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## **Cisco ICM 5.0 Multichannel Software Implementation Map**

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### **Cisco ICM Software, Version 5.0**

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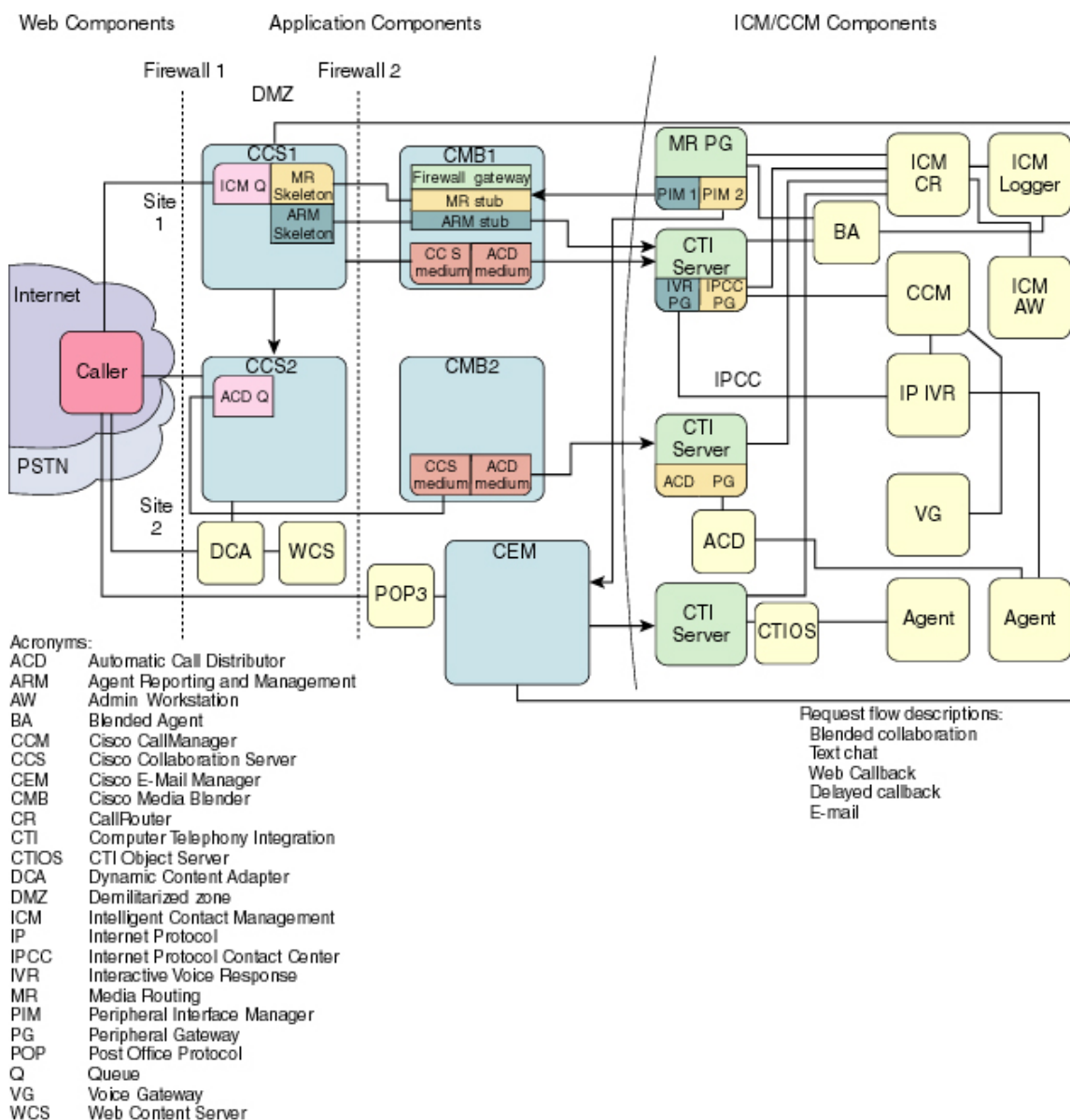
## Table of Contents

<i>Cisco ICM 5.0 Multichannel Software Implementation Map .....</i>	<i>5</i>
<i>The Web Components.....</i>	<i>6</i>
<i>The Application Components .....</i>	<i>6</i>
<i>The ICM and CCM Components .....</i>	<i>7</i>
<i>Suggested Implementation Plan.....</i>	<i>9</i>
<i>Request Flow Descriptions .....</i>	<i>13</i>
Flow of a Blended Collaboration Request With IPCC.....	14
Flow of a Blended Collaboration Request With a Legacy ACD.....	14
Flow of a Text Chat Request With IPCC .....	15
Flow of a Text Chat Request With a Legacy ACD .....	15
Flow of a Web Callback Request with IPCC .....	16
Flow of a Web Callback Request with a Legacy ACD .....	16
Flow of a Delayed Callback Request with IPCC.....	17
Flow of a Delayed Callback Request with a Legacy ACD .....	17
Flow of an E-mail Message.....	18
<i>Components on the Map.....</i>	<i>18</i>
Caller .....	18
Cisco Collaboration Server .....	18
Cisco Media Blender .....	19
Cisco Dynamic Content Adapter .....	19
Cisco E-Mail Manager.....	19
POP3 Server .....	19
Media Routing Peripheral Gateway.....	19
CTI Server .....	19
Blended Agent .....	20
CTI Object Server.....	20
ICM CallRouter .....	20
ICM Logger .....	20
Admin Workstation .....	20
Automatic Call Distributor .....	21

