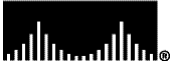


CISCO SYSTEMS



ICM-to-ICM Gateway User Guide for Cisco ICM Enterprise & Hosted Editions

Cisco ICM Enterprise & Hosted Editions Release 7.1(1)
June 2006

Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100



THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CCSP, CCVP, the Cisco Square Bridge logo, Follow Me Browsing, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0601R)

ICM-to-ICM Gateway User Guide for Cisco ICM Enterprise & Hosted Editions

Copyright © 2000–2006, Cisco Systems, Inc.

All rights reserved.



CONTENTS

About This Guide	v	
Purpose	v	
Audience	v	
Conventions	v	
Organization	vii	
Obtaining Documentation	vii	
Cisco.com	vii	
Product Documentation DVD	viii	
Ordering Documentation	viii	
Documentation Feedback	viii	
Field Alerts	ix	
Cisco Product Security Overview	ix	
Reporting Security Problems in Cisco Products	x	
Obtaining Technical Assistance	xi	
Cisco Technical Support & Documentation Website	xi	
Submitting a Service Request	xii	
Definitions of Service Request Severity	xii	
Obtaining Additional Publications and Information	xiii	
CHAPTER 1	ICM-to-ICM Gateway Overview	1-1
	What is ICM-to-ICM Gateway?	1-2
	ICM-to-ICM Gateway Call Flow	1-3

- ICM-to-ICM Communication 1-4
 - Pre-Routing 1-6
 - Post-Routing 1-7
- Logical Connection Management and Fault Tolerance 1-9
- ICM-to-ICM Gateway Requirements 1-12

CHAPTER 2

ICM-to-ICM Gateway Configuration 2-1

- Client ICM Configuration 2-2
 - Identify the Client for the Server 2-2
- Defining Client ICM Configuration Data 2-3
 - Create or Configure the Gateway Process on the Router 2-4
 - Configuring a New Gateway 2-4
 - Configuring an Existing Gateway 2-8
 - Configuring ICM Instances on the Client ICM 2-10
 - Client Script 2-12
 - Specifying a Fixed Local Port Number for the NetwrkCIC Process 2-14
- Server Configuration 2-15
 - Defining and Configuring the INCRP NIC 2-15
 - Installing the INCRP NIC 2-15
 - How to Define the INCRP NIC 2-15
 - Configuring the INCRP NIC in ICM Setup 2-19
 - Setting Up Translation Route Labels 2-21
 - Modifying Routing Scripts 2-21

INDEX



About This Guide

Purpose

This manual describes the ICM-to-ICM Gateway feature that is part of Cisco's Intelligent Contact Management (ICM) software. It discusses ICM-to-ICM Gateway functionality, architecture, and call flows and provides step-by-step instructions for configuring ICM systems for ICM-to-ICM Gateway use.

Audience

This manual is intended primarily for system administrators who will be responsible for configuring ICM systems for ICM-to-ICM Gateway use.

Conventions

This manual uses the following conventions.

Format	Example
Boldface font	<p>Boldface font is used to indicate commands, such as user entries, keys, buttons, and folder and submenu names. For example:</p> <ul style="list-style-type: none"> • Choose Edit > Find. • Click Finish.
<i>Italic font</i>	<p><i>Italic</i> font is used to indicate the following:</p> <ul style="list-style-type: none"> • To introduce a new term. Example: A <i>skill group</i> is a collection of agents who share similar skills. • For emphasis. Example: <i>Do not</i> use the numerical naming convention. • A generic syntax item that you must replace with a specific value. Example: IF (<i>condition, true-value, false-value</i>) • A book title. Example: See the <i>Cisco ICM Software Database Schema Handbook</i>.
window font	<p>Window font, such as Courier, is used for the following:</p> <p>Text as it appears in code or that the window displays. Example: <html><title>Cisco Systems, Inc. </title></html></p> <p>File names. Example: tserver.properties</p> <p>Directory paths. Example: C:\Program Files\Cisco</p>
< >	<p>Angle brackets are used to indicate the following:</p> <ul style="list-style-type: none"> • For arguments where the context does not allow italic, such as ASCII output. • A character string that the user enters but that does not appear on the window such as a password.

Organization

The manual is divided into the following chapters.

Chapter	Description
Chapter 1, "ICM-to-ICM Gateway Overview"	Provides an overview of ICM-to-ICM Gateway capabilities, gives examples of possible business uses, discusses ICM-to-ICM Gateway links and call flows, and states system requirements.
Chapter 2, "ICM-to-ICM Gateway Configuration"	Describes the configuration tasks that you need to perform on the Client ICM and the Server ICM in order to enable ICM-to-ICM Gateway functionality.

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation at this URL:

<http://www.cisco.com/techsupport>

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access international Cisco websites at this URL:

http://www.cisco.com/public/countries_languages.shtml

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on portable media. The DVD enables you to access multiple versions of hardware and software installation, configuration, and command guides for Cisco products and to view technical documentation in HTML. With the DVD, you have access to the same documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .pdf versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

<http://www.cisco.com/go/marketplace/>

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at **tech-doc-store-mkpl@external.cisco.com** or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Field Alerts

Cisco products may be modified or key processes may be determined important. These are announced through use of the Cisco Field Alert and Cisco Field Notice mechanisms. You can register to receive Field Alerts and Field Notices through the Product Alert Tool on Cisco.com. This tool enables you to create a profile to receive announcements by selecting all products of interest. Log into www.cisco.com; then access the tool at <http://tools.cisco.com/Support/PAT/do/ViewMyProfiles.do?local=en>.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

<http://www.cisco.com/go/psirt>

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- For Emergencies only—security-alert@cisco.com

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For Nonemergencies—psirt@cisco.com

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532



Tip

We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.htm

The link on this page has the current PGP key ID in use.

Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

<http://www.cisco.com/techsupport>

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

<http://tools.cisco.com/RPF/register/register.do>



Note

Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support & Documentation website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco engineer. The TAC Service Request Tool is located at this URL:

<http://www.cisco.com/techsupport/servicerequest>

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/techsupport/contacts>

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—Your network is “down,” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

<http://www.cisco.com/go/guide>

- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

<http://www.cisco.com/go/marketplace/>

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

<http://www.ciscopress.com>

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

<http://www.cisco.com/packet>

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

<http://www.cisco.com/go/iqmagazine>

or view the digital edition at this URL:

<http://ciscoiq.texterity.com/ciscoiq/sample/>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

<http://www.cisco.com/ipj>

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

<http://www.cisco.com/en/US/products/index.html>

- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

<http://www.cisco.com/discuss/networking>

- World-class networking training is available from Cisco. You can view current offerings at this URL:

<http://www.cisco.com/en/US/learning/index.html>



1

ICM-to-ICM Gateway Overview

This chapter provides an overview of ICM-to-ICM Gateway. It discusses the following topics:

- Business uses for ICM-to-ICM Gateway
- The ICM-to-ICM Gateway link
- ICM-to-ICM Gateway call flows
- ICM-to-ICM Gateway fault tolerance capabilities
- ICM-to-ICM Gateway system and network configuration requirements

What is ICM-to-ICM Gateway?

ICM-to-ICM Gateway extends the ICM software capability by allowing agents to simultaneously post-route calls and supply additional call-related information to a second agent *on a different ICM*. This enables the initial agent to pass on gathered information without the customer's needing to repeat it to the second agent.

Following are some business scenarios where ICM-to-ICM Gateway functionality can be particularly useful.

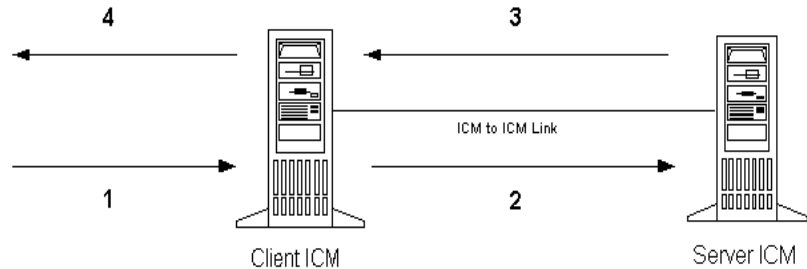
- A customer calls the institutional department of a financial corporation for customer service assistance with a company-sponsored 401k. The customer then asks to be transferred to the retail department to obtain assistance with a personal account.
- Two corporations (for example, a bank and an insurance company), each of which has a contact center that uses an ICM, merge. It may often be desirable to transfer a call between the two companies; for example, to sell insurance to a bank customer.
- A customer calls a hotel to make a reservation. The hotel agent then asks the customer if he/she also needs to rent a car, and then transfers the customer to a car rental agent.
- A company uses an outsourcer to handle part of its overflow traffic. For example, the company service department handles paid support calls in-house but transfers warranty service requests to the outsourcer.
- A multi-national corporation encompasses several geographic regions; each geographic region has its own ICM.

In all these cases, ICM-to-ICM Gateway enables the call-related data to be transferred along with the call so the customer does not need to supply this information again.

ICM-to-ICM Gateway Call Flow

Figure 1-1 illustrates basic ICM-to-ICM Gateway call flow.

Figure 1-1 Basic ICM-to-ICM Gateway Call Flow



1. A Client ICM receives a request. This could be a pre-route request from a service provider network (in which case the routing client is a NIC) or a post-route request from an ACD/IVR (in which case the PG acts as the routing client)
2. The Client ICM executes a script. At some point the script initiates a route request to the other ICM, referred to as the Server ICM. At this point the Server ICM must find a destination label for the call.
3. The Server ICM executes a script to select a destination label for the call. The Server ICM handles this call as a normal route request, save for the fact that the routing client is another ICM and not a service provider network or an ACD/IVR. Once a destination label is selected the Server ICM sends it back to the Client ICM.
4. When the Client ICM receives the destination label from the Server ICM, it passes the label directly to the routing client that initiated the route request. This does not happen under script control, but is an automatic process.

ICM-to-ICM Communication

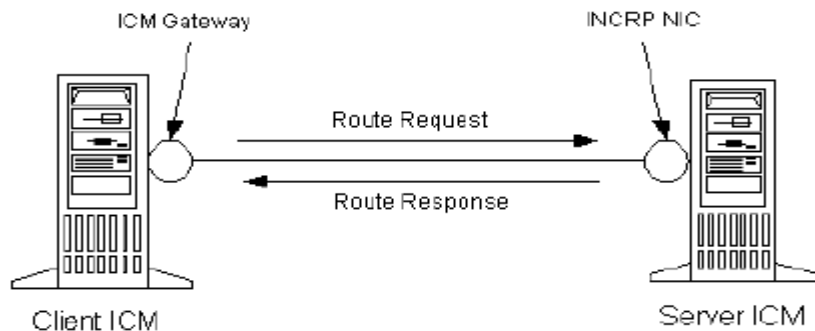
The ICM-to-ICM Gateway link connects two ICMs through a Cisco proprietary protocol called INCRP (Intelligent Network Call Routing Protocol). Both ICMs have a component managing the connection.

