CISCO

# ICM Configuration Guide
# Cisco ICM Enterprise Edition
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Preface

Purpose

The manual shows how to use Cisco Intelligent Contact Management (ICM) configuration tools to configure and maintain the ICM database. For how to create and manage ICM scripts, see the ICM Scripting and Media Routing Guide for Cisco ICM\IPCC Enterprise & Hosted Editions. For specific information on an ACD or NIC, see the appropriate Cisco ICM software ACD or NIC supplement documentation or ask your customer representative for that documentation

Audience

This document is intended for Cisco ICM system administrators. A system administrator should have a general understanding of call center operations and management and specific information about the call centers and carrier networks connected to Cisco ICM software.

Organization

Chapter	Description
Chapter 1, "Overview"	Describes the Cisco ICM system and introduces the Admin Workstation Group set of tools.
Chapter 2, "How Routing Works"	Describes how ICM software interacts with the interexchange carrier (IXC) signaling network and your call centers.
Chapter 3, "The ICM Configuration Manager"	Describes the ICM Configuration Manager tool and how to use it to define and maintain information about your enterprise in the ICM database.
Chapter 4, "Configuring Multiple Records at a Time"	Explains how to configure multiple records at a time.

Chapter	Description
Chapter 5, "Configuring Routing Clients"	Explains how to define your routing clients.
Chapter 6, "Configuring Peripherals and Trunk Groups"	Explains how to define your peripherals, trunk groups, and dialed numbers.
Chapter 7, "Configuring Skill Targets"	Explains how to define the services, skill groups, and agents associated with each peripheral.
Chapter 8, "Configuring Routes and Routing Targets"	Explains how to define the routes and targets within your system.
Chapter 9, "Configuring ICM Software for Integrated Applications"	Describes how to configure multimedia applications in ICM software.
Chapter 10, "Configuring ICM Variables"	Describes the ECC and user variables and how to define and use them.
Chapter 11, "Network IVRs/VRUs"	This chapter discusses the Network IVR/VRU feature that lets you divert a call to an interactive voice response unit for additional processing.

Related Documentation

Related Documentation

Conventions

This manual uses the following conventions.

Format	Example
Boldface type is used for user entries, keys, buttons, and folder and submenu names.	Start the **ICM Configuration Manager** and select **Tools List Tools Expanded Call Variable List**.
Italic type indicates one of the following: • A newly introduced term • For emphasis • A generic syntax item that you must replace with a specific value • A title of a publication	Here are a few Examples • A *skill group* is a collection of agents who share similar skills. • *Do not use* the numerical naming convention that is used in the predefined templates (for example, **persvc01**). • **IF** (*condition, true-value, false-value*) • For more information, see the *Database Schema Handbook for Cisco ICM/IPCC Enterprise & Hosted Editions.*
An arrow (>) indicates an item from a pull-down menu.	The Save command from the File menu is referenced as **File > Save.**

Other Publications

For additional information about Cisco Intelligent Contact Management (ICM) software, see the **Ciscos web site** (http://www.cisco.com)Cisco web site listing ICM documentation.

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• 1 877 228-7302 1 408 525-6532

• 1 877 228-7302 1 408 525-6532

Note: 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.

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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.

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installation, or configuration. There is little or no effect on your business operations.

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Chapter 1

Overview

This chapter provides the following information:

- An introduction to the Intelligent Contact Management (ICM) software and its components

- An introduction to the ICM Admin Workstation tools

- A summary of system management tasks

This section contains the following topics:

ICM Software

Cisco Intelligent Contact Management (ICM) software provides enterprise-wide distribution of multi-channel contacts (inbound/outbound telephone calls, Web collaboration requests, e-mail messages, chat requests) across geographically separated contact centers. ICM software is an open standards based solution whose capabilities include routing, queuing, monitoring, and fault tolerance. ICM software forms the basis for the Cisco Customer Contact Suite.

ICM software functions across environments as well as across channels.

ICM software functions in the older environment of telephone calls delivered over TDM line, of hardware ACDs and IVRs, and of call centers centralized around the hardware. ICM software can route calls for a single 800 number or for several different numbers. ICM software reads information about each incoming call from the public network, determines the best destination

for that call, and returns information to the public network instructing it where to route the call. This is known as *call-by-call routing*.

ICM software makes routing decisions by executing scripts that can easily be modified. These scripts can use real-time information about activity at the contact centers to find the destination best able to handle the call. You can monitor how the system is handling calls and can make changes to the scripts when needed.

ICM software functions in the newer environment of multi-channel contacts delivered through IP connections, of software ACDs and IVRs, and of contact centers that can be as decentralized as the Internet or as centralized as business practices—not hardware necessities—require them to be.

And ICM software functions in the mixed transition environment that involves all of the above.

Components

The ICM software consists of several components.

- *The Central Controller* includes the computer that runs the Call Management process which makes the actual routing decisions and a central database that stores information about the entire system. The Central Controller consists of one or more computers.

- *The Network Interface Controller* (NIC) connects to the IXC signaling network. ICM software both receives routing requests and returns responses through the NIC.

- *A Peripheral Gateway (PG)* is typically located in each contact center and is connected to each peripheral (ACD, PBX, IVR, or Call Manager). The PG reads information from the peripheral, converts it into the format used by ICM software, and forwards it to the Central Controller.

- *An ICM Admin Workstation* can be located anywhere on the wide area network. The ICM Admin Workstation allows you to monitor the activity of the system or a part of the system. It also allows you to update the routing scripts or ICM configuration data.

  The Figure "ICM Software Connections" (page 11), shows the connections within ICM software and between ICM software and the IXC signaling network and contact center peripherals.

Figure 1: ICM Software Connections
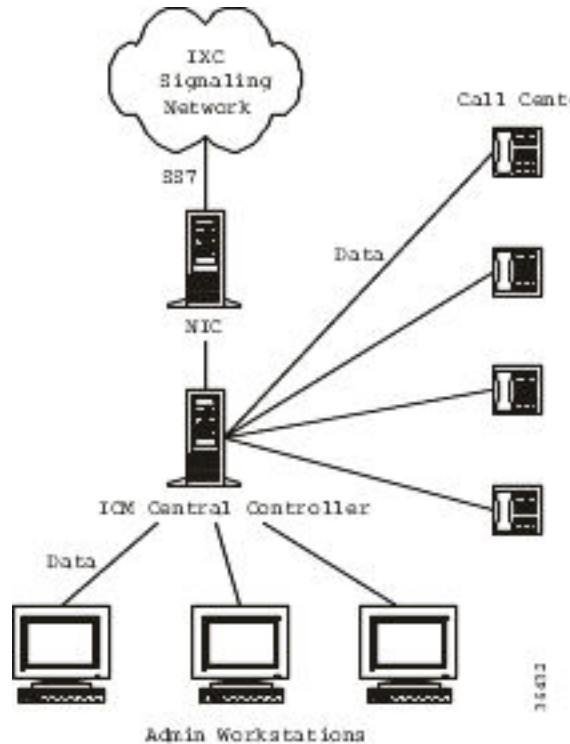
The following subsections give further information about the connections.

Central Controller to IXC Signaling Network

The NIC provides a two-way interface between the Central Controller and the telephone signaling network. This allows ICM software to make routing decisions for each call before the IXC delivers it to a contact center. This is called *Pre-Routing®*.

The NIC reads call routing requests from the signaling network and forwards them to the Central Controller for processing. Each request includes the number dialed, the caller's billing telephone number, and any caller-entered digits (CED) received by the network.

When the Central Controller has determined a destination for the call, it returns the routing information to the NIC. The NIC then passes the information to the IXC signaling network.

The ICM software serves as a *routing server* for the IXC signaling network while the IXC serves as a *routing client* to the ICM software.

Central Controller to Peripheral Gateways

Each contact center has a Peripheral Gateway (PG)to read information from the site's phone system and relay that information to the Central Controller. The PG reads information from the local peripheral (an ACD, PBX, IVR, or Call Manager). This includes information about agent availability, maximum and average caller wait times, and so on. The Peripheral Gateway then forwards the information to the Central Controller.

This information serves two purposes within the Central Controller:

- The router can use this information to determine where to route incoming calls.

- Users of ICM Admin Workstations can use this to monitor the performance of part or all of the system.

  Optionally, the ICM software can make routing decisions in response to requests from each contact center (for example, for intelligent agent-to-agent transfers or transfers from a voice response unit). This is called *Post-Routing®*. If Post-Routing is enabled, then Peripheral Gateways can also pass routing requests to the Central Controller and receive routes in return. In this configuration, the ACD, PBX, or Call Manager serves as a routing client to the ICM software.

Central Controller to ICM Admin Workstations

Users at ICM Admin Workstations can read information from the Central Controller and can send the Central Controller changes to the system configuration or to the routing scripts.

The Central Controller includes a database that stores both information collected from the Peripheral Gateways and information that the Central Controller has accumulated about calls it has routed. You can monitor this information to measure the performance of the system as a whole or of a specific site or group.

ICM Routing Targets

ICM software can route a call to a carrier resource such as an announcement or to a target at a peripheral. A peripheral, such as an ACD, PBX, or Call Manager dispatches calls within a contact center.

Peripheral Targets

Depending on the capabilities of the peripheral and the type of routing instructions you use, ICM software might choose a specific agent at the peripheral to handle the call. In that case, the peripheral merely dispatches the call to the chosen agent. In other cases, ICM software might specify only a group of agents or a type of service to be provided to the caller.

ICM software can route to three types of peripheral targets:

- **Agent.** A specific individual who receives calls through the peripheral. (ICM software, however, cannot guarantee that the specific agent will be available when the call arrives.) The Queue to Agent node allows the targeting of a task (the work performed by an agent) to

a script-specified agent. This node enables an agent to receive and operate on more than one task at a time.

- **Skill group.** A group of agents who share a common set of skills and who can, therefore, all handle specific types of calls. Each skill group contains one or more agents. If supported by the peripheral, each agent can be a member of more than one skill group.

- **Service.** A type of processing the caller requires. For example, a peripheral might have services defined for sales, technical support, or opening new accounts. Each service has one or more skill groups whose members can provide the service. Each skill group can be associated with more than one service.

In the last two cases, the peripheral must choose a specific agent within the group who can provide the service. In each case, the peripheral plays a key role in completing the routing that ICM software has determined. Therefore, ICM software and the peripheral must be set up to complement each other. They must have the same understanding of the agents, skill groups, and services available at each site.

For specific information about how ICM software routes a call and its coordination with peripherals, see the section on "How Routing Works." (page 21)

Scheduled Targets

Some routing clients also support *scheduled targets.* A scheduled target is a group of agents not associated with a Peripheral Gateway. ICM software cannot monitor the group directly. Instead it relies on a periodic schedule to determine the number of agents logged on to the group. The routing client informs ICM software when a call to the group ends. Since ICM software knows how many calls it has routed to the group, it can determine the number of calls in progress. Based on this and the schedule, ICM software can determine whether the target can handle an additional call.

Peripherals

Different peripheral manufacturers use different terminology for agents, skill groups, and services. For example, a service might be called an application, split, or gate. A skill group might be called an agent group or hunt group.

The Table "ICM Software and Peripheral-Specific Terminology" (page 13) , summarizes the mapping of ICM terminology to ACD-specific terminology.

Table 1: ICM Software and Peripheral-Specific Terminology

ICM Term	Peripheral-Specific Equivalent
Agent	Agent
Peripheral target	**Alcatel 400: DNIS** **Ericsson ACP1000**: Trunk group or queue

Peripherals

ICM Term	Peripheral-Specific Equivalent
	NEC NEAX 2400, NEAX 7400, APEX 7600: Pilot number **Nortel DMS-100, DMS-500, and SL-100:** Primary or Supplementary **ACD DN** **Rockwell Galaxy:** DNIS Siemens Hicom 300/E: Destination **ACD** **Others:** Trunk group and **DNIS**[1]
Service	**Alcatel 400:** Pilot **Aspect Contact Center**: Application **Ericsson ACP1000:** Trunk group/called number **Avaya DEFINITY ECS**: Vector Directory Number (VDN) **NEC NEAX 2400, NEAX 7400, APEX 7600:** CCV number **Nortel DMS-100, DMS-500, and SL-100:** Primary or Supplementary ACD DN **Nortel Meridian 1:** ACD Directory Number (ACD DN) or ACD Controlled Directory Number (ACD CDN) [2] **Rockwell Galaxy:** Gate **Rockwell Spectrum:** Application **Siemens Hicom 300/E:** ACD Routing Table (ART) **Siemens Rolm 9005:** Pilot number for ACD routing table
Skill group	**Alcatel 400:** Agent PG **Aspect Contact Center:** Agent group **Ericsson ACP1000**: Agent group **Avaya DEFINITY ECS:** Skill group or hunt group [3] **NEC NEAX 2400, NEAX 7400, APEX 7600:** Split number **Nortel DMS-100, DMS-500, and SL-100:** ACD Group **Nortel Meridian 1: ACD DN** **Others:** Trunk group and **DNIS**
Trunk	**Alcatel 400:** None

ICM Term	Peripheral-Specific Equivalent
	Aspect Contact Center: Instrument [4]
	Nortel DMS-100, DMS-500, and SL-100: None
	Nortel Meridian 1: Member of route
	Others: Trunk
Trunk group	**Alcatel 400**: None
	Nortel DMS-100, DMS-500, and SL-100: None [5]
	Nortel Meridian 1: Route
	Others: Trunk group

1. The Aspect contact center maps a trunk group and DNIS to a Call Control Table (CCT). The DEFINITY ECS uses the trunk group and DNIS for incoming calls.

2. Without Customer Controlled Routing (CCR), one or more services map to an ACD DN. With CCR, one or more services map to an ACD CDN.

3. If an ECS is running in Expert Agent Selection (EAS) mode, a skill group maps to an ECS skill group; otherwise, it maps to a hunt group.

4. A contact center instrument can be a trunk, a teleset, or a workstation.

5. Define one network trunk group and one associated trunk group for each DMS-100, DMS-500, and SL-100.

Note: Multi-channel applications function as application instances. See Chapter 9, "Configuring ICM Software for Integrated Applications," (page 167) for more information about these applications.

In some cases the ICM concept is very close to the corresponding ACD feature. For example, the ICM concept of a service is very similar to the Aspect concept of an application. In other cases, the ACD does not have a feature that maps exactly to the ICM feature. In these cases, you might choose a different mapping than shown in the Table "ICM Software and Peripheral-Specific Terminology (page 13)" . For example, although it might make sense to associate each VDN on a DEFINITY ECS with an ICM service, you could also map each hunt group to a service.

On a Avaya DEFINITY ECS running in EAS mode and on Rockwell Galaxy ACDs, each skill group has primary and secondary subgroups. ICM software emulates this by automatically creating additional skill groups for these peripheral types. For example, when you configure the Sales skill group for a Galaxy ACD, ICM software automatically creates the Sales.pri and Sales.sec skill groups in addition to the base Sales group. In monitoring and scripts, you can reference the .pri and .sec skill groups directly or you can refer to the base skill group.

Some ACDs have limitations that prevent them from making full use of specific features of ICM software.

See the *Pre installation Planning Guide for Cisco ICM Enterprise Edition,* for the current list of supported peripherals with any peripheral-specific limitations.

The ICM Admin Workstation

An ICM Admin Workstation provides tools and resources for supervisors, system administrators, and system managers.

You can use these resources to:

- Initialize and update configuration information.

- Write and update routing scripts and administrative scripts.

- Monitor the execution of scripts.

  You can also monitor the performance of skill groups, services, routes, and trunks through the ICM Admin Workstation.

The ICM Admin Workstation Group

Each ICM Admin Workstation contains the ICM Admin Workstation group.

The following tools are available in the group:

- **AW Select.** Lets you stop and start the services needed to run ICM Admin Workstation applications.

- **Call Tracer.** Lets you send test calls to ICM software and see how they are processed and the target chosen.

- **Check Routes.** Lets you validate the configuration of routes referenced by a script.

- **Configuration Manager.** Lets you set up and maintain your environment. The configuration includes the hardware within the system, the services provided by the system, and the agents who provide them.

- **Glossary**. Defines terms related to ICM software.

- **Initialize Local Database.** Lets you copy current information from ICM software's central database to the local database on the ICM Admin Workstation. (Normally, this is done automatically.)

- **Lock Admin.** Lets you check or change the status of locks in the ICM software central database.

- **Router Log Viewer.** Displays information about calls processed by ICM software and any errors encountered in processing them.

- **Scheduled Target Manager.** Lets you configure and manage scheduled targets.

- **Schema Help.** Describes the structure of the ICM databases.

- **Script Editor.** Lets you create, modify, and schedule routing scripts. ICM software executes these scripts to determine where to route each call.

- **Service Control.** Lets you stop and start ICM-related services.

  Note: In order to conserve system resources, minimize all ICM process windows prior to configuring your system.

- **Setup**. Lets you modify ICM setup parameters.

For more information on InfoMaker, see the *Template Design Guide Using InfoMaker for Cisco IPCC Enterprise & Hosted Editons.*

Central and Local Databases

The Central Controller includes a database that stores the system configuration information and routing scripts. At least one ICM Admin Workstation (referred to as a distributor AW) at each site has its own local database that contains a copy of data from the central database. Other ICM Admin Workstations at the site can read data from the distributor AW's local database. ICM software's UpdateAW background process automatically keeps the local database synchronized with the central database.

When you save a change to configuration data or scripts, ICM software immediately applies that change to the central database. The UpdateAW process copies the change to all local databases.

Lock Administration

To modify a script, you must first obtain a lock on that script. This prevents other users from changing the same script until you have saved your changes. When you edit a script, the Script Editor automatically acquires a script lock for you. The script lock applies to only one script.

Optionally, you can obtain a master lock that prevents other users from making any changes to scripts or configuration data. The master lock is for backwards compatibility only. If a user holds the master lock, only that user can make changes to any scripts or configuration data.

How to acquire and release a lock

To acquire and release a lock, follow these steps:

Step 1 Start **Lock Admin** from the **ICM Admin Workstation** group. The Lock Admin dialog box appears, showing the status of all locks.

Step 2 Select the lock by clicking on the **Type** column of the row describing the lock.

Step 3 Click **Release**.

Step 4 Click **Close** when done.

Configuration Management

ICM configuration information is permanently stored in the Central Controller database. ICM software configuration consists of hardware entities, call targets, announcements, routes, dialed numbers, and regions. Use the ICM Configuration Manager tools to create and modify configuration data. When you apply a change in the ICM Configuration Manager, it is immediately applied to the central database.

To get started setting up and maintaining your configuration, see the section

Script Management

After you have set up your configuration, you can write routing scripts and administrative scripts:

- *A routing script* processes a call routing request from a routing client and determines the best destination for that call. ICM software then passes a label associated with the destination back to the routing client.

- *An administrative script* runs periodically to perform a task, such as setting variables.

Use the Script Editor to create, maintain, and monitor scripts.

You can set up different routing scripts to execute for different types of tasks. You can define call types in terms of the telephone number the caller dialed, the number the caller is calling from, and additional digits entered by the caller. For each call type, you can schedule different routing scripts to execute on different days or at different times of the day. The Figure " Sample Routing Script" shows a sample routing script.

Figure 2: Sample Routing Script
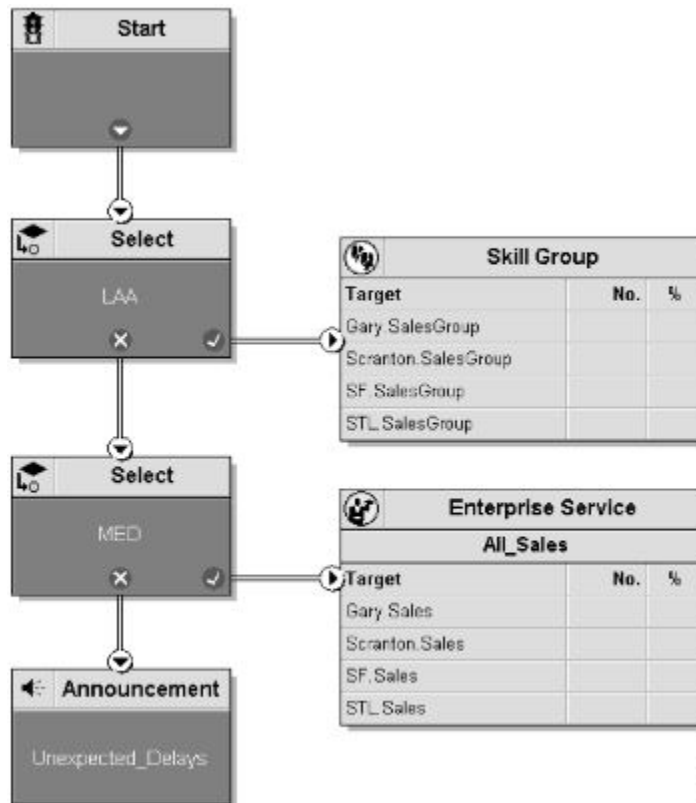
A routing script typically examines several targets and applies selection rules to find an available qualified agent or a target with the shortest expected delay. You can use any of several predefined selection rules or you can set up your own selection criteria.

Within the Script Editor, you can open a script for browsing, monitoring, or editing. When you open a script for editing, the Script Editor automatically obtains the lock for that script.

To get started using the Script Editor to create or maintain scripts, see the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions.*

Chapter 2

How Routing Works

This chapter describes in detail the process of routing a call.

It includes:

- An overview of the routing process

- A description of routing requests and routing clients

- Information about how calls arrive at targets

- An overview of translation routes

- The importance of timeouts and thresholds

Understanding this process will help you set up the configuration of your ICM software and create effective scripts.

This section contains the following topics:

The Routing Process

To properly route calls, three independent systems must work together:

- The routing client

- ICM software

- The peripheral that ultimately receives the call

The *routing client* requests a route from ICM software, receives a response, and delivers the call to the specified destination.

ICM software receives routing requests and determines the appropriate destination for the call. The destination is an announcement (which is played by the routing client), a scheduled target, or a specific target at a peripheral (represented by a trunk group and DNIS).

A *peripheral* is a switch at a call center, such as an ACD, a PBX, or Call Manager. The peripheral completes the routing by dispatching the call to the specific target determined by ICM software.

Steps in the routing process

The process of routing a call consists of the following steps:

Step 1   A routing client requests a route from ICM software.

Step 2   ICM software, using information supplied by the routing client, categorizes the request as a specific call type.

Step 3   ICM software executes a routing script scheduled for the call type to find a destination for the call. The destination can be a routing label, an announcement, or a skill target: a service, skill group, or agent. (If the script fails to find a destination, ICM software uses a default destination based on the dialed number.)

Step 4

If:	Then:
the destination is an announcement, scheduled target, or skill target	ICM software maps that destination to a routing label.

A routing label is a character string value that the routing client maps to a destination trunk group and, optionally, a Dialed Number Identification Service (DNIS) value for the call.

Step 5   ICM software passes the routing label back to the routing client.

Step 6   The routing client interprets the label to find the destination.

Step 7   The routing client dispatches the call to the destination (with the appropriate DNIS value, if any).

Step 8

If:	Then:
the call is sent to a peripheral	the peripheral must determine the specific target for which the call is intended

The peripheral typically makes this determination based on the trunk group on which the call arrived and, optionally, the DNIS value sent with the call. The peripheral then completes the routing by dispatching the call appropriately.

The following sections describe the process in detail.

Routing Requests

ICM software receives T, MCI, or Sprint) or the specific type of the peripheral (for example, VRU or a specific type of ACD).

Routing clients send messages to ICM software. One type of message is a route request. In this case, given a call, the routing client asks ICM software for a destination, or route, for that call. If the routing client is an IXC, this is the only type of message that it sends.

Routing requests are of two types: *Pre-Routing* and *Post-Routing*. A Pre-Routing request is sent by an IXC to determine the initial destination for a call. A Post-Routing request is sent by the peripheral that receives the call to either refine the original route or to redirect the call.

A routing request includes the following information about the call to be routed:

- **Dialed Number (DN)**. The number the caller dialed.

- **Calling Line ID (CLID)**. The caller's billing telephone number. This value is also referred to as Automatic Number Identification or ANI.

- **Caller-Entered Digits (CED)**. Digits the caller entered on a touch-tone phone in response to prompts.

Post-Routing messages vary depending on the type of the peripheral.

Targets

A target is the destination for a call. The target can be either a label, an announcement defined by the routing client, or a target at a peripheral.

On a high level, a target at the peripheral is a service, skill group, or individual agent that ICM software selects to handle the call. This is called the *skill target*. Regardless of the specific skill

target, every call routed by ICM software must also be associated with a service. The combination of a skill target and a service is a *route*.

On a lower level, a target represents a network trunk group at the peripheral and, optionally, a Dialed Number Identification Service (DNIS) value. The routing client uses this type of target, called a *peripheral target*, to route the call.

On a still lower level, each peripheral target or announcement maps to a routing label. A *label* is a character string that the routing client associates with a specific peripheral target or announcement.

The Figure (page 24) shows the relationships among skill targets, routes, peripheral targets, announcements, and labels.

Figure 3: Targets, routes and labels
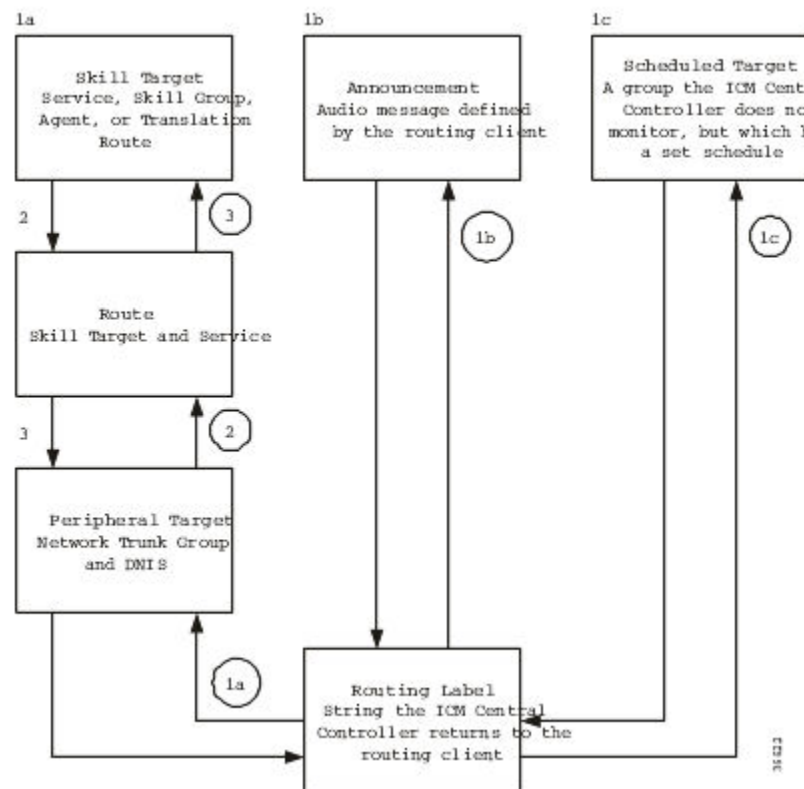
ICM software works from the top to the bottom of the Figure Targets, routes and labels:

1. A routing script determines a destination for the call.

If:	Then:
the destination is a routing label	ICM software can return that value directly to the routing client.

Otherwise, the destination is one of the following:

  − A *skill target* to receive the call

      –   An *announcement* to be played

      –   A *scheduled target* to receive the call

2. If the destination is a skill target, that skill target has an associated *route*.

3. ICM software uses the route to find an associated *peripheral target* supported by the routing client.

4. The peripheral target is associated with a *label*. ICM software returns that label to the routing client. If the destination is an announcement, ICM software only needs to find the label associated with that announcement and return the label to the routing client.

The routing client's processing depends on the type of the label. Some labels instruct the routing client to take a special action: playing a busy signal for the caller, playing an unanswered ring for the caller, or making a special query.

For normal labels, the routing client converts the label to an announcement, scheduled target, or peripheral target by working up from the bottom of the Figure "Targets, routes and labels" (page 24).

1. The routing client receives a label from ICM software in response to its route request.

    It translates that label into one of the following:

      –   A peripheral target

      –   An announcement

      –   A scheduled target

      –   An unrouted task that gets routed to a local agent

If:	Then:
the result is an announcement	it plays the announcement for the caller.
the result is a scheduled target	it delivers the call to that target.

2.

If:	Then:
the result is a peripheral target	the routing client delivers the call to the specified network trunk group at the peripheral and sends the specified DNIS value, if any, with it.

3. The peripheral itself must then recognize the network trunk group and DNIS for the call as it arrives and determine the associated *service* and *skill target*. The peripheral then completes the process by locating the appropriate agent to handle the call.

ICM System Processing

The figure "ICM Route Request Processing" (page 26) summarizes how ICM software processes a route request.

Figure 4: ICM Route Request Processing
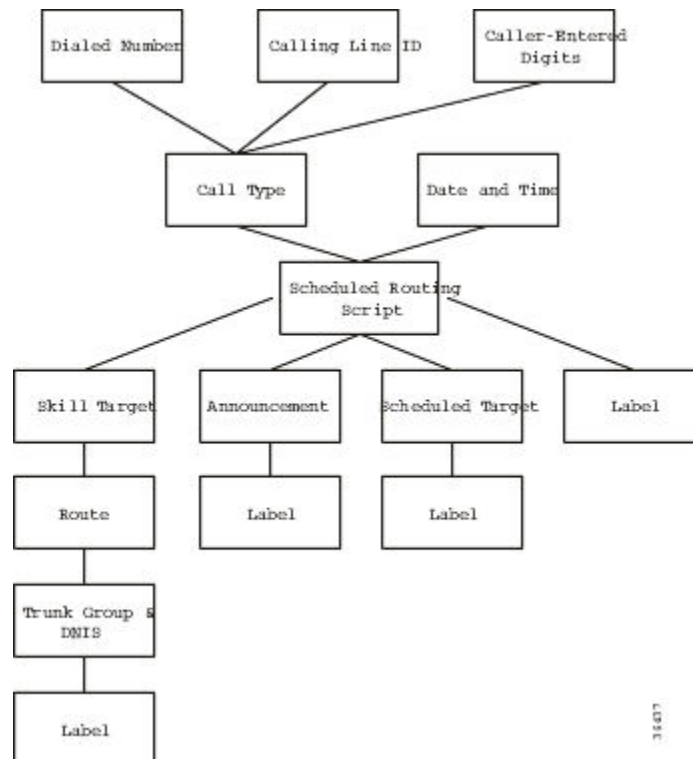
The following subsections describe this processing.

Determine call type

When ICM software receives a route request for a call, it first determines the call type of the call. A call type is a category of incoming ICM routable tasks. Each call type has a schedule that determines which routing script or scripts are active for that call type at any time.

There are two classes of call types:

- Voice (phone calls)

- Non-voice (for example, e-mail and text chat)

Voice call types are categorized by the dialed number (DN), the caller-entered digits (CED), and the calling line ID (CLID).

Non-voice call types are categorized by the Script Type Selector, Application String 1, and Application String 2.

In either case, the last two categories of the call type are optional. For voice call types, the caller-entered digits and the calling line ID are optional, depending on the call. For non-voice call types, Application String 1 and Application String 2 are optional, depending on the application.

While chat sessions and blended collaboration are different from e-mail and also require call variables, the call variables are not part of the call type definition.

For example, you might define three call types to correspond to three sales regions within the country. You might have a network prompt that lets the caller enter 1 for sales, 2 for support, and 3 for information. If a call arrives for the dialed number 800.486.0029, with a CLID from the 403 (San Jose region) area code, and the caller enters 1 (sales) in response to the prompt, that call is classified as Western Sales.

If another call arrives with the same dialed number, but with a CLID from the 212 (New York City) area code, and the caller-entered digit 1, that call is classified as Eastern Sales.

You can define a general default call type and a specific default call type for each routing client. If the call qualifiers do not map to a specific call type, ICM software uses a default call type defined for the routing client. If no default call type is defined for the routing client, ICM software uses the general default call type.

Execute script

Each call type has specific routing scripts scheduled for different times of day and different days of the year. ICM software finds the script currently scheduled for the call type and executes it. If that script fails to find a suitable destination (that is, a label, announcement, or skill target) for the call, then ICM software uses a default target associated with the Dialed Number value.

If ICM software finds an announcement or scheduled target for the call, then it can immediately resolve that to a label to return to the routing client. If ICM software finds a skill target for the call, it must perform a few extra steps before it finds a label.

Determine route

If ICM software finds a skill target for the call, that target has an associated route. You specify the route when you set up the target within the routing script. A route represents the combination of a skill target and a service. That is, a route represents the destination for a call and the type of service to be provided to the caller. Every call routed to a peripheral must have an associated service.

For example, the skill target for a call might be the skill group *Denver.PostSales* and the associated service might be *Denver.TechSupport*. Another call might also be routed to the *Denver.PostSales* group with the associated service *Denver.Upgrades*.

Note: If the destination is itself a service, for example *Chicago.Sales*, then the associated service should also be *Chicago.Sales*. To associate a service skill target with a route for a different service would skew the statistics for those services.

Determine trunk group and DNIS

Once it has determined a route for a call, ICM software finds an associated peripheral target (trunk group and DNIS). It is possible to have several peripheral targets associated with the same route, but typically only one of those targets is valid for the routing client. For example, if you have switched access lines, two IXCs could direct calls to the same trunk group and DNIS, but each requires a different label value for that target. Therefore, you need to define two separate peripheral targets for the route. If more than one peripheral target is associated with the route, ICM software chooses the first peripheral target that maps to a valid label for the routing client.

Determine label

Each peripheral target, scheduled target, or announcement maps to one or more labels. ICM software finds the first label that is valid for the routing client and dialed number and returns that label to the routing client. It is then up to the routing client to interpret the label.

Default label

It is possible that the ICM software might fail to find a call type for a route request. Also, the ICM software may execute the script currently scheduled for a call type and fail to find a destination for the call. In these cases, it uses a default label that is defined for the dialed number. If no default label is defined for the dialed number, the ICM software returns an error to the routing client.

The routing client itself also has some default action defined. When you set up each routing client you can specify the maximum time that client can wait for a response to a routing request. If ICM software has not returned a destination for the call before the time limit is reached, or if ICM software returns an error, the routing client performs its own default action.

For more information on timeout limits, see the "Timeouts and Thresholds (page 21)" section.

Routing Client's Processing

The routing client begins by requesting a route for a call from ICM software. ICM software processes the request as described in the preceding section and returns a label to the routing client.

The routing client has its own internal mappings for labels to announcements, scheduled targets, and peripheral targets.

It uses these mappings to interpret the label from ICM software:

- **Busy**. Routing client plays a busy signal for the caller.

- **Ring**. Routing client plays an unanswered ring for the caller.

- **Normal** and the label maps to an **announcement**. Routing client plays the announcement for the caller.

- **Normal** and the label maps to a **scheduled target**. Routing client delivers the call to that target.

- **Normal** or **DNIS Override** and the label maps to a **peripheral target** (that is, a trunk group and a DNIS). Routing client delivers the call and the specified DNIS value to that trunk group. The peripheral then has responsibility for dispatching the call to the appropriate skill target.

The Peripheral's Processing

When a peripheral receives a call, it determines the trunk group on which the call arrived and the DNIS value, if any, associated with it. The peripheral must be programmed to map these values to the same service and skill target determined by ICM software.

The peripheral, acting as a routing client, can also send a routing request to ICM software.

Translation Routes

Sometimes you want to send additional information along with the call to a skill target. Translation routes allow you to do that.

A translation route is a temporary destination for a call. When ICM software returns a translation route label to the routing client, it also sends a message directly to the Peripheral Gateway (PG) at the targeted peripheral. This message alerts the PG that a call will be arriving that requires route translation.

The message contains the following information:

- The trunk group on which the call will arrive and the DNIS value associated with it.

- A label to be used by the PG to determine the ultimate skill target of the call. This is a label that the PG can interpret to find the correct destination.

- Instructions for further processing to be performed by the PG. This further processing might include, for example, looking up an account number in a database.

When the peripheral sees the call arrive on the specified trunk group and with the specified DNIS value, it passes this information to the PG. The PG then combines it with the information it has received from ICM software. It then sends the call along with this information to the skill target specified by the label it received. At the same time, the peripheral might, for example,

send a message to a host computer that controls the display on the agent's workstation. This allows data, such as the caller's account information, to be displayed on the screen when the call arrives. The PG coordinates communication among the network, the peripheral, and the computer application that controls the display.

To set up a translation route, you must do the following:

*   Set up a translation route associated with the peripheral. You do not need a separate translation route for each possible skill target at the site, but you need at least one for each peripheral that performs translation routing.

*   Set up one or more routes and associated peripheral targets for the translation route. Typically, all peripheral targets for a translation route refer to the same trunk group, but with different DNIS values.

*   Set up a label for the original routing client for the 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.

*   For each peripheral target that you want to be able to ultimately access via a translation route, set a label with the peripheral as the routing client. For example, you might want to be able to send calls to the Atlanta.Support skill group through a translation route. To do this, you must configure a label for that skill group with the Atlanta peripheral as the routing client. This allows the peripheral to determine the ultimate destination for the call.

*   To display data on the agent's workstation when the call arrives, you must configure the peripheral to inform the PG which agent is receiving the call.

Timeouts and Thresholds

In setting up your configuration, you need to specify several timeout and timing threshold values.

For routing clients, you must specify the maximum time ICM software can spend before responding to each routing request. You must also specify the maximum time for the routing client to wait for a response before it stops sending new requests to ICM software.

For each service at a peripheral, you must specify your goal for the maximum time a caller must wait before the call is answered. ICM software uses this value in calculating the service level.

You can specify how to count abandoned calls in the service level calculation. You can also specify the minimum time a call must be in the queue before it can be considered abandoned.

For specific information about configuring routing clients, peripherals, and services, see Chapters 4 through 7.

Routing Clients

In some cases, a routing client might be unable to receive routing responses from ICM software. Sometimes this affects only a single request, but other times the routing client loses contact with ICM software for longer periods. You can specify the amount of time for the routing client to wait before giving up on a single request and the amount of time to wait before it stops sending any requests to ICM software.

Timeout Threshold

The T ICP connections, set the timeout threshold to 1500 milliseconds.

Late Threshold

You can specify a second threshold, the T ICP connections, set the late threshold to 500 milliseconds.

Timeout Limit

ICM software is designed to be a highly reliable system. Distributed duplicated hardware and software fault-tolerance ensure very high availability. However, the NIC uses a timeout limit to provide a safety net to ensure that your calls continue to be routed even if ICM software were to become completely unavailable. If the routing client receives no responses from ICM software within the timeout limit (and a minimum number of requests have been made), it stops sending requests to ICM software. You can set the minimum number of requests that must be made (the consecutive timeout limit) when you set up the NIC software. The default is 10.

