pitney bowes

Spectrum™ Technology Platform

Version 10.0 SP1

Installation Guide

Windows

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1 - Planning Your Installation

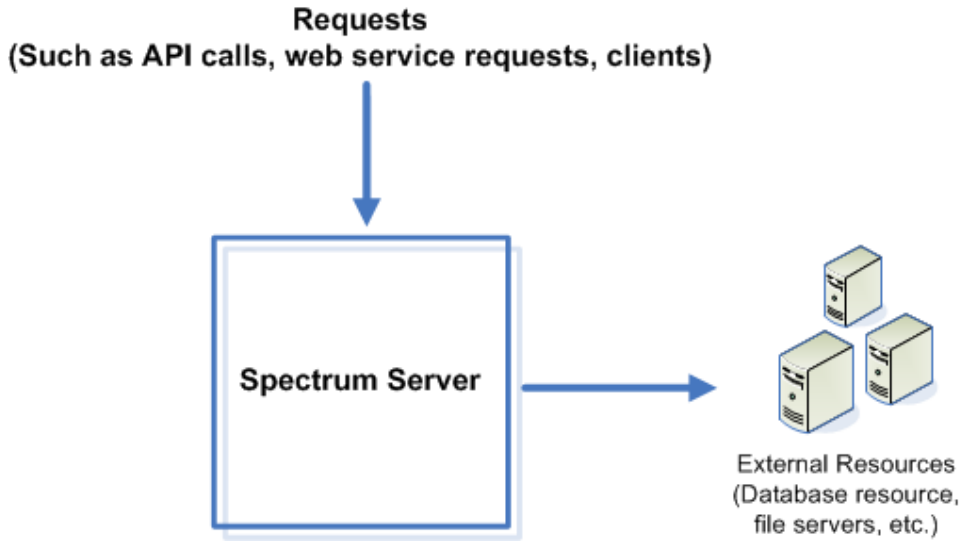
In this section

Installation Scenarios

Spectrum™ Technology Platform supports a variety of installation scenarios that scale to fit the needs of your organization.

Standard

The standard scenario is the simplest installation scenario. You install Spectrum™ Technology Platform on a single server. All activity is handled by this one server, including designing dataflows, storage of configuration information, running jobs, and handling service requests.

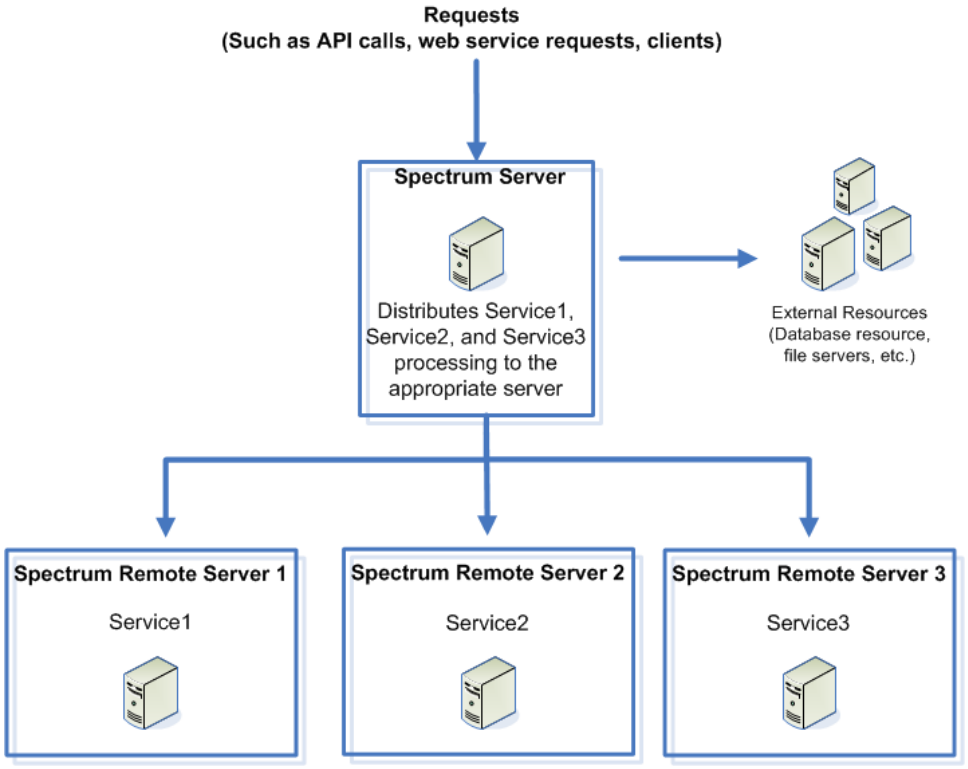


Remote Servers

Remote servers are useful if you have licensed many modules. To use remote servers, you install Spectrum™ Technology Platform on several different servers, installing different modules on each server. You then configure the individual services to execute on one of the remote servers. This approach has the following advantages:

- Improved performance, especially for web service and API calls. For jobs, there may be some performance improvement, but the time it takes to send data across the network to the remote server may offset any performance gains.
- Ability to perform database updates on individual modules without interrupting the availability of other modules. For example, if you need to update a postal database for the Universal Addressing Module, you could install the update by stopping just the remote server handling the Universal Addressing Module, allowing other modules to remain available on other remote servers.

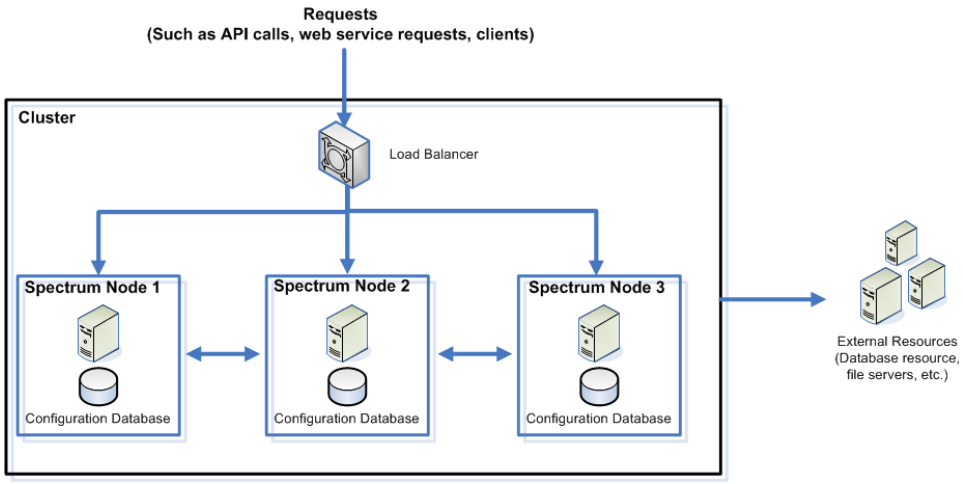
- Startup time can be reduced. With all modules on one server, it can take a long time for the server to start up. With modules installed on separate servers, each server will start up more quickly.



Cluster

In a clustered environment, processing is shared among two or more instances of the server. All communication with Spectrum™ Technology Platform goes through a load balancer. Instead of using the URL and port of the Spectrum™ Technology Platform server, you use the URL and port of the load balancer. Consider using this approach if you require failover redundancy and high-volume, high-performance processing.

The following diagram illustrates this architecture:



This approach has the following advantages:

- Processing is automatically distributed among the nodes in the cluster for optimal performance.
- Configuration settings are automatically synchronized across nodes.
- Uptime can be improved since if a node goes down the other nodes remain available to handle processing requests.
- Adding a new node is easy.

Cluster with Separate Configuration Database

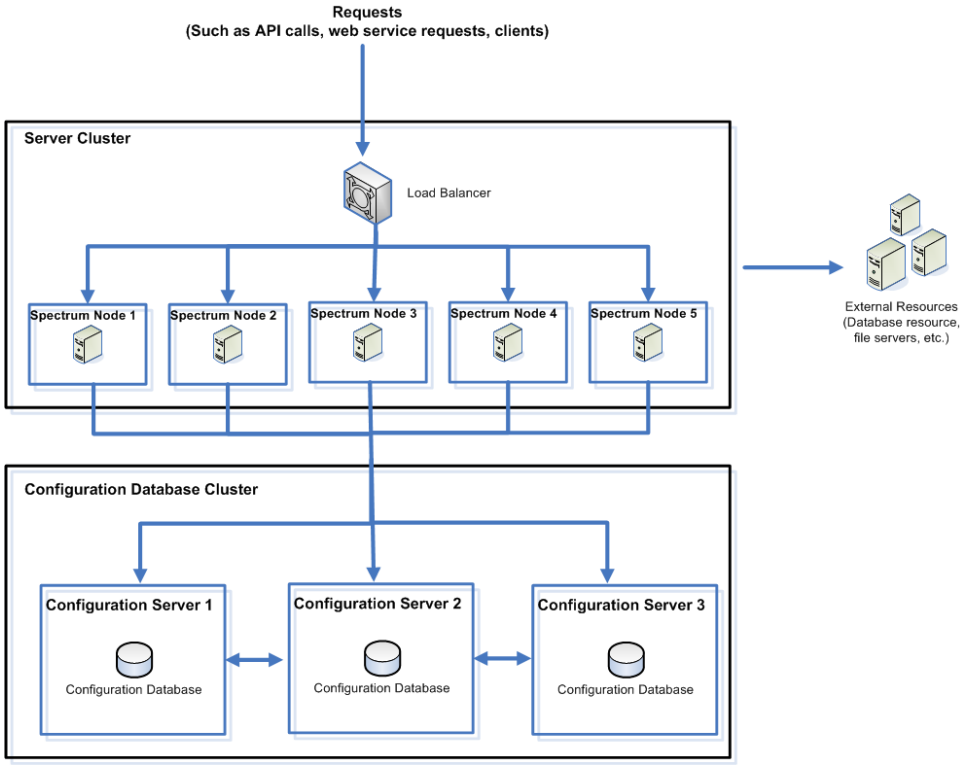
When you install the Spectrum™ Technology Platform server you are installing two things: server software and a configuration database. The server handles the execution of jobs and service requests, reporting, and logging. The configuration database stores data such as users and roles, data connections, dataflows, and the audit log.

For clusters consisting of only a few nodes, installing the server and configuration database together on the same server provides acceptable performance. However, a cluster that consists of a large number of nodes may have its performance negatively affected by having a copy of the configuration database on each node. This is because an increasing number of nodes results in increased data replication between nodes during synchronization. Performance may also suffer if users are accessing the configuration database frequently through activities such as editing dataflows or job schedules. These activities require processing power, resulting in less CPU capacity available for running jobs and responding to service requests.

If you have an implementation with four or more nodes, you should consider installing the configuration database to separate servers. This is the most scalable installation scenario because you can add nodes without necessarily adding another instance of the configuration database. For example, say you have five nodes and three configuration database servers. You could add another five nodes, bringing the total number of nodes to 10, while still using just the three configuration databases to support all 10 nodes.

Installing the configuration database to a separate server has the following advantages:

- More CPU is available to the server for running jobs, process flows, and service requests because reading and writing to the configuration database is handled by a separate server.
- Reduced network traffic due to reduced configuration data replicated between nodes. For example, you could have five Spectrum™ Technology Platform servers for handling execution while having only three repositories. With just three repositories instead of five, data only needs to replicate between three servers rather than five.
- Most scalable installation scenario.



System Requirements

Server Requirements

Operating Systems

Spectrum™ Technology Platform is supported on the following operating systems.

Operating System	Notes
Windows Server 2008 R2	None.
Windows Server 2012 R1 & R2	The Enterprise Tax Module is not supported on R2.

64-bit Required

The Spectrum™ Technology Platform server requires a 64-bit Unix, Linux, or Windows operating system. 32-bit operating systems are not supported.

Disk Space

Spectrum™ Technology Platform has the following disk space requirements.

New Installation	Upgrade
• 3 GB to install all modules, less if installing fewer modules. • 4 GB to 5 GB of temp space for the installation to extract the files it needs, but you may need more depending on the options you are installing. If necessary, modify your TEMP environment variable (Windows) or IATEMPDIR environment variable (Unix and Linux) to point to a location with enough space.	• Free disk space equal to three times the size of your current installation. To determine the size of your current installation, look at the size of the folder where you installed Spectrum™ Technology Platform. • If you are adding modules as part of your upgrade, you will need 3 GB to install all modules, less if installing fewer modules. • 4 GB to 5 GB of temp space for the installation to extract the files it needs, but you may need more depending on the options you are installing. If necessary, modify your TEMP environment variable (Windows) or IATEMPDIR environment variable (Unix and Linux) to point to a location with enough space.

Note: If you are installing a module that uses a reference database, such as a postal database, geocoding database, or data normalization tables, you will need space for this data. The total disk space varies, depending on what modules(s) and what database(s) you are installing.

Memory

- Basic memory requirement: 8 GB
- The Enterprise Geocoding Module requires an additional 500 MB memory for the first non-U.S. geocoder, and 250 MB for each additional non-U.S. geocoder, with these exceptions:
  - Germany, Australia, and the U.K. each require 1 GB additional memory
  - Japan requires 2 GB additional memory

Note that you may distribute processing among multiple servers which may allow you to take advantage of existing hardware instead of adding memory to a single Spectrum™ Technology Platform server. This is referred to as remote server processing. For information on remote servers, see the *Spectrum™ Technology Platform Dataflow Designer Guide*.

- The Location Intelligence Module requires an additional 2 GB RAM to support its mapping and feature components.
- The Data Normalization Module and Universal Name Module require additional memory if you use the following name databases:
  - Arabic Plus Pack: 5.5 GB
  - Asian Plus Pack - Chinese: 32 MB
  - Asian Plus Pack - Japanese: 1.6 GB
  - Asian Plus Pack - Korean: 8 MB
  - Core Names: 1.1 GB

Additional Requirements

- Windows administrator rights

Client Tools Requirements

Enterprise Designer, Management Console, and Interactive Driver require the following:

- Operating system requirements:
  - Windows XP
  - Windows 7
- 86 MB of disk space to install the client without any modules. Each module you install requires additional disk space.
- Microsoft .NET Framework 4.0 (available from the Spectrum™ Technology Platform Welcome Page, http://<SpectrumServerName>:8080)
- The Administration Utility requires Java 8 or later. If you are installing the Administration Utility on the same computer where the Spectrum™ Technology Platform server is installed, Java 8 is already installed since it is included with the server. If you want to install the Administration Utility on another computer, make sure that the computer has Java 8 or later installed.
- A monitor with at least 1024 x 768 resolution
- Maximum Windows DPI setting: 150%
- Adobe Reader 7 or later (for viewing and saving reports)
- To use the deprecated Business Steward Portal or the Data Hub Relationship Analysis Client, a browser with Microsoft Silverlight 5 installed. See **www.microsoft.com/getsilverlight**. Note that Google Chrome is dropping support of Microsoft Silverlight in September 2015. At that time you will need to access these client tools using Internet Explorer (version 11, ideally) or Firefox.
- To use the new Business Steward Portal or the Data Hub Browser, a Web browser is required.

Web Browser Requirements

- Internet Explorer 10 or later
- Google Chrome 43 or later
- Firefox 38 or later

User Interface Languages

Spectrum™ Technology Platform user interfaces such as Management Console, Enterprise Designer, Interactive Driver, and web-based applications are localized for the following languages:

- English
- French
- Japanese
- Portuguese
- Spanish

Client SDK Requirements

The Client SDK provides API access to Spectrum™ Technology Platform services. To use the Client SDK your computer must meet the following requirements:

- 1.25 GB disk space
- JDK 1.5 is required to install the Client SDK. Be sure that JDK 1.5 is in the PATH environment variable. Once installed, the Client SDK supports JDK 1.4 and greater.

Supported Compilers

The Spectrum™ Technology Platform Client SDK is supported with the following compiler and runtime minimum versions.

Java

Client SDK Package Directory: `clientSDK/platforms/java`

Client SDK requires the Java JDK, version 1.4 or higher. This is not installed with the Client SDK.

Windows 32-bit

- JDK: 1.4
- C Compiler: MSVC 6.0 SP3, MSVC 2003, MSVC 2005, MSVC 2008

- C++ Compiler: MSVC 6.0 SP3, MSVC 2003, MSVC 2005, MSVC 2008
- C# .NET: Microsoft .NET Framework 1.1
- Visual Basic: MS Visual Basic 6.0

Windows 64-bit

- JDK: 1.4
- C Compiler: MSVC 2005, MSVC 2008
- C++ Compiler: MSVC 2005, MSVC 2008

HP-UX RISC

- JDK: 1.4
- C Compiler: cc: HP92453-01 A.11.01.21 HP C (Bundled) Compiler
- C++ Compiler: aCC: HP aC++ B3910B A.03.30 HP aC++ B3910B A.03.27

The clientSDK 32-bit lib is linked to the following libraries:

- libpthread.1
- librt.2
- libnsl.1
- libxti.2

The clientSDK 64-bit lib is linked to the following libraries:

- libpthread.1
- libnsl.1
- librt.2
- libdl.1
- libc.2
- libxti.2
- libdl.1

HP-UX Itanium

- JDK: 1.4
- C Compiler: cc: HP aC++/ANSI C B3910B A.06.05
- C++ Compiler: aCC: HP aC++/ANSI C B3910B A.06.05

The clientSDK 32-bit lib is linked to the following libraries:

- libpthread.so.1
- libnsl.so.1
- librt.so.1
- libxti.so.1
- libdl.so.1

The clientSDK 64-bit lib is linked to the following libraries:

- libpthread.so.1
- libnsl.so.1
- librt.so.1
- libxti.so.1
- libdl.so.1

Red Hat (32-bit)

- Operating System: Red Hat Linux 2.4.9-e.65smp
- C Compiler: gcc version 2.96 (gcc 4.1 required for the Address Now Module)
- C++ Compiler: g++ version 2.96

The clientSDK lib is linked to the following libraries:

- libstdc++-libc6.2-2.so.3
- libm.so.6
- libc.so.6
- ld-linux.so.2

Red Hat (64-bit)

- Operating System: Red Hat Linux version 2.6.9-34.0.2.ELsmp
- C Compiler: gcc version 3.4.5
- C++ Compiler: g++ version 3.4.5

The clientSDK lib is linked to the following libraries:

- libstdc++.so.6
- libm.so.6
- libgcc_s.so.1
- libpthread.so.0
- libc.so.6
- ld-linux-x86-64.so.2

SuSE

- Operating System: SuSE SLES 8 (powered by UnitedLinux 1.0) (i586)\nKernel 2.4.21-295-smp (0).
- C Compiler: gcc version 3.2.2
- C++ Compiler: g++ version 3.2.2

The clientSDK lib (32-bit) is linked to the following libraries:

- libstdc++.so.5
- libm.so.6
- libgcc_s.so.1
- libc.so.6
- ld-linux.so.2

Solaris

- Operating System: Solaris 5.8
- C Compiler: cc: Forte Developer 7 C 5.4 2002/03/09
- C++ Compiler: CC: Forte Developer 7 C++ 5.4 Patch 111715-16 2005/04/28

The clientSDK 32-bit lib is linked to the following libraries:

- libpthread.so.1
- libsocket.so.1
- libnsl.so.1
- librt.so.1
- libc.so.1
- libdl.so.1
- libmp.so.2
- libaio.so.1
- libc_psr.so.1

The clientSDK 64-bit lib is linked to the following libraries:

- libpthread.so.1
- libsocket.so.1
- libnsl.so.1
- librt.so.1
- libc.so.1
- libmp.so.2
- libmd5.so.1
- libscf.so.1
- libaio.so.1
- libdoor.so.1
- libuutil.so.1
- libm.so.2
- libc_psr.so.1
- libmd5_psr.so.1

AIX

- Operating System: AIX version 5.1.0.0
- C Compiler: xlc 6.0 Visual Age C 6.0
- C++ Compiler: xlC 6.0 Visual Age C++ 6.0

The clientSDK 32-bit and 64-bit lib are linked to the following libraries:

- libC.a
- libc_r.a
- libpthread.a
- librtl.a

Default Network Ports

The Spectrum™ Technology Platform server uses several network ports for communication. Network port conflicts can result in module components failing to start up. One indication that a component has failed to start up is if it does not appear in the Management Console. To troubleshoot the problem, look in the Spectrum™ Technology Platform log file. This log shows which port is causing the problem. You can find the Spectrum™ Technology Platform log file in:

```
server\app\repository\logs\server.log
```

The following table lists the default network ports. You can change the ports by modifying the properties in this file:

```
server\app\conf\spectrum-container.properties
```

Note: If you want to change the networks ports used by a cluster, you must modify the `spectrum-container.properties` file on each node in the cluster.

Port	Property	Description
2424-2430	`spectrum.orientdb.binary.port`	This port is used by the Spectrum™ Technology Platform configuration database.
2434	`spectrum.orientdb.hazelcast.port`	This port is used by the Spectrum™ Technology Platform configuration database.
2480-2486	`spectrum.orientdb.http.port`	This port is used by the Spectrum™ Technology Platform configuration database.
5701	`spectrum.hazelcast.port`	This port is used by Hazelcast for managing distributed processing between Spectrum™ Technology Platform servers in a cluster.
8080	`spectrum.http.port`	The port used for communication between the server and Enterprise Designer, Management Console, and Interactive Driver. This port is also used by web services.
10119	`spectrum.socketgateway.port`	This port is used for API calls made to services.

Location Intelligence Module Support

Database

The Location Intelligence Module supports the following spatial databases for use with the spatial services, data, and resources:

- Oracle 11gR2
- SQL Server 2008 R2, SQL Server 2012
- SAP HANA 9.3
- PostgreSQL 8+ (PostGIS 1.5 and 2.x)
- GeoPackage (Windows and CentOS)

Data Format

The Location Intelligence Module supports the following data formats for use with the spatial services:

- Generic JDBC (w/XY)
- TAB (native, raster, grid, seamless, DBF)
- ESRI ShapeFile

Raster Format

The following raster and grid formats (64-bit only) are supported in the Location Intelligence Module:

Raster formats:

Format	File Extension
ADRG	.gen
ASRP	.gen
BMP	.bmp, .wbmp
CADRG	.gen
CIB	various
ECW (SDK v5)	.ecw
GeoTiff	.geotif
GIF	.gif
JPEG	.jpg/.jpeg
MRR (Multi-Resolution Raster) **Note:** This support is provided on Windows 64-bit and the following Linux environments: • Oracle Linux 6.5 and 7.1	.mrr

• CentOS 6.4 and 7.1 • Ubuntu 12.04	
MrSID (SDK v9) **Note:** Supports MG4 (MrSID Generation 4). On CentOS 7.1, libpng12.so is required for reading MrSID rasters.	.sid
NITF	.ntf
PNG	.png
TIFF	.tif

Note: Solaris or AIX machines, whether installed with 32- or 64- bit JVM, do not support ECW and MrSID raster formats.

Grid Formats

Format	File Extension
Defense Digital Terrain Elevation Data (DTED)	.dt0, .dt1, .dt2, .dt3
MapInfo Grid	.mig
Vertical Mapper Classified Grid	.grc
Vertical Mapper Continuous Grid	.grd

In order to use rasters and grids as a map layer, there must be an associated .TAB file containing georeference information about the image, including the bounds, coordinate system and registration points.

Browser

The Location Intelligence Module spatial client development, samples, and Spectrum Spatial Manager support the following browsers:

- Microsoft Internet Explorer 10 and 11
- Mozilla Firefox 35 and above
- Google Chrome 40 and above
- Safari (Mac OS X) and Safari 5.1.7 for Windows

Utilities

The Location Intelligence Module utilities (Tile Generator, Map Uploader, Geometry Validator) have the follow requirements:

- These utilities require at a minimum Java 7. If you are installing these utilities on the same computer where the Spectrum™ Technology Platform server is installed, Java 8 will be installed since it is included with the server. If you want to install the utilities on another computer, make sure that the computer has Java 7 or later installed.

- The Map Uploader also requires Microsoft .NET Framework 4.0 (available from the Spectrum™ Technology Platform Welcome Page, http://<SpectrumServerName>:8080)

OGC Compliance

The Location Intelligence Module is OGC compliant for the following services:

- WFS version number 1.0.0
- WMS version number 1.1.1 and 1.3.0

MapInfo Professional Compatibility

The Location Intelligence Module is compatible with MapInfo Professional up to version 15.x. See Tools > MapInfo Pro in the *Spectrum Spatial Getting Started Guide* for more information about the interoperability of the two products.

2 - Standard Installation

In this section

Installing a New Server

Before installing Spectrum™ Technology Platform, be sure to read the release notes. The release notes contains important compatibility information as well as release-specific installation notes.

Note: You may encounter installation problems on Windows if the data execution prevention (DEP) setting is not set correctly. The DEP setting must be set to **Turn on DEP for essential Windows programs and services only**. For instructions on how to change your DEP setting, see the Windows documentation.

1. Download Spectrum™ Technology Platform using the download instructions contained in your welcome letter.
2. Extract the downloaded file to a temporary location on the server where you want to install Spectrum™ Technology Platform.
3. If you are installing on Windows Server 2012 R2, do the following:
   a) Right-click on `install.exe` and select **Properties**.
   b) Click the **Compatibility** tab.
   c) Check the box **Run this program in compatibility mode for** and select **Windows 7**.
   d) Click **OK**.
4. Double-click `install.exe`.
5. The installer walks you through the installation process. Note the following:
   - If you are setting up an environment where the configuration database is installed on a separate server choose **Server only**. Otherwise choose **Standard installation**.
   - When prompted, select the modules that you want to install.
     - Make sure that Spectrum™ Technology Platform is selected.
     - If you are installing the SAP Module you must install these modules: **Address Now Module** and **Advanced Matching Module**. The Enterprise Tax Module is optional. The **Universal Addressing Module** is only required if you will be using the SAP module service SAPValidateAddressWithCandidates.
     - If you are installing the Siebel Module you must install these modules: **Advanced Matching Module**, **Data Normalization Module**, and **Universal Name Module** You may need to install one or more of these modules depending on the features you have licensed: **Address Now Module**, **Enterprise Geocoding Module**, and **Universal Addressing Module**.
   - When prompted, enter the HTTP port that you want to use and then press **Enter**. The default is `8080`. For a complete listing of ports used by Spectrum™ Technology Platform see **Default Network Ports** on page 15.
6. After the installation completes, the Spectrum™ Technology Platform server starts automatically. Wait for the server to start up.

You can see when the server has stared up by opening the log file `<Spectrum Installation Location>\server\app\repository\logs\wrapper.log` and looking for this message:

```
INFO  [Server] Pitney Bowes Spectrum(TM) Technology Platform (Version
 version build) Started
```

Important: Do not attempt to stop the server until after it has fully started for the first time. Stopping the server before it performs an initial startup can cause your installation to become unusable.

7. Install your license key. For instructions, see **Installing a License Key** on page 22.

Upgrading a Server

Important: Before upgrading, be sure to read the release notes for the new version. The release notes contain important compatibility information, supported upgrade paths, and module-specific data backup recommendations.

