Sterling Integrator

IBM

Managing Services and Adapters

Version 5.1

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Chapter 1. Overview of Services and Adapters

Learning About Services and Adapters

Introduction to Services in Sterling Integrator

Services and adapters are used to perform activities in the application such as converting data formats, enveloping EDI data, or exchanging data or messages with a remote system.

The application includes many services and adapters that can be built into business process models. This includes a host of configurable adapters ready for use in business processes for activities such as running legacy programs, ERP systems, Perl scripts, Java™ code, decision engines, defined subprocesses, or virtually any program. Adapters provide noninvasive integration with ERP, Supply Chain Management, Customer Relationship Management, other packaged applications, legacy applications, communications protocols, queuing solutions, and databases.

When the application is installed, the services and adapters are installed with it. Some services are included in the base product, such as the HTTP Client adapter and the LightWeight JDBC adapter. Others are purchased as add-ons that are used for specific functions, such as RosettaNet or ACH standard-compliant messaging. You can use any of the services and adapters that are included in your product license. If you are not sure which services and adapters are part of your license, contact your Sterling Commerce sales representative for assistance.

Key Terms Used with Services and Adapters

These are the most frequently-used service and system-related terms in this guide. Review this topic first, then keep it available for reference as you read through the other topics.

Fundamental Service Terms

These are the terms used most often when talking about the services themselves.

Note: These terms are arranged in order of relevance, not in alphabetical order.

Term	Definition
Service	In Sterling Integrator, a service is a resource that you can configure to carry out an activity. For example, the Translation service is used to convert EDI or XML data from one format to another.
Adapter	Adapters are special cases of services that interact with external systems, or that store or manage state data outside of the workflow context. For example, the WebSphere MQ adapter and the SAP Suite adapter are used to communicate with applications external to the application.

Term	Definition
Service Type	Definition of a service. A service type is like a java class: it is not an object; it must be instantiated for it to exist. The service type defines the "concept" of a particular service; the service configuration you create from it is the object.
Service Configuration	A copy of a particular service type. You use service configurations to perform various activities in the system, such as translating data, receiving data from another application, or tracking specific information like a Sender ID through the various stages of a business process.
Service Group	A set of service configurations of the same service type that can act as peers (can be configured to perform the same activity in the same setting).
Service Parameters	Information used to define a service type or configuration, and to provide the system with processing data and instructions. There are three types of service parameters: • Global parameters These have the widest scope. They are applicable to all services of this type. They have a constant value for all configurations of a service. These parameters are preset and cannot be changed. • Instance parameters These are specific to a single service configuration. You define these parameters in the Admin Console, as part of creating or editing a service configuration. • Workflow parameters You can override or specify this type of parameter at the business process level. You define these in the Graphical Process Modeler (GPM) or by passing the information through BPML at runtime.

Additional Service Terms You Should Know

These terms pertain to service categories, and to Sterling Integrator components that are used with services.

Note: These terms are arranged in alphabetical order.

Term	Definition
Admin Console	The Admin Console pane is your access point to all the standard features in the application Dashboard. Many of the service and adapter tasks are performed from the Deployment > Services menu option located in the Admin Console.

Term	Definition
Bootstrap Adapter	Adapter that is capable of receiving data from external systems and dynamically selecting and running business processes. In some cases, is also referred to as a server adapter or input adapter. Examples of bootstrap adapters are the File System adapter, FTP Server adapter, and HTTP Server adapter.
Business Process	In the business world, a business process is any goal-driven, ordered flow of activities that accomplishes a business objective. Invoicing, order fulfillment, and updating employee information are all examples of business processes. In the application, business process refers to the automated implementation of business objectives. Most processing activities of the application are predicated upon defined business processes—the custom-designed programming instructions you provide to the application, to perform your required activities. Business processes are based on the draft Business Process Modeling Language (BPML) specification from the Business Process Management Initiative (www.bpmi.org). Business process definitions are stored in XML and can be created in any editor that can export the XML format recognized by the application.
Business Process Model	The application enables you to create an automated business process using drag-and-drop technologies to link activities in a digital, graphic representation of the related task—known as a business process model. The business process model is the definition for the process, used by the application each time it runs the process. The activities in your business process models are carried out by services and adapters, represented by icons in the graphical interface. This method enables you to incorporate small units of reusable code into your business processes, and, at the same time, create larger units of reusable code specific to your business operations. Creating business process models is the central endeavor around which your use of the application hinges. Think of business processes in the application as the structures by which you organize software components and activities to fulfill your work objectives.

Term	Definition
Graphical Process Modeler (GPM)	The Graphical Process Modeler is a Web-deployed graphical interface tool you use in conjunction with the application to create and modify business processes. The GPM converts your graphical business process models into source code, saving you the effort of writing code. In the GPM interface you construct your business process models, coordinating the flow of activities in a graphical depiction of the ordered steps. The GPM provides icons representing the services, adapters and BPML instructions that make up your process models. In addition, you configure related parameters through the GPM and create rules and conditions within your process models.
Internal Service	Internal services are a subset of system services. They are reserved for use by the application and are subject to change without notice. Do not use these services when creating your own business processes. Examples are the Auto-Terminate service and Request Response XREF service.
Output Adapter	Adapter that sends data to external systems.
Perimeter Server	A perimeter server is a software tool for communications management that can be installed in a DMZ. The perimeter server manages the communications flow between outer layers of your network and the TCP-based transport adapters. A perimeter server can solve problems with network congestion, security, and scalability, especially in high-volume, Internet-gateway environments.
Removed Service	Services that are no longer installed with the product, but are still available on the product CD. Patches and enhancements are no longer provided.
Resource	In Sterling Integrator, resources are files, templates, and documents that are deployed to perform various actions.
Retiring Service	Services that have entered the deprecation process but are still available for use in the current release of the product.
Stateful Adapter	An adapter can be either stateful or stateless. For stateful adapters, the service controller instantiates one object for each configured copy of the adapter.

Term	Definition
Stateless Adapter	An adapter can be either stateful or stateless. For stateless adapters, the service controller instantiates one object that services all configured copies of the adapter. Each request to the service adapter implementation of the adapter must be a complete request, because states cannot be maintained between requests.
System Service	A service that is used by the system for internal functions and processes, or a service that can be used in business processes to define how the bp should behave under circumstances such as an exception or fault.
Workflow Context (WFC)	The WFC represents the business process state after each service has run. The WFC input to a service is written to a database. The service step is complete after the new WFC is placed in persistent storage. If the application stops, it can be restarted from the persisted WFCs by finding the most recent WFCs and sending those requests to the appropriate services. Services can be restarted automatically. Adapters, which are put in a halting state when the application starts, require user intervention to restart them.

About Services

In Sterling Integrator, a service is a resource that you can configure to carry out an activity. For example, the Translation service is used to convert EDI or XML data from one format to another.

About Service Types

A service type is the definition of a service. A service type is like a java class: it is not an object; it must be instantiated for it to exist. The service type defines the "concept" of a particular service; the service configuration you create from it is the object.

Service types are not used directly to perform activities in the application. Instead, you create a service configuration from a service type. Then, you use the configuration in a business process, or in some cases, set the service or adapter to run on its own and communicate with other systems.

About Service Configurations

A service configuration is a copy of a particular service type. You use service configurations to perform various activities in the system, such as translating data, receiving data from another application, or tracking specific information like a Sender ID through the various stages of a business process.

