



Cisco ICM Web Option with IPCC Implementation Guide

Cisco CallManager, Version 3.09
Cisco Collaboration Server, Version 4.0
Cisco Intelligent Contact Management, Version 4.5
Cisco Media Blender, Build 4.0.113
Cisco Trailhead, Version 4.0

Cisco ICM Web Option with IPCC Implementation Guide

Copyright© 2001, Cisco Systems Inc., all rights reserved.

AccessPath, AtmDirector, Browse with Me, CCIP, CCSI, CD-PAC, CiscoLink, the Cisco Powered Network logo, Cisco Systems Networking Academy, the Cisco Systems Networking Academy logo, Fast Step, Follow Me Browsing, FormShare, FrameShare, GigaStack, IGX, Internet Quotient, IP/VC, iQ Breakthrough, iQ Expertise, iQ FastTrack, the iQ Logo, iQ Net Readiness Scorecard, MGX, the Networkers logo, Packet, RateMUX, ScriptBuilder, ScriptShare, SlideCast, SMARTnet, TransPath, Unity, Voice LAN, Wavelength Router, and WebViewer are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, Discover All That's Possible, and Empowering the Internet Generation, are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Enterprise/Solver, EtherChannel, EtherSwitch, FastHub, FastSwitch, IOS, IP/TV, LightStream, MICA, Network Registrar, PIX, Post-Routing, Pre-Routing, Registrar, StrataView Plus, Stratm, SwitchProbe, TeleRouter, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0106R)

Table of Contents

<i>ABOUT THIS GUIDE</i>	1
Audience	1
Document Structure	1
Related Documentation	1
Cisco Media Blender	1
Cisco Collaboration Server	2
Cisco Intelligent Contact Management Software.....	2
Cisco CallManager.....	2
<i>INTRODUCTION TO CISCO ICM WEB OPTION WITH IPCC</i>	3
Internet Protocol Contact Center	3
Intelligent Contact Management Software	4
Cisco CallManager.....	4
Internet Protocol Interactive Voice Response	4
Web PG	4
Voice Gateway	4
Cisco Collaboration Server	5
Cisco CTI Server	5
Cisco Media Blender	5
Cisco Trailhead	5
<i>CALL FLOW DESCRIPTIONS</i>	6
Flow of a Blended Collaboration Request	7
Flow of a Text Chat Request	8
Flow of a Callback Only Request	9
Flow of a Delayed Callback Request	10
<i>CONFIGURATION AND DEPLOYMENT TIPS</i>	11
ICM and IPCC Components	11
CMB, CCS, and CTH Components	12
Networking and Web Components	12
<i>SUGGESTED IMPLEMENTATION PLAN</i>	13
<i>SUPPORTING PHANTOM STRATEGIES</i>	16

Cisco ICM Web Option with IPCC Implementation Guide

Strategies for Voice Calls	16
Strategies for Text Chat Sessions	16
Setting up Phantom Lines	17
Determine Phantom Line Requirements	17
Add a Phantom Phone Using CallManager	18
ICM Phantom Configurations	24
Add a Device Target	24
Create Phantom Agents	25
Create a Phantom Skill Group.....	26
Configure CMB Phantom-Related Property Files	28
Create a Phantom Pool File	28
Map Agent IDs to Physical Phone IDs.....	29
Assign Passwords to Agent IDs	29
<i>SAMPLE ICM SCRIPT</i>	30
<i>INDEX</i>	33

About this Guide

This guide provides a high-level description of the Cisco ICM Web Option with IPCC solution and explains how it differs from the standard Cisco ICM Web Option solution that is integrated with an automatic call distributor (ACD). This is a Cisco Professional Services solution and a strictly defined variant of the standard Cisco ICM Web Option deployment.

Audience

This guide provides help for Cisco deployment engineers, application consultants, and Professional Services engineers, as well as Cisco partners, who are responsible for deploying the Cisco ICM Web Option with IPCC solution.

Document Structure

This guide has the following sections:

- **Introduction to Cisco ICM Web Option with IPCC**—This section describes all the elements of the Cisco ICM Web Option with IPCC solution.
- **Call Flow Descriptions**—This section provides call flows for blended collaboration, text chat, callback only, and delayed callback requests.
- **Configuration and Deployment Tips**—This section provides some practical information to help you plan the deployment of the solution.
- **Suggested Implementation Plan**—This section provides a high-level procedure for deploying the solution. It supplements the documents listed in the “Related Documentation” section.
- **Supporting Phantom Strategies**—This section describes the various phantom strategies supported by the solution. It also explains how to set up phantom lines using Cisco CallManager, Intelligent Contact Management software, and Cisco Media Blender.
- **Sample ICM Script**—This section provides a sample ICM inbound script that checks the dialed number (DN) and goes on to another script which shows the peripheral targets and the labels.

Related Documentation

You will need the following documentation provided with these Cisco products:

Cisco Media Blender

- *Cisco ICM Web Option Release Notes*
- *Cisco ICM Web Option Overview*
- *Installing Cisco Media Blender on NT Systems Running IIS*
- *Cisco Media Blender Configuration Handbook*
- *Cisco Media Blender Reference Guide*

Cisco ICM Web Option with IPCC Implementation Guide

- *Cisco ICM Web Option: Trailhead Configuration and Administration Guide*
- *Installing Trailhead on NT Systems Running IIS*

Cisco Collaboration Server

- *Cisco Collaboration Server Administration Guide*
- *Cisco Collaboration Server Installation Guide: Windows NT/IIS*

Cisco Intelligent Contact Management Software

- *Cisco ICM Software IPCC Administrator Guide*
- *Cisco ICM Software IPCC Agent Desktop User Guide*
- *Cisco ICM Software Release Notes*
- *Cisco ICM Software Installation Guide*
- *Cisco ICM Software Planning Guide*
- *Cisco ICM Software Configuration Guide*
- *Cisco ICM Software Database Schema Handbook*
- *Cisco ICM Software Script Editor Guide*
- *Cisco ICM Software Administrator Guide*

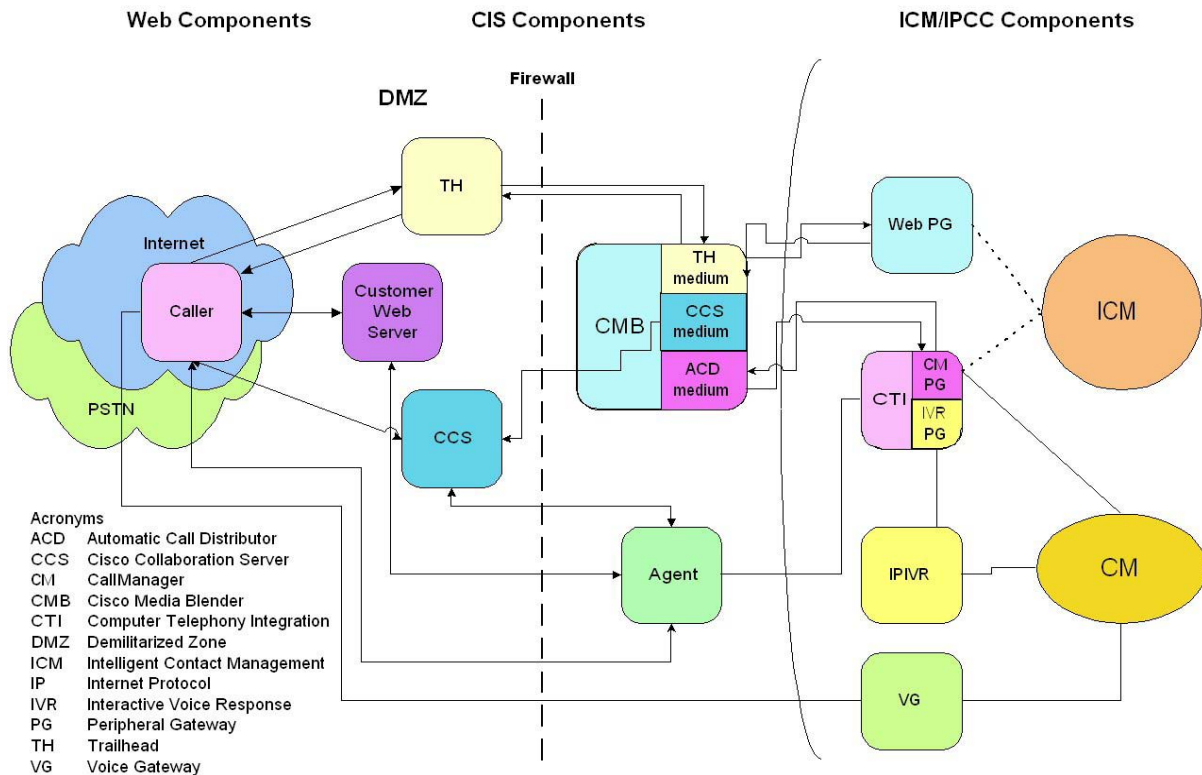
Cisco CallManager

- *Cisco CallManager Administration Guide*
- *Installing Cisco CallManager*
- *Quick Start Guide for Cisco CallManager Release*

Introduction to Cisco ICM Web Option with IPCC

Cisco ICM Web Option with IPCC, a single-site solution, is similar to the ICM Web Option solution that is integrated with an automatic call distributor (ACD). However, the Cisco IPCC, which is sometimes called a virtual ACD, replaces the legacy ACD in the integration.

