set the `YANTRA_HOME` environment variable to your Sterling Supply Chain Applications installation directory.

Note: If you do not define `YANTRA_HOME`, you may see the error "taskdef class com.yantra.tools.ant.ForEach cannot be found".

2. Set or export the `ANT_HOME` environment variable to the `<YANTRA_HOME>/apache-ant-1.6.5` directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).
3. Make sure the `ANT_HOME/bin` directory is included in the `PATH` environment variable. For more information, see the ANT documentation.
4. Set or export the `JAVA_HOME` environment variable to `<WebSphere_Home>/java` where `<WebSphere_Home>` is the WebSphere

installation directory based on your operating system (set for Windows and export for UNIX or LINUX operating systems).

5. Set or export the `ANT_OPTS` environment variable based on your operating system set for Windows and export for UNIX or LINUX operating systems) and JVM vendor as follows:

```
ANT_OPTS=-Xmx768m -Xms768m -XX:MaxPermSize=256m for Sun and HP JVMs
```

```
ANT_OPTS=-Xmx768m -Xms768m for IBM and JRockit JVMs
```

6. Ensure that you run all ANT commands mentioned here from the `<YFS_HOME>` directory. If you are running Sterling Supply Chain Applications services as webservice on WebSphere, run ant from the `<YFS_HOME>` directory as follows:

```
ant -buildfile bin/buildWS.xml webservice-extn
```

This creates the webservice `ycpwsbe.jar` file in `<YFS_HOME>/extn` directory.

7. If you have extended your database, run the following command from the `<YFS_HOME>` directory:

```
ant -f bin/buildWS.xml db-extn
```

Note: If you are running Sterling Supply Chain Applications on SQL Server, then you need to run the `db-extn-sqlserver` target before creating the `yantra.ear` file. To execute the `db-extn-sqlserver` run the following command from `<YFS_HOME>` directory:

```
ant -f bin/buildWS.xml db-extn-sqlserver
```

This creates a database extension JAR file in the `<YFS_HOME>/extn` directory. For more information on extending your database see the *Sterling Supply Chain Applications Customization Guide*.

8. From the `<YFS_HOME>` directory, run the following command:

```
ant -buildfile bin/buildWS.xml create-ear
```

This creates a `yantra.ear` file in the `<YFS_HOME>/drop/` directory.

14.8.6 Configuring the Enterprise Archive on WebSphere

If you are using the DataSource Connection Pooling, perform the following steps:

1. In the `yfs.properties` add the `yfs.datasource.name=jdbc/datasourcename`.
2. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.
3. Configure the DataSource on the WebSphere Application Server. The JNDI Name must be `jdbc/datasourcename`.
4. Test the connection.
5. To avoid the warning messages regarding direct datasource lookups that occurs at run time:
 - a. From the WebSphere Administrative Console, expand Troubleshooting in the left panel and click on Logs and Trace.
 - b. Select each server that hosts Sterling Supply Chain Applications and choose Change Log Detail Levels in the General Properties.
 - c. In the Components panel, select the class, `com.ibm.ejs.j2c.ConnectionFactoryBuilderImpl`, and specify the log level as severe.

14.8.7 Deploying the Enterprise Archive in WebSphere

1. From the WebSphere Administrative Console menu in the left pane, select Applications > Install New Application. The right pane is populated with the specifics for the EAR location.
2. Choose Local File System or Remote File System. Then click the corresponding Browse button and browse to the enterprise archive such as `yantra.ear` or `yantradoc.ear` you want to deploy. Then click Next.
3. Select the Use default virtual host name for Web Modules radio button under Virtual Host and specify your virtual host name. Accept all other defaults and click Next.

4. Check Deploy enterprise beans, and if desired, change the application name. If you are using webservices, check Deploy WebServices and click Next.
5. The Map Modules to Servers screen displays. Select the checkbox next to each desired module (at least two entries YantraEJB and yantra.war should be present). Then click the Cluster/Server in the Cluster and Server pane. Click Apply. The screen refreshes and the server field is updated with the chosen value. Click Next.
6. Specify the following JAR files in the EJB deploy classpath and choose your database version for the DB Type:
 - <YANTRA_HOME>/Applications/Foundation/lib/xercesImpl.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/xml-apis.jar
 - <YANTRA_HOME>/Applications/Foundation/lib/xalan.jarChoose Next.
7. Accept the default JNDI names for the EJB modules on the Provide JNDI Names for Beans screen. Click Next.
8. On the Map Virtual Hosts for Web Modules screen, select your web module and its correct virtual host. Choose Next.
9. The Ensure all Unprotected 2.x Methods screen displays. Click Next.
10. The Provide Options to perform the WebServices Deployment screen displays. Leave them as is and click Next.
11. Choose Finish.
12. If the installation is successful, choose the Save to Master Configuration link.
13. Select the Synchronize changes with Nodes checkbox and click Save.
14. Start your application server by selecting Servers > Application Servers in the left pane. Select the checkbox next to the desired server and click the Start button.
15. Start your application by selecting Applications > Enterprise Applications in the left pane. Select the checkbox next to the application you had just installed and click the Start button.

14.8.8 Application Clients Invoking Sterling Supply Chain Applications EJBs

In order to make EJB calls in Sterling Supply Chain Applications using WebSphere you need to generate EJB stubs and skeletons. The following steps outline the method for creating the JAR files using the `ejbdeploy.sh` script to generate the stubs:

1. Set the `CLASSPATH` to include `xercesImpl.jar`, `xalan.jar`, and `xml-apis.jar` as provided in the `<YANTRA_HOME>/Applications/Foundation/lib` directory.
2. Invoke `ejbdeploy.sh` from the `<WebSphere_Home>/bin` directory with the following three arguments:
 - a. Specify the full path to the `yantra.jar` file in `<YANTRA_HOME>/drop` directory.
 - b. Specify the temporary directory that is used for the EJB deployment.
 - c. Specify the full path to the desired output file, for example `yantra_ejbstubs.jar`.

Additionally set the classpath on the `ejbdeploy.sh` command line following the `-cp` argument. For example:

```
$<WebSphere_Home>/bin/ejbdeploy.sh <YANTRA_HOME>/drop/yantraejb.jar
<WebSphere_Home>/temp <YANTRA_HOME>/drop/yantra_ejbstubs.jar -cp $CLASSPATH
```

The resulting output file `yantra_ejbstubs.jar`, is to be used by the client applications calling the EJBs.

14.9 Setting the Client Character Display

When displaying special characters, such as for various languages, the client computer must be configured to display these characters.

In order for Unicode characters to display correctly in the Sterling Supply Chain Application Consoles, each Windows client must be configured. To configure a client machine select Control Panel > Display > Appearance.

14.10 Clearing Browser and Java Plugin Caches

Once Sterling Supply Chain Applications are ready for deployment, each user must clear the browser and Java Plugin caches on their client machines before launching Sterling Supply Chain Applications.

To clear the browser cache:

1. From the Windows start menu, select Settings > Control Panel > Internet Options. Choose the General tab, and in the Temporary Internet Files inner panel, choose the Delete Files button. The Delete Files dialog displays.
2. Enable the Delete All Offline Content option. Then choose OK, and choose OK once more.
3. Close the Internet Properties window.

To clear the Java plugin cache:

1. From the Windows start menu, select Settings > Control Panel > Java Plugin. Choose the Cache tab.
2. Choose the Clear JAR Cache button then choose OK.
3. Close the Java Plugin Control Panel window.

14.11 Verifying Your Sterling Supply Chain Applications Deployment

To verify the Sterling Supply Chain Applications installation:

1. Restart your application server.
2. Start Internet Explorer.
3. Access `http://<hostname>:<port>/yantra/console/login.jsp`.
4. When prompted for a Login ID and Password, enter "admin" for Login ID and "password" for Password. If the Sterling Supply Chain Applications Administrator's home page is not displayed, contact Sterling Supply Chain Applications Technical Support Services at 1-877-926-8727 or <http://sterlingcommerce.com/Products/Customer>.

14.12 Statistics Monitoring

In order to measure throughput performance, runtime statistics can be gathered. Note that this feature and the data gathered by it in the `YFS_STATISTICS_DETAILS` table is only for the use of Sterling Commerce personnel, as any metrics can change without notice.

In a production environment, you should leave statistics generation enabled to collect statistics data in 10 minute intervals (the default). You should also schedule statistics purges on a regular basis (for example, every two weeks).

15

Deploying and Updating the Sterling Rich Client Applications

This chapter explains how to deploy and update the Sterling Rich Client applications such as Sterling COM PCA (Packaged Composite Application) in different geographical locations.

This chapter also provides the information required to complete [Step 18](#) indicated on the “Installation Checklist” on page 6.

15.1 Before You Begin

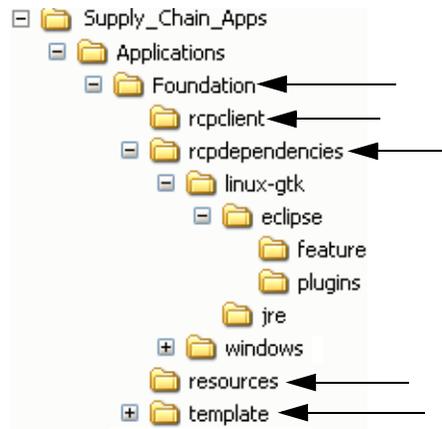
Before you start deploying a Sterling Rich Client application you must have installed Sterling Supply Chain Applications. For more information about installing Sterling Supply Chain Applications, see [Chapter 5, "Installing Sterling Supply Chain Applications"](#).

What is available when Sterling Supply Chain Applications are installed?

The components that are shipped as part of foundation or platform are:

- RCP Infrastructure plug-in's zip file
- RCP Foundation plug-in's zip file
- JREs for each of the supported operating systems. For more information about supported JREs and operating systems, see [Chapter 2, "System Requirements"](#).
- Eclipse dependencies for each of the supported operating systems

After you install Sterling Supply Chain Applications, you can view the directory structure as shown:



The directory structure contains:

- The `Foundation` folder—This contains Sterling RCP (Rich Client Platform) files, plug-ins, or JREs.
- The `rcpclient` folder—This contains Sterling RCP plug-in zip file and Sterling RCP tools plug-in zip file.
- The `rcpdependencies` folder—This contains dependency directories for the supported operating systems. For example, `linux-gtk`, `windows`, and so forth. Each of these directories will contain the supported JREs and Eclipse plug-ins, features, or files. Also, each of these directories contain the `osversion.properties` text file which provides information about the supported versions of the operating system.
- The `template` folder—This contains API XML templates used by the Sterling RCP.
- The `resources` folder—This contains the `yfs.properties.sample` properties file. This file is used when enabling auto updates for the individual PCA. For more information about enabling auto updates, see [Section 15.2.5, "Applying Updates"](#) on page 174.

What is available when a Sterling RCP based PCA is installed?

- When you install a Sterling RCP based PCA client, a zip file that contains the Sterling Rich Client application plug-ins or features is

provided. For example, when you install the Sterling COM PCA application, under the Applications directory, the COM directory gets created. Under this directory, the `rcpclient` folder gets created. This directory contains the `com.zip` file, which contains the Sterling COM PCA specific plug-ins or features.

15.2 Deploying Sterling Rich Client Application

Deploying Sterling Rich Client application involves:

- [Creating the RCP_EXTN_FOLDER Folder](#)
- [Configuring Locations](#)
- [Localizing Bundle and Theme Files](#)
- [Enabling HTTPS](#)
- [Applying Updates](#)
- [Creating or Updating the Sterling Supply Chain Applications Runtime](#)
- [Running the Ant Script](#)

15.2.1 Creating the RCP_EXTN_FOLDER Folder

To maintain all SSL certificates, new plug-ins and new resource files that you created while extending Sterling RCP based PCA client application, you must create a `<RCP_EXTN_FOLDER>` folder.

The `<RCP_EXTN_FOLDER>` folder structure is better explained with an example as follows:

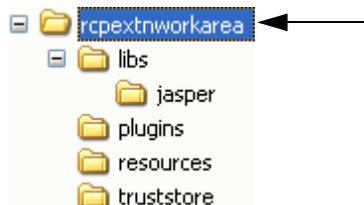
1. Create an appropriate `<RCP_EXTN_FOLDER>` folder for storing the RCP extensions that you create when extending the Sterling RCP-based PCA client application. For example, `rcpextnworkarea` folder.

Note: You can create the `<RCP_EXTN_FOLDER>` folder in any directory outside the `<YANTRA_HOME>` directory.

2. Under the `<RCP_EXTN_FOLDER>` folder, create the following directories as illustrated in [Figure 15–1, "Sample <RCP_EXTN_FOLDER> Folder Structure"](#):
 - `plugins`

- resources
- truststore
- libs

Figure 15–1 Sample <RCP_EXTN_FOLDER> Folder Structure



3. In the <RCP_EXTN_FOLDER>/plugins directory, store all new plug-ins that you created for extending the screens.
4. In the <RCP_EXTN_FOLDER>/resources directory, store the locations.ycfg file, secureapis.xml file (if necessary), localized bundle and theme files, and localized icons. The ant script creates the resources.jar file and copies the contents of the resources folder into this jar file. After copying the contents, the resources.jar file is copied into the Sterling RCP plug-in.
5. In the <RCP_EXTN_FOLDER>/truststore directory, store the SSL trust certificates that needs to be used when the client application is communicating with the server in secure mode. The SSL certificates are automatically copied by the ant script to the correct folder in the Sterling RCP plug-in.
6. Create the jasper folder within the <RCP_EXTN_FOLDER>/libs directory.
7. Copy the following jasper libs needed for JasperReports to the <RCP_EXTN_FOLDER>/libs/jasper folder:
 - commons-beanutils-1.5.jar
 - commons-collections-2.1.jar
 - commons-digester-1.7.jar
 - commons-logging-1.0.2.jar
 - itext-1.3.1.jar
 - jasperreports-1.2.0.jar

- `jdt-compiler.jar`
- `jr-groovy-compiler.jar`

To download these Jasper libs, see the `<YANTRA_HOME>/Applications/Foundation/documentation/code_examples/jasperreports/readme.html` file.

where `<RCP_EXTN_FOLDER>` refers to the folder that you created in [Step 1](#) for storing the Sterling RCP-based PCA client application extensions.

