Gentran Integration Suite

IBM

Interim Fix Updates

Version 4.3 Build 4325 Interim Fix 1

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Version 4.3 Build 4325 Interim Fix 1

Contents

Version 4.3.2.5 and interim fix 4.3.2.5_1 updates

This update applies to Gentran® Integration Suite V4.3.2.5 and interim fix 4325_1 or later.

This change affects the default behavior of the Command Line Adapter 2 (CLA2) and includes more security configuration settings. After the installation of this interim fix, you must enable the CLA2 adapter and configure the security settings. For more information about enabling the CLA2 adapter and configuring the new SSL and key based authentication, see "Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)".

The SWIFTNet Server Adapter also supports both the CLA2 key based authentication and the CLA2 data security with SSL. For more information about the SSL and authentication options available for the SWIFTNet Server Adapter, see "SWIFTNet Server Adapter (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)".

The CLA2 default behavior and security updates also require more changes in the following topics:
- **bin Directory Files** gives you more CLA2 scripts.
- **Conducting a Thread Dump** includes more CLA2 port considerations for thread dumps from the user interface (UI).
- **PGP Package Service** includes more testing consideration changes for enabling CLA2.
- **PGP Unpackage Service** includes more testing consideration changes for enabling CLA2.

Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to the Command Line Adapter 2 in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

The Command Line Adapter 2 (CLA2) enables Gentran Integration Suite to run a program from a command line in a business process. Programs that can be run include executable programs, scripts, or operating system (OS) commands external to Gentran Integration Suite. The Command Line Adapter 2 also supports large files up to 12 GB and provides better memory allocation than the Command Line adapter. The Command Line Adapter 2 replaced the Command Line adapter.

For security the Command Line Adapter 2 is disabled by default. Before a new or existing business process can use the Command Line Adapter 2, you must enable the adapter. For more information about enabling the adapter, see "Enabling the Command Line Adapter 2".
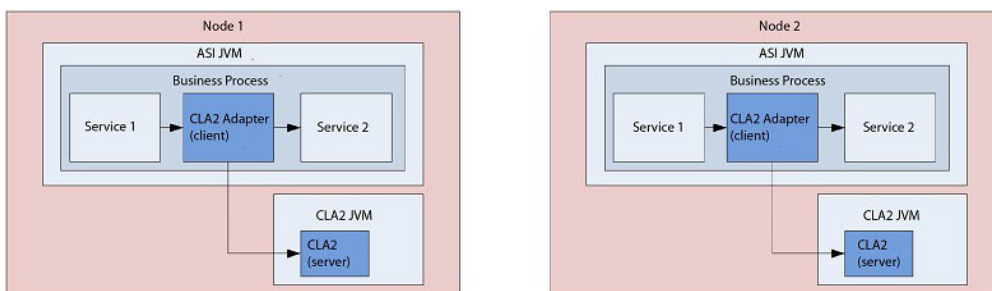
The Command Line Adapter 2 supports both key based authentication and data security with SSL. To secure the Command Line Adapter 2 you must at least enable authentication. For more information about how to configure these new parameters in the adapter, see "Configuring the Command Line Adapter 2".

Any existing custom Command Line Adapter 2 service instances must be reconfigured to verify that authentication is enabled and the correct key (cla2auth) is selected. To verify that authentication is enabled, you can review the audit log file that contains the timestamp, the source host IP, the business process, and the full command line.
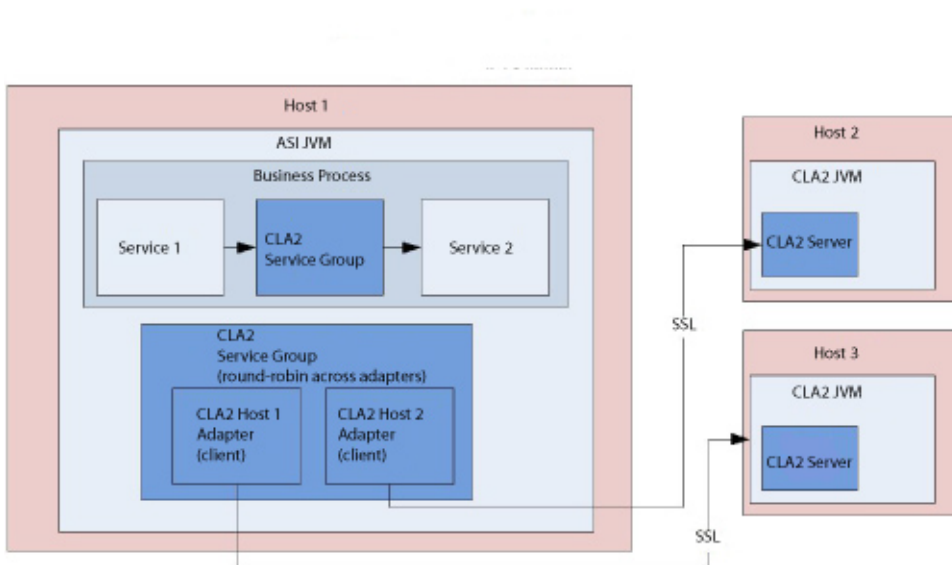
Restriction: Before you can use your existing Command Line Adapter 2 instances you must enable the adapter and redeploy the Command Line Adapter 2. For more information about enabling and redeploying the Command Line Adapter 2, see "Enabling the Command Line Adapter 2" and "Installing the Command Line Adapter 2 remotely".