The Cisco ICM Web Option with IPCC solution integrates many software and hardware elements that you must install and configure. This section describes these elements, which are shown on the following figure.



Internet Protocol Contact Center

The Cisco Internet Protocol Contact Center (IPCC) system functions as a virtual ACD. Some of the capabilities of IPCC include intelligent multi-channel contact routing, ACD functionality, network-to-desktop computer telephony integration (CTI), interactive voice response (IVR) integration, call queuing, and consolidated reporting. Cisco combines three major components to form the IPCC system:

- Cisco Intelligent Contact Management (ICM) software
- Cisco CallManager (CCM)
- Internet Protocol Interactive Voice Response (IPIVR)

Intelligent Contact Management Software

ICM software implements enterprise-wide call distribution across call centers and provides Pre-Routing, Post-Routing, and performance monitoring capabilities.

In the Cisco ICM Web Option with IPCC integration, the ICM Central Controller receives route requests and typically responds with a router response in less than half a second. The router response includes a routing label and call data. The routing label specifies the skill group that will handle this contact. The call data includes any information collected from the customer's web session and passed by the Cisco Trailhead server to the ICM Central Controller by way of the Cisco Trailhead medium on Cisco Media Blender. It also includes any values assigned by the ICM router during the routing script (possibly from a database lookup).

Cisco CallManager

CCM is a computer platform that provides traditional PBX telephony features and functions to packet telephony devices such as Cisco IP phones and Voice-over IP (VoIP) gateways. CCM also supports supplementary and enhanced services such as hold, transfer, forward, conference, automatic route selection, speed dial, and last number redial.

The CCM software resides on the Cisco Media Convergence Server, a dedicated Windows 2000-based PC. CCM uses open standards such as TCP/IP, H.323, and MGCP. CCM takes care of the switching requirements of IPCC.

Internet Protocol Interactive Voice Response

IP IVR provides queuing, voice response, and auto-attendant functions for IPCC. It is an IP-powered interactive voice response solution that provides an open, extensible, and feature-rich foundation for the creation and delivery of IVR solutions.

An IVR is a telecommunications computer, also called a voice response unit (VRU), that responds to caller entered touch-tone digits. The IVR responds to caller-entered digits in much the same way that a conventional computer responds to keystrokes or a click of the mouse. The IVR uses a digitized voice to read menu selections to the caller. The caller then enters the touch-tone digits that correspond to the desired menu selection.

Web PG

The Web Peripheral Gateway (PG) is a VRU PG. It is only used with the Cisco ICM Web Option and must be installed separately from the ICM software.

The Web PG receives a route request from CMB and feeds it to the ICM Central Controller.

Voice Gateway

A voice gateway provides a connection path between the Public Switched Telephone Network (PSTN) and the Cisco AVVID IP telephony network by converting analog and digital voice into IP packets.

Cisco Collaboration Server

CCS, a Web server located outside a firewall, manages real-time Web collaboration between a caller and a contact center agent. CCS downloads JavaScript into the caller's browser and instructs CMB to set up a Web callback. When CMB sets up the callback using the selected CTI strategy and informs CCS of the agent selection, CCS gives control of the caller's browser to the appropriate agent. To do this the agent must already be logged into the CCS. The agent can use any of the CCS features to service the caller.

Note: Although CCS 4.0 offers multi-session chat functionality, the Cisco ICM Web Option with IPCC solution supports only single-session chat.

Cisco CTI Server

The CTI server runs on the CallManager Peripheral Gateway (CM PG). It provides third-party call control and event notification from CCM. CMB interfaces with the CTI server to set up and control the Web callbacks.

When an agent is assigned, the CTI server uses the caller information to notify the agent. This is done using a screen pop on the ICM software's agent Softphone or within a desktop application, for example, a customer relationship management (CRM) application. The CTI server and the CMB interaction can also provide blended conference and transfer.

Cisco Media Blender

CMB helps you synchronize your Web- and ACD-based call center systems by sharing CTI events among participating media. CMB serves as a backbone for blending call requests and performs the following tasks:

- CMB uses HTTP tunneling and its Cisco Trailhead (CTH) medium to proxy communications between the Trailhead server and the Web PG.
- CMB interacts with the CTI server through the CallManager PG to set up and control Web callbacks.
- For blended collaboration, a CMB receives instructions from CCS to set up a Web callback. CMB sets up a callback using the selected CTI strategy. When the call is assigned, CMB notifies CCS of the agent selection.

Cisco Trailhead

CTH is made up of two software components—the Trailhead server, which resides outside a firewall, and the Trailhead medium, which resides inside the same firewall on the CMB machine. Each component is configured using a `Trailhead.properties` file on CMB and a `Trailhead.server.properties` file on the CTH server. The CTH server and the CTH medium communicate with each other using Remote Method Invocation (RMI) connections.

Call Flow Descriptions

The components of the Cisco ICM Web Option with IPCC solution interact in similar ways through four different types of call flows. Note that the call flow represented in the figure in the “Introduction to Cisco ICM Web Option with IPCC” section is the blended collaboration call flow.

Call flow descriptions are provided for the following types of requests:

- Blended collaboration—The caller places a Web request and receives a phone call from an agent. The caller then interacts and shares information with the agent over the Internet. The caller and agent can share Web pages, forms, or applications using a common Web browser.
- Text chat—The caller places a Web request and then participates in a text chat with an agent.
- Callback only—The caller places a Web request and receives a callback from an agent.
- Delayed callback—This is similar to a callback-only request, but the caller requests a callback at a specified future time.

After you have set up the Cisco ICM Web Option with IPCC solution, test all of the caller and agent interactions your company plans to use.

All of the following call flow descriptions assume that the agents have logged into both CCS and IPCC. They do this separately. To log into CCS, the agents use the `agentlogon.html` form on CCS. To log into the IPCC, they use the IPCC agent desktop.

Flow of a Blended Collaboration Request

Step	Component	Event
1	Customer	The customer (caller) clicks a button on a browser page asking for help.
2	CTH	CTH server serves up the <code>callform.html</code> form.
3	Customer	The customer completes the form, adding name, phone number, and skill type required. The customer selects the Want Collaboration option and posts the form to the CTH server. Note that the customer's route code is selected, hard-coded, or inserted into a hidden field by the Web site.
4	CTH	CTH server receives the form and encapsulates data in a Java object.
5	CMB	CTH medium on CMB polls for new submissions and retrieves information from the CTH server. It parses out field information by way of the <code>in.map.properties</code> file. That information is relayed to the Web PG.
6	Web PG	Web PG forwards the request to the ICM Central Controller.
7	ICM	ICM Central Controller accepts a route request and runs an ICM script based on the call type (DN is mandatory; CED, ANI, and other call variables are optional).
8	ICM	ICM Central Controller returns a router response (with a label) in the form of a route-route point that determines which call center and agent skill group will be given the request.
9	Web PG	Web PG receives the router response and passes it to CMB.
10	CMB	CTH medium on CMB receives the ICM router response, processes it through the <code>Trailhead.properties</code> destination section, and passes it to CTH.
11	CTH	CTH server sends an appropriate response HTML page to the customer.
12	Customer	The customer sees the HTML success page. That page, with its hidden fields, posts to CCS.
13	CCS	CCS serves an applet to the customer's browser. A session starts and CCS requests an agent ID from CMB.
14	CMB	CMB receives notification of a new session, selects a phantom line, and sends a Make Call request to the CTI server from the phantom line to the appropriate skill group.
15	CTI server	CTI server executes the Make Call request and returns a Make Call confirmation. The call is routed to the IP IVR to be queued to the agent group.
16	Agent	When an agent is available, that agent's phone rings. The agent answers.
17	CTI server	CTI server sends a call-established event to CMB, making CMB aware of the agent ID assigned to this customer contact.
18	CMB	CMB takes the call-established event, sends a Make Call request to the CTI server with the caller's number, and sends the agent ID to CCS.
19	CTI server	CTI server executes the Make Call request.
20	Customer	When the customer answers the phone, the CTI server receives an answer event from CCM and forwards it to CMB.
21	CMB/ Agent	CMB releases the phantom line. The agent is now on a voice call with the customer.
22	CCS	CCS assigns the call to a specified agent.
23	Customer/ Agent	Collaboration is now enabled with both the customer and the agent.

