Gentran Integration Suite™

Connect:Direct Interoperability Guide

Version 4.3

Sterling Commerce

An IBM Company

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Overview of Connect:Direct Interoperability

Interoperability between Gentran Integration Suite and Connect:Direct brings the strengths of both products together. Connect:Direct enables large scale, multi-platform reliable and secure data exchange. Gentran Integration Suite enables business process modeling and content-based routing using traditional and emerging industry standards. Interoperability enables a Connect:Direct network to efficiently access the advanced integration capabilities of Gentran Integration Suite.

Connect:Direct customers can use Gentran Integration Suite to extend internal and external processes to the vast array of EAI and B2B adapters available with Gentran Integration Suite business process flows.

This section covers the following topics:

✦ About Gentran Integration Suite and Interoperability with Connect:Direct

✦ About Connect:Direct and Interoperability with Gentran Integration Suite

✦ Terminology with Connect:Direct Interoperability

✦ Capabilities with Gentran Integration Suite and Connect:Direct Interoperability

✦ System Requirements for Connect:Direct Interoperability

✦ Licensing Requirements for Connect:Direct Interoperability

About Gentran Integration Suite and Interoperability with Connect:Direct

Gentran Integration Suite is a business process-centric transaction engine for modeling and managing business processes. Gentran Integration Suite supports high volume electronic message exchange, complex routing, translation and flexible integration, and real-time interaction with multiple internal systems and external business partners.

Gentran Integration Suite processing is based on industry standards:

✦ Business processes are created and run based on the Business Process Modeling Language (BPML), a metalanguage for the modeling of business processes.

✦ Internet communications protocols (HTTP, FTP, e-mail) meet industry standards.

✦ B2B management, packaging, and communications protocol standards are supported (ebXML, AS1, AS2, EDIFACT, ANSI X12).

✦ Security standards are supported (X.509 certificates, SSL, PGP, LDAP, Single Sign On, digital signatures, data encryption).

Using Gentran Integration Suite for modeling and managing business processes, you can automate system-to-system business document exchanges such as purchase orders, invoices, shipment notifications, and many other document types, depending on business needs and required protocol standards.

Gentran Integration Suite Services and Adapters

Activities carried out in Gentran Integration Suite are performed by services and adapters. An adapter is a type of service that communicates with systems outside of Gentran Integration Suite. There are many types of adapters, each type intended for use with a specific external system, for example, the Connect:Direct Requester adapter. When you configure an adapter, you create a unique instance of that type of adapter. Because adapters move data into and out of Gentran Integration Suite, you may need to have multiple instances (configurations) of one type of adapter.

Example: The Connect:Direct Requester adapter implements the protocol that enables Gentran Integration Suite to send instructions to a remote Connect:Direct node. You may need to have multiple instances of this adapter to accommodate multiple remote nodes or high volumes of communications.

A service is a component that carries out an activity within a business process. Like adapters, when you configure a service, you are creating a unique copy of the service (a service configuration) for which you have defined specific parameters. One type of service can have many service configurations. Each service configuration must have a unique name. Multiple business processes can use one service configuration simultaneously.

Example: The Connect:Direct Requester Submit Process service tells the Requester adapter to submit a Process on a remote Connect:Direct node. Configuration parameters for this service include the PNODE, the SNODE, and Priority.

Two adapters in Gentran Integration Suite enable interoperability with Connect:Direct. The Connect:Direct Server adapter and the Connect:Direct Requester adapter provide a suite of services specifically for use in business processes that perform operations with Connect:Direct nodes.

Gentran Integration Suite Concepts and Components

The following table defines components that are important for interoperability:

Concepts and Components	Description
Business Process	A *business process* is a sequence of steps that businesses carry out to achieve a goal.
	For example, an online bookseller has a business process: *process customer book order.* This involves a number of steps, or activities, such as checking the inventory system for stock, informing the warehouse to package a book, arranging for shipping, and so forth.

Concepts and Components	Description
Business Process Modeling Language	Business Process Modeling Language (BPML) is an XML-based language for describing and executing business processes. BPML is sufficiently powerful to express most EAI, B2B integration, and associated user interface interaction. Services and adapters are rendered in BPML.
Correlation Records	*Correlation records* enable tracking business processes and documents based on related identifiers such as: document ID, business process ID, Mailbox ID. This functionality is similar but not identical to Connect:Direct Select Statistics and Select Process.
Gentran Integration Suite Mailbox	The Gentran Integration Suite Mailbox is a business document repository that enables you to organize, store, and manage trading partner documents and transactions. This functionality is useful when data is produced by internal systems when trading partner systems are unavailable or requests are received from trading partners outside of processing windows.

About Connect:Direct and Interoperability with Gentran Integration Suite

Connect:Direct is a peer-to-peer file-based integration system optimized for assured delivery, high volume and secure data delivery within and between enterprises. It is optimized for high performance and moves files containing any type of data (text, EDI, binary, image) across multiple platforms, disparate file systems and disparate media (tape, disk).

Connect:Direct automates and secures file transfer between applications within the enterprise and with external business partners. Predefined file transfers can be scheduled for one-time or recurring execution, and can be easily integrated with your existing automated operations or scheduling systems. Extensive recovery features help to assure reliable data delivery in support of 24x7 business operations. Extensive statistics logs provide a complete audit trail and diagnostic information.

Connect:Direct is installed on a wide range of platforms such as mainframe, UNIX, or Windows server, as well as the desktop, providing seamless data delivery across platforms, to communicate with other Connect:Direct sites in the business network.

Connect:Direct User Interfaces

The way you interact with Connect:Direct varies, depending upon the platform on which Connect:Direct is installed. In general, you interact with Connect:Direct through a Connect:Direct client. Following is a list of commonly used clients:

✦ The Requester client is a graphical interface used on Windows and UNIX.

✦ The command line interface (CLI) is available on all platforms.

✦ The browser user interface is another client available on Windows and UNIX.

✦ The interactive user interface is used on the OS/390 and Z/OS platforms.

With the user interface client you can perform the following tasks:

✦ Configure Connect:Direct

✦ Create Processes

✦ View Process activity

✦ Edit network maps

✦ Modify initialization parameters

✦ Define user authorization

Connect:Direct Concepts and Components

The following table defines components that are important for interoperability:

Concepts and Components	Description
Connect:Direct Process	A *Process* is a collective unit of work. Steps in each work unit are defined using a scripting language unique to Connect:Direct. A Connect:Direct Process is composed of statements and is stored in a file with the extension .cdp (Windows). A Process is initiated with a *Submit Process* command. **Note:** The Gentran Integration Suite business process is a .bp file. A business process can initiate a session with a Connect:Direct server to submit a Process, or a Process can initiate a session with Gentran Integration Suite and initiate a business process.
Connect:Direct Process Language	The Connect:Direct Process language consists of *statements* and *parameters* that provide instructions for initiating activities such as: ◆ Copying files between systems (nodes) ◆ Running jobs, programs, and commands ◆ Handling error situations through conditional logic ◆ Starting another Process
Connect:Direct Commands	In Connect:Direct, you use *commands* to submit, monitor, and control the execution of Processes. The most commonly used commands in Connect:Direct are: ◆ Select Process - displays or prints information about a Process. ◆ Select Statistics - displays or prints statistics from a statistics log. ◆ Submit - starts a Process on a remote Connect:Direct node.
Nodes	A node is a Connect:Direct server. Two Connect:Direct servers (local and remote) function together to perform data transfers. Either node can initiate the work by submitting a Process. During the transfer of data, the Connect:Direct server where the Process is initiated is the primary node (PNODE) and the secondary node (SNODE) is the partner node. When a session is established, the node that initiates the session is the PNODE regardless of the direction of information flow. The other is the SNODE. The Process can specify work destined for either the PNODE or SNODE. **Note:** Gentran Integration Suite can be a Connect:Direct local or remote node and can function as a PNODE or an SNODE.
Network Map	Connect:Direct identifies the remote nodes that the local node can communicate with through the use of a *network map* file, sometimes called a *netmap*. The network map includes the names of all the remote nodes that the Connect:Direct local node can communicate with, the paths to contact those remote nodes, and characteristics of the sessions for communication. **Note:** When Gentran Integration Suite is a Connect:Direct node it must have a network map to identify the remote nodes it can communicate with. You add nodes to a network map when you configure the Connect:Direct Server adapter in Gentran Integration Suite. **Note:** The term *map* is used in Gentran Integration Suite for files that describe how to map one data type to another data type. These are also called *translation maps* and should not be confused with network maps.

Terminology with Connect:Direct Interoperability

In Connect:Direct, you refer to the data transferred between systems as *files*. However, when files are copied to and stored in a Gentran Integration Suite Mailbox, you refer to the files as *messages*. Messages are assigned to a mailbox with a name and timestamp. Business processes use services and adapters to add, extract, query, and delete messages. When files are copied to or from a business process, they are referred to as documents in Gentran Integration Suite.

When you perform activities on a message in a Gentran Integration Suite Mailbox and use the data in a business process, you refer to the message body as a *business document*.

Within a business process, while data is being operated on (for example, moved, copied, translated, altered), the data is called the *primary document*. All the shared data within a business process while it runs is called *process data*. The primary document is a subset of the process data and may change during the business process, depending upon the actions of the business process.

Capabilities with Gentran Integration Suite and Connect:Direct Interoperability

Gentran Integration Suite and Connect:Direct work together to enable your company to easily communicate between applications internally and externally with remote business partners.

You can use Gentran Integration Suite and Connect:Direct to securely copy large files and exchange data between the two applications in a near seamless environment, and create automated business processes to interact on the data sent to Gentran Integration Suite.

Gentran Integration Suite acts as an entry point, and after you open the door, you can tie into the tightly integrated Gentran Integration Suite environment which includes among other capabilities:

✦ Bulk data transfer with advanced platform capabilities to move data more efficiently than simple file handoffs

✦ Connect:Direct transport protocol in the Connect:Direct Server adapter

✦ Data transformation

✦ Graphical Process Modeling

✦ Bi-directional monitoring visibility

✦ Bi-directional process initiation

✦ Extended file tracking through shared process identifiers

✦ Access to a broader set of business level protocols such as ebXML, SOAP, UCCnet, and Rosettanet

✦ Routing decisions based on content

✦ Automated business processes triggered by file movement

System Requirements for Connect:Direct Interoperability

The Gentran Integration Suite Connect:Direct Server adapter is compatible with the following versions of Connect:Direct:

✦ Connect:Direct Windows 4.1 (with patch 26) or later

✦ Connect:Direct UNIX 3.5 (with patch dated 28Aug03) or later

✦ Connect:Direct OS/390 4.4 or later

✦ Connect:Direct OS/400 3.5 or later

✦ Connect:Direct Select 1.0 or later

✦ Connect:Direct HP Non-Stop 3.4 or later

Connect:Direct Server adapter is supported on all platforms that support Gentran Integration Suite. Third party jar file CDJava.jar, which is included with Gentran Integration Suite, is required.

Licensing Requirements for Connect:Direct Interoperability

You must have appropriate adapter licensing to use one or more instances of the Connect:Direct Server adapter and the Connect:Direct Requester adapter.

Activate your Gentran Integration Suite license file, if required, from the Sterling Commerce Self-Service Licensing Web site at www.productupdates.stercomm.com.

The Gentran Integration Suite Mailbox option enables you to copy and store files in personal mailboxes in Gentran Integration Suite for later retrieval or to initiate Gentran Integration Suite business processes. To use the Gentran Integration Suite Mailbox option, you must have appropriate mailbox licensing.

How Connect:Direct Interoperability Works

Gentran Integration Suite uses two adapters to communicate with Connect:Direct: The Connect:Direct Server adapter and the Connect:Direct Requester adapter. The Server adapter functions as both PNODE and SNODE in the Connect:Direct network, initiating and responding to Connect:Direct transfer requests. The Requester adapter functions as a client that sends requests to Connect:Direct nodes.