Secure deployment of the Command Line Adapter 2 can be done both locally and remotely. In CLA2 deployment, a CLA2 server runs on each node and only the local CLA2 client can call the CLA2 server. Business processes must be on each node that is running a CLA2 server or you can create a service group of CLA2 adapters to allow the client service to call the appropriate CLA2 server on the localhost.

This diagram illustrates the process flow between the CLA2 adapter client and the CLA2 adapter server on the same host:

Node 1
ASI JVM
Business Process
Service 1
CLA2 Adapter (client)
Service 2
CLA2 JVM
CLA2 (server)

Node 2
ASI JVM
Business Process
Service 1
CLA2 Adapter (client)
Service 2
CLA2 JVM
CLA2 (server)

This diagram illustrates the process flow between the CLA2 adapter client and the CLA2 adapter server on different hosts with multiple CLA2 servers:

Host 1
ASI JVM
Business Process
Service 1
CLA2 Service Group
Service 2
CLA2 Service Group (round-robin across adapters)
CLA2 Host 1 Adapter (client)
CLA2 Host 2 Adapter (client)
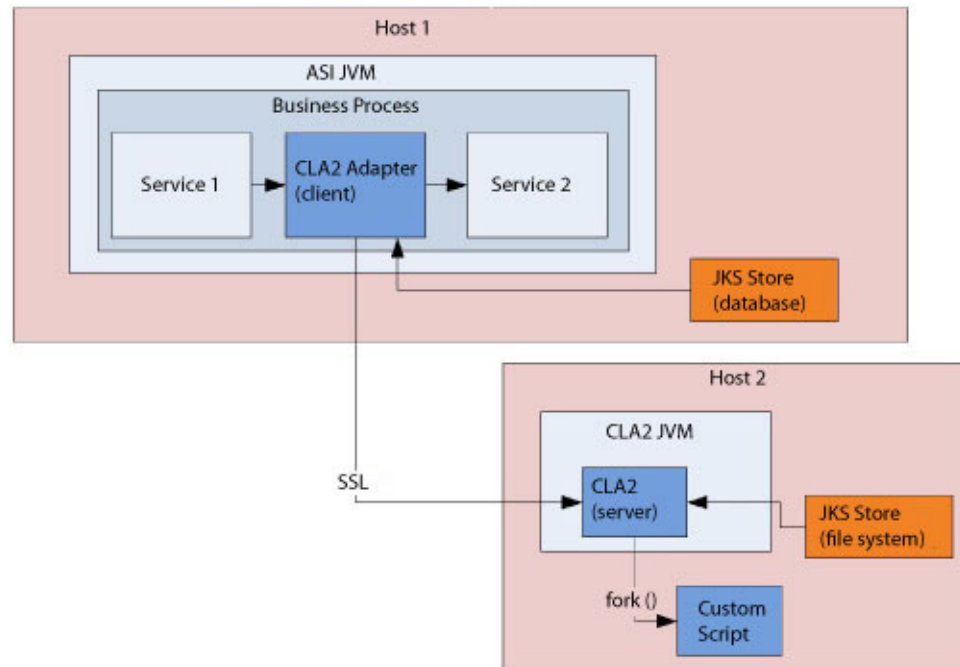
Host 2
CLA2 JVM
CLA2 Server

Host 3
CLA2 JVM
CLA2 Server

SSL
SSL

This diagram illustrates the process flow between the CLA2 adapter client and the CLA2 adapter server on different hosts that are secured with SSL:

Remember: Before you can use the Command Line Adapter 2 in any new or existing business process, you must enable the local Command Line Adapter server. For more information about how to enable the server, see "Enabling the Command Line Adapter 2".

The following table provides a high-level overview of the Command Line Adapter 2:

System name	CmdLine2
GPM category	All Services
Description	Executes a program from the command line. The syntax is: `cmd.exe /C <command>`. This is not necessary when running scripts. Examples:`cmd.exe /C dir importBPs.sh`
Business usage	Used to call any program from the command line.
Usage example	You could use the Command Line Adapter 2 to invoke a program that: • Encrypts and decrypts data you want to send or receive securely over the Internet • Manipulates data, such as change every occurrence of one letter to another • Pages someone • Initiates a business process • Initiates a remote system These are just a few examples out of many possible uses.
Preconfigured?	No
Requires third party files?	No
Platform availability	All supported Gentran Integration Suite platforms

Related services	Command Line Adapter
Application requirements	None
Initiates business processes?	Yes, if you define a business process to start when you configure the Command Line Adapter 2. The business process starts after the output from the command line process is read.
Invocation	Once you enable the Command Line Adapter 2, there are no special requirements. The Command Line Adapter 2 can either be used to start ("bootstrap") a business process or you can include the Command Line Adapter 2 directly in a business process to perform an explicit command. **Note:** The term "bootstrap" is used in the GPM to indicate that the Command Line Adapter 2 is used to start a business process after the output from the command-line process is read.
Business process context considerations	None
Returned status values	Returned status values: • Success: Command Line Adapter 2 was successful. • Error: Command Line Adapter 2 was unsuccessful.
Restrictions	A configuration of this adapter is needed for each program invoked from the command line. Authentication is enabled by default in Gentran Integration Suite delivered Command Line Adapter 2 instances. Custom Command Line Adapter 2 instances must be configured manually to ensure that authentication is enabled and the cla2auth certificate is selected.
Persistence level	System default (Full Persistence)
Testing considerations	Call a small command line process (without using it to invoke a business process) to perform a simple command.

