Cisco Contact Center Gateway Deployment Guide for Cisco Unified ICME/CCE/SCCE/CCX

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Preface

Purpose

This manual describes how to install, configure, and use the Cisco Contact Center Gateway feature, which allows Cisco Unified Contact Center Enterprise (Unified CCE), Cisco Unified System Contact Center Enterprise (Unified SCCE), or Cisco Unified Contact Center Express (Unified CCX) to appear as an ACD (Automatic Call Distributor) to Cisco Unified Intelligent Contact Management Enterprise .

Note: Cisco Unified System Contact Center Enterprise (Unified SCCE) is supported in 8.0(1); however, there is not a separate 8.0(1) version. If you request features that are in 8.0(1), you must migrate to the ICM/CCE/CCH software. Full migration information is documented in the *Installation and Configuration Guide for Cisco Unified System Contact Center Enterprise*.

Audience

This document is intended for contact center system administrators, supervisors, and managers who are responsible for deploying the Cisco Contact Center Gateway software with Unified ICME, Unified CCE, Unified SCCE, or Unified CCX software.

Organization

The following table describes the information contained in each chapter of this guide.

Table 1: Organization

Chapter	Description

Chapter 1, About Unified Contact Center Gateway (page 7)	Introduces the Cisco Contact Center Gateway feature.
Chapter 2: Getting Started Deploying a Cisco Contact Center Gateway (page 21)	Provides an exercise on how to deploy a Cisco Contact Center Gateway based on a specified Parent/Child deployment model.
Chapter 3: Deploying Contact Center Gateway with Cisco Unified Contact Center Enterprise or Cisco Unified System Contact Center Enterprise (page 79)	Provides installation and configuration instructions for deploying Cisco Contact Center Gateway with Unified ICME and Unified CCE or Unified SCCE.
Chapter 4: Deploying Contact Center Gateway with Cisco Unified Contact Center Express (page 111)	Provides installation and configuration instructions for deploying Cisco Contact Center Gateway with Unified CCX.

The Index helps you find information in this guide.

Related Documentation

Documentation for Cisco Unified ICM/Contact Center Enterprise & Hosted, as well as related documentation, is accessible from Cisco.com at: **http://www.cisco.com/cisco/web/psa/default.html**.

- Related documentation includes the documentation sets for Cisco CTI Object Server (CTI OS), Cisco Agent Desktop (CAD), Cisco Agent Desktop - Browser Edition (CAD-BE), Cisco Unified Contact Center Management Portal, Cisco Unified Customer Voice Portal (CVP), Cisco Unified IP IVR, Cisco Unified Intelligence Center, and Cisco Support Tools.
- For documentation for these Cisco Unified Contact Center Products, go to **http://www.cisco.com/cisco/web/psa/default.html**, click **Voice and Unified Communications**, then click **Customer Contact**, then click **Cisco Unified Contact Center Products** or **Cisco Unified Voice Self-Service Products**, then click the product/option you are interested in.
- For troubleshooting tips for these Cisco Unified Contact Center Products, go to **http://docwiki.cisco.com/wiki/Category:Troubleshooting**, then click the product/option you are interested in.
- Documentation for Cisco Unified Communications Manager is accessible from: **http://www.cisco.com/cisco/web/psa/default.html**.
- Technical Support documentation and tools are accessible from: **http://www.cisco.com/en/US/support/index.html**.
- The Product Alert tool is accessible from (login required): **http://www.cisco.com/cgi-bin/Support/FieldNoticeTool/field-notice**.
- For information on the Cisco software support methodology, refer to *Software Release and Support Methodology: ICM/IPCC* available at (login required): **http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/prod_bulletins_list.html**.

- For a detailed list of language localizations, refer to the *Cisco Unified ICM/Contact Center Product and System Localization Matrix* available at the bottom of the following page: **http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_technical_reference_list.html**.

Product Naming Conventions

In this release, the product names defined in the table below have changed. The New Name (long version) is reserved for the first instance of that product name and in all headings. The New Name (short version) is used for subsequent instances of the product name.

Note: This document uses the naming conventions provided in each GUI, which means that in some cases the old product name is in use.

Old Product Name	New Name (long version)	New Name (short version)
Cisco IPCC Enterprise Edition	Cisco Unified Contact Center Enterprise	Unified CCE
Cisco System IPCC Enterprise Edition	Cisco Unified System Contact Center Enterprise	Unified SCCE **Note:** Cisco Unified System Contact Center Enterprise (Unified SCCE) is supported in 8.0(1); however, there is not a separate 8.0(1) version. If you request features that are in 8.0(1), you must migrate to the Unified ICM/CCE/CCH software. Full migration information is documented in the *Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.
Cisco IPCC Hosted Edition	Cisco Unified Contact Center Hosted	Unified CCH
Cisco Intelligent Contact Management (ICM) Enterprise Edition	Cisco Unified Intelligent Contact Management Enterprise	Unified ICME
Cisco Intelligent Contact Management (ICM) Hosted Edition	Cisco Unified Intelligent Contact Management Hosted	Unified ICMH
Cisco CallManager/Cisco Unified CallManager	Cisco Unified Communications Manager	Unified CM

Conventions

This manual uses the following conventions:

Convention	Description
boldface font	Boldface font is used to indicate commands, such as user entries, keys, buttons, and folder and submenu names. For example: • Choose **Edit** > **Find**. • Click **Finish**.
italic font	Italic font is used to indicate the following: • To introduce a new term; for example: A *skill group* is a collection of agents who share similar skills. • For emphasis; for example: *Do not* use the numerical naming convention. • A syntax value that the user must replace; for example: IF (*condition*, *true-value*, *false-value*) • A book title; for example: Refer to the *Cisco CRS Installation Guide*.
`window font`	Window font, such as Courier, is used for the following: • Text as it appears in code or that the window displays; for example: `<html><title>Cisco Systems,Inc. </title></html>` • Navigational text when selecting menu options; for example: `ICM Configuration Manager > Tools> Explorer Tools > Agent Explorer`
`< >`	Angle brackets are used to indicate the following: • For arguments where the context does not allow italic, such as ASCII output. • A character string that the user enters but that does not appear on the window such as a password.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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Documentation Feedback

Chapter 1

About Cisco Contact Center Gateway

This section introduces the Cisco Contact Center Gateway feature, which allows Cisco Unified Contact Center Enterprise (Unified CCE), Cisco Unified System Contact Center Enterprise (Unified SCCE), or Cisco Unified Contact Center Express (Unified CCX) to appear as an ACD (Automatic Call Distributor) to Cisco Unified Intelligent Contact Management Enterprise .

Note: Cisco Unified System Contact Center Enterprise (Unified SCCE) is supported in 8.0(1); however, there is not a separate 8.0(1) version. If you request features that are in 8.0(1), you must migrate to the ICM/CCE/CCH software. Full migration information is documented in the *Installation and Configuration Guide for Cisco Unified System Contact Center Enterprise*.

This chapter contains the following topics:

- What is the Cisco Contact Center Gateway Feature?, page 7
- What is the Parent and Child Relationship?, page 9
- What is Autoconfiguration?, page 10
- About Peripheral Gateways, page 11
- High Availability and Fault Tolerance in Cisco Contact Center Gateway Deployments, page 11
- About Cisco Contact Center Gateway Deployments, page 12
- Routing in Cisco Contact Center Gateway Deployments, page 18
- Reporting in Cisco Contact Center Gateway Deployments, page 19
- Upgrading to Use a Cisco Contact Center Gateway Solution, page 19

What is the Cisco Contact Center Gateway Feature?

The Cisco Contact Center Gateway feature allows Unified CCE, Unified SCCE, or Unified CCX to appear as a traditional Automatic Call Distributor (ACD) connected to the Unified ICME system. Cisco Contact Center Gateway does this by using the Unified ICME Peripheral Gateway (PG) component to communicate through the CTI layer interface in Unified CCE, Unified SCCE, or Unified CCX.

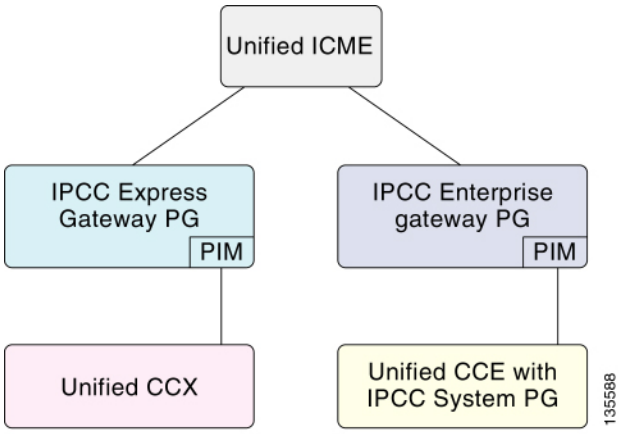
The Cisco Contact Center Gateway feature is ideal for deployments that have several call centers spread geographically. Each call center has remote survivability and administrative independence. New IP call centers can be integrated into an existing Unified ICME environment with many TDM ACD sites. Using a single minimum expected delay (MED) script node, peripherals that are legacy ACDs and gateway types can be used to select the best site to send a call.

The Cisco Contact Center Gateway feature uses two distinct PG types:

- IPCC Express Gateway PG, which connects the Unified ICME system to Unified CCX
- IPCC Enterprise Gateway PG, which connects the Unified ICME system to Unified CCE or Unified SCCE (with an IPCC System PG)

Figure 1 shows the relationship of the PGs to the Unified ICME system.

Figure 1: Unified ICME and PG Relationship



Cisco Contact Center Gateway PG provides all standard Peripheral Interface Manager (PIM) data and functionality including:

- Call event notification
- Agent State notification
- Translation Routing
- Pre- and Post-Routing
- Real-time data
- Historical data

In addition, Cisco Contact Center Gateway provides an autoconfiguration feature, which reduces the need for repeating configuration tasks between Unified CCX or Unified CCE and the Unified ICME systems. Autoconfiguration is described in more detail in the deployment chapters (Chapter 2, Deploying Contact Center Gateway with Unified CCE or Unified SCCE (page 79)

and Chapter 3, Deploying Contact Center Gateway with Cisco Unified Contact Center Express (page 111)).

What is the Parent and Child Relationship?

The systems in a Cisco Contact Center Gateway deployment play different roles.

We use the terms parent and child to describe the relationship between these roles:

- **Parent**. The Unified ICME system that serves as the network or enterprise routing point. The parent uses the appropriate Cisco Contact Center Gateway PGs to communicate to the CTI server on the child Unified CCX, the child Unified CCE, or possibly TDM PGs.

  Note: A parent ICM can have TDM PGs and Gateway PGs.

  The parent can route between children.

- **Child**. The Unified CCE or Unified CCX system that is set up to function as one or more ACDs (each System PG peripheral functions as it's own ACD).

  For a child Unified CCE:

  – the IPCC Enterprise Gateway PG on the parent is used to communicate with the child Unified CCE PG.

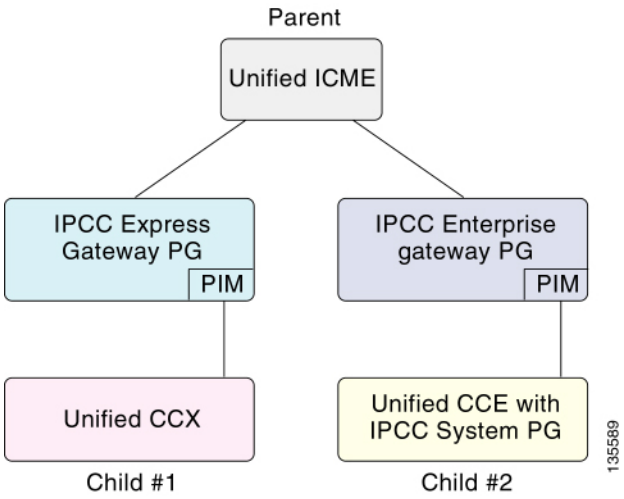
  For a child Unified CCX:

  – the IPCC Express Gateway PG is used.

  The child can receive calls routed from the parent but is not aware of any other peripherals attached to the parent. For practical purposes, it is best to view the child as a standalone Automatic Call Distributor (ACD).

Figure 2 illustrates this relationship.

Figure 2: Parent and Child Relationship



When deploying the Cisco Contact Center Gateway with either a Unified CCE, Unified SCCE, or Unified CCX child, you must first get the child system working, then integrate it with the parent Unified ICME system. For reporting purposes, it is best to collocate the Cisco Contact Center Gateway PG with the System PG on the child. Collocating the PGs helps to preserve connectivity. If the System PG and the Gateway PG lose connectivity, you might lose reporting data on call activity.

What is Autoconfiguration?

Autoconfiguration is a Cisco Contact Center Gateway feature (enabled by default upon installation) that automatically uploads basic configuration data from the child to populate tables on the parent Unified ICME for the corresponding gateway PG. The uploaded tables contain agent, skill group, service, call type, peripheral monitor, and device information.

When autoconfiguration is enabled, manual configuration of agents, skill groups, services, and peripheral monitor entries is not permitted by the Configuration Manager on the Unified ICME parent.

Autoconfiguration is enabled manually by checking a box on the Peripheral tab of the PG Explorer in the parent Unified ICME Configuration Manager. Upon startup, the peripheral gateway PIM remembers the configuration level (keys) from the last time it obtained configuration information. It then requests current configuration information from the child and applies any configuration changes. While the PIM is connected, it continues to make dynamic configuration changes and also updates the parent database to reflect the changes.

Note: There are differences between the way the IPCC Express Gateway and the IPCC Enterprise Gateway are configured and used. See Chapter 2, Deploying Contact Center Gateway with Unified CCE or Unified SCCE (page 79) for information about deploying the IPCC Enterprise Gateway and Chapter 3, Deploying Contact Center Gateway with Cisco Unified Contact Center Express (page 111) for information about deploying the IPCC Express Gateway.

About Peripheral Gateways

Each contact center device (ACD or IVR) communicates with Unified ICME software through a peripheral gateway (PG). The PG reads status information from the device and passes it back to Unified ICME. It also responds to requests for routing information. The PG runs one or more PIM processes, which are the software components that communicate with proprietary ACD and IVR systems. A single PIM is required for each peripheral with which the PG interfaces.

Before you install a Peripheral Gateway (PG), you must already have:

- The Windows operating system installed on the computer, including Simple Network Management Protocol (SNMP)
- The Windows Active Directory services set up for Unified ICME.
- Set up an instance for a PG in the case of Unified ICME.

In the IPCC Express Gateway deployment model, where the IPCC Express Gateway PG is co-resident on the Unified CCX server (running the Windows OS), the PG's SNMP data is not available.

Note: Each Unified CCX or Unified CCE Peripheral Gateway in child deployment can connect to only one Unified ICME parent instance. However, one Unified ICME parent instance can support multiple Unified CCX or Unified CCE children.

For any Unified ICME installation, you must complete the configuration of the components before a PG can function.

See Also

See Chapters 2 and 3 for additional information about deploying Cisco Contact Center Gateway.

For release specifics about the Windows operating system, refer to the *Hardware & System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 8.0(1).*

High Availability and Fault Tolerance in Cisco Contact Center Gateway Deployments

This section describes how parent/child deployments accommodate failover.

About Unified CCE Solutions and Fault Tolerance

For a Unified CCE solution in a Cisco Contact Center Gateway deployment, fault tolerance is achieved as it is with other Unified ICME PGs; there is a Side A and Side B PG which can connect to either side (A or B) of a System PG on a child system. The PGs when connected can cross over the parent/child SideA/SideB for increased fault tolerance.

See Also

For more information about fault tolerance, see the *Installation and Configuration Guide for Cisco Unified Contact Center Enterprise & Hosted.*

About Unified CCX Solutions and High Availability

A Unified CCX solution in a Cisco Contact Center Gateway deployment does not support the Side A/Side B model of fault tolerance. Instead, it supports a high availability model.

In the high availability model, the Unified CCX cluster looks like one ACD to the Unified ICME parent, and a Side A PG is installed on both nodes of Unified CCX.

See Also

For more information, see High Availability with IPCC Express Gateway (page 127).

About Cisco Contact Center Gateway Deployments

This section discusses the supported Cisco Contact Center Gateway deployment models.

Cisco Contact Center Gateway using IPCC Enterprise Gateway PG

The following topics explain the three ways in which you can deploy the IPCC Enterprise Gateway PG.

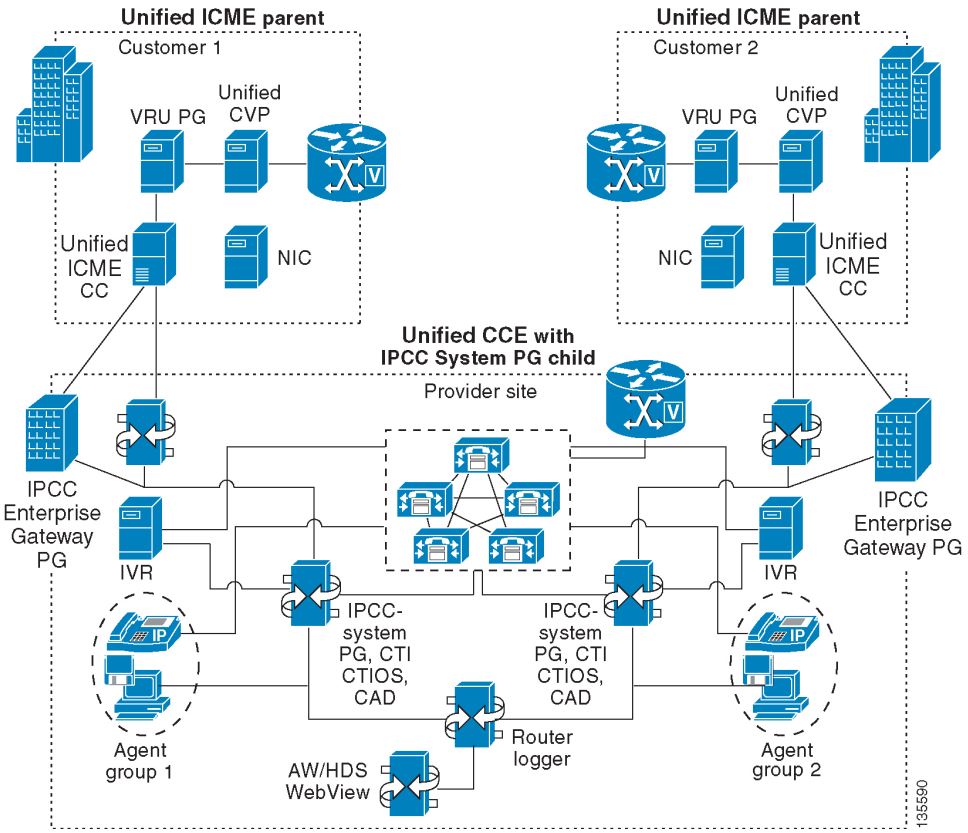
Multiple Unified ICME (parents) with Single Unified CCE (child)

The following figure shows a deployment where two customers (Customer 1 and Customer 2) each running their own Unified ICME parent, outsourced calls to a provider site running Unified CCE with System PGs. The provider site has a Unified CCE installation with two IPCC System PGs that connect to their respective IPCC Enterprise Gateway PG for each Unified ICME parent. The two Cisco Contact Center Gateway PGs provide security because the information of one customer is not seen by the other. The deployment also shows that each customer provides call treatment (prompting) and queuing using Cisco Unified Customer Voice Portal (Unified CVP), shown for each customer, before routing calls to the Provider site. The provider site also has the ability to queue calls using Cisco Unified IP-IVR (Unified IP IVR) that is shown connected to the IPCC System PG.

The agents must be broken up into two peripherals, each on its own PG, and a separate Unified IP IVR or Unified CVP is required if there is local queuing. The provider does realize some economies over having two separate Unified CCE setups for each Unified ICME parent, in that the Unified CCE CallRouter and Logger and Admin Workstation (AW)/WebView/HDS can be shared between them.

Note: Although Unified IP IVR or Unified CVP can be used as the IVR, in the following figure, in the child, IVR refers to Unified IP IVR . For a graphic showing the use of Unified CVP, see the section Multi-site Deployment with Unified SCCE and Unified CVP (page 14).

Figure 3: Multiple Unified ICME parents with a single Unified CCE child



Note: Call types on the Unified CCE child must not span peripherals. That is, a separate set of Call Types is required for each peripheral on the child. This is to keep the correlation between the Call Type on the child to a single peripheral on the parent. Failure to do this results in the Unified ICME parent (Services) seeing only a subset of the calls corresponding to the Call Type on the child.

Single Unified ICME Parent with Multiple Unified CCE Children

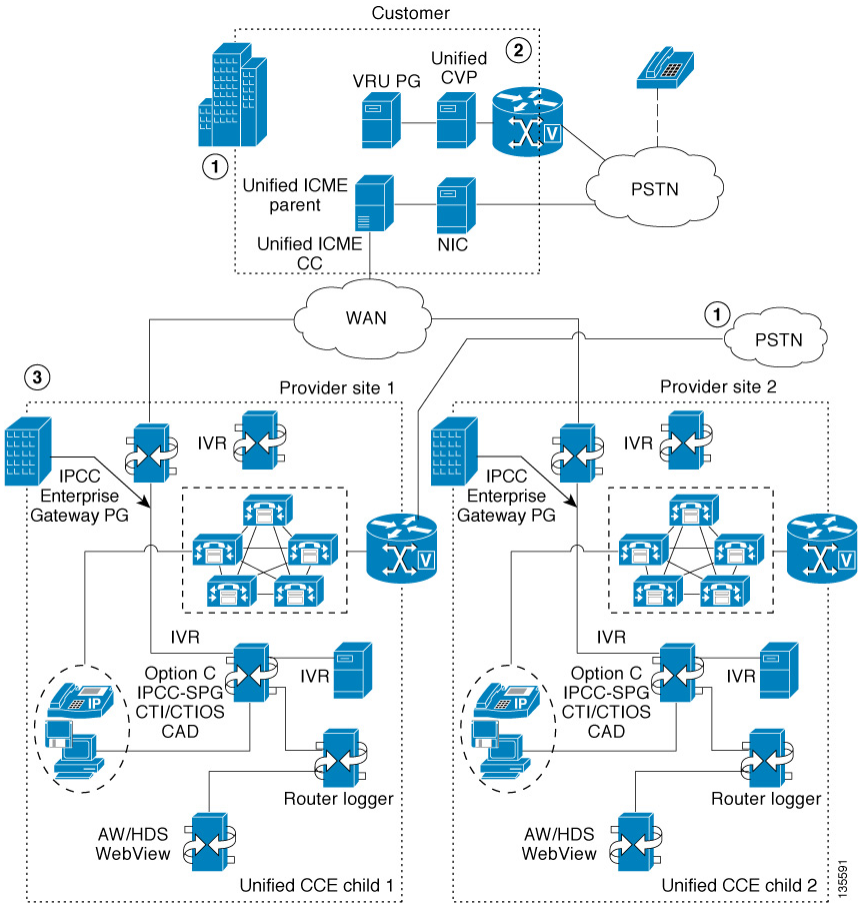
This deployment shows a Unified ICME parent with two IPCC Enterprise Gateway PGs connected to two Unified CCE children with IPCC System PGs. Each Gateway PG can connect to only one IPCC System PG.

Note: The Unified CCE child systems could be branch offices or service bureaus.

This deployment allows calls to be translation-routed from the Unified ICME parent, which is the Customer shown in Figure 4, (page 14) to either of the two Unified CCE children (Provider Site 1 and Provider Site 2 in Figure 4 (page 14)), each of which is treated as a separate ACD by the parent Unified ICME. In the figure, Unified CVP, which is being used at the Customer site, is shown here doing network queuing from the Unified ICME parent. This deployment also provides the ability for each child Unified CCE to route incoming calls to those sites through Voice Gateways (not shown in the figure) that are not related to the parent Unified ICME, thus ensuring that call center operations continue if the WAN connection is not reliable. It also accommodates the phasing-in of Unified CCE deployments alongside TDM ACDs. This deployment also allows post and translation routing from one child to another through the parent. This includes transfers, consults, and so forth.

Note: In the following figure, in the children, IVR refers to Unified IP IVR . For use of Unified CVP, see the section Multi-site Deployment with Unified SCCE and Unified CVP (page 14).

Figure 4: Single Unified ICME Parent with Multiple IPCC Enterprise Children



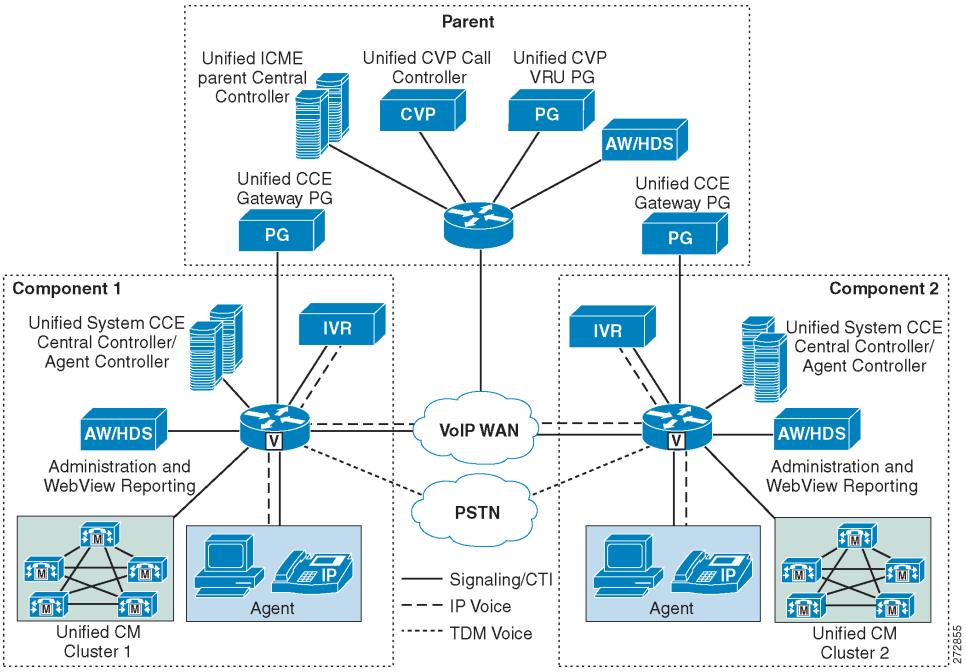
Note:

- This deployment also allows an existing Unified ICME (parent) to coordinate the outsourcing of calls to a Service bureau. The child provider sites are shown in the figure.
- Although not shown in the figure, this deployment can be expanded using the following options:
  - The deployment could also route unrelated calls between the two child provider sites through the PSTN network using its own Network Interface Controller (NIC). Note that this NIC is not illustrated in the diagram, but it is on the Central Controllers on the children.
  - The parent Unified ICME through Cisco Contact Center Gateway PGs could be connected to separate child provider sites using Unified CCE or Unified CCX.
  - You could increase Unified CCE capacity by adding more children to the parent system.

Multi-site Deployment with Unified SCCE and Unified CVP

The following figure shows a parent Unified ICME system deployed with Unified CVP and its own Admin Workstation/HDS server. At each distributed site, there is a complete Unified SCCE deployment using the small/medium model that loads both Central Controller and Agent/IVR Controller on the system server. There is also a local Administration and WebView Reporting machine for the Unified SCCE to perform configuration, scripting, and reporting tasks for that specific site. There is an IPCC Enterprise Gateway PG that connects Unified SCCE to the Unified ICME parent.

Figure 5: Multi-site Deployment with Unified SCCE and Unified CVP



In this deployment, the local Unified SCCE systems act as their own local IP ACDs with no visibility to any of the other sites in the system. Users at Site 1 cannot see any of the calls or reports from Site 2 in this model. Only the parent system has visibility to all activity at all child sites.

The Unified CVP at the Unified ICME parent site is used to control the calls coming into the distributed sites, providing local call queuing and treatment in the VoiceXML Browser in the voice gateway. The local Unified IP IVR servers are used only for a local backup if the connection from these voice gateways is lost to the parent Unified CVP Call Control server. The local Unified IP IVR also provides local queue treatment for calls that are not answered by the local agents, such as reroute on no answer (RONA) calls, rather than sending the call back to the Unified CVP to be requeued.

Unified CVP provides a virtual network queue across all the distributed sites controlled by the parent Unified ICME, which has visibility into all the distributed sites and sends the call to the next available agent from the virtual queue.

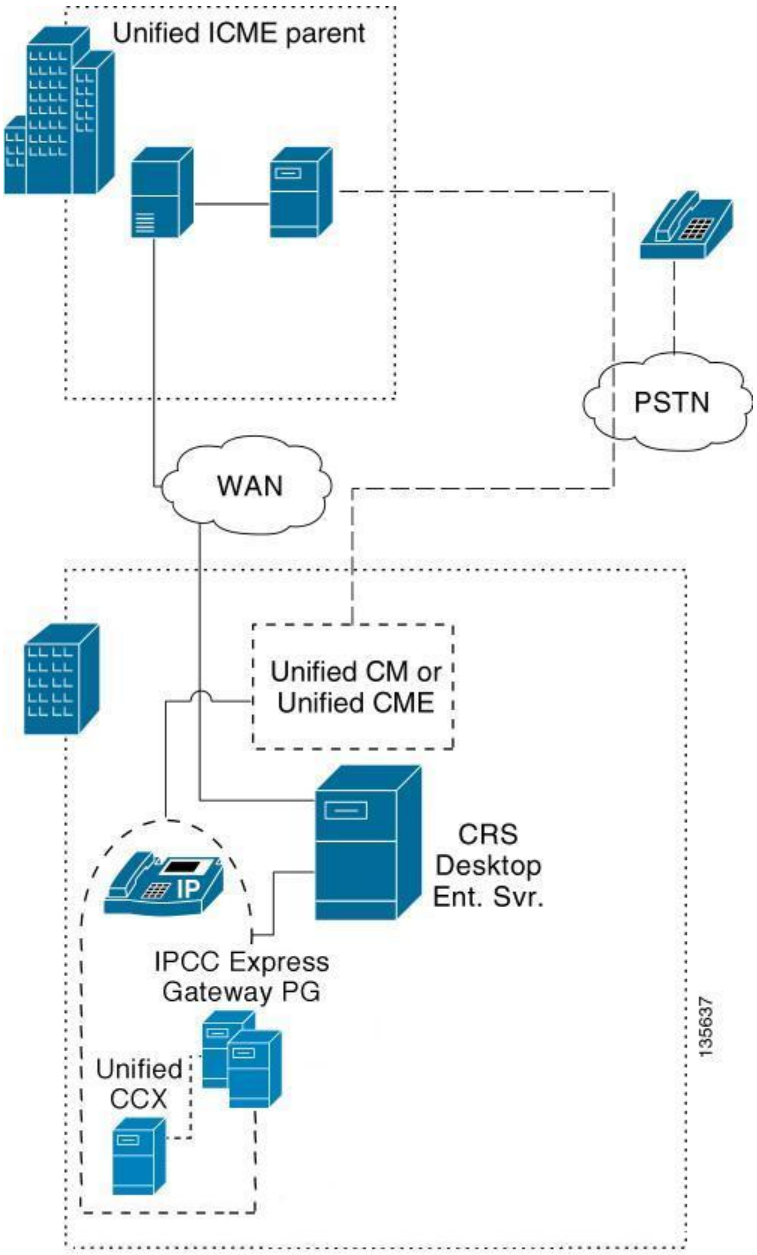
Note: Unified SCCE, Release 7.5, supports Unified CVP in its deployment, and Unified IP IVR and Unified CVP can be used interchangeably. However, one key difference is that information on queued calls at the child Unified CVP is not available at the parent through the IPCC Enterprise Gateway PG, as is the case when Unified IP IVR is used. This means that minimum expected delay (MED) over services at the parent cannot be used.

Be aware that, in this deployment, Unified ICME cannot see the state on calls queued to the child, and therefore cannot report on them. Any Service or Skill Group statistics field that is related to calls queued on the ACD is not valid. For example, SkillGroupRealTime.CallsQueuedNow is never populated. Any function that depends on queue statistics to properly function cannot be used for the gateway peripheral. As an example: MED is not accurate since it does not consider queue time on the Unified CVP peripheral. Also, one site cannot queue to another site.

Cisco Contact Center Gateway using IPCC Express Gateway PG

The following figure shows a deployment model that allows Unified CCX to participate in an enterprise routing environment with Unified ICME.

Figure 6: Contact Center Gateway with IPCC Express Gateway PG with ICM Parent



The Unified CCX appears as an ACD to the Unified ICME parent (CallRouter and Logger).

Note: The IPCC Express Gateway PG is setup on the Unified ICME parent. The IPCC Express Gateway PG and the Unified CCX Engine are installed on different servers, and it connects with the internal CTI Server of the child Unified CCX.

Some configuration settings are pulled from the Unified CCX and automatically configured in Unified ICME.

Unlike Unified CCE deployments, there is no Side B Cisco Contact Center Gateway in this system – if the Unified CCX system is deployed in a high availability (fault tolerant) model, only the active Unified CCX node is an active Cisco Contact Center Gateway; all other PGs

are also Side A PGs, but inactive. In the case of a failover to the second Unified CCX node, the PG on that node activates.

Routing in Cisco Contact Center Gateway Deployments

In its purest form, routing is simply a routing client (a PG or NIC) querying the CallRouter for a destination for which to send the call. Different names are given to this function, depending upon the information used and passed, and the destination for the call.

