

Cisco Virtual Expert Management for Retail Design and Implementation Guide

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Building Architectures to Solve Business Problems



The CVD program consists of systems and solutions designed, tested, and documented to facilitate faster, more reliable, and more predictable customer deployments. For more information visit www.cisco.com/go/designzone.

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Retail Business Challenge and Solution Overview

Lost Revenue: Inadequate Expertise and Missed Opportunity

Retailers are losing revenue due to inadequate customer service around product expertise and lost opportunities to provide differentiated services. Traditionally, retailers have high employee turnover. According to Gartner, a 2006 study showed that "33% of specialty and 30% of apparel retailers churn more than 100% of their part-time nonmanagement staff annually". Retailers that want to be perceived as delivering value that go well beyond low prices, such as product expertise or specialized services, are challenged to maintain quality, well trained specialists in every store across their enterprise. In addition, retailers strive to differentiate themselves from the competition by delivering value beyond simple product availability within their shelves. This value can be described as follows:

- Product Expertise—Retailers are losing revenue due to a shortage of subject-matter experts within their stores. Retail trends, such as increased online sales, have diminished in-store traffic. The macroeconomic environment has caused consumers to become increasingly thrifty. These factors have forced retailers to reduce margins to remain competitive. As a result, payroll and operational expenses have decreased. This, in turn, diminishes the retailer's ability to hire and retain qualified personnel, especially for complex or specialized products. Often, employees are asked to do more and more tasks, reducing the capacity for consultative selling of specialized products. Customers, on the other hand, are doing more online research and are better prepared to ask specific questions when entering the retail store location. Store employees cannot become experts in every product and often do not have the research tools available to them on the sales floor; 33% of customers report they had been unable to find a salesperson to help them on their most recent retail experience (Accenture 2007).
- Expert Services—Retailers have the opportunity to increase revenue by offering specialized services beyond those currently available within their stores (e.g., home design or remodeling specialists for areas such as cabinetry, electrical, plumbing. Other specialized areas might include nutrition specialists, wedding gift consultants, etc.). Due to payroll constraints, not every store can afford to staff a permanent service area with the appropriate specialist. If they can afford the luxury of staffing highly trained expertise at every location, there is no guarantee that their time will be fully used. Utilization of these experts fluctuates throughout the day, depending on the needs of that stores customer patterns.
- Specialized Customer Service—Clear communication between retail employees and their customers is the key to addressing customer needs and offering superior service. However, most stores cannot fully-assist customers that have foreign language or hearing impaired needs since they do not have employees staffed with these language skills. The results are lost sales and a poor customer experience.

The Solution: Cisco's Virtual Expert Management

Cisco's Virtual Expert Management solution enables retailers to directly address the business problems of providing expertise for specialized products, services, or consultative selling by enabling face-to-face consultation through video, voice, and content sharing in the store with the most appropriate subject-matter expert. It locates and seamlessly connects the customer with an expert using skill-based routing and presence availability tracking, enabling all stores to capture the same business opportunity without deploying subject-matter experts at every store. Business principles include the following:

- Relevance—Customer interests are automatically matched against qualified and available specialists, regardless of location.
- Intimacy—Video-enabled, immersive face-to-face interaction with product specialists becomes a reality and increases sales conversion rate. This personal touch improves customer confidence with the retailer and drives brand loyalty.
- Efficiency—Retailers are able to "rationalize" pools of specialists to provide multi-channel coverage throughout the enterprise.
- Environmental Friendly—Expenses related to specialist travel and individual store/branch training reduced dramatically. This reduced carbon footprint contributes to "green-initiatives"

The Cisco Virtual Expert Management solution not only addresses the specific business challenges stated above, it also provides a powerful collaboration foundation that allows the retailer to derive other benefits outside of the scope of the main aim of the solution.

Solution Benefits

The Cisco Virtual Expert Management solution provides benefits to the customer, retailer, and suppliers that include the following:

- Overall benefits
 - Reduces customer revenue leakage by up to 70 percent, doubles conversion rate over audio alone, and almost doubles the number of new products per customer
- Customer benefits
 - Ability to communicate face-to-face with a service expert when and where needed in the store.
 - Ability to make purchase decisions with increased understanding of product's functional benefits, tradeoffs, integration complexity, and post-sale usage expectations.
 - Ability to make a complete purchase and leave the store with essential complementary products and services.
 - Ability to receive service assistance in preferred language (including sign language).
- Employee benefits
 - Employees can speak with an expert for training purposes when not in use by the customer.
- Retailer benefits
 - Demand-based workforce management provides better service and lower overall operations costs-dynamically repositioned customer service agents across multiple stores/time zones to provide more support resources where they are needed based on actual, real-time demand.
 - Increase customer satisfaction by lowering product return rates (e.g., getting the correct product on the first visit).

- Higher revenues due to better-quality up sell, cross-sell, and complete sell activities.
- Higher shopper satisfaction with shopping experience (better informed, promptly available customer service agents).
- Higher shopper loyalty (use retailer's existing customer profile to personalize today's shopping experience).
- Identify most valued customers (loyalty, spend) and offer them premium service, special value or add-on purchase opportunities before they are standing in the checkout line.
- Manufacturer/supplier benefits
 - Able to deliver consistent, accurate, and more in-depth product information, configuration, options, product reviews from manufacturers own marketing systems while they are in the store.
 - Ability to market targeted product messages to customer when they are making their purchase decisions
 - Ability to present incentives directly to customers when they are making their purchase decisions
 - Higher shopper satisfaction due to multi-language expert assistance and in-depth product information in the store
 - More completed sales, less returns with the ability to guide customer through purchase process.
 - Increased incremental revenue through up-selling/cross-selling shoppers, and supplier advertising

The Cisco Virtual Expert Management solution helps retailers differentiate themselves by redefining superior customer service expertise. In addition, many of the solution components may be reused by the retailer to help facilitate a larger communication fabric, greatly enhancing employee productivity and the customer's cross channel experience.

Target Audience

The Cisco Virtual Expert Management solution is designed for visionary retail executives that want to redefine their relationships with their customer-base by providing a superior consultative experience around complicated products or services. This audience includes CXO, VP of Store Operations, voice and data architects, and any position within the business interested in innovative selling methods. This document is intended for the aforementioned audience, as well as, engineers involved the voice or data projects or sales engineers that are interested in how the Cisco Virtual Expert Management solution can be deployed.

Target Audience



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Solution Requirements and Process Flow

Scope

The Cisco Virtual Expert Management solution is a powerful, flexible communication solution that can address a variety of technical, business and associated service preferences. The intent of this document is to identify the components that were combined together and to validate specific "use cases" within a retail environment.

This document provides examples of products that were tested together. Lab validation testing is used to demonstrate how these components can combine to address the business problems that were identified in Chapter 1, "Retail Business Challenge and Solution Overview." The current solution's scope is restricted to specific products and use cases. However, the reader is encouraged to consider that certain products may already exist in a retailers environment that may potentially be substituted for similar functions. Other products and services could be included beyond this scope that could offer dramatic business value. In addition, the solution was restricted to certain use cases of store-to-store and store-to-contact center communication. Home-to-store and home-to-contact center were not tested due to resources and time constraints, but these scenarios would also be potential use cases for this solution. A complete list of components that were validated is available in Chapter 3, "Solution Details."

Solution Requirements

Specific requirements are addressed within the scope of this solution:

- Audio and Video Conferencing between the customer and expert—This solution provides several options to enable audio and video consultation between the customer and the expert. The quality of video and associated products are flexible to the needs of the retailer and allows for the capability of the solution to increase as the needs of the retailer increase.
- Ability to define and search for multiple types of expertise—This solution can intelligently and automatically search for any administratively predefined ranges of expertise.
- Rich Collaboration—Bidirectional document-sharing allows either the client or the expert to input information into relevant documents, web pages, or customer-related material.
- Peripheral Device Sharing—The solution provides the option to print shared documents or collateral locally or at another location of the customer's choice.
- Multimedia Playback—The solution provides the ability for the expert to play multimedia content (instructional videos, prerecorded material) for the customer.

- Self Assisted Model—The solution must be capable of being deployed at a retail location that would allow a customer the confidence to operate the Virtual Expert Management service without needing the assistance of a retail employee.
- Survey—The solution is capable of providing the customer with an optional, customized survey at end of session by directing them to an appropriate URL.
- Security—Secure interactions between customer and expert include many options for session encryption and privacy settings. These designs build on best practices for a secure enterprise architecture.

Solution Use Case Walk-Through

The customer enters the retail store featuring the Cisco Virtual Expert Management solution and approaches or is led to the Virtual Expert station. The Virtual Expert station would be located in a customer services area, an area where special product services are provided or in an isle next to the featured products (e.g., Wine selection). Figure 2-1 shows the process flow of providing expert assistance to a customer.



Figure 2-1 Process Flow of Customer Connecting to an Expert



Dotted process steps are optional based on deployment scenarios and implemented solution components.

The following steps describe the flow in Figure 2-1:

- **Step 1** Using the virtual expert station, the customer searches for a product of interest. This web portal would typically be the retailer's existing E-Commerce site, or a custom portal for a specific set of products or services.
- **Step 2** Once the customer finds a product of interest that may need advanced configuration or additional professional services, there will be a link on that page enabling the customer to **Talk to Expert**. See Figure 2-2



- **Step 3** After the customer clicks on **Talk to Expert** button, the web portal server would use the Cisco WebDialer WSDL service to place a call from the kiosk/phone that the customer is at to the appropriate expert queue.
- Step 4 An optional step to include is database lookups for additional customer data or features such as desktop sharing. Once the customer is connected to the expert queue, the script could be configured to request additional information from the customer before processing the call. Typical information that would be requested from a customer includes customer home phone number, account numbers, and transaction numbers. This information allows the expert advisor locator system to retrieve additional information from the customer kiosk and referenced in a database that includes all VEM stations. This information is used to customize messages subsequently sent to the experts.
- Step 5 The expert advisor locator service sends out instant messages to one or many experts soliciting their assistance with a customer. If a database lookup was performed, this solicitation could include information such as the customer's name, annual purchasing, or last purchase. Expert selection is also based on queuing method (longest available agent, most skilled, or least skilled) or spatiality (closest match among numeric attributes).

If an expert is not available, queue scripting would typically include forwarding the call to a Customer Contact Center agent or answering service. See Figure 2-3.



Figure 2-3 Expert Instant Messaging with Customer

An optional solution component is recording (enhance customer service, meet emerging legal requirements). The audio session between customer and expert can be recorded in several deployment scenarios. Currently, recording of video streams, desktop collaboration and TelePresence calls are not supported. Recordings using NICE are logged and stored for reporting and audits. See Figure 2-4.

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Step 6 When an expert accepts a contact offer, the offers to the other experts are revoked. If a database lookup was performed, additional information could then be provided in the subsequent messages. See Figure 2-5.

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Figure 2-5 Customer Accepting Contact Offer

The expert advisor locator system then connects the expert and customer with voice and video. When additional collaboration is needed, a desktop sharing session can be started. Desktop sharing is available via several products. In this example, the expert is able to remotely control the customers desktop using WebEx Access Anywhere. The link for the session is provided in the acknowledgement message along with the necessary credentials. See Figure 2-6.

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Figure 2-6 Expert Accessing the Customer Desktop

Step 7 Once connected, both the customer and the expert are able to collaboratively control the virtual expert station desktop. The expert can direct the customers browsing experience, help complete complex product web ordering forms, and provide the expert services that the customer needs, keeping the sale in the store. See Figure 2-7.

