# Sterling Integrator®

## Windows Cluster Installation

Version 5.0.05

**Sterling Commerce**
*An IBM Company*

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# Chapter 1

## Introduction

Use the Sterling Integrator *5.0 Windows Cluster Installation Guide* to install Sterling Integrator 5.0 in a cluster (multiple node) Windows environment.

This guide focuses on these installation tasks, including:

- Setting up the database
- Installing the Sterling Integrator software
- Configuring installation utilities
- Configuring Sterling Integrator for a non-English environment

For upgrades, use the Sterling Integrator *5.0 Windows Cluster Upgrade Guide*.

# Setting Up the Database (Windows)

## Creating and Configuring the Database Server (Windows)

You must install, create, and configure a database so that each Sterling Integrator instance has a dedicated schema and login for the database.

**Caution:** If you are reinstalling the Sterling Integrator, be aware that data in your existing database will be deleted. To prevent this, either back up the existing database or save it under a different name.

**Caution:** After creating and configuring your database, recycle the database to apply the changes.

In a Windows environment, the Sterling Integrator can support the following databases:

◆ Oracle®

◆ DB2

◆ Microsoft SQL Server

See *System Requirements* for supported version information.

## Database Sizing (Windows)

Database sizing is designed to give you estimates of the database growth and to assist in planning the disk requirements.

### Capacity Planning

There are many factors to consider when estimating the amount of disk space that will be required for the Sterling Integrator. 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.

The Sterling Integrator provides 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.

### 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.

# Using an Oracle Database (Windows)

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

To use an Oracle database, follow this process:

◆ Create the database. Refer to the Oracle documentation for information about creating the database, including creating a schema repository, login, and tablespace. Be sure to install the correct version and patches.

◆ Refer *Configuring an Oracle Instance (Windows)* on page 8 to configure an Oracle instance.

◆ Refer *Configuring Rollback in Oracle* on page 10 to configure rollback in Oracle.

◆ Refer *Installing the JDBC Driver in Oracle (Windows) on page 10* to install JDBC driver in Oracle.

◆ Refer *Enabling Failover in a Multiple Node Oracle RAC Database Cluster (Windows) on page 11* to enable failover in multiple node RAC database cluster.

## Configuring an Oracle Instance (Windows)

To configure an Oracle instance to work with Sterling Integrator, follow these steps:

1. If you do not have Oracle installed, follow the installation procedures in your Oracle installation manuals. Ensure that you have installed the supported version and patches. See *System Requirements* for supported version information.

2. Run the create instance procedure. Use `AL32UTF8` as character set.

3. Configure the `INIT<INSTANCE_NAME>.ORA` file for Oracle. Sterling Integrator requires the following parameter settings in your Oracle database:

| Parameter | Value |
|---|---|
| Number of open cursors (OPEN_CURSORS) | Greater than or equal to 2000 |
| Shared pool size (SHARED_POOL_SIZE) | Greater than or equal to 90000000 |
| Large pool size (LARGE_POOL_SIZE) | Greater than or equal to 614400 |
| Java pool size (JAVA_POOL_SIZE) | Greater than or equal to 20971520 |

| Parameter | Value |
|---|---|
| Number of processes (PROCESSES) | Greater than 500 |
| | Must be greater than the number of connections required by all nodes of Sterling Integrator. |
| | (Number of Sterling Integrator nodes * Sum of all max pool sizes in Sterling Integrator) + Possible usage of buffer connections from the Sterling Integrator pools + Connections required for other operational management tools |
| | This setting needs to be set high enough to accommodate the expected peak connections from Sterling Integrator plus the possible usage of buffer connections from the Sterling Integrator pools as well as additional connections for other operational management tools. |
| | Note that the expected peak connections from Sterling Integrator are per node, and this number should be multiplied by the number of nodes in a cluster. |
| Log buffer (LOG_BUFFER) | Greater than or equal to 163840 |
| Database block size (DB_BLOCK_SIZE) | Greater than or equal to 8192 |
| Sort area size (SORT_AREA_SIZE) | Greater than or equal to 65536 (for backward compatibility with Oracle 9i database). |
| Sort area retained size (SORT_AREA_RETAINED_SIZE) | Greater than or equal to 65536 (for backward compatibility with Oracle 9i database). |
| Max extends | Unlimited |
| Character set | AL32UTF8 |
| NLS length semantics (NLS_LENGTH_SEMANTICS) | CHAR |
| SGA maximum size (SGA_MAX_SIZE) | 1 GB to $n$ GB, depending on the amount of physical memory on your database server. If the server is running only this database, up to 80% of physical memory. |
| SGA components total size (SGA_TARGET) | |
| PGA target aggregate memory (PGA_AGGREGATE_TARGET) | |
| Cursor sharing (cursor_sharing) | Exact |
| Timed Statistics (timed_statistics) | True |
| Optimizer mode (optimizer_mode) | All_rows |
| Database cache size (db_cache_size) | Greater than or equal to 19200 |

**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.

4. Identify or create a tablespace for Sterling Integrator user tables and indexes to reside.

5.  Create a user for Sterling Integrator.

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

    The following are the privileges required by the Sterling Integrator administrative user for creating and modifying the Oracle database:

    - GRANT "CONNECT" TO SI_USER
    - ALTER USER SI_USER DEFAULT ROLE "CONNECT"
    - GRANT CREATE SEQUENCE TO SI_USER
    - GRANT CREATE TABLE TO SI_USER
    - GRANT CREATE TRIGGER TO SI_USER
    - GRANT SELECT ON CTXSYS.CTX_USER_INDEXES TO SI_USER
    - GRANT SELECT ON SYS.DBA_DATA_FILES TO SI_USER
    - GRANT SELECT ON SYS.DBA_FREE_SPACE TO SI_USER
    - GRANT SELECT ON SYS.DBA_USERS TO SI_USER
    - GRANT SELECT ON SYS.V_$PARAMETER TO SI_USER

**Note:** Ensure that the user who is responsible for creating and modifying the Oracle database has a specified quota (extent) assigned to him in the tablespace even if the user was assigned an unlimited tablespace when the user was created. Otherwise, the installer will throw the *ORA-01950: no privileges on tablespace name* error.

**Note:** If you are using Oracle AQ, then grant the AQ_ADMINISTRATOR_ROLE permission.

## Configuring Rollback in Oracle

You can rollback changes in Oracle using AUTO UNDO management. It is recommended that you use this option. This will avoid any manual monitoring of UNDO segments.

If a server is upgraded from Oracle 8i, set the UNDO_MANAGEMENT=AUTO parameter in init<SID>.ora. Your database administrator needs to determine the UNDO_RETENTION setting. Ensure that the file system, which has the UNDOTBS1 tablespace, has enough space to use the AUTOGROW setting.

## Installing the JDBC Driver in Oracle (Windows)

The Sterling Integrator requires the appropriate JDBC driver for Oracle database. These drivers are thin client based pure Java JDBC drivers. See *System Requirements* for supported version information.

After obtaining the correct JDBC driver, record the absolute path to its location on your system. You must supply this absolute path when installing the Sterling Integrator.

## Enabling Failover in a Multiple Node Oracle RAC Database Cluster (Windows)

To enable failover in a multiple node Oracle RAC database cluster in Windows, do the following:

1. Navigate to the *install_dir*\install\properties directory.

2. In the sandbox.cfg file, add a new property for ORACLE_JDBC_URL, which contains the Oracle RAC connection URL.

   The following example shows the suggested URL form and the way it is organized. However, the property value must be one string of text starting with ORACLE_JDBC_URL=. Your database administrator (DBA) can modify this URL as needed.

```
jdbc:oracle:thin:@
  (DESCRIPTION=
    (ADDRESS_LIST=
      (FAILOVER=ON)
      (LOAD_BALANCE=ON)
      (ADDRESS=(PROTOCOL=TCP)(HOST=myhost1)(PORT=1521))
      (ADDRESS=(PROTOCOL=TCP)(HOST=myhost2)(PORT=1521))
     )
     (CONNECT_DATA = (SERVER = DEDICATED)(SERVICE_NAME = myservicename))
   )
```

3. In the customer_overrides.properties file, add the following read timeout properties for the pools:

```
jdbcService.oraclePool.prop_jdbc.readTimeout=90000
jdbcService.oraclePool_local.prop_jdbc.readTimeout=90000
jdbcService.oraclePool_NoTrans.prop_jdbc.readTimeout=90000
```

4. Run the setupfiles.cmd command from the *install_dir*\install\bin directory.

# Using a DB2 Database (Windows)

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

To use a DB2 database, follow this process:

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

  See *System Requirements* for supported version information.

◆ Create the database. Refer to the DB2 documentation for information about creating the database, including creating a schema repository, login, and tablespace. Be sure to install the correct version and patch.

**Note:** The installation script creates tables and indexes. Certain tables require a page size of 32K. You should have a tablespace to accommodate such tables. DB2 automatically places tables and indexes

in the available tablespaces using its internal logic. You can move the tables to a different tablespace after the installation is complete.

◆ Refer *Installing Client Components, Compilers, and Fix Pack* on page 12 to install client components, compilers, and fix pack.

◆ Refer *Setting Parameters for DB2* on page 12 to set parameters.

◆ Refer *DB2 Database User Privileges* on page 12 to set database user privileges.

◆ Refer *Installing JDBC Drivers for DB2* on page 13 to install JDBC drivers.

## Installing Client Components, Compilers, and Fix Pack

The Sterling Integrator uses stored procedures for DB2. Be sure to install the client components and compilers before you install the fixpack. You must install or set up the following components:

1. Install the Administration client.

2. Install the necessary fix pack after you install the client components and compilers. Otherwise, the clients will overwrite the fix pack binaries.

3. Set the path for the compiler by using the **db2set** command.

For more information about these tasks, see the IBM documentation.

## Setting Parameters for DB2

Sterling Integrator requires the following parameter settings in your DB2 database:

| Parameter | Value |
|---|---|
| DB2_SKIPDELETED | ON |
| DB2_SKIPINSERTED | ON |
| DB2_NUM_CKPW_DAEMONS | 0 |
| DB2LOCK_TO_RB | STATEMENT |
| LOCKLIST | AUTOMATIC |
| MAXLOCKS | AUTOMATIC<br>If AUTOMATIC is not supported: 100 |
| Database Code Set | UTF-8 |

For information about other parameter settings in your DB2 database, see the Sterling Integrator *5.0 Performance Management* documentation.

## DB2 Database User Privileges

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

## Installing JDBC Drivers for DB2

For DB2, install the appropriate DB2 JDBC Type 4 driver and any correlating patches. See *System Requirements* for supported version information.

You can obtain these files from the IBM Web site. After you obtain this JDBC driver, record the absolute path to its location on your system. You must supply this absolute path during installation.

If the JDBC driver provided by your database vendor is distributed among multiple files, you must place all the files that comprise the JDBC driver into one .jar file. Follow these steps to create one .jar file:

1.  Identify all the vendor database jar files for the JDBC driver.

2.  Create a temporary working directory (`mkdir wd; cd wd`).

3.  Extract the contents of each file used for the JDBC driver using the jar utility into the temporary working directory (`jar xvf <jdbc.jar>` for each supplied jar file).

    **Note:** Various Sterling Integrator scripts specify a DB_DRIVER. The DB_DRIVER specified must include all of these JAR files. The DB_DRIVER setting is located in sandbox.cfg. To make changes to the DB_DRIVER setting, edit and save the file, then run `setupfiles.cmd`.

4.  Bundle the files in the temporary working directory into one file using the jar utility (jar cvf new.jar*).

5.  Record the absolute path to the .jar file you created on the Preinstallation Checklist.

The type-4 driver does not require a separate Java listener running on the database server. Instead, connect directly to the DB2 port.

# Using a Microsoft SQL Server Database (Windows)

You can use an SQL Server database for maintaining information on Sterling Integrator. The following sections provide the necessary steps to install and configure a SQL Server database for production.

To use Microsoft SQL Server database, follow this process:

*   If you do not have SQL Server installed, follow the installation procedures in your SQL Server Installation manual. Refer to the SQL Server documentation for information about creating the database, including creating a schema repository, login, and tablespace. Be sure to install the correct version and patch. Sterling Integrator supports Microsoft SQL Server Enterprise and Standard versions. See *System Requirements* for supported version information.

    Refer *Installing Microsoft SQL Server 2005 Service Pack and Hotfix* on page 14 to install service pack and hotfix

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

*   Refer *Configuring Microsoft SQL Server Database* on page 14 to configure SQL Server database.

    *   Refer *Setting Database Parameters in SQL Server* on page 14 to set SQL Server parameters.

    *   Refer *SQL Server Database User Privileges* on page 14 to set SQL Server user privileges.

    *   Refer *Configuring Snapshot for Microsoft SQL Server 2005* on page 14 to configure snapshot.

*   Refer *Installing the JDBC Driver in SQL Server* on page 15 to install JDBC driver.

## Installing Microsoft SQL Server 2005 Service Pack and Hotfix

**Note:** For SQL Server 2005, do not use case-sensitive column names in the database. Case-sensitive names will prevent the SQL Server 2005 System Management Console from loading.

To install Microsoft SQL Server 2005:

1. Install Microsoft SQL Server 2005 base release.

2. Install Microsoft SQL Server 2005 Service Pack 2. You can download it from http://www.microsoft.com/downloads/details.aspx?familyid=D07219B2-1E23-49C8-8F0C-63FA18F 26D3A&displaylang=en.

3. Apply the cumulative hotfix package. You can download it from http://support.microsoft.com/default.aspx?scid=kb;EN-US;933097.

4. Apply the GDR2 hotfix. You can download it from http://support.microsoft.com/kb/934459/.

5. The Microsoft SQL Server 2005 version is now 9.00.3159.

## Configuring Microsoft SQL Server Database

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

- Set database parameters in SQL Server.
- Set SQL Server database user privileges.
- Configure snapshot for SQL Server 2005.

### Setting Database Parameters in SQL Server

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

The following parameter settings are required in your SQL Server database:

| Parameter | Value |
| --- | --- |
| Collation Setting | SQL_Latin1_General_CP850_BIN |
| Sort order | Binary |
| Security authentication | SQL Server and Windows |
| Torn Page Detection | Off |

### SQL Server Database User Privileges

In SQL Server, you must grant DBO (Database Owner) permission to the user. The DB_DDLADMIN role is required for creating objects in the SQL Server database.

### Configuring Snapshot for Microsoft SQL Server 2005

The snapshot feature in Microsoft SQL Server 2005 allows you to view a read-only copy of the database even when it is locked. It is recommended to configure snapshot feature as it reduces deadlocks. Run the following command to enable snapshot feature:

```
ALTER DATABASE db_name SET READ_COMMITTED_SNAPSHOT ON;
```

## Installing the JDBC Driver in SQL Server

Sterling Integrator requires the correct Microsoft SQL Server driver. See *System Requirements* for supported version information.

Go to the Microsoft web site to download the driver and any appropriate patches.

1. Download sqljdbc_*version_language*.tar.gz to a temporary directory.

2. To unpack the zipped tar file, navigate to the directory where you want the driver unpacked and type the following command:

   ```
   gzip -d sqljdbc_version_language.tar.gz
   ```

3. To unpack the tar file, move to the directory where you want the driver installed and type the following command:

   ```
   tar -xf sqljdbc_version_language.tar
   ```

   After the package unpacks, you can find out more information about using this driver by opening the JDBC Help System in the \\*absolutePath*\sqljdbc_*version*\\*language*\help\default.htm file. This will display the help system in your Web browser.

4. When the Sterling Integrator installation asks for the location of the JDBC drivers, specify the extracted jar file created after unpacking the archive (usually named sqljdbc.jar). The JDBC driver version is the same as the version of the drivers downloaded from Microsoft.

## Managing Database Passwords

A password is used by the application to connect to its database. The password is stored as clear text in a property file on the system. If the security policies at your company require you to encrypt these passwords, you can do so after you install the Sterling Integrator. Encrypting these passwords is optional.