How the Command Line Adapter 2 Works

Use the Command Line Adapter 2 in a business process to run any program from the command line, including executable programs, scripts, or OS commands external to Gentran Integration Suite. The types of activities that can be performed include data encryption and decryption, file manipulation, data manipulation, and initiation of a process on a remote system.

You can create multiple Command Line Adapter 2 configurations, one for each of several specific commands. Alternatively, you can use a single Command Line Adapter 2 configuration to perform different commands by specifying the command line process (cmdLine) and working directory (workingDir) in the business process. See *Command Line* for details on these parameters.

For example, your company communicates with a legacy database that is important to its daily business. You want to retrieve some customer billing information in the database and send it within a business process in Gentran

Integration Suite to your accounting department. You can write your own executable program to communicate with your legacy system and run it using the Command Line Adapter 2.

The following steps summarize how the Command Line Adapter 2 is typically used in a business process:

1. The adapter writes the content of the current primary document to a file in the working directory specified as the value of the working directory parameter. The name of this file is specified by the value of the inputFile parameter.
2. Gentran Integration Suite runs an executable program that picks up the file and sends it to the legacy system.
3. The legacy system returns a file, which now includes the customer billing information, and the adapter retrieves it. The file returned is specified by the value of the outputName parameter.
4. The adapter reads the file contents into the primary document.
5. Gentran Integration Suite performs the next operation in the business process.

Implementing the Command Line Adapter 2

You can implement a Command Line Adapter 2 to do the following:
- Execute commands using the command line from within a business process.
- Invoke the Command Line Adapter 2 on a schedule and then start a new business process using the output from the adapter.

  Note: This could be used if you wanted to schedule a command line program that accessed a legacy database on a regular schedule and then used the output in a business process.

The information in this section applies to both of the above implementations.

Before You Begin

Before you begin to implement the Command Line Adapter 2:

1. Enable the Command Line Adapter 2. For information, see "Enabling the Command Line Adapter 2".
2. Create and test the command line program or command to make sure that it works.
3. Determine the working directory where you will be processing your commands.

Process Overview

To implement the Command Line Adapter 2:

1. Create a Command Line Adapter 2 configuration. For information, see *Managing Services and Adapters*.

   Note: If you are configuring a Command Line Adapter 2 to start a business process, create the business process before you configure the adapter.
2. Configure the Command Line Adapter 2. For information, see *Configuring the Command Line Adapter 2*.
3. Create and enable a business process that includes the Command Line Adapter 2.

4. Test the business process and the adapter.

5. Run the business process.

Configuring the Command Line Adapter 2

To create a Command Line Adapter 2 configuration, you must specify field settings in Gentran Integration Suite and in the GPM. For general information about service and adapter configurations, see *Managing Services and Adapters*.

The Application Configuration

The following table describes the fields used to configure the Command Line Adapter 2 in Gentran Integration Suite.

Note: The field names in parentheses represent the corresponding field names in the GPM. This information is provided for your reference. Some fields can be configured in the GPM, if not selected here. Regardless of where they are configured, they can be overridden using BPML.

Field	Description
Name	Unique and meaningful name for the adapter configuration. Required.
Description	Meaningful description for the adapter configuration, for reference purposes. Required.
Select a Group	Select a Service Group to associate with this adapter. Valid values: • None – You do not want to include this configuration in a group at this time. Default. • Create New Group – You can enter a name for a new group in this field, which is then 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. **Note:** A Service Group is a group of services or adapters of the same type that can act as peers. A Service Group name is used in BPML in place of the Service Configuration name. Service Groups show up in the GPM as if they were Service Configurations. For more information about Service Groups, see *Managing Services and Adapters*.
Remote Name (remoteName)	Remote host name or IP address where the remote adapter implementation is running. Required. **Note:** For backward compatibility, the CLA2 supports the Command Line adapter parameter rmiAddr (at the business process level only).
Remote Port (remotePort)	Remote port is determined by the port configuration of the Command Line Adapter 2 server. Required. Default value: basePort+52.

Field	Description
Access Authentication?	Turn on authentication for this instance?
	Valid values:
	• Yes (true) – Default
	• No (false)
	The security default is 30 seconds (3000 milliseconds) and can be adjusted in the `CmdLine2server.properties` file.
	Restriction: The Command Line Adapter 2 server cannot have more than one private certificate in the JKS repository. For more information, see *Maintaining authentication and SSL keys*.
System Authentication Certificate	Select the authentication certificate that you want to run. Default value: cla2auth.
Command Line (cmdLine)	Command line process you want to run. Do one of the following:
	• If you want to set this parameter in the GPM/business process, leave the field blank.
	• Type the command line process in this field exactly as you would from the command line.
	• If you want to use a command that redirects input or output (through the use of >, <, or |), you must do so using a script file.
	• If you do not know the input or output file name, type the following parameters in the command line process as placeholders:
	• `$Input`
	• `$Output`
	These parameters are typed directly in the command line process. You can use these parameters on the command line in any order and multiple times if necessary. At run time, they are replaced with the actual file name.
	• If you want to enter user parameters, use the following placeholders: $0 – $9. These placeholders are resolved by the parm0 – parm9 parameters defined in the GPM or using BPML.
	Note: If $Input or $Output resolves to a filename that contains one or more spaces, automatic quoting will be performed before the command line is executed. For example, If the original command line was `test.sh $Input`, and $Input resolves to file 1, then the final command line, before execution, will be `test.sh "file 1"`. Therefore, do not put quotes around $Input or $Output.
	Note: An example of a command line entry is *test.sh $Input $Output $0 $1 $2 $3 $4 $5 $6 $7 $8 $9.* This runs the shell script `test.sh` taking an input file, using ten parameters, and producing an output file.