When a routing request first exceeds the timeout threshold, the NIC for the routing client starts a timer. If the timer reaches the timeout limit before the routing client receives any on-time routing responses from ICM software, then the NIC tells the routing client to stop sending routing requests to ICM software. An on-time response is a response within the timeout threshold. You can specify the timeout limit in seconds. For example, for AT&T ICP connections, set the timeout limit to 10 seconds.

Abandoned Call Wait Time

When a call is delivered to a peripheral, the caller might be placed in a queue waiting for an agent to become available. Normally, if the caller hangs up before being connected with an agent, the call is considered abandoned. A high number of abandoned calls might mean that you are losing business because callers are being made to wait too long.

However, if a caller hangs up almost immediately after being placed in a queue, you might not want to count that as an abandoned call. In these cases, caller impatience or excessive queue times are not the problem; the caller probably hung up for another reason. Tracking these as abandoned calls can be misleading.

Therefore, you can specify a minimum amount of time that a caller must wait before the call can be considered abandoned. This value is called the *abandoned call wait time*. You can set this value for each peripheral. A typical value might be 10 seconds. This would mean that if the caller hangs up in the first 10 seconds, the call is not considered abandoned, nor is it counted as a call offered. If the caller waits at least 10 seconds and then hangs up, the call is counted as both offered and abandoned. (In the real-time data, a call is counted as offered as soon as it arrives at the peripheral. Therefore, a short call might appear as a call offered in the real-time data, but is not counted as offered in the historical data.)

Service Level

Service level is a measure of how well you are meeting your goals for answering calls. For each service, you can set a goal for the maximum time a caller spends in a queue before being connected to an agent. This value is the *service level threshold*. The service level is usually expressed as the percentage of calls that are answered within the threshold.

To calculate the service level for a period of time, ICM software determines the number of calls that have had a service level event within that period.

A service level event occurs when one of three things happens to a call:

- It is answered within the service level threshold.

- It is abandoned within the service level threshold.

- It reaches the service level threshold without being answered or abandoned.

All calls that have a service level event within a specified period are considered as service level calls offered for that period. This differs from a simple call's offered value, which counts each call at the time it is first offered to the service.

Service Level Threshold

The service level threshold is the number of seconds you set as a goal for connecting a call with an agent. When you set up a peripheral, you can specify a default service level threshold for all services associated with that peripheral. When you set up each service, you can choose to either use the default threshold set for the peripheral or specify a threshold for the service itself in the Service Level Threshold field. If you do not specify a service level threshold for an individual service, the default threshold you specified for the peripheral is used. Typically, you should set these values to match the service level thresholds being used by the peripheral itself.

Service Level Types

Different peripheral types use slightly different formulas to calculate service level. ICM software provides a uniform calculation across all peripherals. This allows you to apply uniform metrics and performance goals across all peripherals. However, ICM software also tracks the service level as calculated by the peripheral itself. This is called the *peripheral service level*. You can use this value, for example, to continue to compare performance to historical norms.

Some peripherals let you select one of several types of service level calculation. You can specify which of these types of service level you want ICM software to track.

The uniform service level calculation performed by ICM software can be done in any of three ways:

- **Abandoned calls ignored**. The number of calls answered within the threshold divided by the number of calls that had a service level event minus the number of calls that were abandoned before exceeding the service level threshold. Calls abandoned before the service level threshold expired are removed from this calculation.

- **Abandoned calls negatively impact service level**. The number of calls answered within the threshold divided by the number of calls that had a service level event. This treats these abandoned calls as though they had exceeded the threshold.

- **Abandoned calls positively impact service level**. The number of calls answered within the threshold plus the number of calls abandoned within the threshold, all divided by the number of calls that had a service level event. This treats these abandoned calls as though they were answered within the threshold.

The following example illustrates these different ways of calculating service level.

Example Service Level Calculations

```
Call Counts

Answered within service level threshold: 70

Abandoned within service level threshold: 10

Exceeded service level threshold: 20

Total service level events: 100

Service Level Calculations

Abandoned calls ignored: 70 / (100 - 10) = 77.7%

Abandoned calls negatively impact: 70 / 100 = 70.0%

Abandoned calls positively impact: (70 + 10) / 100 = 80.0%
```

The value of the Service Level Type field for the service determines how ICM software treats abandoned calls. You set this value when you configure the service.

Timeouts and Thresholds

Chapter 3

The ICM Configuration Manager

After you have installed ICM and have it running, use the Configuration Manager to view and update the configuration information in the ICM database. The configuration information describes the people, groups, and devices that are part of your enterprise.

For example, use the Configuration Manager to specify:

- The devices in your system and the clients they serve

  Which includes

  - The peripherals at your contact centers

  - The routing clients served by your system

- Targets at the peripherals to which ICM software can direct calls

  Which includes

  - Trunks and trunk groups connected to peripherals

  - Skill targets associated with each peripheral: agents, skill groups, services, and translation routes

  - Information used by scripts to organize call requests and direct calls to targets, including call types, regions, prefixes, and dialed numbers

  - Targets understood by the routing client, including announcements, peripheral targets, and routing labels

  - The associations among routing labels, routes, peripheral targets, and skill targets

- Enterprise services and enterprise skill groups as a combination of individual services and groups from different contact centers

This section contains the following topics:

Accessing the Configuration Manager

To access the Configuration Manager:

- In the ICM Admin Workstation group, double-click the Configuration Manager icon

  or

- From the Start menu, **select Programs ICM Admin Workstation Configuration Manager**.

Configuration Manager

When you start the Configuration Manager, the Configuration Manager window appears. The figure "Configuration Manager" shows the window with the top-level directories displayed for all its menus.

The ICM Configuration Manager lets you view and update the configuration information in the ICM database. The configuration information describes the people, groups, and devices that are part of your enterprise.

To set up the configuration of a new system when you are a new user, follow the steps in the menu bar's Step by Step Configuration selection list.

Use the tools in the Telephony Contact Center Configuration menu in the order given to configure, first Network Interface Controllers (NICs), then peripherals, and so on. After you configure ICM software for your telephony contact center, then you can configure the software for multi-media applications.

The tools in the MultiMedia Contact Center Configuration menu are also in the order in which you might use them. For example: you must have a media class before you can create a media routing domain for that class. And you must have an application instance before you can specify the path to that application.

To ...

- Access the configuration tools according to the menu selections of the former Configure ICM tool, in the menu, select **Configure ICM**.

- Access all the tools you can use in the Configuration Manager, in the menu bar, select **Tools**.

Figure 5: Configuration Manager
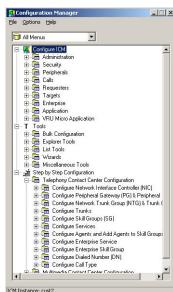
Online Help

For information about any ICM menu option or other interface features, see the online help.

You can activate help from within ICM software in any of three ways:

- Click **Help** in the tool bar or in the dialog box.

- Choose **Help Help Contents** from the menu bar.

- Press the **F1** key.

Troubleshooting

The following section lists problems which may occur when editing records.

Problem:

If an edit is made and saved in one configuration tool while another configuration tool is open, the edited data will not display in the other configuration tool window (or selection boxes) until you click **Retrieve**

Discussion:

Clicking **Retrieve** not only retrieves data when you first open a configuration tool but also refreshes (updates the display of) the data that is currently in the database. The configuration tools do not automatically update the display of data when it is changed in the database unless you click **Save** or **Retrieve**.

Solution:

Click **Retrieve**.

Problem:

> When I saved an edited record, it disappeared from the display of records.

Discussion:

> If you edit a record so that one of its fields no longer matches the filter selected in the Select filter data box, and then save that record, it will disappear from the list of displayed records. This happens because the save function not only saves the data in the database but also refreshes the open window to display the current database data according to the current filter selections.

Solution:

> To see the updated record, select the appropriate filters, and click **Retrieve**.

Configuration Manager Tools

> Use the menu bar in the Configuration Manager window to select the task or tool you want.

Table 2: Tools Summary

Tools	Description
Bulk Configuration Tools	Enable you to configure multiple records at a time.
Explorer and List Tools	Enable you to both view records and their related records and to define, edit, and delete them and their relationships. The difference between the explorer tools and the list tools is that the explorer tools manage records that have more than one relationship while the list tools manage records that have no or only one relationship to other records.
Miscellaneous Tools	Help you perform configuration tasks for which the previous tools are not appropriate.
Wizards	Guide you through configuration tasks.
Outbound Option	Adds outbound dialing functionality to the existing inbound capabilities of ICM software.

Bulk Configuration Tools

> Use the Configuration Manager's bulk configuration tools to configure multiple records at a time. For how to use these tools, see Chapter 4, "Configuring Multiple Records at a Time (page 55)."
>
> The bulk configuration tools enable you to bulk configure the following individual database table records.

The tools are named for the records they manage:

- Agents

- Call types

- Dialed number plans

- Dialed numbers

- Device targets

- Labels

- Network trunk groups

- Network VRU scripts

- Peripheral targets

- Person bulk tool

- Regions

- Region prefixes

- Routes

- Trunks

- Trunk groups

- Scheduled targets

- Services

- Skill groups

- VRU port maps

Explorer and List Tools

Use the Configuration Manager explorer and list tools to configure and manage individual database records.

Explorer Tools

Use the explorer tools to configure and manage database records that have hierarchical relationships to other records. In this way, at one time, you can see and update both the individual

records and their relationships. You can configure and manage the following records with the explorer tools.

The tools are named for the type of records they manage:

- Agent Explorer

- Announcement Explorer

- Database Lookup Explorer

- Device Target Explorer

- ICM Instance Explorer

- Network VRU Explorer

- Network Trunk Group Explorer

- NIC Explorer

- PG Explorer

- Region Explorer

- Scheduled Target Explorer

- Service Explorer

- Service Array Explorer

- Skill Group Explorer

- Translation Route Explorer

List Tools

Use the list tools to configure and manage database records that have limited or no hierarchical relationship to other records. You can configure and manage the following individual records with the list tools.

The tools are named for the type of records they manage:

- Agent Desk Settings List

- Agent Team List

- Application Gateway List

- Application Instance List

- Bucket Intervals List

- Business Entity List

- Call Type List

- Class Securtiy List (On partitioned systems only)

- Dialed Number/Script Selector List

- Enterprise Route List

- Enterprise Service List

- Enterprise Skill Group List

- Expanded Call Variable List

- Feature Control Set List

- Label List

- Media Class List

- Media Routing Domain List

- Network VRU Script List

- Person List

- Reason Code List

- Service Level Threshold List

- Supervisor List

- User List

- User Group List

- User Variable List

- VRU Currency List

- VRU Defaults List

- VRU Locale List

Miscellaneous Tools

The following Configuration Manager tools enable you to do miscellaneous functions not available with the other tools:

- Deleted Objects

  Enables you to view all records deleted from the database and to permanently delete them if you no longer want them available for your records.

- Integrity Check

  Allows you to perform specific integrity checks on the configuration data in the ICM database.

- Region Editor

  Allows you to:

  – View, create, update (cut, copy, paste, move, or edit), and delete custom regions.

  – View, copy, move or delete predefined regions, but not edit them.

- Script Reference

  Allows you to generate a report that shows which routing scripts reference a specific configuration record.

- System Information

  Allows you to view and set general and application gateway information about your enterprise.

- Unreferenced Objects

  Lists the database tables that have unreferenced records. Use this tool to find specific integrity problems within the database.

Wizards

Two wizards guide you through the configuration of:

- Translation routes (Translation Route Wizard)

- Call center applications (Application Wizard)

Use these wizards for step-by-step guidance in configuring the above.

Common Bulk, List, and Explorer Tool Features

The bulk, list and explorer tools have the following common features:

- **Common Filter Access**

  To access data from the database, in the *Select filter data* box of the explorer, list, or bulk insert tool window, select the type of data you want and click the Retrieve button.

- **Record Status Symbols**

  When you make an edit, the record's status symbol updates accordingly. This appears to the left of the record name in the list box of the explorer or list tool and in the State column of the bulk tool.

Table 3: Record Status Symbol Description

Description
A green check mark means the object has not changed since you retrieved it from the database or made a save. **Note:** This feature not common to the explorer tools.
A red X means the object is marked for deletion and will be deleted when you click the Save button.
A yellow arrow means that the object's data has been changed and the changes have not yet been saved in the database.
A yellow addition sign means the object is to be inserted into the database when you click the Save button.
A red circle with a red slash through it indicates the object was created using an application and is controlled by the Application Object Filter (AOF) or by Periheral Auto Configuration.

Other common features

- **ID status box**

  The label in the ID box at the bottom of the screen identifies the ICM system (instance) on which you are working.

- **Delete/Undelete button**

  When a record is selected and you click the Delete button, that button toggles to Undelete and a red x marks the record for deletion. As soon as you save your database changes the marked record(s) is deleted from the database.

- **Save button**

  No changes are made to the database until you click the Save button.

Common List and Explorer Tool Features

The list and explorer tools share the following features.

- **List Box of Retrieved Records**

  Both the explorer and list tools have a list box that displays retrieved records. Selecting a record in this list displays that record's properties in the right side of the tool window. Once displayed, you can edit a record if you have maintenance access to it.

  Retrieved records

  – **Tree** (only in explorer tools)

    In an explorer window, the retrieved list is called a directory *tree*, which can be expanded or contracted to show a hierarchy of records. A *legend* above the tree identifies the types of records that can be displayed in the tree.

    With the mouse, you can select a record in a tree and then move it to another part of the tree, as long as it's object type belongs in that tree location.

  – **UNASSIGNED** (only in explorer tools)

    The explorer tree can also contain UNASSIGNED records. These are stored in an UNASSIGNED directory for the selected directory tree object.

    A record is named UNASSIGNED if it was not assigned (mapped) to a parent object. For example, a label, created in the Bulk Configuration Tool, might not have been assigned to a peripheral target, or a route might not have been assigned to a service.

    You can also use the Label Bulk Configuration tool to take the output of a switch and create 20 or 30 labels. Then, using an explorer tool, you can attach the labels to an appropriate location.

  – **List** (only in list tools)

    In a list window, the retrieved list is called a *list* and has no legend above it since its records have no or only one relationship to another record.

- **Adding New Records**

  The Add button is enabled only after you use the Select filter data section of the window.

  In the explorer tools, when a record in the tree is selected, you can add another record of the same kind or a record immediately below it in the tree hierarchy. In the list tools, the add button is enabled only for the single type of records listed.

- **Deleting Records**

  Selecting a record and clicking **Delete** marks the record (with a red x) for deletion. However, the record is not deleted until you click **Save**.

Delete toggles to **Undelete** when you select an object marked for deletion. To undelete an object marked for deletion, select it and click **Undelete**.

- **Options Menu**

   In the explorer and list tool windows, right clicking on a retrieved record displays an options menu containing all the editing options for that record.

   Note: This menu is not available in the list tools if you have read-only access.

Accessing Database Records

The bulk configuration, explorer, and list tools enable you to access records from the database in the same way. In these tools, use the Select filter data box to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

In the top left of the bulk configuration insert, the explorer, and the list tool windows is a *Select filter data* box similar to the following.

Figure 6: SelectFilterdata

In this example, all records belonging to the Boston_PG_1 peripheral and having JO in their names are selected for retrieval from the database.

The filters used to select data vary according to the type of data. In the preceding example, data is first selected by peripheral and then by name. Some filter selection boxes have only optional filters.

If any editable field is changed, an additional dialog appears (below the *Select filter data* dialog) displaying the original filter settings. In addition, the tree list box and all buttons except Retrieve, **Close**, and **Help** are disabled.

Clicking **Close** cancels the filter changes and returns the fields to their original settings. Clicking **Retrieve** closes the *Select filter data* dialog and enables the display (in the tree list box) of the record retrieved based on the selected filter criteria.

The table Common Filter Functions describes how the optional filters, the check box, and the filter buttons work for all the bulk insert, explorer, and list tools.

Configuration Manager Tools

Table 4: Common Filter Functions

Filter Item	Function	
Optional Filter	None in the optional filter box means no optional filtering. All data is displayed for the selected records. The optional fields to filter on differ by record type according to both the fields in a record and the fields considered useful as filters.	
Condition	**If the selected Optional Filter is**	**Then**
	None	The Condition filter is ignored.
	A text filter (for example, Description)	Select one of the text conditions (Contains, Ends With, Starts With, Is Blank) and enter an appropriate entry in the Value field.
	A numeric filter (for example, Trunk Number)	Select one of the numeric conditions (Equal, Greater Than, Less Than, Not Equal) and enter an appropriate entry in the Value field. The available numeric conditions can change depending on the record data. For example Equal or Not Equal might be the only choices.
Value	The entry in this field is based on the selections made in the Optional Filter and Condition fields. If None is selected in the Optional Filter field, this field is ignored.	
Save check box	Checked, indicates the current settings are saved so that when you next open the list tool for this type of record, the current settings will be selected. However, no data is displayed until you click the Retrieve button.	
Retrieve button	This button displays the data selected in the Select filter data box.	
Cancel filter changes button	If you change the Optional Filter settings after a Retrieve, clicking this button resets the filter settings back to the preceding ones.	

Saving Configuration Data to the Database

When you have completed adding information in an open configuration window, click **Save**.

ICM software saves the configuration data and immediately applies your changes to both the local and central ICM database.

Note:

• Whenever any data is retrieved by a configuration tool, it notes the last change mark on that data at this point in time. If you then attempt to change that item, it first checks the current copy in the database for its change mark. If the change marks do not agree, it indicates another user has changed this item since you last retrieved it, and an error is returned. You must then discard any changes, using **Retrieve** to obtain the latest information for editing.

• This approach is called *optimistic* locking, and assumes that it is rare to have two people needing to change the same item at the same time. This prevents the performance and maintenance issues involved with hard locking items, while still preventing one person from accidentally overwriting another user's changes.

Feature Control

In general, feature control addresses the need of restricting users, or classes of users, from all functionality of the ICM software.

A distinction should be made between object level control and feature control:

• Object control, part of the ICM software partitioning feature, is a method of security for prohibiting access to configuration data in the ICM database.

• Feature control, like the limited AW, is a method of security for prohibiting access to ICM software features.

Script Editor feature control addresses the need of restricting users, or classes of users, from some or all of the functionality of the ICM Script Editor software. In a possible deployment scenario, an ICM software administrator can restrict certain people from doing specific types of script editing. Similar functionality was previously available in the ICM software in both the "Limited AWs" and the WebView "Quick Edit" feature control.

An administrator has two means to restrict access to the editing features of Script Editor and Internet Script Editor:

• Edit options

• Script node control

It is also possible for an administrator top use a combination of both feature control options.

Note:

• In previous ICM Software versions (including, and prior to ICM 4.x), any change made to the read-only status of a user was not dynamically updated in the Script Editor. Script Editor had to be closed, then reopened before the change took effect.

• In ICM Software version 7.0(0), any change made to a user's read-only status (using the User List tool) is automatically updated in Script Editor.

Refer to the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*. for additional feature control information.

Script Node Control

Script node control allows an administrator to create feature sets that can be assigned to users. The feature set controls which script nodes are accessible to the user.

Node Control Table

The node control table (on the *Configuration Manager Script Editor Feature Control* dialog) has two columns, the *Node* column and the *Available* column. This table allows an administrator to create feature control sets that can be assigned to users. The feature control set controls which script nodes are accessible to the user.

If a script is opened that contains a disabled node, you can browse or monitor the script but you cannot put the script into edit mode. If you attempt to put this script into edit mode a message indicating you are not authorized to enter edit mode is displayed. However, you can still Quick Edit the script, just not the node.

Node column

A node is an executable element within a script. A script consists of nodes, connections, routing targets, and comments. Every script begins with a Start node. This column lists of all the nodes that can be used in a script.

Available column

Each checked node in this column appears on editing pallet of the feature-control-set user, regardless of the edit mode (Full Edit or Quick Edit Only).

There are two possible presentation effects:

• Enabled nodes are displayed on the object palette

• Disabled nodes are removed from the object palette

Configuring a Feature Control Set

Configuring a feature control set consists of:

• Creating a feature controls set (see How to create a feature control set (page 48))

• Assigning users to a feature controls set (see How to assign users to a feature control set (page 49))

• Selecting the script nodes available in a feature controls set (see How to select script nodes for a feature control set (page 49))

How to create a feature control set

The system administrator can create a feature control set using the ICM Configuration Manager on the ICM distributor.

Step 1   Ensure the user(s) the feature set is to be assigned to are configured.

Step 2   Start the Configuration Manager by selecting: **Start > Programs > ICM Admin Workstation > Configuration Manager**. The Configuration Manager dialog opens.

Step 3   Select **Tools > List Tools > Feature Control Set List**.

Step 4   In the Feature Control Set section (on the left), click **Add**.

Step 5   Select the **Attributes** tab.

Step 6   Enter the name of the feature control set. The name appears in the left section when **Enter** or **Tab** is pressed.

Step 7   Enter a description (optional).

How to assign users to a feature control set

The system administrator can assign users to a feature control set:

Step 1   Start the Configuration Manager by selecting: **Start > Programs > ICM Admin Workstation > Configuration Manager**. The Configuration Manager dialog opens.

Step 2   Select **Tools > List Tools > User List**.

Step 3   Select the *user* to whom feature control set is to be assigned.

Note: If no users appear, add the user(s) using the User List Tool.

Step 4   On the *Attribute* tab, select the feature set for the selected user.

Step 5   Click **Save** when you are finished assigning feature sets.

How to select script nodes for a feature control set

To select script nodes:

Step 1   Select the name of the feature control set to be assigned.

Step 2   Select the **Attributes** tab.

Step 3   Select **Advanced** (under Script Editor).

Step 4   In the Script Editor Feature Control dialog, select the nodes for this feature control set and an edit option (Full Edit or Quick Edit).

Step 5   Click **OK**.

Step 6	Click **Save**.

Security Settings

For the Security button (in the explorer and bulk tools) or tab (in the list tools) to be visible and enabled:

- The ICM Partition installation **setup** option must be installed on your ICM system.

- You must have maintenance access to the selected database record(s) and to the system class.

Note: For additional information refer to the *ICM Software Security Guide*.

How to view or apply security settings

To view or apply security settings:

Step 1	Follow the steps for viewing the item whose security setting you want to see or apply. (See the online help if you have questions.)
	The selected item's configuration information displays.
Step 2	Select the item(s) whose security settings you want to view or edit.
	Note: You can apply security setting to more than one record at a time only in the Bulk Configuration tool. In this tool's window, if there are security settings on the selected records and they are mixed (different records having different settings), no security data is displayed. If you want to apply one setting to records with mixed settings, select **Override existing settings**.
Step 3	Click **Security**. The Security dialog box displays.
Step 4	View and/or make the security settings.

To view or make the security settings:

- To remove access to the records: In the User Access display area of the Security dialog box, select the user or group to remove and click **Remove**.

- To edit access to the records: In the User Access display area, select the user or group to edit and click **Edit** or double-click on the item you want to edit. Then in the **Edit Permissions** dialog box, select the access type and click **OK**.

- To add access to the selected records:

  – Click **Add**. The Add Users and Groups dialog box displays.

  – Select **User** or **Group**

– Select the user or group name(s) for which you want access rights.

– Select the Access type from the selection list and click **OK**:

Access Type

– **Read** access means a specific user or group can view or reference the object, but cannot modify it.

– **Reference** access means a specific user or group can reference the object in a script. This includes read access, but not write access.

– **Maintenance** access means a specific user or group can update or delete the object as well as view and use it.

Step 5   When done, in the Security dialog box, click **OK**.

Validating Configuration Data

After making changes or additions to your configuration, you should always check that it is internally consistent and complete.

Note: It is especially important to perform integrity checks if you have imported data from another source.

How to check the integrity of your configuration data

To check the integrity of your configuration data, perform the following:

Step 1   In the Configuration Manager menu, select **Miscellaneous Tools > Integrity Check**. The Integrity Check dialog box appears.

Step 2   Choose the type of check option that you want to perform or click **Select All** to choose all the check options. (For specific information about each of these options and the tables and fields they check, see the Configuration Manager online help.)

Step 3   Click **Perform Check**. The Configuration Manager performs the check and one of the following happens:

a.   If the check discovers a problem, the Configuration Manager displays messages in the Integrity Problems text box. Double-click on a message to receive specific information about the records in the data table at the bottom of the window.

b.   If the check completes without finding any invalid data, the Configuration Manager displays a message saying the integrity check completed successfully.

Step 4   When all checks are complete, click **Close**. The Integrity Check dialog box closes.

Many database records need references to related records. For example, each peripheral target ought to reference a route and each trunk group ought to reference a network trunk group.

How to check record references

To check record references, perform the following:

Step 1   In the Configuration Manager menu, select **Miscellaneous Tools > Unreferenced Objects**. The Unreferenced Object dialog box appears listing the database tables containing objects that are missing references.

Step 2   To see the specific rows that are missing references in a table, double-click on the table name. Double-clicking on a table name entry displays that table showing the records that are missing references.

Deleting Configuration Records

At some point, you might want to remove configuration records from your database; for example, if data has been entered in error or changes occur in your business.

How to delete a record

To delete a record:

Step 1   Within Configuration Manager, open any one of the tools in which you can configure that type of record and retrieve the record.

Step 2   Select the retrieved record.

Step 3   Click **Delete**. A red X (marked for deletion) appears in the window next to the name of the record. The Delete button toggles to Undelete. To undelete the record, select it and click **Undelete**.

Step 4   Click **Save** to save the deletion to the database. The record is deleted from the database and is removed from the window.

Note: Some deleted records can still be viewed, as described in the "Administering Deleted Records (page 52)" section. The following section, Types of Deletion (page 52), describes why.

Step 5   Click **Save**. The deletion is saved to the database and the record disappears from the window.

Types of Deletion

Depending on the record involved, the Configuration Manager performs one of two types of deletion:

- **Immediate deletion**. The ICM software immediately removes the record from the database. (Also known as "physical deletion.")

- **Logical deletion**. The ICM software sets the record's Deleted field to Y (yes), but the record remains in the database. The Configuration Manager and the ICM Router treat the record as though it were deleted. The record remains in the database, however, for historical reporting purposes.

Immediate Deletion

Some tables—for example, the Skill Group Member table, which maps agents to skill groups—do not have a Deleted field. When you delete a record from such a table, ICM software immediately removes the record from the central and local database.

Logical Deletion

Other tables, for example, the Skill Group table, which describes a skill group associated with a peripheral—do have a Deleted field. When you delete a record from such a table, ICM software does not remove the record from the central and local database. Instead, ICM software sets the record's Deleted Field to Y to indicate that it is logically deleted.

Logical deletion ensures that any references to the record—for example, references to a skill group in call detail records—remain valid. However, the Configuration Manager and the Script Editor treat the record as though it were deleted.

Caution: Never attempt to set a configuration record's Deleted field directly. Changing a Deleted field directly can compromise the integrity of your ICM database. Use the Configuration Manager Tools > Miscellaneous Tools > Deleted Objects option to permanently remove logically deleted records.

Deletion Dependencies

How a configuration tool processes a record deletion request depends on whether, and how, the record is referenced by other configuration records:

- If no other records reference the current record, the configuration tool deletes the record.

- If other records reference the current record—and the configuration tool can neither modify the references nor delete the other records—the configuration tool does not delete the record.

Administering Deleted Records

The Configuration Manager lets you view logically deleted records. It also allows you to permanently delete these records.

How to view deleted records

To view deleted records, perform the following:

Step 1   In Configuration Manager menu, select **Tools > Miscellaneous Tools > Deleted Objects.** The Deleted Objects dialog box appears, indicating the tables in which records are marked for deletion and the number of records so marked.

Step 2   To see the specific records marked for deletion within a table, double-click on a table name. If you double-click on a table name entry, a list window appears showing records from that table that are marked for logical deletion.

Step 3   To remove a record(s) from the database entirely, select it in the list (or use the Select All button to select all) and click **Delete Permanently**. The Configuration Manager displays a message indicating the operation completed.

You must have access rights to a record to be able to delete it permanently.

Step 4   Click **Close** to close the dialog box.

Chapter 4

Configuring Multiple Records at a Time

This chapter shows you how to use the Configuration Manager Bulk Configuration Tool to insert and update multiple configuration records in a single transaction from a single screen.

In some cases, you might need to work with multiple records of configuration data simultaneously.

For example, you might want to:

- Import records from a text file

- Modify a specific field in multiple records

- Insert a set of records

The Bulk Configuration Tool let you perform these operations on several ICM data tables simultaneously. This tool supplements the Configuration Manager explorer and list tools, which allow you to insert and update single records.

This section contains the following topics:

How to access the Bulk Configuration Tools

To access the Bulk Configuration Tools, follow these stpes:

Step 1 Double-click the **Configuration Manager** in the ICM Admin Workstation group

Step 2 In the Menu selection box, select **Tools > Bulk Configuration.**

Step 3 Then from the submenu selection list, select **Insert** if you need to insert data or Edit if you need to edit.

Step 4 Finally, in the next menu selection list, select the type of table with which you need to work.

Data You Can Bulk Configure

From the Bulk Configuration menu, you can choose to create or update records in the database tables.

Start by selecting the Bulk Configuration Insert or Edit menu. Then select the database table you want to modify.

If you have any questions, see the online help. The help contains table record and field definitions and procedures for all that you can do with the Bulk Configuration Tool. The following sections briefly describe the tool and how to use it.

Insert and Edit Windows

Depending on whether you select **Bulk Configuration Insert** or **Edit**, the Bulk Configuration Insert or Edit window for the selected database table opens.

These two windows have the following features:

• *Same Options*

Both windows have the same options except for Insert (Insert window) and Retrieve (Edit window).

Reason for Two Windows

The reason for having both an insert and an edit window is to prevent confusion when editing records since some configuration objects can only be edited when inserted into the database, the database being a relational one. For example, when you insert the record of a label, you can edit all its fields. However, once you define (and save it in the database) its routing client, the only way you can redefine the routing client is by deleting the label and creating a new one.

• *Saving Changes*

The changes you make in the Insert or Edit window are not applied to the database until you click **Save** or **Close**. The Close button closes the window and gives you the option of saving or cancelling any database changes.

• *Initial Display*

Initially, both windows open without data and wait for your retrieval command (in the Edit window) or insert/import command (in the Insert window).

- *Editable Data Table Fields*

  Columns with an asterisk (*) next to the title indicate required fields. Fields shaded in **blue** cannot be modified directly. However, in some cases setting or changing one field will make another field updateable.

- *Record State*

The first data column contains a symbol indicating the condition of a row's record.

Symbol	Indicates the record is
Figure 7: Not changed icon	*Not changed* since you retrieved the record or saved it.
Figure 8: Changed icon	*Changed* in the current editing session but not yet saved.
Figure 9: Changed Icon	*To be inserted* into the database when you save your edits.
Figure 10: To be deleted icon	*To be deleted* from the database when you save your edits.

Bulk Configuration Features

You can do the following with the Bulk Configuration Tool:

- Retrieve records from the database (Edit Window only).

- Sort records by a single column or by multiple columns.

- Use the search tool to find data in a list of records.

- Apply a single value to a range of fields or apply a range of values to a range of fields.

- Insert additional new rows (records) into the database table (Insert Window only).

- Import multiple record data (either whole records or record fields).

- Export multiple record data (either whole records or record fields).

- Set or change security settings to multiple records at a time.

- Delete records. After deletions are saved to the database (or after you close your editing session), you can no longer undelete deleted records.

- Undelete records that are marked for deletion in the current editing session.

The following sections describe how to use the Bulk Configuration Tool.

Retrieving and Editing Records

Use the *Select filter data* box in the *Edit* window to retrieve records from the database.

How to retrieve and edit existing records

To retrieve and edit existing records, follow these steps:

Step 1   Within the **Bulk Configuration > Edit** menu, select the name of the database table you want to modify. The appropriate Edit window appears. (Initially, no records are shown.)

Step 2   Do one of the following:

a.   To retrieve a range of records, specify values in the **Select filter data** fields. For example, you could enter values that would retrieve only dialed numbers associated with a specific customer, with a specific routing client, or both.

b.   To retrieve all records, leave the Customer and Routing Client fields set to **All.**

Step 3   Click **Retrieve.** The appropriate rows are displayed in the Edit window as in the following example.

Figure 11: Example Bulk Configuration Edit Window
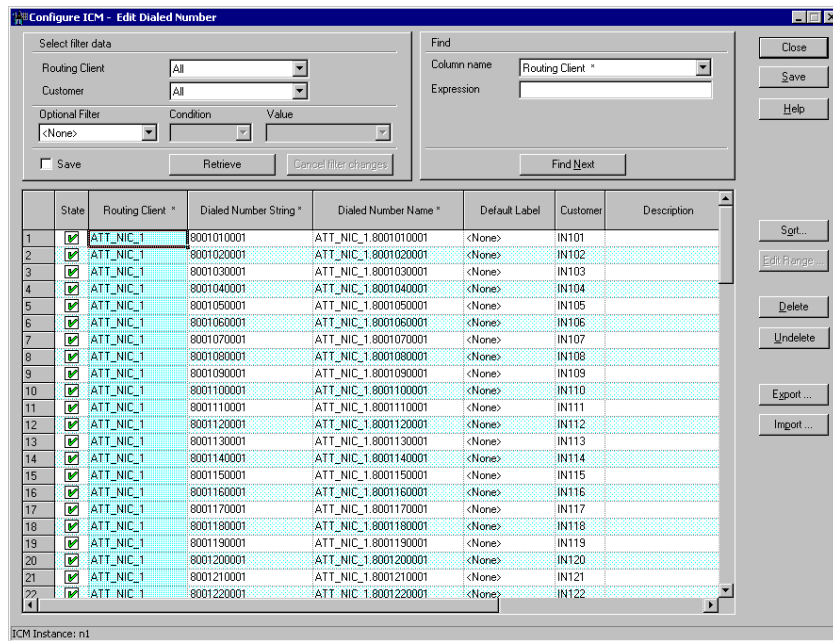
Step 4   Once you have retrieved the records you want to edit, you can edit individual records or a range of records. In a range of records, you can enter a range of values or the same value. You can also delete, import, export, and sort records.

Sorting Records

You can sort records (rows) in two ways: by one column or by multiple columns.

You might want to sort by multiple columns if the first column(s) to sort by has the same value in more than one field, for example, the same routing client, label, or customer name.

- To sort records by one column: double-click on that column's header. To reverse the sort, double-click a second time. When you double-click, an A (Ascending) or D (Descending) appears after the header to indicate the sort order.

- To sort records by multiple columns, see the following procedure.

How to sort records by multiple columns

Step 1   In the Insert or Edit window, click **Sort.** The Sort dialog box displays.

Step 2   In the *Columns available for sort list,* select each column by which you want to sort and click **Add.**

The primary sorting column will be the first column listed in the Columns selected for sort list. To change the column sort order, select a column and click the Up or Down arrow.

The data within each column is sorted in Ascending order unless you deselect the check box beside the column.

Step 3   Click **OK.**

Finding Data in a List of Records

After you have retrieved a set of records, you can use the Find area of the Edit window (Column Name and Expression fields) to search for specific records within the set.

How to find data

To find data in a list of records follow these steps:

Step 1   In *Find* box of the *Edit* or *Insert* window, select the database column in which you want to search for data.

Note: You can also select a column by clicking in that column.

Step 2   In the *Find box Expression* field, enter the value for which you want to search. You can enter a full value or a sub-string.

Step 3   Click **Find Next** to locate the first record that matches the search criteria. The first row that contains the specified expression in the selected column is highlighted.

Selecting Data

You can select whole records for importing, exporting, setting security, deleting, or undeleting. Or, you can select the same field in multiple records for simultaneous editing.

How to select records

Clicking in the left-most numbered field in a row both selects that row and highlights it. Clicking in any field in a row also selects the row but does not highlight it.

How to select one field in multiple records

You can select one edit-control field (when there is no section box in the field) in multiple records in any one of the following three ways:

- Click the field where you want to start and, keeping the left mouse button held down, move the cursor to the last field.

- Click the field where you want to start. While holding down the **Shift** key, click the last field.

- Click the field where you want to start. While holding down the **Shift** key, make your selection by clicking the down arrow.

- Press **Ctrl,** then left-click on each field you wish to select. This allows you to select a random group of fields.

    For selecting one value in multiple selection box fields, see the following section, "Editing a Range of Data" (page 61).

Editing a Range of Data

You can edit a range of data in a table column in several ways:

- Apply a single value to a range of (edit-control) fields

- Apply a single value to a range of selection-box fields

- Apply a range of values to a range of fields

How to apply a single value to a range of edit-control fields

An edit-control field is one you can edit that does not contain a selection box.

Step 1   Make your selection: click the field where you want the range to start and, keeping the left mouse button held down, move the cursor to the last field in the range.

Step 2   Type the new entry that you want to appear in all the fields.

Step 3   Click **Enter** or **Tab.** This applies the change to all the records in the range and moves the focus to the next data field.

How to apply a single value to a range of selection-box fields

Step 1   Select the first field where you want the range to start.

Step 2   Hold down the **Shift** key and keep it down for steps 3, 4, and 5.

Step 3   Click the selection-box down arrow but keep the left mouse button held down and select the fields you want in the range.

Step 4   Click the last field in the selection to display the selection list. You can also open the selection box by pressing **Alt** + an arrow key.

Step 5   Click your selection.

Step 6   Click **Enter** or **Tab** (or in any other field). This applies the change to all the records and moves the focus to the next data field.

How to apply a range of values to a range of fields in a column

To apply a range of values to a range of fields in a column

Step 1   Select the range of fields in a database column. This enables the Edit Range button.

Note: The **Edit Range** button does not work for selection-box fields.

Step 2   Click **Edit Range.** The Edit Range dialog box displays.