Interoperability extends the functionality of Connect:Direct by allowing any Connect:Direct node to make use of the power of business processes by sending files to and receiving data from Gentran Integration Suite.

This section covers the following topics:

✦ System Diagram for Connect:Direct Interoperability

✦ Connect:Direct Server Adapter

✦ Connect:Direct Requester Adapter

✦ Perimeter Servers for Connect:Direct Interoperability

System Diagram for Connect:Direct Interoperability

Within Gentran Integration Suite, the Connect:Direct Server adapter and the Connect:Direct Requester adapter provide specific services for use in business processes. Connect:Direct Server adapters can communicate through a perimeter server, which manages communication with the Connect:Direct Server, enabling business interaction between Enterprise A and Enterprise B.

The following figure shows a high-level view of how Gentran Integration Suite and Connect:Direct work together to exchange information between enterprises:
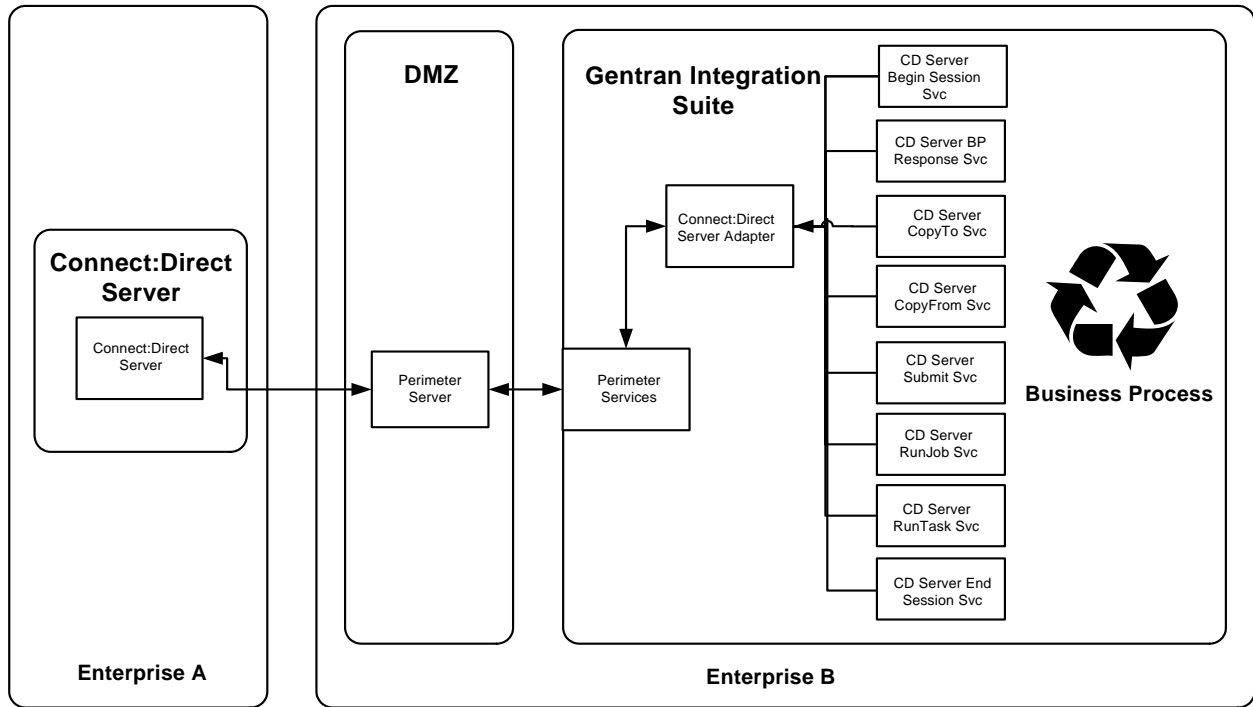
Inter-Enterprise

Connect:Direct Server adapters and Connect:Direct Requester adapters can also be used to exchange transactions with Connect:Direct servers within an enterprise.

The following figure shows how Connect:Direct and Gentran Integration Suite can be used within an enterprise:
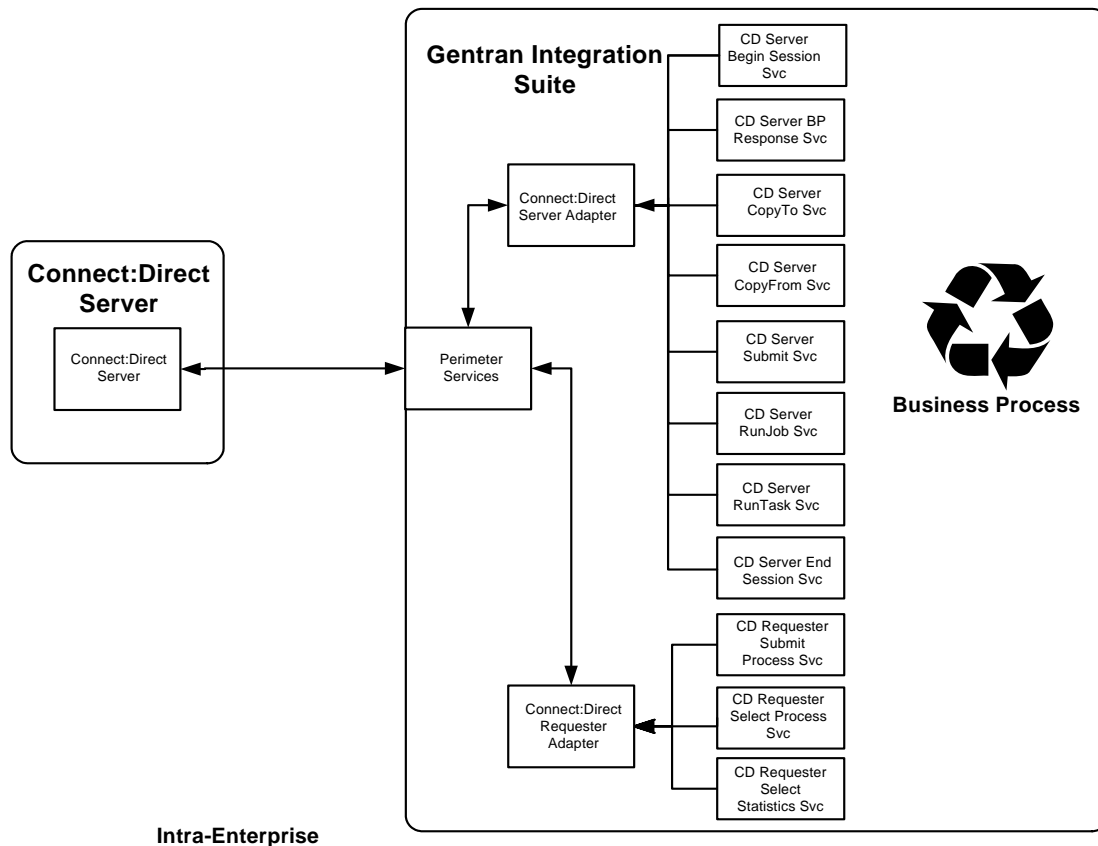
Connect:Direct Server Adapter

The Gentran Integration Suite Connect:Direct Server adapter (Server adapter) is an implementation of the proprietary Connect:Direct communications protocol. The adapter appears as a Connect:Direct node within a Connect:Direct network. The adapter supports both PNODE and SNODE processing functions of a Connect:Direct server. The communication is bi-directional. An external Connect:Direct node can make requests to this adapter and the adapter can make Connect:Direct server level requests to external Connect:Direct nodes. The Server adapter cannot accept requests from a Requester adapter.

The functions that you can perform between Connect:Direct nodes include copying files, submitting other Processes, running jobs, or running tasks.

Secure Point Of Entry (SPOE) support as a PNODE

Connect:Direct has an optional security configuration called Secure Point of Entry (SPOE). To increase security when communicating with known and expected nodes, a Connect:Direct server acting as an SNODE is configured to accept an inbound connection from a designated NodeName. Connections are made with PNODE userid's that are known to the SNODE and authenticated by the SNODE. SPOE uses the SNODEID from the remote Connect:Direct Process to map to a GIS user account for any necessary authorizations. Gentran Integration Suite supports SPOE as a PNODE and automatically supplies the Gentran Integration Suite user executing the business process as the Submitter ID.

Gentran Integration Suite also supports Connect:Direct User Proxies as a PNODE whereby the BP can designate a RemoteUserId and not provide a RemotePassword.

Connect:Direct Requester Adapter

The Gentran Integration Suite Connect:Direct Requester adapter (Requester adapter) is a client that submits Processes to a remote Connect:Direct node and monitors Processes and statistics of the remote node.

The Requester adapter can issue SUBMIT PROCESS, SELECT PROCESS and SELECT STATISTICS commands from within a Gentran Integration Suite business process model. The results are returned in an XML structure which can be parsed using XML Path language (XPATH) or translated using the Gentran Integration Suite translator.

Caution: Because of our continuing efforts to improve services and adapters to align with new technology and capabilities, the Connect:Direct adapter has entered the retirement process in Gentran Integration Suite and is replaced with the Connect:Direct Requester adapter with related services.

Perimeter Servers for Connect:Direct Interoperability

A *perimeter server* is communications management software that is installed in a demilitarized zone (DMZ) of a company network. A perimeter server and its client manage communication flow between the perimeter network and the Gentran Integration Suite TCP-based transport adapters.

Note: Perimeter servers can be used without a DMZ.

The purpose of the perimeter server and perimeter services are:

✦ To minimize DMZ issues

✦ To enhance security and scalability for high-volume environments

✦ To enhance the handling of large files

✦ To improve performance and help reduce network congestion

Managing Perimeter Servers

A perimeter server and all adapters that use the perimeter server must be configured within a single installation of Gentran Integration Suite. If Gentran Integration Suite is deployed in a cluster, then the perimeter server and adapters must be configured in the same Gentran Integration Suite cluster node.

A single Gentran Integration Suite installation can have multiple configured perimeter servers associated with it. All adapters installed on a specific Gentran Integration Suite cluster node can use any perimeter server deployed on the cluster node.

Basic Operation

At Gentran Integration Suite system startup, a persistent connection is established from perimeter services out to a designated perimeter server in the DMZ. Adapters communicate with a perimeter server through designated perimeter services; adapters interface to perimeter services through an application programming interface (API). This arrangement has an additional security advantage in that the use of perimeter servers is restricted to Gentran Integration Suite adapters built for that purpose.

Note: Perimeter servers cannot be used with a third party Internet web server.

An adapter, through the perimeter services API, accesses the perimeter server through an inside firewall into the DMZ. The perimeter server, in turn, has connections through the outer firewall to external Internet connections.

Perimeter Services

Perimeter services is a security solution that enables you to deploy in a secure DMZ. You can use perimeter services in two modes, remote and local.

If you establish an outbound connection to a remote Connect:Direct node, and you want the remote proxy in the DMZ to handle connections for your adapter, then use perimeter services in remote mode. Otherwise, use the local mode.

When Gentran Integration Suite initiates an outbound connection, it requests that perimeter services provide the outbound connection to the IP address for the remote Connect:Direct node.

If the remote Connect:Direct node checks network maps, then it checks the Gentran Integration Suite authentication credentials, and either allows or rejects access accordingly.

When you use a remote perimeter services connection, the Connect:Direct node must have the perimeter services IP address in its network map to establish a connection.

Local Mode Operation

Local mode means that the adapter is operating without a DMZ. This is relevant for:

✦ An adapter configuration that is not communicating over the Internet (but is instead used for communications within an internal network).

✦ Where a DMZ is not needed for a particular application, such as a test environment.

✦ When you want to deploy perimeter network resident authentication for a Gentran Integration Suite system.

A local perimeter server is installed automatically with Gentran Integration Suite.

Remote Mode Operation

Remote mode refers to when you deploy the perimeter server in the DMZ. This is useful in the following cases:

✦ You require high volume, secure connections.