1. Download the updated version of Spectrum™ Technology Platform using the download instructions contained in the release announcement email.
2. Unzip the downloaded installer to a temporary folder on the server you want to upgrade.
3. Follow the information provided in the release notes for recommendations about backing up module-specific data. For example, for the Location Intelligence Module, you need to back up your named resources, data, and configuration files. For the Data Hub Module, you need to follow the instructions in "Backing up Data Hub Models" from the *Master Data Management Guide*.
4. Stop the Spectrum™ Technology Platform server. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel and stop the Pitney Bowes Spectrum™ Technology Platform service.
5. If you have the Address Now Module installed, shut down the Address Now server by going to the Windows services control panel and stopping the Address Now Server service.
6. If you have the Global Sentry Module installed, shut down the Global Sentry database server by going to the Windows services control panel and stopping the Global Sentry Database Server service.
7. Any changes you made to files in the folder `<SpectrumPlatformLocation>\server` will be lost. Before upgrading, review the files and folders in this location and back up any files you have modified.

   You may have modified files in this folder in the following situations:

   - You have the Siebel or SAP modules installed. Be sure to back up existing dataflows, especially any that are customized.

- You are using LDAP for authentication. Be sure to back up this file and restore it after upgrading: `server\app\conf\spring\security\spectrum-config-ldap.properties`.

8. Run the Spectrum™ Technology Platform installer to upgrade your system.
9. If you backed up any files under the `<SpectrumPlatformLocation>\server` folder, restore them to the upgraded server.

Note: Any job or subflow stored in the system during a server upgrade is marked as exposed to provide the same behavior for those jobs and subflows as before the upgrade. Any job or subflow that is exported prior to the upgrade will not be exposed. Therefore, when importing these jobs or subflows back into the system, you must manually expose the imported job or subflow.

Installing a License Key

The license key provides access to software pursuant to the terms of your license. It is an encrypted XML file with a file name ending in `.key`.

Note: When you upgrade an existing Spectrum™ Technology Platform installation, you may continue to use your existing license key. You do not need to get a new one.

To install a license key:

1. Locate the email containing your license key that you received from Pitney Bowes.

   Important: You must install the license key within 45 days of receiving it. If you do not you will need to contact Pitney Bowes for another license key.

2. Copy the `.key` file to the following directory:

   `<SpectrumPlatformLocation>\server\app\import`

   The license key is applied to your system. There is no need to restart your server.

If there was a problem installing the license key, check the log file in:

`<SpectrumPlatformLocation>\server\app\repository\logs`

Depending on whether the key was processed successfully or there was an error processing the key, the processed key goes into one of these folders:

- `<SpectrumPlatformLocation>\server\app\import\archive\license-keys`
- `<SpectrumPlatformLocation>\server\app\import\error\license-keys`

Installing the Server with a Silent Installer

The silent install process for the server allows you to pre-configure the server installation process so that it runs without user intervention. Instead of responding to prompts for information such as the installation location and which modules to install, you specify these responses in a properties file which the installer uses instead of user prompts.

1. In the Spectrum™ Technology Platform installer, browse to the `SilentInstaller` folder.
2. Open the file `installer.properties` in a text editor.
3. Edit `installer.properties` as necessary to specify the installation settings you want to use. See the comments in `installer.properties` for additional information.
4. To run the installer in silent mode, place `installer.properties` in the same directory as install.exe. When the installer executes it will detect `installer.properties` and automatically run in silent mode.

   Alternatively, you can place `installer.properties` in different directory and give the absolute path to the property in the command prompt using the `-f` argument, as follows:

   ```
   install.exe -f PathOfPropertyFile\installer.properties
   ```

Adding Modules

Spectrum™ Technology Platform is designed so that modules can be added as you grow your system over time. For example, you may have one Spectrum™ Technology Platform module and then license another module a few months later. The second product may be built on a newer version of Spectrum™ Technology Platform. This will require you to upgrade your version of Spectrum™ Technology Platform. In another case, the second product is compatible with the installed version. In both cases, the install program recognizes if it needs to upgrade Spectrum™ Technology Platform and will do so without prompting. If an upgrade is not required, the installer will skip the Spectrum™ Technology Platform install steps and install the new module.

The process for adding a module is similar to that of a new installation. In both cases you start the installation process by running the Spectrum™ Technology Platform installer. Note that Spectrum™ Technology Platform modules do not have their own installer. Instead, you use the Spectrum™ Technology Platform installer to add modules.

1. If the Spectrum™ Technology Platform server is running, stop the server. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar (shown below) and select **Stop Server**.

2. Launch the Spectrum™ Technology Platform installer by double-clicking `Install.exe`. The installer walks you through the installation process. When prompted, select the modules that you want to install. Your currently installed modules are selected.
3. Install any necessary databases for the new product. For more information on installing databases, see **Spectrum Databases** on page 64.
4. After you install the necessary databases (if any), start Spectrum™ Technology Platform by right-clicking the Spectrum™ Technology Platform icon in the Windows task bar and selecting **Start Server**.
5. Install the license key for the module. For instructions, see **Installing a License Key** on page 22.

Removing the Server

Before uninstalling any product, back up any files you may need in the future. Uninstalling Spectrum™ Technology Platform will remove any job definitions and server-default changes you may have made.

1. If the Spectrum™ Technology Platform server is running, stop the server. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar (shown below) and select **Stop Server**.

2. If you are removing Spectrum™ Technology Platform from a Windows Server 2012 R2 machine, do the following:
   a) Right-click on the file and select **Properties**:
      SpectrumLocation`\Uninstall\Uninstall_LES\Uninstall_LES.exe`
   b) Click the **Compatibility** tab.
   c) Check the box **Run this program in compatibility mode for** and select **Windows 7**.
   d) Click **OK**.
3. Go to **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Server** and select **Uninstall Pitney Bowes Spectrum™ Technology Platform**.

   Note: Some Java files will not be removed because the uninstall process itself uses them.

4. If there are any client tools that you want to uninstall, see **Removing the Client Tools** on page 88.

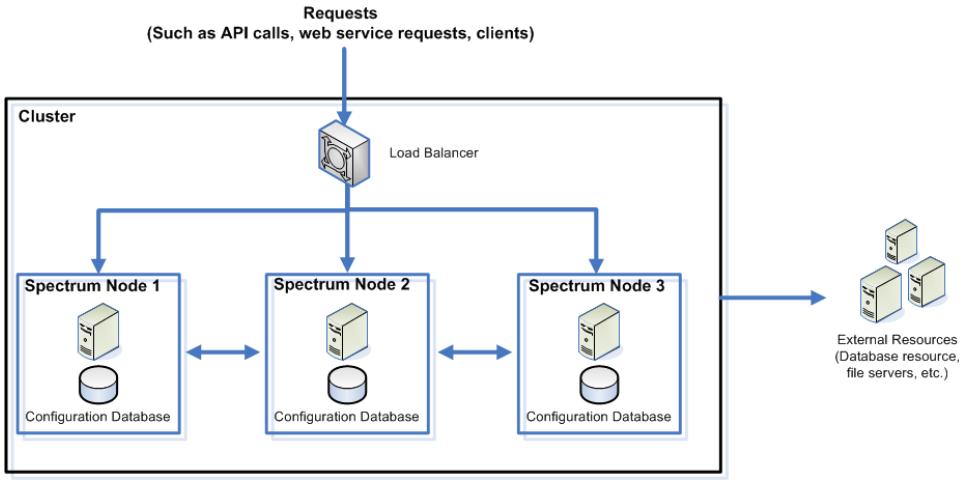
3 - Cluster

In this section

Clustered Architecture

In a clustered environment, processing is shared among two or more instances of the server. All communication with Spectrum™ Technology Platform goes through a load balancer. Instead of using the URL and port of the Spectrum™ Technology Platform server, you use the URL and port of the load balancer. Consider using this approach if you require failover redundancy and high-volume, high-performance processing.

The following diagram illustrates this architecture:



Load Balancer

As requests come into the cluster, the load balancer identifies the best available Spectrum™ Technology Platform node to handle the request. The request is then passed to a Spectrum™ Technology Platform node.

From the user's perspective, the distributed architecture is handled automatically behind the scenes. The user sends a request to the load balancer's URL and port for Spectrum™ Technology Platform (typically port 80 for a distributed environment) as if it were a single Spectrum™ Technology Platform server.

Nodes

A node is a Spectrum™ Technology Platform server installation. Each node has a copy of the configuration database. Each copy is continuously synchronized. This enables each node to share the same settings. License information, dataflows, database resources, and so on can be centrally managed for the cluster because of the shared configuration database.

To configure the cluster, simply point Management Console or Enterprise Designer to the load balancer's URL and port for Spectrum™ Technology Platform (typically port 80 for a distributed environment).

External Resources

The definitions for external resources such as database resources (postal databases, geocoding databases, and so on), JDBC connections, and file servers, reside in the configuration database. The resources themselves (databases, files, web services) can reside anywhere you choose.

Because the database resources themselves reside outside the cluster, multiple clusters can share the same database resources. You must create the resource definitions in each cluster using Management Console. For example if you want multiple clusters to share the same geocoding database, you can install the geocoding database on a server accessible from each cluster, then in Management Console point each cluster to the geocoding database.

Clustered Architecture for the Data Hub Module

In a clustered environment, processing is shared among two or more instances of the server. The Data Hub Module maintains a separate graph database for each model that is configured; each graph database is replicated to each Spectrum™ Technology Platform server. When a model is loaded, one server is chosen as the master and all other servers will maintain a replicated mirror of that master. All writes to the database will be synchronized with the master, while any server can process read requests.

The server that receives the first request to open the model will be chosen as the master. If different servers receive the request to open different models, the masters for these models will be running on different servers. Though it is not normally required to know which server is serving the master role for a given model, this information is available in the JMX Console.

1. Open a web browser and go to `http://<server>:<port>/jmx-console`

   Where:

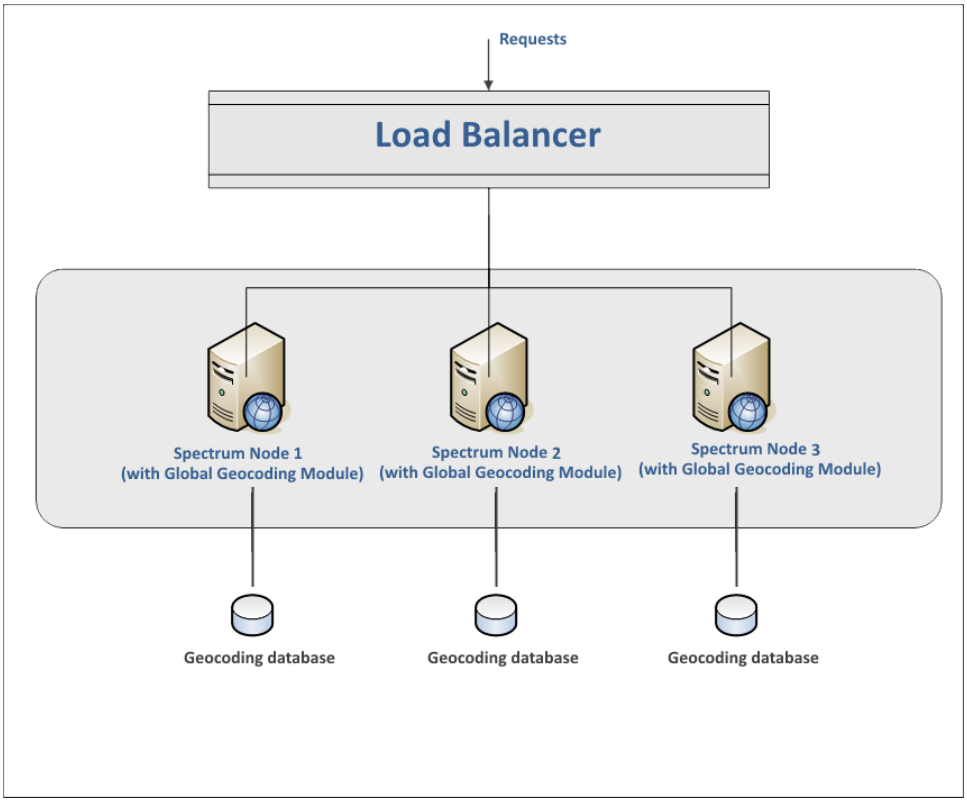
   <server> is the IP address or hostname of your Spectrum™ Technology Platform server.

   <port> is the HTTP port used by Spectrum™ Technology Platform. The default is 8080.

2. Log in using the admin account.
3. Scroll down to Domain: org.neo4j. There will be a set of objects for each model, numbered, starting at 0. The Role attribute in the HighAvailability object indicates whether this server is the master for this model, and the Kernel object indicates the model name in the StoreDirectory attribute.

Clustered Architecture for the Global Geocoding Module

In a clustered environment, processing is shared among two or more instances of the server. The diagram below illustrates the deployment architecture of such a configuration. Load balancing can be used to support high availability and scaling. The deployment architecture includes a load balancer, Spectrum™ Technology Platform nodes with Global Geocoding Modules and Geocoding databases.

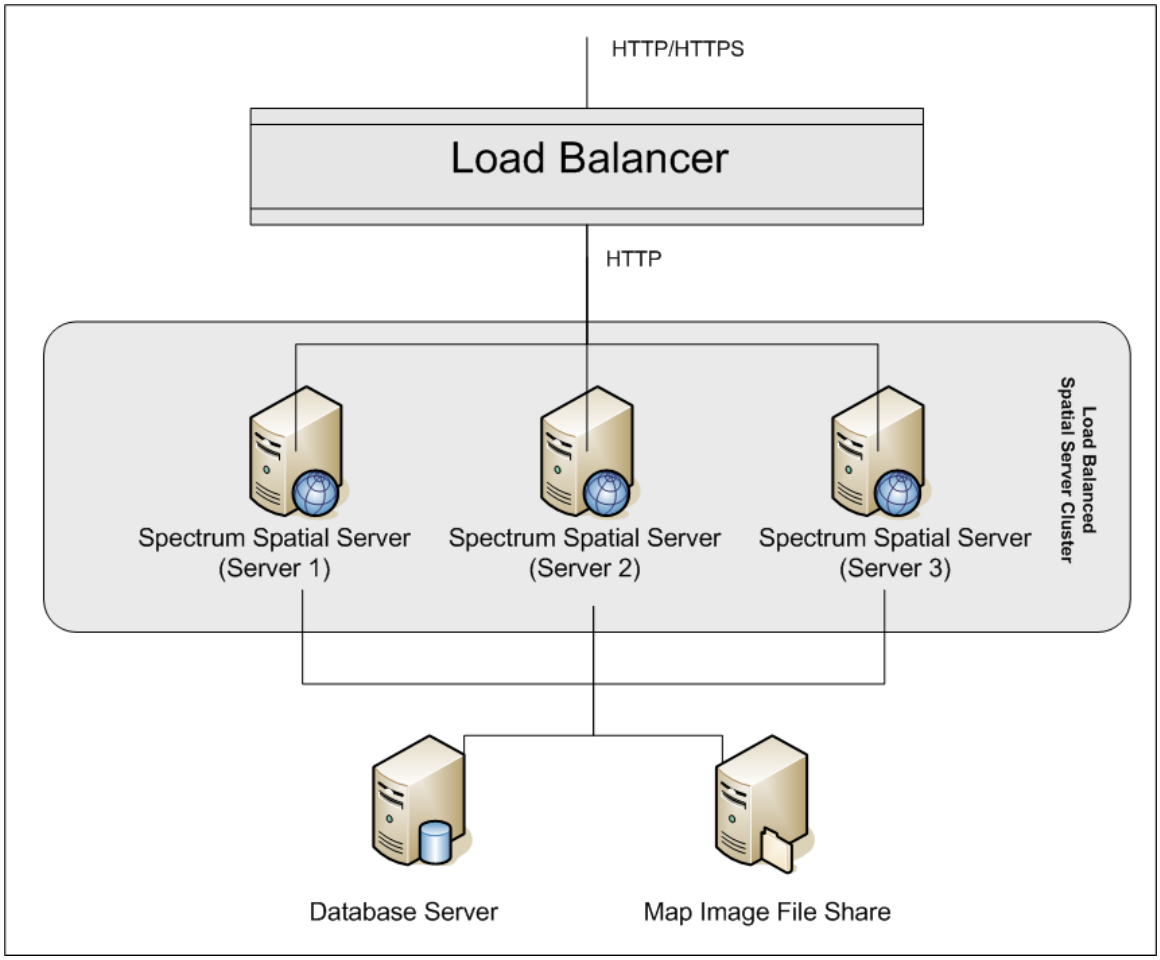


Note: Each Geocoding database MUST be installed in the same location on all of the nodes for the cluster to work properly. For example, if the Geocoding database for "Spectrum Node 1" is installed on `C:\data\`, then the other Spectrum nodes' Geocoding database must also reside on `C:\data\`.

Clustered Architecture for the Location Intelligence Module

In a clustered environment, processing is shared among two or more instances of the server. The diagram below illustrates the deployment architecture of such a configuration. Load balancing can

be used to support high availability and scaling. The deployment architecture includes a load balancer, a Spectrum Spatial cluster, a database, and a file share. With this approach it is possible to scale both horizontally and vertically. You can cluster the Location Intelligence Module with or without platform clustering, starting from version 8.0.



Load Balancer

The load balancer spreads requests between the Spectrum Spatial instances. Any load balancer that supports load balancing HTTP/HTTPs requests can be used.

Spectrum Spatial Cluster

The cluster is a collection of Spectrum instances with LIM sharing administration, named resources, geographical metadata content and configuration settings. Additional nodes can be added to the cluster for resilience or to deliver support for greater loads. Each node can be scaled vertically through additional hardware resources and/or additional instances should this be required for hardware with massive resources. Spectrum can be configured to use restricted numbers of CPUs.

Database

Spectrum stores named resources (maps, layers, tables and styles), geographic metadata and configuration in a repository. In the default single server installation an embedded database is used to store these resources on the local server. To create a resilient scalable solution this embedded database should be replaced with a resilient independent database. Oracle, PostGreSQL/PostGIS and Microsoft SQL Server are the supported repository databases.

In the load balanced configuration, Spectrum nodes cache these resources in a local cache and search index in each node in the cluster. When a Spectrum node receives a request it uses the local cache and index to find resources. Named resources can be added through any node in the cluster. Each node keeps its cache current by checking for differences between its local cache and the central database. This check occurs every 2 seconds by default. Time frequency can be configured. This architecture ensures the server delivers high performance transactions and the load on the repository database is kept to a minimum. If a new Spectrum node is added to the cluster the cache and index are created automatically. Such a scenario can occur to remedy a node failure or grow the capability of the deployment.

File Share

The file share provides a folder to hold map images generated by Spectrum. When maps are rendered using the web services the server supports the map images being returned through URLs or returned as a base 64 encoded image. When a URL is returned the map image is stored as a file and served on request of the URL. To ensure any Spectrum node can return the map image a file share is used to store the images.

Requirements

- All servers that host a node must have their system clocks synchronized in order for the cluster to function. Verify that all systems point to the same time service to synchronize their clocks.
- All nodes in a cluster must be the same version of Spectrum™ Technology Platform so be sure that the version you install is the same as the existing nodes.
- All nodes in a cluster must have the same modules installed, so be sure to install all the necessary modules on the new node.

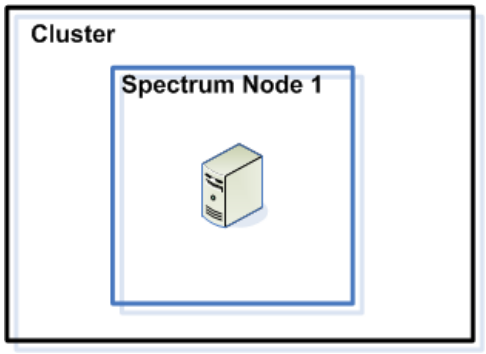
Installing a Cluster

Note: If you are setting up a cluster for the Location Intelligence Module only, follow the instructions in **Installing a Cluster for the Location Intelligence Module** on page 36.

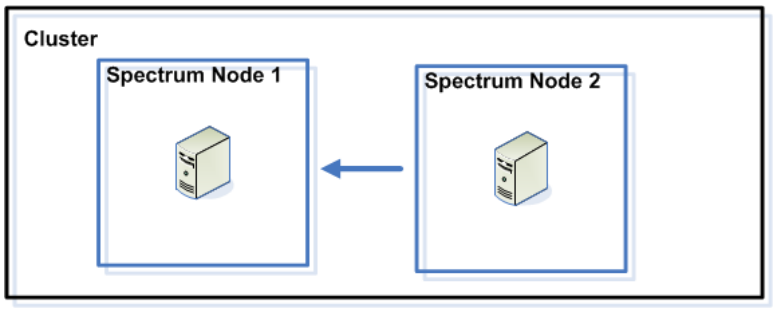
Note: If you are setting up a cluster for the Data Hub Module, also see **Installing a Cluster for the Data Hub Module** on page 35.

Installing a cluster involves setting up one Spectrum™ Technology Platform server at a time. Each time you add a server you need to point it to an existing server which will act as a seed node. A *seed node* is a server that has a copy of the Spectrum configuration data that it can copy to a new node so that the new node's configuration is synchronized with the other nodes in the cluster. The following diagrams illustrate this process.

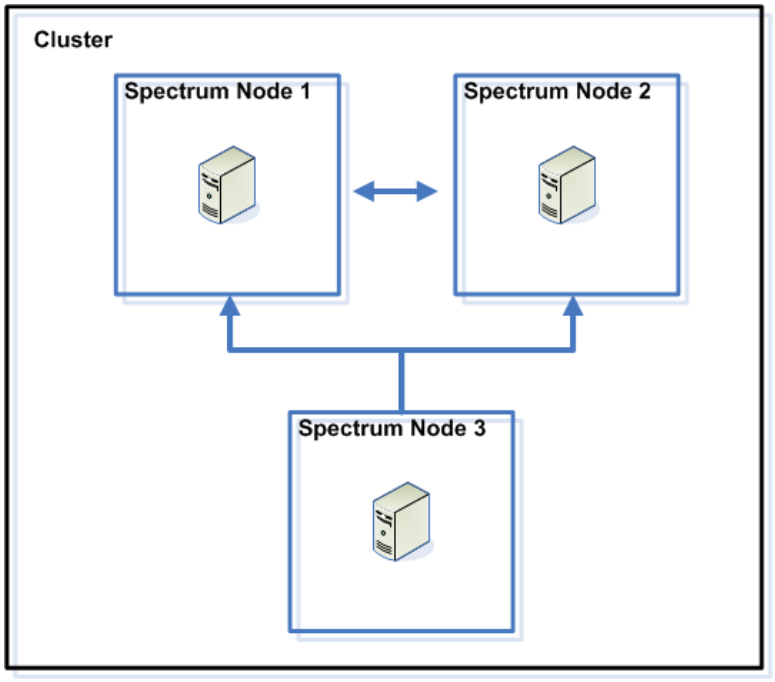
After installing the first node you will in effect have a cluster with only one node:



When you install the second node it must point to the first node as a seed node. This will enable the second node to receive a copy of the first node's configuration database, resulting in a cluster with two nodes with synchronized configuration information.



As you add additional nodes, the new nodes can point to any of the existing nodes as a seed node. You must also configure the first node to point to at least one other node in the cluster so that if it is ever brought down it can rejoin the cluster.



To install a cluster, follow these steps:

1. Install a load balancer. You can choose for yourself an appropriate load balancer. Follow the procedures described in the load balancer's documentation when installing.

   Note: The load balancer must be configured to allow encoded forward slashes. If the load balancer does not allow encoded forward slashes you may get HTTP 404 errors while using the cluster. For example, if you are using an Apache load balancer, you can configure it to allow encoded forward slashes by opening the `httpd.conf` file and specifying this property: `AllowEncodedSlashes On`. For other types of load balancers, refer to the load balancer's documentation.

2. Install Spectrum™ Technology Platform on a server where you want to host a node. For instructions, see **Installing a New Server** on page 20.
3. If the Spectrum™ Technology Platform server is running, stop it. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
4. Edit the file `server/app/conf/spectrum-container.properties` as follows:

   `spectrum.cluster.enabled`

   Set this to `true`.

   `spectrum.cluster.name`

   Set this to any name you want to give to the cluster. If you have multiple clusters, give each cluster a unique name.

   `spectrum.cluster.address`

Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

`spectrum.cluster.seeds`

Set this to the IP address of the Spectrum™ Technology Platform server whose configuration will be reproduced on new nodes added to the cluster. The new server will be configured with the same settings as the seed server whenever it starts up so that it is synchronized with the cluster.

If this is the first node in the cluster you need to specify a seed node that is not yet running. If you know the IP address of the node you want to use as a seed node, enter it now. Otherwise, you will need to return to this properties file once you have the IP address of the seed node.

You can specify multiple IP addresses by separating each with a comma. We recommend that you specify multiple seed nodes so that if one is down others can be used to allow the node to join the cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

`spectrum.cluster.nodename`

Optional. This property allows you to define a specific node name to associate with the configuration database on this node. You should set this option if you plan on manually copying the configuration database from one server to another, such as copying the configuration database from a staging server to a production server. If you do not specify this property, an internally-used node name will be automatically generated by the system.

5. Uncomment the following lines:

```
spectrum.runtime.hostname=
spectrum.runtime.port=
```

Modify these to point to the load balancer host name and the port on which you have configured the load balancer to listen.

6. Save and close the `spectrum-container.properties` file.
7. Start the server. To start the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Add additional nodes to the cluster. For instructions on adding a node, see **Adding a Node to a Cluster** on page 34.

Adding a Node to a Cluster

Follow this procedure if you have already set up a cluster with a load balancer and at least one Spectrum™ Technology Platform node, and you want to add a new Spectrum™ Technology Platform node.

1. Install Spectrum™ Technology Platform on a server where you want to host a node. For instructions, see the *Spectrum™ Technology Platform Installation Guide*.
2. If the Spectrum™ Technology Platform server is running, stop it. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
3. Edit the file `server/app/conf/spectrum-container.properties` as follows:

   `spectrum.cluster.enabled`

   Set this to `true`.

   `spectrum.cluster.name`

   Set this to the name of the cluster that you want this node to join.

   `spectrum.cluster.address`

   Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

   `spectrum.cluster.seeds`

   Set this to the IP address of the Spectrum™ Technology Platform server whose configuration will be replicated on the new node.

   You can specify multiple IP addresses by separating each with a comma. We recommend that you specify multiple seed nodes so that if one is down others can be used to allow the node to join the cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

4. Uncomment the following lines:

   ```
   spectrum.runtime.hostname=
   spectrum.runtime.port=
   ```

   Modify these to point to the load balancer host name and the port on which you have configured the load balancer to listen.

5. Save and close the `spectrum-container.properties` file.
6. Start the server.
   - On Unix or Linux, change the working directory to the Spectrum™ Technology Platform server's `bin` directory, source the setup file, then type the following command: `./server.start .`

- On Windows, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Installing a Cluster for the Data Hub Module

1. Follow the directions in **Installing a Cluster** on page 30.
2. Stop all the Spectrum™ Technology Platform servers in the cluster. To stop the servers, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel and stop the Pitney Bowes Spectrum™ Technology Platform service.
3. Configure the property files.
4. Start the Spectrum™ Technology Platform server. To start the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**. Alternatively, you can use the Windows Services control panel to start the Pitney Bowes Spectrum™ Technology Platform service.