To use a service, you must first select an existing service configuration, or create a new one. Some service configurations are installed with the product; these are predefined and ready to use for specific functions. Review the documentation for

the service type to see if there are existing configurations that would fit your needs. If not, you can create a new configuration.

Defining a new service configuration has two steps:

- Create the service configuration in Admin Console, which automatically assigns any global-level parameters to this configuration. Global parameters are those that apply to all configurations that you create for a particular service type. You enter information for any instance-level parameters for this service type in the Admin Console. Instance parameters are specific to a single service configuration.
- To use a particular service configuration in a business process model, you select it in the GPM and define workflow-level parameters there. Workflow parameters are specific to a single invocation of a service configuration. These are passed to the service during a business process execution.

Service Types with Predefined Configurations

Some service types come with a predefined service configuration that is ready to use. This is true for the internal and system services that are used for system performance, monitoring, and maintenance tasks. These service configurations are installed with the product, because they must be in place and ready to perform functions the first time you start the system.

Sometimes, service configurations are provided because it is recommended that you use them rather than creating your own. You should never need to create any other configurations for these service types—the ones provided are designed to be used in multiple business processes. One example is the set of FTP Client services. One configuration of each is provided. Each service performs a particular FTP function, such as PUT, GET, or LIST. You include the services in business processes to use them. These services work with an FTP Client adapter, which performs the actual communication with a remote FTP server (an FTP server outside Sterling Integrator).

Service Types without Predefined Configurations

Some service types do not come with predefined service configurations. This can be because they require additional configuration by the user, or because they will not be needed by all users - for example, the SAP Suite adapter would only be needed by users who will communicate with an SAP server. To use these service types, you must create at least one service configuration.

Service Concepts You Should Know

- One service type can have many service configurations.
- Each service configuration must have a unique name, because other Sterling Integrator components and programs identify service configurations by name.
- Multiple business processes can use the same service configuration.
- You can create groups of service configurations (of the same service type) that will act as peers. Service groups are used like service configurations in Sterling Integrator, but give you the advantage of being able to balance data loads more effectively by using several services of the same type to handle a particular task, rather than a single service.
- For a service type to be displayed on a stencil in the GPM, a service configuration must exist for it. So, if a service configuration was not included with Sterling Integrator for a service type you need to use, you must create one.

Special Service Capabilities

Services have the following capabilities, which provide flexibility in managing services:

* Large file support – The ability for services to handle files larger than available memory. This can be an effective way to help manage load sharing.
* Service groups – The ability to group "like" services together and treat them as a pool of services
* Storage types – The ability to select the document storage type for a service, such as Database or File System

Documentation for Individual Services and Adapters

Documentation is provided with the product for individual service and adapter types (except for internal services that are for Sterling Commerce use only). Although the content can vary depending on the complexity of the service, it generally includes an overview page, any special instructions for configuration of that service, descriptions of the service parameters, and a sample of how the service is used in a business process. The service documents are available on the documentation library.

Overview of Using a Service

The following process lists the general tasks that you must perform to use a service or adapter. However, because each service is different, you should always read the documentation specific to that service to learn about any unique requirements it may have.

1. Activate your Sterling Integrator license file, if required.
2. Obtain and install required third-party jar files or drivers, if applicable.
3. If necessary, create a new configuration of the service.
4. If necessary, enable the service configuration.
5. If you are using the service configuration as a part of a business process, complete the following:
   * Use the GPM to create the business process.
   * Check in and enable the business process.
   * Test the business process, including the service configuration, by running it.
   * After testing the business process, set it up to run on a schedule or run it as needed, according to your business requirements.

"How Services Work with Business Processes"

How Services Work with Business Processes

Services are an integral part of business processes. The application architecture centers around the execution of individual services according to your business process models. At the core of the system architecture is the integration engine, which executes the services and adapters needed to achieve your business goals and enable visibility into processing activity.

The application may start business processes in different ways:

* According to a user-defined schedule

- By bootstrapping - in response to an activity, such as an FTP transfer of a file to the system
- A user manually starts a process

At each step in a business process, the integration engine calls the indicated service and one of the following ensues:

- Services run within the application.
- Adapters call third-party applications to perform activities outside of the application.
- BPML activities configured in the business process model provide instructions to the integration engine regarding the process flow, such as start and stop, assign a specified value in the process data, run specified activities simultaneously, and so forth.

When an activity completes, the integration engine progresses to the next step in the business process.

At each step in a business process, the application saves a copy of work flow context (WFC) data, which records the state of the business process from service to service. The WFC contains the document being manipulated by the business process and is where each service reports any errors.
Parent topic: "About Services" on page 5

About Service Groups

In Sterling Integrator, you can create groups of service configurations. A group can only contain service configurations of one service type. A service group is a set of service configurations of the same service type that can act as peers (can be configured to perform the same activity in the same setting).

In some situations, you may want to use service groups in your Sterling Integrator cluster to enhance load balancing and failover activities for adapters that use perimeter services - for example, the HTTP Server adapter. If all of the services or adapters in a service group are configured compatibly (identically, except for perimeter server selection), and one of the services in the service group is busy, another service configuration can pick up the business process and begin processing. This is load balancing. If one of the services in the service group is disabled, another service in the service group can pick up a business process and begin processing. This is failover support. For more information about using perimeter services with clustering, see the *Perimeter Services* documentation. For more information about clustering in general, see the *Clustering* documentation.

Service Group Concepts You Should Know

Here are some important concepts about service groups:
- A service group can include only one service type. For example, a group can contain multiple configurations of the HTTP Server adapter, but cannot contain an HTTP Server adapter configuration and an FTP Server adapter configuration.
- Groups do not exist as actual entities in the system; groups are only stored as parameters in service configurations.
- The only way to create or edit a group is by creating or editing a service configuration.
- A service group cannot have the same name as an individual service or as another group, even if the group is for a different service type.

- To remove a service group from Sterling Integrator, simply remove all the service configurations from the group. Also, if you delete all the service configurations that are part of the group, the group no longer exists.
- Once a group no longer exists, you can reuse its name for a new service configuration or group.
- When writing BPML, to use a service group, refer to it in the same way that you would an individual service configuration. For example, if you had a service group named MyHTTPServers, you could use the statement `<participant name="MyHTTPServers"/>` in a business process.
- In the GPM, you can see and select service groups from the config list, the same way that you would select one individual service configuration. (In the config list, service groups are not distinguished from individual service configurations.)

Parent topic: "About Services" on page 5

About Adapters

Adapters are special cases of services that interact with external systems, or that store or manage state data outside of the workflow context.

Adapter Concepts You Should Know

- One adapter type can have many adapter configurations.
- Each adapter configuration must have a unique name, because other Sterling Integrator components and programs identify adapter configurations by name.
- You can create groups of adapter configurations (of the same adapter type). Adapter groups are used in the same way as adapter configurations, but can help with load balancing and failover processing. For more information about service or adapter groups, see About Service Groups.
- The separation of business logic (BP) and the endpoint (adapter) allows for a many-to-many relationship between adapters and business processes. Using the metadata given to the business process, one adapter can start several business processes.

  Conversely, several adapters can start the same business process. A many-to-many relationship between adapters and business process definitions enables the application to focus on business problems, not just on how data arrives.

  For example, separating your business logic from the inputs and outputs used to send and receive files allows you to re-use the business logic portion of your entire workflow. Your business logic might be something like transform the data and send it to a back-end system for processing. By separating this from the adapter, that logic can be instantiated by more than one protocol adapter.