Field	Description
Working Directory (workingDir)	Location of the directory to use for executing the command line process. Optional. Default is the current working directory of the JVM running CLA2Client.jar. **CAUTION:** **Using this adapter to call a Unix script modifies the directory path of the environment variable LD_LIBRARY_PATH. To keep your current path, your script should include either the LD_LIBRARY_PATH path or a reference to your .profile (which includes the LD_LIBRARY_PATH path).**
Turn on debugging messages? (cla2_debug)	Turn on debugging for this adapter instance? Valid values: • Yes (true) – Logging is turned on and the messages are written to the system log. • No (false) – Default. **Note:** This turns on debugging for this specific adapter instance. These messages are logged in the system log in the *install_dir* logs directory. This parameter is read-only in the GPM. **Note:** For backward compatibility, the CLA2 supports the Command Line adapter parameter cmdl_debug (at the business process level only).
Wait on the process to complete before continuing? (waitOnProcess)	Wait on the process to complete before continuing the business process. Valid values: • Yes (true) – If the value is Yes, a status report is created if any stdout/stderr is generated by the process. If an error occurs while the service is processing output data, the advanced status contains the error message instead of the return code value. • No (false) **Note:** If **Use the output generated by the command line process** is set to Yes, the value of this parameter is assumed to be Yes because the service cannot use output if it does not wait for the process to complete. This parameter is read-only in the GPM.
Does this service start a business process? (bootstrap)	Whether the service starts a business process. Required. Valid values: • Yes (true) • No (false) **Note:** This parameter is read-only in the GPM.
Business process (initialWorkFlowName)	Business process you want the Command Line Adapter 2 to start. This field is required only if you selected Yes in *Does this service start a business process?* . If you prefer to configure this parameter in the GPM, select Not Applicable. **Note:** For backward compatibility, the CLA2 supports the Command Line adapter parameter initialWorkFlowId (at the business process level only).

Field	Description
Create Unique working directory	Command Line Adapter 2 creates a unique working directory for each invocation of a business process using the same Command Line Adapter 2 instance. Selecting this option ensures that the adapter instances do not overwrite each other when multiple files with the same name exist.
Document Storage Type (docStorageType)	Defines how the document is stored in the system. Required when the adapter starts a business process. Valid values: • System Default – Default • Database • File System **Note:** For more information on document storage types, see *Managing Services and Adapters*.
Run as User	Applies to the scheduling of the business process. The Run As User field only displays as an option if **Does this service start a business process?** is set to Yes. Type the user ID to associate with the schedule, or click the icon and select a user ID from the list. Valid value is any valid Gentran Integration Suite user ID. **Note:** This parameter allows someone who doesn't have rights to a specific business process to run it. If you select **Admin** as the user ID, you will inherit Administrative rights (for this run of the business process only), and enable the scheduled run.
Use 24 Hour Clock Display	If selected, the adapter will use the 24-hour clock instead of the default 12-hour clock.

Field	Description
Schedule	Information about scheduling the business process invoked by the Command Line Adapter 2. The Schedule field only displays as an option if *Does this service start a business process?* is set to Yes. Valid values: • Do not use schedule If this field is selected, the adapter does not start a business process and does not run on a schedule. • Run based on timer Valid values are the hour and minutes at which to run the adapter. If you choose to select a time interval, the valid values are the hours and minutes for the intervals. Add or delete selections as necessary. Specify any schedule exclusions or date exclusions. Indicate whether you want the adapter to run at startup. • Run daily Valid values are the hour and minutes at which to run the adapter, daily. If you choose to select a time interval, the valid values are the hour and minute for the interval. Add or delete selections as necessary. Specify any date exclusions. Indicate whether you want the adapter to run at startup. • Run based on day(s) of the week Valid values are the day of the week, the hour, and the minute that specify when to run the adapter. If you choose to select a time interval, the valid values are the hours and minutes for the intervals. Add or delete selections as necessary. Specify any date exclusions. • Run based on day(s) of the month Valid values are the day of the month, hour, and minute that specify when to run the adapter. If you choose to select a time interval, the valid values are the hours and minutes for the intervals. Add or delete selections as necessary. Specify any date exclusions.
Does the command line process require an input file? (useInput)	Defines whether the command line process requires an input file? Required. Valid values: • Yes (true) – The primary document of the current business process context is written out to the file system in the working directory and is used as input to the process. Default. • No (false) – No file is written to disk even if a document exists in the business process context. **Note:** This parameter is read-only in the GPM.
Input File Name (inputName)	Input file name, if the command line process requires an input file. Any occurrences of $Input in the command line are replaced with this name. Optional. If you leave this field blank, the default is the primary document name. **Note:** It is important to have a unique input file name for all concurrently running instances of Command Line adapters. If more than one instance of the Command Line Adapter 2 can be executing at the same time, you must create a dynamic, unique name to keep the instances from overwriting each other and causing the process to fail. This can be done by concatenating the current process ID on to a file's base name. This dynamic name may also need to be passed to the cmdLine.