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Figure 2-7 Customer and Expert Interacting

Step 8 Once the conversation is complete, the expert directs the customer's web browser to a satisfaction survey site.





CHAPTER 3

Solution Details

The Cisco Virtual Expert Management solution is specifically targeted at retailers. Cisco has created the Connected Retail model to provide innovative, relevant, and consistent solutions that work together to address the existing and future challenges of today's retailers.

Connected Retail Overview

Connected Retail is Cisco's industry vision that allows retailers to use the strength of the network to connect their brand to today's consumers who are increasingly digital and mobile. Connected Retail solutions are designed to address the many different facets and challenges that face retailers, from one unified platform. Each solution uses the same scalable and standardized architectures. Connected Retail's value is demonstrated through the following four portfolios, each of which is focused on addressing a different aspect of a retailers business needs:

- Customer Experience Transformation—A portfolio of solutions that help a retailer transform and differentiate a customer's experience within their stores.
- Employee Optimization—A portfolio of solutions that are targeted towards increasing efficiency of a retailers workforce.
- Secure Store—A portfolio of solutions that address security and compliance within a retailers enterprise environment.
- Lean Retail—A portfolio of solutions that help a retailer "do more with less". Data center applications are implemented to expand and contract dynamically with the demands of the resources. Stores are streamlined to minimize cost while increasing functionality.

For more information about the Connected Retail solution portfolios, refer to the following URL: http://www.cisco.com/go/retail

Solution Framework

Cisco's Customer Experience Transformation solution portfolio is comprised of solutions that were developed and tested using Cisco's Connected Retail framework. This model depicts the relationships between applications and the network infrastructure. Figure 3-1 depicts the Virtual Expert Management solution framework. The solution framework is divided into three functional layers: applications, core common services, and physical infrastructure.



Figure 3-1 Virtual Expert Management Framework

Applications

Business and collaboration applications connect users and business processes to the infrastructure. The Applications layer of the framework depicts Cisco's business and collaboration applications. Examples include Contact Center Agent desktop, WebEx, and Cisco's Unified Video Advantage. Cisco's Unified Communication Suite enables collaboration services across the Virtual Expert Management solution. Although these applications are being depicted for the utility that they bring to the Virtual Expert Management solution, it is important to recognize the greater reusable value to the retailer. Applications services are the connection from the Applications layer to the Core Common Services layer.

Core Common Services

This is where filtering, caching, protocol optimization interact with applications or application middleware services to optimize the performance from the network to the end user. Specific services that are used within the Virtual Expert Management solution include call processing, expert location services, call recording and presence.

Physical Infrastructure

The Physical Infrastructure layer is where the physical infrastructure resides. The Connected Retail reference architecture provides the foundation of the Physical Infrastructure layer. These network architectures exhibit best practices for retail networks and provide the robust foundation for higher-level services and applications. Each of these architectures contain additional products and features of a fully functional enterprise network and provide a contextual backdrop beyond what is necessary for the Virtual Expert Management solution. For more information about, Connected Retail, see the following URL: http://www.cisco.com/go/retail

Virtual Expert Management Solution Architecture

The Virtual Expert Management solution is comprised of products from several areas of Unified Communications, primarily Contact Center Enterprise. Cisco Unified Contact Center Enterprise provides the core call handling needed to receive and direct calls for the expert queue. Customer Voice Portal is specifically where the customer call is queued and enables advanced call capabilities to gather information and handle exceptions. Cisco's Expert Advisor product is used in conjunction with Cisco Unified Presence to locate experts and request their availability to engage with a customer. Once an expert accepts an offer they are connected using voice and video to the customer's station. Video can take several forms including TelePresence, Cisco Unified Video Advantage and Cisco IP Video Phones. During the session with the customer, the expert can start a collaborative desktop sharing session using one of several different options; WebEx meeting, Cisco Meeting Place, or WebEx Access Anywhere. These allow the customer and expert to jointly view and control desktop applications (e.g., a web browser) and for the expert to assist the customer in their products of interest. While the customer and expert are conversing, their conversation is being recorded for audit/quality assurance using the NICE recording solutions (non-TP endpoints). Figure 3-2 depicts the logical relationship of the solution components.





Protocols and Services for Virtual Expert Management Solution

Virtual Expert Management is comprised of a complex set of systems located primarily in the retailers' data center. Figure 3-3 shows an overview of many of the protocols and services of the solution and the flows between them.



Figure 3-3 Virtual Expert Management Protocols and Services

The protocols used by the applications deployed need to be considered when implementing quality-of-services in the enterprise, and is covered in more detail in Chapter 4, "Design Considerations."

Solution Components

Many systems are needed to create the Virtual Expert Management solution. The Virtual Expert Management solution is conceptually broken down into several functional groups based on the capabilities they bring to the solution. Each component of the solution and its function is briefly described here.

Store Endpoints

Two main scenarios tested in this solution contrast the products of Cisco TelePresence and Cisco Unified Video Advantage. The Virtual Expert Management solution is flexible and allows for many different types of communication channels and technologies from the customer to the expert. Validation in Cisco's laboratories was restricted to several deployment models using several different endpoints. This was not an exhaustive effort of every possible configuration, nor did it account for some additional plausible scenarios.

Common to the two scenarios are the products of CUPC, a Web browser, and desktop phones.

Cisco Unified Personal Communicator

A powerful desktop computer application that allows easy access to communications applications and services such as voice, video, instant messaging, Web conferencing, voice mail, and presence information from a single, multimedia interface on your PC or MAC. This client is a virtual or soft phone with both voice and video capability. The Cisco Unified Personal Communicator (CUPC) is one of the optional user interfaces in the solution.

Cisco Unified Personal Communicator is currently one of the two supported instant messaging clients of Cisco Expert Advisor. It is used by the expert agents to receive and respond to support requests. Both the customer station and the expert station use the CUPC client. Expert agents advertise their availability to the Cisco Expert Advisor system via their presence status in CUPC. On the customer stations the CUPC client can be used as a voice and video endpoint or solely for its instant meeting capability. CUPC includes the ability to automatically start an instant collaborative meeting session using Cisco WebEx or Cisco Unified MeetingPlace. The CUPC client is configured with the experts meeting account information (e.g., username and password) the CUP Server is configured with the meeting site information and this configuration is sent to the CUPC client. The CUPC meeting capabilities are best used for implementations where the expert needs to share their desktop and web browser with a customer rather than the customer sharing to the expert. When using the CUPC client the customer station is configured to start meeting sessions automatically, the expert clicks the start meeting button in the CUPC session window. Both the customer and expert stations open windows and join the new instant meeting. The expert can immediately start sharing their desktop and show the customer relevant information. For instances where the expert needs to view the customer desktop, Webex Access Anywhere provides the most seamless experience, for more information see the "Remote Assistance" section on page 3-13.

The validated endpoints include the following:

- Cisco TelePresence—High Resolution
- Cisco Unified Video Advantage—Lower Resolution

Cisco TelePresence

Cisco TelePresence Station (CTS) 500 units provide high-definition video and stereo audio communication between customers and experts as shown in Figure 3-4. Their large screen format and high-quality video provide a true to life experience for face-to-face communication. The CTS 500 units are the most affordable with a smaller 37-inch display, single, primary codec, stereo-only audio and simple pedestal and wall mounting options. They connect to the network via a single Ethernet cable. Configuration and management is simple via Cisco Unified Communications Manager the same as other voice and video endpoints. Cisco TelePresence offers several resolution and quality settings that cover a broad range of available bandwidths. Each of these options are listed in "Bandwidth Considerations" section on page 4-2. Cisco TelePresence systems are the best solution option for supporting sign language. More information on Cisco TelePresence can be found at the following URL: http://www.cisco.com/go/telepresence.





Cisco Unified Video Advantage

Cisco Unified Video Advantage (CUVA) is a camera that provides video telephony functionality to Cisco Unified IP phones, 7900 Series, and Cisco IP Communicator softphone application as shown in Figure 3-5. Cisco Unified Video Advantage uses the familiar phone interface to make and receive video calls from Cisco Unified IP phones with the video component being displayed on the PC/Kiosk. Installation is comprised of Cisco Unified Video Advantage software and a Cisco VT Camera II (a video telephony USB camera). Currently, video resolutions up to 352x288 are supported Video bandwidth and other configuration is simple via Cisco Unified Communications Manager regions. Video starts automatically after the call is passed to the expert from the virtual expert queue. Best functionality was achieved using a second 4 to 3 ratio monitor connected to the customer stations with the video displaying full screen. Even with the lower resolution, quality and performance were acceptable for most use case

scenarios and it is the most cost effective video solution in conjunction with using Cisco 7900 Series IP phones as the user handsets/speaker phone. More information on Cisco Unified Video Advantage can be found at the following URL: http://www.cisco.com/go/cuva.





Cisco Agent Desktop

Cisco Agent Desktop (CAD) is a computer telephony integration (CTI) solution for IP-based contact centers that allows contact center agents to use powerful tools that help increase agent and supervisor productivity, improve customer satisfaction, and reduce costs. An intuitive GUI decreases IT dependency and simplifies customization, maintenance, and change management. Features a robust CTI screen pop, soft phone with media termination, and agent/supervisor coaching capabilities. Agents see

customer information in an enterprise data window and an optional screen pop. The Cisco Agent Desktop requires minimal screen space and allows agents to customize its capabilities to meet their individual needs.

Data Center Components and Services

Products in this solution enable experts to be configured, located, and used. How does the expert know what customer needs assistance? Using Cisco Customer Voice Portal (CVP), the scripting capabilities enable the entering of information before a call is queued. Typically, you would have the customer enter their phone number or CRM-based club card number. This would enable the CVP system to perform information lookups across databases and provide the resulting information in the offer and acceptance requests that are sent to the expert. These messages are sent to the expert via their Cisco Unified Personal Communicator (CUPC) client as instant messages directly from the Expert Advisor system. Additionally, the Expert Advisor product also supports the use of Microsoft Office Communicator as an instant messaging and presence service.

Cisco Unified Expert Advisor

Cisco Unified Expert Advisor (CUEA) is the core component of the Virtual Expert Management solution. It is available as an optional feature for Cisco Unified Contact Center. It extends the contact center so that highly trained experts can handle certain incoming calls. For example, there might be a call for which the contact center agent and the caller require a discussion with, or advice from, a specialist who is not employed by the contact center, but who agrees to be 'on call' to provide services as a consultant. That person is the expert advisor.

Expert advisors establish their presence and availability to take a call by the state of their instant messaging (IM) client; for example, available or away. The expert advisor IM client effectively serves as the "agent desktop" for experts who establish their willingness to take a call by responding to a message (e.g., *Are you available to handle this contact?*). Once an expert's availability and acceptance of the message request are confirmed, the call is routed to the expert. The contact center agent can also conference the expert into a customer call.

For more information, see the Administration and Configuration Guide for Cisco Unified Expert Advisor at the following URL: http://www.cisco.com/go/ea

Expert Advisor

The expert advisor is an informal or occasional agent. Providing assistance is not their primary job, and thus, they may reject tasks. Also, since experts may not be at their desk at all times, they may not be reachable at their primary phone number. To accommodate these restrictions, the CUEA system uses an IM client instead of an agent desktop. IM clients provide a "lightweight" installation option for the expert advisors and expert advisors tend to be already familiar with the technology so that additional training is not required.