Bootstrap Adapters

Some Sterling Integrator adapters can dynamically select and run business processes. These are known as bootstrap adapters. Examples are the File System adapter, and FTP Server adapter.

Many bootstrap adapters have a configuration parameter that enables you to change the document storage setting from the system default. You can select from the following options:

- File System – Stores documents on the file system. This is controlled by the document_dir setting in jdbc.properties. You might want to consider using this option if you are configuring one of the Server adapters (HTTP Server adapter,

FTP Server adapter, Connect:Direct Server adapter) or the File System adapter. Before selecting this option, consider the following: If you choose to store documents on disk, you must perform certain system tasks manually for the documents, such as archiving. For a clustered environment, the document directory must be available using the same path on all nodes of the cluster.

- Database – Stores documents in the database. If the documents are very large, it can ultimately slow down the system by overburdening the database. This is the best method to use if the service will generate smaller files.
- Default – Uses the default storage method for this system. The default is controlled by the defaultDocumentStorageType setting in the jdbc.properties file. The installed default is Database.

Third-Party Adapters

For some adapters used with third-party software, you must install specific jar files or drivers before you can use the adapter. These third-party jar files are available from the applicable third-party software vendors. Often, you can download the files from the vendor's Web site. If an adapter requires any third-party files, the specific information about the files is included in the documentation for that adapter. Adapters that may require third-party jar files or drivers include:

- Oracle Tuxedo adapters
- Instant Messaging Adapter Suite
- Adapter for PeopleSoft
- WebSphere MQ adapter
- SAP Suite adapter

The scripts are: install3rdParty.sh (for UNIX/Linux) or install3rdParty.cmd (for Windows), located in the Sterling Integrator *install_dir*/bin (or \bin) directory.

You can view instructions and syntax for the script by typing `install3rdParty.sh` (for UNIX/Linux) or `install3rdParty.cmd` (for Windows) on the command line from the bin directory.

Note: When executing the Install3rdParty script, the new file references will be appended to the installdir/properties/dynamicclasspath.cfg file. After running the Install3rdParty script, the installdir/properties/dynamicclasspath.cfg should be reviewed to ensure there is only one reference to the file being added. If more than reference exist, the older reference should be removed from the installdir/properties/dynamicclasspath.cfg.

Adapter and Service Suites

Some adapters are designed to be used with a set of related services. For example, the FTP Client adapter works with the FTP Client services. These adapters are not used within business processes themselves; their services are used in the business process and communicate with the adapter, which then communicates with a system outside the application, such as a remote FTP server.

About Creating a Custom Service or Adapter

Creating custom services and adapters for use with the application requires specialized programming knowledge and skills, as well as a solid understanding of the application. The following list includes the types of knowledge and experience necessary for successfully creating custom services and adapters:

- Java (J2SE) programming knowledge
- General operational and architectural knowledge of the application
- Eclipse programming experience

The following knowledge and experience are helpful, but not required:
- Multi-threaded programming experience in Java
- Ability to write custom APIs and user exits

Before you decide that you require a custom service or adapter, review the services and adapters provided to see if any can be adapted to meet the business need.

If you find that you do need a custom service or adapter, you will need to purchase the Sterling Commerce service developer toolkit called MESA™ Developer Studio. MESA Developer Studio is an Integrated Development Environment (IDE) that uses Eclipse software plug-ins. It enables you to create and deploy custom services and adapters to your Sterling Integrator instance.

If you do not have staff with the prerequisite knowledge and skills, you may also want to consider having Sterling Commerce Consulting Delivery Services work with you.

For more information about purchasing MESA Developer Studio or delivery services, contact your Sterling Commerce sales representative.

Chapter 2. Using Services and Adapters

Selecting a Service in the Admin Console

When you create or edit a service configuration in the Admin Console, you must select the name of the service to work with. There are three ways to select a service.

From the Admin Console, select Deployment > Services > Configuration. From the Select Service Type page, select a service using one of the following methods:

- By category: click the **Tree View** icon. Find the category of service that you want and open that branch. Select the service type and click **Save**. Your selection is entered in the **Service Type** field.
- Alphabetically: click the **List View** icon. Type a partial or complete name in the **Filter by Type** field and click the **Filter** icon. Select the desired service from the results list and click **Save**. Or, select a service type from the list of all services and click **Save**. Your selection is entered in the **Service Type** field.
- Type the name of the service type in the **Service Type** field. This must be the full name; partial names are not accepted.

Creating a Service Configuration

About this task

In some cases, you must create a configuration of the service you want to use. You can create many configurations from one service type.

Note: You can save your configuration at any point in the configuration process by clicking **Save**. You can then return to it later.

Procedure

1. On the Deployment menu, select **Services** > **Configuration**.
2. Next to **Create New Service**, click **Go!**
3. Use the **Tree View** or **List View** to locate and select a service to configure, or type the full name of the service in the **Service Type** field. Click **Next**.
4. Type a unique and meaningful name and description for your configuration in the appropriate fields and click **Next**.

   Note: If you are using a MySQL database, do not create service configurations whose names begin with an accented character.
5. Select or create a service group for this service configuration, as needed. Selections are:
   - **None** – You do not want to include this configuration in a group at this time.
   - **Create New Group** – You can enter a name for a new group in this field, which will then be created along with this configuration.
   - **Select Group** – If you have already created one or more groups for this service type, they are displayed in the list. Select a group from the list.
6. Complete the fields specific to the service. See the documentation for a specific service for more information.

7. To enable this configuration for business processes, select **Enable for Business Processes**.
8. Confirm the information about the service configuration you created and click **Finish**.
9. To determine if additional configuration is necessary, see the documentation for the specific service. You may need to specify additional parameters for some services using the Service Editor in the GPM.

Copying a Service Configuration

About this task

You can copy an existing service configuration to create a service configuration with different settings. Copying is especially helpful when you want to create several configurations for one service, and you want to duplicate some configuration settings without doing a lot of manual entry.

The settings you specify for the new (copied) service configuration do not affect existing configurations. When you create a new configuration from a copy, give the configuration a unique, meaningful name to differentiate it from existing ones. For example, you have a Command Line Adapter 2 configuration called RunBatchFile1. You need to create another configuration that will be used for running a different command line file. You have determined that most of the settings will be the same as those for RunBatchFile1, so the fastest way to create the new configuration is to copy RunBatchFile1 and edit only the settings that need to be different for your new configuration.

Procedure

1. On the Admin Console Deployment menu, select **Services** > **Configuration**.
2. Select the service configuration you want to copy from the **by Service Type** list and click **Go!**
3. Click **Copy** next to the configuration that you want to copy.
4. Make any necessary changes to the name or description and click **Next**.
5. To enable this configuration for business processes, select **Enable for Business Processes**.
6. Confirm the information about the configuration you copied and click **Finish.**

Editing a Service Configuration

About this task

You can edit the settings of a service configuration before or after including the configuration in a business process. You also can edit a service configuration while business processes that use it are running. Business processes that use the service configuration you are editing finish processing with the previous configuration.

All business processes that are initiated after the edited configuration is saved will use the edited configuration.

Procedure

1. On the Deployment menu, select **Services** > **Configuration**.
2. Type the name of the configuration you want to edit in the **Service Name** field and click **Go!**

3. Click **Edit** next to the configuration you want to update.
4. Make any necessary changes to the name or description and click **Next**.
5. To enable this configuration for business processes, verify the **Enable for Business Processes** is selected.
6. Confirm the information about the configuration and click **Finish**.