## Database Password Encryption Methods

Database passwords are encrypted using one of two methods, OBSCURED or ENCRYPTED. The encryption method is decided by the value of the encryptionPrefix in propertyEncryption.properties or propertyEncryption.properties_platform_security_ext file.

## Encrypting Database Passwords (Windows)

To encrypt the database password:

1. Stop the Sterling Integrator.
2. Navigate to \*install_dir*\install\bin.
3. Enter `enccfgs.cmd`.
4. Enter `setup.cmd`.
5. Enter `deployer.cmd`.
6. Enter `startWindowsService.cmd` to start the Sterling Integrator.

## Decrypting Database Passwords (Windows)

To decrypt a password in Windows:

1. Stop the Sterling Integrator.
2. Navigate to \*install_dir*\install\properties.
3. Open the sandbox.cfg file.
4. Copy encrypted password from the database_PASS property. Use the text that appears after the **database_PASS=** text. For example, if **database_PASS= OBSCURED:123ABCxyz321**, you would copy the text **OBSCURED:123ABCxyz321**. (OBSCURED is the encryption method for the password.)
5. Navigate to \*install_dir*\install\bin.
6. Enter **decrypt_string.cmd encrypted_password**. For encrypted_password, use the text that you copied in Step 4.

   You are prompted for the Sterling Integrator passphrase.

   Your decrypted password appears.
7. Navigate to \*install_dir*\install\properties.
8. Edit the sandbox.cfg file to replace the encrypted password with the password that was returned in Step 6.
9. You need to decrypt the entry for **YANTRA_DB_PASS**. Repeat Steps 4 to 8 to decrypt YANTRA_DB_PASS.

**Note:** You should also decrypt any custom database pool passwords present in the customer_overrides.properties file or any other properties file.

10. Navigate to \*install_dir*\install\bin.
11. Enter `setupfiles.cmd`.
12. Enter `deployer.cmd`.
13. Enter `startWindowsService.cmd` to start the Sterling Integrator.

# Installing in a Windows Cluster Environment

**Caution:** Sterling Integrator should be installed behind a company firewall for security purposes. See the Perimeter Server and Security topics in the Sterling Integrator documentation library for more information on secure deployment options.

## Preinstallation Setup Checklist for a Windows Cluster Environment

The following topics will assist you with preinstallation tasks when planning to install the Sterling Integrator in a Windows cluster environment:

**Note:** If you are upgrading from a prior release, see the *Upgrade Guide* before continuing with the installation of the Sterling Integrator.

**Note:** If you are installing the perimeter server, see the perimeter server installation documentation after installing Sterling Integrator.

**Note:** AS2 Edition is not offered as a cluster solution.

### Checklist for Windows Cluster Preinstallation

The preinstallation checklist for the Windows cluster environment identifies the prerequisite tasks you must complete before installing the Sterling Integrator.

**Note:** When creating a name, such as an account name, permissions name, profile name, or database name, follow these conventions:

- Use any valid alphanumeric characters and **-**, **:**, **$**, **&**, or **_**.

- Do not use spaces or apostrophes.

You may want to make a copy of the following checklist and use it to record the information you collect for installing Sterling Integrator:

| Step | Description | Your Notes |
| --- | --- | --- |
| 1 | Verify that your system meets the hardware and software requirements specified for this release. For more information, refer to *Checking System Requirements* on page 20. | |
| 2 | Verify that your system has the patches required by Java™ for the Windows environment. See the vendor's Java Web site for more information. | |
| 3 | For systems with multiple IP addresses, verify that the IP address on which the Sterling Integrator resides is accessible by any client computer that is running a browser interface.<br><br>**Caution:** If you do not verify the IP addresses, your system may not operate properly after installing the Sterling Integrator. | |
| 4 | Verify that all client computers are using Microsoft Internet Explorer 6.x or later. | |
| 5 | If you are using a non-English environment, confirm that you are using the appropriate character set. | |
| 6 | Determine and record the following information about the JDK:<br><br>- Version of the JDK<br><br>- Absolute path to the JDK files and patches. The path name can not include spaces.<br><br>For more information, refer to *Installing the Java Software Development Kit* on page 21. | |
| 7 | Decide which of the following security certificates you will use:<br><br>- The default self-signed SSL (Secure Sockets Layer) certificate that is automatically installed.<br><br>- A Certificate Authority-related certificate that you install before installing Sterling Integrator.<br><br>For more information, refer to *Security Certificates on page 21*. | |

| Step | Description | Your Notes |
|------|-------------|------------|
| 8 | Obtain the unlimited strength JCE distribution file. For more information, refer to *Downloading the JCE Distribution File* on page 21. | |
| 9 | Determine and record information to set up default system alerts from Sterling Integrator:<br><br>◆ The Administrative e-mail address to which system alert messages are sent.<br><br>◆ The SMTP Server IP address used for sending alert messages. | |
| 10 | Determine and record the directory in which you plan to install the Sterling Integrator, using the following guidelines:<br><br>◆ The installation directory must not already exist because the installation process creates it.<br><br>◆ The installation directory must have adequate free disk space.<br><br>◆ The name of the directory cannot include spaces and must be less than 30 characters long excluding separators, for example, C:\SI_50\*install_dir*\install. Using a directory name of more than 30 characters could create an installation that is impossible to delete. | |
| 11 | Obtain the license file and record the absolute path and file name to the license file. Be sure that the path name and the file name do not contain any spaces.<br><br>For more information, refer to *Obtaining a License File* on page 22. | |

| Step | Description | Your Notes |
|------|-------------|------------|
| **Note:** The next two steps are only for Sterling Integrator systems that use the Oracle, SQL Server 2005, or DB2 database. | | |
| 12 | If you are using an Oracle, SQL Server 2005, or DB2 database, determine and record information about your database server. Be aware that this information is case sensitive. <br><br> ◆ Database vendor <br><br> ◆ Database user name and associated password <br><br> ◆ Database (catalog) name <br><br> ◆ Database host name <br><br> ◆ Database host port number <br><br> ◆ (Oracle and Microsoft SQL Server 2005 only) Absolute path and file name for one JDBC driver <br><br> ◆ (DB2 only) Absolute paths and file names for two JDBC drivers <br><br> ◆ For more information about encrypting and decrypting passwords, refer to *Encrypting Database Passwords (Windows)* on page 16 and *Decrypting Database Passwords (Windows)* on page 16. <br><br> **Note:** If you are using an Oracle 10.2.x database, you must set it up for native compilation by allocating space and by setting the plsql_native_library_dir parameter. | |
| 13 | If you are using an Oracle, Microsoft SQL Server 2005, or DB2 database, decide if you are going to manually or automatically apply database definition language (DDL) statements (schema) to the database. <br><br> For more information, refer to *Applying Database Definition Language (DDL) Statements* on page 22. | |

# Checking System Requirements

Before you begin, verify that your system meets the hardware and software requirements specified for this release. The hardware requirements listed are the minimum required to run the Sterling Integrator. Your system requirements will exceed these if you are running other applications on the same machine as the Sterling Integrator. For current information, see the most recent *System Requirements* for Sterling Integrator.

The installation strictly enforces the following system requirements:

◆ Operating system version (must match requirement exactly)

   The minimum patch level for the operating system is enforced, but you can apply higher patch levels.

◆ JDK version (must match requirement exactly)

◆ Disk space

The disk space is a minimum for the installation. The system should be separately sized to handle whatever load is going to be put on the system.

◆ Database

◆ JDBC driver version (supports exact matches and wildcard matches).

If the installation halts because the system requirements are not met, you need to upgrade to a supported version.

## Installing the Java Software Development Kit

You must install the Java Software Development Kit (JDK) and the patches specific to your system. To determine which JDK version and patches you need, see the Sterling Integrator *System Requirements*. After you install the JDK, record the absolute path to its location on your system. You must supply the absolute path when you install the Sterling Integrator.

**Caution:** In Windows, the directory name where the JDK resides cannot include a space.

## Security Certificates

Before installing Sterling Integrator, you must decide which of the following security certificates you will use:

◆ The default self-signed SSL (Secure Sockets Layer) certificate that is automatically generated by the installation.

◆ A Certificate Authority-related certificate that you generate before installing Sterling Integrator.

If you install with the default SSL certificate, but you later want to switch to a CA-related certificate, you can make that change using the sslCert property in the noapp.properties.in file.

## Downloading the JCE Distribution File

The Java Cryptography Extension (JCE) is a set of Java packages from Sun Microsystems, Inc. that provides a framework and implementations for encryption, key generation and key agreement, and Message Authentication Code (MAC) algorithms. By default, Sterling Integrator uses the limited strength JCE file that is included in the JDK that you use during the installation. Installing unlimited strength JCE file will overwrite the limited strength JCE file.

**Note:** If you are installing Sterling Integrator outside of the United States, check to see if you can get the JCE unlimited strength jurisdiction policy files. The unlimited strength jurisdiction policy files can only be exported to countries to which the United States permits the export of higher-level encryption.

To obtain the unlimited strength JCE, do the following:

1. Open your browser and navigate to the following Web site based on your JDK version:

   ◆ For JDK 1.5: http://java.sun.com/javase/downloads/index_jdk5.jsp

- ◆ For JDK 1.6: http://java.sun.com/javase/downloads/index.jsp
2. Depending on the JDK version, perform one of the following tasks:
    - ◆ For JDK 1.5: At the bottom of the page, under **Other Downloads**, locate the *Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 5.0* item and click the **Download** button.
    - ◆ For JDK 1.6: At the bottom of the page, under **Additional Resources** > **Other Downloads**, locate the *Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 6* and click the **Download** button.
3. Based on your selection, download the jce_policy-1_5_0.zip (for JDK 1.5) file or jce_policy-6.zip (for JDK 1.6) file to your system.
4. Once the file resides on your system, note the exact directory and file name for this zipped file. You will need this information during the installation process.

## Determining Port Numbers

During installation, you are prompted to specify the initial port number for the Sterling Integrator.

To specify an initial port number, follow these guidelines:

- ◆ The Sterling Integrator requires a range of 100 consecutive open ports between 1025 and 65535.
- ◆ The initial port number represents the beginning port number in the range.
- ◆ Make sure that port numbers in the port range are not used by any other applications on your system.

After your installation, refer to the *install_dir*\install\properties\sandbox.cfg file for all of the port assignments.

## Applying Database Definition Language (DDL) Statements

When you install Sterling Integrator, you can manually apply database definition language (DDL) statements (for tables, indexes, etc.) to your database tables instead of requiring the installation process to do it directly. This enables you to apply DDL statements for database creation separately from the installation. If you do not choose to manually apply the DDL, the installation will apply both the DDL and the resources.

This feature increases database security by reducing the database permissions of the Sterling Integrator database user. The rights to create tables, indexes, etc. can be reserved for a secure user like a customer database administrator (DBA). A business can require that only a DBA with the proper permissions can make database changes. Also, these database rights would not be affected by Sterling Integrator.

## Obtaining a License File

After your company signed the sales contract with Sterling Commerce, Sterling Commerce creates a license file containing information about your company, your system, and the packages (components) that your company selected to use, such as services, maps, and adapters.

Your first license file is a temporary keyfile that is e-mailed to you after you purchase Sterling Integrator. It allows you to run Sterling Integrator and all of the licensed features for a limited period. Before the keyfile expires, you must replace the temporary key with a permanent key to continue running Sterling Integrator. Failure to either extend your temporary keyfile or replace it with a permanent keyfile will result in the keyfile expiry and Sterling Integrator will fail to start.

The permanent license keyfile contains your specific operating system and the IP address of your system, and is valid for 20 years from the date of issue. To extend your temporary key, obtain the permanent key, or request changes to a permanent key you already have, go to the online Gentran Integration Suite/Sterling Integrator Key Request form (https://support.sterlingcommerce.com/forms/gis_key_request.aspx)and have your PSP number (a unique number that identifies a licensed software asset in your Sterling Integrator installation) available. The PSP Number is present in the temporary or previous version of the keyfile you received from Sterling Commerce. Upon submission of this form, your new keyfile will be generated and delivered to you as an attachment to an email.

The Sterling Integrator permanent license file contains a single or multiple IP addresses in your computing environment. If you change an IP address in your computing environment that is present in your Sterling Integrator license file, Sterling Integrator will cease to operate. You should take necessary precautions to avoid this potential outage, including notifying the appropriate contacts within your organization (information technology and related departments) and include the license file updates in your computing environment change plans.

## Installing the Temporary Key

To install the temporary key, do the following:

1. Rename the temporary key. Use a name (for example, **assetTracking.key**) that clearly identifies the key as the original installation license key.
2. Copy the temporary key to the *absolutePath*\conf directory.
3. Rename the temporary license key file to **license.key**.

## Installing the Permanent Key

To install the permanent key from the command line, do the following:

1. When you receive the permanent license key file, make a copy of it, and keep the copy in a safe place.
2. Stop Sterling Integrator.
3. Copy your license file to the machine where Sterling Integrator is installed.
4. Navigate to the *install_dir*\bin directory and run the `AddLicenseSet.cmd <path>` command, where `<path> is` the path to the license keyfile, for example,
   `C:\SterlingCommerce\SI\bin>AddLicenseSet.cmd c:\temp\gis_license.xml.`
5. Start Sterling Integrator.

**Note:** You can also install or update your license file from the Licenses screen (**Operations** > **System** > **Licenses**) when Sterling Integrator is running.

# Installing in a Windows Cluster Environment

Installing the Sterling Integrator in a Windows cluster environment includes the following sections:

◆ *Installing in a Windows Cluster Environment (GUI-Based) on page 24*

◆ *Installing in a Windows Cluster Environment (Manually Edited Silent Install File) on page 31*

If you downloaded Sterling Integrator or a Service Pack (SP) from the Electronic Software Distribution (ESD) Portal, unzip the downloaded file to an empty directory. Do *not* change the directory structure of the newly unzipped files. The directory containing the unzipped files is an electronic image of an installation CD.

## Installing in a Windows Cluster Environment (GUI-Based)

Installing Sterling Integrator nodes is similar to a standard Sterling Integrator installation, with the following restrictions on all nodes:

◆ All nodes must use the same database.

◆ All nodes must use the same passphrase.

◆ All nodes must use the same operating system.

◆ When installing nodes on different machines, the initial port numbers must be the same.

   **Note:** Installing nodes on different machines helps you take more advantage of the reliability, availability and scalability features of clustering, including failover.

◆ When installing nodes on the same machine, you must install nodes 2 and higher in different directories and use different initial port numbers. Each initial port number must be at least 100 higher or lower than other initial port numbers.

◆ You must install and start the nodes sequentially, one at a time, starting with the first node. Complete all of the node installations before starting any of the nodes.

To run a cluster, you need to get a valid Sterling Integrator license for multiple IP addresses of all the nodes where Sterling Integrator will be installed and configured as a cluster.

**Note:** Clustering is not supported for Sterling Integrator systems that use the MySQL database, even though it is a prompted option.

**Note:** If you encounter problems or errors during installation, see *Troubleshooting: Windows Cluster Environment on page 60*.

To install Sterling Integrator, refer to your preinstallation checklist and follow the steps below:

1. Close all open Windows programs and any command prompt windows.

2. Copy the SCIInstallWizard.jar and SI.jar files from your installation CD (or from another location) to a Windows directory. To start the installation from your desktop, copy SCIInstallWizard.jar to your desktop.

3.  Start the installation process using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ From the desktop, double-click SCIInstallWizard.jar, which is a self-extracting jar file.<br><br>◆ From a command prompt (or from the **Run** dialog box), enter the following command. Do not include any spaces in the directory path to the SCIInstallWizard.jar file.<br><br>`\absolutePath\bin\java -jar`<br>`\absolutePath\SCIInstallWizard.jar`<br><br>The installation dialog box appears. | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Enter the following command. Do not include spaces in the directory:<br><br>`\absolutePath\bin\java -jar`<br>`\absolutePath\SCIInstallWizard.jar`<br><br>The installation dialog box appears. |

4.  Click **Next** to continue the installation program.

5.  Review the license agreement, and click **Accept** to accept the terms.

6.  Type the full path of your JDK directory, or search for it using the **Select Folder** button. Click **Next**.

7.  Type the full path to your license file, or search for it using the **Select File** button. Click **Next**.

    If you do not have a license file, you can minimize this window, obtain the license file, and then return to the installation process.