15.2.2 Configuring Locations

A location is synonymous to a geographic location. For example, store location, call center location, and so forth. Each location has an identifier associated with it, which uniquely identifies the appropriate geographical location.

To configure locations, you must define locations in the `locations.ycfg` file. By default, the `locations.ycfg.sample` file is shipped by the Sterling RCP. You can locate this file in the Sterling RCP plug-in directory. The directory structure where the `locations.ycfg.sample` file is stored is shown below:

```
<YANTRA_HOME>/Applications/Foundation/rcpclient/com.yantra.yfc
.rcp_<version>
```

To configure locations, you can either create a new `locations.ycfg` XML file or modify the existing `locations.ycfg.sample` XML file.

15.2.2.1 Creating and Configuring a New `locations.ycfg` XML File

To configure a new `locations.ycfg` file:

1. Create the `locations.ycfg` XML file and store it in the `<RCP_EXTN_FOLDER>/resource` directory.

where `<RCP_EXTN_FOLDER>` refers to the folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating `<RCP_EXTN_FOLDER>` folder, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

2. Define new locations in the `locations.ycfg` file by using the information provided in the `locations.ycfg.sample` file, which

contains proxy server and application server URL settings for various geographical locations.

A sample configuration data from the `locations.ycfg.sample` file is given below:

```
<?xml version="1.0" encoding="UTF-8"?>
<Locations>
  <Location id = "DEFAULT"
    proxyServer="yourproxyserver.com"
    proxyPort="8080"
    updateType ="pull">
    <Config Name = "DEFAULT"
      Protocol = "http"
      BaseUrl = "localhost"
      PortNumber = "7001"
      ApiUrl = "/Yantra/RcpServlet"
      CompressionEnabled = "N"
    </Config>
  </Location>
  <Location id = "REMOTE"
    proxyServer="yourproxyserver.com"
    proxyPort="8080"
    updateType ="client">
    <Config Name = "IMAGE"
      Protocol = "http"
      BaseUrl = "localhost"
      PortNumber = "7001"
      ApiUrl = "/icons/rcp/$param1$.gif"
      CompressionEnabled = "N"
    </Config>
  </Location>
</Locations>
```

3. Define the Locations root element.
4. Define the Location element under the Locations root element with id such as DEFAULT, LOCAL, REMOTE, and so forth. You can configure the proxy server and application server URL settings for each location.

Note: You must have one Location element with `id` attribute value as "DEFAULT" and this Location element must have Config element whose `Name` attribute should have the value as "DEFAULT".

When you log in to a Sterling Rich Client application using a particular location, the system checks whether or not loaded location has a "DEFAULT" Config element defined for it. If the selected location has "DEFAULT" Config element, the system loads the "DEFAULT" configuration. Otherwise the system loads the "DEFAULT" configuration defined in the "DEFAULT" location.

For more information about location configuration settings, see [Section 15.3, "Location Configuration Settings"](#) on page 179.

15.2.2.2 Modifying the `locations.ycfg.sample` XML File

To modify the `locations.ycfg.sample` file:

1. Copy the `<YANTRA_HOME>/Applications/foundation/rcpclient/com.yantra.yfc.rcp_<version>/locations.ycfg.sample` file and store it in the `<RCP_EXTN_FOLDER>/resource` directory.

where `<RCP_EXTN_FOLDER>` refers to the folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating `<RCP_EXTN_FOLDER>` folder, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

2. Rename the `locations.ycfg.sample` file to `locations.ycfg` file.
3. Modify the location configurations settings as needed. For information about location configuration settings, see [Section 15.3, "Location Configuration Settings"](#) on page 179.

15.2.3 Localizing Bundle and Theme Files

You can localize the Sterling Rich Client application's locale-specific files based on the user's locale. The Sterling RCP supports the bundle and theme locale-specific files. All Sterling Rich Client application plug-ins contain the `<Plug-in_id>_<name>.properties` bundle file and

`<Plug-in_id>_<theme_name>.yhtm` theme file. For more information about localizing bundle and theme files, see the *Sterling Supply Chain Applications Localization Guide*.

15.2.4 Enabling HTTPS

If you are using the HTTPS connection to communicate with the application server, copy all SSL (Secure Socket Layer) certificates in the `truststore` directory. For more information about the `truststore` directory, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

For more information about configuring connection settings for HTTPS connection, see [Section 15.4.2, "Configuring Connection Settings for HTTPS connection"](#) on page 186.

For a HTTP connection, you can also make selective SSL calls for some sensitive APIs. For more information about configuring connection settings for making selective SSL calls, see [Section 15.4.3, "Configuring Connection Settings for Making Selective SSL Calls"](#) on page 187.

15.2.5 Applying Updates

The Sterling RCP's update process is based on the timestamp of the files. In the `yfs.properties` file, the `yfs.rcp.pca.updates.dir` property points to the directory where updates for the PCAs are located. The `yfs.rcp.pca.updates.cache.dir` property points to the local directory on the application server where updates for the PCAs can be cached.

To deploy updates for the Sterling Rich Client application on a client:

1. Modify the

`<YANTRA_HOME>/Applications/Foundation/resources/yfs.properties` file to configure the following properties:

- Configure the `yfs.rcp.pca.updates.dir` property by specifying the path of the directory where updates for the PCAs are located. The directory that you specify can also be a shared directory on the network. For example, `yfs.rcp.pca.updates.dir = <YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>`

where `yfs.rcp.pca.updates.dir` is the property, `<YANTRA_HOME>` is the directory where you have installed Sterling Supply Chain Applications, and `<PCA_UPDATES_DIR>` is the directory, which

contains individual updates folder for each Sterling Supply Chain Applications PCA.

For example, if the root folder for PCA updates is maintained in the `<YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>` directory, and for Sterling COM PCA, if the application identifier is `YFSSYS00011`, PCA code is `com20`, and operating system configuration is `win32.win32.x86`, the client searches for updates based on the application ID, PCA code, and operating system configuration. The Sterling COM PCA updates are maintained in the

`<YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>/YFSSYS00011/com20/win32.win32.x86` directory.

where `"C:\Supply_Chain_Apps\pcaupdates"` is the value specified in the `yfs.rcp.pca.updates.dir` property.

You can find the following resources in this directory:

- Sterling RCP client plug-in
- Sterling COM PCA and related plug-ins
- Eclipse related plug-ins

Note: The JRE files are not updated.

- Configure the `yfs.pca.update.cache.dir` property by specifying the path of the local directory on the application server where updates for PCAs need to be cached. For example, `yfs.pca.update.cache.dir = <YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>/<UPDATES_CACHE_DIR>`

Note: Make sure that the directory specified in the `yfs.rcp.pca.updates.dir` property is different from the directory specified in the `yfs.pca.update.cache.dir` property.

2. Modify the `locations.ycfg` file to define the type of update you want to deploy on the client in the `updateType` attribute of the `Location` element. The Sterling RCP supports two methods of deploying

updates on the client: Client Pull and Push Updates. For more information about the different types of updates that the Sterling RCP supports, see [Section 15.2.5.1, "Type of Updates"](#) on page 176.

15.2.5.1 Type of Updates

The Sterling RCP's update process is based on the timestamp of files. The Sterling RCP supports two methods of deploying updates for a Rich Client application on the client:

- **Client Pull or Automatic Update**—Client Pull is the automatic way of deploying updates on the client. In this type of update, when a user logs in to an Sterling Rich Client application, based on the location configuration settings, the client application automatically starts searching for updates in a background thread and installs them. Once all updates are downloaded successfully and installed, the user is authorized to restart the application.
- **Push Updates or Manual Update**—Push Updates is the manual way of deploying updates on the client. If you want to use push updates option, copy the contents of the update directory based on the client application which you want to update to the client machine. For example, if you have specified the update directory as:
<YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>, copy the contents from the following directory to the client machine.

```
<YANTRA_HOME>/Applications/<PCA_UPDATES_DIR>/<PCA_APPLICATION_ID>/<PCA_APPLICATION_VERSION>/<OS_CONFIG>
```

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications. <PCA_UPDATES_DIR> is the directory where updates are located, <PCA_APPLICATION_ID> is the identifier of the client application for which you want to deploy updates using the Push Update method, <PCA_APPLICATION_VERSION> is the version number of the client application, and <OS_CONFIG> refers to the <Windowing_System>.<OS>.<OS_ARCH> operating system.

15.2.6 Creating or Updating the Sterling Supply Chain Applications Runtime

After making modifications to the required files, you must create or update the Sterling Supply Chain Applications runtime. For more

information about creating Sterling Supply Chain Applications runtime, see the *Sterling Supply Chain Applications Installation Guide*. Before creating or updating the Sterling Supply Chain Applications Runtime, make sure that all the configurations and extensions for the Foundation or PCAs are completed in the Foundation or individual PCA folder in the <YANTRA_HOME>/Applications directory. This enables you to recreate the Sterling Supply Chain Applications runtime without losing your configurations and extensions.

15.2.7 Running the Ant Script

Run the application-specific ant script with the appropriate ant target as needed. The ant script is provided by the appropriate Sterling Rich Client application. For example, if you want to deploy the Sterling COM PCA, run the `buildcomapplication.xml` file.

The ant file contains multiple ant targets to generate the deployable folder for all unique combinations of the Operating System and Application such as `buildCOMForWindows`, `buildCOMForLinuxGTK`, `buildSOPForWindows`, and so forth.

For example, if you want to deploy the Sterling COM PCA on Windows, run the following ant script from the <YFS_HOME> directory with an ant target:

```
ant -f bin/buildcomapplication.xml buildCOMForWindows
```

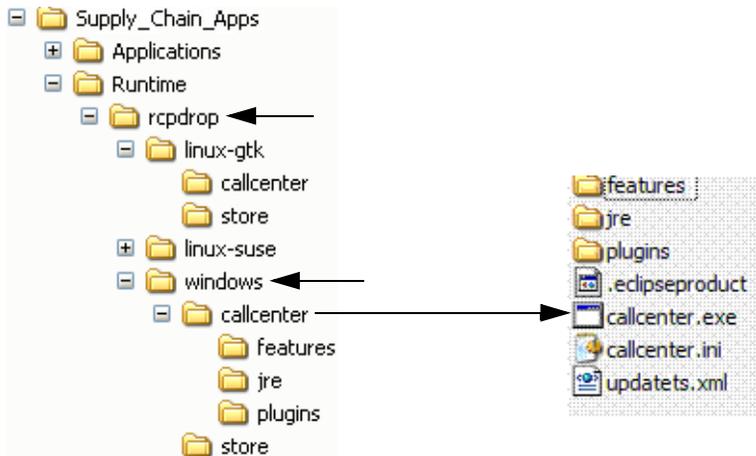
where <YFS_HOME> refers to the <YANTRA_HOME>/Runtime directory.

Note: For this ant script to run, you need following arguments or variables:

- `<YANTRA_HOME>`—name of the folder where Sterling Supply Chain Applications are installed.
- `<RCP_EXTN_FOLDER>`—specify the name of the `<RCP_EXTN_FOLDER>` folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating `<RCP_EXTN_FOLDER>` folder. see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

After you run this ant script runtime the following resources or directory structure is created or generated for the call center application:

Figure 15–2 Sample Directory Structure for Call Center Application



- The `rcpdrop` folder is created within the `<YANTRA_HOME>/Runtime` directory.

where `<YANTRA_HOME>` refers to the directory where you have installed the Sterling Supply Chain Applications.

- Based on the ant target that you specified, when you run the ant script, a folder for the operating system is created. For example, the `windows` folder is created if you specify `buildCOMForWindows` as the

ant target to deploy the Sterling COM PCA on the windows operating system.

- Under the windows folder, the application folder is created. For example, com.

The com folder contains the required files and resources for the application that are to be built. These resources are accumulated from the following folders:

- <YANTRA_HOME>/Applications/Foundation/rcpclient/
- <YANTRA_HOME>/Applications/Foundation/rcpdependencies/windows
- <YANTRA_HOME>/Applications/COM/rcpclient
- <RCP_EXTN_FOLDER>

where <YANTRA_HOME> refers to the directory where you have installed the Sterling Supply Chain Applications. <RCP_EXTN_FOLDER> refers to the folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating <RCP_EXTN_FOLDER> folder, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

- Also the updatets.xml file is created which is used by the Sterling RCP to check for auto updates.

The updatets.xml file contains a list of files that are present in the application. It also includes the timestamp for these files.

Note: The updatets.xml file is automatically generated by the ant script provided with Sterling Supply Chain Applications for building a PCA Application.

15.3 Location Configuration Settings

Location configurations are defined in the locations.ycfg file. You can set different preferences for each location.

To define a new location configuration:

1. Set the attributes of the Location element. For Location element attributes and their descriptions, see [Section 15–1, "Location Element Attribute List"](#).

Table 15–1 Location Element Attribute List

Attribute	Description
id	Specify a unique identifier for the geographical location. For example, DEFAULT, REMOTE, LOCAL, and so forth.
proxyServer	Specify the unique proxy server used to connect to the internet, if applicable.
proxyPort	Specify the port number of the proxy server.
updateType	Set this attribute only when you are updating an Sterling Rich Client application. Specify the mode of update you want to perform, if applicable. Valid update modes are: pull and push. For more information about update modes, see Section 15.2.5, "Applying Updates" on page 174.

2. Define a Config element under the Location element to configure the connection settings. Each location has multiple Config elements. For example, DEFAULT, IMAGE_SMALL, IMAGE_BIG, and so forth. Using the Config element, define the various configuration settings. Set all attributes of the Config element to specify the application server URL you want to use. For more information about configuring connection settings, see [Section 15.4, "Configuring Connection Settings"](#) on page 181.

Note: You must have one Location element with `id` attribute value as "DEFAULT" and this Location element must have Config element whose `Name` attribute should have the value as "DEFAULT".

When you log onto a Sterling Rich Client application using a particular location, the system checks whether or not loaded location has a "DEFAULT" Config element defined for it. If the selected location has "DEFAULT" Config element, the system loads the "DEFAULT" configuration. Otherwise the system loads the "DEFAULT" configuration defined in the "DEFAULT" location.