Deleting a Service Configuration

About this task

In Sterling Integrator, you can delete individual service configurations (except system service configurations). Some reasons you might delete a configuration are:
- Reduce the number of pages of service and adapter configurations displayed.
- Reuse resource names (and allow the service type to be changed).

Here are some important concepts about deleting service configurations:
- Only user accounts that have SII_DELETE and BPMANAGE permissions can delete configurations.
- You cannot delete a service type or a system service configuration.
- Deletion of a service configuration is permanent and the service configuration cannot be restored.
- If the service configuration runs on a schedule, the schedule is deleted with the service configuration.
- When a user account is required by a service configuration (for example, to access a mailbox), and that user account is deleted, the service configuration will not run and generates an error message.
- After you confirm that you want to delete a service configuration, the application deletes it and creates a log entry that contains the name of the service configuration, date and time of deletion, and the user account who performed the deletion.
- After a service configuration has been deleted, you can reuse the name.

Before you delete a service configuration, complete the following tasks:
- Use the Export Resources function to save a copy of the service configuration to offline storage (recommended).
- Disable the service configuration (enabled services cannot be deleted).
- Identify any uses of that service configuration prior to deleting it. Depending on the service type, the configuration may be used by one or more business processes; it may initiate a business process; or it may run independently – for example, a File System adapter configuration can run without being part of a business process.
- Change any business process that uses this configuration to use a different one. A business process that contains a deleted service configuration will fail when run.

To delete a service configuration:

Procedure

1. From the Deployment menu, select **Services** > **Configuration**.
2. Under List, select the service type of the service configuration you want to delete from the by Service Type list and click **Go!**

3. Click **Delete** next to the service configuration that you want to delete.
4. Verify that you want to delete this service configuration and click **OK**.
5. The Resource Summary is displayed, which includes the service type, name and description for this service configuration. Verify that the information shown is for the service configuration that you want deleted.
6. Confirm that you have backed up the service configuration, and that the information shown is for the service configuration you want to delete.
7. Click **Delete** to remove the service configuration.

Enabling or Disabling a Service Configuration

About this task

When necessary for business processes, you can enable and disable service configurations. Business processes can use enabled service configurations only. When you disable a service configuration, it is not available for business processes. For example, you may need to disable a service configuration when you are testing it before making it available for use in a business process. Or you may need to disable a service configuration when you are preparing to delete it.

Keep the following in mind when enabling or disabling a service configuration:
* Business processes that attempt to execute a disabled service configuration will halt at that step.
* If you re-enable a service configuration that uses a schedule, you must re-enable the schedule as well.
* Adapter configurations can also be enabled and disabled using options in the **Operations** > **System** > **Troubleshooter** dialog box.

Procedure

1. On the **Deployment** menu, select **Services** > **Configuration.**
2. Under **Search**, in the **Service Name** field, type the name of the configuration you want to enable or disable and click **Go!**
3. Do one of the following:
   * To enable a configuration, select its **Enabled** check box.
   * To disable a configuration, clear its **Enabled** check box.

Chapter 3. Running Adapters in a Separate JVM

Overview

Adapter availability is the key to measure Sterling Integrator stability. Activities that prevent an adapter from being available may affect the ability to do business. Activities that currently require Sterling Integrator to be unavailable include, but not limited to:

- Installing patch
- Restarting system to pick up property file updates
- Out-of-memory and other system errors

You can choose to run adapters in a separate Java Virtual Machine (JVM), which in turn will increase the adapter availability. The adapter is loosely coupled to Sterling Integrator via database and Java Message Service (JMS). By running adapters in a separate JVM, you can:

- Isolate adapters from engine failure.
- Isolate engine from adapter failure.
- Isolate one adapter failure from another adapter.
- Separate lifecycle for adapters.
- Receive data for adapter even if engine application server-independent virtual machine (ASI VM) is down, but the database must be up and running.

You can run adapters in a separate JVM by creating an adapter container JVM. The adapter container JVM acts like a cluster node, but with limited functions. If you are running Sterling Integrator in a single node environment, the adapter container JVM is listed as a cluster node. Similarly, if you are running Sterling Integrator in a cluster environment, it is listed as a node along with other nodes, but you cannot schedule a business process to run in the adapter container JVM.

It is recommended to configure Sterling Integrator to utilize an external ActiveMQ environment for JMS execution and failover in a cluster environment. The external ActiveMQ environment must utilize the master/slave configuration to increase the availability. For more information about configuring Sterling Integrator to utilize an external ActiveMQ environment, refer to *ActiveMQ Modularization* documentation.

The bootstrapped business processes are persisted to the database if the external ActiveMQ is down. The regular recovery process then picks up the bootstrapped business processes.

Sterling Integrator requires a range of 100 consecutive open ports between 1025 and 65535. However, if you are running Sterling Integrator in a vertical cluster environment, the ports reserved by Sterling Integrator is higher than 100 ports. It can be calculated by the following formula:

(Number of nodes * 100)

The following adapters can be run in a separate JVM by creating an adapter container JVM:

- FTP
- FTPS

- SFTP
- HTTP
- HTTPS
- Connect:Direct

Configure Adapter Container JVMs

The adapter container JVM enables an adapter to run in a separate JVM. The adapter container JVM acts like a cluster node without workflow engine.

This topic provides information about the following tasks:
- "Setup Adapter Container"
- "Start Adapter Container" on page 21
- "Stop Adapter Container and ASI" on page 22

"Setup Adapter Container"

"Start Adapter Container" on page 21

"Stop Adapter Container and ASI" on page 22

"Adapter Container Example" on page 24

Setup Adapter Container

The database should be up and running to setup an adapter container JVM as database is updated to setup adapter container.

Ensure that you have sufficient hardware resources before configuring container nodes. The default value of maximum heap for container node is 512 MB. You can increase this value if the container hosting the adapter is processing a large amount of data. The container node properties can be located in the *install_dir*/install/properties/node*AC* directory, for example *install_dir*/install/properties/node1AC1. The database connection parameters are the same as that of ASI node. However, you can modify the database connection parameters by overriding them in the customer_overrides.properties file in the container node properties directory.

For more information about tuning container JVMs, refer to *Sterling Integrator Performance Management* documentation.

Every ASI node and container node contains customer_overrides.properties file. You have to update the customer_overrides.properties file in the respective nodes to apply or override any changes. You should update customer_overrides.properties file depending on the order in which you setup the container node:
- If you create customer_overrides.properties file in the ASI node before the container node is setup, the properties added into the customer_overrides.properties file of the ASI node would be automatically added into the customer_overrides.properties file in the container node.
- If you create/update customer_overrides.properties file in the ASI node after the container node is setup, the properties added into the customer_overrides.properties file of the ASI node should be manually added into the customer_overrides.properties file in the container node.

This topic covers the following:
- Setup Adapter Container - iSeries
- Setup Adapter Container - UNIX/Linux

- Setup Adapter Container - Windows

Setup Adapter Container - iSeries

To setup an adapter container JVM in iSeries:

1. Navigate to the *install_dir*/install/bin directory.
2. Perform this step, which enables you to set up the adapter container independently later without shutting down the system.

   Note: You should skip this step if you are adding additional adapter containers after setting up at least one adapter container.