8.  Type the full path to your JCE file or search for it using the **Select File** button. Click **Next**. For more information about JCE files, see *Downloading the JCE Distribution File* on page 21.

9.  Enter the installation directory for Sterling Integrator by doing one of the following:

    ◆ Type the directory name. Click **Yes** at the prompt *The directory does not exist, create it?*.

    ◆ Click **Select Folder** and navigate to the folder you want to use as the installation directory.

    You should create a new directory or the installation will fail subsequently. This directory is referred to as *install_dir* in subsequent prompts. Click **Next.**

    **Note:** The name of the directory cannot include spaces and must be less than 30 characters long excluding separators, for example, C:\SI_50\*install_dir*\install. Using a directory name of more than 30 characters could create an installation that is impossible to delete.

10. At the *Select Install jar* prompt, type the path to the SI.jar file or use the **Select File** button to browse through directories for the file.

    **Note:** The directory path to SI.jar cannot include any spaces.

    After selecting the file, click **Next**.

11. At the **Installation Port** dialog box, take the following two actions:

    ◆ At the prompt *Enter explicit IP address or Hostname to override the default*, use the default value **localhost** or enter your own host IP address. If you use **localhost**, the installation program uses the first external IP address for this system.

    **Note:** If you are installing Sterling Integrator on VMware, you should provide the IP address of the virtual machine and not of the VMware host. For example, if 10.251.124.160 is the IP address

of the VMware server and 10.251.124.156 is the IP address of the Windows 2003 server it is hosting, you should use 10.251.124.160 as the IP address to install Sterling Integrator.

**Caution:** Sterling Integrator 5.0 does not support IPv6 installation on Windows. Before applying an IPv6 address, see *IPv6 Capabilities* section in Sterling Integrator *5.0 System Requirements* guide.

◆ At the prompt *Initial Port*, type the initial port number for the installation. The initial port number must be the first number of a range of at least 100 port numbers.

The installation creates subsequent ports based on the initial port number. For all of the port assignments, see the *install_dir*\install\properties\sandbox.cfg file.

After entering this information, click **Next**.

12. Type your system passphrase. Then type the passphrase again to confirm it. Click **Next**.

13. At the **E-Mail Information** dialog box, take the following actions:

◆ Type the administrative e-mail address to which you want system alert messages sent. Use the format *you@yourdomain*.

◆ Type the SMTP mail server host name that you want to use for system alert messages and other administrative notices. Use an IP address or a host name.

Click **Next**.

14. You can enable FIPS (Federal Information Processing Standards) mode by selecting the check box at the **Enable FIPS mode** dialog box. To disable FIPS, clear the check box.

Click **Next**.

15. Select the radio button for the database that you want to use (Oracle, Microsoft SQL Server 2005, or DB2), and click **Next**.

**Note:** Clustering is not supported for Sterling Integrator systems that use the MySQL database, even though it is a prompted option.

16. At the **Select all options that apply to this installation** dialog box, take the following actions:

a. Do not select the upgrade-related check box.

b. Do not select the check box at the *This installation is for a cluster node 2 or higher* prompt. For node 2 and higher of the cluster, select the check box.

Do not click **Next**.

17. At the *Apply database schema automatically?* check box, decide whether to automatically or manually apply database definition language (DDL) statements:

**Note:** For more information about this option, refer to *Applying Database Definition Language (DDL) Statements* on page 22.

◆ To automatically apply DDL statements, select the check box (the default value).

If you do not choose to manually apply DDL statements, the installation automatically applies both the DDL and the resources.

- To manually apply DDL statements, clear the check box.

  If you manually create the database schema, you will have to run the installation command again after manually creating the schema. You will manually create the database schema using the sql files in the *install_dir*\install\repository\scripts directory. For more information, refer to the utilities configuration documentation.

  The application of DDL statements should be done in the same order when you select the check box at the *Apply database schema automatically?* prompt. You can find this order by referring to an installation log file of an installation where the check box was selected at the *Apply database schema automatically?* prompt.

  Apply the DDL statements manually and restart the installation procedure in a new installation directory. You can delete the installation directory created earlier. Clear the check box at the *Apply database schema automatically?* prompt. The installation process will continue and complete without any errors. The installation process will validate the database with a Sterling Integrator tool called DBVerify and warn you if there are issues, and will exit the installation.

  Do not click **Next**. You will click **Next** after the next step.

18. Select *Verbose install?* check box to generate an installation log for debugging information. The events that occur during the installation are recorded in InstallSI.log file. By default, *the Verbose install?* check box is not selected.

    Click **Next**.

19. Configure your database by typing the following information:

    - Database user name

    - Database password (and confirmation)

    - Database catalog name

    - Database host name

      **Note:** In Oracle, do not use an IP v6 address for the host name.

    - Database port

    - (Oracle and Microsoft SQL Server 2005 only) Absolute path and file name for one JDBC driver file

    - (DB2 only) Absolute paths and file names for two JDBC driver files

      Use the Type-4 JDBC driver. This type of driver converts JDBC calls into the network protocol used directly by DB2, allowing a direct call from Sterling Integrator to the DB2 server.

    - (Oracle only) Select the check box to select the data type to use for caching. Select either the default BLOB (binary large object) columns data type or the Long Raw data type.

      You can significantly improve performance by enabling the cache on the BLOB data object in Oracle. For more information, refer to the Sterling Integrator documentation for slow performance in Oracle.

    After entering this information, click **Next**.

20. The **Confirm Database Information** screen appears. It includes all of the database details and the complete path to the installation jar file. To change any information, click the **Back** button and make your changes.

Click **Next** after reviewing this information.

If your JDBC driver is not correct for your database, the following message appears:

*Please check your database version and JDBC driver versions*

Click **OK**. Use the **Back** button to return to the **Database Connection Information** dialog box, where you can enter the correct JDBC driver.

21. The **Install Actions** screen appears, showing actions that will be performed during the installation. The checkboxes are automatically selected for the actions *Verify Operating System is supported*, *Verify the selected JDK is supported*, *Install Components*, *Save install files*, *Clean Up Files*, and *Install Windows Services*. You cannot clear them.

If you want to create a desktop icon for launching Sterling Integrator, select the *Create Desktop Icons (Windows & Linux)* check box on the **Install Actions** screen. By default, the check box is selected.

If you created a desktop icon and use Windows Server 2008, you will need to perform additional configuration for the desktop icon after the installation is complete. See the *Configure the Sterling Integrator Desktop Icon for Windows Server 2008* on page 39.

Click **Next**.

The **Installation Progress** screen appears. You can click the **Show Details** button to confirm your installation information before starting the installation.

22. Click **Install** to start the installation.

The **Installation Progress** screen shows the general progress of the installation through different stages (as shown earlier on the **Install Actions** screen). For more information about these stages, click the **Show Details** button.

For more detailed information about the installation, refer to the *install_dir*\PreInstallSI.log file. If the installation stops, check the PreInstallSI.log file for details. For more information, refer to *Troubleshooting: Windows Cluster Environment* on page 60.

23. The installation completes automatically. When the installation is finished, the system displays a dialog box with the message *Installation Wizard completed. Please see the installation guide for next steps*. Click **OK** to close this message.

Also, if you click the **Show Details** button, the message *BUILD SUCCESSFUL* appears in the **Output** box. Click **Exit** to close the installation dialog box.

Installation information is in the following files:

◆   ant.install.log (in the *install_dir* directory)

◆   InstallSI.log (in the *install_dir*\install directory)

24. Install each subsequent node, from node 2 onwards. The installation passphrase must be the same across all nodes.

If you are installing nodes on separate machines, enter the same information that you entered for node 1, with the following exception:

- At the *This installation is for a cluster node 2 or higher* prompt, select the check box.

If you are installing multiple nodes on the same machine, enter the same information that you entered for node 1, with the following exceptions:

- Use a different installation directory for each node.

- Use an initial port number that is 100 port numbers higher or lower than the initial port number on other nodes. Each node will be configured on a different port range.

- At the *This installation is for a cluster node 2 or higher* prompt, select the check box.

The installation proceeds. After all the nodes are installed, proceed to the next step.

25. If you install multiple nodes on the same machine or use different base ports for node 2 onward, do the following:

   a. Go to the *install_dir*\install\properties directory of node 1.

   b. Access the values of the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext** file and the **mcast_port** property in the **jgroups_cluster.properties** file.

   c. Go to the *install_dir*\install\properties directory of each node (from node 2 onward).

   d. Change the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext.in** file to the value of the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext** file in the node 1 installation.

   e. Change the **mcast_port** property in the **jgroups_cluster.properties.in** file to the value of the **mcast_port** property in the **jgroups_cluster.properties** file in the node 1 installation.

   f. (IPv6 only) For all nodes, change mcast_property from 239.255.166.17 to **FFFF:239.255.166.17**.

   g. (IPv6 only) In the sandbox.cfg file, add **HOST_ADDR=<*IPv6_hostname*>**.

   h. After changing these properties, run the `install_dir`\install\bin\setupfiles.cmd command for node 2 onward.

26. On each node, starting with node 1, perform cluster configuration by running the command `startCluster.cmd` *nodeNumber* from the Sterling Integrator *install_dir*\install\bin directory where *nodeNumber* is the sequential number assigned to each node starting with 1.

   For example, use the following commands on the first two nodes:

   a. `startCluster.cmd 1`

   b. `startCluster.cmd 2`

**Note:** You should run `startCluster.cmd` command only after you install Sterling Integrator. You should not run `startCluster.cmd` command when you restart a Sterling Integrator instance. However, if you have installed a patch or a hot-fix, refer *Custom Configurations* on page 40 to start the cluster without updating the database settings.

27. Bring up all instances of Sterling Integrator by running `startWindowsService.cmd` from the *install_dir*\install\bin directory for each instance, starting with the first node.

   **Note:** It may take several minutes for Sterling Integrator components to initialize and start up.

   If Sterling Integrator does not start or if you receive a message about an invalid or corrupt license file, go to the *Troubleshooting: Windows Environment* section.

   When startup is finished, a message like the following is displayed:

   *Open your Web browser to http://host:port/(interface)*, where *host:port* is the IP address, *port number* is where Sterling Integrator resides on your system, and *(interface)* is the interface used by Sterling Integrator (for example, admin or dashboard).

   Make a note of the URL address so you can access Sterling Integrator later.

   To dynamically add new nodes to the cluster, install the new node in the same way that you installed node 2. Run the `startCluster.cmd` command with the new node number.

# Installing in a Windows Cluster Environment (Manually Edited Silent Install File)

Use the following instructions to install in a Windows cluster environment from a command line, using a manually edited silent installation file. Make sure that you have set up your silent installation file as described in *Creating the Silent Installation File* on page 31.

To install using your manually edited silent installation file, refer to *Installing with a Manually Edited Silent Installation File* on page 36.

## Creating the Silent Installation File

To use a manually edited silent installation file, you first create a silent installation file using a text editor. The file must contain the entries marked as required in the following table. When you are finished editing the file, record its name and location. You will use this information during the installation.

If possible, use a silent installation file from an interactive installation as an example for your silent installation file. Also, use the antinstall-config.xml file in SCIInstallWizard.jar to check the names and default values for the entries.

**Note:** File paths require UNIX slashes (/), because the installation interacts with a Java program.

| Entry | Description |
|-------|-------------|
| The following entries correlate to prompts in the installation procedure described in *Installing in a Windows Cluster Environment (GUI-Based)* on page 24. Read through that procedure when creating your silent installation text file. | |
| ACCEPT_LICENSE | (Required) Indicates if the user accepts the license agreement. Default: YES |
| JVM_LOC | (Required) Full path to JDK directory. |
| SI_LICENSE_AVAILABLE | Indicates if a license is being passed in and is required for installation. Default: YES |
| LICENSE_FILE_PATH | (Required) Full path to a valid license file. Example: *absolutePath*/Full_License.xml |
| JCE_DIST_FILE | (Required) Full path to unlimited strength JCE policy file. If present, this file will overwrite the JCE file in the JDK. Example: *absolutePath*/unrestrict123.zip |

| Entry | Description |
| --- | --- |
| INSTALL_DIR<br><br>**Note:** The INSTALL_DIR property cannot point to a pre-existing directory, or the installation will fail. | (Required) The directory that includes subdirectories like bin (where many commands are stored) and properties (where many property files are stored). The path to this directory might include the following:<br><br>◆ The installation directory that you specify during an interactive installation.<br><br>◆ The subdirectory "install".<br><br>Although you can enter your own path, the *install_dir*\install path matches the path that is created during an interactive installation. It also matches the path that is used in documentation. For example, an instruction to stop Sterling Integrator reads:<br><br>1 Navigate to the *install_dir*\install\bin directory.<br><br>2 Run the hardstop.cmd command.<br><br>**Note:** The name of the directory cannot include spaces and must be less than 30 characters long excluding separators, for example, C:\SI_50\*install_dir*\install. Using a directory name of more than 30 characters could create an installation that is impossible to delete. |
| DB_VENDOR | (Required) Database vendor.<br><br>Valid values:<br><br>◆ Oracle<br><br>◆ MSSQL2005<br><br>◆ DB2<br><br>**Note:** Clustering is not supported for Sterling Integrator systems that use the MySQL database, even though it is a prompted option. Do not use the MySQL option. |
| MSSQL2005 | ◆ If you are running on Microsoft SQL Server 2005, this attribute must be set to **true**.<br><br>◆ If you are not running on Microsoft SQL Server 2005, do not include this attribute.<br><br>**Note:** This attribute is case-sensitive.<br><br>Default: true |

| Entry | Description |
|---|---|
| INSTALL_IP | (Required) Host name or IP address.<br><br>Valid values:<br><br>◆ localhost (default)<br><br>◆ (your IP address or host name)<br><br>**Note:** If you are installing Sterling Integrator on VMware, you should provide the IP address of the virtual machine and not of the VMware host. For example, if 10.251.124.160 is the IP address of the VMware server and 10.251.124.156 is the IP address of the Windows 2003 server it is hosting, you should use 10.251.124.160 as the IP address to install Sterling Integrator.<br><br>**Caution:** Sterling Integrator 5.0 does not support IPv6 installation on Windows. Before applying an IPv6 address, see *IPv6 Capabilities* section in Sterling Integrator *5.0 System Requirements* guide. |
| PORT1 | (Required) Initial port for the assignment of port numbers for adapters and other items. Ports are assigned consecutively from this port (for example, SSL_PORT = initial port + 1).<br><br>Example: 12345<br><br>Default: 8080 |
| APSERVER_PASS | (Required) Passphrase used to secure all encrypted data in database. |
| SI_ADMIN_MAIL_ADDR | (Required) E-mail address for the administrative user.<br><br>Example: abc@xyz.com |
| SI_ADMIN_SMTP_HOST | (Required) Valid SMTP host through which the system can e-mail the administrative user.<br><br>Example: mail.xyz.com |
| REINIT_DB | (Required) Indicates if database should be initialized.<br><br>◆ For a single node installation and node 1 of a cluster, this property is **true**.<br><br>◆ For node 2 and higher of a cluster, this property is **false**.<br><br>Default: true |
| CLUSTER | (Required) Indicates if this is the second or higher node of a cluster installation.<br><br>Valid values:<br><br>◆ true - This is the second or higher node of a cluster installation.<br><br>◆ false (default) - This is the first node of a cluster or a single node (non-cluster) installation. |
| FIPS_MODE | (Optional) Indicates if you are using FIPS (Federal Information Processing Standards) mode.<br><br>Valid values:<br><br>◆ true - Enable FIPS mode.<br><br>◆ false (default) - Disable FIPS mode. |

