

IBM Sterling B2B Integrator



Scheduling

Release 5.2

IBM Sterling B2B Integrator



Scheduling

Release 5.2

Note

Before using this information and the product it supports, read the information in "Notices" on page 39.

Copyright

This edition applies to Version 5 Release 2 of Sterling B2B Integrator and to all subsequent releases and modifications until otherwise indicated in new editions.

© **Copyright IBM Corporation 2000, 2011.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Scheduling	1	Troubleshooting Schedules	28
Scheduling Basics.	1	Where do I find information about schedules?..	28
Phase 1: Scheduling Prerequisites and Setup in a Test Environment.	1	What do I do if the schedule does not run?..	29
Phase 2: Testing Schedules in a Test Environment	2	What do I do if the schedule runs at a different time than when it was scheduled?..	29
Phase 3: Exporting Schedules to the Production Environment	2	Can I use log files to troubleshoot schedules? ..	29
Scheduling Prerequisites and Planning.	3	Scheduling Wizard Parameters	31
Scheduling Licenses and Permissions	3	Scheduling Wizard: Schedule Type Page.	31
Schedules After Upgrades	4	Scheduling Wizard: E-mail Options Page for Reports.	32
Schedules in the AS2 Edition	4	Scheduling Wizard: Settings Pages.	32
Scheduling Considerations.	4	Scheduling Wizard: Configuration Page for Business Processes and Reports.	32
Basic Information About the Activity Being Scheduled	4	Scheduling Wizard: Confirm Page	33
Deadlines That Impact Scheduled Times	5	Run Schedules Based on a Timer	33
Dates That Impact Excluded Times	5	Timer Schedule Settings (Select Time Interval) ..	33
Peak and Non-peak Processing Times	6	Timer Schedule Exclusions (Select Time Interval)	34
Processing Time and Frequency of the Scheduled Activity	6	Date Exclusions (Timer Schedule)	34
Enabling a Schedule	7	Run Schedules Daily	34
Disabling a Schedule	7	Daily Schedule Settings (Select Time or Time Interval)	34
Deleting a Schedule	7	Daily Schedule Exclusions (Select Time Interval)	35
Schedules for Business Processes.	8	Date Exclusions (Daily Schedule)	35
Creating a Business Process Schedule	8	Run Schedules Based on Days of the Week	35
Editing a Business Process Schedule	8	Weekly Schedule Settings (Select Time/Day or Time Interval/Day).	35
Deleting a Business Process Schedule	9	Weekly Schedule Exclusions (Select Time Interval/Day).	36
Example of a Business Process Schedule	9	Date Exclusions (Weekly Schedule)	36
Passing Data from a Schedule to a Business Process	12	Run Schedules Based on Days of the Month	36
Schedules for Reports	13	Monthly Schedule Settings (Select Time/Day or Time Interval/Day).	37
Creating a Report Schedule	13	Monthly Schedule Exclusions (Select Time Interval/Day).	37
Editing a Report Schedule	13	Date Exclusions (Monthly Schedule)	38
Example of a Report Schedule	14	Notices	39
Schedules for Stand-alone Services.	16	Index	43
Creating a Schedule for a Stand-alone Service ..	17		
Editing a Schedule for a Stand-alone Service ..	17		
Deleting a Schedule for a Stand-alone Business Process or Service	18		
Example of a Stand-alone Service Schedule.	18		
Default Schedules for Supplied Services and Adapters	19		

Scheduling

In IBM® Sterling B2B Integrator, you can set up schedules so that business processes, reports, and some services run automatically at hourly, daily, weekly, or monthly intervals.

Schedules help you improve communications within your company and with partners outside of your company. The benefits of scheduling include:

- Flexibility, including setting time intervals and excluding dates and times
- Increased efficiency by automating previously manual processes
- Improved response times with your trading partners and other members of your value chain
- Automating routine, recurring tasks and controlling when and how often the tasks are completed
- Reducing costs associated with performing activities manually
- Increasing overall productivity by using resources effectively

Schedules in Sterling B2B Integrator provide great flexibility in automating manual activities. Use scheduling when the activity:

- Does not require manual intervention
- Is routine and recurring
- Must be run on a specific day, or at a specific date or time
- Is low-priority and can be run during non-peak hours

Scheduling Basics

In Sterling B2B Integrator, a *schedule* is a resource in the database that stores time and date information separately from the activity being scheduled. Schedules identify when to run the activity (hourly, daily, weekly, or monthly) and when to skip the normal interval by excluding a certain time, time range, or date. Each schedule is used for just one business process, service, or report, so you must create separate schedules for each business activity.

Phase 1: Scheduling Prerequisites and Setup in a Test Environment

Procedure

1. Meet the licensing, permissions, and environmental requirements for the resource you want to schedule. See “Scheduling Prerequisites and Planning” on page 3.
2. In a test environment, create or configure the business process, service, or report being scheduled.
Manually test the business process, service, or report to verify that the activity works as planned.
3. In a test environment, create the schedule for the business process, service, or report.

When complete the scheduling wizard, the new schedule is enabled and runs when the first scheduled time period is reached. Additionally, if you select the

Run at startup option, the scheduled activity runs one time immediately after the schedule is saved in the database. Thereafter, the activity runs when Sterling B2B Integrator is restarted.

Phase 2: Testing Schedules in a Test Environment

About this task

Test and troubleshoot the schedule in the test environment.

Procedure

1. Know how to test scheduled activities by disabling the schedule, running the activity manually, and enabling the schedule. Newly created schedules are automatically enabled, so you must disable the schedule before running the activity manually. Otherwise, errors may result if you run the same activity manually when the schedule is running the activity automatically. After the manual test, you must enable the schedule again or it does not operate. In the scheduling wizard, do not use the Do not schedule option to stop or disable a schedule. If you select this option, you cannot enable the schedule in the future. Instead, you must re-create the schedule. Only use this option to indicate that a service or report should never use a schedule.
2. Test the schedules in your test environment to verify that the service, business process, or report runs as scheduled and within the acceptable time parameters. For example, you might create a File System adapter configuration to collect files from a file system with a schedule of every day, every 20 minutes. The schedule is not important if the File System adapter configuration does not collect the correct files from the correct file system. In this case, you must correct the service configuration before testing the schedule.
3. Be sure to test the schedule under regular performance conditions in your test environment. For example, testing may reveal that the size of scheduled reports or business processes requires you to move the scheduled times based on the system processing loads. In addition, you may find that running an activity at an interval that is too short is not productive. In this case, you can edit the schedule and extend the time interval between executions.
4. You can also create processing time benchmarks based on the size of the reports or outputs expected to refine the schedule further, so that you can schedule similar activities in the future with greater accuracy.

Phase 3: Exporting Schedules to the Production Environment

Procedure

1. Export the schedule from your test environment and import it into your production environment.
You import and export schedules just like you import and export any other resource. You can export and import one or more schedules at the same time.
2. In your production environment, verify that the imported schedule is enabled and monitor the scheduled activity. After the time interval for the schedule has passed, verify the outputs for the business process, service or adapter, or report.
 - a. If the outputs were correct and within the acceptable time parameters, the test was successful.
 - b. If the outputs were correct, but not within the acceptable time parameters, you may need to edit the schedule.

- c. If there were no outputs suggesting that the schedule did not run, verify that the activity ran using the monitoring capabilities in Sterling B2B Integrator.
3. In your production environment, monitor and adjust the schedule as needed.
You may need to disable and enable schedules in your production environment if you need the output of the scheduled activity at a time outside of the normal schedule. For example, you may need to run a report for an urgent meeting when the next scheduled report run is the following day. In this case, you run the report manually to have the most current information for the meeting. In this case, you must disable the schedule to reduce the chances of errors, run the report manually, and then re-enable the schedule so the report runs automatically again.

Scheduling Prerequisites and Planning

When you create a schedule, you are doing more than setting a time and a date for an activity to run. You must consider how the schedule works within Sterling B2B Integrator overall, and with your and your trading partners' businesses.

Creating a schedule to automate activities can help your business in many ways, such as faster response times and improved communications with your value chain partners. However, creating a schedule for an activity that runs at the wrong time resulting in a missed business opportunity or scheduling an activity that is resource intensive during your peak processing times can cause decreased system performance, errors, or lost revenue for your company.