Figure 12: Edit Range dialog box
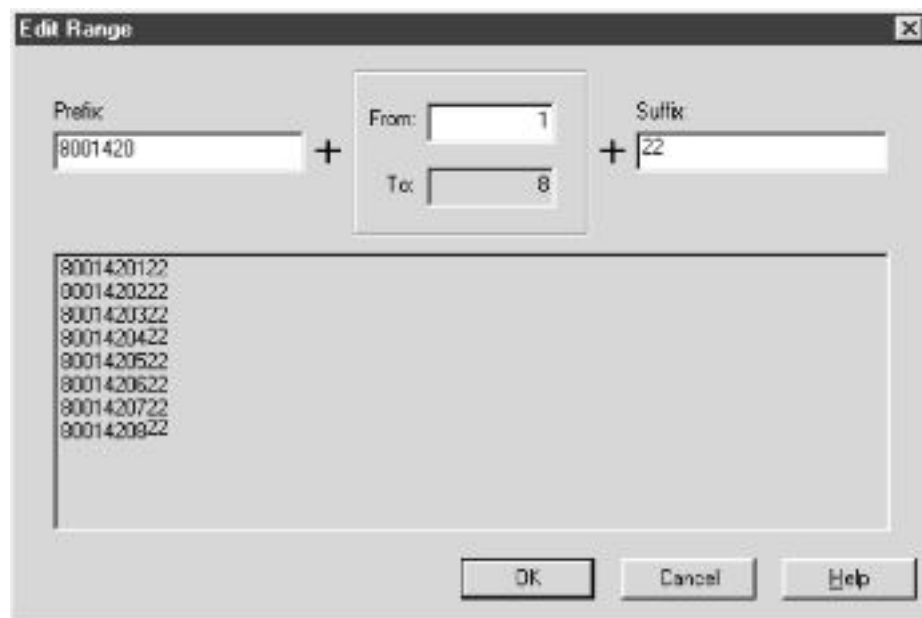
Step 3   In the Edit Range From field, enter the first number of the range.

Step 4   In the Prefix and Suffix fields, you can optionally enter substrings to appear at the start and/or end of each value. The Edit Range dialog box lists the generated values.

> **Note:** When entering a numeric range, you may also enter leading zeros to ensure proper alignment (i.e., 001 to 999).

Step 5 Click **OK.** This applies the changes to the fields you selected in the Insert or Edit window.

Inserting New Records

You can insert new records by inserting multiple blank rows (records) and filling in the data (see How to insert new records (page 63), or by importing the data (see How to import data (page 64)).

You can also edit the data you insert when you insert it.

How to insert new records

Step 1 In the **Bulk Configuration > Insert** menu, select the name of the data table to which you want to add records. The appropriate Insert window opens, automatically displaying one new row.

Step 2 To create additional rows, enter the number of additional rows in the Quantity field and click **Insert.** The additional rows are added in the Insert window.

Step 3 Enter the data in the rows:

 a. If you want to edit individual fields in the new rows, type the information you want in each of the fields and go to Step 8.

 b. If you want to edit a column in multiple rows so that a range of values is entered, go to Step 4.

 c. For other ways of entering data into multiple rows, see the "Editing a Range of Data" (page 61) section

Step 4 Select the rows in the column you want to modify.

Step 5 Click **Edit Range**. The Edit Range dialog box appears.

Step 6 Enter a prefix (optional), the start value for the range, and a suffix (optional). The generated values are listed in the dialog box.

Step 7 Click **OK** to close the Edit Range dialog box and apply the values to the column you selected.

Step 8 When you have finished setting fields in the new rows, press Enter to apply your changes to the ICM database.

You can leave empty rows, the system ignores them.

> **Note:** No changes are made to the database until you press **Enter.**

Importing Data

You can import data from a specified text file into the opened database table. Whole records or only columns of data can be imported, if the data matches (see Step 3 of the following procedure). If any error occurs during the import process, the process is cancelled.

How to import data

Step 1   In the Insert or Edit window, click **Import**.

Step 2   In the Import dialog box, click **File.**

Step 3   In the File Open dialog box, select the file containing the data you want to import and click **Open.** For a description of the required import-file format, see the "Import/Export Data File Format" (page 65)section following this procedure.

The Import File Data area displays the first few lines of the opened file.

- When importing data in the Edit mode, the following rules apply:

  - The Bulk Configuration Tool reads only those records whose primary key values match those of records in the Edit window.

    If there is a record that does not match the primary key value, the record is considered to be an error and a message box with the primary key value pops up to ask you to correct the problem.

  - If any field in the import record is null, the corresponding field value in the grid window become blank for an edit cell or uses the default value for a drop-down list cell.

  - If any field is missing in the import file, the corresponding field in the Edit window remain unchanged.

  - If there is a larger number of records in the file to be imported than the number of rows in the grid, it is considered as an error and a message box pops up asking you to correct it.

  - If there is a duplicated primary key in the file to be imported, it is considered as an error. A message box with the duplicated primary key value pops up asking you to correct it.

  - After importing, all records imported (including records marked for deletion in the grid) are marked as "Changed" regardless whether the value is changed or not.

  - After a importing, the records are displayed in index order (ordered by logical keys). If you did not sort before importing, the order appears the same after the import.

- When importing data in the Insert mode, the following rules apply:

– Only a single import is supported and any existing rows are removed from the grid. When you click **Import**, a message box pops up if there is any record in the grid. You will see the following message:

"All the existing data will be replaced by the data to be imported. If you want to retain the current data on the grid please click the Cancel button then save or export the existing data. Click the **OK** button to proceed with the importing."

– After importing, all rows are marked as "New" and the ordering is the same as that in the file imported from.

– In the Import Insert mode, the tool reads only those records whose primary key values are not presented. If the primary key field is selected for file to be imported, it is considered an error and a message box with the primary key field name pops up asking you to correct the problem.

– If any field in the import record is null, the corresponding field value in the grid window becomes blank for an edit cell or uses the default value for a drop-down list cell.

Note: If headers are included in the imported file, the Add and Remove buttons are not enabled and you can only import the record(s) as a whole. In that case, go to Step 6.

Step 4   If the imported data does not contain headers, in the Available Fields list box, select the names of the fields to import that match the data and click **Add**.

Step 5   To change the order of the columns, select a column and move it within the list by clicking **Up** or **Down**.

Step 6   Click **OK.** The data is imported into the data table.

Import/Export Data File Format

The import and export files used by the Bulk Configuration Tool can optionally include a header that identifies the table and columns in the file. The header is followed by one line for each row of data.

The following rules apply to the file headers:

- A line beginning with a number sign (#) is a comment and is ignored.

- Blank lines are also ignored.

- The header content is indicated by a line beginning with two underline characters and the word **TABLE** or **COLUMNS**. The following line contains the name of the table or the name of the columns. For example:`__TABLE`

    `Call_Type __`

    `COLUMNS`

```
CallTypeID EnterpriseName Description Deleted CustomerDefinitionID
```

- All column names must be on a single line and are separated by Tab characters.

  The following rules apply to the data in the files:

  — One row of table data per line.

  — Column values must be in the same order in all rows. If columns are specified in the header, the columns in the data rows must be in the same order.

  — Column values are separated by a single Tab character.

  — Fields intentionally left blank must be represented by two adjacent Tab characters or a Tab character at the end of a line. On import, the default value is used for such a value.

  — String values may include spaces.

  — An error occurs on import if a line contains too few or too many values.

  Note: A simple way to create the import file with a valid format is to use Excel and save it as Text (Tab delimited) (*.TXT).

Exporting Data

The export function saves the selected records or field(s) to a tab-delimited text file that you can import into the ICM database or into a database tool such as Microsoft Excel. If any error occurs during the export process, the process is cancelled.

How to export data

To export data, follow these steps:

Step 1　Select the rows with fields you want to export.

Note:

- If you intend to import this data into the Edit window, you must export a primary key field along with any other fields. The primary key field has the same column name as the database table name.

- All rows selected (including records marked for deletion) are exported.

Step 2　Click **Export.**

Step 3　Select the Header option if you want to include a header containing the table name and column names in the output file. Inclduing the header clarifies the content of the file.

Step 4　In the Export dialog box, select the column(s) you want to export and click **Add** or **AddAll.**

Step 5 To change the order of the columns to export, select one of them and move it within the list by clicking **Up** or **Down**.

Step 6 Click **File** and specify the file name and directory to which to save the data.

Step 7 Click **OK**.

Applying Security Settings to Multiple Records

For instructions on how to view or apply security settings to multiple records, see Security Settings (page 50).

Deleting and Undeleting Records

You can delete one or more records at a time and you can undelete records marked for deletion.

How to delete records

To delete records, follow these steps:

Step 1 Select the row(s) to be deleted.

Note: Selecting any field in a row (or any range of fields in a column) selects the rows of which they are a part.

Step 2 Click **Delete**. The selected rows are marked for deletion.

Step 3 Click **Save.** The rows marked for deletion are deleted from the database.

Note: You can no longer undelete records marked for deletion once you have saved your changes to the database.

How to undelete records

Step 1 Select the rows marked for deletion.

Step 2 Click **Undelete.** The deletion mark is removed from the records.

Step 3 Click **Save.** The change is saved to the database.

Bulk Configuration Features

Chapter 5

Configuring Routing Clients

This chapter describes how to set up routing clients and their directly related elements.

It includes:

- An introduction to the Routing Client subsystem

- Instructions on how to view, delete, modify, and define:

- Network Interface Controllers (NICs)

- Routing clients

- Dialed numbers

This section contains the following topics:

The Routing Client Subsystem

A routing client is an entity that sends route requests to ICM software.

A routing client can be:

- A public network interexchange carrier (IXC),T, BT, MCI, Nortel, or Sprint

- A private network peripheral, such as an Aspect or Lucent ACD

The figure "Routing Client Subsystem" (page 70) shows the elements of the Routing Client subsystem.

Figure 13: Routing Client Subsystem
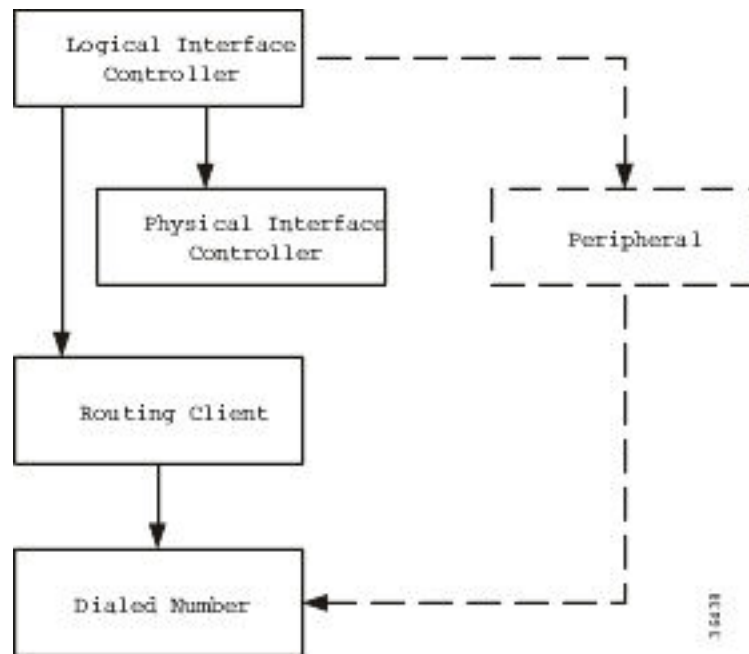
Interface Controllers

Each routing client must be associated with an interface controller. An interface controller operates on two levels: *physical* and *logical*. A physical device is a single instance of a device. A logical device is either a single physical device or more than one physical device running duplexed.

A Physical Interface Controller can be a:

- **Network Interface Controller (NIC)**. A NIC communicates directly with the **IXC's** signaling network, reading call routing requests from the network and transferring them to the **ICM's** Central Controller. This chapter describes how to set up a **NIC**.

- **Peripheral Gateway (PG)**. A PG communicates with the **ACD, PBX,** or **VRU** at a contact center, monitoring status information from the peripheral and sending it to the **ICM's** Central Controller. The PG can also act as a routing client, sending routing requests to **ICM** software. For information on setting up Peripheral Gateways, see Chapter 6, "Configuring Peripherals and Trunk Groups." (page 83)

Examples of Routing Client Subsystems

You can associate more than one routing client with a single logical interface controller. For example, if an **ICM** Network Interface Controller (NIC) is serving two **AT&T** Intelligent Call

Processing (ICP) subsystems, as shown in the figure "Two Clients / One Logical Interface Controller" (page 71), you can define each as a separate routing client through the single logical interface controller.

Figure 14: Two Clients / One Logical Interface Controller
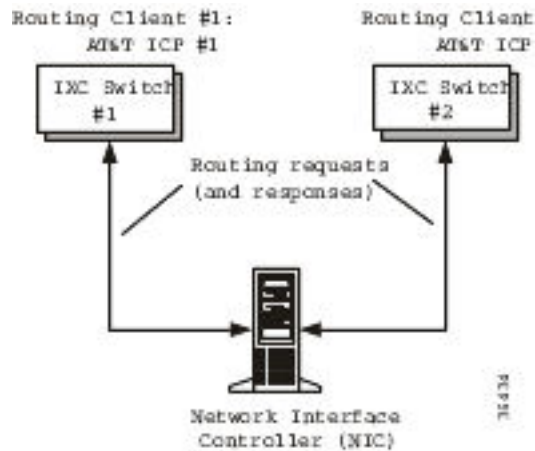
On the other hand, if you have two ACDs performing private network routing through two different Peripheral Gateways, as shown in the figure "Two Clients / Two Logical Interface Controllers" (page 71), you must define each as a routing client because each Peripheral Gateway is a separate logical interface controller.

Figure 15: Two Clients / Two Logical Interface Controllers
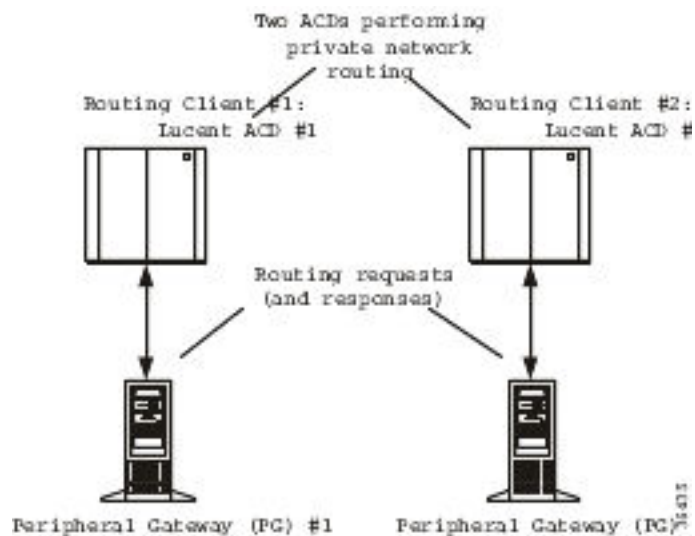
Configuring a Network Interface Controller (NIC)

Use the NIC Explorer to view, define, modify, or delete Network Interface Controller information and its associated routing client information.

The NIC Explorer generates records that set up a logical interface controller, one or more physical interface controllers, and one or more routing clients.

How to view a NIC and its routing client(s)

To view a NIC and its routing client(s), follow these steps:

Step 1 From the **Configuration Manager** menu, select **Tools > Explorer Tools > NIC Explorer.**

The NIC Explorer window appears.

Step 2 In the **Select filter data box**, select the filters you want.

Step 3 Click **Retrieve.** The name(s) of the retrieved NIC(s) are listed in the tree list box.

Step 4 In the tree list box, select the NIC whose records you want to view. The selected NIC's configuration information displays in the fields on the right. For field descriptions, see the "NIC Explorer Tab Descriptions" (page 72) section.

Step 5 To view a routing client record, in the tree list box, expand the tree branch for the selected NIC and select the NIC's routing client icon.

The routing client configuration information displays in the window on the right. For field descriptions, see the Table "Routing Client Tab Descriptions" (page 74) .

NIC Explorer Tab Descriptions

The following tables describe the tabbed property fields and buttons that configure a NIC and its routing client(s).

Logical Interface Controller Tab

The Logical Interface Controller tab allows you to view (and define or edit, if you have maintenance access) the properties of the selected logical interface controller.

The NIC (Network Interface Controller) is the computer and process within ICM software that reads call routing requests from the network and transfers them to the ICM Central Controller. It consists of a logical interface controller and one or two physical interface controllers. The number of physical interface controllers permitted depends on the client type.

Table 5: Logical Interface Controller Tab Descriptions

Field/Button	Description
Controller ID (required)	A unique identifier for the **NIC's** logical controller. This is a read-only field. When you create a new **NIC**, the system places **UNASSIGNED** in this field and automatically creates an **ID** when you save your edits.

Field/Button	Description
Name (required)	The enterprise name for the NIC's logical controller. This name also identifies the NIC and must be unique for all logical controllers in the enterprise.
Client Type (required)	The type of routing client serviced by the NIC. For example, Lucent, MCI, Sprint, and so on. When defining a new NIC, select one from the pop-up selection box. 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.
Configuration Parameter	A string containing information such as logon information, specific to the interface controller device. For example: *-rtuser UserName -rtpswd Password*
Description	Additional information about the Logical interface controller.
Add Physical Interface Controller	Click this button to add one or more Physical Interface Controllers. This button is disabled when there is no client type, as in a new NIC record, or when the NIC node reaches its upper limit of Physical Interface Controllers.

Physical Interface Controller Tab

The Physical Interface Controller tab allows you to view (and define or edit, if you have maintenance access) the properties of the selected NIC's physical interface controller(s).

Table 6: Physical Interface Controller Tab Descriptions

Field/Button	Description
Associated Physical Interface Controllers	A duplexed **NIC** has two entries in the Physical Interface Controller table and a single entry in the Logical Interface Controller table.
ID	A unique identifier for the NIC's associated physical interface controller. This is a read-only field. When you create a new NIC, the system places **UNASSIGNED** in this field and automatically creates an **ID** when you save your edits.
Name	The enterprise name of the routing client associated with the **NIC.** This name must be unique for all physical controllers in the enterprise.
Description	Any other information about the physical interface controller.
Modify	To edit the name or description of the *physical interface controller*, click this button and in the Physical Interface Controller dialog box enter your edits and click **OK.**
New	To enter a record for a new associated physical interface controller, click this button and in the *Physical Interface Controller* dialog box, enter its enterprise name and click **OK**. The system assigns an ID to the controller when you save it to the database. The NIC can represent multiple physical devices. The limit is different for different client types. See the *Pre-Installation Planning Guide for Cisco ICM Enterprise Edition* for more information.
Delete	Deletes the selected physical interface controller.

Routing Client Tab

The Routing Client tab allows you to view (and define or edit, if you have maintenance access) the properties of the selected routing client. The Routing client is the entity that sends routing requests to ICM software.

Table 7: Routing Client Tab Descriptions

Field	Description
Name (required)	The enterprise name of the routing client associated with the NIC. You can have more than one routing client associated with a NIC. Typically, each routing client maps to a subsystem within the interexchange carrier network.
Timeout threshold (required)	The maximum time, in milliseconds, that the routing client can wait for a response to a routing request. The NIC sends a default response slightly before this threshold.
Late threshold (required)	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 (required)	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. For more information, see Chapter 2, "How Routing Works." (page 21)
Default call type	An enterprise name for the call type. Initially, you can leave this field blank. For information on this field, see the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* .
Configuration parameters	A string containing any initialization parameters that must be passed to the routing client. For a public network, this might include the subsystem number. A null value indicates no configuration parameters are provided.
Use DN/Label map	Indicates whether the Dialed Number (DN) Label table is used to determine which labels are valid for each dialed number. If not, all labels for the routing client are valid for all dialed number.
Client type (required)	The type of routing client that ultimately routes the call on the requesting ICM system. This field is enabled only for the routing client associated with an INCRP NIC. In all other cases, it is the same as the logical interface controller's client type. See also "Sprint Routing Clients" (page 72) and "CRSP Routing Clients" (page 72).
Description	Additional information about the routing client.
Network routing client	A name used to associate routing clients across instances. The same string value for the routing client on the NAM and the corresponding routing client on the CICM (applies only for a network ICM.) For information on the Network routing client field, see the *Multiple-NAM Setup and Configuration Guide for Cisco ICM Hosted Edition*

Field	Description
Default Media Routing Domain	(selection list) The media routing domain associated with the routing client.

How to modify a NIC and or its routing client(s)

To modify a NIC and or its routing client(s), follow these steps:

Step 1 Follow the preceding steps for viewing a NIC (See the

The selected NIC's configuration information displays in the fields on the righ

Step 2 Edit the configuration information. (For field descriptions, see the

You can modify all fields in the logical controller, physical controller, and router client tabs that are not greyed out.

When you make a modification, a *Changed* icon
Figure 16: Changed icon

appears next to the edited item (NIC or routing client) in the tree list box.

Step 3 Click **Save.**

The modified data in the ICM database is saved and the Changed icon is removed from the display in the tree list box.

How to define a NIC

To define a NIC, follow these steps:

Step 1 From the **Configuration Manager** menu, select **Tools > Explorer Tools > NIC Explorer**. The NIC Explorer window appears.

Step 2 In the **Select filter** data box, click **Retrieve.** This enables the Add NIC button.

Step 3 Click Add NIC. A new NIC and its routing client display in the tree list box. Next to each is a To Be Inserted icon
Figure 17: To be inserted Icon

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

Step 4   Fill in the tabbed fields. (For field descriptions, see the "NIC Explorer Tab Descriptions" section.) (page 72)

Step 5   If desired, set security settings on the records. (See the "How to view or apply security settings" section.) (page 35)

Step 6   Click **Save**. The newly defined NIC is saved in the database and the To Be Inserted icon is removed from the tree list box.

How to define a routing client

To define a routing client, follow these steps:

Step 1   Follow the steps for viewing a NIC. (See the "How to view a NIC and its routing client(s)" section). (page 72)The selected NIC's configuration information displays in the fields on the right.

Step 2   In the tree list box, select the NIC to which you want to add a routing client. This enables the Add Routing Client button.

Step 3   Click **Add Routing Client**. A new routing client icon appears under the selected NIC in the tree list box and a new routing client tab appears in the window on the right.

Step 4   Enter the needed routing client configuration information in the fields on the right. (For field descriptions, see the Table " Routing Client Tab Descriptions". (page 74))

Step 5   If desired, set security settings on the records. (See the "How to view or apply security settings" section (page 50))

Step 6   Click **Save.**

Sprint Routing Clients

If you specify Sprint as the type of routing client, the NIC Explorer automatically generates some additional records:

- An announcement named NPA_Blocked_Recording (if it does not already exist).

- A label named @NPA Blocked Recording associated with the generated routing client. The label type is Normal and the target is the NPA_Blocked_Recording announcement.

- A label named @Slow Busy associated with the generated routing client. The label type is Busy.

  These records provide support for Sprint's NPA Blocked Recording feature and for returning a busy signal to the caller.

CRSP Routing Clients

CRSP. If you specify CRSP as the type of routing client, two labels are automatically created by the NIC Explorer and are associated with the new routing client:

- "ringForever" with a label type of 3 (ring)

- "busyForver" with a label type of 2 (busy)

When a CRSP routing client record is deleted, the preceding labels associated with the routing client are also deleted.

How to delete a NIC

Follow these steps to delete a NIC:

Step 1 Follow the steps for viewing a NIC. (See the "How to view a NIC and its routing client(s)" section. (page 72))

The selected NIC's configuration information displays in the fields on the right.

Step 2 In the tree list box, select the NIC whose records you want to delete.

Step 3 Click **Delete.**

Step 4 This places a *Marked for Deletion* icon
Figure 18: Marked for deletion icon

next to the NIC in the tree list box. This also toggles the Delete button to Undelete.

To undelete a NIC marked for deletion, select it in the tree list box and click **Undelete**.

Step 5 Click **Save.**

This deletes from the database the NIC marked for deletion and removes it from the tree list box. Once you do this, you cannot undelete the NIC.

Configuring Dialed Number/Script Selectors

After you have set up a routing client, you need to define the dialed number/script selectors serviced by it. A dialed number/script selector can represent an actual number dialed by a caller or any string passed by a routing client to indicate the number dialed.

The Configuration Manager's Dialed Number/Script Selector List tool allows you to list the dialed number/script selectors currently defined in the ICM database, to define new ones, and to view, edit, or delete the records of existing ones. The following instructions show you how to configure individual dialed number/script selectors. For configuring multiple dialed number/script selectors at a time, see Chapter 4, "Configuring Multiple Records at a Time" (page 83).

Dialed Number/Script Selector List Tab Descriptions

How to view, define, delete, or modify dialed number/script selectors

Follow the steps below, to view, define, delete, or modify dialed number/script selectors

Step 1   From within the **Configuration Manager** menu, select **Tools > List Tools > Dialed Number/Script Selector List**. The Dialed Number/Script Selector List window appears.

Step 2   In the **Select filter data** area, select the **Routing client** and **Customer** associated with the dialed number/script selector.

Note: Once you have saved a Dialed Number record to the ICM database, you cannot update the Routing Client field.

If you are viewing or modifying a previously created record and you want to limit the number of records retrieved from the database, also select one of the optional filters.

Step 3   Click **Retrieve**. This enables the Add button and displays a list of the retrieved dialed number/script selectors.

The properties of the dialed number/script selector selected in the Dialed Number/Script Selector list box on the left side of the window are displayed in the property tabs on the right side of the window:

The following properties are displayed:

- The Attributes tab allows you to view and (if you have maintenance access) to define, edit, or delete the attributes of the selected dialed number/script selector. Attributes with an asterisk are required. Table "Dialed Number/Script Selector Attributes Tab Descriptions" (page 79) describes these attributes.

- The Dialed Number Label tab allows you to map labels (in addition to a default label) to the selected dialed number/script selector. Table "Dialed Number Label Tab Descriptions" (page 79) describes the fields and buttons on this tab.

- The Security tab allows you to set security settings to the selected record. For a description of how to use the Security tab, see Chapter 3, Security Settings. (page 50)

Step 4   This step depends on what you want to do:

- To add a new dialed number/script selector, click **Add** and enter the appropriate values in the tabbed property fields on the right side of the window.

- To delete a dialed number/script selector, select that number in the **Dialed Number/Script Selector** list box and click **Delete**.

- To edit a dialed number/script selector, select that number in the **Dialed Number/Script Selector** list box and edit the appropriate values in the tabbed property fields on the right side of the window.

Step 5   Click **Save** to enter any edits into the database.

The dialog box closes, and for a new dialed number/script selector, the ICM database manager automatically generates a unique Dialed Number ID for the routing client.

Dialed Number/Script Selector List Tab Descriptions

The following tables describe the tabbed property fields and buttons that configure a dialed number record.

Attributes Tab

Allows you to view and (if you have maintenance access) to define, edit, or delete the attributes of the dialed number/script selector.

Attributes with an asterisk are required.

Table 8: Dialed Number/Script Selector Attributes Tab Descriptions

Attribute	Description
Routing Client (required)	(selection list) The enterprise name of the routing client associated with this dialed number/script selector. Once you select a routing client and save to the database, this field becomes read only.
Dialed number/script selector string (required)	The string value by which the routing client identifies this dialed number/script selector. This must be the value the routing client passes to the ICM software for calls to this number. For example: 8005551212.
Name (required)	The enterprise name for the dialed number/script selector. This name must be unique among all dialed number/script selectors in the system.
Media routing domain (required)	(selection list) The media routing domain associated with the selected dialed number/script selector.
Customer	(optional) (selection list) The customer associated with the dialed number/script selector.
Default label	(optional) (selection list) The name of the default label for this dialed number/script selector. The label must have been previously defined for it to

Attribute	Description
	be in the selection list. Use the Configuration Manager's Label List tool to define labels. If ICM software fails to determine a target for the call within the routing client's time-out threshold, then the default label for the dialed number/script selector is used.
Description	(optional) Additional description for the dialed number/script selector.
Permit Application Routing	Check this to allow Application Routing. Indicates if remote routing is permitted on this dialed number'script selector.
Reserved by IVR	Enabled when a Type 9 is selected in the Network VRU tab

Dialed Number Mapping Tab

Allows you to view the call types that are mapped to the selected dialed number/script selector and to add, edit, or remove call-type mappings.

A call type is a classification for incoming calls. The call type determines which routing script is executed to find a destination for the call. A call type maps to specific combinations of dialed number (DN), calling line ID (CLID), and caller-entered digits (CED).

You can create as many different mappings for each call type as you want.

Table 9: Dialed Number Mapping Tab Descriptions

Coloumn/ button	Description
CLID/App String 1	The string value by which the routing client identifies the Calling Line ID.
CED/AppString 2	The string value by which the routing client identifies the Caller Entered Digits.
Call Type	Name of the call type to map to the selected dialed number/script selector.
Add	Allows selection of Application Strings and the Call Type. Click Add, andthen in the Dialed Number Map Entry dialog box, select any one of the radio buttons for : Application String 1 • All - To Make All CLID Values Valid. • None - To indicate no caller-entered digits are required and/or are entered for the call type. • Prefix String 1 - Enter the prefix characters. • Match String 1 -Enter a string.

Coloumn/ button	Description
	Application String 2 • All - To Make All CLID Values Valid. • None - To indicate no caller-entered digits are required and/or are entered for the call type. • Match String 2 - Enter a string. Call Type • Choose a call type from the drop-down list.
Edit	Use this to edit the mapped entry.
Remove	Removes the entry.
Up/ Down	Allows sorting of the Call Type order.

Dialed Number Label Tab

Allows you to view, add, or remove the mapping of labels to the selected dialed number/script selector. These are additional to the default label assigned in the Attributes tab.

Table 10: Dialed Number Label Tab Descriptions

Column/Button	Description
Name	This list contains all the Labels currently assigned to the selected dialed number/script selector.
Description	Additional information about the label.
Add	To assign a label to the dialed number/script selector selected in the Dialed Number/Script Selector list box, click Add. Then in the Add Label dialog box, select a label name and click **OK.** **Note:** For labels to appear in this dialog box, they must have been previously defined for the selected dialed number/script selector routing client. Use the Label List tool to define labels.
Remove	To remove a label from the dialed number/list selector selected in the *Dialed Number/Script Selector* list box, select the label name and click **Remove**.

Configuring Dialed Number/Script Selectors

Chapter 6

Configuring Peripherals and Trunk Groups

This chapter describes how to configure peripherals and the trunk groups associated with them.

It includes:

- An introduction to the Peripheral Subsystem

- Instructions on how to view, define, delete, or modify:

  - Peripheral Gateways

  - Peripherals

  - Network Trunk Groups

  - Trunk Groups

  - Trunks

This section contains the following topics:

The Peripheral Subsystem

A peripheral is a switch, such as an ACD, PBX, VRU, or Call Manager. Calls arrive at the peripheral through trunks that are organized into trunk groups. ICM software monitors activity at each peripheral and can route calls to targets at each peripheral.

The logical interface controller and physical interface controller represent the Peripheral Gateway (PG) through which the peripheral communicates with the ICM system.

To view the elements in a peripheral subsystem, see the figure (page 84).

Figure 19: Peripheral Subsystem
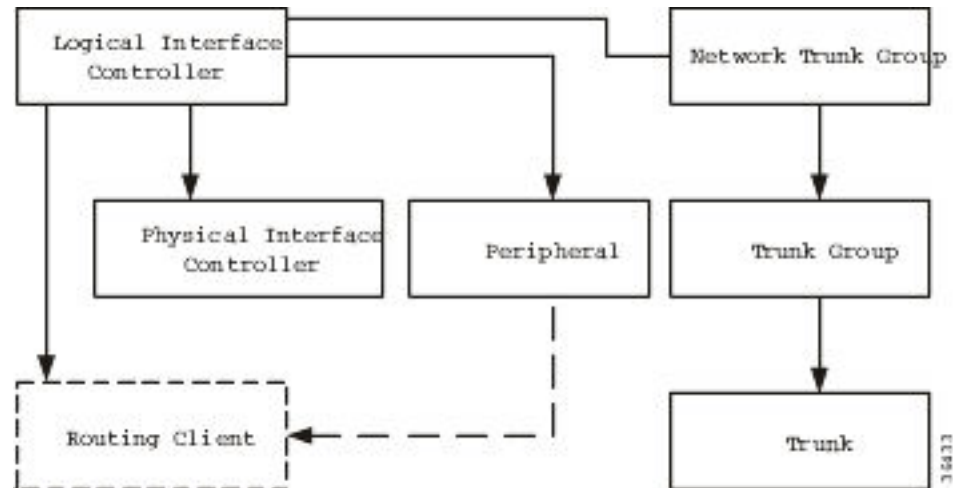
The routing client figures into this subsystem only if the peripheral acts as a routing client (that is, it sends routing requests to ICM software). For information on defining Routing Clients see section, "Configuring Routing Clients (page 69)."

Peripheral Gateways (PGs)

Each peripheral communicates with ICM software through a Peripheral Gateway, called a PG. The PG is a computer that communicates directly with the ACD, PBX, VRU, or Call Manager at a contact center, monitoring status information from the peripheral and sending it to the ICM system's Central Controller. If the peripheral acts as a routing client, the PG sends routing requests to ICM software.

The PG can be a single simplexed computer or a pair of duplexed computers. A single PG can service more than one peripheral; however, each peripheral uses one, and only one, PG.

Note: Although a PG can consist of a pair of duplexed computers, only one of them is active at a time, so that ICM software sees it as a single, logical and physical, PG.

Configuring a PG

Use the PG Explorer to view, define, modify, or delete peripheral gateway records.

The PG Explorer generates and maintains PG records for a logical interface controller, a physical interface controller, associated peripherals, and, if appropriate, an associated routing client.

Note: If you are configuring a PG for a duplexed pair, you only need to define the information once.

Figure (page 85) shows the records generated by the PG Explorer.

Figure 20: Records generated by PG Explorer
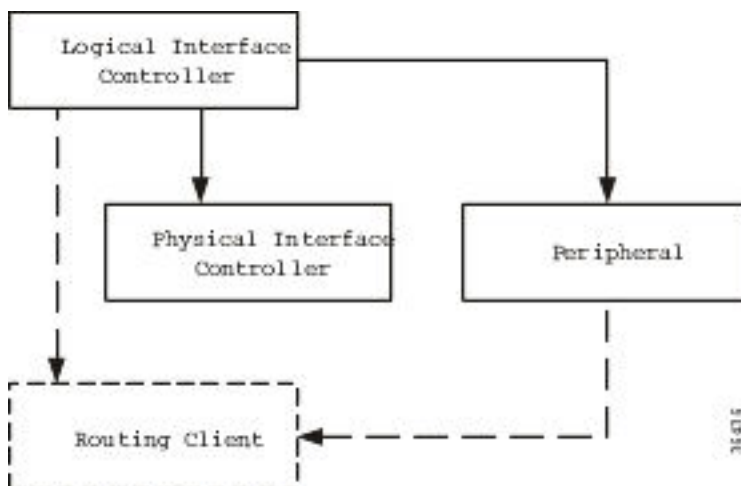
How to view PG records

1. From the Configuration Manager menu, select **Tools Explorer Tools PG Explorer**. The PG Explorer window appears.

2. In the **Select filter data** box, select the filters you want.

3. Click **Retrieve**. The name(s) of the retrieved PG(s) appear in the tree list box.

4. In the tree list box, select the PG whose records you want to view. The selected PG's configuration information displays in the tabbed fields on the right.

5. To view a peripheral's record: in the tree list box, expand the tree branch for the selected PG, and select the PG's peripheral icon.

The peripheral configuration information displays in the window on the right. For field descriptions, see the following section, PG Explorer Tab Descriptions (page 84).

PG Explorer Tab Descriptions

The following tables describe the tabbed property fields and buttons that configure a PG. Use these fields to define and update PGs and their associated peripherals.

Logical Controller Tab

Use the Logical Controller tab to view, define, and update PG definitions. In the ICM database, a PG is identified by its logical controller.

Table 11: Logical Controller Tab Descriptions

Field	Description
Logical Controller ID (required)	A unique identifier used to reference the PG's Logical Interface Controller table. This is a read-only field. When you create a new PG, the system places UNASSIGNED in this field and automatically creates an ID when you save your edits.
Physical Controller ID (required)	A unique identifier for the PG's physical controller. This is a read-only field. When you create a new PG, the system places UNASSIGNED in this field and automatically creates an ID when you save your edits.
Name (required)	An enterprise name for the PG. This name must be unique for all PGs in the enterprise. An enterprise name: • Is a character-string name commonly used to identify an object in the ICM database. • Must be unique among all objects of a specific type. For example, each service must have an enterprise name that is unique among all services. • 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. **Note:** This name is used in composite names which are limited to a 32 character length, i.e., an agent enterprise name. Therefore, keep the name short.
Client type (required)	(selection list) The type of client that the PG services. When defining a new PG, select one from the pop-up selection box. Selecting a type of peripheral automatically places that type's default values in the associated peripheral's Client type, Peripheral service level type, Service level type, and Service level threshold fields. **Note:** Once a client type is selected and saved in the database, the selection box options change and you are limited on how you can change that type. If the client type is PG Generic, then you may be able to change that type from the Peripheral tab. However, if the peripheral is online

Field	Description
	and agents are logged onto it, then the agents will be automatically logged off when the peripheral's client type is changed.
Configuration parameters	A string containing information, such as logon information, specific to the PG. For example: `-rtuser UserName -rtpswd Password`
Description	Additional information about the PG.
Physical controller description	Information about the physical controller.
Primary CTI address	Address for CTI server as <IP>:<port> in either dotted numeric or name format. If a CTI server is installed at the PG, then enter its address. This address is needed if an agent is connected through a CTI server rather than through a peripheral.
Secondary CTI address	Address for CTI server as <IP>:<port> in either dotted numeric or name format. The secondary CTI address is needed if a CTI server is installed at the PG and the ICM system is duplexed. **Note:** If you use a simplex system, fill in both the addresses. Otherwise the CeM arm connection will not be established.

Peripheral Tab

A peripheral is a switch, such as an ACD, PBX, or IVR, that receives calls that have been routed by ICM software. Use the Peripheral tab and its associated tabs to view, define, and update the peripherals associated with a PG.

Table 12: Peripheral Tab Descriptions

Field	Description
Peripheral ID (required)	A unique identifier for the peripheral. This is a read-only field. When you create a new PG, the system places UNASSIGNED in this field and automatically creates an ID when you save your edits.
Name (required)	An enterprise name for this peripheral. The name must be unique among all peripherals in the enterprise.
Peripheral name (required)	The name of the peripheral as it is known at the local site. Unlike the Enterprise Name field, the value of this field does not have to be unique. For example, at each site you might label the peripherals Switch1, Switch2, and so forth.
Client type (required)	The type of peripheral. The value for this field comes from the Logical Controller Client Type field.