Configuring Property Files

Two files are used to configure the Data Hub Module:

- ***SpectrumFolder*\server\modules\hub\hub.properties**-Controls Spectrum™ Technology Platform settings, including whether to join a cluster and whether to enable history tracking and auditing.
- ***SpectrumFolder*\server\modules\hub\db\neo4j.properties**-Controls how the graph databases are configured, using Neo4j Enterprise. This file is used as a template for each model. If needed, each model can be configured separately by placing a copy of this property file into the store directory for that model.

By default, each model is placed in a subdirectory under the *SpectrumFolder*\server\modules\hub\db directory. The name of each model contains a "model." prefix followed by the name of the model (e.g., "model.CustomerRetention"). The location of this top-level directory may be overridden using the **hub.models.path.base** property in the hub.properties file.

To configure the system to run in a cluster you must set the following properties in the **hub.properties** file:

```
#hub.neo4j.database.type=embedded
hub.neo4j.database.type=ha

#For ha mode, MUST be set to the number of servers in the cluster (or
```

```
models will not replicate reliably)
hub.servers.per.cluster=3
```

Note that the **hub.servers.per.cluster** property must match the number of servers expected in a cluster. If fewer than this number of servers are running at the time the Data Hub attempts to open or create a model, it will wait for these servers to join and then fail after a timeout. Once the model is running, the system will continue running as long a quorum of servers (more than half the expected number of servers) are in communication. For a cluster of six servers, four must stay in communication, for three servers, two must stay in contact, and for a two-server cluster, all servers must be in contact at all times. For this reason, it is recommended that clusters have a minimum of three servers in order to achieve a level of fault tolerance. Also, an odd number of servers provide better resiliency per server than an even-numbered cluster (e.g., both a three-server cluster and a four-server cluster can withstand a maximum of one lost server).

Installing a Cluster for the Location Intelligence Module

To set up a cluster for the Location Intelligence Module, you must first configure a common repository (depending on the type of database you have) then configure your system to prepare it for clustering.

Configuring a Common Repository

You must configure Spectrum to use a common repository database for the cluster. This ensures that named resources, geographic metadata and configuration settings are managed across the cluster. You can configure Spectrum to use a common repository database using a PostgreSQL, an Oracle, or a Microsoft SQL Server database.

The repository is installed with a set of named resources, geographic metadata and configuration files. To migrate these resources to the common database repository the resources need to be exported from the default internal repository database and reimported into the new shared repository database.

To provide support for bulk export/import of repository content, the repository provides a WebDAV interface.

Set Up a PostgreSQL Repository Database

These steps describe how to set up your repository on a PostgreSQL database:

1. Copy all repository resources to a local folder using WebDAV.

The contents of the installed repository must be exported. This step only needs to be performed once, as the contents of the repository should be the same at this point for all instances of Spectrum™ Technology Platform.

2. Back up the folder /<spectrum root>/server/modules/spatial/jackrabbit to a local directory or disk.
3. Stop Spectrum.
4. On all instances of Spectrum™ Technology Platform, add the database JDBC drivers to the Spectrum common lib directory to allow it to use the selected database.

   Copy the /<spectrum root>/server/modules/spatial/lib/postgresql-x.x-xxx.jdbc4.jar file to /<spectrum root>/server/app/lib/postgresql-x.x-xxx.jdbc4.jar.

5. On all instances of Spectrum™ Technology Platform, edit the /<spectrum root>/server/modules/spatial/jackrabbit/repository.xml file to point the repository to a database and add clustering. There are four separate changes you need to make:
   a) Modify the two FileSystem sections within the Repository and Workspace sections of the file:

```
<FileSystem class="org.apache.jackrabbit.core.fs.db.DbFileSystem">
   <param name="driver" value="org.postgresql.Driver"/>
   <param name="url"
value="jdbc:postgresql://<hostname>:<port>/<databasename>"/>
   <param name="schema" value="postgresql"/>
   <param name="user" value="<user>"/>
   <param name="password" value="<pwd>"/>
   <param name="schemaObjectPrefix" value="rep_"/>
  </FileSystem>
```

   b) Modify the Persistence Manager section within the Workspace section:

```
<PersistenceManager
class="org.apache.jackrabbit.core.persistence.bundle.PostgreSQLPersistenceManager">

   <param name="url"
value="jdbc:postgresql://<hostname>:<port>/<databasename>"/>
   <param name="schema" value="postgresql"/>
   <param name="user" value="<user>"/>
   <param name="password" value="<pwd>"/>
   <param name="schemaObjectPrefix" value="${wsp.name}_"/>
   <param name="externalBLOBs" value="false"/>
  </PersistenceManager>
```

   c) Enable Clustering at the end of the file, right above the </Repository> tag. Each instance of Spectrum will need to have a distinct Cluster id to enable synchronization of clustering to work. The delay defines the time delay for synchronization in milliseconds.

```
<Cluster id="node1" syncDelay="2000">
   <Journal
class="org.apache.jackrabbit.core.journal.DatabaseJournal">
    <param name="revision" value="${rep.home}/revision.log" />
    <param name="driver" value="org.postgresql.Driver" />
```

```
    <param name="url"
value="jdbc:postgresql://<hostname>:<port>/<databasename>" />
    <param name="schema" value="postgresql"/>
    <param name="schemaObjectPrefix" value="rep_"/>
    <param name="user" value="<user>"/>
    <param name="password" value="<pwd>"/>
    <param name="databaseType" value="postgresql"/>
   </Journal>
  </Cluster>
```

d) Comment out the DataStore section:

```
<DataStore class="org.apache.jackrabbit.core.data.FileDataStore"/>
```

6. On all instances of Spectrum™ Technology Platform, remove the following folders from the /server/modules/spatial/jackrabbit directory: repository, version, workspaces.
7. If your PostgreSQL database has previously had repository content added, you must remove tables from your database so a clean repository can be created. If you are starting with a new database, make sure the tables do not exist. The following tables need to be removed from the database:

```
public.default_names_id_seq
public.default_binval
public.default_bundle
public.default_names
public.default_refs
public rep_fsentry
public.rep_global_revision
public.rep_journal
public.rep_local_revisions
public.security_binval
public.security_bundle
public.security_names
public.security_refs
```

8. Start Spectrum.
9. Restore the resources by copying them from the local folder into the Repository using WebDAV.

   Import the content of the repository you previously exported back into the repository. This step only needs to be performed on one of the Spectrum™ Technology Platform instances.

Set Up an Oracle Repository Database

These steps describe how to set up your repository on an Oracle database:

1. Copy all repository resources to a local folder using WebDAV.

The contents of the installed repository must be exported. This step only needs to be performed once, as the contents of the repository should be the same at this point for all instances of Spectrum™ Technology Platform.

2. Back up the folder /<spectrum root>/server/modules/spatial/jackrabbit to a local directory or disk.
3. Stop Spectrum.
4. On all instances of Spectrum™ Technology Platform, verify an Oracle JDBC Driver exists under the folder <spectrum root>/server/app/lib (for example, ojdbc6-11.2.0.3.jar).
5. On all instances of Spectrum™ Technology Platform, edit the /<spectrum root>/server/modules/spatial/jackrabbit/repository.xml file to point the repository to a database and add clustering. There are four separate changes you need to make:
   a) Modify the two FileSystem sections within the Repository and Workspace sections of the file:

```
<FileSystem class="org.apache.jackrabbit.core.fs.db.OracleFileSystem">

            <param name="driver" value="oracle.jdbc.OracleDriver"
/>
            <param name="url"
value="jdbc:oracle:thin:@//<hostname>:<port>/<databasename>" />
            <param name="user" value="<user>" />
            <param name="password" value="<pwd>" />
            <param name="schema" value="oracle"/>
            <param name="schemaObjectPrefix" value="rep_"/>
</FileSystem>
```

   b) Modify the Persistence Manager section within the Workspace section:

```
<PersistenceManager
class="org.apache.jackrabbit.core.persistence.pool.OraclePersistenceManager">

            <param name="driver" value="oracle.jdbc.OracleDriver"
/>
            <param name="url"
value="jdbc:oracle:thin:@//<hostname>:<port>/<databasename>" />
            <param name="user" value="<user>" />
            <param name="password" value="<pwd>" />
            <param name="schema" value="oracle"/>
            <param name="schemaObjectPrefix" value="${wsp.name}_"/>

            <param name="externalBLOBs" value="false"/>
        </PersistenceManager>
```

   c) Enable clustering at the end of the file, right above the </Repository> tag. Each instance of Spectrum will need to have a distinct id to enable synchronization of clustering to work. The delay defines the time delay for synchronization in milliseconds.

```
<Cluster id="node1" syncDelay="2000">
        <Journal
class="org.apache.jackrabbit.core.journal.OracleDatabaseJournal">
```

```
            <param name="driver" value="oracle.jdbc.OracleDriver"
/>
            <param name="url"
value="jdbc:oracle:thin:@//<hostname>:<port>/<databasename>" />
                <param name="schema" value="oracle"/>
                <param name="schemaObjectPrefix" value="rep_"/>
            <param name="user" value="<user>" />
            <param name="password" value="<pwd>" />
            <param name="databaseType" value="oracle"/>
            <param name="revision" value="${rep.home}/revision.log"
 />
        </Journal>
    </Cluster>
```

d) Comment out the DataStore section:

```
<DataStore class="org.apache.jackrabbit.core.data.FileDataStore"/>
```

6. On all instances of Spectrum™ Technology Platform, remove the following folders from the /server/modules/spatial/jackrabbit directory: repository, version, workspaces.
7. If your Oracle database has previously had repository content added, you must remove tables from your database so a clean repository can be created. If you are starting with a new database, make sure the tables do not exist. The following tables need to be removed from the database:

```
default_names_id_seq
default_binval
default_bundle
default_names
default_refs
public rep_fsentry
rep_global_revision
rep_journal
rep_local_revisions
security_binval
security_bundle
security_names
security_refs
```

8. Start Spectrum.
9. Restore the resources by copying them from the local folder into the Repository using WebDAV.

   Import the content of the repository you previously exported back into the repository. This step only needs to be performed on one of the Spectrum™ Technology Platform instances.

Set Up an MS SQL Server Repository Database

These steps describe how to set up your repository on an MS SQL Server database:

1. Copy all repository resources to a local folder using WebDAV.

The contents of the installed repository must be exported. This step only needs to be performed once, as the contents of the repository should be the same at this point for all instances of Spectrum™ Technology Platform.

2. Back up the folder /<spectrum root>/server/modules/spatial/jackrabbit to a local directory or disk.
3. Stop Spectrum on all nodes.
4. On all instances of Spectrum™ Technology Platform, add the database JDBC drivers to the Spectrum common lib directory to allow it to use the selected database. Copy the /<spectrum root>/server/modules/spatial/lib/sqljdbc4-4.x.jar file to /<spectrum root>/server/app/lib/sqljdbc4-4.x.jar.
5. On all instances of Spectrum™ Technology Platform, edit the /<spectrum root>/server/modules/spatial/jackrabbit/repository.xml file to point the repository to a database and add clustering. There are four separate changes you need to make:
   a) Modify the two FileSystem sections within the Repository and Workspace sections of the file:

```
<FileSystem class="org.apache.jackrabbit.core.fs.db.MSSqlFileSystem">

    <param name="driver"
value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/>
    <param name="url"
value="jdbc:sqlserver://${HOST}:${PORT};${DATABASENAME};"/>
    <param name="schema" value="mssql"/>
    <param name="user" value="${USERNAME}"/>
    <param name="password" value="${PWD}"/>
    <param name="schemaObjectPrefix" value="rep_"/>
</FileSystem>
```

   b) Modify the Persistence Manager section within the Workspace section:

```
<PersistenceManager
class="org.apache.jackrabbit.core.persistence.pool.MSSqlPersistenceManager">

    <param name="url"
value="jdbc:sqlserver://${HOST}:${PORT};${DATABASENAME};"/>
 <param name="schema" value="mssql"/>
 <param name="user" value="${USERNAME}"/>
 <param name="password" value="${PWD}"/>
 <param name="schemaObjectPrefix" value="${wsp.name}_"/>
 <param name="externalBLOBs" value="false"/>
 <param name="tableSpace" value=""/>
</PersistenceManager>
```

   c) Enable clustering at the end of the file, right above the </Repository> tag. Each instance of Spectrum will need to have a distinct id to enable synchronization of clustering to work. The delay defines the time delay for synchronization in milliseconds.

```
<Cluster id="node1" syncDelay="2000">
    <Journal
class="org.apache.jackrabbit.core.journal.MSSqlDatabaseJournal">
```

```
 <param name="revision" value="${rep.home}/revision.log" />
 <param name="driver"
value="com.microsoft.sqlserver.jdbc.SQLServerDriver"/>
 <param name="url"
value="jdbc:sqlserver://${HOST}:${PORT};${DATABASENAME};"/>
 <param name="user" value="${USERNAME}"/>
 <param name="password" value="$PWD}"/>
 <param name="schema" value="mssql"/>
 <param name="schemaObjectPrefix" value="rep_"/>
 <param name="databaseType" value="mssql"/>
    </Journal>
</Cluster>
```

d) Comment out the DataStore section:

```
<DataStore class="org.apache.jackrabbit.core.data.FileDataStore"/>
```

6. On all instances of Spectrum™ Technology Platform, remove the following folders from the /server/modules/spatial/jackrabbit directory: repository, version, workspaces.
7. If your SQL Server database has previously had repository content added, you must remove tables from your database so a clean repository can be created. If you are starting with a new database, make sure the tables do not exist. The following tables need to be removed from the database:

```
default_names_id_seq
default_binval
default_bundle
default_names
default_refs
public rep_fsentry
rep_global_revision
rep_journal
rep_local_revisions
security_binval
security_bundle
security_names
security_refs
```

8. Start Spectrum on all nodes.
9. Restore the resources by copying them from the local folder into the repository using WebDAV.

   Import the content of the repository you previously exported back into the repository. This step only needs to be performed on one of the Spectrum™ Technology Platform instances.

Configuring Your System

Once the Spectrum™ Technology Platform is installed and you have configure a common repository, you need to configure your instance before you can replicate it to another virtual machine. If you are not using a virtual machine environment, you will need to perform these steps on each of your Spectrum™ Technology Platform installations.

Adding a Map File Share

You can add a map file share (a shared image folder) to Spectrum™ Technology Platform. (To create a map file share, see page 43.)

To add a map file share:

1. Modify the Mapping Service configuration by pointing to a shared image folder and load balance server. In the ImageCache change the Directory parameter to a common image directory, and change the AccessBaseURL parameter to the load balancer machine image URL.

   If you are using a virtual machine environment, remember this IP address, as you must set the load balancer VM to this IP address.

```
<ImageCache>
<Directory>/mnt/<linux mount>/images</Directory>
<AccessBaseURL>http://<loadbalance_IP_address>/Spatial/images</AccessBaseURL>

 <FileExpire>30</FileExpire>
 <ScanInterval>30</ScanInterval>
</ImageCache>
```

2. Set up symbolic link to enable map images to go to the shared file system.

```
cd /<spatial server root>/server/modules/spatial
rm –Rf images
ln -s / mnt/<linux mount>/images
```

Setting Up a Map Image File Share

The file share provides a folder to hold map images generated by Spectrum Spatial. Create a shared folder accessible to all Spectrum nodes. The file share is not required if maps are returned from the web services as Base64-encoded images.

To set up a map image file share:

1. Mount a shared folder on each operating system hosting Spectrum. The commands below mount a drive on a Microsoft Windows Server or network drive supporting CIFS.

```
mkdir /mnt/<linux mount>
mount -t cifs //<windows host>/<windows share> /mnt/<linux mount>-o
username=shareuser,password=sharepassword,domain=pbi
```

2. Set the image share to load at startup in `/etc/fstab`.

```
//<windows ip address for share>/share /path_to/mount cifs
username=server_user,password=secret,_netdev 0 0
```

Modifying the Service Configurations

To modify the service configurations for load balancing:

In each service configuration file, change the <RepositoryURL> to point to the load balance server repository URL.

The RepositoryURL should change to point to the balancer from `http://<Spectrum>/RepositoryService/rmi` to `http://<Balancer>/RepositoryService/rmi`.

Modifying Java Properties File

To modify the java properties for Spectrum™ Technology Platform:

1. Modify the java.properties file, located in `<spectrum>/server/modules/spatial/java.properties`, to point to the load balance server.
2. Change the images.webapp.url and all of the service host and port numbers to point to the load balance server.

Configuring Ports for Multiple Spectrum Instances

If you have multiple Spectrum™ Technology Platform instances on a single machine, you must change the port numbers.

To change the port numbers for each Spectrum™ Technology Platform instance:

1. Change all ports in `<Spectrum root>/server/app/conf/spectrum-container.properties` to new port values that are not in use. The http port reflects the port number entered in the installer.
2. Update the rmi port in bootstrap.properties in the /<spectrum root>/server/modules/spatial folder (for example, 11099). The default is 1099.

Shared Spectrum Local Data

If you are using TAB file data on the file system, this data needs to be in a shared location accessible by all instances of Spectrum in the load balanced environment. It is also important to note that all named resources in the repository accessing data on the file system should point to this shared location.

Each VM or machine hosting Spectrum needs to have access to the mounted shared drive.

Note: Using named resources that point to database tables do not require a shared drive, as the named resources in the repository do not access the data using a file path; rather they use a named connection to the data in the database.

Upgrading a Cluster

Important: Before upgrading, be sure to read the release notes for the new version. The release notes contain important compatibility information, supported upgrade paths, and module-specific data backup recommendations.

Note: If you are upgrading a cluster for the Location Intelligence Module only, follow the instructions in **Upgrading with Clustering for the Location Intelligence Module** on page 49. If you are upgrading both Spectrum and LIM clusters, before shutting down all nodes also see **Upgrading with Clustering for the Location Intelligence Module** on page 49 for some required pre-upgrade steps.

Note: If you are upgrading a cluster for the Data Hub Module, also see **Upgrading with Clustering for the Data Hub Module** on page 47 for some required pre- and post-upgrade steps.

1. Shut down all the Spectrum™ Technology Platform nodes in the cluster.
2. Choose which node you want to upgrade first, and upgrade that node. For instructions, see **Upgrading a Server** on page 21.
3. If the Spectrum™ Technology Platform server is running, stop it. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
4. Edit the file `server/app/conf/spectrum-container.properties` as follows:

   `spectrum.cluster.enabled`

   Set this to `true`.

   `spectrum.cluster.name`

   Set this to any name you want to give to the cluster. If you have multiple clusters, give each cluster a unique name.

   `spectrum.cluster.address`

Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

`spectrum.cluster.seeds`

Set this to the IP address of the Spectrum™ Technology Platform server whose configuration will be reproduced on new nodes added to the cluster. The new server will be configured with the same settings as the seed server whenever it starts up so that it is synchronized with the cluster.

If this is the first node in the cluster you need to specify a seed node that is not yet running. If you know the IP address of the node you want to use as a seed node, enter it now. Otherwise, you will need to return to this properties file once you have the IP address of the seed node.

You can specify multiple IP addresses by separating each with a comma. We recommend that you specify multiple seed nodes so that if one is down others can be used to allow the node to join the cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

`spectrum.cluster.nodename`

Optional. This property allows you to define a specific node name to associate with the configuration database on this node. You should set this option if you plan on manually copying the configuration database from one server to another, such as copying the configuration database from a staging server to a production server. If you do not specify this property, an internally-used node name will be automatically generated by the system.

5. Uncomment the following lines:

```
spectrum.runtime.hostname=
spectrum.runtime.port=
```

Modify these to point to the load balancer host name and the port on which you have configured the load balancer to listen.

6. Save and close the `spectrum-container.properties` file.
7. Start the server.
8. Repeat this process to upgrade the other nodes in the cluster.

Upgrading with Clustering for the Data Hub Module

Additional steps are required for the Data Hub Module both before and after the upgrade process.

Prepare for Upgrading

1. Follow the instructions in **Upgrading a Cluster** on page 45, as these apply to both clustered and non-clustered environments.
2. Follow the instructions in "Backing up Data Hub Models" from the *Master Data Management Guide*.
3. Shut down each server in the cluster. Shut the instances down one at a time rather than all at once, and shut down the master server last. Because the choice of master depends upon which server first opened the model, you may want to restart the cluster and open each model from the first server that was started and then shut them down in reverse order.
4. To ensure that Spectrum™ Technology Platform is shut down cleanly and completely, examine the *SpectrumDirectory*`/server/app/repository/logs/wrapper.log` file for errors during shutdown.
5. For Spectrum™ Technology Platform versions 10.0 and later, each model directory must contain a `version.data` file (*SpectrumDirectory*`/server/modules/hub/db/model.<modelname>/version.data`). If after opening each model on the master server the model directory does not contain this file, it can be copied from one of the non-master nodes. This issue can occur when a non-master services the initial request to create a model.

Upgrade the Master Server

After following the instructions in **Upgrading a Cluster** on page 45 to install the new version of Spectrum™ Technology Platform on the master server, the server will have been reset to a non-clustered configuration. The server can be started at this point; however, the Data Hub models may still require a store upgrade and will fail to open if the server is started before the store upgrade is allowed.

1. Stop the Spectrum™ Technology Platform server. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel and stop the Pitney Bowes Spectrum™ Technology Platform service.
2. Confirm that master server is set to non-clustered (embedded) mode in the *SpectrumFolder*`\server\modules\hub\hub.properties` file:

```
hub.neo4j.database.type=embedded
#hub.neo4j.database.type=ha

#For ha mode, MUST be set to the number of servers in the cluster (or
 models will not replicate reliably)
#hub.servers.per.cluster=3
```

3. Enable store upgrade by setting the following line from *SpectrumFolder*\server\modules\hub\db\neo4j.properties as shown below.

```
allow_store_upgrade=true
```

4. Start the Spectrum™ Technology Platform server. To start the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**. Alternatively, you can use the Windows Services control panel to start the Pitney Bowes Spectrum™ Technology Platform service.
5. Open each model.
6. Follow the instructions in "Backing up Data Hub Models" from the *Master Data Management Guide* again.
7. Stop the Spectrum™ Technology Platform server. To stop the server, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel and stop the Pitney Bowes Spectrum™ Technology Platform service.
8. Set the master server to clustered (high-availability) mode in the *SpectrumFolder*\server\modules\hub\hub.properties file:

```
#hub.neo4j.database.type=embedded
hub.neo4j.database.type=ha

#For ha mode, MUST be set to the number of servers in the cluster (or
 models will not replicate reliably)
#hub.servers.per.cluster=3
```

9. Compare any configuration files that you backed up to the installed files and make any necessary changes. Do not overwrite new files with old files because new files may contain properties that old files do not.

Delete Models on Non-Master Servers

Before upgrading, delete the models in the *SpectrumDirectory*/server/modules/hub/db directory for all non-master servers. Do **not** delete the models from the master server.

Upgrade Non-Master Servers

1. Follow the instructions in **Upgrading a Server** on page 21 for each non-master server. If the installer starts up the Spectrum™ Technology Platform server, shut the server down.

   Note: Do **not** open any models in the cluster while you are upgrading.

2. Set each non-master server to clustered (high-availability) mode in the *SpectrumFolder*\server\modules\hub\hub.properties file:

```
#hub.neo4j.database.type=embedded
hub.neo4j.database.type=ha

#For ha mode, MUST be set to the number of servers in the cluster (or
```

```
 models will not replicate reliably)
#hub.servers.per.cluster=3
```

3. Compare any configuration files that you backed up to the installed files and make any necessary changes. Do not overwrite new files with old files because new files may contain properties that old files do not.

Copy Models

Copy the *SpectrumFolder*\server\modules\hub\db\model.* directories to each of the non-master servers.

Start the Servers

1. Start up the master server, followed by non-master servers.
2. Ensure that each server in the cluster is functioning. Check *SpectrumFolder*\server\app\repository\wrapper.log for any errors.
3. While directly connected to the master server (bypassing the load balancer), open each model, one at a time, and inspect the wrapper.log file for errors.

Upgrading with Clustering for the Location Intelligence Module

When a common repository database is used for clustering, these additional steps required before and after the Spectrum™ Technology Platform upgrade process. Before the upgrade, you must move to a local Derby database setup; after the upgrade, you then change back to the cluster setup by pointing repository.xml to the external database.

1. Before upgrading Spectrum™ Technology Platform, back up the repository by following these steps.
   a) Select a node from the cluster.
   b) Back up the repository content using WebDAV.
   c) Back up repository.xml (under Spectrum\server\modules\spatial\jackrabbit).
   d) Back up the JDBC driver jar file used by the database for the repository (for example, postgresql-9.1-901.jdbc4.jar under Spectrum\server\app\lib).
   e) Back up repository.xml from Spectrum\server\app\tmp\RepositoryService.war-xxxxxxxx-contents\webapp\WEB-INF\classes\org\apache\jackrabbit\core. If you cannot find this file, you can extract it from RepositoryService.war under Spectrum\server\app\deploy.
2. Switch the common repository database to a local Derby database (temporarily, just for upgrade purposes). Apply the following steps to all nodes in the cluster.

a) Shut down the Spectrum™ Technology Platform server.
b) Rename the jackrabbit folder to "jackrabbit_cluster" (from `Spectrum\server\modules\spatial\jackrabbit` to `Spectrum\server\modules\spatial\jackrabbit_cluster`).
c) Create another jackrabbit folder in the same location.
d) Copy repository.xml (backed up in Step 1e) to the jackrabbit folder.
e) Start the Spectrum™ Technology Platform server
f) Copy all the repository files and folders (backed up in Step 1b) into the repository using WebDAV.
g) Shut down the Spectrum™ Technology Platform server

3. Follow normal procedures to upgrade Spectrum™ Technology Platform to the new version.
4. After the Spectrum™ Technology Platform upgrade is complete, switch back to the common repository database for all nodes in the cluster by following these steps.
   a) ***First node only:*** Start the Spectrum™ Technology Platform server (if required) and back up the content from the repository using WebDAV.
   b) Shut down the Spectrum™ Technology Platform server.
   c) Rename the jackrabbit folder to "jackrabbit_local" (from `Spectrum\server\modules\spatial\jackrabbit` to `Spectrum\server\modules\spatial\jackrabbit_local`).
   d) Create another folder named "jackrabbit" in the same location.
   e) Copy repository.xml (backed up in Step 1c) to the jackrabbit folder.
   f) Copy the JDBC driver jar (backed up in Step 1d) to `Spectrum\server\app\lib`.
   g) Start the Spectrum™ Technology Platform server.
   h) ***First node only:*** Remove the existing content from the repository, then copy the content that you backed up in Step 4a into the repository using WebDAV.
   i) Repeat Steps 4b-4g for each additional node.
   j) For each additional node, after copying repository.xml (backed up in Step 1c) to the jackrabbit folder, verify that it has a distinct Cluster ID.

Removing a Node from a Cluster

To remove a node from a cluster, stop the Spectrum™ Technology Platform server.

- On Unix or Linux, change the working directory to the Spectrum™ Technology Platform server's `bin` directory, source the setup file, then type the following command: `./server.stop .`
- On Windows, right-click the Spectrum™ Technology Platform icon in the system tray and select **Stop Server**.