Field	Description
Delete input file after process completes? (inputDelete)	Defines whether the input file is deleted after the process completes? Valid values: • Yes (true) – Default • No (false) **Note:** To delete the input file, **Wait on the process to complete before continuing?** must also be Yes. This parameter is read-only in the GPM.
Use the output generated by the command line process? (useOutput)	Use output generated by the command line process? Required. Valid values: • Yes (true) – The adapter will attempt to read the output of the process. If bootstrapping a workflow, the file will become the primary document in the new workflow. If not bootstrapping, the file is collected and placed in ProcessData, not as the Primary Document. Default . For example, `<assign name="Assign" to="PrimaryDocument" from="CLA2/document/@SCIObjectID"></assign>` • No (false) – No file is read into the business process context even if one is generated by the command line process. **Note:** This parameter is read-only in the GPM.
Output File Name (outputName)	Output file name, if you want to use the output generated by the command line process. Any occurrences of $Output in the command line are replaced with this name. Optional. If you leave this field blank, the default is the business process primary document name. **Note:** It is important to have a unique output file name for all concurrently running instances of command line adapters. If more than one instance of the Command Line Adapter 2 can be executing at the same time, you must create a dynamic unique name to keep the instances from overwriting each other and causing the process to fail. This can be done by concatenating the current process ID on to a file's base name. This dynamic name may also need to be passed to the cmdLine.
Delete output file after process completes? (outputDelete)	Specifies whether the output file is deleted after it is collected? Valid values: • Yes (true) – Default • No (false) **Note:** This parameter is read-only in the GPM.
Use SSL (Note: User Authentication without SSL will result in a weak security configuration.)	Use SSL to secure the Command Line Adapter 2? Valid values: • Yes (true) • No (false) – Default **Restriction:** The Command Line Adapter 2 server cannot have more than one private certificate in the JKS repository. For more information, see *Maintaining authentication and SSL keys*.
SSL Public CA Certificate	Select the SSL Public CA certificate for validation.

GPM Configuration

The following screen shows a graphical view of some GPM parameters for the Command Line adapter. The dimmed values were specified using the Command Line adapter configuration. The active fields are env0 and env1, which cannot be configured in the service configuration.

The following example shows the corresponding business process solution using BPML.

```
<process name="Example_CommandLine2BP">
  <operation name="Command Line 2 Adapter Run Script">
    <participant name="Sample_CommandLine2_Adapter"/>
    <output message="CmdLine2InputMessage">
        <assign to="."> from="*"/>
        <assign to="parm0">VAR1</assign>
        <assign to="parm1">USER</assign>
        <assign to="parm2">10</assign>
        <assign to="env0">VAR1=TEST</assign>
        <assign to="env1">USER=ME</assign>
    </output>
    <input message="inmsg">
```

```
        <assign to="." from="*"></assign>
      </input>
    </operation>
  </process>
```

The following table describes the fields used to configure the Command Line adapter in the GPM. This table contains the fields that are only configured in the GPM. Other fields may also be configured if they were left blank in the Gentran Integration Suite configuration.

Field	Description
Config (participant name)	Name of the adapter configuration. Required.
env0	An environment variable in the form name=value. Optional. Any value is valid.
env1	An environment variable in the form name=value. Optional. Any value is valid.
env2	An environment variable in the form name=value. Optional. Any value is valid.
env3	An environment variable in the form name=value. Optional. Any value is valid.
env4	An environment variable in the form name=value. Optional. Any value is valid.
env5	An environment variable in the form name=value. Optional. Any value is valid.
env6	An environment variable in the form name=value. Optional. Any value is valid.
env7	An environment variable in the form name=value. Optional. Any value is valid.
env8	An environment variable in the form name=value. Optional. Any value is valid.
env9	An environment variable in the form name=value. Optional. Any value is valid.
keepPath	Normally, any path information is stripped off the filename to allow for platform independence. This parameter allows you to keep the entire path. Optional. Valid values: • Yes – Path information is retained • No – Path information is stripped off
parm0	Resolves the $0 placeholder. Optional. Any value is valid.
parm1	Resolves the $1 placeholder. Optional. Any value is valid.
parm2	Resolves the $2 placeholder. Optional. Any value is valid.
parm3	Resolves the $3 placeholder. Optional. Any value is valid.
parm4	Resolves the $4 placeholder. Optional. Any value is valid.
parm5	Resolves the $5 placeholder. Optional. Any value is valid.
parm6	Resolves the $6 placeholder. Optional. Any value is valid.
parm7	Resolves the $7 placeholder. Optional. Any value is valid.
parm8	Resolves the $8 placeholder. Optional. Any value is valid.
parm9	Resolves the $9 placeholder. Optional. Any value is valid.

Field	Description
setSoTimeout	Specifies, in milliseconds, how long the socket will wait in receive mode without receiving anything before timing out. This is necessary to ensure that a process doesn't "hang" indefinitely. Optional. Valid value: any integer. Default is 60000 milliseconds (60 seconds). If your command line process is going to take longer than the default 60 seconds to process completely, then increase this value accordingly.
successValue	If waitOnProcess is Yes (true), then this option can be used to determine what the successful return code value is. Optional. Valid value is any integer. The default is 0 . If a value is specified and does not equal the return code value of the process, the business process status is set to ERROR. **Note:** The successValue parameter is an important parameter that is often overlooked. It is used to signal Gentran Integration Suite if the command line process failed. If the returned success value does not match the returned status, the process fails. Without returning a success value from an OS script, failures are not detected and the process is assumed to have passed. This creates a failure for the business functionality that is hard to correct later. In writing OS scripts, always check the return status for each call and handle it properly. This includes returning the status values to the OS shell. Error handling in scripts can cause the script to exit before the final output file is generated. Returning from the script to Gentran Integration Suite without an output file is a critical error that is handled before the returned successValue is examined. See *Use the output generated by the command line process?* for dealing with this issue.Many OS commands do not return a success value, instead they output errors to stderr or stdout. In these cases, the commands stderr and/or stdout text must be captured, filtered, and an error status returned if the command failed.