Field	Description
	Note: Once a client type is selected and saved in the database, the selection box options change and you are limited on how you can change that type. If the client type is PG Generic, then you may be able to change that type from the Peripheral tab. However, if the peripheral is online and agents are logged onto it, then the agents will be automatically logged off when the peripheral's client type is changed.
Location (required)	The peripheral's location. For example: the name of a city, building, or department.
Abandoned call wait time (required)	Minimum time in seconds an incoming call must be queued before being considered an abandoned call if the caller hangs up.
Configuration parameters	A string containing any parameters that must be sent to the device to initialize it. In most cases, you should leave this string blank.
Call control variable map	A string that describes the mappings of the peripheral's call control variables to ICM software's call control variables.
Description	Additional information about the peripheral.
Default desk settings	(selection list) Default desk settings for agents associated with the peripheral. If NONE is the only option in the selection list, you need to create desk settings. To create desk settings, use the Configuration Manager's Agent Desk Settings List tool.
Peripheral service level type (required)	The default type of service level calculation to be performed by the peripheral for its associated services. Specify one of the following: • If the peripheral type is Aspect, choose the type of calculation to be performed by default. You can override the default for each individual service. • If the peripheral type is not Aspect, choose **Calculated by CallCenter**.
Enable post routing	Checked, indicates post routing is enabled. When this is enabled, the Routing Client tab is also enabled. If you check Enable post routing in the Peripheral tab, also enter the properties in the Routing Client tab. **Note:** If an existing PG does not have post-routing enabled and its type supports it, you can enable it. However, if an existing PG has post-routing enabled, you cannot disable it.

Field	Description
Peripheral Auto Configured	Checked, indicates peripheral is auto configured.

Advanced Tab

The Advanced tab allows you to view (and define or edit, if you have maintenance access) the advanced properties of the selected peripheral.

Table 13: Advanced Tab Descriptions

Field	Description
Available holdoff delay (required)	The number of seconds to wait after the end of a call before recording the agent as available. The value you enter here is the default for all skill groups associated with the peripheral. You can change the value for individual skill groups. Specify one of the following: • For a Nortel Meridian peripheral, this value should match the flexible call force timer (FCFT). • For a DMS-100, this is the default Variable WrapUp time for ACD DNs. • For all other peripheral types, set this field to 0.
Default route	The default route associated with this peripheral.
Answered short calls threshold	The maximum length, in seconds, for a short call to the peripheral. Any calls with a duration below the threshold are considered short. You might then choose to factor out short calls from handle times you calculate.
Network VRU	The type of network VRU. If the peripheral is a VRU, that is, used as a network VRU, select the name of the network VRU from the drop-down list. **Agent auto-configuration** Specifies whether agent auto-configuration is enabled for the peripheral. **Note:** Agent Reporting implies Auto Configuration. Agent Reporting without auto-configuration is NOT supported. ICM does not support Agent Reporting on manually configured agents with auto-configuration off. **Internal IPTA only** Specifies whether the peripheral belongs to internal IPTA.

Skill Group MaskTab

This tab allows you to view (and define or edit, if you have maintenance access) the default number of subskill groups associated with the selected peripheral.

Note: For some peripherals (Definity ECS EAS, Nortel Meridian, Rockwell Galaxy, and Rockwell Spectrum), the Configuration Manager can automatically create subgroups (primary, secondary, and so on) for each skill group.

Subskill Group Check Boxes

The maximum number of subgroups that may be created depends on the Peripheral's client type, and may be none. Where subgroups are available, a default selection has been made. You may change this default, either to none or any number up to the maximum number allowed for this client type.

If you later edit the subgroup selection, removing any previously used subgroups may cause loss of reporting information and should be done carefully. Changes done here will be reflected in all Skill Group entries that currently exist for this Peripheral, which do not explicitly override the settings in the Peripheral.

Check a box for each subskill group you want to be associated by default with the peripheral. For each box you check, a skill group record is created in the database if the primary skill group uses the peripheral's default.

The number of subskill groups used by a primary skill group is specified in the Subgroup Mask tab of the Skill Group Explorer. There, you can add more subskill groups than are defined for the peripheral if the selected skill group requires additional ones.

Routing Client Tab

A routing client represents an entity that sends routing requests to the ICM software through a logical interface controller. Use the Routing Client tab to view, define, or update a PG's routing clients.

Table 14: Routing Client Tab Descriptions

Field	Description
Name (required)	An enterprise name for this routing client. The name must be unique among all routing clients in the enterprise.
Timeout threshold (required)	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 (required)	The 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 TimeoutThreshold.

Field	Description
Timeout limit (required)	The number of seconds to wait for routing responses before the routing client terminates communication with the ICM software. When a response from the ICM router exceeds the time-out threshold, then the routing client starts a timer. If the timer reaches the specified time-out limit before the routing client receives any responses from the ICM router, then the routing client assumes the ICM system is off-line and stops sending it routing requests.
Default MR domain ID (required)	(selection list) The media routing domain associated with the routing client.
Default call type	The call type to be used for any route request that does not match a defined call type mapping. The drop-down list contains all configured call types. The ICM software uses the default call type for any routing request from the routing client that does not otherwise map to a call type. If you do not define a default call type for the routing client, the ICM software uses a general default call type.
Configuration parameters	An optional string containing the configuration parameters to be used by the controller to initialize the routing client. For a public network client, this field normally specifies the subsystem for the NIC to use.
Use DN/Label map	Indicates that the Dialed Number (DN) Label table is used to determine which labels are valid for each dialed number (if checked), or that all labels for the routing client are valid for all dialed numbers (if not checked). Normally, this field should be unchecked.
Client type	Indicates the type of client. For an ICRP NIC, this is the type of the ultimate client on the Network ICM. In all other cases, it is the same as the PG's Client Type.
Description	Additional information about the routing client.
Network routing client	A name used to associate routing clients across instances.
Network transfer preferred	Checked, indicates network transfer is preferred. When the target of a call transfer is reachable by both a label defined for the requesting routing client and by another label defined for the network routing client that pre-routed the call, this option indicates which choice is preferred.

Peripheral Monitor Tab

A peripheral monitor is an entity that you want to monitor at the peripheral. Not all peripherals require peripheral monitor records.

You must configure Peripheral Monitor records for:

- Extension numbers on a Definity switch

- Pilots and agents on an Alcatel 4400

- Monitored entities on a Siemens ACD

- Primary ACD DNs and Secondary DNs on a DMS-100

- Positions on a Meridian ACD running in enhanced CTI mode

Table 15: Peripheral Monitor Tab Descriptions

Field	Description
Current peripheral monitor entries	Lists the current peripheral monitor data (Type, Extension, and Configuration Parameter) entered for the selected PG. **Note:** The Peripheral monitor records are initially sorted by PeripheralMonitorID (the default sort order). Click any column header to reverse the sort order (ascending-to-descending or descending-to- ascending). The indicator to the right always points to the lowest item in the current list order.

Type (required)	The type of entity to be monitored: ACD Directory Number (ACD DN), Meridian Position, Queue, Route Control Group (RCG), Routing Device, Station, Symposium CDN, Trunk, Vector Directory Number (VDN), or Virtual Routing Device.
	
	 Type of entity
	
	 • For a DMS-100, choose ACD DN for each entry.
	
	 • For an Alcatel 4400, choose:
	
	    – ACD DN for Non CSTA Routing Pilots or an agent
	
	    – Routing Device for CSTA Routing Pilots
	
	    – Virtual Routing Device for all virtual devices to be used for translation or post routing

Extension	Extensions are • For an Alcatel 4400, the DN for a pilot or the agent number for an agent. • For a Avaya Definity, if there is a single extension number, enter the number here (for example, 6002) and do not enter it in the parameter string. If there is more

Field	Description
	than one number, leave this field blank and enter the numbers as a range in the parameter string. • For a DMS-100, the Primary ACD DN, Secondary DN, or a non-digit character. • For a Siemens ACD, the extension number to be monitored.

Configuration Parameters	A parameter string to be passed to the peripheral along with the extension string to start monitoring on the specified extension:
	
	• For a Definity, if there is more than one extension number, enter them here as a range, for example, 6001-6020. If there is only one extension number, leave the parameter string blank.
	
	• For a DMS-100, the string can contain the following items:
	
	  – <SN n> where n is the CompuCALL session associated with the Primary ACD DN or Secondary DN in the Extension field.
	
	  – <CDN> indicates that the Primary ACD DN in the Extension field is a CDN.
	
	  – <DN dn> <ID posID> where dn is an Agent DN and posID is the associated agent position ID.
	
	• For a Meridian ACD, this value indicates the position number and, optionally, the associated Individual Directory Number (IDN). The syntax of the parameter string is as follows:
	
	position [, idn] In this syntax, position may be a single position number (such as 5201) or a range of position numbers (such as 5201-5299) and idn is an associated Individual Directory Number (for example, 4201) or range of Individual Directory Numbers (such as 4201-4299). A range can contain up to 200 contiguous positions and IDNs. For example, the following are valid parameter strings:
	
	5201
	
	5201, 4201
	
	5201-5299

Field	Description
	5201-5299 4201-4299 If a position has an associated IDN, include the IDN in the parameter string. • For Siemens ACDs, this string is optional.
New	Click this button to enter new monitor data. Then, select a type from the Type selection list, fill in any other appropriate field information, and click the **Enter** key.
Delete	Click this button to delete the selected row item from the list of Current peripheral monitor entries.
Extension	Displays the Extension of the selected Current peripheral monitor entries for editing purposes. Click Save when you are done editing to save your changes.
Configuration Parameter	Displays the Configuration Parameter of the selected Current peripheral monitor entries for editing purposes. Click Save when you are done editing to save your changes.
Type	Displays the Type of the selected Current peripheral monitor entries for editing purposes. Click Save when you are done editing to save your changes.

Default Route Tab

Use this tab to create a default route for each Media Routing Domain that is associated with a peripheral.

Table 16: Default Route Tab

Field/Button	Description
Current default route entries	**Media routing domain** The media routing domain configured for the selected default route entry. **Route** The default route configured for the media routing domain of the selected default route entry. **Note:** The default route configured for the media routing domain of the selected default route entry.Click any column header to reverse the sort order (ascending-to-descending or descending-to- ascending). The indicator to the right always points to the lowest item in the current list order.

Field/Button	Description
New	Click to enter new default route data. Then, enter a media routing domain and a route.
Delete	Click to delete the selected row item from the list of current default route entries.
Media routing domain (required)	Enter the media routing domain when creating a new default route entry.
Route	Enter the route when creating a new default route entry.

Agent Distribution Tab

Use the Agent Distribution tab to list and view the agent distributions currently defined in the ICM database and (if you have maintenance access) to define new agent distributions, and to edit, or delete existing ones. This data is stored in the database Agent Distribution table.

Note: The PG Explorer (and the assigning of agent distribution) is not available on a limited AW.

Table 17: Agent Distribution Tab Descriptions

Field	Description
Enable agent reporting	Specifies whether agent reporting is enabled for the peripheral. Select this option if you want the peripheral to report agent-level statistics to ICM software. **Note:** • Agent Reporting implies Auto Configuration. Agent Reporting without auto-configuration is NOT supported. ICM does not support Agent Reporting on manually configured agents with auto-configuration off. • If the peripheral's client type is CallManager/SoftACD, then you must select an agent desk setting in the PG Explorer's Peripheral tab before you can enable agent reporting. The peripheral's client type is indicated in the PG Explorer's Peripheral tab.
Agent Event detail	Specifies whether agent event detail reporting is enabled for the peripheral. This checkbox is enabled only if the **Enable agent reporting** checkbox is selected. Making this selection result in agent reason codes being added to agent reporting. **Note:** This checkbox is enabled by default if you are adding a CallManager PG.
Agent distribution entries	Lists the agent distributors (Admin Workstations) available for distributing agent report data for the selected peripheral.

Field	Description
	Distributor Site Name One or more names of agent distribution sites associated with the selected peripheral. **Enabled** N indicates the site is not enabled. Y indicates the site is enabled.
Currently selected site	**Distributor Site Name** The name of the currently selected site in the agent distribution entries list. **Enabled** Checked, enables the flow of agent data from the peripheral to the distributor. Unchecked, disables the flow of agent data.
New	Click to add a new distributor site. This places *NEW* in the Distributor site name input box and in the Agent Distribution Entries list. Replace *NEW* in the Distributor site name input box with the name you want. Then click the check box if you want to enable it, and click **Save**.
Delete	To delete a distributor site, select that site's name in the Agent Distribution Entries list and click this botton. Then click **Save**.

Note: For information on how to use the AgentCfg command line utility to import agent data, see "Importing Agent Configuration Data from the Peripheral (page 125)" in the section Configuring Skill Targets.

Defining PGs and Peripheral

Use the PG explorer to define a PG and its associated peripherals.

How to define a PG

To define a PG, perform the following:

Step 1   From the Configuration Manager menu, select **Tools Explorer Tools PG Explorer**. The PG Explorer window appears.

Step 2   In the Select filter data box, click **Retrieve**. This enables the Add PG button.

Step 3   Click Add PG. A new PG appears in the tree list box with a To Be Inserted icon

Figure 21: PG to be inserted icon

⚙

next to it. Tabbed fields also appear on the right for the new PG's configuration information.

Step 4   Fill in the tabbed fields. (For field descriptions, see the "PG Explorer Tab Descriptions (page 84)" section.

Step 5   If desired, set security settings on the records. (See the "How to view or apply security settings (page 50)" section in Chapter 3.)

Step 6   Click **Save** to save the newly defined PG in the database.

How to define a peripheral

Follow the steps for defining a peripheral:

Step 1   Follow the steps for viewing a PG. (See the "How to view PG records (page 83)" section.)

The selected PG's configuration information appears in the fields on the right. For field descriptions, see the "PG Explorer Tab Descriptions (page 84)" section.

Step 2   In the tree list box, select the PG to which you want to add a peripheral. This enables the Add Peripheral button.

Step 3   Click **Add Peripheral**. A peripheral is added to the selected PG in the tree list box. Also a new set of tabbed fields appear on the right for the new PG's configuration information.

Step 4   Enter the needed peripheral configuration information in the fields on the right. (For field descriptions, see Table Peripheral Tab Descriptions (page 87).)

Step 5   If desired, set security settings on the records. (See the "How to view or apply security settings (page 50)" in the section The ICM Configuration Manager)

Step 6   Click **Save**.

After you have defined a peripheral, you can define the trunks, agents, groups, and services associated with that peripheral.

Modifying a PG or Peripheral

Use the PG Explorer to modify a PG or a peripheral.

How to modify a PG and peripheral records

Follow the steps to modify a PG and peripheral records:

Step 1   Follow the steps for viewing a PG. (See the "" section.)

The selected PG's configuration information displays in the fields on the right.

Step 2   Edit the configuration information. (For field descriptions, see the "" section.)

Note: You cannot modify fields that are greyed out.

Table 18: Rules for Changing a PG's Client Type

If the PG Client Type is	Then it can be
Non PG_Generic (ACD or VRU)	Changed to PG_Generic.
PG_Generic	Changed to VRU or a specific ACD type if and only if all peripherals configured for that PG are of the same type.
Rockwell r1.3 ACD	Changed to Rockwell Galaxy or Rockwell Spectrum.
Avaya DEFINITY ECS ACD	Switched between EAS and non-EAS mode.

Table 19: Rules for Changing a PG's Peripheral

If the PG Client Type is...	Then...
PG_Generic	A VRU peripheral can always be added.
PG_Generic	An ACD peripheral cannot be changed to a VRU peripheral or vice-versa. The peripheral must be deleted and re-added.
PG_Generic with only VRU peripherals	Any type of ACD peripheral can be added.
PG_Generic with at least one ACD peripheral	Any additional ACDs must be of the same type.

When you make a modification, the *Changed* icon
Figure 22: Changed Icon

appears next to the selected item (PG or Peripheral) in the tree list box.

Step 3   Click **Save**.

The modified data is saved in the ICM database and the *Changed* icon is removed from the PG or peripheral in the tree list box.

Deleting a PG or a Peripheral

Use the PG Explorer to delete a PG or a peripheral.

How to delete a PG or a peripheral

Follow the steps to delete a PG or a peripheral:

Step 1   Follow the steps for viewing a PG. (See the "How to view PG records (page 83)" section.)

The selected PG's configuration information displays in the fields on the right.

Step 2   In the tree list box, select the PG or peripheral whose records you want to delete.

Note: If you select a PG, the records for all peripherals associated with it will also be deleted. If you select a peripheral, only its records will be deleted.

Step 3   Click **Delete**.

Step 4   This places a *Marked for Deletion* icon
Figure 23: Deletion Icon

next to the selected item in the tree list box. This also toggles the Delete button to Undelete.

To undelete an item marked for deletion, select it in the tree list box and click Undelete.

Step 5   Click **Save**.

This deletes from the database the PG or peripheral marked for deletion and removes it from the tree list box. Once you do this, you cannot undelete the deleted item.

Configuring Trunk Groups and Trunks

Every peripheral has one or more associated trunk groups, with each trunk group containing one or more physical trunks. Trunk groups map to trunk sets defined by the peripheral.

A peripheral dispatches a call to the appropriate skill target based on the trunk group on which the call arrives and the DNIS value that accompanies it. The peripheral treats all trunks with a particular trunk group the same, but it might treat trunks within another trunk group differently.

Note: The DMS-100 does not have trunk groups, but within ICM software you must define one network trunk group and one trunk group for each DMS-100.

When setting up trunk groups and trunks, you must specify:

• Each trunk group that can receive calls

• How many trunks are in each trunk group, or configuration information for each trunk in the group

This section describes how to configure the trunk groups and trunks that will be used by routing clients and peripherals.

Network Trunk Groups, Trunk Groups, and Trunks

Routing clients deliver calls to trunk groups at the peripheral. However, a routing client might group the trunks differently from the way the peripheral groups them. The groups as seen by the routing client are called network trunk groups.

A network trunk group:

• Is a collection of peripheral trunk groups.

• Can map directly to a single trunk group at the peripheral or to multiple trunk groups.

• Can also map to trunk groups at different peripherals, provided that all the peripherals are associated with the same Peripheral Gateway. (Only valid for VRU peripherals.)

How to view a network trunk group, its trunk groups, and its trunks

Follow the steps to view a network trunk group, its trunk groups, and its trunks:

Step 1   From the Configuration Manager menu, select **Tools Explorer Tools Network Trunk Group Explorer**. The Network Trunk Group Explorer window appears.

Figure 24: Example Network Trunk Group Explorer Window
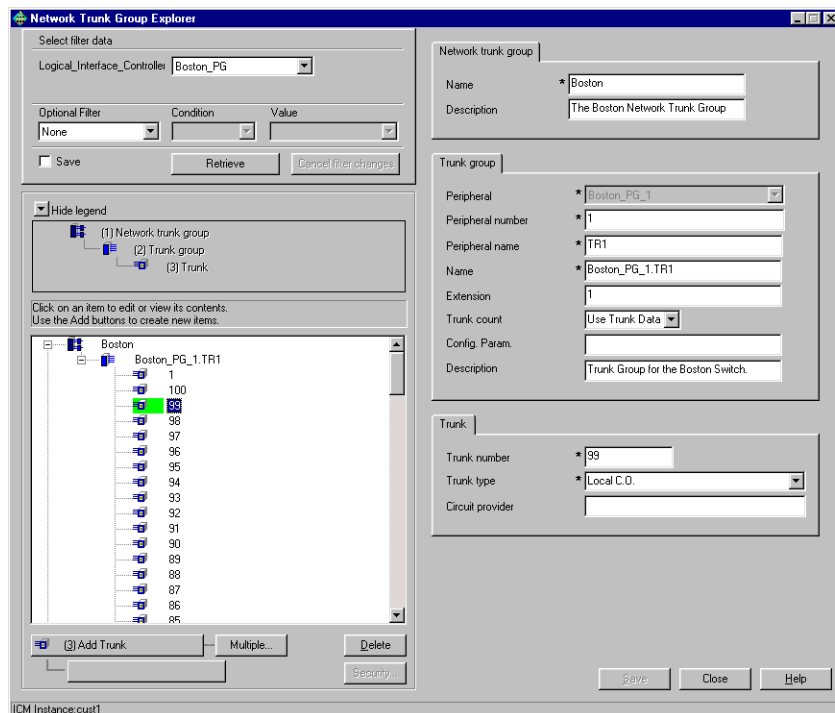
Step 2   In the **Select filter data** box, select the filters you want.

Step 3   Click **Retrieve**. This enables the Add button and displays a list of the retrieved network trunk group(s) in a tree list box on the left side of the explorer window.

Step 4   In the tree list box, select the network trunk group whose records you want to view or modify. The selected network trunk group's configuration information displays in the tabbed fields on the right.

Step 5   To view trunk group or trunk data, expand the tree and then select the tree item whose properties you want to view or edit. In the figure "Example Network Trunk Group Explorer Window" (page 100), Trunk 99 is selected. This trunk belongs to the Boston_PG_1 trunk group, which belongs to the Boston network trunk group.

The property tabs on the right side of the explorer window display the properties of the item selected in the tree list box. Properties with an asterisk are required. If you have maintenance access, you can define or edit these properties.

Network Trunk Group Tab Descriptions

Allows you to view (and define or edit, if you have maintenance access) the properties of the selected network trunk group.

Table 20: Network Trunk Group Tab Descriptions

Property	Description
Name (required)	An enterprise name for the network trunk group. This name must be unique for all network trunk groups in the system.
Description	(optional) Any other information about the network trunk group.

Trunk Group Tab Descriptions

Allows you to view (and define or edit, if you have maintenance access) the properties of the selected trunk group.

Table 21: Trunk Group Tab Descriptions (continued)

Property	Description
Peripheral (required)	(selection list) The enterprise name of the peripheral with which the trunk group is associated. **Note:** Once you have saved a trunk group record to the ICM database, you cannot update this field.
Peripheral number (required)	The number of this trunk group as understood by the peripheral.

Property	Description
	This value must be unique among all trunk groups connected to the same peripheral, but not throughout the entire system. Once you install the data to the central database, you cannot change this field.
Peripheral name (required)	The name of this trunk group as understood by the peripheral. This value must be unique among all trunk groups connected to the same peripheral, but not throughout the entire system.
Name (required)	The enterprise name for the trunk group. This name must be unique among all trunk groups in the entire system. If you click in this field when entering a new trunk group, the system by default creates a name from the peripheral and the peripheral name. For example: Boston_PG.TrunkGroup2 where Boston_PG is the peripheral and TrunkGroup2 is the peripheral name.
Extension	The description is: • If the peripheral is a Avaya DEFINITY ECS, the extension number that the peripheral associates with this trunk group. • If the peripheral is a Nortel Meridian running in enhanced CTI mode, the Meridian route access code (ACOD) for this route. • For all other peripheral types, this field should be blank.
Trunk count	(selection list) The number of trunks in this trunk group or **Use Trunk Data**. If **Use Trunk Data** is selected, ICM software determines the trunk count dynamically by counting the associated records in the Trunk table.
Config. Param.	A parameter string that ICM software must send to the ACD to configure the trunk group.
Description	A description for the trunk group.

Trunk Tab Descriptions

Allows you to view (and define or edit, if you have maintenance access) the properties of the selected trunk.

Table 22: Trunk Tab Descriptions

Property	Description
Trunk number (required)	The number of this trunk within the trunk group.

Property	Description
Trunk type (required)	(selection list) The trunk's trunk type: DID/DNIS, Foreign Exchange, Interflow, Local Central Office, PRI, Tie Line, or WATS. The table "Trunk Types (page 103)" lists the types of trunks that ICM software supports.
Circuit provider	The name of the carrier that provides the circuit for this trunk. The provider is either a local phone company or an interexchange carrier.

Table 23: Trunk Types

Trunk Type	Description
Local CO	Connects the peripheral directly to the local telephone company's central office (CO).
Foreign exchange	Connects the peripheral directly to the central office of a non-local central office.
WATS	Dedicated to Wide Area Telecommunication Service (WATS). This is a special service that allows a peripheral to place or receive calls from specific regions at a discounted price.
DID/DNIS	Supports Direct Inside Dial (DID) or Dialed Number Identification Service (DNIS). A code to identify the number dialed by the caller accompanies each call. The peripheral can then dispatch the call to a specific target.
PRI	Supports ISDN Primary Rate Interface (PRI). This mode typically provides 23 channels for voice or data and one channel for signaling information (23B + 1D).
Tie-line	Connects one peripheral directly with another across a wide area.
Interflow	Dedicated line that allows one peripheral to off-load calls to another peripheral.

How to edit a network trunk group, its trunk groups, and its trunks

Follow the steps to edit a network trunk group, its trunk groups, and its trunks:

Step 1 From the Configuration Manager menu, select **Tools Explorer Tools Network Trunk Group Explorer**. The Network Trunk Group Explorer window appears.

Step 2 In the **Select filter data** box, select the filters you want.

Step 3 Click **Retrieve**. This displays a list of the retrieved network trunk group(s) in a tree list box on the left side of the explorer window.

Step 4 In the tree list box, select the item you want to edit. Expand the tree if necessary. This displays the selected item's property tab on the right side of the window.

Step 5   Edit the appropriate properties. For property descriptions, see the "Network Trunk Group Tab Descriptions (page 100)" section.

Step 6   Click **Save**.

How to define a network trunk group, its trunk groups, and its trunks

Follow the steps to define a network trunk group, its trunk groups, and its trunks:

Step 1   From the Configuration Manager menu, select **Tools Explorer Tools Network Trunk Group**. The Network Trunk Group Explorer window appears.

Step 2   In the **Select filter data** box, select the filters you want.

Step 3   Click **Retrieve**. This displays a list of the retrieved trunk groups and enables the add functionality.

Step 4   This step depends on what you want to do:

     a.   To add a new network trunk group, click **Add Network Trunk Group**.

     b.   To add a new trunk group, select the network trunk group to which you want to add a group, and click **Add Network Trunk Group**.

     c.   To add a new trunk, select the trunk group to which you want to add a trunk, and click **Add Trunk**.

Step 5   Enter the appropriate values in the tabbed property fields on the right side of the window. For property descriptions, see the "Network Trunk Group Tab Descriptions (page 100)" section.

Step 6   Click **Save**.

How to delete a network trunk group, its trunk groups, and its trunks

Follow the steps to delete a network trunk group, its trunk groups, and its trunks:

Step 1   From the Configuration Manager menu, select **Tools Explorer Tools Network Trunk Group Explorer**. The Network Trunk Group Explorer window appears.

Step 2   In the **Select filter data** box, select the filters you want.

Step 3   Click **Retrieve**. This displays a list of the retrieved network trunk groups.

Step 4   In the tree list box, select the network trunk group, trunk group, or trunk whose records you want to delete.

     Note: If you select a network trunk group, the records for all trunk groups and trunks associated with it will also be deleted. If you select a trunk, only its records will be deleted.

Step 5   Click **Delete**.

Step 6   This places a *Marked for Deletion* icon
Figure 25: Marked for Delete Icon

next to the selected item in the tree list box. This also toggles the Delete button to Undelete.

To undelete an item marked for deletion, select it in the tree list box and click Undelete.

Step 7   Click **Save**.

This deletes from the database the item marked for deletion and removes it from the tree list box. Once you do this, you cannot undelete the deleted item.

How to define multiple trunks

You can quickly define multiple trunks of the same type for a specific trunk group by using the Multiple button in the Network Trunk Group Explorer window.

Step 1   From within the **Network Trunk Group Explorer**, select the trunk group to which you want to add trunks. This enables the Multiple button.

Note: You must have an existing trunk from the peripheral defined before you click Multiple.

Step 2   Click **Multiple**. The Multiple Trunk Creation dialog box appears.

Figure 26: Multiple trunk creation

Step 3   Set the **First trunk number** and the **Last trunk number** fields so that you define the range of trunks you want.

Step 4   In the Trunk type field, select the trunk type. For a description of trunk types, see Table "Trunk Types (page 103)".

Step 5   (optional) In the Circuit provider field, enter the name of the carrier that provides the circuit for this trunk.

Step 6   Click **Create records**. The tree list box will display a list of the numbered trunks beneath the selected trunk group and the Trunk tab on the right side of the window will display the properties of the trunk at the end of the series of numbers.

Step 7   In the Network Trunk Group Explorer window, click **Save**.

Note: If a trunk number in the range you specified has already been used, that trunk number is selected in the tree list box and a message displays. Before you can save the data, you must edit the trunk number.

Chapter 7

Configuring Skill Targets

This chapter describes how to set up the entities that ICM software selects to handle calls at a peripheral.

It includes:

- An introduction to the skill targets subsystem

- Instructions on how to view, define, delete, or modify:

    - Services

    - Skill Groups

    - Agents

    - Persons

    - Agent reporting

    - Enterprise services

    - Enterprise skill groups

This chapter also includes instructions for using theagentcfg.exe utility that allows you to update you ICM database with agent information from an ICM peripheral.

This section contains the following topics:

The Skill Targets Subsystem

After you define a peripheral, you must define the skill targets associated with the peripheral. The Figure "Skill Targets" shows the elements in a skill target subsystem.

Figure 27: The Skill Targets Subsystem
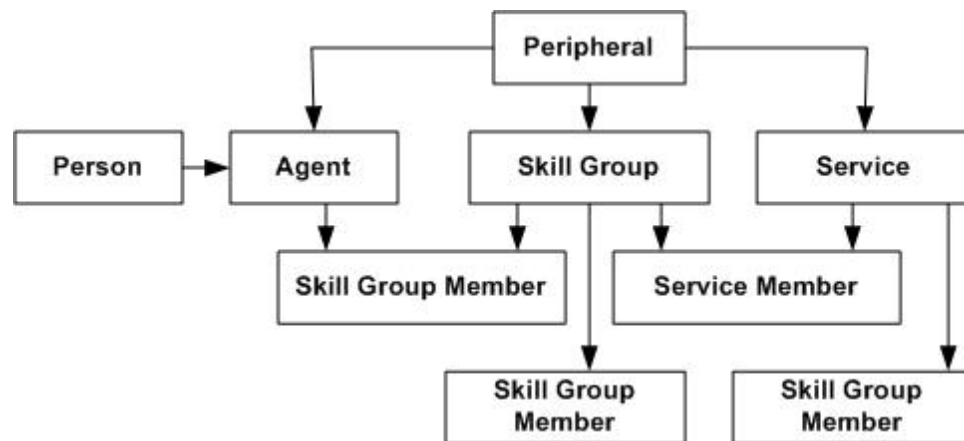
Skill targets are the entities that ICM software chooses to handle calls at a peripheral: services, skill groups, and agents. The other members in the skill target subsystem define relationships among skill targets:

The other members in the skill target subsystem define relationships among skill targets:

- Agents are members of skill groups.

- Skill groups are members of services.

- An enterprise skill group is a collection of skill groups, usually from different peripherals.

- An enterprise service is a collection of services, usually from different peripherals.

The rest of this chapter describes how to define these skill targets and establish the relationships among them.

Services

You must provide information about each service associated with a peripheral. A service is a type of caller need that the peripheral handles; for example, Sales, Support, and Information might all be services.

Use the Service Explorer to configure services and their associated records.

Service Explorer

The following sections show you how to use the Service Explorer to view and configure a service and its associated routes, peripheral targets, and labels.

How to view a service

To view a service, follow these steps:

Step 1 In the Configuration Manager menu, select **Tools > Explorer Tools > Service Explorer**. The Service Explorer window appears.

Step 2 In the **Select filter data** box, select the peripheral associated with the service you want to view. You can choose the name from the drop-down list.

Note: Once you have saved a service record to the ICM database, you cannot change the peripheral to which it is associated.

Step 3 Select any other filters you want. **None** in the Optional filter box means all services associated with the selected peripheral will be displayed.

Step 4 Click **Retrieve**. This lists in the tree list box the name(s) of the retrieved service(s).

Note: A tree object is unassigned if it was made by another configuration tool and was not assigned (mapped) to a parent object; for example, a label might not have been assigned to a peripheral target or a route might not have been assigned to a service, and so on.

Step 5 In the tree list box, select a service to display its configuration information on the right side of the window.

Step 6 If the service has a route associated with it, click its icon in the tree list box to display its configuration information. Do the same for a peripheral target associated with the route and a label associated with the peripheral target.

Service Explorer Tab Descriptions

The tables in the following sections describe the fields in the Service Explorer records.

Service Tab

This tab allows you to view (and define or edit, if you have maintenance access) the properties of the selected service.

A service is the type of caller need that a peripheral handles; for example, Sales, Support, and Information.

Table 24: Service Tab Field Descriptions

Field	Description
Media routing domain (required)	(selection list) The media routing domain associated with the service.
Peripheral number (required)	The number of this service as understood by the selected peripheral. Use the application number, gate number, split number, or skill number. This value must be unique among all services for a peripheral, but need not be unique across peripherals.
Peripheral name (required)	The local name for the peripheral's service. This value must be unique among all services associated with the peripheral, but need not be unique across peripherals. For example, each peripheral can have a service named Sales.
Name (required)	The enterprise name of the service. This name must be unique among all the services in the enterprise. If you click in this box after entering the peripheral name, the software automatically creates this name by appending the peripheral name to the selected peripheral. For example: Boston_PG_1.Sales.
Config param	(optional) A string of parameters the ICM system sends to the peripheral to initialize the service.

Service level type (required)	For IPCC peripherals and for non-voice MRDs, the value of this field is always one ("ignore abandoned calls") since you cannot track abandoned calls in these cases. The ICM Configuration Manager tools do not allow this field to be changed for IPCC peripherals and non-voice MRDs. The allowed values here are constrained by the formula:
	
	`If (MRD == CISCO_VOICE) && Peripheral != IPCC) then`
	`<any_valid_value> Else only 0/1 allowed.`

Service level threshold(required)	Default value at runtime. This can be overriden for individual services (Service table). If not, then this value is used if valid. If this entry is negative, the default is obtained from the ServiceLevelThreshold table, then the MRDomain table. Default entry is -1, which should be displayed in text, and not as a number.
Peripheral service level type	Ignored for non-voice services.
No longer used by peripheral	Indicates that this was origanally configured by Peripheral Auto Config and this service is no longer used by the peripheral.

Advanced Tab

This tab allows you to view (and define or edit, if you have maintenance access) advanced properties of the selected service.

Table 25: Advanced Tab Field Descriptions

Field	Description
Peripheral service level type (required)	Type of service level calculation to be used in the Peripheral Service Level fields of the Service Real Time and Service Half Hour tables.
Schedule name	Identifies an imported schedule associated with the service.
Extension	The extension number for the skill group used by AT&T Definity G3. For all other peripheral types, leave this field blank.

Service Members Tab

This tab allows you to view service member information for the service that is currently selected. If you have maintenance access, this tab also lets you add or remove service members.

Table 26: Service Members Tab Field/Button Descriptions

Field/Button	Description
Field	
Current Service Members	This window lists the names of all the skill groups that are members of the selected service.
Primary	Use the *Primary* checkbox to indicate whether a skill is a primary group (the default) for the service or a backup group. You can have more than one primary skill group.
Skill Group Name	To add a service member, click this button. Then in the Add Service Member window, select the name of a skill group from the list of available records and click OK.
Buttons	
Add	An enterprise name for the skill group. This name must be unique among all skill groups in the enterprise.
Remove	To remove a service member, select a skill group in the Current service members window and click this button.

Route Tab

A route is a value returned by a routing script that maps to a target at a peripheral; that is, a service, skill group, agent, or translation route. In this case, the route maps to the selected service. For more information on routes, see Chapter 8, "Configuring Routes and Routing Targets." (page 137)

Table 27: Route Tab Field Descriptions

Field	Description
Name (required)	The enterprise name of the route.
Description	Additional information about the route.

Peripheral Target Tab

The DNIS tab allows you to view (and define, delete, or edit, if you have maintenance access) the DNIS properties of the selected peripheral target. A peripheral target is a combination of a network trunk group and a DNIS (Dialed Number Identification Service) value, which ICM software uses to indicate the destination for a call.

A DNIS is a string of digits indicating the number dialed by a caller and how the call should be handled by the ACD, PBX, or VRU.

Table 28: DNIS Tab Field Descriptions

Field	Description
DNIS	Dialed Number Identification Service (DNIS). Usually a string of digits indicating the number dialed by a caller and how the call should be handled by the ACD, PBX, or IVR. Sometimes the string may include letters. The exact content of this field is dependant on the external hardware the ICM software interfaces with. ICM system itself has no dependency on the contents of this field being in any particular format. ICM software uses the DNIS and trunk group to indicate the destination for a call. The logger enforces the following rule: If a peripheral target (DNIS) is attached to a route, the route must have its **Service** field populated.
Description	Additional information about the peripheral target.
Network trunk group	(drop-down list) The enterprise name of the network trunk group associated with the peripheral target.

Label Tab

The Label tab allows you to view (and create, delete, or edit, if you have maintenance access) the properties of the selected label. A label (or routing label) is a value that the ICM system returns to a routing client to map to a target, which, in this case, is the selected service on the selected peripheral. For a full description of labels, see Chapter 8, "Labels" section. (page 144)

Table 29: Label Tab Field Descriptions

Field	Description
Routing Client (required)	The label value.
Label(required)	Additional information about the peripheral target.
Label type	(Drop-down list) The valid types depend on the type of routing client. Select one valid type for your routing client. Check with your carrier for the latest information about supported label types. Typical types are Normal, DNIS Override, Busy, Ring, and Post-Query.
Customer	The customer associated with the label.
Description	Additional information about the label.

Modifying, Defining, and Deleting Services

The following sections show you how to modify, define, and delete services.

How to modify a service

To modify a service

Step 1 Follow the steps for viewing a service. (See the "How to view a service" section. (page 109))

Step 2   Edit the configuration information. (For field descriptions, see the "Service Explorer Tab Descriptions" section. (page 109))

Note: You cannot modify fields that are greyed out.

With the mouse, you can select an object and then move it to another part of the tree, as long as its object type belongs in that tree location. For example, to move a route to another service, select it and then move the mouse to that service. When that service becomes highlighted, lift your finger off the mouse. You can also use the Bulk Configuration tool to take the output of a switch and create 20 or 30 labels. Then, using the Service Explorer, you can attach the labels to an appropriate location.

When you make a modification, the Changed icon
Figure 28: Changed icon

appears next to the selected item in the tree list box.

Step 3   Click **Save**.

The modified data is saved in the ICM database and the *Changed* icon is removed from the edited object in the tree list box.

How to define a service and/or its associated records

To define a service and/or its associated records follow these steps:

Step 1   In the Configuration Manager menu, select **Tools > Explorer Tools > Service Explorer**. The Service Explorer window appears.

Step 2   In the *Select filter data* box of the Explorer window, click Retrieve. This enables the Add Service button.

Step 3   Click **Add Service**. A new service appears in the tree list box with a *To Be Inserted* icon
Figure 29: To be inserted icon

next to it. Tabbed fields also appear on the right for the new service's configuration information.

Step 4   Fill in the tabbed fields. (For field descriptions, see "Service Explorer Tab Descriptions" section. (page 109))

Step 5   Click **Add Route** and fill in its configuration records.