IM presence is used instead of explicit login. If an expert advisor is unavailable or not logged into IM, requests are not directed to that expert advisor. Tasks are offered through the IM client and the expert advisor can accept or reject the task. The system is configurable as to how long it waits for a reply, but by default an expert advisor has 30 seconds to respond to the request. If the expert advisor mistyped the phone number, the system will re-query them for the correct phone number to call. The expert advisor can also specify a different number for the system to call.

User Management—Adding Users, Queue Assignment, Skills and Attributes

The list of available users in the CUEA system is based on users configured on the presence server and synchronized to the expert advisor system based on a schedule. As new presence users are added (either manually or via integration with directory systems), they are then available to be added and configured as expert advisors. When a user is added to the expert advisors group, their skills and attributes are configured and assigned as desired. Once configured these users are now available for queue membership by direct assignment or based on skill and attribute capabilities.

Assignment queues are used to match expert advisors with incoming contact requests. Assignment queues have a one-to-one relationship with Unified ICM Skill Groups. When an assignment queue is created on the CUEA system, a Unified ICM Skill Group is also created and tied to the assignment queue.

There are two selection strategies for assignment queues that can be used:

- Queue ordering (longest available agent, most skilled, or least skilled)
- Spatial (closest match among numeric attributes)

Expert advisors are matched with assignment queues via membership rules in one of two ways:

- Expert advisors—Expert advisors are assigned directly to the assignment queue
- Skills and attributes—A combination of skills and attributes are specified for the assignment queue. Expert advisors are deemed eligible to be offered tasks from the assignment queue if the expert advisor's skills and attributes fall within the skill and attribute parameter ranges of the assignment queue.

An assignment queue is created for each group of expert advisors or skills to which call requests is routed. The queue is then configured to have agents directly assigned by selecting expert advisors on the membership tab, or by specifying skills and attributes on the membership tab.

- If *expert advisors* is selected in the Membership tab, then expert advisors are assigned directly to the assignment queue. When requests are routed to the queue, available expert advisors defined for the queue can receive the request.
- If *skills and attributes* is selected in the Membership tab, then only expert advisors who meet the criteria of the skills and attributes selection are routed the requests.

Skills are classifications for expert advisor abilities, general knowledge, and expertise. The skills summary page on the expert advisors system details the skills that are defined on the system. The summary page displays the skill name and a description for each skill. Once the skills have been defined they can then be assigned to expert advisors and assignment queues and used for proper call routing of incoming contacts.

When adding expert advisors there is a list skills that can be selected for each expert created or edited. Simply check the box next to the names of the skills to add, optionally edit the competency level for each skill assigned. Competency can range from 1 to 100, with 100 being the most competent. The default is 50.

Custom Messages to Expert Advisors

Message sets are collections of messages that can be sent to or received from expert advisors. Each set of messages contains a set of text strings that are either sent to or received from an expert advisor when certain call events (such as a login, a call transfer, or failover) occur.

The CUEA system includes a set of system defined messages that can be copied and customized to meet many needs, such as defining messages in a foreign language, or for multiple formats, for example, HTML and TEXT.

Messages can use token replacement strings for information sent to the expert advisor. There are two types of token replacement strings that can be used; non-call detail (NCD) and call detail (CD).

There are four NCD token replacement strings:

- NCD: UserName%—The login name of the user
- NCD:UserID—The ID of the user
- NCD: TimeLeft%—The amount of time left to accept the request
- NCD: InvalidNumber%—The invalid number that the system tried to call

CD token replacement strings are strings created from system and call attributes, as defined in the **Daily Management > Attributes** menu of the expert advisor system. To retrieve string information from databases the ICM router will need to be configured for database routing. ICM scripts are then crafted to retrieve information from databases, for example, based on caller entered digits or calling phone number, and populated to peripheral variables that are passed to the expert advisor system as call data.

As an example, an attribute can be created called CustomerName and mapped to a contact attribute source (e.g., PeripherialVariable1), then referenced using a token replacement string in the message to the expert advisor using this syntax%*CD:CustomerName*%. These token replacement strings are replaced with their current value when the message is sent to the expert advisor. See the default message sets for example usage.

Steps for configuring databases in ICM and attributes in expert advisor systems are available in Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management."

Cisco Unified Presence Server

Cisco Unified Presence Server (CUP) is a standards-based enterprise platform that brings people together in and across organizations in the most effective way. This open and extensible platform facilitates the highly secure exchange of availability and instant messaging (IM) information between Cisco Unified Communications Manager and other applications. Cisco Unified Presence is an essential component in the Virtual Expert Management solution. It integrates the functionality of Cisco Unified Expert Advisor with the experts located throughout the organization so they can be reached using instant messaging instead of having to log into a fat and expensive agent desktop client. Users configured in the CUP server are the base users available for selection in Cisco Unified MeetingPlace and Cisco Webex meeting services can be configured in the CUP server and applied to different groups of users. Meeting settings are pushed to CUPC clients when logging in and enable the instant meeting feature when communicating with other CUPC-enabled end clients. More information on Cisco Unified Presence can be found at the following URL: http://www.cisco.com/en/US/products/ps6837/index.html.

Voice Applications

The call-processing function of the solution is comprised of several applications that work in coordination to establish intelligent call management. It not only provides basic call establishment, but also offers advanced call treatment for intelligent call routing across channels to appropriate resources and self-service applications.

Cisco Unified Communications Manager

An enterprise-class IP telephony call-processing system that provides traditional telephony features as well as advanced capabilities, such as preference, and rich conferencing services. Cisco Unified Communications Manager (CUCM) creates a unified workspace that supports a full range of communications features and applications with a solution that is highly scalable. Each CUCM cluster can support up to 30,000 users and the clusters can be distributed for scalability, redundancy, and load balancing. CUCM provides the logical addressing (phone numbers) within the solution and is the core call management component.

Cisco Unified Contact Center Enterprise

An intelligent contact routing, call treatment, network-to-desktop computer telephony integration (CTI), and multichannel contact management over an IP infrastructure. It combines multichannel automatic call distributor (ACD) functionality with IP telephony in a unified solution, enabling the rapid deployment of a distributed contact center infrastructure. As a core component of the Virtual Expert Management solution, Cisco Unified Contact Center Enterprise (CUCCE) applies business logic to customer calls and is the glue integrating the other components such as Cisco Unified Communications Manager, Cisco Unified Customer Voice Portal, Cisco Unified Expert Advisor and gateways. Contact Center agents connect using a client to track and support customer calls. The system monitors the resources available in the contact center to meet customer needs, including agent skills and availability, interactive voice response (IVR) status, and queue lengths.

For more information on Cisco Unified Contact Center Enterprise, see the following URL: http://www.cisco.com/en/US/products/sw/custcosw/ps1844/index.html

Cisco Unified Intelligent Contact Management

A combination of multichannel contact management, intelligent routing, and network-to-desktop computer telephony integration (CTI) capabilities that virtualize contact center routing, reporting, and computer telephony integration across heterogeneous and distributed third-party automatic call distribution (ACD) and interactive voice response (IVR) systems. It interfaces with carriers' intelligent networks for pre-routing and delegation of calls targeted to one or more contact centers. It segments customers and monitors resource activity and availability, delivers each contact to the most appropriate resource anywhere in the enterprise and profiles each customer using contact-related data, such as dialed number and calling line ID. It assigns the most appropriate resources to meet a customer's needs based on real-time conditions (such as agent skills, availability, and queue lengths) continuously gathered from various contact center components. Cisco Unified Intelligent Contact Management (CUICM) is a core component in a Cisco Unified Contact Center Enterprise implementation. It performs the core call-routing functionality between services and systems, integrated database lookup functionality, and all call logging.

Cisco Unified Customer Voice Portal

An intelligent, personalized self-service over the phone application. Enables customers to efficiently retrieve the information they need from the contact center. Customers can use touch-tone signals or their own voice to request self-service information. If they request live agent assistance, Cisco Unified Customer Voice Portal (CVP) can place a call in queue until an appropriate agent is available and then transfer information given by the customer directly to the agent along with the call itself to provide a seamless customer service experience. In addition, Unified CVP can support video interactions, including self-service, queuing, and agent across mobile devices and kiosks. Unified CVP hosts the various expert advisor queue scripts created for each pool of products and services. It facilitates the

transfer of calls to the VXML gateway and manages call recovery. Cisco Unified Customer Voice Portal is the preferred call-queuing product for Cisco Expert Advisor and the Virtual Expert Management solution.

For more information on CVP, see the following URL: http://www.cisco.com/en/US/products/sw/custcosw/ps1006/index.html

Remote Assistance

Several products were validated to provide the remote assistance capabilities needed for a remote expert solution. Initially the best options integrated tightly with the Cisco Unified Personal Communicator capability of starting an instant meeting (see "CUPC Instant Meetings" section on page 4-7). But the best product for collaborative desktop sharing was found to be Cisco's WebEx Access Anywhere. Compared to WebEx Meeting Center and Cisco MeetingPlace which have many manual steps to perform for desktop sharing, Cisco's WebEx Access Anywhere is able to connect automatically to the in store customer station and instantly share the customers desktop. Cisco Webex Access Anywhere provides the most seamless user experience of any of the remote assistance options tested.

Each of these products evaluated have a number of useful features as described below and provide a great deal of options and flexibility for a virtual expert solution.

Cisco WebEx

A hosted service that offers several different products with various capabilities. These include real-time desktop sharing with phone conferencing so that the client sees the same collateral that the remote expert is sharing. This service is only available as a hosted service but has a road map of capabilities that include behind the firewall recording and mixing of sessions using an on-premise appliance. This option can be contrasted with the Cisco Meetingplace products, but as a service can scale dynamically as needed to meet current and future business needs. More information about the WebEx suite of products is available at http://www.webex.com

WebEx Access Anywhere

Cisco WebEx Access Anywhere is a sub-component of both Cisco Meeting Center and Cisco WebEx Remote Support. It enables remote control of a computer via a preconfigured agent that is installed on that computer. The WebEx Access Anywhere sessions can be easily started via a URL link used by the expert. The link can be provided in the instant message along with user credentials needed to access the customer station. The expert is able to instantly see what the customer is looking at and take control as needed to assist the customer. The service enables dual desktop control of the mouse and keyboard, there is no need to switch control back and forth between the expert and the customer. This service also enables the expert to print to a printer connected to the customer station, as well as direct file transfers between customer and expert (i.e., the customer inserts a USB drive to receive a file or digital receipt from the expert). The WebEx Access Anywhere service provides the most seamless experience for a customer using an off the shelf product. Screen shots and installation steps for Cisco WebEx Access Anywhere is available in Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management."

WebEx Meeting Center

Cisco WebEx Meeting Center integrates closely with Cisco Unified Personal Communicator. It enables an instant meeting to be started between the expert and the customer with a click of button on the CUPC client. The CUPC client is configured with the experts WebEx account information (e.g., username and password) the CUP Server is configured with the WebEx site information and this configuration is sent to the CUPC client. WebEx Meeting Center is best used for implementations where the Expert needs to share their desktop and web browser with a customer rather than the customer sharing to the expert. When using the CUPC client the customer station is configured to start meeting sessions automatically, the expert clicks the start meeting button in the CUPC session window. Both the customer and expert stations open windows and join the new instant meeting. The expert can immediately start sharing their desktop and show the customer relevant information. Using meeting center, the desktop sessions can be set to automatically record via the site settings. To enable automatic recording both **Network-Based Recording** and **Unlimited Overage** options need to be added to the site profile. Management of recordings and various features can be achieved through the published API interface.