The component on the Client ICM is called an **ICM Gateway**. It sends the route requests and receives the responses (destination labels) from the Server ICM.

The component on the Server ICM is called an **INCRP Network Interface Controller (INCRP NIC)**. The NIC receives route requests and sends responses back to the requester. An ICM can have an INCRP NIC, as well as other types of NICs.

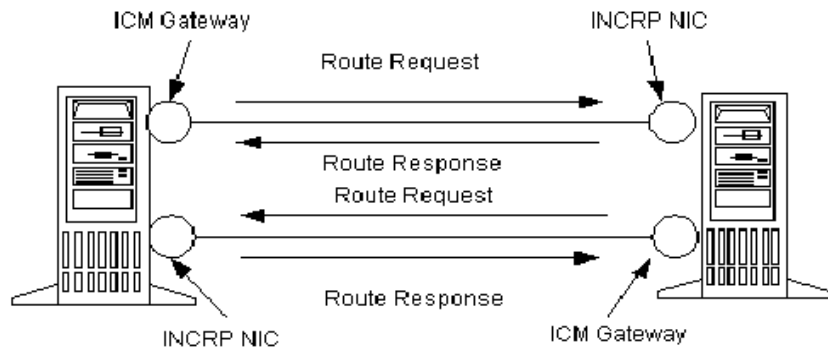
Both the ICM Gateway and the INCRP NIC are components that run on the Router machine, so no additional hardware is required.

Figure 1-2 ICM-to-ICM Link Components



The ICM-to-ICM link shown in [Figure 1-2](#) is a connection in one direction only. It allows the Client ICM to send route requests to the Server ICM, but not the other way around. It is possible to additionally reverse the roles of the ICMs as well, so that each ICM can send route requests to each other. In this case, each ICM needs an ICM Gateway and an INCRP NIC, as shown in [Figure 1-3](#).

Figure 1-3 Bi-Directional ICM-to-ICM Link

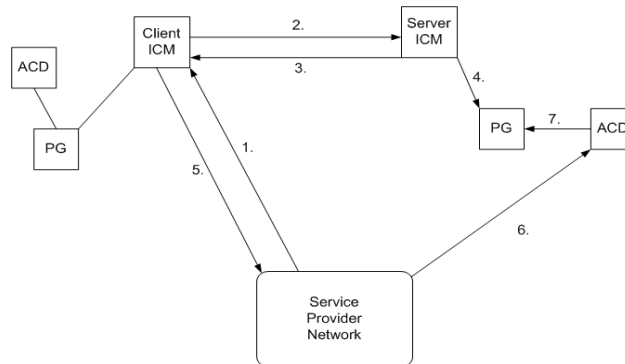


INCRP supports direct connections between two ICMs only. ICMs that are not directly connected with an ICM-to-ICM link cannot send each other route requests through another ICM.

Pre-Routing

Figure 1-4 illustrates a call flow scenario for a call that is pre-routed from one ICM to another.

Figure 1-4 Example Pre-Routing Call Flow

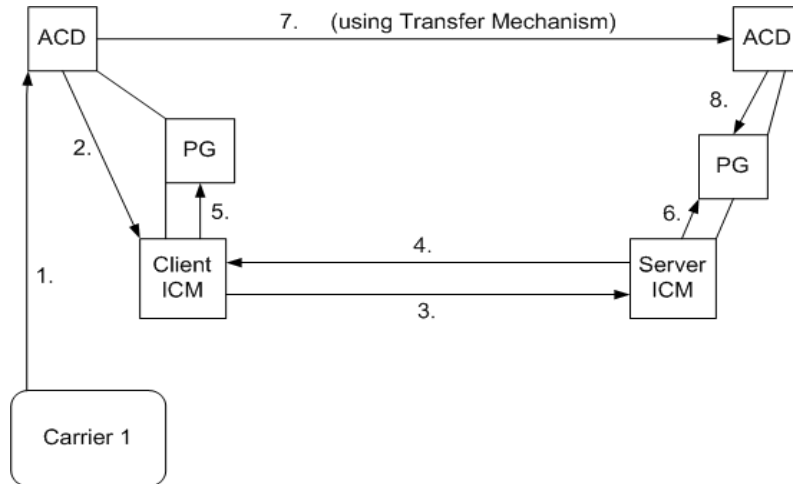


1. The Service Provider network sends a route request to the Client ICM.
2. The Client ICM receives the pre-route request and executes a routing script that determines that the route request is to be handed to another ICM. The ICM forwards the route request to the Server ICM.
3. The Server ICM executes a script that selects a peripheral target for the call and sends the corresponding label to the Client ICM.
4. If the selected target is reached using a translation route, the Server ICM sends the call context data to the selected peripheral, where it waits for the call to arrive. If translation routing is not used, this step is skipped.
5. The Client ICM forwards the destination label (that it received in Step 3) to the network.
6. The network connects the call to the selected destination on the Server ICM ACD/Agent.
7. If this was a translation routed call, the ACD connected to the Server ICM requests the call detail information from the PG where it has been waiting since Step 4 and sends the call to an agent.