Output from Adapter to Business Process

The following table contains the parameters passed from the Command Line Adapter 2 to the business process:

Parameter Name and Element Value (BPML)	Description
Document (CLA2/document)	If a file is collected in non-bootstrap mode, the document is placed in ProcessData, not as the Primary Document.
DocumentId (CLA2/documentId)	If a file is collected in non-bootstrap mode, the document identifier of the document is placed here.
ProcessExitValue (CLA2/ProcessExitValue)	Sets the process data value to the exit value of the process.
FileName (CLA2/FileName)	The name of the file, if any, that was collected as part of the output from the process that ran.

Usage Examples

This section contains an example using the Command Line Adapter 2. Examples are included using both the GPM and BPML.

Invoking the Command Line Adapter to Run a Shell Script

The following example business process illustrates using the Command Line Adapter 2 to execute a shell script that expects an input file as the first parameter, an output file as the second parameter, and three other parameters.

- When this example configuration is used, a shell script called "test.sh" (which resides in the /home directory) is run.
- The program requires the input filename as the first parameter, the output filename as the second parameter, and three other parameters.
- Because the useInput variable is set to true and the inputName variable is blank, the name of the primary document replaces the $Input placeholder.
- Because the useOutput variable is set to true and the outputName variable is blank, the $Output placeholder is replaced with the name of the primary document.
- If the document name in the workflow context is "data.txt" in this example, the command line becomes `/home/test.sh data.txt data.txt VAR1 USER 10` at run-time.
- The name of the primary document is passed as the input file to the shell script program on the command line.
- The name of the primary document is passed as the output file to the shell script program on the command line.

  Note: If the inputName and outputName parameters had file names entered, these file names would replace the $Input and $Output placeholders.

GPM Example

The following example illustrates the above business process using the GPM.

Business Process Modeling Language (BPML) Example

The following example illustrates the same business process using BPML.

```
<process name="Example_CommandLine2_BP">
  <operation name="Command Line Adapter 2 Run Script">
    <participant name="Sample_CommandLine2_Adapter"/>
    <output message="CmdLine2InputMessage">
      <assign to="."> from="*"/>
      <assign to="parm0">VAR1</assign>
      <assign to="parm1">USER</assign>
      <assign to="parm2">10</assign>
      <assign to="env0">VAR1=TEST</assign>
      <assign to="env1">USER=ME</assign>
    </output>
    <input message="inmsg">
```

```
      <assign to="." from="*"></assign>
    </input>
  </operation>
</process>
```

Enabling the Command Line Adapter 2

Before you can use the Command Line Adapter 2, you must enable the server by editing the `sandbox.cfg` file. For more information about installing the Command Line Adapter 2 server remotely, see *Installing the Command Line Adapter 2 server remotely*.

Also, if you have a custom Command Line Adapter 2, you must reconfigure each of your custom adapters with the authentication and SSL options, see *Configuring the Command Line Adapter 2*.

To enable the Command Line Adapter 2 locally in your environment:
1. Open `sandbox.cfg` file that is in the `install_dir/install/properties` directory.
2. Add the `LAUNCH_CLA2_SERVER` property and set the value to `true`.
   `LAUNCH_CLA2_SERVER=true`
3. Run the `setupfile.sh/.cmd` to recycle Gentran Integration Suite.
4. Start and stop the Command Line Adapter 2.
   - Start the Command Line Adapter 2 with the `startCmdLine2.sh` (UNIX) or the `StartCLA2WindowsService.cmd` (Windows) script.
   - Stop the Command Line Adapter 2 with the `stopCmdLine2.sh` (UNIX) or the `StopCLA2WindowsService.cmd` (Windows) script.

Tip: To use **Operations** > **System** > **JVM Monitor** > **Take Thread Dump**, the default Command Line Adapter 2 must match the `CLA2_PORT` in the `sandbox.cfg` to take thread dumps from the User Interface.

Installing the Command Line Adapter 2 server remotely

For your new or existing Command Line Adapter 2 instances you must use these instructions to install and redeploy the Command Line Adapter 2 server. Also, before you begin editing the files on your remote server, you must copy the needed files to your remote server.

Important: For secure Command Line Adapter 2 remote deployment, ensure that only the Gentran Integration Suite boxes have direct network access to the remote host Command Line Adapter 2 port.

To install the Command Line Adapter 2 server remotely:
1. Run the `<install>/bin/CLA2makejar.sh`(UNIX or Linux) or `<install>/bin/CLA2makejar.cmd` (Windows) script in your Gentran Integration Suite instance to create the `CLA2RemotePackage.jar` in your `/bin` directory.
2. Copy the `CLA2RemotePackage.jar` to your remote server.
3. Create a directory on your remote server `<remoteFolder>`.
4. Copy the `CLA2RemotePackage.jar` into your `<remoteFolder>` and extract the contents of the `CLA2RemotePackage.jar`.
5. Edit the following scripts in your `<remoteFolder>` by updating all the remote paths and ports.
   - `startCmdLine2.sh` (UNIX)

```
jvm_args="-Xms128m -Xmx512m -DcmdlineProps2="<remoteFolder>/CmdLine2server.properties" -jar"
clientJar=<remoteFolder>/CLA2Client.jar
logOutput=<remoteFolder>/CmdLine2.output
nohup <remoteFolder>/bin/java $jvm_args $clientJar <remotePort> > $logOutput 2>&1 &
cmdLine2pid=$!
echo $cmdLine2pid > <remoteFolder>/cmdline2.pid
echo CmdLine2 started with PID=$cmdLine2pid
```