WebEx Remote Support

Cisco WebEx Remote Support combines several virtual expert management features in a single "hosted as a service" product. It does not include any of the other products mentioned (e.g., CUCM, CUEA, CVP, CUP, CUPC, CUICM, etc). Call flows are process through WebEx and direct via VIOP. WebEx Remote Support includes WebEx WebACD, a Web-based ACD where queues and experts can be created and managed. For each ACD queue a *Click-to-Connect* link and Web icon is created that can be embedded in the retailers site for both internal and external customer access. This link and icon change dynamically based on whether agents are available to provide immediate support or to leave a message. Experts load the WebACD client and are assigned to various queues by a supervisor/manager. When a customer clicks on the remote support link their browser loads a thin client (similar to Meeting center) and connects them to the WebACD queue. The customer is prompted for basic information items (e.g., name and a phone number) as information that can be passed to the agent. An agent would then select the new customer from the WebACD queue and be connected with voice and video. The voice connection supports both voice-over-IP (VoIP) within the browser, if the customer has a microphone and speakers connected to their PC, or via a phone line as a callback to the customers entered phone number. The agent can then also share their desktop, or view the customer desktop as desired. Upon completion of the session, the customers' web browser is automatically directed to a survey site where they can provide feedback. WebEx Remote Support also includes integrated recording of voice, video, and desktop sharing sessions. WebEx Remote Support also is capable of remote printing and drag and drop file transfers. As a hosted-service WebEx Remote Support is a quick and easy solution for virtual expert management to both customers at home and in the store. WebEx Remote Support is also the most flexible, enabling expert agents to provide assistance from anywhere via a simple Web browser. More information regarding WebEx Remote Support can be found at the following URL: http://www.webex.com/product-overview/support-center/remote-support.html

Cisco Unified Meetingplace

Cisco Unified Meetingplace is an in-house service (contrasted with the hosted Cisco Webex service) that allows real-time desktop sharing with phone conferencing so that the client sees the same collateral that the remote expert is sharing.

Cisco Unified Meetingplace integrates closely with Cisco Unified Personal Communicator. It enables an instant meeting to be started between the expert and the customer with a click of button on the CUPC client. The CUPC client is configured with the experts Meetingplace account information (e.g., username and password) the CUP Server is configured with the Meetingplace site information and this configuration is sent to the CUPC client. Cisco Unified Meetingplace is best used for implementations where the expert needs to share their desktop and web browser with a customer rather than the customer sharing to the expert. When using the CUPC client the customer station is configured to start meeting sessions automatically, the expert clicks the start meeting button in the CUPC session window. Both the customer and expert stations open windows and join the new instant meeting. The expert can immediately start sharing their desktop and show the customer relevant information.
Recording

There are several well known products that facilitate recording of call center audio sessions. In the Virtual Expert Management solution, NICE fulfills this requirement.

NICE Perform Recording

Compliance recording within the contact center and experts in the store has become a necessity for businesses to ensure compliance with both external and internal regulations and procedures. Non-compliance can cost millions of dollars in fines and litigation, damage business reputation, increase customer churn, and raise exposure to fraud. Recording customer interactions provides a valuable tool for:

- Compliance with regulations requiring recording
- Dispute resolution and legal defense
- Verbal contract documentation
- Accuracy verification
- Employee compliance monitoring and verification

The NICE Perform Recording solution offers a reliable and resilient compliance recording solution, enabling contact centers, stores, corporate offices, and other sites to document all information related to certain business operations, protect the business, and mitigate risk. The solution provides the capability to capture, store, and maintain customer conversations and activity.

NICE compliance recording is available for TDM, VoIP, and hybrid environments. It is seamless integration with other NICE SmartCenter solutions such as Interaction Analytics and Quality Management enhances NICE's offering to deliver significant value added capabilities which can optimize operational efficiency and provide detailed customer insight.

NICE Perform Technology

The power of NICE Perform lies in the unique synergy between Cisco and NICE's advanced technology components:

- NICE Perform can capture and store all calls as required, and the unique NICE technology stores digitalized voice recording in a highly efficient manner, making rapid identification and retrieval simple and inexpensive.
- NICE Perform is fully integrated with Microsoft.NET client-server technology, reducing overheads, improving response time, and easing the installation of updates and new versions.
- NICE Perform's audio analysis capabilities are the most advanced and accurate available, allowing word spotting, emotion detection, and voice analysis.
- NICE Perform works in traditional, hybrid and VoIP environments.

The aggregation of the various tools and technologies included in NICE Perform allow users to find and use the insights hidden in the enterprise's unstructured data. For more information about NICE Perform, see the following URL: http://www.nice.com/solutions/enterprise/nice_perform.php

Supplemental

This section addresses some of the additional functions and features that are available for reporting and enhancements.

Cisco Unified Customer Voice Portal Reporting Server

The Unified Customer Voice Portal Reporting Service provides historical reporting for virtual expert needs as well as to a distributed self-service deployment in a call center environment. The system is primarily used to assist call center managers with call activity summary information to manage daily operations. It can also provide operational analysis of various IVR applications.

The Reporting Service receives reporting data from the IVR Service, the SIP Service, and the VXML Server. It is deployed together with an Informix database management system, and it transforms and writes this reporting data into that database. The database schema is prescribed by the CVP product, but the schema is fully published so that customers may develop custom reports based on it.

The reporting service itself does not perform database administrative and maintenance activities such as backups or purges. However, Unified CVP provides access to such maintenance tasks through the Operations Console.

For more information on CVP Reporting, see the following URL: http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/customer_voice_portal /cvp7_0/configuration/guide/cvp702rpg.pdf

Cisco Expert Advisor Reporting Server

The Cisco Expert Advisor Reporting Server is one of three servers that comprise the Cisco Unified Expert Advisor cluster. It is optional to install the reporting server. The advantage of doing so is that this server hosts the database used by reports generated from the Expert Advisor historical reports templates. Reports generated from these templates provide additional detail on expert advisor call activity and statistics than what is available from the WebView reports. Administrators can view (in real-time) experts' availability and occupancy within given assignment queues (or skill groups) for higher control and insight into business operations. An open (public schema) database is used and includes reports to view historical records of detailed experts' activities and call-handling behavior.

For more information on Cisco Expert Advisor Reporting, refer to the *Reporting Guide for Cisco Unified Expert Advisor* at the following URL starting on page 51: http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/cisco_unified_expert_ advisor/ea_761/user/guide/ea76rptg.pdf

For more information on Cisco Expert Advisor, see the follow URL: http://www.cisco.com/en/US/products/ps9675/index.html

Media Server

Media Server is a server that serves up audio files and media supporting queue script configuration options to the VXML gateways. In this solution, the media server was implemented using Microsoft IIS on a Windows 2003 server. Separate folders were created for the content used in the queue scripts. Examples of the content served includes voice prompt wave files such as **agentbusy.wav** and **get4digits.wav**. Step-by-step installation of the media server is available in the Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management." Additionally, the *CVP*

Implementation Guide includes the media server and other options for media management in detail (local storage on VXML gateways, media caching, etc) For more information on CVP, see the following URL: http://www.cisco.com/en/US/products/sw/custcosw/ps1006/prod_installation_guides_list.html

VEM Database

A database with a table was created in SQL for correlating the customers expert station location using the calling phone number with the WebEx Access Anywhere remote control URL that is sent to the expert when an offer is accepted. This is a simple database of just two columns that is referenced in the queue script. Database access is based on credentials in the ICM call router (see the Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management" for installation steps on setting up database access in ICM). For the database server MS SQL server 2003 was used.

Customer Relationship Management Database

The Customer Relationship Management (CRM) database is used to track all information and contacts with a customer. For this purposes of this validation, a simple database with a table was created in SQL for correlating the customers entered digits when in the expert queue and other customer information that would typically be found in a CRM system such as the customer's name, account balance, or last purchases. This information is sent to the expert as part of an offer or after the offer is accepted. This is a simple database with several columns of information that are referenced in the queue script and matched against. Database access is based on credentials in the ICM call router (see Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management" for installation steps on setting up database access in ICM). For the database server MS SQL server 2003 was used.

Directory

A directory server is necessary for managing users in an enterprise. Best practices for user management in Cisco Unified Communications Manager are to link users in Communications Manager directly with a directory server. For this solution, Microsoft's Active Directory was used. Several users in the directory contained phone number information allowing proper linking to Cisco Unified Presence users using the Cisco Unified Personal Communicator clients. These users also directly tie together as the users listed in Cisco Unified Expert advisor to be assigned as experts. Adding new users to the solution can take several process steps depending on deployments but will typically follow the new user addition steps for the individual products in the Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management."

Gateways

Peripheral Gateways

Peripheral gateway is a service component enabled within Cisco Unified Intelligent Contact Manager. A peripheral is a switch, such as an ACD, PBX, VRU, or CUCM. Calls arrive at the peripheral through trunks that are organized into trunk groups. ICM software monitors activity at each peripheral and can route calls to targets at each peripheral. The logical interface controller and physical interface controller represent the Peripheral Gateway (PG) through which the peripheral communicates with the ICM system. Two PGs are implemented in the VEM solution with three Peripheral Interface Modules (PIM); CUCM, EA and VRU. Additional gateways may be necessary based on the deployment needs of the enterprise. PIMs facilitate the communication between the differing components in a Contact Center

deployment. The CUCM PIM connects the Cisco Unified Communication manger to the contact center for call routing and all of the devices used by experts and agents. The EA PIM connects the Cisco Expert Advisor system to the contact center, enabling users via instant messaging clients to act as contact center agents and accepting calls. The VRU PIM connects Cisco Customer Voice Portal to the contact center and provides the interface for incoming customer calls to be directed through scripts to each queue. More information on Peripheral Gateways for ICM can be found on page 83 of the ICM Configuration guide for Cisco Unified ICM Enterprise at the following URL:

http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/icm_enterprise/icm_enterprise_7_5/configuration/guide/icm75cfg.pdf

Cisco Voice XML Gateway

Voice Extensible Markup Language (VXML) is a standard defined by the World Wide Web Consortium (W3C). It is designed to create audio dialogs that provide synthesized speech, recognition of spoken words, recognition of DTMF digits, and recorded spoken audio. The VXML server and clients use the well known HTTP protocol to exchange VXML documents/pages. VXML is supported on several Cisco router/gateway platforms. In this solution validation, the VXML Gateway is implemented on a centralized Cisco ISR router running Voice software in the Data center. Calls are passed to the VXML gateway to play media and receive responses from callers as specified in the queue scripting. Scaling of the gateway is based on the call capacity of the gateway router and the expected call load of concurrent calls that would be in the queue at any one time. Configurations for setting up the VXML gateway on an ISR router are provided in the Appendix B, "Quick Installation and Configuration Steps for Virtual Expert Management."