Post-Routing

Figure 1-5 illustrates a call flow scenario for a post-routed call transfer from one ICM to another.

Figure 1-5 Example Post-Routing Call Flow



1. A call terminates at an ACD that is connected to the Client ICM. This can be a pre-routed call or a call sent there without ICM control.
2. The agent initiates a post-route request in one of two ways:
 - a. The agent transfers the call to a special number on the ACD, which prompts the ACD to issue a post-route request to the Client ICM.
 - b. The agent sends a call transfer request to the CTI Server (not shown). This transfer request must have the post-route flag set, so that a post-route request is issued to the Client ICM before transferring the call.
3. The Client ICM receives the post-route request along with the call context and runs a scheduled script that determines that the route request is to be handed to the Server ICM. The Client ICM forwards the route request to the Server ICM.
4. The Server ICM selects a destination for the call and responds back to the Client ICM with the selected label. The Server ICM also returns the (possibly modified) call context to the Client ICM.

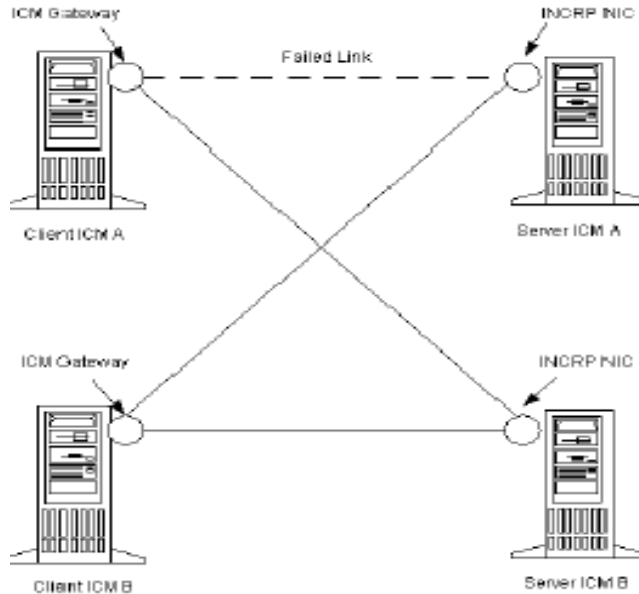
5. The Client ICM receives the label, attempts to validate it, and passes the label onto its routing client (the PG in this case). If no label is received from the Server ICM (or the Server ICM is not online) the Client ICM provides a destination label and sends it to the routing client.
6. If the selected target was a peripheral target with an associated translation route, the Server ICM sends the translation route information to the PG, where the ACD waits until the call arrives at the ACD and the ACD retrieves the information from the PG (in Step 8). If the selected target does not use a translation route, this step is skipped. In that case, the call context is still transferred to the Server ICM but it is not available for the receiving ACD, since it cannot be matched with the call.
7. The original PG and the ACD transfer the call to its destination. The PG sends the destination label to the ACD. The ACD uses that information to disconnect the agent who requested the call transfer and connects the incoming call leg to its destination using a tie line or public network trunk.
8. If this is a translation route call, the ACD connected to the Server ICM receives the call, requests the call detail information from the PG (where it has been waiting since Step 6), and sends the call to an agent.

Logical Connection Management and Fault Tolerance

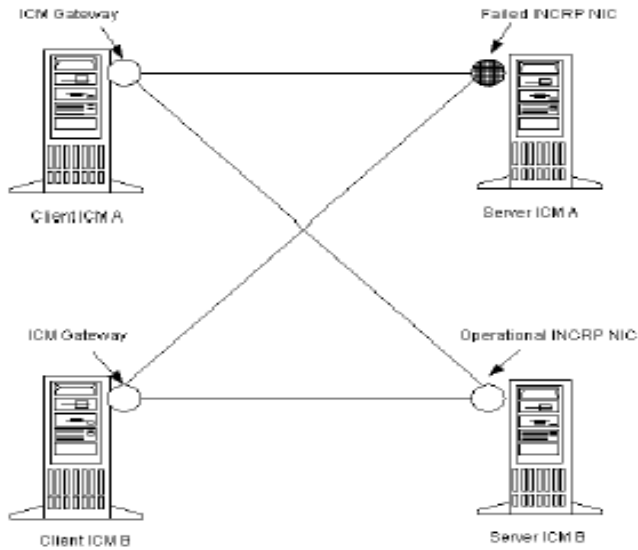
Because the ICM software is typically deployed as a synchronous duplex pair, the ICM-to-ICM Gateway is likewise deployed between ICM system pairs. This leverages the ICM software's fault tolerant architecture and keeps the synchronous router pairs in sync.

ICM-to-ICM Gateway addresses the following other possible points of failure as follows:

- In the case of a link failure, each INCRP NIC has a link to both ICM Gateway components. Each INCRP NIC can therefore maintain communications with the other ICM Gateway.

