ICM-to-ICM Gateway Configuration

This chapter includes instructions for the tasks you must perform on the client and server systems to configure the ICM-to-ICM correctly.

For the Client ICM, these tasks include the following:

- Configuring an ICM Gateway process on the CallRouter.

- Making the necessary script changes for sending pre-route or post-route requests to the Server ICM.

- Optionally, specifying a fixed local port number for the Network CIC process.

For the Server ICM, these tasks include the following:

- Installing and Configuring an INCRP NIC on the CallRouter.

- Setting up the necessary translation route labels.

- Making the necessary script changes for returning calls and labels to the Client ICM.

Note If you are implementing a bidirectional ICM-to-ICM Gateway link (see the section, ICM-to-ICM Gateway Overview), perform Client and Server tasks on **both** Unified CCE instances.

Client ICM Configuration

This section provides instructions for the configuration tasks you must perform on the Client ICM.

Identify the Client for the Server

To identify the ICM Gateway Client for the ICM Gateway Server, run a full Web Setup Tool on the Client Router machine.

Note   For more information on CallRouter installation, refer to the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

Procedure

Step 1   In the Router Properties screen, check the **Remote Network Routing** option box.

Step 2   Use the **NAM ID** field to specify a Client ICM ID number.

1. If the associated Server ICM communicates with only *one* Client ICM, you can accept the default NAM ID field value of 0.

2. If the associated Server ICM communicates with *multiple* Client ICMs, the NAM ID value:

    • Must be a unique number for each Client ICM in the configuration.

    • The maximum NAM ID number can be 127.

What to do next

Note   Make a note of this Client ICM ID number and use the same number for the Client ID setting in the Server ICM configuration.

Client ICM Configuration Data

In a "side-by-side" architecture such as this, the Client ICM system requires only a subset of the normal ICM configuration data. The following table summarizes the configuration data for a Client ICM.

Table 1: Table 2-1 Configuration Data on a Client ICM

Table	Contents
Announcement	Any announcements used in Client ICM scripts.
Application Gateway	A remote ICM gateway for each instance on each associated Server ICM.

Table	Contents
Business Entity	The default business entity only.
Call Type	Typically, one for each instance.
Call Type Map	Associate each Client ICM call type with a Client ICM script.
Dialed Number	All dialed numbers used on associated Server ICMs, plus the numbers used for direct translation. (No default routes are defined for Client ICM dialed numbers.)
Dialed Number Map	Associates dialed numbers and calling line IDs with Client ICM call types.
Label	All labels returned by associated Server ICMs, plus the labels used for direct translation.
Network Interface Controller	One required for the Network Interface Controller to the carrier network.
Peripheral Gateway (PG)	One or more for the Peripheral Gateway to the carrier network.
Prefix	Any prefixes used in Client ICM regions.
Region	Any regions used in Client ICM dialed number map.
Routing Client	One or more for the carrier network.
Script	One or more for each call type.

The Client ICM needs only a limited configuration (dialed numbers, labels, basic routing scripts, and so on) while the instance-specific scripts, and the configuration, real-time, and historical data are stored on the Server ICM.

To set up your Client ICM configuration, run Configuration Manager on a Client ICM Admin Workstation.

Note   For instructions on using Configuration Manager, refer to the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

Configure New Gateway

An Application Gateway process must be configured on the Client ICM for each Server ICM that the Client ICM is going to communicate with. To configure a new Application Gateway, perform the following steps.

Procedure

Step 1	From the ICM Configuration Manager on an Admin Workstation associated with the Client ICM, select **Calls** > **Application Gateway** > **Application Gateway List**. The Application Gateway List window appears.
Step 2	Click **Retrieve**.
Step 3	Click **Add**. The Attributes tab appears.

Step 4 Specify the following values on the Attributes tab:

a) **Name**. Enter a name for the ICM Gateway.

b) **Type**. Choose Remote ICM.

c) **Preferred Side**. Indicates the preferred side of the Gateway to use when both are available. If only one side is available, Unified CCE uses that side regardless of preference.

d) **Encryption**. Indicates whether requests to the Application Gateway are encrypted. Choose **None**.

e) **Fault Tolerance**. If the Application Gateway is duplexed, specify the fault-tolerance strategy it uses. Choose **None**.

f) **Connection**. Choose whether the Gateway is Duplex (has both a Side and Side B connection), Simplex A (only has a Side A), or Simplex B (only has a Side B).

g) **Description**. (Optional.) Additional information about the gateway.

Step 5 Click the **Save** button to create the gateway.

Note	Make a note of the Application Gateway ID value. You need this value when you run Setup to configure the INCRP NIC on the Server ICM.

Step 6   To set the connection information, click the **Connection Side A** tab or the **Connection Side B** tab.