   If application server-independent (ASI) node is up, run **./hardstop.sh** command to stop it.

   Run **./startCluster.sh 1 false** command.
3. From QSH, setup adapter container by running **./setupContainer.sh** *containerNumber* command from the *install_dir*/install/bin directory.

   In this convention, *containerNumber* refers to the adapter container node number. For example, if you run **./setupContainer.sh 1** on Sterling Integrator system, then the adapter container name will be node1AC1.

Setup Adapter Container - UNIX/Linux

To setup adapter container JVM in UNIX/Linux:

1. Navigate to the *install_dir*/install/bin directory.
2. Perform this step, which enables you to set up the adapter container independently later without shutting down the system.

   Note:

   You should skip this step and perform step 3 if you are:
   - Running Sterling Integrator in a cluster environment.
   - Migrating Sterling Integrator to a cluster environment after setting up at least one adapter container.

     For more information about migrating to a cluster environment, refer to *Sterling Integrator Cluster Installation* documentation.
   - Adding additional adapter containers after setting up at least one adapter container.

   If application server-independent (ASI) node is up, run **./hardstop.sh** command to stop it.

   Run **./startCluster.sh** *1* **false** command.
3. Setup adapter container by running **./setupContainer.sh** *containerNumber* command.

   In this convention, *containerNumber* refers to the adapter container node number. For example, if you run **./setupContainer.sh 2** on Sterling Integrator node2, then the adapter container name will be node2AC2.

Setup Adapter Container - Windows

To setup adapter container JVM and install it as a service in Windows:

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

2. Perform this step, which enables you to set up the adapter container independently later without shutting down the system.

   Note:

   You should skip this step and perform step 3 if you are:
   - Running Sterling Integrator in a cluster environment.
   - Migrating Sterling Integrator to a cluster environment after setting up at least one adapter container.

     For more information about migrating to a cluster environment, refer to *Sterling Integrator Cluster Installation* documentation.
   - Adding additional adapter containers after setting up at least one adapter container.

   If application server-independent (ASI) node is up, run **stopWindowService.cmd** command to stop it.

   Run **startCluster.cmd** *1* **false** command.
3. Setup adapter container by running **setupContainer.cmd** *containerNumber* command.

   In this convention, *containerNumber* refers to the adapter container node number. For example, if you run **setupContainer.cmd 2** on Sterling Integrator node2, then the adapter container name will be node2AC2.

Applying New Builds

You should stop application-server independent (ASI) nodes before applying new builds. However, container nodes can be running when you are applying new builds. You can apply new builds to the ASI nodes and container nodes separately. You can apply new builds to the container nodes after applying them on the ASI nodes.

If you intend to apply new build to both container node and ASI node together, both nodes should be stopped. For more information, refer to Sterling Integrator Upgrade documentation.

If you intend to apply new build to the ASI node and container node separately, ensure that you first apply the new build to the ASI node.

To apply new build to the ASI node, perform the following tasks:
1. Stop ASI node by running one of the following commands:
   - (UNIX/Linux or iSeries) **./stopASI.sh**
   - (Windows) **stopASIWindowsService.cmd**
2. Stop ASI ops server by running one of the following commands:
   - (UNIX/Linux or iSeries) **./stopASI.sh ops**
   - (Windows) **stopOpsWindowsService.cmd**
3. Install the new build by running one of the following commands:
   - (UNIX/Linux or iSeries) **./InstallService.sh** *<patch.jar>*
   - (Windows) **InstallService.cmd** *<patch.jar>*
4. Start ASI node by running one of the following commands:
   - (UNIX/Linux or iSeries) **./run.sh**
   - (Windows) **startASIWindowsService.cmd**

To apply new build to the container node, perform the following tasks:

1. Stop adapter container nodes by running one of the following commands:
   - (UNIX/Linux or iSeries) **./stopContainer.sh**
   - (Windows) **stopContainerWindowsServices.cmd**
2. Install the new build by running one of the following commands:
   - (UNIX/Linux or iSeries) **./patchContainerNodes.sh**
   - (Windows) **patchContainerNodes.cmd**
3. Start adapter container node by running one of the following commands:
   - (UNIX/Linux or iSeries) **./startContainer.sh**
   - (Windows) **startContainerWindowsService.cmd**

You should update customer_overrides.properties.in file in each container node if you have customized bundles. For example, if you have two OSGI bundles, customer_bundle1.jar and customer_bundle2.jar, you should place them in *install_dir*/install/osgi/bundles (*install_dir*\install\osgi\bundles for Windows) directory. Additionally, you should add the following line in the customer_overrides.properties.in file in the *install_dir*/install/properties/node*AC* (*install_dir*\install\properties\node*AC* for Windows) directory:

osgi.osgi.auto.start.bundles.customer=customer_bundle1.jar, customer_bundle2.jar

Parent topic: "Configure Adapter Container JVMs" on page 18

Start Adapter Container

This topic covers the following:
- Start Adapter Container - iSeries
- Start Adapter Container - UNIX/Linux
- Start Adapter Container - Windows

Start Adapter Container - iSeries

To start adapter container JVM in iSeries, run one of the following commands:

- Submit a batch job by entering the following command:

  SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; ./runAll.sh'))
  JOB(SIMAIN)

  To reduce keying errors at startup, create a command language (CL) program similar to the following example:

  PGM
  SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; ./runAll.sh'))
  JOB(SIMAIN)
  ENDPGM

Or

- Submit batch jobs by entering the following commands:

  SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; ./run.sh'))
  JOB(SIMAIN)
  SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; ./startContainer.sh
  ')) JOB(SICONTAIN)

  To reduce keying errors at startup, create a command language (CL) program similar to the following example:

  PGM

```
SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; ./run.sh))
JOB(SIMAIN)
SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ;
./startContainer.sh')) JOB(SICONTAIN)
ENDPGM
```

This will start Sterling Integrator and the adapter container JVM as separate jobs.

Start Adapter Container - UNIX/Linux

To start adapter container JVM in UNIX/Linux, run one of the following commands from the *install_dir*/install/bin directory:

- **./runAll.sh** - starts Sterling Integrator and all configured adapter container JVMs.
- **./run.sh** - starts noapp node.
- **./startContainer.sh** # - starts specified adapter container JVM.

Note: If you run **./runAll.sh** script, it starts Sterling Integrator and all configured adapter container JVMs. Similarly, **startContainer.sh** will start all configured adapter containers.

Start Adapter Container - Windows

To start adapter container JVM in Windows, run one of the following commands from the *install_dir*\install\bin directory:

- **startWindowsService.cmd** - starts Sterling Integrator and all configured adapter container JVMs.
- **startContainerWindowsService.cmd** - starts all configured adapter container JVMs.
- **startContainerWindowsService.cmd** # - starts specified adapter container JVM.

  In this convention, # refers to the number used to configure the container JVM. For example, in the command **setupContianer.cmd 2**, the container JVM number is 2.
- **startASIWindowsService.cmd** - starts noapp node.

Parent topic: "Configure Adapter Container JVMs" on page 18

Stop Adapter Container and ASI

This topic covers the following:

- Stop Adapter Container - iSeries
- Stop Adapter Container - UNIX/Linux
- Stop Adapter Container - Windows
- Stop ASI System

Stop Adapter Container - iSeries

To stop adapter container JVM in iSeries, run one of the following commands from the *install_dir*/install/bin directory:

- **./stopContainer.sh** - stops all adapter container nodes.
- **./stopContainer.sh** # - stops a specific adapter container node. In this convention, # refers to the adapter container node number.