Before you can route calls to a child, you must create scripts on the child and the parent. For information about routing and scripting see the deployment chapter (Chapter 2, Deploying Contact Center Gateway with Unified CCE or Unified SCCE (page 79) or Chapter 3, Deploying Contact Center Gateway with Cisco Unified Contact Center Express (page 111)) for your specific solution.

Call Data Transfer Between Parent and Child

During a call flow, call data is passed from the child and to the child system only during the following three scenarios:

- From the child to the parent when the child sends a ROUTE_REQUEST_EVENT to the parent. This happens during a Translation Route dialog or a Post-Route dialog initiated from the child. This happens when a call at the child is sent to a route point controlled by the parent.
- From the parent to the child when the parent responds to a ROUTE_REQUEST_EVENT with a ROUTE_SELECT_EVENT. This happens during a Translation routing dialog or a Post-Route dialog initiated from the child. This happens when a call at the child is a route point controlled by the parent.
- From the child to the parent when data is updated at the child and a CALL_DATA_UPDATE_EVENT is sent.

In the parent-to-child or child-to-parent call flow only a subset of call variables and ECC variables are passed to the call flow. All ECC and call variable transfers are subject to the MAPVAR and MAPECC variables (if present) for filtering.

The following table lists call data that is transferred between parent and child. Any variables not specifically mentioned here are not transferred. Additionally only ECC variables configured with the same name on both systems can be transferred between parent and child systems. The table does not account for any additional restrictions that MAPVAR and MAPECC might import.

Item	To Parent in Route Request	To Child in Route Select	To Parent from Call Data update and other events
Call Variables 1-10	Yes	Yes	Yes
ECC Variables	Yes	Yes	Yes
ANI	Yes	No	No

Item	To Parent in Route Request	To Child in Route Select	To Parent from Call Data update and other events
User To User Info	Yes	No	No
Dialed Number (DNIS)	Yes	No	No
Caller Entered Digits (CED)	Yes	No	No
Call Wrapup Data	No	No	Yes

Unified ICME variables are explained in the Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted.

Reporting in Cisco Contact Center Gateway Deployments

There are two levels of reporting in Cisco Contact Center Gateway deployments:

- ACD (child)
- Enterprise (parent)

The addition of the Cisco Contact Center Gateway PGs does not affect the reports on the ACD level; Unified CCE and Unified CCX reports can be run and accurately reflect the state of their respective systems.

However, the data that the child system feeds to the parent through Cisco Contact Center Gateway does not always correlate on both systems, and this affects the reports on the enterprise level. In some instances, discrepancies are due to timing period issues; in others, they occur because the Cisco Contact Center Gateway does not populate certain database fields.

As already noted , queued calls on a child that uses Unified SCCE with Unified CVP cannot be reported on, so they are not reflected in the statistics.

Note: For additional information, refer to the Reporting Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted.

Upgrading to Use a Cisco Contact Center Gateway Solution

If you have previous versions of Unified ICME, Unified CCE, or Unified CCX software and would like to upgrade so you can use a Cisco Contact Center Gateway solution, upgrade each product in the Cisco Contact Center Gateway solution before integrating the parent and child software and installing the PG.

Note: The Unified ICME parent and the Unified CCE, Unified SCCE, or Unified CCX child must be version compatible; that is, ensure that there is not more than one minor release of variance. See the **Compatibility Guide for Cisco Unified Contact Center Enterprise** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_device_support_tables_list.html)

to determine the correct versions to use. If you are using Unified IP IVR in your deployment, be sure to select a version that is compatible with Cisco Unified Communications Manager (Unified CM) and a Unified CM version that is both compatible with Unified ICME and Unified IP IVR .

You can also use the following documents as appropriate for your parent/child deployment:

- To upgrade to a newer version of Cisco Unified Communications Manager, refer to the Unified CM documentation.
- To upgrade to a newer version of Unified CCX or Unified IP IVR , refer to the*Cisco Unified Contact Center Express Installation Guide*.
- To upgrade to a newer version of Unified ICME or Unified CCE, refer to the Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted.
- To upgrade to a newer version of Unified CVP, refer to the Upgrade Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*Installation and Upgrade Guide for Cisco Unified Customer Voice Portal*.

After upgrading to the latest releases for the child Unified CCE, install the parent Unified ICME software, including the IPCC Enterprise Gateway PG. (See Chapter 2, Deploying Contact Center Gateway with Unified CCE or Unified SCCE (page 79) for more information.)

Similarly, if you want to upgrade to use Cisco Contact Center Gateway with Unified CCX, you would need the same applications, but when installing Cisco Unified Contact Center Express , you would choose Unified CCX as the product instead of Unified IP IVR , and you need the Cisco Agent Desktop that works with Unified CCX (not the one that works with Unified ICME). Also during the installation of Unified CCX, you can choose to use Cisco Unified Communications Manager (Unified CM) or Cisco Unified Communications Manager Express (Unified CME). See Chapter 3, Deploying Contact Center Gateway with Unified CCX (page 111) for more information.

Since the use of Unified CVP with Unified SCCE has become available only with Unified SCCE 7.5(1), no upgrade for such a child system is called for.

Chapter 2

Getting Started Deploying a Cisco Contact Center Gateway

This chapter provides an example of how to deploy a Cisco Contact Center Gateway.

Follow the steps provided, in the order provided, to create a working example of a Parent/Child system that utilizes an IP IVR. This introduces you to the various concepts and tasks you must follow for a successful deployment.

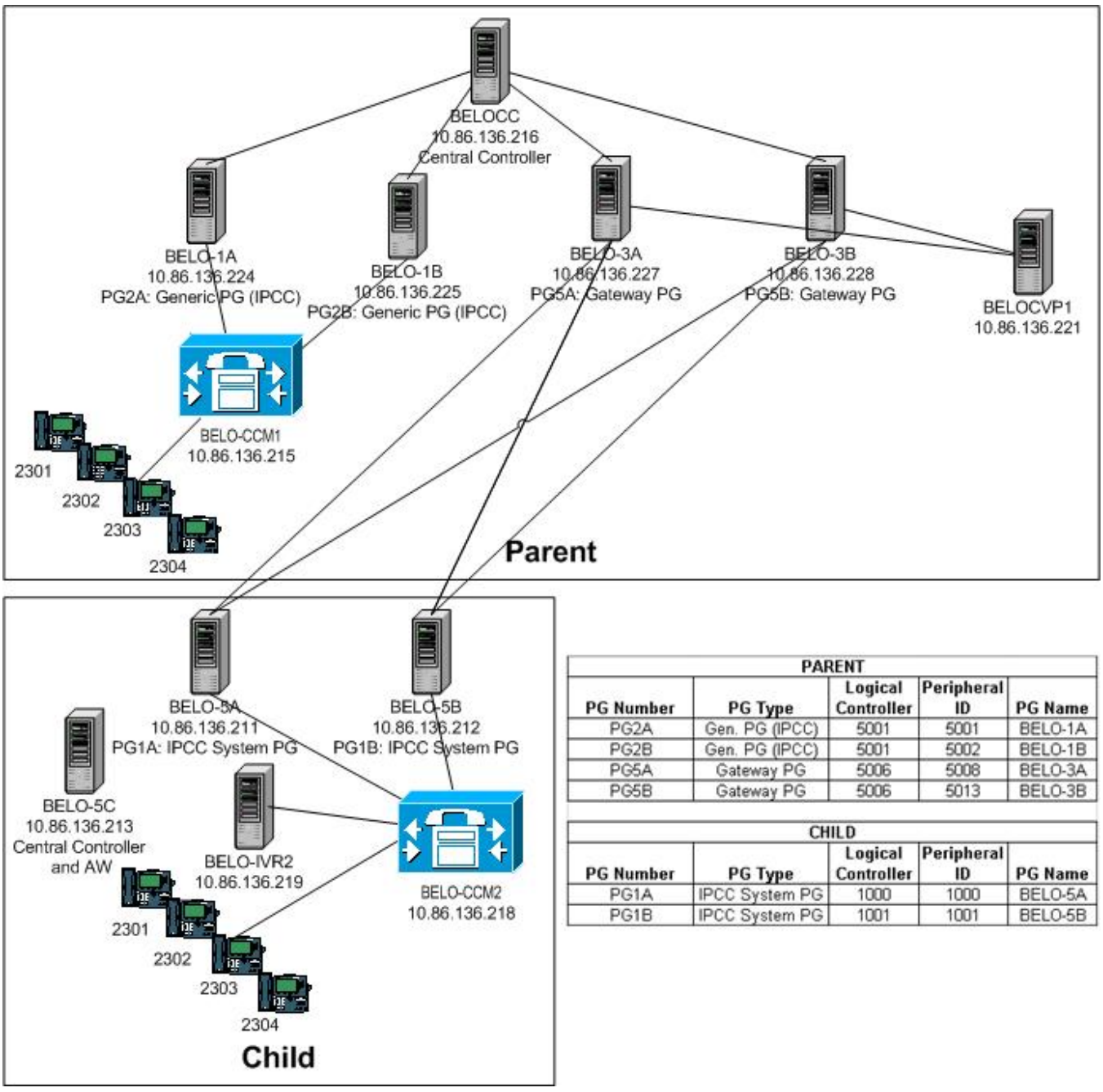
You are told how to set up and configure one side of the duplexed components, then you must set up and configure the other side on your own, using the previous side as an example.

After completion of this exercise, you can then utilize the information following chapters to perform a successful Contact Center Gateway deployment with your specific product and options.

The example is based on the following deployment.

Note: BELOCVP1 is not used in this example but is shown to indicate another possible Child system example.

Figure 7: BELO Deployment



PARENT				
PG Number	PG Type	Logical Controller	Peripheral ID	PG Name
PG2A	Gen. PG (IPCC)	5001	5001	BELO-1A
PG2B	Gen. PG (IPCC)	5001	5002	BELO-1B
PG5A	Gateway PG	5006	5008	BELO-3A
PG5B	Gateway PG	5006	5013	BELO-3B

CHILD				
PG Number	PG Type	Logical Controller	Peripheral ID	PG Name
PG1A	IPCC System PG	1000	1000	BELO-5A
PG1B	IPCC System PG	1001	1001	BELO-5B

The Parent site consists of:

- Simplexed Central Controller (BELOCC)
- Duplexed Generic IPCC Peripheral Gateway (PG2A and PG2B)
  - Named BELO-1A and BELO-1B, respectively
  - Interfaces with the Parent Unified CM (BELO-CCM1)
- Unified CM (BELO-CCM1)

  - Routes calls to four (4) extensions (DNs 2301-2304)

- IVR (BELO-IVR1)
- Duplexed IPCC Gateway Peripheral Gateway (PG5A and PG5B)
  - Named BELO-3A and BELO-3B, respectively
  - Interfaces with the Child duplexed System PG (PG1A and PG1B)

The Child site consists of:

- a duplexed IPCC System Peripheral Gateway (PG1A and PG1B))
  - Named BELO-5A and BELO-5B, respectively
  - These provide the interface between the duplexed Parent IPCC Gateway PG (BELO-3A and BELO-3B) and the Unified CM (BELO-CCM2)
- Unified CM (BELO-CCM2)
  - Routes calls to four (4) extensions (DNs 2301-2304)
  - Routes calls to the IP IVR (BELO-IVR2)
- IP IVR (BELO-IVR2)
- Simplexed Central Controller and an Administration & Data Server (BELO-5C)

Note: The Child is deployed first, followed by the Parent deployment.

This chapter contains the following topics:

- Prerequisites, page 23
- Deploying the Child, page 25
- Deploying the Parent, page 58

Prerequisites

The following must be performed prior to deploying the Child or the Parent system:

- Install the System software on the appropriate machines.
  - This places the files into the \bin directory.
  - Refer to the Installation and Configuration Guide for Cisco Unified Contact Center Enterprise & Hosted for additional information.
- Run the Domain Manager to create the Facility (BELO) and the Instance (bh03).

Note: Refer to Adding the Facility and Instance (page 24) for additional information.

- Install and configure the Unified CM.

  Note: If necessary, you can replace the Unified CM with another ACD controller.

  The following extensions/dialed numbers are configured:

  – 2301

  – 2302

  – 2303

  – 2304

  The following local route points are configured:

  – 2500 (to any available skill group)

  – 2501 (to SG01)

  – 2502 (to SG02)

Adding the Facility and the Instance

Upon completing the installation, from the Installation window, run the Domain Manager to add the Facility and the Instance.

Step 1 Click **Run the Domain Manager**.

The Domain Manager main window appears.

Note: Refer to the Completed Domain Manager image, following, as a reference.

Step 2 Click **Domains**, then select/expand the domain (BELODC.cisco.com).

Step 3 Click **Add** under Cisco Root, then select **Cisco_ICM**.

Step 4 Click **Add** under Facility, enter **BELO** (the Facility name), and click **OK**.

The Facility BELO is added to the Cisco Root of Cisco_ICM.

Step 5 Click **Facility**.

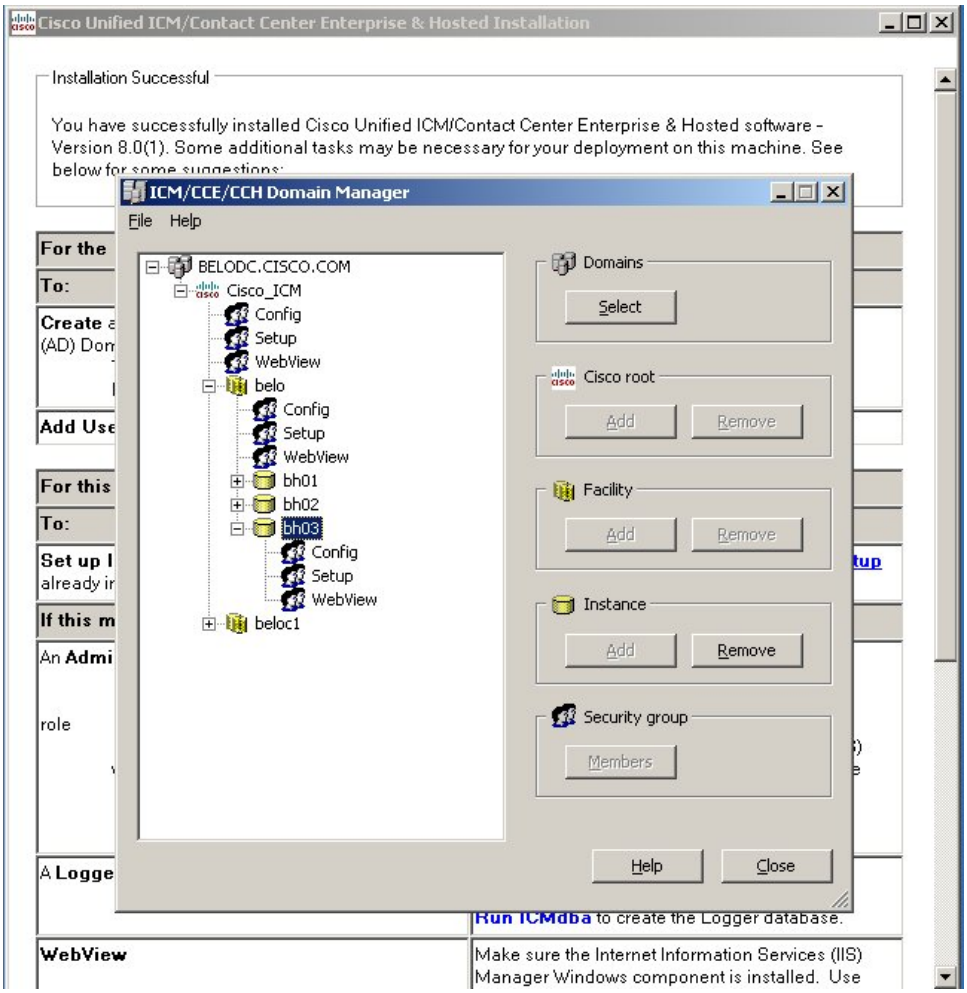
Step 6 Under Instance, click **Add**.

Step 7 Enter **BH03** (the Instance Name), then click **OK**.

The Instance BH03 is added to the Facility BELO.

Step 8 Click **Close**. The Domain, Cisco Root, Facility, and Instance have been established.

Figure 8: Completed Domain Manager



Deploying the Child

This section describes the setup and configuration of an example Child system.

Overview

This overview provides a "big picture" look at the child deployment. The following sections provide the detailed instructions for each specific task. The exercise tasks must be performed in the order presented in this example.

The deployment process must be performed in the following order:

1. Run the Web Setup Tool to set up the Child Administration & Data Server on BELO-5C.

2. Run the Web Setup Tool and ICMDBA to setup the Child Central Controller (CC) on BELO-5C.

   The Web Setup Tool is used to set up the CallRouter and Logger. ICMDBA is used to create the Logger datatbase.

3. On the Administration & Data Server, run the Configuration Manager to add the System Peripheral Gateways.

   – This assigns the Logical Controller IDs (LCID) and the Peripheral IDs (PID) required during setup.

4. Run the Web Setup Tool on BELO-5A and BELO-5B to setup PG1A and PG1B, respectively.

   – The previously obtained LCIDs and PIDs are used during the setup of each System PG.

   – Install and Configure JTAPI on the System PGs.

   – Install CTI Server on the System PGs.

   – Install the Desktop Application on the System PGs.

5. Using the Configuration Manager tools, configure the following:

   – Agents

   – Skill Groups

   – Skill Group Members

   – Dialed Numbers

   – Call Types

6. Use the Script Editor to manage Call Types, and to create and schedule routing scripts.

7. Test the Child system.

Setting Up the Child Administration & Data Server

Setting up the Administration & Data Server involves running the Web Setup Tool for the Administration & Data Server on the same computer as the Central Controller (BELO-5C).

How to Set Up the Child Administration & Data Server

The following steps lead you through setting up the Child Administration & Data Server for this example.

Step 1 Run the Web Setup Tool on the computer designated as the Child Central Controller (BELO-5C).

The Web Setup Tool window appears.

Step 2 Click **Instance Management**, then click **Add**.

The Add Instance dialog appears.

Step 3 Select **BELO** (the Facility), then **bh03** (the Instance to add).

Step 4 Click **Save**.

Step 5 Select **Administration & Data Server**, then click **Add**.

The Add Administration & Data Server dialog appears.

Step 6 Set the deployment model.

a. Select **bh03** (the Instance) from the drop-down menu.

b. Select **Enterprise** as the deployment type.

c. Select **Small to Medium** for the deployment size.

d. Click **Next**.

Step 7 Set the role for the Administration & Data Server.

a. Select **Administration Server** and **Real-time Reporting**.

b. Click **Next**.

Step 8 Set the Administration & Data Server connectivity.

a. Select **Primary Administration & Data Server**.

b. Enter the Secondary Administration & Data Server name **BELO-5C** (the same as the Primary since there is no Secondary Administration & Data Server).

c. Enter **BELO-5C-Site1** for the site name, then click **Next**.

Step 9 Set the database and options by accepting the default settings, then click **Next**.

Step 10 Set the Central Controller connectivity.

a. Enter **BELO-5C** (the name of the Child Central Controller computer) into each name field.

b. Ensure the Central Controller Domain is set to **BELODC.cisco.com**.

c. Select **Side A Preferred**, then click **Next**.

The Summary window appears.

Step 11 Ensure all settings are correct, then click **Next**.

The system configures the Administration & Data Server, then the Administration & Data Server window appears displaying the Administration & Data Server information.

Setting Up the Child Central Controller

Setting up the Child Central Controller involves running the Web Setup Tool for the CallRouter and ICMDBA to create the Logger database on the Logger. Both are performed on the Central Controller computer (BELO-5C).

How to Set Up the CallRouter

Setting up the CallRouter involves running the Web Setup Tool on BELO-5C.

Step 1 Run the Web Setup Tool.

The main Web Setup Tool window appears.

Step 2 Click **Routers**.

The Routers dialog appears.

Step 3 Click **Add** to set up the CallRouter.

The Deployment dialog appears.

Step 4 On the Deployment dialog:

a. Ensure the Instance is set to **bh03**.

b. Select **Side A**.

c. Select **Simplex** for the Fault Tolerance mode.

d. Click **Next**.

The Router Connectivity dialog appears.

Step 5 Ensure all the fields indicate **BELO-5C** (the Central Controller computer name), then click **Next**.

The Enable Peripheral Gateways dialog appears.

Step 6 On the Enable Peripheral Gateways dialog:

a. Enter **1** to indicate to the CallRouter how many PGs you are deploying, then click **Next**.

The Router Options dialog appears.

Step 7 Leave all settings at the default (nothing selected) and click **Next**.

The Summary dialog appears.

Step 8 Ensure the Router summary is correct, then click **Finish**.

The CallRouter is set up, then the Router successfully saved window appears.

How to Create the Logger Database

Use ICMDBA to create the Logger database.

Step 1 Select **Start > All Programs > Unified ICM-CCE-CCH Tools > ICMDBA**.

The ICMDBA Tool appears.

Step 2 Create the Logger database.

Note: Refer to the Administration Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted for additional information on creating the Logger database.

How to Set Up the Logger

Setting up the Logger involves running the Web Setup Tool on BELO-5C.

Step 1 Run the Web Setup Tool.

The main Web Setup Tool window appears.

Step 2 Click **Loggers**.

The Logger dialog appears.

Step 3 click **Add** to set up the Logger.

The Deployment dialog appears.

Step 4 On the Deployment dialog:

a. Ensure the Instance is set to **bh03**.

b. Ensure the Logger Type is set to **Enterprise**.

c. Select **Side A**.

d. Select **Simplex** for the Fault Tolerance mode.

e. Click **Next**.

The Central Controller Connectivity dialog appears.

Step 5 Ensure the following settings are correct on the Central Controller Connectivity dialog:

a. The Router Private Interfaces (Side A and Side B) are **BELO-5C**.

b. The Logger Private Interfaces (Side A and Side B) are **BELO-5C**.

c. Click **Next**.

The Additional Options dialog appears.

Step 6 On the Additional Options dialog:

a. Leave the default settings and click **Next**.

The Summary dialog appears.

Step 7 Ensure the Logger summary is correct, then click **Finish**.

The Logger is set up, then the Logger successfully saved window appears.

At this point you have completed the Web Setup Tool. You have added an Administration & Data Server and a Central Controller (consisting of the CallRouter and the Logger) to the Child system.

Exit the Web Setup Tool. On the Child Administration & Data Server, open the ICM Service Control and start the distributor, logger, and router processes.

Configuring the System Peripheral Gateways

On the Administration & Data Server, run the Configuration Manager to add the System Peripheral Gateways.

How to Configure the System PGs

Use the Configuration Manager tools to add and configure the System PGs.

Step 1 Select **Start > All Programs > Cisco Unified CCE Tools > Administration Tools > Configuration Manager**.

Step 2 Start the PG Explorer Tool, then in the Main window click **Retrieve**.

Step 3 Click **Add PG**.

This creates both the Peripheral Gateway and the Peripheral.

a. Enter **IPCC** for the Name.

b. Select **IPCC System** for the Client Type.

c. If no desk settings are set, set them now. Click **OK**.

The Agent Desk Settings List Tool appears.

d. Click **Add**.

The Attribute tab appears.

e. Enter the Name **default**.

f. Leave all other settings at their defaults and click **Save**.

g. Close the Desk Settings List Tool.

Step 4 Go back to the PG Explorer Tool.

a. Select **IPCC-1** as the Peripheral.

b. On the Peripheral tab, set the Default Desk Settings to **default**.

c. On the Agent Distribution tab, click **New**.

d. Set the Administration & Data Server site name to **BELO-5C-Site 1** and leave all other settings at their defaults.

e. On the Routing Client tab, enter the Name **IPCC_RC** and leave all other settings at their defaults.

f. Click **Save**.

The Logical Controller ID (5000) and the Physical Controller ID (5000) are now indicated on the Logical Controller tab.

g. Reboot the System Peripheral Gateway computers (BELO-5A and BELO-5B).

The Central Controller setup and configuration is now complete. The Peripheral Gateways can now be installed and configured to communicate with the Central Controller.

How to Add the Instance

This task is performed on the Child System Peripheral Gateway computers BELO-5A (PG1A) and BELO-5B (PG1B).

After the reboot, use the Web Setup Tool to add the Instance.

Step 1 Enter **http://BELO-5B/setup** (or BELO-5A, as applicable) and log in to the Web Setup Tool to add the Instance. The main Web Setup Tool window appears.

Step 2 Click **Instance Management**, then click **Add**.

The Add Instance dialog appears.

Step 3 Select **BELO** (the Facility), then **bh03** (the Instance to add).

Step 4 Click **Save**.

Step 5 Click **Log Out**.

Setting Up the System Peripheral Gateways

Use the PG Setup Tool to add and configure the System PGs.

How to Set Up the System PGs

Once the PG (Peripheral Gateway) Setup Tool is open, use the tool to set up the System PGs.

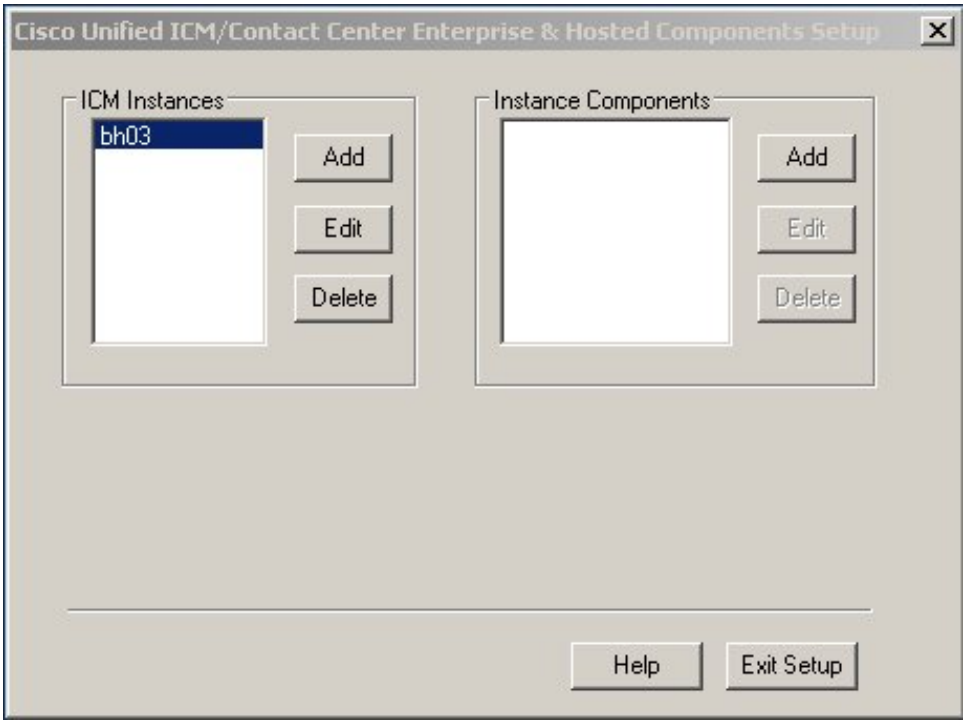
In this section, you set up side B of PG1.

Step 1 Click **PG Setup Tool**.

Step 2 Select whether or not to add Operating System hardening (recommended).

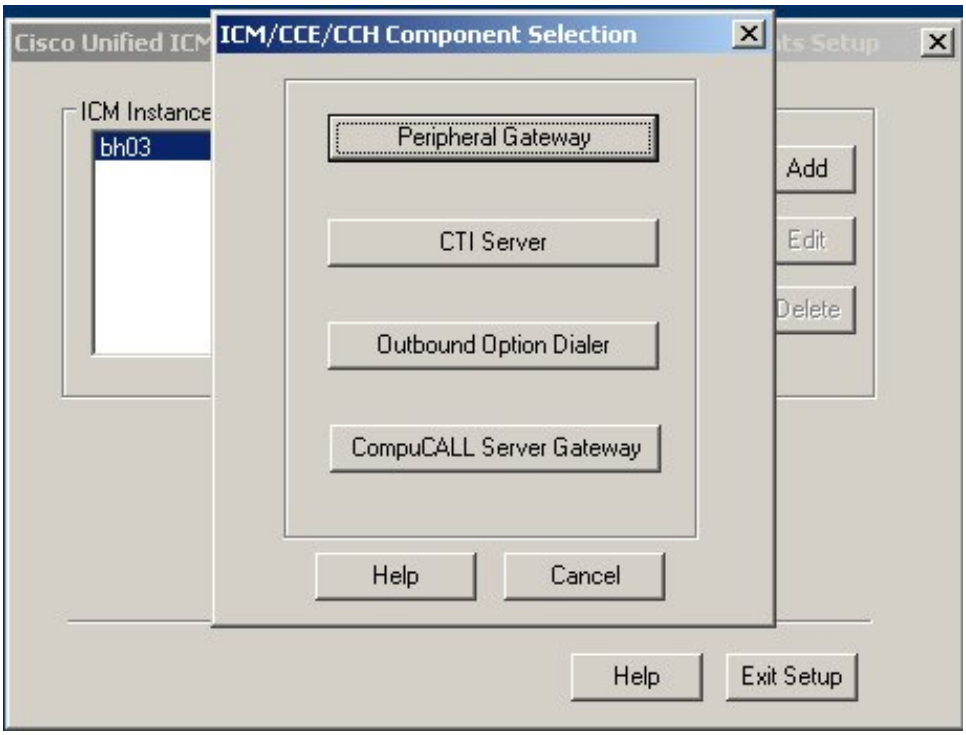
Step 3 On the main PG Setup Tool window, in the Instance Component section, click **Add**.

Figure 9: Main Peripheral Gateway Setup Window



The ICM/CCE/CCH Component dialog appears.

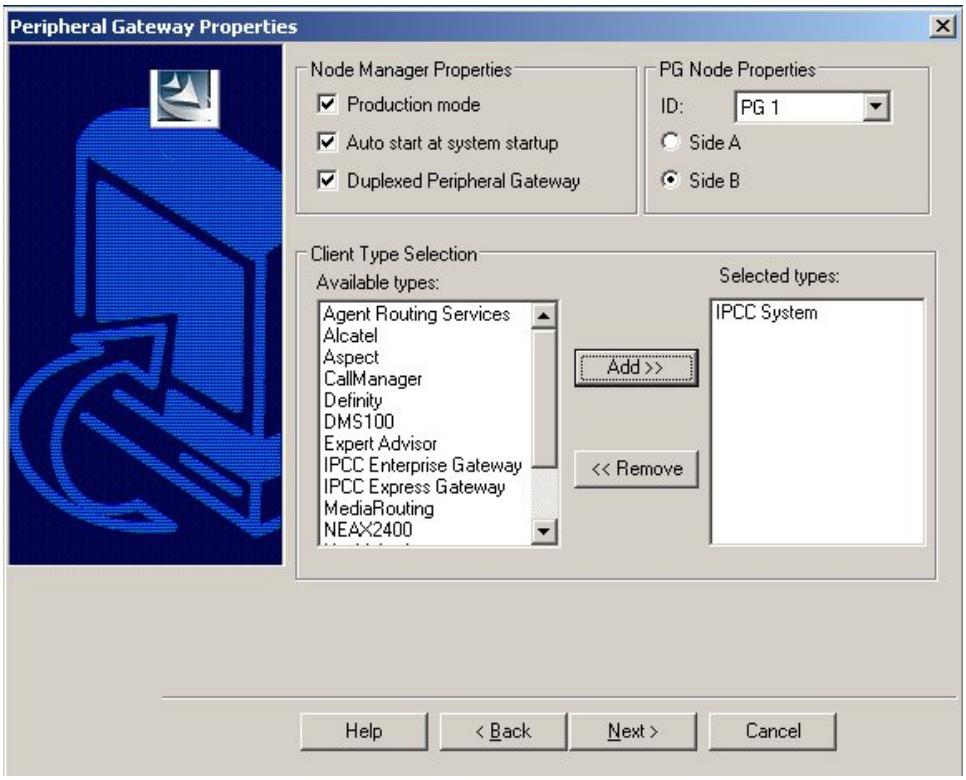
Figure 10: ICM/CCE/CCH Component Selection - Peripheral Gateway



Step 4 Select **Peripheral Gateway**.

The Peripheral Gateway Properties dialog appears.

Figure 11: Peripheral Gateway Properties



Step 5 Ensure that all checkboxes in the Node Manager Properties section are checked.

Step 6 Ensure **PG1** and the appropriate side is selected in the PG Node Properties dialog.

Step 7 Select **IPCC Systems** for the Client Type, then click **Add**.