Step 6   Click **Add Peripheral Target** and also **Add Label** and fill in those records.

Selecting an item in the tree list box enables the Add button for more items of that type and for the associated item immediately beneath it in the tree, if it can have one.

> **Step 7** If desired, set security settings on the records. (See the "How to view or apply security settings" section. (page 50))
>
> **Step 8** Click **Save.**

How to delete a record

To delete a record:

> **Step 1** In the explorer tree list box, select the item or associated items whose records you want to delete.
>
> **Note:** Deleting any item in the tree list box with branches beneath it also deletes those branches. For example, if you delete a service, you also delete its associated route, peripheral target, and label, if it has such. But, deleting a label deletes only that label.
>
> **Step 2** Click **Delete.** This places a *Marked for Deletion* icon
> *Figure 30: Marked for deletion*
>
>
>
> next to the selected item in the tree list box. This also toggles the **Delete** button to Undelete.
>
> To undelete an item marked for deletion, select it in the tree list box and click **Undelete**.
>
> **Step 3** Click **Save**.
>
> This deletes from the database the item(s) marked for deletion and removes it from the tree list box. Once you do this, you cannot undelete the deleted item.

Skill Groups

Enter information about each skill group associated with each peripheral. A skill group is a collection of agents that share a common set of skills and is associated with a service. Each skill group can be a member of more than one service.

Use the Configuration Manager's Skill Group Explorer to view, modify, or define a skill group.

Skill Group Explorer

The following sections show you how to use the Skill Group Explorer to view and configure a skill group and its associated routes, peripheral targets, and labels.

How to view a skill group

To view a skill group, follow these steps:

Step 1   In the Configuration Manager's menu, select **Tools > Explorer Tools > Skill Group Explorer.** The Skill Group Explorer window appears.

Step 2   In the **Select filter data** box, select the peripheral associated with the skill group you want to view. You can choose the name from the drop-down list of peripheral enterprise names.

Step 3   Select any other filters you want. None in the Optional filter box means all skill groups associated with the selected peripheral will be displayed.

Step 4   Click **Retrieve**. This lists in the tree list box the name(s) of the retrieved service(s).

Step 5   In the tree list box, select a service to display its configuration information on the right side of the window.

Step 6   If the skill group has a route associated with it, click its icon in the tree list box to display its configuration information. Do the same for a peripheral target associated with the route and a label associated with the peripheral target.

Note: A tree object is unassigned if it was made by another configuration tool and was not assigned (mapped) to a parent object; for example, a label might not have been assigned to a peripheral target or a route might not have been assigned to a service, and so on.

Skill Group Explorer Tab Descriptions

The tables in the following sections describe the tabbed fields in the Skill Group Explorer records.

Skill Group Tab

The Skill Group tab allows you to view (and edit, if you have maintenance access) the properties of the currently selected skill group. A skill group is a collection of agents that share a common set of skills.

Table 30: Skill Group Tab Descriptions

Field	Description
Media routing domain (required)	(selection list) The media routing domain associated with the skill group.
	Note: A media routing domain (MRD) can associate with one or more skill groups, but a skill group can associate with only one media routing domain.

Field	Description
Peripheral Number (required)	The skill group number as known by the peripheral. This value must be unique among all skill groups for a peripheral, but need not be unique across peripherals.
Peripheral Name (required)	The local name for this skill group. This value must be unique among all skill groups associated with the peripheral, but need not be unique across peripherals. For example, each peripheral can have a skill group named International_Orders. For skill groups that support subskill groups, the sub-skill groups' name are made out of the base skill group's name plus a suffix. A suffix can have max 4 characters. Therefore, the maximum length for base skill group name is 28 characters when you plan to have sub-skill groups. **Note:** The peripheral name in the filter box is its enterprise name, not this name.
Name (required)	An enterprise name for the skill group. This name must be unique among all skill groups in the enterprise. If you click in this box after entering the peripheral name, the software automatically creates this name by appending the peripheral name to the selected peripheral. For example: Boston_PG1.Internaltional_Orders.
Available Holdoff Delay	The number of seconds to wait after a call ends before recording the agent as Available. You can enter a value or choose the default. • For a Nortel Meridian peripheral, set this value to match the flexible call force timer (FCFT). • For a DMS-100, enter the Variable WrapUp time for the ACD DN. • For all other peripheral types, set this field to zero.
Priority	(read-only) Indicates the routing priority of this base group for the skill. The value 0 indicates a base skill group. This is the default when there is only one skill group and there are no priorities. For sub skill group priorities please refer to the Sub Skill Group tab as well as the Subgroup Mask tab.
Extension	If the peripheral is a Avaya DEFINITY ECS or Rockwell Spectrum, enter the extension number associated with the skill group. For all other peripheral types, leave this field blank.
ICM picks the agent	Checked, indicates that the ICM software selects the agent. This option is used for IPCC-like routing where the ICM software picks the agent to handle a request. Unchecked, indicates another entity, typically an ACD, does the agent selection (after the ICM software has sent a call to an ACD skill group). This option applies to pre-routed requests.
ConfigParam	(Optional) A string of parameters the ICM software sends to the peripheral to initialize the skill group.
Description	Additional information about the skill group.
No longer used by peripheral	Indicates that this skill group was originally configured by Peripheral Auto Config and is no longer used by the peripheral.

Skill Group Members Tab

The Skill Group Members tab allows you to view skill group member information for the currently selected skill group. If you have maintenance access, this tab also lets you add or remove skill group members. This tab is only enabled if there are no sub-skill groups configured for this base skill group.

Table 31: Skill Group Members Tab Descriptions

Field/Button	Description
Current skill group members	This window lists the names of all the agents that are members of the selected skill group.
Agent Name	The name of an agent in the skill group.
Button	
Add	To add a skill group member, click this button. Then in the *Add Skill Group Member* window, select the name of an agent from the list of available records and click OK.
Remove	To remove an agent, select an agent name in the *Current Skill Group Members* window and click this button.

Subgroup Mask Tab

The Subgroup Mask tab allows you to view (and edit, if you have maintenance access) the number of subskill groups on the currently selected peripheral. This tab is enabled only if the selected peripheral can have subskill groups. A subgroup mask defines subskill groups.

Note: For all peripherals that support subskills (Definity ECS EAS, Nortel Meridian, Rockwell Galaxy, and Rockwell Spectrum), the Skill Group Explorer automatically creates the subskills (primary, secondary, and so on) as defined by the peripheral subgroup mask. This tab gives you the option of changing the subskill mask on a skill-group-by-skill-group basis.

Table 32: Subgroup Mask Tab Descriptions

Field	Description
Override Peripheral Default Mask	If this check box is not checked, the default subskill groups for the selected peripheral are created. Selecting this check box enables the subskill group check boxes.
Subskill group check boxes	Check the box for each subskill group you want to generate. Uncheck the box for each sub-skill group that you want to delete. Upon saving, the unchecked sub-skill groups are only marked deleted in the database for reporting purposes. To permanently delete these sub-skill groups once they are on longer needed, use the Deleted Object tool. If these sub-skill groups are not permanently deleted, configuring a sub-skill group with the same priority by checking off the corresponding checkbox in the Subgroup

Field	Description
	mask tab causes the error message *"Failed to update the database. The enterprise name that was entered is already in use"*.

Sub Skill Groups Tab

The Sub Skill Groups tab allows you to view (and edit, if you have maintenance access) the subskill group properties of the currently selected peripheral. This tab is enabled only if the selected peripheral has subskill groups.

Table 33: Sub Skill Groups Tab Descriptions

Item	Description
Associated sub skill groups	The list of subskill groups associated with the peripheral.
Priority	The names of the subskill groups associated with the peripheral.
Agents in the selected sub-group	The priority level of the subskill groups: 1=primary; 2=secondary; 3=tertiary; and so on. The value 0 indicates a base skill group. This is the default when there is only one skill group and there are no priorities.
Agents in the selected sub-group	The list of agents in the selected subskill group.
Agent name	The names of the agents in the selected subskill groups.
Add	To add an agent to the selected subskill group, click this button, and in the *Add Skill Group Member* dialog box, select a name and click **OK**.
Remove	To remove an agent from the selected subskill group, select that agent's name and click **Remove.** .

Route Tab

The Route tab allows you to view (and define, delete, or edit, if you have maintenance access) the properties of the selected route.

A route is a value returned by a routing script that maps to a target at a peripheral; that is, a service, skill group, agent, or translation route. In this case, the route maps to a skill group. For more information on routes, see the section"Configuring Routes and Routing Targets." (page 137)

Table 34: Route Tab Descriptions

Field	Description
Skill group priority	Set to 0 if the route is assigned to the base skill group. If the route is assigned to a sub skill group (as listed on the Sub skill groups tab), select the setting (1, 2, 3, etc.) that matches the desired sub skill group from the sub skill groups list. The number of priority levels available depends upon the subgroup mask setting (1-64) on the Subgroup Mask tab which in turn depends upon the peripheral chosen.
Name (required)	The enterprise name of the route.

Field	Description
	You might derive the enterprise name for the route from the skill group and service associated with it. For example, you might have a route associated with the *Dallas.TeleSales* service and the *Dallas.Sales* skill group. You might name the route *Dallas.TS_Sales.*.
Description	Additional information about the route.
Service Name	(selection list) The name of the service associated with the route. Every route must be associated with a service for it to be functional. By choosing a service, you are implicitly associating the route with the peripheral for that service. For a new route, the drop-down list contains all the services defined for the selected peripheral (or PG, in the case of a service array). If you select None as the service name, then the route cannot be associated with a peripheral and you can move the route to the UNASSIGNED list. Once a route has a service selected, it can no longer be moved to the UNASSIGNED list. However, it can be moved within the appropriate tool to another skill target. For example, in the Skill Group Explorer, you can move a route to another skill group, in the Service Explorer, you can move a route to another service, and in the Agent Explorer, you can move a route to another agent.

Peripheral Target Tab

The Peripheral Target tab allows you to view (and define, delete, or edit, if you have maintenance access) the DNIS properties of the selected peripheral target. A peripheral target is a combination of a trunk group and a DNIS value.

A peripheral target is associated with a service, skill group, agent, or translation route at a peripheral. Each peripheral target is also associated with a route that can be returned by a routing script.

A DNIS is a string of digits indicating the number dialed by a caller and how the call should be handled by the ACD, PBX, or VRU.

Note that peripheral target refers to a trunk group and DNIS value. Skill target refers to the entity at the peripheral to which the call is dispatched.

Table 35: Peripheral Target Tab Descriptions

Field	Description
DNIS (required)	Dialed Number Identification Service (DNIS). Usually a string of digits indicating the number dialed by a caller and how the call should be handled by the ACD, PBX, or IVR. Sometimes the string may include letters. The exact content of this field is dependant on the external hardware the ICM software interfaces with. ICM system itself has no dependency on the contents of this field being in any particular format. ICM software uses the DNIS and trunk group to indicate the destination for a call. The logger enforces the following rule: If a peripheral target (DNIS) is attached to a route, the route must have its Service field populated.

Field	Description
Description	Additional information about the peripheral target.
Network Trunk Group	The enterprise name of the network trunk group associated with the peripheral target.

Label Tab

The Label tab allows you to view (and create, delete, or edit, if you have maintenance access) the properties of the selected label.

A label (or routing label) is a value that the ICM system returns to a routing client to map to a target, which, in this case, is the selected skill group on the selected peripheral. For a full description of labels, see the "Labels" section. (page 144).

Table 36: Label Tab Descriptions

Field	Description
Routing client (required)	The enterprise name of the routing client associated with the label. The logger enforces the following rule: If a peripheral target (DNIS) is attached to a route, the route must have its Service field populated.
Label (required)	The label value.
Label type (required)	(drop-down list) The valid types depend on the type of routing client. Select one valid type for your routing client. Check with your carrier for the latest information about supported label types. Typical types are Normal, DNIS Override, Busy, Ring, and Post-Query.
Customer	(optional) The customer associated with the label.
Description	Additional information about the label.

Modifying, Defining, and Deleting Skill Groups

The following sections show you how to modify, define skill groups. For information on how to delete a skill group or any of its records, see the "How to delete a record" section. (page 114).

How to modify a skill group

To modify a skill group follow these steps:

Step 1   Follow the steps for viewing a skill group. (See the "How to view a skill group" section. (page 115)

Note: Once you have saved a skill group record to the ICM database, you cannot update the Peripheral field.

Step 2   Edit the configuration information. (For field descriptions, see the "Skill Group Explorer Tab Descriptions" section. (page 115))

Note: You cannot modify fields that are greyed out.

With the mouse, you can select an object and then move it to another part of the tree, as long as its object type belongs in that tree location. For example, to move a route to another skill group, select it and then move the mouse to that skill group. When that skill group becomes highlighted, lift your finger off the mouse. You can also use the Bulk Configuration tool to take the output of a switch and create 20 or 30 labels. Then, using the explorer, you can attach the labels to an appropriate location.

When you make a modification, the *Changed* icon
Figure 31: Changed icon

appears next to the selected item in the tree list box.

Step 3   Click **Save**.

The modified data is saved in the ICM database and the Changed icon is removed from the edited object in the tree list box.

How to define a skill group and/or its associated records

To define a skill group and/or its associated records follow these steps:

Step 1   n the Configuration Manager's menu, select **Tools > Explorer Tools > Skill Group Explorer.** The Skill Group Explorer window appears.

Step 2   In the **Select filter data** area of the Explorer window, click **Retrieve.** This enables the Add Skill Group button.

Step 3   Click **Add Skill Group**. A new skill group appears in the tree list box with a To Be Inserted icon next to it. Tabbed fields also appear on the right for the new skill group's configuration information.

Step 4   Fill in the tabbed fields. (For field descriptions, see the "Skill Group Explorer Tab Descriptions" section). (page 115)

Step 5   Click **Add Route** and fill in its configuration records.

Step 6   Click **Add Peripheral Target** and also **Add Label** and fill in those records.

Selecting an item in the tree list box enables the Add button for more items of that type and for the associated item immediately beneath it in the tree, if it can have one.

Step 7   If desired, set security settings on the records. (See the "How to view or apply security settings" section). (page 50)

Step 8   Click **Save**.

Mapping Skill Groups to Services

When you define services and skill groups, you can establish the mappings of skill groups to services. Each skill group can be mapped to zero, one, or more services; each service can be mapped to zero, one, or more skill groups.

You can define some service member skill groups as being primary for the service. ICM software uses the primary attribute in determining the destination for a call to the service. For example, the Longest Available Agent (LAA) for a service is really the LAA for the primary group(s) configured for that service.

How to map skill groups to services

To map skill groups to services, follow these steps:

Step 1   Within the Configuration Manager menu, select **Tools > Explorer Tools > Service Explorer**. The Service Explorer window appears.

Step 2   Select the filters you want and click **Retrieve**. The retrieved services appear in the list box.

Step 3   Select the service you want and click the **Service Members tab**.

Step 4   This step depends on whether you want to add or to remove skill group(s):

    a.   To remove a skill group(s), select the skill group's name(s) and click **Remove.**

    b.   To add a skill group(s), click **Add,** and in the **Add Service Member** dialog box, select the skill group(s) and click **OK**.

The available skill groups are all those defined for the selected peripheral.

Step 5   In the Service Members tab, select the **Primary** check box for any skill groups that you want to be primary.

Step 6   When finished, in the Skill Group Explorer window, click **Save**.

Persons

You must associate every agent with a person record. The person stores the login name, first name, last name, and password. On ICM you can have multiple agents per person. An agent is an "extension" of a person on a given peripheral.

The Persons List tool allows you to list the persons currently defined in the ICM database, to define new ones, and to view, edit, or delete the records of existing ones.

Note: You can create Persons and or Agents in ICM software, the Cisco Collaboration application, or the Cisco E-Mail Manager application. Creating them in one of the preceding makes them available to all. However if agents exist in your enterprise in ICM software and you want them to be able to work on an ICM application, you must also enable those existing agents in that application.

Available person records are records that have not been mapped to any agent records (including logically deleted ones) at the peripheral selected in the Agent Explorer. To free a person associated with a logically deleted agent, use the Configuration Manager's Deleted Objects tool to permanently delete the logically deleted agent.

Select Filter Data

Use the Select filter data box to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

Optional filter

None means no optional filtering. All data is displayed for the selected records.

The optional fields to filter on differ by record type according to both the fields in a record and the fields considered useful as filters.

Condition filter

Table 37: Option Filters

If the selected Optional Filter is	Then
None	The Condition filter is ignored.
A text filter (for example, Description)	Select one of the text conditions (Contains, Ends With, Starts With, Is Blank) and enter an appropriate entry in the Value field.
A numeric filter (for example, Trunk Number)	Select one of the numeric conditions (Equal, Greater Than, Less Than, Not Equal) and enter an appropriate entry in the Value field. The available numeric conditions can change depending on the record data. For example Equal or Not Equal might be the only choices.

Value

The entry in this field is based on the selections made in the Optional Filter and Condition fields. If None is selected in the Optional Filter field, this field is ignored.

Save

Checked, indicates the current settings are saved so that when you next open the list tool for this type of record, the current settings will be selected. However, no data is displayed until you click the Retrieve button.

Retrieve

> This button displays the data selected in the Select filter data box.

Cancel filter changes

> If you change the Optional Filter settings after a Retrieve, clicking this button resets the filter settings back to the preceding ones.

Persons List Tool Tab Descriptions

> Following are the Persons List Tool Tab Descriptions:

Attributes tab

> Allows you to view (and define, delete, or edit, if you have maintenance access) the properties of the selected person.

Table 38: Person List Tool Tab Descriptions

Field	Description
First name (required)	The selected agent's first name; for example: John. The system automatically fills in the name fields after you select a person.
Last name (required)	The selected agent's last name; for example: Smith.
Login name (required)	The selected agent's login name; for example:jsmith. **Note:** In the System Information tool, the administrator can set whether or not person login names are case sensitive.
Password	optional) An MD5 encrypted password, used for authentication by ICM and by applications integrated with ICM. The password is restricted to the 7-bit printable ASCII characters (any of the 94 characters with the numeric values from 32 to 126). Control characters (for example, 'tab') and international characters are not allowed. This means passwords cannot be entered in a non-Western alphabet, such as Kanji. **Note:** In the System Information tool, the administrator can set the number of required characters for person passwords. A person password is case sensitive.
Change Password	Click to change your password. **Note:** Enables the Password and Confirm Password fields.
Confirm Password	Used when changing your password.
Description	(optional) Additional information about the person.

Field	Description
Enable logins (optional)	optional) Checked, indicates that this person is currently allowed to access the system. Unchecked, indicates the person is not allowed to access the system. A typical use of this is to temporarily suspend a person's access to the system during vacation or certain hours, and to do so without disturbing any of the entered information for this person. **Note:** This option is not and will not be supported by ACDs or soft ACDs. This option is also currently not supported by IPCC voice phones. However, this option is supported by the Cisco Collaboration Server and the Cisco E-Mail Manager applications.

How to change your password

Follow these steps to change your password:

Step 1   Click **Change Password.**

Step 2   Enter your new password in the enabled *Password* field.

Step 3   Re-enter your new password in the enabled *Confirm password* field to ensure you have typed it correctly.

Step 4   Click **Save** to set your new password.

Agents

An agent is a person who handles calls from a peripheral or supervises those who do. You need to set up each agent associated with each peripheral.

Use the Configuration Manager's Agent Explorer to configure agents.

Note: If partitioning is enabled, you need supervisor privileges to add or remove an agent from a skill group and you need administrator privileges to define an agent record and to edit it in other ways.

ICM software also provides a utility that allows you to insert and update agent records based on data in a text file. For more information, see the "Importing Agent Configuration Data from the Peripheral" section. (page 130)

How to view or modify an agent(s) record

To view or modify an agent(s) record, follow these steps:

Step 1	In the Configuration Manager menu, select **Tools > Explorer Tools > Agent Explorer**. The Agent Explorer window appears.
Step 2	In the **Select filter data** box, select the peripheral with which the agent is associated. Enter any other filters you want and click **Retrieve**.
	The retrieved enterprise names for the agents are displayed in the list box.
Step 3	Select the agent name whose properties you want to view and use the tabs on the right side of the window to view the properties.
Step 4	Edit the properties appropriate. See the online help if you have questions.
Step 5	When finished, in the Agent Explorer window, click **Save**.

How to create an agent

Follow these steps to create an agent

Step 1	In the Configuration Manager menu, select **Tools > Explorer Tools > Agent Explorer**. The Agent Explorer window appears.
Step 2	In the **Select filter data** box, select the peripheral with which the agent is to associated and click **Retrieve**. This enables the Add Agent button.
Step 3	Click **Add Agent**.
Step 4	In the property tabs on the right side of the window, enter the appropriate property values. See the online help for field definitions. Use the Agent tab to define the agent, the Skill group membership tab to map the agent to any skill groups, and the Supervisor tab to assign the agent as a supervisor. Use the online help for field definitions.
Step 5	When finished, click **Save**.

Agent Explorer Tab Descriptions

The tables in the following sections describe the tabbed fields in the Agent Explorer.

Agent Tab

The Agent tab allows you to view (and define, delete, or edit, if you have maintenance access) the properties of the selected agent's account.

Table 39: Agent Tab Descriptions

Field	Description
First name (required)	The selected agent's first name; for example: John. The system automatically fills in the name fields after you select a person.
Temporary	(appears only if agent is a temporary one) This label and checkbox appear next to the first name field only if the selected agent is a temporary agent created by the ICM CallRouter. In this case the name related fields are grayed out. To change this agent to a permanent agent, uncheck this checkbox, fill in the required fields, and click Save. This checkbox then becomes hidden.
Last name (required)	The selected agent's last name; for example: Smith
Login name (required)	The selected agent's login name; for example:jsmith. The login name must be unique within the enterprise. Use the System Info tool to determine if the login name is to be case-sensitive or not.
Select Person	(optional) Click this button to select a person to associate with the agent record. You can select a person for a new agent, an existing agent, or a temporary agent. To create an agent record, you must associate a person with the agent. For an existing agent record, you can select a different person (from the current one selected) to be associated with that agent record. If you select a person for a temporary agent, you make that agent a permanent one. You cannot demote an agent to be a temporary one. An ICM agent's personal information is stored in the database's Person table.
Enterprise Name (required)	An enterprise name for the agent that is unique within the enterprise. When defining a new agent, if you click this field after entering the agent's first and last name, the system by default enters as the enterprise name the peripheral with the agent's last and first name appended to it. For example: Boston_PG_1.Smith_John where Boston_PG_1 is the peripheral and Smith_John is the agent's last and first name.
Peripheral name	The agent login ID assigned at the peripheral. The peripheral number is equivalent to the agent ID. You must enter the Peripheral number for a voice agent or agent enabled for voice. If you create an agent on ICM without assigning the agent to a skill group and leave the Peripheral number blank, it is auto-generated.
Peripheral number (required)	(optional) The name of the agent as known to the peripheral; for example: service_expert1. The peripheral name is equivalent to the agent name.
No longer used by peripheral	Indicates that this was originally configured by Peripheral Auto Config and is no longer used by the peripheral.

Skill Group Membership Tab

The Skill Group Membership tab lists the skill groups in which the selected agent is a member and enables a supervisor to add (or remove) the selected agent to (or from) a skill group.

Field/Button	Description
Skill Group Name	The skill groups in which the selected agent is a member.
Add	To add the selected agent to a skill group, click this button, and in the Add Skill Group Member dialog box, select the skill group you want and click OK.
Remove	Click this button to remove the selected agent from the selected skill group.

Note: To save any edits made in this tab, in the Agent Explorer window, click Save.

Supervisor Tab

The supervisor tab allows an administrator to assign (or unassign) the selected agent to be a supervisor.

Note: Agents are not ICM users, therefore cannot run any reports. Supervisors are special agents who are ICM users with limited privileges. Supervisors can only see their agent team reports, and no agent in their team or other teams can see any data as they are not ICM users. Supervisors can also add and remove members of their teams.

Table 40: Supervisor Tab Descriptions

Field	Description
Supervisor Agent	Checked, indicates the selected agent is a supervisor.
Domain name (required)	Select the Active Directory Domain Name.
Location	Select the Location.
Supervisor login as user (required)	Window domain account login name for the selected agent.
Supervisor login password	The Window domain account password for the account of the selected supervisor agent. Only asterisks appear in the field as you type.
Description	Additional supervisor information about the selected agent.

Mapping Agents to Skill Groups

After you have set up skill groups and agents, enter the assignments of agents to skill groups as configured for the peripheral. Each agent can belong to zero, one, or more skill groups.

You can use the Configuration Manager's Skill Group Explorer to map agents to skill groups.

How to assign agents to a skill group

Follow these steps to assign agents to a skill group:

Step 1   Within the Configuration Manager menu, select **Tools > Explorer Tools > Agent Explorer**. The Agent Explorer window appears.

Step 2   Select the filters you want and click **Retrieve**. The retrieved agents appear in the list box.

Step 3   Select the agent you want assign to a skill group and click the **Skill Group Membership** tab.

Step 4   This step depends on whether you want to add or to remove agent. On the *Skill group membership* tab:

a.   To remove the selected agent from a skill group, select the appropriate skill group(s) and click **Remove**.

b.   To add the selected agent to a skill group, click **Add,** and in the *Add Skill Group Member* dialog, select the appropriate skill group(s) and click **OK**.

Step 5   When finished, in the Agent Explorer window, click **Save.**

Agent Reporting and Distribution

You can optionally license Agent Reporting for one or more PGs in your system. This allows you to view reports about individual agents as well as skill groups and services.

Note: Agent-level reporting is not supported for the Galaxy or Siemens Rolm 9751 CBX (9005) ACDs.

You can also define which peripherals feed agent data to each distributor site. The flow of data from a specific peripheral is called an agent distribution. You can define just the agent distributions you want.

You can also enable or disable an agent distribution at any time. This means you can stop the flow of all agent real-time data to a distributor when you are not viewing real-time agent reports.

How to enable/disable agent data at a peripheral and define an agent distribution

Follow these steps to enable/disable agent data at a peripheral and define an agent distribution:

Step 1   In the Configuration Manager menu, select **Tools > Explorer Tools > PG Explorer**. The PG Explorer window appears.

Step 2   Click **Retrieve**.

Step 3   In the tree list box, expand the appropriate logical controller and select the peripheral.

Step 4   In the Agent Distribution tab, select or deselect the **Enable agent reporting**.

Step 5   In the Agent Distribution Entries list box, select an existing distribution site or create a new one by clicking New and entering values for the following fields:

a.   **Distributor Site Name**. The Admin site name for the real-time distributor, as specified in ICM Setup.

b. **Enabled/Disabled**. Specifies the distribution of agent data from the peripheral to the distributor. You can subsequently change this value to turn on or turn off the flow of agent data.

Step 6 Click **Save** to apply your changes.

Agent State Trace

Optionally, ICM software can track every state (Available, Talking, and so on) an agent passes through. You can turn on this feature in the Configuration Manager's Agent Explorer. The Agent tab includes the Agent State Trace check box, which you select if you want to track this agent's states.

Note: Tracking every state of an agent puts an added load on ICM software. Activating this feature for all agents at all times may require additional network bandwidth, additional database space, and so on. Typically, you must use this feature only for short-term tracking of specific agents.

Temporary Agents

ICM software might receive agent-level reporting data for an agent that has not been configured. ICM software automatically configures a temporary agent to associate with this data.

The Agent Explorer Agent tab includes a Temporary Agent check box. This check box is disabled and unchecked for standard agents. For temporary agents created by the ICM router software, this checkbox is enabled and checked.

ICM software derives the last name, first name, and enterprise name from the peripheral number and skill target ID.

You can subsequently modify the agent configuration to assign the correct names to the agent. To convert a temporary agent to a standard agent, uncheck the Temporary Agent check box. When you apply these modifications, the Temporary Agent field is automatically deselected and disabled.

Importing Agent Configuration Data from the Peripheral

An ACD requires all the available agents to be configured to allow the agents to login to the call handling devices with their peripheral number (Agent ID) or peripheral name, password, etc. Also, these agents are configured to handle specific category of calls based on Skill Group. There are some other data elements configured on the ACD such as last name, first name and other class of services.

The ICM Agent Level Reporting requires these agents to be configured in ICM in order to identify them with either full name, peripheral name or enterprise name on both the real-time and historical reports.

The agentcfg.exe command line tool provides a process of configuring the agent configuration data elements available on an ACD into the Agent table in the ICM database. This can also be automated by scheduling the process to run as an AT job at a specific time during a day. The frequency of scheduling the agent configuration process depends on your requirements.

The Agent configuration process is required to run for each peripheral.

How to import agent data

Follow these stpes to import agent data:

Step 1   Retrieve the agent configuration data from the peripheral.

Step 2   Form all the information in a tab-delimited text file with one row per agent. Each row of the file must contain the following fields, in order:

`PeripheralNumber FirstName LastName Description PeripheralName`

Step 3   To import data from the file into ICM software, enter one of the following commands at the command prompt: **`AgentCfg <Peripheral ID or Peripheral Name> <Input file name> [<Second input file>] [<Option>]`**

These variables are defined as:

a.   <Peripheral ID or Peripheral Name>:

Peripheral ID or Peripheral Name of the peripheral that you want to configure.

b.   <Input file name>:

The name of the input file contains the agent OR skill group member configuration data on the ACD in the appropriate format (described in the next section). The file must contain header information, otherwise the tool assumes the data is for the Agent table.

Full or relative path is allowed.

c.   <Second input file>:

If the first file contained Agent data, the second file must contain Skill Group Member data. If the first file contained Skill Group Member data, the second file must contain Agent data.

If no files contain headers, it is assumed that Agent data is in the first file and Skill Group Member data is in the second file. If headers are provided, the files may be specified in either order.

Full or relative path is allowed.

d.   <Option>:

/show Only - show configuration changes without committing to the database.

/nodelete - the tool will not perform any delete operations. All inserts and updates will be saved.

Example:

1. AgentCfg.exe peripheral1 c:\temp\agentData.txt c:\temp\skillGrpMemData.txt

    This example will configure both agent and skill group member data for peripheral1.

2. AgentCfg.exe peripheral1 c:\temp\skillGrpMemData.txt

    This example will configure skill group member data for peripheral. The file must contain header information.

Step 4   When ICM software invokes the AgentCfg command, it performs the following steps for each line in the input file:

The following steps are performed for each line in the input file:

1. ICM software attempts to match the PeripheralNumber value to a configured agent for the peripheral.

    If it finds a match, it proceeds directly to step 2.

    If it cannot find a match, it creates a new agent row in the database using the data from the input file, and proceeds to step 2.

2. ICM software checks to see if the "temporary" flag is set. If it is, it then updates the existing record.

3. ICM software checks whether the peripheral name values also match.

    If the FirstName and LastName values match, then ICM software updates the existing record with the given Description and PeripheralName values. (If the existing record was for a temporary agent, the agent is no longer temporary after the update.)

    If the values do not match, then ICM software marks the existing record as deleted and inserts a new row with the data from the input file. If an agent is configured for the peripheral in the database, but is not listed in the input file, then ICM software marks the agent as deleted in the database.

4. The ICM software does a loop through the Skill Group Member input file container and compares the records in file and those in database:

    if the record is found in file but does not exist in the database, the record is inserted.

    if the record is found in the database but does not exist in the file, the record is deleted.

When using the AgentCfg.exe tool to import data, the input files must be formatted as described below. Note that the _ _TABLE and _ _COLUMNS and the line below each is considered the header. The header is not always required. The beginning of this section indicates when the headers are needed.

Agent configuration data file

The input file must contain the list of all the agents configured on the ACD for that peripheral in the following format:

_ _TABLE

Agent

Indicates the name of the table to which the data will be configured. The table name is always Agent and this line should not be changed.

_ _COLUMNS

Indicates the tab delimited column names corresponds to the data values. This line also should not be changed. The columns need to be in the order as shown below:

`PeripheralNumber<tab>FirstName<tab>LastName<tab>Description<tab>PeripheralName`

`1045<tab>F1045<tab>L1045<tab>Auto Configured by Router<tab>F1045.L1045`

`1046<tab>F1046<tab>L1046<tab>Auto Configured by Router<tab>F1046.L1046`

`1047<tab>F1047<tab>L1047<tab>Auto Configured by`

`Router<tab>F1047.L1047<eof>`

The following indicates the tab delimited data values correspond to the column names:

`1045<tab>F1045<tab>L1045<tab>Auto Configured by Router<tab>F1045.L1045`

Skill Group Member configuration data file

Note that the __TABLE and __COLUMNS and the line below each is considered the header. The header is not always required.

The input file should contain the list of all the skill group member data as a relation between skill group and agents, which configured on the ACD for that peripheral in the following format:

_ _TABLE

Skill_Group_Member

Indicates the name of the table to which the data will be configured. The table name is always Skill_Group_Member and this line should not be changed.

_ _COLUMNS

Indicates the tab delimited column names corresponds to the data values. This line also should not be changed. The columns need to be in the order that has been shown below.

```
SkillGroupEnterpriseName <tab> AgentPeripheralNumber
SkillGroupExterprise1<tab>1045 SkillGroupExterprise2<tab>1046
SkillGroupExterprise1<tab>1046
```

SkillGroupEnterpriseName is the ExterpriseName of the skill group, which the agent belongs to.

AgentPeripheralNumber is the agent's login ID assigned at the switch, which is the same as the above Agent Peripheral Number.

The following indicates the tab delimited data values correspond to the column names:

```
SkillGroupExterprise1<tab>1045
```

Enterprise Data

Within a script, you often want to examine a set of possible targets on different peripherals before deciding where to send the call. For example, if you are routing a sales call, you might want to check the Sales skill groups at each call center to find which has the longest available agent or shortest expected delay.

An enterprise service is a set of services that can be referenced in a script. The individual services can be associated with different peripherals. Similarly, an enterprise skill group is a set of skill groups that can be referenced in a script. The individual skill groups can be associated with different peripherals.

In addition to using them within a script, you can track enterprise services and enterprise skill groups through monitoring screens and reports. This allows you to easily follow the performance, for example, of all Support services within the system.

For information on monitoring screens and reports, see the *Cisco Supervisor Desktop User Guide* .

If your system has partitioning enabled, each enterprise service and enterprise skill group is associated with a specific business entity. If partitioning is not enabled, you can ignore the Business Entity field.

Enterprise Services

Within a routing script, you can use an enterprise service as a shorthand for a set of services. You might want to scan several services to find, for example, the service with the shortest

expected delay. Within the script, you can specify individual services to scan or, if you have an enterprise service defined, you can simply specify the enterprise service.

How to create an enterprise service and assign specific services

Follow these steps to create an enterprise service and assign specific services:

Step 1   In the Configuration Manager menu, select **Tools > List Tools > Enterprise Service List**. The Enterprise Service List window appears.

Step 2   In the Select filter data box, select the filters you want and click Click the Members tab.. This enables the Add button and lists the currently defined enterprise services for the selected business entity(s).

Step 3   Click **Add**.

Step 4   In the Attributes tab, enter values for the following fields:

    a.   **Name**. A name for the enterprise service. This name must be unique among all enterprise services in the system

    b.   **Business Entity**. If partitioning is enabled, the business entity to which the enterprise service belongs.

    c.   **Description**. Any other information you want about the enterprise service.. Any other information you want about the enterprise service.

Step 5   Click **Save** to save the changes.

Step 6   Click the **Members** tab.

Step 7   In the Members tab, click **Add**.

Step 8   In the Add Enterprise Service Member dialog box, select the services you want to add and click **OK**. The dialog box closes and the selected services are listed as members in the Members tab.

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

Enterprise Skill Groups

Just as you can use an enterprise service as a shorthand for a collection of services, so you can use an enterprise skill group as a shorthand for a collection of skill groups. The skill groups can be defined on different peripherals.

How to create an enterprise skill group

Follow these steps to create an enterprise skill group:

Step 1   In the Configuration Manager menu, select **Tools > List Tools > Enterprise Skill Groups List**. The Enterprise Skill Group List window appears.

Step 2   In the Select filter data box, select the filters you want and click **Retrieve**. This enables the Add button and lists the currently defined skill groups for the selected business entity(s).

Step 3   Click **Add**, and in the **Attributes** tab, enter values for the following fields:

    a.   **Name**. A name for the enterprise skill group. This name must be unique among all enterprise skill groups in the system.. A name for the enterprise skill group. This name must be unique among all enterprise skill groups in the system.

    b.   **Business Entity**. If partitioning is enabled, the business entity to which the enterprise skill belongs.

    c.   **Description**. Any other information about the enterprise skill group.

Step 4   Click **Save** to save the changes.

Step 5   Click the **Members** tab.

Step 6   In the Members tab, click **Add**.

Step 7   In the Add Enterprise Skill Group Member dialog box, select the skill groups you want to add and click **OK**. The dialog box closes and the selected skill groups are listed as members in the Members tab.

    Note: The Skill Group list includes base skill groups as well as primary and secondary groups for those switches that support them. Typically, you should add either the base group or the associated primary and secondary groups, but not all three, to the enterprise skill group.

Step 8   Click **Save** to save the changes to the database.

Chapter 8

Configuring Routes and Routing Targets

This chapter describes how to configure the information that routing clients use to interpret the response from ICM software and route the call to its destination.

It includes:

- An overview of the routes and targets subsystem

- Information on how to configure routes, network targets, and labels

- A discussion of mapping labels to dialed numbers

- Information about service arrays

- Instructions for using the Application Wizard

- A discussion of default route and default label

- Information about scheduled targets and translation routes

This section contains the following topics:

The Routes and Target Subsystem

For every routing request it processes, ICM software determines an announcement to be played to the caller, a route for the call, or a special action such as ring-no-answer or signal busy.

To see the elements of the routes and targets subsystem and the order in which you must define them, see the Figure (page 138). Note that elements in this subsystem depend on elements defined in the routing client and peripheral subsystems. For example, you must define a network trunk group and trunk group, which are part of the peripheral subsystem, before you can define a peripheral target.