You can also create a command language (CL) program similar to the following example:

```
SBMJOB CMD(QSH CMD('umask 002 ; cd install_dir/bin ; +
./stopContainer.sh')) JOB(STOPCONT)
```

Note: : If you stop Sterling Integrator by running the **./hardstop.sh** command, it will also stop the adapter containers that are currently running.

Stop Adapter Container - UNIX/Linux

To stop adapter container JVM in UNIX/Linux, run the following command from the *install_dir*/install/bin directory:

- **./stopContainer.sh** - stops all adapter container nodes.
- **./stopContainer.sh** # - stops a specific adapter container node.
  In this convention, # refers to the container JVM number. For example, by running the command **./stopContainer.sh 1** stops container JVM number 1.

Stop Adapter Container - Windows

To stop adapter container JVM in Windows, run the following command from the *install_dir*\install\bin directory:

- **stopContainerWindowsService.cmd** - stops all adapter container nodes.
- **stopContainerWindowsService.cmd** # - stops a specific adapter container node.
  In this convention, # refers to the container JVM number. For example, by running the command **stopContainerWindowService 2** stops container JVM number 2.

To uninstall and reinstall a specific adapter container JVM as a Windows service, run the following command from the *install_dir*\install\bin directory:

UninstallContainerWindowsService.cmd #

Note: If you run **stopWindowsService.cmd** command, it stops Sterling Integrator and all configured adapter container JVMs.

To uninstall and reinstall a specific adapter container JVM as a Windows service, run the following commands:

1. Run **UninstallContainerWindowsService.cmd** # command to uninstall adapter container JVM as a Windows service.
2. Run **InstallContainerWindowsService.cmd** # command to install adapter container as a Windows service.
3. Run **InstallACPassPhraseWindowsService.cmd** # command to install AC passphrase windows service, which is used to setup passphrase for container node.

To uninstall and reinstall all configured adapter containers, run the following commands:

1. Run **UninstallContainerWindowsService.cmd** command to uninstall all adapter containers.
2. Run **installAllACNodes.cmd** command to reinstall all adapter containers.

Stop ASI System

You can stop ASI (application server-independent) system without stopping the adapter containers. The adapter containers can continue to function and receive data. However, the database must be up and running during this time. You can install patches and perform maintenance on the ASI system while the adapter containers continue to function when Sterling Integrator is stopped.

To stop ASI system (noapp server) without stopping adapter container, run one of the following commands from the *install_dir*/install/bin (*install_dir*\install\bin for Windows) directory:

- (For Unix, Linux, or iSeries) **stopASI.sh**
- (For Windows) **stopASIWindowsService.cmd**

Parent topic: "Configure Adapter Container JVMs" on page 18

Adapter Container Example
About this task

Following is an example to setup two adapter container JVMs, setup adapter to be deployed on the adapter container JVM, and execute the business process:

Procedure

1. Install Sterling Integrator.
2. Navigate to *install_dir*/install/bin (for Windows - *install_dir*\install\bin) directory.
3. If application server-independent (ASI) node is up, run **./hardstop.sh** (for Windows - **stopWindowService.cmd**) command to stop it.

   Run **./startCluster.sh 1 false** (for Windows - **startCluster.cmd**) command.

   After running **startCluster** command, you can add adapter container irrespective of whether the rest of the system is up or down.
4. Run **./setupContainer.sh 1** (for Windows - **setupContainer.cmd 1**) command to setup first adapter container JVM. It creates the adapter container node1AC1.
5. Run **./setupContainer.sh 2** (for Windows - **setupContainer.cmd 2**) command to setup second adapter container JVM. It creates the adapter container node1AC2.
6. Run **./runAll.sh** (for Windows - **startWindowsService.cmd**) to start the ASI server and the two adapter container JVMs.
7. From the **Administration** menu, select **Operations** > **System** > **Cluster** > **Node Status** . All JVMs are listed as cluster nodes.
8. From the **Administration** menu, select **Operations** > **System** > **Troubleshooter** to view information for container adapter JVM.
9. From the **Administration** menu, select **Deployment** > **Services** > **Configuration**.
10. In the Create section of the screen that is displayed, select **Go!** to create a new service.
11. Configure the adapter by selecting the JVM node name as the environment and assign or create a business process to use the adapter.

    Notes:
    - You can monitor the business process page to view where the adapter runs.

- To view container node log file, navigate to **Administration** > **Operations** > **System** > **Logs**.

Parent topic: "Configure Adapter Container JVMs" on page 18

Managing OSGi Bundles

The adapter container is implemented as OSGi container. The container manager tool is bundled along with Sterling Integrator to manage the OSGi bundles inside the container.

To use OSGi Manager, run the following OSGi Manager command from the *install_dir*/install/bin directory:

OSGiManagerClient –nnodeName command bundle

In this convention:

nodeName is the name of the container that is configured by the setupContainer command.

command is either list, start, stop, install, or uninstall.

bundle is the .jar file that contains the bundle and must be present in *install_dir*/install/osgi/bundles directory. The bundle is required for all commands except list command.

Following are some examples of OSGi Manager commands and their output:
- To display all bundles that are deployed on each adapter container JVM in the cluster for two nodes setup as node1AC1 and node1AC2 -

  ./osgiManager.sh list

  ```
  $osgiManager.sh list
  Execute list on node1AC1:
  Known bundles:
  Bundle Name:    Location:      Version:      Status:
  System Bundle   System Bundle  1.2.1   ACTIVE
  Sterling Commerce AdapterJVM Bundle
  file:/install_dir/osgi/bundles/container_bundle_2_1.jar
  1.0.0   ACTIVE
  Sterling Commerce OSGi Command line Manager
  file:/install_dir/osgi/bundles/manager_bundle_2_1.jar
  1.0.0   ACTIVE
  Execute list on node1AC2:
  Known bundles:
  Bundle Name:    Location:      Version:      Status:
  System Bundle   System Bundle  1.2.1   ACTIVE
  Sterling Commerce AdapterJVM Bundle
  file:/install_dir/osgi/bundles/container_bundle_2_1.jar
  1.0.0   ACTIVE
  Sterling Commerce OSGi Command line Manager
  file:/install_dir/osgi/bundles/manager_bundle_2_1.jar
  1.0.0   ACTIVE
  ```
- To display bundles deployed on adapter container node node1AC1 -

  ./osgiManager.sh -nnode1AC1 list

  ```
  $osgiManager.sh -nnode1AC1 list
  Execute list on node1AC1:
  Known bundles:
  Bundle Name:    Location:      Version:      Status:
  System Bundle   System Bundle  1.2.1   ACTIVE
  Sterling Commerce AdapterJVM Bundle
  ```

```
file:/install_dir/osgi/bundles/container_bundle_2_1.jar
1.0.0  ACTIVE
Sterling Commerce OSGi Command line Manager
file:/install_dir/osgi/bundles/manager_bundle_2_1.jar
1.0.0  ACTIVE
```

- To stop OSGi Manager on a specific adapter container node -

  **./osgiManager.sh -nnode2AC1 stop file:/install_dir/install/osgi/bundle/
  container_bundle_1_1.jar**

- To stop OSGi Manager on all adapter container nodes -

  **./osgiManager.sh stop file:/install_dir/install/osgi/bundle/
  container_bundle_1_1.jar**

- To stop a customized bundle on all adapter container nodes -

  ./osgiManager.sh stop *<bundle_location>*

  In this convention, *<bundle_location>* is the URL returned by the
  ./osgiManager.sh list command.