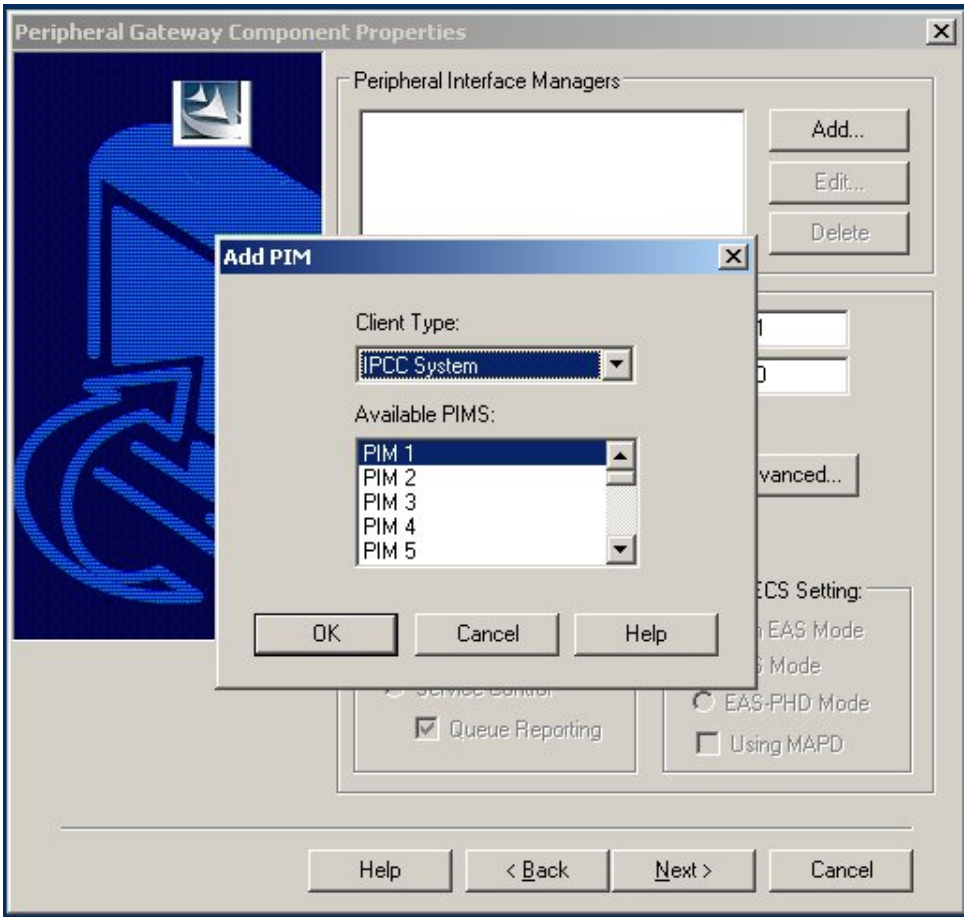
Step 8 Click **Next**.

The Peripheral Gateway Component Properties dialog appears.

Step 9 Click **Add**.

The Add PIM dialog appears.

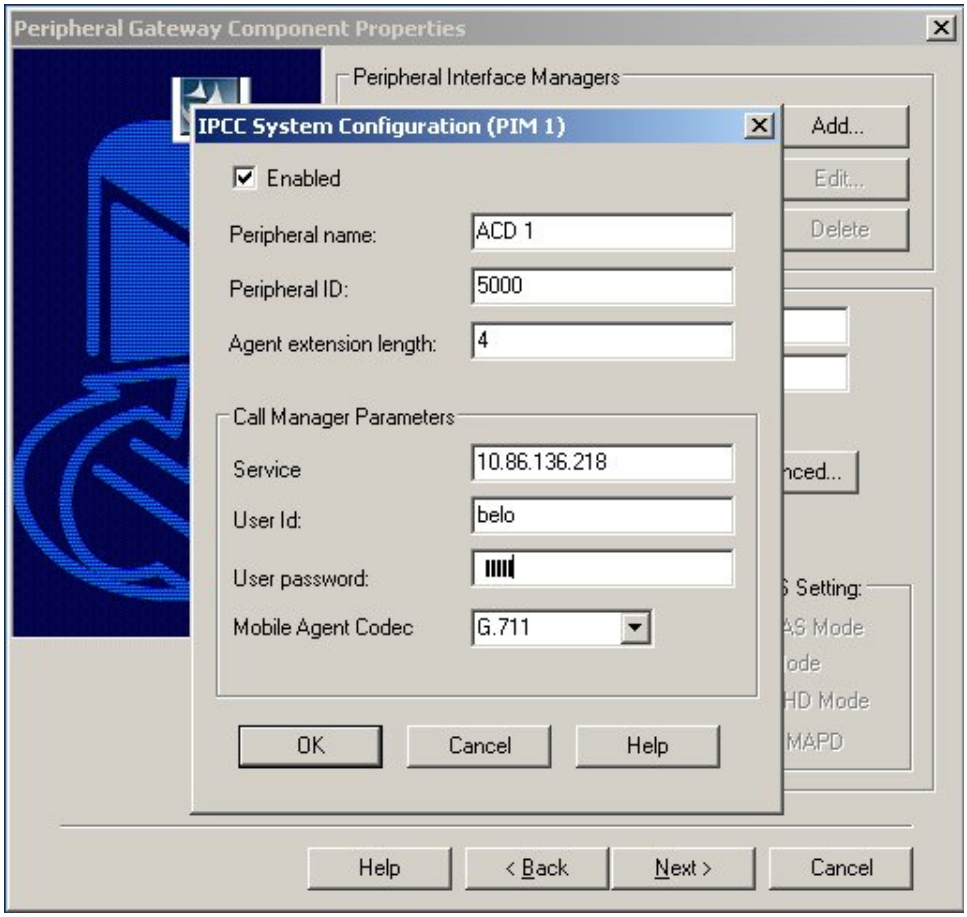
Figure 12: Add PIM Dialog



Step 10 Select **IPCC System** and **PIM**, then click **OK**.

The IPCC System Configuration (PIM1) dialog appears.

Figure 13: IPCC System Configuration (PIM1)



Step 11 Check **Enabled**.

Step 12 Add the PID of **5000**.

Step 13 Enter an Agent Extension Length of **4**.

Step 14 Set the service to **10.86.136.218** (the IP address of the Unified CM BELO-CCM2).

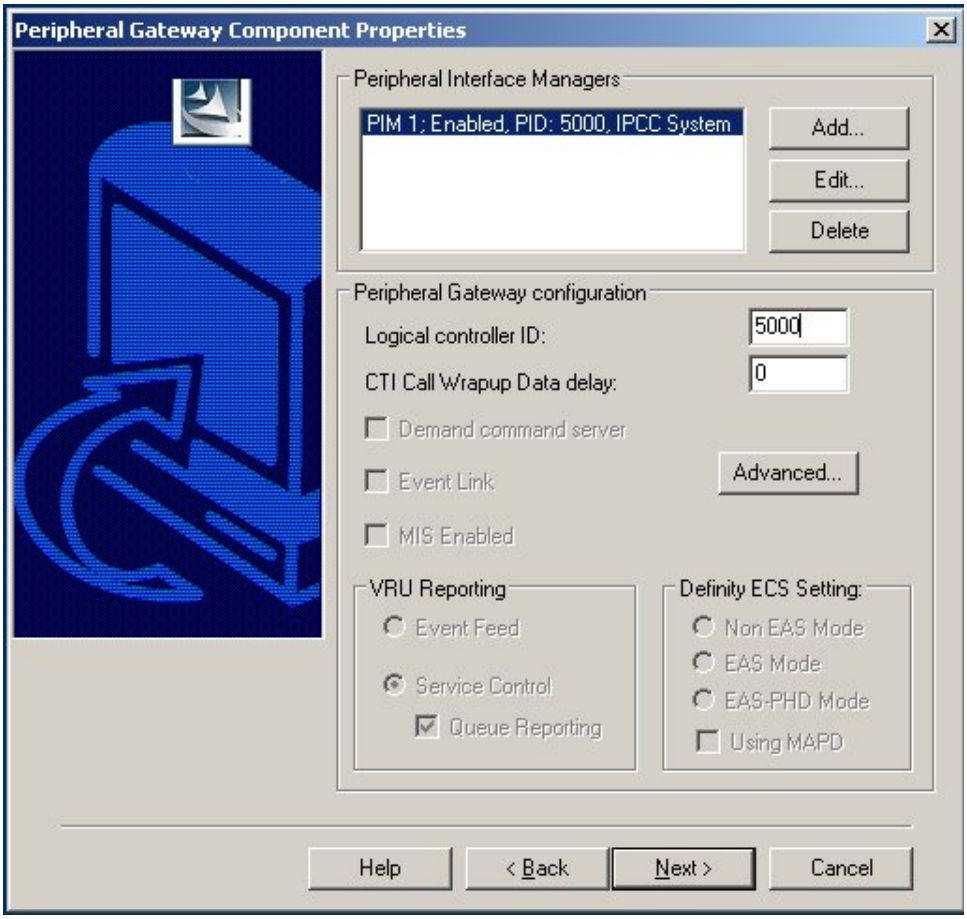
Step 15 Enter the user ID **BELO** (an application user created on the Unified CM).

Step 16 Enter the user password of **cisco** (set in the Unified CM).

Step 17 Click **OK**.

You return to the Peripheral Gateway Component Properties dialog.

Figure 14: Peripheral Gateway Component Properties

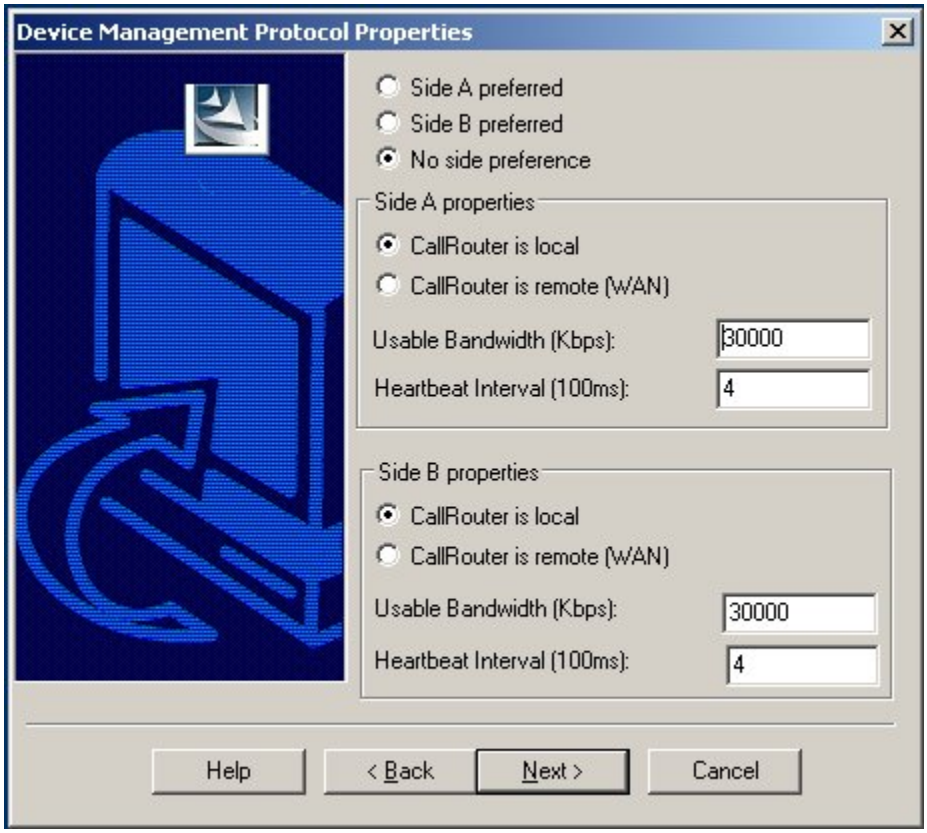


Step 18 Change the LCID to **5000** (the same LCID as used previously in the PG Explorer Tool).

Step 19 Click **Next**.

The Device Management Protocol Properties dialog appears.

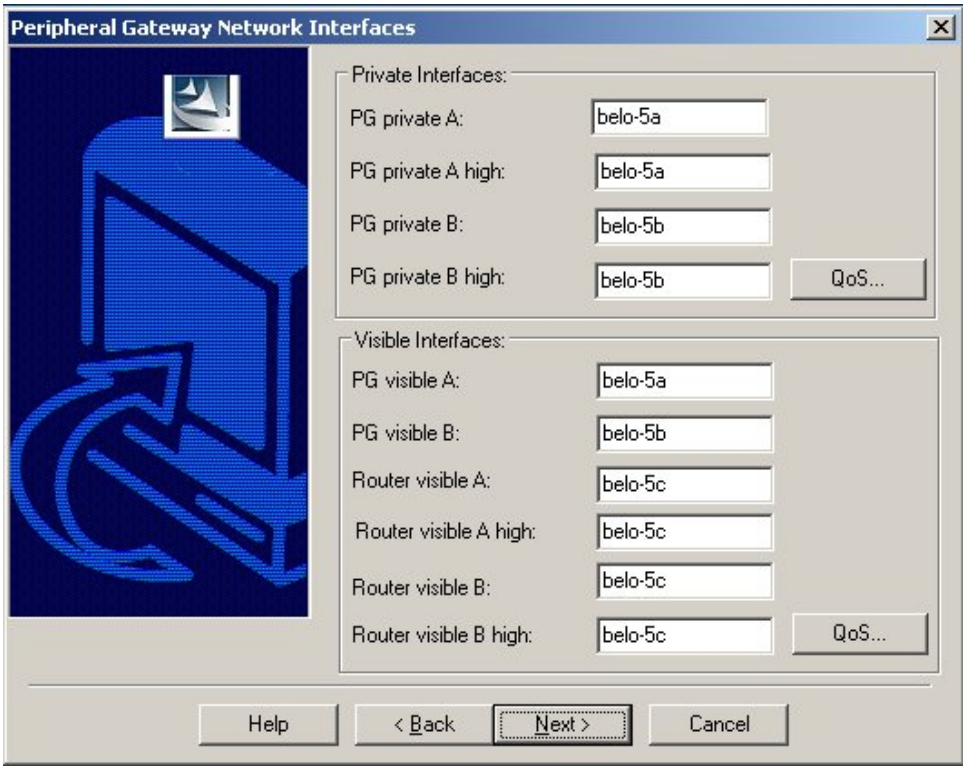
Figure 15: Device Management Protocol Properties



Step 20 Leave all settings at their default values and click **Next**.

The Peripheral Gateway Network Interfaces dialog appears.

Figure 16: Peripheral Gateway Network Interfaces



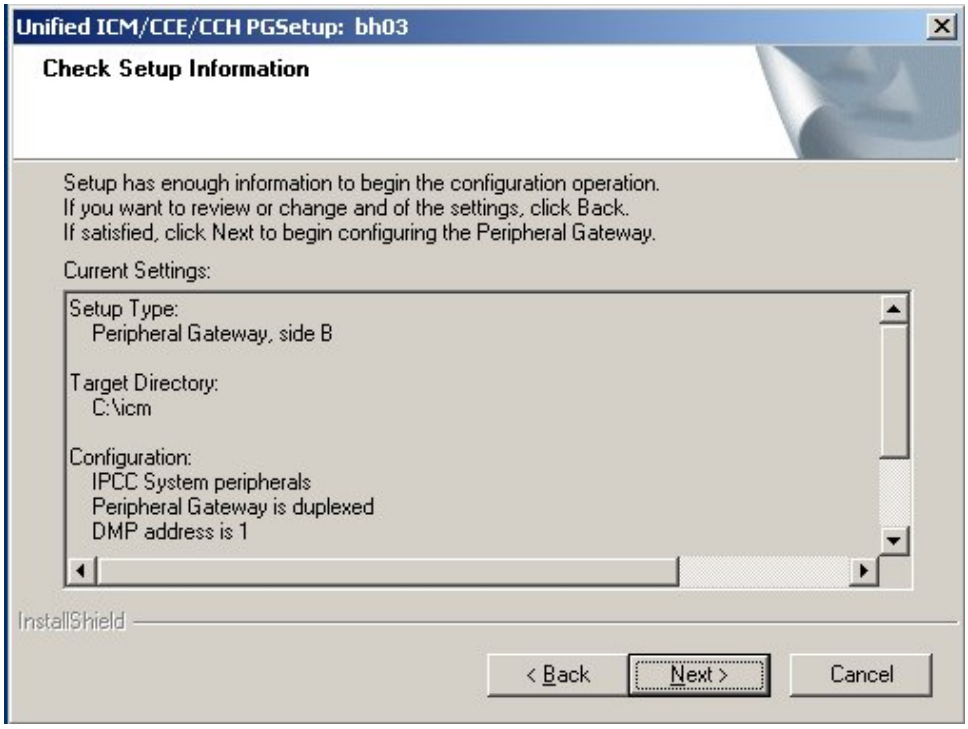
Step 21 Set the PG fields to **BELO-5A** and **BELO-5B**, as applicable.

Step 22 Set the Router fields to **BELO-5C**.

Step 23 Click **Next**.

The Check Setup Information dialog appears.

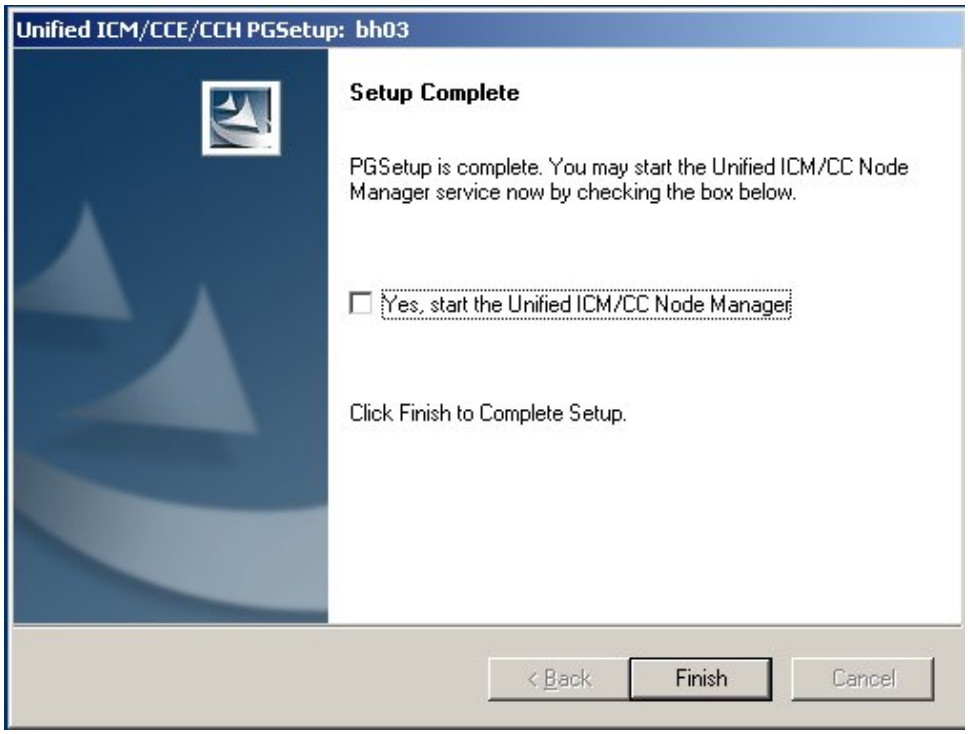
Figure 17: Check Setup Information



Step 24 If all the settings are correct, click **Next**.

The System PGs are set up and the Setup Complete dialog appears.

Figure 18: Setup Complete



Step 25 Click **Finish** when the setup is complete.

You are returned to the main PG Setup Tool window.

Step 26 Click **Exit Setup**.

Step 27 Go to the Unified CM, then download and install the JTAPI plugin for Windows on the System PGs.

a. Select **Application** > **Plugins**.

b. Click **Find**.

c. Next to Cisco JTAPI for Windows, click **Download**.

d. Install the downloaded file **ciscojtapiclient.exe**, accepting all the default settings.

Step 28 Start the PG1A and PG1B services on each System PG (**BELO-5A** and **BELO-5B**).

Installing CTI Server

CTI Server is installed on the System PGs (**BELO-5A** and **BELO-5B**).

How to Install CTI Server

Use the PG Setup Tool to install CTI Server.

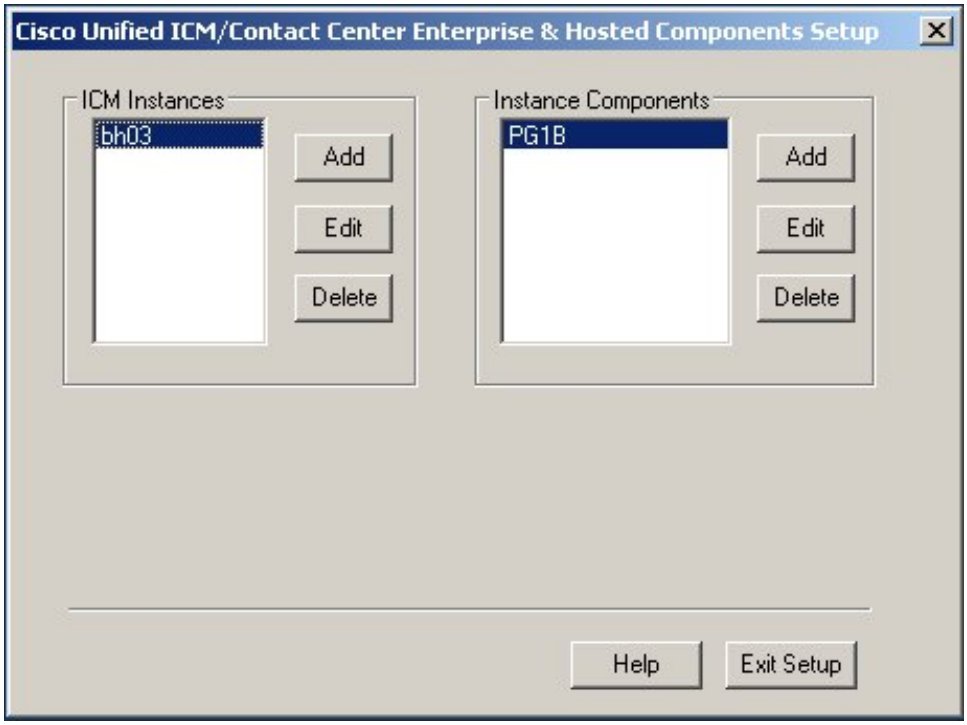
In this section, you install CTI Server on side B of PG1.

Step 1 Using Service Control, stop the PG service.

Step 2 Start the PG Setup Tool.

The Cisco Unified ICM/Contact Center Enterprise & Hosted Components Setup dialog appears.

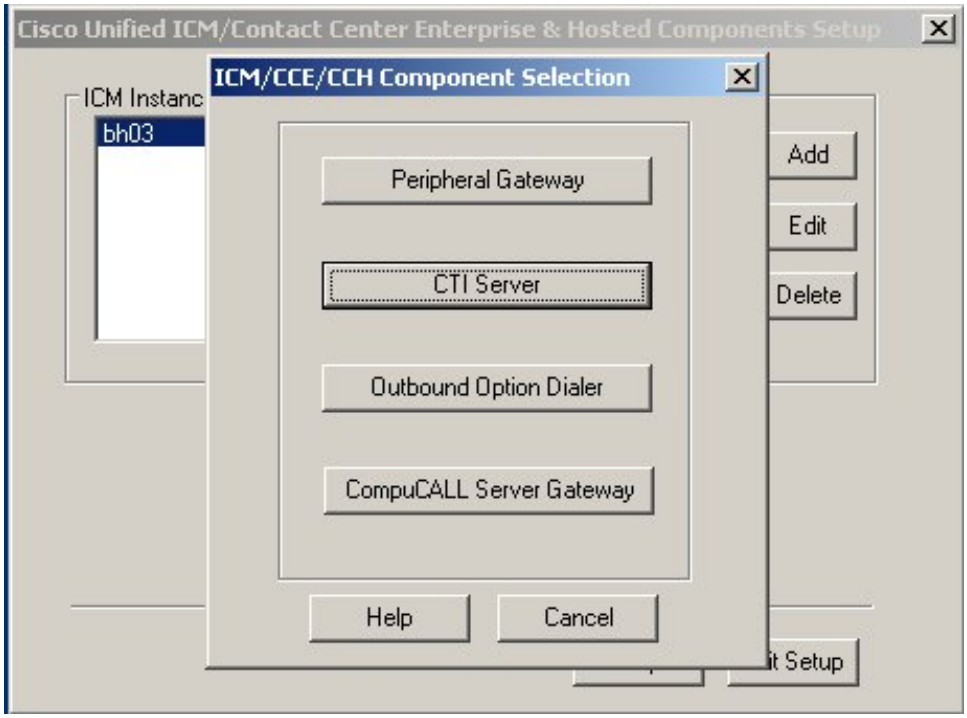
Figure 19: ICM/CCE/CCH Component Selection



Step 3 In the Instance Components dialog, click **Add**.

The ICM/CCE/CCH Component Selection dialog appears.

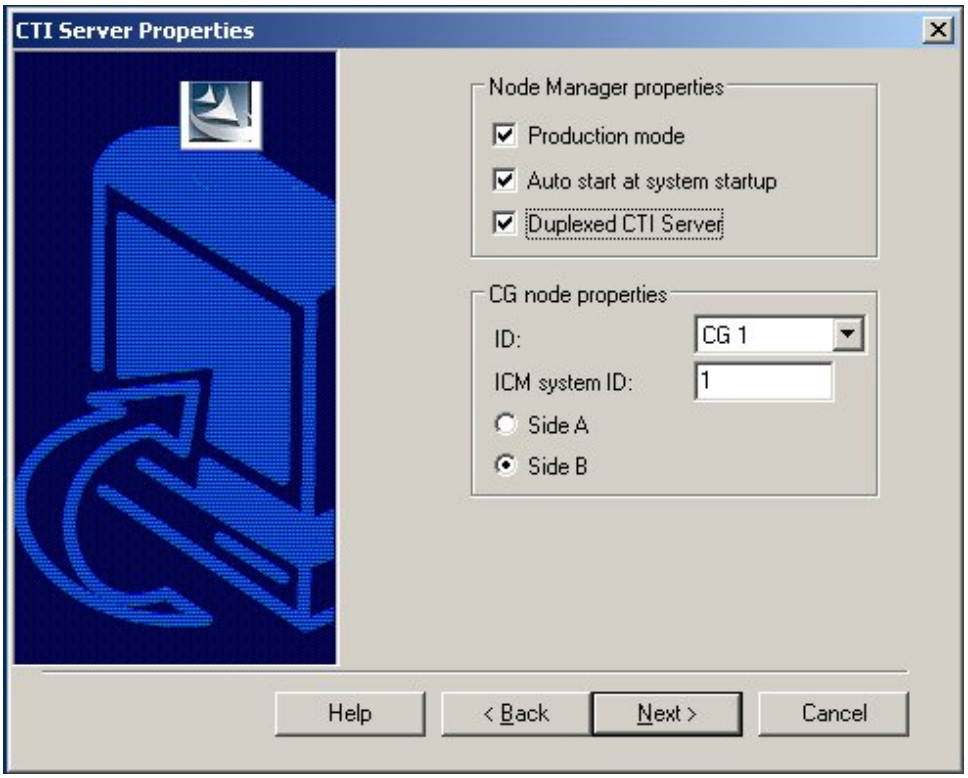
Figure 20: ICM/CCE/CCH Component Selection - CTI Server



Step 4 Select **CTI Server**.

The CTI Server Properties dialog appears.

Figure 21: CTI Server Properties



Step 5 Check **Duplexed CTI Server** and ensure all the other check boxes are checked as well.

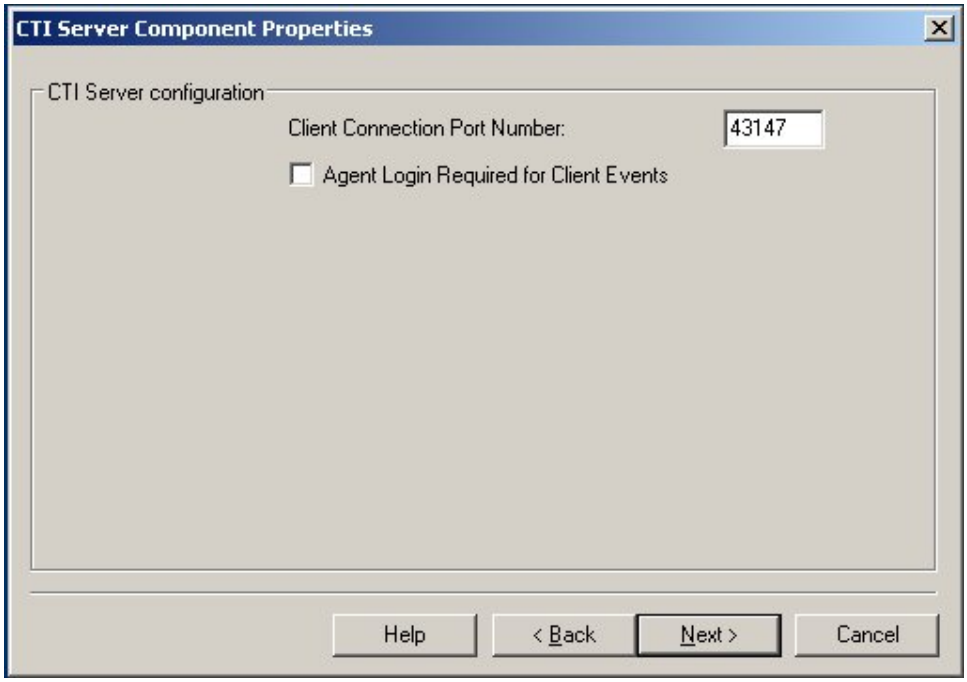
Step 6 Select **CG 1** as the CG Node ID.

Step 7 Enter **1** for the ICM system ID (the same as the Device Management Protocol (DMP) and the PG ID).

Step 8 Click **Next**.

The CTI Server Component Properties dialog appears.

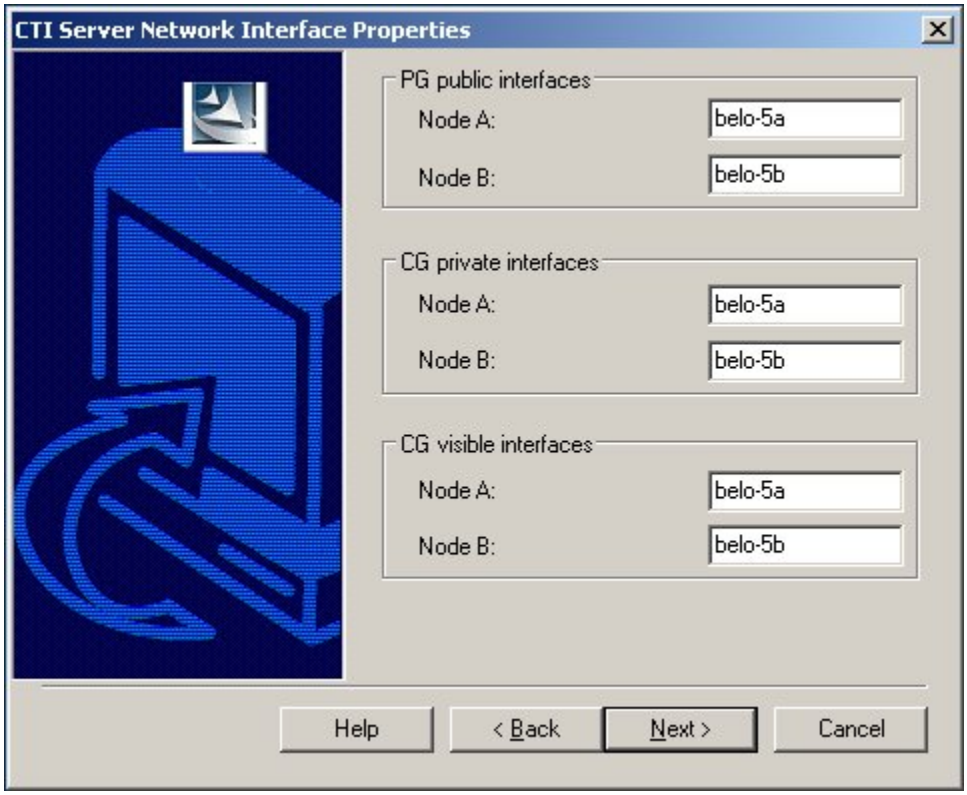
Figure 22: CTI Server Component Properties



Step 9 Leave the Default Port setting of **43147**, then click **Next**.

The Network Interface Properties dialog appears.

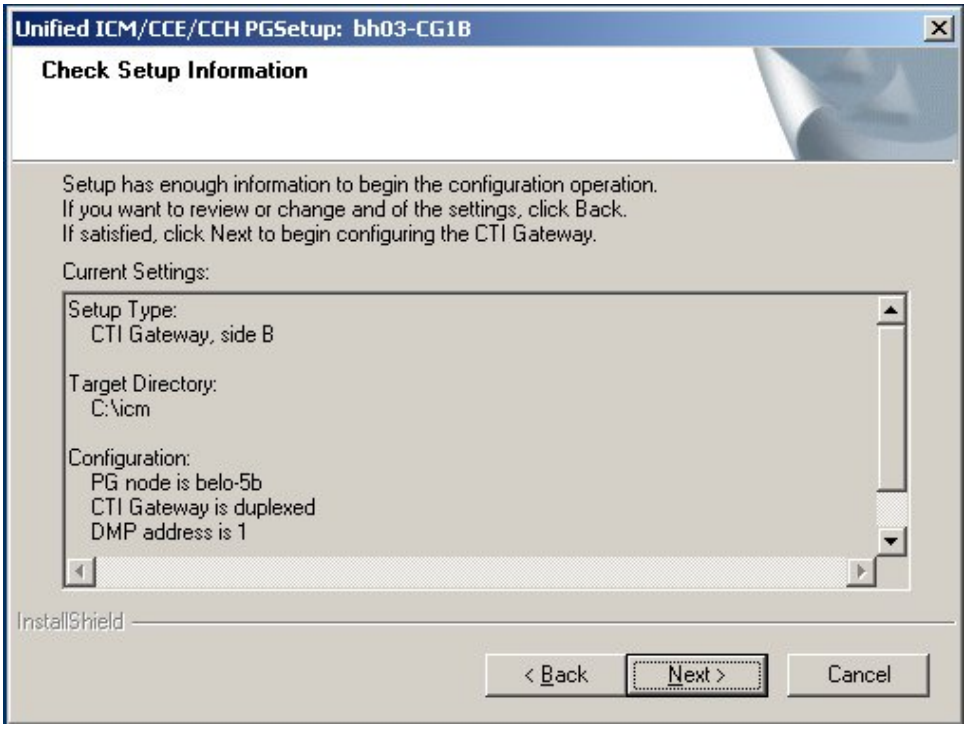
Figure 23: Network Interface Properties



Step 10 Enter **BELO-5A** and **BELO-5B** as applicable, then click **Next**.