✦ You want the remote proxy in the DMZ to handle inbound and outbound connections for your Connect:Direct Server adapter.

If the remote Connect:Direct node is configured to check network maps, then it checks the Gentran Integration Suite authentication credentials, and allows or rejects access accordingly.When you use a remote perimeter services connection, the Connect:Direct node must have the perimeter services IP address in its network map to establish the connection.

To implement a perimeter server to manage communications with Connect:Direct in remote mode:

1. Install a perimeter server in a DMZ.

2. Add, configure and enable the perimeter server in Gentran Integration Suite through **Operations > Perimeter Servers**.

3. Confirm the perimeter server by selecting **Operations** > **System > Troubleshooter**. The System Troubleshooting page is displayed.

4. Scroll to the bottom of the page to the Perimeter Servers section. Verify that the perimeter server is installed and enabled.

Understanding Business Processes and Connect:Direct Services

This section provides information about Gentran Integration Suite business processes and the Connect:Direct services provided in the Connect:Direct Server adapter and the Connect:Direct Requester adapter.

This section covers the following topics:

✦ Business Processes and Connect:Direct Interoperability

✦ Graphical Process Modeler and Connect:Direct Stencils

✦ Using the Mailbox Option and Connect:Direct Interoperability

✦ Using Connect:Direct Services in a Business Process

✦ Sample Business Process Scenario for Connect:Direct Interoperability

Business Processes and Connect:Direct Interoperability

Connect:Direct and Gentran Integration Suite each have their own version of a *process*. Connect:Direct uses a Process statement to initiate a session with another Connect:Direct node and then uses specific statements to perform tasks and make requests on that node.

Gentran Integration Suite uses business process services to initiate a session with another Connect:Direct node to perform tasks and make requests on that node. However, you can also use Gentran Integration Suite automated business processes to handle complex processes such as order fulfillment, invoicing, inventory, and other processes that require data exchange and business integration.

These automated business processes enable you to transfer your files, or business documents, to internal processing activities and to trading partners, exchanges, and customers.

Graphical Process Modeler and Connect:Direct Stencils

The Graphical Process Modeler is a tool that enables you to create business processes in Gentran Integration Suite using drag-and-drop functionality. You can drag element icons onto the workspace to create your business process model. When you save the business process model, the Graphical Process Modeler converts the graphical representation of business processes to well-formed Business Process Modeling Language (BPML).

Download and Install the Graphical Process Modeler

To download and install Java Web Start and the Graphical Process Modeler, you must log in to Gentran Integration Suite using a login ID that has permission to create and manage business processes.

To download Java Web Start and install the Graphical Process Modeler:

1. From the Gentran Integration Suite Admin Console, in the Tools section, next to Java Web start, click the **Download** link.

2. In the **File Download** dialog box, select the **Open** option and click **OK**.

3. After reading the license agreement, click **Accept**.

4. In the installation Directory dialog box, accept all of the defaults and click **Next**.

5. If you receive a message that setup did not detect a usable Java 2 Runtime Environment, either accept the default installation directory or click **Browse** to select another installation directory, and then click **OK**.

   The **Installing Files** dialog box opens and displays the in-progress installation. When the installation is complete, the setup program prompts you to read the Readme file. Click **Cancel.**

6. Start the Graphical Process Modeler. Click **Go!**

Connect:Direct Stencils

The Graphical Process Modeler uses stencils to group related services which makes them easier to find and helps you understand which services and adapters to use, based on your business need. These stencils provide access to the service and adapter elements available in the Graphical Process Modeler that you use to create business processes.

Gentran Integration Suite offers a customized Connect:Direct stencil to use when you create business processes that include interaction with Connect:Direct nodes. The stencil includes elements for the services related to the Connect:Direct Server adapter and the Connect:Direct Requester adapter. Even though the Connect:Direct services are used in conjunction with the Connect:Direct adapters, the adapters themselves are not shown in the stencil because they cannot be included as operations in a business process.

To access the Connect:Direct stencils in the Graphical Process Modeler:

1. From the **View** menu, select **Stencil > Applications > Sterling Commerce > Connect:Direct**.

2. From the **File** menu, select **New** to start a business process.

3. In the left pane, click on **Connect:Direct**. A menu of element icons is displayed.

4. Drag the icons you want to use to the center pane.

5. Double-click the element icon to open the configuration pane.

Using the Mailbox Option and Connect:Direct Interoperability

You can copy files to a Gentran Integration Suite Connect:Direct node directly to a business process or to a mailbox.The optional mailbox enables you to organize, store and manage trading partner documents.

Although staging and scheduling of data transmission is present to varying degrees in numerous applications and infrastructure components, it is beneficial to centralize the definition, operation, management, and control of this staging and scheduling. In Gentran Integration Suite, these capabilities are centralized in Gentran Integration Suite Mailbox.

You can set up mailboxes within Gentran Integration Suite so that files copied over to Gentran Integration Suite are stored and retrieved later. When the files are stored in a mailbox, they are referred to as messages. You can also use mailbox routing rules to initiate business processes in Gentran Integration Suite based on messages that are stored in a mailbox.

Gentran Integration Suite requires users to have permission to access a mailbox or start a business process.

Creating the Mailbox

To create a mailbox in Gentran Integration Suite:

1. In the Admin console, select **Deployment** > **Mailboxes** > **Configuration**.

2. In the Create section, click **Go!**

3. Complete the Name page as described in the following table, then click **Next**.

In this field	Type or select	Description
Parent Mailbox	/	The root mailbox is denoted by a slash (/).
		If other mailboxes exist, select the parent mailbox that you want to create the new mailbox under. You can type a partial name in the **Filter by Name** field and click the filter button for a filtered list. Required.
Name	*mailbox_name*	This name identifies the mailbox in Gentran Integration Suite. Required.
Description	Repository for Connect: Direct	Use this field to describe the mailbox. This field is not used by any other resource in the system. Required.

4. Groups in Gentran Integration Suite maintain permissions for several users from a single place. All groups in the Selected Groups list have permission to access this mailbox. Alternatively, you can add groups from the Accounts menu. Groups are optional. Click **Next** in the Assign Groups page.

5. All users in the Selected Users list have permission to access this mailbox. Alternatively, you can add user permissions for this mailbox from the Accounts menu. Associating users with a mailbox is optional. Click **Next** in the Assign Users page.

6. In the Confirm page, review the information and click **Finish**.

7. Click **Return**.

Using Connect:Direct Services in a Business Process

The Connect:Direct Server adapter and the Connect:Direct Requester adapter provide a suite of B2B services to establish communication between Gentran Integration Suite and Connect:Direct.

Using these services, you can create automated business processes to perform the same tasks performed with Connect:Direct Processes and with Connect:Direct commands.

The Connect:Direct Server services correspond to the Connect:Direct Process Language. These services work with the Connect:Direct Server adapter. These services are used when the Server adapter is the PNODE.

The Connect:Direct Requester services correspond to the Connect:Direct Requester API and work with the Connect:Direct Requester adapter.

The services created specifically for use with Connect:Direct are described in the following sections, along with a scenario of how each service is used within a business process.

Server Adapter Services

The Connect:Direct Server adapter provides the following services:

✦ Connect:Direct Server Begin Session Service

✦ Connect:Direct Server BP Response Service

✦ Connect:Direct Server CopyTo Service

✦ Connect:Direct Server End Session Service

✦ Connect:Direct Server Run Job Service

✦ Connect:Direct Server Run Task Service

✦ Connect:Direct Server Submit Service

Connect:Direct Server Begin Session Service

The Begin Session service begins a session with a remote Connect:Direct Node.The service then uses the Connect:Direct Server adapter as the communications mechanism for outbound requests to the remote node.

For example, a Gentran Integration Suite business process includes a file as primary document to copy to a remote Connect:Direct node. Before the copy operation can begin, a session must be established with the remote Connect:Direct node using the Server Begin Session service.

This service must be configured with the Connect:Direct node name that exists in the netmap of a Connect:Direct Server adapter. You must obtain a valid user ID and password from the remote Connect:Direct node that you want to connect with. You must then specify this user ID and password during configuration of the Begin Session service.

The Begin Session service automatically retries failed session connection attempts. You can specify the maximum number of retries and the time interval between retry attempts using parameters in either the Server adapter or the Begin Session service configuration. When specified in the Begin Session service, the value overrides the values set in the Server adapter configuration and enables a business process to define the Begin Session service retry policy directly.

The remote Connect:Direct node may provide you with a Connect:Direct proxy. The proxy enables you to have a special user ID that maps to a stored user ID and password. If you receive a proxy, use the proxy name in place of the RemoteUserId.

Connect:Direct Server BP Response Service

The BP Response service is used as the last operation in a business process started from a Connect:Direct Server adapter in response to a request from a remote Connect:Direct Server to copy (a file) from a business process. The service performs a callback on the Connect Direct Server adapter that started the business process to convey the primary document used as the response to send to the remote Connect:Direct Server. (This is similar to the HTTP Respond service, which performs a callback on the HTTP Server adapter). This service uses session information placed in the process data by the Connect:Direct Server adapter that started the business process. Therefore the service can only be used in business processes started by a Connect:Direct Server adapter.

A remote Connect:Direct Server initiates a session with a Connect:Direct Server adapter in Gentran Integration Suite and requests to *copy* (retrieve) the final primary document resulting from a business process started by the Connect:Direct Server adapter. The name of the business process is provided in the request from the remote Connect:Direct node. The last operation in the business process must be the BP Response service, so the service can call back the adapter to respond to the request from the remote Connect:Direct node.

Connect:Direct Server CopyFrom Service

The CopyFrom service copies a file from a remote Connect:Direct node.

To ensure the checkpointed copy performed by this service is restarted if interrupted by a failure of the Gentran Integration Suite server, the business process must have the recovery level set to **Auto Resume**. If so marked, the business process and the copy resumes automatically when Gentran Integration Suite restarts, if the remote Connect:Direct node is still active. When resumed, the copy restarts from the checkpoint. The checkpoint interval must be a value greater than zero. At least three checkpoint intervals must have been passed before the failure or the data transfer restarts at the beginning.

If the CopyFrom service is interrupted by a failure of the remote Connect:Direct node the business process enters a waiting state. When the remote Connect:Direct node is available, run the Schedule_BPExpirator business process in Gentran Integration Suite to resume the copy. At least three checkpoint intervals must have been passed before the failure or the data transfer restarts at the beginning.

Note: The BPExpirator business process runs automatically every 15 minutes (default). To resume the copy in a shorter time frame, run the Schedule_BPExpirator business process manually.

Connect:Direct Server CopyTo Service

The CopyTo service copies a file to a remote Connect:Direct node. For example, a trading partner copies a business document to a remote Connect:Direct outside the organization.

To ensure the checkpointed copy performed by the CopyTo service is restarted if interrupted by a failure of the Gentran Integration Suite server, the business process must have the Recovery Level set to **Auto Resume**. If so marked, the business process and copy resumes automatically when Gentran Integration Suite restarts, if the remote Connect:Direct node is still active.

When resumed, the copy restarts as follows, depending upon the configuration of the Connect:Direct Server adapter:

Document Storage Set To	Restarts From
Database	Beginning
File System	Checkpoint
	Note: The checkpoint interval must be a value greater than zero. At least three checkpoint intervals must have been passed before the failure or the data transfer restarts at the beginning.

Note: Gentran Integration Suite stores checkpoint information for 30 days, after which it is automatically purged. If your database is corrupted, you must purge this checkpoint information by performing a cold start.

If the CopyTo service is interrupted by a failure of the remote Connect:Direct node the business process enters a waiting state. When the remote Connect:Direct node is available, run Schedule_BPExpirator in Gentran Integration Suite to resume the copy. At least three checkpoint intervals must have been passed before the failure or the data transfer restarts at the beginning.

Note: The BPExpirator business process runs automatically every 15 minutes (default). To resume the copy in a shorter time frame, run the Schedule_BPExpirator business process manually.