Flow of a Text Chat Request

Step	Component	Event
1	Customer	The customer (caller) clicks a button a browser page asking for help.
2	CTH	CTH server serves up the <code>callform.html</code> form.
3	Customer	The customer enters a phone number, selects the Want Chat option, and posts the form to the CTH server. Note that the customer's route code is selected, hard-coded, or inserted into a hidden field by the Web site.
4	CTH	CTH server receives the form and encapsulates data in a Java object.
5	CMB	CTH medium on CMB polls for new submissions and retrieves information from the CTH server. It parses out field information by way of the <code>in.map.properties</code> file. That information is relayed to the Web PG.
6	Web PG	Web PG forwards the request to the ICM Central Controller.
7	ICM	ICM Central Controller accepts a route request and runs an ICM Script based on the call type (DN is mandatory; CED, ANI, and other call variables are optional).
8	ICM	ICM Central Controller returns a router response (with a label) in the form of a route-route point that determines which call center and agent skill group will be given the request.
9	Web PG	Web PG receives the router response and passes it to CMB.
10	CMB	CTH medium on CMB receives the ICM router response, processes it through the <code>Trailhead.properties</code> destination section, and passes it to the CTH server.
11	CTH	CTH server sends an appropriate response HTML page to the customer.
12	Customer	The customer sees the HTML success page. That page, with its hidden fields, posts to CCS.
13	CCS	CCS serves an applet to the customer's browser. A session starts and CCS requests an agent ID from CMB.
14	CMB	CMB receives notification of a new request, selects a phantom line, and sends a Make Call request to the CTI server from the phantom line to the appropriate skill group.
15	CTI server	CTI server executes the Make Call request and returns a Make Call confirmation. The call is routed to the IP IVR to be queued to the agent group.
16	Agent	When an agent is available, that agent's phone rings and is placed on hold.
17	CTI server	CTI server sends a call-established event is to CMB.
18	CMB	CMB takes the call-established event, passes the agent ID to CCS, and, depending on the phantom strategy used, releases or holds the phantom line. See the "Strategies for Text Chat Sessions" section.
19	CCS	CCS assigns the call to the agent.
20	Customer/ Agent	Collaboration is now enabled with both the customer and the agent.

Flow of a Callback Only Request

Step	Component	Event
1	Customer	The customer (caller) clicks a button on a browser page asking for help.
2	CTH	CTH server serves up the <code>callform.html</code> form.
3	Customer	The customer enters a phone number, selects the Want Callback option, picks “Now” for the time from the drop-down menu, and posts the form to CTH. Note that the customer’s route code is selected, hard-coded, or inserted into a hidden field by the Web site.
4	CTH	CTH server receives the form and encapsulates data in a Java object.
5	CMB	CTH medium on CMB polls for new submissions and retrieves information from the CTH server. It parses out field information by way of the <code>in.map.properties</code> file. That information is relayed to the Web PG.
6	Web PG	Web PG forwards the request to the ICM Central Controller.
7	ICM	ICM Central Controller accepts a route request and runs an ICM script based on the call type (DN is mandatory; CED, ANI, and other call variables are optional).
8	ICM	ICM Central Controller returns a router response (with a label) in the form of a route-route point that determines which contact center and which agent skill group will be given the request.
9	Web PG	Web PG receives the router response and passes it to CMB.
10	CMB	CTH medium on CMB receives the ICM router response, processes it through the <code>Trailhead.properties</code> destination section, and passes it to the CTH server.
11	CTH	CTH server sends an appropriate response HTML page to the customer.
12	Customer	The customer sees the static HTML success page.
13	CMB	CTH notifies CMB of the request. CMB selects a phantom line and sends a Make Call request to the CTI server from the phantom line to the appropriate skill group.
14	CTI server	CTI server executes the Make Call request and returns a Make Call confirmation. The call is routed to the IP IVR to be queued to the agent group.
15	Agent	When an agent is available, that agent’s phone rings. The agent answers.
16	CTI Server	CTI server sends a call-established event to CMB.
17	CMB	CMB sends a Make Call request to the CTI server with the caller’s number.
18	CTI server	CTI server executes the Make Call request.
19	Customer	The customer’s phone rings. The customer answers and talks to the agent.
20	CMB/ Agent	CMB releases the phantom line. Agent is now on a voice call with the customer.

Flow of a Delayed Callback Request

Step	Component	Event
1	Customer	The customer (caller) clicks a button on a browser page asking for help.
2	CTH	CTH server serves up the <code>callform.html</code> form.
3	Customer	The customer enters a phone number and selects the Want Callback option, picks a future time from the drop-down menu, and posts the form to CTH. Note that the customer's route code is selected, hard-coded, or inserted into a hidden field by the Web site.
4	CTH	CTH server receives the form and encapsulates data in a Java object.
5	CMB	CTH medium on the CMB polls for new submissions and retrieves information from the CTH server. It parses out field information by way of the <code>in.map.properties</code> file. That information is relayed to the Web PG.
6	Web PG	Web PG forwards the request to the ICM Central Controller.
7	ICM	ICM Central Controller accepts a route request and runs an ICM script based on the call type (DN is mandatory; CED, ANI, and other call variables are optional).
8	ICM	ICM Central Controller returns a router response (with a label) in the form of a route-route point that determines which contact center and agent skill group will be given the request.
9	Web PG	Web PG receives the router response and passes it to CMB.
10	CMB	CTH medium on CMB receives the ICM router response, processes it through the <code>Trailhead.properties</code> destination section, and passes it to the CTH server.
11	CTH	CTH server sends an appropriate response HTML page to the customer.
12	Customer	The customer sees the static HTML success page.
13	CMB	CTH server notifies CMB of the request. CMB holds the call queued in memory until the number of minutes specified on the caller's call form expires. When the number of minutes is reached, CMB selects a phantom line and sends a Make Call request to the CTI server from the phantom line to the appropriate skill group.
14	CTI server	CTI server executes the Make Call request. The call is queued to the agent group.
15	Agent	When an agent is available, that agent's phone rings and is placed on hold.
16	CTI server	CTI server sends a call-established event to CMB.
17	CMB	CMB sends a Make Call request to the CTI server with the caller's number.
18	CTI server	CTI server executes the Make Call request.
19	Customer	Customer's phone rings. The customer answers and talks to the agent.
20	CMB/ Agent	CMB releases the phantom line. Agent is now on a voice call with the customer.

Configuration and Deployment Tips

Standard CCS configuration work can go on independently of the other aspects of the Cisco ICM Web Option with IPCC deployment. Creating custom content directories, configuring agent and call custom properties, and look and feel work can be accomplished before or during the rest of the Cisco ICM Web Option with IPCC implementation. However, the creation of Collaboration agents and the configuration of CTH and CMB require a configured Cisco IPCC system to be present.

ICM and IPCC Components

The ICM and IPCC components include, but are not limited to, the CallRouter, Logger, Admin Workstation, Web PG, CallManager PG, IVR PG, CallManager, and IP IVR. Here are some helpful tips concerning the deployment of the ICM and IPCC components to which the other Cisco ICM Web Option components will be added.

- You must configure the CM PG, Web PG, phantom lines, and CTI servers before you configure CMB.
- The Web PG is a VRU PG with a Network VRU and Post-Routing enabled.
- Personnel configuring CMB will need the IP addresses, port numbers, peripheral IDs, user names, and passwords for the CM PG and CTI server.
- To configure the Web PG to talk to CMB, you will need the CMB IP address and server port to use.
- Before the integration will work, the CTI server must be in active mode, and the Web PG peripheral interface manager (PIM) must be in a mode attempting to connect to CMB.
- Phantom lines using Cisco 7910 or 7960 IP phones need to be created in CallManager. A phantom skill group with phantom agents must be created using ICM software. This information is also necessary for the configuration of CMB. See the “Supporting Phantom Strategies” section.
- Personnel configuring CCS will need the ICM agent ID for any agent who will be configured in CCS. Each ID must be used as the “permanent extension” setting in CCS.
- Labels created in the ICM script for the Web PG routing client must follow the following format: *route-route point*.

CMB, CCS, and CTH Components

Here are some helpful tips for deploying the CCS, CMB, and CTH components. More complete information is available in the documentation that comes with the CCS and CMB products.

- The peripheral type setting to use in the `ACD.ciscocti.properties` file is “IPCC.” Uncomment the `peripheral.type=IPCC` line in that file.
- To configure the CMB to communicate with the CTI server, you need the server IP addresses, port names, peripheral IDs, user names, and passwords. You add this information to the `ACD.ciscocti.properties` file on the CMB server.
- To configure CMB to handle a duplexed CTI server, uncomment the following properties in the `ACD.ciscocti.properties` file:
`peripheral.hostname2=`
`peripheral.hostport2=`

Specify the host name and host port of the other server. If you do not specify values for these properties, the default values for the `peripheral.hostname` and `peripheral.hostport` properties (which already exist in the file) are used. The duplexed CTI server acts as a single PG, but only one side is active at a time. When one side goes down, the other side takes over.

- For CTH to talk to CMB you must configure the `trailhead.server.properties` file on the CTH server; for CMB to talk to CTH, you must configure the `blender.properties` and `Trailhead.properties` files on the CMB server.
- To map the CMB and CTH HTML variables to input variables on the Web PG, you must also configure the `in.map.properties` on the CMB server. See the *Cisco ICM Web Option: Trailhead Configuration and Administration Guide* for more configuration information.
- If you want to pass a value that will get stored in the CCS database and can be used as a reference in custom reports, configure the `out.map.properties` file on the CMB server to pass a value from ICM to the User2 field.
- If you want a secure server, you can configure CTH and CCS for Secure Sockets Layer (SSL).
- You can load-balance multiple CTH servers using the Cisco Local Director but not multiple Collaboration Servers. This will also require an additional CMB and additional PIM processes on the Web PG.

Networking and Web Components

A customer-supplied Network and Internet Topology Team must work with Cisco personnel to resolve any firewall, domain, security, or Web site integration issues and to assist in the performance of various system tests. This team should include employees able to simulate typical agent/caller interactions. People knowledgeable about the company’s Internet network and Web development, and who know the company’s business rules are also needed on this team.

Suggested Implementation Plan

The following is a suggested plan to follow when setting up the Cisco ICM Web Option with IPCC solution. This plan assumes the ICM and IPCC software have already been installed.