The Check Setup Information dialog appears.

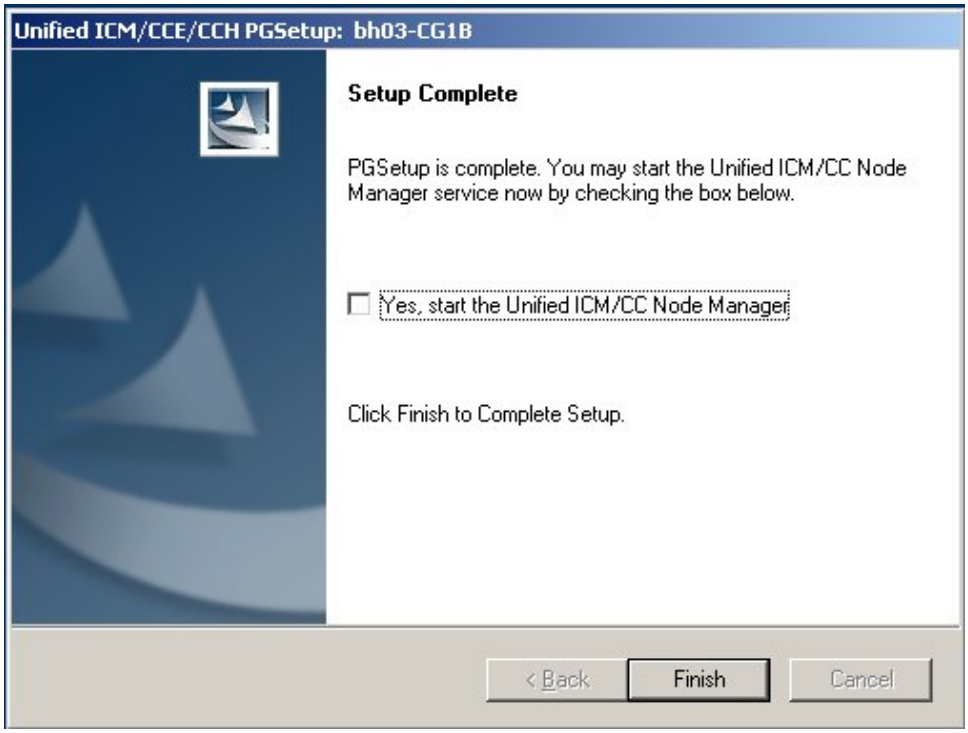
Figure 24: Check Setup Information



Step 11 Check that all settings are correct , then click **Next**.

The Setup is complete dialog appears.

Figure 25: Setup Complete



Step 12 Click **Finish**.

You are returned to the main PG Setup window.

Step 13 Click **Exit Setup**.

Step 14 Start the PG and CG services using the ICM/CCE/CCH Service Control application and check to ensure they are running properly.

Installing the Desktop Application on the System PGs

The Desktop Application is installed on the PGs to enable testing. While any desktop application (CTI OS, CAD, Custom Desktops) can be used, you are installing the CTI OS Desktop for this exercise.

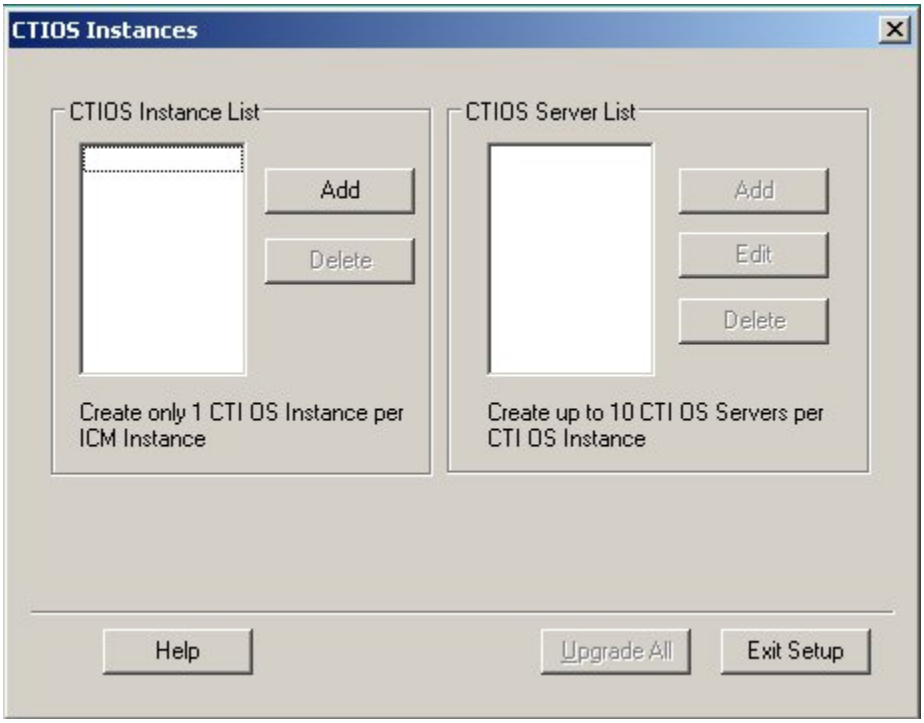
How to Install CTI OS Desktop

The CTI OS Desktop must be installed on both PG1A and PG1B.

Step 1 Start CTI OS Server Setup (setup.exe) from the CTI OS directory (ctiosserver)

The CTIOS Instances window appears.

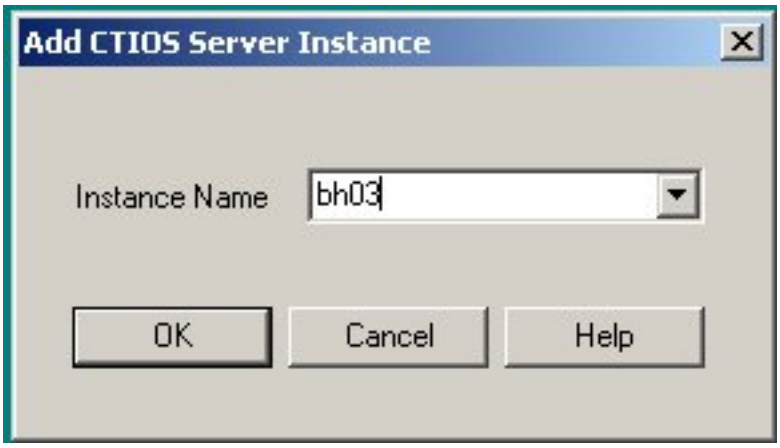
Figure 26: CTIOS Instances



Step 2 Select **Add** in the CTI OS Instance dialog.

The Add CTIOS Server Instance dialog appears.

Figure 27: Add CTIOS Server Instance

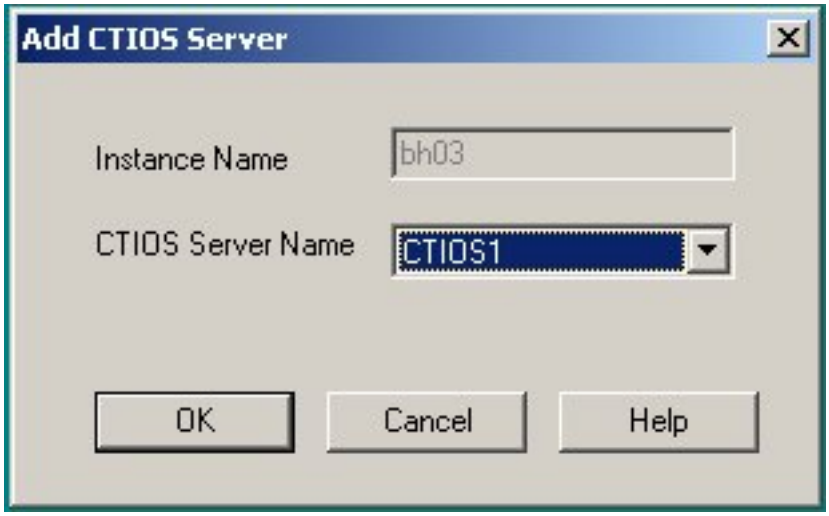


Step 3 Enter the Instance name **bh03**, then click **OK**.

Step 4 Select **Add** in the CTI OS Server List section.

The Add CTI OS Server dialog appears.

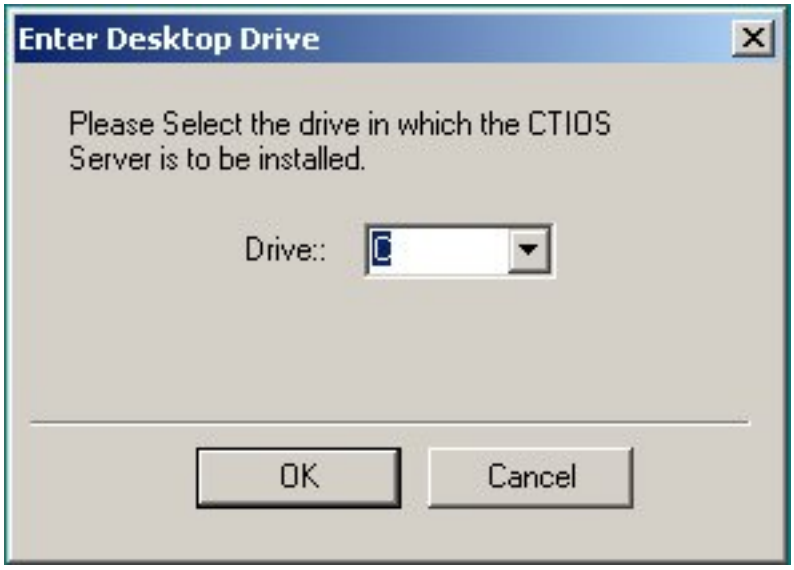
Figure 28: Add CTIOS Server



Step 5 Enter **CTIOS1** as the CTI OS Server name, then click **OK**.

The Enter Desktop Drive dialog appears.

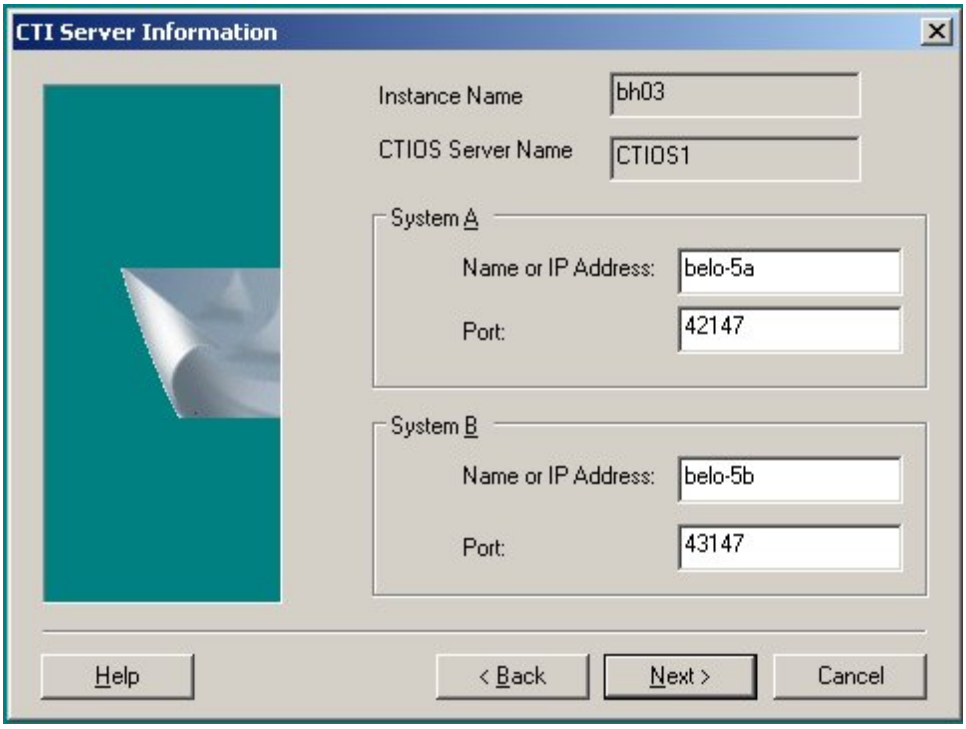
Figure 29: Enter Desktop Drive



Step 6 Enter drive **C** and click **OK**.

The CTI Server Information dialog appears.

Figure 30: CTI Server Information



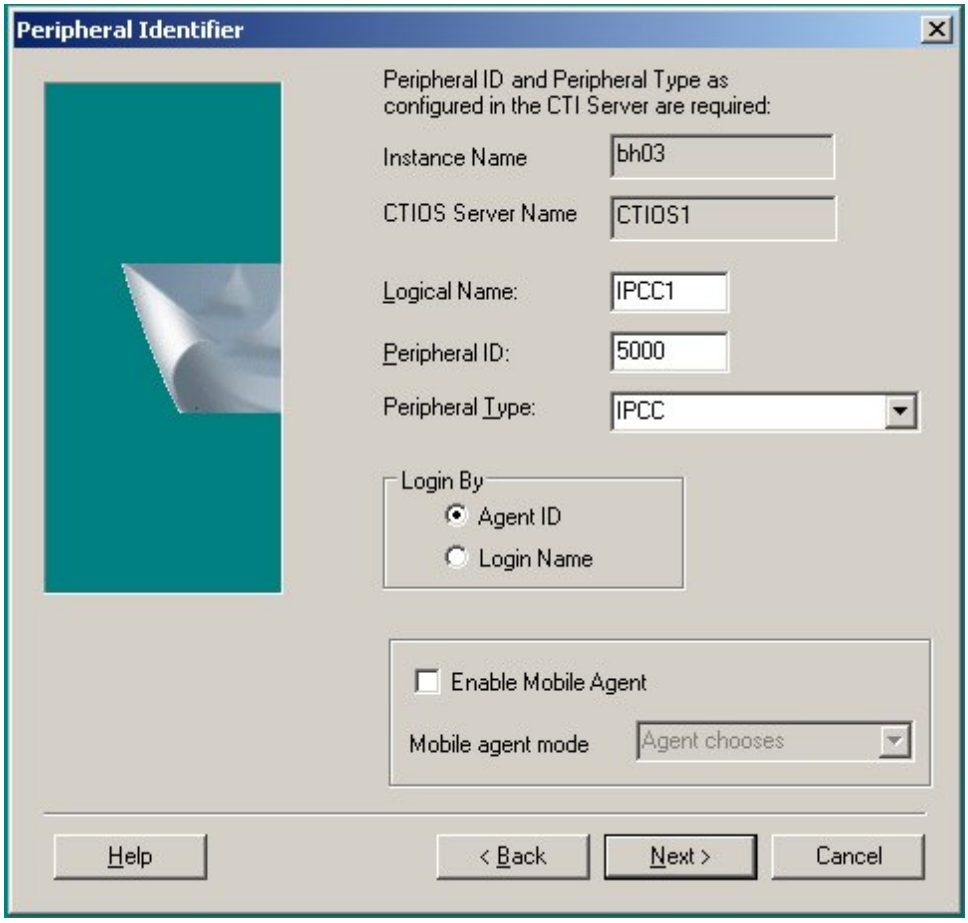
Step 7 Enter **BELO-5A** or **BELO-5B** for the System setting, as applicable.

Step 8 Enter the Port **42147** (for Side A) or **43147** (for Side B), as applicable.

Step 9 Click **Next**.

The Peripheral Identifier dialog appears.

Figure 31: Peripheral Identifier



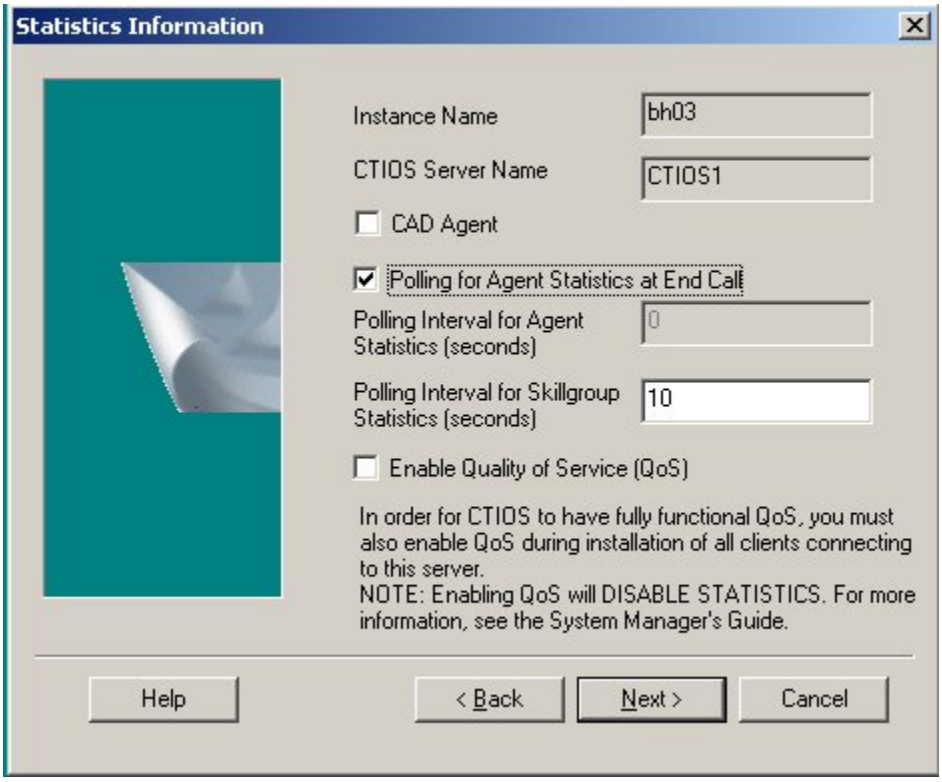
Step 10 Ensure the default settings are correct, then click **Next**.

The Connection Information dialog appears.

Step 11 Accept all the default settings and click **Next**.

The Statistics Information dialog appears.

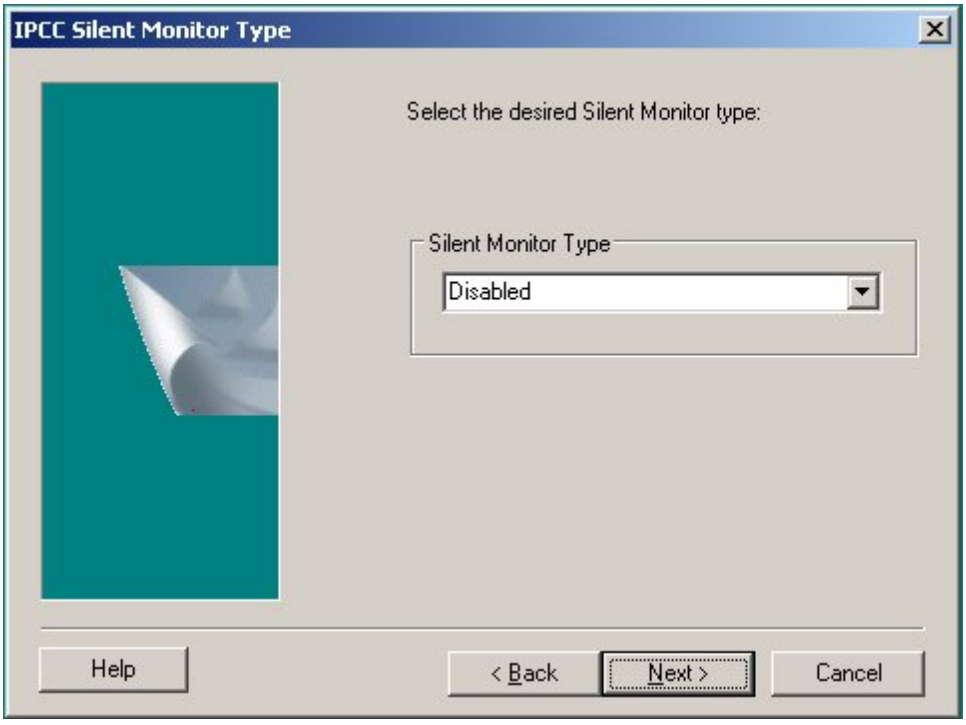
Figure 32: Statistics Information



Step 12 Accept all the default settings and click **Next**.

The IPCC Silent Monitor Type dialog appears.

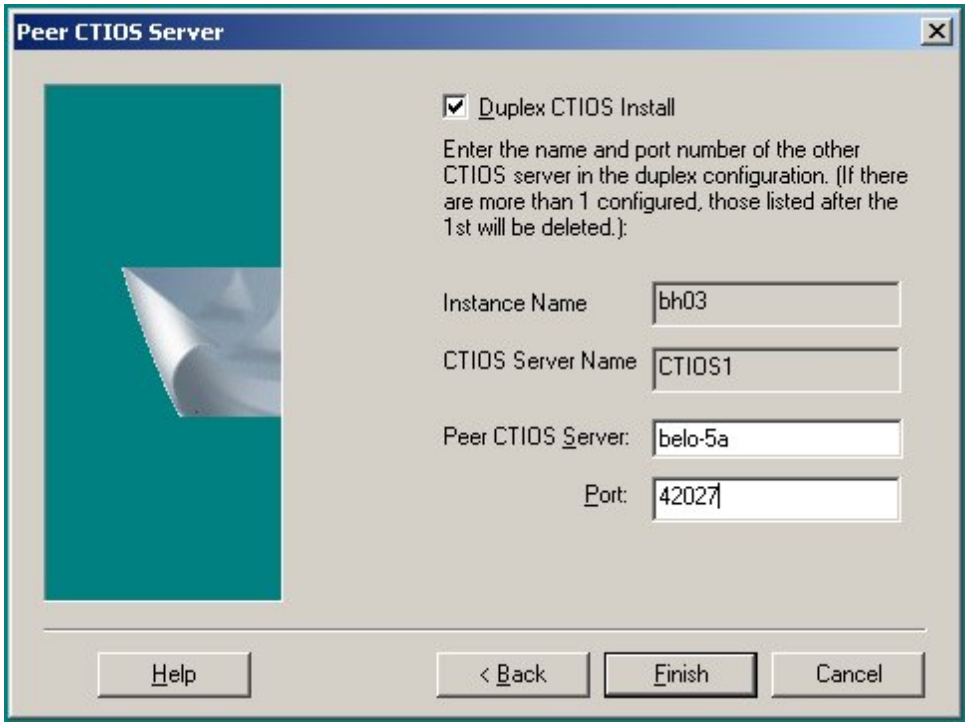
Figure 33: IPCC Silent Monitor Type



Step 13 Accept the default (**Disabled**) and click **Next**.

The Peer CTI OS Server dialog appears.

Figure 34: Peer CTIOS Server



Step 14 Click **Duplexed CTI OS Install**.

Step 15 Set the Peer CTI OS Server to **BELO-5A** or **BELO-5B**, as applicable.

Step 16 Set the Port to **42027** (for PG1A) or **42028** (for PG1B), as applicable.

Step 17 Click **Finish**.

The Cisco CTI OS Server Security dialog appears.

Figure 35: CTIOS Server Security

Step 18 *Do not enable security.* Click **OK**.

The CTI OS Security Setup Complete dialog appears.

Step 19 Click **Finish**.

The Setup Complete dialog appears.

Step 20 Check **Yes, I want to restart my computer now.**, then click **Finish**.

The system reboots.

Configuring Agents on the Child Central Controller

Access the Configuration Manager on the Child Administration & Data Server to configure agents.

How to Configure Agents on the Child Central Controller

Use the Configuration Manager Agent Explorer tool to configure agents on the Child Central Controller.

Step 1 Start the **Agent Explorer tool**.

Step 2 On the Main window of the Agent Explorer tool, click **Retrieve**.

Step 3 Click **Add Agent**.

The Agent tab appears.

Step 4 Complete all the fields except the Password and the Peripheral Name fields.

The agent name information appears in the list, as with all Explorer tools.

Step 5 Repeat this to add at least three agents.

Step 6 Click **Save**, then **Close** to exit the Agent Explorer tool.

Configuring Skill Groups on the Child Central Controller

Access the Configuration Manager on the Child Administration & Data Server to configure skill groups.

How to Configure Skill Groups on the Child Central Controller

Use the Configuration Manager Skill Group Explorer Tool to configure skill groups SG01 and SG02 on the Child Central Controller.

Step 1 Start the **Skill Group Explorer Tool** .

Step 2 On the Main window of the Agent Explorer Tool, click **Retrieve**.

Step 3 Click **Add Skill Group**.

The Skill Group tab appears.

Step 4 Complete all the fields and click **OK**.

The skill group name appears in the list, as with all Explorer tools.

Step 5 Select the **Skill Group Member** tab and click **Add**.

The Add Skill Group Member dialog appears.

Step 6 Select the agents to add to the skill group, then click **OK**.

The agents become members of the skill group.

Step 7 Select the skill group in the tree list, then click **Add Route**.

The Route tab appears.

Step 8 Provide the Route Name and click **Save**.

The route name appears in the tree list and the skill group has been added to the peripheral.

Step 9 Repeat this to add one more skill group.

Step 10 Click **Save**, then **Close** to exit the Skill Group Explorer Tool.

Configuring Dialed Numbers on the Child Central Controller

Access the Configuration Manager on the Child Administration & Data Server to configure dialed numbers.

How to Configure Dialed Numbers on the Child Central Controller

Use the Configuration Manager Dialed Number/Script Selector List Tool to configure dialed numbers on the Child Central Controller.

Step 1 Start the **Dialed Number/Script Selector List Tool**.

Step 2 On the Main window of the Dialed Number/Script Selector List Tool, click **Retrieve**.

Step 3 Click **Add**.

The Dialed Number Attributes tab appears.

Step 4 Select **IPCC_RC** as the Routing Client.

Step 5 Select **Cisco_Voice** for the Media Routing Domain.

Step 6 Set the Dialed Number String/Script Selector to **2500** (the route point set up on the Unified CM.

Step 7 Set **IPCC_RC_2500** as the Name, then select **bh03** as the Customer setting.

Step 8 Check **Permit Application Routing** on the route points controlled by the Parent (the Post route points and the Translation route points).

This provides the link between the Parent and the Child. It gives the Parent visibility to the Dialed Number so it is able to handle it.

Step 9 Click **Save**.

The dialed number appears in the tree list.

Step 10 Repeat this to add two more dialed numbers (one for each skill group).

When complete, you have the following DNs:

- 2500

  - Connects to all of the skill groups.
  - Named IPCC_RC_2500.
- 2501
  - Connects to SG01.
  - Named IPCC_RC_2501.
- 2502
  - Connects to SG02.
  - Named IPCC_RC_2502.

Step 11 Click **Save**, then **Close** to exit the Skill Group Explorer Tool.

Configuring Call Types on the Child Central Controller

Access the Configuration Manager on the Child Administration & Data Server to configure call types.

How to Configure Call Types on the Child Central Controller

Use the Configuration Manager Call Type List tool to configure call types on the Child Central Controller.

Step 1 Start the Call Type List tool.

Step 2 On the Main window of the Call Type List tool, click **Retrieve**.

Step 3 Click **Add**.

The Call Type Attributes tab appears.

Step 4 Set **internal_2500CT** as the Name, then select **bh03** as the Customer setting.

Step 5 Click **Save**.

The call type appears in the tree list.

Step 6 Repeat this to add two more call types (**internal_2501CT** and **internal_2502CT**).

When complete, you have the following call types:

- internal_2500CT
- internal_2501CT

- internal_2502CT

Step 7 Click **Save** next to the green check, then **Close** to exit the Call Type List tool.

Creating and Scheduling Routing Scripts

A routing script determines how a call is handled by establishing the routing rules.

Refer to the Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted for additional information on scripting.

How to Create and Schedule a Routing Script

In this section, you create a routing script and schedule it so that you can log in agents and have them make and accept calls.

Step 1 Start the Script Editor application on the Administration & Data Server.

Step 2 Create the first routing script and name it **internal_2500**.

a. Set the Skill Group node to **IPCC_1.Cisco_Voice.SG01** and **IPCC_1.Cisco_Voice.SG02**.

b. Set the Queue to Skill Group node to the same (**IPCC_1.Cisco_Voice.SG01** and **IPCC_1.Cisco_Voice.SG02**).

c. Set the Wait node to **10 seconds**.

Step 3 Save the script.

Step 4 Click **Script > Call Type Manager**.

The Call Type Manager appears.

Step 5 Select **Media Routing Domain** and **Dialed Number**.

This associates the call type with the dialed number.

Step 6 Click **Add**.

The Dialed Number Entry dialog appears.

Step 7 Associate the dialed number with the call type by selecting **internal_2500CT** (the call type), then click **OK**.

Step 8 To schedule the routing script, click the **Schedule** tab.

Step 9 Click **Add**.

The Call Type Scheduling dialog appears.

Step 10 Accept all the default settings on each of the rest of the tabs, then click **OK**.

You return to the Call Type Manager.

Step 11 Click **OK**.

You now have a system that allows you to log in agents and have them make and accept calls.

Testing the Child Example System

Successful completion of the following test indicates that your installation, setup, and configuration of the example system is successful.

How to Test the Example System

Perform the following to test the Child system you built.

Step 1 Log on to the Child Agent Desktop.

Step 2 Log in two (2) agents.

Step 3 Dial **2500** from one logged in agent to the other.

Deploying the Parent

This section describes the setup and configuration of an example Parent system.

Overview

This overview provides a "big picture" look at the parent deployment. The following sections provide the detailed instructions for each specific task. The exercise tasks must be performed in the order presented in this example.

The deployment process must be performed in the following order:

1. Run the Web Setup Tool to setup the Administration & Data Server on BELO-CC.
2. Run the Web Setup Tool and ICMDBA to setup the Central Controller (CC) on BELO-CC.

   The Web Setup Tool is used to set up the CallRouter and Logger. ICMDBA is used to create the Logger datatbase.
3. On the Administration & Data Server, run the Configuration Manager to add the Enterprise Gateway PGs (BELO-3A and BELO-3B).

- This assigns the Logical Controller IDs (LCID) and the Peripheral IDs (PID) required during setup.

4. Run the Web Setup Tool on BELO-3A and BELO-3B to setup PG5A and PG5B, respectively.
   - The previously obtained LCIDs and PIDs are used during the setup of each Enterprise Gateway PG.
   - Install and Configure JTAPI on the Enterprise Gateway PGs.
   - Install CTI Server on the Enterprise Gateway PGs.
   - Install the Desktop Application on the Enterprise Gateway PGs.
5. Configure and set up the Generic PGs
6. Using the Configuration Manager tools, configure the following:
   - Agents
   - Skill Groups
   - Skill Group Members
   - Dialed Numbers
   - Call Types
7. Use the Script Editor to manage Call Types, and to create and schedule routing scripts.
8. Test the Parent system.

Setting Up the Parent Administration & Data Server

Setting up the Parent Administration & Data Server involves running the Web Setup Tool for the Administration & Data Server on the same computer as the Parent Central Controller (BELO-CC).

How to Set Up the Parent Administration & Data Server

The following steps lead you through setting up the Parent Administration & Data Server for this example.

Step 1 Run the Web Setup Tool on the computer designated as the Parent Central Controller.

The Web Setup Tool window appears.

Step 2 Click **Instance Management**, then click **Add**.

The Add Instance dialog appears.

Step 3 Select **BELO** (the Facility), then **bh01** (the Instance to add).

Step 4 Click **Save**.

Step 5 Select **Administration & Data Server**, then click **Add**.

The Add Administration & Data Server dialog appears.

Step 6 Set the deployment model.

a. Select **bh01** (the Instance) from the drop-down menu.

b. Select **Enterprise** as the deployment type.

c. Select **Small to Medium** for the deployment size.

d. Click **Next**.

Step 7 Set the role for the Administration & Data Server.

a. Select **Administration Server** and **Real-time Reporting**.

b. Click **Next**.

Step 8 Set the Administration & Data Server connectivity.

a. Select **Primary Administration & Data Server**.

b. Enter the Secondary Administration & Data Server name **BELO-CC** (the same as the Primary since there is no Secondary Administration & Data Server).

c. Enter **BELO-CC-Site1** for the site name, then click **Next**.

Step 9 Set the database and options by accepting the default settings, then click **Next**.

Step 10 Set the Central Controller connectivity.

a. Enter **BELO-CC** (the name of the Parent Central Controller computer) into each name field.

b. Ensure the Central Controller Domain is set to **BELODC.cisco.com**.

c. Select **Side A Preferred**, then click **Next**.

The Summary window appears.

Step 11 Ensure all settings are correct, then click **Next**.

The system configures the Administration & Data Server, then the Administration & Data Server window appears displaying the Administration & Data Server information.