<b>Cisco CallManager.....</b>	<b>21</b>
<b>Internet Protocol Contact Center.....</b>	<b>21</b>
<b>Internet Protocol Interactive Voice Response.....</b>	<b>21</b>
<b>Voice Gateway .....</b>	<b>21</b>
<b>Agent .....</b>	<b>22</b>

## Cisco ICM 5.0 Multichannel Software Implementation Map

The Cisco ICM 5.0 multichannel software integrates many software and hardware elements that you must install and configure. Click the three "Components" at the top of the following image map for some helpful setup tips. Click the request flow descriptions for details about the various request flows you can use. Click other components on the map for additional information. A [suggested implementation plan](#) is provided to help you coordinate the setup tasks. Note that in the following figure, all connections are bidirectional; arrows indicate the direction of link initiation. The boxes on the map do not represent individual machines. Some boxes are included to provide clarity of process and concept. For example, the platform might have only one CTI Server.



## The Web Components

Someone employed at the customer site where the multichannel software is being deployed typically handles the work involved to integrate the Web components. The individuals responsible must resolve any firewall issues and perform some tests. This work requires people at the site who can configure the company's phone system, who know about the agents, skill groups, and phantom lines, and who are able to simulate typical agent and caller interactions. Someone knowledgeable about the company's Internet network and Web development and someone who knows the company's business rules are also needed. Here are some helpful tips:

- When setting up the multichannel software for multiple sites, use remote control software to remotely handle configuration, troubleshooting, and rebooting.
- Perform a test to be sure the caller's browser can use HTTP to send and receive Web pages to and from the Collaboration Server behind Firewall 1 in the DMZ.
- Perform a test to be sure the caller's browser cannot access the Media Blenders inside Firewall 2. For information about firewall considerations, see the *Cisco Media Blender Installation Guide*.
- Be sure the caller can participate in the [different types of requests](#), such as Web callback, delayed callback, blended collaboration, text chat, and email. Typical caller and agent interactions for your company should be tested.

## The Application Components

Cisco personnel or a Cisco Partner typically handles the work involved in setting up the application components. This work includes installing and configuring the Collaboration Server, Dynamic Content Adapter, Media Blender, and E-Mail Manager software. Here are some helpful tips; more complete information is available in the documentation listed below.

- When setting up the multichannel software for multiple sites, use remote control software to remotely handle configuration, troubleshooting, and rebooting.
- To configure the Media Blender that handles the CTI server, you must get the server IP addresses, port names, peripheral IDs, switch types, user names, and passwords used when the ICM/CCM components were set up. You add this information to the `ACD.ciscocti.properties` file on CMB.
- For Media Blender to communicate with Collaboration Server, you must set up the connection using the Collaboration Server Administration desktop. Also use the desktop to perform other configuration tasks. (See the [Suggested Implementation Plan](#)).
- For Dynamic Content Adapter to communicate with Collaboration Server, you must also set up a connection.
- For best results, use a fresh Collaboration Server installation with Dynamic Content Adapter (DCA), and be sure to install DCA on its own server. Because DCA uses a different version of ServletExec than Collaboration Server uses, it should not be installed on the same machine as Collaboration Server.
- During the configuration of the ICM/CCM components, application instances and media routing domains (MRDs) for Collaboration Server and E-Mail Manager are created using ICM Configuration Manager. Configure the Collaboration Server name and key to be the same as the Collaboration Server application instance created in the ICM software, and enable the MRDs.
- Work with someone at the customer site to be sure the caller's browser can use HTTP to send and receive a Web page to and from the Collaboration Servers in the DMZ.

You need the following documentation:

- Cisco Collaboration Server documents:
  - *Cisco Collaboration Server Implementation Guide*
  - *Cisco Collaboration Server Installation Guide*
  - *Cisco Collaboration Server Overview*
  - *Cisco Collaboration Server Administration Guide*
- Cisco Dynamic Content Adapter documents:
  - *Cisco Dynamic Content Adapter Installation and Integration Guide*
  - *Cisco Dynamic Content Adapter Administration and Configuration Guide*
- Cisco Media Blender documents:
  - *Cisco Media Blender Installation Guide*
  - *Cisco Media Blender Administration Guide*
- Cisco E-Mail Manager documents:
  - *Cisco E-Mail Manager Installation and Configuration Guide*
  - *Cisco E-Mail Manager Overview Guide*
  - *Cisco E-Mail Manager Administration Guide*

## The ICM and CCM Components

Cisco personnel or a Cisco Partner typically handles the work involved in setting up the ICM and CCM components. These components should be installed and configured before the application components. This work involves setting up the Intelligent Contact Management (ICM) software, which includes all the elements of IPCC, such as Cisco CallManager (CCM) and the Cisco IP IVR, as well as the CTI servers, the legacy ACDs, and the peripheral gateways. Here are some helpful tips; more complete information is available in the documentation listed below.