1. Install CMB. Note that a CTH-enabled license key is necessary.
2. Install CTH.
3. Install CCS.
4. Install Cisco ICM Web PG. Note that the Web PG is installed separately from the other ICM software and is only used with the ICM Web Option.
5. Update the host files, by doing the following:
 - Add the CMB, CTH, CCS, and Web PG servers to the ICM hosts file.
 - Update that hosts file throughout the ICM products.
 - Copy that hosts file to the CMB, CTH, CCS, and Web PG servers to `c:\winnt\system32\drivers\etc`. (If using CTH on a Solaris server, create or modify the host file using a UNIX text editor and copy it to the `/etc` directory.)
6. Determine the firewall considerations. See the *Cisco ICM Web Option: Trailhead Configuration and Administration Guide* for details.
7. Configure the Web PG and note the following:
 - Web PG is a VRU PG.
 - Web PG needs to be enabled on the router (run `SETUP` on the router and enable the PG). This can be done before the Web PG is installed.
 - Web PG peripherals need to be enabled for post-routing. From the Configure ICM menu bar, select **Requesters > Configure PG**.
 - CTH is identified as a Network VRU in ICM. You must create a Network VRU for Trailhead. From the Configure ICM menu bar, select **Targets > Network VRU** and add an Enterprise Name for CTH. The type to use is 3. For every Web PG peripheral, set the Network VRU to CTH. From the Configure ICM menu bar, select **Peripherals > Peripheral**. See the *Cisco ICM Software Configuration Guide* for more information about configuring and routing to Network VRUs.
 - The VRU host name is the IP address of CMB.
 - For the value of the VRU connection port, use any port other than the well-known or reserved ports. Set this in the `Trailhead.properties` file on CMB. See Step 12 for additional CTH configuration tasks.
8. Define your business needs by answering the following questions:
 - What do you want to accomplish with intelligent routing?
 - What information is available to make routing decisions?
 - What information is necessary to route decisions?
 - Does any type of call take priority?

Cisco ICM Web Option with IPCC Implementation Guide

- What are the needs in the event of error or unavailable agents?
 - Will ICM pass any new value back to session details?
 - What decisions will you make about routing parameters, labels, route points, and delimiters?
9. Write an ICM script to accomplish your business needs. Note that the script can be checked and verified using Call Tracer. A sample ICM script is shown in the “Sample ICM Script” section.
10. Configure and customize the Cisco Collaboration Server. See the *Cisco Collaboration Server Administration Guide* for details. Configure the following property files, which are found in the `\Cisco_CS\servlets\properties` directory:
- `agent.properties`
 - `caller.properties`
 - `callerCustom.properties`
 - `wlServer.properties`
11. Configure CMB by doing the following:
- Edit the `Trailhead.properties` file and specify the following:
 - CTH logic based on whether this is a routing and/or a queuing CMB.
 - Destination information based on ICM script labels, appropriate URL to be triggered, and type of call.
 - CTH connection information. Note this information; you will need it when you configure CTH.
 - Label delimiter or label length based on the ICM script you wrote. See step 9.
 - Edit the `ACD.ciscocti.properties` file. Most properties in that file are configured for IPCC in the same way as for an ACD. A new item concerns the type of peripheral (uncomment the `peripheral.type=IPCC` line). Note that if authentication is not used on the CTI server, the CTI user name can be any name.
 - Edit the `in.map.properties` file to pass values to ICM based on your business needs and the ICM script you wrote. See steps 8 and 9.
 - Edit the `out.map.properties` file if the ICM software is to pass new values to the session.
 - Edit the `cti.in.map.properties` on CMB to pass values to the CTI server based on the needs of the screen pop application.
 - Note that the `skills.properties` file does not need to be configured because ICM is picking the skills.
 - Set up phantom lines. See the section “Supporting Phantom Strategies.”

12. Configure CTH

- Edit the `Trailhead.server.properties` file, paying particular attention to connection information, identifying CMB properly, and noting its ability to route and queue.
- Create a `callform.html` page that captures information necessary to accomplish the ICM script. The `callform.html` file can be on the CTH, CCS, or Web content server, but it posts to CTH. Make sure the form contains:

```
<INPUT TYPE="hidden" NAME="Trailhead" VALUE="1">
<INPUT TYPE="checkbox" NAME="WantsCollab">
```

Note that the default `callform.html` file that installs with the CTH software does not contain a path to `caller.custom.properties`. You can add it there or hard code it in the success HTML pages. Hard-coding the value in the success HTML pages allows the use of different `caller.custom.properties` files for different collaboration types.

- Create all other HTML success and error pages based on the destination section of the `Trailhead.properties` file on CMB and the expected result from the ICM script. In other words, make sure the names match those called for in the destination section. Make sure each form posts to the appropriate Collaboration server and that all the appropriate fields are being passed.

Note: For delayed callback calls, the routing decision is made at the time of submission and the session is queued on CMB.

Supporting Phantom Strategies

You can configure CMB to support different types of calls, such as voice and text chat. CMB can then use a number of different outbound dialing strategies to determine how the call is placed to the caller. The Cisco ICM Web Option with IPCC solution supports five phantom strategies—two for voice calls and three for text chat sessions.

Strategies for Voice Calls

The following phantom strategies can be used for voice calls:

- **PhantomWaitRelease**—CMB dials into a queue using one of the phantom lines. Once the agent answers, the phantom line is placed on hold while CMB places an outbound call to the caller using the agent's second line. Once the caller answers the phone, the phantom line is released.
- **PhantomWaitNoRelease**—This strategy is similar to **PhantomWaitRelease** except the phantom line stays connected to the agent for the length of the call. This strategy provides more detailed agent handle time reporting from the IPCC, but it requires a larger pool of phantom lines.

Strategies for Text Chat Sessions

The following phantom strategies can be used for text chat sessions:

- **PhantomNoCallRelease**—Use this strategy if you want to provide chat sessions and if your IPCC is configured to place agents in a busy state as soon as their phones disconnect. This strategy connects to an agent but releases the phantom line immediately. The agent is placed in a busy state, allowing the agent and caller to engage in a text chat session uninterrupted.
- **PhantomNoCallNoRelease**—When you use this strategy for text sessions, MeCMB uses the phantom line to select the agent; however, the phantom does not release the agent's phone until the session is complete. This provides more accurate reporting but requires a larger pool of phantom lines.
- **PhantomNoCallNoHold**—This strategy is similar to the **PhantomNoCallNoRelease** strategy except the call from the phantom line to the agent is not placed in the hold state. Instead, it remains in the talking state. For reporting purposes, this strategy has the IPCC report that the agent is talking while using chat.

CMB uses a pool of phantom lines to support the phantom strategies. For more information about phantom strategies, see the *Cisco Media Blender Configuration Handbook*.

Setting up Phantom Lines

Setting up phantom lines requires configuration work on three major components of the Cisco ICM Web Option with IPCC solution—CCM, ICM, and CMB. The following steps are required:

1. Add phantom phones using CCM and configure them using ICM software.
2. Create a phantom agent for each phantom phone using ICM software. Note that the phantom agents are not real agents.
3. Create a phantom skill group for these agents using ICM software. Note that it is not a real skill group and should not be used or routed to in ICM scripts.
4. Configure CMB to use the phantom phones.

Before you begin setting up the phantom lines, determine how many phantom lines you will need.

Determine Phantom Line Requirements

Use this formula when determining how many phantom lines are needed on your system:

$$\text{number of phantom lines needed} = c * s / 3600$$

where:

- c represents the number of blended calls per hour.
- s represents the seconds per phantom usage. When using the PhantomWaitRelease strategy, this is the average queue time. When using the PhantomWaitNoRelease strategy, this is the average queue time plus average talk time.

Example:

This example assumes that the CTI strategy used is PhantomWaitRelease. There are 3600 calls per hour and the queue time per call is equal to 10 seconds.

- number of phantom lines needed = $3600 * 10 / 3600$
- number of phantom lines needed = 10 lines

Add a Phantom Phone Using CallManager

Complete the following steps to add a phantom phone in the CallManager application:

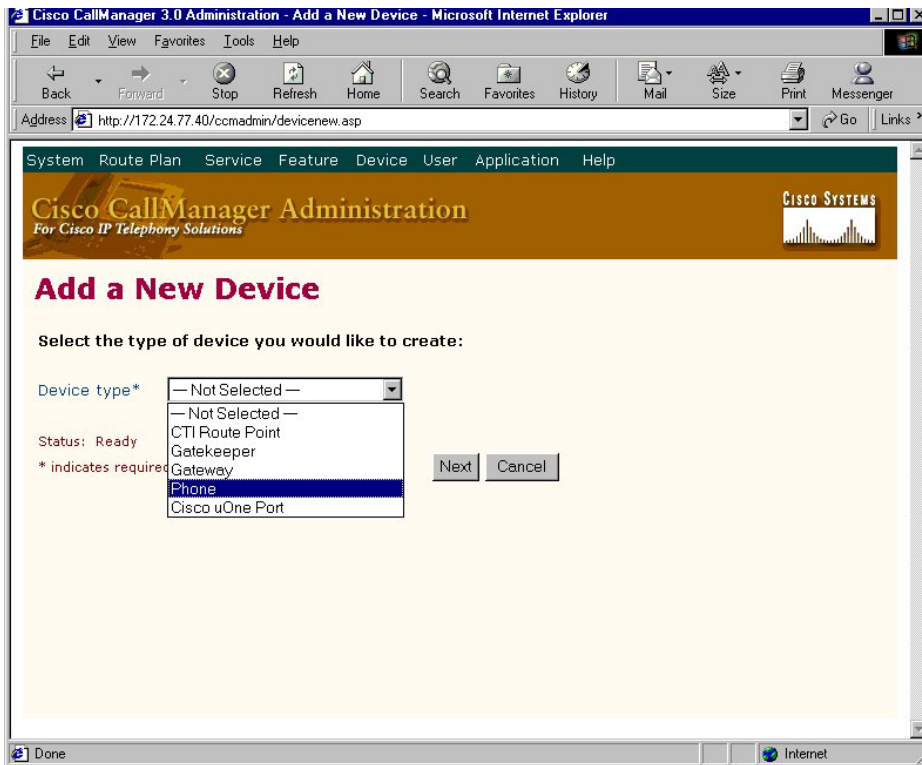
1. Using a Web browser, open Cisco CallManager Administration. This URL is commonly `http://IPCC<CallManager Server>P/CCMADMIN`



Note: You can also navigate to this screen from the Start menu on your desktop; that is, **Start > Programs > Cisco CallManager > Cisco CallManager Administration**.