- stopCmdLine2.sh (UNIX)

```
pidFile=<remoteFolder>/cmdline2.pid
```

- start_remote_CLA2_console.cmd (Windows)

```
<remoteJKDfolder>\bin\java.exe -Xss256k -Xms64m -Xmx512m -DcmdlineProps2=
<remoteFolder>\CmdLine2server.properties -Djava.io.tmpdir=<remoteFolder>
-Djava.class.path=<remoteFolder>\CLA2Client.jar; com.sterlingcommerce.woodstock.
services.cmdline2.CmdLine2RemoteImpl <remotePort> > <remoteFolder>\cla2client.log 2>&1
```

6. Edit the CmdLine2server.properties file in your <remoteFolder>.

```
keystore_location=<remoteFolder>/cla2_KeyStore.jks
```

   Tip: The host binding property CLA2NetworkHosts is in the
   CmdLine2server.properties file and the host binding must include the remote
   host name for example: localhost,chantico.dub.usoh.ibm.com.

7. Edit the log file location in the Cmdline2server.properties file.

```
logLocation=<remoteFolder>/cla2server.log
```

8. Modify the *.sh files to make them executable.

```
chmod 740 *.sh
```

9. Start the CLA2 server with the start script in your remote directory.
   - startCmdLine2.sh (UNIX)
   - start_remote_CLA2_console.cmd (Windows)

10. Verify that the server started correctly by viewing the cla2client.log file.

11. Stop the Command Line Adapter 2 server with the stop script in your remote
    directory.
    - stopCmdLine2.sh (UNIX)
    - Ctrl + C (Windows)

Stopping the Command Line Adapter 2

If Gentran Integration Suite is shut down with the (Windows)
stopWindowsService.cmd or (UNIX and iSeries®) hardstop.sh script, the Command
Line Adapter 2 also shuts down.

You can also stop the Command Line Adapter 2 with these commands:
- (UNIX or iSeries) ./stopCmdLine2.sh
- (Windows service) stopCLA2WindowsService.cmd

Otherwise, once started, the adapter runs silently as configured and does not
return to the command line until it is finished, interrupted, or fails. Therefore, you
cannot use that command line to execute any other commands.

Maintaining authentication and SSL keys

The Command Line Adapter 2 provides default keys. However, you can use
custom keys for authentication and SSL both locally and remotely. For remote
custom keys, you must update the Java™ keystore (JKS) file and the property file in
your remote directory. For more information about importing keys, see *Security*.

Restriction: The Command Line Adapter 2 server cannot have more than one
private certificate in the JKS repository.

To create an authentication key or SSL certificate:

1. Create a key pair with your preferred tool.
2. Import the key pair into the Gentran Integration Suite system keys table. For more information about importing keys, see *Security*.
3. Select the imported key or certificate when you configure the Command Line Adapter 2 in Gentran Integration Suite.
4. Add the public key to the `CLA2Server.jks` file with your preferred tool (example: Keytool).
5. Set the `publicCertAlias = <custom_name>` in the `CmdLine2servers.properties` file.

To create an SSL key:

1. Create a key pair with your preferred tool.
2. Import the certificate into the Gentran Integration Suite CA certificate table. For more information about importing keys, see *Security*.
3. Select the imported certificate when you configure the Command Line Adapter 2 in Gentran Integration Suite.
4. Add the private key to the `CLA2Server.jks` file with your preferred tool (example: Keytool).
5. Set the `SSLCertificateName = <custom_name>` in the `CmdLine2servers.properties` file.

SWIFTNet Server Adapter (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to the SWIFTNet Server Adapter in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

The following information provides an overview of the SWIFTNet Server adapter CLA2 related updates for Gentran Integration Suite Version 4.3.2.5 and interim fix 4325_1 or later:

The SWIFTNet Server Adapter includes new parameters for the Command Line Adapter 2 authentication and SSL options. All default or custom preconfigured SWIFTNet Adapter instances have authentication that is enabled and SSL that is disabled. For more information about the changes to the Command Line Adapter 2 server, see *Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)*.

For existing SWIFTNet Server Adapter instances (including custom instances), the new parameters are blank and a value of `None Provided` is displayed on the Service Configuration Summary page. However, during execution these values default to `Authentication = Yes, System Certificate = cla2auth`, and `CLA2 SSL = No`. You can edit these default values in the corresponding adapter instance and save your changes.

All new instances of the SWIFTNet Server Adapter have Authentication that is enabled by default and SSL that is disabled by default.

Tip: You are encouraged to at least enable the `Authentication` option.

Implementing the SWIFTNet Server Adapter

This update applies to the SWIFTNet Server Adapter V4.3.2.5 and interim fox 4.3.2.5_1 or later. To implement the SWIFTNet Server adapter, steps 1 and 2 have been updated for secure CLA2 configuration with interim fix 4.3.2.5_1:

1. Enable the Command Line Adapter 2, see *Enabling the Command Line Adapter 2* in Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later).

   Tip: For a secure configuration, enable both the Authentication and the SSL security options available in the Command Line Adapter 2 configuration.

2. Create a configuration of the Command Line Adapter 2, see *Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)*. For information about the remote installation of the Command Line Adapter 2, see *Installing the Command Line Adapter 2 server remotely* in Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later).

   Restriction: You must enable the same secure options on the SWIFTNet Server adapter that you enable when configuring the Command Line Adapter 2.

3. Create a configuration of the SWIFTNet Server adapter, see *Managing Adapters and Services*. For information about the fields specific to this adapter, see *Configuring the SWIFTNet Server Adapter*.