Figure 32: Routes and Target subsystem
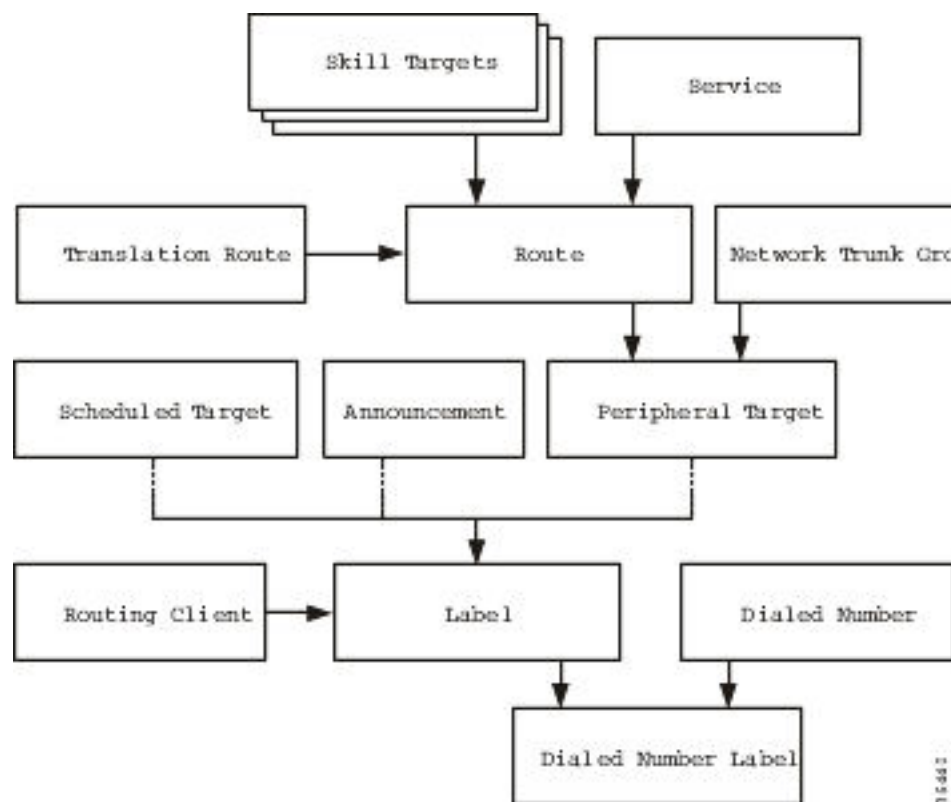
For information on defining routing clients and dialed numbers, see the section Configuring Routing Clients (page 69). For information on defining trunk groups, see the section Configuring Peripherals and Trunk Groups (page 83). For information on defining services and skill targets, see the section Configuring Skill Targets (page 107). This section describes the relationship between the elements in the Routes and Targets subsystem and how to configure them.

Route Configuration

A route consists of two components:

- The skill target (agent, skill group, service, translation route, or service array) at a peripheral which can handle a call.

- The service by which the peripheral classifies the call.

Note: You must have defined the skill target and service before you can configure a route. Follow the steps in the Configuration Manager's Step by Step Configuration menu when configuring your ICM system.

How to define and update a route

In the Configuration Manager, you can define and update many routes at a time using the Route Bulk tool. Or you can create and update a route using one of the following explorer tools:

- Agent Explorer

- Skill Group Explorer

- Service Explorer

- Service Array Explorer

- Translation Route Explorer

With the explorer tools, you can define and update a route at the same time you define and update its target. You can access all the tools for creating routes from the Configuration Manager's **ICM Configure > Targets > Route** menu. See the Figure (page 140).

Figure 33: Configuration Manager Route Tools
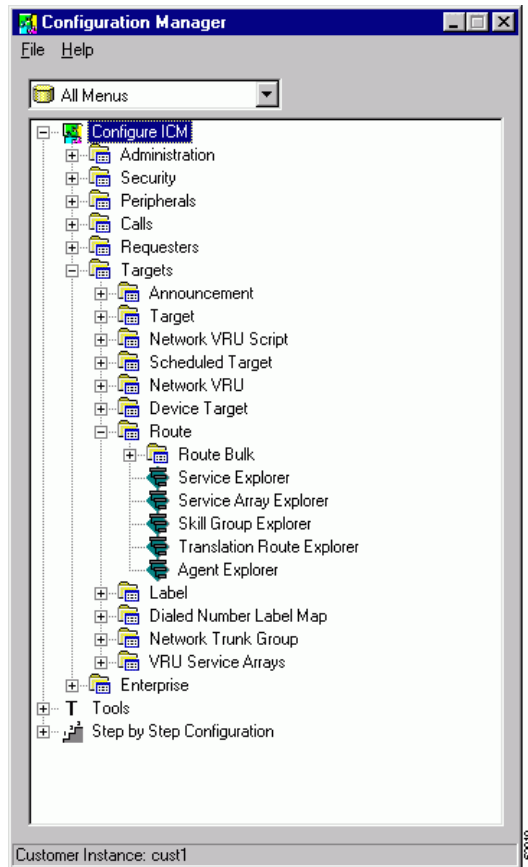
How to define or modify a route

Use the Configuration Manager's Route Bulk tool to create multiple routes. To create individual routes, use the Configuration Manager's explorer tool appropriate for the route target. Follow the instructions in the online help.

The following instructions apply in general to all the explorer tools dealing with routes.

Step 1　In the appropriate explorer window:

- To define a new route, select the target for which you are creating the route and click **Add Route**.

- To modify a route, select the route.

Step 2　In the Route tab, enter values for the following fields:

- **Name**. A unique name for the route. You might derive the name for the route from the skill target and service associated with it. For example, you might have a route associated with

the Dallas.TeleSales service and the Dallas.Sales skill group. You might name the route Dallas.TS_Sales.

- **Description**. Text identifying the route.

- **Service name**. (selection list) Every route must be associated with a service. By choosing a service, you are implicitly associating the route with the peripheral for that service. For a new route, the drop-down list contains all the services defined for the selected peripheral (or PG, in the case of a service array).

  To assign the route to another service, in the tree list, drag it to the desired peripheral. You can also move the route to the UNASSIGNED list.

Warning: When you break the association between a route and a peripheral, ICM software removes the Route ID value from all peripheral targets that reference that route.

Step 3   Click **Save**. ICM software saves your changes in the database.

How to set a default route for a peripheral

After you have defined routes, you can set a default route for each peripheral. ICM software uses the default route to classify calls for statistical purposes.

For each call that arrives at a peripheral, ICM software records monitoring information in the real-time and historical tables for the route associated with that call. If ICM software cannot determine a route for the call, it uses the default route defined for the peripheral.

By defining a default route for each peripheral, you ensure that ICM software captures route information for every call. You might want to create a special route for this purpose. You can then determine which calls are not being accounted for properly.

Step 1   In the Configuration Manager menu, select **Tools > Explorer Tools > PG Explorer**. The PG Explorer window appears.

Step 2   In the tree list window, select the peripheral you want to modify and click the **Advanced** tab.

Step 3   In the Default route field, select the enterprise name of a route from the selection list. The list includes all routes associated with skill targets at the chosen peripheral.

Step 4   After choosing the route, click **Save** to enter your edits into the database.

Network Targets

Routing clients do not send calls directly to services, skill groups, or agents. They send each call to an announcement or to a specific trunk group at a peripheral. If the call is sent to a trunk

group, the routing client can also send a DNIS value for the call. The combination of trunk group and DNIS value is a *peripheral target*.

You must define the announcements and peripheral targets that the routing clients use. These are called network targets. Later, you can associate a routing label with each *network target*.

How to define peripheral targets

A peripheral target is a combination of a network trunk group and a DNIS value. You must work with your interexchange carrier or other routing client to set up the trunk groups on which you expect to receive calls and the DNIS values that are sent with them.

Step 1 In the Configuration Manager menu, select **Configure ICM > Targets > Target** from the menu bar.

The resulting menu (see the) gives you the option of creating multiple peripheral targets, using the Peripheral Target Bulk configuration tool or creating a peripheral target for a service, a service array, a skill group, a translation route, or an agent. Select the appropriate tool for your needs.

Step 2 Use the online help if you have questions.

Step 3 When finished, click **Save**.

Figure 34: Configuration Manager's Target Submenu
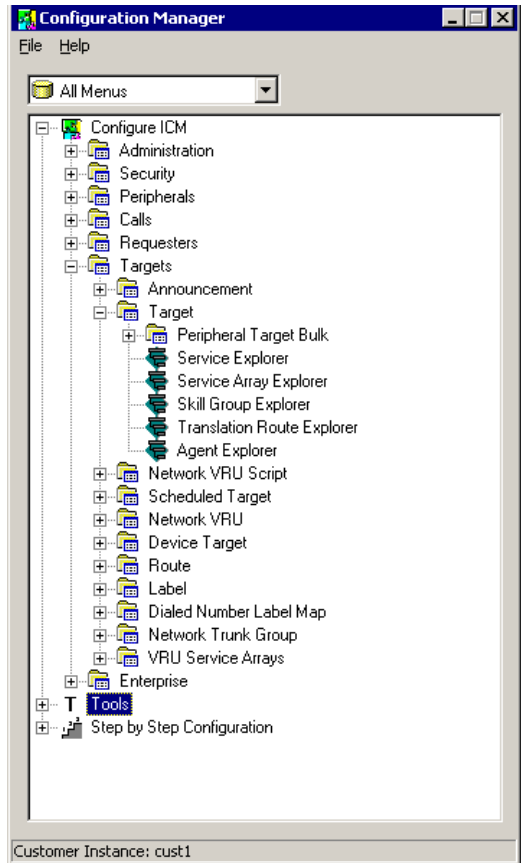
Announcement Configuration Information

You must provide information about any announcements to which you want to route calls. You must work with the interexchange carrier or other routing client to set up announcements within the network and assign labels to them. You can then enter information about the labels into the ICM system.

Note: If you have a Sprint routing client, ICM software automatically configures an announcement named NPA_Blocked_Recording.

How to add announcement configuration information

To add announcement configuration information, proceed along the following steps:

Step 1   In the Configuration Manager menu, select **Tools > Explorer Tools > Announcement Explorer**. The Announcement Explorer window appears.

Step 2   Click **Retrieve**. This enables the Add Announcement button.

Step 3   Click **Add Announcement**.

Step 4   In the Announcement tab, enter values for the following fields:

- **Name**. A unique name for the announcement.

- **Description**. Text identifying the announcement.

Note: You have the option of saving at this point and then adding the label information in the following step.

Step 5   To associate a label with the announcement:

- In the tree list window select one from the UNASSIGNED group and drag it to the announcement

  In the tree list window select one from the UNASSIGNED group and drag it to the announcement

- Select the announcement and click **Add Label**. Then in the Label tab, enter the appropriate field information.

  Note: A description of the Label tab fields and buttons can be found in the online help.

Step 6   Click **Save** to save the announcement configuration settings. ICM software automatically generates a unique Network Target ID value.

Labels

After defining announcements and peripheral targets, you must define the labels that your routing clients use to reference network targets. The label is the value that ICM software returns to the routing client. The routing client then translates the label to an announcement or peripheral target (trunk group and DNIS) that the peripheral will convert to the skill target and service you specify.

Note: For an AT&T ICP connection, ICM software treats a CRP code as a label.

Label Types

In defining a label, you must specify a label *type* by selecting an option from the Type drop-down list in the Label Configuration selection box.

Note: Each label you define is valid only for a specific routing client; not all label types are valid for all types of routing clients. Check with your carrier for the latest information about supported label types.

The table Supported Label Types (page 144)lists the configured label types ICM software supports. In addition to these labels, a script can create a *dynamic* label, which is defined in realtime through a script expression and then passed to a routing client.

Table 41: Supported Label Types

Label Type	Description	Routing Clients	How to Send Label
Normal	Maps to a trunk group and DNIS or announcement defined by the routing client.	All	Specify an associated route in a routing script target.
DNIS Override	Sends a value along with the label that overrides the DNIS value of the routing client.	MCI	Specify an associated route in a routing script target.
Busy	Plays a busy signal for the caller.	All	Use a Busy or Termination script node.
Ring	Plays an unanswered ring for the caller.	AT&T GTN	Use a Ring or Termination script node.
Post-Query	Specifies a re-entry point in the network routing plan. The routing client begins processing the routing plan from that point.	All	Use a Return Label script node.

The Normal and DNIS Override types are used for peripheral targets (and hence, for routes) or for announcements. Busy, Ring, and Post-Query labels are not associated with any target in the ICM configuration. The routing client uses its own special targets for labels of these types.

For more information on targets within scripts, see the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*.

Special Spring Labels

Sprint routing clients require two special labels to support the Busy feature and the NPA Blocked Recording feature:

- A Busy label named @Slow Busy.

- A Normal label named @NPA Blocked Recording. The target for this label must be the NPA_Blocked_Recording announcement.

When you use the NIC Explorer to set up a Sprint routing client, ICM software creates these labels automatically. (It also automatically creates the NPA_Blocked_Recording announcement, if necessary.)

The label names @Slow Busy and @NPA Blocked Recording are reserved for this specific use. You must not create any other labels with these names.

Creating Labels

To set up a label, you create configuration information and associate the label with a network target.

How to create a label

To create a label, follow these steps:

Step 1   In the Configuration Manager menu, select **Configure ICM > Targets > Label**.

Step 2   This displays the following menu options for configuring a label:

- Label Bulk

- Label List

- Service Explorer

- Service Array Explorer

- Skill Group Explorer

- Translation Route Explorer

- Agent Explorer

- Announcement Explorer

- Network VRU Explorer

Step 3   Select the tool you need:

- Use the Label Bulk tool to configure many labels at a time.

- Use the Label List tool to configure individual labels for any network targets.

- Use the preceding explorer tools to configure labels for a specific network target (services, service arrays, skill groups, translation routes, agents, announcements, network VRUs).

Step 4   Enter values for the following fields. Use the online help if you have questions:

- **Routing Client**. (required) The enterprise name of the routing client that can receive this label.

- **Label**. (required)

  The literal string of characters to be returned to the routing client.

- **Label Type**. (required)

  The type of label. The valid types depend on the type of the routing client. For more information, see the descriptions of label types in the table Supported Label Types (page 144).

- **Target type**

(selection list) Indicates the type of the network target associated with the label: Network Announcement, PBX/ACD Peripheral (that is, a peripheral target), a device target, a scheduled target, or a network VRU.

Note: The Target type is a filter for the Network target field. The Target type selected is not retained unless a Network target is selected.

- **Network target**. (list and bulk tools only)

  (selection list) Indicates the announcement, peripheral target, or scheduled target associated with the label.

- **Customer**. (list and bulk tools only)

  The customer associated with the label.

- **Description**. Any other information you want about the label.

  The table Valid Label Targets (page 147) lists which targets are valid for each label type

Table 42: Valid Label Targets

Label	ACD/PBX	Network Announcement	Scheduled Target	Network Device	Network VRU
Normal	Valid	Valid	Valid	Valid	Valid
DNIS Override	Valid	Valid	Valid	Valid	Valid
Busy	—	—	—	—	Valid
Ring	—	—	—	—	Valid
Post-Query	Valid	—	Valid	Valid	Valid

Step 5   Click **Save**.

Mapping Labels

For some routing clients, all labels are valid for all dialed number/script selectors. For other routing clients, you must specify which labels are valid for each dialed number/script selector. You specify whether the mapping of labels to dialed number/script selectors is necessary when you configure the routing client. For more information on this, see the section Configuring Routing Clients (page 69).

How to map specific labels to a dialed number/script selector

To map specific labels to a dialed number/script selector, follow these steps:

Step 1   In the Configuration Manager menu, select **Tools > List Tools > Dialed Number/Script Selector List**. The Dialed Number/Script Selector List window appears.

Step 2	Select the filters you want and click **Retrieve**. The enterprise names for the retrieved dialed number/script selectors are listed in the list box.
Step 3	Select the enterprise name for the dialed number/script selector you want.
Step 4	Click the **Dialed Number Label** tab.

The Name column displays a list of all labels currently associated with that dialed number/script selector.

Note: For a call associated with this dialed number/script selector, ICM software can return only labels assigned to the dialed number/script selector.

Step 5	Click **Add**.
Step 6	In the **Add Label** dialog box, select a label name and click **OK**.

Note: For labels to appear in this dialog selection box, they must have been previously defined for the selected dialed number/script selector's routing client. Use the Label List tool to define labels.

Step 7	Click **Save**.

How to set a default label for a dialed number/script selector

After you have defined labels, you can set a default label for each dialed number/script selector. If ICM software fails to find a label by running the routing scripts for the call type, it uses the default label for the dialed number/script selector.

You can use the Configuration Manager's Dialed Number Bulk tool to configure many dialed number/script selectors at a time or the Dialed Number/Script Selector List tool to configure one at a time. The following instructions show how to use the Dialed Number/Script Selector List tool.

Step 1	In the Configuration Manager's menu, select **Tools > List Tools > Dialed Number/Script Selector List**. The Dialed Number/Script Selector List window appears.
Step 2	Select the filters you want click **Retrieve**. The enterprise names for the dialed number/script selector(s) retrieved are listed in the list box.
Step 3	Select the dialed number/script selector you want and click the **Attributes** tab.
Step 4	In the **Default** label field, select the enterprise name of a label from the selection list. This list includes all labels associated with the same routing client as the dialed number/script selector.
Step 5	After choosing the label, click **Save**.

Note: Within a routing script, you can explicitly invoke the default label for the current dialed number/script selector by using a Termination node.

Service Arrays

Service arrays are closely tied to network trunk groups. Typically, you use service arrays in cases where:

• You have similar peripheral services defined on multiple VRUs.

• VRUs all share the same network group.

By grouping the services of multiple VRUs into a service array, you can send calls to a single target (a service array) and let the network deliver the call to any one of the peripheral services that make up the service array. For example, if several VRUs each support a Quotes service, you can define a Quotes service array for those services.

How to configure service arrays

To configure service arrays, proceed along the following steps:

Step 1   In the Configuration Manager menu, select **Configure ICM > Targets > VRU Service Arrays > Service Array Explorer**. The Service Array Explorer window appears.

Step 2   In the Select filter data box, select the appropriate filters and click Retrieve. This enables the Add Service array button and displays a list of all currently defined service arrays associated with the selected PG.

Step 3   You can define a new service array or modify an existing one:

• To set up a new service array, click **Add Service array**.

   Note: To create subsequent service arrays for the same PG, select the PG in the tree list window and then click **Add Service array**.

• To modify an existing service array, select it in the tree list window.

Step 4   In the **Service Array** tab for the selected service array, enter values for the following fields:

• **Name**. A unique name for the service array.

• **Description**. Additional information about the service array.

Step 5   Click the **Members** tab.

This tab lists the services that are current service array members of the selected PG.

- To add service members, click *Add*. Then in the Add Service Member window, select the name of a service from the list of available records and click **OK**. The Available records list contains all the services connected to the peripherals associated with the selected PG.

- To remove a service member, select it in the list and click **Remove**.

Step 6 Add or modify a route associated with the service array:

- To add a route, select the service array in the tree list box, and click **Add Route**. Or in the tree list box, select a route from the UNASSIGNED group and drag it to the service array. Then in the **Route** tab, enter or modify the Name and Description.

- To modify the route, select it in the tree list box, and modify the Name and Description in the **Route** tab.

Step 7 Add or modify one or more peripheral targets for the route:

- To add a peripheral target, select the route and click Add Peripheral target. Or in the tree list box, select a peripheral target from the UNASSIGNED group and drag it to the route. Then in the Peripheral target tab, enter the following:

  - **DNIS**. The DNIS value for the peripheral target. The routing client delivers this value to the trunk group along with the call.

  - **Description**. Any additional information about the DNIS value.

  - **Network trunk group**. The group on which to deliver calls for the service array.

Step 8 To add or modify a label for the peripheral target:

- To add a label, select the peripheral target in the tree list box, and click **Add Label**. Or in the tree list box, select a label from the UNASSIGNED group and drag it to the peripheral target. Then in the Label tab, enter or modify the following:

  - **Routing client**. The enterprise name of the routing client that can receive this label.

  - **Label**. The literal string of characters to be returned to the routing client.

  - **Label type**. The type of label. The valid types depend on the type of the routing client. For more information, see the descriptions of label types in the table Supported Label Types (page 144).

  - **Description**. Any additional information about the label.

- To modify the label, select it in the tree list box, and modify the preceding fields in the **Route** tab.

Step 9 Click **Save** to save the changes to the database.

Step 10 Click **Close** to close the Service Array Explorer.

Application Wizard

The Application Wizard provides an alternate method for defining labels, peripheral targets, and routes and associating them with services at a peripheral.

Before starting the Application Wizard, you must have defined the routing client, peripheral, network trunk groups (and associated trunk groups), and services to be used. Within the Application Wizard you can create dialed numbers, labels, peripheral targets, and routes.

Note: The Application Wizard does not allow you to associate routes and targets with skill groups or agents. It allows you to target only services.

How to use the Application Wizard

To use the Application Wizard, follow these steps:

Step 1   In the Configuration Manager menu, select **Tools > Wizards > Application Wizard**. The Routing window appears.

Step 2   Choose the type of application you want to set up (Pre-Routing or Post-Routing) and click **Next** to continue. The Routing Client and Dialed Number window appears, displaying information about all the configured routing clients of the type you selected.

Figure 35: Application Wizard - Routing Client and Dialed Number
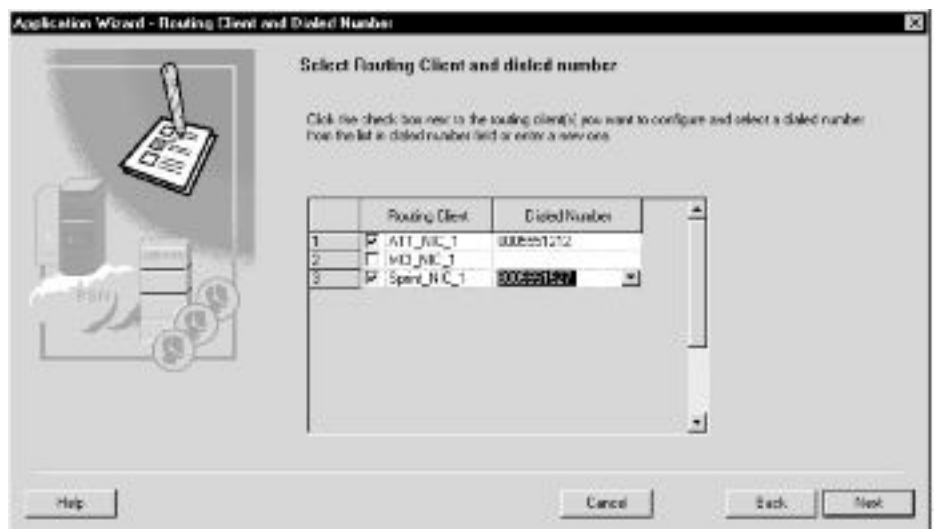
Step 3   Specify the following:

- **Routing Client**. Click to select one or more routing clients for the application. (A check mark to the left of the routing client indicates it is selected.)

- **Dialed Number**. Click the row and select a number from the drop-down list or enter a new dialed number value.

Note: You must specify a dialed number for each routing client selected.

Step 4   Click **Next**. The Peripheral window appears.

Figure 36: Application Wizard—Peripheral

Step 5   Specify the following:

* **Peripheral**. Click to select one or more peripherals to which you want the application to deliver calls.

* **Number of Network Trunks**. The number of network trunk groups to be targeted at each peripheral.

Step 6   Click **Next**. The Network Trunk Group window appears, displaying the peripherals and routing clients you have previously selected.

Figure 37: Application Wizard—Network Trunk Group
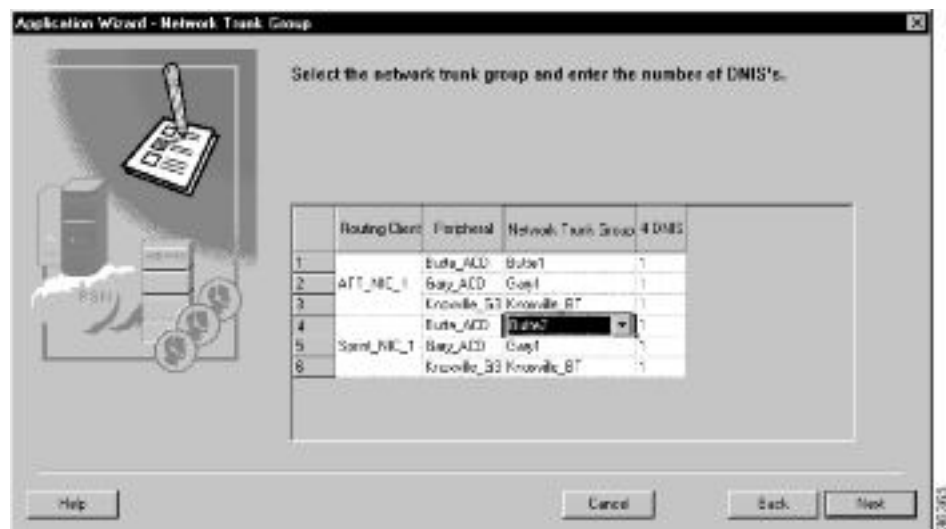
Step 7   For each row, specify the following:

- **Network Trunk Group**. Click the row and select from the drop-down list.

- **# DNIS**. The number of peripheral targets (DNIS values) to define for each network trunk group.

Step 8   Click **Next**. The Route DNIS and Label window appears.

Figure 38: Application Wizard—Service, Route, DNIS and Label

Step 9   For each network trunk group, specify the following:

- **Label**. (This value does not have to be defined in the ICM database.) The value ICM software returns to the routing client to indicate the destination of the call.

- **DNIS**. (This value does not have to be defined in the ICM database.) The value the routing client sends to the network trunk group to indicate the destination of the call.

- **Service Peripheral Name**. Click the row and select a predefined service at the peripheral from the drop-down list.

- **Route**. Name of the route to be associated with the service. Select from the drop-down list or enter a new route name.

Step 10   Click **Next**. The Application Wizard displays a dialog box listing the changes that will be made to the ICM database.

Step 11   Click **Finish** to save the changes and exit the Application Wizard.

Scheduled Targets

A scheduled target is a special type of destination for a call. ICM software has only limited information about a scheduled target: the number of calls that the target can handle simultaneously and the number of calls currently in progress at the target.

Note: Scheduled targets are only available for NICs that use intelligent network support. These include CRSP, INAP (CS-1 and CS-2), Carrier AIN, and CWC routing targets.

ICM software determines the number of calls the target can handle by referring to a periodic schedule associated with the target, as shown in the .

Figure 39: A Scheduled Target with Multiple Periods
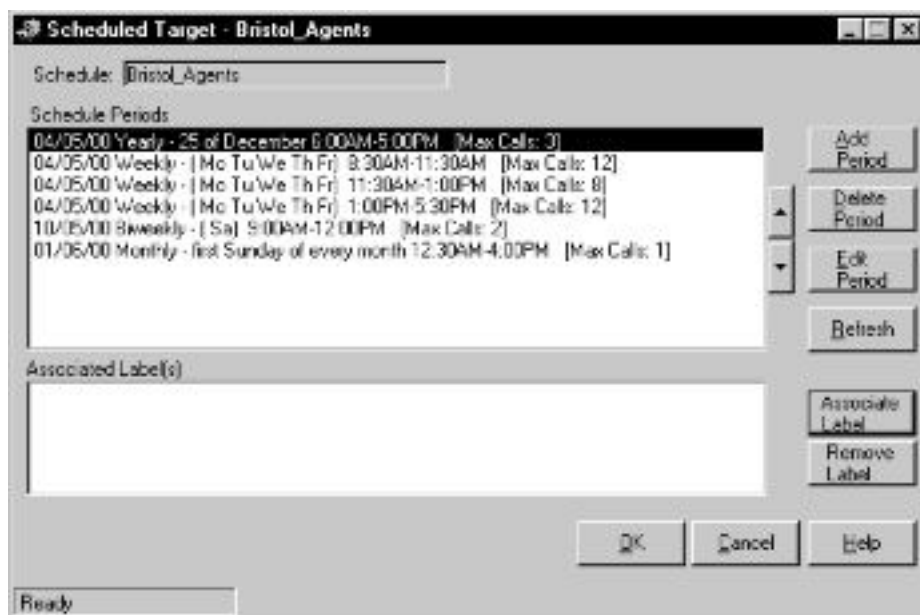
ICM software determines the number of calls in progress based on the number of calls it has sent and the number of calls that have ended. (The routing client must inform ICM software each time a call at the target ends.)

ICM software evaluates the periods in the order listed in the Schedule Periods dialog box. (You can use the up and down arrow buttons to change a period's position within the list.)

You can also associate the scheduled target with previously defined routing labels.

For information on defining routing labels, see the section. For information about referencing scheduled targets in a routing script, see the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*.

Use the Scheduled Target Manager to configure a scheduled target and associated schedule. The Workforce Management Integration System—which also lets you import schedule data from an external workforce management system and export data from the ICM database in the form of a report—is a separate Cisco ICM software product.

See the Cisco ICM Software Workforce Management Integration User Guide for more information.

How to create a new scheduled target

To create a new scheduled target, follow these steps:

Step 1   In the Admin Workstation group, click the **Scheduled Target Manager**. The Scheduled Target Manager dialog box appears, listing any scheduled targets that have been previously defined.

**Step 2**   Click **New**. The New Scheduled Target dialog box appears.

Figure 40: New Scheduled Target

Step 3   Enter a name for the target and, optionally, a description. If you are using partitioning, choose the business entity for the target.

Step 4   Click **Finish** to create the scheduled target and return to the main window.

Step 5   Click **Exit** to close the Scheduled Target Manager.

How to create a new schedule period for a target

To create a new schedule period for a target, proceed along the following steps:

Step 1   Within the Scheduled Target Manager main window, click **View**. The Scheduled Targets dialog box appears.

Figure 41: Schedule Targets
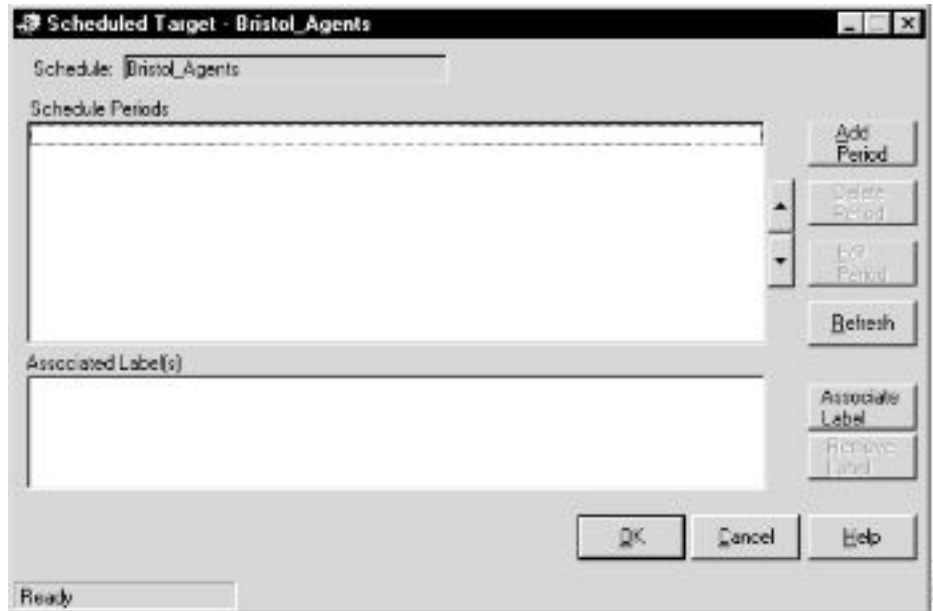
Step 2   Click **Add Period**. The Periodic Schedule Information dialog box appears.

Figure 42: Periodic Schedule Information
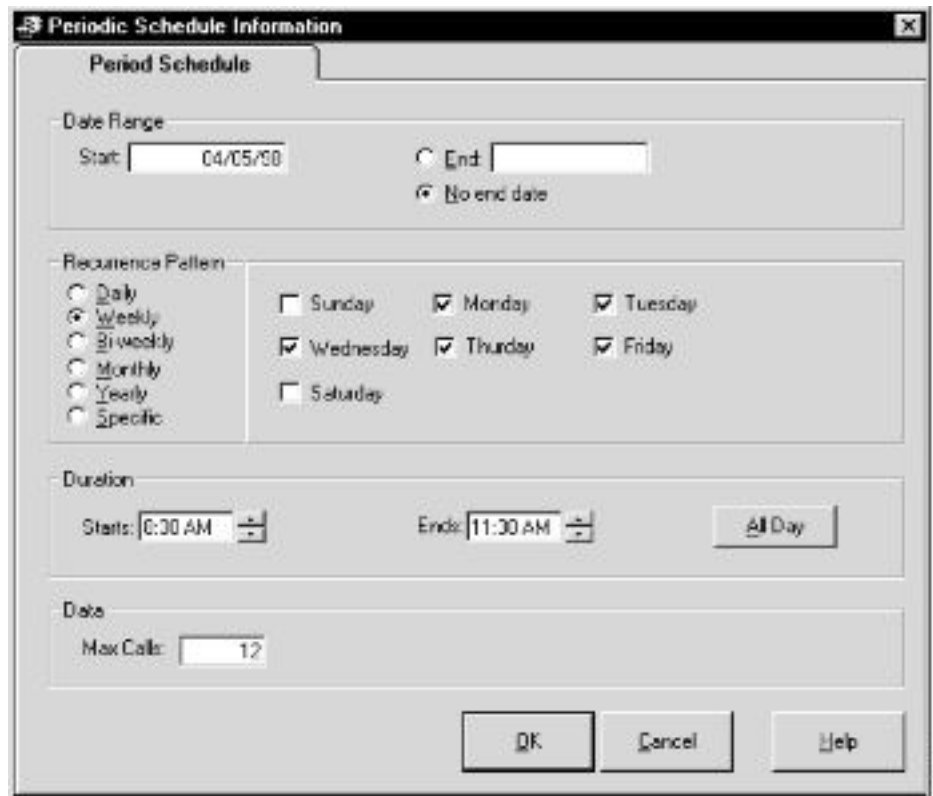
Step 3   Specify the following:

- **Date Range**. A starting date for the period and, optionally, an end date.

- **Recurrence Pattern**. Which days the schedule applies to.

    Note: For details about the choices for the Recurrence Pattern fields, see the discussion of script scheduling in the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions*. The options for periodic schedules are the same as for script schedules.

- **Duration**. The time range for the schedule period.

- **Data**. The maximum number of calls in progress the target that can handle during the specified period.

Step 4   Click **OK** to save the period information and return to the Scheduled Target dialog box.

   Note: None of the periods you have added or changed are saved until you click the Scheduled Target's **OK** button.

Step 5   Click **Exit** to close the Scheduled Target Manager.

How to associate labels with a scheduled target

To associate labels with a scheduled target, follow these steps:

Step 1   Within the Scheduled Target Manager main window, click Associate Label. The Associate Label dialog box appears, displaying a list of labels not currently associated with a target.

Step 2   Choose a label from the list and click **OK** to save the label and return to the Scheduled Target Manager dialog box.

Step 3   Repeat Steps 1 and 2 to associate additional labels with the scheduled target.

Step 4   Click **OK** in the Scheduled Target dialog box to save the changes you have made and return to the Scheduled Target Manager main window.

Step 5   Click **Exit** to close the Scheduled Target Manager.

Translation Routes

A translation route is a special destination for a call that allows you to deliver other information along with the call. You do this by delivering the call first to the translation route. While the routing client is processing the call, ICM software delivers the final destination for the call to the Peripheral Gateway along with any other necessary information. The peripheral then works

with the PG to reroute the call to the ultimate target and ensure that the appropriate information is also delivered.

A single translation route can be used to send information to any number of different targets. However, because the PG must uniquely identify the call, you cannot perform translation routing on two calls to the same peripheral target simultaneously. To avoid this, you typically define a set of peripheral targets, and routes, for each translation route.

Translation Route Wizard

You can define translation routes within the Configuration Manager. However, defining the correct associations with peripheral targets, labels, and routes is complicated. To automate much of the process, use the Translation Route Wizard.

Note: You can also use the Translation Route Wizard to view configuration or integrity reports on translation routes, update existing translation routes, or to delete translation routes and their associated entities.

How to create a translation route

To create a translation route, follow these steps:

Step 1 In the Configuration Manager, select **Tools > Wizards > Translation Route Wizard**. The Translation Route Wizard introductory dialog box opens.

Step 2 Click **Next**. The *Select Configuration Task* dialog box appears.

Step 3 To create a translation route, choose **Create New** and click **Next**. The Define Translation Route dialog box appears.

Figure 43: Define Translation Route

Note: The graphic on the left of the dialog box shows the entities you will be defining while using the Translation Route Wizard.

Step 4   Enter a long and short name for the translation route and, optionally, a description—the short name is used in forming target names—and click **Next**. The Select Configuration dialog box appears.

Figure 44: Select Configuration
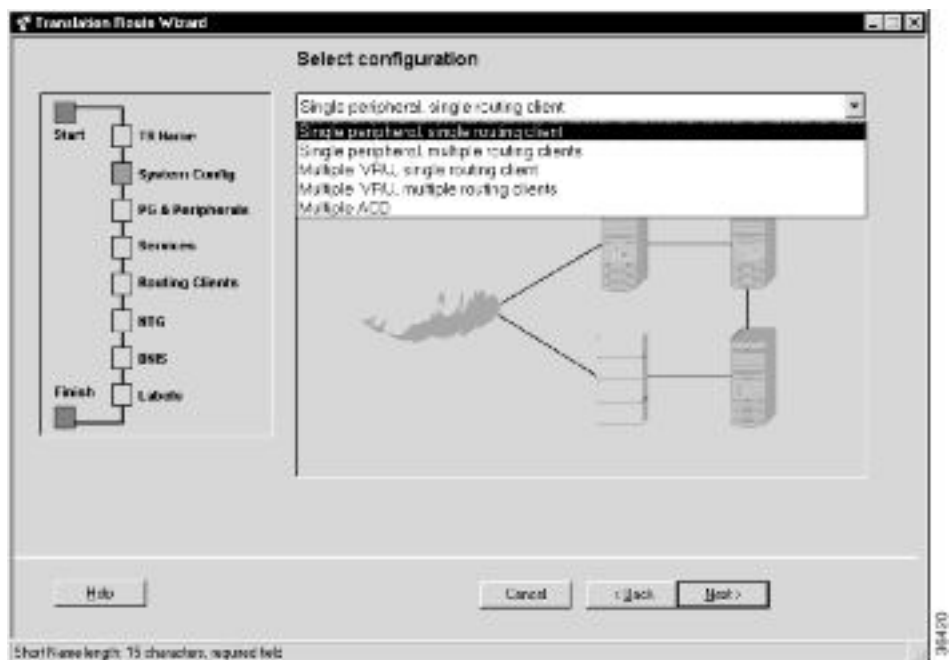
Step 5   Use the drop-down list to choose the configuration. The graphic changes to show the configuration you select.