Scheduling Licenses and Permissions

Before you can set up schedules in a test or production environment, you must meet the following prerequisites:

- You must have the appropriate license file for the services and activities you want to schedule.
- You must have the appropriate security permissions applied to your user account.

UI BP Manager

Enables you to download the Graphical Process Modeler, and create and manage business processes.

UI Reports

Enables you to create, manage, and schedule reports.

UI Services

Enables you to install, configure, manage, and schedule services.

UI Scheduler

Enables you to schedule business processes, search for schedules and edit business process and service schedules.

UI Import/Export

Enables you to export the schedules and associated business processes, services, or reports to another system of Sterling B2B Integrator, and import the schedules and resources into Sterling B2B Integrator.

UI Logs

Enables you to view the schedule.log and reports.log files for troubleshooting schedules.

Schedules After Upgrades

When you upgrade Sterling B2B Integrator, your schedules are upgraded to the new version and run based on the schedule setting you configured.

After you upgrade Sterling B2B Integrator, you can verify schedules by selecting **Deployment > Schedules > Search**. Locate each schedule and verify that it is enabled and defined correctly.

Schedules in the AS2 Edition

In the AS2 Edition of Sterling B2B Integrator, you can set up schedules for business processes only. The AS2 Edition does not support reports or schedules for services.

- There are no default schedules for business processes after you install AS2 Edition.
- AS2 Edition lists only the schedules for business processes that are created in the AS2 Edition. However, the complete version of Sterling B2B Integrator lists schedules for business processes created in both the complete version and in the AS2 Edition.

Scheduling Considerations

This section summarizes various considerations for scheduling business processes, services, and reports.

Basic Information About the Activity Being Scheduled

What type of activity are you scheduling and where does the output from the activity go?

Are you scheduling a business process, report, or service?

Be sure the business process, report, or service is created or configured and that you know the name of the resource.

For example, you need to schedule an export activity, but you can only schedule the **Export** service when the service is in a business process. You must create the business process including the **Export** service and then schedule the business process.

The activity being scheduled determines how you create the schedule. Some services can be scheduled independent of a business process.

If scheduling a business process, does data need to be passed to the business process?

The Scheduler can pass XML data to a business process when it invokes it. You define name/value pairs for the data when creating the schedule.

Who or what business process or service needs the output from the scheduled business process, service, or report?

For example, your manager may require a report at a specific time daily, or a business process may require the output from another business process.

This determines who to send the output to or what business process or service is invoked by the scheduled activity.

Is the business process or service that uses the output also scheduled?

For example, you may schedule a business process that produces an invoice that is required by another scheduled business process.

This determines the dates and times of the schedule, since the scheduled activity producing the output must complete before the second scheduled activity starts.

Are you running the business process, service, or report manually as well as on a schedule?

For example, you may need to run a report manually at times in a rush situation, but the report is scheduled to run every hour. To avoid errors, you do not want to manually run the report at the time it is scheduled to run. You should disable the schedule before manually running the scheduled activity.

Deadlines That Impact Scheduled Times

Are there internal and external deadlines that impact when the schedule should be set? Deadlines can determine the dates and times when an activity should be scheduled to run.

Reporting time frames for your company

Reporting various types of information to different departments within your company can impact schedules for your business processes, services, and reports.

Priority or strategy changes of your company

Priority and strategy changes can cause changes in which business processes take priority over other business processes, and which reports rise in importance over other reports.

These situations can impact the scheduling of activities in Sterling B2B Integrator. Considering these issues helps you determine types of schedules, and which activities to run during peak or non-peak processing hours.

Trading partner agreements

Trading partner agreements may include stipulations regarding document turnaround times, fines associated with missing critical response times, and other information that is important to your communication with your trading partners throughout your value chain.

For example, a trading partner that requires you to process a document within 30 minutes of receiving the document.

Dates That Impact Excluded Times

Are there dates or times when the schedule does not need to run? Holidays and other events can determine the dates and times that a schedule should exclude or that a low priority schedule should include.

Holidays and company calendars

Holidays and company calendars can determine when is the best time to run a large report or business process. Alternatively, holidays can determine dates to exclude in your schedules.

For example, if you have a large report that is due on January 3 of each year and your company is closed January 1 for New Year's day, you may decide to schedule the report to run on January 1 when more resources are available in Sterling B2B Integrator. On the other hand, you may skip January 1 for a routine report that is not needed when the company is closed.

Periods of higher processing times during the quarter

Low priority schedules should exclude high-volume processing times.

Scheduled maintenance of Sterling B2B Integrator or other systems that integrate with Sterling B2B Integrator, either at your company or your trading partners.

Scheduled maintenance is necessary for all systems. When you are conducting maintenance on Sterling B2B Integrator or other systems that integrate with it, you can disable schedules that are to run during those periods. Or you can schedule activities around those periods. Either of these adjustments will reduce performance level problems caused by schedules attempting to run but generating errors, or schedules being placed in a waiting status.

In addition, if you consider your trading partners scheduled maintenance, you can schedule your activities around those periods and use Sterling B2B Integrator resources for other processing.

Peak and Non-peak Processing Times

On your system, what are the peak and non-peak processing times during the day, week, or month? Peak and non-peak processing times can help you determine when to run high priority and low priority activities in Sterling B2B Integrator to increase performance and maximize the use of system resources.

For example, you receive the largest amount of processing requests for Sterling B2B Integrator every day between 8:00 a.m. and 5:00 p.m. You do not want to schedule non-priority work during this time interval.

Peak processing times are times that low priority schedules should avoid or exclude, so that Sterling B2B Integrator performance levels are not reduced.

For example, you receive the least amount of processing requests for Sterling B2B Integrator every day between 2:00 a.m. and 5:00 p.m. Schedule non-priority work during this time interval.

Non-peak processing times are times that low priority schedules should include, so that Sterling B2B Integrator performance levels are not reduced.

Processing Time and Frequency of the Scheduled Activity

The processing time and frequency of the activity being scheduled impacts scheduling intervals.

Total processing time required for the business process, service, or report

Total processing time is critical to scheduling business processes, services, and reports, so that you do not have overlapping executions.

For example, if a business process takes a total of 30 minutes to complete, you should not schedule the business process to run every 10 minutes; otherwise, errors may occur.

Frequency that the data or processing is required

Determining the frequency that data or processing is required helps you determine the schedule type to use with the activity.

For example, if a File System adapter configuration collects documents from a file system every 10 minutes, so the documents can be used in another business process, the best schedule type is timer. If, however, the service configuration collects documents every Friday at 3:00 p.m., then the best schedule type is weekly.

Enabling a Schedule

About this task

Enabling a schedule makes the schedule active and causes the associated activity to run according to the schedule settings. A schedule must be enabled in order to run.

Procedure

1. Select **Deployment > Schedules**.
2. Use Search or List to identify the schedule you want and click **Go!**.
To find a report schedule, look for the business process created for the schedule. The format is *reportname_scheduleBP*.
3. On the Schedules page, locate the schedule and select the check box in the **Enabled** column.

The schedule is enabled immediately and runs at the next scheduled time.

Disabling a Schedule

About this task

Disabling a schedule makes the schedule inactive. Disable a schedule to stop it for editing or to run the activity manually.

Procedure

1. Select **Deployment > Schedules**.
2. Use Search or List to identify the schedule you want and click **Go!**.
To find a report schedule, look for the business process created for the schedule. The format is *reportname_scheduleBP*.
3. On the Schedules page, locate the schedule and clear the check box in the **Enabled** column.

The schedule is disabled immediately and will not run until it is enabled again.

Deleting a Schedule

You can delete a schedule independently of the activity that it is scheduled to invoke. The delete function does not delete the business process, service, or report that the schedule invokes.

About this task

Disabling a schedule stops the schedule from running, but keeps the activity active in Sterling B2B Integrator.

Note: Do not delete the preconfigured services for archiving, indexing, or purging. Deleting these services will negatively impact the performance of your system.