A sample configuration data used to define a location configuration is as follows:

```

<Location id = "DEFAULT"
    proxyServer="proxy.yantra.com"
    proxyPort="8080">
    <Config Name = "DEFAULT"
        Protocol = "http"
        BaseUrl = "localhost"
        PortNumber = "7001"
        ApiUrl = "/Yantra/RcpServlet"
        CompressionEnabled = "N"
    </Config>
</Location>

```

When you start the Sterling Rich Client application, the system reads the `locations.ycfg` file and loads the location information available in this file.

When you start the application for the first time, the Location Preferences window displays.

1. Select a location from the drop-down list.
2. Configure the proxy server settings, if applicable.

Based on the location preferences, you will be logged in to the application.

15.4 Configuring Connection Settings

To connect to the application server, you must configure the Sterling Rich Client application. In the `locations.ycfg` file, set the protocol, base URL, port number, API URL, and other attributes of the Config element. For Config element attributes, see [Table 15–2, "Config Element Attribute List"](#). You can configure the connection settings for fetching images from the server or connecting to HTTPS.

Table 15–2 Config Element Attribute List

Attribute	Description
Name	Specify a unique name for the server configuration. For example, LOCAL, DEFAULT, and so forth.
Protocol	Specify the name of the protocol to use to communicate with the application server. For example, http or https. For more information about configuring connection settings for HTTPS protocol, see Section 15.4.2, "Configuring Connection Settings for HTTPS connection" on page 186.
BaseUrl	Specify the base URL path of the application server. For example localhost or 10.11.25.80 or www.myserver.com.
PortNumber	Specify the port number based on the protocol you specified. For example, 7001 or 7002.
HttpsPortNumber	(Optional) Specify the port number you want to use to make selective SSL calls for an HTTP connection. For example, 7008. For more information about configuring connection settings for making selective SSL calls, see Section 15.4.3, "Configuring Connection Settings for Making Selective SSL Calls" on page 187.
ApiUrl	Specify the URL path of the application server where all APIs are stored. For example, /Yantra/RCPServlet. If you want to display images from the server, the URL path must contain \$param1\$ parameter. For more information about configuring connection settings for fetching images from the server, see Section 15.4.1, "Configuring Connection Settings for Fetching Images from the Server" on page 183.
CompressionEnabled	If the data received from the server is in the compressed format, set the CompressionEnabled attribute to "Y". The Sterling RCP supports only Gzip compression format. For more information about the supported compression format, see Section 15.7, "Compression in Sterling Rich Client Platform" on page 189.

A sample configuration data used to configure a server is as follows:

```
<Config Name = "DEFAULT"
      Protocol = "http"
```

```

        baseUrl = "localhost"
        portNumber = "7001"
        apiUrl = "/Yantra/RcpServlet"
        compressionEnabled = "Y"
    </Config>
    <Config Name = "LOCAL"
        Protocol = "http"
        baseUrl = "localhost"
        portNumber = "7001"
        httpsPortNumber = "7002"
        apiUrl = "/Yantra/RcpServlet"
        compressionEnabled = "N"
    </Config>

```

Note: You must have one location element with `id` attribute value as "DEFAULT". This location element must have Config element with Name attribute value as "DEFAULT", which defines the DEFAULT URL for the connecting to the application server.

The Sterling Rich Client application is initially launched by connecting to the server specified in the "DEFAULT" URL. You can define the URL at each command level, if applicable. If the command element in the `<Plug-in_id>_commands.ycm1` file is not associated with the URL, the system considers the "DEFAULT" URL for that command.

15.4.1 Configuring Connection Settings for Fetching Images from the Server

You can configure the connection settings to fetch images from the server by setting the protocol, base URL, port number, API URL, and other attributes of the Config element in the `locations.ycfg` file. For Config element attributes, see [Table 15–3, "Config Element Attribute List"](#). You can create more than one configurations to display different types of images.

Table 15–3 Config Element Attribute List

Attribute	Description
Name	Specify a unique name for the server configuration.
Protocol	Specify the name of the protocol to use to communicate with the application server. For example, http or https.
BaseUrl	Specify the base URL path of the server. For example localhost, 10.11.25.80, or www.myserver.com.
PortNumber	Specify the port number based on the protocol that you have specified. For example, 80.
ApiUrl	Specify the URL path of the server where all the images are stored. The URL path must contain \$param1\$ parameter. For example, /icons/rcp/\$param1\$.gif.
DefaultApiUrl	Specify the URL path of the image that displays if the image specified in the ApiUrl is not found, if applicable. For example. /icons/rcp/404.jpeg.

Note: You can create the following server configurations to fetch images of different types such as GIF, JPEG, PNG, and so forth:

- IMAGE
- IMAGE_SMALL
- IMAGE_MEDIUM
- IMAGE_BIG

Each location must have a server configuration named "IMAGE" which defines the URL for fetching images from the server. You can configure the "IMAGE" URL to get images of type GIF, JPEG, PNG, and so forth. All other server configurations are optional.

The sample configuration data that is used to configure server for displaying images is given below:

```
<Config-List>
  <Config Name = "IMAGE"
```

```

        Protocol = "http"
        BaseUrl = "localhost"
        PortNumber = "80"
        ApiUrl = "/icons/imgservlet/?file=$param1$"
    </Config>
    <Config Name = "IMAGE_SMALL"
        Protocol = "http"
        BaseUrl = "localhost"
        PortNumber = "80"
        ApiUrl = "/icons/rcp/$param1$.gif"
        DefaultApiUrl = "/icons/rcp/404.gif"
    </Config>
    <Config Name = "IMAGE_BIG"
        Protocol = "http"
        BaseUrl = "localhost"
        PortNumber = "80"
        ApiUrl = "/icons/rcp/$param1$.jpeg"
        DefaultApiUrl = "/icons/rcp/404.gif"
    </Config>
</Config-List>

```

For example, to get an image from the server using the `http://localhost:80/icons/imgservlet/?file=Y001` URL, define a Config element named `IMAGE` as shown in the sample code (above). To fetch an image from the server using the `http://localhost:80/icons/rcp/Y001.gif` URL, define a Config element named `IMAGE_SMALL` as shown in the sample code (above). In both the cases, the `$param1$` variable is replaced by the image's name.

Note: You can modify the Config element for the IMAGE URL. But ensure that you do not delete it.

For example, if you want to get an image for an OrderNo label:

1. Set the source binding for the label as:

```
lblOrderNo.setSourceBinding("ServerImageList:Images/Icons/RCP/Image1/@OrderNo");
```

where `lblOrderNo` is the label name and `ServerImageList` is the namespace for the model.

2. Set the server image configuration for the label to display the image from the server as shown:

```
lblBindingData.setServerImageConfiguration(YRCConstants.IMAGE_SMALL);
```

where `lblBindingData` is the binding object and `IMAGE_SMALL` is the value of the `Name` attribute of the `Config` element, which is defined in the configuration file.

When getting the image for the `lblOrderNo` label, the `$param1$` parameter is replaced by the value of the `OrderNo` attribute. If the value of the `OrderNo` attribute is "Y001", the image `Y001.gif` displays for the `lblOrderNo` label.

15.4.2 Configuring Connection Settings for HTTPS connection

To configure the connection settings to communicate with application servers:

1. In the `locations.ycfg` file when defining the connection settings, set the value of `Protocol` attribute of the `Config` element as "https". Also, specify the port number for the HTTPS protocol in the `PortNumber` attribute of the `Config` element. For more information about configuring the connection settings, see [Section 15.4, "Configuring Connection Settings"](#) on page 181.
2. Copy all SSL or public key certificates required for configuring an HTTPS connection in the `truststore` directory under the `extensions` folder that you created as shown:

```
<RCP_EXTN_FOLDER>/truststore.
```

where `<RCP_EXTN_FOLDER>` refers to the folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating `<RCP_EXTN_FOLDER>` folder, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

A trusted Certificate Authority (CA) like VeriSign issues these security certificates. For more information about SSL or security certificates, see [Section 15.5, "Security Certificates"](#) on page 187.

15.4.3 Configuring Connection Settings for Making Selective SSL Calls

For a HTTP connection, you can make selective SSL calls for certain sensitive APIs. For example, you use an HTTP connection for calling APIs. For some sensitive APIs you can make an SSL call instead of a normal HTTP call by configuring the connection settings as follows:

- When defining the connection settings in the `locations.ycfg` file, in the `HttpsPortNumber` attribute of the `Config` element, specify the port number you want to use to make selective SSL calls. For more information about configuring the connection settings, see [Section 15.4, "Configuring Connection Settings"](#) on page 181.
- Copy all SSL or public key certificates that are necessary for configuring a HTTPS connection in the `<RCP_EXTN_FOLDER>/truststore` directory that you created.

where `<RCP_EXTN_FOLDER>` refers to the folder that you created for storing Sterling RCP based PCA client application extensions. For more information about creating `<RCP_EXTN_FOLDER>` folder, see [Section 15.2.1, "Creating the RCP_EXTN_FOLDER Folder"](#) on page 169.

A trusted Certificate Authority (CA) such as VeriSign, issues these security certificates. For more information about SSL or security certificates, see [Section 15.5, "Security Certificates"](#) on page 187.

- Create the `secureapis.xml` file and add the names of all APIs that you want to call by making SSL calls to this file. For more information about adding secure APIs, see [Section 15.6, "Adding Secure APIs for Making Selective SSL Calls"](#) on page 188.
- Copy the `secureapis.xml` file to the `<RCP_EXTN_FOLDER>/resources` directory that you created.

15.5 Security Certificates

An SSL certificate or public key certificate is a certificate that uses a digital signature to bind a public key with an identity information such as the name of the person or an organization, address, and so forth. An SSL certificate has information about the owner of the certificate, the usage of the certificate, validity details, resource location or web site address, e-mail address and the certificate ID of the person who certifies (signs)

this information. SSL certificates are used for secure communication over the HTTPS protocol.

Whenever a client needs to verify the authenticity of an SSL server, the SSL certificate used by the server needs to be signed by the Certificate Authority that is already trusted by the client. The well-known certificate authorities such as Thawte and VeriSign serve as an authoritative, trusted third party for authentication. They sign the SSL certificates that are used when dealing with sensitive information or services. If these SSL certificates are signed by a trusted authority, it is possible to verify the identity of a server by supplying the SSL certificate.

15.6 Adding Secure APIs for Making Selective SSL Calls

First create the `secureapis.xml` file. To add secure APIs to this file, follow these steps:

1. In the `secureapis.xml` file, define the `Apis` root element.
 - In an application, if you always want to call a specific API by making an SSL call, define the `Api` element under the `Apis` root element.

In the `name` attribute of the `Api` element, specify the name of the API for which you want to make the selective SSL call.

For example, in an application you may always want to call the `getCreditCardDetails` API using an SSL call.

- In an application, for some specific screens, if you want to call a particular command by making an SSL call, define the `Command` element under the `Apis` root element.

In the `commandName` attribute, specify the name of the command for which you want to make an SSL call. In the `formId` attribute, specify the identifier of the form for which you are calling the command specified in the `commandName` attribute.

For example, in a particular screen, you may want to call the `getUserVerification` command by making a secure SSL call.

A sample `secureapis.xml` file is shown here:

```
<?xml version="1.0" encoding="UTF-8"?>
```

```

<ApiList>
  <Api name="getCreditCardDetails"/>
  <Command formId="com.yantra.pca.ycd.rcp.YCDUserDetails"
    commandName="getUserVerification"/>
</ApiList>

```

Note: You can create the `secureapis.xml` file and add the secure APIs to this file using the Sterling RCP Extensibility Tool. For more information about using the Sterling RCP Extensibility Tool, see the *Sterling Supply Chain Applications Customization Guide*.

15.7 Compression in Sterling Rich Client Platform

The Sterling RCP enables you to send and receive compressed data to and from the application server. When you enable compression, the Sterling RCP enables bidirectional compression.

Benefits

- The bidirectional compression helps in reducing the traffic in both directions as only the XML data is passed to an API or service. For example, input XMLs and output templates passed to an API or service.
- The compression is most useful for applications that rely more on multiple API calls because it avoids multiple trips to and from the application server.
- There is minimal overhead in performing compression. For example, when an XML file size is large, we can reduce the size of the data by about 90%.

Note: The Sterling RCP supports the Gzip compression format.

The Sterling RCP does not support compression of images or zip files when fetching images or extracting updates from the server.

To enable compression, in the `locations.ycfg` file, you must set the value of the `CompressionEnabled` attribute of the `Config` element to "Y".

These settings are done when you are configuring the connection settings for a Sterling Rich Client application. For more information about configuring connection settings, see [Section 15.4, "Configuring Connection Settings"](#) on page 181.

16

Deploying Configuration Data

During incremental configurations of Sterling Supply Chain Applications, changes are typically developed in a test environment and then they are rolled out into production. Migrating configuration data can be fairly cumbersome and time consuming. Sterling Supply Chain Applications provide a Configuration Deployment Tool that enables you to migrate configuration data. This tool ensures data integrity while reducing the system downtime to transfer data and minimizing the effort needed to ensure accuracy.

This tool is designed to migrate data that is modified as part of a normal day-to-day operation. Note that the Configuration Deployment Tool can be used to deploy configuration data that is the result of an upgrade, but it should **not** be used to perform the data upgrade itself.

This chapter also provides the information required to complete [Step 19](#) indicated on the "Installation Checklist" on page 6.

Configuration Deployment Tool Features

The Configuration Deployment Tool (CDT) can be accessed from the Sterling Supply Chain Applications Development and Deployment WorkBench (also known as the "WorkBench").

Note: The GUI mode of the Sterling Supply Chain Applications Configuration Deployment Tool is only available on Windows.

CDT provides the following capabilities:

- Transfer complete and partial sets of configuration data or discrete logical portions.

- Transfer data to and from XML files or databases.
- Transform certain data-like IP addresses and port numbers that are different in two environments, depending upon network configuration.
- Generate a report of configuration differences by comparing the two systems.

16.1 Concepts Regarding Configuration Data Deployment

This section defines terms relevant to the Configuration Deployment Tool, and explains how they apply.

16.1.1 Source and Target Environments

The Sterling Supply Chain Applications Configuration Deployment Tool deploys data from one Sterling Supply Chain Applications environment to another. The deployment could occur from development to test environments, from staging to production environments, and so forth. The environment that serves as the point of origin for the data is known as the "source" environment. The destination environment into which data is deployed is defined as the "target" environment. This deployment can be in the form of importing and exporting data to and from databases or XML files.