If you do not want the server to rejoin the cluster the next time it starts up, open the file `server/app/conf/spectrum-container.properties` in a text editor and set `spectrum.cluster.enabled` to `false`.

For Location Intelligence Module users: If you want to keep the node standalone and able to run outside the cluster, copy back the original repository.xml file and remove the following folders from the `/server/modules/spatial/jackrabbit` directory for each instance of Spectrum™ Technology Platform: repository, version, workspaces. Restart the server and import the repository content.

Adding Modules to a Cluster

After installing a cluster you may decide to add additional modules. This procedure describes how to add one or more modules to an existing cluster.

1. Shut down all the Spectrum™ Technology Platform nodes in the cluster.
2. Choose a node where you will first install the module. On that node, open the following file in a text editor: `server/app/conf/spectrum-container.properties`.
3. Set `spectrum.cluster.enabled` to `false`.
4. Save and close the file.
5. Install the module or modules you want to add. For instructions, see the *Spectrum™ Technology Platform Installation Guide*.
6. Start up the server.

   The server starts up in standalone (non-clustered) mode.

7. Wait for the server to fully start up, then stop the server.
8. Open `server/app/conf/spectrum-container.properties` in a text editor and set `spectrum.cluster.enabled` to `true`.
9. Save and close the file.
10. Start up the server.

    You now have a cluster of one with the new module installed.

11. Start up each of the other nodes.

Starting a Cluster

If all the nodes in a cluster are stopped, you must follow this procedure to start up the cluster safely and avoid data loss.

1. Start the node that was shut down last.

   Warning: The first node that you start must be the last node that was shut down. Starting up another node first may result in loss of data such as job history and configuration settings. If you do not know which node was shut down last, look in each node's wrapper log for the time stamp of the shutdown message. You can find the wrapper log in: *Spectrum Location*\server\app\repository\logs\wrapper.log.

2. Wait for the Spectrum™ Technology Platform server to *completely* start up.

   You can tell when the Spectrum™ Technology Platform server has completely started up by looking in the wrapper log: *Spectrum Location*\server\app\repository\logs\wrapper.log. The following message is displayed when the server is completely started:

   ```
   Pitney Bowes Spectrum(TM) Technology Platform (Version Version Number)
    Started.
   ```

3. Start the other nodes in the cluster.

   Warning: Be sure to wait for the first node to start up *completely* before starting additional nodes. Starting up additional nodes before the first one is started may result in loss of data.

Shutting Down a Cluster

To shut down an entire cluster:

1. Shut down each Spectrum™ Technology Platform server in the cluster.

   - On Unix or Linux, change the working directory to the Spectrum™ Technology Platform server's `bin` directory, source the setup file, then type the following command: `./server.stop`.
   - On Windows, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.

2. Make a note of which node was shut down last. You will need this information when starting up the cluster.

   Warning: When starting up the cluster, the first node you start up must be the last node that was shut down.

Using Client Tools with a Cluster

1. Launch the client tool (Management Console, Enterprise Designer, or Interactive Driver).
2. In the **Server name** field, enter the server name of the load balancer.
3. In the **Port** field, enter the port that you have configured the load balancer to listen on.

   Note: Input files, output files and database resources must be on a shared drive, or file server, or some commonly-accessible location. Otherwise, all files must be loaded on each server that hosts a Spectrum™ Technology Platform server and must be located in the same path.

Once you have logged in you can use the client tool as normal. The actions you take will apply to all Spectrum™ Technology Platform instances in the cluster where you are logged in.

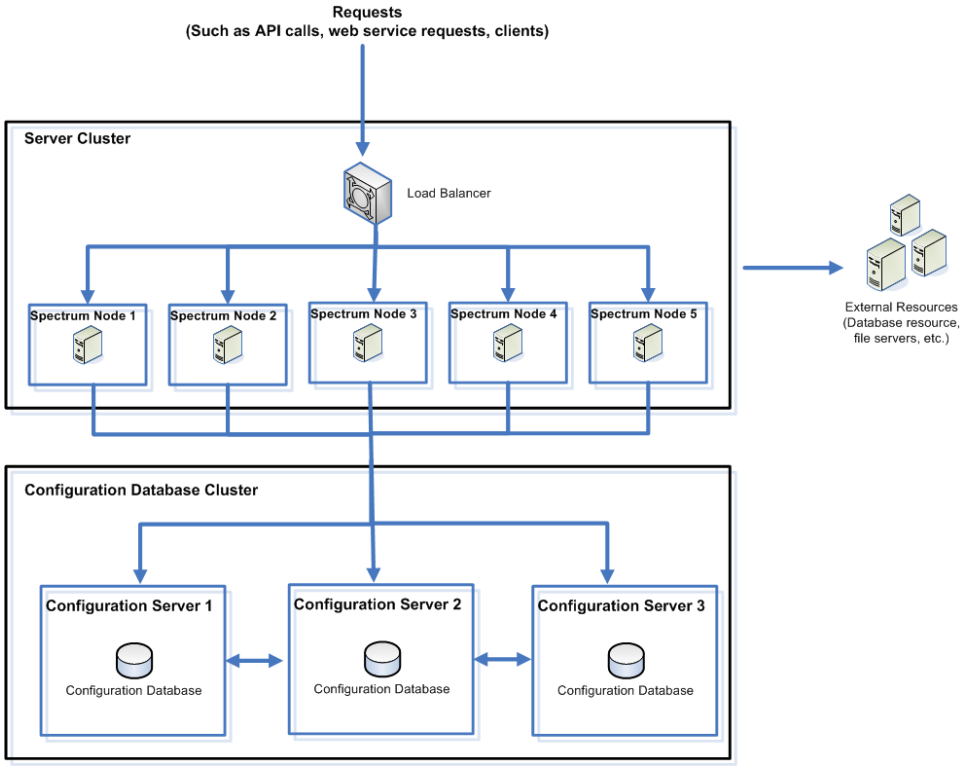
4 - Cluster with Separated Configuration Database

In this section

Installing a Cluster with a Separated Configuration Database

This procedure creates two clusters: one for the server nodes and one for configuration database nodes. The nodes in the server cluster point to the servers in the configuration database cluster for their configuration data. The nodes in the configuration database cluster replicate their data between each other.

The following diagram illustrates this installation scenario:



To install a separate database repository, you first install the configuration database on servers in a cluster, then install the server on nodes in a separate cluster. At least one configuration database must be running before you can install the server.

1. Place the Spectrum™ Technology Platform installer on the server where you want to install the configuration database.
2. Double-click `installdb.exe`.
3. Follow the prompts to install the configuration database.

4. After the installation is complete, the configuration database starts up automatically. Verify that the configuration database is fully started before continuing by opening the log file `<Spectrum Installation Location>/server/app/repository/logs/wrapper.log` and looking for this message:

```
INFO  [Server] Pitney Bowes Spectrum(TM) Technology Platform (Version
 version build) Started
```

   Important: Do not continue until the configuration database has fully started up. If it fails to start up, troubleshoot the issue before continuing. Also, do not attempt to stop the configuration database until after it has *fully* started for the first time. Stopping the configuration database before it performs an initial startup can cause your installation to become unusable.

5. Stop the configuration database. To stop the configuration database, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel to stop the configuration database by stopping the **Spectrum Database** service.
6. Edit the file `server/app/conf/spectrum-container.properties` as follows:

   `spectrum.cluster.name`

   - If this is the first node in the cluster, set this to any name you want to give to the cluster. Be sure that the name is unique if you have multiple clusters.
   - If you are adding a node to an existing cluster, set this to the name of the cluster that you want this node to join.

   `spectrum.cluster.enabled`

   Set this to `true`.

   `spectrum.cluster.address`

   Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

   `spectrum.cluster.seeds`

   Set this to the IP address of the configuration database server you want to be used to set up new configuration database nodes added to the cluster. The configuration database from the seed server is copied to the node whenever it starts up so that it is synchronized with the cluster.

   Note: If this is the first node in the cluster you may specify seed nodes that are not yet running. If you know the IP addresses of the nodes you want to use as seed nodes, you may enter those now. Otherwise, you will need to return to this properties file once you have the IP addresses of the seed nodes and enter them.

   You can specify multiple comma-separated IP addresses. You should specify multiple seed nodes so that if one is down others can be used to allow the node to join the

cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

7. Save and close the `spectrum-container.properties` file.
8. Start the configuration database. To start the configuration database, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**. Alternatively, you can use the Windows Services control panel to start the configuration database by starting the **Spectrum Database** service.
9. Install the configuration database on additional servers as needed to complete the configuration database cluster.
10. Install the server cluster. For instructions, see **Installing a Cluster** on page 30.

    Important: When installing each server select the **Server only** option in the installer and provide the host and port of one or more of each of the configuration database server. You can find the port in the file *InstallationLocation*`\server\app\conf\spectrum-container.properties`. The port is specified in the `spectrum.orientdb.binary.port` property.

Upgrading a Cluster with a Separated Configuration Database

Important: Before upgrading, be sure to read the release notes for the new version. The release notes contain important compatibility information, supported upgrade paths, and module-specific data backup recommendations.

This procedure describes how to upgrade Spectrum™ Technology Platform when you have separated the configuration database from the server. To upgrade an environment that has a separated configuration database, you first upgrade the configuration database cluster, then the server cluster.

1. Shut down all the nodes in the server cluster and then shut down all the nodes in the configuration database cluster.

   Note: Make a note of the last node that you shut down in the configuration database cluster. You must start up this node first after upgrading.

2. On the *last* node that you shut down in the configuration database cluster, execute `installdb.exe`. The installer upgrades the configuration database.

   Warning: The first node that you upgrade must be the last node that was shut down. This is because on some operating systems the configuration database will start automatically at the end of the upgrade process. If the first node that starts up is not the last node that was shut down, data such as job history and configuration settings may be lost.

If you do not know which node was shut down last, look in each node's wrapper log for the time stamp of the shutdown message. You can find the wrapper log in: *Spectrum Location*\server\app\repository\logs\wrapper.log.

3. After the upgrade process finishes, wait for the server to start up, then stop the server.

   You can see when the server has started up by opening the log file <Spectrum Installation Location>\server\app\repository\logs\wrapper.log and looking for this message:

   ```
   INFO  [Server] Pitney Bowes Spectrum(TM) Technology Platform Database
    (Version version build) Started
   ```

   Important: Do not attempt to stop the server until after it has fully started for the first time. Stopping the server before it performs an initial startup can cause your installation to become unusable.

4. If your existing server cluster is version 10.0 you must run a conversion utility on the cluster before upgrading. This is only necessary for version 10.0 clusters.

   Before proceeding, note the following:

   - In order to run this utility, each node in the cluster must have adequate disk space. The amount of free disk space needed is three times the size of the server/app/repository/store/databases folder. If necessary, add disk space to each node before proceeding.
   - The conversion process may take up to an hour if you have a large configuration database.

   a) Shut down all the Spectrum™ Technology Platform nodes in the server cluster.
   b) On one of the nodes, back up the following folder:
      server/app/repository/store/databases
   c) On the *last* node that was shut down in the cluster, right-click the following file and select **Run as administrator**:
      SpectrumFolder\server\bin\convert.db.bat

5. Configure clustering for the database cluster.
   a) Edit the file server/app/conf/spectrum-container.properties as follows:

      spectrum.cluster.name

      - If this is the first node in the cluster, set this to any name you want to give to the cluster. Be sure that the name is unique if you have multiple clusters.
      - If you are adding a node to an existing cluster, set this to the name of the cluster that you want this node to join.

      spectrum.cluster.enabled

      Set this to true.

      spectrum.cluster.address

Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

`spectrum.cluster.seeds`

Set this to the IP address of the configuration database server you want to be used to set up new configuration database nodes added to the cluster. The configuration database from the seed server is copied to the node whenever it starts up so that it is synchronized with the cluster.

Note If this is the first node in the cluster you may specify seed nodes that are not yet running. If you know the IP addresses of the nodes you want to use as seed nodes, you may enter those now. Otherwise, you will need to return to this properties file once you have the IP addresses of the seed nodes and enter them.

You can specify multiple comma-separated IP addresses. You should specify multiple seed nodes so that if one is down others can be used to allow the node to join the cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

b) Save and close the `spectrum-container.properties` file.

c) Start the *last* node that was shut down in the configuration database. To start the configuration database, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**. Alternatively, you can use the Windows Services control panel to start the configuration database by starting the **Spectrum Database** service.

Warning: The first node that you start must be the last node that was shut down. Starting up another node first may result in loss of data such as job history and configuration settings. If you do not know which node was shut down last, look in each node's wrapper log for the time stamp of the shutdown message. You can find the wrapper log in: *`Spectrum Location`*`\server\app\repository\logs\wrapper.log`.

d) After the upgraded configuration database is fully started up, repeat the previous steps to upgrade each of the remaining servers in the configuration database cluster and start up each of them.

6. Upgrade each node in the server cluster. For instructions, see d**Upgrading a Cluster** on page 45.

Important: When installing each server select the **Server only** option in the installer and provide the host and port of one or more of each of the configuration database server. You can find the port in the file *`InstallationLocation`*`\server\app\conf\spectrum-container.properties`. The port is specified in the `spectrum.orientdb.binary.port` property.

Note: Any job or subflow stored in the system during a server upgrade is marked as exposed to provide the same behavior for those jobs and subflows as before the upgrade. Any job or subflow that is exported prior to the upgrade will not be exposed. Therefore, when importing

these jobs or subflows back into the system, you must manually expose the imported job or subflow.

Converting from a Standard Installation to a Separated Configuration Database

If you have an existing Spectrum™ Technology Platform installation and you want to take advantage of the improved scalability of a separated configuration database, you can convert your existing installation from one where the configuration database is part of the server to one where the configuration database is in a separate cluster.

At a high level, this is the conversion process:

- Shut down your existing Spectrum™ Technology Platform installation.
- Set up the new configuration database cluster:
  - Install the separate configuration database software on a new server.
  - Copy your existing configuration database to the new server.
  - Configure clustering and start up the configuration database cluster.
- Install the server-only cluster and start it up.

Follow the detailed steps below to convert a standard installation to a separated configuration database.

1. (Optional) If you are upgrading to a new version as part of converting from a standard installation to a separated configuration database, upgrade your existing server. For instructions, see **Upgrading a Server** on page 21.
2. Shut down the server. If you have a clustered installation, shut down the cluster.
3. Install the configuration database to a new server.
   a) Place the Spectrum™ Technology Platform installer on the machine where you want to install the configuration database. This must be a different machine from the one where you have your existing Spectrum™ Technology Platform server installed.
   b) Double-click `installdb.exe`.
   c) Follow the prompts to install the configuration database.
   d) After the installation is complete, the configuration database starts up automatically. Verify that the configuration database is fully started before continuing by opening the log file `<Spectrum Installation Location>/server/app/repository/logs/wrapper.log` and looking for this message:

```
INFO  [Server] Pitney Bowes Spectrum(TM) Technology Platform (Version
 version build) Started
```

Important: Do not continue until the configuration database has fully started up. If it fails to start up, troubleshoot the issue before continuing. Also, do not attempt to stop the configuration database until after it has *fully* started for the first time. Stopping the configuration database before it performs an initial startup can cause your installation to become unusable.

e) Stop the configuration database. To stop the configuration database, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**. Alternatively, you can use the Windows Services control panel to stop the configuration database by stopping the **Spectrum Database** service.

f) Copy the `server\app\repository\store` folder from your existing server to the server where you installed the separate configuration database. Replace the existing `server\app\repository\store` folder.

g) If the server from which you copied the `server\app\repository\store` folder is version 10.0 or earlier you must run a conversion utility on the configuration database on the new machine.

Before running the conversion utility note the following:

- In order to run this utility, the server must have adequate disk space. The amount of free disk space needed is three times the size of the `server/app/repository/store/databases` folder. If necessary, add disk space before proceeding.
- The conversion process may take up to an hour if you have a large configuration database.

To run the conversion utility:

1. Back up the following folder: `server/app/repository/store/databases`
2. Right-click the following file and select **Run as administrator**: *`SpectrumFolder`*`\server\bin\convert.db.bat`

h) Configure the cluster properties for the database cluster by editing the file `server/app/conf/spectrum-container.properties` as follows:

`spectrum.cluster.name`

- If this is the first node in the cluster, set this to any name you want to give to the cluster. Be sure that the name is unique if you have multiple clusters.
- If you are adding a node to an existing cluster, set this to the name of the cluster that you want this node to join.

`spectrum.cluster.enabled`

Set this to `true`.

`spectrum.cluster.address`

Set this to the network interface to which you want this node to bind. Specify 0.0.0.0 if you want the node to bind to all network interfaces.

`spectrum.cluster.seeds`

Set this to the IP address of the configuration database server you want to be used to set up new configuration database nodes added to the cluster. The configuration database from the seed server is copied to the node whenever it starts up so that it is synchronized with the cluster.

Note If this is the first node in the cluster you may specify seed nodes that are not yet running. If you know the IP addresses of the nodes you want to use as seed nodes, you may enter those now. Otherwise, you will need to return to this properties file once you have the IP addresses of the seed nodes and enter them.

You can specify multiple comma-separated IP addresses. You should specify multiple seed nodes so that if one is down others can be used to allow the node to join the cluster. The node will attempt to access each seed node in the order listed. If none of the seed nodes can be reached, the node will not join the cluster.

i) Save and close the `spectrum-container.properties` file.

j) Start the configuration database. To start the configuration database, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**. Alternatively, you can use the Windows Services control panel to start the configuration database by starting the **Spectrum Database** service.

k) Install the configuration database on additional servers as needed to complete the configuration database cluster.

4. Install the server.

a) (Optional) If you are upgrading to a new version and you want to use the same machine to host the upgraded server as hosted the existing server, uninstall the existing server of Spectrum™ Technology Platform.

b) Install the server cluster. For instructions, see **Installing a Cluster** on page 30.

Important: When installing each server select the **Server only** option in the installer and provide the host and port of one or more of the configuration database servers. You can find the port in the file *InstallationLocation*`\server\app\conf\spectrum-container.properties`. The port is specified in the `spectrum.orientdb.binary.port` property.

Converting from a Separated Configuration Database to a Standard Installation

If you have a cluster that consists of separate clusters for the server and for the configuration database, you can convert your installation to a standard installation where the server and configuration database are installed together on the same server.

1. Shut down all the nodes in the server cluster and then shut down all the nodes in the configuration database cluster.
2. The configuration database must be of the same version of Spectrum™ Technology Platform as the server you are converting to. If the configuration database is from an older version, upgrade the configuration database to the same version of Spectrum™ Technology Platform as the version you want to use for the standard server. On the *last* node that you shut down in the configuration database cluster, execute `installdb.exe`. The installer upgrades the configuration database.

   Warning: The node that you upgrade must be the last node that was shut down. This is so that data such as job history and configuration settings are not lost. If you do not know which node was shut down last, look in each node's wrapper log for the time stamp of the shutdown message. You can find the wrapper log in: *`Spectrum Location`*`\server\app\repository\logs\wrapper.log`.

3. After the upgrade process finishes, wait for the server to start up, then stop the server.

   You can see when the server has stared up by opening the log file `<Spectrum Installation Location>\server\app\repository\logs\wrapper.log` and looking for this message:

   ```
   INFO   [Server] Pitney Bowes Spectrum(TM) Technology Platform Database
    (Version version build) Started
   ```

   Important: Do not attempt to stop the server until after it has fully started for the first time. Stopping the server before it performs an initial startup can cause your installation to become unusable.

4. Install a new server. For instructions, see **Installing a New Server** on page 20.

   Note: When prompted, be sure to select **Standard Installation**, not **Server only**.

5. Stop the server.
6. Copy the *`SpectrumLocation`*`/server/app/repository/store` folder from the last configuration database server you shut down to the new server, replacing the existing *`SpectrumLocation`*`/server/app/repository/store` folder.
7. Start the server.

5 - Spectrum Databases

After you have installed the server you need to install the databases that support the module(s) you have installed. Databases provide the information that Spectrum™ Technology Platform modules use to process data, such as postal address data, name data, or geospatial data. For example, if you have installed the Enterprise Geocoding Module, you will need to install databases that contain geospatial data; if you have installed the Universal Addressing Module, you will need to install databases that contain postal data.

In this section

Installing the Address Now Module Database

1. Copy the `liclcs.sbi` license file provided by Pitney Bowes into the following directory: `<SpectrumPlatformLocation>\server\modules\anow\license`.
2. Make sure no applications are running.
3. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
4. Insert the database DVD containing the database(s) you want to install.

   Note: You must install the Postal databases if you want to use the Enhanced databases.

5. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Address Now Module** > **Address Now Data Loader**.
6. The installation wizard guides you through the rest of the process.

   Note: The installation location for the Address Now directory defaults to `<SpectrumPlatformLocation>\server\modules\anow`. Do not change this path or the database will not install correctly.

   Note: When prompted for the location of the Installation Media Directory, be sure to select the directory on the database DVD that contains the `kbase` folder.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

7. When the Data Loader is finished, start the Address Now server by going to **Control Panel** > **Administrative Tools** > **Services**. Right-click the Address Now Server service and select Start.
8. After the database installed, start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Installing the Advanced Matching Module Database

The Advanced Matching Module provides a load utility to install databases. The database files that you install depend on the databases you have licensed.

Note: To install the Advanced Matching Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.

2. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
3. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

4. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Universal Name and Advanced Matching Modules** > **Database Load Utility**.
5. Follow the prompts during the rest of the installation process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

6. Open the file `<SpectrumDirectory>\server\bin\wrapper\wrapper.conf` in a text editor.
7. Increase the Java settings for initial heap size (`wrapper.java.initmemory`) and maximum heap size (`wrapper.java.maxmemory`) to reflect the total amount of memory required for the Arabic Plus Pack and Asian Plus Pack.

   - Arabic Plus Pack: 5.5 GB
   - Asian Plus Pack - Chinese: 32 MB
   - Asian Plus Pack - Japanese: 1.6 GB
   - Asian Plus Pack - Korean: 8 MB
   - Core Names: 1.1 GB

8. Save and close `wrapper.conf`.
9. Start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Installing Data Normalization Module Databases

The Data Normalization Module provides a load utility to install databases for the Advanced Transformer, Open Parser, and Table Lookup components. The database files that you install depend on the databases you have licensed. Use this list of database tables to determine which files you should download and install. For more information on the tables contained in each database, refer to the reference documentation for each component.

Stage	Available Databases
Advanced Transformer	Data Normalization Module - Base Tables
Open Parser	• Data Normalization Module - Base Tables • Core Names Database • Company Names Database • Arabic Plus Pack • Asian Plus Pack
Table Lookup	• Data Normalization Module - Base Tables • Core Names Database • Arabic Plus Pack • Asian Plus Pack • ZREPLACE (Used by the SAP Module for French address validation)

Note: To install the Data Normalization Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
3. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

4. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Data Normalization Module** > **Database Load Utility**.
5. Follow the prompts during the rest of the installation process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

6. Start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Installing Enterprise Geocoding Module Databases

This module has several databases. You may have one or more of these, depending on the features you have licensed.

International Geocoding Databases

International geocoding databases contain the data necessary to perform geocoding and reverse geocoding for locations outside the U.S. Each country has its own database, and some countries have optional databases that provide enhanced geocoding.

Note: If you install multiple databases, install each database to a separate folder.

Note: To install the Enterprise Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Run `dbloader.exe`.
5. Follow the prompts during the rest of the installation process.

   Note: Do not install geocoding databases on a network drive. Doing so can cause performance problems.

6. After you install the database files, use the Database Resource tool in the Management Console to define the database as a resource. For more information, see the *Administration Guide*.

Note: If you installed the Australia Geocoded National Address File (G-NAF), you must specify the GNAF123 and GNAF456 as separate paths but in the same database resource in the Management Console.

If you install the Australia Geocoded National Address File (G-NAF), there will be two subfolders: `GNAF123` and `GNAF456`. `GNAF123` contains the point-level dictionary. This has the highest precision of geocoding (characterized by Reliability Level 1, 2, or 3.) `GNAF456` contains the remainder of address information in G-NAF that does not meet high precision geocoding criteria (characterized by Reliability Level 4, 5, or 6.) We recommend that you use both databases to validate the existence

of addresses but only use `GNAF123` for parcel-level geocoding. If you do not require parcel-level geocodes you can use `GNAF456` for geocoding.

U.S. Geocoding Databases

The U.S. geocoding databases contain the spatial data necessary to perform address standardization and geocoding. You must install at least one of these databases.

- **Centrus Enhanced Geocoding**—This database consists of TIGER data provided by the U.S. Geological Survey and address data provided by the U.S. Postal Service.
- **TomTom Geocoding**—This database provides more up-to-date data than the Centrus Enhanced Geocoding database. It requires an additional license. The data is provided by TomTom, a third-party provider of spatial data, and postal data from the U.S. Postal Service.
- **NAVTEQ Geocoding**—This database provides more up-to-date data than the Centrus Enhanced Geocoding database. It requires an additional license. NAVTEQ data is provided by NAVTEQ, a third-party provider of spatial data. For more information about these databases, contact your sales representative.
- **ZIP + 4 Centroid**—This database provides only address standardization and ZIP + 4 centroid matching. It does not provide street-level matching.

These databases use proprietary files called GSD files. For ZIP Code centroid matching, the file us.Z9 contains all the centroid info for all states and normally has a z9 extension.

Each geocoding database has an optional Statewide Intersections Index. The Statewide Intersection Index is designed to enable fast intersection identification on a statewide basis. For example, the Statewide Intersection Index will allow the database to search for "1st and Main St, CO" and return a list of possible matches in Colorado more quickly than searching the entire geocoding database for each instance of the intersection.

Note: To install the Enterprise Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Run `DataSets.exe`. The installation wizard guides you through the rest of the process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

5. After you install the database files, use the Database Resource tool in the Management Console to define the database as a resource. For more information, see the *Administration Guide*.

Points Databases (U.S. Only)

Points databases contain data for locating the center of a parcel. These databases provides enhanced geocoding accuracy for internet mapping, property and casualty insurance, telecommunications, utilities, and others.

- **Master Location Data** —This database provides the best available address point location for every mailable and deliverable address in the United States.
- **Centrus Points**—This database contains the data necessary to locate the center of a parcel or building. It does not contain assessor's parcel number (APN) or elevation data.
- **Centrus Elevation**—This database contains the same data as Centrus Points, plus elevation data.
- **Centrus Enhanced Points**—This database contains the same data as Centrus Points, plus APN data.
- **Centrus Premium Points**—This database contains the same data as Centrus Points, plus both APN and elevation data.
- **TomTom Points Database**—The data in this database is provided by TomTom, a third-party provider of spatial data.
- **NAVTEQ Points**—This database is provided by NAVTEQ, a third-party data provider. It contains data used to locate addresses at the center of the actual building footprint or parcel.

Note: To install the Enterprise Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the Pitney Bowes web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

3. Run `Setup.exe`. The installation wizard guides you through the rest of the process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

4. After you install the database files, use the Database Resource tool in the Management Console to define the database as a resource. For more information, see *Spectrum™ Technology Platform Administration Guide*.

Early Warning System (U.S. Only)

The USPS provides free Early Warning System (EWS) data to prevent matching errors due to the age of the address information in the .gsd files. The USPS creates a new EWS data set each week that you can download from the USPS website (**ribbs.usps.gov**).