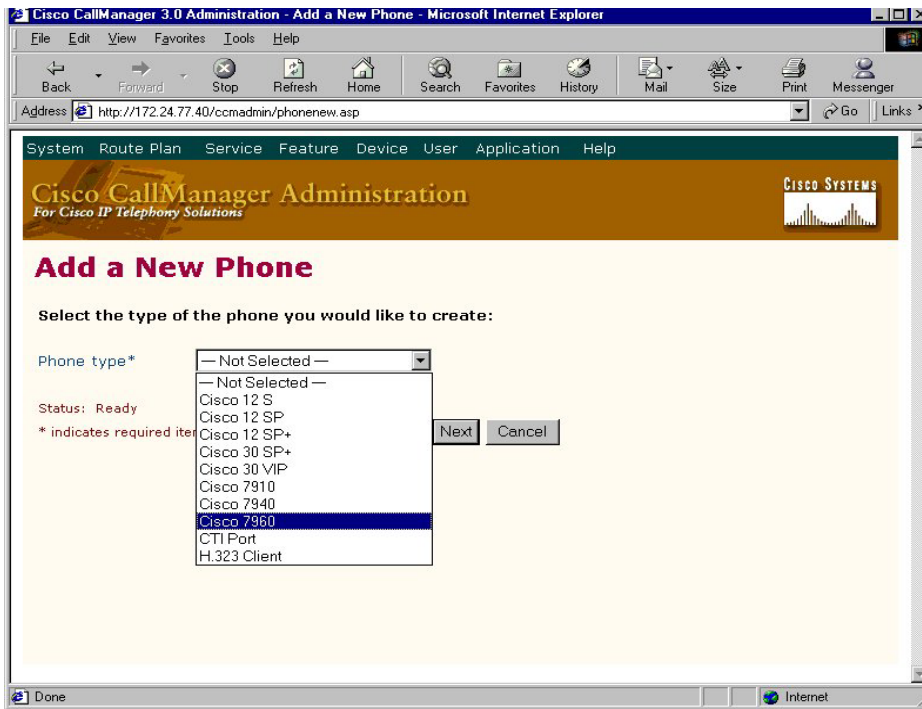
2. From the Device drop-down menu, select the Add a New Device option.

The Add a New Device screen appears.



3. From the Device type list box, select the Phone option.

The Add a New Phone page appears.

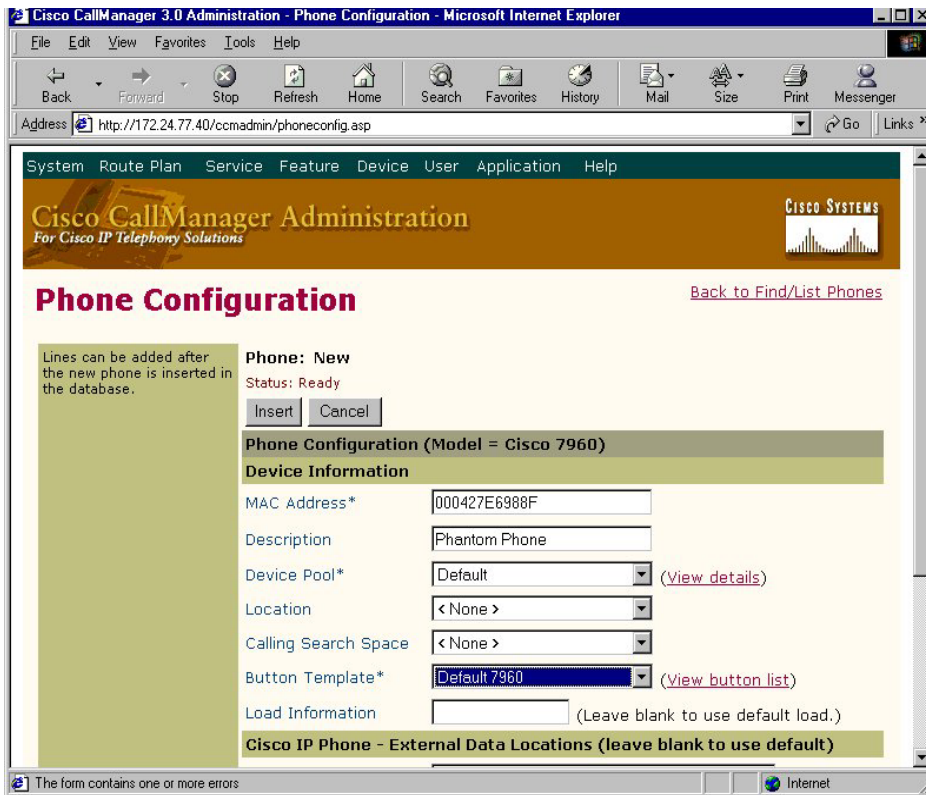


4. From the Phone type list box, select the Cisco 7960 option.

The Phone Configuration screen appears.

5. Find the MAC address for a Cisco IP Phone that will be used as a phantom phone.

The MAC address is printed on a sticker on the back of the phone. It can also be displayed in the phone's LCD display by pressing the Settings button, highlighting Network Configuration, and then pressing the Select button.



6. Enter the MAC address in the MAC Address field on the Phone Configuration screen.
7. Enter “Phantom Phone” in the Description field.
8. Select Default 7960 as the Button Template type.
9. Click Insert.

10. Click Line 1.

The Configure a Directory Number screen appears.

Line 1 for SEP0003E3340B87 (WEB_7000)
Status: Ready

Update Update and Close Delete Restart Devices Cancel

Directory Number

Directory Number* 7000
Partition <None >

Directory Number Settings

Calling Search Space <None >
Call Waiting Off

Call Forward and Pickup Settings

	Destination	Calling Search Space
Forward All		<None >
Forward Busy		<None >
Forward No Answer		<None >
Call Pickup Group	<None >	

Line Settings for this Device

Display
 Disable ring on this line External Phone Number Mask

* indicates required item; changes to Line or Directory Number settings require restart.

Done Internet

11. Enter a number in the Directory Number field and set Call Waiting to Off.

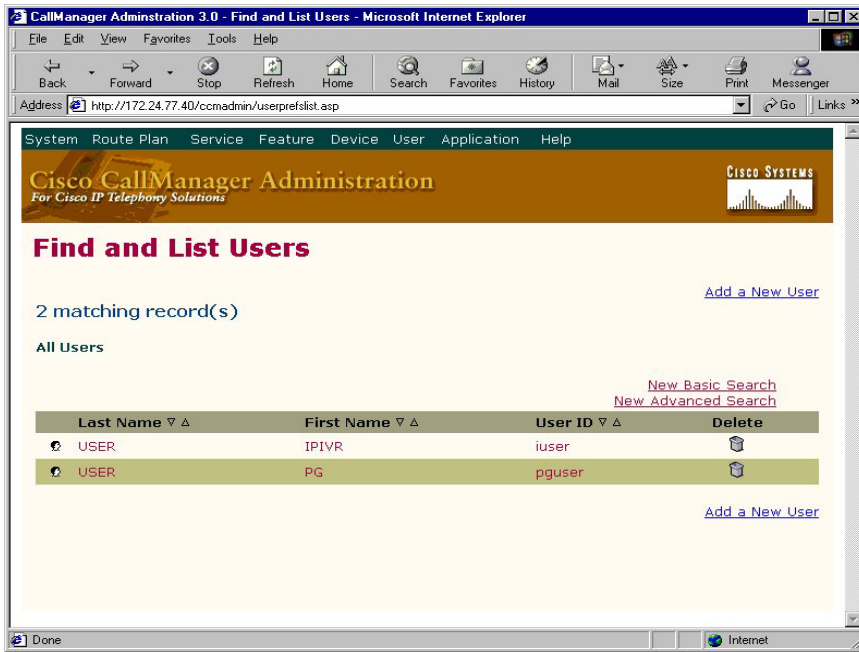
12. Click Update and Close.