Setting Up the Parent Central Controller

Setting up the Parent Central Controller involves running the Web Setup Tool for the CallRouter and ICMDBA to create the Logger database on the Logger. Both are performed on the Parent Central Controller computer (BELO-CC).

How to Set Up the CallRouter

Setting up the CallRouter involves running the Web Setup Tool on BELO-CC.

Step 1 Run the Web Setup Tool.

The main Web Setup Tool window appears.

Step 2 Click **Routers**.

The Routers dialog appears.

Step 3 Click **Add** to set up the CallRouter.

The Deployment dialog appears.

Step 4 On the Deployment dialog:

a. Ensure the Instance is set to **bh01**.

b. Select **Side A**.

c. Select **Simplex** for the Fault Tolerance mode.

d. Click **Next**.

The Router Connectivity dialog appears.

Step 5 Ensure all the fields indicate **BELO-CC** (the Parent Central Controller computer name), then click **Next**.

The Enable Peripheral Gateways dialog appears.

Step 6 On the Enable Peripheral Gateways dialog:

a. Enter **2** to indicate to the CallRouter how many PGs you are deploying.

b. Click **Next**.

The Router Options dialog appears.

Step 7 Leave all settings at the default (nothing selected) and click **Next**.

The Summary dialog appears.

Step 8 Ensure the Router summary is correct, then click **Finish**.

The CallRouter is set up, then the Router successfully saved window appears.

How to Create the Logger Database

Use ICMDBA to create the Logger database.

Step 1 Select **Start > All Programs > Unified ICM-CCE-CCH Tools > ICMDBA**.

The ICMDBA Tool appears.

Step 2 Create the Logger database.

Note: Refer to the Administration Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted for additional information on creating the Logger database.

How to Set Up the Logger

Setting up the Logger involves running the Web Setup Tool on BELO-CC.

Step 1 Run the Web Setup Tool.

The main Web Setup Tool window appears.

Step 2 Click **Loggers**.

The Logger dialog appears.

Step 3 Click **Add** to set up the Logger.

The Deployment dialog appears.

Step 4 On the Deployment dialog:

a. Ensure the Instance is set to **bh01**.

b. Ensure the Logger Type is set to **Enterprise**.

c. Select **Side A**.

d. Select **Simplex** for the Fault Tolerance mode.

e. Click **Next**.

The Central Controller Connectivity dialog appears.

Step 5 Ensure the following settings are correct on the Central Controller Connectivity dialog:

a. The Router Private Interfaces (Side A and Side B) are **BELO-CC**.

b. The Logger Private Interfaces (Side A and Side B) are **BELO-CC**.

c. Click **Next**.

The Additional Options dialog appears.

Step 6 On the Additional Options dialog:

a. Leave the default settings and click **Next**.

The Summary dialog appears.

Step 7 Ensure the Logger summary is correct, then click **Finish**.

The Logger is set up, then the Logger successfully saved window appears.

At this point you have completed the Web Setup Tool. You have added an Administration & Data Server and a Central Controller (consisting of the CallRouter and the Logger) to the Parent system.

Exit the Web Setup Tool. On the Parent Administration & Data Server, open the ICM Service Control and start the distributor, logger, and router processes.

Configuring the Enterprise Gateway Peripheral Gateways (PGs)

On the Administration & Data Server, run the Configuration Manager to add the Enterprise Gateway PG computers BELO-3A (PG5A) and BELO-3B (PG5B) to the Parent System.

How to Configure the Enterprise Gateway PGs

Use the Configuration Manager tools to add and configure the Enterprise Gateway PGs to the Parent system.

Step 1 Select **Start > All Programs > Cisco Systems, Inc. > Administration & Data Server Tools > Configuration Manager**.

Step 2 Start the PG Explorer Tool, then on the Main window click **Retrieve**.

Step 3 Click **Add PG**.

This creates both the Peripheral Gateway and the Peripheral.

a. Enter **ACMI** for the Name.

b. Select **Enterprise Gateway** for the Client Type.

c. If no desk settings are set, set them now. Click **OK**.

The Agent Desk Settings List Tool appears.

d. Click **Add**.

The Attribute tab appears.

e. Enter the Name **default**.

f. Leave all other settings at their defaults and click **Save**.

g. Close the Desk Settings List Tool.

Step 4 Go back to the PG Explorer Tool.

a. Select **ACMI-1** as the Peripheral.

b. On the Peripheral tab, set the Default Desk Settings to **default**.

c. On the Agent Distribution tab, click **New**.

d. Set the Administration & Data Server site name to **BELO-CC-Site 1** and leave all other settings at their defaults.

e. On the Routing Client tab, enter the Name **ACMI-1_RC** and leave all other settings at their defaults.

f. Click **Save**.

The Logical Controller ID (5006), the Physical Controller ID (5006), and the Peripheral ID (5000) are now indicated on the Logical Controller tab.

g. Reboot the Enterprise Gateway Peripheral Gateway computers (BELO-3A and BELO-3B).

Adding the Instance

This task is performed on the Parent Enterprise Gateway PG computers BELO-3A (PG5A) and BELO-3B (PG5B).

How to Add the Instance and Facility

After the reboot, use the Web Setup Tool to add the Instance (bh01).

Step 1 Enter **http://BELO-3B/setup** (or BELO-3A, as applicable) and log in to the Web Setup Tool to add the Instance. The main Web Setup Tool window appears.

Step 2 Click **Instance Management**, then click **Add**.

The Add Instance dialog appears.

Step 3 Select **BELO** (the Facility), then **bh01** (the Instance to add).

Step 4 Click **Save**.

Step 5 Click **Log Out**.

Setting Up the Enterprise Gateway Peripheral Gateways

This task is performed on the Parent Administration & Data Server computer (BELO-CC) to set up the Enterprise Gateway PG computers BELO-3A (PG5A) and BELO-3B (PG5B).

How to Set Up the Enterprise Gateway PGs

Once the PG Setup Tool is open, use the Peripheral Gateway Setup Tool to set up the Enterprise Gateway PG computers BELO-3A (PG5A) and BELO-3B (PG5B).

Step 1 Click **Peripheral Gateway Setup Tool**.

Step 2 Select whether or not to add Operating System hardening (recommended).

Step 3 On the main Peripheral Gateway setup window, select the **Instance Component** tab, then click **Add**.

The ICM/CCE/CCH Component dialog appears.

Step 4 Select **Peripheral Gateway**.

The Peripheral Gateway Properties dialog appears.

Step 5 Ensure that all checkboxes in the Node Manager Properties section are checked.

Step 6 Ensure **PG5** and the appropriate side is selected in the PG Node Properties dialog.

Step 7 Select **IPCC Enterprise Gateway** for the Client Type, then click **Add**.

Step 8 Click **Next**.

The PG Component Properties dialog appears.

Step 9 Click **Add**.

The Add PIM dialog appears.

Step 10 Select **IPCC Enterprise Gateway** and **PIM**, then click **OK**.

The IPCC Enterprise Gateway Configuration (PIM1) dialog appears.

Step 11 Check **Enabled**.

Step 12 Add the PID of **5008**.

Step 13 Enter the System PGA name **BELO-5A**.

Step 14 Enter the System PGA port **42027** (the CTI Server port).

Step 15 Enter the System PGB name **BELO-5B**.

Step 16 Enter the System PGA port **4300027** (the CTI Server port).

Step 17 Enter the System PG PID **5000**.

Step 18 Click **OK**.

You return to the PG Component Properties dialog.

Step 19 Change the LCID to **5006** (the same LCID as used previously in the PG Explorer Tool).

Step 20 Click **Next**.

The Device Management Protocol Properties dialog appears.

Step 21 Leave all settings at their default values and click **Next**.

The PG Network Interfaces dialog appears.

Step 22 Set the PG fields to **BELO-3A** and **BELO-3B**, as applicable.

Step 23 Set the Router fields to **BELO-CC**.

Step 24 Click **Next**.

The Check Setup Information dialog appears.

Step 25 If all the settings are correct, click **Next**.

The Enterprise Gateway PGs are set up.

Step 26 Click **Finish** when the setup is complete.

You are returned to the main setup window.

Step 27 Click **Exit Setup**.

Step 28 Go to the Unified CM, then download and install the JTAPI plugin for Windows on the Gateway PGs.

a. Select **Application** > **Plugins**.

b. Click **Find**.

c. Next to Cisco JTAPI for Windows, click **Download**.

d. Install the downloaded file **ciscojtapiclient.exe**, accepting all the default settings.

Step 29 Start the PG5A and PG5B services on each Enterprise Gateway PG (**BELO-3A** and **BELO-3B**).

Configuring and Setting Up the Generic Peripheral Gateways (PGs)

Now that you have configured and set up the System PGs on the Child system, as well as the Enterprise Gateway PGs on the Parent system, use the same tools to configure the Generic Contact Center PGs (PG2A on BELO-1A and PG2B on BELO-1B). The required information is provided in Figure 7 (page 22).

Installing CTI Server

CTI Server is installed on the Generic PGs (**PG2A** and **PG2A**).

How to Install CTI Server

Use the PG Setup Tool to install CTI Server.

Step 1 Using Service Control, stop the PG service.

Step 2 Start the Peripheral Gateway Setup Tool.

The main PG Setup Tool window appears.

Step 3 In the Instance Components dialog, click **Add**.

The ICM/CCE/CCH Component Selection dialog appears.

Step 4 Select **CTI Server**.

The CTI Server Properties dialog appears.

Step 5 Check **Duplexed CTI Server** and ensure all the other checkboxes are checked as well.

Step 6 Select **CG 2** as the CG Node ID.

Step 7 Enter **2** for the ICM system ID (the same as the Device Management Protocol (DMP) and the PG ID).

Step 8 Click **Next**.

The CTI Server Component Properties dialog appears.

Step 9 Leave the Default Port setting of **42147**, then click **Next**.

The Network Interface Properties dialog appears.

Step 10 Enter **BELO-1A** and **BELO-1B** as applicable, then click **Next**.

The Check settings dialog appears.

Step 11 Check that all settings are correct , then click **Next**.

The Setup is complete dialog appears.

Step 12 Click **Finish**.

You are returned to the Main Setup window.

Step 13 Click **Exit Setup**.

Step 14 Start the PG and CG services using the ICM/CCE/CCH Service Control application and check to ensure they are running properly.

Installing the Desktop Application on the Generic PGs

The Desktop Application is installed on the Generic PGs (PG2A and PG2B) to enable testing. While any desktop application (CTI OS, CAD, Custom Desktops) can be used, you are installing the CTI OS Desktop for this exercise.

How to Install CTI OS Desktop

The CTI OS Desktop must be installed on both PG2A and PG2B.

Step 1 Start CTI OS Server Setup (setup.exe) from the CTI OS directory (ctiosserver)

The Main Setup window appears.

Step 2 Select **Add** in the CTI OS Instance dialog.

The Add CTI OS Server Instance dialog appears.

Step 3 Enter the Instance name **bh01**, then click **OK**.

Step 4 Select **Add** in the CTI OS Server List section.

The Add CTI OS Server dialog appears.

Step 5 Enter **CTIOS2** as the CTI OS Server name, then click **OK**.

The Enter Desktop Drive dialog appears.

Step 6 Enter drive **C** and click **OK**.

The CTI Server Information dialog appears.

Step 7 Enter **BELO-1A** or **BELO-1B** for the System setting, as applicable.

Step 8 Enter the Port **42147** (for Side A) or **43147** (for Side B), as applicable.

Step 9 Click **Next**.

The Peripheral Identifier dialog appears.

Step 10 Ensure the default settings are correct, then click **Next**.

The Connection Information dialog appears.

Step 11 Accept all the default settings and click **Next**.

The Statistics Information dialog appears.

Step 12 Accept all the default settings and click **Next**.

The IPCC Silent Monitor Type dialog appears.

Step 13 Accept the default (**Disabled**) and click **Next**.

The Peer CTI OS Server dialog appears.

Step 14 Click **Duplexed CTI OS Install**.

Step 15 Set the Peer CTI OS Server to **BELO-1A** or **BELO-1B**, as applicable.

Step 16 Set the Port to **42027** (for PG2A) or **42028** (for PG2B), as applicable.

Step 17 Click **Finish**.

The Cisco CTI OS Server Security dialog appears.

Step 18 *Do not enable security.* Click **OK**.

The CTI OS Security Setup Complete dialog appears.

Step 19 Click **Finish**.

The CTI OS Setup Complete dialog appears.

Step 20 Check **Reboot**, then click **Finish**.

The system reboots.

Autoconfiguration with Enterprise Gateway

For Cisco Contact Center Gateway deployments with a Unified CCE child, *Call Types* are configured as *Services*. Autoconfiguration is enabled by default in the Peripheral tab of the PG Explorer. Autoconfiguration takes effect when the PG is started.

When autoconfiguration occurs between the parent Unified ICME and the child Unified CCE, the following Unified ICME tables are populated:

1. Agent/Person
2. Skill Group
3. Service
4. Peripheral Monitor

Note: Autoconfiguration of like entities are configured on the parent for Agent, Skill Group, but not for Call Type (child) and Service (parent).

Default skill groups on the child, which are non-viewable, get created as real skill groups on the parent.

Note: Activity done in the default skill group on the child shows up in these real skill groups on the parent.

Configure Service members on the parent. To configure service members for any given service, examine the script for a call type on the child and note to what skill groups the script offers the call. On the Unified CCE parent, make these skill groups service members of that Service.

Note: Autoconfiguration does not provide complete configuration for Unified ICME software. It only configures agents, services, skill groups, skill group members, and peripheral monitors. You must configure many other elements, such as dialed numbers, scripts, peripheral targets, routes, and so forth.

If *any* error occurs during autoconfiguration, the keys on the parent are not updated. The Unified CCE PIM continues to upload the entire child configuration to compare it every time it is started until no configuration errors are encountered.

Configuration changes to the peripheral numbers (of agents or skillgroups) on the child Unified CCE, that are carried out while the IPCC Gateway PG on the parent is not running, or is stopped, are not get correctly reflected on the parent. Such changes must be done manually on the parent.

Configuring Dialed Numbers on the Parent Central Controller

Access the Configuration Manager on the Parent Administration & Data Server to configure dialed numbers.

How to Configure Dialed Numbers on the Parent Central Controller

Use the Configuration Manager Dialed Number/Script Selector List Tool to configure dialed numbers on the Parent Central Controller.

Step 1 Start the **Dialed Number/Script Selector List Tool**.

Step 2 On the Main window of the Dialed Number/Script Selector List Tool, click **Retrieve**.

Step 3 Click **Add**.

The Dialed Number Attributes tab appears.

Step 4 Select **ACMI_RC** as the Routing Client.

Step 5 Select **Cisco_Voice** for the Media Routing Domain.

Step 6 Set the Dialed Number String/Script Selector to **2500** (the route point set up on the Unified CM.

Step 7 Set **ACMI_RC_2500** as the Name, then select **bh01** as the Customer setting.

Step 8 Check **Permit Application Routing** on the route points controlled by the Parent (the Post route points and the Translation route points).

This provides the link between the Parent and the Child. It gives the Parent visibility to the Dialed Number so it is able to handle it.

Step 9 Click **Save**.

The dialed number appears in the tree list.

Step 10 Repeat this to add two more dialed numbers (one for each skill group).

When complete, you have the following DNs:

- 2500
  - Connects to all of the skill groups.
  - Named ACMI_RC_2500.
- 2501
  - Connects to SG01.
  - Named ACMI_RC_2501.
- 2502
  - Connects to SG02.

– Named ACMI_RC_2502.

Step 11 Click **Save**, then **Close** to exit the Skill Group Explorer Tool.

Configuring Call Types on the Parent Central Controller

Access the Configuration Manager on the Parent Administration & Data Server to configure call types.

How to Configure Call Types on the Parent Central Controller

Use the Configuration Manager Call Type List Tool to configure call types on the Parent Central Controller.

Step 1 Start the **Call Type List Tool** .

Step 2 On the Main window of the Call Type List tool, click **Retrieve**.

Step 3 Click **Add**.

The Call Type Attributes tab appears.

Step 4 Set **internal_2500CT** as the Name, then select **bh03** as the Customer setting.

Step 5 Click **Save**.

The call type appears in the tree list.

Step 6 Repeat this to add two more call types (**internal_2501CT** and **internal_2502CT**).

When complete, you have the following call types:

- internal_2500CT
- internal_2501CT
- internal_2502CT

Step 7 Click **Save** next to the green check, then **Close** to exit the Call Type List tool.

Configuring the Link from the Parent System to the Child System

While some autoconfiguration occurs between the Parent and Child systems, other configurations must be performed manually so that call flow works properly. You must configure the components necessary to link the Parent system and the Child system and allow communications between them.

These include configuring:

- Trunk Group
- Network Trunk Group
- Routes
- Peripheral targets
- Labels
- Routing clients for the autoconfigured Services
- Route points
- Dialed numbers (with Permit Application Routing enabled)
- Autoconfigured Skill Groups as Service members
- Autoconfigured Services (from the Child call types)

The Script Editor is used to create and schedule routing scripts.

How to Configure Additional Elements at the Parent

Use the appropriate tools as indicated below to configure additional elements needed.

Note: Refer to the Configuration Manager online help and the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted* for additional information.

Step 1 Using the Network Trunk Group Explorer, configure a Network Trunk Group on the Enterprise Gateway PG.

Used when configuring peripheral targets.

Step 2 Using the Trunk Group Explorer, configure a Trunk Group on the Enterprise Gateway PG.

Used when configuring peripheral targets.

Step 3 Configure Routes, Peripheral Targets and Labels for the Enterprise Gateway PG.

a. To configure the routes:

Define and update many routes at a time using the RouteBulk tool.

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

b. To configure the peripheral targets:

Use the appropriate explorer tool to configure labels for a specific network target:

- services
- service arrays
- skill groups
- translation routes
- agents
- announcements
- network VRUs

c. To configure labels:

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.

Step 4 Configure the parent Unified IP IVR routing clients for the auto-configured Services (child call types).

A routing client can be:

- A public network interexchange carrier (IXC) such as BT, MCI, Nortel, or Sprint
- A private network peripheral, such as an Aspect or Lucent ACD
- Each routing client must be associated with an interface controller.

  A Physical Interface Controller can be a:

  – Network Interface Controller (NIC)

    A NIC communicates directly with the IXC signaling network, reading call routing requests from the network and transferring them to the Central Controller.

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

  – 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 CentralController. The PG can also act as a routing client, sending routing requests to System software.

Step 5 In Unified CM, configure the corresponding route points that match the labels.

The labels must be added to the child as dialed numbers with Permit Application Routing enabled.

Step 6 Add auto-configured Skill Groups as Service Members.

Note: If this is not done, MED cannot be used.

Step 7 Create translation routes, routes, peripheral targets, and labels for the IPCC Enterprise Gateway PG and the parent routing clients.

Note: In order to pass call context from the parent to the child, all calls must be translation routed.

See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*, the Configuration Manager online help, and the section Using Translation Routing (page 90) for additional information.

Create and Schedule a Routing Script on the Parent

Create a script that can interact with the IPCC Enterprise Gateway. Be sure the script targets a skill group, either directly or through a service. Examples might use Longest Available Agent (LAA) for skill groups and Minimum Expected Delay (MED) for Services.

For general information about scripting, see *Scripting in an IPCC Environment* in the **Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_user_guide_list.html) .

For instructions on how to create a Translation Route, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*. You create the translation route in the Translation Route Wizard or the Translation Route Explorer before you create the script. Also see the section, Using Translation Routing (page 90)and the section Routing for the IPCC Enterprise Gateway (page 87)

How to Create and Schedule a Routing Script

In this section, you create a routing script and schedule it so that you can log in agents and have them make and accept calls.

Step 1 Start the Script Editor application on the Administration & Data Server.

Step 2 Create the first routing script and name it **internal_2500**.

a. Set the Skill Group node to **ACMI_1.Cisco_Voice.SG01** and **ACMI_1.Cisco_Voice.SG02**.

b. Set the Queue to Skill Group node to the same (**ACMI_1.Cisco_Voice.SG01** and **ACMI_1.Cisco_Voice.SG02**).

c. Set the Wait node to **10 seconds**.

Step 3 Save the script.

Step 4 Click **Script** > **Call Type Manager**.

The Call Type Manager appears.

Step 5 Select **Media Routing Domain** and **Dialed Number**.

This associates the call type with the dialed number.

Step 6 Click **Add**.

The Dialed Number Entry dialog appears.

Step 7 Associate the dialed number with the call type by selecting **internal_2500CT** (the call type), then click **OK**.

Step 8 To schedule the routing script, click the **Schedule** tab.

Step 9 Click **Add**.

The Call Type Scheduling dialog appears.

Step 10 Accept all the default settings on each of the rest of the tabs, then click **OK**.

You return to the Call Type Manager.

Step 11 Click **OK**.

You now have a system that allows you to log in agents and have them make and accept calls.

Start the Unified ICME Service

To start the Unified ICME Service for the Enterprise Gateway PG, in the Unified ICME Service Control dialog box, select the Services name for the Enterprise Gateway PG and click **Start**.

After a connection is established between the child and the parent Unified ICME, configuration in the child propagates to the parent Unified ICME Configuration Manager. Agent configuration information on the child propagates to the parent, where it is grayed out, indicating that it cannot be modified or deleted at the parent level.

For general information about Unified ICME Service Control, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

Testing the Example System

Successful completion of the following test indicates that your installation, setup, and configuration of the example system is successful.

How to Test the Example System

Perform the following to test the system you built.

Step 1 Log on to the Parent Agent Desktop.

Step 2 Log in two (2) agents, one on the Parent and one on the Child.

Step 3 Dial **2500** from the Parent logged in agent.

The call is routed from the Parent to a Skill Group, then to the Child where it is routed to an agent or, if the agent is busy, to the IP IVR.

Chapter 3

Deploying Cisco Contact Center Gateway with Cisco Unified Contact Center Enterprise or Cisco Unified System Contact Center Enterprise

This chapter provides instructions for deploying the Cisco Contact Center Gateway feature with a child Unified CCE or a child Unified SCCE.

This chapter contains the following topics:

- Prerequisites for a Cisco Contact Center Gateway Setup, page 79
- Checklist of Specific Tasks at the Child, page 80
- Checklist of Specific Tasks at the Parent, page 82
- Autoconfiguration with IPCC Enterprise Gateway, page 85
- Routing for the IPCC Enterprise Gateway, page 87

Prerequisites for a Cisco Contact Center Gateway Setup

Before setting up your Cisco Contact Center Gateway, complete the following:

1. Install and configure a Unified CCE or Unified SCCE child system.

   Step-by-step instructions for configuring Unified CCE are included in the **Installation and Configuration Guide for Cisco Unified Contact Center Enterprise & Hosted** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_installation_guides_list.html).

   Step-by-step instructions for configuring Unified SCCE are included in the **Installation and Configuration Guide for Cisco Unified System Contact Center Enterprise** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_installation_guides_list.html). Configuration is done using the Unified SCCE Web Administration Tool, which has online Help for guidance. During installation, Unified SCCE installs a VRU PG with a

VRU PIM for connecting with Unified CVP. Unified IP IVR connects through the IPCC System PG with an Agent PIM for connecting with Unified CM. The IPCC System PG is installed and configured transparently in Unified SCCE. This is the only Agent PG type supported by Unified SCCE. No manual configuration of PG client type, and PIMs, is required.

Note: To enable call transfers from a parent Unified CM cluster to a child Unified CM cluster, you must first satisfy Unified CM IP Telephony requirements -- for example, deploying a Device Trunk such as H.225 Trunk (Gatekeeper Controlled) or Intercluster Trunk (Non-Gatekeeper Controlled). For more information, see the Cisco Unified Communications Manager documentation.

2. Tested your child Unified CCE or Unified SCCE system to be sure everything is working correctly and that you can route calls.

3. Installed and configured a Unified ICME parent system.

   The process of installing and configuring the Unified ICME parent system includes installing the IPCC Enterprise Gateway PG.

   Use the Unified ICME installation CD. You must install Side A and Side B IPCC Enterprise Gateway PGs.

   For instructions on installing Unified ICME, see the **ICM Setup and Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_installation_guides_list.html) .

   For instructions on configuring Unified ICME, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*

4. Collected the necessary configuration information. Although many elements are configured automatically--see Autoconfiguration with IPCC Enterprise Gateway (page 85)--other configurations must still be done manually. For example, for the CTI Server, you need the host names or IP addresses and connection ports for Side A and Side B. You also need the Peripheral ID when setting up a simplified peripheral.

Checklist of Specific Tasks at the Child

Following is a list of tasks specific to the child system:

- Enable application routing on a Unified CCE child (page 81)or
- Enable application routing on a Unified SCCE child (page 81).
- Special Considerations for a Unified SCCE child system with Unified CVP (page 81).

Enable Application Routing on a Unified CCE Child

To enable application routing on a Unified CCE child system, complete the following steps:

Step 1 In the Configuration Manager of the Unified CCE child, select **Tools > List Tools > DialedNumber/Script Selector List**.

Step 2 In the Attributes tab, check the **Permit Application Routing** check box for those route points on which you post route or translation route to the parent. This box must be checked for dialed numbers from the parent, translation routing DNIS/Label for the parent, as well as anything transferred from the parent via post routing.

For information about using Configuration Manager, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*

Enable Application Routing on a Unified SCCE Child

To enable application routing on a Unified SCCE child system, complete the following steps:

Step 1 On the Unified SCCE child's Web Administration Tool, select **Contact Management > Dialed Numbers** to configure dialed numbers.

Step 2 Check the **Permit Application Routing** box on the Dialed Number table for those route points on which you post route or translation route to the parent. This box must be checked for dialed numbers from the parent, translation routing DNIS/Label for the parent, as well as anything transferred from the parent via post routing.

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

Special Configurations for a Unified SCCE Child System with Unified CVP

Unified SCCE can be used as a child with Unified CVP as its IVR.

When you use Unified CVP with a Unified SCCE child system, the following must be in place:

- The Unified SCCE IVR controller must map to the Unified CM routing label.
- The Unified CM route pattern must be associated with the child Unified CVP.
- The Unified CVP's SIP static route must point to the child Unified CM (or the Gatekeeper zone for H.323).

See Also

See the *Configuration and Administration Guide for Cisco Unified Customer Voice Portal* for additional information.

Checklist of Specific Tasks at the Parent

Following is a list of tasks specific to setting up the parent..

- Configure the IPCC Enterprise Gateway PG. (page 82)
- Set up the IPCC Enterprise Gateway PIM. (page 83)
- Configure additional elements at the parent. (page 83)
- Create a script on the parent system. (page 75)
- Start the Unified ICME Service for the IPCC Enterprise Gateway PG. (page 76)

How to Configure the IPCC Enterprise Gateway PG

Complete the following steps to configure the PG:

Step 1 Start the Configuration Manager on the Admin Workstation. To start the Configuration Manager, double-click on its icon within the Unified ICME Admin Workstation program group.

For information about the Configuration Manager, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

Step 2 Follow the instructions in the Peripheral Gateway chapter of the *ICM Installation Guide for Cisco Unified ICM Enterprise* using the following IPCC Enterprise Gateway-specific settings:

In the Peripheral Gateway Properties dialog box: **Client Type Selection**. Select IPCC Enterprise Gateway as your “switch” PG type.

You cannot also select VRU. If you attempt to add a VRU in this case, an error message is displayed.

In the Advanced tab of the PG Explorer, ensure that Agent autoconfiguration is disabled in order for the IPCC Enterprise Gateway PG to function properly.

See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

When you bring up the Gateway PG, the autoconfiguration takes place.

How to Setup the IPCC Enterprise Gateway PIM

To configure the PIM, complete the following steps:

Step 1 In the IPCC Enterprise Gateway Configuration dialog box, 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.

Step 2 In the **Peripheral name** field, enter the Peripheral name of the *parent* server from the Configuration Manager (use the PG Explorer tool to view the Peripheral name). This can be any user chosen name.

Step 3 In the **Peripheral ID** field, from the Peripheral record, enter the Peripheral ID value of the *parent* server from the Configuration Manager (use the PG Explorer tool to view the Peripheral ID).

Step 4 In **System A name**, enter the hostname or IP address of the Side A *child* CTI server.

Note: This should be the address or name of the child's System PG.

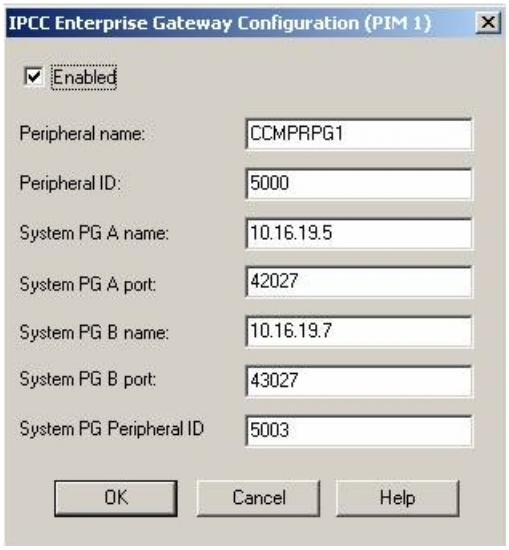
Step 5 In **System A port**, enter the port on the Side A *child* CTI server (the server port of the CG).

Step 6 In **System A Peripheral ID**, enter the peripheral ID of the Side A *child* peripheral.

Note: Currently, in a Unified SCCE system (where there is web-based configuration), only one peripheral is supported on a Cisco Unified System Contact Center Enterprise(Unified SCCE) child system; its Peripheral ID value is **1000**. However, this is only the case where Unified SCCE (web based configuration) is used. In other cases, use the true Peripheral ID of the Child Unified SCCE to propagate the skill groups. Look in the PG Explorer of the parent system to get the Peripheral ID of the Gateway PIM.

Step 7 In the duplexed child system, in **System B name**, **System B port**, and **System B Peripheral ID**, enter the corresponding information for Side B.

Figure 36: Example IPCC Gateway Configuration



Note:

- The Peripheral ID is for Unified CCE. It is set based on your system configuration.
- When using Unified SCCE as the child, note that during installation of the IPCC Enterprise Gateway PG, the Peripheral ID for the Unified SCCE child IPCC System PG is auto-generated from the parent Unified ICME's PG_ICID registry variable.

Configure Additional Elements at the Parent

There are some autoconfigurations that happen between the parent and child, but other configurations must be done manually using Configuration Manager so that call flows work properly:

Step 1 Configure a Network Trunk Group and a Trunk Group on the IPCC Enterprise Gateway PG. This is used when configuring peripheral targets.

Step 2 Configure Routes, Peripheral Targets and Labels for the IPCC Enterprise Gateway PG and the parent IVR (either Unified CVP or Unified IP IVR) routing clients for the auto-configured Services (child call types). Corresponding route points that match the labels must be configured in Unified CM. The labels must be added to the child as dialed numbers with Permit Application Routing enabled.

Step 3 Add auto-configured Skill Groups as Service Members. If this is not done, MED cannot be used.

Step 4 In order to pass call context from the parent to the child, all calls must be translation routed. Create translation routes, routes, peripheral targets, and labels for the IPCC Enterprise Gateway PG and the parent routing clients.

See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted* and the section Using Translation Routing (page 90).

Create a Script on the Parent

Create a script that can interact with the IPCC Enterprise Gateway. Be sure the script targets a skill group, either directly or through a service. Examples might be Longest Available Agent (LAA) for skill groups and Minimum Expected Delay (MED) for Services.

For general information about scripting, see *Scripting in an IPCC Environment* in the **Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted** (http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_user_guide_list.html) .

For instructions on how to create a Translation Route, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*. You create the translation route in the Translation Route Wizard or the Translation Route Explorer before you create the script. Also see the section, Using Translation Routing (page 90)and the section Routing for the IPCC Enterprise Gateway (page 87)

Start the Unified ICME Service

To start the Unified ICME Service for the IPCC Enterprise Gateway PG, in the Unified ICME Service Control dialog box, select the Services name for the IPCC Enterprise Gateway PG and click **Start**.

After a connection is established between the child and the parent Unified ICME, configuration in the child propagates to the parent Unified ICME Configuration Manager. Agent configuration information on the child propagates to the parent, where it is grayed out, indicating that it cannot be modified or deleted at the parent level.

For general information about Unified ICME Service Control, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

Autoconfiguration with IPCC Enterprise Gateway

For Cisco Contact Center Gateway deployments with a Unified CCE child, *Call Types* are configured as *Services*. Autoconfiguration is enabled by default in the Peripheral tab of the PG Explorer. Autoconfiguration takes effect when the PG is started.

When autoconfiguration occurs between the parent Unified ICME and the child Unified CCE, the following Unified ICME tables are populated:

1. Agent/Person
2. Skill Group
3. Service

4. Peripheral Monitor

Note: Autoconfiguration of like entities are configured on the parent for Agent, Skill Group, but not for Call Type (child) and Service (parent).

Default skill groups on the child, which are non-viewable, get created as real skill groups on the parent. Note that activity done in the default skill group on the child shows up in these real skill groups on the parent.

Configure Service members on the parent. To configure service members for any given service, examine the script for a call type on the child and note to what skill groups the script offers the call. On the Unified CCE parent, make these skill groups service members of that Service.

Note: Autoconfiguration does not provide complete configuration for Unified ICME software. It only configures agents, services, skill groups, skill group members, and peripheral monitors. You must configure many other elements, such as dialed numbers, scripts, peripheral targets, routes, and so forth.