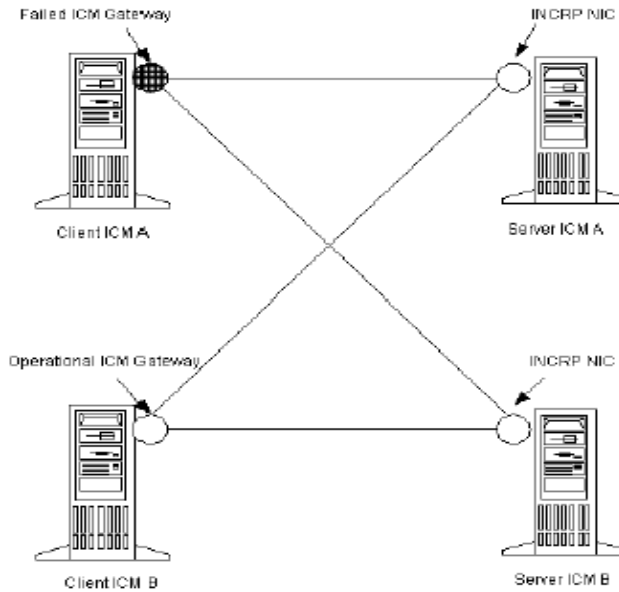


- If an INCRP NIC fails, the Client ICM's routers are synchronized and can communicate via the remaining INCRP NIC.

**Note**

If a link failure or a NIC failure occurs, calls that were in progress at the time of the failure may be lost.

- If an ICM-to-ICM Gateway fails, the Server ICM's routers are synchronized and can communicate via the remaining ICM-to-ICM Gateway.

**Note**

For a more complete discussion of ICM Fault Tolerance, refer to the *ICM Administration Guide for Cisco ICM Enterprise Edition*.

ICM-to-ICM Gateway Requirements

The following are system requirements for ICM-to-ICM Gateway.

- Both Client ICM and Server ICM require ICM software version 7.0 SR3 or later. If two connected ICMs are running different versions of ICM software, only the ICM-to-ICM Gateway features supported by the lowest numbered version are available.
- An ICM communication network configuration that can support ICM-to-ICM Gateway. The Signaling Access Network (SAN) is strongly recommended, with the private network as an alternate if a SAN does not exist.

**Note**

Refer to the *Pre-Installation Planning Guide for Cisco ICM Enterprise Edition* for information about the Signaling Access Network and ICM communications network configurations.



2

ICM-to-ICM Gateway Configuration

This chapter includes instructions for the various tasks that you need to perform on the client and server systems in order for ICM-to-ICM Gateway to function correctly. For the Client ICM, these tasks include the following:

- Configuring an ICM Gateway process on the Router.
- Define Client ICM configuration data.
- 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 Router.
- 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 [Chapter 1, “ICM-to-ICM Gateway Overview”](#)), you need to perform Client side configuration and Server side configuration on **both** ICM systems.

Client ICM Configuration

This section provides instructions for the configuration tasks you need to 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 ICM Setup on the Client Router machine.

**Note**

For more information on router installation, refer to the *ICM Installation Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*.

For each ICM-to-ICM Gateway client, perform the following steps.

-
- 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.
- If the associated Server ICM will be communicating with only *one* Client ICM, you can accept the default **NAM ID** field value of 0.
 - If the associated Server ICM will be communicating with *multiple* Client ICMs, the **NAM ID** value:
 - Needs to be a unique number for each Client ICM in the configuration.
 - Must be non-zero; start with the number 1.

**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.

Defining Client ICM Configuration Data

In a two-tier architecture, the Client ICM system requires only a subset of the normal ICM configuration data. [Table 1](#) summarizes the configuration data for a Client ICM.

Table 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.
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 those 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 that can be returned by associated Server ICMs, plus those 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, etc.) while the instance-specific scripts, 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 *ICM Configuration Guide for Cisco ICM Enterprise Edition*.

Create or Configure the Gateway Process on the Router

An Application Gateway process must be configured on the Client ICM for each Server ICM that the Client ICM is going to communicate with.

Configuring a New Gateway

If you need to configure a new Application Gateway, perform the following steps.

-
- 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.

Select filter data

Optional Filter: None Condition: Value: []

Save Retrieve Cancel filter changes

Application Gateway

Name

Add Delete Revert

Attributes | Connection Side A | Connection Side B

Name * []

Application gateway ID: 0

Type * Remote ICM

Preferred side: Side A

Encryption * <None>

Fault tolerance * <None>

Connection: Duplex

Description: []

Save Close Help

ICM Instance: cust1

Step 4 Specify the following values on the Attributes tab:

- **Name.** Enter a name for the ICM Gateway.
- **Type.** Choose **Remote ICM**.
- **Preferred Side.** Indicates the preferred side of the Gateway to use when both are available. If only one side is available, ICM software uses that side regardless of preference.
- **Encryption.** Indicates whether requests to the Application Gateway are encrypted. Choose **None**.

- **Fault Tolerance.** If the Application Gateway is duplexed, specifies the fault-tolerance strategy it uses. Choose **None**.
- **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).
- **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, as you will need it when you run Setup to configure the INCRP NIC on the Server ICM.

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

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

Enter NAM Addresses

NAM Mode

Single NAM Multiple NAMs

Address

IP Address/Name Instance Number Side

0 None

Address List

IP Address/Name	Instance Number	Side	NAM ID

Add Update Remove

OK Cancel Help

Step 8 Specify the following information:

- **NAM Mode.** Select Single NAM.
- **IP Address/Name.** Enter the high priority IP address of the Server ICM. (Normally this is the public IP address, but if no public address is available, use the high priority private IP address.) This address *must* be the same address specified for the INCRP NIC on the targeted system. (You may use the hostname in place of the address.)
- **Instance Number.** Enter the number of the customer ICM on the Server ICM (0 through 24).
- **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 number(s) for the server system(s). You will need to specify these Application Gateway ID number(s) during Server side configuration.
-

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

Configuring an Existing Gateway

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

-
- Step 1** Bring up the **Calls > Application Gateway > Application Gateway List** screen.