- When setting up the multichannel software for multiple sites, use remote control software to remotely handle configuration, troubleshooting, and rebooting.
- If you are using IPCC, be sure to configure CallManager and install and configure IP-IVR before installing and configuring ICM software.
- You must configure the ACD and IPCC PGs and the CTI Servers before the Media Blenders that work with the CTI Server can be configured.
- Make note of the server IP addresses, port names, peripheral IDs of the switches, the switch types, user names, and passwords. These are needed when configuring the Media Blenders that handle the CTI servers.
- If fault tolerance is required, use duplexed CTI Servers to keep things running. When one goes down, the other takes over.
- Configure the MR PG PIM1 to talk to CMB1. Configure the MR PG PIM2 to talk to E-Mail Manager. You will need the Media Blender and E-Mail Manager IP addresses and server ports. Before the integration will work, the CTI server must be in Active mode and the MR PG PIM1 must be in a mode attempting to connect to Media Blender.
- Using the ICM Configuration Manager, create the following objects (order is not important):
  - Media Routing Domains (MRDs) for each Collaboration Server media class. You will need the names of the Collaboration Server media classes that will be used. Each MRD requires a separate ICM script.
  - An MRD for E-Mail Manager.
  - IPCC and ACD peripherals. Information about these peripherals is needed when using the Collaboration Server Administration UI to associate agents with the peripherals.
  - Application instances; for example, if you are using a Collaboration Server and an E-Mail Manager, you must create application instances for each application.

You need the following documents, which are available on the ICM Software Documentation CD:

- Cisco ICM Software Installation and Configuration Guides
  - *Cisco ICM Software Installation Guide*
  - *Cisco ICM Software Configuration Guide*
  - *Cisco ICM Software IPCC Installation and Configuration Guide*
  - *Cisco ICM Software IPCC Laboratory Guide*
  - *Cisco ICM Software WebView Installation Guide*
  - *Cisco ICM Software Blended Agent Setup and Configuration Guide*
  - *Cisco ICM Software ACD Supplement for Aspect CallCenter*
  - *Cisco ICM Software ACD Supplement for DEFINITY ECS*
  - *Cisco ICM Software ACD Supplement for Nortel Meridian*
  - *Cisco ICM Software ACD Supplement for Nortel Symposium*
  - *Cisco ICM Software ACD Supplement for Rockwell Spectrum*
  - *Cisco ICM Software SS7 Gateway Configuration Tool User Guide*
- Cisco ICM Software Administrator and Supervisor Guides
  - *Cisco ICM Software Administration Guide*
  - *Cisco ICM Software IPCC Administration Guide*
  - *Cisco ICM Software CTI OS System Manager's Guide*
  - *Cisco ICM Software AlarmTracker Administrator Guide*
  - *Cisco ICM Software Security Guide*
  - *Cisco ICM Software Web View Administrator Guide*
- Cisco ICM Software Programming Documentation
  - *Cisco ICM Software Scripting and Media Routing Guide*
  - *Cisco ICM Software Database Schema Handbook*



## Suggested Implementation Plan

The following high-level procedure provides a suggested plan to use when setting up the multichannel software.

1. Install the following product software, and note that upgrading and licensing information is typically included in the installation guides for the respective products.
  - Cisco ICM Software. If using Blended Agent for outbound calls and when you are installing the ICM Admin Workstation, be sure to enable the Blended Agent Support option in the Admin Workstation Client Properties dialog box. Note that the Cisco CTI Object Server (CTI OS) software must be installed separately.
  - Cisco WebView. Install on the ICM Admin Workstation.
  - Cisco Collaboration Server
  - Cisco Media Blender
  - Cisco Dynamic Content Adapter.
  - Cisco E-Mail Manager. Note that some configuration happens during the E-Mail Manager installation process. See step 7.

After installing the products, be sure to update the system hosts files for all the machines on the platform.

**Note:** If you are using IPCC, configure CallManager and install and configure IP-IVR before installing the ICM software. CallManager is pre-installed on the Cisco Media Convergence Server (MCS) so you do not need that installation guide. See the *Getting Started with Cisco Customer Response Applications* for information on installing IP-IVR. During the installation of ICM, be sure to add a CallManager peripheral gateway (PG) that has two PIMs—one for CallManager and the other for IP-IVR.