| Entry | Description |
|---|---|
| ORACLE_USE_BLOB | (Required if DB_VENDOR=Oracle) Indicates the data type that you are using for caching. <br> Valid values: <br> ◆ true (default) - BLOB (binary large object) <br> ◆ false - Long Raw |
| DB_USER | (Required) Database user name. <br> Example: abcd_123_1 |
| DB_PASS | (Required) Database password. <br> Example: xyz |
| DB_DATA | (Required) Database catalog name. <br> Example: abcd |
| DB_HOST | (Required) Database host name. <br> Example: abcd <br> Default: localhost |
| DB_PORT | (Required) Database port. <br> Example: 1234 |
| DB_DRIVERS | (Required) Full path to JDBC driver file(s). If DB_VENDOR is: <br> ◆ Oracle or MSSQL2005, specify one driver. <br> ◆ DB2, specify two drivers. <br> If you specify more than one driver, use colons (:) to separate the file names. <br> Examples: <br> ◆ *JDBC_driver_dir*/jdbc.jar <br> ◆ *JDBC_driver_dir*/db2_1_jdbc.jar:*JDBC_driver_dir*/db2_2_jdbc.jar |
| DB_CREATE_SCHEMA | (Required) Indicates if you want the database schema automatically created. <br> Valid values: <br> ◆ true (default) - Automatically create the schema. <br> ◆ false - Manually create the schema. <br> **Note:** If you create the database schema manually, restart the installation procedure in a new installation directory. You can delete the installation directory created earlier. |
| DEBUG | (Optional) Records events that occur during the installation in InstallSI.log file. <br> Valid values: <br> ◆ true - records events that occur during the installation. <br> ◆ false (default) - does not record the events that occur during installation. |

| Entry | Description |
|-------|-------------|
| JDK64BIT | Indicates if a 32-bit or 64-bit JDK is being used.<br>**Note:** Refer to the *System Requirements* to determine the type of JDK for your operating system.<br>Valid values:<br>◆ true (default) - 64-bit<br>◆ false - 32-bit |
| MSSQL2005 | ◆ (Microsoft SQL Server 2005) Set this attribute to the default value of **true**.<br>◆ (All other servers) Do not include this attribute.<br>**Note:** This attribute is case-sensitive. |
| Icons | (Required) Indicates if you want to create a desktop icon for launching Sterling Integrator (**Icons=true**).<br>◆ true - Create desktop icon.<br>◆ false (default) - Do not create desktop icon.<br>If you choose to create a desktop icon and use Windows Server 2008, you will need to perform some additional configuration for the desktop icon after the upgrade is complete. See the *Configure the Sterling Integrator Desktop Icon for Windows Server 2008* on page 39. |

The following entries do not directly correlate to prompts in the installation procedure described in *Installing in a Windows Cluster Environment (GUI-Based)* on page 24. Use these entries to customize or document your installation.

| Entry | Description |
|-------|-------------|
| LOAD_FACTORY_SETUP | Indicates whether factory setup should be loaded during installation<br>Valid values:<br>◆ true (default).- loads factory setup during installation.<br>◆ false - does not load factory setup during installation. Run loadDefaults command after installation.<br>**Note:** To manually set LOAD_FACTORY_SETUP to **false** after an installation where LOAD_FACTORY_SETUP=true (the default value), change LOAD_FACTORY_SETUP to **false** in sandbox.cfg file. |
| CONFIG_GS | Indicates whether integration with Gentran Server should be configured.<br>Default: No |
| NO_DBVERIFY | Valid values are true/false. When set to true during installation and installservice, dbverify will not be run.<br>This means that the Sterling Integrator will not generate DDL to make the database like the XML entity repository. |

## Installing with a Manually Edited Silent Installation File

Installing Sterling Integrator nodes is similar to a standard Sterling Integrator installation, with the following restrictions on all nodes:

◆ All nodes must use the same database.

◆ All nodes must use the same passphrase.

◆ All nodes must use the same operating system.

◆ When installing nodes on different machines, the port numbers must be the same.

   **Note:** Installing nodes on different machines helps you take more advantage of the reliability, availability and scalability features of clustering, including failover.

◆ When installing nodes on the same machine, you must install nodes 2 and higher in different directories and use different initial port numbers. Each initial port number must be at least 100 higher or lower than other initial port numbers.

◆ You must install the nodes sequentially, one at a time, starting with the first node.

◆ After installing all nodes, you must start the nodes sequentially, one at a time, starting with the first node.

To run a cluster, you need to get a valid Sterling Integrator license for multiple IP addresses of all the nodes where Sterling Integrator will be installed and configured as a cluster.

**Note:** Clustering is not supported for Sterling Integrator systems that use the MySQL database, even though it is a prompted option.

**Note:** If you encounter problems or errors during installation, see *Troubleshooting: Windows Cluster Environment* on page 60.

To install Sterling Integrator, refer to your preinstallation checklist and follow the steps below:

1. From the Sterling Integrator installation CD (or from another location), copy SI.jar to a Windows directory.

   If you are using FTP to copy the files, verify that your session is set to binary mode.

2. Set up your silent installation file, using the guidelines in *Creating the Silent Installation File* on page 31. Record the path to your silent installation file. Use an installation directory that does not yet exist.

3. Start the installation process using one of the following methods. The command includes path to the JDK, the Sterling Integrator jar file, and the silent installation file (note the `-f` parameter).

**Note:** The directory path to SI.jar cannot include any spaces.

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ From a command prompt (or from the **Run** dialog box), enter the following command. Do not include any spaces in the directory path:<br><br>`absolutePath\bin\java -Xmx512m -jar`<br>`\absolutePath\SI.jar -f`<br>`\absolutePath\SilentInstallFile` | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Enter the following command. Do not include spaces in the directory path:<br><br>`absolutePath\bin\java -Xmx512m -jar`<br>`\absolutePath\SI.jar -f`<br>`\absolutePath\SilentInstallFile` |

The program verifies support for your operating system and JDK. It also verifies that your operating system is patched to the required level.

The installation begins. You can follow the progress of your installation through the PreInstallSI.log in your installation directory. If the installation stops, check the PreInstallSI.log file for details. For more information, refer to *Troubleshooting: Windows Cluster Environment* on page 60.

The following components are installed:

- ◆ Core files (services, adapters, and predefined business processes)
- ◆ Package files
- ◆ License file

4. When the installation is finished, the system displays the following message:

*Installation has completed successfully.*

5. Install each subsequent node, from node 2 onwards.

If you are installing nodes on separate machines, enter the same information in the silent installation file that you entered for node 1, with the following exceptionS:

- ◆ Set **REINIT_DB=false**. This prevents the database from being re-initialized.
- ◆ Set **CLUSTER=true**.

If you are installing multiple nodes on the same machine, enter the same information in the silent installation file that you entered for node 1, with the following exceptions:

- ◆ Set **REINIT_DB=false**. This prevents the database from being re-initialized.
- ◆ Set **CLUSTER=true**.
- ◆ Use a different installation directory for each node (the INSTALL_DIR property).

- Use an initial port number that is 100 port numbers higher or lower than the initial port number on other nodes (the PORT1 property). Each node will be configured on a different port range.

After all the nodes are installed, proceed to the next step.

6. To start the installation of nodes 2 and higher of the cluster, type the following command, which include paths to the JDK directory, the application jar file, and the silent installation file (note the -f parameter).

**Note:** The directory path to SI.jar does not include any spaces. Make sure that you specify the full path to the jar file.

```
absolutePath\bin\java -Xmx512m -jar absolutePath\SI.jar -f
absolutePath\SilentInstallFile -cluster
```

The installation starts. You can follow the progress of your installation on screen.

7. If you install multiple nodes on the same machine or use different base ports for node 2 onward, do the following:

   a. Go to the *install_dir*\install\properties directory of node 1.

   b. Access the values of the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext** file and the **mcast_port** property in the **jgroups_cluster.properties** file.

   c. Go to the *install_dir*\install\properties directory of each node (from node 2 onward).

   d. Change the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext.in** file to the value of the **multicastBasePort** property in the **noapp.properties_platform_ifcresources_ext** file in the node 1 installation.

   e. Change the **mcast_port** property in the **jgroups_cluster.properties.in** file to the value of the **mcast_port** property in the **jgroups_cluster.properties** file in the node 1 installation.

   f. (IPv6 only) For all nodes, change mcast_property from 239.255.166.17 to **FFFF:239.255.166.17**.

   g. (IPv6 only) In the sandbox.cfg file, add **HOST_ADDR=<*IPv6_hostname*>**.

   h. After changing these properties, run the `install_dir`\install\bin\setupfiles.cmd command for node 2 onward.

8. On each node, starting with node 1, run the command `startCluster.cmd` *nodeNumber* from the *install_dir*\install\bin directory where *nodeNumber* is the sequential number assigned to each node starting with 1. For example, on the first two nodes, you would run the following commands:

**Node 1**

```
startCluster.cmd 1
```

When the cluster environment is configured, you will get the message *BUILD SUCCESSFUL.*

**Node 2**

```
a. startCluster.cmd 2
```

   b. Enter the passphrase.

When the cluster environment is configured, you will get the message *Deployment to application server successful*.

**Note:** You should run `startCluster.cmd` command only after you install Sterling Integrator. You should not run `startCluster.cmd` command when you restart a Sterling Integrator instance. However, if you have installed a patch or a hot-fix, refer *Custom Configurations* on page 40 to start the cluster without updating the database settings.

9. Once the cluster configuration is complete, go to the *install_dir*\install\bin directory for each node and issue the following commands to install and start Windows services:

a. `InstallWindowsService.cmd`

b. `startWindowsService.cmd`

When prompted, enter the passphrase that you entered earlier.

**Note:** If you entered the wrong passphrase, Sterling Integrator exits with the error *Error '1' starting SI*. To stop all running processes, you must run the `hardstop.cmd` command before running the `startWindowsService.cmd` command again.

The final startup processes run, concluding with the following messages:

*Open your Web browser to [URL]*

*Depending on system load, it may take several minutes for the UI to be ready.*

Make a note of the URL address so that you can access Sterling Integrator later.

The system returns you to a Windows prompt.

To make a dynamic addition of new nodes to the cluster, install new nodes to the cluster as described above and configure the servers for the cluster.

## Configure the Sterling Integrator Desktop Icon for Windows Server 2008

User Access Control (UAC) is a security component in Windows Server 2008. If you enable the UAC, it affects the installation process as well as the daily processing for Sterling Integrator. If you disable the UAC, which requires a reboot, the installation process and daily processing for Sterling Integrator remains the same as in previously supported Windows versions.

If you installed or upgraded the Sterling Integrator on a Windows Server 2008 and created a desktop icon for Sterling Integrator, you must complete this task in order for the desktop icon to work:

1. Right-click Sterling Integrator desktop icon.

2. Click **Properties**.

3. In the Shortcut tab, click **Advanced**.

4. Select the check box next to **Run as administrator**.

5. Click **OK** to apply the changes to Advanced Properties.

6. Click **OK**.

# Cluster Setup (Windows)

The following sections explain how to set up a cluster installation after upgrading all nodes of the cluster.

## Custom Configurations

As part of a default cluster configuration, certain values in the database for service or adapter configurations, default document storage type, etc., are updated to get the cluster working. The default settings include no shared or mounted file system available with "line of sight" from all cluster nodes, etc. Certain service or adapter configurations are forcibly deployed on node1 and default document storage type is set up to "Database" for all business processes.

After you install the cluster and evaluate the customer configurations and requirements, the above conditions might change and custom configurations will be incorporated. To keep these custom configuration changes from being overwritten, the following cluster configuration script has an option to update the database:

```
startCluster.cmd nodeNumber true/false
```

- ◆ *nodeNumber* is the cluster node number
- ◆ Type **true** to perform database update and **false** to prevent any database updates.

The first time you configure a cluster, run `startCluster.cmd` with the database update option set to true to have all cluster-related configurations take effect.

```
startCluster.cmd nodeNumber true
```

For cluster configurations after the first configuration, you can execute the `startCluster.cmd` command with the database update option turned off. This prevents any configuration changes from affecting the system, especially after installing patches/hot-fixes.

```
startCluster.cmd nodeNumber false
```

## Node to Node Communications

Cluster nodes are configured to communicate with each other using JGroups, an open source toolkit that provides flexibility for protocol configuration. JGroups provides rich open management features, along with multiple protocol support. JGroups supports multicast (UDP) and TCP-based communication protocols.

When JGroups is configured to use multicast (UDP), all cluster nodes communicate with each other on a specific IP address and port. The multicast ports are configured based on the installation base port. All clusters that are on the same subnet configured on the same base port will end multicasting messages on the same multicast IP address and port.

To avoid this, each Sterling Integrator cluster on the same subnet needs to be configured on different base ports. Install your clusters on different port ranges or on different network segments with multicast forwarding restricted, so that they will not interfere with each other. The default multicast address used in Sterling Integrator release 5.0 is "239.255.166.17". This address is configurable, with a port range of 10 ports, starting with the multicast base port for the instance.

All nodes participating in the same cluster must be installed on the same multicast base port (the multicastBasePort property in the noapp.properties file). This is usually computed from the system base (non-multicast) port, but can be configured separately in the noapp.properties file, to allow different nodes in a cluster to be installed at different (non-multicast) port ranges. Also, all the nodes in the cluster should be installed in the same subnet.

For node to node communications, the properties are defined in jgroups_cluster.properties..  The attributes used to define communications are:

◆ property_string - default value is UDP.

◆ distribution_property_string - default value is TCP. This attribute should never be set to UDP.

If you want to change the communication for cluster multicast from TCP to UDP, contact GIS Support. In addition, if  you are using TCP for both property_string and distribution_property_string, the initial_hosts list for TCPPING should contain all hosts in the cluster.

For more information about UDP, TCP and JGroups communications, refer to the Sterling Integrator *5.0 Clustering* documentation.

## Configuring Shared File System as Document Storage

In a cluster, the default document storage is database, so that all of the nodes in the cluster have line of sight to the documents to access and process the documents. However, using the database for document storage has performance implications over using the file system for document storage.

To use the file system as document storage in a cluster, the file system needs to be a shared/mounted/clustered file system with all nodes having line of sight to the file system. Have your system administrator set up the shared/mounted/clustered file system.

For each node, follow this procedure to configure a shared file system in a cluster:

1. Go to the *install_dir*\install\properties directory.

2. Change the document_dir property in jdbc.properties.in to point to the shared file system directory configured to store the documents.

3. Run the setupfiles.cmd command in the *install_dir*\install\bin directory.

4. Restart Sterling Integrator (all nodes).

This configures a shared file system directory as document storage.

## Cluster Environment Verification

This section explains the verification process for the cluster environment.

◆ Verify the following properties:

   ◆ The property **CLUSTER=true** is included in *install_dir*\install\properties\sandbox.cfg.

   ◆ The cluster property in centralops.properties and noapp.properties is true and the clustered_env property in ui.properties is set to true

- ◆ Using the System Troubleshooter, you can verify the cluster environment by viewing the following information for each node:
  a. Queue information
  b. JNDI Tree for each node
  c. Host, state, status, adapters, and memory usage information
  d. Perimeter Server
  e. Shows adapter status for each node with a drop-down box listing all nodes in cluster

- ◆ Select **Operations** > **System** > **Troubleshooter** to display all the cluster nodes, ops URL, node URL, the status of the node and which node holds the token.

- ◆ You can track errors and exceptions in the system by selecting **Operations** > **System** > **Logs**. In a cluster environment, the logs are provided for each node. A dropdown list shows all the nodes. By selecting the node, the logs corresponding to the nodes are displayed. You can see each log item in this page for each node after all nodes start.

- ◆ The Activity Monitor UI provides the status of running business process and scheduled services. Using this feature, you can monitor all service activities including the node on which each activity is executing.

- ◆ To display the current threads that are running on specific node, select **Operations** > **System** > **Troubleshooter**, and then select the Threads for a node.

## Starting the Cluster

**Note:** To run a cluster, you need to get a valid Sterling Integrator license for multiple IP address of all the nodes where Sterling Integrator will be installed and configured as a cluster.