4. Specify field settings for the adapter configuration in the application Admin Console and in the GPM as necessary. See *Creating or Setting Up a Adapter Configuration in the Admin Console* or *Setting Up the Adapter in the GPM*.

5. Configure the business process you are using for the SWIFTNet Server adapter.

   The business processes that work with SWIFTNet Server adapter include the following:
   - handleSWIFTNetServerSnFRequest
   - handleSWIFTNetInboundCorrelation
   - handleSWIFTNetOutboundCorrelation
   - handleSWIFTNetServerFADelNotif
   - handleSWIFTNetServerFAEvent
   - handleSWIFTNetServerFARequest
   - handleSWIFTNetServerFASnFDelNotif
   - handleSWIFTNetServerFASnFRequest
   - handleSWIFTNetServerRequest
   - handleSWIFTNetServerSnFDelNotif
   - handleSWIFTNetServerFASnFEvent
   - handleSWIFTNetSnFInboundCorrelation
   - handleSWIFTNetSnFOutboundCorrelation

6. Define the **HTTP Listen Port** in the SWIFTNet HTTP Server adapter instance, which should have the same value as the **GIS HTTP Server Adapter Port** defined in the SWIFTNet Server adapter configuration.

7. Specify field settings in the business process. See *Business Process Example*.

Creating or Setting Up a Adapter Configuration in the Admin Console

This update applies to V4.3.2.5 and interim fix 4.3.2.5_1 or later and includes new Authentication and SSL Fields in the SWIFTNet Server Adapter Admin concole for secure Command Line Adapter 2 (CLA2) configuration.

Field	Description
Access Authentication?	Turn on authentication for Command Line Adapter 2? **Tip:** For a secure configuration, enable authentication. Valid values: • Yes - Default • No For more information about the authentication configuration of the Command Line Adapter 2, see *Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)*. **Restriction:** The authentication parameters that are set here must be the same as those in the Command Line Adapter 2 configuration.
System Authentication Certificate	Select the Command Line Adapter 2 authentication certificate that you want to run. Default value: cla2auth
Use SSL for CLA2 communication (Note: User Authentication without SSL will result in a weak security configuration.)	Use SSL to secure the Command Line Adapter 2? **Tip:** For a secure configuration, enable SSL. Valid values: • Yes • No - Default For more information about the SSL configuration of the Command Line Adapter 2, see *Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)*. **Restriction:** The SSL parameters that are set here must be the same as those in the Command Line Adapter 2 configuration.
SSL Public CA Certificate	Select the Command Line Adapter 2 SSL Public CA Certificate for validation. Default value: cla2ssl

bin Directory Files (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to the bin Directory Files in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

These are the new scripts and files that are in the bin directory upon the installation of the interim fix. Additional scripts are found in the bin Directory Scripts and Files PDF.

The following table lists the new files that are found in the following location: `install_dir/bin` directory of the installation.

File (UNIX/Linux)	
File (Windows)	**Description**
• CLA2makejar.sh • CLA2makejar.cmd	Used to create the CLA2RemotePackage.jar in your bin directory. This jar is then used in the remote installation process for CLA2.
• startCmdLine2.sh • startCLA2WindowsService.cmd	Starts Command Line Adapter 2 (local).
• startCmdLine2.sh • start_remote_CLA2_console.cmd	Starts Command Line Adapter 2 (remote).
• stopCmdLine2.sh	Stops Command Line Adapter 2.

Conducting a Thread Dump (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to Conducting a Thread Dump in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

For the Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.4_2 or later), when you use **Operations** > **System** > **JVM Monitor** > **Take Thread Dump**, the default Command Line Adapter 2 must be enabled and match the CLA2_PORT in the sandbox.cfg to take thread dumps from the User Interface. You can also use the command line to take a thread dump with the shell script.

For information about thread dumps, refer to "Reading a Thread Dump" and the "Conducting a Thread Dump".

PGP Package Service (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to the PGP Package Service in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

The following new CLA2 testing considerations must now be considered for the PGP Package service:

Testing considerations	Create the profile in the PGP Server Manager. This profile stores information about the PGP server, including PGP Type, PGP Executable, PGP Path, the location of the public key ring, the secret key ring, and the random number seed. It enables you to create key maps for secret key sets and conventional key sets. A pre-defined Command Line Adapter 2 (PGPCmdlineService) is installed withGentran Integration Suite. The Command Line Adapter 2 is used for large file support (streaming). Start the remote Command Line 2 client. For more information about enabling and installing the Command Line Adapter 2, see *Command Line Adapter 2 (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)*.

PGP Unpackage Service (Version 4.3.2.5 and interim fix 4.3.2.5_1 or later)

This update applies to the PGP Unpackage Service in Gentran Integration Suite V4.3.2.5 and interim fix 4.3.2.5_1 or later.

The following new CLA2 testing considerations must now be considered for the PGP Unpackage service:

Testing considerations	Create the profile in the PGP Server Manager. This profile stores information about the PGP server, including PGP Type, PGP Executable, PGP Path, the location of the public key ring, the secret key ring, and the random number seed. It enables you to create key maps for secret key sets and conventional key sets. A pre-defined Command Line Adapter 2 (PGPCmdlineService) is installed with Gentran Integration Suite.
	The Command Line Adapter 2 is used for large file support (streaming). Start the remote Command Line 2 client. For more information about enabling and installing the Command Line Adapter 2, see *Command Line Adapter 2 (Build 4325 and interim fix or later)*.

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