2. Determine the firewall considerations. See the *Cisco Media Blender Installation Guide* for details.
3. Configure ICM software. Using the ICM Configuration Manager, complete the following:
  - Create application instances for Collaboration Server and E-Mail Manager.
  - Create media routing domains (MRDs) for each Collaboration Server-related media class. For Collaboration Server these should be non-interruptible.
  - Create a media routing domain for E-Mail Manager. ICM treats E-Mail Manager as an interruptible medium, but E-Mail Manager ignores the interrupts.
  - Create peripheral IDs and records for any Cisco CallManager and ACD used.
  - Configure ICM for IPCC. See Note above.
  - Configure the Cisco CTI OS software.
  - Configure the media routing peripheral gateway (MR-PG). Set up a media routing peripheral interface manager (MR-PIM) for each application instance. Note that you can have up to 32 PIMs on one MR-PG.
  - Configure the ConAPI connections from the ICM Admin Workstation to Collaboration Server and E-Mail Manager using the CMS Control tool's CONAPI tab.
  - Be sure the `user.cisco.cmb` expanded call context (ECC) variable is configured in the ICM Expanded Call Variable database table and enabled using the System Information tool in ICM Configuration Manager. This variable is the default value for the Media Blender `peripheral.namedvars` property in the

`ACD.ciscocti.properties` file and is required for the handling of Web callbacks.

- Configure any legacy ACDs and phantom lines. For example, if you are using the Definity G3 ACD, ICM must monitor the vector directory numbers (VDNs) used for phantom calls. See the ACD supplements on the ICM documentation CD.

See the *Cisco ICM Software Configuration Guide* and the *Cisco ICM Software IPCC Installation and Configuration Guide* for more details about configuring ICM and IPCC. See the *Cisco ICM Software CTI OS System Manager's Guide* for details about configuring CTI OS.

4. Configure the Cisco Collaboration Server software. Using the Collaboration Server Administration desktop, complete the following:
  - Define the Collaboration Server application instance.
  - Enable the MRDs that were created using ICM software.
  - Set up the two-way RMI connections to the Media Blenders. Each connection must be set up on Collaboration Server and Media Blender, preferably in that order. Collaboration Server auto-generates two configured property files for setting up the connection on Media Blender—`collaboration.properties` and `<ConnectionName>.properties`, which must be copied to Media Blender.
  - Establish a connection to the ICM Admin Workstation.
  - Enable the peripherals that were created using ICM software. Peripherals must be enabled on Collaboration Server before agents and skill groups can be created. An agent can be assigned to more than one peripheral, but a skill group can be assigned to only one peripheral.
  - Set up the ICM queue and ACD queues. Note that both these queues require a connection to a Media Blender. You can have only one ICM queue per Collaboration Server and only one ACD queue per Media Blender. However, there can be multiple ACD queues on one Collaboration Server.
  - Create Skill Groups and Agents. Enable the agents. An agent can work on more than one Collaboration Server. Note that voice skill groups cannot be created on Collaboration Server.
  - Assign Agents to Skill Groups. If the agent is on an IPCC peripheral, assign the Blended Collaboration skill group to the agent. If the agent is on an ACD peripheral, do not assign a skill group because this is done on the ACD.
  - Create callform HTML pages that capture information necessary to accomplish the ICM script(s). You will need a callform page for each of the Collaboration Server media classes.
  - Configure the ConAPI connection to the ICM Admin Workstation.

See the *Cisco Collaboration Server Administration Guide* for more details about configuring Collaboration Server.

5. Configure the Cisco Media Blender software. Using the Media Blender Administration user interface and some property files, complete the following:
  - Configure the firewall gateway service for the Media Routing (MR) and Agent Reporting and Management (ARM) stubs. You will need the connection name from the `<ConnectionName>.properties` file in step 4.
  - Identify participating media using the `medium1` and `medium2` properties in the `blender.properties` file. Note that Media Blender property files are in the `\CiscoMB\servlet\Properties\Blender` directory.
  - If you are using an ACD, define a pool of phantom lines and set up a phantom pool file. Identify the phantom pool file to your ACD and activate the CTI strategy

in the `ACD.ciscocti.properties` file. Note that IPCC and SoftACD do not use phantom lines. For IPCC or SoftACD, uncomment the `ctistrategy=AgentReserved` line in the `ACD.ciscocti.properties` file. Also in that property file, add the ICM peripheral ID and the CTI Server host name and host port.

- If you installed the Standalone Distributed Diagnostics Services Network (SDDSN) system after installing Media Blender, enable Phone Home services to send alerts to the Cisco Technical Assistance Center (TAC).

See the *Cisco Media Blender Administration Guide* for more details about configuring Media Blender.