13. From the User drop-down menu, select the Global Directory option.

14. Click Search.

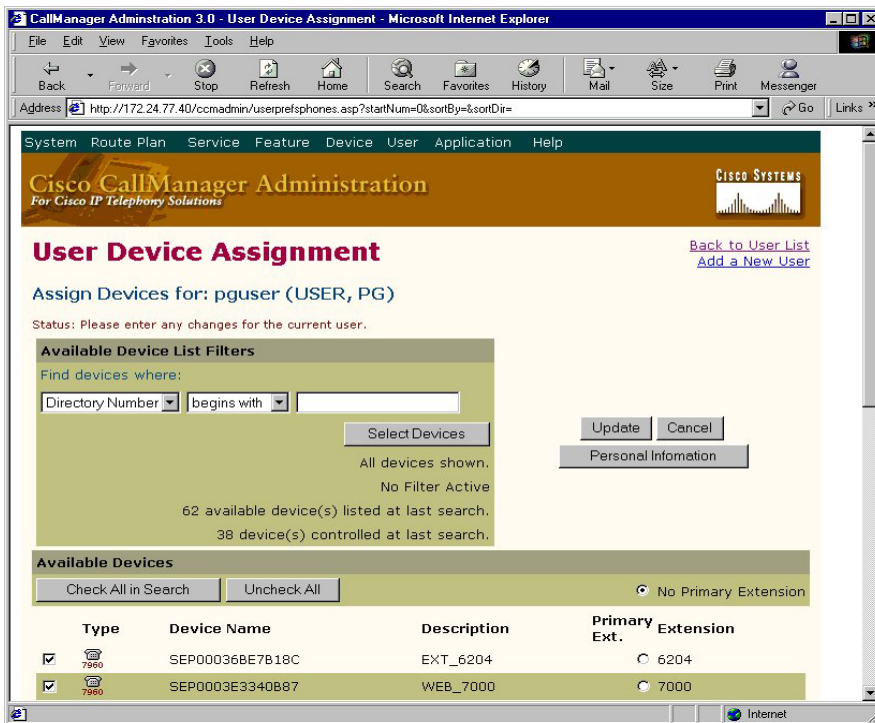
The Find and List Users screen appears.

Cisco ICM Web Option with IPCC Implementation Guide



15. Select the CallManager PG User from the list.
16. Click Associate Devices near the bottom of the screen.

The User Device Assignment screen appears.



17. Enter the Phone Device Description and click Select Devices.
18. Click the box next to the Phantom Phone you created.
19. Click Update.

Repeat these steps for any additional Phantom Phones.

ICM Phantom Configurations

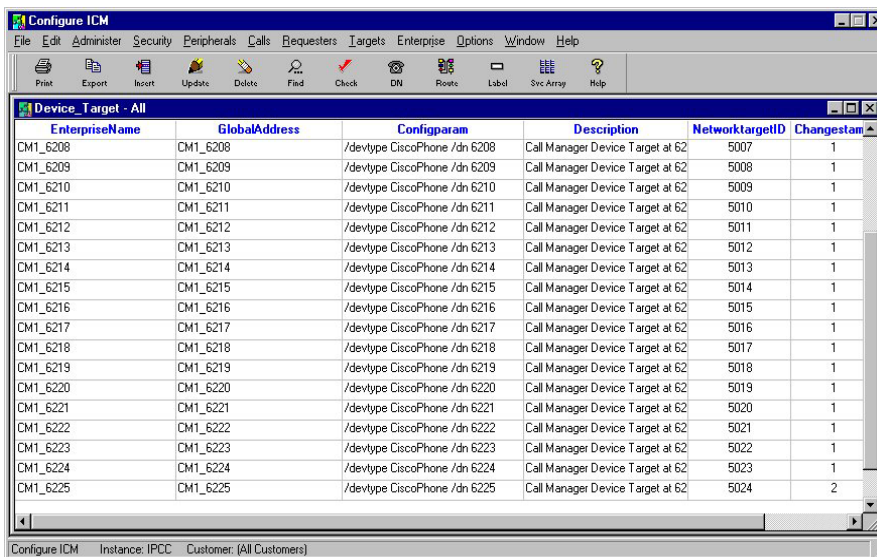
You need to complete the following tasks using the Configure ICM software:

- Add a device target
- Create phantom agents
- Create a phantom skill group

Add a Device Target

To add a device target using the ICM software, complete the following steps:

1. From either a Distributor Admin Workstation or a Client Admin Workstation, open Configure ICM.



The screenshot shows the 'Configure ICM' application window. The title bar reads 'Configure ICM'. The menu bar includes 'File', 'Edit', 'Administer', 'Security', 'Peripherals', 'Calls', 'Requesters', 'Targets', 'Enterprise', 'Options', 'Window', and 'Help'. The toolbar contains icons for 'Print', 'Export', 'Insert', 'Update', 'Delete', 'Find', 'Check', 'DN', 'Route', 'Label', 'Svc Array', and 'Help'. The main window displays a table titled 'Device Target - All' with the following columns: EnterpriseName, GlobalAddress, Configparam, Description, NetworktargetID, and Changestam. The table contains 18 rows of data, each representing a device target configuration.

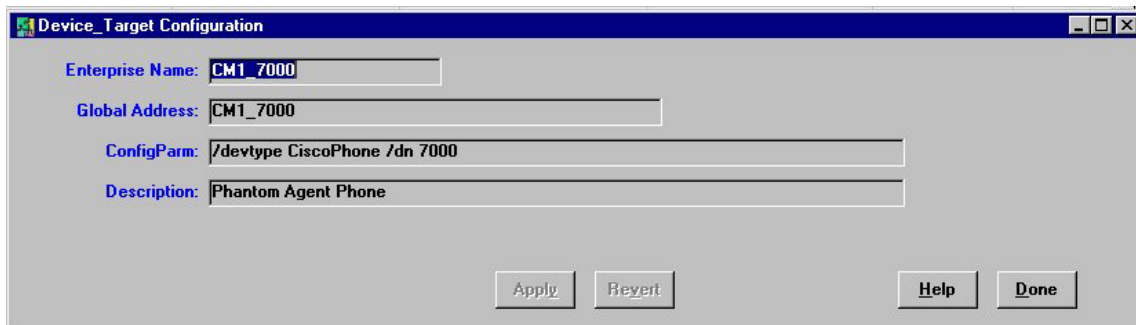
EnterpriseName	GlobalAddress	Configparam	Description	NetworktargetID	Changestam
CM1_6208	CM1_6208	/devtype CiscoPhone /dn 6208	Call Manager Device Target at 62	5007	1
CM1_6209	CM1_6209	/devtype CiscoPhone /dn 6209	Call Manager Device Target at 62	5008	1
CM1_6210	CM1_6210	/devtype CiscoPhone /dn 6210	Call Manager Device Target at 62	5009	1
CM1_6211	CM1_6211	/devtype CiscoPhone /dn 6211	Call Manager Device Target at 62	5010	1
CM1_6212	CM1_6212	/devtype CiscoPhone /dn 6212	Call Manager Device Target at 62	5011	1
CM1_6213	CM1_6213	/devtype CiscoPhone /dn 6213	Call Manager Device Target at 62	5012	1
CM1_6214	CM1_6214	/devtype CiscoPhone /dn 6214	Call Manager Device Target at 62	5013	1
CM1_6215	CM1_6215	/devtype CiscoPhone /dn 6215	Call Manager Device Target at 62	5014	1
CM1_6216	CM1_6216	/devtype CiscoPhone /dn 6216	Call Manager Device Target at 62	5015	1
CM1_6217	CM1_6217	/devtype CiscoPhone /dn 6217	Call Manager Device Target at 62	5016	1
CM1_6218	CM1_6218	/devtype CiscoPhone /dn 6218	Call Manager Device Target at 62	5017	1
CM1_6219	CM1_6219	/devtype CiscoPhone /dn 6219	Call Manager Device Target at 62	5018	1
CM1_6220	CM1_6220	/devtype CiscoPhone /dn 6220	Call Manager Device Target at 62	5019	1
CM1_6221	CM1_6221	/devtype CiscoPhone /dn 6221	Call Manager Device Target at 62	5020	1
CM1_6222	CM1_6222	/devtype CiscoPhone /dn 6222	Call Manager Device Target at 62	5021	1
CM1_6223	CM1_6223	/devtype CiscoPhone /dn 6223	Call Manager Device Target at 62	5022	1
CM1_6224	CM1_6224	/devtype CiscoPhone /dn 6224	Call Manager Device Target at 62	5023	1
CM1_6225	CM1_6225	/devtype CiscoPhone /dn 6225	Call Manager Device Target at 62	5024	2

2. From the menu bar, select **Targets > Device Target**.

The Device_Target All window appears.

3. Click the Insert button.

The Device_Target Configuration dialog box appears.