To install the Early Warning System (EWS) database rename the database file from OUT to EWS.txt and place it in the same folder as the primary database.

Installing Enterprise Routing Module Databases

1. Make sure no applications are running.
2. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the technical support web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

3. Run `dbloader.exe`.
4. Follow the prompts during the rest of the installation process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

Installing Enterprise Tax Module Databases

Depending on the features you have licensed, you need to install one or more of these databases.

Database Compatibility

The Enterprise Tax Module version 9.0 SP2 and later uses a different data format than previous releases. You must download and install the **GeoTAX/Enterprise Tax Premium database** for use in this version. The GeoTAX/Enterprise Tax Premium database is not compatible with any releases prior to version 9.0 SP2.

Downloading Database Files

Note: **Prior to downloading the data files:** If you have previously installed database files, you should back up those files and delete any copies of the `.gdi, .gsd, gsi, .gsl, .gsu, .gsz, .gsx, .z9, .dir, .las and .los files` in the data install directory.

Downloading from the eStore

Use the link in your welcome email to download the zip file. Extract the files and make note of the directory where you save the files.

Downloading from the Technical Support Web Site

Download the database from the technical support web site, **www.g1.com/support**. The data file will be downloaded as a .zip file. Extract the files and make note of the directory where you save the files.

Downloading Florida Format Files

You can obtain the Florida format files from the Florida Department of Revenue. The Florida Department of Revenue compiles the database based on county.

1. Download the files from the Florida website at: **https://pointmatch.state.fl.us/General/AddressFiles.aspx/**.
2. Unzip the downloaded files and transfer them to the server.

   Note: Be sure to FTP your files in binary format.

3. Combine the county files into a single file if you downloaded more than one county. If you downloaded the entire state list, you have approximately 67 files. You must combine all the files into one file.
   Your file is ready for loading.

Downloading TS-158 Format Files

The Federation of Tax Administrators (FTA) maintains a website with links to all data sources that use the TS-158 format.

1. Download the files from the Florida website at: **https://pointmatch.state.fl.us/General/AddressFiles.aspx**.
2. Unzip the downloaded files and transfer them to the Spectrum™ Technology Platform server.
3. State files are often broken up into individual county files. Combine all state and/or county files into a single file.
   Your file is ready for loading.

Database Options

The following describes the database options presented in the Windows Database Load Utility.

GeoTAX master files

The GeoTAX/Enterprise Tax Premium Database is a required dataset and is the master file for the Enterprise Tax Module software. The master files identify all geographic components associated with a street address, such as the latitude/longitude, census tract, and block group.

Point Data files

Point Data products include Master Location Data (MLD), Centrus Points, Centrus NAVTEQ Points, and Centrus TomTom Points. The point data provides point-level geocoding for the most accurate placement of addresses throughout the U.S. The Master Location Data database provides the best available address point location for every mailable and deliverable address in the United States.

User auxiliary file

This is a user-defined file that the Enterprise Tax Module uses to override results from the master files in street-level matching. If you have data that is more current than that in the master files, you can enter the new data into the auxiliary file and use it for your address matching. The Enterprise Tax Module returns matches made with a code that signifies the answer came from the auxiliary file. You can also return user-defined data from the auxiliary file with the match. The install program creates the file `G1GTAUX` in the specified destination.

GeoTAX auxiliary file

This file contains new addresses that have not yet been added to the master files. It provides the most up-to-date address data possible. The install program creates the indexed sequential file `G1GTAX2` in the specified destination.

Landmark auxiliary file

This is a user-defined file that allows you to specify customized address information in your input records. The recommended primary use of this file to match to your company's non-address locations such as well heads, transmission towers or any other descriptive location. The latitude/longitude that is part of the input needed to build this file allows companies to automatically keep track of any jurisdictional changes that affect these unique locations. Matching to this file requires that the input record information match exactly to the Landmark file contents. This also applies to street records if you choose to enter them in the Landmark file. For more information, refer to the *Enterprise Tax Module Guide*.

State-supplied Florida format file

This is a state-supplied file in Florida-native format which is provided by individual state governments. The Enterprise Tax Module first attempts to match to the state database. If the Enterprise Tax Module cannot find a state match, it attempts a match to the GeoTAX Auxiliary file, if loaded, then to the master files.

State-supplied TS-158 format file

This is a state-supplied file in TS-158 (ANSI Transaction Set No. 158) format which is provided by individual state governments. The Enterprise Tax Module first attempts to match to the state database. If the Enterprise Tax Module cannot find a state match, it attempts a match to the GeoTAX Auxiliary file, if loaded, then to the master files.

Boundary file

Boundary files provide additional data about locations of special tax districts:

- Special Purpose Tax Districts (spd.txb)
- Insurance Premium Tax Districts (ipd.txb)
- Payroll Tax Districts (pay.txb)
- Personal Property Tax Districts (ptd.txb)
- User-defined Boundary file (usr.txb)

PB Software tax rate file

The Pitney Bowes Software Sales and Use Tax Rate file allows you to use the Enterprise Tax Module to provide sales and use tax rates for each of the assigned tax jurisdictions as well as the total rate for the assigned locations. The install program creates the indexed sequential file `GTTAXRT`.

Payroll tax correspondence file

Payroll tax cross-reference file allow you to use third-party software to determine the payroll tax rates. The cross-reference files combine the U.S. Government Federal Information Processing Standards (FIPS) codes with the proprietary geocodes used by tax software from third parties. The Payroll System Tax Code file is a customized file that you build to return the payroll tax codes used by your payroll system. The install program produces database files called `G1GTPTC` and `G1GTPTC.vix`.

Taxware® cross reference file

This sales tax cross-reference file enables you to use the Enterprise Tax Module to determine tax jurisdictions for a given address, then use Taxware® software to determine the sales tax rates for those jurisdictions.

Vertex® cross reference file

This sales tax cross-reference files allows you to use the Enterprise Tax module to determine tax jurisdictions for a given address, then use Vertex® software to determine the sales tax rates for those jurisdictions.

PB Software Vertex® cross reference file

This is a Vertex® cross-reference file supplied by Pitney Bowes. The install program produces a database file `GTMSTR2` in the specified destination.

Installing the Database Files

1. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Enterprise Tax Module** > **Database Load Utility**.
   The Database Load Utility window launches.
2. Select the database you want to install.

   Note: For Point Data, select the **GeoTAX master files** option.

3. Follow the instructions provided by the wizard.

   Note: When specifying the destination directory:

   - All Enterprise Tax Module databases and cross-reference files must be installed in the same directory.
   - You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

4. In Management Console, open the Enterprise Tax Module database resource tool and define a database resource that includes the database you just installed. Be sure to update Assign GeoTAX Info and Reverse GeoTAX Info Lookup to use the new database resource.

Installing Global Geocoding Module Databases

This module supports databases for both US and non-US countries.

Non-US Geocoding Databases

Non-US geocoding databases contain the data necessary to perform geocoding and reverse geocoding for locations outside the U.S.

Note: If you install multiple databases, install each database to a separate folder.

Note: To install the Global Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.

2. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Run `dbloader.exe`.
5. Follow the prompts during the rest of the installation process.

   Note: Do not install geocoding databases on a network drive. Doing so can cause performance problems.

6. After you install the database files, use either the Database Resource tool in the Management Console or the Global Geocode CLI database commands to define the database as a resource. For more information, see the *Administration Guide*.

U.S. Geocoding Databases

The U.S. geocoding databases contain the spatial data necessary to perform address standardization and geocoding. You must install at least one of these databases.

- **TomTom Geocoding**—This database provides street segment data by TomTom, a third-party provider of spatial data, and postal data from the U.S. Postal Service.
- **NAVTEQ Geocoding**—This database provides street segment data by NAVTEQ, a third-party provider of spatial data.

These databases use proprietary files called GSD files. For ZIP Code centroid matching, the file us.Z9 contains all the centroid info for all states and normally has a z9 extension.

Each geocoding database has an optional Statewide Intersections Index. The Statewide Intersection Index is designed to enable fast intersection identification on a statewide basis. For example, the Statewide Intersection Index will allow the database to search for "1st and Main St, CO" and return a list of possible matches in Colorado more quickly than searching the entire geocoding database for each instance of the intersection.

Note: To install the Global Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Run `DataSets.exe`. The installation wizard guides you through the rest of the process.

Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

5. After you install the database files, use either the Global Geocoding Database Resource tool in the Management Console or the Global Geocoding CLI database commands to define the database as a resource. For more information, see the *Administration Guide*.

Points Databases (U.S. Only)

Points databases contain data for locating the center of a parcel. These databases provides enhanced geocoding accuracy for internet mapping, property and casualty insurance, telecommunications, utilities, and others.

Note: To use a points database, you must also install a streets database. See **U.S. Geocoding Databases** on page 76 for the list of available US streets databases.

- **Master Location Data** —This database provides the best available address point location for every mailable and deliverable address in the United States.
- **Centrus Points**—This database contains the data necessary to locate the center of a parcel or building. It does not contain assessor's parcel number (APN) or elevation data.
- **Centrus Elevation**—This database contains the same data as Centrus Points, plus elevation data.
- **Centrus Enhanced Points**—This database contains the same data as Centrus Points, plus APN data.
- **Centrus Premium Points**—This database contains the same data as Centrus Points, plus both APN and elevation data.
- **TomTom Points**—The data in this database is provided by TomTom, a third-party provider of spatial data.
- **NAVTEQ Points**—This database is provided by NAVTEQ, a third-party data provider. It contains data used to locate addresses at the center of the actual building footprint or parcel.

Note: To install the Global Geocoding Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the Pitney Bowes web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

3. Run `Setup.exe`. The installation wizard guides you through the rest of the process.

Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

4. After you install the database files, use either the Global Geocoding Database Resource tool in the Management Console or the Global Geocoding CLI database commands to define the database as a resource. For more information, see the *Administration Guide*.

Installing the Global Sentry Module Database

The following databases are required to run Global Sentry in real-time mode:

- globalsentrydb.script
- globalsentrydb.properties

The following databases are required to run Global Sentry in batch mode:

- globalsentrydb.script
- globalsentrydb.properties
- globalsentrydb.addresses.csv
- globalsentrydb.fullnames.csv
- globalsentrydb.ids.csv
- globalsentrydb.names.csv

In addition, you must install the Data Normalization Module databases to use Global Sentry. For instructions, see **Installing Data Normalization Module Databases** on page 66.

1. Open the Windows services control panel and stop the service Global Sentry Database Server.
2. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
3. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the Pitney Bowes web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

4. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Global Sentry Module** > **Database Load Utility**.
5. Follow the prompts during the rest of the installation process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

6. Start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

7. Open the Windows services control panel and start the service Global Sentry Database Server.
8. After installing the Global Sentry Module database, you must configure a JDBC connection in the Spectrum™ Technology Platform Management Console. Go to **Start** > **Settings** > **Control Panel** > **Administrative Tools** > **Services** to verify that the Global Sentry Database is running.
9. Open Management Console by clicking **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Client Tools** > **Management Console**.
10. Under Resources, select **JDBC Drivers**.
11. Click **Add**.
12. Type the JDBC properties in the applicable text box:
    - JDBC driver configuration name: HSQLDB
    - JDBC driver class name: org.hsqldb.jdbcDriver
    - Connection string template: jdbc:hsqldb:hsql://${host}:${port}/${instance}
13. Add the following driver file:

    file:<SpectrumPlatformLocation>/GlobalSentryDatabase/lib/hsqldb.jar
14. Add the following Connection properties:
    a) Click **Add**. In the JDBC Connection property dialog box, type "`Password`" in both the **Label** and the **Property Token** fields and click **OK**.
    b) Click **Add**. In the JDBC Connection property dialog box type "`User`" in the **Label** and the **Property Token** fields and click **OK**.
15. Click **OK**.
16. Under Resources, click **Connections**.
17. Click **Add**.
18. Define the following connection properties:
    - Connection name: Global Sentry
    - Database driver: select the HSQLDB JDBC driver that you created in the previous steps.
19. Enter the following values in the **Connection Properties** dialog box:
    - user: sa
    - password: <there is no password>
    - host: localhost or <your server name>
    - port: 9001
    - instance: globalsentrydb
20. Click **Test** to verify the connection works.
21. Click **OK**, then click **OK** again.

Installing Location Intelligence Module Databases

1. Place the data on the file system, or install the data into a database.
2. Use Spatial Manager to define Location Intelligence Module database resources (named connections and tables). For more information, see the "Configuring Database Resources" chapter of the *Spectrum™ Technology Platform Administration Guide* on **support.pb.com**.

Installing Universal Addressing Module Databases

This procedure describes how to install databases used by Get Candidate Addresses, Get City State Province, Get Postal Codes, Validate Address, and Validate Address AUS. For instructions on installing databases used by Validate Address Global, see **Installing Validate Address Global Databases** on page 81. For instructions on installing databases used by Validate Address Loqate, see **Installing Validate Address Loqate Databases** on page 81.

Note: To install the Universal Addressing Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
3. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
4. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Universal Addressing Module** > **Database Load Utility**.
5. Follow the prompts during the rest of the installation process.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

6. If you choose to install Residential Delivery Indicator, an optional database that you license directly from the U.S. Postal Service, you are prompted for the nine-digit RDI table and the eleven-digit RDI table. These are called rts.hs9 and rts.hs11, respectively, and they are provided by the U.S. Postal Service.

Installing Validate Address Global Databases

This procedure describes how to install the databases used by the Validate Address Global stage. For instructions on installing databases used by other Universal Addressing Module stages, see the *Spectrum™ Technology Platform Administration Guide*.

1. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
2. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.
3. Unzip the database file to the location you want. The database zip files are:
   - VAGlobal-EMEA.zip—Contains the data for Europe, Middle East, and Africa.
   - VAGlobal-APAC.zip—Contains the data for Asia-Pacific.
   - VAGlobal-Americas.zip—Contains the data for the Americas.

   Note: You may install databases on a network share, but performance will be affected since you will be accessing them on a network rather than accessing them locally.
4. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the system tray and select **Stop Server**.
5. Install the unlock code:
   a) Open the following file in a text editor:
   ```
   <SpectrumLocation>\server\modules\addressglobal\conf\unlockcodes.txt
   ```
   b) Enter your unlock codes, one per line.
   c) Save and close the file.
6. Start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the system tray and select **Start Server**.

Installing Validate Address Loqate Databases

This procedure describes how to install the databases used by the Validate Address Loqate stage. For instructions on installing databases used by other Universal Addressing Module stages, see the *Spectrum™ Technology Platform Administration Guide*.

1. Download the database from the Pitney Bowes Software eStore using the link provided in the release announcement or welcome email. You can also download the database from the technical support web site, **www.g1.com/support**.
2. The database is downloaded as a zip file. Unzip the database before proceeding with the installation.

3. Unzip the database file(s) to the location you want. If you are installing data from multiple zip files or discs, be sure to unzip them all to the same location. The database zip files are:
   - LQ0—Contains general database setup files.

     Note: Regardless of which set of data you use, the files in LQ0 must be installed.

   - LQ1—Contains the data for Middle East, Africa, and Asia-Pacific.
   - LQ2—Contains the data for the Caribbean, Central America, and parts of South America.
   - LQ3—Contains the data for Eastern and parts of Western Europe.
   - LQ4—Contains the data for parts of North America.
   - LQ5—Contains the data for parts of Western Europe.
   - LQ6—Contains the data for parts of North America.

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

4. From the location where you extracted the database files, right-click **install.bat** and select **Run as administrator**. This will launch the Loqate Installer.

   Note: Except general database setup files (LQ0), all the other data files are placed inside the DATA folder.

5. Follow the prompts during the rest of the installation process.
6. From the location where you installed the Loqate database, click **InstallData.bat**. This will launch the Installation manager that installs the data files.

Installing Universal Name Module Databases

The Universal Name Module provides a load utility to install databases. The database files that you load depend on the databases you have licensed.

Note: To install the Universal Name Module databases on Windows Server 2008 you need administrator privileges.

1. Make sure no applications are running.
2. Stop Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Stop Server**.
3. Insert the database DVD or download the database from the technical support web site, **www.g1.com/support**.

   Note: If you download the database from the web site, it will be downloaded as a zip file. Unzip the database before proceeding with the installation.

4. Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Universal Name and Advanced Matching Modules** > **Database Load Utility**.
5. Follow the prompts to complete the installation process. The database files are you can install are:
   - Arabic Plus Pack: `g1-cdq-cjki-arabic-<date>.jar`
   - Asian Plus Pack - Chinese: `g1-cdq-cjki-chinese-<date>.jar`
   - Asian Plus Pack - Japanese: `g1-cdq-cjki-japanese-<date>.jar`
   - Asian Plus Pack - Korean: `g1-cdq-cjki-korean-<date>.jar`
   - Core Names Database: `g1-cdq-nomino-base-<date>.jar`

   Note: You may install databases on a mapped drive, but performance will be affected since you will be accessing them on a network rather than accessing them locally.

6. To load the complete Core Names Database, you must also install Open Parser and Table Lookup data from the Data Normalization Module Database Load Utility.
   a) Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Data Normalization Module** > **Database Load Utility** > **Open Parser**.
   b) Follow the prompts to complete the installation process. The database file you need to install is:
      - cdq-OpenParser-EnhancedNames.tba

   c) Select **Start** > **Programs** > **Pitney Bowes** > **Spectrum™ Technology Platform** > **Modules** > **Data Normalization Module** > **Database Load Utility** > **Table Lookup**.
   d) Follow the prompts to complete the installation process. The database file you need to install is:
      - cdq-TableLookup-EnhancedGenderCodes.tba

7. Open the file `<SpectrumDirectory>\server\bin\wrapper\wrapper.conf` in a text editor.
8. Increase the Java settings for initial heap size (`wrapper.java.initmemory`) and maximum heap size (`wrapper.java.maxmemory`) to reflect the total amount of memory required for the Arabic Plus Pack and Asian Plus Pack.
   - Arabic Plus Pack: 5.5 GB
   - Asian Plus Pack - Chinese: 32 MB
   - Asian Plus Pack - Japanese: 1.6 GB
   - Asian Plus Pack - Korean: 8 MB
   - Core Names: 1.1 GB

9. Save and close `wrapper.conf`.
10. Start Spectrum™ Technology Platform. To do this, right-click the Spectrum™ Technology Platform icon in the Windows task bar and select **Start Server**.

Using the Database Silent Installer

The silent install process allows you to pre-configure the database installation process so that it runs without user intervention. Instead of responding to prompts from the installation process for information such as the installation location, you specify these responses in a properties file that the installer uses instead of user prompts.

Using the Loqate Database Silent Installer

1. In the Spectrum™ Technology Platform server installer (not the database installer), browse to the `SilentInstaller` folder.
2. Using a text editor, open the `uam_loqate.installer.properties` file.
3. Edit the properties file as necessary to specify the installation settings you want to use. See the comments in the properties file for additional information.
4. To run the installer in silent mode, place the properties file in any directory except the location where you are going to install the Loqate data and give the absolute path to the property in the command prompt, as follows:

   ```
   install.bat %PathOfPropertyFile%\uam_loqate.installer.properties
   ```

6 - Client Tools

In this section

Installing the Client Tools

The Spectrum™ Technology Platform client tools are Windows applications that you use to administer your server and design and run dataflows and process flows. You must install your Spectrum™ Technology Platform server before installing the client tools.

Before installing, be sure to read the release notes. The release notes contains important compatibility information as well as release-specific installation notes.

This procedure describes how to install the following client tools:

- **Enterprise Designer**— Use Enterprise Designer to create, modify, and run dataflows.
- **Management Console**—Use the Management Console to perform administrative tasks such as setting service defaults, scheduling jobs, managing users and security, and so on.
- **Interactive Driver**—Use Interactive Driver to test different processing settings. Interactive Driver allows you to run a small number of records through a process to preview the result.
- **Job Executor**—Job Executor is a command line tool that allows you to run a job from a command line or script. The job must have been previously created and saved on Spectrum™ Technology Platform using Enterprise Designer.
- **Process Flow Executor**—Process Flow Executor is a command line tool that allows the execution of a process flow from a command line or script. The process flow must have been previously created and saved on Spectrum™ Technology Platform using Enterprise Designer.
- **Administration Utility**—The Administration Utility provides command line access to several administrative functions. You can use it in a script, allowing you to automate certain administrative tasks. You can also use it interactively.

To install the client tools:

1. Open a web browser and go to the Spectrum™ Technology Platform Welcome Page at:

   http://<servername>:<port>

   For example, if you installed Spectrum™ Technology Platform on a computer named "myspectrumplatform" and it is using the default HTTP port 8080, you would go to:

   http://myspectrumplatform:8080

2. Click **Platform Client Tools**.
3. Download the client tool you want to install.

Installing Clients with a Silent Installer

The silent install process for the clients installs Management Console, Enterprise Designer, and Interactive Driver without user intervention. Instead of prompting the user for information such as the installation location, the installer uses pre-configured selections that you specify.

To use the silent installer you must first create an installer properties file by running the client installer and responding to the prompts. The resulting properties file can then be used to silently install the client on other computers.

1. Open a web browser and go to the Spectrum™ Technology Platform Welcome Page at:

   http://<servername>:<port>

   For example, if you installed Spectrum™ Technology Platform on a computer named "myspectrumplatform" and it is using the default HTTP port 8080, you would go to:

   http://myspectrumplatform:8080

2. Click **Platform Client Tools**.
3. Click **Download Installer**.
4. Choose to save the file to a location on your computer.

   Note: Save the installer on a Windows computer that does not already have the client tools installed. You will need to run the installer in order to specify the options you want to use in the silent install process.

5. Open a Windows command prompt.
6. In the command prompt, change directories to the directory where you saved the installer.
7. Execute the following command:

   ```
   Setup.exe -r installer.properties
   ```

8. Respond to the installer prompts by selecting the options that you want to use when the installer runs silently.

   For example, if you want the silent installer to install the client tools to `C:\SpectrumClientTools`, specify `C:\SpectrumClientTools` when prompted for an installation folder.

   When the installer finishes running, a properties file named `installer.properties` is created in the same folder as the `Setup.exe` file.

9. Open the `installer.properties` file in a text editor.

10. Add the following on line 8 of the file:

```
INSTALLER_UI=silent
```

Note: This is case sensitive to be sure to enter it exactly as shown above.

11. Save and close the properties file.

You have now configured a properties file that will enable you to install the client tools silently.

12. To install the client tools silently, place `installer.properties` and `Setup.exe` in the same folder on the computer where you want to install the client tools and run `Setup.exe`. When the installer executes it will detect `installer.properties` and automatically run in silent mode.

Alternatively, you can place `installer.properties` in different directory and give the absolute path to the property in the command prompt using the `-f` argument, as follows:

```
Setup.exe -f PathOfPropertyFile\installer.properties
```

Removing the Client Tools

1. Back up any files you may need in the future.
2. Use the Windows Add/Remove Programs control panel to uninstall the Spectrum™ Technology Platform client tools or Client API.

7 - Client API

In this section

Installing the Client API

The Client API is used to integrate Spectrum™ Technology Platform functionality into your applications. If you will be creating your own program to call Spectrum™ Technology Platform, you need to install the Spectrum™ Technology Platform Client API on the system where you will be developing your application. The Client API allows access to Spectrum™ Technology Platform through several programming languages, including Java, C++, and web services.

1. Open the folder where you have downloaded the Spectrum™ Technology Platform Client API installer.
2. Double-click the `sdkinst.exe` file.
3. The installer guides you through the installation process.

Removing the Client API

Use the Windows Add/Remove Programs control panel to uninstall the Spectrum™ Technology Platform Client API.

8 - SAP, Siebel, and Microsoft Dynamics

In this section

Configuring SAP

Integrating with SAP Web Dynpro

Before continuing verify the following:

- SAP Application, SAP NetWeaver 7.01 with Patch 3 and Spectrum™ Technology Platform is available
- PBS SCA files have been deployed.
- System Landscape Directory (SLD) has been properly configured

To integrate Spectrum™ Technology Platform with SAP Web Dynpro, you need to install supporting databases and dataflows on the Spectrum™ Technology Platform server, and then configure your SAP system to communicate with Spectrum™ Technology Platform. Once you do this, users of SAP Web Dynpro will have access to address validation and geocoding functionality from within SAP Web Dynpro.

1. On the Spectrum™ Technology Platform server, install the databases required to perform address validation, geocoding, and tax jurisdiction assignment and define database resources for each database.

   You must give the database resources the following names.

Database	Required Name for Database Resource
Enterprise Geocoding Module - Canada Database	IGEO_CAN
Enterprise Geocoding Module - U.S. Database	EGM_US
Enterprise Tax Module Database	ETM
Universal Addressing Module - Canada Database	Canada
Universal Addressing Module - Loqate Database	Loqate
Universal Addressing Module - U.S. Database	UAM_US

2. When you install the SAP Module, several dataflow files are automatically installed. Other dataflow files must be manually copied into Spectrum™ Technology Platform.

a) If you are adding the Address Now Module, Enterprise Tax Module, or Universal Addressing Module to an existing installation, open Spectrum™ Technology Platform Enterprise Designer, select **View** > **Server Explorer**, and delete this dataflow: SAPValidateAddressWithCandidates.
b) Go to: *SpectrumFolder*\server\modules\dataflows\sap.
c) Review the following table then copy the applicable dataflow files to:

SpectrumFolder\server\app\import

If you are installing this set of modules	Copy these dataflow files to the import folder
Address Now Module	SAPValidateAddressWithCandidates.ANOW.df
Address Now Module Universal Addressing Module	SAPGenerateCASSReport.df SAPValidateAddressWithCandidates.ANOW.df SAPValidateAddressWithCandidates.UAM.df
Address Now Module Enterprise Geocoding Module	SAPValidateAddressWithCandidates.ANOW_EGM.df
Address Now Module Enterprise Geocoding Module Universal Addressing Module	SAPValidateAddressWithCandidates.UAM_ANOW_EGM.df
Address Now Module Enterprise Tax Module Universal Addressing Module	SAPAssignGeoTAXInfo.df SAPBatchAssignGeoTAXInfo.df SAPGenerateCASSReport.df SAPValidateAddressAndAssignGeoTAXInfo.df SAPValidateAddressWithCandidates.UAM_ANOW_ETM.df
Address Now Module Enterprise Geocoding Module Enterprise Tax Module Universal Addressing Module	SAPValidateAddressWithCandidates.UAM_ANOW_ETM_EGM.df
Universal Addressing Module without Loqate	SAPGenerateCASSReport.df SAPValidateAddressWithCandidate_UAM.df

If you are installing this set of modules	Copy these dataflow files to the import folder
Universal Addressing Module without Loqate Enterprise Tax Module	SAPAssignGeoTAXInfo.df SAPBatchAssignGeoTAXInfo.df SAPGenerateCASSReport.df SAPValidateAddressAndAssignGeoTAXInfo.df SAPValidateAddressWithCandidates.UAM_ETM.df
Universal Addressing Module with Loqate	ValidateAddressWithCandidates_UAM_Loqate.df
Universal Addressing Module with Loqate Enterprise Geocoding Module	ValidateAddressWithCandidates_UAM_Loqate_EGM.df
Universal Addressing Module with Loqate Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_ETM.df
Universal Addressing Module with Loqate Enterprise Geocoding Module Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_EGM_ETM.df
Universal Addressing Module, Loqate only	ValidateAddressWithCandidates_Loqate.df
Universal Addressing Module, Loqate only Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates_EGM.df
Enterprise Tax Module	ValidateAssignGeoTAXInfo.df ValidateAddressWithCandidates_ETM.df SAPBatchAssignGeoTAXInfo.df

Note: If errors occur in Management Console or Enterprise Designer, delete the contents of `<WindowsTemporaryDirectory>\g1Assemblies`, where <WindowsTemporaryDirectory> is one of the following: %TMP%, %TEMP%, %USERPROFILE%, or the Windows directory. Typically, C:\Documents and Settings\<USERNAME>\Local Settings\Temp\g1Assemblies. After you delete the contents of this folder log in again.