Connect:Direct Server End Session Service

The End Session service ends a session established between two Connect:Direct nodes.Whenever Begin Session service is used in a business process, End Session service must also be used.The service uses the Server adapter as the communication mechanism for the outbound request to end the session.

For example, a Gentran Integration Suite business process has initiated a session with a remote Connect:Direct node using the Begin Session service. During the course of the session, some business activity occurs, for example a file is copied from the remote Connect:Direct node. After the operation is complete, the business process uses the End Session service to terminate the session.

Connect:Direct Server Run Job Service

The Run Job service submits work to the remote Connect:Direct node that executes asynchronously (relative to the remaining steps in the business process). Do not use the Run Job service to submit to a Connect:Direct Server adapter in Gentran Integration Suite.

For example, write a business process that uses the Run Job service to execute a script on a remote Connect:Direct node. You can use this service to execute a script that compresses and archives log files asynchronously on a remote Connect:Direct node.

Connect:Direct Server Run Task Service

The Run Task service submits work to the remote Connect:Direct node that executes synchronously relative to the remaining steps in the business process. Do not use the Run Task service to submit to a Connect:Direct Server adapter in Gentran Integration Suite.

For example, write a business process that uses the Run Task service to execute a script on a remote Connect:Direct node. You can use this service to execute a script that compresses and archives log files synchronously on a remote Connect:Direct node.

Connect:Direct Server Submit Service

The Submit service submits a Connect:Direct Process to another Connect:Direct node. The Process submitted must be saved in a file on the Connect:Direct node where the Submit Process statement executes.

Note: Connect:Direct Server adapter supports the Submit Process statement. It does not support the Submit Process command in Connect:Direct.

Use this service to initiate work on a remote Connect:Direct node. During execution of a Connect:Direct Process, the submit statement causes a different Connect:Direct Process to be submitted to either the PNODE or the SNODE. The sysopts parameters specified in the Submit Process statement are passed to the business process. Any values specified through the Submit service override values in the process file.

Submit Process Name can also be formatted for submitting to a Gentran Integration Suite Connect:Direct Server adapter. Use a process name such as the following:

/businessprocess/serverbpname/somedocname

For example, a file on a remote Connect:Direct node is needed on another node. Create a business process to submit a Connect:Direct Process to the remote Connect:Direct node to transfer the file.

Requester Adapter Services

The Requester adapter provides the following services:

✦ Connect:Direct Requester Select Process Service

✦ Connect:Direct Requester Select Statistics Service

✦ Connect:Direct Requester Submit Service

Connect:Direct Requester Select Process Service

The Select Process service retrieves information about a Process that is in progress on a remote Connect:Direct Server. Information can be retrieved based on query criteria such as Process name and number, SNODE, queue, status, or submitter node and user ID.

Use Select Process to get status information about a Process submitted to a remote Connect:Direct node. This service uses the Requester adapter as the communication mechanism for the request. For example, a

business process submits a Connect:Direct Process to a remote Connect:Direct node, then uses the Select Process service to check the status of the Process.

Connect:Direct Requester Select Statistics Service

The Select Statistics service retrieves statistics from a remote Connect:Direct node based on various criteria, such as Process name, start and stop date, start and stop time, and so on. This service examines records in the Statistics Log for a remote Connect:Direct node.

Use Select Statistics to get status information about a Process submitted to a remote Connect:Direct node. This service uses the Requester adapter as the communication mechanism for the request. For example, a business process submits a Connect:Direct Process to a remote Connect:Direct node, then uses the Select Statistics service to check the completion status of the Process.

Connect:Direct Requester Submit Service

The Submit service submits a Connect:Direct Process to a remote Connect:Direct node.

Use the Submit service to initiate work on a remote Connect:Direct node. The service uses the Requester adapter as the communication mechanism for the request.

For example, a file on a remote Connect:Direct node is needed on another node. Create a business process to submit a Connect:Direct Process to the remote Connect:Direct Server to transfer the file from one node to the other.

Sample Business Process Scenario for Connect:Direct Interoperability

This business process scenario consists of two fictitious companies, MaxxMart and Contempo Bank, in which Contempo Bank, an online bank, provides loans for high-ticket items (such as high-end electronics) to customers of MaxxMart, a large retailer.

As part of the agreement, MaxxMart has setup several PCs in its store with a web-based interface through which customers can complete online applications for financing MaxxMart's high-ticket items. The agreement between MaxxMart and Contempo requires quick approval with no more than a 30-minute turnaround on loan applications.

Contempo, who has the role of main trading partner, has Connect:Direct installed. MaxxMart, who has the role of external trading partner, has Gentran Integration Suite installed and uses the Connect:Direct Server adapter and Web Extensions.

MaxxMart has configured an instance of the Connect:Direct Server adapter with a node defined for Contempo. MaxxMart uses a customized Web Extensions interface for the online application. Contempo has added an entry for the MaxxMart Connect:Direct Server adapter node to its network map.

When MaxxMart receives the loan request, it forwards the application to Contempo, where a back end system either approves or denies the request. Contempo returns the approval (or denial) to MaxxMart. For approved loans, MaxxMart also initiates a Connect:Direct Process that causes Contempo to transfer funds

for the approved loan to the MaxxMart bank account as an ACH transaction. The MaxxMart bank requires that ACH transactions be handled through AS2.

The CDInterop_AppProcess business process, Connect:Direct Server adapter, HTTP Server adapter, and the following services are used in this scenario:

✦ Connect:Direct Server Begin Session service

✦ Connect:Direct Server CopyTo service

✦ Connect:Direct Server Run Task service

✦ SMTP Send adapter

✦ Connect:Direct Server Submit service

✦ EDIINT Message service

✦ Connect:Direct Server End Session service

The following steps outline the business process scenario being addressed by Gentran Integration Suite and Connect:Direct Interoperability:

1. A MaxxMart customer completes an online loan application using the Web Extensions custom interface and submits the application.

2. The MaxxMart Gentran Integration Suite system initiates the CDInterop_AppProcess business process, which establishes a connection with the Contempo Connect:Direct server using the Connect:Direct Server Begin Session service. The Begin Session service is configured to use a specific Connect:Direct Server adapter for the connection.

3. The Connect:Direct Server adapter specified in the Begin Session service retrieves node information for the Contempo node from its configuration.

4. The adapter then passes its identification information to the Contempo node through a perimeter server in the DMZ, and the Contempo node returns its identification information to MaxxMart's node.

5. The MaxxMart node sends a user ID and password to the Contempo node, and the Contempo node verifies the user ID and password. After this verification, the Contempo node authorizes the session.

6. At this point, the MaxxMart node copies the customer loan application to a specified location at Contempo using the Connect:Direct Server CopyTo service. This loan application is included as the primary document in the CDInterop_AppProcess business process, which initiated when the customer submitted the application. The location where the loan application is copied is the starting point for all loan applications at Contempo. A process already exists in the Contempo business environment that takes loan applications from this location and processes them using a back-office system.

7. The next activity in the business process uses the Connect:Direct Server Run Task service and executes the back-office system at Contempo that processes (approves/denies) loan applications. The business process waits for a synchronous response from the back-office system as a result of the Run Task activity.

8. The Contempo back-office system processes the loan application using the copied file and approves the loan. The back office system returns an approval response to the CDInterop_AppProcess business process, specifying the name and location of the approval document.

9. The approval response is forwarded to a MaxxMart e-mail address using the SMTP Send adapter and a MaxxMart associate receives the approval notification.

10. After receiving the approval response, the CDInterop_AppProcess uses the Connect:Direct Server Submit service to start a Connect:Direct Process that exists on the Contempo node. The Connect:Direct Process causes an ACH transfer to deposit the loan funds into MaxxMart's account.

11. The Connect:Direct Process is initiated and the ACH file is generated through an internal ACH application at Contempo. The generated ACH file is then transferred (copied) to the CDInterop_AppProcess business process.

12. When the business process receives the ACH file, it uses the EDIINT Message service to transform the file into an EDIINT message, which it then transfers to MaxxMart's bank account through the HTTP Server adapter.

13. The business process receives the synchronous MDN response from the bank acknowledging receipt of the ACH transfer.

14. The final activity in the CDInterop_AppProcess ends the session with Contempo node using the Connect:Direct Server End Session service. The End Session service uses the session token available in the business process data and closes the connection with the Contempo node.

15. If the business process fails, the failure is recorded at the close of the session.

In the Graphical Process Modeler, the business process is displayed as in the following figure:
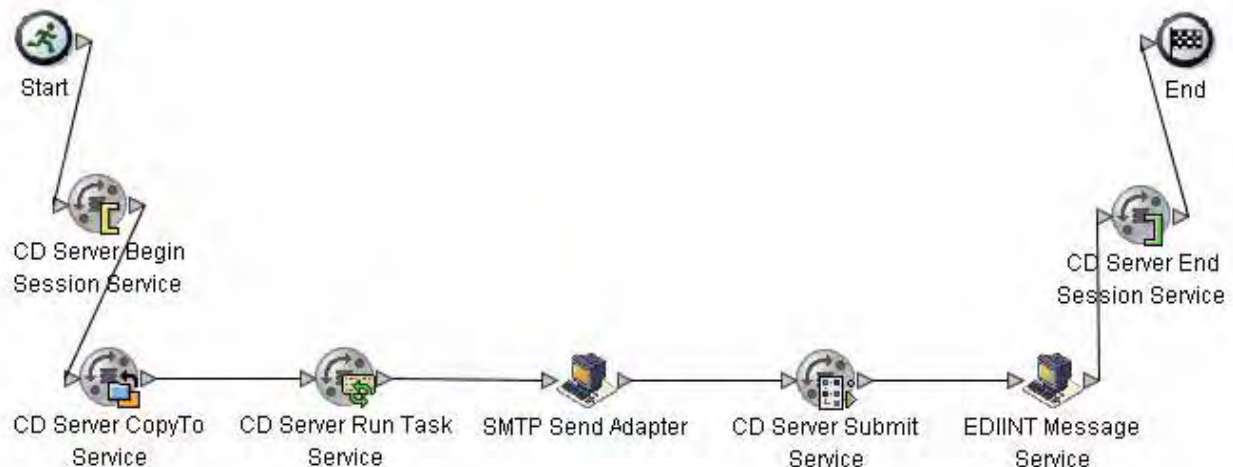
The BPML associated with this business process is as follows:

```
<process name="default">
  <sequence>
    <operation name="CD Server Begin Session Service">
      <participant name="CDServerBeginSession"/>
      <output message="CDServerBeginSessionServiceTypeInputMessage">
        <assign to="LocalCDNodeName">TEST5_CDSERVER_ADAPTER</assign>
        <assign to="." from="*"></assign>
      </output>
      <input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
    </operation>
```

```
    <operation name="CD Server CopyTo Service">
      <participant name="CDServerCopyTo"/>
      <output message="CDServerCopyToServiceTypeInputMessage">
        <assign to="LocalDocumentId">loanapp</assign>
        <assign to="RemoteFileName">approval</assign>
        <assign to="SessionToken">token</assign>
        <assign to="." from="*"></assign>
      </output>
      <input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
    </operation>

    <operation name="CD Server Run Task Service">
      <participant name="CDServerRunTask"/>
      <output message="CDServerRunTaskServiceTypeInputMessage">
        <assign to="Program">Connect:Direct</assign>
        <assign to="SessionToken">token2</assign>
        <assign to="." from="*"></assign>
      </output>
      <input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
    </operation>

    <operation name="SMTP Send Adapter">
      <participant name="SMTP_SEND_ADAPTER"/>
      <output message="SMTP_SEND_ADAPTERInputMessage">
        <assign to="." from="*"></assign>
      </output>
      <input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
    </operation>

    <operation name="CD Server Submit Service">
      <participant name="CDServerSubmit"/>
      <output message="CDServerSubmitServiceTypeInputMessage">
        <assign to="RemoteProcessFile">denial</assign>
        <assign to="SessionToken">token3</assign>
        <assign to="." from="*"></assign>
      </output>
      <input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
    </operation>

    <operation name="EDIINT Message Service">
      <participant name="TestEDIINTParse"/>
      <output message="EDIINTMessageServiceInputMessage">
        <assign to="." from="*"></assign>
      </output>
<input message="inmsg">
        <assign to="." from="*"></assign>
      </input>
```

```
      </operation>

      <operation name="CD Server End Session Service">
        <participant name="CDServerEndSession"/>
        <output message="CDServerEndSessionServiceTypeInputMessage">
          <assign to="SessionToken">token4</assign>
          <assign to="." from="*"></assign>
        </output>
        <input message="inmsg">
          <assign to="." from="*"></assign>
        </input>
      </operation>

  </sequence>
</process>
```

Configuring Gentran Integration Suite and Connect:Direct for Interoperability

To exchange data between Gentran Integration Suite and Connect:Direct, you must complete configuration tasks in both the Connect:Direct and Gentran Integration Suite applications.