6. Configure the Dynamic Content Adapter software. After installing Collaboration Server and then installing DCA, you must integrate DCA with Collaboration Server. In most cases, you can use DCA as-is immediately after installing and integrating it with Collaboration Server. Post-installation configuration is usually not necessary. However, you might want to do the following:
  - Configure DCA for SSL to share secure content.
  - Change the Admin Tool password (recommended).
  - Test your site with DCA.

See the *Cisco Dynamic Content Adapter Administration and Configuration Guide* for more details about configuring DCA.

7. Configure the E-Mail Manager software. Using the E-Mail Manager Administration user interface, complete the following:
  - Use the E-Mail Manager's Configuration utility to create an application instance and enable the MRD that was created using ICM software. The Configuration utility opens during the installation of E-Mail Manager and guides you through creating the first application instance. When you create the instance, you enter the MRD address. You will need the application instance name and key used by ICM.
  - After the new instance is up and running, log in to the Administration Desktop and enable one or more peripherals for the E-Mail Manager instance.
  - Create skill groups and select a peripheral for each skill group. A skill group can be associated with only one peripheral.
  - Create agents using E-Mail Manager or enable agents created on ICM or Collaboration Server to work with e-mail messages.
  - Determine whether E-Mail Manager directly routes messages to the skill group (E-Mail Manager Routing), or if routing to the skill group is deferred to ICM software (ICM Routing).
  - Define rules to route certain messages through ICM software.
  - Configure the ConAPI connection to the ICM Admin Workstation.

See the *Cisco E-Mail Manager Installation and Configuration Guide* and the *Cisco E-Mail Manager Administration Guide* for more details about configuring E-Mail Manager.

8. Define your business needs by answering the following questions:
  - What do you want to accomplish with intelligent routing?
  - What information is available and necessary to make routing decisions?
  - Does any type of call take priority over another?
  - What are the needs in the events of error or unavailable agents?
  - Will ICM pass any new value back to session details?

- What decisions will you make about routing parameters and labels?
  - What MRDs and applications will you be using?
  - What kinds of reports do you need for your business?
9. Write ICM scripts for Collaboration Server and E-Mail Manager media routing domains to accomplish your business needs. An ICM script is scheduled based on the routing domain, script selector, dialed number, and call type. Each routing domain requires an ICM script, but it is possible to route requests from different MRDs using one script. Scripts can be checked and verified using Call Tracer. Note that labels are different in Version 5.0. See the *Cisco ICM Software Scripting and Media Routing Guide* and the *Cisco Collaboration Server Administration Guide* for more details on creating scripts.
10. Test all of the [request flows](#) you plan to use.

## Request Flow Descriptions

After you have set up the integrated platform, test all the caller/agent interactions your company plans to use. The request flows for the same type of request can differ depending on whether the agent is assigned by IPCC or by a legacy ACD. The following request flows are available:

**Blended Collaboration—** With blended collaboration, the caller and agent talk on the phone and are linked in a collaborative Web session.

- [Blended collaboration using IPCC](#)
- [Blended collaboration using a legacy ACD](#)

**Text Chat—** The caller and agent can conduct a text chat session when a telephone call is not desired or not possible.

- [Text chat using IPCC](#)
- [Text chat using a legacy ACD](#)

**Web Callback—** A Web callback request is one that does not involve collaboration. The caller and agent simply talk on the phone.

- [Web callback using IPCC](#)
- [Web callback using a legacy ACD](#)

**Delayed Callback—** A delayed call back request is similar to Web callback only the customer requests a call at a specified number of minutes in the future. When the time has elapsed, the caller and agent talk on the phone.

- [Delayed callback using IPCC](#)
- [Delayed callback using a legacy ACD](#)

**Email Message—** The flow of an email message does not involve either the IPCC or a legacy ACD. ICM assigns an agent and the customer and agent communicate by electronic mail.

- [Email message flow](#)

## ***Flow of a Blended Collaboration Request With IPCC***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form, adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller submits the form.
4. The request goes to the routing Collaboration Server's ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using the Blended Collaboration Media Routing Domain (MRD). The MR PG sends the request to the ICM CallRouter, which routes it to the Agent node in Script Editor.
6. The ICM software runs a script, picks an agent, and sends the Agent ID to Collaboration Server using the Media Blender firewall gateway service. Collaboration Server may transfer the request to another Collaboration Server that has the agent selected.
7. Collaboration Server notifies Media Blender using a startSession event and connects the customer and agent (before they are on a voice call together). Agent Reporting and Management (ARM) messages are sent once the agent and customer are connected (from Collaboration Server to the CTI server using the ARM stub on the Media Blender firewall gateway).
8. Media Blender sends the request through the CTI Server and places the call from the agent's phone to the caller (Media Blender uses the AgentReserved CTI strategy).
9. The caller's phone rings. The caller and agent can share Web pages and collaborate while speaking on the phone.