Procedure

1. Select **Deployment > Schedules**.
2. Use Search or List to identify the schedule you want and click **Go!**.
To find a report schedule, look for the business process created for the schedule. The format is *reportname_scheduleBP*.
3. On the Schedules page, locate the schedule and select **Delete**.

- The Resource Summary screen displays the scheduling data for you to review.
4. Click **Next** to continue with the deletion.
The Confirm screen displays.
 5. Click **Delete** to confirm that you want to delete the BP schedule.
The schedule is deleted immediately. Other business processes associated with this schedule, such as bootstrapped processes, will not process.
 6. Click **Return** to continue.

Schedules for Business Processes

You can set up schedules for a business process so that it runs automatically on hourly, daily, weekly, or monthly intervals. You can also use a schedule to pass XML structured data to a business process when the Scheduler invokes it.

Creating a Business Process Schedule

Procedure

1. Create or identify the business process you want to schedule.
2. In Sterling B2B Integrator, select **Deployment > Schedules**.
In Sterling B2B Integrator AS2 Edition, select **Administration Menu > Schedules**.
3. Next to Schedule a Business Process, click **Go!**.
4. Work through the scheduling wizard to set up the schedule.
You can run a schedule based on a timer, daily, days of the week, or days of the month.
5. If planning to have the schedule pass XML data to the business process, do the following on the Select BP and optional name/value pair screen:
 - a. In the list, select the business process you want to schedule.
 - b. Enter the values for the first name/value pair.
 - c. Check **Append** if needed.
 - d. Click **Add**.
6. Repeat step 5 if you want to define additional name/value pairs. When finished, click **Next**.
When you click **Finish** on the Confirm screen, the schedule is saved, enabled, and ready to run.

Editing a Business Process Schedule

Procedure

1. Disable the schedule you are editing. This action prevents errors in case the schedule is running at the time you are working.
2. In Sterling B2B Integrator, select **Deployment > Schedules**.
In Sterling B2B Integrator AS2 Edition, select **Administration Menu > Schedules**.
3. If you know the name of the schedule, type it in the **Search** field and click **Go!**.
Or use the List box, select **Business processes**, and click **Go!** In the list schedules, click **edit** next to the schedule you want.
4. Work through the scheduling wizard to complete the setup.
You can run a schedule based on a timer, daily, days of the week, or days of the month.

- Click **Finish** to save and apply the changes to the schedule.
5. Enable the schedule.

Deleting a Business Process Schedule

Procedure

1. In Sterling B2B Integrator, select **Deployment > Schedules**.
In Sterling B2B Integrator AS2 Edition, select **Administration Menu > Schedules**.
2. Type the name of the schedule in the **Search** field and click **Go!**.
If you do not know the exact schedule name, select **Business processes in the List box**, and click **Go!**.
3. Click **Delete** next to the schedule you want to delete.
The Resource Summary screen displays with scheduling data for you to review.
4. Click **Next** to continue with the deletion.
The Confirm screen displays.
5. Click **Delete** to confirm that you want to delete the BP schedule.
The schedule is deleted immediately. Any other business processes associated with this schedule, such as bootstrapped processes, will not process.
6. Click **Return** to continue.

Example of a Business Process Schedule

This example consists of four scheduling activities:

- Scheduling a business process at several time intervals each day (timer schedule)
- Scheduling a business process every day at a specific time (daily schedule)
- Scheduling a business process one day each week at a specific time (weekly schedule)
- Scheduling a business process adapter one day a month at a specific time. (monthly schedule)

Your business includes various types of processes, from simple to complex. At the heart of many processes are acknowledgments. Acknowledgements are very important to conducting business with your value chain partners. Sometimes, you do not receive the acknowledgments from your trading partner, which may indicate the business process ran in error, or did not run, or is in a waiting state.

You can schedule the predefined business process OverdueAckCheck to run at a regular time interval each day to track business processes that have not received an acknowledgment.

In addition, you may find that you want to create a business process that runs every day and provides performance statistics for comparison to your benchmarks, or that you can save resources by submitting data in a batch to your trading partners during non-peak hours, or you can send invoices to your smaller trading partners once a month, instead of several times a month.

By analyzing your past processing trends using your Business Process Usage Report and other reports and statistics in Sterling B2B Integrator, you determine that your business has peak processing hours from 8:00 a.m. to 10:00 p.m. and has moderate to heavy processing volumes that use large amounts of Sterling B2B Integrator resources during the peak processing times.

Using the preceding analysis, you determine that you must schedule the following:

- OverdueAckCheck business process every day every 30 minutes to check for business processes that are awaiting an acknowledgment.
- A performance test business process every day during non-peak hours at 11:00 p.m.
- A business process that submits map updates in a batch to your trading partners from a file system on a weekly basis.
- A business process that submits invoices in a batch to your smaller trading partners on a monthly basis.

The following list describes the schedule parameters you set for the business processes:

OverdueAckCheck

Business Process to schedule: OverdueAckCheck (predefined in Sterling B2B Integrator)

Timer or Clock: Timer

System: node1

Execution Day: Every Day

Scheduled Time(s): Every 0 hours and 30 minutes

Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

Performance test

Service to schedule: Performance test business process that you create

Timer or Clock: Clock (Daily)

System: node1

Execution Day: Every Day

Scheduled Time(s): 11:00 p.m.

Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

Map update

Service to schedule: Map update batch business process that you create

Timer or Clock: Clock (Weekly)

System: node1

Execution Day: Sunday

Scheduled Time(s): 11:00 p.m.

Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

Small trading partner invoices

Service to schedule: Invoice batch business process that you create

Timer or Clock: Clock (Monthly)

System: node1

Execution Day: LDOM (last day of the month)

Scheduled Time(s): 11:00 p.m.

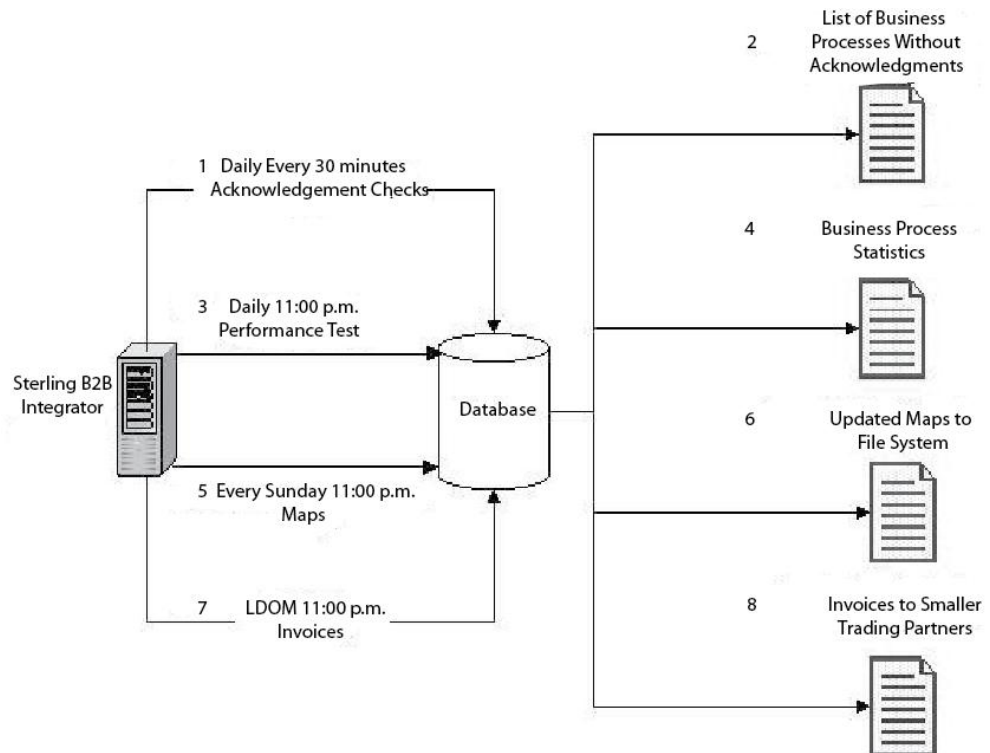
Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

The following figure shows the business processes running on schedule and the results of each business process:



1. The OverdueAckCheck predefined business process runs every 30 minutes, checking for business processes that have not received an acknowledgment.
2. A list of business processes without acknowledgements is produced.
3. At 11:00 p.m. every day, the performance test business process that you created runs.
4. The business process statistics are available for you to compare against your benchmarks to verify performance levels are as expected.
5. Every Sunday at 11:00 p.m., the map updates business process that you created to send updates of your maps to your trading partners runs.