This section covers the following topics:

✦ Configuring Connect:Direct for Interoperability with Gentran Integration Suite

✦ Configuring Gentran Integration Suite for Connect:Direct Interoperability

✦ Security Considerations for Connect:Direct Interoperability

Configuring Connect:Direct for Interoperability with Gentran Integration Suite

To transfer data and submit business processes to a remote Gentran Integration Suite node, you must add information about the node to the network map on the Connect:Direct server that initiates the communication session.

The network map includes the names of all the remote nodes that the Connect:Direct local node can communicate with, the paths to contact those remote nodes, and characteristics of the sessions for communication.

You must obtain certain information ahead of time from the Gentran Integration Suite administrator to configure the netmap entry for the Gentran Integration Suite remote node.

You must configure the Connect:Direct browser hyperlink properties file to use the Connect:Direct browser to monitor activity and perform queries for Gentran Integration Suite processes initiated by a Connect:Direct node. To monitor activity and perform queries on Gentran Integration Suite processes initiated by a Connect:Direct node, you must configure the Connect:Direct browser properties file to display a hyperlink to Gentran Integration Suite.

Adding a Remote Gentran Integration Suite Node to a Network Map

Several tools are available to add a node to a Connect:Direct network map based on the appropriate Connect:Direct node platform you use (UNIX, Windows, OS/390, OS/400).

To learn how to add nodes to network maps, see the Connect:Direct documentation available online from the Sterling Commerce Documentation Library.

You must obtain the following information before you can add a remote Gentran Integration Suite node to a Connect:Direct network map:

Parameter	Description
Node Name	Specifies the 1–16 character node name parameter that defines the name of the remote node. Required. Gentran Integration Suite must provide the node name. **Note:** The node name does not have to be previously defined in Gentran Integration Suite because the Connect:Direct network map does not perform an immediate check. Ensure the node name is the same node name used when you set up the Gentran Integration Suite adapter.
Port	Specifies the Connect:Direct communications port portion of the comm.info parameter. The format is a port name or nnnnn, where nnnnn is a 1–5 digit number. The default is 1364. Gentran Integration Suite must provide the port value. Required.
IP Address	The value is one of the following: ◆ The host name of the Connect:Direct host computer. ◆ The IP address of the remote node in nnn.nnn.nnn.nnn format. Required.
Buffer Size	Specifies the comm.bufsize parameter, which is the buffer size for transmitting data to and from a remote node. The value for TCP/IP is unlimited. The default is 4096 bytes. **Note:** The Gentran Integration Suite adapter deploys with a default buffer size. The two nodes negotiate buffer size and the lower size is selected. For a larger buffer size from the start, negotiate with the administrator for the remote node before configuring.

Obtaining User Authorization

To perform certain tasks on a remote Gentran Integration Suite node (such as access a Gentran Integration Suite mailbox, initiate business processes), you must obtain a valid Gentran Integration Suite user name and password, and include them when you write your Process statements. Get this information when you contact the Gentran Integration Suite administrator to obtain network map parameters.

Configuring Connect:Direct Browser Hyperlink Properties

The Connect:Direct Browser User Interface enables you to monitor activity and perform queries for Gentran Integration Suite business processes initiated by a Connect:Direct node from an Internet browser such as Microsoft Internet Explorer or Netscape Navigator. The Select Process or Select Statistics commands are

hyperlinked to Gentran Integration Suite search pages where you can retrieve detailed information about Gentran Integration Suite business processes associated with a Connect:Direct Process, assuming you have the valid security privileges.

Note: To use the hyperlink capability, do not specify a value for ProcessName in the Connect:Direct Server Begin Session service. The hyperlink is active only with the system-generated ProcessName.

To use the hyperlink capability, you must configure two Link Properties in the Connect:Direct Browser User Interface.

To configure a hyperlink properties file in the Connect:Direct Browser User Interface:

1. On the User Function page, click **Admin Functions**.

2. Click **Configuration**.

3. Type the administrator ID and password and click **Sign On**.

4. The Configure Node Properties page is displayed. Click **Administrator Links**.

5. The Configure Link Properties page is displayed. Type the parameter values for the first Link Property and click **Add**. The following table describes the parameters to configure the Link Properties:

Parameter	Description
LInk Name	Link1
Node Name	Gentran Integration Suite Connect:Direct Node Name
Record IDs	Leave the default record IDs
Advanced	Leave this field blank
URL	`http://<host:port>/ws/ExtLogin?userid=&USERID;&password=&PASSWORD;&bpid=&BPID;` **Note:** Type this URL exactly as is, except replace <host:port> with the host and port for your Gentran Integration Suite browser interface.
User ID	Gentran Integration Suite user ID
Password	Gentran Integration Suite password

This links to the Business Process Details page for the Gentran Integration Suite business process.

6. Type the parameter values for the second Link Property and click **Add**.

The following table describes the parameters to configure the Link Properties:

Parameter	Description
Link Name	Link2
Node Name	Gentran Integration Suite Connect:Direct Node Name
Record IDs	Leave the default record IDs
Advanced	Leave this field blank

Parameter	Description
URL	`<http://<host:port>/ws/ExtCorr?userid=&USERID;&password=&PAS SWORD;&where=live&CD ProcessName=&PNAM;&CD ProcessNum=&PNUM;&CD SnodeName=&SNOD;&CD PnodeName=&PNOD;&CD LocalFileName=&SFIL;&CD RemoteFileName=&DFIL>;` **Note:** Type this URL exactly as is, except replace <host:port> with the host and port for your Gentran Integration Suite browser interface.
User ID	Gentran Integration Suite user ID
Password	Gentran Integration Suite password

This links to the Correlation Search Results page and enables you to select the appropriate Gentran Integration Suite business process.

Note: Because the process records are hyperlinked with the first matching link, the links for Gentran Integration Suite must be named alphabetically so that the first link matches first. For example, if the first link is named Link1, the second link could be named Link2.

Configuring Gentran Integration Suite for Connect:Direct Interoperability

The Connect:Direct Server adapter and Connect:Direct Requester adapter in Gentran Integration Suite establish connectivity to Connect:Direct.

This section describes what information you must have to configure the Connect:Direct Server adapter and Connect:Direct Requester adapter and provides instructions on how to configure them.

Configuring the Connect:Direct Server Adapter

The Connect:Direct Server adapter sends, receives, and processes requests from remote Connect:Direct nodes. Use this adapter to initiate business processes that perform some work (for example, copy files to or from Gentran Integration Suite or to or from a Gentran Integration Suite mailbox).

Each configuration of the Connect:Direct Server adapter corresponds to a complete installation of a Connect:Direct server. For example, if you deploy five configurations of the Connect:Direct Server adapter, you have deployed five Connect:Direct servers because other Connect:Direct nodes recognize each adapter as a separate Connect:Direct server.

The following information is needed before you can create and enable a configuration of the Connect:Direct Server adapter:

Remote Server Information	Description
Connect:Direct Port	TCP/IP port number that the Connect:Direct Server adapter monitors for requests from remote nodes. Required.
Connect:Direct Node Name	Name that identifies this Connect:Direct Server adapter. This is the name you give to the remote Connect: Direct node to create a netmap entry for the Connect:Direct Server adapter. Maximum 16 characters. Required.

Configure the Connect:Direct Server adapter using the adapter documentation.

Configure services and create business processes that use the services to send, receive, and process requests from remote Connect:Direct nodes that include your Server adapter in their network map.

Note: The new instance of the Connect:Direct Server adapter must be enabled to communicate with Connect:Direct.

Configuring the Connect:Direct Requester Adapter

Use the Connect:Direct Requester adapter to act as a Connect:Direct client and perform queries on work that is in progress or has completed on a Connect:Direct node. You can also use the Requester adapter to submit a Process that initiates a sequence of steps on a remote Connect:Direct server. In other words, you can request that a Process run on another server.

Caution: Because of our continuing efforts to improve services and adapters to align with new technology and capabilities, the Connect:Direct adapter has entered the retirement process in Gentran Integration Suite and is replaced with the Connect:Direct Requester adapter with related services.

Prerequisites

The following information is needed before you can create and enable a configuration of the Connect:Direct Requester adapter:

Remote Server Information	Description
Remote Connect:Direct Server Address	Host name or IP address of the remote Connect:Direct server to connect to.
Remote Connect:Direct Server Port	Port number that the remote Connect:Direct server is monitoring for API connections.
Connect:Direct User ID	User ID required to access the Connect:Direct server.
Connect:Direct Password	Password required to access the Connect:Direct server.

Create a configuration of the Connect:Direct Requester adapter using the adapter documentation.

Configure services and create business processes that use the services to send, receive, and process requests from remote Connect:Direct nodes that include your Requester adapter in their network map.

Note: The new instance of the Connect:Direct Requester adapter must be enabled to communicate with Connect:Direct.

Security Considerations for Connect:Direct Interoperability

Connect:Direct and Gentran Integration Suite work together to provide a secure method of exchanging data through a combination of the Connect:Direct Secure+ Option combined with Gentran Integration Suite perimeter services.

Connect:Direct Secure+ Option

Connect:Direct Secure+ Option with Gentran Integration Suite enables you to select either Transport Layer Security (TLS) or Secure Sockets Layer protocol (SSL) security protocols to use to secure data during electronic transmission.

The TLS and SSL protocols provide three types of security:

✦ Server Authentication, in which the PNODE requests a certificate from the SNODE during the initial communication. The SNODE returns its certificate information and the PNODE then compares the certificate information to a list of trusted sources. If the certificate is signed by a trusted source, a connection is established.

✦ Client authentication, which requires the PNODE to send its own certificate. If enabled, the SNODE requests certificate information from the PNODE, after it returns its certificate information to the PNODE. If the client certificate is signed by a trusted source, the connection is established.

✦ Client authentication with common name checking, which requires a certificate common name in the PNODE certificate. The SNODE searches the certificate file it receives from the PNODE and looks for a certificate common name. If the SNODE finds the certificate common name, communication is established.

Note: Gentran Integration Suite does not support Station-to-Station protocol (STS) security.

The Connect:Direct Server adapter uses the TLS and SSL protocol certificates to exchange a session key between the PNODE and SNODE.

The Connect:Direct server certificates and cipher suites are listed in the configuration of the Connect:Direct Requester adapter for authentication by the Connect:Direct server. The Requester adapter does not have a certificate or private key. The TLS and SSL protocols use certificates to exchange a session key between the Connect:Direct Requester adapter and the Connect:Direct server.

Node Communication for Connect:Direct Interoperability

This section is in the context of a Connect:Direct PNODE in communication with a Gentran Integration Suite Connect:Direct Server adapter functioning as the SNODE.

Connect:Direct uses Processes to perform tasks on other Connect:Direct nodes, including Gentran Integration Suite Server adapter operating as a Connect:Direct node. Processes are constructed and submitted for execution in several ways, depending on the user interfaces available on your operating environment.

A Connect:Direct Process is composed of a required process statement, followed by one or more other statements, such as copy or submit.