Step 7   To specify an address, click the **Enter Address** button. The Enter NAM Addresses dialog box appears.

Step 8   Specify the following information:

     a)   **NAM Mode**. Select Single NAM.

     b)   **IP Address/Name**. Enter the Public (high priority) IP address of the Server ICM. Alternatively, the SAN can be used (consult your Cisco certified partner or TAC for assistance). This address must be the same address specified for the INCRP NIC on the targeted system. You can use the hostname in place of the address.

     c)   **Instance Number**. Enter the Instance Number of the Server ICM (0 to 24).

     d)   **Side**. Indicate which side of the Client ICM prefers this connection:

         • **Side A**. Client ICM Side A prefers to use this connection.

         • **Side B**. Client ICM Side B prefers to use this connection.

         • **None**. Neither side of the Client ICM prefers to use this connection.

         • **Both Side A and B**. Both sides of the Client ICM prefer to use this connection.

Note	Consider network traffic in choosing this value. For example, if one side of the Client ICM is co-located with only one side of the Server ICM, you can make that the preferred connection in order to avoid unnecessary WAN traffic to the other side.

Step 9   When finished, click **Save** to save the changes.

Step 10   From the Application Gateway list, make note of the Application Gateway IDs numbers for the server systems. You specify these Application Gateway ID numbers during Server-side configuration.

The bottom half of the ConnectionSide A and Connection Side B tabs display several timeout and limit values. Accept the defaults for these values.

Configure Existing Gateway

If the gateway process is already present on the CallRouter, perform the following steps to configure it for ICM-to-ICM Gateway use.

Procedure

Step 1   From the ICM Configuration Manager on an Admin Workstation associated with the Client ICM, select
Calls > **Application Gateway** > **Application Gateway List** screen.

Step 2   Click **Retrieve**.

Step 3   From the Application Gateway list, make note of the Application Gateway IDs numbers for the server systems.
You specify these Application Gateway ID numbers during Server-side configuration.

Step 4   Configure the Connection Side A and Connection Side B tabs as needed.

> **Note**   Refer to the *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise
> & Hosted* for instructions.

Step 5   Navigate to **Miscellaneous Tools** > **System Information** in configuration manager.

Step 6   In the Application Gateway section, click **Remote ICM**. Accept the default values for the remaining fields
on all tabs.

Edit Client Script

Typically, the Client ICM originally receives the call and pre-routes it to an ACD. The call is then post-routed to a peripheral associated with the server system. The client determines the label associated with the server's peripheral by requesting the label from an ICM Gateway node in a script.
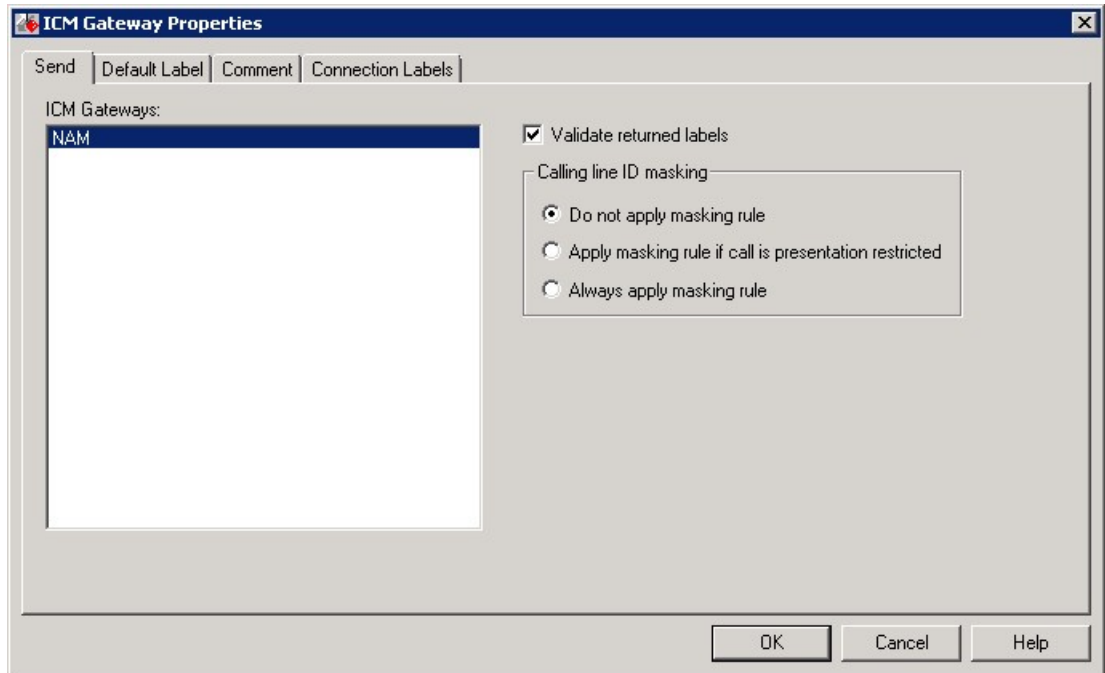
From the Script Editor, you can specify a local definition of the label that the ICM Gateway node returns. Perform the following steps:

Procedure

Step 1   Right-click on the ICM Gateway node.