6. The updated maps are sent to a file system where your trading partners scheduled File System adapter collects the maps and invokes a business process to import the updated maps automatically.
7. On the last day of each month (LDM) at 11:00 p.m., the business process you created to send invoices to your smaller trading partners runs.
8. The invoices are submitted at one time to your smaller trading partners, reducing resource usages in Sterling B2B Integrator.

Passing Data from a Schedule to a Business Process

A schedule can pass data to a business process with name/value pairs parameters. The name/value pairs are defined in XML structured data.

There are two ways to run a business process using a schedule:

- Configuring a schedule for a business process in the UI.
- Using the CreateSchedule XAPI.

Both ways will pass XML structured data to the Scheduler, which invokes the business process with the data.

Configuring a Schedule to Pass Data to a Business Process Using the UI

When creating a new schedule or editing an existing schedule, you can add name/value pairs to the schedule that will be used to pass XML structured data to the business process when it is invoked.

Before creating the schedule, you must determine the name/value pairs needed and whether to append data for each.

You define the name/value pairs while creating or editing the schedule in the Scheduler wizard, on the Select BP and optional name/value pair screen.

You can also decide whether to have the name/value pairs data overwritten in the database each time the business process is run, or append the data from each run and store it in the database. Data should be appended only if required for business reasons; otherwise, leave at the default.

- For more information about creating or editing a business process schedule, see “Creating a Business Process Schedule” on page 8 or “Editing a Business Process Schedule” on page 8.
- For more information about the Scheduler wizard, see “Scheduling Wizard Parameters” on page 31.

Passing Data to a Business Process Using the CreateSchedule XAPI

Instead of using a schedule created in the UI to invoke a business process (and to pass name/value pairs to the business process), you can create and run a schedule for a business process programatically, using the CreateSchedule XAPI.

The CreateSchedule XAPI requires the TimingXML and NAMEVALUEPAIRXML tags in its input.

Note: See the application API Javadocs for detailed information about these tags and other requirements for CreateScheduleXML.

If you are invoking a schedule that already exists, you can use the `GetScheduleDetails` XAPI to retrieve information for it. The output from `GetScheduleDetails` includes the two tags needed as input for `CreateScheduleXML`.

Schedules for Reports

You can set up schedules for reports so that they run automatically on hourly, daily, weekly, or monthly intervals. The application does not schedule any reports by default. Consider these guidelines:

- The report configuration must exist before you set up the schedule.
- You can have only one schedule per report configuration.
- After a scheduled report is generated, it can be stored on your file system or e-mailed (in compressed format) to a recipient. You set up these choices as part of the report schedule.
- Creating a schedule for a report automatically creates a business process using the default report name *reportname_scheduleBP*. The business process for a schedule is listed with other business processes when you select **Deployment > Schedules > List > Business Processes**.
- You can also schedule a report through the Report Service, if the report configuration is predefined and you supply the report configuration name and the format of the report.

Creating a Report Schedule

Procedure

1. Create or identify the report you want to schedule.
2. From **Operations > Reports**, locate **Schedule Report** and click **Go!**.
3. On the Report Configurations page, complete the following actions:
 - In **Choose Report to Schedule**, select the report you want.
 - Select the format you want to use for the report produced by the schedule. Click **Next**.
4. On the E-mail Options page, complete one or both of the following options and click **Next**.
 - To store the report on your file system, select **Store Reports On File System**. Then type the path to the location in the **File Path** field.
 - To e-mail the report (in compressed format) to a specified recipient, select **E-mail Address**. Then type the e-mail information.
5. Work through the scheduling wizard to complete the setup.

You can run a schedule based on a timer, daily, days of the week, or days of the month.

When you click **Finish**, the schedule is saved, enabled, and ready to run.

Editing a Report Schedule

About this task

You can edit a report schedule in two ways:

- From **Operations > Reports**, you can locate the report you want and edit its schedule. Use this method if you want to modify the format of the report or how it is delivered to the file system or to an e-mail recipient. However, this method makes disabling the schedule more cumbersome.

- From **Deployment > Schedules**, you can locate the business process that was created for the report schedule and edit it. This method makes it easy to disable the schedule before editing it. However, you cannot adjust the format of the report or how it is delivered to the file system or to an e-mail recipient.

Procedure

1. Before you begin, know the name of the business process that corresponds to the report schedule you want. Business processes for report schedules are named *reportname_scheduleBP* (where *reportname* is the name of the default report configuration).
2. Choose one method:

Method A: To modify the format of the report, how it is delivered, and scheduling times	Method B: To modify only scheduling times and preserve the report format and delivery options
<ol style="list-style-type: none"> 1. Disable the business process for the report schedule you want. Select Deployment > Schedules > List > Business Processes. In the list, clear the Enabled check box next to the report schedule you want. Click Return. 2. Select Operations > Reports. Use Search or List to display the report you want. In the list, click edit in the Schedule column for the report you want. 3. Indicate the report format. Click Next. 4. Indicate the delivery options for storing the report on the file system or for sending it to an e-mail recipient. Click Next. 	<ol style="list-style-type: none"> 1. Disable the business process for the report schedule you want. Select Deployment > Schedules > List > Business Processes. In the list, clear the Enabled check box next to the report schedule you want. 2. In the list, click edit next to the report schedule you want.

3. Work through the scheduling wizard to adjust the schedule.
You can run a schedule based on a timer, daily, days of the week, or days of the month.
Click **Finish** to save and apply the changes to the schedule.
4. Enable the business process that corresponds to the report schedule you edited.

Example of a Report Schedule

This scheduling example consists of three scheduling activities:

- Scheduling a report every day at a specific time, including exclusions. (Daily schedule)
- Scheduling a report one day each week at a specific time. (Weekly schedule)
- Scheduling a report one day a month at a specific time. (Monthly schedule)

Your manager requires you to provide three reports at different times, all in HTML format:

- Report 1 on business processes that are in a waiting status each day by 10:00 a.m., except on holidays such as New Year's day, January 1.
- Report 2 on the number of functional acknowledgements from a specified sender ID that are overdue during the week by 11:00 a.m. each Wednesday.
- Report 3 on business process definitions that were modified during the month by 4:00 p.m. on the last day of the month.

You can set schedules to automatically generate these reports for you and have the report information e-mailed to you, reducing your time spent on reporting issues. Based on the preceding requirements set by your manager, you determine that you need 45 minutes to prepare each of the reports for your manager, so you have the reports e-mailed to you one hour before the deadlines set by your manager.

The following table describes the schedule parameters you set for each report:

Report 1

Report to schedule: BPDetail_ByState.

This report provides the states of each business process running in Sterling B2B Integrator.

Format: HTML

E-mail Address:

- Subject: Report 1
- E-mail Address: yourname@yourcompany.com
- E-mail Host: your e-mail host server name
- E-mail Port: your e-mail port number

Schedule Type: Daily

Schedule Time: 9:00 a.m.

Date Exclusions: 1 - January

Report 2

Report to schedule: EDIOutAck_GroupLevel_BySenderReceiver.

This report provides the status of acknowledgements based on sender or receiver IDs.

Format: HTML

E-mail Address:

- Subject: Report 2
- E-mail Address: yourname@yourcompany.com
- E-mail Host: your e-mail host server name
- E-mail Port: your e-mail port number

Schedule Type: Day(s) of the week

Schedule Time: 10:00 a.m. Wednesday

Date Exclusions: None

Report 3

Report to schedule: BPDefList_ByBPDefStatus.

This report provides a list of business process definitions by status.