Application Gateway List

Select filter data

Optional Filter: None Condition: Value:

Save Retrieve Cancel filter changes

Application Gateway

Name

Add Delete Revert

Attributes: Connection Side A | Connection Side B

Name * []

Application gateway ID: 0

Type * Remote ICM

Preferred side: Side A

Encryption * <None>

Fault tolerance * <None>

Connection: Duplex

Description: []

Save Close Help

ICM Instance: cust1

Step 2 Click **Retrieve**.

Step 3 From the Application Gateway list, make note of the Application Gateway IDs number(s) for the server system(s). You will need to specify these Application Gateway ID number(s) during Server side configuration.

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



Note

Refer to the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for instructions.

Defining Client ICM Configuration Data

- Step 5** Bring up the **Enterprise > System Information** Screen.
- Step 6** In the Application Gateway section, click on **Remote ICM**. Accept the default values for the remaining fields on all tabs.

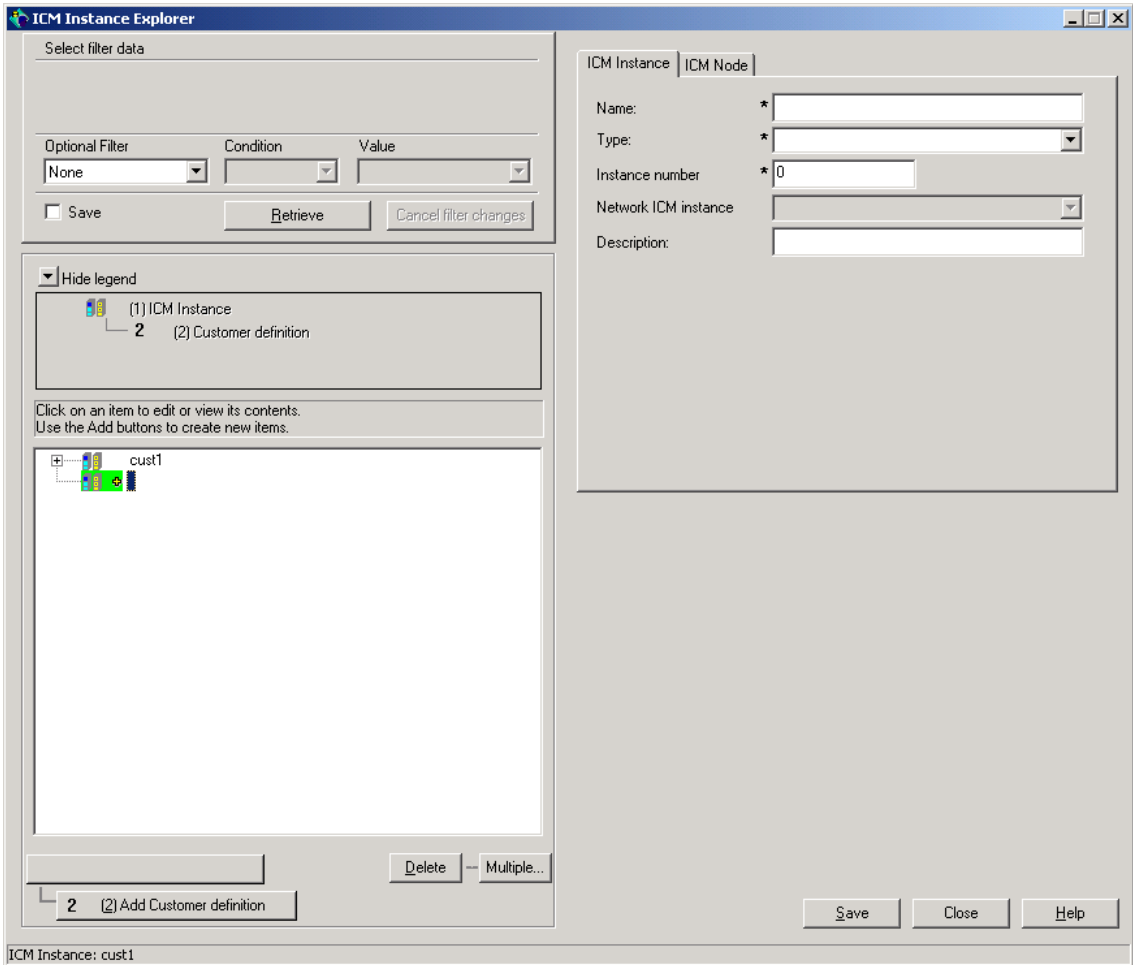
The screenshot shows the 'Application Gateway' configuration window. On the left, there are two radio buttons: 'Custom gateway' (unselected) and 'Remote ICM' (selected). To the right, there are four tabs: 'Timeout', 'Sessions', 'Heartbeats', and 'Errors'. The 'Timeout' tab is active, displaying three rows of configuration fields:

Field	Value	Unit
Request	500	milliseconds
Abandon	5000	milliseconds
Late	400	milliseconds

Configuring ICM Instances on the Client ICM

Perform the following steps *on the Client ICM system* to configure the associated Server ICM instance.

- Step 1** Start **Configuration Manager** from the **ICM Admin Workstation** group. The Configuration Manager window opens.
- Step 2** Open the ICM Instance List tool (**Enterprise > ICM Instance > ICM Instance Explorer**). The ICM Instance List window appears.
- Step 3** Click the **Retrieve** button.
- Step 4** Click the **Add ICM Instance** button.