  If it is not required to restart the bundle when the container node is restarted,
  ensure that you remove the name of the bundle .jar from the
  customer_overrides.properties file in each container.

Monitoring Adapter Container JVMs

Adapter containers act as cluster nodes. You can view the adapter container details
and its status in the Node Status screen. When the adapter container node goes
down, a node went down event is triggered and an email is sent to the Sterling
Integrator administrator.

To monitor adapter container status, from the **Administration** menu, select
Operations > **System** > **Cluster** > **Node Status** .

Note: You can view more information for an adapter container node in System
Troubleshooting screen (**Operations** > **System** > **Troubleshooter**).

The container logs are stored in the *install_dir*/install/logs/*node*AC**
(*install_dir*\install\logs*node*AC** for Windows) directory. In this convention,
*node*AC**, the first * refers to the ASI node name and the second * refers to the
container number. For example, in node2AC1, 2 refers to the ASI node name and 1
refers to the container number.

Chapter 4. Retiring and Removed Services and Adapters

Deprecation Process for Services and Adapters

Periodically, Sterling Integrator releases new services and adapters that improve performance, enhance features, or ensure compatibility with improved versions of other products. In many cases, a single new service or adapter encapsulates all the functionality of two or three existing services or adapters. In this case, the existing services or adapters will be retired so that they can be replaced by the new service or adapter. If you are using services or adapters that are being retired, you must replace them with the new services and adapters. The retirement process is gradual so that you have time to analyze the impact to your business processes and to plan a smooth migration to the replacement service or adapter.

Phase 1: Services and Adapters are Identified as Retiring

The first step in the retirement process is that Sterling Commerce designates a service or adapter as a retiring resource. During this step, the service or adapter is moved from its functional area stencil (such as Communications) to the Retiring stencil in the Graphical Process Modeler (GPM). Services and adapters in the Retiring stencil still work as they did before, but you should migrate to the replacement service or adapter before the next release. Migrating to the new resource means that you have to update any business process that uses the old resource so that it uses the new resource. A service or adapter will generally remain on the Retiring category for two releases (possibly longer), but you should update your system as soon as possible.

Phase 2: Services and Adapters are Removed from the Product

The second step in the retirement process is that Sterling Commercee removes the services from Sterling Integrator. The service or adapter is not installed as part of Sterling Integrator, but is included on the installation CD. It is removed from the Retiring stencil in the GPM. If you must continue to use a removed service or adapter, you must install it manually from the CD and then activate its license (if any). Sterling Commerce will not provide patches or enhancements for the removed services and adapters.

To install a removed service or adapter manually, use the InstallService.sh or InstallService.cmd scripts located in the /install_dir/bin/ directory of your Sterling Integrator system.

Phase 3: Completely Retired Services

In the final phase of the retirement process, the service or adapter is no longer distributed on the installation CD and is completely retired. To access a retired service or adapter, contact Sterling Commerce Customer Support.

Retirement Process Checklist

About this task

We strongly encourage you to migrate to the replacement services or adapters as soon as possible. Your migration plan should include the following:

Procedure

1. Evaluate your current business processes and identify any that use a retired or removed service or adapter.
2. Determine which existing packages or components use the service or adapter.
3. Determine which new service or adapter replaces an existing resource.
4. Develop a plan to edit the affected business processes and use the replacement service or adapter instead of the retiring or removed resource.
5. Test your system and verify that the replacement service or adapter is functioning in the updated business process.

Services and Adapters Currently in Retirement Phase

You can still access the following retiring services and adapters in Sterling Integrator. However, to ensure that you are using the components with the most capabilities, it is recommended that you use the replacement services and adapters instead.

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
B2B FTP Client Adapter	FTP Client Adapter	- Uses Perimeter servers - Scriptable through BPML - Highly scalable - Supports large files (up to 15 GB) - Works easily with most FTP servers
B2B HTTP Client Adapter	HTTP Client Adapter	- Uses Perimeter servers - Highly scalable (>150 concurrent transfers) - Supports large files (up to 2 GB) - HTTP 1.1 support - Persistent connections - Scriptable through BPML
B2B HTTP Communications Adapter	HTTP Client Adapter	- Uses Perimeter servers - Highly scalable (>150 concurrent transfers) - Supports large files (up to 2 GB) - HTTP 1.1 support - Persistent connections - Scriptable through BPML
B2B HTTP Server Adapter	HTTP Server Adapter	- Uses Perimeter servers - Uses the same Jetty HTTP server engine as the Sterling Integrator ASI console - Able to run both WARs and BPML web applications - Runs application code inside the application JVM, for access to all application resources

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
Connect Direct Adapter	Connect Direct Requester Adapter	• Uses Perimeter servers • Supports content-based routing of data within a business process
Connect Enterprise Adapter	Connect:Enterprise UNIX Server Adapter	• Supports content-based routing of data • Uses Perimeter servers
EDIFACT CONTRL Generation Service	EDIFACT Deenvelope Service / EDI Post Processor Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT CONTRL Reconciliation Service	EDIFACT Deenvelope Service / EDI Post Processor Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT UNB/UNZ Deenvelope Service	EDIFACT Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT UNG/UNE Deenvelope Service	EDIFACT Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT UNH/UNT Deenvelope Service	EDIFACT Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
EDIFACT UNB/UNZ Envelope Service	EDIFACT Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT UNG/UNE Envelope Service	EDIFACT Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
EDIFACT UNH/UNT Envelope Service	EDIFACT Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
FTP Get Adapter	FTP Client Adapter	• Uses Perimeter servers • Scriptable through BPML • Highly scalable • Supports large files (up to 15 GB) • Works easily with most FTP servers
FTP Send Adapter	FTP Client Adapter	• Uses Perimeter servers • Scriptable through BPML • Highly scalable • Supports large files (up to 15 GB) • Works easily with most FTP servers
HTTP Communications Adapter	HTTP Client Adapter	• Uses Perimeter servers • Highly scalable (>150 concurrent transfers) • Supports large files (up to 2 GB) • HTTP 1.1 support • Persistent connections • Scriptable through BPML

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
HTTP Send Adapter	HTTP Client Adapter	• Uses Perimeter servers • Highly scalable (>150 concurrent transfers) • Supports large files (up to 2 GB) • HTTP 1.1 support • Persistent connections • Scriptable through BPML
SIB Adapter	FTP Client Adapter	• Uses Perimeter servers • Highly scalable (>150 concurrent transfers) • Supports large files (up to 15 GB) • Scriptable through BPML
X12 997 Generation Service	X12 Deenvelope Service / EDIPostProcessorService	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 997 Reconciliation Service	X12 Deenvelope Service / EDIPostProcessorService	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 GS/GE Deenvelope Service	X12 Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 GS/GE Envelope Service	X12 Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
X12 ISA/IEA Deenvelope Service	X12 Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 ISA/IEA Envelope Service	X12 Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 ST/SE Deenvelope Service	X12 Deenvelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 ST/SE Envelope Service	X12 Envelope Service	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 TA1 Generation Service	X12 Deenvelope Service / EDIPostProcessorService	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service
X12 TA1 Reconciliation Service	X12 Deenvelope Service / EDIPostProcessorService	• Performance improvements • Large document support • Wildcard support • Deferred sequence checking • Duplicate checking • No further enhancements being made to retiring service

Retiring Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
XML Transformer	Replaced by DocToDOM, DOMToDoc and XSLT Service for translation. One function has not been replaced: specifying literal XML tags using the CData section, which would be converted to nodes in the Process Data.	No further enhancements being made to retiring service

Services and Adapters Currently in Removed Phase

Some of the services and adapters listed may have been removed prior to this release and are included for information purposes.