CHAPTER 4

Design Considerations

QoS Recommendations

Retailers have many business applications that have different requirements for priority when traffic congestion occurs. A strategic QoS deployment will allow for an enhanced customer/retailer user experience. Typically, Enterprise retailers are not cognizant of all of the business applications that traverse the network as many applications get deployed by non IT departments or by IT departments that fail to involve Network staff for QoS considerations. As a result, some applications will greatly disrupt the performance of other well behaved applications when they are anonymously deployed. The ability of the retailer to successfully plan, implement and manage Enterprise scale QoS deployments, given the lack of its own application knowledge, is compounded by the complexity and technical knowledge required by the network staff to fully comprehend QoS. Improperly configured routers and switches are as big a threat to performance as rogue applications. Network staff should prioritize traffic by exclusion, meaning that they classify and prioritize the known important applications explicitly (e.g., voice, video and POS, leaving remaining traffic to participate in the best effort queue.

Retailers and service providers are encouraged to adopt RFC 4594 provisioning recommendations with the aim of improving QoS consistency, compatibility, and interoperability. Since these are guidelines and not standards, modifications can be made to these recommendations as specific needs or constraints require. A summary of Cisco's implementation of RFC 4594 is presented in Table 4-1.

Application Class	Per-Hop Behavior	Admission Control	Queuing and Dropping
VoIP Telephony	EF	Required	Priority Queue (PQ)
Broadcast Video	CS5	Required	(Optional) PQ
Real-Time Interactive	CS4	Required	(Optional) PQ
Multimedia Conferencing	AF4	Required	BW Queue + DSCP WRED
Multimedia Streaming	AF3	Recommended	BW Queue + DSCP WRED
Network Control	CS6		BW Queue
Call Signaling	CS3		BW Queue
Ops/Admin/Mgmt (OAM)	CS2		BW Queue
Transactional Data	AF2		BW Queue + DSCP WRED
Bulk Data	AF1		BW Queue + DSCP WRED
Best Effort	DF		Default Queue + RED
Scavenger	CS1		Min BW Queue

Table 4-1 Cisco Differentiated Services (DiffServ) QoS Recommendations for Medianets

The method of QoS used in the testing lab was based on the Cisco Enterprise Quality of Service reference design as shown in Table 3 - Cisco Enterprise Quality of Service.

For more information on QoS, see the following:

- Cisco Enterprise Quality-of-Service http://www.cisco.com/en/US/solutions/ns340/ns414/ns742/ns817/landing_voice_video.html
- QoS Design Recommendations for Medianets

http://www.cisco.com/en/US/docs/solutions/Enterprise/Video/qosmrn.html

- Cisco Telepresence Design Guide QoS http://www.cisco.com/en/US/docs/solutions/Enterprise/Video/tpqos.html
- Network Ports Used by Cisco Unified Personal Communicator http://www.cisco.com/en/US/docs/voice_ip_comm/cupc/7_0/english/release/notes/ol15710.html

Bandwidth Considerations

Each of the video options in the solution have differing bandwidth requirements which can dramatically affect the design and deployment scenarios. Table 4-2 provides a brief overview of the different requirements for each product.

Table 4-2Bandwidth Requirements

Product / Platform	Bandwidth Audio & Video	Resolution	Frame Rate	Notes
TelePresence-500 Best	4128Kbps	1920x1080p	30fps	Best Quality
TelePresence-500 Better	3628Kbps	1920x1080p	30fps	Better Quality

TelePresence-500 Good	3128Kbps	1920x1080p	30fps	Good Quality
TelePresence-500 Best	2378Kbps	1280x720p	30fps	Best Quality
TelePresence-500 Better	1628Kbps	1280x720p	30fps	Better Quality
TelePresence-500 Good	1128Kbps	1280x720p	30fps	Good Quality
TelePresence-500 Lite	936Kbps	1280x720p	30fps	Extended Reach
Video Advantage	384-1500Kbps	352x288,320x240,	up to 30fps	
		176x144, and 160x120		
CUPC Video	384-512Kbps	352x288 / 176x144	up to 30fps / 15fps	
Cisco 9900 Series Phones	up to 1000Kbps	up to 640x480	30fps	
Cisco 7985 Series Phones	up to 768Kbps	352x240	30fps	
Cisco WebEx	384Kbps	320x240	7-15fps	

Table 4-2 Bandwidth Requirements (continued)

Table 4-2 represents raw bandwidth requirements and also needs to accommodate additional IP overhead.

For more information on Cisco TelePresence resolution and bandwidth, refer to the following URL: http://www.cisco.com/en/US/docs/solutions/Enterprise/Video/tpover.html#wp1043742

NICE Perform Release 3.2

NICE Perform can support many methods of recording including distributed, centralized and active recording. This solution validated the functionality of both centralized recording using a trusted ready point and monitor port as well as active recording, a feature on newer Cisco 7975, 7965 and 7945 series phones.

Active Recording

When the customer talks to the expert agent, the Cisco Unified Communications Manager (CUCM) sets up an additional call between the agent's phone and the NICE VoIP Logger. The voice itself is replicated at the phone's BIB (Built in Bridge) and sent to the VoIP Logger IP address. Figure 4-1 shows the call flows for call control and the media flows between devices and the NICE VoIP logger.



Figure 4-1 Active Recording to NICE VoIP Logger in Data Center

Centralized Recording

When the customer talks to the expert agent, the Cisco Unified Communications Manager (CUCM) routes all calls for these stations through a trusted relay point. The voice itself is then replicated at the switches interface port of the trusted relay point and sent to the VoIP Logger monitoring interface. Figure 4-2 shows the call flows for call control and the media flows between devices.



Figure 4-2 Passive Recording via Trusted Relay Point in Data Center

Lessons Learned

TelePresence Lessons Learned

The video portion of a TelePresence call will not work with a regular deployment when following the configuration guide *Cisco Unified Communications Manager Configuration Guide for the Cisco TelePresence Systems*

http://www.cisco.com/en/US/partner/docs/telepresence/cucm_cts/1_6/configuration/guide/cucm_cts_1_6.html.

In the above guide, the directory number used by the CTS unit and associated 7975 handset is a shared line. Within the installation steps, the directory number is specified to be configured as **Auto Answer with Speakerphone** in the Auto Answer drop-down menu. This configuration causes problems when calls are routed over SIP trunks to other systems (e.g., between Call Manager clusters to CVP queue, etc.). The Cisco 7975 phone will auto answer before the CTS unit as the transferred SIP call will appear as an audio-only call. In order to have the CTS unit answer the call and perform a reinvite, adding video back to the call between the endpoints, the directory number must be configured with **Auto Answer off** and in the CTS unit Product Specific Configuration Layout section of the CTS device configuration set the CTS Auto Answer drop-down menu to **CTS Override - Auto Answer All**. See Figure 4-3.

Directory Number Settings —		
Voice Mail Profile	<none></none>	•
Calling Search Space	< None >	•
Presence Group*	Standard Presence group	•
User Hold MOH Audio Source	< None >	•
Network Hold MOH Audio Source	< None >	•
Auto Answer*	Auto Answer Off	K
	Auto Answer Off	
	Auto Answer with Headset	
AAR Settings	Auto Answer with Speakerphone	
	CTS Auto Answer*	CTS Override - Auto Answer All
	Advertise G.722 Codec*	Follow CUCM DN settings
	External SYSLOG Address	
	Alternate CUCM for Directory Lookup	CTS Override - Auto Answer Internal Only CTS Override - Auto Answer External Only

Figure 4-3 Configuring Directory Number

Trusted Relay Point for Calls

The Cisco Unified Communications Manager enables the insertion of trusted relay points (TRPs). The insertion of TRPs into the media path is most often used in a network virtualization environment and when QoS enforcement is needed. In the Cisco Virtual Expert Management solution, the TRP is used to reroute the media stream from the call endpoints and force them to flow through the TRP. On the switch port where the TRP connects a SPAN session is created to mirror all traffic to the NICE recording server. This is a cost-effective way to implement a centralized recording solution for non-encrypted audio calls on devices that do not support duplicate audio streams (e.g., Cisco 7985, 7960, etc) like the newer Cisco 7975 phones. With proper decode codec support on the recording server, even TelePresence calls can be recorded. A TRP can be configured on Cisco ISR routers with Voice IOS software. A typical TRP configuration in IOS would look as follows:

```
!
sccp local FastEthernet0/0
sccp ccm 192.168.45.182 identifier 1 version 7.0
sccp
!
sccp ccm group 1
associate ccm 1 priority 1
associate profile 1 register MTP-01
!
dspfarm profile 1 mtp
codec g711ulaw
codec pass-through
maximum sessions software 110
associate application SCCP
!
```

Once the TRP is configured, a Media Termination Point (MTP) is added to the CallManager under the Media resources menu. The MTP name must match the register name specified on the TRP. After the TRP is configured and registered, each phone can be configured to use the TRP individually or based on a device pool.

For more information on configuring TRPs and MTPs, see Media Resources in *Cisco Unified Communications Manager System Guide for Cisco Unified Communications Manager Business Edition, Release 7.1(2)* at the following URL:

http://www.cisco.com/en/US/docs/voice_ip_comm/cucmbe/admin/7_1_2/ccmsys/a05mtp.html#wpxref 35934

CUPC Instant Meetings

One of the primary advantages of using CUPC client over other IM services is the ability to start an instant meeting with the other party of a VEM session. When a customer call is passed from the expert queue to the Expert Agent the CUPC clients on both systems share call information and enable the start of an instant meeting using either Cisco MeetingPlace or Cisco WebEx Meeting. When using Cisco WebEx Meeting there are several configuration items that need to be taken into consideration. The CUPC client does not use the stations proxy configuration settings when launching a meeting. If your enterprise uses a proxy when connecting to Internet sites, special considerations need to be taken for connecting to the WebEx meeting servers. Additionally, version 7.02 and later of the CUPC client is not able to dynamically generate a meeting password for instant WebEx meetings. Consequently, when using CUPC the requirement for a meeting password in the WebEx site administration must be disabled to use WebEx meetings for collaboration in the Virtual Expert solution. See Figure 4-4.



Figure 4-4 Instant Meetings

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Summary

Retailers that want to be perceived as delivering value beyond low prices, such as product expertise or specialized services, can benefit from implementing the Cisco Virtual Expert Management solution. This solution performed well in face-to-face consultation through video, voice, and content sharing between stores with the most appropriate subject matter expert. Its ability to locate and seamlessly connect experts across the enterprise using skill-based routing and presence availability-enabled stores to capture the same business opportunity without deploying subject-matter experts at every store. The Cisco Virtual Expert Management solution helps retailers differentiate themselves by redefining superior customer service expertise.

Partner Profile

NICE Solutions for Financial Institutions

Complying with regulations, improving customer retention, and enhancing operational efficiency is critical in today's complex business environment. Achieving these goals while reducing expenses in a tough economic climate is no easy task. To empower organizations and attain these business objectives, NICE has developed a set of innovative enterprise solutions for contact centers, branches (including home agents and backoffice operations), and trading floors.

NICE's enterprise solutions deliver the powerful tools necessary to address critical business needs including the following:

- Compliance and risk management
- Customer retention and insight
- Operational efficiency

For more information about the NICE Solutions refer to the following URL: http://www.nice.com/solutions/enterprise/index.php

IP Phone-Based Active VoIP Recording

NICE active VoIP recording enables the delivery of centralized recording capabilities in distributed environments. All NICE Perform servers are consolidated in the data center, where all calls that take place in the organization's branches and other remote locations are recorded.

By reducing the need for costly branch set-up, administration, and management of recording servers, NICE helps to flatten the organization and enables simple, yet efficient handling of remote employees.