> **Note:** A translation route can be associated with a single peripheral or with multiple VRUs associated with a single PG. It can handle calls originating from a single routing client or from multiple routing clients. (The Multiple ACD type is not currently supported.)

Step 6   Click **Next**. The Select Peripheral Gateway, Peripherals, and Services dialog box appears.

Figure 45: Select Peripheral Gateway, Peripherals, and Services

Step 7   Specify the following:

- **Peripheral Gateway**. (scrolling list) The gateway target for the translation route.

- **Peripheral**. (scrolling list) The single peripheral or the peripheral to route calls to.

- **Service/Service Array**. (scrolling list) If the translation route is associated with a single peripheral, then select the service associated with the translation route. If the translation route is associated with multiple VRUs, then select a service array.

Step 8   Click **Next**. The Select Routing Clients and Dialed Numbers appears.

Figure 46: Select Routing Clients and Dialed Numbers

Use this dialog box to specify the routing client or routing clients from which translation routed calls originate. For each routing client, you can also specify which specific dialed numbers are used for translation routed calls.

Step 9   Select a routing client from the Pre-Routing Client list or the Post-Routing Client list. The Dialed Number lists updates to show the dialed numbers associated with the selected routing client.

Step 10   Select a dialed number you want to use with the translation route and click the Add button. The number appears in the list at the bottom of the dialog box. The Translation Route Wizard will map the translation route's labels to each of these dialed numbers.

Note: Some routing clients do not require mappings of labels to specific dialed numbers. The Dialed Number list is automatically disabled for such routing clients. You need only select the routing client and click the Add button to add it to the list. You can also use the Disable Dialed Number Selection option to manually disable the Dialed Number list. The Translation Route Wizard will then not create mappings of dialed numbers to labels for the routing client.

Step 11   Click **Next**. The Select Network Trunk Groups for Routing Clients dialog box appears.

Figure 47: Select Network Trunk Groups for Routing Clients

For each routing client you have selected, you must select at least one network trunk group to be used in peripheral targets associated with the translation route.

Step 12   Select a routing client, select a network trunk group value for it, and click **Add**. The Network Trunk Group appears in the list at the bottom of the dialog box.

**Step 13**   Click **Next**. The Configure DNIS dialog box appears.
Figure 48: Configure DNIS
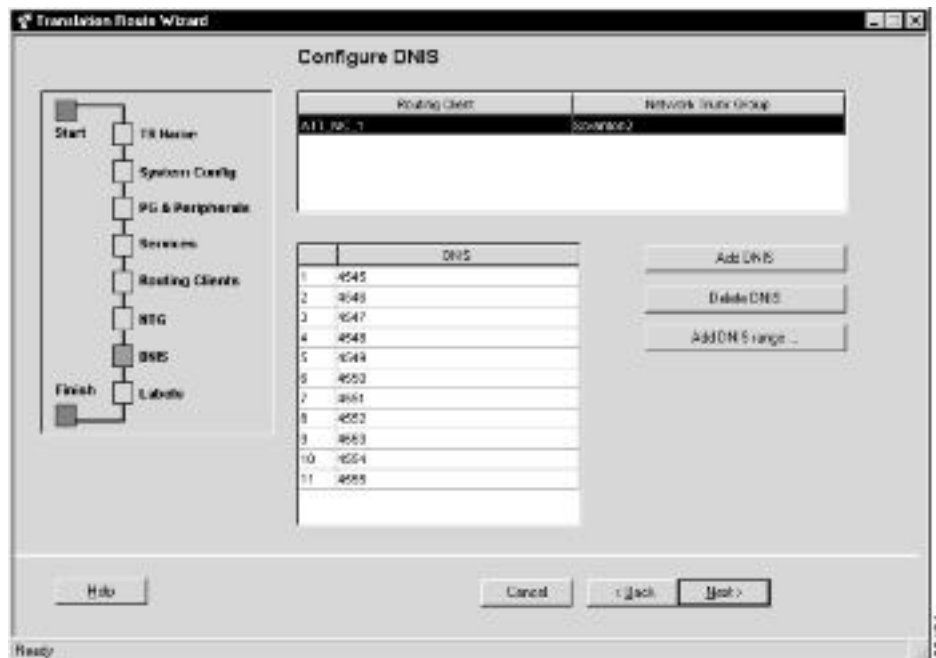
Use this dialog box to specify the DNIS values to be used in peripheral targets associated with the translation route.

Step 14   Do one of the following:

- To enter a specific DNIS value, click **Add DNIS** and enter the value.

- To add a range of DNIS values, typically required by a translation route, click **Add DNIS Range**. A dialog box prompts you to enter a starting and ending DNIS value. The Translation Route Wizard automatically generates the DNIS values in the range.

Step 15   Click **Next**. The Configure Label dialog box appears.
Figure 49: Configure Label
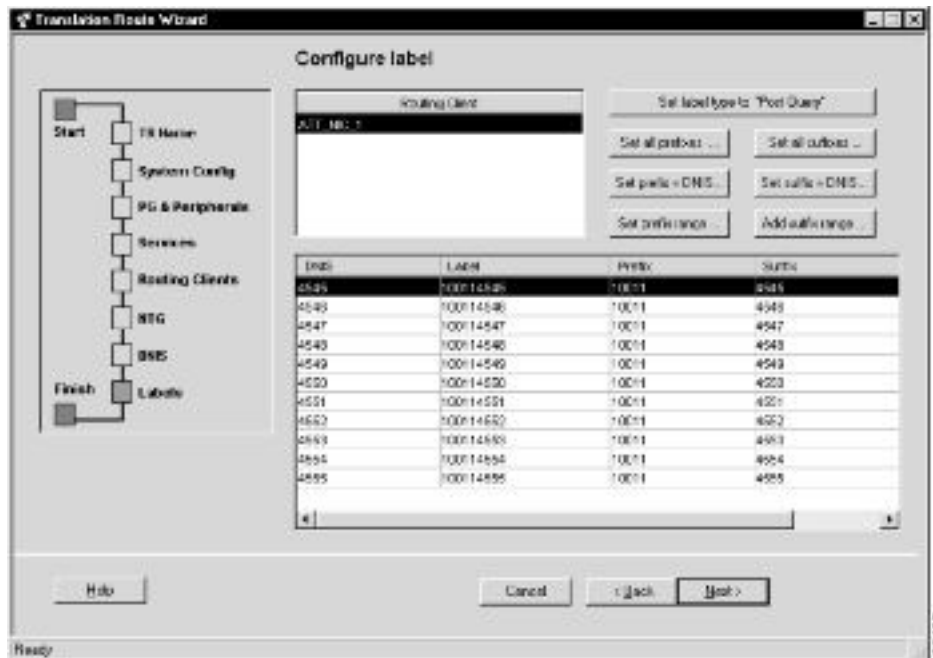
Use this dialog box to define a label for each peripheral target. A label consists of a prefix and a suffix. Each DNIS value requires a unique label.

Step 16   Do one of the following:

- Enter prefixes and suffixes individually.

- Use the buttons in this dialog box to set a range of values or to base the prefix or suffix values on the DNIS values.

Step 17   Click **Next**. The Wizard Complete dialog box appears.

Figure 50: Wizard Completing
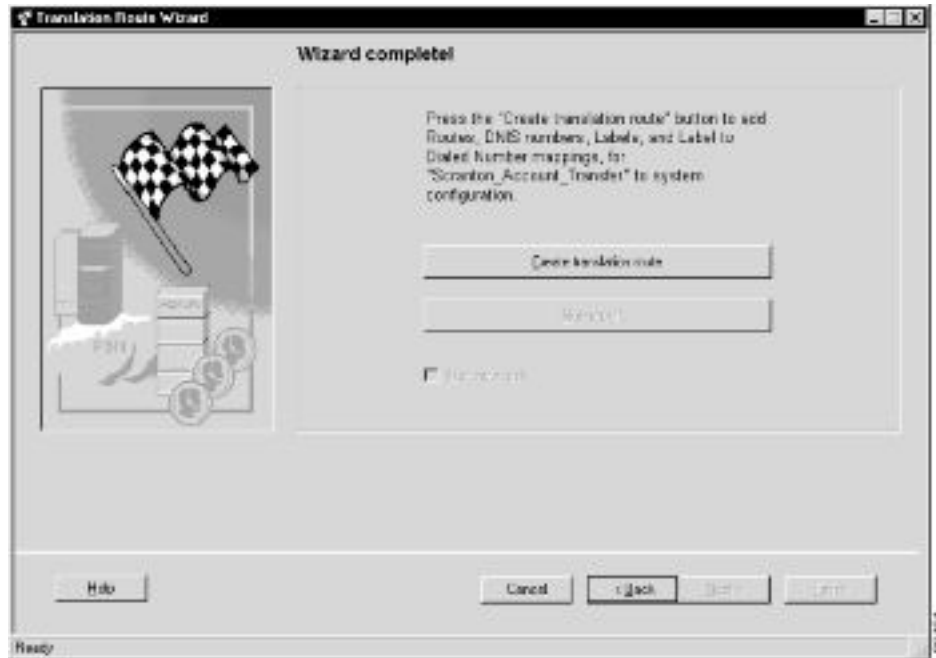
Step 18   Click **Create Translation Route** to create the translation route and its associated entities. First, the Translation Route Wizard displays a success message and then the dialog box appears as follows.

Figure 51: Wizard Complete

Step 19   Do one of the following:

- To see details about the translation route you just created, click **Run Report**.

- To return to the beginning of the Translation Route Wizard and perform a new task, select **Start New Task** and click **Finish**.

- To exit the Translation Route Wizard, click **Finish**.

Translation Route Wizard

Chapter 9

Configuring ICM Software for Integrated Applications

These instructions provide information for installing and configuring ICM 7.0(0) software as part of a system integrated with the Cisco Collaboration Server and Cisco E-Mail Manager applications.

For additional information about Cisco Intelligent Contact Management (ICM) software, see the **Cisco web site** (http://www.cisco.com) listing ICM documentation: **http://. www.cisco.com/univercd/cc/td/doc/product/icm/index.htm**

For a high-level overview of integrating the applications with ICM software, refer to the *Cisco Customer Contact Suite Implementation Map* that is delivered with ICM software.

Note: Important! While performing the tasks outlined in this chapter, be sure to note the ICM software configuration information, as you will need to enter this information when configuring the integrated applications.

This section contains the following topics:

ICM 7.0(0) Software Requirements

Note: Important! ICM software and the integrated applications should not be installed on the same machine.

Before you begin configuring ICM software for the integrated applications, you must upgrade ICM software.

For complete and current information on Software Requirements, see the Cisco Intelligent Contact Management Software Release 7.0(0) Bill of Materials (BOM). The ICM BOM is available at: *http://www.cisco.com/univercd/cc/td/doc/product/icm/index.htm.*

Refer to the *ICM Upgrade Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for specific upgrade and installation requirements.

How to install the application interface

Note: Important! You must install the application interface before beginning the ICM configuration.

If you want your Admin Workstation to be the point of contact for the integrated applications (Cisco Collaboration Server and Cisco E-Mail Manager) configuration (to host the CMS Server), you need to perform this installation.

Refer to the *ICM Installation Guide for Cisco ICM Enterprise Edition* for detailed information about the Admin Workstation setup.

Step 1   Run setup.exe from the ICM CD-ROM.

Step 2   Select your Distributor AW and click **Edit**. The Admin Workstation properties window displays.

Step 3   Click the **Next** button. The Real-time Distributor Node Properties window displays.

Step 4   Click the **CMS Node** checkbox. Selecting this option installs the CMS Server on the Admin Workstation.

Step 5   Finish the installation process.

After installing the application interface, you need to run the CMS Control tool on the installed Admin Workstation to set up, from the ICM side, the connections that allow the integrated applications to talk to that Admin Workstation. You must also configure each application's end of the connection.

To improve performance, if no debugging is being performed using that console, keep the CMS node console minimized. If the console is not minimized, considerable CPU resources are tied up displaying numerous messages from the system I/O.

See the "Application Connections" (page 182) section for more information about using the CMS Control tool to set up the connections between ICM software and the integrated applications.

Verify Pre-Integration Configuration

Verify the configuration by doing the following:

- Verify that all processes, including all PIMs and CTI servers, are active (that is, all processes start, duplexed routers load the configuration and synchronize, and all PIMs and CTI servers are active).

- Verify that the MSSQL server has started. Submit sample calls through all routing clients and all call types. Use the Call Tracer tool in the ICM Script Editor to test router call handling functionality.

Note: This test must be done prior to the ICM upgrade and after the ICM upgrade. Failures should be addressed prior to integration.

Configuring ICM Software for Integration

To configure ICM software for the applications, you need to configure/install the following:

- Media routing domains for appropriate media classes within ICM software

- Media routing peripheral gateways (PGs) and peripherals

- ECC (Expanded Call Context) variables

- Application instance(s) and define them in ICM software

- Agents (you can create agents either in ICM software or in the applications.

- Connections to the CMS server using the Application tab of the CMS Control tool in the ICM Admin Workstation folder

- Configuration work on the integrated applications

- Skill group configuration using ICM Script Editor

- Information to push to waiting Cisco Collaboration Server callers

Note: Although it is possible to create agents and skill groups on ICM and then enable them on the application, it is recommended they be created from the application admin interface.

The following sections describe each of the preceding, their configuration and installation instructions, and indicate the ICM configuration tool you need for each configuration. Refer to a configuration tool's online help if you have any questions.

Note: Before using the ICM configuration tools to perform each configuration process, if you have more than one ICM instance you want to configure, open the AW Select tool in the ICM Admin Workstation and select the ICM instance with which you want to work.

Media Routing Domains

To create and then assign a media routing domain to a media class (physical media that ICM software treats as a single concept), use the ICM Configuration Manager's Media Routing Domain List tool.

ICM software uses Media Routing Domains (MRDs) to organize how requests from different media are routed. An MRD is a collection of skill groups and services that are associated with a common communication medium. ICM software uses an MRD to route a task to an agent who is associated with a skill group and a particular medium.

Before you can configure your application (for example, the Cisco Collaboration Server) to use ICM software as a routing engine, MRDs must be established in ICM software. These MRDs have unique IDs across the enterprise. Then, on the application, you must enable those ICM Media Routing Domains that you need to use.

Note: mportant! The MRD IDs *must* be created in ICM software first, and then passed on to the person configuring the application, in order to perform a successful configuration. In Cisco Collaboration Server you only need the MRD name, you do not need the MRD ID.

A media class describes the type of requests you want to set up for routing on ICM software.

Pre-defined media classes include:

- Cisco Multi-session chat

- Cisco Single-session chat

- Cisco Blended Collaboration (voice and single-session chat)

- Cisco Voice

- Cisco E-mail Manager

Note: A number of media classes are pre-defined for Cisco applications bundled with ICM software. There is currently no reason for you to create a new media class. Future third party applications that interface with ICM software may result in the defining of additional media classes.

How to configure the Media Routing Domain

Step 1   Start the ICM Configuration Manager and select Tools > List Tools > Media Routing Domain List. The Media Routing Domain List window displays. Click the Retrieve button and then the Add button to display the Attributes tab.

Step 2   Enter the following information:

- Name. Enter the enterprise name of the MRD.

- Media Class. Use the drop-down list to select the media class for the integrated application.

- The MRDomainID is a required read-only field. (An ID number will be automatically created when you save your entry.)

Step 3   After entering the required fields, save the configuration and close the window.

Note: Refer to the ICM Configuration Manager's online help for detailed information about the Media Routing Domain List tool.

Media Routing Peripheral Gateway (MR-PG)

To create a media routing peripheral gateway, use the ICM Configuration Manager's Network VRU Explorer and the PG Explorer.

A media routing peripheral gateway is capable of routing media requests of different kinds (for example, e-mail, Web callback, and so on). MR-PGs support multiple media routing applications by placing multiple, independent Peripheral Interface Managers (PIMs) on a PG platform. For example, if you are connecting a Cisco E-Mail Manager server and a Cisco Collaboration Server, you need two MR-PIMs on the PG. (We recommend you setup no more than 10 PIMs per MR-PG.) A single MR-PIM is required for each application server to be connected to the ICM system. In addition to an MR-PG, you also need at least one Agent PG, such as an IPCC PG, a legacy ACD PG, or a NonVoiceAgent PG. For this example, we will use an IPCC PG.

For example, the diagram below provides an overview of the interfaces that need to be configured for ICM integration with Cisco E-Mail Manager.

Figure 52: Interfacing with Cisco E-Mail Manager
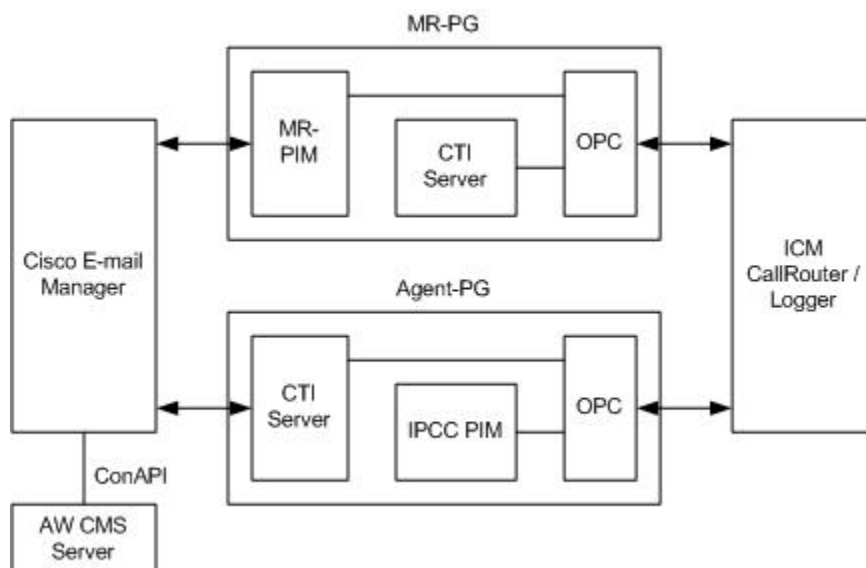
Configuring the MR-PG

The MR-PG interface provides routing instructions to the integrated applications, while the Agent PG configuration is used to report agent state and status to ICM software.

Note: No agents are configured on MR-PGs. Agents are configured on NonVoice Agent PGs or other agent PGs.

The ICM software media routing mechanism leverages and takes advantage of the existing ICM Network VRU operational infrastructures. In order to setup for media routing, you must configure a Network VRU in the ICM configuration. This Network VRU configuration has no relationship with any actual Network VRU in your environment.

How to configure the MR-PG

Step 1	Start the ICM Configuration Manager. From the ICM Configuration Manager menu, select **Configure ICM > Targets > Network VRU > Network VRU Explorer**. The Network VRU Explorer window displays.
Step 2	Click the **Retrieve** button and then click the **Add Network VRU** button. The Network VRU dialog box displays.
Step 3	Do the following:

- Enter a name for the Network VRU (for example, Cust_MR_VRU).

- Select **Type 2** from Type drop-down list.

- Optionally, enter a description (i.e., Media Routing).

- Save and close the window.

Step 4	From the ICM Configuration Manager menu, select Configure **ICM > Peripherals > Peripheral > PG Explorer**. The PG Explorer window displays.
Step 5	Click the **Retrieve** and then click the **Add PG button**. The Logical controller dialog box displays.
Step 6	Do the following:

- Enter a name for the PG (for example, Cust_MR_PG1).

- Select **MR PG** as the Client Type.

Step 7	In the tree section of the window, expand the tree and click the **Add Peripheral** button. The Peripheral configuration dialog box displays.

Step 8   Do the following:

- Select the Peripheral tab and check the **Enable Post Routing** box.

- Select the Advanced tab and select the previously created Network VRU from the drop-down list.

- On the Routing Client tab, enter a routing client name (for example, Cust_MR_PG1_1.RC) and set the default timeouts to **2000, 1000,** and **10**, respectively.

- Save the configuration. After you save the configuration, the system assigns a Logical Controller ID and a Physical Controller ID.

Note: We recommend you make a note of these values because you will need to provide them when you install the MR-PG.

Step 9   Close the window.

Installing the MR-PG

Customer contact applications use the MediaRouting interface to request instructions from ICM software when they receive a contact request from a customer using one of the mediums, such as e-mail, Web-collaboration, or voice. When ICM software receives a new task request from the application, ICM runs a pre-defined ICM script to determine how to handle the task.

As a result of the execution of the ICM script, ICM sends an instruction to the application to do one of the following:

- While the application is executing an application script that is stored on the application server, ICM is looking for a best available agent that has the matching skill within the enterprise, and assigns this agent to this task.

- Handle the new task with an ICM determined best available agent that has the matching skill within the enterprise or a label the application utilizes to determine the best available agent for the task.

Note: When choosing where to install the MR-PG, be aware you can only install two PG's per server.

How to install the MR-PG

To install the MR-PG, follow these steps:

Step 1   Run setup.exe from the ICM CD-ROM on the machine that you want to make an MR-PG. Add the customer if you have not already done so.

Step 2   Click **Add** in the Instance Components section and choose **Peripheral Gateway** from the ICM Component Selection window. The Peripheral Gateway Properties window displays.

Step 3   Do the following:

- Choose Production Mode.

    Note: The Auto Start at System Startup option ensures that the Peripheral Gateway can restart itself automatically if necessary. It is strongly recommended that you set the Auto Start feature after installation is complete. The server may need to be rebooted a number of times during installation, and problems could occur if the node starts before hotfixes and/or databases are applied.

- Specify whether the PG is part of a duplexed pair.

- In the ID field, choose the PG's device identifier as enabled in the CallRouter's Device Management Protocol (DMP) configuration dialog (part of the CallRouter portion of ICM setup.exe; enables the connection between the Router and the PG). Each logical PG must have a unique device assignment at the CallRouter. (If a PG is duplexed, both physical machines use the same device assignment.) To add another logical PG, you must enable another PG device for the CallRouter.

- If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select **Side A.**

- Use the Client Type Selection section of the window to select **MediaRouting** and click the **Add** button.

- Select the drive and language as appropriate and click the **Next** button.

Step 4   The Peripheral Gateway Component Properties window displays.

Enter the Logical Controller ID generated when you configured the PG with the PG Explorer in Step 8 of the section. Click the **Add** button and select **PIM 1** from the list.

Step 5   The MediaRouting Configuration box displays.

Step 6   Do the following:

- To put the PIM into service, check the Enabled option. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.

- Enter the peripheral name in the Peripheral name field. In most cases, you must use the enterprise name from the associated Peripheral record.

> **Note:** When creating peripheral names, use short descriptive names and keep the length to a minimum.

- Enter the Peripheral ID from the Peripheral record.

- For Application Hostname (1), enter the host name or the IP address of the application server machine (i.e., Cisco Media Blender for connection to Cisco Collaboration Server or Cisco E-Mail Manager). If using the host name, the name must be in the host's file.

- For Application Connection Port (1), enter the port number on the application server machine that the PIM will use to communicate with the application.

> **Note:** When creating a PIM on the MR-PG for Cisco E-Mail Manager, you must set the Application Connection Port to 1600 (default is 2000); set it to 2000 for the Cisco Collaboration Server.

- Leave Application Hostname (2) blank.

- Leave Application Connection Port (2) blank.

> **Note:** The Application Hostname and Application Connection Port are used for Cisco E-Mail Manager and Cisco Collaboration Server failover. Both applications initially try to connect to the first host. If unsuccessful, Cisco E-Mail Manager and Cisco Collaboration Server then try to connect to the second host. If this attempt to connect is also unsuccessful, they then re-try connecting to the first host. This process repeats until successful connection to the host.

- For Heartbeat Interval (seconds), specify how often the PG should check its connection to the application server. Use the default value.

- For Reconnect Interval (seconds), specify how often the PG should try to re-establish a lost connection to the application server. Use the default value

- Click **OK.**

Step 7 From the Peripheral Gateway Component Properties window, click the **Next** button. The Device Management Protocol Properties window displays. Enter the appropriate settings and click the **Next** button.

Step 8 The Peripheral Gateway Network Interfaces window displays. Enter the appropriate settings and click the **Next** button.

Step 9 The Check Setup Information window displays. Verify the setup information and click the **Next** button. ICM software installs the PG.

Step 10 When the Setup Complete window displays, click the **Finish** button to exit from the setup program.

Configuring and Installing the IPCC PG

When agents and skill groups are created—whether from an application (Cisco Collaboration Server or Cisco E-Mail Manager) or on ICM software—they must reside on a peripheral. A peripheral can be associated with an IPCC, SoftACD, or Legacy ACD for agents doing any work on the phone. If the agents on the peripheral will never be doing phone work, one or more NonVoice peripherals can be used.

How to configure the IPCC PG

To configure the IPCC PG, follow these steps:

Step 1   Start the ICM Configuration Manager. From the ICM Configuration Manager menu, select **Configure ICM > Peripherals > Peripheral > PG Explorer**. The PG Explorer window displays.

Step 2   Click the **Retrieve** and then click the **Add PG** button. The Logical controller dialog box displays.

Step 3   Do the following:

- Enter a name for the PG (for example, Cust_NVA_PG1).

- Select IPCC/SoftACD/EA as the Client Type.

- Enter the address for the Primary CTI server and the Secondary CTI server in the following form:

  <IP address of the CTI server>:<Client Connection Port Number>

  i.e., 192.168.1.101:42027

  This entry is necessary for Cisco E-mail Manager to gather CTI connection data.

Step 4   In the tree section of the window, expand the tree and click on the peripheral. The Peripheral configuration dialog box displays.

Step 5   Do the following:

- Use the default name or change the name.

  Note: This name is used in composite names which are limited to a 32 character length, i.e., an agent enterprise name. Therefore, keep the name short.

- IPCC uses post routing, do not un-select the **Enable Post Routing** checkbox.

Step 6   Select the Advanced tab and click the **Agent Reporting** checkbox.

Step 7   Select the Routing Client tab and specify the routing client for post routing.

Note: This tab appears only if the **Enable Post Routing** checkbox is selected.

Step 8   Save the configuration. After you save the configuration, the system assigns a Logical Controller ID and a Physical Controller ID. Make a note of these values because you will need to provide them when you install the IPCC-PG.

Step 9   Close the window.

How to install the IPCC PG

To install the IPCC PG, follow these steps:

Step 1   Run setup.exe from the ICM CD-ROM on the machine that will be the Agent PG. Add the customer if you have not already done so.

Step 2   Click **Add** in the Customer Components section and choose Peripheral Gateway from the ICM Component Selection window. The Peripheral Gateway Properties window displays.

Step 3   Do the following:

- Choose **Production Mode**.

  Note: The Auto Start at System Startup option ensures that the Peripheral Gateway can restart itself automatically if necessary. It is strongly recommended that you set the Auto Start feature after installation is complete. The server may need to be rebooted a number of times during installation, and problems could occur if the node starts before hotfixes and/or databases are applied.

- Specify whether the PG is part of a duplexed pair.

- In the ID field, choose the PG's device identifier as enabled in the CallRouter's DMP configuration dialog box. Each logical PG must have a unique device assignment at the CallRouter. (If a PG is duplexed, both physical machines use the same device assignment.) To add another logical PG, you must enable another PG device for the CallRouter.

- If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select **Side A**.

- Use the Client Type Selection section of the window to select the IPCC/SoftACD/EA PG and click the **Add** button.

- Select the drive and language as appropriate and click the **Next** button.

Step 4   The Peripheral Gateway Component Properties window displays.

Enter the Logical Controller ID generated when you configured the Agent PG with the PG Explorer. Click the **Add** button.

Step 5   The IPCC/SoftACD/EA Configuration box displays.

Step 6 Do the following:

- To put the PIM into service, check the **Enabled** option. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.

- Enter the peripheral name in the Peripheral Name field. In most cases, you must use the enterprise name from the associated Peripheral record.

  Note: When creating peripheral names, use short descriptive names and keep the length to a minimum.

- Enter the Peripheral ID from the Peripheral record.

- Specify the maximum length for an agent extension in the Agent Extension Length field.

- Click the **IPCC** button in the Telephony Server Protocol section.

- Enter the Call Manager host/IP that this peripheral will connect to in the Service field in the IPCC Parameters section.

- Specify a the User ID and User password created on the Call Manager you are connecting to.

Step 7 Click **OK**.

Installing CTI Server

You need to install a CTI Server for each Agent PG (the steps are basically the same as those for a Media Routing PG). Each PG uses CTI Server to provide the interface between the integrated application and ICM software.

Note:

- It is important that when you install a CTI Server, you pick the Custom Gateway (CG) that corresponds to the Agent PG that you just installed. For example, if you just installed a MR-PG as PG1 and an IPCC Agent PG as PG2; you must install the CTI Server for PG2 as CG2, not CG1.

- You do not need to install a CTI server on the Agent PG if one is already installed.

How to install CTI Server

To install CTI Server, follow these steps:

Step 1 Run setup.exe from the ICM CD-ROM on the same machine as the Agent PG. Add the customer if you have not already done so.

Step 2 Click Add in the Customer Components section and choose CTI Server from the ICM Component Selection window. The CTI Server Properties window displays.

Figure 53: cti_server_prop_dialogbox

Step 3   Do the following:

- Choose **Production Mode**.

  Note: The Auto Start at System Startup option ensures that the Peripheral Gateway can restart itself automatically if necessary. It is strongly recommended that you set the Auto Start feature *after* installation is complete. The server may need to be rebooted a number of times during installation, and problems could occur if the node starts before hotfixes and/or databases are applied.

- Specify whether the CTI Server is part of a duplexed pair.

- In the ID field, specify the number of the CTI Server node (CG1 through CG80).

- In the ICM System ID field, enter the DMP device number of the Agent PG that you want associated with the CTI Server.

  Note: The DMP device number is the checkbox you checked for the PG (that is, if you checked box 1, the device number is 1, box 2, the device number is 2, etc.).

- If the CTI Server is duplexed, specify whether you are installing Side A or Side B. If the CTI Server is simplexed, select Side **A.**

- Select the drive and language as appropriate and click the **Next** button.

Step 4   The CTI Server Component Properties window displays.

Step 5   Click the **Next** button. The CTI Server Network Interface Properties window displays. Enter the appropriate interface information.

Step 6   Click the **Next** button to view the setup information window. If the information is correct, click the **Next** button and finish the installation.

Agents

You can create *persons* (records that contain personal information about an agent) and *agents* (person who handles customer contact) in ICM software and in the Cisco Collaboration Server and Cisco E-Mail Manager applications.

- Creating them in Cisco Collaboration Server or in Cisco E-mail Manager makes them available to ICM.

- Creating them in ICM does not make them immediately available to ICM, the application must enable the agent.

- An agent created in Cisco Collaboration Server must be enabled in Cisco E-mail Manager.

- An agent created in Cisco E-mail Manager must be enabled in Cisco Collaboration Server.

Note: Creating an agent in an application rather than in ICM software is more productive since the application automatically creates the person record and agent record for the agent in the ICM database. When you create an Agent record, you have the option of associating it with an existing Person record (clicking the Select Person button). If you do not associate the Agent record with an existing Person record, a new Person record is automatically created when you create the agent

Configuring an agent for multi-media means assigning that agent to at least two skill groups (one for each media). For example, the agent might handle both e-mail and phones, Single-session chat and phones, or Blended Collaboration and e-mail.

Note: Use the integrated applications to assign an agent an application-specific skill group. Application-specific skill groups must be created and maintained in the application, not in ICM software.

If you want to configure phone agents in ICM software, you must first create person records for them in the ICM Configuration Manager's Person List tool.

Every agent is associated with a person record. This is primarily a person's first and last name and login password. This record must exist before you can create an agent in ICM software (see How to create an agent (page 126)).

The purpose of the person record is so that, in a multi-channel contact center, one person can be assigned as an agent on different peripherals since ICM software defines an agent as belonging to only one peripheral.

Note: The preceding is also true for non-integrated ICM systems.

The second step in creating an agent in ICM software is to use the ICM Configuration Manager's Agent Explorer tool to create the agent. When you do so, the agent is associated with a person.

Non Voice Agents

A NonVoiceAgent PG/PIM is only intended for use at a site that does not have voice, but that does want to use ICM to do its multi-channel (Non Voice) contact routing. For such a site a Non Voice Agent PG is necessary, since every agent must be associated with a peripheral, and the site has no Agent peripheral other than the NonVoiceAgent PG. (A Media Routing PG is also needed, but an MR-PG is not an Agent PG.)

At a site with voice, some agents may be NonVoice agents, that is, these agents will not make/take telephone calls. Such agents are created on the IPCC or ACD PG for that site and indicated by a Peripheral Number beginning with the letters NV. You do not require a separate NonVoiceAgent PG for these agents.

Note: In this discussion "voice" means the making/taking of telephone calls, while NonVoice implies the inability to make/take any such calls. This is to be distinguished from the meaning of Voice with regard to Media Classes. The Media Classes called Voice and Blended Collaboration both involve "voice" in the current sense.

- If a NonVoice agent is created through Cisco Collaboration Server or Cisco E-Mail Manager, a peripheral-unique Peripheral Number beginning with the letters NV is automatically generated. If later you wish to change a NonVoice agent to a voice enabled agent, go to the Agent Explorer in ICM Configuration Manager and change the agent's Peripheral Number to the agent's peripheral-unique voice Peripheral Number (often the agent's telephone number). Do not simply remove the letters NV from the beginning of the previously generated Peripheral Number. If the agent was created as a voice agent, a peripheral-unique peripheral number is assigned at creation.

- If a NonVoice agent is being created through ICM Configuration Manager, leave the Peripheral Number field blank when creating the agent. The system will then generate a peripheral-unique Peripheral Number beginning with NV.

If it is later decided that an existing NonVoice agent should be allowed to receive telephone calls, change the agent's Peripheral Number to a voice Peripheral Number, using Agent Explorer, as indicated above in the first bulleted item.

If it is decided that an existing voice-enabled agent should become a NonVoice agent, delete the Peripheral Number as it appears in the Agent Explorer—thus blanking the field—and then continue as indicated above in the second bulleted item.

Application Instance

Important! Application instances must be configured before you configure Cisco Collaboration Server or Cisco E-Mail Manager.

Use the ICM Configuration Manager's Application Instance List tool to configure application instances, external to ICM, to allow identification and access to the ICM Configuration Management System (CMS). This enters an application ID and application key (password) that identifies the application. You need to enter the same information in the application.

Note: Important! Share the ICM software configuration information you noted during the previous procedures with the person performing the integrated applications configuration.

How to configure the application instance

To configure the application instance, follow these steps:

Step 1   Start the ICM Configuration Manager and select **Tools > List Tools > Application Instance List**. The Application Instance List window displays. Click the Retrieve button and then the Add button to display the Attributes tab.

For example, the following Attributes tab displays application instance information for Cisco E-Mail Manager.

Figure 54: configure the application instance

Step 2   Enter the following information:

- Name. The enterprise name for the application instance.

- Application key. This is the password that the integrated application will use to be identified by ICM software. The password is restricted to the 7-bit printable ASCII characters (any of the 94 characters with the numeric values from 32 to 126). Control characters (for example, 'tab') and international characters are not allowed. This means passwords cannot be entered in a non-Western alphabet, such as Kanji.

- Application type. Available options are: Cisco_Collaboration_Server and Cisco_Email_Manager.

- Permission Level. Select the permission level from the drop-down list.

Step 3   After entering the required fields, save the configuration and close the window.

Note: Refer to the ICM Configuration Manager's online help for detailed information about the Application Instance List tool..

Application Connections

AIn order for the application to communicate with the ICM system for configuration purposes, a communications path between ICM software and the application must be established.

You can define the communications path from ICM software (CMS Server) to the application using the Application tab in the CMS Control tool (resides on Distributor Admin Workstation in icm\bin directory). A similar user interface on the application side (Cisco Collaboration Server

or Cisco E-Mail Manager) is used to define the communications path from the application to the CMS Server.

Within the Application tab, the Application Connections table lists the current application connections, where you can add, edit, and delete application connections.

Note: The Application link and ICM Distributor AW link must match on the application side.

How to configure CMS Server connections

To configure CMS Server connections, follow these steps:

Step 1   Start the ICM Admin Workstation and double-click the **CMS Control** icon.

Step 2   Select the Application tab.

Step 3   Click **Add**. The Application Connection Details dialog box displays.

Step 4   Enter the application connection properties:

- **ICM Distributor AW link**. The ICM RMI Driver connection end point identity; for example, CEM1_Application_Servant.

- **ICM Distributor AW RMI registry port**. The port number for the ICM Distributor AW RMI registry.

- **Application link**. The application RMI Driver connection end point identity; for example, CEM1_Application_Client.

- **Application RMI registry port**. The port number for the Application RMI registry.

- **Application host name**. The computer address where the application interface client resides. This name can be either an IP address or a name resolved by DNS or WINS; for example, CEM1.

Step 5   Click **OK** twice. This restarts the Cms_Jserver on the Admin Workstation.

Note: When you click OK the second time to save your changes and close the CMS Control window, a message box may appear that states:

"The CmsJServer process is about to be cycled. Click **OK** to proceed or **Cancel** to quit."

Click **OK** to proceed.

Note: Refer to the application-specific instructions for specific field information. Refer to the CMS Control tool's online help for specific information about the field descriptions.

Additional Configuration Setups

After configuring ICM software, you need to perform the following configurations in the Cisco Collaboration Server application:

- Once you have configured ICM software and Cisco Collaboration Server, more configuration must occur on the Cisco Media Blender server. These tasks include:

  Ensuring Cisco Media Blender connection property files have been copied from the Cisco Collaboration Server

  Configuring the firewall gateway

- ICM and ACD queues:

  If the Collaboration server will be used to send requests submitted to it to ICM software, you must create one ICM queue. When a request is submitted to an ICM queue, ICM software will route the request to the Collaboration server and agent most appropriate to handle the request.

  If you are using legacy ACDs for Blended Collaboration you must create ACD queues on the Collaboration server. ACD queues are used to communicate with Cisco Media Blender.

Refer to the Cisco Collaboration Server installation CD for documentation on performing these configurations.

Using Application Gateways

An application gateway is an optional ICM feature that allows you to invoke an external application from within a script (using a Gateway node). You can pass data to the application and receive data in return, which you can then examine and use for routing decisions.

Before you can use these nodes in a script, you must first configure the gateways.

The application gateway requires connection information to communicate with the external application. You perform this task using the Configuration Manager.

Configuring Application Gateways

You must configure an application gateway for each application you want to access from within scripts.