Note: If you make any changes to the configuration data in the source database, the existing transactions in the CDT may get affected.

Also, for the YFS_TRAN_LOCN_ATTRS table, only the configuration data is copied to the target database and the transaction data columns such as Pend_in_volume, Pend_in_weight, and Freeze on variance are not copied to the target database. The weight and volume are recalculated and updated in the target database.

[Example 16–1, "Configuration Data XML"](#) shows the required format of these XML files.

Example 16–1 Configuration Data XML

```
<?xml version="1.0" encoding="UTF-8" ?>
<YFS_ATP_RULESList TableName="YFS_ATP_RULES">
  <AtpRules AccumulationDays="730" AdvanceNotificationTime="0"
    AtpRule="DEFAULT" AtpRuleKey="DEFAULT" AtpRuleName="DEFAULT"
    BackwardConsumptionDays="730" ConsiderPoForAlloc="N" Createprogid=""
    Createts="" Createuserid="SYSTEM" ForwardConsumptionDays="730" Lockid="0"
    MaxInventoryHoldDays="730" Modifyprogid="SYSTEM" Modifyts=""
    Modifyuserid="SYSTEM" OrganizationCode="DEFAULT" PastDueDemandDays="730"
    PastDueSupplyDays="730" ProcessingTime="0" />
</YFS_ATP_RULESList>
```

16.1.2 Configuration Groups and Driver Entities

The entire set of Sterling Supply Chain Applications configuration data is broken down into logical subsets called "configuration groups" and "driver entities". Configuration groups and driver entities are predefined and cannot be changed.

During the deployment process, if you need to perform more granular inserts, updates, and deletes so that your target database matches your source, you choose these configuration groups or driver entities.

Driver Entities

Most Sterling Supply Chain Applications configuration data can be deployed starting with a logical entity, for example, an organization or a pipeline. These logical entities are called "driver entities". Driver entities represent the most granular level of information that can be deployed from the source to the target without loss of data integrity.

Only driver entities allow deployment at a record level. For other tables either of the following conditions apply:

- The table is completely deployed if it is not dependent on any driver entity.
- Only records corresponding to the driver entity are deployed.

Information about driver entities can be stored in multiple tables and when deploying an entity, data in all related tables is deployed together in one transaction boundary to preserve data consistency.

Configuration Groups

Logically related tables or driver entities are also grouped together into "configuration groups" that typically represent larger, significant logical data models within Sterling Supply Chain Applications. Examples include the Business Process Model or the Participant Model. These groups are provided for convenience and for ease of navigation on the user interface.

16.1.3 Externally Maintained Configuration Data

In your implementation of Sterling Supply Chain Applications, you may be required to import certain data into your target that is not part of your source Sterling Supply Chain Applications database. For these tables, you should not use CDT to deploy data as it does not have access to the correct data.

Best Practices

If you must use the Configuration Deployment Tool to deploy externally maintained data, the recommended way to handle this is to import this data into the source and then use CDT to deploy it into the target. This guarantees data integrity.

If you cannot import this data into your source database, Sterling Supply Chain Applications supply features that enable you to work with external data by ensuring that the target database either ignores these tables or appends them. Use the Ignore and Append-only features **only** as a last resort and only after subjecting your environment to rigorous testing.

Caution: When using the Ignore or Append-only features, CDT cannot guarantee the integrity of any external data. In order to ensure data integrity, CDT must have complete access to the configuration data.

Ignore

In cases where data in tables is maintained externally, you can omit these tables from the deployment operation by specifying a preference for them to be ignored.

Ignoring a table or a driver entity also automatically ignores all its dependent tables. However, there are some tables that store data for

multiple driver entities and are present in multiple groups. An example of this is the YFS_GRAPH_UI table that contains data for pipelines, services and statuses. Ignoring one of these tables causes CDT to incorrectly mark the corresponding records for deletion.

Append-only

In cases where some tables are partially maintained externally, you can specify preferences to ensure that these tables are deployed in an "append-only" mode.

For append-only tables, the dependent tables are not ignored. Marking a table as append-only implies that only a few rows in the target database are maintained on the source system—other rows are externally imported. In such cases, it is *extremely* important that there is no overlap between the data present in the source and the external system. For example, if you maintain your shipping nodes in the source database and import store information directly into the target, you must not have any stores in the source database. This leads to unpredictable results.

16.1.4 Deploying Database Extensions

Any database extensions you have defined within the Sterling Supply Chain Applications database extensibility framework are automatically deployed when configured to do so, as described in [Section 16.3](#), "Setting Up the Configuration Deployment Tool" on page 202.

16.1.5 Deploying Custom Tables

CDT automatically deploys Sterling Supply Chain Applications configuration tables and extensions defined within the Sterling Supply Chain Applications database framework. If you have custom (non-Sterling Supply Chain Applications) configuration tables defined in your installation, CDT needs to be specially configured to deploy these tables. To enable CDT to deploy these tables, the tables need to be registered with CDT by creating a special custom deployment XML file, called `cdt_custom.xml`. A sample of this file can be found in your `<YANTRA_HOME>/Applications/Foundation/resources/ydkresources` directory. This file defines a group named "Custom Tables" and should include a list of your custom tables. CDT automatically compares, displays and deploys changes to custom records for all tables that have one or more primary key columns.

Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

This tool does not support custom tables as drivers or the representation of custom tables in a dependency tree structure. As a result, all custom tables can only be deployed together as part of the "Custom Tables" group. It also does not support custom tables without a primary key.

The `cdt_custom.xml` file contains the following:

```
<Group Name="Custom Tables">
  <Table Name="CUSTOM_CONFIG_TABLE_1"/>
  <Table Name="CUSTOM_CONFIG_TABLE_2"/>
</Group>
```

16.1.6 Foreign Key Checks

CDT enforces data consistency by deploying all related tables that define an entity together in one operation. In addition, to ensure data integrity, CDT also checks the required foreign key constraints for each table - which could potentially be defined for a table in a completely different group. Therefore, when deploying a small subset of data, it is possible that you may see error messages indicating foreign key constraint violations if the corresponding data in the independent table is not being deployed in the same operation. In this case, you should try deploying a bigger set of data. Note that foreign key constraints are **not** defined or checked for custom tables.

To provide the best performance, foreign key constraints are not checked when deploying the complete Sterling Supply Chain Applications configuration.

16.1.7 Data Transformations

Frequently, the development and production environments have different values for network settings such as server names and IP addresses. Some configuration data tables in Sterling Supply Chain Applications store host names, IP addresses, and URLs. While these are valid for your source environment, when deploying this data into the target environment, the configuration must be updated with the corresponding values applicable to the target environment. CDT enables you to

automatically transform these data elements into target-appropriate values by letting you specify transformations to be carried out on the source data *before* it is deployed into the target.

16.2 Before You Begin

Before you begin using the Configuration Deployment Tool, ensure that you have addressed the policies and system requirements described in this section.

16.2.1 System Requirements

The RAM requirements of the Configuration Deployment Tool depend on the size of your database and the distribution of your configuration data. For system requirements of Sterling Supply Chain Applications tools, including the Configuration Deployment Tool, see [Chapter 2, "System Requirements"](#).

Time Estimates

The time required for the Configuration Deployment Tool to perform comparison and deployment tasks varies according to your system resources and the size and distribution of your configuration data. For example, processing time may increase when there are many records in a table that are referenced by foreign key constraints from other tables, or when there are many records in a table that serves as a driver entity.

During tests of the Configuration Deployment Tool, Sterling Supply Chain Applications measured the amount of time it took to perform tasks on a Pentium class machine with 512 MB of RAM and running at 550 MHz. The Configuration Deployment Tool performed as described in [Table 16–1, "Configuration Deployment Tool Time Estimates"](#):

Table 16–1 Configuration Deployment Tool Time Estimates

Task	Description of Databases	Time
Comparison	Source database - 110,000 records	7 minutes
	Target database - 110,000 records	
Comparison	Source database - 110,000 records	4 minutes
	Target database - empty	
Deployment	110,000 differences	11 minutes

Installation

The Configuration Deployment Tool is installed automatically during the Sterling Supply Chain Applications installation process.

Environment State

The Configuration Deployment Tool assumes that your source and target environments match exactly in the following respects:

- Release of Sterling Supply Chain Applications (including hot fixes)
- Release of JDBC drivers
- Release of database software
- Database structure (Sterling supply chain schema objects such as tables, indexes, and sequences)

As this Configuration Deployment Tool is used by technical professionals for tasks they perform on an occasional basis, it is **not** localizable or customizable. However, you can specify configuration preferences as described in this chapter.

16.2.2 Security Strategy

The Configuration Deployment Tool makes use of the user authentication and authorization supplied by your database provider. Access control and authorization are not specified through the Configuration Deployment Tool.

Ensure that the person using the Configuration Deployment Tool has sufficient authentication privileges (select, insert, update, and delete) for both databases; full DBA privileges are not required.

16.2.3 Change Management Strategy

The Configuration Deployment Tool does **not** enforce checks to restrict configuration data modification on the source or the target schemas using other means. You must develop and enforce your own methodology.

For example, if you use the Configuration Deployment Tool to migrate data from staging to production, it is **not** expected that the configuration in production is modified by means other than this tool. In such a case those changes are overwritten the next time CDT is run. Also, this could

potentially lead to data integrity issues if the changes are performed in either the source or target while CDT is being run.

The Configuration Deployment Tool is **not** supported for implementations where configuration data is directly modified in production using the Sterling Supply Chain Applications Configurator or any other means. For exceptional cases like urgent or critical fixes to configuration data in production, you must update the staging database with the same changes.

16.2.4 Rollback Strategy

To prevent application failure and downtime, implement a rigorous rollback methodology that involves creating a backup snapshot of your configuration data in production **before** you use CDT to deploy changes. This backup can be accomplished by using the database-specific export and import utilities. Sterling Supply Chain Applications provide some samples for Oracle, DB2 and SQL Server database that you can customize for your own use.

16.2.5 Upgrades and Maintenance

Using the Configuration Deployment Tool should not impact the methodology for applying upgrades or hot fixes in a multi-step staging environment.

The upgrade methodology being followed should not change for environments already set up for staging before production. However, the Configuration Deployment Tool by itself does **not** provide support for all of the processes and methodologies required for supporting a multi-step application staging and deployment environment because it is only capable of deploying configuration data.

The process of applying product upgrades and patches is especially complex in an environment where the staging area must be kept synchronized with production. One way to keep these environments harmonious is to apply software patches to both systems simultaneously and reverse deploy the data upgrades. This is because application data upgrades may behave differently and produce different results based on the transactional data they encounter. If this application data upgrade is run independently on production and staging, the results may be significantly different as a result of the differences in transactional data that the upgrade program encountered. In such a case, the production

snapshot should be treated as the baseline and reverse deployed into staging. This can be accomplished by configuring your production database as the source and your staging database as the target.

Example Upgrade Scenario

In an example upgrade scenario, Sterling Supply Chain Applications introduce a feature that recognizes various attributes for order types. For example, an Order_type "URGENT" implies that the order should be displayed in the user interface with a specific icon that enables you to distinguish it from other orders. However, in previous releases, you may have been using the Order_type field to classify orders into other types because this field was designed for order classification.

When Sterling Supply Chain Applications provide an upgrade toolkit, one component of the toolkit handles upgrades to the Order_type field.

The upgrade logic may flow as follows:

1. Read all the distinct values of the Order_type field from the YFS_ORDER table.
2. For each different Order_type in the your system, create entries in the Order_Type_Master configuration table and assign a default icon to it.

If this data upgrade is run on the staging system, it will **not** find any orders, so the Order_Type_Master table will only contain "URGENT" which is provided by default.

However, when the same data upgrade is run in production, the Order_Type_Master table will contain multiple entries, one for each type of order that is in the transaction database.

Then, when the Configuration Deployment Tool is run again, it marks all of these new records for deletion because the source is assumed to be the most up-to-date configuration. This behavior is obviously **incorrect**.

As a result, you should design upgrade kit or hot-fixes for transaction dependent configuration data as follows:

1. The upgrade kit (or hot-fix) should have one script to prepare input for upgrade of transaction-dependent configuration data (for example, prepared list of distinct order types). Then you can run this script on the production database. You can also run this script in the test database and can take the union of the two.

2. The next step in the upgrade should use this as input and upgrade the configuration data accordingly. For example, inserting into ORDER_TYPE_MASTER table.

If you have identified any changes in the configuration data, please contact Sterling Supply Chain Applications Technical Support at 1-877-926-8727.

16.2.6 Externally Maintained Configuration Data

In your implementation of Sterling Supply Chain Applications, you may have external data that is not part of your source database, as described in [Section 16.1.3, "Externally Maintained Configuration Data"](#) on page 194. If you are required to import this data, you should devise an external method rather than using the Configuration Deployment Tool.

If you *do* use the Configuration Deployment Tool to deploy this data, you can configure it to omit these externally maintained tables or to only append specific data as described in [Section 16.6, "Specifying the Preferences Settings"](#) on page 211.

Note that these options may incorrectly cause CDT to mark some records as "Abandoned" since the data for the corresponding driver entity cannot be identified. For details on working with Abandoned records, see [Section 16.15, "Troubleshooting"](#) on page 225.

16.2.7 Best Practices

When deploying data into production or other critical environments that feed into it, use CDT to compare and deploy the *entire* configuration rather than an individual configuration group or driver entity. Deploying the entire database addresses the following issues:

- Data integrity - Deploying an individual configuration group or driver entity is most likely to result in messages about data integrity violations. Understanding how to address these messages requires a significant understanding of the Sterling Supply Chain Applications Data Model.
- Custom tables - CDT only deploys custom configuration tables when you choose to compare the entire Sterling Supply Chain Applications configuration and deploy all resulting differences.

- New or empty databases - When using the tool to deploy data into a new or empty database, deploy the entire database.
- Foreign key interdependencies - Other scenarios with foreign key interdependencies between tables in different groups or other significant configuration changes may require you to perform a full deployment.
- Performance - Upon completion of the deployment operation, CDT signals all servers in the Sterling Supply Chain Applications target environment to refresh locally-cached data. This is a resource-intensive and time-consuming operation and may cause slowdown in Sterling Supply Chain Applications until the cache reaches a steady state. To avoid these dips in the performance, deploy changes for the entire Sterling Supply Chain Applications configuration in one operation rather than multiple, small ones.