This IT-friendly technology makes active VoIP recording the ideal solution even for single-site operations. NICE's solution for IP-phone-based active recording for Cisco Unified Communications Manager (CUCM) is another component of NICE's extensive portfolio of active recording integrations.

Solution Benefits

Consolidation

NICE active recording for Cisco enables the centralization of the recording system in the data center, in a similar manner to the centralization of the CUCM servers. This allows the organization to benefit from reduced expenses and to enjoy both economies of scale and the lower support costs, thanks to simplified and consolidated administration, management, and maintenance.

IT Friendliness

Passive VoIP recording requires the use of mirroring ("SPAN") sessions. These sessions have to be maintained for supporting moves, adds and changes of the telephony and data networks. This may conflict with organizations' IT policies. IP-phone based active recording does away with the need for mirroring sessions, thus reducing the network management load on IT staff.

Lower Total Cost of Ownership

NICE offers a reduced footprint, industry standard servers, the highest number of recording channels per server, and advanced compression capabilities that reduce long-term storage volume and ensure lower ownership costs.

Freedom from Size Limitations

The NICE integrated recording solution meets the recording needs of all sizes and kinds of business, from small enterprises recording a few dozen phones to large single-site and multi-site operations with tens of thousands of phones.

Cohesive, Integrated Solution Suite

NICE meets all the organization's call recording requirements. The same system can support all recording modes—Total recording, user initiated recording-on-demand, and rule-based recording, including sampled recording for quality management in contact center environments.

NICE offers a unified solution for recording in mixed telephony environments, specifically where CUCM is serving the back office of a financial trading floor while a turret system is being utilized in its front office.

Improved Operational Control

NICE offers organizations better control by means of centralized administration, recording and playback. All the operational and administrative activities can be performed over the network.

High Security

Extensive privilege-based user access mechanisms provide full control of user operations, while an integral audit trail provides detailed information of user activity.

Unlimited Storage

In addition to off-line storage capabilities, NICE's integration with leading enterprise storage management vendors enables centralized archiving with seamless on-line media access.

Theory of Operation

NICE Perform Architecture

The NICE Perform solution is composed of four main elements:

Interactions Center

The Interactions Center connects to the CUCM CTIManager using TAPI (or to the Cisco Unified Contact Center Enterprise CTI Gateway in contact center environments) for receiving call events. It implements recording rules, handles recording requests and controls the loggers.

• Loggers

The VoIP loggers capture and record the voice packets.

• Database

The Database maintains the call details and the system's administrative information.

Application Server

The Application Server provides access layer for the system to the end user applications. The system's elements may be consolidated in a single server or a pair of servers, or distributed among several servers, according to the scale of the solution.

Additional optional elements include screen loggers for recording the screen activity of the users, a Storage Center for managing long-term storage of the recorded data, and audio analytic servers for automated voice analysis.

Contact centers can take advantage of the advanced NICE SmartCenter solution. NICE SmartCenter provides organizations with capabilities to improve performance at the agent, operational and enterprise levels. This solution drives contact center and enterprise performance by leveraging the synergies of the combined capabilities of NICE's offering for interactions capture, quality management, interaction analytics, workforce management, performance management, coaching, and customer feedback; each the leading solution in its category, unified within a Service-Oriented Architecture (SOA) framework, providing powerful functionality with maximum flexibility.

Phone-Based Active VoIP Recording

One of the new features Cisco Unified Communications Manager (CUCM) version 6 had introduced is an integration capability for providing IP phone-based recording. Cisco IP-phones are capable of forking the received and transmitted voice traffic in two separate Real Time Protocol (RTP) streams. NICE Perform uses SIP trunk in order to connect to the CUCM cluster. Over this SIP trunk the CUCM and the NICE Interactions Center exchange SIP messages which direct the recorded calls from the IP-phones to their destination—the VoIP logger.

Recording Modes

The NICE-Cisco phone-based active recording integration supports the following recording modes:

• Total Recording

Total recording is used where all the calls need to be recorded. The recording session automatically establishes when an agent answers or initiates a call.

• Interaction-based recording, including record-on-demand or quality management recording programs.

Interaction-based recording serves for recording specific calls. NICE Perform invokes the recording session for an active call through the CUCM CTIManager using TAPI. The trigger for recording calls in interaction-based recording may be a human recording request or a recording rule, based on the call's details.

The setting of the recording mode is based on directory numbers (DNs), and mixed recording modes are supported within the same system for different DNs. The recording capability is a CUCM administered feature. The phone's DN is configured as "Automatic recording" for total recording or as "Application-invoked recording" for interaction-based recording in the CUCM administration.

Recording Transparency and Tones

Even though the IP-phone actively participates in the recording process by sending out the audio streams, the recorded user does not receive any visual or audio indication that recording is taking place.

Note that in certain jurisdictions, a requirement exists to inform the calling or the called party by means of a specific tone that their call is being recorded. The IP-phone is capable of inserting this notification tone, ensuring that the called or the calling party (or both) is notified that recording is taking place.

Supported Versions and Phone Models

IP-phone based active recording is supported by CUCM 6.0 and above. The recorded IP phones must be able to fork media. The supported models are Cisco third-generation IP phones: 7906G, 7911G, 7931G, 7941G, 7941G-GE, 7942G, 7945G, 7961G, 7962G, 7965G, 7961G-GE, 7970G, 7971G-GE, 7975G.

For earlier CUCM versions and for other phone models, NICE offers three recording methods:

- Passive VoIP recording
- Active VoIP recording-based on NICE's VoIP Recording Gateway
- Active VoIP recording-based on NICE's VoIP Recording Agent

The VoIP Recording Gateway is a network element that filters RTP traffic and forks it, sending the forked streams to the recording system. Distributed implementation of the VoIP Recording Gateway enables consolidation of the recording system servers, and is not dependent on CUCM version or phone models.

The VoIP Recording Agent is software that runs on a PC, capable of forking the RTP packets of a Cisco IP Communicator softphone or of a daisy-chained hard IP-phone. The VoIP Recording Agent then sends the forked streams to the VoIP logger, in a similar manner as the phone-based active recording.

NICE Perform software migration paths are available once the CUCM system and phones are upgraded to support phone-based active recording. Where only a portion of the phones are of the models that support phone-based active recording, the rest of the phones can be recorded using any of the other above-mentioned methods. NICE Perform supports mixed recording methods in the same system.





Product List

	Software
Product / Platform	Release
Cisco Unified Communications Manager	7.1(2a)
Cisco Unified Contact Center Enterprise	7.5(5)
Cisco Customer Voice Portal Call Server	7.0(2)
Cisco Expert Advisor Runtime Servers	7.6(1)
Cisco Expert Advisor Reporting Server	7.6(1)
Cisco Unified Video Advantage	2.1(2)
Cisco Unified Presence Server	7.0(4)
Cisco Unified Personal Communicator Client	7.0(2)
Cisco TelePresence 500 systems	1.5.3(2115)
Cisco Media Conferencing Unit (MCU)	5.7(0)
Cisco MCU	
IOS XML Gateway	
Windows Workstation (Expert & Customers)	Windows 7 and XP w/sp3
Cisco WebEx	current
NICE Perform Recording Server	Release 3.2 Version 9.10.6.356





Quick Installation and Configuration Steps for Virtual Expert Management

Introduction

This section is based on internal guides created by Laurent Pham and Shahazd Ali. It has been expanded to include all VEM components, and updated to reflect the specific settings and items used in the validation lab. Figure B-1 depicts the components and endpoints that are covered.



Figure B-1 Virtual Expert Management Protocols and Services

Prerequisites

Cisco recommends that you should have knowledge of the following topics:

- Cisco Unified Communication Manager (CUCM)
- Cisco Unified Intelligent Contact Management (CUICM)
- Cisco Unified Cisco Voice Portal (CUCVP)
- Cisco Voice Gateways and VXML Gateways
- Cisco Unified Expert Advisor
- Cisco Unified Presence and SIP Proxies
- Cisco Unified TelePresence
- Cisco Unified Video Advantage
- Cisco Unified MeetingPlace
- Cisco WebEx Meeting
- Cisco WebACD
- Cisco WebEx Access Anywhere

Preparing the Environment

System Information

- This guide assumes that CUCM is installed and configured with appropriate endpoints. For a quick
 guide to install and configure CUCM with CVP and VXML GW, refer to the following URL:
 https://supportforums.cisco.com/docs/DOC-1374
- All domain controllers in your domain or forest must be running Windows Server 2003 with the domain functional level set to Windows Server 2003, thereby all domain- and forest-wide features needed are available.
- Before installing ICM software components, the computers must have the Microsoft Windows operating system—including SNMP and (for Windows 2003) WMI and, for some components, Microsoft SQL Server database management software installed. See Figure B-2.

Figure B-2 System Installer

Sub <u>c</u> omponents of Management and Monitoring Tools:			
🔲 🎳 Connection Manager Administration Kit	1.1 MB 📥		
🗆 🕵 Connection Point Services	0.2 MB		
🗹 🜉 Network Monitor Tools	2.3 MB		
🗹 👵 Simple Network Management Protocol	0.9 MB		
🗹 🚚 WMI SNMP Provider	1.1 MB		
🗹 😓 WMI Windows Installer Provider	0.6 MB		
Description: Allows client applications to access Windows Installer information through Windows Management Instrumentation (WMI).			

• This installation includes setting up the Windows Active Directory services for ICM software. Setting up Active Directory entails adding the Cisco Root Organizational Unit, one Facility Organizational Unit, and one Instance Organizational Unit to the Active Directory Schema. These steps require domain admin-level access.

For more information, refer to the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* and the *SNMP Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* at the following URLs:

http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_technical_reference_list.html

http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_installation_and_configuration_g uides_list.html

CCE components that operate on Cisco IPT Windows OS 2003 Enterprise Edition must also have the following services installed and started:

- DNS Service—Required for AD
- Replication Service—Required for AD
- Task Scheduler Service—Required for ICM Installation
- Install WMI Windows Installer Provider—Required for ICM Router Installation
- NT LM Security Support Provider-Required for AD
- File Replication—Required for AD

The CUICM components Router, Logger, AW, PG, and CTIOS Server must communicate with the Active Directory server and join a domain. In this validation setup, the Active Directory Domain Controller and DNS Server are already set up and have been used in previous solutions. For more information on installing and setting up Active Directory, refer to the Windows 2003 server administration guides.

SQL server is a required component for the Logger platform. Installation of this software is covered in the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* referenced above.

ICM software requires Microsoft SQL Server databases on each Logger, Historical Data Server (HDS), and each Real-time Distributor Admin Workstation (SQL Server is not required for Client AWs). SQL Server must be installed on each of these computers before you install the ICM software.

Virtualization Support

Beginning with Cisco Unified ICM and Unified Contact Center Enterprise and Hosted Editions Release 7.5(3), servers can be consolidated by deploying a virtualization solution for Client Administrative Workstations (AWs) and certain Peripheral Gateways (PGs) on the VMware platform. For the virtualization requirements, mapping to discrete servers, and CPU processor and RAM requirements for each of the supported PG and Client AW virtual machines (VMs), refer to the latest version of the *Hardware & System Software Specification (Bill of Materials) for Cisco ICM/IPCC Enterprise & Hosted Editions*, available at the following URL:

http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_implementation_design_guides_l ist.html

Before you incorporate virtual machines into your contact center design and deployment, you must read through and follow the guidelines and restrictions described in the *Virtualization Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*, available at the following URL:

http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_user_guide_list.html

Other Unified ICM and Unified CCE components, such as the CallRouter, Logger, AW Distributor, HDS, WebView Server, and CAD Server, as well as the Cisco Unified Contact Center Management Portal (Unified CCMP), and Cisco Unified Intelligence Suite, are not supported in a virtualized environment at this time.