ICM-to-ICM Gateway Configuration

Specification of Fixed Local Port Number for NetwrkCIC Process

Step 2 From the pop-up menu that appears, choose **Properties**. The ICM Gateway dialog box appears.

Step 3 From the list, select the gateway to the Unified CCE to which you want to send the request.

Step 4 Check the **Validate Returned Labels** check box if you want the Client ICM to validate the label that the Server ICM returns before passing it to the routing client. If the Server ICM is returning a dynamic label, do not check this box. A dynamic label is an expression the Server ICM CallRouter converts to a character string and returns to the routing client as a label.

Step 5 On the **Default Label** tab, specify a default label to be used if the Server ICM returns an invalid label.

Step 6 Click **OK**.

Specification of Fixed Local Port Number for NetwrkCIC Process

In an ICM-to-ICM Gateway implementation, the NetwrkCIC process is a part of the Client CallRouter installation that manages the ICM Gateway. By default, the IP port used in the NetwrkCIC process for the public network communication to the Server ICM INCRP NIC process is selected dynamically at runtime.

Unified CCE processes use IP port numbers between 39000 and 50000. Use the following formula to obtain the number for side A of a duplexed system:

*Port number = 40000 + (I * 40) + 33*

where *I* is the instance number of an ICM instance. (**NOTE**: Typically, there is only a single instance for an ICM-to-ICM Gateway). To find the instance number, run the local setup program, select an instance, and click the edit button. The "Edit Instance" dialog box displays the instance number.

For instance number 0, the port number is 40033.

For side B, the port number is obtained by adding 1000 to the side A number. This formula is intended to be stable. However, there is no guarantee that the formula will not change.

ICM-to-ICM Gateway Configuration

8

If your site does not support dynamic port allocation, you can optionally modify the NetwrkCIC process to use a specific port number. To bind the NetwrkCIC process to a specific port number when communicating with the server INCRP NIC process, you specify the port number in the registry of the Client ICM machine.