In addition, Sterling Commerce, Inc. recommends scheduling routine deployment operations during periods of low activity.

16.3 Setting Up the Configuration Deployment Tool

Setting up CDT involves installing software, copying files, and editing them as described in this section.

To set up the Configuration Deployment Tool:

1. If Sterling Supply Chain Applications have not been installed on your computer, install it by running the setup file in the CD-ROM appropriate for your operating system.
2. Copy the applicable JDBC driver file to the `<YANTRA_HOME>/Applications/Foundation/lib/` directory of your application server as follows:
 - If you are using Oracle and WebLogic, download the Oracle JDBC driver from the Oracle website and copy to the `<YANTRA_HOME>/Applications/Foundation/lib/` directory on your application server machine.

The Oracle JDBC driver can be found at:

http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html

Download the `ojdbc14.jar` file for Oracle.

- If you are using Oracle and WAS, download the Oracle JDBC driver from the Oracle website and copy to the `<YANTRA_HOME>/Applications/Foundation/lib/` directory on your application server machine.

The Oracle JDBC driver can be found at:

http://www.oracle.com/technology/software/tech/java/sqlj_jdbc/index.html

Download the `ojdbc14.jar` file for Oracle.

- If you are using DB2, copy the `<DB2_HOME>/sqllib/java/db2jcc.jar` database driver file and the `db2jcc_license_cu.jar` license file on your database server to the `<YANTRA_HOME>/Applications/Foundation/lib/` directory.
- If you are using SQL Server, copy the SQL Server JDBC driver file (`Opta.jar`) to your `<YANTRA_HOME>/Applications/Foundation/lib/` directory.

3. From the `<YANTRA_HOME>/Applications/Foundation/resources/` directory, copy and rename the following files by removing the `.sample` extension:
 - `log4jconfig.xml.sample`
 - `yifclient.properties.sample`
 - `yfs.properties.sample`
4. From the `<YANTRA_HOME>/Applications/Foundation/resources/ydkresources/` directory, copy and rename any files named `.sample` by removing the `.sample` extension. For example, rename `ydkconfig.xml.sample` to `ydkconfig.xml`.

Note: Rename `cdt_custom.xml.sample` to `cdt_custom.xml` ONLY if you have custom tables to be included in the compare function.

5. If you have extended the Sterling Supply Chain Applications database, copy your database extensions to your computer as follows:

- a. Copy your database extension XML files to your local `<YANTRA_HOME>/Applications/Foundation/database/entities/extensions/` directory.
- b. Copy your `yfsdbextn.jar` file to your local `<YANTRA_HOME>/Applications/Foundation/lib/` directory.

For more information on extending your database see the *Sterling Supply Chain Applications Customization Guide*.

6. In the following files, specify the values described in [Table 16–2, "Configuration Deployment Tool Properties"](#):
 - `<YANTRA_HOME>/Applications/Foundation/resources/yfs.properties`
 - `<YANTRA_HOME>/Applications/Foundation/resources/ydkresources/ydkconfig.xml`
 - `<YANTRA_HOME>/Applications/Foundation/bin/ydk.cmd`
 - `<YANTRA_HOME>/Applications/Foundation/resources/log4jconfig.xml`
7. Update the Sterling Supply Chain Applications Runtime for these modifications. For more information about updating Sterling Supply Chain Applications Runtime, see [Section 13.2, "Updating the Sterling Supply Chain Applications Runtime"](#) on page 129.

Table 16–2 Configuration Deployment Tool Properties

Property	Description
In the <code>yfs.properties</code> resource file	
<code>yfs.dblogin.jdbcurl</code>	<ul style="list-style-type: none"> – If you are using Oracle, set this value to: <code>jdbc:oracle:thin:@<DatabaseServerHostName/IPAddress>:<TNSListenerPortNumber>:<DatabaseSID>.</code> – If you are using SQL Server, set this value to: <code>jdbc:inetdae7:<Database Server HostName/IPAddress>:<Port Number>?<database=Database Name>&charset=<your charset>.</code> – If you are using DB2, set this value to: <code>jdbc:db2://<DatabaseServerHostname>:<Port Number>/<Database name>.</code>

Table 16–2 Configuration Deployment Tool Properties

Property	Description
yfs.dblogin.userid	Specify the user name associated with the database.
yfs.dblogin.password	Specify the password for the user associated with the database.
yfs.install.displaydoublequantity	– If you do not want to round off the decimal value of any attribute to the nearest integer, set the value to: Y.

In the ydkconfig.xml resource file

ResourcesDir	Specify as the full path of the <YANTRA_HOME>/Applications/Foundation/resources/ydkresources/ directory, including the final slash. For example, ResourcesDir=D:/Supply_Chain_Apps/resources/ydkresources/.
--------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

In the ydk.cmd script

CLASSPATH	Include the <JAVA_HOME>/bin/ directory.
YFS_HOME	Specify as the full path to your <YANTRA_HOME>/Runtime directory. For example, YFS_HOME=D:/Supply_Chain_Apps/Runtime.
JAVA_HOME	Specify the Java installation directory. For example, JAVA_HOME=D:/JDK_1.5.0_06-b05.
DB_EXTN_JAR	Conditional. If you have extended any Sterling Supply Chain Applications configuration database tables, specify the full path to your yfsdbextn.jar file.
DB_DRIVER	Specify the path to the database driver. For example, DB_DRIVER=D:/Supply_Chain_Apps/extn/ojdbc14.jar

In the log4jconfig.xml script

LOG_DIRECTORY	Set this value to: <pre><param name="File" value="D:<your_installation_directory_name> /<log_file_name">".</pre>
---------------	------------------------------------------------------------------------------------------------------------------------------------

Note: The data stored in the yfs.properties resource file is only used to launch the CDT, it does not need to specify source or target database.

16.4 Running the Configuration Deployment Tool

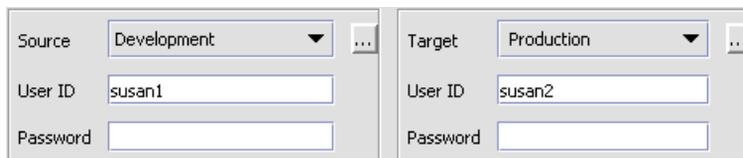
This section describes how to start and stop the Configuration Deployment Tool.

To start the Configuration Deployment Tool:

1. From the <YFS_HOME>/bin/ directory, run the ydk.cmd script, which opens a Microsoft Windows console and starts the Sterling Supply Chain Applications Development and Deployment WorkBench.

Important: The Windows console displays WorkBench startup information. **Do not** close the console while the WorkBench is running. Closing the console closes the tool, and your work is lost.

2. From the Sterling Supply Chain Applications Development and Deployment WorkBench menu, choose Tools > Deployment > Configuration Data Deployment. This opens the Configuration Deployment Tool Logon dialog box.



3. Choose the Source button and enter the values appropriate for the source database. Then choose the Target button and enter the values appropriate for the target database.

When you are finished, close the dialog box. The values you specified are saved automatically and persist from one session to the next.

Note: If you change the name of either source or target database, the transformation settings are lost. To get back your old transformation settings, revert to the old source and target database name.

In the Source database and Target database windows, specify the applicable values as described in [Table 16–3, "Configuration Deployment Tool Logon Dialog Box"](#):

Table 16–3 Configuration Deployment Tool Logon Dialog Box

Field	Detail
Name	Specify a logical database identifier. For the source, specify the database you want to copy data from. For the target, specify the database to write the data to.
className	Specify the class name of your database driver as follows: <ul style="list-style-type: none"> • If you are using Oracle, set this value to: <code>oracle.jdbc.OracleDriver</code>. • If you are using SQL Server, set this value to: <code>com.inet.tds.TdsDriver</code>. • If you are using DB2, set this value to: <code>com.ibm.db2.jcc.DB2Driver</code>.
jdbcURL	Specify the URL to connect to the database: <ul style="list-style-type: none"> • If you are using Oracle, set this value to: <code>jdbc:oracle:thin:@<DatabaseServerHostname/IP address><TNSListenerPortNumber>:<DatabaseSID></code>. • If you are using SQL Server, set this value to: <code>jdbc:inetdae7:<Database Server HostName/IPaddress>:<Port Number>?<database=Database Name>&charset=<your charset></code>. • If you are using DB2, set this value to: <code>jdbc:db2://<Database Server Hostname>:<Port Number>/<Database name></code>.

Table 16–3 Configuration Deployment Tool Logon Dialog Box

Field	Detail
dbType	Specify the type of database you are running as follows: <ul style="list-style-type: none"> For Oracle, specify <code>oracle</code> (all lower case). For SQL Server, specify <code>sqlserver</code> (all lower case). For DB2, specify <code>db2</code> (all lower case). For an XML datasource, specify <code>xml</code> (all lower case).
folder	If using an XML datasource, specify the complete path of the folder location for the XML files.
httppurl	Only applicable for the target database. Specify a URL for the application server whose data cache is to be refreshed after data is deployed into the target database. Use the syntax: <code>http://<hostname/ip-address>:<port-number>/yantara/interop/InteropHttpServlet</code> , where <code>hostname</code> , <code>IP-address</code> and <code>port-number</code> are the parameters used to connect to the application server.
schema	Specify the schema owner as follows: <ul style="list-style-type: none"> If you are using Oracle or DB2 database and the user you specify is different from the Sterling supply chain schema owner, specify the owner of the Sterling supply chain schema. If you are using SQL Server, leave this blank.
user	Specify the user name associated with the database.

- In the Logon dialog box, enter the passwords associated with the user names.

The Deployment Explorer window displays.

To stop the Configuration Deployment Tool:

From the Sterling Supply Chain Applications Development and Deployment WorkBench menu, choose File > Exit.

This closes the Configuration Deployment Tool and the Windows console.

16.5 Understanding the Configuration Deployment Tool User Interface

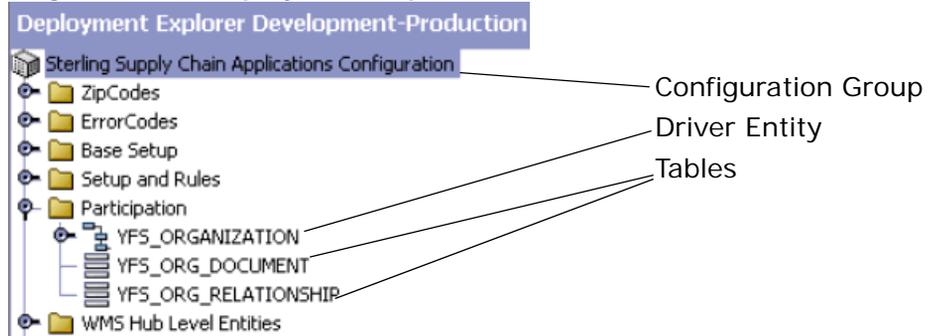
When the Configuration Deployment Tool starts, it prompts you to specify the details about your source and target databases to use during the session. After you have successfully connected to your source and target databases, the Deployment Explorer window appears.

16.5.1 The Deployment Explorer

The Deployment Explorer window displays the list of configuration groups, driver entities, and tables that can be deployed. The names you define for the source and target databases are displayed in the heading panel.

Each time you log into the Configuration Deployment Tool there is one instance of this window.

Figure 16–1 *Deployment Explorer Window*



You can choose the configuration group or the driver entity that you want to compare between the source and target databases.

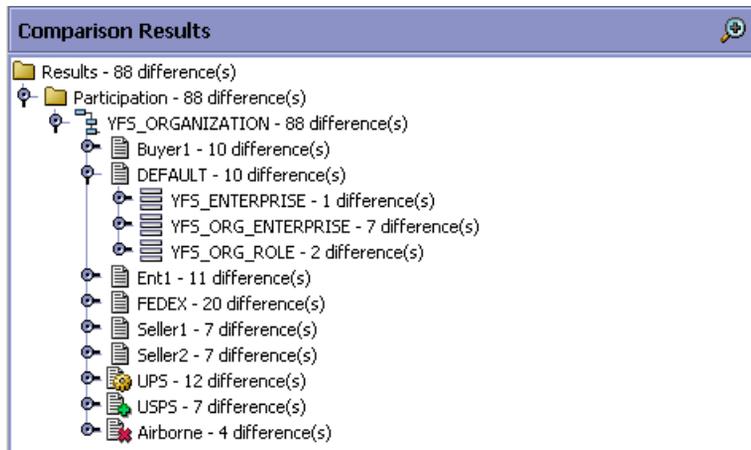
During the compare operation, the progress and the results of the comparison operation are displayed in the Comparison Results window and in the Status panel.

16.5.2 Comparison Results Window

The Comparison Results window displays the outcome of the comparison between the source and the target databases.

The Comparison Results window displays information pertaining to the current session. Only one Comparison Results window can be displayed during each session. After viewing the results of one comparison, you must close the window before you can compare a different set of tables.

Figure 16–2 Comparison Results Window

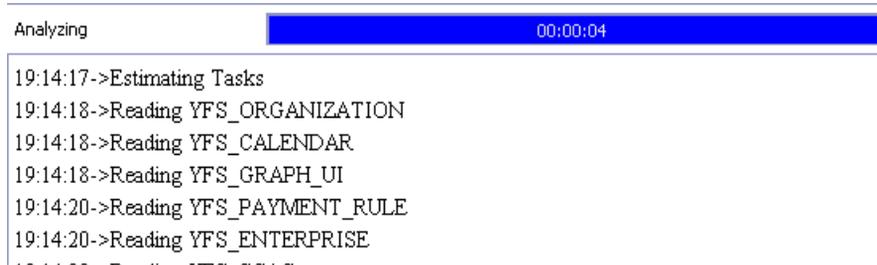


After generating comparison results, you can carry out any one of the following tasks:

- Generate a report of the differences
- View the details of each difference
- Deploy configuration data from the source database into the target database

16.5.3 The Status Panel

The Status panel displays information about operations while they are carried out.

Figure 16–3 Configuration Deployment Tool Status Panel

16.6 Specifying the Preferences Settings

You can configure preferences (such as a reports directory) and parameters that determine the behavior of the comparison operation. When you modify these properties, the changes persist, so you do not need to reset them each time you use CDT. These changes are saved in the

<YANTRA_HOME>/Applications/Foundation/resources/ydkresources/ydkprefs.xml file.