Format: HTML

E-mail Address:

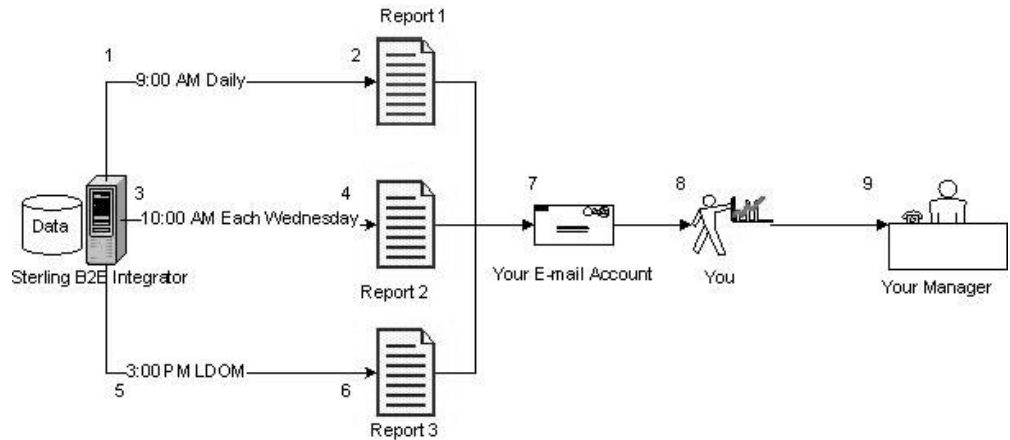
- Subject: Report 3
- E-mail Address: yourname@yourcompany.com
- E-mail Host: your e-mail host server name
- E-mail Port: your e-mail port number

Schedule Type: Day(s) of the month

Schedule Time: 3:00 p.m. LDOM (Last Day Of Month)

Date Exclusions: None

The following figure shows the reports running on schedule, being e-mailed to you, and you providing the reports to your manager:



1. The BPDdetail_ByState report (Report 1) runs at 09:00 a.m. every day.
2. The report is created and mailed to your e-mail account.
3. Each Wednesday at 10:00 a.m., the EDIOutAck_GroupLevel_BySenderReceiver report (Report 2) runs.
4. The report is created and mailed to your e-mail account.
5. On the last day of each month (LDM) at 3:00 p.m., the BPDefList_ByBPDefStatus report (Report 3) runs.
6. The report is created and mailed to your e-mail account.
7. You retrieve the reports from your e-mail account at the appropriate times and create the reports for your manager.
8. You deliver the reports to your manager by the specified deadlines.

Schedules for Stand-alone Services

You can set up schedules only for those services and adapters that can be run as a stand-alone service. However, all services and adapters can be included in a business process that is scheduled.

Creating a schedule for a service is part of creating the service configuration. You can schedule stand-alone services so that they run automatically on hourly, daily, weekly, or monthly intervals. Consider these guidelines:

- When you schedule a service, you schedule only that service. You cannot create a schedule and apply it to many services at the same time.
- The schedule settings are stored in the database you use with Sterling B2B Integrator and are internal to Sterling B2B Integrator *only*. Schedules for applications that are external to Sterling B2B Integrator do not impact the service and adapters schedules that you create within Sterling B2B Integrator.
- Some stand-alone services and adapters are supplied with default schedules when Sterling B2B Integrator is installed. See *Default Schedules for Supplied Services and Adapters*.
- The Run as User option is available only to super users. It is not available to subgroups of the Admin group or other groups.

The stand-alone services and adapters for which you can create schedules include the following:

Stand-alone Services and Adapters	
B2B Mail Client adapter	IBM Information Exchange FTP adapter
BackupService	Index Business Process Service
Command Line2 adapter Note: The Command Line2 adapter also replaces the Command Line adapter, which is in the process of retiring.	Java™ Database Connectivity (JDBC) adapter
IBM Sterling Connect:Enterprise® adapter	Lightweight JDBC adapter
EDI Enveloping Service	Mailbox Evaluate All Automatic Routing Rules service
EDI Overdue Acknowledgment Check Service	Mailbox Evaluate Routing Rules service
File System adapter	Mailbox Scheduled Delete service
FTP Get adapter	Oracle AQ JMS Queue adapter
IBM Sterling Gentran:Server® UNIX Purge Process Service	Oracle AQ JMS Topic adapter
IBM Sterling Gentran:Server Windows adapter	Perf Data Purge service
GXS ICS FTP adapter	Purge service
	Purge Business Process Linkage service
	Retention Processor

Creating a Schedule for a Stand-alone Service

About this task

You create a service schedule when you configure the service.

Procedure

1. Install the service or adapter.
2. To configure the service, select **Deployment > Services > Configuration**. Complete the steps required for the service or adapter.
3. When the Schedule Type page is displayed, use the scheduling wizard to complete the setup.
You can run a schedule based on a timer, daily, days of the week, or days of the month.
4. Click **Finish**. The schedule is saved, enabled, and ready to run.

Editing a Schedule for a Stand-alone Service

Procedure

1. Disable the schedule you are editing. This action prevents errors in case the schedule is running at the time you are working.
2. Select **Deployment > Schedules**.
3. Type the name of the schedule in the **Search** field and click **Go!**.
Alternately, select **Services in the List box**, click **Go!.**, and click **edit** next to the schedule you want in the list.

4. Work through the scheduling wizard to adjust the schedule.
You can run a schedule based on a timer, daily, days of the week, or days of the month.
5. Click **Finish** to save and apply the changes to the schedule.
6. Enable the schedule.

Deleting a Schedule for a Stand-alone Business Process or Service

Procedure

1. In Sterling B2B Integrator, select **Deployment > Schedules**.
In Sterling B2B Integrator AS2 Edition, select **Administration Menu > Schedules**.
2. Type the name of the schedule in the **Search** field and click **Go!**.
Alternately, use the List box, select **Business processes or Services**, and click **Go!**.
3. Click **Delete** next to the schedule you want to delete.
The Resource Summary screen displays with the scheduling data for you to review.
4. Click **Next** to continue with the deletion.
The Confirm screen displays.
5. Click **Delete** to confirm.
The schedule is deleted immediately. Any other business processes associated with this schedule, such as bootstrapped processes, will not process.
6. Click **Return** to continue.

Example of a Stand-alone Service Schedule

This example consists of two scheduling activities:

- Scheduling a File System adapter one day each week at a specific time. (Weekly schedule)
- Scheduling a IBM Sterling Gentran:Server Windows adapter one day a month at a specific time. (Monthly schedule)

By analyzing your past processing trends, you determine you have a file system that you must collect data from every week, and you also need to collect information from a rarely used file system one time a month from which you create a report for your manager.

Using the analysis of your processing volumes and peak times, and the importance of both of these processes, you determine that you can schedule both services during non-peak hours:

- File System adapter 1 (weekly) – 07:00 a.m. each Monday
- File System adapter 2 (monthly) – 06:00 a.m. LDOM (last day of month)

The following table describes the schedule parameters you set for the File System adapters:

File System adapter 1

Service to schedule: File System adapter

Timer or Clock: Clock (Weekly)

System: node1

Execution Day: Every Monday

Scheduled Time(s): 07:00 a.m.

Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

File System adapter 2

Service to schedule: File System adapter

Timer or Clock: Clock (Monthly))

System: node1

Execution Day: LDOM (last day of the month)

Scheduled Time(s): 06:00 a.m.

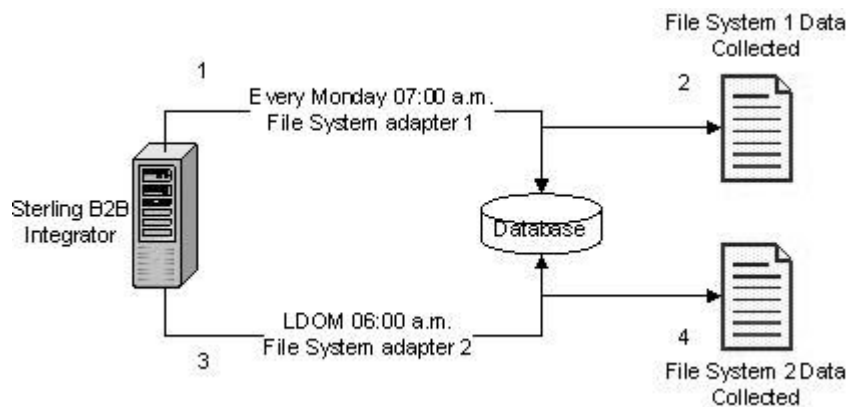
Excluded Time(s): None

Excluded Dates: None

At startup: No

Run As User: Admin

This figure shows the services running on schedule and the data being collected from the file systems:



1. Each Monday at 07:00 a.m. the File System adapter 1 runs in Sterling B2B Integrator and checks File System 1 for data.
2. Data in File System 1 is collected and brought into Sterling B2B Integrator for use by the appropriate business process or service.
3. At 06:00 a.m. on the last day of each month, the File System adapter 2 service runs in Sterling B2B Integrator and checks File System 2 for data.
4. Data in File System 2 is collected and brought into Sterling B2B Integrator for use by the appropriate business process or service, so that you can create the report for your manager.