Removed Service or Adapter	Replacement Service or Adapter	Benefits of Using the Replacement Service or Adapter
IBM MQ Series adapter	Web Sphere MQ adapter	WebSphere software release name-change support
CORBA adapter	N/A	N/A

Chapter 5. Frequently Asked Questions about Services and Adapters

Can a service be run on a schedule?

Services and adapters can be run on a schedule as part of a business process. You can configure schedules for some services and adapters as part of their configuration in the Admin Console. This includes certain services and adapters that are used to collect or extract data (like the File System adapter), or to communicate with other applications (like the Oracle AQ JMS Queue Adapter). You do not need to set up a business process for these schedules - the system creates the necessary business process and runs it for you.

For more information about services that can be configured to run on a schedule, see the *Scheduling* documentation.

How do I search for a service, or view a list of services?

About this task

To find a particular service configuration, or to see whether a particular service type has service configurations that were installed with Sterling Integrator, use the following steps.

If you complete this procedure after installation, and others have access to the system, all configurations for the service type, whether installed with the application or created after installation, are displayed. Sterling Integrator does not enforce any naming convention or flag to distinguish between the configurations shipped with the product and those created by users. If you wish to distinguish, you may choose to use a naming convention in your instance.

Procedure
1. From the Admin Console, select **Deployment** > **Services** > **Configuration**.
2. Select the service type you want to view from the **By Service Type** list, then click **Go!** All configurations that exist for the service type are displayed (possibly in multiple pages).
3. Click the name of any service configuration to see its settings, which will be displayed in a separate window.

How do I retrieve data from a service status report?

About this task

You can use the XPath function called Status_Rpt to get data from a service's status report and put it into process data. Add the following assign statement to the service configuration in the GPM or directly to the BPML code:

```
<assign to="." from="Status_Rpt('Report')"></assign>
```

where the "Report" value can be any name. It is used for the name of the node in process data for the report. The status report will be written to process data under

this node. The following example shows BPML for the input message that includes the assign statement to get the status report:

```
<input message="Xin">
<assign to="." from="*"></assign>
<assign to="." from="Status_Rpt('Report')"></assign>
</input>
```

DOMToDoc can also be used in conjunction with the Status_Rpt function to write the information to a document instead of process data.

What system services are used by the Recovery business process?

Important: Do not use these services in business processes. They are used by other services and are subject to change without notice.

The Recovery business process uses the following services:

BP Report Service - Generates a report listing business process instance IDs that match:
- the state specified in the configuration and currently are not running
- the instance IDs list due to shutdown (soft stop)

BP State Filter Service - Sorts the list processes located by the WFFReport service into one of the following types of auto-recovery categories:
- Manual
- Resume
- Restart
- Terminate

BP Mark Service - Marks a list of business process instance IDs found from BP Report Service to either INTERRUPTED_MAN or INTERRUPTED_AUTO.

BP Start Service - Resumes or restarts business processes that are listed in the RESUME and RESTART lists from BPReportService, respectively.

What are some troubleshooting tips for services in business processes?

What do I do if a bootstrapped business process doesn't start?

If an adapter tries to start a business process definition that does not exist or is disabled, the application saves the request to start the business process definition and any related documents within the application. Use the business process monitor to view error messages for any business process definitions that failed to execute.
- If the business process definition cannot be found: Do an advanced restart and select a different business process definition, which uses the same input data.
- If the business process definition is disabled: When you enable that business process definition, the application automatically resumes any configurations of that business process definition that stopped.

How does editing a service configuration impact a business process?

You can edit the settings of a service configuration before or after including the configuration in a business process. You also can edit a service configuration while business processes that use it are running. Business processes that use the service configuration you are editing finish processing with the previous configuration. All business processes that are initiated after the edited configuration is saved will use the edited configuration.

What happens to a business process if a service it uses is disabled?

If a service configuration that is used in a business process is disabled, the business process will halt with a Service Disabled advanced status message. Once you enable the service configuration, the business process automatically resumes. See *Advanced Status Messages for Business Processes* for more information.

What happens to a business process if a service it uses is deleted?

If a service configuration that is used in a business process is deleted from the system, the business process will halt with an Invalid Service advanced status message at that service step. You should never delete a service configuration without verifying that it is not used anywhere first. See *Advanced Status Messages for Business Processes* for more information.

Advanced Status Messages for Business Processes

In the Business Process Detail page, you can check the message in the Advanced Status column of the business process instance to determine whether further action for the business process is required. The following table describes advanced status messages and possible actions you can take:

Message	Description	Action
None	No advanced status is available for the current stage.	No action is required.
Invalid Business Process	Business process does not exist.	1. In the Monitor page, find the instance. 2. Select a different instance from the Advanced list. 3. From the Action field, select Restart.

Message	Description	Action
Business Process Definition Disabled	Unavailable feature selected for the business process.	1. Find the instance by performing an advanced search. 2. From the Business Process menu, select Manager, and then locate the instance. 3. Click Enable for the selected instance. 4. Click Execution Manager for the instance. The business process resumes automatically.
Service Disabled	Unavailable feature selected for this service in the business process.	1. From the Deployment menu, select Services > Configuration. 2. Search and find the service. 3. Click Enable for the selected service. The business process resumes automatically.

Message	Description	Action
Service Error	Error occurred with the service processing the data at this point in the business process.	Check the status of the service or adapter: 1. From the Operations menu, select System > Troubleshooter. 2. For Application Status, under Adapters, verify that the service or adapter is enabled. 3. If necessary, enable the service or adapter. 4. Select Resume from the Business Process Detail page. 5. If the service or adapter is enabled, from the Operations menu, select System > Logs. 6. View the log associated with the service that encountered the error. The log may show where the error occurred or what caused the error. 7. Correct the error where possible and select Resume from the Business Process Detail page. If the log does not contain information about the error, resume the instance and verify your results.
Service Stopped	Service in the business process stopped.	1. In the Monitor page, find the instance. 2. In the ID column, click the number identifying the instance to display the related Business Process Detail page. 3. Identify which service stopped. 4. Troubleshoot the business process to determine what caused the service from running. 5. Select Resume from the Action field.

Message	Description	Action
Business Process Instance Stopped	Business process discontinued execution.	1. In the Monitor page, find the instance. 2. In the ID column, click the number identifying the instance to display the related Business Process Detail page. 3. Review the advanced message to determine why the instance stopped and correct the problem. 4. Return to the Monitor page and select Resume, Restart, or Advanced Restart in the Action field.
Invalid Service	Service does not exist.	1. If the service type does not exist, install the service type. 2. If the service configuration does not exist, create the service configuration. 3. Restart the business process.
Mandatory parameter for service missing	Service is missing a required parameter.	1. Determine which parameter is missing. 2. Modify the service properties in the business process model. 3. Restart the process if necessary.
Invalid value for mandatory parameter	Value for required parameter is incorrect.	1. Fix the incorrect parameter in the business process model. 2. Restart the process.

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