To specify Configuration Deployment Tool settings:

1. From the Deployment Explorer action bar, choose the  *Preferences* icon.
2. In the Preferences window, fill in values using the descriptions in [Table 16–4, "Configuration Deployment Tool Preference Settings"](#).

Table 16–4 Configuration Deployment Tool Preference Settings

Control	Description
Settings Tab	
Reports Directory	Specify the absolute path where you want reports to be generated.
Custom Deployment Class	Specify the name of the class that should be invoked for deploying custom tables not handled by CDT.
Max Changes to Display	Specify the maximum number of differences to be displayed. The default display number is 100.
Transformations Tab	
Table Element	Tables that can be added or deleted.

Table 16–4 Configuration Deployment Tool Preference Settings

Control	Description
Table Name Attribute	Specify the name of the table on which you want to carry out the transformation. The syntax and case must match the name of the table used in the Sterling Supply Chain Applications ERDs. Custom tables cannot be transformed. Choose the Details icon to specify a value.
Column Element	Columns that can be added or deleted.
Column Name Attribute	Specify the name of the column containing the data to be transformed. The syntax and case must match the name of the column used in the Sterling Supply Chain Applications ERDs. Extended columns can be transformed. Choose the Details icon to specify a value.
Transform Element	Define the transformation for this column. For each column, you can define one or more transformations. These transformations are applied to data in this column in sequential order. You can specify multiple transformations for each column, using the delete action to remove the parent element.
Match Attribute	Specify the pattern to search for in the source data. All matching occurrences of this pattern are replaced with the value specified in the Replace attribute. Choose the Details icon to specify a value.
Replace Attribute	Specify the value to replace the pattern with. Choose the Details icon to specify a value.
XPath Attribute	<p>Conditional. If the column to be transformed contains non-XML data, you do not need to specify this XPath attribute. However, some configuration information in Sterling Supply Chain Applications is stored as XML in the database.</p> <p>If the column to be transformed contains XML data, use this attribute to specify the location of the exact attribute to be transformed. Use the syntax: <code>xml:/Configuration/Connection/Host/@IPAddresses</code>. Choose the Details icon to specify a value.</p>
Append-only Tables Tab	

Table 16–4 Configuration Deployment Tool Preference Settings

Control	Description
Append-only Tables	Specify any configuration tables in which <i>some</i> rows maintain data that is external to Sterling Supply Chain Applications. This prevents the data from being deleted during deployment. Specify that table and all of its dependent tables. Note: Rows that are maintained externally should <i>never</i> be present in your source database, since this can lead to unpredictable results.
Ignore Tables Tab	
Ignore Tables	Specify any external configuration tables that you do not want the tool to deploy from the source to the target. Ignoring a table automatically ignores all dependent tables as well.

16.7 Transforming Elements

When deploying data from one database instance to another, you can override the values of certain data elements. For example, if your source and target environment network settings (host names, port numbers, and IP addresses) are different, the Configuration Deployment Tool can transform the settings in order to make them appropriate for the target environment.

Transformations are carried out as a pattern match and replace the data in the source database before it is deployed into the target.

Note: The match and replace are carried out for the complete string literal and no wild card search for characters is allowed.

Example Transformation

For example, consider the following configuration XML in the source database:

```
<SubFlowConfig>
  <Link>
    <Properties DeliveryMode=" "
      InitialContextFactory="weblogic.jndi.WLInitialContextFactory"
      ProviderURL="t3://localhost:7001" QCFLookup="TEST_AGENT_QCF"
```

```

    QName="DefaultAgentQueue" TimeToLive="" />
  </Link>
</SubFlowConfig>

```

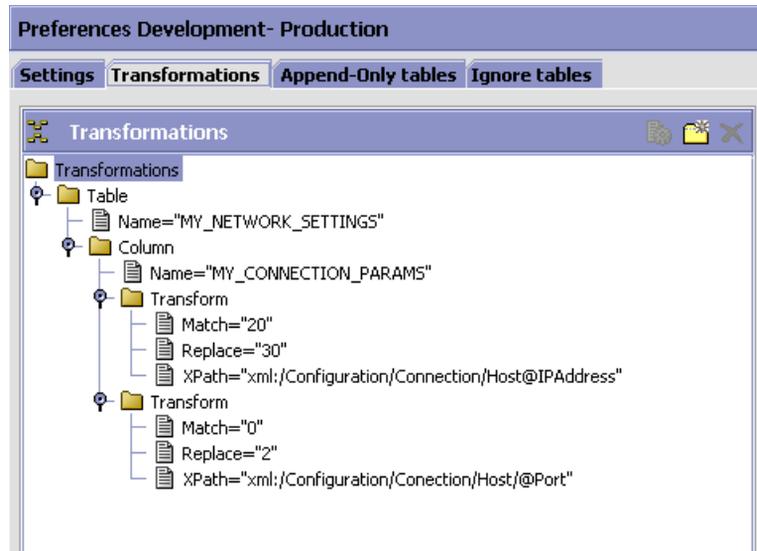
The target database has values for port number as 7221 and QCFLookup as AGENT_QCF, which you do not want overridden by values in the source database. To transform these values, specify the values as described in [Table 16–5, "Transforming Elements"](#):

Table 16–5 Transforming Elements

Element	Attribute	Value
ProviderURL	Match	Specify 7001 (or 0 to find all occurrences of 0).
	Replace	Specify 7221 (or 2 to replace all occurrences of 2).
	XPath	xml:/SubFlowConfig/Link/Properties/@ProviderURL
QCFLookup	Match	Specify TEST_ to find all occurrences of TEST_.
	Replace	Leave blank to ensure that TEST_ is removed.
	XPath	xml:/SubFlowConfig/Link/Properties/@QCFLookup

Using this example, the Transformation tab would look as shown in [Figure 16–4, "Transformations Example"](#).

Figure 16–4 Transformations Example



To transform elements of the configuration data:

1. From the Deployment Explorer window action bar, choose the  *Preferences* icon.
2. In the Preferences window, select the Transformations tab and fill in values, using the information provided in [Table 16–4, "Configuration Deployment Tool Preference Settings"](#) on page 211. When you deploy data, these transformation values you specify are deployed along with configuration data.

Before you deploy data, you must first perform a database comparison as described in [Section 16.8, "Comparing Data"](#) on page 215.

16.8 Comparing Data

In order to deploy configuration data into production, you must first compare the two databases and then deploy your changes.

Note: The CDT considers special characters as data when both source and target environment are databases.

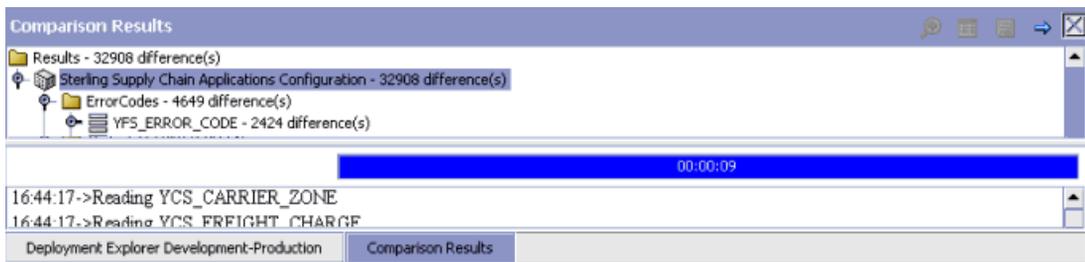
To compare databases:

1. From the Deployment Explorer tree, select the data you want to compare.

Tip: When you are deploying data for the *first* time, compare the entire database. Compare smaller increments only *after* you are certain that your source and target databases have relatively few differences.

The available comparison groups are as follows:

- For the entire database, choose the  *Sterling Supply Chain Applications Configuration* icon.
 - For a specific configuration group, choose the  *Configuration Group* icon.
 - For a specific driver entity, choose the  *Driver Entity* icon.
2. From the Deployment Explorer action bar, choose the  *Compare* icon. The Comparison Results window displays on the top right and lists all differences. The Comparison Results Status panel displays on the bottom right.



Note: If a table is present in multiple groups or under multiple entities, its difference may be counted multiple times in the total number.

After the comparison completes, you can perform any of the following actions:

- Examine any differences, using the instructions in [Section 16.9, "Examining Database Differences"](#) on page 217.
- Export the report, using the instructions in [Section 16.10, "Exporting Comparison Results"](#) on page 219.
- Generate a report, using the instructions in [Section 16.11, "Generating a Report of Differences"](#) on page 220.
- Deploy your changes, using the instructions in [Section 16.13, "Deploying Your Configuration Data"](#) on page 222.

16.9 Examining Database Differences

To examine the differences between databases:

1. Choose  to compare the two databases. For more information about comparing databases, see [Section 16.8, "Comparing Data"](#) on page 215.
2. From the Comparison Results tree, expand the corresponding entity and select the table that you want to examine.
3. From the Comparison Results action bar, choose . The range of possible results are as follows:
 -  - The *Unchanged* icon indicates that an entity contains dependent tables that have differences.
 -  - The *Add* icon indicates that a record is inserted to the target database, as shown in [Figure 16–5, "Record Details Insert Window"](#)

Figure 16–5 Record Details Insert Window

Record Details	
Inserted	
Name	Value
OrganizationCode	USPS
CatalogOrganizationCode	DEFAULT
PrimaryUrl	

 The *Remove* icon indicates that a record is deleted from the target database, as shown in [Figure 16–6, "Record Details Delete Window"](#).

Figure 16–6 Record Details Delete Window

Record Details	
Deleted	
Name	Value
OrganizationCode	Airborne
CatalogOrganizationCode	DEFAULT
PrimaryUrl	

 The *Modify* icon indicates columns that are updated on the target database as shown in [Figure 16–7, "Record Details Change Window"](#). It displays information in sections as follows:

- Top section - displays values that are changed on the target database
- Bottom section - displays values that remain the same

Figure 16–7 Record Details Change Window

Record Details		
Changed		
Name	Old Value	New Value
PaymentProcessingReqd	Y	N
Unchanged		
Name	Value	
OrganizationCode	UPS	
CatalogOrganizationCode	DEFAULT	
PrimaryUrl		

- After examining your data, you may want to generate a report of these differences as described in [Section 16.11, "Generating a Report of Differences"](#) on page 220.

16.10 Exporting Comparison Results

You can export the configuration differences for comparison at a later time or as a backup for your existing configuration.

To export the comparison results into an XML file:

- Ensure that you have specified a directory location where the comparison report is generated in the Reports Directory field on the Settings tab of your Sterling Supply Chain Applications Configuration Deployment Tool Preferences. For more information about specifying these preferences settings, see [Section 16.6, "Specifying the Preferences Settings"](#) on page 211.
- From the Comparison Results action bar, choose . From the Windows Explorer, browse to the location specified in the Reports Directory field.

The Sterling Supply Chain Applications Configuration Deployment Tool automatically creates a subdirectory in this directory. For example, if

you have specified `D:/reports` in the Reports Directory field and exported the comparison results at 3:40 pm on May 23, 2003, CDT creates the subdirectory as: `D:/reports/export20030523154024`. This new subdirectory contains the `ydkexport.xml` file, which contains the comparison results.

After the comparison completes, you can perform any of the following actions:

- Examine the differences using the instructions in [Section 16.9, "Examining Database Differences"](#) on page 217.
- Generate a report of the differences, using the instructions in [Section 16.11, "Generating a Report of Differences"](#) on page 220.
- Deploy your changes using the instructions in [Section 16.13, "Deploying Your Configuration Data"](#) on page 222.

16.11 Generating a Report of Differences

You can generate a report of differences between the source and target databases.

To generate a report of differences:

1. Choose  to ensure that you have specified a `reports` directory. For more information about specifying CDT settings, see [Section 16.6, "Specifying the Preferences Settings"](#) on page 211.
2. Choose  to compare the two databases. For more information about comparing databases, see [Section 16.8, "Comparing Data"](#) on page 215.
3. In the Comparison Results tree, select the Results node.
4. From the Comparison Results action bar, choose . The Status panel displays trace messages that enable you to determine the success of the report generation process. The location of the report displays along with a message of the successful creation of reports.
5. From the Windows Explorer, browse to your reports directory. Within the directory you specified, the Configuration Deployment Tool creates a subdirectory named according to the time it was created.

For example, if you have specified `d:/reports` as the reports directory and generate a report at 3:40 p.m. on May 23, 2003, the

CDT creates a subdirectory called 20030523154024 within the `d:/reports` directory.

This new subdirectory contains the following:

- An `index.xml` file contains an overall summary of changes as displayed on the UI
- One XML file for each table that has changes with the details of each change

6. Open the XML files to see the differences.

If you generate another report, a new directory is created and populated with another set of XML files.

16.12 Importing Configuration Differences

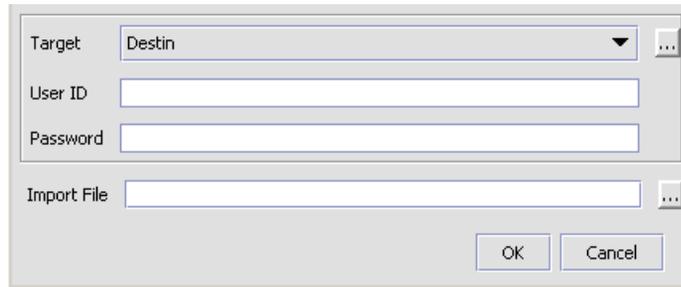
You can import configuration differences that are obtained by exporting comparison results.

Note: The Configuration Deployment Tool does not support data that contains special characters when comparing databases, exporting comparison results or importing comparison results.

For more information about exporting comparison results, see [Section 16.10, "Exporting Comparison Results"](#) on page 219.

To import configuration differences:

1. Run the `<YFS_HOME>/bin/ydk.cmd` script. This script opens a Microsoft Windows console and starts the Sterling Supply Chain Applications Development and Deployment WorkBench.
2. From the Sterling Supply Chain Applications Development and Deployment WorkBench menu, choose `Tools > Deployment > Import Results`. The Sterling Supply Chain Applications Configuration Deployment Tool Import dialog box displays.



The dialog box contains the following fields and controls:

- Target:** A dropdown menu with "Destin" selected and a browse button (...).
- User ID:** A text input field.
- Password:** A text input field.
- Import File:** A text input field with a browse button (...).
- Buttons:** "OK" and "Cancel" buttons at the bottom right.