Default Schedules for Supplied Services and Adapters

Some services and adapters are supplied with default schedules when Sterling B2B Integrator is installed. You can edit the default schedules to meet your needs.

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>AFTPurgeArchiveMailboxes</p> <p>Ensures that messages stored in AFT's archive mailboxes are made eligible for purging very soon after their corresponding AFT Routes are purged</p>	<p>Enabled: Yes</p> <p>Schedule Type: Business Process</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 04:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>AssociateBPsToDocs</p> <p>Associates expired documents with the business process to enable archiving and purging</p> <p>Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 30 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>AutoTerminate</p> <p>Terminates business processes that have been in a specified state for more than a specified number of days</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 04:00 AM</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>BackupService</p> <p>Backs up complete or terminated business process data</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 02:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>BPExpirator</p> <p>Continues waiting services when their timeout period expires</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 15 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>
<p>BPLinkagePurgeService</p> <p>Purges expired business process hierarchical data.</p> <p>Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock (Daily)</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 02:30 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>BPRecovery</p> <p>Recovers incomplete business processes</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 45 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>
<p>CheckExpireService</p> <p>Checks to see if certificates are about to expire</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 02:30 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>DataStoreFileSystem</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 1 minute</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>DBMonitor</p> <p>Monitors the database for common conditions that may be signs of problems with database health</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Monday</p> <p>Scheduled Time(s): 04:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>DocumentStatsArchive</p> <p>Recalculates a document's statistics.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 30 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>IndexBusinessProcessService</p> <p>Moves completed or terminated business process data into the index tables in the database</p> <p>Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 10 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>IWFCDriverService</p> <p>Recovers iwfc objects from the wfc_error/iwfc directory and attempts to start the subprocess. If the subprocess starts, the file is deleted; otherwise, the file remains in the directory for the next scheduled run time.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock (Daily)</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 03:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>MailboxEvaluateAllAutomaticRules</p> <p>Evaluates all mailbox rules designated for automatic processing</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 1 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>MailboxEvaluateAllAutomaticRulesSubMin</p> <p>Evaluates all mailbox rules designated for automatic processing</p>	<p>Enabled: No</p> <p>Schedule Type: Business Process</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Execution Time: Every 0 hours and 10 seconds</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>MessagePurge</p> <p>Purges expired user messages Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 30 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>NonEDiInboundFSAdapter</p> <p>Collects files from the <i>install_dir/nonediinbound/collect</i> directory for translation purposes</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 2 hours and 0 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>
<p>NonEDiOutboundFSAdapter</p> <p>Collects files from the <i>install_dir/nonediotbound/collect</i> directory for translation purposes</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 2 hours and 0 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>PartialDocumentCleanUp</p> <p>Purges incomplete documents that have expired</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node 1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 2 hours and 0 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>PerfDataPurgeService</p> <p>Purges data from YFS_STATISTICS_DETAILS</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 03:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: admin</p>
<p>ProduceMsgPurgeService</p> <p>Purges expired user messages</p> <p>Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 02:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>PurgeService</p> <p>Purges completed or terminated business process data from live tables Note: Do not delete this service. Deleting it will impair system performance.</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 10 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: Admin</p>
<p>RetentionProcessor</p> <p>Purge eligible records from the Reporting Services data repository</p>	<p>Enabled: Yes</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Clock</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): 02:00 a.m.</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: No</p> <p>Run As User: admin</p>
<p>Scheduled_AlertService</p> <p>Checks business processes for error statuses</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 0 hours and 30 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>

Service or Adapter Supplied During Installation	Default Schedule Settings
<p>SyncEngine_DataCleanManager</p> <p>Cleans the data in the SyncEngine tables when all of the tasks are completed based on a syncopsetid process</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 20 hours and 45 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>
<p>SyncnEngine_TaskManager</p> <p>Manages tasks for the SyncEngine</p>	<p>Enabled: No</p> <p>Schedule Type: Service</p> <p>Timer or Clock: Timer</p> <p>System: node1</p> <p>Execution Day: Every Day</p> <p>Scheduled Time(s): Every 6 hours and 0 minutes</p> <p>Excluded Time(s): None</p> <p>Excluded Dates: None</p> <p>At startup: Yes</p> <p>Run As User: Admin</p>

Troubleshooting Schedules

If you experience problems with your business processes, reports, or services not running as scheduled, you can use the following information to help you troubleshoot and correct the issue. The actual problem may not be with the schedule, but with the business process, service or report. If you try all of the options provided here, and the business process, service, or report is still not running properly, troubleshoot the activity.

Where do I find information about schedules?

Deployment > Schedules > Search > Schedules page

List that enables you to view schedule settings and enable or disable schedules.

Business Processes > Manager > Search > Execution Manager page

Enables you to enable or disable, execute, or stop a business process.

Deployment > Services > Configuration > Services Configuration page

List that enables you to view service settings, enable or disable services, or edit or copy services.

Operations > Reports > Search> Reports page

List that enables you to view report configurations, enable or disable reports, or edit or copy report configurations, and edit report schedules.

Operations > System > Logs > System Logs page

List of log reports, included schedule.log, that may help you troubleshoot schedules.

What do I do if the schedule does not run?

Verify the schedule is enabled in Sterling B2B Integrator.

- If the schedule is disabled, enable the schedule.
- If the schedule is enabled, verify that the activity is enabled in Sterling B2B Integrator. If the activity is disabled, enable the activity and the schedule should run.

Review the schedule configuration and verify that the schedule settings are correct.

- If the schedule settings are incorrect, edit the schedule to correct the schedule to run when you want it to run.

Verify that the activity (business process, service or adapter, or report) scheduled has not been deleted from Sterling B2B Integrator.

- If the activity was deleted, recreate the configuration and schedule.
- If the activity was not deleted, review the activity configuration. If no schedule settings are configured, the schedule was not saved in Sterling B2B Integrator. Create a new schedule for the activity.

What do I do if the schedule runs at a different time than when it was scheduled?

Review the schedule configuration and verify that the schedule settings are correct. If the schedule settings are incorrect, edit the schedule to correct the schedule to run when you want it to schedule.

Can I use log files to troubleshoot schedules?

The schedule.log file provides information about service, business process, and report schedules and is useful to determine if errors occurred during schedule execution.

If an error occurred when running a scheduled activity, the information about the schedule displays in the schedule.log file. You can compare the information in the log file against the schedule settings you provided when you created the schedule to determine if there are discrepancies in the settings.

If the settings match, the error may be caused by the activity itself. In this situation, you should review the appropriate log for the activity. For example, the report.log file details information about reports.

To use the schedule.log

1. Display the System Logs page. Select **Operations > System > Logs**. Then select schedule.log.

2. Select schedule.log. The log includes the following parameters:

scheduleType

Number indicating the schedule type. Valid values are:

- 1 – Service schedule
- 2 – Business process schedule

scheduleID

Unique schedule ID that identifies the specific schedule in the database.

scheduleTypeID

The business process ID that is invoked by the schedule.

serviceName

Name of the service or business process that is scheduled.

params

Not currently used.

executionCount

Not currently used.

executionCurrentCount

Not currently used.

executionStatus

Not currently used.

status Status of the schedule. Valid values are:

- active – Enabled
- inactive – Disabled

systemName

Node number that the schedule resides on. This is useful if you are working in a clustered environment of Sterling B2B Integrator.

execOnMinute

Indicates the type of schedule and whether the schedule runs at startup. Valid values are:

- 0 – Timer schedule that does not run at startup.
- 1 – Daily, weekly, or monthly schedule that does not run at startup.
- 2 – Timer schedule that runs at startup.
- 3 – Daily, weekly, or monthly schedule that runs at startup.

userID

User that is running the schedule. For example, admin is the administrator.

timingXML

The parameters related to the schedule date and time ranges, and any exclusions. Values include:

Day of the week – Number indicating the day of the week. Monday (1), Tuesday (2), Wednesday (3), Thursday (4), Friday (5), Saturday (6), Sunday (0), every day (-1)

Range – Time range for the time intervals.

hashcode

Used for debugging issues.