To specify this port number, add the following registry entry on the Client ICM machine:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Cisco Systems, Inc.\ICM\<instance
name>\Router[A,B]\CIC\CurrentVersion\Configuration\CIC Public LAN IP Port
```

Specify the type of this entry as a DWORD.

Note The Web Setup Tool program does not manage this registry entry. If you upgrade Unified CCE, you must add the registry entry again.

If the registry entry is not present, the NetwrkCIC process uses the port dynamically allocated as usual.

If you change the port number while the NetwrkCIC process is running, you must restart the CallRouter service for it to take effect.

Server Configuration

This section provides instructions for the configuration tasks you must perform on the Server ICM.

Define and Configure INCRP NIC

To set up the INCRP NIC for each instance on the Server ICM, perform the following tasks:

Procedure

- Install the INCRP NIC, if you have not already done so.

  To install the INCRP NIC, refer to the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.
- Define the INCRP NIC using the NIC Explorer tool.
- Add INCRP NIC information using the Web Setup Tool.

Define INCRP NIC

Note The preferred network for this connection is the Public/Visible or SAN network. When using the SAN network, it must have a WAN link between Side A and B. SAN was originally intended for the CallRouter to Network Gateway connection, which does not cross the A/B boundary.

Procedure

Step 1 Within the ICM Admin Workstation group, double-click **Administration & Data Server**. The Select Administration Client window appears.

Step 2   Select the instance you are configuring.

Step 3   From the ICM Configuration Manager, **Configuration Manager** > **Tools** > **Explorer Tools** > **NIC Explorer**.

Step 4   In the Select filter data box, click **Retrieve**.

Step 5   Click **Add NIC**. A new NIC and its routing client display in the tree window. Next to each is a *To Be Inserted* icon.

On the right of the tree window, tabbed fields also display the new NIC's and routing client's configuration information.

Step 6   Enter the following in the Logical Interface Controller tab fields:

a)   **Name**. A name for the NIC. The name can be up to 32 characters. The valid characters are upper-case and lower-case letters, digits, periods (.), and underlines (_). The first character of the name must be a letter or digit.

b)   **Client Type**. (Drop-down list.) The type of routing client serviced by the NIC. Select **INCRP**.

Note   When you select the type of routing client, default values for that type are automatically placed in the Routing Client's Timeout Threshold, Late Threshold, Timeout Limit, Use DN/Label Map, and Client Type fields.

Step 7   Click the **Add Physical Interface Controller** button. The Physical Interface Controller dialog box appears.

Step 8   In the Create Single Physical Interface Controller section, specify an Enterprise Name and, optionally, a Description.

Note   If the NIC is duplexed, a Physical Interface Controller is required for both Side A and Side B.

Step 9   Click **OK**. The Physical Interface Controller tab appears, displaying the information you specified, and an ID value of UNASSIGNED.

Step 10   Enter the following information in the Routing Client tab fields:

a)   **Name**. A name for the NIC Routing Client. The name can be up to 32 characters. The valid characters are upper-case and lower-case letters, digits, periods (.), and underlines (_). The first character of the name must be a letter or digit.

b) Timeout threshold. The maximum time, in milliseconds, the routing client can wait for a response to a routing request. The NIC sends a default response slightly before this threshold.

c) Late threshold. A threshold value, in milliseconds, for classifying responses as late. Any response that exceeds this threshold is considered late even if it does not exceed the Timeout Threshold.

d) Timeout limit. The maximum time, in seconds, for which the routing client waits for a response. This limit is the maximum time the routing client tolerates consecutive response timeouts before it stops sending requests to the Unified CCE instance. If the routing client receives no responses from Unified CCE within this limit, it terminates the routing operation.

e) **Configuration parameters**. Specify a /customerid switch to map the routing client at the Client ICM to the local routing client. Use one of the following formats:

   • /customerid X- where **X** is the Routing Client ID on the Client ICM.

   • /customerid A:X- where **A** is the Client ID specified in Setup and **X** is the Routing Client on the Client ICM.

   Note   Use /customerid A:X if the Server ICM has more than one Client. RoutingClientIDs can be duplicated on a different Unified CCE.

f) **Client Type**. (Drop-down list.) The type of routing client that ultimately routes the call on the requesting ICM system. This type must match the type of NIC running on the Client ICM.

Step 11   Click **Save**. The newly defined NIC is saved in the database, a Physical Controller ID is assigned, and the *To Be Inserted* icon is removed from the tree window.

   Note   Make a note of the Physical Controller ID value. You need this value to set up the INCRP NIC on the CallRouter. If the NIC is duplexed, you need both Physical Controller ID values.

Step 12   Click **Close** to exit the NIC Explorer.

Configure INCRP NIC in Web Setup Tool

To configure the INCRP NIC on the Server ICM, run Web Setup Tool and edit the CallRouter from the Server Router machine (rather than from the installation CD).

Note   For more information on CallRouter installation, refer to the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

Perform the following steps:

Procedure

Step 1   Run Web Setup Tool and select **Component management** > **Routers** > **Network Interface Controllers**.

Step 2   Click **Add** Under Deployment for the Added Instance.

Component Management > Routers > Network Interface Controllers >

Add Network Interface Controller

| **Deployment** | Properties | Client ICM/CCE/CCH | Summary |

*Instance: ash
Facility: fac3
Router: RouterA
*Network Interface Controller: INCRP

* Required field

Step 3   Set Network Interface Controller to **INCRP**.

Step 4   Click **Add**.

Component Management > Routers > Network Interface Controllers >

Add Network Interface Controller

INCRP Network Interface Controller Properties
*Physical Interface Controller ID: 0
*Local Hostname or IP Address: localhost
*Handshake Timeout (ms): 5000

* Required field

Step 5   Complete the **INCRP Network Interface Controller Properties** fields as configured for your system. Click

Next.

Step 6   Complete the **Client ICM/CCE/CCH** properties. Click **Next**.

Step 7   Click **Finish**.

Translation Route Labels

From the ICM-to-ICM Gateway server's point of view it is doing a translation route to one of its peripheral targets. When you set up a translation route on the Server ICM, set up a label for the original routing client providing a call to access each of the peripheral targets associated with the translation route. For example, if the routing client is an interexchange carrier (IXC), set up a label to the targets with the IXC. This method allows the call to be initially sent to the translation route at the peripheral.

Note   For instructions on how to run Translation Route Wizard and how to define translation route labels, refer to the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

Modify Routing Scripts

The server requires a script that handles requests from the client. The script is associated with a call type, which is in turn defined by the dialed number, calling line id, and caller entered digits.

From the Script Editor, you can specify the label that the server script returns to the client. For example, you could create a Select node that routes calls to specified services under certain conditions. Perform the following steps.

Procedure

Step 1   From Script Editor, connect the Select node to a Service node.

Step 2   Right-click the Select node and choose Properties. The dialog box appears.

Step 3   Specify the criteria for selecting services.

Note   You can specify the label that the server script returns from other Script Editor nodes, such as the Label node. Refer to the *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* for more information.