3. Choose the Target button and enter the values appropriate for the Target database. Then choose the Import File and enter the path of the file to be imported.

When you are finished, close the dialog box by clicking the OK button.

4. After the comparison results are loaded, you can perform any of the following actions:
 - Examine any differences, using instructions as specified in [Section 16.9, "Examining Database Differences"](#) on page 217.
 - Generate a report, using the instructions as specified in [Section 16.11, "Generating a Report of Differences"](#) on page 220.
 - Deploy your changes, using instructions as specified in [Section 16.12, "Importing Configuration Differences"](#) on page 221.

16.13 Deploying Your Configuration Data

Before deploying configuration data, ensure that you are deploying the correct data by comparing the data and examining any differences.

In addition, ensure that you have addressed rollback issues. Sterling Supply Chain Applications supply sample backup and rollback scripts. For information on these scripts, see [Section 16.15.5, "Data Rollback Scripts"](#) on page 230.

To deploy configuration data:

1. Compare the two databases (by choosing the  *Compare* icon). For this detailed procedure, see [Section 16.8, "Comparing Data"](#) on page 215.
2. From the Comparison Results tree, select the entities you want to deploy.

Tip: When you deploy data for the *first* time, deploy the entire database. Deploy smaller increments only *after* you are certain that your source and target databases have relatively few differences.

The available options are as follows:

- For the entire database, choose the  *Sterling Supply Chain Applications Configuration* icon.
 - For a specific configuration group, choose the  *Configuration Group* icon.
 - For a specific driver entity, choose the  *Driver Entity* icon.
3. From the Comparison Results action bar, choose the  *Deploy* icon.
 - If the deployment succeeds, the Status panel displays a success message, the data is committed to your target database, and the cache is updated as specified in the `httpurl` field described in [Table 16–3](#) on page 207.
 - If the deployment fails, the Status panel indicates the errors to resolve and no data is committed to the target database.
 4. If you have deployed data from the `YFS_RESOURCE` table, restart your application servers in the target environment in order to refresh the cache.

16.14 Deploying Your Configuration Data in Command-Line Mode

There may be circumstances under which you want to run or schedule deployment of configuration data without user interface

interaction or without viewing the source and target comparison results.

To accomplish this you can deploy your configuration data in command-line mode. When you deploy your data in command-line mode, CDT automatically compares the source and target environments and then deploys the configuration data.

To deploy configuration data in command-line mode:

1. Set up CDT following the instructions in [Section 16.3, "Setting Up the Configuration Deployment Tool"](#) on page 202.
2. Run CDT.
3. Set the properties in the `<YANTRA_HOME>/Applications/Foundation/bin/cdtshell.cmd` file as described in [Section 16–6, "Configuration Deployment Tool Properties"](#).

Table 16–6 Configuration Deployment Tool Properties

Property	Description
JAVA_HOME	Specify the Java installation directory. For example, <code>JAVA_HOME=D:/JDK_1.5.0_06-b05</code> .
YFS_HOME	Specify the Sterling Supply Chain Applications merged Runtime directory as <code><YANTRA_HOME>/Runtime</code> . For example, <code>YFS_HOME=D:/Supply_Chain_Apps/Runtime</code> .
DB_DRIVER	Specify the path to the database driver. For example, <code>DB_DRIVER=D:/Supply_Chain_Apps/Applications/Foundation/extn/ojdbc14.jar</code>
DB_EXTN_JAR	Optional. If you have extended any Sterling Supply Chain Applications configuration database tables, specify the full path to the <code>yfsdbextn.jar</code> file.
SOURCE_DB	Specify the name of the data source as defined in the Configuration Deployment Tool Logon dialog box.
SOURCE_PASSWORD	Optional. If using a database as the source destination for data, specify the password for the database instance.
TARGET_DB	Specify the name of the data target destination for the data. For example, <code>TARGET_DB=xxx</code> (if using a database) or <code>TARGET_DB=xxxx</code> (if using an XML file).

Table 16–6 Configuration Deployment Tool Properties

Property	Description
TARGET_PASSWORD	Optional. If using a database for the target destination, specify the password for the database instance.
ExportDir	The comparison results are stored in this directory.
ImportDir	This directory should contain the comparison results that are exported. The ImportDir property when present, the source database properties are not used.
DoNotSynchronize	Valid values are Y or N. Y indicates that the comparison results are exported, but are not deployed. N indicates that the comparison results are exported and deployed as well. By default, the comparison results are automatically deployed.

4. Run the `<YFS_HOME>/bin/cdtshell.cmd` script.

You can also schedule this script to run at any appropriate time.

16.15 Troubleshooting

During operations, the Configuration Deployment Tool displays messages in the Status panel that enable you to understand the status of each operation. These messages can be classified as:

- Status
- Warnings
- Unexpected errors

The following section describes various messages that you may encounter and any relevant corrective actions you should take.

16.15.1 Informational Messages

Informational messages represent the status of the operation being performed. These messages are displayed in the default color (typically black) in the Status panel. Examples of informational messages include:

- Refreshing database cache

- Deployment operation started
- Reading table YFS_ORGANIZATION

16.15.2 Warning Messages

Warning messages typically require corrective action. They are displayed in red on the Status panel. CDT may produce the warning messages described in this section.

WARNING - FK check failed for table <name> to <name2>

This warning message typically indicates that the configuration data that you are trying to deploy will cause inconsistent data in the target database.

To analyze and correct this problem:

1. Determine the size of the data set you are deploying. This error typically occurs when trying to deploy a very small set of data, such as only a driver entity or a configuration group. For example, when deploying a pipeline, this error results if the document type to which the pipeline belongs has not been picked for deployment.

Try resolving this error by selecting a larger set to deploy. For example, instead of deploying a record, deploy the entire group, if possible.
2. If you still encounter this error for a group or you must only deploy a particular record, try synchronizing the foreign table before deploying the data.
3. Occasionally, inconsistent data in the source database causes this error. If this is the case, you must correct the source of the inconsistency before you proceed.

WARNING - Cache Refresh Failed

This error indicates that CDT was unable to inform the application server cluster on the target environment about the newly deployed configuration changes. The reason the cache refresh failed is displayed on the Status panel.

To analyze and correct this problem:

1. Verify the URL specified in the `httpurl` field for the target database. The `httpurl` is accessible from the Logon dialog box. Ensure that the `httpurl` points to a running instance of the application server and has the following format:

```
http://<hostname/ip-address>:<port-number>/yantra/interop/InteropHttpServlet
where hostname, ip-address and port-number are the parameters used to connect to the application server.
```

2. If your target environment is not running, no action is required. Sterling Supply Chain Applications automatically read the latest configuration data when it is started.
3. If the target environment is running, you must manually drop the stale database cache using the Sterling Supply Chain Applications System Administration Console. Not performing this step may result in Sterling Supply Chain Applications not recognizing the changed configuration.

WARNING - The program detected a few abandoned records in the target database.

In most cases, abandoned records are harmless and should not lead to the incorrect operation of Sterling Supply Chain Applications. By default, CDT leaves them untouched.

This warning typically occurs as a result of the following circumstances which are described in detail in [Section 16.1.3, "Externally Maintained Configuration Data"](#) on page 194:

- When CDT determines record that do not belong to a valid driver entity (for example, a pipeline for a process type that no longer exists)
- When CDT has been configured to ignore certain tables without ignoring all dependent tables

To analyze and correct this problem:

1. Add the `-DShowAbandoned=Y` Java parameter to the `ydk.cmd` script.
2. Run the `ydk.cmd` script. If CDT finds abandoned records, it dynamically creates a group called "Abandoned Records" and displays them in the Comparison Results window.

3. Examine these records, and then either ignore them or delete them from the target.

16.15.3 Unexpected Errors

Depending on the severity, messages about unexpected errors are displayed in either of the following places:

- In CDT Status panel (in red)
- In the Microsoft Windows console used to launch the Configuration Deployment Tool

To analyze and correct these errors:

1. If the error indicates an out-of-memory condition, try your previous operation with a smaller set of data.
2. Verify that your system specifications comply with the recommendations described in [Chapter 2, "System Requirements"](#).
3. You can edit the `-mx` Java parameter in the `ydk.cmd` script to increase the memory available for the Configuration Deployment Tool.

For example, if you were comparing the complete configuration, try comparing one group at a time. The same is true for the deployment operation.

In other cases, the underlying error and detailed trace are displayed. This may point to an incomplete or faulty installation or incorrectly specified runtime parameters.

16.15.4 Exceptions While Exporting With `cdtshell.cmd/sh` Scripts

The `cdtshell.cmd/sh` scripts throw a `java.lang.StringIndexOutOfBoundsException` when exporting configuration data using the Sterling Supply Chain Applications Configuration Deployment Tool with the database as `SOURCE_DB` and the XML file as `TARGET_DB`.

To analyze and correct this exception:

Verify that the `ExportDir` and the folder location of the XML files are not the same location.

16.15.5 Data Rollback Scripts

Before deploying data from a staging to a production environment, it is recommended to take a snapshot of your production configuration data. This snapshot enables you to perform a rollback of the deployment operation in case of failure. Sterling Supply Chain Applications provide the following rollback scripts:

- Backup script - creates multiple files containing data from all Sterling Supply Chain Applications configuration data
- Restoration script - uses the files produced by the backup scripts to restore the Sterling Supply Chain Applications configuration to a previously known good state

Note: The backup files do not represent the entire configuration snapshot (for example, it does not capture the YFS_PERSON_INFO table), so do not use the scripts for deploying data to a different database. Instead, use CDT to deploy configuration data.

These scripts are *only* for performing a rollback of configuration data onto the database from which the snapshot was taken.

16.15.5.1 Customizing the Scripts

Sterling Supply Chain Applications supply sample scripts in the `<YANTRA_HOME>/Applications/Foundation/bin/` directory. Rename and customize them to suit your implementation and methodology. Some suggested changes include adding your custom configuration tables and changing the paths where the data files are written to or read from to suit your version control process.

These scripts rely on utilities provided by the database vendor.

Oracle scripts rely on `export` or `import` or `sqlplus`. Edit and use the following scripts:

- `backup_config_oracle.cmd`
- `restore_config_oracle.cmd`

SQL Server scripts rely on `bcp` or `osql`. Edit and use the following scripts:

- `backup_config_sqlserver.cmd`

- `restore_config_sqlserver.cmd`

DB2 scripts rely on `export` or `load`. Edit and use the following scripts:

- `backup_config_db2.cmd`
- `restore_config_db2.cmd`

16.15.5.2 Running the Scripts

Before you deploy any data using the Sterling Supply Chain Applications Configuration Deployment Tool, use the backup script to back up your data. These backup data files can then be version controlled.

A

- access control, 147, 157
- Activesync, 84
- agent criteria
 - override, 123
- agent server setting
 - modifying configurator UI, 110
 - modifying management.properties, 109
 - modifying yfs.properties, 109
- Apache server
 - WebLogic proxy, WebSphere proxy, 140
 - websphere proxy, 140
- assigning ship nodes, 114
- authentication
 - using JAAS, 23
 - using LDAP, 23

B

- barcode printing
 - WebLogic, 147
 - WebSphere, 157
- browser
 - clearing cache, 164
- bsfengines.jar, 144
- bsf.jar, 144
- buildWLS.xml, 149, 152
- buildWS.xml, 158, 160

C

- capacity planning, 66

- CDT (Configuration Deployment Tool), 191
- clearing browser, 164
- clearing java plugin caches, 164
- client character, 163
 - displaying special characters, 163
- client characters
 - displaying unicode character, 163
- cold boot
 - reinstallation, 87
- collation property, 64
- component object model., 29
- COM+ (extended component object model), 29
- Configuration Deployment Tool, 191
 - and externally maintained data
 - appending, 195
 - best practices, 194
 - data integrity, 201
 - ignoring, 194
 - custom tables, 201
 - best practices when using, 201
 - specifying, 211
 - data transformations, 196, 213
 - specifying, 211
 - exporting
 - comparison results, 219
 - features, 191
 - foreign key interdependencies, 196, 202
 - best practices, 202
 - troubleshooting, 226
 - groups
 - configuration groups, 194
 - driver entities, 193
 - importing
 - configuration differences, 221

- performance
 - optimizing, 202
 - time estimates, 197
- planning
 - change management strategy, 198
 - prerequisites, 198
 - rollback strategy, 199
 - security, 198
 - system requirements, 197
 - upgrades, 199
- tasks
 - comparing databases, 216
 - deploying data, 223
 - deploying data in command-line mode, 224
 - examining differences between databases, 217
 - generating a report of differences, 220
 - performing rollback, 229
 - setting up the CDT, 202
 - specifying a reports directory, 211
 - specifying custom classes, 211
 - specifying tables to append, 212
 - specifying tables to ignore, 213
 - specifying transformations, 211
 - starting the CDT, 206
 - stopping the CDT, 206
 - transforming elements, 215
- troubleshooting
 - abandoned records errors, 227
 - cache refresh errors, 226
 - FK check errors, 226
 - rollback scripts, 229
 - unexpected errors, 228
- user interface
 - Comparison Results window, 209
 - Deployment Explorer window, 209
 - Status panel, 210
- Configuring
 - server images, 183
- configuring application server, 38
 - JDK upgrades, 38
- copying WMS label formats, 78
- copying WMS node
 - rapid deployment tool, 125
- creating EAR

- for WebLogic, 151
 - for WebSphere, 157
- cross-site script vulnerabilities
 - malicious HTML, 99
 - prevention, 99
 - enabling html encoding, 99
- custom classes deployment, 135

D

- data migrator, 119
 - connection settings, 104
 - log files, 121
 - errors, warnings, 121
 - modifying migrator.properties, 103
 - properties file, 103
 - restart file, 120
 - task definition files, 119
- database
 - connection settings, 102
 - modifying yfs.properties, 102
 - override properties, 103
- database security, 32
 - credit card encryption, 32
- database sizing, 66
 - capacity planning, 66
 - disk estimation
 - DOM module, 67
 - nWMS module, 70
 - future disk estimation, 75
- database user privileges, 55
 - DB2, 61
 - Oracle, 55
 - oracle
 - administrative user, 55
 - application user, 55
 - SQL server, 64
- database verification, 115
- db-extn-sqlserver, 152,160
- dbverify script, 115
- DB2
 - codepage selection, 61
 - configuring, 61
 - copying database driver, 61
 - installation, 60