If *any* error occurs during autoconfiguration, the keys on the parent are not updated. The Unified CCE PIM continues to upload the entire child configuration to compare it every time it is started until no configuration errors are encountered.

Configuration changes to the peripheral numbers (of agents or skill groups) on the child Unified CCE, that are carried out while the IPCC Gateway PG on the parent is not running, or is stopped, are not get correctly reflected on the parent. Such changes must be done manually on the parent.

Autoconfiguration Maintenance

The following information provides help with maintenance:

- Errors from the last run of the autoconfiguration dialog box can be found in the main PG directory for the Gateway PG in question. The file is named **`AutoConfigError.txt`**. It can be viewed with any text editor. For example, **`C:\icm\cust1\PG1A\AutoConfigError.txt`** could be an example file name. The file contains the time and date and a brief error message as to why an element could not be configured. The same is true for autoconfiguration with the IPCC Express Gateway. If this file does not exists, that means the last configuration run was clean.

- Periodically, manually delete entries in the Service, Agent, and Skill Group tables that allow deletion. An item that does not allow deletion shows a circle with a line through it next to the item. Items can be deleted on the parent when they are deleted on the child. When you delete items on the child, they become "deletable" on the parent but are not automatically deleted.

  Use the Deleted Objects tool in the parent to **permanently delete** any deleted records. You can access this tool in Configuration Manager by selecting **Tools > Miscellaneous Tools > Deleted Objects**. This helps to reduce the number of autoconfiguration errors. The fewer records that are marked for deletion that still exist, the smaller the chance that autoconfiguration gets duplicate errors when creating objects.

- Most autoconfiguration errors occur (in Enterprise cases) because of deleted records. It is disabled by default.

Note:

- Do not confuse Cisco Contact Center Gateway autoconfiguration with Agent autoconfiguration. (Agent autoconfiguration is a check box option available on the Advanced tab in the PG Explorer.)
- You must ensure that Agent autoconfiguration is disabled so that the IPCC Enterprise Gateway PG can function properly.

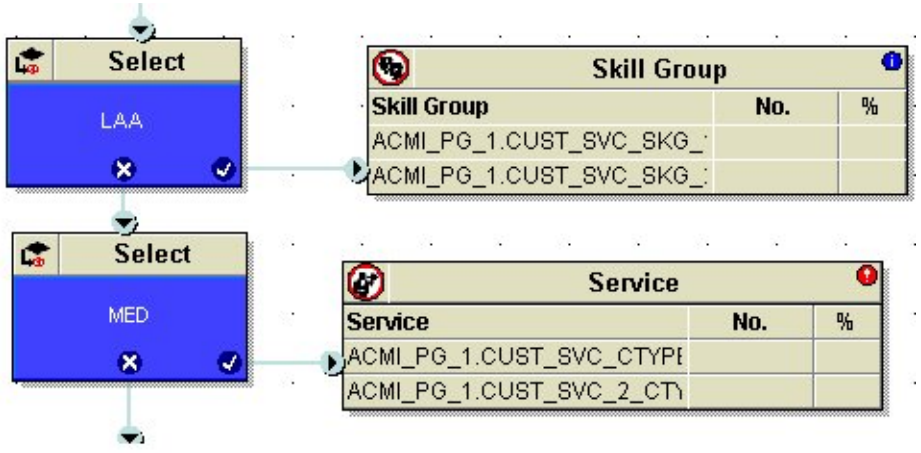
Routing for the IPCC Enterprise Gateway

The script on the Unified ICME parent interacts with the IPCC Enterprise Gateway PG. For information about scripting for Unified CCE, see the *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted.*

Be sure all route points that are handled remotely (with Application routing enabled) have default "local" scripts to run in case no host (parent) is available. Include Post Route points in the scripts as well as translation route destinations.

The following simple routing script has an LAA node that selects the skill group with the longest available agent (if an agent is available) among skill groups on the same ACD or a different ACD. If no agents are available, then the script selects the Service with the Minimum Expected Delay (MED) among services on the same or different ACD.

Figure 37: Unified CCE Routing Script



Note: Scripting in a Cisco Contact Center Gateway deployment is no different than scripting between Unified ICME and all other TDMs in that either skill groups or services are targeted, not agents.

Important Configuration Information for Routing

To Post-route a call from the child in a Unified CCE system to the parent Unified ICME, you must:

- Create a transfer number on the child's Unified CM cluster as a CTI Route Point (a Unified CM object).

  When the agent has a call at the child and wants to post-route it back via Unified ICME, the call is transferred to that dialed number -- either from the desktop or using the Cisco IP Phone.

- Configure the transfer number in both the child and the parent -- but in the child, you must tag the number to allow application routing, which means the route request is passed up to the parent for a response. If the parent does not respond, the child must also have backup scripting to handle the call locally as well.

In the Parent, you must:

- Create the dialed number for the transfer CTI Route Point.
- Build a call type and associated script to perform the post-route in the parent Unified ICME.

The parent script can instruct the child system:

- To transfer the call to another child (via translation route to the other child's skill group)
- To transfer the call to a destination on the same child
- Or with Unified CVP, it can instruct Unified CVP to connect the call back to the network queue (provided it came from there in the first place).

  If Unified CVP is present at the Parent, the Parent/Child design assumes Unified CVP at the Parent gets all the calls first and is used as a network queue point -- that does simplify the call delivery, RONA and subsequent transfers quite a bit.

If you use Unified IP IVR to do the enterprise queuing at the Unified Unified ICM Parent, you must also be aware of the following:

- There is no built-in RONA timeout for that model like Cisco has with CVP. So, in this case, you must script for RONA at the Child locally and decide in that process if you want to re-route the call all the way back to the Parent Unified ICM or just hold it in queue locally for the next local agent.
- Also, for subsequent transfers between child systems, there is extra work to translation route the calls to the IP IVR at the Parent in the Parent Unified ICM post-routing script.

In the child, you must:

- Create the dialed number for the transfer CTI Route Point.
- Check the box for enable application routing and build backup treatment in case the Unified ICME parent does not respond -- the call is sitting in a CTI Route Point that can timeout, so it is important for there to be a way to deal with that call in the event that the Unified ICM does not return a route.

The following routing scripts show sample parent and child call flow configurations. The first script runs the external script called ICMVisibleQAnn1 (note that Unified CVP is used for network queuing at the parent). The second script runs an external script called VisibleQ (note that Unified IP IVR is used for queuing at the child):

Figure 38: Example Parent Call Flow Configuration

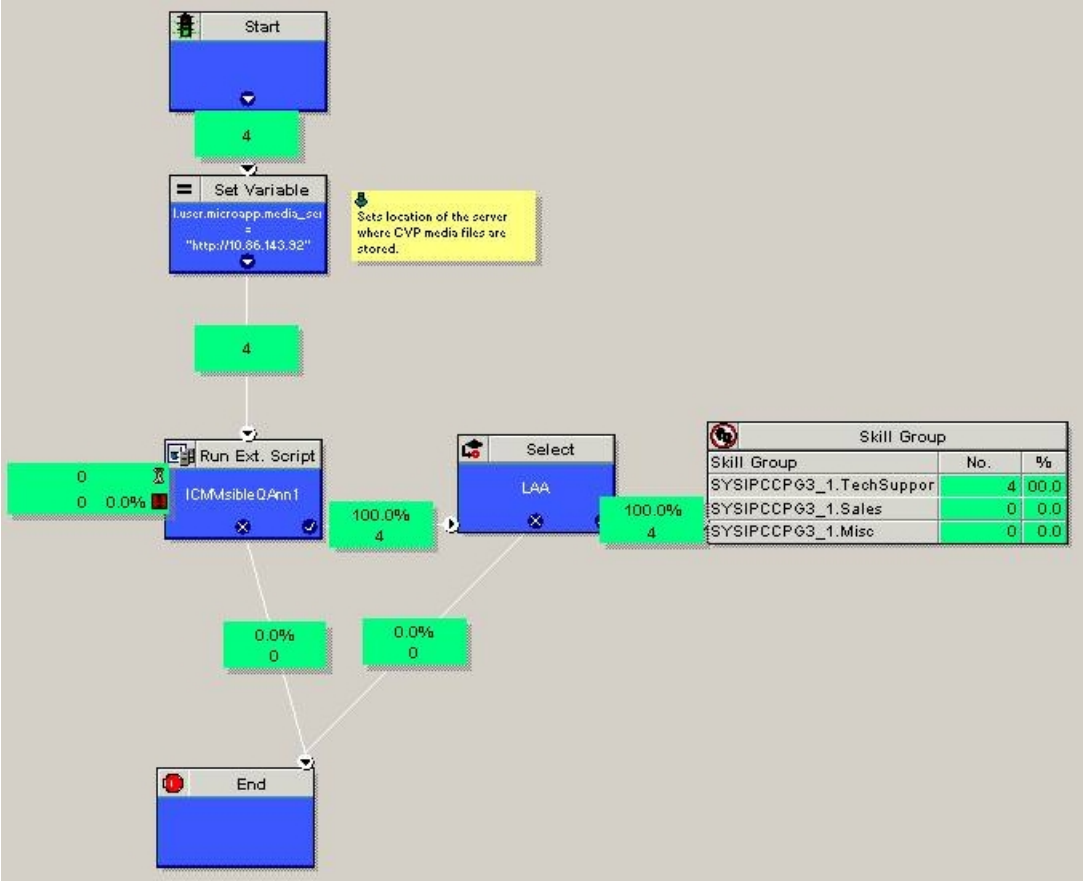
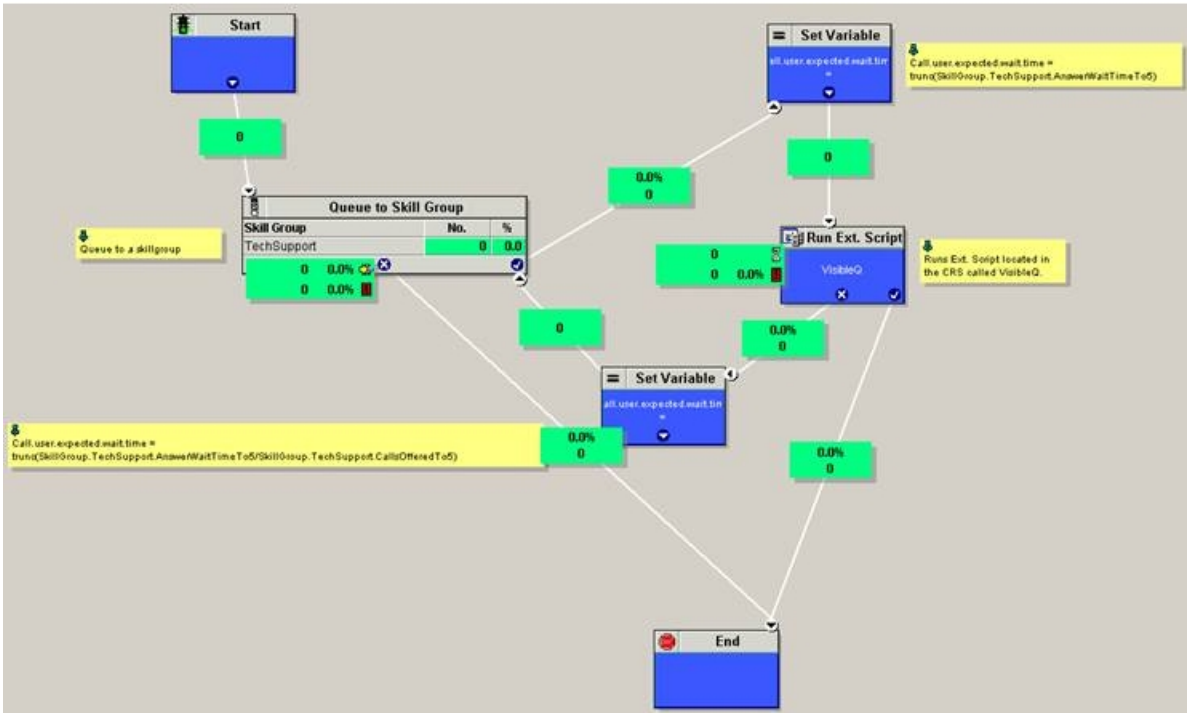


Figure 39: Example Child Call Flow Configuration



Using Translation Routing

A translation route is a special destination for a call that allows you to deliver call information along with the call. Translation routing ensures that the association between a call and its related data is maintained throughout the life of the call. Translation routing plays a significant role in the accuracy of reporting and allows for 'cradle-to-grave' call tracking and reporting. Some reporting metrics gathered for call types and skill groups are applicable only if calls are translation-routed.

The call is delivered first to the translation route. While the routing client is processing the call, Unified ICME 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.

You can create a translation route using either the Translation Route Explorer or the Translation Route Wizard. If you create a translation route with the Wizard, you can later modify it using the Explorer. The Wizard is especially helpful when creating multiple translation routes. After you create the translation route, you create a translation route script.

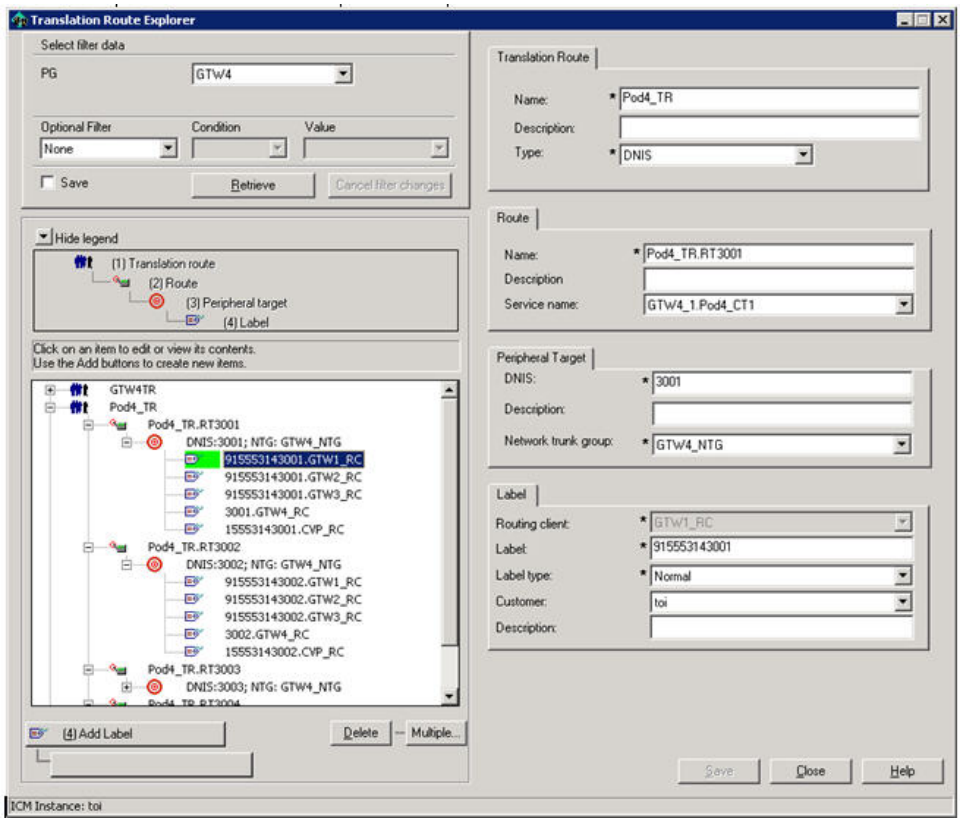
How to Create a Parent-Child Translation Route Using the Translation Route Explorer

You can define translation routes within the Unified ICME Configuration Manager using the Translation Route Explorer.

Step 1 In the Configuration Manager, select **Tools** > **Explorer Tools** > **Translation Route Explorer**.

The Translation Route Explorer dialog box appears. The following example shows the Explorer with route information included.

Figure 40: Translation Route Explorer



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 is the target of a translation route.

  For example, if you are routing from Peripheral A and Peripheral B to Peripheral C (and not to Peripheral A or Peripheral B, you only need translation routes on Peripheral C. You need labels for Peripheral A and Peripheral B as well.

- 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 Dialed Number Identification Service (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 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.

The online Help guides you through completion of the fields in the Explorer. More detailed information can be found in the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

How to Create a Parent-Child Translation Route Using the Translation Route Wizard

A translation route can be created on the parent using the Translation Route Wizard or the Translation Route Explorer. To use the Explorer, refer to How to Create a Parent-Child Translation Route Using the Translation Route Explorer (page 90).

Before using the Translation Route Wizard, go to **Tools > Explorer Tools > PG Explorer**. On the Peripheral tab, be sure that the **Enable post routing** check box is checked. In the Routing client tab, name the routing client.

When the peripheral starts, autoconfiguration populates the parent Configuration Manager with data about agents, skill groups, services, and so forth.

To create a translation route using the Translation Route Wizard, follow these steps:

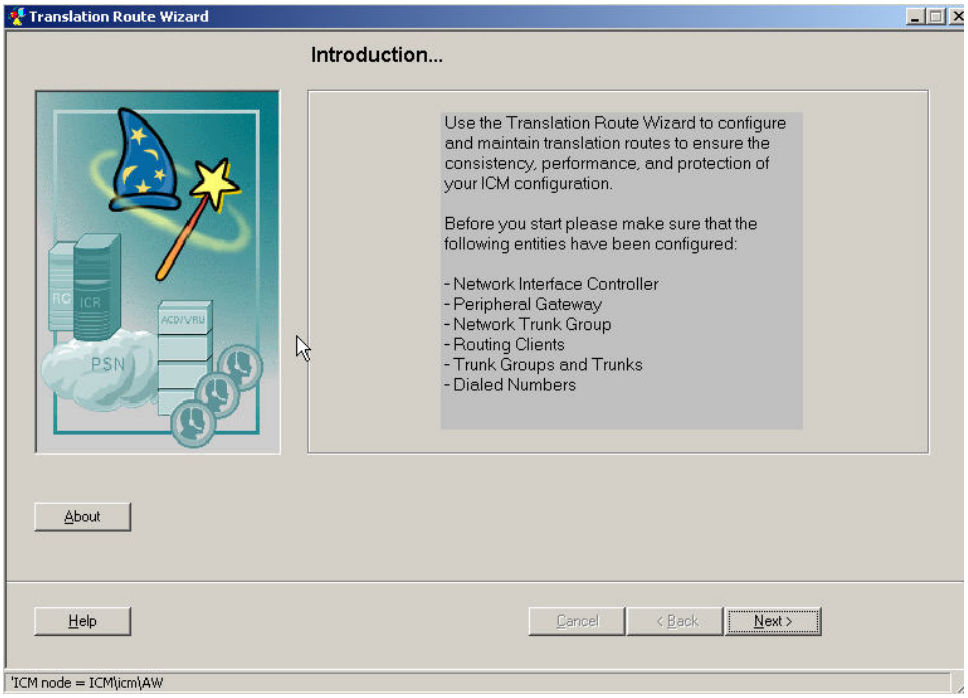
Note: The procedure for creating a Translation Route shown here is for a relatively simple deployment model that has one parent, one child, and Unified CVP at the parent.

Step 1 In the Configuration Manager, select **Tools > Wizards > Translation Route Wizard**.

The Translation Route Wizard introductory dialog box opens.

Note: Before you begin creating the translation route, you must configure a Peripheral Gateway (PG), Network Trunk Group, Routing Clients, Trunk Groups, and Trunks.

Figure 41: Translation Route Wizard



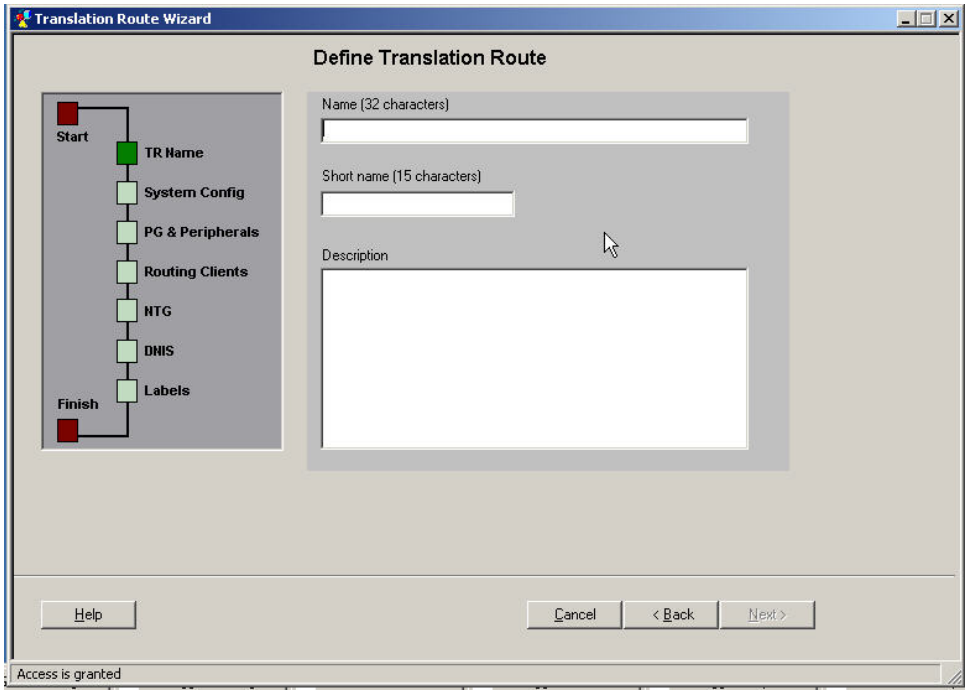
Step 2 Click **Next**.

The Select Configuration Task dialog box appears.

Step 3 Select **Create New** and click **Next**.

The Define Translation Route dialog box appears.

Figure 42: Define Translation Route



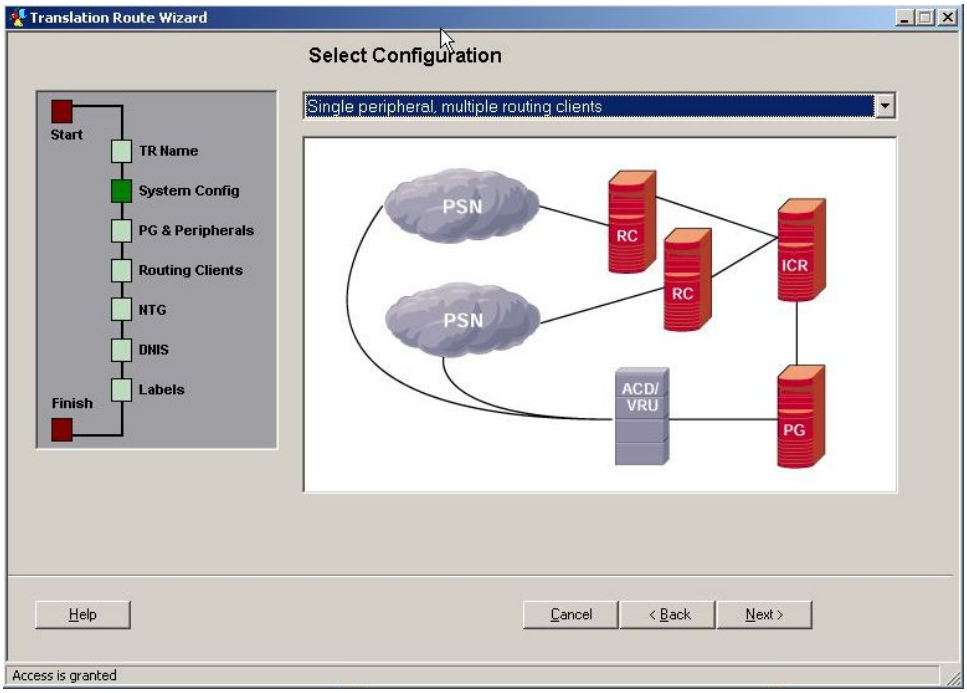
The graphic on the left of the dialog box shows the entities defined while using the Translation Route Wizard.

Step 4 In the Name field, enter a long name for the translation route. Click **Next**.

The Short name field automatically populates with a limited number of characters from the long name and is used in forming target names. An optional description can be entered as well.

The Select Configuration dialog box opens.

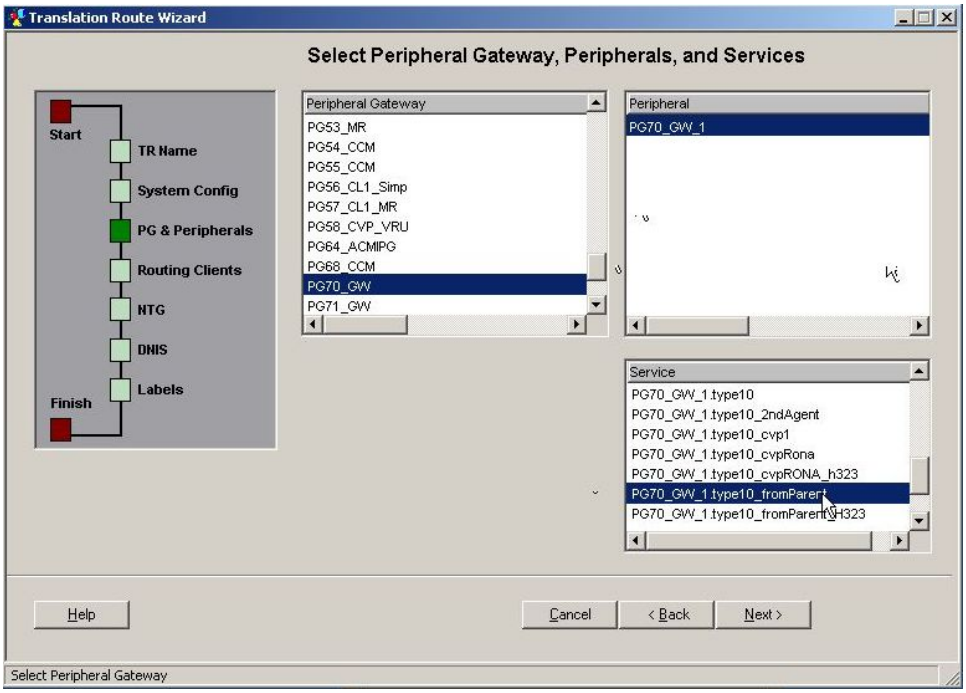
Figure 43: Select Configuration



Step 5 From the drop-down list, select **Single peripheral, multiple routing clients** and click **Next**.

The Select Peripheral Gateway, Peripherals, and Services dialog box opens.

Figure 44: Select Peripheral Gateway, Peripherals, and Services

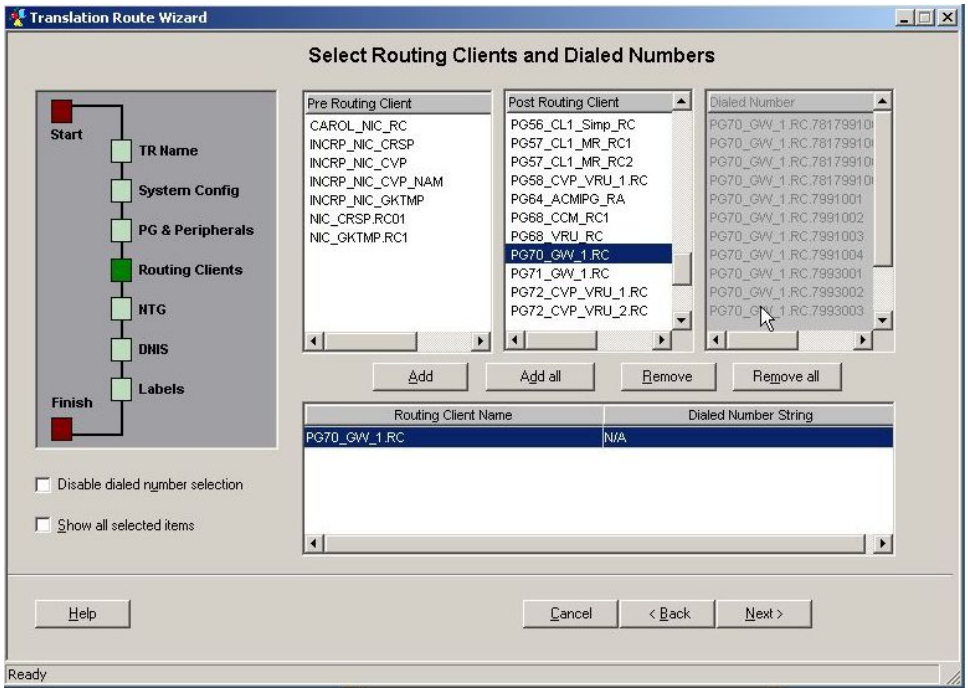


Step 6 Select the PG for the IPCC Enterprise Gateway PG from the Peripheral Gateway list, then select the peripheral for that PG from the Peripheral list. Click **Next**.

The service is the call type that was created on the child and was propagated to the parent.

The Select Routing Clients and Dialed Numbers dialog box opens.

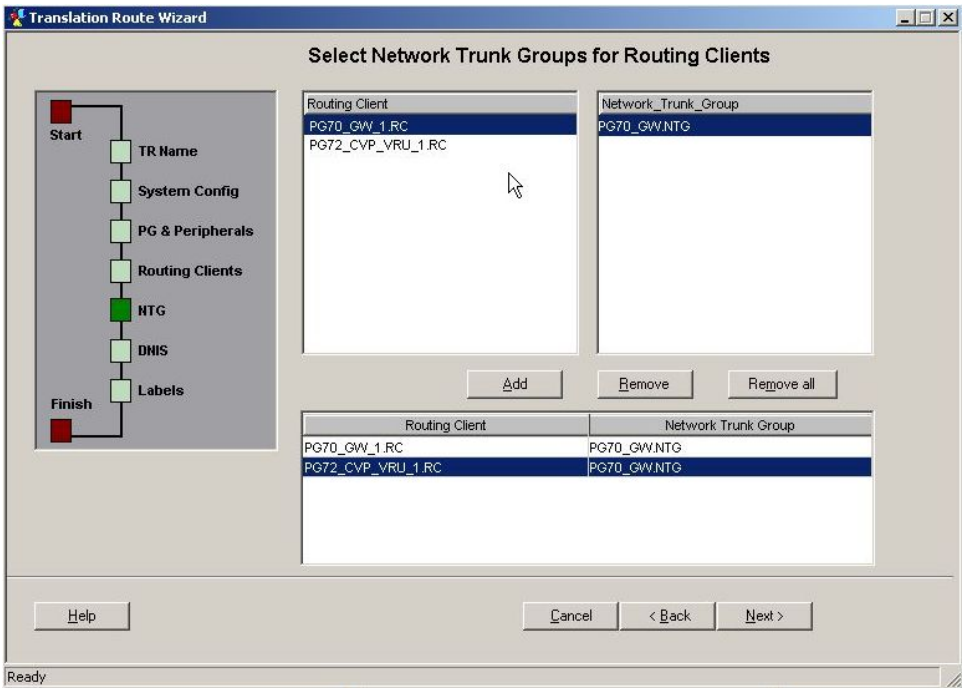
Figure 45: Select Routing Clients and Dialed Numbers



Step 7 Select two routing clients from the Post Routing Client list--one for the Gateway PG, the other for Unified CVP. Ignore the Pre Routing Client list, as it is not needed. The Dialed Number list is greyed out, and dialed numbers cannot be selected. Click **Next**.

The Select Network Trunk Groups for Routing Clients dialog box opens.

Figure 46: Select Network Trunk Groups for Routing Clients



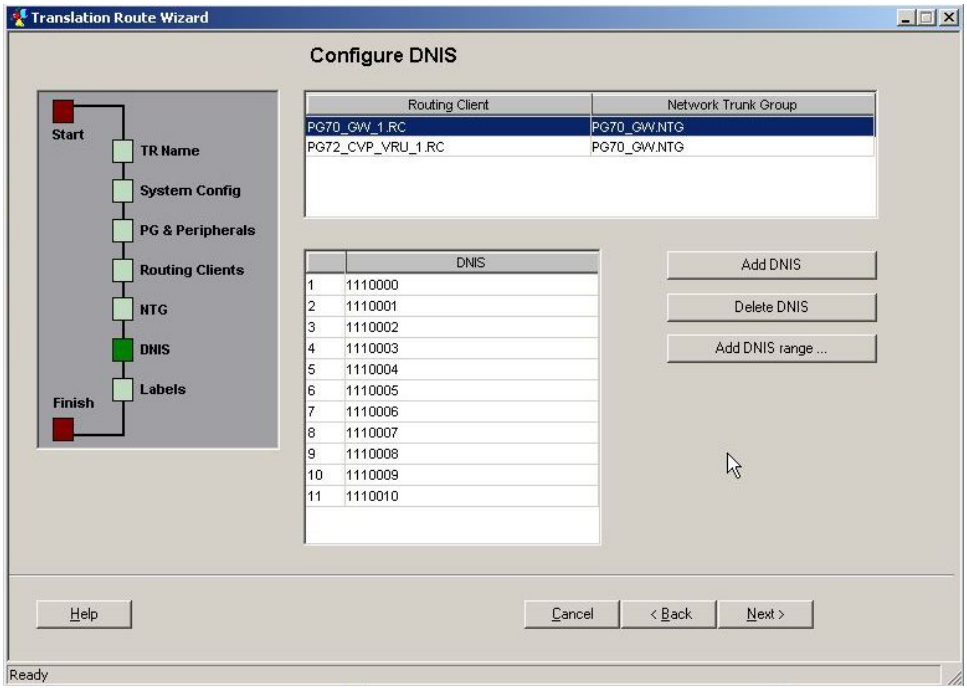
Step 8 First select the routing client for the Gateway PG and click **Add**; then select the routing client for Unified CVP and click **Add**.