The following shows a portion of a schedule.log file with debug enabled:

```
scheduleType:      '1'
scheduleTypeID:   '151'
serviceName:      'MailboxEvaluateAllAutomaticRules'
params:           'null'
executionCount:   '-1'
executionCurrentCount: '0'
executionStatus:  'WAIT'
status:           'INACTIVE'
systemName:       'node1'
execOnMinute:     '0'
userID:           'admin'
timingXML:         '<timingxml>
  <days>
    <day ofWeek="-1">
      <times>
        <timeRange>
          <range>0000-2359</range>
          <interval>1</interval>
          <onMinute>0</onMinute>
        </timeRange>
      </times>
    </day>
  </days>
</timingxml>
hashcode: 11916079
```

Scheduling Wizard Parameters

The scheduling wizard displays the options that are appropriate for the resource you are scheduling and for the type of schedule you select.

Scheduling Wizard: Schedule Type Page

Run As User

For super users only. Identify the user who has permission to run the scheduled activity. You can type the user ID. Or you can click the button, select the user ID from the list, and click **Save**.

Note: For scheduled services, this option is available only the super users. It is not available to subgroups of the Admin group or other groups.

Use 24 Hour Clock Display

By default, the scheduling wizard displays times using a 12-hour clock (which designates hours as a.m. or p.m.). Use this option to display times using a 24-hour clock.

Do not use schedule

For report and service schedules only. Removes all references to a schedule from the service or report. If you select this option, you cannot enable the schedule in the future. You must recreate the schedule instead. Use this option only when you do not need a schedule for a service or report.

Run based on timer

Run the scheduled activity at a certain time or time interval, such as every 2 hours. See “Run Schedules Based on a Timer” on page 33.

Run daily

Run the scheduled activity one or more times every day. See “Run Schedules Daily” on page 34.

Run based on day(s) of the week

Run the scheduled activity on certain days of the week, such as every Monday. See “Run Schedules Based on Days of the Week” on page 35.

Run based on day(s) of the month

Run the scheduled activity on certain days of the month, such as the 1st or 15th of every month. See “Run Schedules Based on Days of the Month” on page 36.

Scheduling Wizard: E-mail Options Page for Reports

E-mail options are displayed only if you are scheduling a report.

Store reports on file system

If selected the reports are stored as files.

Note: You must select either **Store reports on the file system** or **E-mail Address**. You can select both options.

File path

The file path where the reports are stored.

E-mail Address

If selected the reports are sent to the specified E-mail address. You can only specify one E-mail address.

Note: You must select either **Store reports on the file system** or **E-mail Address**. You can select both options.

Subject

The subject of the E-mail which is sent to the specified address.

E-mail Address

The E-mail address to send the reports to.

E-mail Host

The E-mail server name.

E-mail Port

The port number of the E-mail server.

Scheduling Wizard: Settings Pages

In the scheduling wizard, the type of schedule you select determines what you see on subsequent pages.

- See “Run Schedules Based on a Timer” on page 33
- See “Run Schedules Daily” on page 34
- See “Run Schedules Based on Days of the Week” on page 35
- See “Run Schedules Based on Days of the Month” on page 36

Scheduling Wizard: Configuration Page for Business Processes and Reports

Option	Description
Business Process	For business processes only. Identify the business process for which you are creating a schedule.

Option	Description
Choose report to schedule Format	For reports only. Identify the report to schedule and its format. Report formats are: PDF (default), HTML, or XLS.
Name, Value, Append	For business processes only. Enter name/value pairs for XML data to be passed to the business process. For each name/value pair, you can choose to have the data overwritten or appended each time this name/value pair is passed. Check Append if you want data appended. After entering a Name and Value for one name/value pair (and checking Append if necessary), click Add . The pair displays in the table onscreen. Repeat for each additional name/value pair. To delete a name/value pair from the table, select it and click Delete . Tip: The bprecovery.properties file lists the following valid scheduling names and default values: <ul style="list-style-type: none"> • auto_terminate_days=14 • num_states=1 • auto_terminate_state1=halted • auto_terminate_batch=1000

Scheduling Wizard: Confirm Page

Use the last page of the scheduling wizard to verify that your previous choices are correct.

Run Schedules Based on a Timer

Schedules based on a timer run the scheduled activity at a certain time or time interval, such as every 2 hours. Use this schedule type when you run the same activity at the same time every day, or when you are indexing, archiving, and purging information from your database.

If the scheduled activity runs one or more times a day regardless of peak and non-peak processing times, use a timer-based schedule instead of a daily schedule.

Timer Schedule Settings (Select Time Interval)

Indicate the usual interval when the scheduled activity is run.

Every ___ hours ___ minutes

Number of hours and minutes in the interval. For example, to run a business process every 2.5 hours, enter 2 hours and 30 minutes.

At Startup

Optional. Indicate whether to run the scheduled activity when Sterling B2B Integrator starts up. The scheduled activity also runs one time immediately after the schedule is saved in the database.

Timer Schedule Exclusions (Select Time Interval)

Optional. Indicate the times when the usual interval is skipped and the scheduled activity is not run.

Option	Description
From ___ AM/PM To ___ AM/PM. Click Add .	Type the hour to start and end the excluded interval and click Add . For example, if a business process runs every 2.5 hours, enter 12 p.m. to 1 p.m. to skip that hour. You can add more than one excluded interval.

Date Exclusions (Timer Schedule)

Optional. Indicate the days of the month when the usual interval is skipped and the scheduled activity is not run.

Option	Description
Months ___ Days ___ Click Add .	Select the month and day to exclude and click Add . For example, select January 1 to skip that day. You can add more than one excluded day.

Run Schedules Daily

Daily schedules run the scheduled activity one or more times a day, either at a specified hour or at a time interval. Use this schedule type when you run the same activity every day, either once a day or a few times a day.

If the scheduled activity runs daily during non-peak processing times, use a daily schedule instead of a timer-based schedule.

Daily Schedule Settings (Select Time or Time Interval)

Indicate the usual interval when the scheduled activity is run every day.

To	Complete these options	Example
Run the scheduled activity at one or more times every day	___ (hours) ___ (AM or PM) Click Add .	To run a business process or report at 10:15 a.m., enter 10:15 a.m. and click Add . You can add more than one specific time.
Run the scheduled activity at certain intervals every day	Check here to select time interval. From ___ To ____ Every ___ hours ___ minutes Click Add .	To run a business process or report every 2.5 hours between noon and midnight every day: <ul style="list-style-type: none"> • Select Check here to select time interval. • Enter from 12:00 p.m to 12:00 a.m., • Enter every 2 hours 30 minutes. • Click Add. You can add more than one time interval.

To	Complete these options	Example
Run the scheduled activity at startup	At Startup	Optional. Indicate whether to run the scheduled activity when Sterling B2B Integrator starts up. The scheduled activity also runs one time immediately after the schedule is saved in the database.

Daily Schedule Exclusions (Select Time Interval)

Optional. Indicate the times when the usual interval is skipped and the scheduled activity is not run.

Option	Description
From ___ AM/PM To ___ AM/PM. Click Add .	Type the hour to start and end the excluded interval and click Add . For example, if a business process runs every 2.5 hours, enter 12 p.m. to 1 p.m. to skip that hour. You can add more than one excluded interval.

Date Exclusions (Daily Schedule)

Optional. Indicate the days of the month when the usual interval is skipped and the scheduled activity is not run.

Option	Description
Months ___ Days ___ Click Add .	Select the month and day to exclude and click Add . For example, select January 1 to skip that day. You can add more than one excluded day.