You can start the cluster environment by running the following command on each node, starting with node1. For example:

For Node 1 enter:

`startWindowsService.cmd`

For Node 2 and higher, enter:

`startWindowsService.cmd`

If you need to release all the locks in a cluster and both nodes are down, use the restart parameter for node 1:

For Node 1, enter:

`startWindowsService.cmd restart.`

For Nodes 2 and higher, enter:

`startWindowsService.cmd`

## Stopping the Cluster

You can stop a cluster by using one of the following options:

**Caution:** Running `softstop.cmd` command in a multiple node (clustered) environment will suspend all scheduled business processes. It is recommended to run the `hardstop.cmd` command when stopping individual nodes of a cluster.

- hardstop.cmd from each node. This stops all Windows Services for each node.

- softstop.cmd from each node. All schedules running on the node are suspended. This does a regular cleanup and shutdown of all components.

- softstop.cmd all. Stops the whole cluster.

- Shut down the whole cluster by selecting **Operations** > **System** > **Troubleshooter**, and then clicking the **Stop the System** link.

- Shut down specific nodes by selecting **Operations** > **System** > **Troubleshooter**, and then clicking the **shutdown** link.

# Patches and Hot-Fixes (Cluster)

The following sections explain how to update Sterling Integrator, using the following methods:

◆ *Installing the Current Maintenance Patch (Cluster)* on page 44

  Patches contain cumulative fixes for a specific version of Sterling Integrator. Because each patch contains the fixes from previous patches, you only need to install the most recent patch.

◆ *Installing a Hot-Fix* on page 50

  A hot-fix is one or more fixes applied to a specific existing patch.

## Installing the Current Maintenance Patch (Cluster)

Patches contain cumulative fixes for a specific version of Sterling Integrator. Because each patch contains the fixes from previous patches, you only need to install the most recent patch.

**Note:** During patch installation, the dbVerify utility compares the list of standard indexes with those present in the database and drops the custom indexes. You should recreate the custom indexes after the patch installation is complete.

All nodes in a cluster must be patched to the same level. You should stop all nodes in the cluster before installing a patch and then install the patch on each node but in some cases, you can apply patches to nodes while others are still processing. A patch containing any of the following requires the entire cluster to be down:

◆ Critical cluster functionality

◆ Engine-related changes

◆ Changes to the database

Attempting to apply patches while part of the cluster is running should only be done with the advice of Sterling Commerce Customer Support.

Before installing the patch, refer to the following sections for more information about working with the different nodes of a cluster during a maintenance patch installation:

**Note:** Before performing this task, refer to *Preserving Custom Changes During Updates* on page 52.

◆ *Applying a Patch in a Cluster Environment Stopping the Whole Cluster* on page 45

◆ *Applying a Patch in a Cluster Environment Stopping One Node at a Time* on page 47

To help you determine which patch to use, the files are named using the following naming convention:

si_*<release number>*_build_*<build number>*.jar

Information about a patch is located in a PDF file with a similar name. The naming convention for PDF files containing information about a particular patch is:

si_*<release number>*_build_info.pdf

Both the .jar and the .pdf files are available on the Sterling Commerce Support on Demand Web site, at https://support.sterlingcommerce.com. You should periodically check the web site to verify that you have the most recent patch.

**Note:** The patch installation may use one or more patch property override files. These files will be named *propertyFile_patch*.properties. Do not alter these files.

Additionally, property changes made directly in .properties or .properties.in files may be overridden during the patch installation. Properties overridden using the customer_overrides.propertie**s** file are not affected.

**Note:** If you edited any of the cdinterop files, you must back them up before applying the patch. The cdinterop files do not have initialization (*.in) files. After applying the patch, use the backup version of the files in your patched installation. These files include the following files: cdinterop-proxy-records.properties; cdinterop-spoe-auth.properties; cdinterop-spoe-policy.properties; and cdinterop-user-records.properties.

## Applying a Patch in a Cluster Environment Stopping the Whole Cluster

For a critical patch where the whole cluster needs to be down, use the following process:

1. Go to the Sterling Commerce Support on Demand Web site, at https://support.sterlingcommerce.com.

2. Download the most recent patch file for your version of Sterling Integrator and record the absolute path to the downloaded file. If you use FTP, use Binary mode. Do not rename the file. Make sure that you download the file to your local machine (for example, to your installation bin directory), and not to a network drive. Use the full path to your local machine when you install the patch.

3. Verify that the database server is up and ready to accept connections.

4. Stop all nodes of the cluster.

5. Perform a full backup of Sterling Integrator installation directory, including all subdirectories. Also back up your database.

6. If your database password is encrypted, decrypt the password. For more information about decrypting database password, refer *Decrypting Database Passwords (Windows)* on page 16.

7. If you edited any property files, update the customer_overrides.properties file with these changes. This will keep the edited property files from being overwritten with the contents of the associated initialization (*.properties.in) files during the patch installation. Please refer to the documentation on configuring overrides to properties files.

8. Close all command prompt windows.

9. Install the patch using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ Open a command prompt window (from the **Run** dialog box). <br><br> ◆ Change to the directory where Sterling Integrator is installed and enter the following command. Do not include any spaces in the directory path: <br><br> `installDir\bin` <br><br> ◆ Enter the following command to install the patch: <br><br> `InstallService.cmd <path>\si_<version>_build_<number>.jar` | ◆ Click **Start**. <br><br> ◆ Right-click **Command Prompt** and select **Run as administrator**. <br><br> ◆ The Administrator: Command Prompt dialog box is displayed. <br><br> ◆ Change to the directory where Sterling Integrator is installed and enter the following command. Do not include any spaces in the directory path: <br><br> `installDir\bin` <br><br> ◆ Enter the following command to install the patch: <br><br> `InstallService.cmd <path>\si_<version>_build_<number>.jar` |

where:
*<path>* is fully qualified path to maintenance patch file
*<version>* is Sterling Integrator version
*<number>* is patch number

Example: `InstallService.cmd \installdir\si_50_build_5002.jar`

Apply the patch to node 1 first, and then to the subsequent nodes: node 2, node 3, etc. For node 1, REINIT_DB is true in sandbox.cfg. For subsequent nodes, REINIT_DB is false, which prevents database updates from repeating on each node's patch installation. This is automatically set during the patch installation for all nodes except node 1 if the installation is done using the nodbinit option.

Information about the patch installation is automatically logged to *install_dir*\install\logs\InstallService.log.

If the patch attempts to modify the database schema and the modification fails, you will receive an error message about the failure. The message provides the error message code from the database and the SQL command that failed. The failure information is also logged to the system.log file and to the patch.log file.

f. Enter the passphrase when prompted.

10. If you decrypted the database password, re-encrypt the password. For more information about encrypting database password, refer *Encrypting Database Passwords (Windows)* on page 16.

11. For each node, run the `startCluster.cmd` *nodeNumber* command to reconfigure the cluster environment after installing the patch.

For more information about using the `startCluster.cmd` command, refer to *Updating the Database (dbupdate) with the startCluster Command* on page 49.

**Note:** Ensure that you run `startCluster.cmd` *nodenumber* `false` command to prevent configuration changes that may affect the system. Refer to *Custom Configurations* on page 40 before configuring the cluster environment.

12. Restart Sterling Integrator.

If you are using a perimeter server in a DMZ, see the perimeter server documentation.

## Applying a Patch in a Cluster Environment Stopping One Node at a Time

For a patch where you can stop the cluster one node at a time, use the following procedure:

**Note:** Apply the patch to node 1 first, and then to the subsequent nodes: node 2, node 3, etc.

1. Go to the Sterling Commerce Support on Demand Web site, at https://support.sterlingcommerce.com.

2. Download the most recent patch file for your version of Sterling Integrator and record the absolute path to the downloaded file. If you use FTP, use Binary mode. Do not rename the file. Make sure that you download the file to your local machine (for example, to your installation bin directory), and not to a network drive. Use the full path to your local machine when you install the patch.

3. Verify that the database server is up and ready to accept connections.

4. Shut down node 1 using the `hardstop.cmd` command.

   Wait until the perimeter server of the node is completely down before installing the patch.

5. Perform a full backup of Sterling Integrator installation directory, including all subdirectories. Also back up your database.

6. If your database password is encrypted, decrypt the password. For more information about decrypting database password, refer *Decrypting Database Passwords (Windows)* on page 16.

7. If you edited any property files, update the customer_overrides.properties file with these changes. This will keep the edited property files from being overwritten with the contents of the associated initialization (*.properties.in) files during the patch installation. Please refer to the documentation on configuring overrides to properties files.

8. Close all command prompt windows.

9.  Install the patch using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ Open a command prompt window (from the **Run** dialog box).<br><br>◆ Change to the directory where Sterling Integrator is installed and enter the following command. Do not include any spaces in the directory path:<br><br>   *installDir*\bin<br><br>◆ Enter the following command to install the patch:<br><br>   InstallService.cmd<br>   <*path*>\si_<*version*>_build_<*number*>.<br>   jar | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Change to the directory where Sterling Integrator is installed and enter the following command. Do not include any spaces in the directory path:<br><br>   *installDir*\bin<br><br>◆ Enter the following command to install the patch:<br><br>   InstallService.cmd<br>   <*path*>\si_<*version*>_build_<*number*>.<br>   jar |

where:
*<path>* is fully qualified path to maintenance patch file
*<version>* is Sterling Integrator version
*<number>* is patch number

Example: InstallService.cmd \*installdir*\si_50_build_5002.jar

For node 1, REINIT_DB=true in sandbox.cfg. For subsequent nodes, REINIT_DB=false, which prevents database updates from repeating on each node's patch installation. This is automatically set during the patch installation for all nodes except node 1 if the installation is done using the nodbinit option.

Information about the patch installation is automatically logged to
*install_dir*\install\logs\InstallService.log.

If the patch attempts to modify the database schema and the modification fails, you will receive an error message about the failure. The message provides the error message code from the database and the SQL command that failed. The failure information is also logged to the system.log file and to the patch.log file.

g.  Enter the passphrase when prompted.

10. If you decrypted the database password, re-encrypt the password. For more information about encrypting database password, refer *Encrypting Database Passwords (Windows)* on page 16.

11. Run the startCluster.cmd 1 command to reconfigure the cluster environment after installing the patch.

For more information about using the startCluster.cmd command, refer to *Updating the Database (dbupdate) with the startCluster Command* on page 49.

**Note:** Ensure that you run startCluster.cmd *nodenumber* false command to prevent configuration changes that may affect the system. Refer to *Custom Configurations* on page 40 before configuring the cluster environment.

12. Open *install_dir*\install\properties\sandbox.cfg in a text editor. Perform the following steps:

    a.   If REINIT_DB is true, back up the sandbox.cfg file and change REINIT_DB to false.

    b.   Save and close the sandbox.cfg file.

    This prevents database updates from being repeated for each node.

13. Repeat this procedure for each subsequent node.

14. Restart Sterling Integrator.

If you are using a perimeter server in a DMZ, see the perimeter server documentation.

## Updating the Database (dbupdate) with the startCluster Command

The `startCluster.cmd` *nodeNumber* command on node 1 will automatically update the database, unless you use the command `startCluster.cmd 1 false`. The `startCluster.cmd` *nodeNumber* command on all other nodes will not update the database.

When you configure the Sterling Integrator cluster for the first time, you should run the `startCluster.cmd` command with the database update value set to true (`startCluster.cmd 1 true`), or just `startCluster.cmd 1`, since on node 1, dbupdate defaults to true. This makes all cluster-related configurations take effect. The database update will synchronize the scheduled jobs between the nodes by assigning them all to node 1.

The `startCluster.cmd` command with the database update value turned off (`startCluster.cmd 1 false`) prevents any configuration changes from affecting the system, especially after you install patches or hot-fixes.

For current database updates, the following services are tied to node 1:

- Schedule
- FileSystem
- CmdLine
- CDServerAdapter
- CDAdapter
- CDRequesterAdapter
- CEUServerAdapter
- HttpServerAdapter
- B2B_HTTP_COMMUNICATIONS_ADAPTER
- HTTP_COMMUNICATIONS_ADAPTER
- HTTPClientAdapter
- FTPClientAdapter
- FtpServerAdapter
- SFTPClientAdapter

The default storage of the following services is set to the database:

- HttpServerAdapter

- ◆ CEUServerExtractServiceType
- ◆ CDSERVER_ADAPTER

The default storage of all business processes is set to the database.

# Installing a Hot-Fix

After you install the Sterling Integrator, you may need to install a hot-fix. A *hot-fix* is one or more fixes applied to a specific existing patch.

**Note:** Before performing this task, refer to *Preserving Custom Changes During Updates* on page 52.

## Before Installing a Hot-Fix

Before you can install a hot-fix developed for your company, you must have completed the following:

- ◆ Received the file name of the *caseid*.jar to install from Sterling Commerce Customer Support
- ◆ Created a full backup of the Sterling Integrator
- ◆ Created a full backup of your database

## Hot-Fix Installation

To install a hot-fix on a Windows system:

1. Log in to the computer that you are installing the hot-fix on.
2. Is the database password encrypted? If Yes, decrypt the password.

   For more information, refer to *Decrypting Database Passwords (Windows)* on page 16.

   Apply the hot-fix to node 1 first, and then to the subsequent nodes: node 2, node 3, etc. For node 1, REINIT_DB is true in *install_dir*\install\properties\sandbox.cfg. For subsequent nodes, REINIT_DB is false, which prevents database updates from repeating on each node's hot-fix installation.
3. At the command line, type `ftp theworld.stercomm.com`. Use one of the following methods to open command prompt:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
|---|---|
| ◆ Open a command prompt window (from the **Run** dialog box). | ◆ Click **Start**.<br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br>◆ The Administrator: Command Prompt dialog box is displayed. |

4. Type your user name and password. If you do not know your user name and password, contact Sterling Commerce Customer Support.
5. Type **bin** and press **Enter** to select Binary as your transfer mode.

6. At the FTP prompt, type the command `get ccaseid.jar`, where *ccaseid* includes the ID number you received from Customer Support.

   **Note:** You can transfer the file to any directory for which you have write permission.

7. Shut down the Sterling Integrator.

8. Change to the *install_dir*\install\bin directory.

9. Type the command `InstallService.cmd absolutePath\ccaseid.jar` to install the hot-fix.

   **Caution:** You may need to complete this step twice depending on the patch. Read the output from the `InstallService.cmd` script carefully to see if you need to complete this step twice.

10. If you decrypted the database password in step 2, re-encrypt the password.

    For more information, refer to *Encrypting Database Passwords (Windows)* on page 16.

11. Restart the Sterling Integrator.

    **Note:** Ensure that you run `startCluster.cmd nodenumber false` command to prevent configuration changes that may affect the system. Refer to *Custom Configurations* on page 40 before configuring the cluster environment.

12. In the *install_dir*\install\bin directory, run `dump_info.cmd` to verify that the hot-fix was successfully installed. The successful running of `dump_info.cmd` will display the Sterling Integrator version number of the hot-fix.

## Hot-Fix Package Delivery Method

The hot-fix package delivery method has changed effective Sterling Integrator, Release 5.0 Build 5006 onwards. The hot-fix package will be delivered as a jar file that contains only the files that were modified. However, the installation procedure for a hot-fix remains the same. Refer to *Hot-Fix Installation* on page 50 for hot-fix installation procedure.

The following list describes the features of the new hot-fix package model:

◆ Modified components are packaged as an installable file (jar).

◆ Hot-fix version is maintained in the hotfix.properties file. It does not update the SI_VERSION table.

   Run `dumpinfo.cmd` command to display the hot-fix version. You can also verify the hot-fix version in Sterling Integrator Support user interface page.

◆ Size of the hot-fix package is small.

◆ Hot-fix must be installed on the same build version that was used to build it. For example, if a test system is on Sterling Integrator, Release 5.0 Build 5006 and the hot-fix is built for 5006, it can be installed on that test system. However, if the production system is on Sterling Integrator, Release 5.0 Build 5005, you must apply Sterling Integrator, Release 5.0 Build 5006 prior to applying the hot-fix.