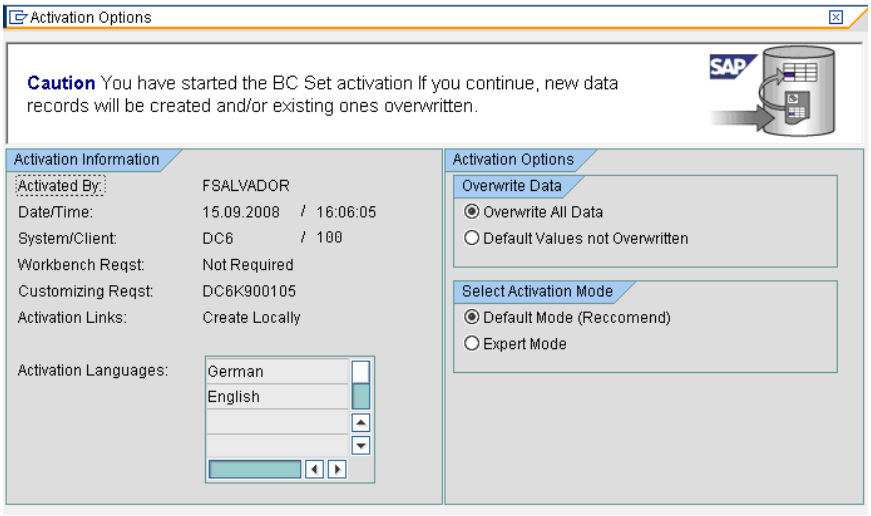
3. Import .SAR files.

   A .SAR file is a file that contains a third-party add-on package for SAP, such as the Spectrum™ Technology Platform SAP Module. The .SAR file is located on the Spectrum™ Technology Platform installer in the `SAP Objects` folder. For information on importing .SAR files into SAP applications, see your SAP Basis administrator.

4. Activate the BC sets.
   a) Log-on to the client where the settings for the Spectrum™ Technology Platform SAP Module is to be configured.
   b) Enter the transaction code `SCPR20`.

      This activates Business Configuration (BC) sets. This will place the default entries on the Spectrum™ Technology Platform customizing tables.

   c) In the **BC Set** field, enter `/HSGRP1/BCSET_BC_BAS_PV`.
   d) Activate it with the options **Overwrite All Data** and **Default Mode**.



   e) Select and activate the remaining BC sets with the activation options set to **Overwrite All Data** and **Expert Mode**.

      Note: Active these BC sets in the order listed.

      /HSGRP1/BCSET_BC_BAS_GTX

/HSGRP1/MERGE_SETTINGS
/HSGRP1/BCSET_BUPA_CUSTOM
/HSGRP1/BCSET_BC_BAS_DES
/HSGRP1/BCSET_VENDOR

5. Set up the RFC destination.
   a) Enter transaction code `SM59`.
   b) Click **Create**.
   c) In the **RFC Destination** field, enter a name of your choice.
   d) In the **Connection Type** field, enter `G` (HTTP connection to external server).
   e) In the **Description 1** field, enter a meaningful description.
   f) Press the Enter key.
   g) Click the **Technical Settings** tab.
   h) In the **Target Host** field, enter the computer name or IP Address of the Spectrum™ Technology Platform server.
   i) In the **Service No** field enter 8080.
   j) Click the **Special Options** tab.
   k) Select **No Timeout**.
   l) Select **HTTP 1.1**.
   m) After you save, click **Connection Test**.

      Note: If there is a pop-up window, check the **Accept All Further Cookies** box and select YES.

   n) When the test is successful, go to the **Response Body** tab to view the Spectrum™ Technology Platform page.
6. Set up the Spectrum™ Technology Platform Logging Object
   a) Enter transaction code `SLG0`.
   b) Click **New Entries**.
   c) In the **Object** column, enter `/HSGRP1/DQC`.
   d) In the **Object text** column, enter `DQC Logging`.
   e) Save the change.
7. Set up JCO destinations:
   a) Go to the NetWeaver Portal Content Administrator URL and log in as J2EE_ADMIN or an account that has an Administrator Privilege.
   b) Expand **Deployed Content**, then **pb.com**, then **pb.com/dqc**. On the **Details** window, select the **JCO Connections** tab.
   c) Select WD_DQC_MODELDATA_DEST and click **Create**. Complete all the required information to be able to run and test the connection.
   d) Repeat the steps and complete the required information for WD_DQC_MODELDATA_DEST.

Note: WD_DQC_MODELDATA_DEST is the Application Data and WD_DQC_RFC_METADATA_DEST is the Dictionary Metadata.

8. Configure the BuildGlobalAddress web service in the SAP Visual Admin:
   a) Go to <drive>:/usr./sap/<system id>/DVEBMGS01/ j2ee/admin and click go.bat and enter J2EE_ADMIN password.
   b) Go to **Cluster** > **Server** > **Services** > **JCo RFC Provider** and select the **Bundles** tab.
   c) Enter all of the information needed by the application and click **Set** to save the changes.
   d) Go to **Cluster** > **Server** > **Services** > **Web Services Security**.
   e) Create a proxy in **Web Services Client** > **sap.com** > **Dynamic WSProxies** with the name `PBBIWebServiceConnectorBGA`.
   f) For the URL, enter:

      ```
      http://<spectrumservername>:<port>/soap/BuildGlobalAddress?wsdl
      ```

      For example,

      ```
      http://MySpectrumServer:8080/soap/BuildGlobalAddress?wsdl
      ```

   g) Restart the application server.
9. If you will be using French address validation, you must install the Data Normalization Module table `cdq-TableLookup-SAP.tba` on the Spectrum™ Technology Platform server. For more information, see the *Spectrum™ Technology Platform Installation Guide*.

Integrating with SAP Interaction Center WebClient

Before continuing verify the following:

- The Interaction Center WebClient user has the CRM_UI_PROFILE parameter ID with IC_AGENT as the Parameter Value
- The duplicate option is activated in SPRO under ICWC (**SPRO** > **CRM** > **ICWC** > **Define Account Identification Profiles**)

To integrate Spectrum™ Technology Platform with SAP Interaction Center WebClient, you need to install supporting databases and dataflows on the Spectrum™ Technology Platform server, and then configure your SAP system to communicate with Spectrum™ Technology Platform. Once you do this, users of SAP Interaction Center WebClient will have access to address validation and geocoding functionality from within SAP Interaction Center WebClient.

1. On the Spectrum™ Technology Platform server, install the databases required to perform address validation, geocoding, and tax jurisdiction assignment and define database resources for each database.

   You must give the database resources the following names.

Database	Required Name for Database Resource
Enterprise Geocoding Module - Canada Database	IGEO_CAN
Enterprise Geocoding Module - U.S. Database	EGM_US
Enterprise Tax Module Database	ETM
Universal Addressing Module - Canada Database	Canada
Universal Addressing Module - Loqate Database	Loqate
Universal Addressing Module - U.S. Database	UAM_US

2. When you install the SAP Module, several dataflow files are automatically installed. Other dataflow files must be manually copied into Spectrum™ Technology Platform.
   a) If you are adding the Address Now Module, Enterprise Tax Module, or Universal Addressing Module to an existing installation, open Spectrum™ Technology Platform Enterprise Designer, select **View** > **Server Explorer**, and delete this dataflow: SAPValidateAddressWithCandidates.
   b) Go to: *SpectrumFolder*\server\modules\dataflows\sap.
   c) Review the following table then copy the applicable dataflow files to:

   SpectrumFolder\server\app\import

If you are installing this set of modules	Copy these dataflow files to the import folder
Address Now Module	SAPValidateAddressWithCandidates.ANOW.df
Address Now Module Universal Addressing Module	SAPGenerateCASSReport.df SAPValidateAddressWithCandidates.ANOW.df SAPValidateAddressWithCandidates.UAM.df
Address Now Module Enterprise Geocoding Module	SAPValidateAddressWithCandidates.ANOW_EGM.df
Address Now Module Enterprise Geocoding Module Universal Addressing Module	SAPValidateAddressWithCandidates.UAM_ANOW_EGM.df

If you are installing this set of modules	Copy these dataflow files to the import folder
Address Now Module Enterprise Tax Module Universal Addressing Module	SAPAssignGeoTAXInfo.df SAPBatchAssignGeoTAXInfo.df SAPGenerateCASSReport.df SAPValidateAddressAndAssignGeoTAXInfo.df SAPValidateAddressWithCandidates.UAM_ANOW_ETM.df
Address Now Module Enterprise Geocoding Module Enterprise Tax Module Universal Addressing Module	SAPValidateAddressWithCandidates.UAM_ANOW_ETM_EGM.df
Universal Addressing Module without Loqate	SAPGenerateCASSReport.df SAPValidateAddressWithCandidate_UAM.df
Universal Addressing Module without Loqate Enterprise Tax Module	SAPAssignGeoTAXInfo.df SAPBatchAssignGeoTAXInfo.df SAPGenerateCASSReport.df SAPValidateAddressAndAssignGeoTAXInfo.df SAPValidateAddressWithCandidates.UAM_ETM.df
Universal Addressing Module with Loqate	ValidateAddressWithCandidates_UAM_Loqate.df
Universal Addressing Module with Loqate Enterprise Geocoding Module	ValidateAddressWithCandidates_UAM_Loqate_EGM.df
Universal Addressing Module with Loqate Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_ETM.df
Universal Addressing Module with Loqate Enterprise Geocoding Module Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_EGM_ETM.df

If you are installing this set of modules	Copy these dataflow files to the import folder
Universal Addressing Module, Loqate only	ValidateAddressWithCandidates_Loqate.df
Universal Addressing Module, Loqate only Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates_EGM.df
Enterprise Tax Module	ValidateAssignGeoTAXInfo.df ValidateAddressWithCandidates_ETM.df SAPBatchAssignGeoTAXInfo.df

Note: If errors occur in Management Console or Enterprise Designer, delete the contents of `<WindowsTemporaryDirectory>\g1Assemblies`, where <WindowsTemporaryDirectory> is one of the following: %TMP%, %TEMP%, %USERPROFILE%, or the Windows directory. Typically, C:\Documents and Settings\<USERNAME>\Local Settings\Temp\g1Assemblies. After you delete the contents of this folder log in again.

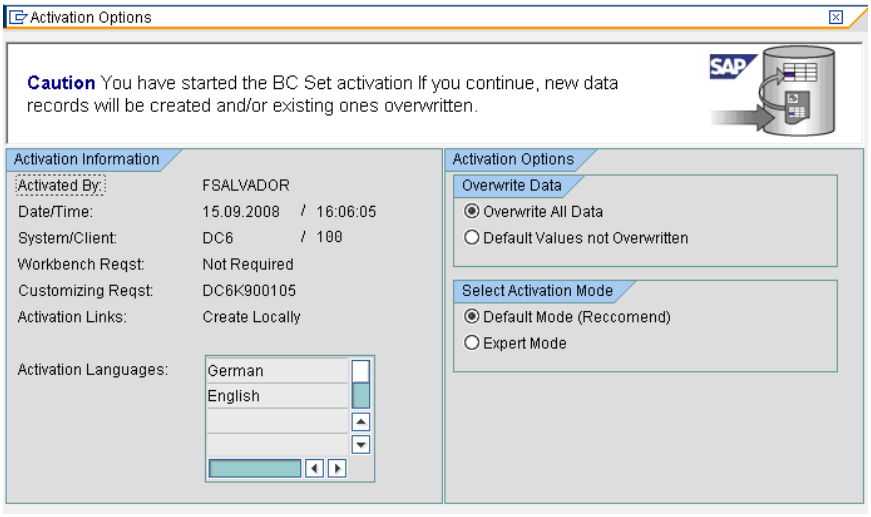
3. Import .SAR files.

   A .SAR file is a file that contains a third-party add-on package for SAP, such as the Spectrum™ Technology Platform SAP Module. The .SAR file is located on the Spectrum™ Technology Platform installer in the `SAP Objects` folder. For information on importing .SAR files into SAP applications, see your SAP Basis administrator.

4. Activate the BC sets.
   a) Log-on to the client where the settings for the Spectrum™ Technology Platform SAP Module is to be configured.
   b) Enter the transaction code `SCPR20`.

      This activates Business Configuration (BC) sets. This will place the default entries on the Spectrum™ Technology Platform customizing tables.

   c) In the **BC Set** field, enter `/HSGRP1/BCSET_BC_BAS_PV`.
   d) Activate it with the options **Overwrite All Data** and **Default Mode**.



e) Select and activate the remaining BC sets with the activation options set to **Overwrite All Data** and **Expert Mode**.

Note: Active these BC sets in the order listed.

/HSGRP1/BCSET_BC_BAS_GTX
/HSGRP1/MERGE_SETTINGS
/HSGRP1/BCSET_BUPA_CUSTOM
/HSGRP1/BCSET_BC_BAS_DES
/HSGRP1/BCSET_VENDOR

5. Activate the following BC set with activation options set to **Overwrite All Data** and **Expert Mode**.

   /HSGRP1/BCSET_DQC_CUSTOM

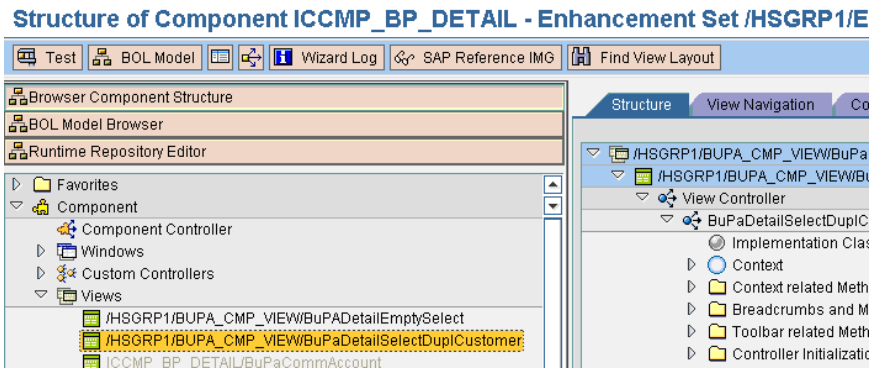
6. Activate the BC set for IC WebClient. The BC set is `/HSGRP1/ICWC_SETTINGS`. Specify the activation options **Overwrite Data** and **Expert Mode**.
7. Set up the RFC destination.
   a) Enter transaction code `SM59`.
   b) Click **Create**.
   c) In the **RFC Destination** field, enter a name of your choice.
   d) In the **Connection Type** field, enter `G` (HTTP connection to external server).
   e) In the **Description 1** field, enter a meaningful description.
   f) Press the Enter key.
   g) Click the **Technical Settings** tab.
   h) In the **Target Host** field, enter the computer name or IP Address of the Spectrum™ Technology Platform server.
   i) In the **Service No** field enter 8080.
   j) Click the **Special Options** tab.

k) Select **No Timeout**.
l) Select **HTTP 1.1**.
m) After you save, click **Connection Test**.

Note: If there is a pop-up window, check the **Accept All Further Cookies** box and select YES.

n) When the test is successful, go to the **Response Body** tab to view the Spectrum™ Technology Platform page.

8. Set up the Spectrum™ Technology Platform Logging Object
   a) Enter transaction code `SLG0`.
   b) Click **New Entries**.
   c) In the **Object** column, enter `/HSGRP1/DQC`.
   d) In the **Object text** column, enter `DQC Logging`.
   e) Save the change.
9. Enable the Pitney Bowes IC WebClient Enhancement Set.
   a) Enter the transaction code `SM30`.
   b) In the **Table/View** field, enter `BSPWDV_EHSET_ASG`.
   c) Click **Maintain**.
   d) Click **New Entries**
   e) In the **Client** field, enter the client number where the enhancement set will take effect.
   f) In the **Enhancement Set** field, enter `/HSGRP1/ENHANCEMENT_SET`.
10. Add the IC WebClient Configurations.
   a) Enter the transaction code `BSP_WD_CMPWB`.
   b) In the **Component** field, enter `ICCMP_DETAIL`.
   c) Click the check icon.
   d) In the **Enhancement Set** field, enter `/HSGRP1/ENHANCEMENT_SET`.
   e) Click **Display**.
   f) Expand the **Views** folder and select **/HSGRP1/BUPA_CMP_VIEW/BuPaDetailSelectDuplCustomer**.



g) Click the **Configuration** tab.
h) On the edit screen select Full Name, Telephone, Street, City and Country context then click the right arrow button and arrange them in this order:

Full Name
Telephone
Street
City
Country

i) Save the configuration.

11. If you will be using French address validation, you must install the Data Normalization Module table `cdq-TableLookup-SAP.tba` on the Spectrum™ Technology Platform server. For more information, see the *Spectrum™ Technology Platform Installation Guide*.

Installing Support Files for Read from SAP

The Read from SAP stage reads data from an SAP database as input to a Spectrum™ Technology Platform dataflow. In order for the Read from SAP stage to access data in your SAP system you must make the following changes on your SAP system:

- Install the SAP Java Connector
- Install the SAP Transport Requests that support Read from SAP

Note: You will not be able to use the Read form SAP stage until you perform these steps.

1. Install the SAP Java Connector (SAP JCo).
   a) Go to **service.sap.com/connectors** and log in with your SAP Marketplace credentials.
   b) Go to **SAP JCo Connector** > **Tools & Services**.
   c) Download SAP JCo to your system.
   d) Unzip the SAP JCo zip file to a temporary location.
   e) Stop the Spectrum™ Technology Platform server.
   f) Copy the .jar file to the following folder on the Spectrum™ Technology Platform server:
   `SpectrumFolder\server\app\lib`
   g) Copy the .dll file to the following folder on the Spectrum™ Technology Platform server:
   `SpectrumFolder\server\bin\wrapper`
   h) Start the Spectrum™ Technology Platform server.
2. Install the SAP Transport Requests that support Read from SAP.

   Note: The following steps should be performed by your SAP Basis administrator.

a) In the Spectrum™ Technology Platform installer, go to the folder `AP Data Integration Objects\Enterprise System Connectors`.
b) Deploy the SAP Transport Requests contained in this folder. See your SAP documentation for instructions on deploying SAP Transport Requests.

Configuring Siebel

Integrating with Siebel Data Quality

To integrate Spectrum™ Technology Platform with Siebel Data Quality, you need to install supporting databases and dataflows on the Spectrum™ Technology Platform server, and then configure your Siebel system to communicate with Spectrum™ Technology Platform. Once you do this, users of Siebel Data Quality will have access to address validation and geocoding functionality from within Siebel Data Quality.

1. On the Spectrum™ Technology Platform server, install the databases required to perform address validation, geocoding, and tax jurisdiction assignment and define database resources for each database.

   You must give the database resources the following names.

Database	Required Name for Database Resource
Enterprise Geocoding Module - Canada Database	IGEO_CAN
Enterprise Geocoding Module - U.S. Database	EGM_US
Enterprise Tax Module Database	ETM
Universal Addressing Module - Canada Database	Canada
Universal Addressing Module - Loqate Database	Loqate
Universal Addressing Module - U.S. Database	UAM_US

2. When you install the Siebel module, several dataflow files are automatically installed. Other dataflow files must be manually copied into the Spectrum™ Technology Platform server.

a) Browse to one of the following folders on your Spectrum™ Technology Platform server:

- For Siebel Business Applications, go to:
  `<SpectrumPlatformLocation>\server\modules\dataflows\siebel\sea`
- For Siebel Industry Applications, go to:
  `<SpectrumPlatformLocation>\server\modules\dataflows\siebel\sia`

b) Review the following table then copy the applicable dataflow files to:

SpectrumLocation`\server\app\import`

Table 1: Dataflow Files To Import

If you are installing this set of modules	Copy these dataflow files to the import folder
Address Now Module only	SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.ADN.df
Address Now Module Universal Addressing Module	SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.UAM_ADN.df
Address Now Module Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.EGM_ADN.df
Address Now Module Enterprise Geocoding Module Universal Addressing Module	GeocodeUSAddressWithCandidates.df SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.UAM_EGM_ADN.df
Universal Addressing Module only	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates.UAM.df
Universal Addressing Module Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates.UAM_EGM.df
Universal Addressing Module Enterprise Tax Module	GeocodeUSAddressWithCandidates.df ValidateAssignGeoTAXInfo.df ValidateAddressWithCandidates_UAM_ETM.df

If you are installing this set of modules	Copy these dataflow files to the import folder
Universal Address Module with Loqate	ValidateAddressWithCandidates_UAM_Loqate.df
Universal Addressing Module with Loqate Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Universal Addressing Module, Loqate only Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Universal Addressing Module with Loqate Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_ETM.df
Universal Addressing Module with Loqate Enterprise Geocoding Module Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_EGM_ETM.df
Universal Addressing Module, Loqate only	ValidateAddressWithCandidates_Loqate.df
Enterprise Geocoding Module	ValidateAddressWithCandidates.EGM.df
Enterprise Tax Module	ValidateAssignGeoTAXInfo.df

Note: If errors occur in Management Console or Enterprise Designer, delete the client cache. To delete the client cache, go to **Tools** > **Options** in Management Console or Enterprise Designer, click the **Advanced** tab, then click **Clear Cache**. After you clear the cache, restart Management Console or Enterprise Designer.

3. Optional: If you are using the Enterprise Geocoding Module, configure the geocoding dataflow to use the geocoding database resource name you have configured on your system:

a) In Enterprise Designer, open the dataflow GeocodeUSAddressWithCandidates.
b) In each dataflow, open the Geocode US Address stage.
c) In the **Database** field, select the name of the geocoding database as defined in the Management Console. The default name is KGDDatasource but if the geocoding database has a different name on your system, select the appropriate name.

Note: For more information about database resources, see the *Spectrum™ Technology Platform Administration Guide*.

d) Save and close each dataflow.

4. Copy Siebel objects to your system:
   a) Browse to the location where you downloaded the Spectrum™ Technology Platform installer.
   b) Browse to the appropriate folder for your version of Siebel as shown in the following table.

Siebel Version	Folder
Siebel Business Applications 8.0 SDQ	`Siebel Objects\8.0\Business\SDQ`
Siebel Business Applications 8.1.1 SDQ	`Siebel Objects\8.1.1\Business\SDQ`
Siebel Industry Applications 8.0 SDQ	`Siebel Objects\8.0\Industry\SDQ`
Siebel Industry Applications 8.1.1 SDQ	`Siebel Objects\8.1.1\Industry\SDQ`

   c) Copy the contents of the folder to a temporary directory.

   Note: This temporary folder will be the referred to as `<Spectrum Package>` in the following steps.

5. Create objects and allow object locking:
   a) Log in to Siebel Tools as the user SADMIN. In the **Connect to** field select **Server**.
   b) In the Object Explorer, click **Project**.
   c) Create three new records using the following values in the **Name** column. To create a new record, right-click in the Projects area and select **New Record**.

      Group 1 Data Quality
      Group 1 EAI Testing
      Group 1 Workflow

   d) Open the file `<Spectrum Package>\tools\CDQP_Queries.txt`.
   e) Copy and paste the query contents to the Project list of your Object Manager. Cross-check the query result with the table below and perform the action suggested. To toggle object

locking, go to Object Explorer and browse to the Project object. From the Project area, right-click and select the project, and select **Toggle Object Locking**.

Table 2: Queries for Siebel SDQ

Siebel Business Applications	Siebel Industry Applications	Project	Action
	X	Account	Toggle Object Locking
X		Account (SCW)	Toggle Object Locking
X	X	Account (SSE)	Toggle Object Locking
X	X	Contact	Toggle Object Locking
		Contact (SSE)	Toggle Object Locking
		CUT Account	Toggle Object Locking
		CUT Siebel Communications	Toggle Object Locking
		CUT Usage	Toggle Object Locking
		DNB Data	Toggle Object Locking
		DeDuplication	Toggle Object Locking
		eAutomotive	Toggle Object Locking
X	X	Employee	Toggle Object Locking
		FINS Contract	Toggle Object Locking
		FINS Contract Info	Toggle Object Locking
		FINS Deal Commercial	Toggle Object Locking
		FINS Financial Services	Toggle Object Locking
		FINS Opportunity	Toggle Object Locking

Siebel Business Applications	Siebel Industry Applications	Project	Action
X	X	Group 1 Data Quality	Create and Toggle Object Locking
X	X	Group 1 EAI Testing	Create and Toggle Object Locking
X	X	Group 1 Workflow	Create and Toggle Object Locking
		List Mgmt (Import)	Toggle Object Locking
X	X	List Mgmt (UI)	Toggle Object Locking
		Mvg	Toggle Object Locking
		Oppty	Toggle Object Locking
		Oppty (SSE)	Toggle Object Locking
X		Personal Contact	Toggle Object Locking
X	X	Picklist	Toggle Object Locking
		Server Component Requests	Toggle Object Locking
		Siebel Sales Enterprise	Toggle Object Locking
		Siebel Universal Agent	Toggle Object Locking
	X	VERT CUT Address	Toggle Object Locking
		VERT Cut Common	Toggle Object Locking

6. Check out the Siebel Projects:
   a) Log in to Siebel Tools as the user SADMIN. In the **Connect to** field select **Local**.
   b) Select **Tools** > **Check Out**.
   c) Select the projects indicated in the following table and click **Checkout**.

Table 3: Siebel Projects for SDQ

Siebel Business Applications	Siebel Industry Applications	Project
	X	Account
X	X	Account (SCW)
X	X	Account (SSE)
X	X	Contact
		Contact (SSE)
		CUT Account
		CUT Siebel Communications
		CUT Usage
		DNB Data
		DeDuplication
		eAutomotive
X	X	Employee
		FINS Contract
		FINS Contract Info
		FINS Deal Commercial
		FINS Financial Services
		FINS Opportunity
		Group 1 Data Quality
X	X	Group 1 EAI Testing

Siebel Business Applications	Siebel Industry Applications	Project
X	X	Group 1 Workflow
		List Mgmt (Import)
X	X	List Mgmt (UI)
		Mvg
		Oppty
		Oppty (SSE)
X		Personal Contact
X	X	Picklist
		Server Component Requests
X		Siebel Sales Enterprise
		Siebel Universal Agent
	X	VERT CUT Address
		VERT Cut Common

7. Import the Spectrum™ Technology Platform Siebel Objects.
   a) Select **Tools** > **Import from Archive**.
   b) Browse to the Spectrum™ Technology Platform installation package. In the `Siebel Objects` folder, browse to the subfolder for your version of Siebel and select the SIF files.
   c) Select **Merge the object definition in the repository** and click **Next**.
8. Check in all locked projects:
   a) Select **Tools** > **Check In**.
   b) Select all the Projects to check in and click **Check in**.
9. (Open UI Only) Import the Spectrum™ Technology Platform Siebel Objects for Open UI:
   a) Select **Tools** > **Import from Archive**.
   b) Browse to the Spectrum™ Technology Platform installation package. In the `Siebel Objects` folder, browse to the `OPEN_UI` subfolder for your version of Siebel and select the SIF files.

c) Select **Merge the object definition in the repository** and click **Next**.