- Step 5** Specify the following on the ICM Instance tab:
- **Name.** The enterprise name for the Client ICM instance, as used in Setup.
 - **Type.** (Drop-down list.) Select Network ICM.
 - **Instance Number.** The instance number as defined in Setup.
 - **Description.** (Optional.) Additional information about the ICM Instance.

- Step 6** Click **Save**.

- Step 7** Click the **Add ICM Instance** button.
- Step 8** Specify the following on the ICM Instance tab:
- **Name.** The enterprise name for the Server ICM instance, as used in Setup.
 - **Type.** (Drop-down list.) Select Customer ICM.
 - **Instance Number.** The instance number as defined in Setup.
 - **Network ICM Instance.** (Drop-down list.) The associated Client ICM instance configured in Step 5.
 - **Description.** (Optional.) Additional information about the ICM Instance.
- Step 9** Click **Save**.
-

Client Script

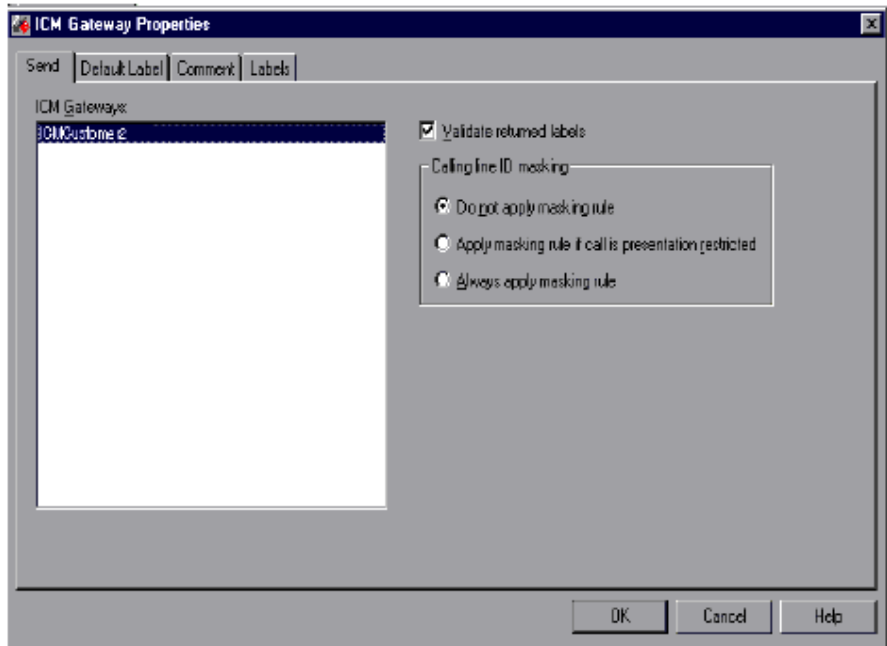
Typically, the client ICM originally receives the call and pre-routes it to an ACD. The call is then post-routed to a peripheral associated with the server system. The client determines the label associated with the server's peripheral by requesting the label from an ICM Gateway node in a script.

From the Script Editor, you can specify a local definition of the label that the ICM Gateway node returns. Perform the following steps:

- Step 1** Right click on the ICM Gateway node.



- 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 ICM system 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 (an expression the Server ICM CallRouter converts to a character string and returns to the routing client as a label), do not check this box.
- 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**.
-

Specifying a Fixed Local Port Number for the NetwrkCIC Process

In an ICM-to-ICM Gateway implementation, the NetwrkCIC process is a part of the Client ICM Router 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.

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

$$\text{Port number} = 40000 + (i * 40) + 33$$

where i is the instance number of an ICM instance. To find out the instance number, run the local setup program, select an instance and click the edit button. The “Edit Instance” dialog box will display the instance number.

For instance number 0, the port number will be 40033.

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

This dynamic port allocation is an issue for some ICM customers. You can *optionally* modify the NetwrkCIC process to use a specific port number. If a specific port number is provided in the registry of the Client ICM machine, the NetwrkCIC process will instead bind to that port number when communicating with the server INCRP NIC process.

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 this entry as a DWORD type.

This registry entry is not managed by the ICM Setup program. Therefore if you upgrade ICM software later, 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 ICM router service for it to take effect.

Server Configuration

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

Defining and Configuring the INCRP NIC

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

- Install the INCRP NIC, if you have not already done so
- Define the INCRP NIC using the NIC Explorer tool
- Add INCRP NIC information using ICM Setup

Installing the INCRP NIC

If you need to install the INCRP NIC, refer to the *ICM Installation Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for guidelines and procedures.

How to Define the INCRP NIC

-
- Step 1** Within the ICM Admin Workstation group, double-click AW Select. The Select ICM AW Service window appears.
 - Step 2** Select the instance you will be configuring.
 - Step 3** From the ICM Configuration Manager, invoke the NIC Explorer tool. The NIC Explorer window appears.
 - Step 4** In the Select filter data box, click **Retrieve**. This enables the Add NIC button.
 - 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.