## ***Flow of a Blended Collaboration Request With a Legacy ACD***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller submits the form.
4. The request goes to the routing Collaboration Server ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM MR PG using the Voice Media Routing Domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. ICM software runs a script, picks a service or skill group on an ACD, and returns a label pointing to that service or skill in a message.
8. The routing Collaboration Server transfers the request to the agent Collaboration Server for that specific ACD.
9. The agent Collaboration Server holds the request in the ACD queue and asks Media Blender to get an agent.
10. Media Blender runs a specific CTI strategy; for example, PhantomWaitRelease, in order to queue the request (by placing the call) on the ACD and find a suitable agent.
11. The ACD assigns the call to a suitable agent and notifies Media Blender.
12. Media Blender places the call from the agent to the caller.
13. The caller's phone rings. The caller answers it and talks with the agent.
14. Media Blender notifies Collaboration Server, and Collaboration Server links the caller and agent.
15. Collaboration is now enabled. The agent and caller can share Web pages and collaborate while speaking on the phone.

## ***Flow of a Text Chat Request With IPCC***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form adding name and any special skill needed by the agent, such as a language skill. The form also provides a choice for multi-session chat or single-session chat. Then the caller submits the form.
4. The request goes to the Collaboration Server ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using either the single-session chat (SSC) or multi-session chat (MSC) Media Routing Domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. The ICM software runs a script, picks an agent, and sends the Agent ID to Collaboration Server using the Media Blender firewall gateway service.
8. ICM routes the request to an agent.
9. Collaboration Server connects the caller and agent in a chat session. If this is multi-session chat, the agent is in several sessions simultaneously.
10. The caller(s) and agent communicate using text chat. Agent Reporting and Management (ARM) is used to report activity.

## ***Flow of a Text Chat Request With a Legacy ACD***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form adding name, and any special skill needed by the agent, such as a language skill. Then the caller submits the form. Note that only single-session chat is supported by a legacy ACD.
4. The request goes to the Collaboration Server ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG). Note that a voice MRD must be used.
6. The MR PG sends the request to the ICM CallRouter.
7. ICM returns a label in a message to Collaboration Server.
8. The routing Collaboration Server transfers the request to the agent Collaboration Server for that specific ACD.
9. The agent Collaboration Server holds the request in the ACD queue and asks Media Blender to get an agent.
10. Media Blender runs a specific CTI strategy; for example, PhantomNoCallRelease.
11. The ACD assigns an agent.
12. Collaboration Server connects the caller and agent in a chat session.
13. The caller and agent communicate using text chat. Reporting is done through the ACD.

## ***Flow of a Web Callback Request with IPCC***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form, adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller submits the form.
4. The request goes to the Collaboration Server ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using the Voice media routing domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. The ICM software assigns an agent and notifies Collaboration Server, but Collaboration Server does not use this information.
8. ICM sends a preCall message to the IPCC PG. Media Blender gets the preCall message from the CTI server and places a call from the agent to the caller. (Media Blender uses the AgentReserved CTI strategy). The preCall message contains the agent ID, the caller's phone number and an expanded call context variable (`user.cisco.cmb=callback`, which is set by Collaboration Server).
9. The caller's phone rings and the customer answers it. The agent is now on a voice call with the caller.

## ***Flow of a Web Callback Request with a Legacy ACD***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form, adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller submits the form.
4. The request goes to the Collaboration Server ICM queue.
5. Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using the Voice media routing domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. The ICM software picks a site skill and service and notifies Collaboration Server, but Collaboration Server does not use this information.
8. ICM sends a Legacy-preCall message to the ACD PG. Media Blender gets the Legacy-preCall message from the CTI server and runs a CTI strategy, for example, PhantomWaitRelease. The Legacy-preCall message contains a label that identifies the skill/service dialed number (DN) that ICM picked, the customer's phone number, and an expanded call context variable (`user.cisco.cmb=callback`, which is set by Collaboration Server).
9. The ACD assigns an agent and the call.
10. Media Blender places the call from the agent to the caller.
11. The caller's phone rings and the customer answers it. The agent is now on a voice call with the caller.



## ***Flow of a Delayed Callback Request with IPCC***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form, adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller picks a future time from the drop-down menu and submits the form.
4. The request goes to the routing Collaboration Server's ICM queue. Collaboration Server holds the request until the specified time has elapsed. Note that the request is saved in the database and can be retrieved if the server is recycled.
5. At the specified time, Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using the Voice media routing domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. The ICM software assigns an agent and notifies Collaboration Server, but Collaboration Server ignores this.
8. ICM sends a preCall message to the IPCC PG. Media Blender gets the preCall message from the CTI server and places a call from the agent to the customer. (Media Blender uses the AgentReserved strategy). The preCall message contains the agent ID, the customer's phone number, and an expanded call context variable (`user.cisco.cmb=callback`, which is set by Collaboration Server).
9. The caller's phone rings and the customer answers it. The agent is now on a voice call with the caller.