10. Compile all Projects:
    a) Select **Tools** > **Compile Projects**.
    b) Click **All Projects**.
    c) In the **Siebel Repository File** field, enter the path of your Siebel Web Client SRF file.
    d) Click **Compile**.
11. Deploy the Siebel objects in the client:

    Note: Keep a backup of the old SRF in case old binaries need to be re-implemented.

    a) Copy the generated SRF to your web client objects folder.

       For example, on Windows the web client object folder may be `C:\Program Files\Siebel\8.0\web client\OBJECTS\ENU`. On Unix or Linux the folder may be `/disk2/sia78/webclient/OBJECTS/enu/`.

    b) Copy the contents of `<Spectrum Package>\dll` to your `BIN` folder.
    c) Copy the contents of `<Spectrum Package>\cfg` to your `BIN/ENU` folder.
12. Deploy the Siebel objects to the server:
    a) Stop the Siebel server.
    b) Copy the generated SRF file to your web client objects folder.

       For example, the folder for Siebel Business on Windows may be `C:\sea80\siebsrvr\OBJECTS\ENU`. On Unix or Linux the folder may be `/disk2/sea78/siebsrvr/OBJECTS/enu/`.

    c) Copy the libraries to your server.

       - For Windows, copy the contents of `<Spectrum Package>\lib\win` to your `BIN` folder.
       - For Unix or Linux, copy the contents of `<Spectrum Package>/lib/sol` to your `LIB` folder.

    d) Copy the contents of `<Spectrum Package>\cfg` to your `BIN\ENU` folder.
    e) Start the Siebel server.
13. Install the options file.
    a) Click **Site Map** > **Administration - Data** > **LOV Explorer**.
    b) Click **New**.
    c) In the **Type** column, enter `FILE_PATH`.
    d) Click **Query**.
    e) In the **Type** column, enter `FILE_PATH`.
    f) Browse to the **Values** folder.
    g) In the **Display Value** column, enter the absolute path to the folder where you want to keep the options file. You can specify any folder you want.
    h) Browse to the Spectrum™ Technology Platform installation package.

i) In the `Siebel Objects` folder, browse to the `cfg` subfolder for your version of Siebel and select the `Group1Connector.opt` file.
j) Copy this file to the folder you specified for FILE_PATH.

14. Activate the Spectrum™ Technology Platform workflows in the Siebel web client:
    a) Log in to the Siebel Application, connecting to the server data source.
    b) Select **Site Map** > **Administration - Business Process** > **Workflow Deployment**.
    c) Query for all the GROUP 1* workflows.
    d) Click **Activate** for each workflow.
    e) Query for all the Promote* workflows.
    f) Click **Activate** for the ff workflows **Promote Prospect (Single)** and **Promote Prospect (Many)**.
15. Verify the installation:
    a) Log in to Siebel Application.
    b) All applets should load properly without error.
16. Configure the Siebel instance configuration parameters:
    a) Select **Site Map** > **Administration - Server Configuration** > **Enterprises**.
    b) Verify/Change the ff Parameters:
        - Data Cleansing Type—G1Cleansing
        - DeDuplication Data Type—G1DataMatching
    c) Click **Component Definitions** and select the ff components. For each component, verify parameters and values.

Table 4: Siebel Business

Component Definitions	Parameter	Value/Value on Restart
*Data Quality Manager *Sales Object Manager (ENU) *List Import Service Manager	Data Cleansing Type	G1Cleansing
	Data Cleansing Enable Flag	True
	DeDuplication Data Type	G1DataMatching
	DeDuplication Enable Flag	True

Table 5: Siebel Industry

Component Definitions	Parameter	Value/Value on Restart
*Data Quality Manager *eAutomotive Object Manager (ENU) *List Import Service Manager	Data Cleansing Type	G1Cleansing
	Data Cleansing Enable Flag	True
	DeDuplication Data Type	G1DataMatching
	DeDuplication Enable Flag	True

d) Select **Site Map** > **Server Configuration** > **Servers**. Repeat steps b through c for server configuration parameters.
e) Select **Site Map** > **User Profile Preferences** > **Data Quality**. Change the following settings:

Parameter	Value
Enable DeDuplication	Yes
Enable Data Cleansing	Yes

f) Browse to `<Siebel Installation>\bin\ENU` and open the appropriate file:

- Siebel Business: siebel.cfg and uagent.cfg
- Siebel Industry: auto.cfg

g) Under the area [DataCleansing] change the ff Parameters:

```
Enable = TRUE
Type = G1Cleansing
```

h) Under the area [DeDuplication] change the ff Parameters:

```
Enable = TRUE
Type = G1DataMatching
```

i) Select **Site Map** > **Administration - Server Configuration**. Click the **Synchronize** link and select **Synchronize** after being redirected.

17. Configure data cleansing configuration parameters:
a) Select **Site Map** > **Administration** > **Data Quality** > **Third Party Administration**. On the Vendor Applet, include the ff value

Name	DLL Name
G1Cleansing	Group1Connector

b) Add the ff BC Vendor Field Mapping:

Table 6: Siebel Business

Business Component	Operation
Account	Data Cleansing
Business Address	Data Cleansing
Contact	Data Cleansing
List Mgmt Prospective Contact	Data Cleansing
Personal Address	Data Cleansing

Table 7: Siebel Industry

Business Component	Operation
Account	Data Cleansing
CUT Address	Data Cleansing
Contact	Data Cleansing
List Mgmt Prospective Contact	Data Cleansing
Personal Address	Data Cleansing

c) Under each BC operation, add the ff field mappings:

Table 8: Siebel Business

Business Component Field	Mapped Field
Account	
Name	FirmName
Business Address	
City	City
Country	CountryName
County	USCountyName
Disable DataCleansing	DisableDataCleansing
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Location Code	LocationCode
G1 Longitude	Longitude
G1 Match Code	MatchCode
G1 Residential Delivery Indicator	RDI
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2
Contact	
First Name	FirstName

Business Component Field	Mapped Field
Last Name	LastName
M/M	TitleOfRespect
Middle Name	MiddleName
List Management Prospective Contact	
City	City
Country	CountryName
County	USCountyName
Disable DataCleansing	DisableDataCleansing
First Name	FirstName
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Location Code	LocationCode
G1 Longitude	Longitude
G1 Match Code	MatchCode
G1 Residential Delivery Indicator	RDI
Last Name	LastName
Middle Name	MiddleName
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1

Business Component Field	Mapped Field
Street Address 2	AddressLine2
Personal Address	
City	City
Country	CountryName
County	USCountyName
Disable DataCleansing	DisableDataCleansing
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Longitude	Longitude
G1 Residential Delivery Indicator	RDI
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2

Table 9: Siebel Industry

Business Component Field	Mapped Field
Account	
Name	FirmName
CUT Address	
City	City

Business Component Field	Mapped Field
Country	CountryName
County	USCountyName
Disable Data Cleansing	DisableDataCleansing
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Location Code	LocationCode
G1 Longitude	Longitude
G1 Match Code	MatchCode
G1 Residential Delivery Indicator	RDI
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2
Contact	
First Name	FirstName
Last Name	LastName
Middle Name	MiddleName
M/M	TitleOfRespect
List Management Prospective Contact	
City	City

Business Component Field	Mapped Field
Country	CountryName
County	USCountyName
Disable DataCleansing	DisableDataCleansing
First Name	FirstName
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Location Code	LocationCode
G1 Longitude	Longitude
G1 Match Code	MatchCode
G1 Residential Delivery Indicator	RDI
Last Name	LastName
Middle Name	MiddleName
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2
Personal Address	
City	City
Country	CountryName
County	USCountyName

Business Component Field	Mapped Field
Disable DataCleansing	DisableDataCleansing
G1 Delivery Point Validation Indicator	DPV
G1 Latitude	Latitude
G1 Longitude	Longitude
G1 Residential Delivery Indicator	RDI
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2

d) Add the ff Vendor Parameters.

Table 10: Siebel Business

Name	Value
Account DataCleanse Record Type	Account
Business Address DataCleanse Record Type	Business Address
Contact DataCleanse Record Type	Contact
List Mgmt Prospective Contact DataCleanse Record Type	List Mgmt Prospective Contact
Personal Address DataCleanse Record Type	Personal Address

Table 11: Siebel Industry:

Name	Value
Account DataCleanse Record Type	Account
CUT Address DataCleanse Record Type	CUT Address
Contact DataCleanse Record Type	Contact
List Mgmt Prospective Contact DataCleanse Record Type	List Mgmt Prospective Contact
Personal Address DataCleanse Record Type	Personal Address

e) Select **Site Map** > **Administration - Data Quality** > **Third Party Administration** > **Data Quality Settings**. Add the ff data for Data Quality Settings. These settings enable data cleansing for your Siebel Application

Name	Value
Enable DataCleansing	Yes

18. Configure data matching configuration parameters:
    a) Select **Site Map** > **Administration** > **Data Quality** > **Third Party Administration**. On the Vendor Applet, include the ff value

Name	DLL Name
G1DataMatching	Group1Connector

b) Add the ff BC Vendor Field Mapping:

Table 12: Siebel Business Applications

Business Component	Operation
Account	DeDuplication
Business Address	DeDuplication

Business Component	Operation
Contact	DeDuplication
List Mgmt Prospective Contact	DeDuplication

Table 13: Siebel Industry Applications

Business Component	Operation
Account	DeDuplication
CUT Address	DeDuplication
Contact	DeDuplication
List Mgmt Prospective Contact	DeDuplication

c) Under each BC Operation, add the ff Field Mappings.

Table 14: Siebel Business Applications

Business Component Field	Mapped Field
Account	
Dedup Token	DedupToken
Id	Id
Location	Location
Name	Name
Primary Account City	City
Primary Account Country	CountryName
Primary Account Postal Code	PostalCode

Business Component Field	Mapped Field
Primary Account State	StateProvince
Primary Account Street Address	AddressLine1
Business Address	
City	City
Country	CountryName
Id	Id
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2
Contact	
First Name	FirstName
Id	Id
Last Name	LastName
Middle Name	MiddleName
Primary Account Name	AccountName
Primary City	City
Primary Country	CountryName
Primary Postal Code	PostalCode
Primary State	StateProvince

Business Component Field	Mapped Field
List Management Prospective Contact	
Account	Account
City	City
Country	CountryName
First Name	FirstName
Id	Id
Last Name	LastName
Middle Name	MiddleName
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2

Table 15: Siebel Industry Applications

Business Component Field	Mapped Field
Account	
Dedup Token	DedupToken
Id	Id
Location	Location
Name	Name
Primary Account City	City

Business Component Field	Mapped Field
Primary Account Country	Country
Primary Account Postal Code	PostalCode
Primary Account State	State
Primary Account Street Address	AddressLine1
CUT Address	
City	City
Country	Country
Id	Id
Postal Code	PostalCode
State	State
Street Address	AddressLine1
Street Address 2	AddressLine2
Contact	
First Name	FirstName
Id	Id
Last Name	LastName
Middle Name	MiddleName
Primary Account Name	Name
Primary City	City
Primary Country	Country

Business Component Field	Mapped Field
Primary Postal Code	Code
Primary State	State
List Management Prospective Contact	
Account	Account
City	City
Country	CountryName
First Name	FirstName
Id	Id
Last Name	LastName
Middle Name	MiddleName
Postal Code	PostalCode
State	StateProvince
Street Address	AddressLine1
Street Address 2	AddressLine2

d) Add the ff Vendor Parameters:

Note: Token Expression and Query Expression are custom fields in their respective Business Components.

Table 16: Vendor Parameters

Name	Value
Account DeDup Record Type	Account

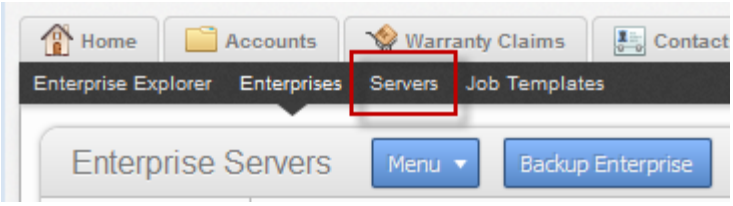
Name	Value
Account Query Expression	"|" + [Query Expression 1] + [Query Expression 2] + [Query Expression 3]
Account Token Expression	"|" + [Token Expression 1] + [Token Expression 2] + [Token Expression 3]
Batch Max Num of Records	200
(Siebel Business Only) Business Address DeDup Record Type	Business Address
(Siebel Industry Only) CUT Address DeDup Record Type	CUT Address
Contact DeDup Record Type	Contact
Contact Query Expression	"|" + [Query Expression 1] + [Query Expression 2] + [Query Expression 3]
Contact Token Expression	"|" + [Token Expression 1] + [Token Expression 2] + [Token Expression 3]
List Mgmt Prospective Contact DeDup Record Type	List Mgmt Prospective Contact
List Mgmt Prospective Contact Query Expression	"|" + [Query Expression 1] + [Query Expression 2] + [Query Expression 3]
List Mgmt Prospective Contact Token Expression	"|" + [Token Expression 1] + [Token Expression 2] + [Token Expression 3]
Realtime Max Num of Records	200

e) Select **Site Map** > **Administration - Data Quality** > **Third Party Administration** > **Data Quality Settings**. Add the ff data for Data Quality Settings. These settings enable data matching for your Siebel Application.

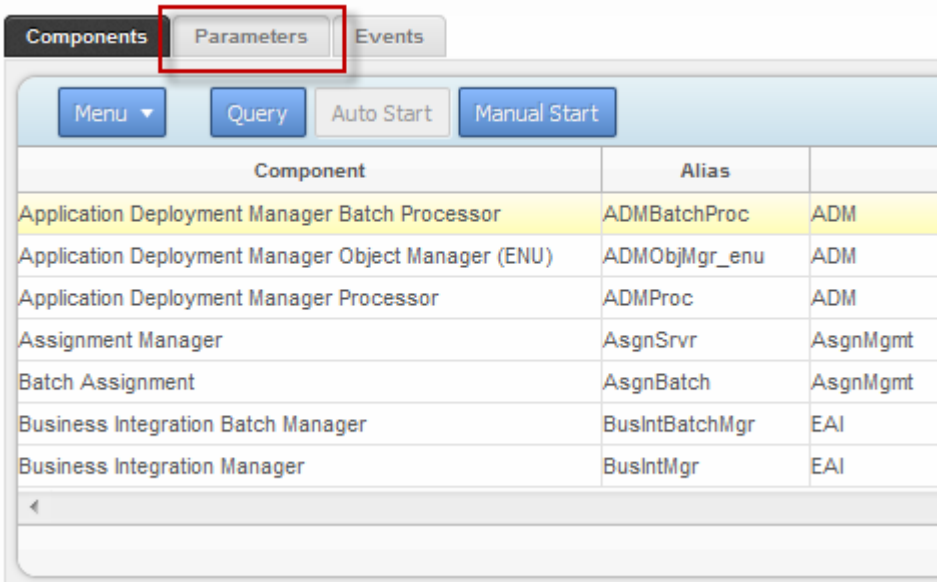
Name	Value
Enable DeDuplication	Yes

Name	Value
Force User DeDupe - Account	Yes
Force User DeDupe - Contact	Yes
Force User DeDupe - List Mgmt	Yes

19. (Open UI Only) Grant the EAI File Transport business service access to the file system by following these steps.
    a) Click **Navigate** > **Site map**.
    b) Click **Administration - Server Configuration**.
    c) In the **Administration - Server Configuration** section, under **Enterprises**, click **Parameters**.
    d) Click **Query**.
    e) In the **Name** column, enter `EAI File Transport Folder List`.
    f) Click **Go**.
    g) In the **Value** column, enter the root of the drive where you have Siebel installed. For example, `C:\`.
    h) Click the **Servers** link:



    i) Click the **Parameters** tab:

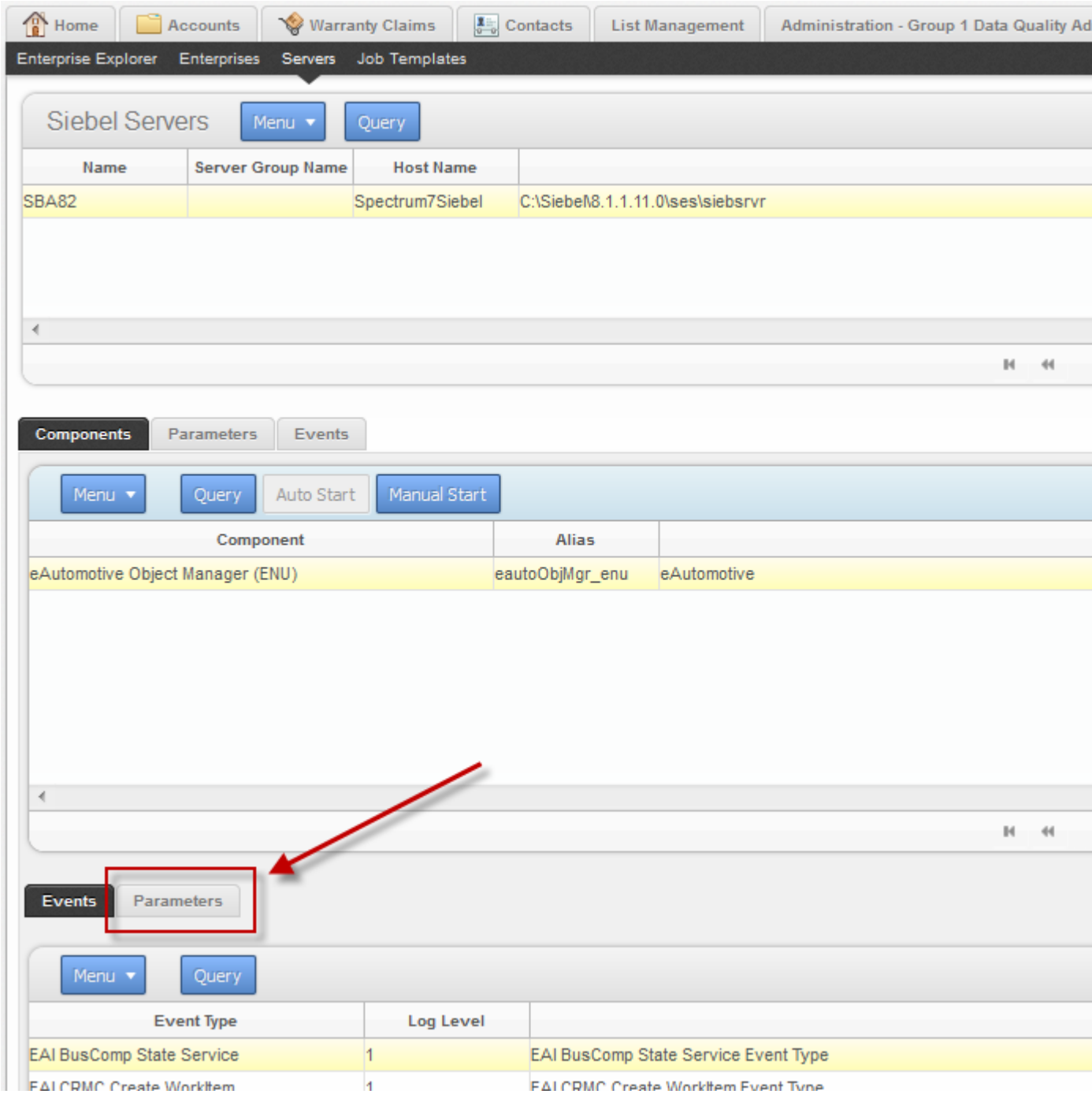


j) Click **Query**.
k) In the **Name** column, enter `EAI File Transport Folder List`.
l) Click **Go**.
m) In the **Value** column, enter the root of the drive where you have Siebel installed. For example, `C:\`.
n) Add the following values to the the .cfg file appropriate for your system (for example, `auto.cfg`, `tools.cfg`, and so on).

```
[EAIFileTransportConfigSubsys]
EAIFileTransportFolders=C:\
```

o) Restart the Siebel server and gateway.

20. Set the EditProfileAttr parameter:
a) Click **Navigate** > **Site Map**
b) Click **Administration - Server Configuration**.
c) In the **Administration - Server Configuration** section, under **Servers**, click **Components**.
d) On the **Components** tab, click **Query**.
e) In the **Component** column, enter the name of the Object Manager component. For example, "eAutomotive Object Manager".
f) Click **Go**.
g) Click the **Parameters** tab at the bottom of the window.



h) Scroll to the parameter EditProfileAttr.

i) Enter `True` in the **Value**, **Value on Restart**, and **Default Value** columns.

You have now configured Siebel SDQ to use Spectrum™ Technology Platform for data quality processing.

Integrating with Siebel Non-SDQ

To integrate Spectrum™ Technology Platform with Siebel Non-SDQ, you need to install supporting databases and dataflows on the Spectrum™ Technology Platform server, and then configure your Siebel system to communicate with Spectrum™ Technology Platform. Once you do this, users of Siebel Non-SDQ will have access to address validation and geocoding functionality from within Siebel Non-SDQ.

1. On the Spectrum™ Technology Platform server, install the databases required to perform address validation, geocoding, and tax jurisdiction assignment and define database resources for each database.

   You must give the database resources the following names.

Database	Required Name for Database Resource
Enterprise Geocoding Module - Canada Database	IGEO_CAN
Enterprise Geocoding Module - U.S. Database	EGM_US
Enterprise Tax Module Database	ETM
Universal Addressing Module - Canada Database	Canada
Universal Addressing Module - Loqate Database	Loqate
Universal Addressing Module - U.S. Database	UAM_US

2. When you install the Siebel module, several dataflow files are automatically installed. Other dataflow files must be manually copied into the Spectrum™ Technology Platform server.
   a) Browse to one of the following folders on your Spectrum™ Technology Platform server:
      - For Siebel Business Applications, go to:
        `<SpectrumPlatformLocation>\server\modules\dataflows\siebel\sea`
      - For Siebel Industry Applications, go to:
        `<SpectrumPlatformLocation>\server\modules\dataflows\siebel\sia`

   b) Review the following table then copy the applicable dataflow files to:

      SpectrumLocation`\server\app\import`

Table 17: Dataflow Files To Import

If you are installing this set of modules	Copy these dataflow files to the import folder
Address Now Module only	SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.ADN.df
Address Now Module Universal Addressing Module	SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.UAM_ADN.df
Address Now Module Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.EGM_ADN.df
Address Now Module Enterprise Geocoding Module Universal Addressing Module	GeocodeUSAddressWithCandidates.df SiebelGetGlobalCandidateAddresses.df ValidateAddressWithCandidates.UAM_EGM_ADN.df
Universal Addressing Module only	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates.UAM.df
Universal Addressing Module Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df ValidateAddressWithCandidates.UAM_EGM.df
Universal Addressing Module Enterprise Tax Module	GeocodeUSAddressWithCandidates.df ValidateAssignGeoTAXInfo.df ValidateAddressWithCandidates_UAM_ETM.df
Universal Address Module with Loqate	ValidateAddressWithCandidates_UAM_Loqate.df
Universal Addressing Module with Loqate Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df

If you are installing this set of modules	Copy these dataflow files to the import folder
Universal Addressing Module, Loqate only Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Universal Addressing Module with Loqate Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_ETM.df
Universal Addressing Module with Loqate Enterprise Geocoding Module Enterprise Tax Module	ValidateAddressWithCandidates_UAM_Loqate_EGM_ETM.df
Universal Addressing Module, Loqate only	ValidateAddressWithCandidates_Loqate.df
Enterprise Geocoding Module	ValidateAddressWithCandidates.EGM.df
Enterprise Tax Module	ValidateAssignGeoTAXInfo.df

Note: If errors occur in Management Console or Enterprise Designer, delete the client cache. To delete the client cache, go to **Tools** > **Options** in Management Console or Enterprise Designer, click the **Advanced** tab, then click **Clear Cache**. After you clear the cache, restart Management Console or Enterprise Designer.

3. Optional: If you are using the Enterprise Geocoding Module, configure the geocoding dataflow to use the geocoding database resource name you have configured on your system:
   a) In Enterprise Designer, open the dataflow GeocodeUSAddressWithCandidates.
   b) In each dataflow, open the Geocode US Address stage.
   c) In the **Database** field, select the name of the geocoding database as defined in the Management Console. The default name is KGDDatasource but if the geocoding database has a different name on your system, select the appropriate name.

   Note: For more information about database resources, see the *Spectrum™ Technology Platform Administration Guide*.

d) Save and close each dataflow.

4. Copy Siebel objects to your system:
   a) Browse to the location where you downloaded the Spectrum™ Technology Platform installer.
   b) Browse to the appropriate folder for your version of Siebel as shown in the following table.

Siebel Version	Folder
Siebel Business Applications 8.0 Non-SDQ	`Siebel Objects\8.0\Business\non SDQ`
Siebel Business Applications 8.1.1 Non-SDQ	`Siebel Objects\8.1.1\Business\non SDQ`
Siebel Industry Applications 8.0 Non-SDQ	`Siebel Objects\8.0\Industry\non SDQ`
Siebel Industry Applications 8.1.1 Non-SDQ	`Siebel Objects\8.1.1\Industry\non SDQ`

   c) Copy the contents of the folder to a temporary directory.

   Note: This temporary folder will be the referred to as `<Spectrum Package>` in the following steps.

5. Create objects and allow object locking:
   a) Log in to Siebel Tools as the user SADMIN, with the connection pointing to the server data source.
   b) Go to **Object Explorer**, drill down to the **Project** object. From the Project area, right-click and select **New Record**. Create the following projects:

      - Group 1 Data Quality
      - Group 1 EAI Testing
      - Group 1 Workflow

   c) Open the file `<Spectrum Package>\tools\CDQP_Queries.txt`.
   d) Copy and paste the query contents to the Project list of your Object Manager. Cross-check the query result with the table below and perform the action suggested. To toggle object locking, go to Object Explorer and browse to the Project object. From the Project area, right-click and select the project, and select **Toggle Object Locking**.