This section covers the following topics:

✦   Process Statements for Connect:Direct Interoperability

✦   Copy Statements

✦   Submit Statements

✦   Authentication Issues Requiring Process Updates

✦   Forwarding of Run Job and Run Task in Connect:Direct Interoperability

✦   Sample Business Process For Run Job Forwarding in Connect:Direct Interoperability

✦   Sample Connect:Direct Script for Connect:Direct Interoperability

✦   Sample Process with Session Token for Connect:Direct Interoperability

Process Statements for Connect:Direct Interoperability

The Connect:Direct Process statement defines the beginning of a series of one or more statements that specify functions performed. Every Connect:Direct Process contains a process statement. The process statement defines the attributes of the Process, including:

✦   Name of the secondary node (SNODE) involved in the Process

✦   Process execution priority

◆ When to start the Process if not immediately (Scheduling)

◆ Who to notify upon completion of each step

◆ Whether to store a copy of the Process to execute at future specified intervals (Set Retain = Yes)

The following table lists process statements and their functions:

Process Statement	Function
process	Defines general Process characteristics.
copy	Copies files from one node to another.
run task	Enables you to specify commands in a Process. The Process waits for the task to finish before executing the next step in the Process.
run job	Enables you to specify commands in a Process. The Process does not wait for the job to finish to execute the next step in the Process.
submit	Starts another process to either the local or remote node during execution of a Process.
conditional	Alters the sequence of Process execution based on the completion code of previous steps with the if, then, else, eif (end if), goto, and exit statements.
pend	Marks the end of a Connect:Direct Process.

To start a business process from a remote Connect:Direct to Gentran Integration Suite, do the following:

1. In Gentran Integration Suite, create a permission for the business process.

2. In Gentran Integration Suite, assign the SNODE userid access to the business process.

3. From Connect:Direct, send a request to Gentran Integration Suite. Requests could include:

   ◆ Copy To business process

   ◆ Copy From business process

   ◆ Submit to Gentran Integration Suite

Note: Gentran Integration Suite does not accept run task and run job process statements from a Connect:Direct node, except for forwarding the task or process to a Connect:Direct node (not a Gentran Integration Suite Server adapter).

Copy Statements

Copy statements must have a Gentran Integration Suite Mailbox or business process as the destination or source file. Specific syntax is required in the copy statement.

The copy statement is composed of a from clause that includes the source file name and a to clause that includes the destination file name. Additional parameters can be specified to further customize the file transfer operation.

Following is an example of a Process for Connect:Direct Windows that includes a copy statement for a file named C:\files\bigfile10m and a Gentran Integration Suite Mailbox named test1:

```
/*BEGIN_REQUESTER_COMMENTS
```

```
    $PNODE$="ROGER-VM-2K" $PNODE_OS$="Windows"
    $SNODE$="vcdps3" $SNODE_OS$="UNIX"
    $OPTIONS$="WDOS"
    END_REQUESTER_COMMENTS*/
SAMPLE PROCESS
    SNODE=vcdps3
        SNODEID=(lucita, lucitazPwd)
STEP1 COPY
    FROM (
    FILE=C:\files\bigfile10m
    SYSOPTS="DATATYPE(BINARY) XLATE(NO) "
    TO (
    FILE=/mailbox/test1/copiedDoc_10m
    SYSOPTS=":datatype=binary::xlate=no:"
    CKPT=No
PEND
```

The destination document is named copiedDoc_10m.

Syntax for Copy Statements when Gentran Integration Suite is SNODE

To retrieve a document (copyfrom) from Gentran Integration Suite or to send a document to (copyto) Gentran Integration Suite, you must use the valid syntax with the copy statement. File names and mailbox names are case-independent.

✦ Use this to send a file to or from a business process with a copy statement:

/businessprocess/yourbpname/nameofdoc

✦ Use this to get a document directly to or from a Gentran Integration Suite mailbox with a copy statement:

/mailbox/yourmailboxname/yourmessagename

Caution: Some Connect:Direct installations do not accept empty records. To avoid a rejection of the copy request, a blank space is added to replace an empty line.

Submit Statements

During execution of a Connect:Direct Process, the submit statement triggers another Connect:Direct Process to be submitted to either the PNODE, which is the node with Process control, or the SNODE, which is the secondary node that participates in the Process.

Syntax for Submit Statements when Gentran Integration Suite is SNODE

To submit a business process, you must use the valid syntax with the submit statement. Submitted processes must be business processes.

Use this to send a business process with a Submit statement:

/businessprocess/yourbpname

Authentication Issues Requiring Process Updates

For OS/390, you must add SNODEID=(NODENAME, NODENAME) to the Connect:Direct Process because OS/390 does not require a user name and password for authentication. OS/390 authenticates with peers using user name, node, and IP address. Gentran Integration Suite requires a user name and password.

Forwarding of Run Job and Run Task in Connect:Direct Interoperability

Gentran Integration Suite can serve as a proxy between any Connect:Direct node and a Connect:Direct OS/390 nodes. You would do this when you want to move data between nodes with the security features of Gentran Integration Suite Perimeter Services.

In this scenario, the following steps occur:

1. Gentran Integration Suite Connect:Direct Server adapter receives a request from a Connect:Direct PNODE to initiate a run job or run task on a Connect:Direct SNODE.

2. The Connect:Direct Server adapter verifies that the user may perform this action.

3. The PNODE provides information about the run job or run task to the Connect:Direct Server adapter.

4. The Connect:Direct Server adapter initiates a business process with access control (permission assigned) for the user specified by the SNODE.

   The Connect:Direct Server adapter must be configured with the business process specified in the Run Task Business Process Name or Run Job Business Process Name field.

5. The business process forwards the run job or run task request through the Connect:Direct Server adapter to a Connect:Direct SNODE.

6. The Connect:Direct Server adapter provides status information to the business process that initiated the run job or run task.

7. The Connect:Direct Server adapter provides status information to the PNODE.

Gentran Integration Suite is capable of forwarding run job and run task to Connect:Direct OS/390 nodes only.

Sample Business Process For Run Job Forwarding in Connect:Direct Interoperability

A sample business process to do Run Job Forwarding follows:

```
<process name="RunJobServiceExample">
  <sequence name=>
      <operation name="CONNECT:Direct Server Begin Session Service">
        <participant name="CDServerBeginSession"/>
        <output message="BeginSession">
          <assign to="." from="*"></assign>
```

```
            <assign to="LocalCDNodeName">CDSERVER_ADAPTER_TEST1</assign>
            <assign to="RemoteCDNodeName">CDUNIX_NODE1</assign>
            <assign to="RemoteUserId">SNUSERID</assign>
            <assign to="RemotePasswd">SNPASSWORD</assign>
          </output>
          <input message="inmsg">
            <assign to="BeginSessionResults" from="*"></assign>
          </input>
        </operation>
        <operation name="CONNECT:Direct Server Run Job Service">
          <participant name="CDServerRunJob"/>
          <output message="RunJob">
            <assign to="." from="*"></assign>
            <assign to="SessionToken" from =
"//BeginSessionResults/SessionToken/text()"></assign>
            <assign to="Sysopts" from =
"CDServerNodeData/Forwarding/ProcessInfo/text()"></assign>
          </output>
          <input message="inmsg">
            <assign to="RunJob_Results" from="*"></assign>
          </input>
        </operation>
        <operation name="CONNECT:Direct Server End Session Service">
          <participant name="CDServerEndSession"/>
          <output message="EndSession">
            <assign to="." from="*"></assign>
            <assign to="SessionToken"
from="//BeginSessionResults/SessionToken/text()"></assign>
          </output>
          <input message="inmsg">
            <assign to="EndSessionResults" from="*"></assign>
          </input>
        </operation>
    </sequence>
</process>
```

Sample Business Process for Run Task Forwarding in Connect:Direct Interoperability

A sample business process to do Run Task Forwarding follows:

```
<process name="RunTaskServiceExample">
  < sequence name="CDServerRunTask">
        <operation name="CONNECT:Direct Server Begin Session Service">
          <participant name="CDServerBeginSession"/>
          <output message="BeginSession">
            <assign to="." from="*"></assign>
            <assign to="LocalCDNodeName">CDSERVER_ADAPTER_TEST1</assign>
            <assign to="RemoteCDNodeName">CDUNIX_NODE1</assign>
            <assign to="RemoteUserId">testUser</assign>
            <assign to="RemotePasswd">whatisthis</assign>
```

```
                </output>
                <input message="inmsg">
                  <assign to="BeginSessionResults" from="*"></assign>
                </input>
            </operation>
            <operation name="CONNECT:Direct Server Run Task Service">
                <participant name="CDServerRunTask"/>
                <output message="RunTask">
                  <assign to="." from="*"></assign>
      <assign to="SessionToken"
                  from="//BeginSessionResults/SessionToken/text()"></assign>
    <assign to="Program" from=
    "  CDServerNodeData/Forwarding/ProcessInfo/text()"></assign>
    <assign to="Sysopts" from =
    "CDServerNodeData/Forwarding/Sysopts/text()"></assign>
    </output>
                <input message="inmsg">
                  <assign to="RunTask_Results" from="*"></assign>
                </input>
            </operation>
            <operation name="CONNECT:Direct Server End Session Service">
                <participant name="CDServerEndSession"/>
                <output message="EndSession">
                  <assign to="." from="*"></assign>
                  <assign to="SessionToken"
from="//BeginSessionResults/SessionToken/text()"></assign>
                </output>
                <input message="inmsg">
                  <assign to="EndSessionResults" from="*"></assign>
                </input>
            </operation>
    </sequence>
```

Sample Connect:Direct Script for Connect:Direct Interoperability

The following sample Process uses Connect:Direct OS/390 Process statements to illustrate product functionality:

```
/*
COPY01 PROCESS -- copies PDS members beginning with INV*
to the Chicago node
if successful, runs USERJOB on the
Chicago node to modify data
copies modified FILEA back from Chicago
if not successful, sends NOTIFY to inform about
STEP01 failure
Modification History:
04.Jul.1998 CSG Initial Implementation
*/
COPY01 PROCESS SNODE=CD.CHICAGO
STEP01 COPY FROM (DSN=MASTER.PDS - /* send PDS member INVxxxx */
```

```
SELECT=INV*) - /* to Chicago and place in */
TO (DSN=MUNGE.ME) /* file "MUNGE.ME" (only 1 */
/* member matches criteria) */
IF (STEP01 < 8) THEN /* if copy successful */
STEP02 RUN JOB (DSN="xxNT") SNODE - /* run "data modify" job */
SYSOPTS=\"PGM(fix.bat)\ || -
\ARGS (PO_num)"\
STEP03 COPY FROM (DSN=MUNGE.ME SNODE) - /* and bring file back */
TO (DSN=MODIFIED || %SUBDATE)
ELSE
/* or if step 1 failed */
STEP04 RUN TASK (PGM=DMNOTIFY, PARM=('FAIL', FILEA || %SUBDATE)) PNODE
```

A description of the Process follows:

COPY01 is a PROCESS statement that identifies the secondary node (SNODE) as CD.CHICAGO. The SNODE is the Connect:Direct node that interacts with the primary node (PNODE) during Process execution. The SNODE can also be referred to as the participating, target, or remote node. A remote node must be specified in every Process.

The PNODE is the Connect:Direct node on which the Process is submitted. The PNODE may also be referred to as the local node. PNODE is used for documentation only.

STEP01 is a COPY statement that copies a file on the PNODE to a file on the SNODE.

STEP02 and STEP03 use Conditional statements. If STEP01 completes successfully (that is, the return code [RC] is less than 8), the THEN path is taken and STEP02 and STEP03 execute. If STEP01 fails, the ELSE path is taken and STEP04 executes.

STEP04 is a RUN TASK statement. The DMNOTIFY program executes within the Connect:Direct environment.