The Routing Client and Network Trunk Group information appears at the bottom of the dialog box.

Step 9 Click **Next**.

The Configure DNIS dialog box opens.

Figure 47: Conffigure DNIS



Note: The DNIS is the value the Network returns to the Gateway/CM to indicate the dialed number. If the DNIS is attached to a route, the route must have its Service field populated. The DNIS does not have to be defined in the Unified ICM database.

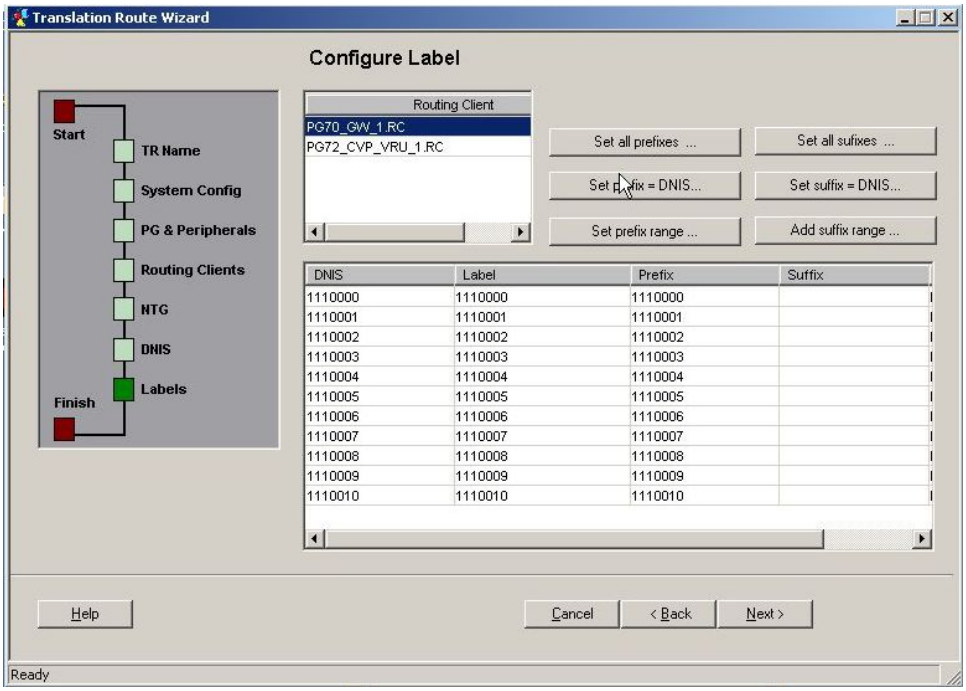
Step 10 Click **Add DNIS range** and enter a beginning DNIS (such as 1110000) and an ending DNIS (such as 1110010), then click **OK**.

The DNIS list appears on the dialog box with all the numbers in the range listed.

Step 11 For simplicity, use the same DNIS and label, and click **Next**.

The Configure Label dialog box opens.

Figure 48: Configure Label



Step 12 Click **Set prefix = DNIS** for each routing client.

A Set Prefix = DNIS dialog box opens.

Note: The label does not always match the DNIS. Usually the label is comprised of a prefix (for example, 1800123), followed by the DNIS.

Step 13 Be sure the **Include DNIS string as is** radio button is selected, and click **OK**.

The DNIS, Label, and Prefix lists populate with the numbers.

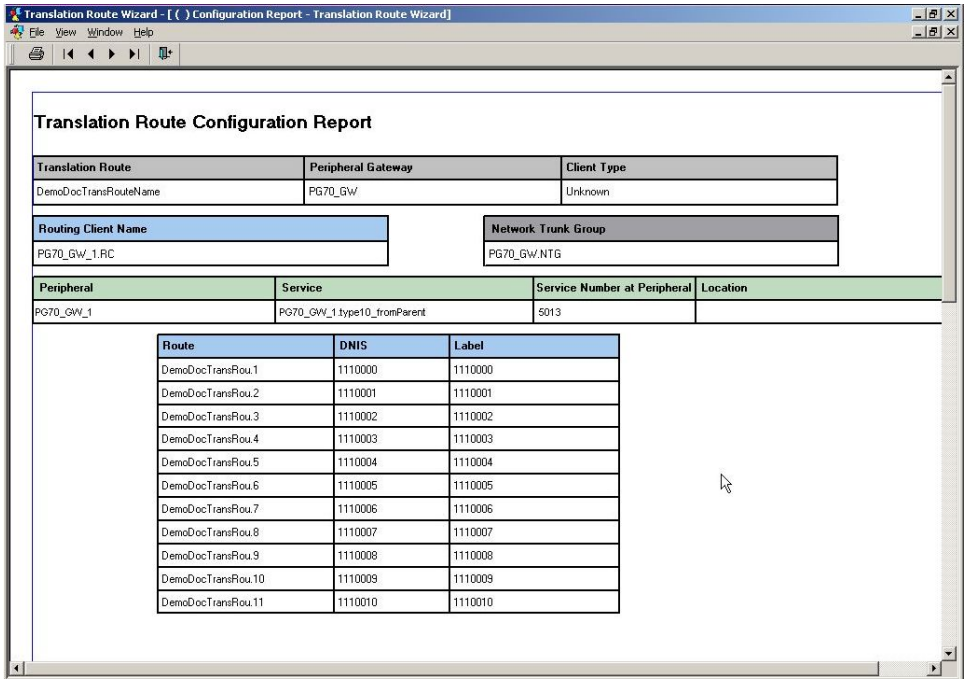
Step 14 Click **Next**.

The final dialog box appears.

Step 15 Click **Create Translation Route**.

Step 16 After getting a success message, run a Translation Route Configuration Report and check the values.

Figure 49: TR Configuration Report



Note: For a parent/child deployment to work properly, it is important that the configuration of the parent, child, Unified CM, Unified CVP, and the IOS gateway matches. Be sure that all of the numbers in the translation route are added to the child Unified CCE or SCCE (as Dialed Numbers with Permit Application Routing enabled) and Unified CM (as Route Points), and that the numbers match across the deployment (parent, child, and Unified CM). For Unified CCE, see Enable Application Routing on a Unified CCE Child (page 81) or for Unified SCCE, see Enable Application Routing on a Unified SCCE Child (page 81).

For additional information about using the Translation Route Wizard, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted*.

How to Configure Unified IP IVR for Translation Routing

If using Unified IP IVR instead of Unified CVP in a translation route, there are some configurations necessary in Unified IP IVR . First add an Unified ICM translation routing application, and then assign a JTAPI trigger to this application.

Note: Before configuring a translation routing application, you must first upload the VRU scripts required by the application.

To configure Unified IP IVR for translation routing, do the following:

Step 1 In Unified CCX Administration, select **Applications > Application Management**.

Step 2 Click **Add a New Application**.

Step 3 From the Application Type drop-down menu, select **Unified ICME Translation Routing**.

Step 4 In the Name field, enter the name of the script on which the Unified CCE translation routing is based.

Step 5 Press the **Tab** key to automatically populate the Description field.

Step 6 In the ID field, accept the ID, or enter a unique ID.

This field corresponds to the service identifier of the call reported to the Cisco Unified ICME and configured in the Unified ICME translation route.

Step 7 In Maximum Number of Sessions field, enter the maximum number of simultaneous sessions that the application can handle.

Step 8 In the Enabled field, accept the default radio button **Yes**.

Step 9 In the Timeout field, enter a value.

This value is the maximum amount of time (in seconds) the system waits to invoke the application before rejecting a contact.

Step 10 From the Default Script drop-down list, choose the script that runs if a system error occurs, or if instructed by the Cisco Unified ICM to route to the default treatment.

Step 11 Click **Add**.

A message displays confirming the operation has been successfully executed.

Step 12 Click **OK**.

Step 13 Click **Add New Trigger**.

The Add a New Trigger page opens.

Step 14 From Trigger Type drop-down menu, select **Unified CM/Unified CME Telephony**, then click **Next**.

Step 15 In Unified CCX Administration, select **Subsystems** > **Unified CM Telephony**.

Step 16 On the Unified CM Telephony Configuration navigation bar, click the **Unified CM Telephony Triggers** hyperlink.

The Unified CM Telephony Trigger Configuration summary web page opens.

Step 17 Click **Add a New Unified CM Telephony Trigger** .

The Unified CM Telephony Trigger Configuration web page opens.

Step 18 Complete the fields on this page (see the online Help for additional information), then click **Add**.

The Unified CM Telephony Trigger Configuration summary web page opens, displaying the new Unified CM Telephony trigger.

See Also

For additional information about adding applications and triggers to Unified IP IVR see the online Help or the **Cisco Unified Contact Center Express Administration Guide** (http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

See Also

If you are using Unified CVP instead of Unified IP IVR , see the section Special Configurations for a Unified SCCE Child System with Unified CVP (page 81).

Call Flow Examples

Helpful tips before creating call flows:

- Network Consultative transfer is not supported with Unified CVP in a parent/child environment.

  Network transfer must be disabled for the call flow to work; uncheck **Unified ICME Configuration Manager > PG Explorer > Client tab >Network transfer preferred**.

- When using blind transfer, there is a possible issue with the transferring agent getting stuck in the Hold state. Clear by restarting the JTAPI process.

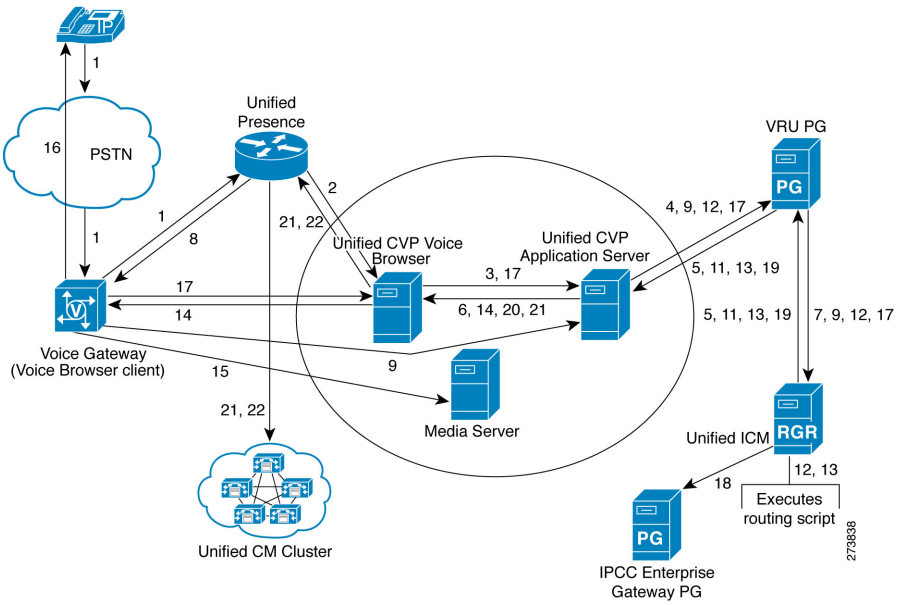
- Use the IP address, NOT a name, when configuring SIP trunks on Cisco Unified CallManager.

Call Flow with Unified CVP at the Parent

Typically, a parent Unified ICME system (including Cisco Unified Customer Voice Portal, VXML and PSTN gateways) is located in a different location than a child Cisco Unified Contact Center Enterprise system. This section describes a sample Parent/Child call flow, the components, and the configuration that were tested and verified in this contact center test environment.

In the following call flow, while the Cisco Unified Customer Voice Portal Application Browser, Cisco Unified Customer Voice Portal SIP subsystem service, and Media Server are represented as separate entities, they are all on the same physical Cisco Unified Customer Voice Portal call control server.

Figure 50: Parent/Child Call Flow with Unified CVP



A description of Parent/Child Call Flow in the Parent System follows:

1. The call comes from the PSTN into an IOS SIP Gateway that originates a SIP call to Cisco Unified Presence.
2. Cisco Unified Presence sends the SIP call to the CVP SIP subsystem service.
3. The Unified CVP SIP subsystem service sends the details of the call to the Unified CVP Call Server using HTTP
4. The Unified CVP Call Server sends a NEW_CALL event to the Unified ICM using the Unified ICM/VRU Interface protocol via the Unified CVP VRU PIM.
5. Unified ICM, upon receipt of the NEW_CALL event, sends a temporary Connect label to connect a VRU to the Unified CVP Call Server.
6. The Unified CVP Call Server sends the label with a correlation ID to the CVP SIP subsystem service.
7. The Unified CVP SIP subsystem service sends the label to Cisco Unified Presence.
8. Cisco Unified Presence sends the call to the VXML gateway.
9. The VRU functionality of the PSTN Gateway then sends a message to the appropriate Unified CVP Call Server that in turn sends a REQUEST_INSTRUCTION message to Unified ICM.
10. Unified ICM uses the correlation ID, which is relayed to it as a part of the REQUEST_INSTRUCTION message, with the call it processed earlier.
11. Unified ICM, upon receipt of the REQUEST_INSTRUCTION message, also sends a CONNECT_TO_RESOURCE event back to the Unified CVP Call Server.

12. The Unified CVP Call Server acknowledges Unified ICM with a RESOURCE_CONNECTED event, then Unified ICM executes the routing script enabled for that call.

13. Upon execution of the routing script by Unified ICM, the Unified CVP Call Server gets a RUN_SCRIPT_REQ event from Unified ICM.

14. The Unified CVP Call Server runs the script and sends instructions to the Unified CVP SIP subsystem client (PSTN GW) via HTTP (VXML) to play the media file.

15. The Unified CVP SIP subsystem client sends HTTP requests to the HTTP Media Server to get the media file and then plays it out to the caller.

16. The caller is requested by the contents of the media file to respond to the prompts in the recording.

17. The Unified CVP SIP subsystem client detects the response or caller-entered digits (CED) and sends it to the Unified CVP Call Server that then forwards it to Unified ICM.

18. Unified ICM does the following:

    – Receives the CED and determines the appropriate child system to handle the call by returning a label for the peripheral target. In this case, the peripheral is the child Unified ICM.

    – Sends a PRE_ROUTE message to the Unified CCE Gateway.

19. Unified ICM instructs the Unified CVP Call Server, with a CONNECT event, to start setting up the IP Transfer to the peripheral target. In this case, the label for the peripheral target is defined as a CTI route point on the Unified CM in the child system.

20. The Unified CVP Call Server sends a VXML Transfer to the Unified CVP SIP subsystem service to start call setup to the peripheral target.

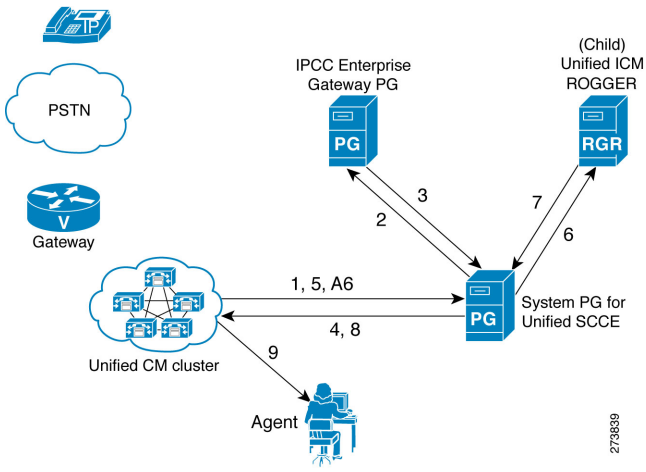
21. Refer to Figure 9 (page 89), the graphical representation of the Parent/Child call flow. The Unified CVP SIP subsystem service sends several SIP messages to Cisco Unified Presence to:

    – Open and close the appropriate RTP path to the originating PSTN Gateway and the VRU.

    – Set up the call to the Unified CM in the child system.

The call arrives at the translation route destination on the child system.

Figure 51: Child Call Flow with Agent Available



In the Child System, after the call arrives, the following happens in a scenario when an agent is available:

1. The call comes to the CTI route point on the Unified CM of the child system. Unified CM sends a ROUTE_REQUEST message (to determine that the Gateway PG registered for control of this route point) to the System PG for Unified SCCE.

2. The System PG for Unified SCCE recognizes that this is a route point that has been registered by the parent Gateway PG and sends a ROUTE_REQUEST message to the IPCC Enterprise Gateway PG.

3. The IPCC Enterprise Gateway PG matches up the DNIS on the route point and responds with a ROUTE_SELECT (and a label), which is a CTI route point on the child Unified CM, which is controlled by the child.

4. The System PG for Unified SCCE sends the ROUTE_RESPONSE to the child Unified CM.

5. Unified CM sends a ROUTE_REQUEST message to the System PG for Unified SCCE for the new CTI route point.

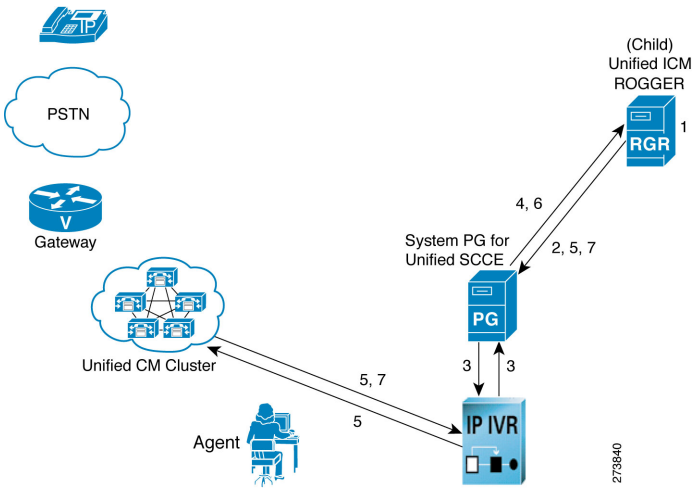
6. The System PG for Unified SCCE sends a NEW_CALL to the child Unified ICM Rogger.

7. The CallRouter runs a script, selects an available agent, and returns a Connect for the label fo that agent device.

8. The System PG for Unified SCCE returns a ROUTE_RESPONSE to the Unified CM.

9. The call reaches an available agent.

Figure 52: Child Call Flow with Agent Unavailable



In the Child system, the following happens in a scenario when an agent is not available:

1. The Unified ICME CallRouter executes the Unified ICME script based on the dialed number that was part of the NEW_CALL. The script determines the skill group that can best answer the call and checks for agent availability. Since an agent is unavailable to answer the call, the Unified ICM script executes a RUN_EXTERNAL_SCRIPT node. It then places the call in a queue for the specific skill group.

2. The Unified ICME Rogger returns a CONNECT message with a label to the Unified CM. The label allows the call to route to the Unified IP IVR . For Unified IP IVR , the dialed number is a CTI route point that is owned by the Unified IP IVR user.

   Note: On Unified IP IVR , this CTI route point is defined as a JTAPI Trigger. Unified IP IVR is in the same Unified CM cluster as the call.

3. When the call arrives, the JTAPI link on Unified CM informs Unified IP IVR , which in turn informs the System PG for Unified SCCE.

4. When the System PG for Unified SCCE receives the incoming call arrival message, it sends a REQUEST_INSTRUCTION message to Unified ICME.

5. The Unified ICME CallRouter executes the Unified ICME script based on the dialed number that was part of the NEW_CALL. The script determines the skill group that can best answer the call and checks for agent availability. Since an agent is unavailable to answer the call, the Unified ICM script executes a RUN_EXTERNAL_SCRIPT node. It then places the call in a queue for the specific skill group.

6. The Unified ICME Rogger returns a CONNECT message with a label to the Unified CM. The label allows the call to route to the Unified IP IVR . For Unified IP IVR , the dialed number is a CTI route point that is owned by the Unified IP IVR user.

   Note: On Unified IP IVR , this CTI route point is defined as a JTAPI Trigger. Unified IP IVR is in the same Unified CM cluster as the call.

7. When the call arrives, the JTAPI link on Unified CM informs Unified IP IVR , which in turn informs the System PG for Unified SCCE.

8. When the System PG for Unified SCCE receives the incoming call arrival message, it sends a REQUEST_INSTRUCTION message to Unified ICME.

9. Unified ICME instructs Unified IP IVR , via the System PG for Unified SCCE, to play the queue messages for the caller via a RUN_SCRIPT, until such time an agent is available to take the call.

10. Once an agent becomes available, the Unified System Contact Center Gateway (Unified SCCG) sends an AGENT_STATE_CHG message to Unified ICM indicating that a qualified agent has become available.

11. Unified ICM then does the following:

    – Sends a PRE_CALL message to the System PG for Unified SCCE with call context information, so that it can reserve the agent and wait for the call to arrive at the agent's phone.

    – Instructs Unified IP IVR to redirect the call from the agent queue to the available agent (through the System PG).

12. Unified IP IVR then sends the call to the Unified CM, and the call is handled in the same manner as described in steps 5 - 9 in the previous Child call flow.

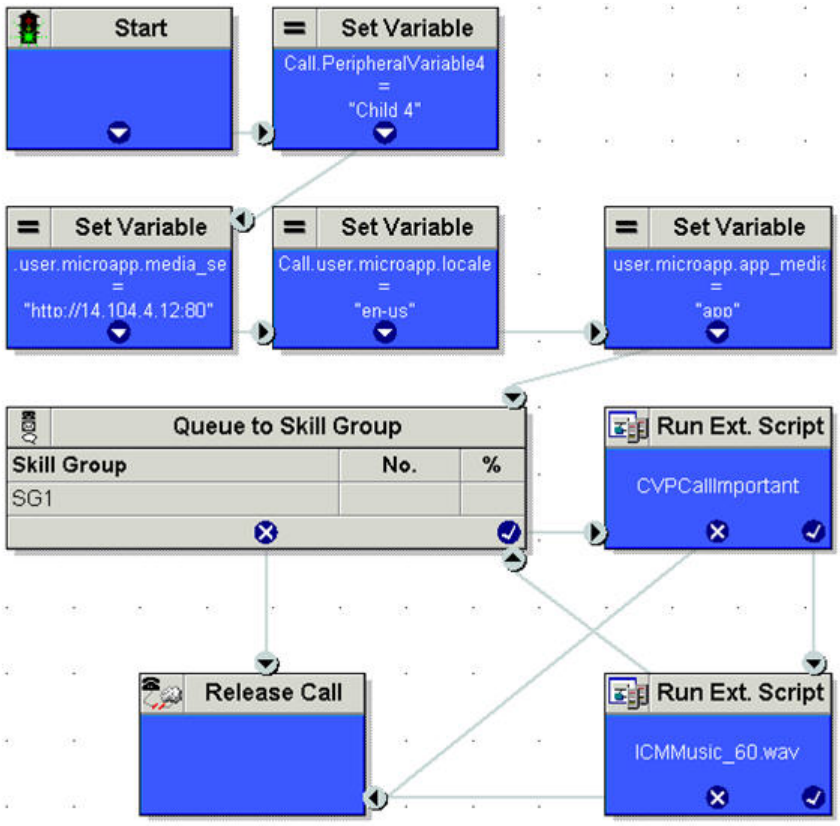
See Also

This call flow information was taken from Tested Call Flows on the **Cisco web site** (http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/UC6.1.1/cc_system_arch/ch4_flow.html#wp1564973). See that site for additional information about the necessary configuration and scripting for these call flows.

Call Flow that Uses a Translation Route in a Routing Script

The following routing script uses a translation route and supports a call flow where the call originates at the child Unified CVP, and no agent is available. The call is then queued locally, and an agent becomes available and answers the call.

Figure 53: Translation Routing Script



How to queue to Unified CVP on the Child

To queue to Unified CVP on the child, do the following:

Step 1 Populate the following Set Variable nodes (specifically used with Unified CVP):

a. call.user.microapp.media_server = <*voice_browser_address*>

b. call.user.microapp.locale = en-us

c. call.user.microapp.app_media_lib = app

Step 2 Add a Queue to Skill Group and call it SG1.

Step 3 Add Run External Script nodes that run the CVPCallImportant script.

Step 4 Save the script and activate it.

To exercise the call flow above, do the following:

To exercise the above call flow, do the following:

Step 1 Log in to the CTI OS desktop (or CAD desktop) and set the agent's state to Not Ready.

Step 2 From the parent phone, dial the number of the child (to invoke this script), such as 9155531[child#]9001.

The following message plays: "Your call is important to us..."

Step 3 From the desktop, change the agent's state to Ready.

The child phone rings when the call arrives at the desktop.

Note: This call flow requires pre-configuration on Unified ICME. The section How to Create a Parent/Child Translation Route Using the Translation Route Wizard (page 92), shows some Unified ICME configurations needed before running the wizard. Also,Figure 11, Translation Route Explorer (page 91), shows the kinds of configuration (but not the exact configuration values for this call flow) that are needed to create a translation route using the Translation Route Explorer.

Chapter 4

Deploying Cisco Contact Center Gateway with Cisco Unified Contact Center Express

This section provides instructions for deploying the Cisco Contact Center Gateway feature with Unified CCX.

This chapter contains the following topics:

- What You Need Before You Install, page 111
- Installation and Configuration Checklist, page 112
- Routing in IPCC Express Gateway Deployments, page 121
- High Availability with IPCC Express Gateway, page 127

What You Need Before You Install

You need the following software so that the IPCC Express Gateway feature can function:

- Cisco Unified Communications Manager (Unified CM) or Cisco Cisco Unified Communications Manager Express (Unified CME)
- Cisco Unified Contact Center Express
- Cisco Unified Intelligent Contact Management Enterprise (Unified ICME)
- Cisco Agent and Supervisor Desktops (bundled with Unified CCX)

Note: For Cisco Agent and Supervisor Desktops you must use the release that is bundled with, and is compatible with, Unified CCX; do not use the release that is compatible with Unified ICME.

Although Unified CM and Unified CCX can usually be installed on the same machine, when using the IPCC Express Gateway feature, Unified CM and Unified CCX must be installed on separate machines.

Note: While the IPCC Express Gateway PG software is located on the Unified ICME installation CD, that part of the Unified ICME must be installed on the same machine as the Unified CCX software. How to Install the IPCC Express PG (page 112) provides the installation instructions for the PG software.

Installation and Configuration Checklist

This section lists the installation and configuration tasks for deploying Cisco Contact Center Gateway with Unified CCX. With Release 5.0(1) and greater of Unified CCX, you can install and configure either Unified CM or Unified CME; both work with Unified CCX in the Gateway environment.

Note: For high availability in an IPCC Express Gateway deployment, you must install Unified CCX and the IPCC Express Gateway PG on two nodes of Unified CCX (master and standby).

Table 2: Installation and Configuration Checklist

Task	Description/Notes	Reference
1a. Install Unified CM. See Task 1b if using Unified CME.	After installing Unified CM, configure a Unified CM administrator. Make note of the username and password as well as the IP address of the machine on which Unified CM is running. **Note:** You must install Unified CM on a different machine than Unified CCX.	*Cisco Unified Communications Manager Installation Guide*
1b. Verify that the appropriate version of Unified CME is installed on the CallRouter. The corresponding IOS image contains the Unified CME software.	Configure the Unified CME CallRouter. Make note of the AXL userID, password, and the CallRouter's IP address. Configure Unified CME to enable operability with Unified CCX.	*Cisco Unified Communications Manager Express New Features*
2. Install the Unified CCX software.	During the Unified CCX installation process, you choose whether you plan to use Unified CM or Unified CME with Unified CCX. **Note:** All licensed Unified CCX packages (Standard, Enhanced, and Premium) work with the Cisco Contact Center Gateway. The license is applied later on Unified CCX Administration.	*Cisco Unified Contact Center Express Installation Guide* *Getting Started with Cisco Unified Contact Center Express*
3a. Configure the Unified CM software in Unified CCX.	Notice that when you configure route points on Unified CCX, they are automatically configured in Unified CM.	*Cisco Unified Communications Manager Administration Guide*

Task	Description/Notes	Reference
See Task 3b if you are using Unified CME.	Agents are configured on Unified CM.	*Cisco Unified Contact Center Express Administration Guide*
3b. For Cisco Unified CME, launch the setup wizard on Unified CCX and go through the setup for Unified CME.	When setup launches, you are asked for the AXL userID and password (that you created on Unified CME). You also need to enter the CallRouter IP address. Configure CME Telephony Subsystem to enable interoperability with Unified CCX. Create users and assign the agent capability in Unified CCX. **Note:** On Unified CME, route points are configured automatically when you configure them on Unified CCX. In addition, a Call Control Channel is created automatically.	*Cisco Unified Contact Center Express Administration Guide*
4. Install and configure the Cisco Agent and Supervisor Desktops.	You need the IP addresses for Unified CM and Unified CCX during the installation process. If you are using Unified CME, the Cisco Desktop Administrator needs the IP address of the CallRouter. After installing and configuring CAD, you can test the child system to be sure all is working as expected.	*Cisco CAD Installation Guide* and *Cisco Desktop Administrator's User Guide*.
5. Install the Unified ICME parent system, if the Unified ICME software is not already installed.	**Note:** • You can only connect one Unified ICME instance for IPCC Express Gateway. • Some autoconfiguration happens between Unified CCX and Unified ICME. See the section "Autoconfiguration Between Unified CCX and Unified ICME" for details.	*ICM Setup and Installation Guide for Cisco Unified ICM/Contact Center Enterprise*
6. Configure the IPCC Express Gateway PG in Unified ICME.	Use the Unified ICME Configuration Manager on the Admin Workstation to access the PG Explorer to complete this task.	See the section "Configuring the IPCC Express Gateway PG in Unified ICME" and the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted* for instructions.
7. Install the Gateway PG software on the same machine where you installed Unified CCX.	The PG software is on the Unified ICME installation CD. **Warning!** In the MDS and DMP Properties dialog box, make sure that **Disable ICM time synchronization** is checked (the default). For more information, see IPCC	See "Installing the IPCC Express Gateway PG" and the *ICM Setup and Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted.*.

Task	Description/Notes	Reference
	Express Gateway PG Setup and Time Synchronization (page 118).	
8. Configure the Unified ICME parent software.	Use the Unified ICME Configuration Manager on the Admin Workstation to complete this task. Some autoconfiguration has taken place; configure other elements so that call flows work properly: • Configure a Network Trunk Group and a Trunk Group on the IPCC Express Gateway peripheral. These are used when configuring peripheral targets. • Configure Routes, Peripheral Targets and Labels for the IPCC Express Gateway PG and the parent IVR (either Unified CVP or Unified IP IVR) routing clients for the auto-configured Services (child call types). • Add auto-configured Skill Groups as Service Members. • In order to pass call context from the parent to the child, all calls must be translation routed. Create translation routes, routes, peripheral targets, and labels for the IPCC Express Gateway PG and the parent routing clients. **Note:** • In an IPCC Express Gateway system the enterprise Expanded Call Context (ECC) variable must be defined in Unified CCX, Cisco Desktop Administrator (CDA), and Unified ICME. In addition, be sure all ECC variable names begin with the characters: **`user.`** (includes period). • For more information on ECC variables, see Call Variables in IPCC Express Gateway (page 124).	See the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise and Hosted* and the section Using Translation Routing (page 90).
9. Create a script on Unified CCX.	Create a script that interacts with the IPCC Express Gateway PG, taking special care when specifying call variables/ECC variable settings.	For general information about using the Unified CCX Editor to create scripts, see the *Cisco Unified Contact Center Express Scripting and Development Series: Volume 1, Getting Started with Scripts*, and refer to Chapter 18: Designing IPCC Gateway Scripts. In addition, see *Volume 2, Editor Step Reference.*

Task	Description/Notes	Reference
10. Create a script using Unified ICME.	Create a script that interacts with the IPCC Express Gateway PG, taking special care when specifying call variable/ECC variable settings.	For general information about Unified ICME Scripting, see the *ICM Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted.*

How to Configure the IPCC Express Gateway PG in Unified ICME

On the machine where the Unified ICME software is installed, open the Admin Workstation.

Complete the following steps to configure the PG:

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

Step 2 In the Logical Controller tab in the **Name** field enter the name of the PG.

Step 3 In the Client Type field select **IPCC Express Gateway**.

Step 4 Click **Save**.

In the bottom left pane of the PG Explorer the PG name appears. Also, additional tabs appear under the Logical Controller tab. On the Logical Controller tab you see the Logical Controller ID and the Peripheral ID.

Step 5 On the Peripheral tab, be sure to check the **Enable Post-Routing** check box and the **Peripheral Auto Configured** check box.