Hardware Components

The following are the hardware components of the IPCC laboratory system:

- Two Cisco 794x/796x/797x series IP phones as Expert Advisor user phones
- One MCS Server for CUCM
- Two servers running Windows 2003 Enterprise Edition for CUICM Enterprise Components in duplex mode:
 - Router
 - Logger
 - AW
 - CUCM PG
 - CVP VRU PG
 - CTIOS Gateway or CTIO PG
 - CTIO Server
- Windows 2003 Enterprise Edition-based server running the following CVP components:
 - CVP Call Server
 - CVP Media Server
 - Microsoft IIS Web Server
- One MCS server for Cisco Unified Presence
- One MCS server for Cisco Unified Expert Advisor
- Windows XP based agent PC
- Cisco 3845 Router
 - Ingress PSTN Gateway
 - VXML Gateway
- PSTN Simulator (CUCME gateway with cross over T1 PRI cable connected to CVP Gateway could be used)

Unified CCE 7.5(1) components are supported only on Cisco MCS or MCS-equivalent servers. For further specifics on hardware requirements including recommended platform sizing guidelines (not specific brands or models of servers), based on the types of available hardware systems, refer to the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Unified Contact Center Enterprise & Hosted, Release 7.5(1)* at the following URL:

http://www.cisco.com/en/US/products/sw/custcosw/ps1844/products_user_guide_list.html

Software Components

The software release is based on the system Release 7.1(3):

- Cisco IOS Software Releases 12.4(24)T1 Voice Feature Set on the VXML Gateway
- Cisco Unified Communication Manager version 7.1(3)
- Cisco Unified Presence Server 7.0(5)
- Cisco Unified ICM version 7.5(6)
- Cisco Unified CVP version 7.0(2)
- Cisco Unified Expert Advisor 7.6(1) SR1
- Cisco CTI Object Server 7.5(6)
- JTAPI Client version is CUCM bundled

Installation

The following component need to be installed:

- Install CUCM (Publisher and Subscriber)
- Install TelePresence endpoints
- Install CCE / ICM
- Install CVP
- Install CUP and CUPC Clients
- Install EA

Pre-requisite:

• Be familiar with CUCM, Unified CCE, and Unified CVP



This appendix does not cover the basic installation of Unified CCE and Unified CVP. It assumes you have basic knowledge of CUCM, Unified CCE, and Unified CVP.

CUCM Installation

- In VMWare environment, a minimum of 72 GB disk is required
- Version: 7.1.3.10000-11
- Make sure the CTI Manager and Cisco AXL Web services are running

CCE Installation

To install 7.5(6), 1 UCCE 7.5(1), many need to be installed first and then upgraded to 7.5(6) (the upgrade is available on cisco.com).

The full installation and design guidance for the Cisco Unified Contact Center Enterprise can be found in the *Cisco Unified Contact Center Enterprise Solution Reference Network Design (SRND)*. The system prerequisites are also covered in the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*. For details, refer to the following URLs:

http://www.cisco.com/en/US/solutions/ns340/ns414/ns742/ns818/landing_contact_ctr.html

http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_technical_reference_list.html

The ICM Setup program allows you to install, update, and configure your ICM software. It is located on your ICM CD. Run Setup on each machine in the ICM system: each CallRouter, each Logger, each Peripheral Gateway (PG), and each Admin Workstation. At initial installation, a local version of the Setup program is installed on each ICM component at **\icm\bin\ICMSetup.exe**.(On an Admin Workstation, the Cisco Admin Workstation group contains an icon for this program.)

In order to run Setup, you must be a local.

Installation of each of the ICM components is performed through the ICMSetup application. This application is located in the **ICM\bin** directory of the DVD as well as the ICM directory after an installation has already been accomplished.

After executing the ICMSetup program, the **ICM Component Selection dialog** box appears where the buttons used to install the components are displayed. The following components were used in the validation testing:

- Admin Workstation
- Router
- Logger
- Peripheral Gateway
- CTI Server
- CTI OS Server

About the ICM Setup Program

The ICM Setup program allows you install, update, and configure your ICM software. It is located on the ICM CD. Run Setup on each machine in the ICM system: each CallRouter, each Logger, each Peripheral Gateway (PG), and each Admin Workstation. At the initial installation, a local version of the Setup program is installed on each ICM component at **\icm\bin\ICMSetup.exe**. (On an Admin Workstation, the Cisco Admin Workstation group contains an icon for this program.)

In order to run Setup, you must be a local administrator and belong to the setup group for any instance that you are installing a component.



During the installation of the Central Controller and Administration and WebView Reporting, the ICM installer checks to see whether there is a Microsoft.NET Framework 3.5 installed. If it is not installed, Setup will install it. After the installation of the Microsoft.NET Framework 3.5, it might prompt you to reboot the system. If prompted, reboot the system and run Setup again.

About ICM Component Installation Order

You can install the various components in the order in which they are treated in this appendix. In general, there is a great deal of flexibility in the order of installation, provided that you know the names and locations for the various components beforehand. However, the following presents the standard approach:

- **Step 1** Install either the CallRouter or the Logger first. It does not matter in which order you install the CallRouter and Logger.
- Step 2 Install both the CallRouter and the Logger before you install an Admin Workstation (AW).
- Step 3 ICM Setup and Installation Guide Cisco Unified ICM/Contact Center Enterprise & Hosted 7.5(1)
- **Step 4** If you are using WebView, install it after you have installed the Real-time Distributor AW.
- Step 5Install the CallRouter, Logger, and AW before you install the Network Interface Controller (NIC) and
Peripheral Gateway (PG), but it does not matter in which order you install the NIC and PG.
- **Step 6** Install the CTI Server after you have installed the CallRouter, Logger, AW, NIC, and PG.

Creating an ICM Instance

- Before any ICM components can be installed and ICM instance must first be created
- Before an instance can be selected the proper entries must first be created in the domain using the Domain Manager

Configure Domain Manager

Step 1 Start the Cisco Unified ICM installation by running the **ICMSetup.exe** application on the CD or local directory as appropriate.

Step 2 Click the **Domain Manager**. See Figure B-3.

Figure B-3	Domain Manager
Cisco ICM Setup	×
- ICM Instances-	Add Add Edit.
Upgrade A	Delete Delete
	urity Hardening Help Exit Setup

Step 3 Select the desired domain from the list on the left and click **ADD**, then click **OK**. See Figure B-4.

Select Domains			×
Enter domain name:		Selected domains:	
Filter domain choices © Forest © Trusted © Both (Forest and Trusted)			
Choose domains: CISCO-IRN.COM	A <u>d</u> d > < <u>R</u> emove		
	Add All >>		
	ok	CancelHe	ip

Figure B-4 Selecting Domain

- **Step 4** After the domain is selected, click **Add** it under the Cisco root section. Enter an appropriate name such as **Cisco_ICM** and click **OK**.
- **Step 5** With the new root selected, click the **ADD** button under the Facility option. Enter an appropriate Facility name such as **Cisco_ICM_Facility** and click **OK**.
- **Step 6** Once the Facility has been added, select it and click **Add** under the Instance option. Enter an instance name such as **ICM** and click **OK**. See Figure B-5.

🚺 ICM Domain Manager	
Eile Help	
CISCO-IRN.COM	Domains Select Select Add Remove Facility Add Remove
	Instance Add Remove
	Members

Figure B-5 Adding Instance Name

Step 7 After adding the root, facility and instances click *close*. After the domain components have been created, you can then add the instance in the ICM setup.

At least one ICM instance must be added before you can install any ICM components.

\$. Note

Before you can create an ICM instance, you **must** have set up the Windows Active Directory services for ICM software. You must also have added the Cisco Root Organizational Unit, and at least one Facility Organizational Unit with one Instance Organizational Unit. Refer to the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

- **Step 8** In the Cisco ICM Setup dialog box, in the ICM Instances section, click **Add**. The Add Instance dialog box opens:
 - a. Select the network **Domain** for the instance.
 - b. Select the Facility Organizational Unit for the instance.
 - c. Select the Instance Name for the instance.



The ICM Instance Name is the name of the Instance Organizational Unit.

Use the **Instance Number** generated by the ICM software. (For standard single-instance ICM configurations, the instance number is 0.)



The mappings of instance names to instance numbers must be the same on every node in the system.

Step 1	Click OK.	See	Figure	B-6 .
--------	-----------	-----	--------	--------------

Elaura D C

гіgure Б-б	Creating an in	stance	
Cisco ICM Setup		×	
- ICM Instances	Add	ance Components	
	Add Instance		×
	Instance Information-		
	Domain	cisco-irn.com	
Upgrade All	Facility	cisco_icm_facility	
	Instance Name	icm 💌	
	Instance Number	0	
Prompt for Secur		does not contain an available ICM instance OU. Please , or use the ICM Domain Manager to add a new acility.	
		Domain Manager	
		K Cancel Help	228077

Creating on Instance

Step 2 You can now add ICM Instance components. First create and install Router and Logger ICM Servers.When installed together they are commonly referred to as a Rogger Server.

Refer to Chapters 5 and 6 of the ICM Setup and Installation Guide at the following URL:

http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/icm_enterprise/icm_enterprise_7_5/installation/guide/icm75instl.pdf

Install the Router and Logger

Call Router Installation

The CallRouter (generally referred to in this document simply as the *Router*) is the component that contains the contact routing logic and makes all routing decisions. It receives contact routing requests and determines the best destination for each contact. It also collects information about the entire system. This appendix explains how to install the CallRouter software and perform some basic configuration. For this configuration, you must know the visible and private network addresses (either host names or IP addresses) of the CallRouter and, for a duplexed configuration, the addresses of the CallRouter on the other side. The CallRouter and Logger are typically on separate computers. However, in small contact center configurations they can both be on the same computer. See Figure B-7.



Step 1 In the ICM Setup application, click the **Add** button on the right under **Instance Components**. See Figure B-8.

Figure B-8



A new dialogue window will appear where you will be able to select the Router component. See Figure B-9.

Router Properties	×
Node Manager properties Production mode Auto start at system startup Duplexed Router Database routing Application gateway Remote Network Routing NAM ID: 0 No system reboot on error Side Side	
Help < <u>B</u> ack Next >	

Figure B-9

Step 2 For high availability installations select the Duplexed Router option and click Next.

Do not select any Network Interface Controllers. Leave all the options as default. The Customer ID is insignificant for this solution. See Figure B-10.

	Network interface	- Network interface controllers					
		Configure	MCI:	Configure			
	AUCS INAP:	Configure	Nortel:	Configure			
	CAIN:	Configure	T NTL:	Configure			
	CRSP:	Configure	Sprint:	Configure			
57		Configure	SS7IN:	Configure			
	GKTMP:	Configure	Stentor:	Configure			
	INCRP:	Configure	TIM INAP:	Configure			
		Configure					
	Customer ID:	0	MDS timed delivery qu Interval: 50 Threshold: 50	ueue Disable ICM time synchronization			

Figure B-10

Step 3 Click Next.

For the lab validation, two peripheral gateways were used; one for CUCM and another as VRU PG for CVP and expert advisor.