## ***Flow of a Delayed Callback Request with a Legacy ACD***

1. The caller clicks a button on the browser asking for help.
2. The Collaboration Server serves up the call form.
3. The caller completes the form, adding name, phone number, and any special skill needed by the agent, such as a language skill. Then the caller picks a future time from the drop-down menu and submits the form.
4. The request goes to the routing Collaboration Server's ICM queue. Collaboration Server holds the request until the specified time has elapsed. Note that the request is saved in the database and can be retrieved if the server is cycled.
5. At the specified time, Collaboration Server uses the Media Blender firewall gateway service to send a message to the ICM Media Routing Peripheral Gateway (MR PG) using the Voice media routing domain (MRD).
6. The MR PG sends the request to the ICM CallRouter.
7. The ICM software picks a site skill and service and notifies Collaboration Server, but Collaboration Server does not use this information.
8. ICM sends a Legacy-preCall message to the ACD PG. Media Blender gets the Legacy-preCall message from the CTI server and runs a CTI strategy, for example, PhantomWaitRelease. The Legacy-preCall message contains a label that identifies the skill/service dialed number (DN) that ICM picked, the caller's phone number, and an expanded call context variable (`user.cisco.cmb=callback`, which is set by Collaboration Server).
9. The ACD assigns an agent and the call.
10. Media Blender places the call from the agent to the caller.
11. The caller's phone rings and the customer answers it. The agent is now on a voice call with the caller.

## **Flow of an E-mail Message**

1. The customer sends an e-mail message asking for help.
2. The message is read from the POP3 server into the E-Mail Manager rules engine.
3. If the configured rules determine that the message should be routed using the ICM software, the message is placed in the appropriate skill group queue.
4. E-Mail Manager requests routing for this message by sending a route request to the ICM Central Controller using the Media Routing Interface.
5. The ICM Central Controller accepts a route request and runs an ICM Script based on the skill group that was used.
6. The ICM Central Controller returns a result that either routes the email message to an available agent or to a local skill group queue. If the message goes to a local skill group queue, the e-mail message flow ends.
7. If the e-mail message is routed to an available agent, the message is placed in the agent's queue.
8. E-Mail Manager notifies the agent's browser that an e-mail message has been routed to the agent.
9. The user interface opens the message, and the e-mail task is begun.
10. E-Mail Manager notifies the ICM Central Controller that the task has begun.
11. The agent responds to the customer's e-mail message.

## **Components on the Map**

The following information describes the various components on the map. This information appears in pop-ups.

### **Caller**

The caller refers to a person using a Web browser who sends a request to communicate with a contact center agent. The request sometimes results in a phone conversation between the caller and agent but not always. For example, communication using text chat or an e-mail message does not involve a phone call.

### **Cisco Collaboration Server**

Collaboration Server is an application that provides Web collaboration between a caller and a contact center agent. Collaboration Server allows agents to share information with customers over the Web, such as Web pages, forms, and applications, while at the same time conducting a voice conversation or a text chat.

The routing Collaboration Server routes caller requests through the Media Blender firewall gateway service to the media routing peripheral gateway (MR PG). The MR PG sends the request to the ICM Central Controller. Using variables in the Web request, the Collaboration Server determines the media class and queue type to which the request should be submitted, and based on these variables, sends a message to ICM.

The Collaboration Server Administration desktop makes it simple to configure agents, and each agent created on Collaboration Server is simultaneously created in ICM. Collaboration Server provides a variety of media classes for handling different types of requests, such as blended collaboration, multi-session chat, single-session chat, and voice. Each media class is associated with a media routing domain (MRD), which is a collection of skill groups and services used for routing tasks.

## **Cisco Media Blender**

Media Blender is designed for web and computer telephony integration (CTI). It works with Collaboration Server to provide Web callback and blended collaboration. When used with a legacy ACD, Media Blender allows queuing and routing of Web.

Media Blender also provides a firewall gateway service to allow communication between the Cisco Collaboration Server (CCS), which resides outside firewall 2, and the media routing peripheral gateway (MR PG) inside the firewall. This service uses the Sun Microsystems Remote Method Invocation (RMI). RMI uses a mechanism to communicate with remote objects called stubs and skeletons.

## **Cisco Dynamic Content Adapter**

Dynamic Content Adapter (DCA) works with Collaboration Server to assist in the sharing of SPLIT content pages. SPLIT is an acronym for secure, personalized, live, interactive, and transactional Web content. Collaboration Server provides Web page collaboration by sharing URLs. While this methodology can be sufficient for sites that can reproduce pages using a URL, most Web sites now include at least some SPLIT content. DCA allows collaboration on SPLIT content by intelligently caching and managing content from a Web content server during a Collaboration Server session. This allows all participants in a DCA session to receive the same content.

## **Cisco E-Mail Manager**

E-Mail Manager is an application that manages high volumes of customer inquiries submitted to company e-mail boxes or a Web site. E-Mail Manager accelerates the e-mail response process by automatically directing messages to the correct agent or support team, categorizing and prioritizing messages, suggesting relevant response templates, and if desired, sending automated replies. E-Mail Manager also provides contact center agents with queue management, reporting, and outbound marketing tools.