- DB2 database
 - production environment, 61
 - running scripts, 62
 - running customDB views, 62
 - sizing, See Also database sizing, 56, 61
- deploying
 - custom classes, 135
- deploying configuration data, 191
 - exceptions while exporting with cdtshell.cmd/sh scripts, 228
- deploying EAR
 - on WebLogic, 151
 - on WebSphere, 154
- deploying Sterling Supply Chain Applications, 131
 - on WebLogic, 142
 - on WebSphere, 154
- deployment architecture
 - analyzing
 - authentication mechanism, 23
 - current security infrastructure, 22
 - data encryption, 23
 - network topology, 23
- disk estimation
 - DOM module, 67
 - before estimating, 67, 68, 69
 - estimation methodology, 67
 - steps involved, 69
 - future requirements, 75
 - nWMS and DOM module
 - steps involved, 72
 - nWMS module, 70
 - before estimating, 70, 71
 - estimation methodology, 70
 - nWMS module only
 - steps involved, 74
- DOM module
 - disk space estimation, 69
- DOM module disk estimation, 67
- driver entities, 193

E

- EAR (Enterprise Archive), 151
- EJB (Enterprise JavaBeans), 25
- ejbdeploy.sh, 163

- encrypting properties, 98
- enterprise javabeans. See EJB, 25
- environment variable
 - YANTRA_HOME, xv, 4
 - YANTRA_OLD_HOME, xv
 - YFS_HOME, xv, 4
 - YFS_OLD_HOME, xv
- errors, 57
- estimates of database, 66

F

- factory defaults, 112
 - installer restart file, 114
 - modifying loadDefaults file, 113
 - modifying migrator.properties, 113
 - specifying US geography definitions, 114
 - specifying US region definitions, 114
- file separator, 45, 98

G

- generating EJB stubs, 163
- Graph display on WebLogic, 147
- Graph display on WebSphere, 157

H

- history database, 68, 71
- HP-UX
 - ncurses installation, 90
- HTML characters
 - impacting display, 99
- HTTP
 - in-memory session replication, 153
- HTTP (hypertext transfer protocol), 26
- HTTPS
 - enforcing secure protocol, 136
- HTTPS (hypertext transfer protocol secure), 29
- hypertext transfer protocol secure. See HTTPS, 29
- hypertext transfer protocol. See HTTP, 26

I

- installation checklist, 6
- installation directory structure, 1
- Installing, 38
- installing
 - DB2
 - Oracle
 - SQL Server
- installing analytics, 43
- installing application server, 37
- installing carrier server, 43
- installing database software, 53
 - DB2. See DB2
 - Oracle. See Oracle
 - SQL Server. See SQL Server
- installing DB2, 60
- installing jasperreports, 79
- installing mobile application, 83
- installing Oracle, 53
- installing print server, 77
- installing SQL Server, 63
- installing Sterling Supply Chain Applications
 - on remote machine, 46
 - setting permissions, 47
 - on UNIX and LINUX, 44
 - on Windows, 45
 - UNIX criteria, 44
- installing Sterling Supply Chain Applications language pack, 49
- installing weighing scale, 81
- integration server setting
 - modifying configurator UI, 110
- internet access
 - running Sterling Supply Chain Applications configurator, 98
- Internet Explorer security
 - adding trusted website, 35
 - browser settings, 32
- intgeration server setting
 - modifying management.properties, 109
 - modifying yfs.properties, 109
- invoking
 - custom classes, 136

J

- JAAS (Java Authentication and Authorization Service), 23
- jasperreports
 - installation, 79
- Java Authentication and Authorization Service. See JAAS, 23
- java messaging service. See JMS, 27
- java naming and directory interface. See JNDI, 28
- java plugin
 - changing yfs.properties file, 99
 - clearing cache, 164
- java protocol
 - disabling, 25
 - EJB, 25
 - HTTP, 26
 - JMS, 27
- java protocols
 - securing, 27
 - COM+, 29
 - EJB, 28
 - HTTP API tester, 29
- JavaServer pages. See JSP, 28
- jcrt.jar, 145
- jdbcurl, 102, 104
- JMS (java messaging service), 27
- JNDI clean up
 - stale entries, 146
- JNDI registry, 146
 - clean up, 145
 - stale entries, 146
- JNDI registry clean up, 145
- JNDI (java naming and directory interface), 28
- jnet.jar, 145
- JSP (JavaServer Pages), 28
- jsse.jar, 145
- JVM settings
 - classpath, 155
 - custom properties, 156
 - for WebSphere, 155
 - WebSphere properties, 155

L

- LAN (local area network), 25
- language pack
 - creating EAR, 52
 - creating ear, 52
 - deploying EAR, 52
 - installing, 49
 - on remote computer, 50
 - on UNIX and LINUX, 49
 - on Windows, 50
 - loading factory defaults, 51
 - loading language pack translations, 51
 - setting up properties, 50
 - switching base language, 52
- LDAP user authentication, 104
 - assumption, 104
 - for application consoles, 105
 - modifying configurator UI, 106
 - modifying weblogic startup file, 106
 - modifying yfs.properties, 106
 - password expiration, 105
 - change password link, 105
 - expire in days, 105
 - properties, 105
- LDAP (lightweight directory access protocol), 23
- lightweight directory access protocol. See LDAP, 23
- LLM (loftware label manager), 77
- loading factory defaults,database factory defaults, 112
- local area network. See LAN, 25
- loftware label manager, 77
 - bar code label, 77
 - defining printers, 78
 - designing label, 77
 - for UNIX systems, 78
 - modifying yfs.properties, 78
 - supported modes, 77
- log files
 - best practices, security, 30
 - for data migrator, 121
 - setting up, 107
- logging
 - modifying yfs.properties, 108

- properties, 107
 - utility, 107
- login.jsp, 138
- log4j configuration file, 108
- log4j utility, 107
- LPM (loftware print server), 77

M

- maintaining accurate entries, 146
- maximum performance, 9
- Microsoft .NET, 88
- mixed protocol
 - filter initialization parameter
 - HTTPListenPort, 138
 - HTTPSListenPort, 138
 - SecuredQueryStringPatterns, 139
 - SecuredURLPatterns, 138
 - UnchangedQueryStringPatterns, 139
 - UnsecuredQueryStringPatterns, 139
 - UnsecuredURLPatterns, 139
- mixed protocols, 99, 136
 - configuring filter, 136
 - enforcing HTTPS, 136
 - filter mechanics, 139
 - secure,unsecure, 136
 - securing login information, 140
- mobile application
 - Activesync for copying files, 84
 - installation, 83
- mobile installation
 - cold boot reinstallation, 87
 - installing libiconv
 - HP-UX Itanium, 91
 - installing ncurses, 90
 - steps to install, 84
- mobile terminals
 - device requirements
 - barcode scanner, 15
 - keys, 15
 - minimum memory, 16
 - network connectivity, 16
 - screen resolution, 16
 - synchronization, 15

N

- named pipes, 63
- namedwebservices.xml, 148
- ncurses, 90
- network topology
 - deployment over internet, 24
 - deployment over LAN, 25
 - deployment over VPN, 24
- networked WMS module disk estimation, 70
- non-Sterling Supply Chain Applications files, 109
- nWMS and DOM module
 - disk space estimation, 72
- nWMS module only
 - disk space estimation, 74

O

- operating system permissions, 31
- Oracle
 - configuring, 55
 - copying JDBC driver, 54
 - installation, 53
 - running create instance, 53
- Oracle database
 - production environment, 55
 - creating views, 56
 - running scripts, 56
 - setting connection properties, 100
 - query rewrite privileges, 56

P

- password expiration, 105
- Pocket PC mobile terminal
 - reinstalling on cold boot, 87
- PocketPC mobile terminal
 - installing Sterling, 83
- post installation recommendations, 30
- pre-compile JSPs
 - WebLogic utility, 142
- pre-compiling JSP files, 131
- Preparing the Database Server, 53
- print server
 - configuration utility, 78

- installing software components, 77
- print server installation, 77
- procuring storage, 69, 71
- production environment, 192
- properties file
 - for data migrator, 103
- properties, encrypting, 98

R

- RDT (rapid deployment tool), 125
- recommended data encryption
 - SSL 128-bit, 23
 - VPN 3DES, 23
- RegionSchema-US.sql, 114
- remote method invocation. See RMI, 28
- restart file
 - for data migrator, 120
- restart files
 - preserving, 121
- retention policy, 68
- reverse proxy, 138
- RMI (remote method invocation), 28
- rollback of configuration data, 229
- running
 - DB2 scripts, 62
 - Oracle scripts, 57
 - SQL Server scripts, 64
- runtime, 2
 - creating, 127
 - updating, 129

S

- secure protocol, 136
- secure socket layer. See SSL, 24
- security
 - database security, 32
 - deployment architecture, 21
 - Internet Explorer settings, 32
 - java protocol See java protocol
 - web security See web security
- security plan
 - creating, 21
- session replication, 153

- idempotent flag, 153
- including session descriptors, 153
- set up
 - utility script files, 111
 - UNIX permissions, 112
- Setting Oracle Database Connection Properties, 100
- setting up
 - Agent server, 109
 - database verification tool, 115
 - Integration server, 109
 - Oracle scripts, 57
 - properties file, 98
 - WebLogic scripts, 142
 - webservices, 148
- setting up Sterling Supply Chain Applications, 95
 - properties file, 95
- SQL Server
 - configuring, 64
- SQL Server database
 - case-insensitive mode, 64
 - collation property, 64
 - copying database driver, 64
 - enabling named pipes, 63
 - enabling TCP/IP, 63
 - estimating character set, 64
 - production environment, 64
 - running scripts, 64
 - sizing, See Also database sizing, 64
- SSL accelerator, 24
- SSL (secure socket layer), 24
- stack traces
 - eliminating, 147
- staging environment, 192
- stale entries, 146
 - eliminating, 146
- statistics monitoring, 165
- Sterling Supply Chain Applications
 - deploying, 131
 - installation directory structure, 1
- Sterling Supply Chain Applications Mobile Application
 - installation
 - PocketPC mobile terminal, 83
- Sterling Supply Chain Applications Runtime, 2

- creating, 127
- updating, 129
- Sterling Supply Chain Applications utilities
 - installation, 112
 - dbverify, 112
 - loadDefaults, 112
 - upgrade, 118
 - MigrationValidator, 119
 - migrator, 119
- suppressing password prompt, 140
- System Console, 157
- system requirements
 - minimum, 9

T

- task definition file
 - childtask element, 120
 - task element, 119
- task definition files
 - for data migrator, 119
- task defintion file
 - taskinfo element, 120
- TCP/IP, 63
- time-triggered transactions
 - override agent criteria, 123
- transaction data
 - truncating, 121
- transactional database, 68, 70
- truncating transaction data, 121
- types of order, 68

U

- unsecure protocol, 136
- US_ZipcodeLocation.sql, 114
- Utilities
 - development, 121
 - transaction data truncation tool, 121
 - runtime, 122
 - agent server, 123
 - agent trigger, 123
 - Integration server, 122
 - setting up classpath, 123

V

- verifying database, 115
 - extra objects, 118
- verifying deployment, 164
- virtual host configuration, 156
- virtual private network. See VPN, 24
- VPN (virtual private network), 24
- VT220 Mobile Terminal, 83, 90
 - installing, 90
 - steps to install, 91

W

- WAR file
 - adding webservices elements, 150
- web security
 - routing, 31
 - session security, 30
 - web server executables, 31
 - writing log files, 30
- WebLogic
 - creating EAR
 - configuring environment variables, 151
 - exporting ANT_OPTS, 128, 152, 160
 - extended database, 152
 - file descriptors, 151
 - steps involved, 151
 - yantra.ear, 153
 - creating EAR, deploying EAR, 151
 - eliminating stack traces, 147
 - preparing for JNDI clean up, 145
 - running webservices, 152
 - script properties, 143
 - setting client character display, 163
 - setting HTTP in-memory session replication, 153
 - using webservices, 148
 - webservices properties, 149
- WebLogic application server
 - setting up, 142
- weblogic.jar, 146
- weblogic.xml, 153
- webservices, 148
 - on WebLogic, 152
 - on WebSphere, 157
 - properties on WebLogic, 149
 - properties on WebSphere, 158
- WebSphere
 - application clients
 - invoking Sterling Supply Chain Applications EJBs, 163
 - avoiding warning messages, 154
 - configuring EAR, 161
 - configuring JVM settings, 155
 - configuring virtual host, 156
 - creating EAR, 157
 - extended database, 160
 - setting environment variables, 159
 - steps involved, 159
 - deploying EAR, 154, 161
 - JVM properties, 155
 - making EJB calls, 163
 - preparing for deployment, 154
 - running webservices, 157
 - specifying memory parameters, 154
 - webservices properties, 158
- web.xml, 136
- weighing scale
 - installation, 81
 - steps to install, 81
- Win CE 5.0 mobile terminal
 - reinstalling on cold boot, 89
- WinCE mobile terminal, 83
 - installing Sterling, 83
- WinCE mobile terminals
 - reinstalling on cold boot, 88
- WMS installation
 - defining printers, 78

Y

- yantra.ear, 153
- yantraejb.jar, 132
- yantra.jar, 132, 163
- yantra.war, 132
- yantrawebservices.war, 132
- yantra_ejbstubs.jar, 163
- YANTRA_HOME, xv, 4
- yantra_indexadds.sql, 117

- yantra_indexdrops.sql, 117
- YANTRA_OLD_HOME, xv
- yantra_sequence.sql, 117
- yantra_tablechanges.sql, 117
- yantra_tabledrops.sql, 117
- Yantra_TextIndexAdds.sql, 117
- Yantra_TextIndexDrops.sql, 117
- Yantra_TextIndexModify.sql, 117
- Yantra_TextIndexUpdates.sql, 117
- ycpwsbe.jar, 149
- yfs.properties
 - Configuration Deployment Tool, 203
 - dblogin.jdbcurl, 102, 104
- yfssqlserver_master_db_script.cmd, 65
- YFS_HOME, xv, 4
- yfs_master_db_script.log, 57
- yfs_master_db_script.sql, 56, 57
- YFS_OLD_HOME, xv
- yfs_seq_db2.sql, 62
- yfs_tables.sql, 57, 62