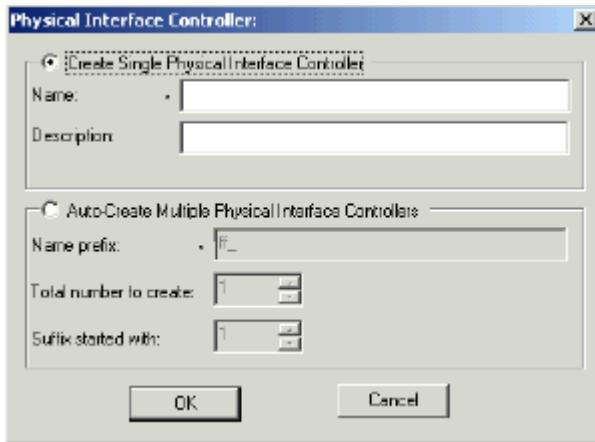
On the right of the tree window, tabbed fields also display the new NIC's and routing client's configuration information.
 - Step 6** Enter the following in the Logical Interface Controller tab fields:

- **Name.** A name that will serve as the NIC name. 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.
- **Client Type.**(Drop-down list.) The type of routing client serviced by the NIC. Select **INCRP**.

**Note**

Selecting a type of routing client automatically places that type's default values 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.
- 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:
- **Name.** A name that will serve as the NIC Routing Client name. 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.
 - **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.
 - **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.
 - **Timeout limit.** The maximum time, in seconds, for which the routing client waits for a response. This is the maximum time the routing client will tolerate consecutive response timeouts before it stops sending requests to the ICM software. If the routing client receives no responses from the ICM software within this limit, it terminates routing operation.

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

The screenshot shows a configuration window titled "Routing Client" with the following fields and values:

- Routing client ID: * 5000
- Name: * INCRP_1_RC
- Timeout threshold: * 1000
- Late threshold: * 500
- Timeout limit: * 10
- Default call type: NONE
- Configuration parameters: /customerid 1:5000
- Use DN/Label map:
- Client type: * CRSP
- Description: (empty)
- Network routing client: (empty)
- Default media routing domain: NONE

- 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.

Configuring the INCRP NIC in ICM Setup

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



Note For more information on router installation, refer to the ICM Installation Guide for Cisco ICM/IPCC Enterprise & Hosted Editions.

Perform the following steps.

Step 1 On the Router Component Properties screen, click the **INCRP** check box. The **Configure** button becomes enabled.

Step 2 Click **Configure**. The INCRP NIC Properties screen appears.

INCRP NIC Properties

Network Interface Controller properties

Physical controller: IP name: Handshake timeout:

Client ICM

Enable	Description	Client Id	AppGatewayId	Side A address	Side B address
<input checked="" type="checkbox"/>	First pair	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>
<input type="checkbox"/>	<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0.0.0.0"/>	<input type="text" value="0.0.0.0"/>

OK Cancel Help

ICM Setup supports a maximum of ten clients.

- Step 3** In the Network Interface Controller section of this screen, ensure that the value for Physical Controller matches the Physical Controller ID value that was assigned to the NIC when you defined the NIC (see the previous section, [“Installing the INCRP NIC”](#)).
- Step 4** In the Client ICM section of this screen, enter the following information for each client for which this system is a server.
- **Enable.** Check the **Enable** box to enable the client.
 - **Description.** Enter a description of the client (optional).
 - **Client ID.** Enter the same value that you entered in the NAM ID field on the Router Properties screen during client machine router setup (see the [“Identify the Client for the Server”](#) section on page 2-2).

- **Application Gateway ID.** Enter the application gateway ID. This **must** match the application gateway ID as shown on the Calls > Application Gateway All list screen (see the “[Create or Configure the Gateway Process on the Router](#)” section on page 2-4).
- **Side A Address, Side B Address.** If you are using the Signaling Access Network, enter the Signaling Access Network IP address for the client. Otherwise, enter the Public Network IP address.

Step 5 Click OK.

Setting Up 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, you must set up a label for the original routing client for 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), you must set up a label to the targets with the IXC. This 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 *ICM Configuration Guide for Cisco ICM Enterprise Edition*.

Modifying Routing Scripts

The server has 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.

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

Step 2 Right click on 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 *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for more information.



INDEX

B

Basic call flow [1-3](#)

C

Client ICM

 configuring [2-2](#)

 Router setup [2-2](#)

 script [2-12](#)

D

defining

 NIC [2-15](#)

F

Fault tolerance [1-9](#)

I

ICM Client

 mapping Routing Clients [2-18](#)

ICM Gateway node [2-12](#)

ICM Gateway process [1-4](#)

ICM-to-ICM Gateway

 basic call flow [1-3](#)

 business uses [1-2](#)

 post-routing call flow [1-7](#)

 pre-routing call flow [1-6](#)

 system requirements [1-12](#)

ICM-to-ICM link [1-4](#)

INCRP NIC [1-4](#)

Intelligent Network Call Routing
Protocol (INCRP) [1-4](#)

M

Mapping Client ICM and local
Routing Clients [2-18](#)

N

NAM

 configuration data [2-3](#)

Network Interface Controller (NIC)

 defining [2-15](#)

NIC

defining [2-15](#)

P

Physical controller ID

INCRP NIC [2-16](#)

Post-routing call flow [1-7](#)

Pre-routing call flow [1-6](#)

R

Router setup

Client ICM [2-2, 2-19](#)

Routing Clients, mapping [2-18](#)

S

Scripts

Client ICM [2-12](#)

Server ICM [2-21](#)

Server ICM

configuring [2-15](#)

script [2-21](#)

Signaling Access Network
(SAN) [1-12](#)

System requirements [1-12](#)