◆ You can locate the hot-fix read me file in the Sterling Integrator root *(install_dir)* directory. For example, *install_dir*\hotfix_readme.txt.

◆ If you have Sterling File Gateway installed in your environment, the hot-fix for Sterling File Gateway is installed automatically.

## Preserving Custom Changes During Updates

You can preserve your custom changes to system resources (like workflow definitions and maps) when you update your system. During updates, the system can identify when you make a custom change versus when the system makes a change through an upgrade or patch.

When a patch, installation or upgrade is performed, a baseline record of system resources is created. This baseline is not affected by any subsequent customer changes. When another patch is installed, the resources in this baseline are compared to the resources in the existing system. If a baseline and existing resource are not the same, it means that the existing resource was customized and is not overwritten by the patch.

During an update, the baseline is updated with new system resource information, but not with custom changes to resources.

A report shows what has changed in the system that customer-specific changes did not permit to get set as defaults. This report is used in conjunction with the user interface to verify that customer overrides are not getting overwritten by the patch.

The report includes the following resource types:

- Workflow definitions
- Maps
- Schema
- Template

## Performing Checksum using DB Checksum Tool

A checksum is a simple redundancy check used to detect errors in data. In Sterling Integrator 4.3, a verification process is used to compare the checksum between the existing default resource and the resource added after applying a patch or upgrading. The DB Checksum tool, a resource difference tool generates a granular report of the changes in the system that was not permitted to be set as defaults.

The DB Checksum tool generates the difference in resource checksum between the default resource and the latest system resource from the database.

To run DB Checksum tool, do the following:

1. Navigate to the `<install_dir>\bin` directory using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
|---|---|
| <ul><li>Open a command prompt window (from the **Run** dialog box).</li></ul> | <ul><li>Click **Start**.</li><li>Right-click **Command Prompt** and select **Run as administrator**.</li><li>The Administrator: Command Prompt dialog box is displayed.</li></ul> |

2. In the command prompt window, enter the following command:

```
db_checksum_tool.cmd [-d] [-i [1 | 2 | 3 | 4 | 5]] [-r [wfd | map | schema |
sii | template]] [-o <output file>] [-g] [-h]
```

where:

-d is the mode to dump the difference of resource checksum between the default resource and latest system resource.

-i is the resource type integer (optional).

    1 is WFD

    2 is MAP

    3 is SCHEMA

    4 is SII

    5 is TEMPLATE

-r is the resource name (optional).For example, wfd, map, schema, sii, or template.

-o is the file name to output all the messages (optional).

-g is the file name that lists all the ignored resources (optional).

-h is the help screen.

3. The DB Checksum tool performs the relevant checksum operation based on the command options and generates the output message.

# Postinstallation in a Windows Cluster Environment

After installing the Sterling Integrator, you should complete the following tasks:

◆ *Configuring Property Files on page 53*

◆ *Performing Initial Administrative Setups in the Sterling Integrator on page 54*

◆ *Configuring Customer Overrides File when you have a Firewall between Nodes* on page 55

◆ *Starting Sterling Integrator in Windows on page 55*

◆ *Downloading the Sterling Integrator Tools on page 56*

◆ *Stopping Sterling Integrator (Windows) on page 56*

## Configuring Property Files

Property files contain properties that control the operation of the Sterling Integrator. For example, the REINIT_DB property in the sandbox.cfg property file controls whether or not a database is initialized when you install Sterling Integrator.

By modifying the values of these properties, you can customize the Sterling Integrator to suit your business and technical needs. Most property files are in the *install_dir*\install\properties directory.

After installing the Sterling Integrator, most property and script files do not need any further configuration for basic operation of the system. However, if you want to customize any specific operations—for example, setting a different logging level—you will need to edit (and in some cases, create) certain property or .xml files.

Before changing any property files, refer to the *Working with Property Files* documentation for general information about how to work with property files. Also, the property files reference documentation has information about specific properties.

Areas where you might need to make specific property file changes after an installation include (but are not limited to) the following areas:

- ◆ LDAP user authentication
- ◆ Prevention of cross-site script vulnerabilities
- ◆ Logging configuration
- ◆ Process-specific property file settings
- ◆ Securing the Interop Servlet

**Note:** If you are upgrading from a prior release, see the Sterling Integrator *Upgrade Guide* that applies to your implementation before continuing with the setup of the Sterling Integrator. Changes may have been made to the properties files since the previous release, so you must read the *Upgrade Guide* for information about how these changes impact your system.


## Performing Initial Administrative Setups in the Sterling Integrator

At this point, your installation is complete, and you can run Sterling Integrator. If you are installing the Sterling Integrator for the first time, you need to perform some initial administrative setups before users can use the Sterling Integrator. For example, the system administrator for the Sterling Integrator must register users and grant permissions.

For security purposes, change default user ID passwords immediately after installation is completed. See the *Update My Account Information* task in the documentation library.

Also, it is recommended that you run several performance reports so that benchmarks are established for tuning the system in the future. For more information about preparing your Sterling Integrator system for effective performance tuning, refer to the performance tuning methodology documentation.

## Configuring Customer Overrides File when you have a Firewall between Nodes

If you have configured a firewall between nodes that blocks ports outside of the port range assigned to Sterling Integrator, perform the following task on all nodes:

1. Navigate to the *install_dir*\install\properties directory and locate (or create, if necessary) the customer_overrides.properties file.

2. Open the customer_overrides.properties file using a text editor.

3. Add the following properties:

   ```
   noapp.jnp_host= <host_name>
   noapp.jnprmiport=<port_number_1>
   noapp.jnprmiport2=<port_number_2>
   noapp.useSocketFactories=true
   noapp.jndirmiport=<port_number_3>
   ops.jnp_host= <host_name>
   ops.jnprmiport=<port_number_1>
   ops.useSocketFactories=true
   ops.jndirmiport=<port_number_2>
   ops.jnprmiport2=<port_number_3>
   ```

   This increases the number of threads used by the system.

4. Save and close the customer_overrides.properties file.

5. Stop Sterling Integrator and restart it to apply the changes.


## Starting Sterling Integrator in Windows

Start Sterling Integrator using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ Open a command prompt window (from the **Run** dialog box).<br>◆ Navigate to the *install_dir*\install\bin directory.<br>◆ Enter the command:<br>`StartWindowsService.cmd` | ◆ Click **Start**.<br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br>◆ The Administrator: Command Prompt dialog box is displayed.<br>◆ Navigate to the *install_dir*\install\bin directory.<br>◆ Enter the command:<br>`StartWindowsService.cmd` |

**Note:** It may take several minutes for the Sterling Integrator components to initialize and start up.

If the Sterling Integrator does not start or if you receive a message about an invalid or corrupt license file, go to the *Troubleshooting: Windows Cluster Environment* on page 60.

When startup is finished, a message like the following is displayed:

*Open your Web browser to http://host:port/(interface)*

*host* is the IP address, *port* is where the Sterling Integrator resides on your system, and *(interface)* is the interface used by Sterling Integrator.

Make a note of the URL address so that you can access Sterling Integrator later.

Type the default user ID (admin) and password (password). The default login is at an administrative level. One of your first tasks as an administrator is to change the administrative password and to register other users with other levels of permission.

## Downloading the Sterling Integrator Tools

The Sterling Integrator includes tools that run on a desktop or personal computer. After you install, start, and access the Sterling Integrator, you can install the following tools by downloading them from within Sterling Integrator. For more information about a tool, refer to the documentation for that tool.

**Note:** MESA Developer Studio and Reporting Services are optional features that are purchased separately from Sterling Integrator. These optional features each require a separate license in addition to your license for Sterling Integrator.

- ◆ Map Editor and associated standards
- ◆ Graphical Process Modeler
- ◆ Web Template Designer
- ◆ (If licensed) MESA Developer Studio plug-ins, including:
  - ◆ MESA Developer Studio Software Development Kit (SDK)
  - ◆ MESA Developer Studio Skin Editor
- ◆ (If licensed) Reporting Services, which requires MESA Developer Studio if you want to use the plug-ins to create fact models and custom reports.

Conflicting IP addresses can cause problems when you download a desktop tool. See *Installing the Current Maintenance Patch (Cluster)* on page 44.

## Stopping Sterling Integrator (Windows)

To stop Sterling Integrator in a Windows cluster environment, follow these steps:

1. Open Sterling Integrator.
2. From the Administration Menu, select **Operations** > **System** > **Troubleshooter**.
3. Click **Stop the System** and wait for shutdown to complete.

# Managing Nodes in a Cluster

You can add or remove nodes in a cluster environment. The following prerequisites should be considered before performing any modification in the cluster environment:

- ◆ New nodes should have the same range of ports available as the current nodes.
- ◆ Sterling Integrator license file should be updated to include the IP address of the new nodes.
- ◆ Directory structure on the new nodes should match with the directory structure of the existing nodes.
- ◆ Perimeter servers should be updated with the new IP addresses to ensure proper configuration.
- ◆ Any adapters, services, or business processes assigned to or scheduled to run on the node being removed should be assigned to run on other nodes.

The following sections provide the necessary steps to add a node and remove a node from the cluster:

- ◆ *Adding a Node* on page 57
- ◆ *Removing a Node* on page 57

## Adding a Node

To add a node into the cluster:

**Note:** You do not need to stop the cluster environment while adding a new node.

1. Install a new Sterling Integrator node to be added into the cluster with the `-cluster` option during installation. To install a new node, refer *Installing in a Windows Cluster Environment* on page 24. Ensure that the new node being added is not a primary node.

2. Update `jgroups_cluster.properties` file and `jgroups_cluster.properties.in` file with the new node details.

3. Configure the new node by running the command `startcluster.cmd` *nodeNumber* from the *install_dir*\bin directory. The node number should be greater than 1.

**Note:** You should run `startCluster.cmd` command only after you install Sterling Integrator. You should not run `startCluster.cmd` command when you restart a Sterling Integrator instance. However, if you have installed a patch or a hot-fix, refer *Custom Configurations* on page 40 to start the cluster without updating the database settings.

4. Start the new Gentran Integration Suite node. To start a node, refer *Starting Sterling Integrator in Windows on page 55*.

## Removing a Node

To remove a node from the cluster:

1. Reassign or stop any adapters, services, or business processes assigned to or scheduled to run on the node being removed.

**Note:** It is recommended that you restart the Sterling Integrator cluster environment after removing the node from the cluster.

2. Perform backup of the node being removed.

3. Edit `jgroups_cluster.properties` file and `jgroups_cluster.properties.in` file in all nodes to remove the IP address of the node being removed.

4. Uninstall Gentran Integration Suite in the node being removed. To stop a node and uninstall Gentran Integration Suite from a node, refer *Uninstalling the Sterling Integrator from a Windows Cluster Environment* on page 58.

# Uninstalling the Sterling Integrator from a Windows Cluster Environment

When you uninstall the Sterling Integrator, it is automatically removed from the server.

Additionally, you may perform the following tasks:

◆ Manually remove the JDK that was installed

◆ Manually remove any desktop tools that were downloaded

◆ Free any database space in Oracle or SQL Server databases

To uninstall the Sterling Integrator from a Windows cluster environment, follow these steps for each node:

1. Stop the Sterling Integrator and wait for shutdown to complete. To stop Sterling Integrator, use one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
|---|---|
| ◆ Open a command prompt window (from the **Run** dialog box).<br>◆ Navigate to the *install_dir*\install\bin directory.<br>◆ Enter `hardstop.cmd`. | ◆ Click **Start**.<br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br>◆ The Administrator: Command Prompt dialog box is displayed.<br>◆ Navigate to the *install_dir*\install\bin directory.<br>◆ Enter `hardstop.cmd`. |

You should receive a message stating that services were successfully stopped when you stopped Sterling Integrator. These services include:

◆ Noapps

◆ Opsserver

◆ WebDav

◆ Database-related service

2. To uninstall these services, do the following:

   a. Select **Start** > **Control Panel**.

   b. Double-click **Administrative Tools**.

   c. Double-click **Services**

      The **Services** window appears.

      **Note:** You can also display the **Services** window with the command **Start** > **Run** > `services.msc`.

   d. If an Sterling Integrator service is still running, navigate to the *install_dir*\install\bin directory and run all of your the `uninstall*WindowsService.cmd` commands (for example, `uninstallWindowsService.cmd`, `uninstallOpsWindowsService.cmd`, `uninstallCLA2WindowsService.cmd`, and `uninstallWebdavWindowsService.cmd`).

3. If the JDK is not being used by another application, remove it.

   a. From the Windows **Start** menu, select **Control Panel**.

   b. From the Control Panel, select **Add or Remove Programs**.

      The **Add or Remove Programs** window appears.

   c. Select **J2SE Runtime Environment** <*version number*> **Update** <*update number*> and click **Remove**.

   d. Select **J2SE Development Kit** <*version number*> **Update** <*update number*> and click **Remove**.

   e. Close all windows and return to your desktop.

4. Delete the folder where the Sterling Integrator was installed, including all subfolders. For example, delete *C:\SterlingCommerce* and its subfolders.

5. If you use an Oracle or SQL Server database, these remain intact even after you remove the Sterling Integrator from the server. If you no longer want to reference the data, contact your database administrator about removing the unwanted tables and recovering the database space where the Sterling Integrator resided.

6. After you remove the Sterling Integrator from the server, you can remove Eclipse and any tools that were downloaded to the desktop:

   ◆ Map Editor and associated standards

      Refer to the *Map Editor Guide* for information about removing the Map Editor.

   ◆ Graphical Process Modeler

      Refer to the *Graphical Process Modeler Guide* for information about removing the Graphical Process Modeler.

   ◆ Web Template Designer

      Refer to the *Web Extensions Guide* for information about removing the Web Template Designer.

   ◆ (If licensed) MESA Developer Studio plug-ins, including:

      ◆MESA Developer Studio Software Development Kit (SDK)

◆MESA Developer Studio Skin Editor

Refer to the *MESA Developer Studio* guide for information about removing MESA Developer Studio.

◆ (If licensed) Reporting Services, which requires MESA Developer Studio if you want to use the plug-ins to create fact models and custom reports.

Refer to the *MESA Developer Studio* guide for information about removing Reporting Services.

# Troubleshooting: Windows Cluster Environment

| Situation | Message or Symptom | Explanation/Resolution |
|---|---|---|
| Installing | You encounter errors or problems during installation. | **Explanation**<br>The installation creates several log files that you can use to diagnose problems like the failure of an installation.<br>**Resolution**<br>Examine the log files generated during installation:<br>1  ant.install.log (in the *install_dir* directory)<br>2  *install_dir*\PreInstallSI.log<br>3  *install_dir*\install\InstallSI.log |
| Installing | During installation, you select the destination directory and the installation program stops running. | **Explanation**<br>The command window was closed after you selected the destination directory.<br>**Resolution**<br>Delete the destination directory and re-start the installation process. Do not close the command window. |
| Installing | You started the installation program but realize that the license file has not been downloaded. | **Resolution**<br>Minimize the installation window, obtain the license file, and then continue with the installation procedure. |
| Installing | During installation, you enter database information and see the message: *Information is incorrect.* | **Explanation**<br>One or more of the criteria for the database is incorrect.<br>**Resolution**<br>Click **Back** to redisplay the dialog box that asks for the database information. Correct the error and click **Next**. |

| Situation | Message or Symptom | Explanation/Resolution |
|---|---|---|
| Installing a desktop tool or resource | Cannot download any of the following:<br>◆ Map Editor and associated standards<br>◆ Graphical Process Modeler<br>◆ Web Template Designer<br>◆ (If licensed) MESA Developer Studio plug-ins, including:<br>  ◆ MESA Developer Studio Software Development Kit (SDK)<br>  ◆ MESA Developer Studio Skin Editor<br>◆ (If licensed) Reporting Services, which requires MESA Developer Studio if you want to use the plug-ins to create fact models and custom reports. | **Explanation**<br>When you install the Sterling Integrator, system files are created that contain an internal IP address. If you install the Sterling Integrator behind a firewall, and your firewall is configured to accept an external IP address from a client computer, you may not be able to download the desktop tools and resources. The firewall will reject the IP address from a client residing outside of the firewall.<br>**Resolution**<br>Modify the system files that contain the invalid IP address. Follow these steps:<br>1  Navigate to the *install_dir*\install\bin directory.<br>2  Stop Sterling Integrator.<br>3  Enter the following command followed by the external IP address:<br>`patchJNLP.cmd external_IP_address`<br>4  Restart Sterling Integrator. |
| Starting | Sterling Integrator returns the message *Page cannot be displayed.* | **Explanation**<br>Sterling Integrator might be binding to the wrong network interface.<br>**Resolution**<br>Adjust property file settings to correct the problem. For more information, see *Changing Network Interface Bindings* on page 61 |

## Changing Network Interface Bindings

To increase the security of the Administrator Console user interface, Sterling Integrator Version 5.0 binds only to specific network interfaces. By default, previous versions had been bound to all network interfaces. After installing, if the URL for Sterling Integrator returns *Page cannot be displayed*, you can adjust property settings to correct the problem.