Run Schedules Based on Days of the Week

Weekly schedules run the scheduled activity on certain days of the week, such as every Monday. Use this schedule type when you run the scheduled activity one or more times a week during non-peak processing times.

Weekly Schedule Settings (Select Time/Day or Time Interval/Day)

Indicate the usual interval when the scheduled activity is run on certain days of the week.

To	Complete these options:	Example
Run the scheduled activity at one or more times on specific days of the week	___ (hours) ___ (AM or PM) Select Day _____ Click Add .	To run a business process or report at 10:15 a.m. every Monday, enter 10:15 a.m., select Monday , and click Add . You can add more than one specific time/day.

To	Complete these options:	Example
Run the scheduled activity at certain intervals on specific days of the week	Check here to select time interval. From ____ To ____ Every ____ hours ____ minutes Select Day ____ Click Add .	To run a business process or report every 2.5 hours between noon and midnight every Monday: <ul style="list-style-type: none"> • Select Check here to select time interval. • Enter from 12:00 p.m to 12:00 a.m. • Enter every 2 hours 30 minutes. • Select Monday. • Click Add. You can add more than one time interval/day.
Run the scheduled activity at startup	At Startup	Optional. Indicate whether to run the scheduled activity when Sterling B2B Integrator starts up. The scheduled activity also runs one time immediately after the schedule is saved in the database.

Weekly Schedule Exclusions (Select Time Interval/Day)

Optional. Indicate the times when the usual interval is skipped and the scheduled activity is not run.

Option	Description
From ____ AM/PM To ____ AM/PM. Select Day ____ Click Add .	Type the hour to start and end the excluded interval, select the day, and click Add . For example, if a business process runs every 2.5 hours, enter from 12 p.m. to 1 p.m. and select Tuesday to skip that hour on Tuesdays. You can add more than one excluded interval.

Date Exclusions (Weekly Schedule)

Optional. Indicate the days of the month when the usual interval is skipped and the scheduled activity is not run.

Option	Description
Months ____ Days ____ Click Add .	Select the month and day to exclude and click Add . For example, select January 1 to skip that day. You can add more than one excluded day.

Run Schedules Based on Days of the Month

Weekly schedules run the scheduled activity on certain days of the month, such as the 1st or 15th of every month. Use this schedule type when you run the same activity monthly or quarterly.

Monthly Schedule Settings (Select Time/Day or Time Interval/Day)

Indicate the usual interval when the scheduled activity is run on certain days of every month.

To	Complete these options:	Example
Run the scheduled activity at one or more times on certain days of the month	___ (hours) ___ (AM or PM) Select Day ___ Click Add .	To run a business process or report at 10:15 a.m. on the first of every month, enter 10:15 a.m.,select day 1, and click Add . You can add more than one specific time/day. LDOM is the last day of the month.
Run the scheduled activity at certain intervals on certain days of the month	Check here to select time interval. From ___ To ___ Select Day ___ Every ___ hours ___ minutes Click Add .	To run a business process or report every 2.5 hours between noon and midnight on the first of every month: <ul style="list-style-type: none"> • Select Check here to select time interval. • Enter from 12:00 p.m to 12:00 a.m. • Enter day 1. • Enter every 2 hours 30 minutes. • Click Add. You can add more than one time interval/day. LDOM is the last day of the month.
Run the scheduled activity at startup	At Startup	Optional. Indicate whether to run the scheduled activity when Sterling B2B Integrator starts up. The scheduled activity also runs one time immediately after the schedule is saved in the database.

Monthly Schedule Exclusions (Select Time Interval/Day)

Optional. Indicate the time and day when the usual interval is skipped and the scheduled activity is not run.

Option	Description
From ___ AM/PM To ___ AM/PM. On Days _____ Click Add .	Type the hour to start and end the excluded interval, select the day, and click Add . For example, if a business process runs every 2.5 hours, enter from 12 p.m. to 1 p.m. and select Day 1 to skip that hour on the first of every month. You can add more than one excluded interval. LDOM is the last day of the month.

Date Exclusions (Monthly Schedule)

Optional. Indicate the days of the month when the usual interval is skipped and the scheduled activity is not run.

Option	Description
Months ___ Days ___ Click Add .	Select the month and day to exclude and click Add . For example, select January 1 to skip that day. You can add more than one excluded day.

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing

IBM Corporation

North Castle Drive

Armonk, NY 10504-1785

U.S.A.

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing

Legal and Intellectual Property Law

IBM Japan Ltd.

19-21, Nihonbashi-Hakozakicho, Chuo-ku

Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be

incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation

J46A/G4

555 Bailey Avenue

San Jose, CA 95141-1003

U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© IBM 2015. Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. 2015.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

Trademarks

IBM, the IBM logo, and [ibm.com](http://www.ibm.com)[®] are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at <http://www.ibm.com/legal/copytrade.shtml>.

Adobe, the Adobe logo, PostScript, and the PostScript logo are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, and/or other countries.

IT Infrastructure Library is a registered trademark of the Central Computer and Telecommunications Agency which is now part of the Office of Government Commerce.

Intel, Intel logo, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

ITIL is a registered trademark, and a registered community trademark of the Office of Government Commerce, and is registered in the U.S. Patent and Trademark Office.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc. in the United States, other countries, or both and is used under license therefrom.

Linear Tape-Open, LTO, the LTO Logo, Ultrium and the Ultrium Logo are trademarks of HP, IBM Corp. and Quantum in the U.S. and other countries.

Connect Control Center[®], Connect:Direct[®], Connect:Enterprise, Gentran[®], Gentran[®]:Basic[®], Gentran:Control[®], Gentran:Director[®], Gentran:Plus[®], Gentran:Realtime[®], Gentran:Server[®], Gentran:Viewpoint[®], Sterling Commerce[™], Sterling Information Broker[®], and Sterling Integrator[®] are trademarks or registered trademarks of Sterling Commerce[®], Inc., an IBM Company.

Other company, product, and service names may be trademarks or service marks of others.

Index

A

AS2 Edition scheduling considerations 4
AssociateBPsToDocs 20

B

BPEXpirator 21
BPLinkagePurgeService 21
BPREcovery 22
business process schedule
 creating 8
 editing 8, 9
 example 9

C

configuration, schedule 31
considerations
 schedule, AS2 Edition 4
 schedule, upgrade 4
creating
 business process schedule 8
 report schedule 13
 service schedule 16

D

disabling schedules 7
DocumentStatsArchive 23

E

editing
 business process schedule 8, 9
 report schedule 13
 service schedule 17
enabling schedules 7
Execution Manager page 28

F

frequency 6

I

IndexBusinessProcessService 23
IWFCDriverService 24

L

log file, schedule 29

M

MailboxEvaluateAllAutomaticRules 24
MessagePurge 25

N

name/value pairs 4, 8, 12
NonEDiInboundFSAdapter 25
NonEDiOutboundFSAdapter 25

P

ProduceMsgPurgeService 26
PurgeService 27

R

report
 schedule 13
Report page 29
report schedule example 14
report schedule, editing 13
Report Service,
 using 13

S

schedule
 benefits 1
 business process, creating 8
 business process, example 9
 configuration parameters 31
 considerations, AS2 Edition 4
 considerations, upgrade 4
 definition 1
 disabling 7
 editing, business process 8, 9
 editing, report 13
 editing, service 17
 enabling 7
 overview 1
 prerequisites 3
 report 13
 report example 14
 report, creating
 scheduling reports 13
 service example 18
 service, creating 16
 service, standalones 17
 testing 2
 troubleshooting 28
 troubleshooting issues 29
 use to 1
 schedule E-mail options
 E-mail address 32
 E-mail host 32
 E-mail port 32
 file path 32
 store reports on file system 32
 subject 32
 schedule.log 29
 schedule.log parameters 29
 Scheduled_AlertService 27
 Schedules page 28

service schedule

 creating 16
 editing 17
 example 18
Services Configuration page 29
standalone services 17
SyncnEngine_TaskManager 28
SyncnEngine_DataCleanManager 28
System Logs page 29

T

testing schedules 2
total processing times 6
troubleshooting issues, schedules 29
troubleshooting, schedules 28



Product Number:

Printed in USA