Sample Process with Session Token for Connect:Direct Interoperability

The following BPML assigns the process token to track the open session and handles the session end if any step fails in the On-Fault service:

```
<process name = "CD_Server_Submit_test">
<sequence>
<operation name="CD Server Begin Session Service">
<participant name="CDServerBeginSession"/>
<output message="CDServerBeginSessionServiceTypeInputMessage">
<assign to="LocalCDNodeName">giscdservice</assign>
<assign to="RemoteCDNodeName">remotenode</assign>
<assign to="RemotePasswd">password</assign>
<assign to="RemoteUserId">user</assign>
<assign to="." from="*"></assign>
</output>
<input message="inmsg">
<assign to="." from="*"></assign>
</input>
```

```
</operation>
<operation name="CD Server Submit Service">
<participant name="CDServerSubmit"/>
<output message="CDServerSubmitServiceTypeInputMessage">
<assign to="RemoteProcessFile">'c:\program files\connect direct
v4.1.00\server\process\sample.cdp'</assign>
<assign to="SessionToken">SessionToken/SessionId/text()</assign>
<assign to="." from="*"></assign>
</output>
<input message="inmsg">
<assign to="." from="*"></assign>
</input>
</operation>
<operation name="CD Server End Session Service">
<participant name="CDServerEndSession"/>
<output message="CDServerEndSessionServiceTypeInputMessage">
<assign to="SessionToken">SessionToken/SessionId/text()</assign>
<assign to="." from="*"></assign>
</output>
<input message="inmsg">
<assign to="." from="*"></assign>
</input>
</operation>
<onFault>
<operation name="CD Server End Session Service">
<participant name="CDServerEndSession"/>
<output message="CDServerEndSessionServiceTypeInputMessage">
<assign to="SessionToken">SessionToken/SessionId/text()</assign>
<assign to="." from="*"></assign>
</output>
<input message="inmsg">
<assign to="." from="*"></assign>
</input>
</operation>
</onFault>
</sequence>
</process>
```

Tracking Activities in Connect:Direct Interoperability

You track business process activities performed between Gentran Integration Suite and Connect:Direct within the existing reporting infrastructure of each product. From Connect:Direct you can locate activities generated from Gentran Integration Suite, or you can use hyperlinks in the Connect:Direct browser to view the Business Process Details page in Gentran Integration Suite.

To further enhance tracking between Gentran Integration Suite and Connect:Direct, correlation records are automatically created so that you can search for Processes or documents using any one of several name/value pairs.

This section covers the following topics:

✦ Overview of Tracking Processes in Connect:Direct Interoperability

✦ Tracking Process Activity in Connect:Direct Interoperability

✦ Monitoring Business Processes for Connect:Direct Interoperability

✦ Business Document Tracking Scenario for Connect:Direct Interoperability

Overview of Tracking Processes in Connect:Direct Interoperability

Processes can be tracked on local and remote nodes to see that they were successfully executed or if there were errors. Tracking is enabled during the execution and for specified time after completion.

Tracking Processes on the Local Node

Select Process and Select Statistics are the two Connect:Direct functions that allow you to track activity on a *local* Connect:Direct server. The local server may be the PNODE or the SNODE of the activity you are tracking. You can run these functions from any of the Connect:Direct client installations, including:

✦ Connect:Direct Requester

✦ Interactive User Interface

✦ Connect:Direct Browser User Interface

To track activity that occurred with Gentran Integration Suite as the *local* node, do not use these Connect:Direct functions. Use the **Business Processes** menu features or the Gentran Integration Suite logging files.

Tracking Processes on the Remote Node

You can use the Gentran Integration Suite Connect:Direct Requester adapter to issue Select Process and Select Statistics commands to track activity on a *remote* Connect:Direct server. Do this by using the following Connect:Direct Requester services in a business process:

✦ Connect:Direct Requester Select Process service

✦ Connect:Direct Requester Select Statistics service

When using a *non-Gentran Integration Suite* Connect:Direct server, you can view details of process activity on a remote node with the Connect:Direct browser user interface.

When you issue a Select Process or Select Statistics command from the Connect:Direct browser user interface for a Process, and the activity is on a Gentran Integration Suite Connect:Direct node, a hyperlink is displayed to enable you to jump to Gentran Integration Suite. The hyperlink gives you access to the Correlation and Monitor feature so you can view details of the related business process.

Note: If you specify a ProcessName in the Connect:Direct Server Begin Session service, the hyperlink is not active.

Tracking Process Activity in Connect:Direct Interoperability

The Connect:Direct Browser User Interface enables you to monitor Connect:Direct Processes on a Connect:Direct node and in Gentran Integration Suite from an Internet browser, such as Microsoft Internet Explorer or Netscape Navigator. Use the Connect:Direct browser user interface to connect to a non-Gentran Integration Suite node to track activity.

You can perform a Select Process command to view detailed records of all current, ongoing Processes that are running on the server. You can also perform a Select Statistics command to view statistical Process record information on completed Processes. Each Connect:Direct Process references a unique Process number as its primary Process identifier.

Select Process

Use Select Process to view detailed records of all current, ongoing Processes as they progress through a local Connect:Direct node. The local node may be functioning as the PNODE or the SNODE in the Process you are tracking.

You can choose the Processes to display according to selection criteria such as Process name and number, SNODE, queue, status, or submitter node and user ID. You can track Processes that are running on the local server as either PNODE or SNODE.

After you make your selections and click **Select Process**, summary Process information is displayed. You can then choose to display detailed information about a particular Process. For non-Gentran Integration Suite nodes, you can also change, delete, or suspend a Process from this browser interface.

Select Statistics

Connect:Direct maintains statistics on all Connect:Direct activity, including completion records for each step of a Process. On non-Gentran Integration Suite nodes, you use the Select Statistics page to view statistical Process record information on completed Processes.

You can retrieve statistics based on various criteria, such as Process name, start and stop date, start and stop time, and so forth.

After you make your selections and click **Select Statistics**, summary statistics are displayed. You can then get detailed statistics about a particular Process.

Connect:Direct Browser Hyperlink

When you use the Select Process or Select Statistics pages in the Connect:Direct browser user interface, you can track Connect:Direct Processes on a Connect:Direct node *and* in Gentran Integration Suite. For those Processes associated with a Gentran Integration Suite Connect:Direct node, hyperlinks take you to Gentran Integration Suite Monitor pages to retrieve detailed information.

Note: The Link Properties must be configured before use. To configure hyperlink properties, see *Configuring Connect:Direct Browser Hyperlink Properties* on page 32.

For example, if a remote Connect:Direct node initiates a Process to copy files to Gentran Integration Suite, the Connect:Direct browser enables you to view information about this process. When Process information is displayed, a hyperlink is available that takes you to the Correlation Search Results page in Gentran Integration Suite to view information associated with that Connect:Direct Process. You can expand your search to determine where else the document (file) transferred, such as to a mailbox. With the document ID, you can track all activity associated with the document.

Note: If you specify a ProcessName in the Connect:Direct Server Begin Session service, the hyperlink is not active.

Monitoring Business Processes for Connect:Direct Interoperability

The Gentran Integration Suite Admin Console enables you to view information about business processes that interact with remote Connect:Direct nodes. Correlation records are automatically maintained so that you can search for specific information (such as, business process IDs, document IDs, workflow IDs, and mailbox IDs). Each business process references a unique business process ID as its primary process identifier.

The tracking and search functions available to track Gentran Integration Suite business processes, Connect:Direct Processes, and Connect:Direct adapter activity are described in the following table:

Tracking Option	Description
Central Search	Use to search for live (active) business process instances that do not appear in the Current Processes. Search by Name, Status, or Date.
Current Processes	Lists the status of the ten most recent business process instances.
Current Activities	Search for Connect:Direct Server adapter activity by adapter configuration name or by when the activity registered within Gentran Integration Suite.
Advanced Search	
Business Processes	Search for active, archived or stored business processes. Search by business process instance ID, business process Name, State, or Date.
Documents	Search for active, archived or stored documents handled by a business process. Search by Time, Document ID, Sender or Receiver ID, Type, Status or Correlations.
Correlation	Search for active, archived or stored business processes by name-value pairs. This is a key tracking method in interoperability because you can search by values such as PNODE, SNODE, Connect:Direct Process Name and so forth.

When you find the business process you are interested in on any of these Monitor pages, you can obtain additional details by selecting the number in the ID column to open the Business Process Details page.

Business Process Detail

The Business Process Detail page is accessed from any page that contains the business process ID. This page provides a progress report about a specific business process instance. In addition, you can stop or restart the business process from this page.

Following is a partial list of the information you can obtain from this page:

✦ The business process definition (the BPML file)

✦ The current state of each step in a business process

✦ The date and time a business process started and ended

✦ The contents of the process data and the primary document at each step of the business process

Current Processes Monitor

Selecting **Business Processes** > **Current Processes** opens the Monitor page with a list of the processes currently running in Gentran Integration Suite. A Green status indicates no errors or warnings occurred during processing. A Red status indicates errors or warnings encountered during processing. Use this page to:

✦ Review detailed processing information by clicking on the ID of the process.

✦ View the business process definition by clicking on the Name of the process.

✦ View the current state of a business process.

✦ View the date and time a business process Started and Ended.

Current Activities Monitor

Selecting **Business Processes** > **Monitor** > **Current Activities** opens the Service Activity search page. The Service Activity page enables you to monitor activity of several adapters, including the Connect:Direct Server adapter. When you select an adapter to monitor, activity detail occurring on the adapter is displayed.

If the Connect:Direct Server adapter is used by a business process that has stopped running, you can use this feature to determine whether the adapter is preventing the business process from running.

The results of an activities search includes the following information:

✦ Session identifier

✦ Node name

✦ When the activity started and when it last updated

Correlation Search

Correlation searches are a key to relating a Connect:Direct Process with a Gentran Integration Suite business process. Whereas Connect:Direct identifies a Process with a *Process Number* and a *Process Name*, Gentran Integration Suite identifies its business processes with an *Instance ID*.

Note: A Process/business process that involves two Connect:Direct nodes does not create a unique identifier. Correlations are created to identify related Gentran Integration Suite and Connect:Direct Processes.

The Connect:Direct Server adapter and related services automatically write Gentran Integration Suite correlation records to enable searches for business processes and documents containing certain correlation identifiers.

The Correlation Search page enables you to search for business process activity according to six Connect:Direct specific name-value pairs, including:

✦ CD_LocalFileName

✦ CD_RemoteFileName

✦ CD_ProcessName

✦ CD_ProcessNum

✦ CD_PnodeName

✦ CD_SnodeName

Note: Do not perform a correlation search by Process Number only. A Process Number is unique to a single Connect:Direct server, therefore you may see the same Process Number used for different Processes – each associated with a different node.

Business Document Tracking Scenario for Connect:Direct Interoperability

The following scenario shows how reporting and search capabilities in Connect:Direct and Gentran Integration Suite work together. MaxxMart, the fictitious retailer discussed in *Sample Business Process Scenario for Connect:Direct Interoperability* on page 26, has not received the disbursement of loan funds from Contempo for a customer who purchased a high ticket item.

Contempo, who has the role of Main trading partner, has Connect:Direct installed. MaxxMart has Gentran Integration Suite installed and has configured the Connect:Direct Server adapter to establish interoperability between the two applications. Contempo defined a remote node in its Connect:Direct network map for the MaxxMart adapter.

MaxxMart contacts Contempo to find out why they did not receive their funds. The following steps show how Contempo can use interoperability between Connect:Direct and Gentran Integration Suite to figure out what happened to the MaxxMart payment.

1. Contempo accesses the Connect:Direct browser interface and executes a Select Process to view all Processes that involved MaxxMart as a PNODE that ran on the date in question. The two companies have an established business process where MaxxMart submits a Process on the Contempo Connect:Direct server that transfers approved loan funds to the MaxxMart bank account.

2. The Select Process results page displays matching Processes. Contempo notices a business process name that is a "B" followed by a number (such as B12345). This indicates that the number is a Gentran Integration Suite business process ID. The process number is hyperlinked to Gentran Integration Suite and provides detailed business process information. Contempo clicks the appropriate hyperlink to track the business process activity.