1.  On the server where the Sterling Integrator resides, edit the noapp.properties_platform_ifcresources_ext.in file.

    a.  Locate the admin_host parameter. The default settings are as follows:

    *hostname1* is the name of primary network interface, the one given highest priority by the Sterling Integrator.

    *localhost* is the name of the network interface on the server where the Sterling Integrator resides.

    **Default entries**

    ```
    admin_host.1    = hostname1
    admin_host.2    = localhost
    ```

b. Correct the parameters.

If no interface is being displayed, edit *hostname1* so that it correctly identifies the primary network interface that accesses the Sterling Integrator.

If an additional network interface needs to access the Sterling Integrator, add an additional *admin_host* entry, as shown below.

**Edited entries**

```
admin_host.1    = hostname1
admin_host.2    = localhost
admin_host.3    = hostname2
```

2. Stop the Sterling Integrator.

3. Run the `setupfiles.cmd` utility located in the *install_dir*\install\bin directory.

4. Restart the Sterling Integrator.

# Installing a Perimeter Server in Windows (Cluster)

A perimeter server is an optional software tool for communications management that can be installed in a demilitarized zone (DMZ), which is a computer host or small network inserted as a neutral zone between a company's private network and the outside public network.

The perimeter server manages the communications flow between outer layers of your network and the TCP-based transport adapters. A perimeter server can solve problems with network congestion, security, and scalability, especially in high-volume, Internet-gateway environments. A perimeter server requires a corresponding perimeter client.

Installing a Sterling Integrator perimeter server in a Windows environment includes the following sections:

## Setting Up Perimeter Servers with Sterling Integrator

The Sterling Integrator installation program installs a perimeter client and a local mode server. The local mode server is useful for testing purposes or in environments that do not require a secure solution. However, if you require high-volume, secure connections, you must install a perimeter server in a remote zone, either a more secure or less secure network than your integration server.

When you install a perimeter server, use these guidelines:

*   Licensing for a perimeter server is determined by the licensing restrictions on the corresponding B2B adapters in Sterling Integrator.

◆ Each perimeter server is limited to two TCP/IP addresses: internal interface and external interface. *Internal interface* is the TCP/IP address that the perimeter server uses to communicate with Sterling Integrator. *External interface* is the TCP/IP address that the perimeter server uses to communicate with trading partners.

To use additional TCP/IP addresses, install additional perimeter servers.

◆ You may have multiple perimeter servers installed on the same computer interacting with one instance of Sterling Integrator. To install a perimeter server on a computer with an existing instance, install the new perimeter server in a different installation directory.

◆ The combination of internal TCP/IP address and port must be unique for all perimeter servers installed on one computer.

   ◆ If a perimeter server is installed using the wildcard address, then all ports must be unique.

   ◆ If a perimeter server is installed using the wildcard address, then its port is not available for use by adapters that use the server or any other perimeter server on that computer.

   ◆ The internal and external interface may use the same TCP/IP address. However, the port used by the perimeter server is not available to the adapters that use the server.

## Installing a Perimeter Server in a More Secure Network in a Windows Environment

To install a perimeter server in a Windows environment:

1. Close all open Windows programs.

2. Insert Sterling Integrator installation CD into the appropriate drive.

3. Copy the ps_4400.jar installation files from the installation CD (or from another location) to a Windows directory. If you are using FTP to copy the file, be sure your session is set to binary mode.

4. Start the perimeter server installation process using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ From a command prompt (or from the **Run** dialog box), enter the following command. Do not include any spaces in the directory path:<br><br>`\absolutePath\bin\java -jar`<br>`\install_dir\install\packages\ps_44`<br>`00.jar -interactive` | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Enter the following command. Do not include spaces in the directory path:<br><br>`\absolutePath\bin\java -jar`<br>`\install_dir\install\packages\ps_44`<br>`00.jar -interactive` |

**Note:** You can install perimeter server either in silent mode or in interactive mode. The default installation mode is silent. In the silent mode, you should specify the details in a silent file, whereas in the interactive mode, you should enter the value each time a prompt appears. Append the install command with the `-interactive` flag to install through the interactive mode.

The program verifies the operating system, required patch level, and the location and version of the JDK.

5. Enter the name for the installation directory.

6. If there is an existing installation in the directory you specify, you can update it using the same settings. Answer the question:

*There is an existing install at that location, update it while keeping existing settings?*

If **yes**, the installation will proceed without additional entries.

**Note:** If you want to change any of the settings, you must use a new directory, or delete the old installation before performing the new installation. You cannot overwrite an existing installation, and you cannot use an existing directory that does not contain a valid installation. The existing installation must be Sterling Integrator 5.0 or later.

The program verifies the amount of available disk space.

7. Answer the question:

*Is this server in a less secure network than the integration server?*

No

For more information about making the perimeter more secure, refer to *Reducing Perimeter Server Security Vulnerabilities* on page 72.

8. Answer the question:

*Will this server need to operate on specific network interfaces?*

If **yes**, the program returns a list of the available network interfaces available on your host. Select the interfaces for the server to use.

9. Enter the TCP/IP address or DNS name that the integration server (Sterling Integrator) will listen on for the connection from this server.

10. Verify the TCP/IP address or DNS name.

11. Enter the port that the integration server (Sterling Integrator) will listen on for the connection from this server. The port number must be higher than 1024.

12. Enter the local port that the perimeter server will use for the connection to the integration server (Sterling Integrator). The port number must be higher than 1024, except specify a port of zero if you want the operating system to select any unused port.

13. Verify the port.

    When the perimeter server is installed, the following message is displayed:

    *Installation of Perimeter Service is finished*

14. Change to the installation directory.

15. Enter **installPS.cmd** to install this perimeter server as a Windows Service.

16. Enter **startPSService.cmd** to start the perimeter server.

## Installing a Perimeter Server in a Less Secure Network in a Windows Environment

To install a perimeter server in a Windows environment:

1. Close all open Windows programs.

2. Insert Sterling Integrator installation CD into the appropriate drive.

3. Copy the ps_4400.jar installation files from the installation CD (or from another location) to a Windows directory. If you are using FTP to copy the file, be sure your session is set to binary mode.

4. Start the perimeter server installation process using one of the following methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ From a command prompt (or from the **Run** dialog box), enter the following command. Do not include any spaces in the directory path:<br><br>`\absolutePath\bin\java -jar \install_dir\install\packages\ps_44 00.jar -interactive` | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Enter the following command. Do not include spaces in the directory path:<br><br>`\absolutePath\bin\java -jar \install_dir\install\packages\ps_44 00.jar -interactive` |

**Note:** You can install perimeter server either in silent mode or in interactive mode. The default installation mode is silent. In the silent mode, you should specify the details in a silent file, whereas in the interactive mode, you should enter the value each time a prompt appears. Append the install command with the `-interactive` flag to install through the interactive mode.

The program verifies the operating system, required patch level, and the location and version of the JDK.

5. Enter the name for the installation directory.

6. If there is an existing installation in the directory you specify, you can update it using the same settings. Answer the question:

   *There is an existing install at that location, update it while keeping existing settings?*

   If **yes**, the installation will proceed without additional entries.

   **Note:** If you want to change any of the settings, you must use a new directory, or delete the old installation before performing the new installation. You cannot overwrite an existing installation, and you cannot use an existing directory that does not contain a valid installation. The existing installation must be Sterling Integrator 5.0 or later.

   The program verifies the amount of available disk space.

7. Answer the question:

   *Is this server in a less secure network than the integration server?*

   **Yes**

8. Answer the question:

   *Will this server need to operate on specific network interfaces?*

   If **yes**, the program returns a list of the available network interfaces available on your host. Select the interfaces for the server to use.

9. Enter the TCP/IP address or DNS name for the internal interface to use to communicate with the integration server (Sterling Integrator.). Press Enter to use a wildcard for this address.

10. Verify the TCP/IP address or DNS name for the internal interface.

11. Enter the TCP/IP address or DNS name for the external interface to use to communicate with trading partners. Press Enter to use a wildcard for this address.

12. Verify the TCP/IP address or DNS name for the external interface.

13. Enter the port that the perimeter server will listen on for the connection from integration server (Sterling Integrator). The port number must be higher than 1024.

14. Verify the port.

    When the perimeter server is installed, the following message is displayed:

    *Installation of Perimeter Service is finished*

15. Change to the installation directory.

16. Enter **installPS.cmd** to install this perimeter server as a Windows Service.

17. Enter **startPSService.cmd** to start the perimeter server.

# Installing an External Perimeter Server in Silent Mode

Use the following instructions to install an external perimeter server in silent mode from a command line, using a manually edited silent installation file. Make sure you have set up your silent installation file, as described in *Creating the Silent Installation File* on page 68.

The perimeter server can be installed on the same machine where you have installed Sterling Integrator or on a separate machine. It is recommended to install a perimeter server on a separate machine.

To install an external perimeter server using your manually edited silent installation file, refer to *Installing a Perimeter Server with a Silent Installation File* on page 69.

## Creating the Silent Installation File

A manually edited silent installation file must contain the entries marked as required in the following table. When you are finished editing the file, record its name and location. You will use this information during the installation.

| Entry | Description |
| --- | --- |
| INSTALL_DIR | (Required) The installation directory that stores perimeter server files and related directories. This directory must exist prior to running silent installation. For example, `\`*`install_dir`*`\perimeterserver`. |
| REVERSE_CONNECT | (Optional) Determines if the perimeter server is to be installed in a more secure network zone. Valid values: <br> ◆ Y - Install in a more secure network zone. <br> ◆ N - Install in a less secure network zone. |
| PS_PORT | (Required) Determines the perimeter server port to interact with Sterling Integrator. |

| Entry | Description |
|---|---|
| PS_SECURE_IF | (Required) Determines the TCP/IP address or DNS name for the internal interface to communicate with the integration server (Sterling Integrator). You can use a wildcard (*) for this address. |
| PS_EXTERNAL_IF | (Required) Determines the TCP/IP address or DNS name for the external interface to communicate with the trading partners. You can use a wildcard (*) for this address. |
| REMOTE_ADDR | (Optional) Determines the remote perimeter server address. (Not required if REVERSE_CONNECT=N) |
| REMOTE_PORT | (Optional) Determines the remote perimeter server port. (Not required if REVERSE_CONNECT=N) |
| MAX_JVM_HEAP | (Required) Determines the maximum Java heap size allocated to the JVM. |

Following is an example of the perimeter server silent installation file contents:

```
INSTALL_DIR=\install_dir\perimeterserver
REVERSE_CONNECT=N
PS_PORT=48000
PS_SECURE_IF=*
PS_EXTERNAL_IF=*
MAX_JVM_HEAP=512
```

## Installing a Perimeter Server with a Silent Installation File

To install an external perimeter server in silent mode:

1. Copy the ps_4400.jar installation files from the installation CD (or from another location) to a Windows directory. If you are using FTP to copy the file, make sure your session is set to binary mode.

2. Setup your silent installation file, using the guidelines in *Creating the Silent Installation File* on page 68. Record the location of the silent installation file.

3. Start the installation process using one of the following methods. The command includes the path to the JDK, the perimeter server .jar file, and the silent installation file (note the `-f` parameter).:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
| --- | --- |
| ◆ From a command prompt (or from the **Run** dialog box), enter the following command. Do not include any spaces in the directory path:<br><br>`\absolutePath\bin\java -jar`<br>`\install_dir\install\packages\ps_44`<br>`00.jar -f silent.txt` | ◆ Click **Start**.<br><br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br><br>◆ The Administrator: Command Prompt dialog box is displayed.<br><br>◆ Enter the following command. Do not include spaces in the directory path:<br><br>`\absolutePath\bin\java -jar`<br>`\install_dir\install\packages\ps_44`<br>`00.jar -f silent.txt` |

The program verifies the operating system, required patch level, and the location and version of the JDK.

If you want to change any of the settings, you must use a new directory, or delete the old installation before performing the new installation. You cannot overwrite an existing installation, and you cannot use an existing directory that does not contain a valid installation. The existing installation must be Sterling Integrator 5.0 or later.

When the perimeter server is installed, the following message is displayed:

*Installation of Perimeter Service is finished*

4. Change to the installation directory.
5. Enter `startupPs.cmd` to start the perimeter server.

# Installing Patches in a Perimeter Server Windows Environment

Remote perimeter servers are not automatically updated by a service pack or patch. You must reinstall the perimeter server using the new perimeter server installation file supplied with the service pack or patch.

## Updating a Remote Perimeter Server in Windows

To update a remote perimeter server in Windows, do the following:

1. Update your installation of Sterling Integrator with the latest maintenance patch. Obtain the maintenance patch file from the Sterling Commerce Support on Demand web site, at https://support.sterlingcommerce.com. These patches have a name that identifies a build number. For example, si_50_build_5002.jar. For more information, refer to the maintenance patch documentation.

2. Locate your perimeter server patch file in the *install_dir*/install/packages directory of your installation of Sterling Integrator. For maintenance patches, obtain the file from the Sterling Commerce Support on Demand Web site, at https://support.sterlingcommerce.com. These patch files have a name that identifies a version number. For example, ps_2006.jar.

3. Copy the file to the home directory or base directory on the remote server.

4. Stop the perimeter server using the stopPs.cmd command.

5. To begin the installation, enter the following command using one of the methods:

| For Windows Server 2003 or earlier | For Windows Server 2008 |
|---|---|
| ◆ From a command prompt (or from the **Run** dialog box), enter the following command:<br>`\`*absolutePath*`\bin\java -jar`<br>*filename*`.jar -interactive` | ◆ Click **Start**.<br>◆ Right-click **Command Prompt** and select **Run as administrator**.<br>◆ The Administrator: Command Prompt dialog box is displayed.<br>◆ Enter the following command:<br>`\`*absolutePath*`\bin\java -jar`<br>*filename*`.jar -interactive` |

**Note:** You can install perimeter server either in silent mode or in interactive mode. The default installation mode is silent. In the silent mode, you should specify the details in a silent file, whereas in the interactive mode, you should enter the value each time a prompt appears. Append the install command with the `-interactive` flag to install through the interactive mode.

*absolutePath* is the directory name where the Java version is installed.

The program verifies the operating system, required patch level, and the location and version of the JDK.

6. Type the full path to the installation directory. If you do not want to change any settings for your perimeter server, specify the same directory where the remote perimeter server was originally installed.

7. Answer the question:

*There is an existing install at that location, update it while keeping existing settings?*

If **yes**, the installation will proceed without additional entries.

**Note:** If you want to change any of the settings, you must use a new directory, or delete the old installation before performing the new installation. You cannot overwrite an existing installation, and you cannot use an existing directory that does not contain a valid installation. The existing installation must be Sterling Integrator 5.0 or later.

When the perimeter server is installed, the following message is displayed:

*Installation of Perimeter Service is finished*

8. Change to the installation directory.

9. Type `startupPs.cmd` to start the perimeter server.

# Starting and Stopping Perimeter Servers in Windows

To start a perimeter server in Windows, use the `startPSService.cmd` command, or use the Services Control Panel.