Table 18: Queries for Siebel non-SDQ

Siebel Business Applications	Siebel Industry Applications	Open UI	Project	Action
X	X	X	Account	Toggle Object Locking
X	X	X	Account (SCW)	Toggle Object Locking
X	X	X	Account (SSE)	Toggle Object Locking
X	X	X	Contact	Toggle Object Locking
X	X	X	Contact (SSE)	Toggle Object Locking
	X	X	CUT Account	Toggle Object Locking
	X	X	CUT Siebel Communications	Toggle Object Locking
	X	X	CUT Usage	Toggle Object Locking
X	X	X	DNB Data	Toggle Object Locking
X	X	X	DeDuplication	Toggle Object Locking
	X	X	eAutomotive	Toggle Object Locking
X	X	X	Employee	Toggle Object Locking
	X	X	FINS Contract	Toggle Object Locking

Siebel Business Applications	Siebel Industry Applications	Open UI	Project	Action
	X	X	FINS Contract Info	Toggle Object Locking
	X	X	FINS Deal Commercial	Toggle Object Locking
	X	X	FINS Financial Services	Toggle Object Locking
	X	X	FINS Opportunity	Toggle Object Locking
X	X	X	Group 1 Data Quality	Create and Toggle Object Locking
X	X	X	Group 1 EAI Testing	Create and Toggle Object Locking
	X	X	Group 1 Workflow	Create and Toggle Object Locking
X			List Mgmt (Import)	Toggle Object Locking
X	X	X	List Mgmt (UI)	Toggle Object Locking
X			Mvg	Toggle Object Locking
X	X	X	Oppty	Toggle Object Locking
X	X	X	Oppty (SSE)	Toggle Object Locking
X	X	X	Personal Contact	Toggle Object Locking
X	X	X	Picklist	Toggle Object Locking

Siebel Business Applications	Siebel Industry Applications	Open UI	Project	Action
X	X	X	Server Component Requests	Toggle Object Locking
X		X	Siebel Sales Enterprise	Toggle Object Locking
X			Siebel Universal Agent	Toggle Object Locking
	X	X	VERT CUT Address	Toggle Object Locking
	X	X	VERT Cut Common	Toggle Object Locking

6. Check out the Siebel Projects:
   a) Log in to Siebel Tools on Local Datasource.
   b) Select **Tools** > **Checkout**.
   c) Select the projects indicated in the following table and click **Checkout**.

Table 19: Siebel Projects for non-SDQ

Siebel Business Applications	Siebel Industry Applications	Project
X	X	Account
X	X	Account (SCW)
X	X	Account (SSE)
X	X	Contact
X	X	Contact (SSE)
	X	CUT Account
	X	CUT Siebel Communications
	X	CUT Usage

Siebel Business Applications	Siebel Industry Applications	Project
X	X	DNB Data
X	X	DeDuplication
	X	eAutomotive
X	X	Employee
	X	FINS Contract
	X	FINS Contract Info
	X	FINS Deal Commercial
	X	FINS Financial Services
	X	FINS Opportunity
X	X	Group 1 Data Quality
X	X	Group 1 EAI Testing
	X	Group 1 Workflow
X		List Mgmt (Import)
X	X	List Mgmt (UI)
X		Mvg
X	X	Oppty
X	X	Oppty (SSE)
X	X	Personal Contact
X	X	Picklist
X	X	Server Component Requests

Siebel Business Applications	Siebel Industry Applications	Project
X		Siebel Sales Enterprise
X		Siebel Universal Agent
	X	VERT CUT Address
	X	VERT Cut Common

7. Import the Spectrum™ Technology Platform Siebel objects:
   a) Select **Tools** > **Import from Archive**.
   b) Import the Siebel SIF files located in `<Spectrum Package>\sif`. Select **Overwrite the object definition in the repository** and click **Next** to proceed until the import process has been completed.
      - G1_NEW.sif
      - G1_APPLET.sif
      - G1_BO.sif
      - G1_LINK.sif
      - G1_BC.sif
      - G1_BC_SCRIPTS.sif
      - G1_EAI_TESTING.sif
      - G1_APPLICATION.sif
      - G1_PICKLIST.sif
      - G1_VIEW.sif
      - G1_WORKFLOW.sif
      - (8.1.1 only) Rebranding.sif
   c) (Open UI Only) Import the Siebel SIF files located in `<Spectrum Package>\OPEN_UI`. Select **Overwrite the object definition in the repository** and click **Next** to proceed until the import process has been completed.
      - FINS Personal Address List Applet.sif
      - G1 Common Browser Scripts Service.sif
      - Siebel Sales Enterprise.sif
8. Check in all locked projects:
   a) Select **Tools** > **Check In**.
   b) Select all the Projects to check in and click **Check in**.
9. Compile all Projects:
   a) Select **Tools** > **Compile Projects**.

b) Click **All Projects**.
c) In the **Siebel Repository File** field, enter the path of your Siebel Web Client SRF file.
d) Click **Compile**.

10. Update the application .CFG flie:
    a) Open the appropriate .cfg file in an editor:

    For example, for Siebel Business:

    - Siebel Call Center—`uagent.cfg`
    - Siebel Sales—`siebel.cfg`

    For example, for Siebel Industry:

    - eAutomotive—`auto.cfg`
    - Financial—`fins.cfg`
    - eCommunication—`ecomm.cfg`

    Siebel .cfg files are usually found in the following locations:

    - Siebel thick client—`Siebel\<version>\web client\bin\enu`
    - Siebel thin client—`<Siebel Server>\bin\enu`

    b) Add the following lines under the `[SWE]` section:

```
ClientBusinessService0 = G1 Async Service
ClientBusinessService1 = G1 Business Name Standardization Service
ClientBusinessService2 = G1 Common Browser Scripts Service
ClientBusinessService3 = G1 Common Server Scripts Service
ClientBusinessService4 = G1 DNB VBC Service
ClientBusinessService5 = G1 Data Cleansing Service
ClientBusinessService6 = G1 DeDuplication Service
ClientBusinessService7 = G1 Generate HashKey Service
ClientBusinessService8 = G1 GeoCoding Service
ClientBusinessService9 = G1 Interactive Service
ClientBusinessService10 = G1 Merge Records Service
ClientBusinessService11 = G1 Name Casing Service
ClientBusinessService12 = G1WebService
```

11. Deploy the Siebel objects in the client:

    Note: Keep a backup of the old SRF in case old binaries need to be re-implemented.

    a) Copy the generated SRF to your web client objects folder.

    For example, on Windows this folder may be `C:\Program Files\Siebel\8.0\web client\OBJECTS\ENU`. On Unix or Linux this folder may be `/disk2/sia78/webclient/OBJECTS/enu/`.

    b) Open a command prompt and go to the BIN folder of the web client.

For example, on Windows this folder may be `C:\Program Files\Siebel\8.0\web client\BIN`. On Unix or Linux, this folder may be `/disk2/sia80/webclient/BIN`.

c) Generate browser scripts by issuing the command:

On Windows:

```
genbscript "ENU\siebel.cfg" "[public\enu folder]"
```

On Unix or Linux:

```
genbscript [location of .cfg] [public/enu folder]
```

For example, on Windows:

```
C:\Program Files\Siebel\8.0\web client\BIN>genbscript "enu\siebel.cfg"
"C:\Program Files\Siebel\8.0\web client\PUBLIC\enu"
```

On Unix or Linux:

```
genbscript /disk2/sia80/webclient/BIN/enu/siebel.cfg
sia80/webclient/PUBLIC/enu
```

d) Copy `g1_check.gif` and `g1_x.gif` from the temporary folder to `public\enu\images` in the Siebel web client.

e) Copy the contents of `<Spectrum Package>\dll` to your `BIN` folder.

f) Copy the contents of `<Spectrum Package>\cfg` to your `BIN/ENU` folder.

12. Deploy the Siebel objects to the server:

a) Stop the Siebel server.

b) Copy the generated SRF file to your web client objects folder.

For example, for Siebel Business on Windows the folder may be `C:\sea80\siebsrvr\OBJECTS\ENU`. On Unix or Linux the folder may be `/disk2/sea80/siebsrvr/OBJECTS/enu/`.

c) Open a command prompt and go to the BIN drive of the web client.

For example, on Windows this folder may be `C:\sia80\siebsrvr\BIN`. On Unix or Linux this folder may be `/disk2/sea80/siebsrvr/BIN`.

d) Generate browser scripts by issuing this command:

On Windows:

```
genbscript "ENU\siebel.cfg" "[webmaster folder]"
```

On Unix or Linux:

```
genbscript [location of Siebel.cfg] [webmaster folder]
```

For example, on Windows:

```
C:\sia80\siebsrvr\BIN>genbscript "enu\siebel.cfg"
"C:\sia80\siebsrvr\WEBMASTER"
```

For example, on Unix or Linux:

```
genbscript /disk2/sea80/siebsrvr/BIN/enu/siebel.cfg
/disk2/sea80/siebsrvr/WEBMASTER/
```

e) Copy `g1_check.gif` and `g1_x.gif` from the temporary folder to the following folder on the Siebel sever.

On Windows:

```
public\enu\images
```

On Unix or Linux:

```
WEBMASTER/images/enu
```

Note: For Siebel Thin Client, copy `g1_check.gif` and `g1_x.gif` from the temporary directory to `SWEApp/PUBLIC/enu/images`.

f) Copy the generated browser scripts from `/WEBMASTER` to `<SWEApp Location>/public/ENU`.

g) Start the Siebel server.

13. Activate the Spectrum™ Technology Platform workflows in the Siebel web client:
    a) Log in to the Siebel Application, connecting to the server data source.
    b) Select **Site Map** > **Administration - Business Process** > **Workflow Deployment**.
    c) Query for all the GROUP 1* workflows.
    d) Click **Activate** for each workflow.
    e) Query for all the Promote* workflows.
    f) Click **Activate** for the ff workflows **Promote Prospect (Single)** and **Promote Prospect (Many)**.
14. Load the Group 1 configuration.
    a) Log in to the Siebel application connecting to the server data source.
    b) Go to **Site Map** > **Administration - Business Service** > **Simulator**.
    c) In the top applet, create a new record and set the following fields:

Service Name	Workflow Process Manager
Method Name	Run Process
Iterations	1

    d) In the Input Arguments applet, load:

```
<Spectrum Package>\tools\OptionsManagerLoadData.xml
```

Note: Delete the entry if previous GROUP 1 options already exist in the database. Run the following SQL Script: `DELETE SIEBEL.S_LST_OF_VAL WHERE CODE = 'G1'`

e) Click **Run** in the top applet of the Simulator view. Delete the record.
f) Repeat steps c. and d. for the ff files:

- `ViewAccessLoadData.xml`
- `AdminAccessLoadData.xml`

g) Go to **Site Map** > **Administration - Application** > **Responsibilities**:
h) Query for the responsibility Group 1 Responsibility.
i) In the Users tab, add SADMIN or any Siebel administrator. This associates the Group 1 Administration Screen to the user.

Note: In order to see the changes you must log-in again.

j) Go to **Site Map** > **Administration - Group 1 Data Quality** > **Options Manager** > **General Behavior**.
k) Change the server and port number where the Spectrum™ Technology Platform server is located.

15. Verify the installation:
a) Log in to Siebel Application.
b) All applets should load properly without error.

16. Modify and apply web services.
a) Go to **Site Map** > **Administration - Web Services** > **Outbound Web Services**.
b) Click **Import** on the **Outbound Web Services** area and then specify the file `<Spectrum Package>\tools\G1WebService.xml`.
c) Query on the Name field ValidateAddress, and modify its settings as follows:

On the Service Port applet, change the following fields:

- Transport: Local Business Service
- Address: G1 WebService Filter Service

On the Operations applet, change the following fields:

- Response Filter Service Display: G1 WebService Filter Service
- Response Filter Method Display: filter Response

17. Encrypt and apply Spectrum™ Technology Platform user name and password.
a) Run the following command on the command prompt:

```
java -version
```

Java Runtime Environment (JRE) 1.4.x is required. If none is installed, you can download from **java.sun.com/j2se/1.4.2/download.html**. Download the JRE of your target platform.

b) Acquire the file `<Spectrum Package>\tools\Base64.class`.
c) On the command prompt, type the following command:

```
java Base64 -encode -s "<username>:<password>"
```

where <username> and <password> is to the login information of Spectrum™ Technology Platform server. Copy the generated value.

Note: The default Spectrum™ Technology Platform password can be found in `<Spectrum Package>\tools\Default Password.txt`.

d) Go to **Site Map** > **Administration - Group 1 Data Quality** > **Password Manager**. Paste the value generated in step c. and click **Save Changes**.

18. Configure Siebel server configuration events.

The Siebel server must be configured so that the records created in the local database can be synchronized to the server.

a) Navigate to **View** > **Administration - Server Configuration** > **Servers** > **Components** > **Event**.
b) Locate the Workflow Process Manager Server components.
c) Set the following Component Event Configuration for Workflow Process Manager:

Task Configuration	4
Component Tracing	3
SQL Parse and Execute	4
Workflow Definition Loading	4
Workflow Engine Invoked	4
Workflow Step Execution	4
Workflow Process Execution	4
Object Manager Business Service Operation and SetErrorMsg Log	4
Object Manager Business Component Operation and SetErrorMsg Log	4
Object Manager SQL Log	4

d) Locate the Transaction Merger server components.
e) Set the following Component Event Configuration for Transaction Merger:

General Events	4
Components Tracing	3
SQL Parse and Execute	4

19. Enable marketing server components.

    The Marketing Server Components must be enabled to import a list from the List Management business object.

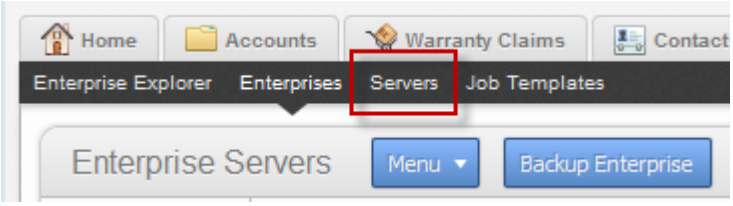
    a) Navigate to **Administration - Server Configuration** > **Enterprises** > **Component Groups**.
    b) In the Spectrum™ Technology Platform Server list, select the appropriate server.
    c) In the Enterprise Component Groups list, locate each of the required component groups using the following table. If the **Enable State** field does not contain the value **Enabled**, select the component groups, click the menu button, and choose **Enable Component Group**.

Group Name	Components	Description
MktgOM	• Marketing Obj Mgr • eMarketing Obj Mgr • eEvents Obj Mjr	Marketing Object Manager. Supports the user interface and business objects for the Marketing application.
Mktg Srv	List Import Service Manager	Marketing Server. Used for list management list import.

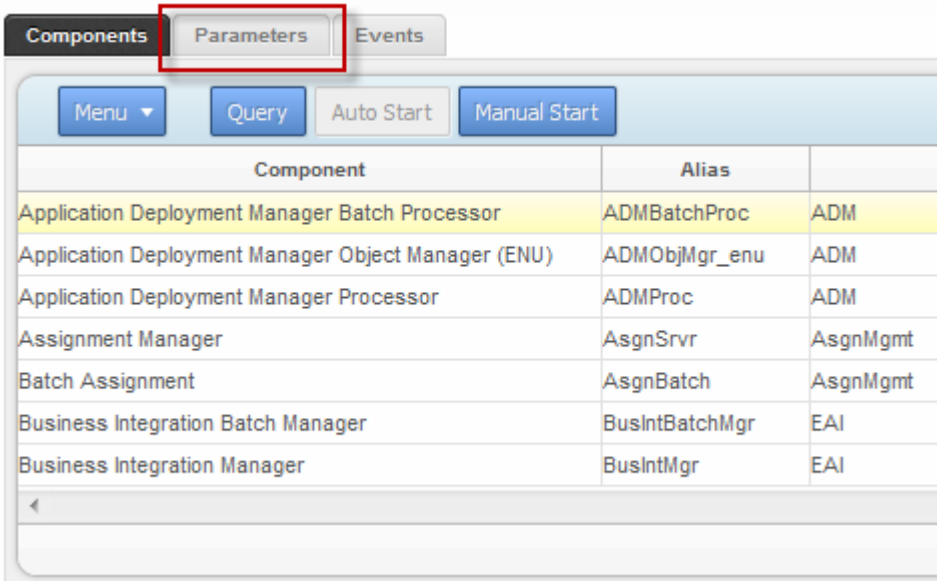
    d) Click the **Synchronize view** tab and click **Synchronize**.
    e) Restart the Siebel server. The Siebel server must be restarted each time synchronization occurs.

20. (Open UI Only) Grant the EAI File Transport business service access to the file system by following these steps.

    a) Click **Navigate** > **Site map**.
    b) Click **Administration - Server Configuration**.
    c) In the **Administration - Server Configuration** section, under **Enterprises**, click **Parameters**.
    d) Click **Query**.
    e) In the **Name** column, enter `EAI File Transport Folder List`.
    f) Click **Go**.
    g) In the **Value** column, enter the root of the drive where you have Siebel installed. For example, `C:\`.
    h) Click the **Servers** link:



i) Click the **Parameters** tab:



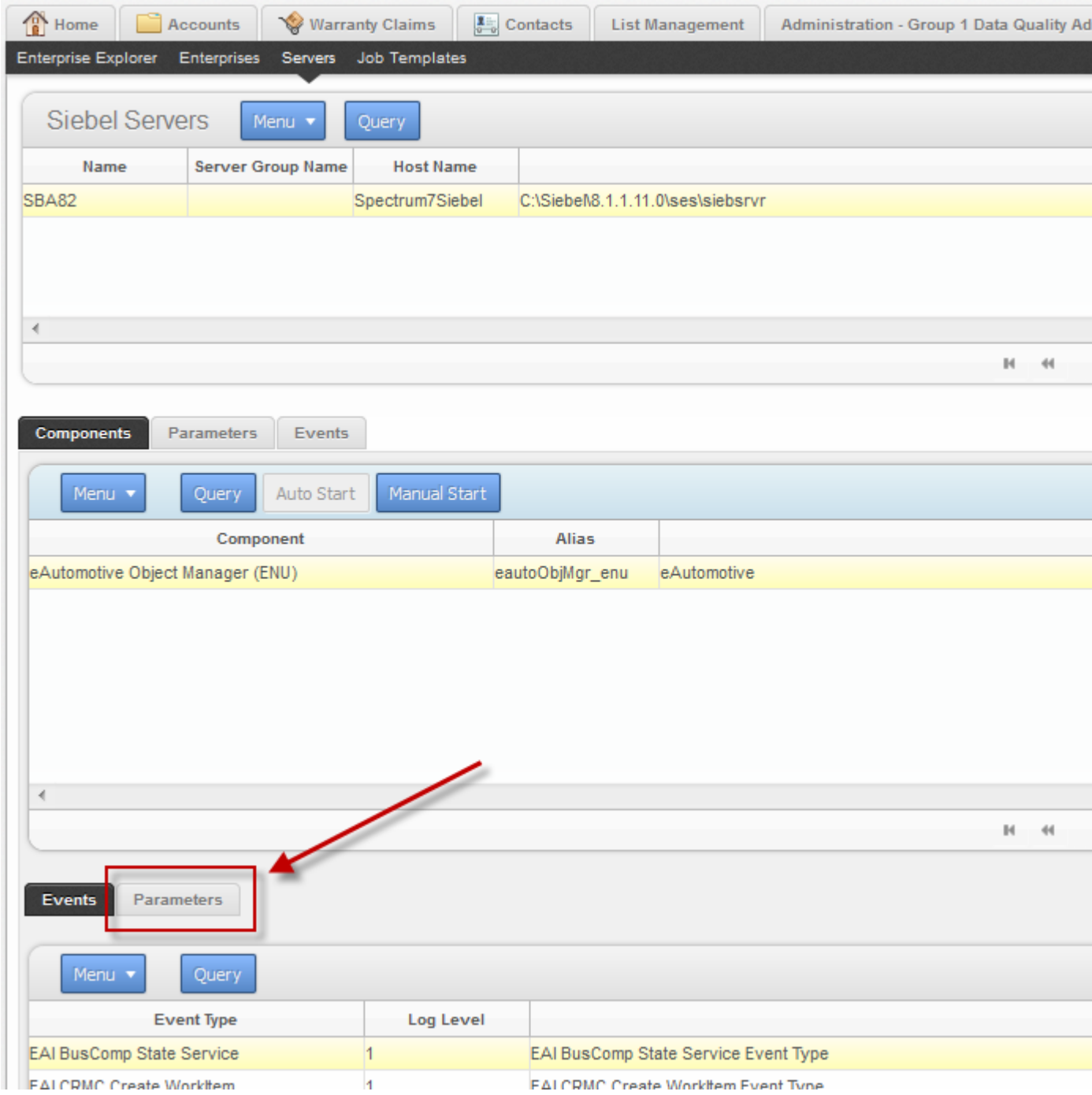
j) Click **Query**.
k) In the **Name** column, enter `EAI File Transport Folder List`.
l) Click **Go**.
m) In the **Value** column, enter the root of the drive where you have Siebel installed. For example, `C:\`.
n) Add the following values to the the .cfg file appropriate for your system (for example, `auto.cfg`, `tools.cfg`, and so on).

```
[EAIFileTransportConfigSubsys]
EAIFileTransportFolders=C:\
```

o) Restart the Siebel server and gateway.

21. Set the EditProfileAttr parameter:
a) Click **Navigate** > **Site Map**
b) Click **Administration - Server Configuration**.
c) In the **Administration - Server Configuration** section, under **Servers**, click **Components**.
d) On the **Components** tab, click **Query**.
e) In the **Component** column, enter the name of the Object Manager component. For example, "eAutomotive Object Manager".
f) Click **Go**.

g) Click the **Parameters** tab at the bottom of the window.



h) Scroll to the parameter EditProfileAttr.

i) Enter `True` in the **Value**, **Value on Restart**, and **Default Value** columns.

You have now configured Siebel non-SDQ to use Spectrum™ Technology Platform for data quality processing.

Configuring Microsoft Dynamics CRM

Integrating with Microsoft Dynamics CRM

To integrate Spectrum™ Technology Platform with Microsoft Dynamics CRM, you need to install supporting databases and dataflows on the Spectrum™ Technology Platform server, and deploy the Spectrum™ Technology Platform solution on your Microsoft Dynamics CRM server. Once you do this, users of Microsoft Dynamics CRM will have access to address validation, geocoding, and duplicate detection functionality from within Microsoft Dynamics CRM.

Note: End users who use Internet Explorer must use Internet Explorer 10 or 11. Older versions of Internet Explorer are not supported. All versions of Chrome and Firefox are supported.

1. If you are using Spectrum™ Technology Platform for address validation or geocoding, install the databases required to perform address validation and geocoding and define database resources for each database.

   Note: If you are using Spectrum™ Technology Platform for duplicate detection only, you can skip this step.

   You must give the database resources the following names.

Database	Required Name for Database Resource
Enterprise Geocoding Module - Canada Database	IGEO_CAN
Enterprise Geocoding Module - U.S. Database	EGM_US
Universal Addressing Module - Canada Database	Canada
Universal Addressing Module - Loqate Database	Loqate
Universal Addressing Module - U.S. Database	UAM_US

Note: You must install the Delivery Point Validation (DPV) data and the Residential Delivery Indicator (RDI) data in order to perform DPV and RDI processing on U.S. addresses.

2. Import the Microsoft Dynamics CRM Module dataflows into your Spectrum™ Technology Platform server.
   a) On the Spectrum™ Technology Platform server, open this folder:

   SpectrumFolder\server\modules\dataflows\mscrm

   Note: This folder is only available if you have installed the Microsoft Dynamics CRM Module.

   b) Review the following table then copy the applicable dataflow files to:

   SpectrumFolder\server\app\import

If you have installed this set of modules	Copy these dataflow files to the import folder
Advanced Matching Module	GenerateMatchKey.df GenerateMatchScore.df GenerateSearchKey.Consonant.df GenerateSearchKey.df GenerateSearchKey.Metaphone.df GenerateSearchKey.Substring.df
Universal Addressing Module without Loqate	ValidateAddresswithCandidates_UAM.df
Universal Addressing Module without Loqate Enterprise Geocoding Module	ValidateAddressWithCandidates_UAM_EGM.df
Universal Addressing Module with Loqate	ValidateAddressWithCandidates_UAM_Loqate.df
Universal Addressing Module with Loqate Enterprise Geocoding Module	BatchAddressValidate.df ValidateAddressAndGenerateMatchKey.df ValidateAddressWithCandidates_UAM_Loqate_EGM.df
Universal Addressing Module, Loqate only	ValidateAddressWithCandidates_Loqate.df

If you have installed this set of modules	Copy these dataflow files to the import folder
Universal Addressing Module, Loqate only Enterprise Geocoding Module	ValidateAddressWithCandidates_Loqate_EGM.df
Enterprise Geocoding Module	GeocodeUSAddressWithCandidates.df

3. Import the Microsoft Dynamics CRM Module into your Microsoft Dynamics CRM system.
   a) In the Spectrum™ Technology Platform installation package, browse to this folder:
      `MS CRM Objects\MS CRM Dynamics 2013\MSCRM Object\`
   b) Copy the file `netProxy.aspx` to the following folder on you Microsoft Dynamics CRM server:
      `MicrosoftDynamicsCRMInstallation``\CRMWeb`
   c) Copy the file `netProxy.dll` to the following folder on you Microsoft Dynamics CRM server:
      `MicrosoftDynamicsCRMInstallation``\CRMWeb\Bin`
   d) Log in to Microsoft Dynamics CRM as an administrator.
   e) Click **Microsoft Dynamics CRM** then click **Settings**.
   f) Click **Solutions**.
   g) Click **Import**.
   h) Browse to the the Spectrum™ Technology Platform installation package and select the following file:
      `MS CRM Objects\MS CRM Dynamics 2013\MSCRM Object\mscrm\PBMSDynamicsCRMConnector_1_0_0_managed.zip`
   i) Click **Next** then **Publish All Customizations**.
   j) Restart the Microsoft Dynamics CRM server.
4. Define the connection between Microsoft Dynamics CRM and the Spectrum™ Technology Platform server.
   a) Log in to Microsoft Dynamics CRM as an administrator.
   b) Click **Microsoft Dynamics CRM** > **Settings**.
   c) Click **Settings** > **Pitney Bowes**. You will have to scroll to the right to find the Pitney Bowes link.
   d) Click **Administration**.
   e) Click **New**.
   f) In the **Name** field, enter `PB`.
   g) In the **Server Name** field, enter the server name or IP address of the Spectrum™ Technology Platform server.

h) In the **Port** field, enter the port used by the Spectrum™ Technology Platform server for HTTP communication. By default the port is 8080.
i) In the **Account ID** field, enter the Spectrum™ Technology Platform user name.
j) In the **Password** field, enter the password for the Spectrum™ Technology Platform user.
k) Click **Save**

The Microsoft Dynamics CRM system now has access to address validation and, optionally, geocoding services on the Spectrum™ Technology Platform server.

9 - Support

In this section

Technical Support

If you run into an issue, Pitney Bowes Technical Support can help guide you to a solution. When you contact Pitney Bowes Technical Support, please provide the following information:

- A description of the task you were performing
- The level or version of your operating system
- The patch level or service pack
- The log file located in your install directory at:
  `<SpectrumInstallationLocation>\server\app\repository\logs\wrapper.log`

Contact information for Technical Support can be found at:

www.g1.com/Support/Contact

Note: If you purchased Spectrum™ Technology Platform through a third-party partner, please contact the partner for technical support.

Documentation

Product documentation can be found at:

support.pb.com/spectrum

Digital Insights

Digital Insights is an online resource for Pitney Bowes leadership to share innovations, goals, and product news, as well as exchange ideas with visitors. You can access Digital Insights at:

blogs.pb.com/digital-insights/

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