3. When Contempo tracks the business process detail, it sees that the HTTP Server adapter, which is required to execute an ACH transfer over AS2, was down at the time the dispersal was processed. Although the business process logged the error, this information was not returned to the Contempo Connect:Direct server.

4. Contempo realizes it must notify MaxxMart that it must modify the business process to capture any downstream failures that prevent a transfer and return this status information to the Contempo node so the Process can be resubmitted at a later time.

Troubleshooting Connect:Direct Interoperability

Gentran Integration Suite and Connect:Direct are designed to work together, in a seamless and tightly integrated environment. However, as is the case with any application, occasions may occur when you need to troubleshoot certain components or functions.

This section provides general troubleshooting guidelines when configuring and using Gentran Integration Suite with Connect:Direct.

Note: To troubleshoot general Connect:Direct functions, see the Connect:Direct documentation set for general troubleshooting information and instructions.

Note: You may need to work with your Trading Partners or system administrators to troubleshoot the systems you are communicating with.

Verifying Connectivity for Connect:Direct Interoperability

To verify connectivity between Connect:Direct and Gentran Integration Suite:

1. Check configurations on Connect:Direct and Gentran Integration Suite for compliance. In particular, look at the network maps on both systems.

2. Verify that the Connect:Direct nodes in question are active when a *begin session* is invoked. Search for the Gentran Integration Suite adapter configuration in the Browser User Interface and verify that the adapter is enabled.

3. Verify that perimeter services client connects to perimeter services server. If the client cannot connect, it causes the perimeter services-enabled Connect:Direct Server adapter to fail.

    Perimeter servers do not automatically reboot after a failure.

    To determine the status of the perimeter services client in Gentran Integration Suite:

    a. From the Gentran Integration Suite **Operations** menu, select **Troubleshooter**.

    b. Look for the **Perimeter Servers** area. It is usually at the bottom of the Troubleshooting page. This shows the state of the perimeter server clients which are defined in Gentran Integration Suite and whether they are on.

        Disconnected is displayed if no perimeter server is installed.

    c. Make certain the client is enabled.

Exchanging Process IDs in Connect:Direct Interoperability

If either Connect:Direct or Gentran Integration Suite cannot exchange process identifiers, the process correlation in the various monitor user interfaces does not work for the particular instance of a process. When this occurs, correct the identifiers and restart the process.

Using the Graphical Process Modeler for Connect:Direct Interoperability

The following restrictions apply to using the Graphical Process Modeler:

✦ Do not attempt simultaneous **COPY** operations for the same node.
✦ Issue a **Close Session** for each open session when session is finished.

Restarting Copy Interruptions in Connect:Direct Interoperability

Automatic Retry for Interrupted or Failed Copy Transactions

The Wait service is used automatically by Gentran Integration Suite in the event of a failure of the remote Connect:Direct node that interrupts a business process, such as one that is performing a Connect:Direct copy operation.

A business process suspended by the Wait service needs to be resumed by the scheduled system process Schedule_BPExpirator. By default, the BPExpirator is scheduled to run every 15 minutes. The BPExpirator schedule can influence checkpoint restart for the adapter.

If Gentran Integration Suite stops responding during a copy transaction, and the recovery level is set to Auto-Resume, the business process resumes automatically at next Gentran Integration Suite start up.

Checkpoint Restart

The Connect:Direct Server adapter includes parameters to govern checkpoint and restart behavior if either Gentran Integration Suite or the remote node fails. If the remote Connect:Direct server or the network fails during a copy operation, the Connect:Direct Server adapter goes into a retry mode using the values specified at configuration. The adapter waits for the configured amount of time and then resumes the copy.

Two values impact the amount of time the Connect:Direct Server adapter actually waits to resume copy. The first value is the *Interval between Retry attempts (minutes)* as specified in the Connect:Direct Server adapter configuration. The second value is the frequency defined by the scheduled system process *Schedule_BPExpirator*. The larger value governs the checkpoint restart.

For example, if the Interval between Retry attempts is set to 10 minutes, and the Schedule_BPExpirator is scheduled to run every 15 minutes, the retry occurs at the next scheduled 15 minute interval. Set Schedule_BPExpirator to a much lower number, such as one minute, to achieve the fastest restart.

Checkpoint restart is enabled even when SNODE compression is on.

Checkpoint restart is only enabled for file system-based document, outbound (from Gentran Integration Suite) data transfers. (If Gentran Integration Suite is the Pnode this means business processes using the CopyTo service, if Gentran Integration Suite is the Snode this means the remote Connect:Direct Server copies documents from Gentran Integration Suite to the remote node.)

Purging Checkpoint Data

Gentran Integration Suite stores checkpoint information for 30 days, after which it is automatically purged. If your database is corrupted, you must purge this checkpoint information by performing a cold restart.

To purge checkpoint data:

1. From the Business Processes menu, search for the adapter configuration.

2. Edit the configuration to set **Server Start Option** to **Cold**.

3. Save the changes and click Finish.

4. The Gentran Integration Suite adapter restarts. The checkpoint data is purged during startup.

5. Edit the configuration again to set Server Start Option to Warm to continue using Checkpoint Restart without a loss of information between multiple sessions.

Logging Files for Connect:Direct Interoperability

More information, including audit messages and error messages, can be found in Gentran Integration Suite log files. Log files are available through the **Operations** > **System** > **Logs** menu.

The *cdinterop.log* files record details for all adapter activity and business processes that involve the Connect:Direct Server and Requester adapters and the related Connect:Direct services.

Note: A new log is created each time the Gentran Integration Suite server is stopped. If it is not stopped during a given day, the log grows with each Connect:Direct transaction.

By default, the cdinterop.log file captures audit level messages, even when logging is not enabled. When the log is enabled, all transactions are recorded, including:

✦ Error messages

✦ Adapter startup and shutdown

✦ Adapter changes

✦ Security checks

Turning on Logging

If the error is not in the logs, turn on the Gentran Integration Suite cdinterop.log to capture activity of the Connect:Direct Server adapter and the services:

1. Browse to **Operation > System > Logs**.

2. Scroll to the Environment section of the page.

3. Click the edit icon to the left of Connect:Direct **Server and Requester Adapter and Services**.

4. In the Environment window, select **On** next to Logging Level and click **Save**.

5. Attempt to recreate the problem.

6. View the log for more informative entries.

Error Messages in Connect:Direct Interoperability

The following table lists error messages from Gentran Integration Suite that you may encounter and describe the system action and appropriate response to clear the problem.

Error Number	Error Message	System Action	Response
JGIS001E	Mailbox doesn't exist	Could not access mailbox in Gentran Integration Suite.	Check the mailbox path in Gentran Integration Suite.
JGIS002E	No sufficient permission on mailbox	Could not access mailbox in Gentran Integration Suite.	Check user permission on mailbox in Gentran Integration Suite.
JGIS003E	File is not extractable from mailbox	Could not read file from mailbox in Gentran Integration Suite.	Check the file extractability.
JGIS004E	Error when completing file writing	Could not complete file writing in Gentran Integration Suite.	Collect the Gentran Integration Suite Connect:Direct Server log files and contact Sterling Commerce Customer Support.

Error Number	Error Message	System Action	Response
JGIS005E	Document after copy is null	Could not get a valid document after copy.	Collect the Gentran Integration Suite Connect:Direct Server log files and contact Sterling Commerce Customer Support.
JGIS006E	Error launching a business process	Could not start a business process in Gentran Integration Suite.	Check the business process in Gentran Integration Suite.
JGIS007E JGIS008E	Error adding a message to mailbox	Could not add a message to mailbox in Gentran Integration Suite.	Check the mailbox path or the user permission on the mailbox in Gentran Integration Suite.
JGIS009E	User token is null	Could not check user token in Gentran Integration Suite.	Check the user token in Gentran Integration Suite.
JGIS010E	Mailbox path is null	Could not check mailbox path in Gentran Integration Suite.	Check the mailbox path in Gentran Integration Suite.
JGIS011E	Error querying message	Could not query message from mailbox in Gentran Integration Suite.	Check file name and verify message with the file name existed in mailbox.
JGIS012E	File can not be found	Could not find the file.	Check the file name and ensure the file exists
JGIS013E	Document ID is null	Could not check the document ID.	Check the document ID used in Gentran Integration Suite.
JGIS014E	Error extracting a message from mailbox	Could not extract a message from mailbox.	Check the message in Gentran Integration Suite mailbox and ensure it is extractable.
JGIS015E	Error when completing a message extract from mailbox	Could not complete a message extract from a mailbox.	Check the message in Gentran Integration Suite mailbox and ensure it is extractable.
JGIS016E	Error when getting a file pointer	Could not get a file pointer.	Collect the Gentran Integration Suite Connect:Direct server log files and contact Sterling Commerce Customer Support.
JGIS017E	Error when getting file length	Could not get file length.	Collect the Gentran Integration Suite Connect:Direct server log files and contact Sterling Commerce Customer Support.
JGIS018E	Error when reading file	Could not read from a file.	Collect the Gentran Integration Suite Connect:Direct server log files and contact Sterling Commerce Customer Support.
JGIS019E	Error when writing file	Could not write to a file.	Collect the Gentran Integration Suite Connect:Direct server log files and contact Sterling Commerce Customer Support.

Error Number	Error Message	System Action	Response
JGIS020E	Error when seeking in a file	Could not seek in a file.	Collect the Gentran Integration Suite Connect:Direct server log files and contact Sterling Commerce Customer Support.
JGIS021I	Invalid UserId	Could not find user in Gentran Integration Suite.	Check the User ID specified.
JGIS022I	Invalid Password	Could not authenticate the user in Gentran Integration Suite.	Check the User ID and Password specified.
JGIS023I	UserId or Password Error	Could not authenticate the user in Gentran Integration Suite.	User ID or Password is not specified.
JGIS024I	Invalid Business Process	Could not access the business process in Gentran Integration Suite.	Check the business process in Gentran Integration Suite.
JGIS025I	Business Process Permission Error	Could not access the business process in Gentran Integration Suite.	Check the User Permissions associated with the business process in Gentran Integration Suite.
JGIS026I	Generic Error	Could not initiate the business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS027I	Document Timeout Error	Timed out waiting to get document from a business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS028I	Document Retrieval Error	Could not get the document from the business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS029I	Illegal State Error on Connect:Direct Server During Call-Back	Could not initiate business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS030I	Session Error	Could not find the session.	Check the logs and business process in Gentran Integration Suite.
JGIS031I	Invalid File URL Error	Could not validate file URL specified in copy.	Check the file URL specified in copy statement.
JGIS032I	Mailbox Error	Mailbox Error while searching/retrieving Mailbox in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS033I	Invalid Local Connect:Direct Server Error	Could not find local Connect:Direct Server on Gentran Integration Suite	Check the logs and business process in Gentran Integration Suite.

Error Number	Error Message	System Action	Response
JGIS034I	Connection Timed Out Error	Could not establish connection before timeout.	Check the logs and business process in Gentran Integration Suite.
JGIS035I	Forwarding RunJob BP Error	Could not initiate the business process in Gentran Integration Suite.	Check the business process for proper RunJob configuration.
JGIS036I	Forwarding RunTask BP Error	Could not initiate the business process in Gentran Integration Suite.	Check the business process for proper RunTask configuration.
JGIS037I	Generic GIS Service Error	Could not initiate the business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS038I	Generic GIS Error	Could not initiate the business process in Gentran Integration Suite.	Check the logs and business process in Gentran Integration Suite.
JGIS039I	NetMap Checking Error	Could not perform netmap checking in Gentran Integration Suite.	Check netmap for valid remote node.
JGIS040I	Invalid Business Process Permission Error	Could not access the business process in Gentran Integration Suite.	Check the User Permissions associated with the business process in Gentran Integration Suite.
JGIS041I	Invalid Parameter Value Error	Could not initiate the business process in Gentran Integration Suite.	Check the parameter value for the right format.

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