Configuration information includes data such as:

- The type of application the gateway will interact with: a non-ICM application or an application on another ICM system

- The form of connection the gateway will use: duplex or simplex

- A fault tolerance strategy for the gateway, described below in the Table "Application Gateway Fault Tolerance Strategies" (page 185)

Table 43: Application Gateway Fault Tolerance Strategies

Fault Tolerance Strategy	Description
Duplicate Request	Each request is sent to both sides of the gateway.
Alternate Request	All requests are sent to only the A side of the gateway unless it fails. Side B is used only if side A is not available.
None	The application gateway is not duplexed.

Once you specify the configuration information, you can define the connection information for the gateway, such as the network address of the port through which ICM software communicates with the application.

If your ICM Central Controller is duplexed, you can define separate connection information for each side of the Central Controller. This allows each side to communicate with a local copy of the external application.

Note: For a remote ICM, the address must be the same address specified for the ICRP NIC on the targeted system. (You may use the hostname in place of the address.) This address value must be followed by a colon, an instance or customer number (denoting which ICM to access on the remote system), another colon, and a letter indicating which side of the NAM system prefers to use this connection. The preference letters are A (side A of the NAM prefers this connection), B (side B of the NAM prefers this connection), N (neither side of the NAM prefers this connection), or R (both sides of the NAM prefer this connection). For example, the address might be 199.97.123.45:1:A.

How to configure an application gateway

To configure an application gateway, follow these steps:

Step 1   Within the Configuration Manager, select **Tools > List Tools > Application Gateway List**. The Application Gateway List window appears.

Step 2   To enable Add, click **Retrieve**.

Step 3   Click **Add**. The Attributes property tab appears.

Step 4   Complete the Attributes property tab.

Note: For additional information refer to the online Help.

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

Next, configure the connection information for the application gateway.

How to configure an application gateway connection and set the default connection parameters

To configure an application gateway connection and set the default connection parameters, follow these steps:

Step 1   Within the Application Gateway List window, click **Retrieve** and select the desired Application Gateway.

Step 2   Complete the Connection property tab(s).

Note: For additional information refer to the online Help.

Step 3   Click **Save** to apply your changes.

Skill Group Configuration with ICM Script Editor

Universal Queue is the ability of the ICM software to route requests from voice, web, chat, and e-mail channels from a single queue point directly to appropriately skilled agents. With Universal Queue, ICM software treats requests from different media channels as a part of a single queue. Routing scripts send queued requests to agents based on business rules regardless of the media channel. For example, the routing of asynchronous channels such as e-mail, and synchronous channels such as voice and chat, allows ICM software to deliver the right contact to the right resource the first time, regardless of the channel it came through. The Queue to Agent node allows the targeting of a task (the work performed by an agent) to a script-specified agent.

The Queue to Agent node enables an agent to receive and operate on more than one task at a time. As a result, Universal Queue coordinates an agent's ability to work on multiple tasks of various media. It supports a simple control model where an agent's ability to handle an additional task depends on what task that agent is currently handling. For this level of control, ICM software must have exclusive access to task assignment.

Note: For Universal Queue to work, the agent must be assigned to skill groups that "ICM picks the agent," for which ICM software does the routing.

The CallRouter has the ability to move tasks out of the present script execution and resubmit them into the system as a new invocation.

Routing Script Configuration

Due to the introduction of a Media Routing Domain relationship, skill groups are medium specific. When an agent logs into ICM software via a phone, or via Cisco Collaboration Server or Cisco E-Mail Manager, the agent actually logs into an MRD. This automatically logs the

agent into skill groups associated with that agent within that MRD. Then, as a task request for a specific MRD begins script execution, the CallRouter considers only the skill groups associated with that specific MRD. This allows one script to be written to handle many MRDs.

When upgrading from an earlier version of ICM software, setup upgrades all existing skill group definitions to the Voice Media Routing Domain. (MRDs for Single-session Chat, Multi-session Chat, Email, or Blended Collaboration media classes must be added using the ICM Configuration Manager's Media Routing Domain List tool.)

The associated MRD applies to most related objects. Service member objects only map skill groups to services of the same media routing domain.

Skill groups are created as follows:

- Cisco Collaboration Server and Cisco E-Mail Manager skill groups (Cisco Collaboration Server Single-session chat, Cisco Collaboration Server Multi-session chat, Cisco Collaboration Server Blended Collaboration - IPCC, and Cisco E-Mail Manager e-mail) are configured (created, modified, deleted and agent assignment is done) on the applications.

- Legacy ACD skill groups are configured on the ACD and on ICM software.

Queue to Specific Agent

To assign a task to a specific agent, the CallRouter needs to do four things:

1. Pick an agent to receive the task.

2. Pick the MRD.

3. Pick a skill group from the list provided by the MRD selection.

4. Pick a route from the list provided by the skill group selection.

Using this style of Queue to Agent node, you select a specific agent at script design time.

n this case, where it is obvious who the agent is, the node property sheet displays a choice of routes for the peripheral that the agent is assigned to.

Note: Routes, agents, skill groups, and services are all associated with a peripheral.

How to select multiple skill groups and routes for different media by agent

To select multiple skill groups and routes for different media by agent, follow these steps:

Step 1   In ICM Script Editor, open the appropriate script in Edit mode.

Step 2   Select the **Queue to Agent** node.

Step 3   Right-click and select **Properties** to open the Queue to Agent Properties dialog box.

Step 4   Ensure the Queue to Agent type is set to **Select using direct references**. If not:

1. Select **Change** to open the Queue Agent Type dialog box.

2. Select **Explicit agent references**.

3. Click **OK** to return to the Queue to Agent Properties dialog box.

Step 5   Select an agent from the drop-down list in the **Agent** column. This enables the rest of the columns.

Step 6   In the **Domain** column, select the appropriate MRD.

Step 7   In the appropriate column, select a skill group and a Route valid for the selected agent and MRD.

You can specify the agent multiple times, each with a different MRD selection.

Queue to Agent Expression

In this mode of the Queue to Agent node, the agent identity is determined by the queue to agent expression at runtime.

Since the agent and MRD are not known until script execution time, you need some way of selecting an appropriate skill group and route. To accomplish this, pick an enterprise skill group. Ensure the enterprise skill group includes appropriate skill groups to cover all MRD cases for that agent. To select the route, use an enterprise route. Again, ensure that the enterprise route includes an appropriate collection of routes.

How to select multiple skill groups and routes for different media by agent expression

To select multiple skill groups and routes for different media by agent expression, follow these steps:

Step 1   In ICM Script Editor, open the appropriate script in Edit mode.

Step 2   Select the Queue to Agent node.

Step 3   Right-click and select **Properties** to open the Queue to Agent Properties dialog box.

Step 4   Ensure the Queue to Agent type is set to **Select using indirect references**. If not:

1. Select **Change** to open the Queue Agent Type dialog box.

2. Select **Lookup agent references by expression**.

3. Click **OK** to return to the Queue to Agent Properties dialog box.

Step 5   Enter an agent expression (normally task.PreferredAgentID) into the **Agent Expression** column.
Formula Editor is enabled when the **Agent Expression column** is selected.

Note: PreferreAgentID is not used by Cisco Collaboration Server. If you wish to set the agent
ID dynamically in the Agent Expression field, use a Call variable or an ECC variable.

Step 6   In the appropriate column, select an appropriate **Enterprise Skill Group** and an **Enterprise
Route** valid for the entered agent expression.

You can specify the agent expression multiple times, each with a different enterprise skill group
and enterprise route selection.

Refer to the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted
Editions* for more information about using ICM Script Editor.

Pushing Information to Waiting Cisco Collaboration Server Callers

On the ICM Central Controller, you can create a Network VRU script list, which lists scripts
set up to play to callers waiting for an agent. With the ICM-integrated Cisco Collaboration
Server, you can set up a VRU script list to point to URLs or text messages to display on the
browsers of callers waiting for a Collaboration agent.

With ICM routing, you have the option of displaying information, such as advertisements or
informational URLs to a caller who is waiting to join a session with an agent. You can also
populate these ads or URLs so that they display caller information originating in the callform.
This way, you can personalize ads or messages seen by the waiting caller.

Refer to the *Cisco Collaboration Server Administration Guide for Cisco ICM/IPCC Enterprise
& Hosted Editions* for detailed instructions on setting up this information.

Agent Reporting on the Admin Workstation for a Particular PG

The following instructions provide information on how to configure the AW for agent reporting
of real time and historical data.

How to configure agent reporting

To configure agent reporting, follow these steps:

Step 1   With WebView and the third-party tools installed, set up an HDS database on the AW.

Step 2   Check the **WebView Reporting** checkbox in the Real-time Distributor Node Properties window
of the AW setup.

Step 3   Click the **Real-time Distributor** option in the Admin Workstation Properties window of the
AW setup.

Step 4   Check the **Historical Data Server** checkbox in the Real-time Distributor Properties window of the AW setup.

Note: Make a note of the AW's Distributor Site Name in the AW setup because this information will be needed later on.

Step 5   Configure the same AW for the Historical Data Server in the setup for the AW.

Step 6   Configure the Logger for HDS replication by clicking the **Historical Data Replication** checkbox in the Logger Properties window.

Step 7   Open the PG Explorer in the ICM Configuration Manager and select the PIM.

Step 8   Configure the PG PIM for Agent Reporting by clicking the **Agent Reporting** checkbox on the Advanced tab.

Step 9   Open the Agent Distribution List Tool in the ICM Configuration Manager and add an entry for that PG/PIM and the AW's Distributor Site Name (see Step 4), exactly as it appears in the AW setup.

Application Object Filter

The application object filter restricts access to application specific data that is not owned by the running application (for example, Cisco E-Mail Manger or Cisco Collaboration Server). Application owned data includes skill groups, services, application paths, and routes. The application object filter is not applicable if there are no multimedia applications.

Access to the application object filter is restricted. You must use a super user password (case sensitive) to enable or disable the application object filter. This password is set as "password" during installation.

Normally enabled, the application object filter prevents administrators from creating or editing application specific skill groups, services, application paths, or routes in the Configuration Manager. You would want this enabled since creating or editing the preceding application specific data using ICM could cause the application to become out of sync with the ICM. These items mustbe created and updated in the application requiring them, and not in ICM software.

Disabling the application object filter allows administrators to create, delete, or edit application specific skill groups, services, application paths, and routes from the Configuration Manager tools. You might want to do this if, for example, an application is dead (you cannot access the application) and application specific data needs to be removed from the ICM database. Another example of when you would want to disable the application object filter would be you need clean up after removing an application.

How to disable an application object filter:

To disable an application object filter, follow these steps:

Step 1   Select **Options > Application Object Filter**.

Step 2   Enter the Password when prompted.

Step 3   Select Disable.

Step 4   The tool opens and the status line indicates the application object filter is disabled.

Note:

- Open tools are not affected by the change in the application object filter status. The status change only effects tools opened after the application object filter status has been changed.

- Each time the Configuration Manager opens, the application object filter reverts to its default status – enabled.

Application Object Filter

Chapter 10

Configuring ICM Variables

There are two types of ICM variables you can configure:

* Expanded Call Context variables

* User variables

This section contains the following topics:

ECC (Expanded Call Context) Variables

Expanded Call Context (ECC) variables are variables that you define and enable in the Configuration Manager to store values associated with the call. You can specify the variable name and data type. The name must begin with the string **user**. These are in addition to the variables the ICM software defines for each call (PeripheralVariable1 through PeripheralVariable10, CallerEnteredDigits, CallingLineID, etc.).

An ECC variable name can be up to 33 bytes long (1-32 usable characters). Use the following naming convention when creating an ECC variable:

user.<CompanyName>.<VariableDescription>

In this syntax:

* **<CompanyName>** is the name of your company

* **<VariableDescription>** is a descriptive tag for the variable.

For example, you could use the following name for an ECC variable created for Cisco account numbers:

```
user.Cisco.AcctNum
```

Using this naming convention will prevent naming conflicts with any third-party applications that interface with ICM software.

Note: If your corporation is large, you may even want to break **<VariableDescription>** down to include the Business Unit, Division, or other organizational entity that exists in your company.

In addition:

- An ECC variable can be either a scalar variable or an array element, each with a maximum length of 210 bytes.

- The maximum number of elements in an array can be 255.

- The maximum buffer size for each scalar variable = 5 + the maximum length of the variable where the 5 bytes includes 4 bytes to tag the variable and 1 byte for the null terminator.

- The maximum buffer size for each array = 5 + (1 + the maximum length of array element) * (the maximum number of elements in the array).

- There is a null terminator for each element, as well as a null terminator for the array as a whole.

- Since the total size of the buffer used to store the variables internally is 2000 bytes, the total sum of all the maximum buffer sizes for each variable and each array must be no greater than 2000.

  For example, if you intended to use one scalar ECC variable with a maximum length of 100 bytes, one scalar ECC variable with a maximum length of 80 bytes, and an ECC array with a maximum of 9 elements with each element having a maximum length of 200 bytes, the buffer size would be: (5+100) + (5+80) + (5 + (1+200)*9) = 2004. As this buffer size is too large, the length of one of the scalar ECC variables or the length of the array ECC variable would need to be adjusted.

ECC Variables for Cisco Blended Collaboration or Voice MRDs with Collaboration

ECC variables must be configured in the ICM Configuration Manager's Expanded Call Variable List tool (for each integrated application) in order to route requests using the voice Media Routing Domain.

For Cisco Blended Collaboration or Voice MRDs with Collaboration, the ECC variables are:

- user.cisco.cmb
- user.cisco.cmb.callclass

Note: You do not need to specify these variables in your input map on the Cisco Collaboration Server; however, Collaboration automatically configures these variables when you enable the Voice MRDs associated with your specific Cisco Collaboration Server instance.

In addition, if changes are made to the ECC variables in your inmap file, or to ECC variables in ICM software, you must restart Cisco Collaboration Server for changes to take effect.

Note:

- **Important!** While their default size is 40 characters, use the Expanded Call Variable List tool in the ICM Configuration Manager to limit the user.cisco.cmb variable to 8 bytes and the user.cisco.cmb.callclass variable to 10 bytes to prevent ECC space limitation issues.

- Refer to the ICM Configuration Manager's online help for detailed information about the Expanded Call Variable List tool.

Configuring Expanded Call Context Variables

Expanded call context variable configuration consists of two steps:

- Setting the Enable Expanded Call Context option in the System Information dialog box

- Defining the variable through the Expanded Call Variable List in the Configuration Manager

For Web Callback and Delayed Callback to work properly, an ECC variable (also known as a named variable) must be defined. The Cisco CTI driver supports the use of ECC variables in addition to the standard call variables associated with a call. Before an ECC variable can be used, it must be defined in the ICM ECC variable database table.

Note: For more information, see *Cisco ICM Enterprise Edition Database Schema Handbook*.

How to set the Enable Expanded Call Context option

Step 1   Within the Configuration Manager, select **Tools > Miscellaneous Tools > System Information**.

The System Information window appears.

Step 2   Select **Enable Expanded Call Context**.

Note: For additional information refer to the online Help.

Step 3   Click **Save** to apply your changes.

How to define an Expanded Call Context (ECC) variable

Step 1   Within the Configuration Manager, select **Tools > List Tools > Expanded Call Variable List**.

The Expanded Call Variable List window appears.

Step 2   In the Expanded Call Variable List window, enable Add by clicking **Retrieve**.

Step 3   Click **Add**.

The Attributes property tab appears.

Step 4   Complete the Attributes property tab:

Field	Description
Name (required)	The enterprise name of the expanded call variable. This name must start with the string user and must be unique among all expanded call variables in the system (an enterprise name). **Note:** Use the following syntax to prevent naming conflicts: `user.company.name` where company is your company name and name describes the expanded call variable.
Maximum length (required)	Specifies the maximum number of characters (1-210) allowed in the extended call variable value (the size of the variable string). For a numeric value, the number of digits is specified. Important notes: • The maximum amount of space that all the ECC variables together can take up in the ICM system is no more than 2000 bytes (not 2K or 2048 bytes) and sometimes less, depending on your combination of scalar and array variables and their sizes. Each ECC variable takes up space based on the following formula: For scalar: 5 + Maximum_Length For array: 5 + (1 + Maximum_Length) * (Maximum_Array_Size) • The number of characters or digits does not indicate the number of bytes. For example, a scalar ECC variable of 10 characters could take up 15 bytes of space.
Array (checkbox)	When selected, indicates the expanded call variable is an array, not a scalar. Maximum array size If the expanded call variable is an array, this indicates the maximum number of

	elements (1-255) in that array. See also the note under the Maximum length description.
Enabled (checkbox)	When selected, indicates the generation of the expanded call variable for each call is enabled.
Persistent (checkbox)	When selected, ECC variables will be written to the Logger database. **Note:** Non-persistent variables can be used in routing scripts, but will not be written to the database.
Cisco provided (checkbox)	When selected, indicates that the ICM software predefines the selected expanded call variable.
Description	Provides additional information about the ECC variable.

Step 5 Click **Save** to apply your changes.

Configuring ECC variables for use by CTI Server

Before entering ECC variables using the ICM config tool, the total size of the ECC variables should be validated against the following rules and limits.

Step 1 Since the total size of the buffer used to store the variables in CTI Server internally is 2500 bytes, the total sum of all the maximum buffer sizes for each scalar variable and arrays must be no greater than 2500.

Step 2 The maximum buffer size for each scalar variable = 4 + length of the ECC name + the maximum length of the variable where the 4 bytes includes a 1 byte tag, 1 byte to define the length, and 2 terminating NULL characters.

Step 3 The maximum buffer size for each array = (5 + length of the ECC name + the maximum length of array element) * (the maximum number of elements in the array) where the 5 bytes includes a 1 byte tag, 1 byte to define the length, 1 byte for the array index, and 2 terminating NULL characters.

For example, if you intended to use one scalar ECC variable with a maximum length of 100 bytes named *user.var*, one scalar ECC variable with a maximum length of 80 bytes named *user.vartwo*, and an ECC array named *user.varthree* with a maximum of 9 elements with each element having a maximum length of 200 bytes, the buffer size would be:

(4+8+100) + (4+11+80) + ((5 + 13 + 200)*9)) = 2169

where 8 is the length of *user.var*, 11 is the length of *user.vartwo* and 13 is the length of *user.varthree*.

User Variables

You can also create global user variables. For example, you could create a user variable called usertemp to serve as a temporary storage area for a string value used by an If node.

Each user variable must:

- Have a name that begins with user.

- Be associated with an object type, for example, Service. (This enables ICM software to maintain an instance of that variable for each object of that type in the system.)

- Be identified as a persistent (retains value across CallRouter restarts) or non-persistent (does not retain value across CallRouter restarts) variable.

Note: A user variable can store a value up to 40 characters long.

After you have defined a variable, you can then use the Script Editor Formula Editor to access the variable and reference it in expressions, just as you would with a "built-in" variable

How to define a user variable

Step 1   Within the Configuration Manager, select **Tools > List Tools > User Variable List.**

The User Variable List window appears.

Step 2   In the User Variable List window, enable Add by clicking **Retrieve**.

Step 3   Click **Add**.

The Attributes property tab appears.

Step 4   Complete the Attributes property tab.

Note: The **Variable name**, **Object type**, and **Data type** fields are required. All other fields are optional. For additional information refer to the online Help.

Step 5   Click **Save** to apply your changes.

Chapter 11

Network IVRs/VRUs

This chapter discusses the Network IVR/VRU feature that lets you divert a call to an interactive voice response unit for additional processing.

It includes:

*   An introduction to IVR/VRUs

*   Information on how to configure IVR/VRUs

*   A discussion on how to access IVR/VRUs in scripts

*   Instructions on how to queue calls at IVR/VRUs

This section contains the following topics:

Introducing Network IVRs/VRUs

Each routing client can have one or more associated Network Voice Response Units (VRUs). A VRU is a telecommunications computer, also called an Interactive Voice Response (IVR) unit, that responds to caller-entered touch-tone digits.

The routing client can be a *public* network interexchange carrier (IXC) intelligent network, or a *private* network peripheral, such as an Aspect or Avaya ACD.

Note: Network VRUs are only available for *intelligent* public network IXCs, not all public network IXCs.

A Network VRU supports ICM software's service control interface. An ICM routing script can divert a call to a Network VRU and instruct the VRU to perform specific processing before ICM software determines the final destination for the call.

Preparation for using the VRU feature includes:

- Setting up Network VRU targets with the Configuration Manager

- Inserting VRU nodes in the routing script

This chapter describes how to perform these tasks.

Note: For the remainder of this chapter, the term VRU will be used exclusively to be consistent with the on-screen prompts.

VRU Configuration Tools

Network VRU Explorer

This tool allows a Network Applications Manager (NAM) to view, edit, or define network VRUs, labels, and their associations. The ICM software can send a customer call to a network VRU.

Note: The Network VRU Explorer is not available on a limited AW.

To begin, select the filters you want and click **Retrieve**.

The changes you make in the Network VRU Explorer window are not applied to the database until you click **Save**.

Select filter data box

Use the Select filter data box (see Accessing Database Records (page 38) in Chapter 3 for additional information) to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

Network VRU Label Tree

Hide/Show legend

This button toggles between **Hide and Show**. Click it to hide or show a diagram identifying all the objects that can be displayed in the tree list box and showing their hierarchy.

Tree list box

The tree list box displays the names of the retrieved Network VRUs and, when expanded, the labels associated with them.

When you select an item within the tree, details about that item appear in the tabbed property fields to the right of the tree list box.

Tree list box Properties

- Expanding (+)/contracting (-) the tree (+ and – buttons)

- Displaying option menu (right mouse button clicking)

- Making tree connections (drag and drop)

  With the mouse, you can select an object and then move it to another part of the tree, as long as its object type belongs in that tree location.

  For example, to move a route to another service, select it by clicking the left mouse button, and then move the mouse to that service. When that service becomes highlighted, lift your finger off the mouse. You could also use the Bulk Configuration tool to take the output of a switch and create 20 or 30 labels. Then, using one of the explorer tools, you could attach these UNASSIGNED labels to an appropriate location.

- Symbols indicating object state (see the table "Record Status Symbol Descriptions" (page 43) in the section The ICM Configuration Manager.

- UNASSIGNED tree objects

  A tree object is marked UNASSIGNED if it was made by another configuration tool and was not assigned (mapped) to a parent object.

  For example, a label might not have been assigned to a peripheral target or a route might not have been assigned to a service.

  With the mouse, you can select an UNASSIGNED object and move it to a tree branch, as long as it's an object that belongs in that tree location. Use the window legend to see what objects belong where.

  When you move an UNASSIGNED object to an appropriate tree-branch location, you assign that object to the object above it in the tree. Then the object is no longer unassigned. For example, in this way you might assign an unassigned label to a peripheral target.

Add

When an object in the tree is selected, you can add another object of the same kind or an object immediately below it in the tree hierarchy. The **Add** buttons are enabled accordingly.

Add Network VRU

Click to add a network VRU to the database.

Add Label

Click to add a label to the selected network VRU.

Delete

Click to delete the selected object in the tree. This marks the selected object for deletion. When you click **Save**, the object is deleted from the database.

If a network VRU is selected, it and the labels associated with it are marked for deletion. If a label is selected, only that label's record is marked for deletion.

Undelete

The **Delete** button toggles to **Undelete** when you select an object marked for deletion. To undelete an object marked for deletion, select it and click Undelete.

Security

Visible only if you have partitioning. Enabled only if you have maintenance access to the database record.

Click to apply security options to the selected tree object. For a description of the security options, click.

ID status box

The label in the ID box at the bottom of the screen identifies the ICM system on which you are working.

Network VRU Tab

Allows you to view (and define or edit, if you have maintenance access) the properties of the selected network VRU.

Table 44: Network VRU Explorer Network VRU Tab Descriptions

Field	Description
Name (required)	An enterprise name for the network VRU. This name must be unique for all network VRUs in the enterprise
Type (required)	(selection list) The type of network VRU. For additional information see the table Voice Response Unit (VRU) Types (page 208).
Description	Additional information about the network VRU.

Network VRU Banks Tab

This is enabled when a Type 9 is selected in the Network VRU tab.

Button	Description
Add	Displays a list of Trunk Groups that are on an IPCC System Peripheral.
Remove	Removes the added items from the list of Trunk Groups.

Label tab

Allows you to view (and create, delete, or edit, if you have maintenance access) the properties of the selected label.

Table 45: Network VRU Explorer Label Tab Descriptions

Field	Description
Network VRU Bank	Specify the Network Target for the Label to be associated with.
Routing client (required)	The enterprise name of the routing client associated with the label.
Label (required)	The label value.
Label type (required)	(Drop-down list) The valid types depend on the type of routing client. Select one valid type for your routing client. Check with your carrier for the latest information about supported label types. Typical types are Normal, DNIS Override, Busy, Ring, and Post-Query.
Customer (optional)	The customer associated with the label.
Description	Additional information about the label.

Network VRU Script List Tool

This tool allows you to list the network VRU scripts currently defined in the ICM database, to define new ones, and to view, edit, or delete the records of existing ones.

Network VRU scripts are created by VRU engineers for VRUs. This list tool defines these previously created scripts for ICM software so it can interact with the scripts.

Note: The Network VRU Script List tool is not available on a limited AW.

Select filter data box

Use the Select filter data box (see in the section The ICM Configuration Manager for additional information) to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

Network VRU Script List box

> Lists the network VRU scripts retrieved or created in the current editing session. The tabbed
> fields on the right side of the window display the properties of the selected network VRU script.

Attributes tab

> Allows you to view and (if you have maintenance access) to define, edit, or delete the attributes
> of the selected network VRU script.

Table 46: VRU Script List Tool Application Tab Descriptions

Field	Description
Name (required)	An enterprise name for the VRU script. This name must be unique for all VRU scripts in the system.
Network VRU (required)	(selection list) The network VRU associated with the VRU script.
VRU script name (required)	The number by which the script is known to the VRU.
Timeout (seconds) (required)	The number of seconds the ICM should wait for a response after directing the routing client to run this script. If the ICM does not receive a response from the routing client within this time, it assumes the VRU script has failed.
Configuration param	A string to be passed to the VRU when the script is invoked.
Customer	(selection list) The customer associated with the VRU script, if any.
Interruptible	Checked, indicates the script can be interrupted (for example, if an agent becomes available to handle the call).
Overridable	Checked, indicates the script can make itself interruptible or non-interruptible.
Description	Any additional information about the VRU script.

Security tab

> Visible only on partitioned systems and enabled only on records for which you have maintenance
> access.

VRU Currency List Tool

> This tool allows you to list the VRU currencies currently defined in the ICM database, to define
> new ones, and to view, edit, or delete the records of existing ones.

Select filter data box

Use the Select filter data box (see Accessing Database Records (page 38) in the section The ICM Configuration Manager for additional information) to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

VRU Currency list box

Lists the VRU currencies retrieved and or created in the current editing session. The tabbed field on the right side of the window displays the name of the selected VRU currency.

Currency (required)

The type of currency (pounds, dollars, yens, and so on) that the VRU uses when playing prompts. For example, the type of currency is needed if a caller requests information regarding a bank statement. The currency type cannot be longer than 10 characters.

Attributes tab

Allows you to view and (if you have maintenance access) to define, modify, and delete currencies.

VRU Defaults List Tool

This tool allows you to list VRU defaults currently defined in the ICM database, to define new ones, and to view, edit, or delete the records of existing ones.

Select filter data box

Use the Select filter data box (see Accessing Database Records (page 38) in the section The ICM Configuration Manager for additional information) to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

VRU defaults list box

Lists the VRU defaults retrieved and or created in the current editing session. The tabbed fields on the right side of the window display the properties of the selected VRU defaults.

Attributes tab

Allows you to view and (if you have maintenance access) to update the defaults used by ISN (Internet Service Node).

Table 47: VRU Defaults List Tool Application Tab Descriptions

Field	Description
Name (required)	A unique name for the VRU defaults list.
Description	Additional information about the VRU defaults list.
Media server set (required)	The base URL (Uniform Resource Locator) for all media files used in the VRU script. For example: www.machine1/dir1/dirs. Part of the base URL is the application server IP address or DNS name. The maximum string size is 30 characters. The default value localhost. When the Media Server URL is DNS name and if the DNS Server is configured to return multiple IP addresses for a host name, then ISN will attempt to get the media files from each Media Server IP address in sequence with the priority to the closest IP address (as determined by the subnet mask). **Note:** For multi-tenant systems, you can include the customer name at the end of the string.
Locale (required)	(selection list) A combination of language and country which define the grammar and prompt set to use. The default is en_US.
System media library	The name of the system library of media files and prompts for individual digits, months, default error messages, and so on. The maximum string size is 10 characters. The default is sys. **Note:** Each locale has a specific system media library.
Application media library	The name of the application library of media files and prompts for individual digits, months, default error messages, and so on. Indicates the application media library that contains the application media file to be played to the caller. The maximum string size is 10 characters. The default is app. **Note:** Each locale has a specific application media library.
Currency (required)	(selection list) The currency type used in the IVR prompts to the caller. The default is dollar.
DTMF termination key (required)	(selection list) The key the caller presses to signify the end of digit entry. The default value is #. The choices are 0 through 9, #, or *.

Field	Description
	DTMF (Dual Tone Multi Frequency) is the "touch-tone" method used by the telephone system to communicate the keys pressed when dialing.
InterDigit Timeout (required)	The timeout in seconds allowed between entering digits before the system assumes the caller is finished. The range is from 1 to 99 seconds. The default value is 3 seconds.
No Entry	Defaults for when the caller does not enter data. **Number of tries (required)** The number of times the VRU queries the caller when the caller does not entry any data. The range of value is from 1 to 9. The default value is 3. **Timeout (required)** The number of seconds allowed before the caller starts entering data. After this time, the call is ended. The timeout range is from 0 to 99 seconds. The default value is 5 seconds.
Invalid Entry	Defaults for when the caller enters incorrect data. **Number of tries (required)** The number of times the VRU queries the caller when the caller enters incorrect data. The range is from 1 to 9. The default value is 3.

VRU Locale List Tool

This tool allows you to list the VRU locales currently defined in the ICM database, to define new ones, and to view, edit, or delete the records of existing ones.

Select filter data box

Use the Select filter data box (see Accessing Database Records (page 38) in the section The ICm Configuration Manager for additional information) to select and retrieve data from the database. Until you retrieve database data, no data is displayed.

VRU locales list box

Lists the VRU locales retrieved and or created in the current editing session. The tabbed fields on the right side of the window display the properties of the selected VRU locales.

VRU Locale

A combination of language and country which define the grammar and prompt set to use when the VRU plays prompts.

Attributes tab

Allows you to view and (if you have maintenance access) to define, modify, and delete VRU locales.

Locale (required)

A combination of language and country which define the grammar and prompt set to use when the VRU plays prompts. The default is en_US. This cannot be longer than 10 characters.

Configuring Network VRUs and VRU Scripts

Before you start configuring a Network VRU, you must know its type. The VRU type determines what routing script nodes ICM software needs to use to communicate with the VRU. For example, when interacting with a Type 3 VRU, ICM software will need to execute a routing script containing a Send to VRU node in order to successfully process a call.

The lists the VRU types that are currently available.

Table 48: Voice Response Unit (VRU) Types

Type	Description	Nodes to Use with This Type
2	A VRU at the customer premises.	Required: Translation Route to VRU. Optional: Queue and Run VRU Script.
3	A VRU controlled by the routing client. **Note:** Use this type (rather than Type 7) when the routing client can automatically take back the call from the VRU when ICM software returns a destination.	Optional: Send to VRU, Queue, and Run VRU Script.
5	A VRU controlled by the routing client. ICM software does not associate a DNIS or correlation ID with the call. **Note:** Use this type (rather than a Type 3 or Type 7) when the routing client itself takes care of mapping the call to requests from ICM software.	Required: Send to VRU. Optional: Queue and Run VRU Script.

Type	Description	Nodes to Use with This Type
6	A VRU that receives the call before a route request is sent to ICM software.	The VRU for this type is programmed so that it can recognize such a request based on the call qualifiers, so you can then assume the call is already at the VRU. Optional: Queue and Run VRU Script.
7	A VRU controlled by the routing client. **Note:** Use this type (instead of Type 3) when the routing client cannot take back the call from the VRU. That is, ICM software automatically instructs the VRU to release when it sends a route response to the routing client. (An example: CWC Network VRUs.)	Optional: Send to VRU1, Queue, and Run VRU Script.
8	Similar to Type 2, but associated with a Customer ICM in a Network ICM environment.	Required: Translation Route to VRU. Optional: Queue and Run VRU Script.
9	Use this to enable the Network VRU Banks tab	Required

It is not really necessary to include a Send to VRU node in a script referring to a Type 3 or Type 7 VRU, as the Queue and Run VRU Script nodes automatically send the call to the VRU if it is not already there when they execute. However, it is recommended that you make a practice of including it in such scripts, as it can act as a visual aid if you ever need to troubleshoot the script.

For Types 3 and 7 you must use the System Information dialog box to configure a range of correlation IDs. These IDs allow ICM software to match calls arriving at the VRU with calls sent there by ICM software. (For Types 2 and 8, ICM software uses the DNIS values associated with the translation route to match up the calls. For Type 6, no matching is required since the call is already at the VRU.)

VRU Port Map Data Descriptions

A VRU Port Map associates a VRU trunk with an ACD trunk or an ADC port. In cases where ACD and VRU PIMs are controlled by the same PG, each row in the VRU_Port_Map table specifies how a VRU port maps to an ACD trunk or port.

Table 49: VRU Port Map Data Descriptions

Field	Description
State	(display only) A symbol indicating whether a row's record is changed, not changed, to be deleted, or to be inserted.(See Insert and Edit Windows (page 55) in the section Configuring Multiple Records at a Time for additional information.)

Field	Description
VRU Trunk Group (required)	Indicates the VRU Trunk Group associated with this port map.
VRU Trunk Number (required)	Indicates the VRU Trunk associated with this port map.
Mapping Type (required)	Type of mapping associated with this port map. There are two mapping types: • VRU Trunk, which maps to ACD Trunk • VRU Port, which maps to ACD Port This selection determines which two of the next four fields are editable.
ACD Trunk Group	(optional) Indicates the ACD Trunk Group associated with this port map.
ACD Trunk Number	(optional) Indicates the ACD Trunk associated with this port map.
ACD Peripheral	(optional) Indicates the ACD Peripheral associated with this port map.
ACD Port	(optional) Indicates the ACD Port associated with this port map.

Network VRU Script Data Descriptions

Each row identifies a script used by a network VRU to handle a call. A VRU script is managed by the VRU itself. It is not stored in the ICM database or directly managed by ICM software. ICM software can only direct the VRU to run the script.

Note: The Network VRU Script Bulk tool is not available on a limited AW.

Table 50: Network VRU Script Data Descriptions

Field	Description
State	(display only) A symbol indicating whether a row's record is changed, not changed, to be deleted, or to be inserted.
Network Target (required)	Identifies the network VRU associated with the script.
VRU Script Name (required)	The name of the script as known at the VRU.
Network VRU Script (required)	The enterprise name of the script.
Customer	(optional) The name of the customer associated with the script.
Interruptible (required)	Indicates whether ICM software can interrupt the script (for example, if a routing target becomes available): Yes or No.
Overridable (required)	Indicates whether the script can override its own Interruptible attribute: Yes or No.

Field	Description
Configuration Parameter	(optional) A parameter string that is sent to the VRU to initialize the script.
Timeout	(optional) The number of seconds ICM software should wait for a response after invoking the script. If ICM software does not receive a response from the routing client within this time, it assumes the VRU script has failed.
Description	(optional) Additional information about the script.

Configuring Network VRUs

First, you need to define each logical VRU in the database.

How to configure a Network VRU

Perform the following steps to configure a Network VRU:

Step 1   Within the Configuration Manager, select **Tools Explorer Tools Network VRU Explorer**. The Network VRU Explorer window appears.

Step 2   In the Network VRU Explorer window, enable **Add Network VRU** by clicking **Retrieve**.

Step 3   Click **Add Network VRU**. The Network VRU property tab appears.

Step 4   Complete the Network VRU property tab.

Note: The Name and Type fields are required. For a description of the available types, see Table VRU Types (page 208). All other fields are optional. For additional information refer to the online Help.

Step 5   Click **Save** to apply your changes.

Network VRU Labels

You must associate all VRU Types (except Type 6) with a Network VRU Label.

How to define a Network VRU label

Perform the following steps to define a Network VRU label:

Step 1   In the Network VRU Explorer window, click **Retrieve** and select the Network VRU you want to add the label to. The Label property tab appears.

Note: For information on defining labels, see the Cisco ICM Software Configuration Guide.

Step 2   Complete the Label property tab.

Note: The **Routing client**, **Label**, and **Label type** fields are required. All other fields are optional. For additional information refer to the online Help.

Step 3   Click **Save** to apply your changes.

Network VRU System Information

For Network VRUs, you must use the System Information dialog box to define a range of correlation IDs so ICM software can communicate with the VRU about the call.

How to set the default Network VRU and range of correlation numbers

Perform the following steps to set the default Network VRU and range of correlation numbers:

Step 1   Within the Configuration Manager, select **Tools Miscellaneous Tools System Information**. The System Information window appears.

Step 2   In the System Information window, select the **Default Network VRU**.

Step 3   Enter the **Minimum Correlation Number**.

Step 4   Enter the **Maximum Correlation Number**.

Note: For additional information refer to the online Help.

Step 5   Click **Save** to apply your changes.

Network VRU Script Configuration

To allow a routing script to control the processing on the VRU, you must configure VRU-based scripts within ICM software. An ICM routing script can then direct the VRU to run a specific script.

Note: VRU scripts are defined and maintained on the VRU. ICM software only maintains a name for each VRU script. It does not maintain the scripts themselves.

How to configure VRU scripts

Perform the following steps to configure VRU scripts:

Step 1   Within the Configuration Manager, select **Tools Network VRU Script List**. The Network VRU Script List window appears.

Step 2   In the Network VRU Script List window, enable **Add** by clicking **Retrieve**.

Step 3   Click **Add**. The Attributes property tab appears.

Step 4   Complete the Attributes property tab.

Note: The **Name**, **Network VRU**, **VRU script name**, and **Timeout** fields are required. All other fields are optional. For additional information refer to the online Help.

Step 5   Click **Save** to apply your changes. The ICM software database manager automatically generates a unique Network VRU Script ID.

Accessing VRUs in ICM Scripts

After you have configured a Network VRU and VRU scripts, you can use the Script Editor (refer to the *ICM Scripting and Media Routing Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for additional information) to write a routing script to send a call to the VRU and invoke a specific VRU script.

Queuing Calls at VRUs

You can queue a call at a Network VRU until a specific resource becomes available. A call can be queued for one or more skill groups, an enterprise skill group, or one or more scheduled targets. As soon as an agent becomes available at one of the specified targets, the call is removed from queue and sent to the target.

Queuing Calls at VRUs

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