When a customer sends an e-mail message asking for help, the message is read from the POP3 server into the E-Mail Manager rules engine and then is placed in the appropriate skill group queue. E-Mail Manager sends a route request to the ICM Router and ICM routes the request to an available agent.

## **POP3 Server**

A Post Office Protocol 3 (POP3) server receives the customer's e-mail request and sends it to the E-Mail Manager rules engine.

## **Media Routing Peripheral Gateway**

The media routing peripheral gateway (MR-PG) is an ICM peripheral gateway that is capable of routing media requests of different kinds, such as e-mail and Web callback. The MR-PG supports multiple media routing clients by accommodating multiple, independent peripheral interface managers (PIMs) on a PG platform. A single MR PIM is required for each application instance connected to the ICM system. For example, when connecting an E-Mail Manager instance and a Collaboration Server instance, two MR PIMs are needed on the PG.

## **CTI Server**

The Computer Telephony Integration (CTI) server is an ICM process that acts as a server for CTI clients to communicate with ICM. Each CTI server typically runs on a peripheral gateway (PG)

and provides call control and event notification from the IPCC or a legacy ACD. Media Blender interfaces with the CTI server to set up and control the Web callbacks.

The CTI server that interfaces with E-Mail Manager runs on what is sometimes called a "dummy" PG, because it does not provide the functionality of a regular PG. However, it is a PG that still must be configured.

### ***Blended Agent***

Blended Agent (BA) is an application that provides outbound dialing functionality along with the existing inbound capabilities of ICM software. With BA, contact centers can be configured for automated outbound activities. BA allows agents who are not busy with inbound calls to perform outbound calls, thereby maintaining high agent productivity.

### ***CTI Object Server***

The Computer Telephony Integration Object Server (CTI OS) is used to drive Softphone and third-party integration applications. It permits agents to handle call and agent state events. Typically, Softphone and third-party applications integrate the ICM product with customer applications such as CRM, order entry, and contact center processing.

Although CTIOS can be installed on a PG with a CTI Server, it is often beneficial to run CTIOS on its own server. This permits faster call handling.

### ***ICM CallRouter***

The ICM CallRouter receives routing requests and determines the best destination for each request. It also collects information about the entire system. The ICM CallRouter and the ICM Logger run on the Central Controller, a computer which accumulates data about the requests it has routed.

Real-time call and agent group status data arrives at the Central Controller from the Peripheral Gateways, which are constantly monitoring activity at each contact center. The CallRouter acts as the real-time server. The CallRouter is responsible for providing real-time data to one or more Distributor Admin Workstations (AWs) at each admin site. Client AWs at the site receive their real-time data through a connection to a distributor AW. These AWs are called Client AWs because they do not have the local database and Distributor processes required to receive real-time data directly from the CallRouter.

### ***ICM Logger***

The Logger is the interface between the CallRouter and the database manager (SQL Server). As the CallRouter collects information about the system, it passes the information to the Logger for storage in a central relational database. The database manager on the Logger maintains statistics and data for use in monitoring and reporting. In some ICM configurations, the Logger process may reside on the same computer as the CallRouter.

### ***Admin Workstation***

The Admin Workstation (AW) is a personal computer used to monitor and report on the handling of requests in the ICM system. The AW can also be used to modify the system configuration or scripts.

The AW connects to the Logger for historical reporting and configuration data; it connects to the CallRouter for real-time data (reporting data and possibly real-time script-monitoring data).

## **Automatic Call Distributor**

An automatic call distributor (ACD) is a programmable device that can route incoming requests to a target within a contact center. The platform supports the following legacy ACDs:

- Avaya (Lucent) Definity ECS G3
- Aspect CallCenter
- Nortel Symposium
- Nortel Meridian 1
- Rockwell Spectrum

## **Cisco CallManager**

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 is pre-installed 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 Contact Center**

The Internet Protocol Contact Center (IPCC) system functions as a virtual ACD. Some of the capabilities of IPCC include intelligent multichannel request routing, ACD functionality, network-to-desktop 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 Call Manager (CCM)
- Interactive Voice Response (IVR)

## **Internet Protocol Interactive Voice Response**

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 these digits in much the same way that a conventional computer responds to keystrokes or a click of a 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.

## **Voice Gateway**

The 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.

## **Agent**

An agent is a person in a contact center who communicates with callers (customers) by way of voice calls, text chat, and email messages. Each agent is associated with a peripheral and can be a member of one or more skill groups. A person can be enabled as an agent on more than one peripheral.

Each Collaboration Server and E-Mail Manager agent uses an agent desktop, an agent softphone, and a physical phone when communicating with customers. The physical phone and softphone connect to the CTI server. The agent desktop connects with the agent desktop on either Collaboration Server or E-Mail Manager.