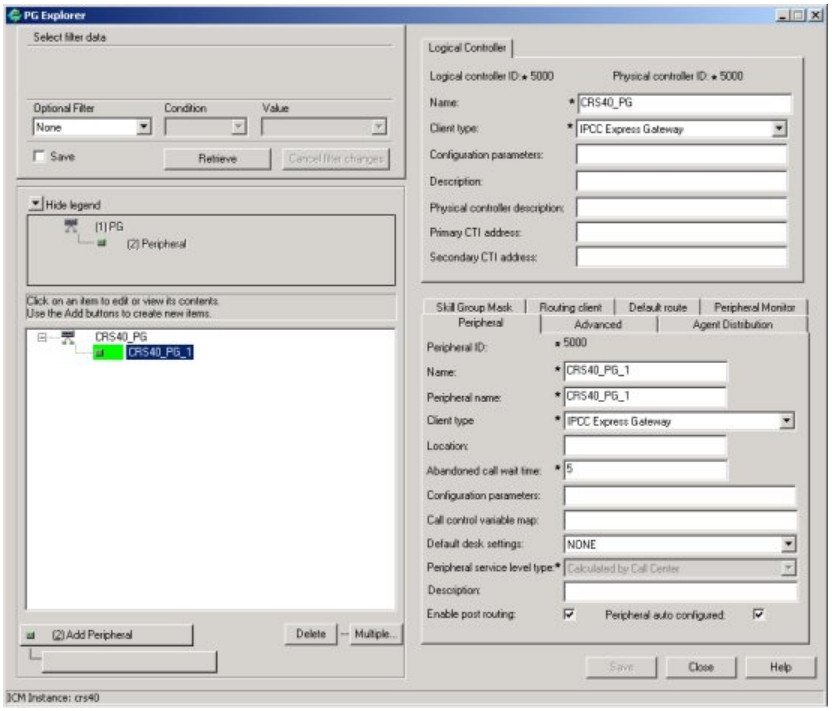
Step 6 On the Routing Client tab, add the name of the PG in the Name field and complete the other fields.

Step 7 Click **Save.**

The following figure shows the Unified ICME PG Explorer with the configured PG and Peripheral Tab fields.

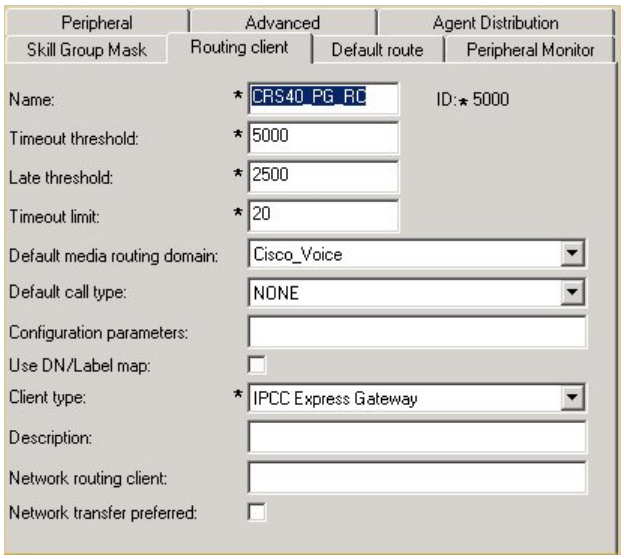
Note: The Logical Controller ID on the Logical Controller tab is a unique identifier used to reference the PG's Logical Interface Controller table. This is a read-only field. When you create a new PG, the system places UNASSIGNED in this field and automatically creates an ID when you save your edits. See the *ICM Configuration Guide for Cisco ICM Enterprise Edition* for more details.

Figure 54: Unified ICME PG Explorer



The following figure shows the configured Routing Client tab of the PG Explorer:

Figure 55: Routing Client Tab



Note: In the Advanced tab of the PG Explorer, be sure that Agent autoconfiguration is disabled so that the IPCC Express Gateway PG can function properly.

How to Install the IPCC Express Gateway PG

The IPCC Express Gateway PG must not be installed on the same machine where the Unified CCX is installed. Also, do not install the PG on the machine where the other Unified ICME software is installed.

Note: If you want to use high availability, you must repeat the following procedure on a second machine on which Unified CCX is not installed.

To install the IPCC Express Gateway PG, complete the following steps:

Step 1 Run `setup.exe` from the Unified ICM installation CD. The Unified ICM Setup dialog box appears.

Step 2 Click **Add** under ICM Instances, and add an instance if one does not already exist.

Step 3 Click **Add** under ICM components. The ICM Component Selection dialog box appears.

Step 4 Select **Peripheral Gateway**. The Peripheral Gateway Properties dialog box appears.

Step 5 Make sure that the **Auto start at system startup** box is *not checked* and the **Duplexed Peripheral Gateway** box is *checked*.

Step 6 Select **IPCC Express Gateway** from the Client Type Selection section of the window.

Step 7 Accept the default drive location for the installation of the PG software, choose a language, and then click **Next**.

The Peripheral Gateway Component Properties dialog box appears.

Step 8 In the Peripheral Interface Managers section, click **Add**.

The Add PIM dialog box appears.

Step 9 Add a PIM (for example, PIM1), then click **OK**.

A configuration dialog box appears.

Step 10 Do the following:

a. Check the **Enabled** option.

b. In the **Peripheral Name** field enter the name of the PG.

c. In the **Peripheral ID** field, enter the ID of the Unified ICME parent server. Use the Unified ICM PG Explorer tool to access the ID.

d. In the **IPCC Express Host Name** field, enter the IP address or the host name of the Unified CCX child server.

e. In the **Unified CCX Host Port** field, enter the port number of the Unified CCX child server. The default port number is 12028.

Note: Effective Unified CCX 8.0, the IPCC Express Host Port has changed to 12028. Use the port number 42027, if you are integrating ICM with previous releases of Unified CCX.

Step 11 Click **OK**.

The Peripheral Gateway Component Properties dialog box reappears.

Step 12 Click **Advanced**.

The MDS and DMP Properties dialog box opens.

Step 13 In the MDS and DMP Properties dialog box, make sure that **Disable ICM time synchronization** is checked (the default).

Warning: Leaving this box unchecked can lead to catastrophic results, in some cases even bringing down the call center. (For more information, see IPCC Express Gateway PG Setup and Time Synchronization (page 118).)

Step 14 Click **OK**. The Peripheral Gateway Component Properties dialog box reappears.

Step 15 Click **Finish** to exit Setup.

After the PG is installed, you see the ICM Service Control icon on your desktop.

Note: More detailed information is provided about installing and configuring PGs in the *ICM Installation Guide for Cisco ICM Enterprise Edition*. What is provided here is information particular to the IPCC Express Gateway PG.

IPCC Express Gateway PG Setup and Time Synchronization

Disable ICM time synchronization in the MDS and DMP Properties dialog affects time synchronization between systems. Since the Windows operating system uses its own integrated time service--making it unnecessary for Unified ICME to perform a *separate* time synchronization--the box is checked by default. The Unified ICME documentation says to accept this default, except in cases where the PG is configured as a workgroup machine (that is, not a domain).

However, when an IPCC Express Gateway PG is co-located with Unified CCX, this box must *always* be checked, even in cases where the Unified CCX machine is in a workgroup. The reason for this is because Unified CCX uses the Network Time Protocol (NTP) service to synchronize the Unified CCX system time with the NTP server that runs on the Cisco Unified Communications Manager. If **Disable ICM time synchronization** is unchecked, the IPCC Express Gateway PG attempts time synchronization with the Unified ICM Central Controller; this conflicts with the NTP service.

Warning: This dual-time synchronization can have a detrimental impact on Unified CCX functionality!

Accepting the default for **Disable ICM time synchronization** during the IPCC Express Gateway PG setup prevents a conflict and the NTP client service running on Unified CCX machine is able to keep the time synchronized with the Unified CM.

This means that the time on the Unified CCX server and the Unified ICM Central Controller might not be in sync. When this happens:

- The IPCC Express Gateway PG-specific historical data records the Unified CCX system time.
- The Unified ICM central controller delivers a warning message that the IPCC Express Gateway PG is out-of-sync with the Unified ICME system.
- Peripheral reports might not cover equivalent time periods relative to system reports (for example, Call Type reports).

This behavior is similar to what is seen when other ACDs are integrated with Unified ICME.

Autoconfiguration between Unified CCX and Unified ICME

Autoconfiguration is a feature of the Cisco Contact Center Gateway that minimizes the need to perform redundant configuration tasks on the Unified CCX child and the Unified ICME parent.

The following table shows the elements of Unified CCX that automatically get configured in Unified ICME. You make the configuration changes on the Unified CCX Administration user interface.

Table 3: Autoconfiguration

Unified CCX	Unified ICME
Resource	Agent. Note that the agent extension goes to the Station field of the Peripheral Monitor Table.
CSQ	Skill Group
Application	Service
Route Point (Trigger)	Routing Device, Peripheral Monitor Table

Agents are added and extensions are assigned to them in Unified CM Administration. In Unified CCX agents are called resources. This agent information is automatically sent to Unified ICME by the IPCC Express Gateway. You assign resource groups and skills to agents using the Unified CCX Administration web interface. See the *Cisco Unified Contact Center Express Administration Guide*.

Autoconfiguration Example of CSQ/Skill Group

For example, when you configure a Contact Service Queue (CSQ) on Unified CCX, the data is sent by the IPCC Express Gateway to Unified ICME, where it is automatically configured as a Skill Group.

To enter a Unified CCX CSQ, complete the following steps:

1. From the Unified CCX Administration menu bar, choose **Subsystems** > **RmCm**.

   The Unified CCX Configuration web page opens, displaying the RM JTAPI Provider area.

2. On the Unified CCX Configuration navigation bar, click the **Contact Service Queues** hyperlink.

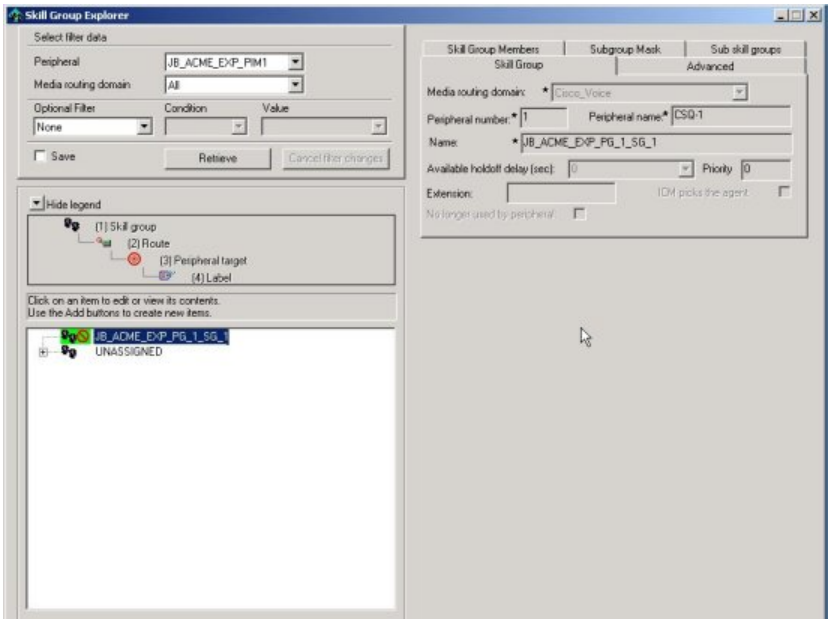
   The Contact Service Queues summary web page opens. Enter information in the fields and additional windows as described in the *Cisco Unified Contact Center Express Administration Guide*.

3. When all steps in the procedure are complete, click **Add**. The new CSQ displays and all agents belonging to the resource group or skill group selected are now a part of this CSQ.

You can confirm that the skill group has been added to Unified ICME by checking the Unified ICME Skill Group Explorer. As shown in the following Skill Group Explorer window, autoconfigured items display on the Unified ICME AW with a special icon next to them (a red circle with a line through the center). This icon means that changes are to be done from Unified CCX only. In addition, some entry fields, such as the No longer used by peripheral check box, are grayed out.

For information about autoconfiguration maintenance, see the section Autoconfiguration with IPCC Enterprise Gateway (page 85).

Figure 56: Skill Group Explorer with Red Circle Icon



Autoconfiguration settings cannot be changed on Unified ICME. If you want to make a change to an agent, skill group, or service, you must do so on the child Unified CCX system using the Unified CCX Administration web interface.

Note: Do not confuse Cisco Contact Center Gateway autoconfiguration with Agent autoconfiguration, which activates the AgentCfg utility to maintain agent configuration data for the peripheral.

Agent autoconfiguration is a check box option available on the Advanced tab in the PG Explorer. Be sure that Agent autoconfiguration is disabled so that the IPCC Express Gateway PG can function properly.

See Also

For detailed information about configuring Unified CCX, see the *Cisco Unified Contact Center Express Administration Guide*.

Routing in IPCC Express Gateway Deployments

In the IPCC Express Gateway deployment model, the Unified CCX child is integrated with the Unified ICME parent as an ACD, and all the Unified ICME routing concepts, namely, pre-routing, translation-routing, and post-routing are supported in this deployment model.

Pre-Routing

Pre-routing is a Unified ICME routing concept that enables Unified ICME to execute routing business logic to select the site to which you want to send the call while the call is still in the network.

As Unified CCX integrates with the Unified ICME parent as an ACD, Unified ICME receives a continuous feed of calls and agent state information from Unified CCX via the IPCC Express Gateway PG, and thus Unified ICME knows about the number of agents available in different CSQs on all connected Unified CCX child systems.

In the pre-routing call flow, when a customer makes a call, the network holds the call and sends a route request to Unified ICME via NIC. Unified ICME returns a route response to the network carrier with a label, which is a route-point (trigger) on a Unified CCX site connected to the Unified ICME parent. The network uses the label to send the call to the specified destination (Unified CCX child). When the call arrives at the Unified CCX, the call triggers a script that queues the call and routes to an agent.

Note: No call variables are passed during pre-routing.

Post-Routing

Post-routing is another Unified ICME routing concept which enables Unified ICME to make secondary routing decisions after a call has been initially processed at a connected ACD (child Unified CCX site).

When a call arrives at a Unified CCX trigger, a workflow (script) is executed. Unified CCX can make a post-route request to Unified ICME to query final destination of the call (by placing the Request Route step in the workflow).

When Unified ICME gets the route request by way of the IPCC Express Gateway PG, a Unified ICME script is executed and returns a label to Unified CCX. The Unified CCX script, which sent the post-route request using the Route Request Step, then handles the call according to the label received.

In the case of the IPCC Express Gateway, some examples of the labels returned by Unified ICME are:

- Route point (local or remote): Design the Unified CCX script to redirect the call to the specified route point by using the redirect step and passing the route point in the label.
- CSQ ID (for skill-based routing): Design the Unified CCX script to queue the call to a Contact Service Queue (CSQ) by using the Select Resource step and passing the CSQ-Id received in the label.
- Agent ID (for agent-based routing): Design the Unified CCX script to send the call to an agent.

Note:

- Request Route Step does not allow modification of call data. A Unified CCX workflow needs to use the new steps--Get Enterprise Call Info and Set Enterprise Call Info--to access call data
- If the call is redirected from one Unified CCX child to another Unified CCX child, based upon a label returned by Unified ICME, the call variables are not transferred from one Unified CCX site to the other and the call appears as a new call to the second Unified CCX site.

Translation Routing

Translation routing is another Unified ICME routing concept which enables passing the call variables along with a call in case the call is routed from one peripheral to another (one Unified CCX child to another in this deployment model). For sending a call from one Unified CCX to another Unified CCX (or Unified CCE), an inter-cluster trunk must be set up between the two Unified CMs on each site.

Note: This implies that translation routing be used only when there are multiple Unified CCX child systems connected to the same Unified ICME parent and it is required to pass call variables when calls are redirected from one Unified CCX child to another.

Translation routes must be configured on Unified ICME with a pool of dialed numbers that have been defined on Unified CCX as route points. A Unified ICME script must be set up to set call data and route the call to a service that has been defined as an application on IPCC Express.

Translation routing can be used with both pre- and post-routing.

The translation routing with post-routing call flow is similar to the post-route call flow, until the point where a Unified CCX site gets a new call and sends a route request to Unified ICME, and Unified ICME decides to redirect the call to another Unified CCX site. Unified ICME returns a label, which points to a route point (trigger) on another Unified CCX site. In addition

to returning the route response (label) to the requesting Unified CCX Site, Unified ICME also sends a separate message (known as the pre-call) with the call variables to the IPCC Express Gateway PG on the Unified CCX site where the call is redirected.

Upon receiving the label, the first Unified CCX site redirects the call to the second Unified CCX. When the call arrives at the second Unified CCX, it makes another route request to Unified ICME using the Request Route step. When the IPCC Express Gateway PG on this second site gets this route request, it matches the route request with the pre-call message from Unified ICME and returns a label and call variables to Unified CCX. Unified CCX handles the call in accordance with the label received and adds the call variables, if present.

In case of translation routing with pre-routing, the call flow is similar to pre-routing. In addition to directing the network carrier to send the call to a given Unified CCX site, the Unified ICME also sends a pre-call to the IPCC Express Gateway PG on that site containing the call variables. When the call arrives at the Unified CCX, it follow the same flow described above.

See Also

See the task Using Translation Routing (page 90)

Scripting on the Unified CCX Child

The Unified CCX Editor contains three steps that specifically interface with Cisco Contact Center Gateway:

- **Get Enterprise Call Info** / **Set Enterprise Call Info** (Call Contact palette of Unified CCX Editor). Use these steps to retrieve or send data from one part of your system to another. In a Cisco Contact Center Gateway deployment, this enables getting and setting data from Unified CCX to the Unified ICME parent and Cisco Agent Desktop. As this step must appear in a Unified CCX script before the call is connected to an agent, place this step in the script before the Request Route or Select Resource Step.

- **Request Route** (ACD palette). Use the Request Route step to request a call routing label from Unified ICME. A Unified CCX script can then use that label to process the call further. The route point must be registered in the Peripheral Monitor table of Unified ICME, and the route request is uniquely identified by the route point.

  The Request Route step has two output branches:

  – **Selected**. The Request Route step successfully returned a routing destination from Unified ICME.

  – **Failed**. The Request Route step failed to return a routing destination from Unified ICME.

Figure 57: Request Route Step

Call Variables in IPCC Express Gateway

Unified CCX uses Call Variables and Expanded Call variables when passing data between the systems. For example, the Set Enterprise Call Info step in the Unified CCX Editor has two tabs. Use the General tab to set call data in predefined call variables; use the Expanded Call Variables tab to set data in enterprise ECC variables.

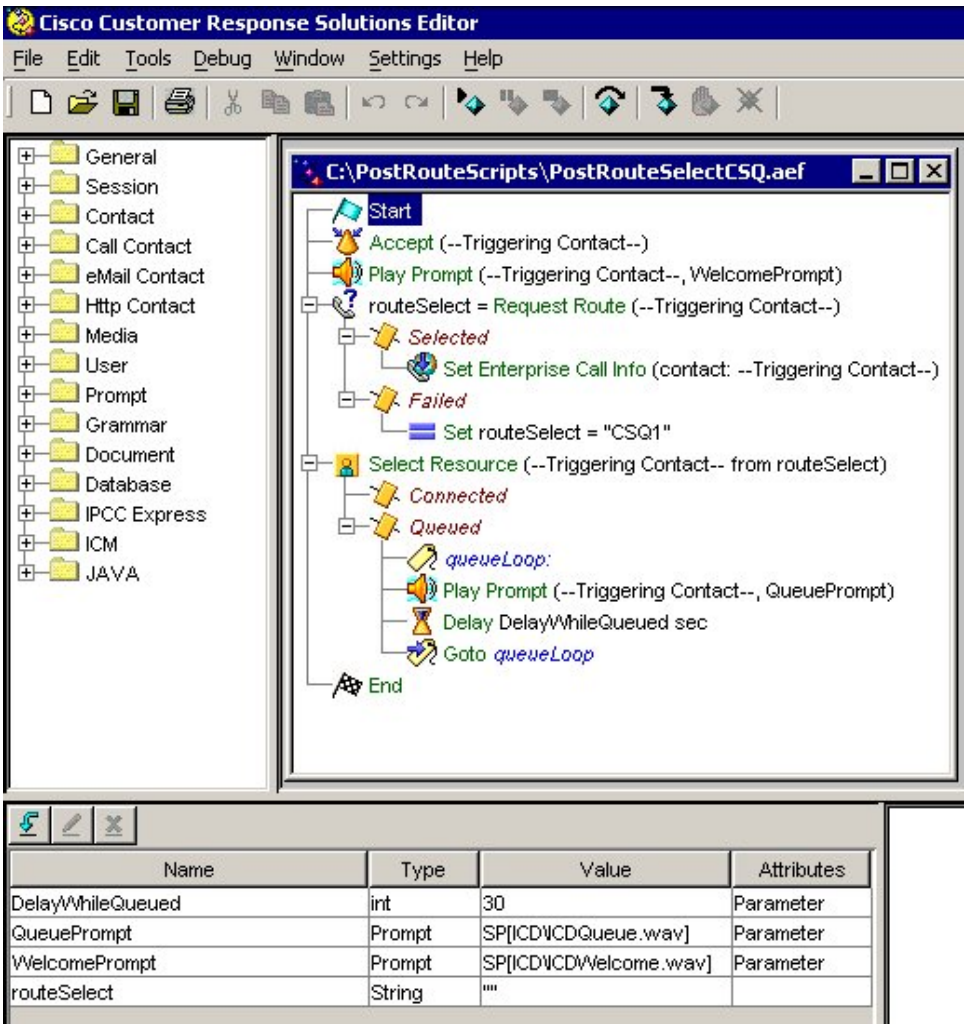
Every enterprise ECC variable must be defined on both sides of the system that sends and receives the variable data. In a Unified CCX system integrated with Unified ICME through the IPCC Express Gateway, the enterprise ECC variable must be defined both in Unified CCX, in Cisco Desktop Administrator (CDA), and also in Unified ICME (in the Expanded Call Variable List Tool in Unified ICM Configuration Manager).

Note:

- All ECC variable names must begin with the characters: **`user.`**(includes period).
- For more information about defining Call Variables/Expanded Call Variables in Unified CCX, see *Cisco Unified Contact Center Express Scripting and Development Series: Volume 1, Getting Started with Scripts*, and *Volume 2, Editor Step Reference*. For more information about defining Call Variables/Expanded Call Variables in Unified ICM, see *Scripting and Media Routing Guide for ICM/IPCC Enterprise and Hosted Editions*.

The following figure shows a sample Unified CCX Script that Selects a CSQ:

Figure 58: Unified CCX Script

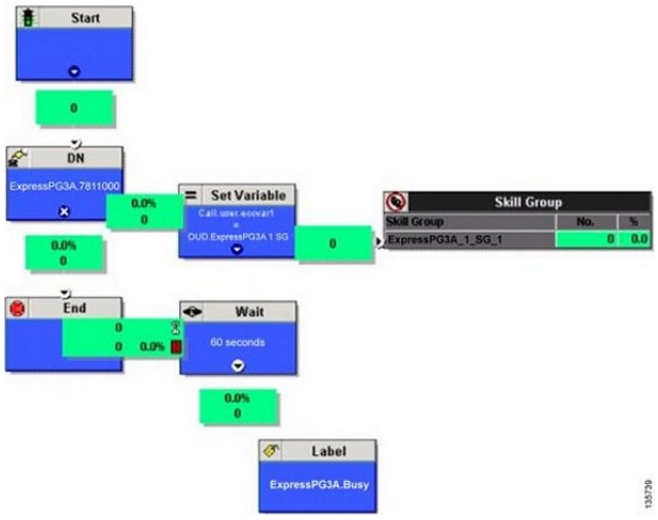


The variables used in the script are shown at the bottom of the figure. The variables, this script, and other scripts are described in detail in the *Designing IPCC Gateway Scripts* chapter in *Cisco Unified Contact Center Express Scripting and Development Series: Volume 1, Getting Started with Scripts*. The Unified CCX steps, agent-based routing, and skill-based routing are also explained in that book as well as in *Cisco Unified Contact Center Express Scripting and Development Series: Volume 2, Editor Step Reference*.

Scripting on the Unified ICME Parent

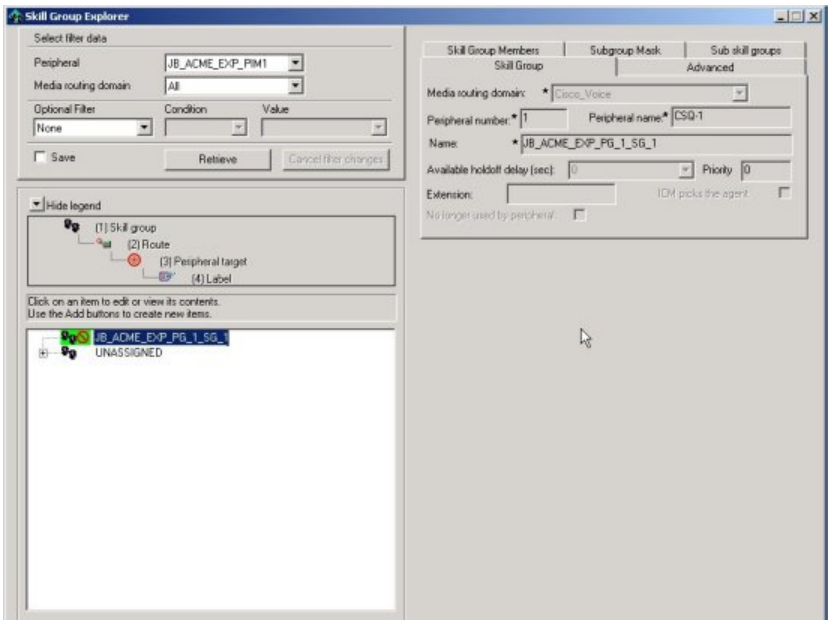
The script on the Unified ICME parent interacts with the IPCC Express Gateway PG. The following figure shows a Unified ICME parent script that selects Ready resource from skill group and returns a CSQ label.

Figure 59: Unified ICME Routing Script



Note: In the following figure in the "hide legend" section of the configured Skill Group Explorer that a label is returned. In Unified CCX, a CSQ equates to a Skill Group in Unified ICME.

Figure 60: CSQ Label on Skill Group Explorer



Translation Routing Call Flow

The following call flow is for a translation route. The deployment shows a Unified ICME parent with three children (Unified SCCE, Unified CCE, and Unified CCX). The Unified CCX originates the call.

The following happens in the call flow:

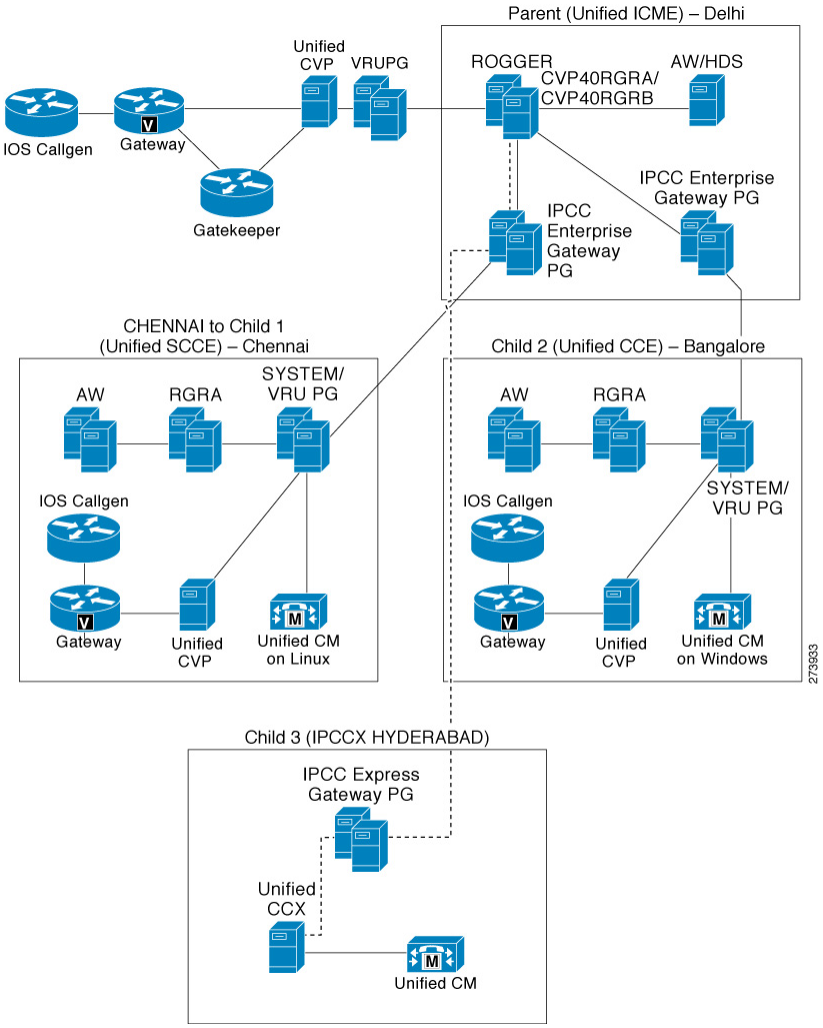
1. The call originates at the child Unified CCX (Child 3), and a request is sent to the Unified ICME via the Child 3 System/VRU PG and the Parent Gateway PG.

2. Unified ICME provides a temporary label to Unified CCX via the IPCC Express Gateway PG and a permanent label to Unified CCE via the other Parent Enterprise Gateway PG and the Child 2 System/VRU PG.

3. The call is sent from the Child 3 Unified CCX to the Unified CM (connected to the child Unified CCX).

4. Then the call is sent to the Child 2 Unified CM (connected to the Child 2 Unified CCE) and an adjunct route request (post route) is made to complete the translation route.

Figure 61: Translation Route with Unified CCX

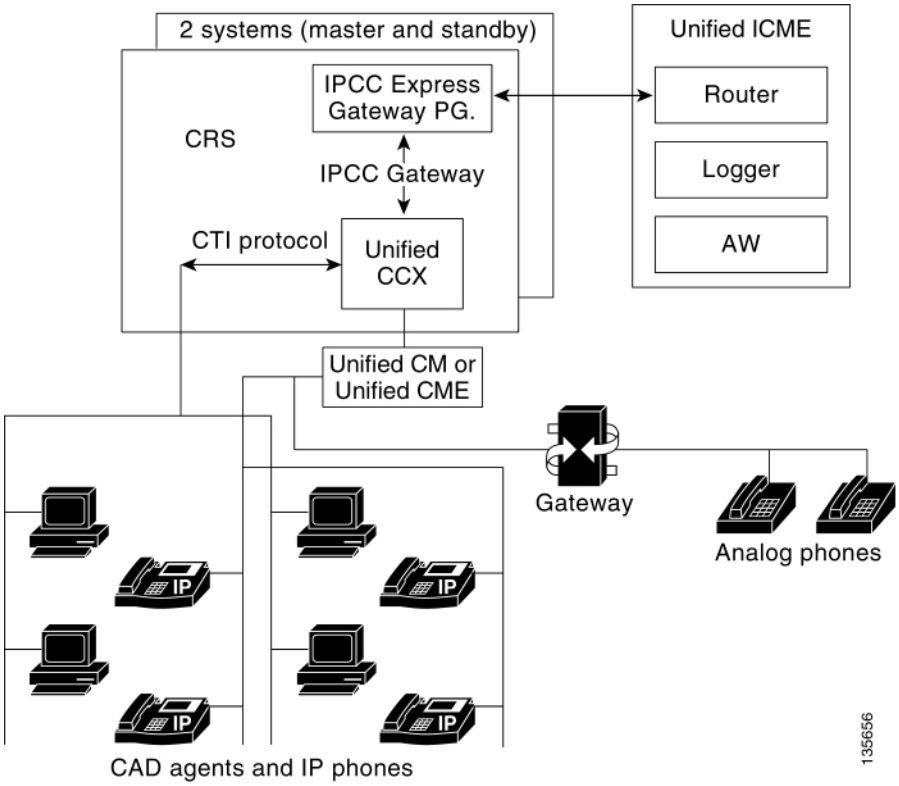


High Availability with IPCC Express Gateway

In high availability, there is a Side A PG installed on each of the two nodes of Unified CCX. Only one of the servers, the Master, is active at a time. When the active side fails, the standby side starts up, but all the calls in queue are dropped and the now-active server and PGs go through a full re-initialization. (For more information on the Unified CCX Master Server, see the *Cisco Unified CCX Administration Guide*.)

The following figure shows an IPCC Express Gateway PG on two Unified CCX Servers, the master and the standby servers.

Figure 62: High Availability with IPCC Express Gateway PG



Only the IPCC Express Gateway PG on the Master Unified CCX node is activated and connects to the Unified ICME CallRouter. The Cisco Contact Center Gateway Manager controls activation and deactivation of the IPCC Express Gateway PG.

When there is a Mastership change (failover) on the Unified CCX servers, the PGs on both nodes are notified of the change; and activate or deactivate according to their Mastership status.

The Unified CCX child still maintains its *site* or local routing capability. In contrast to Unified CCE deployments where CallManager PG loses contact with the CallRouter, Unified CCX is self-sustaining and does not need Unified ICME to function.

The following describes IPCC Express Gateway PG recovery in three different failure scenarios:

- **IPCC Express Gateway PG Fails/Unified CCX Server Active**. If a software problem causes IPCC Express Gateway PG failure, Unified ICME Node Manager restarts the IPCC Express Gateway PG. There is no fault tolerance at the Unified ICME level; all call and agent state changes that occur while the PG is inactive are lost to Unified ICME. When Unified ICME reconnects, it receives call and agent information for the *current* time period.

- **IPCC Express Gateway PG-to-Unified ICME Connectivity Fails**. If a network problem disrupts the connection between IPCC Express Gateway PG and Unified ICME, the Unified ICME keeps trying to reconnect until it is successful. When Unified ICME reconnects, it receives call and agent information for both the current *and* disconnected time periods.

- **Unified ICME Side A Fails/IPCC Express Gateway PG Active**. If a problem occurs on the Unified ICME side, Unified ICME automatically fails over to its Side B. There is no disruption in the flow of information from the IPCC Express Gateway PG.

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