To stop a perimeter server in Windows, use the `stopPSService.cmd` command, or use the Services Control Panel. To remove this perimeter server's definition as a Windows Service, use the `uninstallPSService.cmd` command.

# Reducing Perimeter Server Security Vulnerabilities

When Sterling Integrator is deployed with a remote perimeter server in a more secure network zone, there is security vulnerability. An intruder may compromise the host where the proxy resides, and take over the persistent connection to the perimeter server residing in the more secure zone. If this happens, the perimeter server will relay all the intruder's network requests past the firewall into this internal zone.

To prevent an intrusion, limit the activities the remote perimeter server can perform on behalf of the proxy to specifically those activities that the proxy needs to do for its operation.

Control these limitations by a configuration residing in the secure network zone with the remote perimeter server, inaccessible by the proxy that could become compromised.

## Granting Permissions for Specific Activities By a Perimeter Server

1. Install a remote perimeter server, choosing the option for a more secure network zone. Refer to the full perimeter server installation instructions, as described in *Installing a Perimeter Server in a More Secure Network in a Windows Environment* on page 64.

2. At the installation prompt *Is this server in a less secure network than the integration server?*, select **No**, which is the option for a more secure network zone.

3. In the perimeter server installation directory there will be a text file named restricted.policy that must be customized. Its initial contents are:

```
// Standard extensions get all permissions by default grant codeBase
"file:${{java.ext.dirs}}/*" {permission java.security. AllPermission;};

 grant {
    // Grant all permissions needed for basic operation.

    permission java.util.PropertyPermission "*", "read";

    permission java.security.SecurityPermission "putProviderProperty.*";

    permission java.io.FilePermission "-", "read,write";
    permission java.io.FilePermission ".", "read";

    // Needed to allow lookup of network interfaces.
    permission java.net.SocketPermission "*", "resolve";
```

```
 };

 grant {
     // Adjust for your local network requirements.

     // Needed to connect out for the persistent connection.  Do not remove this.
     permission java.net.SocketPermission "localhost:12002", "connect";

     // For each target FTP Server that a FTP Client Adapter will connect to in passive
mode.
     //
     // permission java.net.SocketPermission "ftphost:21", "connect"; // Control
connection.
     // permission java.net.SocketPermission "ftphost:lowPort-highPort", "connect"; //
Passive data connections.

     // For each target FTP Server that a FTP Client Adapter will connect to in active
mode.
     //
     // permission java.net.SocketPermission "ftphost:21", "connect"; // Control
connection.
     // permission java.net.SocketPermission "localhost:lowPort-highPort", "listen";
// Active data port range.
     // permission java.net.SocketPermission "ftphost", "accept"; // Active data
connections.

     // For each target HTTP Server that an HTTP Client Adapter will connect to.
     //
     // permission java.net.SocketPermission "htttphost:443", "connect";

     // For each target C:D snode that the C:D Server Adapter will connect to.
     //
     // permission java.net.SocketPermission "snode:1364", "connect"
};
```

4.  Edit this file to add permission lines for each back-end server that you intend to allow the proxy to access. There are commented out examples for each type of server.

The first two grant sections are required for correct perimeter server operation. Do not modify these sections.

**Example**

The following example grants permission to a target FTP Server:

**Note:**  In the example, servers are configured to listen on the following ports: 33001 (for FTP), 33002 (for HTTP), and 1364 (for C:D). These port numbers can be edited.

```
// To restrict or permit the required Host/Server to communicate with the  PS, update
the "ftphost/ htttphost/snode" with
     that of the Server IP and provide the appropriate PORT number where the Server
will listen. //

   // For each target FTP Server
   // permission java.net.SocketPermission "10.117.15.87:33001", "connect"; //
Control connection.
   // permission java.net.SocketPermission "10.117.15.87:lowPort-highPort",
"connect"; // Passive data connections.
```

```
   // 10.117.15.87 indicates IP of the FTP Server for which the permission is granted
by PS for communicating with client //

   // For each target HTTP Server
   //
   // permission java.net.SocketPermission "10.117.15.87:33002", "connect";
   // 10.117.15.87 indicates IP of the HTTP Server for which the permission is granted
by PS for communicating with client //


   // For each target C:D snode
   //
   // permission java.net.SocketPermission "snode:1364", "connect";
   //  10.117.15.87 indicates IP of the Connect Direct Node for which the permission
is granted by PS for communication //
```

5.  Turn on restrictions. In the install directory is the perimeter server settings file:

    remote_perimeter.properties.

    Edit it to change the "restricted" setting to a value of true.

6.  In the future, any attempt by the perimeter server to access disallowed network resources will be rejected and logged in the perimeter server log written to the perimeter server installation directory.

## Performing DNS Lookup on Remote Perimeter Server

By default, a perimeter server performs DNS lookup in the main server JVM. If you have limited DNS in your secure area, you can configure the remote perimeter server to look up trading partner addresses in the DMZ.

To enable DNS lookup to occur at the remote perimeter server, edit the perimeter.properties file to change the following parameter:

**Note:** Do not edit the properties files. Make all the changes in the customer_overrides.properties file.

| Property Name | Description |
| --- | --- |
| *&lt;psname&gt;*.forceRemote DNS | Enables remote DNS resolution for the perimeter server, where *&lt;psname&gt;* is the name of the perimeter server. Valid values: <br><br> ◆ true - enable remote DNS resolution <br><br> ◆ false - disable remote DNS resolution |

# Chapter 5

# Configuring Utilities

The Sterling Integrator supplies sample script files that you must customize using the directions provided in this chapter.

This chapter describes all the utilities supplied by the Sterling Integrator, 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.

**Note:** During the FTP process for hot fix releases, unnecessary carriage return characters (^M) may be introduced in some scripts. You must remove these characters before running the scripts. You can use any standard script editing tool to remove these unnecessary carriage return characters (^M).

**Note:** During the standard product release process, Sterling Commerce ensures that the unnecessary carriage return characters are not present in scripts provided by the Sterling Integrator.

## Installation Utilities

Installation utilities enable you to install the Sterling Integrator. These utilities are present in the *install_dir*\install\bin directory. Some of the utilities used for installing the various configurations of the Sterling Integrator are the following:

◆ dbverify.cmd

This utility validates a database's structure by ensuring that the correct tables, columns, and rows are present in the database.

During the installation process, the dbverify.cmd utility is used to generate SQL scripts to create the database schema or tables and indexes. These SQL statements are then run against the database, unless you choose to manually create database schemas after installation. For detailed information about setting up and running dbverify, see *Verifying the Database Schema on page 76*.

◆ install3rdparty.cmd

This utility copies supplied resources into the Sterling Integrator directory structure, and can append added jar files to the global classpath or agent classpath.

◆ InstallService.cmd

This utility installs programs for specific tasks, like a regression test jar file or a patch jar file.

◆ setupfiles.cmd

This utility checks the various initial product settings files (`*.in`) files for variables and updates the corresponding files with the values defined in the `sandbox.cfg` file to create the final files that are used by the product during runtime.

# Creating and Verifying Database Schemas

By default, the database schemas are automatically created during installation. However, you can tell the installation process to skip these tasks, then perform the tasks manually after installation. To have the installation process skip creating the database schemas, follow the relevant instructions in your installation instructions.

For more information about the database schema , refer to *Verifying the Database Schema on page 76*.

## Verifying the Database Schema

To use the dbverify utility to verify the database schema:

1. From the command line, run the `dbverify` script from the *install_dir*\install\bin\ folder as follows:

    ```
    dbverify.cmd
    ```

2. If you have enabled the text search feature, edit the *install_dir*\bin\bin\dbverify.cmd script.

    For MS SQL and DB2 databases only, add the -DBNAME <database_name> parameter as mentioned below. For example,

    ```
    %JAVA_HOME%\bin\java com.yantra.tools.dbverify.DbVerifyCommandLine -b
    %<INSTALL_DIR>% -DBNAME %<database_name>% -u %USERNAME% -p %PASSWD% -d
    %DRIVER% -url %URL% -g Y -DT
    %<INSTALL_DIR>%\repository\datatypes\datatypes.xml
    ```

    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.

    For Oracle only, add the "-TSIT" parameter as mentioned below. For example:

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

    Where <tsindex_type> refers to the type of text search indexes you have created such as ctxcat or context.

3. If you want to ignore the third-party tables when verifying the database, modify the dbverify.cmd script, which is located in the *install_dir*\install\bin folder.

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

   ```
   %JAVA_HOME%\bin\java -DIgnore3rdPartyTables=Y
   com.yantra.tools.dbverify.DbVerifyCommandLine -b %INSTALL% -u %USERNAME% -p
   %PASSWD% -d %DRIVER% -url %URL% -g Y -DT
   install_dir\repository\datatypes\datatypes.xml
   ```

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

4. 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.

   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, dbverify generates SQL statements for:

   ◆ Dropping the Index

   ◆ Changing the size of the datatype for the column

   ◆ Creating the new Index

   The three SQL statements for these tasks appear in different `*.sql` files. The appropriate `*.sql` files must be run in the proper order as follows:

   a. Run the install_dir\install\repository\scripts\EFrame_IndexDrops.sql for dropping the index.

   b. Run the install_dir\install\repository\scripts\EFrame_TableChanges.sql for altering the size of the datatype for a column.

c.  Run the install_dir\install\bin\EFrame_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.

The following scripts are generated:

**Note:** All scripts listed below can be found in the *install_dir*\install\repository\scripts directory.

| Script Name | Description of the script |
| --- | --- |
| EFrame_Sequence.sql | Contains all the additional sequences that need to be created. |
| | **Note:** If you are using an MS SQL Server 2005 database, the EFrame_Sequence.sql script is not created when you run the dbverify command. |
| EFrame_TableChanges.sql | Contains all the table column differences that need to be applied on the database schema. Modify this file to reference your tablespaces. |
| EFrame_Drops.lst | This list is provided as an example of tables that can be removed. |
| | **Note:** The Sterling Integrator does not provide a .sql file for removing tables from the database. |
| EFrame_IndexAdds.sql | Adds all of the indexes that need to be created in the database. Modify this file to reference your tablespaces. |
| EFrame_IndexDrops.sql | Removes any extra indexes in the database. |
| EFrame_TextIndexUpdates.sql | When executed, updates the content of the text indexes. |
| EFrame_UpdateQueries.sql | For upgrades, updates the table column values in order to apply other changes made to the columns. For example, if a table column is changed from nullable to not nullable in the installation of a previous release, the column values must be updated before the column can be made not null in the current release because the column default values for the current release may contain null values. |

**Note:** The *install_dir*\install\bin\EFrame_Drops.lst indicates 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.

**Note:** This script may also contain reduced columns. These are columns that were changed to have a smaller size in the newer version. These changes are suppressed because:

◆  Not all databases will allow you to apply the changes.

◆  Databases that do allow you to apply the changes can behave unpredictably if the table already contains values that are longer than the new length.

## Installing Third-Party JAR Files

You can use the install3rdParty utility to add third-party custom jars to the classpath of various utilities.

Keep the following in mind when using the install3rdParty utility to update a classpath:

◆  The order of lines in the dynamic classpath files determine the order of the classpath for the agent.

◆ Whatever is in the beginning of the file is analogous to the jar being in the beginning of the classpath.

For help in using install3rdParty, enter the command, including the `-help` option, on the command line. The install3rdParty utility prints a usage message.

# Configuring the Sterling Integrator for a Non-English Environment

You can install the Sterling Integrator in an English or a non-English environment.

By modifying a few system settings, you can then configure the Sterling Integrator for your locale.

This chapter also explains how to install, load the factory defaults, and check the import mode of the Sterling Integrator language packs.

## Installing the Language Pack

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

**Note:** Before installing the language pack be sure that you have successfully installed the Sterling Integrator.

To install the Sterling Integrator 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.

## Loading the Sterling Integrator Language Pack Factory Defaults

To load the language-specific factory defaults run the `loadDefaults.cmd` script available in the *install_dir*\install\bin directory and pass the locale-specific installer file. For example:

```
loadDefaults.cmd install_dir\install\database\FactorySetup\install\
<language>_<country>_locale_installer.xml
```

The default locale that is shipped with the CD is `ja_JP`.

## Loading the Sterling Integrator Language Pack Translations

Prior to loading the Sterling Integrator Language Pack factory defaults, be sure that you have successfully completed all instructions in the database tier software chapter.

To load the language pack translation with custom localization literals, run the `LocalizedStringReconciler` tool in the IMPORT mode from the *install_dir*\install\bin directory as follows:

```
ant -f localizedstringreconciler.xml  import
-Dsrc=install_dir/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 *install_dir*/database/FactorySetup/XMLS/<language>_<country> directory into the database.

The basefilename refers to the file present in the /database/FactorySetup/XMLS directory, for which the translations are to be imported into the database.

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

## Switching the Sterling Integrator Base Language

The base language for the Application Configurator can be switched only once.

# Configuring Encodings for the Sterling Integrator

Language settings for Java applications involve both character sets and encoding:

◆ A *character set* is a set of characters (letters, numbers, and symbols such as #, $, and &) that are recognized by computer hardware and software.

◆ An *encoding* is a representation of data in a particular character set. An *encoding set* is a group of encodings.

For information about basic and extended encoding sets, see java.sun.com/j2se/1.5.0/docs/guide/intl/encoding.doc.html.

The default encoding for the Sterling Integrator is 8-bit Unicode Transformation Format (UTF-8).

The Sterling Integrator provides two property files that contain supported encoding sets. These properties files reside in the *install_dir*\install\properties directory.

◆ encodings.properties – Contains the default encoding set used in the Sterling Integrator interface.

◆ encodings_large.properties – Contains all supported encoding sets.

The default encoding set in the Sterling Integrator includes the following encodings:

◆ UTF-8

- IS0-8859-1

- ISO-8859-5

- US-ASCII

- ISO_8859-1

- EUC-JP

- UTF-16

- ISO-2022-JP

You are not limited to the encodings in the encoding.properties file. The Sterling Integrator enables you to configure the encodings properties files to expand the number of encodings you can use.

To configure your encoding set:

1. Stop the Sterling Integrator and wait for shutdown to complete.

2. Change to the *install_dir*\install\properties directory.

3. Open the encodings_large.properties file. Select the encodings you want to add to the encodings.properties file.

4. Open the encodings.properties.in file.

5. At the end of the encodings.properties.in file, add the encodings you selected from the encodings_large.properties file. When adding encodings from one file to the other, first copy the encodings as they appear in the encodings_large.properties file. After adding the new encodings, ensure that the index numbers are consecutive. If the index numbers are not consecutive, change the index number or numbers as needed. For example, `encoding54` cannot follow `encoding6`. In this example, change `encoding54` to `encoding7`.

   The first name in the definition (before the comma) is the name that will appear in the Sterling Integrator user interface. You can change this name to make it more descriptive. For example:

   ```
   encoding4 = 819,ISO8859_1
   ```

   may be changed to

   ```
   encoding4 = WesternEurope,ISO8859_1
   ```

   ISO8859_1 is the Java canonical name and should not be changed.

6. Update the first line in the encodings.properties.in file (*numberof*). Change *numberof* to the number of encodings added to the file. For example, if the current value is *numberof = 6* and you add 5 new encodings, the new value is *numberof = 11*.

   *numberof* indicates the total number of encodings located in the file. You must update *numberof* to ensure that the encodings you added will be visible in the user interface.

7. Change to the *install_dir*\install\bin directory.

8. Run the setupfiles.cmd script.

9. Start the Sterling Integrator.

# Configuring Locales

The Sterling Integrator runs in any locale that Java supports. If you want to run the Sterling Integrator in a non-default locale, then configure your environment to the specific locale you want to use.

**Note:** To configure your operating system as a non-English environment, consult your operating system's documentation.

To determine and set your locale in a Windows environment:

1. Select **Control Panel > Regional Options > General tab**.
2. From the **Your locale (location)** list, select the language and location.
3. Click **Set Default** and select the locale from the **Set the appropriate locale** list.

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