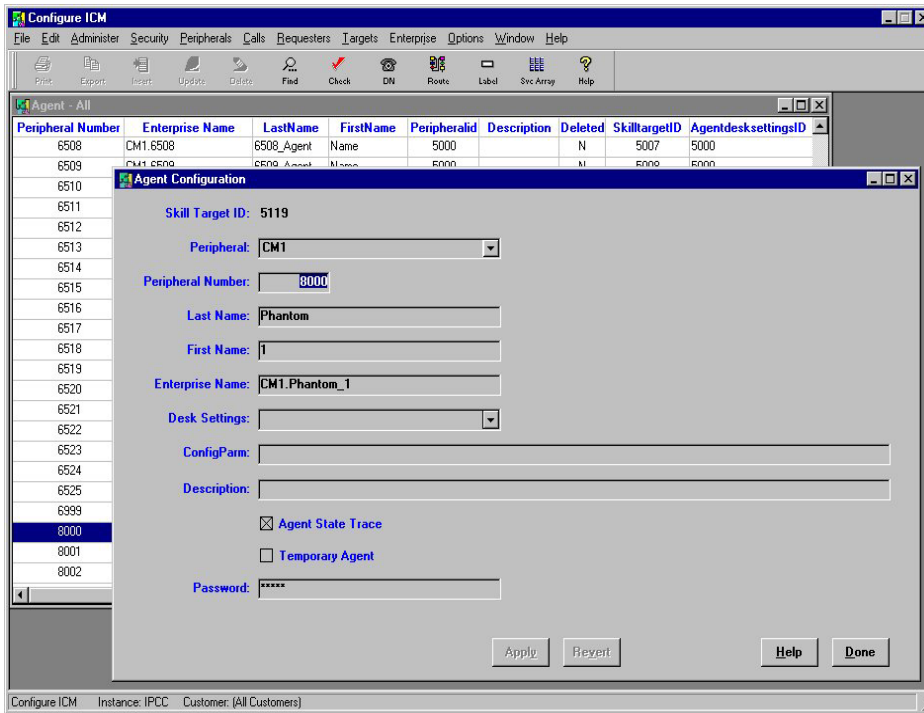


4. Enter Device Target Configuration details based on the phantom line you created in CallManager.
5. Click Apply.
6. Click Done.
7. Repeat these steps for all the Phantom Lines created in CallManager.
8. Close the Device_Target All window.

Create Phantom Agents

To create phantom agents using the ICM software, complete the following steps:

1. Continue in the Configure ICM screen.
2. From the menu bar select **Peripherals > Agent**.
3. Click Insert.



4. Enter Agent Configuration information.
5. Click Done.

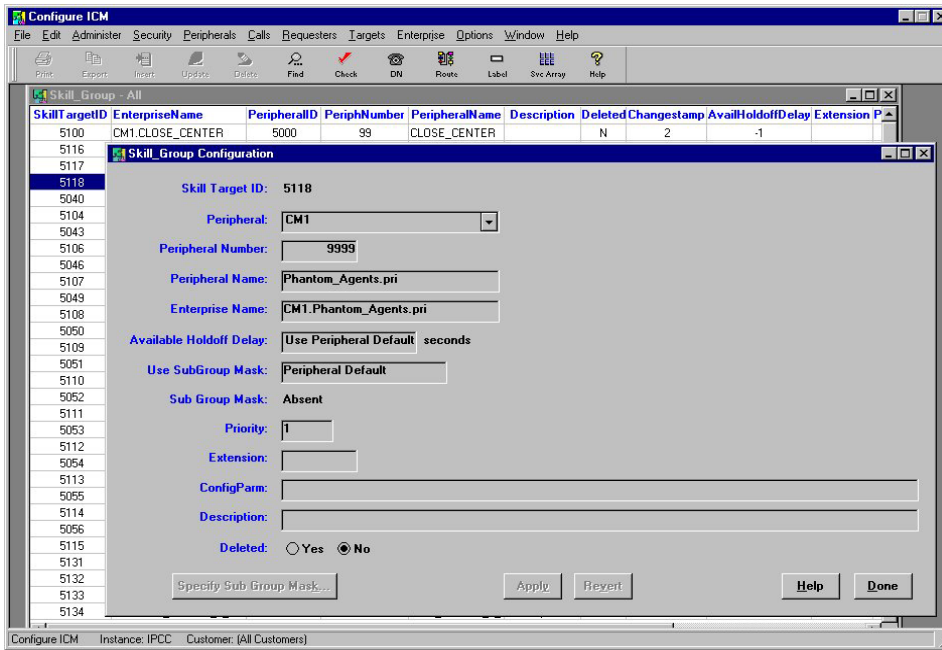
Repeat these steps until you have created the same number of agents as phantom lines.

Create a Phantom Skill Group

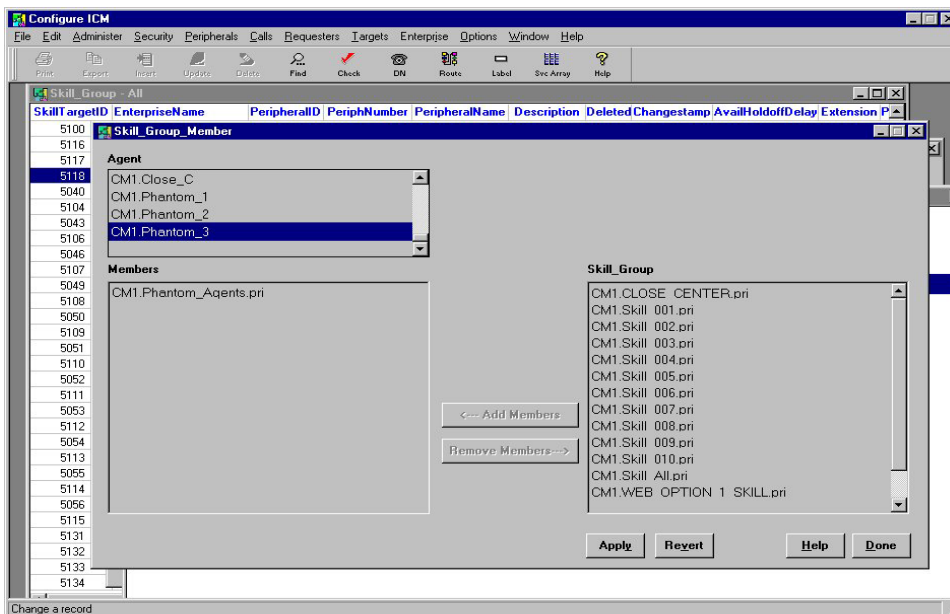
To create a phantom skill group using the ICM software, complete the following steps:

1. Continue in the Configure ICM screen.
2. From the menu bar, select **Peripherals > Skill Group**.
3. Click Insert.

Cisco ICM Web Option with IPCC Implementation Guide



4. Enter Skill Group Configuration information.
5. Click Apply.
6. Right-click in the Skill Group Configuration window.
7. Select Skill Group Member.
8. Click Update.



9. From the Agent list box, select the phantom agent created in the previous step.
10. From the Skill_Group list box, select the newly created Skill Group and click Add Members.
11. Click Apply.

Repeat steps 9 through 11 for all other phantom agents.

Note: The phantom skill group created in the above procedure is not the same as the skill group to which the real agents are mapped.

Configure CMB Phantom-Related Property Files

To configure CMB to support phantom lines, you must edit three files:

- `phantom.properties`
- `agents.properties`
- `password.properties`

Use a text editor, such as Notepad, to edit these files, which typically reside in the following directory on CMB:

```
<drive_letter>:\Cisco_MB\servlet\properties\Blender
```

Create a Phantom Pool File

To create a phantom pool file, complete the following steps:

1. Edit the `phantoms.properties` file by adding the newly created phantom agents = D. Here the `phantomID=phantom type`. Type D indicates a digital line.

For example:

```
8000=D  
8001=D  
8002=D
```

2. Save and close the `phantom.properties` file.

Map Agent IDs to Physical Phone IDs

To map the agent IDs to the physical phone IDs, complete the following steps:

1. Edit the `agents.properties` file by entering the newly created phantom agents = their assigned physical devices (Cisco IP Phones).

For example:

```
8000=7000  
8001=7001  
8002=7002
```

2. Save and close the `agents.properties` file.

Assign Passwords to Agent IDs

To assign passwords to the agents' logical IDs, complete the following steps:

1. Edit the `password.properties` file by entering the newly created phantom agents = their device login password.

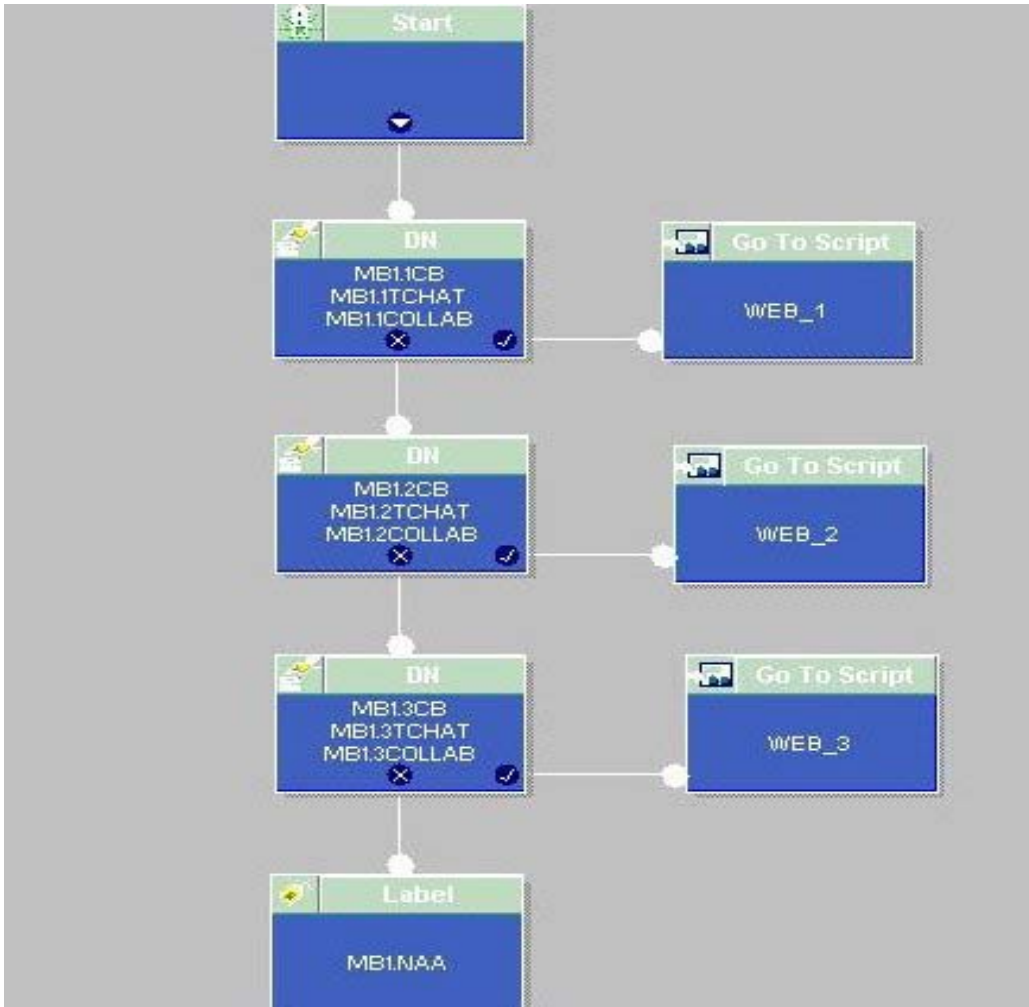
For example:

```
8000=cisco  
8001=cisco  
8002=cisco
```

2. Save and close the `password.properties` file.

Sample ICM Script

All Cisco ICM Web Option with IPCC requests start with the inbound script. The following script checks the dialed number (DN).

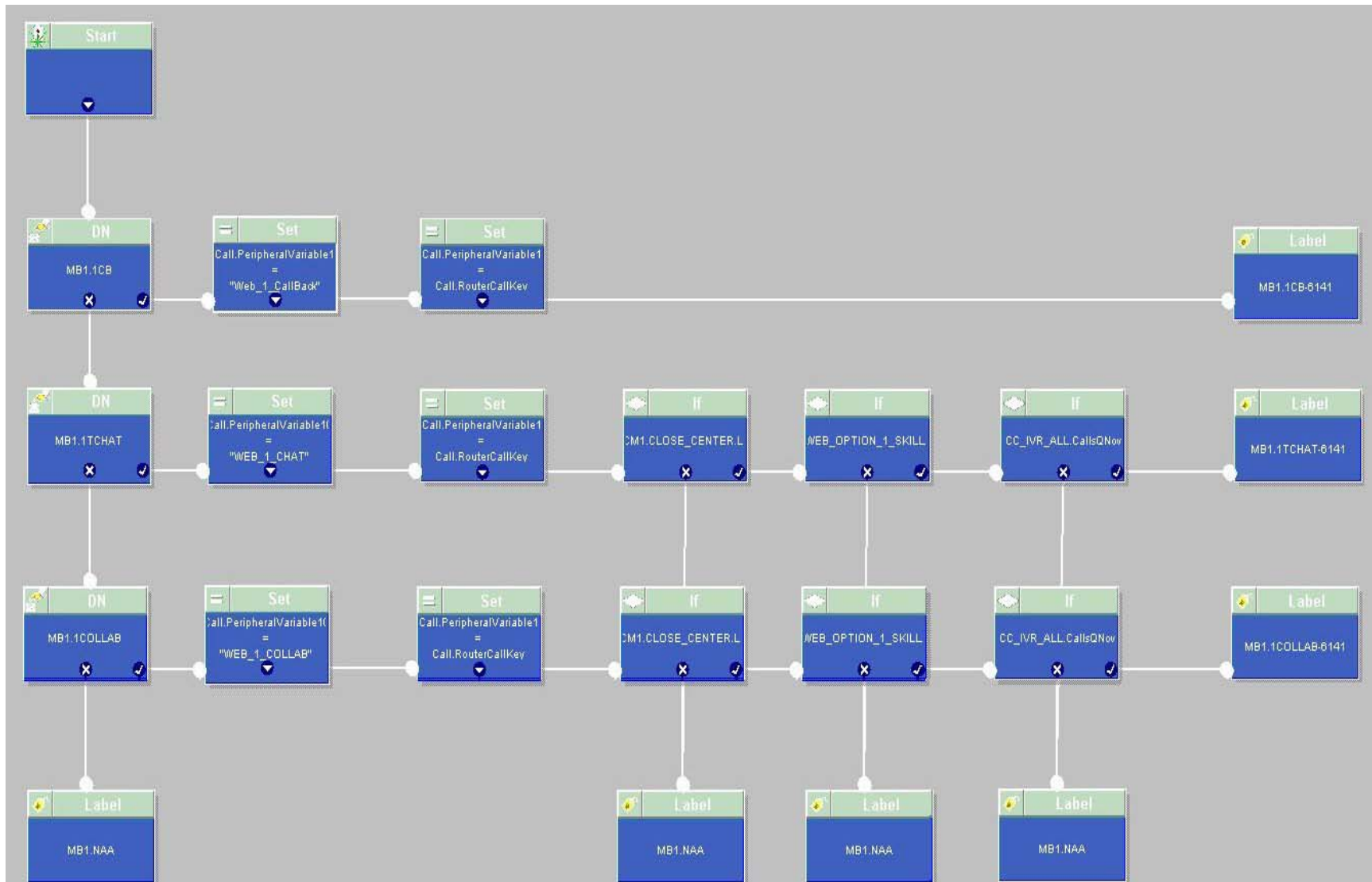


Based on the DN, a second script is triggered, which represents an organization of agents in a contact center. The second script might represent a business unit or a separate company in an outsourced contact center. The WEB_1 script is shown on the following page. You can see the labels returned for three different types of requests—callback only, text chat, and blended collaboration.

For more information about ICM scripts, see the *Cisco ICM Web Option: Trailhead Configuration and Administration Guide* and the *Cisco ICM Software Script Editor Guide*.

Note: For the Cisco ICM Web Option with IPCC solution, several ICM scripting nodes should only be used with modification. Examples are the longest available agent (LAA), minimum expected delay (MED), and Queue To nodes. CMB requires that the ICM script return a label of the form route-route point, and these nodes return agent selections.

Cisco ICM Web Option with IPCC Implementation Guide



Index

A

ACD.ciscocti.properties file 12
agents.properties file 29
AVVID IP telephony network 4

B

business needs
 defining 13

C

call flows
 blended collaboration 7
 callback only 9
 delayed callback 10
 text chat 8
 types of 6
caller.custom.properties file 15
callform HTML page
 creating 15
CallManager Administration 18
 adding a new device 18
 adding a new phone 19
 configuring a directory number 22
 finding and listing users 22
 phone configuration screen 21
 user device assignment 23
Central Controller 4
Cisco CallManager 4
Cisco Collaboration Server 5
Cisco Media Blender 5
 configuring phantom-related files 28
 property file location 28
configuration
 Collaboration Server 12, 14
 ICM and IPCC 11
 Media Blender 12, 14
 tips 11
 Trailhead 12, 15
Configure ICM
 add a device target 24
 create phantom agents 25
 creating a phantom skill group 26
CTI Server 5
cti.in.map.properties file 14

D

deployment
 networking and Web components 12
 tips 11
device target
 adding in ICM 24
duplexed CTI server 12

E

examples
 agents.properties file 29
 password.properties file 29
 phantom line requirements 17
 phantom pool file 28
 sample ICM script 30

F

firewall considerations 13

H

host files
 updating 13

I

ICM script 14
 label format 11
 nodes 30
 sample 30
ICM Web Option with IPCC
 defined 3
implementation plan 13
in.map.properties file 14
Intelligent Contact Management *See* ICM
Internet Protocol Contact Center *See* IPCC
IP phones
 Cisco 7910 11
 Cisco 7960 11
IPCC 3, 11
IPIVR 4
IVR 4

O

out.map.properties file 14

P

password.properties file 29
phantom agents

Cisco ICM Web Option with IPCC Implementation Guide

creating in ICM.....25

phantom lines 11, 17

 formula for determining requirements..... 17

phantom phone

 adding with CallManager 18

phantom pool file28

phantom skill group

 creating in ICM.....26

phantom strategies 16

 PhantomNoCallNoHold..... 16

 PhantomNoCallNoRelease 16

 PhantomNoCallRelease 16

 PhantomWaitNoRelease 16

 PhantomWaitRelease..... 16

phantom.properties file.....28

PSTN.....4

R

route-route point 11, 30

T

Trailhead..... 5, 7, 12, 14, 15

Trailhead.properties file 14

Trailhead.server.properties file..... 15

V

virtual ACD 3

Voice Gateway 4

VRU PG..... 4, 11, 13

W

Web PG..... 4, 11, 13