The number of PGs must be entered as a range or comma separated list. For the two PGs, it could be entered as either "1-2" or "1,2". See Figure B-11.

Figure B-11

Peripheral Gateway devices			1
Peripheral Gateway Devices (1-80) :	1-3		
		Advanced	
		Auvanceu	228082

Step 4 Accept the current settings and click on Next for the following screens.

It is best practice to use IP addresses rather the hostnames when identifying the public and private interfaces for the Router. The following image and other similar installation screens during CUICM component installation will be similar. See Figure B-12.

Router private interfaces- Node A: Node A high: Node B high: Router visible interfaces- Node A: Node A: Node A high: Node B: Node B high:	192.168.9.17 192.168.9.17 192.168.9.18 192.168.9.18 192.168.45.141 192.168.45.141 192.168.45.142 192.168.45.142	QoS	
Help < Bac	ok <u>N</u> ext≻	Cancel	228083

Figure B-12

Note

If the CallRouter is simplexed, enter **localhost** in both the **B** and **B high** fields.

Step 5 After entering the Router interface IP addresses click Next. See Figure B-13.

Figure B-13

M Setup: icm-ra Check Setup Information	
Setup has enough information to begin the configuration operation. If you want to review or change and of the settings, click Back. If satisfied, click Next to begin configuring the Router.	
Current Settings:	
Setup Type: Router, side A Target Directory: C:Nicm Configuration: Router is duplexed Microsoft Windows DHCP Media Sense is disabled.	
	F
stallShield	
< <u>B</u> ack <u>Next</u> >	Cancel

Step 6 At the ICM setup, review the installation settings and click *Next* to complete the installation of the Call Router.

Logger Installation

In the ICM Setup application, click the **Add** button on the right under "Instance Components". A new dialogue window appears where you will be able to select the Logger component. See Figure B-14 and Figure B-15.





Figure B-15



Step 7 Select production, Auto startup and Duplexed logger options, then click **Next**. See Figure B-16.

Figure B-16

Logger Component Properti		×
	Customer support Phone home Configure	
	Outbound Option	
R	Logger database configuration Purge	
CO		
	Help < <u>B</u> ack <u>N</u> ext > Cancel	

Step 8 Click Next. See Figure B-17.

Fig	ure	R-	17
ги	ure	D-	17

Network Interface Properties			×
	Router private interfaces Node A: Node B:	192.168.9.17 192.168.9.18	
A	Logger private interfaces — Node A: Node B:	192.168.9.17 192.168.9.18	
Help	Back Me	vt.) Cancel	
Help	< <u>B</u> ack <u>N</u> e	xt > Cancel	

- Step 9 Configure the public and private Router and Logger interfaces using the IP address. Click Next.
- **Step 10** At the end of the ICM setup, review the installation settings and click **Next** to complete the installation of the Call Logger.

Create ICMDB on Logger

You must create a database for each Logger, it is best to do this before installing other components. To create the database and determine the appropriate size of the database, run the ICM Database Administration (ICMDBA) tool. This tool is installed on each ICM component that has an installed database (ICMDBA is in the **\icm\bin** directory) and on each Admin Workstation.

For more information on using the ICMDBA tool, refer to the ICM Administration Guide for Cisco Unified ICM/Contact Center Enterprise &Hosted.

Once the proper size is determined, run the **icmdba.exe** file from the local ICM directory to create and configure the new database. See Figure B-18.

Figure B-18

Figure B-19



If you are prompted that the SQL Server is not configured properly, click **yes** and then set the memory requirement to 0 and the recovery interval to 1. As this may have interrupted the installation process, you will see that no new database has been created. You need to once again select **Create** under the database option.

This time all the necessary changes have been made, you will be able to create the database. Now add the data and log databases to the list and create the database. See Figure B-19.

Create Database					×
Instance: icm1					Create
Configuration					Cancel
DB Type sideA		•	Region North Am	erica 💌	Help
ICM Type Standard			Partitions		
Storage					
Device Name	Туре	Drive	Size		
C icm1_sideAC	data	С	1400.00MB		
C C C C C C C C C C C C C C C C C C C	log	С	100.00MB		
Add	Edit		Remove		2

You will notice a screen similar to screen shown in Figure B-20 and once the database is created successfully click **OK**.

Figure B-20



Installing the Admin Workstation

After completing the installation of the Router and Logger, the Admin Workstation can be set up. The Admin workstation is configured before the other PGs as it assigns the IDs needed for the Router, Logger, and PGs to communicate through.

The Admin Workstation (AW) is the human interface to the ICM software. It serves as a control console where you can monitor agent and contact center activity and change how the ICM software routes contacts. For example, you can use the Admin Workstation to configure the ICM contact center data and to create routing scripts. Admin Workstations can be located anywhere, as long as they have LAN, WAN, or dial-up connections to the ICM software. Typically, the Admin Workstation is installed on a Windows operations console used by system administrators, not the Router, Logger, or other ICM server systems. It requires an SQL database and must be a member of the Active Directory Domain. See Figure B-21.





Step 1 From the ICM Setup applications, select **Add** for the ICM instance and then "**Admin Workstation**". See Figure B-22.
Admin Workstation Properties		×
	Admin Workstation Configuration Client (No Real-time Distributor) Real-time Distributor AW Type Standard Climited AW Network AW (NAM) Network AW (CIDM) Production Mode Target drive:	
	Help < <u>B</u> ack <u>N</u> ext > Canc	228093

Step 2 Select Next. See Figure B-23.

Figure B-23

Real-time Distributor Node Pro	perties	×
	Node Manager Properties Auto start at system startup Agent Re-skilling Web Tool CMS node	
	 Internet Script Editor Server Service Account Management O not modify service accounts Setup creates service accounts User manages service accounts 	
	Help < <u>B</u> ack <u>N</u> ext > Cancel	228094

Step 3 Select Next. See Figure B-24.

Fiaure	R-24
rigure	D-24

Real-time Distributor Properti	es	×
	Admin site name:	icm-admin
	Second distributor for site Central controller preferred si Central controller side A Central controller side B Database WebView Database Historical Data Server Partitioning WebView Server Remote WebView Server Central Controller	SQL Server Drive: C
IL IV	Router side A:	192.168.45.141
	Router side B:	192.168.45.142
	Logger side A:	192.168.45.141
	Logger side B:	192.168.45.142
	Help < <u>B</u> ac	k <u>N</u> ext> Cancel g

Step 4 Select Next.See Figure B-25.

Figure	B-25
--------	------

Admin Workstation Client Prope	rties	×
	Real Time Distributors Primary distributor: Secondary distributor:	icm-admin
	Help < <u>B</u> ack	<u>N</u> ext> Cancel 82

Step 5 Verify Setup parameters and select **Next** to finish. See Figure B-26.

Figure B-26

L

ICM Setup: icm-AW	×
Check Setup Information	
Setup has enough information to begin the configuration If you want to review or change and of the settings, clic If satisfied, click Next to begin configuring the Admin W	k Back.
Current Settings:	
Setup Type: Admin Workstation Distributor Target Directory: C:Nicm Configuration: Admin is a Realtime Distributor Backup distributor: Router: 192.168.45.141/192.168.45.142	*
InstallShield	ack <u>Next></u> Cancel

Step 6 After the AW installation is complete, you must initialize the local database. The initialize database dialogue will appear after the Admin Workstation module installation is completed. See Figure B-27.

Figure B-27

Initialize Local Database		_ 🗆 ×
Table name	Elapsed time (sec)	Rows copied 🔺
ICR_Instance		
ICR_Node		
Customer_Definition		
Customer_Options		
Logical_Interface_Controller		
Physical_Interface_Controller		
Agent_Desk_Settings		
Peripheral		
Cfg_Mngr_User_Desktop_Snap		
Cfg_Mngr_App_Snapshot_State		
Cfg_Mngr_User_Menu		
Cfg_Mngr_View		-
•		
Connections		Start
Instance name: icm1		<u></u>
Local .\icm1 awdb		Close
Central 192.168.93.130\icm1_side	д	Help

When you install a Distributor Admin Workstation, ICM Setup automatically sizes and creates a local database on the machine. Because this database is constantly overwritten by new data, the database size remains fairly constant. You normally do not need to resize the Distributor Admin Workstation (AW) real-time database. If you do need to resize the Distributor AW database, you can do so using the ICM Database Administration (ICMDBA) tool.

AW Configuration Manager CUCM PG Setting

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

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

Note

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

Primary CTI OS Server

Before adding the peripheral gateways to the CUCCE Servers, they must first be created in the Admin Workstation Configuration Manager. This generates the peripheral IDs that are necessary for the PG/PIM installations.

To create the peripheral gateways in Configuration Manager there must first be an Agent Desk Settings List entry as it is one of the required settings under a PG controller configuration.

Create a new Agent Desk Settings list as follows:

- **Step 1** Open the Configurations Manager on the AW.
- Step 2 Select the Agent Desk Settings List option under the Tools > Explorer Tools group.
- Step 3 Click Retrieve.
- Step 4 Click Add.
- **Step 5** Enter an appropriate list name such as **Agent_Desk_Settings_1**.
- **Step 6** Enter a proper description.
- **Step 7** Set the Ring no Answer time to **10**.
- **Step 8** Set the Wrap up time to **20**.
- Step 9 Click Save. See Figure B-28.

Figure B-28

Agent Desk Settings List	
Select filter data	Attributes
	Name * Agent_Desk_Settings_1
Optional Filter Condition Value	Ring no answer time 10 seconds (1 - 120)
None	Ring no answer dialed number None>
Save <u>R</u> etrieve Cancel filter changes	Logout non-activity time seconds (10 - 7200)
Agent Desk Settings	Work mode on incoming * Optional
Name Name Agent_Desk_Settings_1	Work mode on outgoing * Optional
	Wrap up time 20 seconds (1 - 7200)
	Assist call method Consult
	Emergency alert method Consult
	Description CUCM Agent Desk Global Setting #1
	Miscellaneous Outbound Access
	Auto answer International Idle reason required
	Logout reason required Ivit Local private network
	Auto record on emergency Deperator assisted Deperator assisted
	□ PBX
	Enable Cisco Unified Mobile Agent Mobile agent mode Agent chooses
Ľ	
Add Delete Reyert	
MInstance: icm	<u>Save</u> <u>Dose</u> <u>Help</u>

To create the peripheral gateways in Configuration Manager, there must also be an Media Routing Domain list entry as it is one of the required settings under a PG controller configuration.

Create a new Agent Desk Settings list as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **Media Routing Domain List** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add.
- **Step 5** Enter an appropriate list name such as **Cisco_Voice**.
- **Step 6** Enter a proper description.
- **Step 7** Set the Media Class to **Cisco_Voice**.
- Step 8 Click Save. See Figure B-29.

Name	* Cisco_Voice				
Media routing domain ID	* 1				
Media class	* Cisco_Voice			V	
- Task			Override Media Class Default		
Life	0	seconds			
Start timeout	0	seconds	$\overline{\mathbf{v}}$		
Max duration	0	seconds	M		
- Calls in Queue]	1	
Max					
Max per call type					
Max time in queue		seconds			
Service level threshold	* 30				
Service level type	* Ignore Abandoned Cal	s		_	
Interruptible					
Description	Default Media Routing	Domain for Cis	co_Voice		

Once the Agent Desk setting list and the Media Routing Domain have been created, the new PG logical controllers for the Call Manager, CVP, and Expert Advisor can be created.

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There are several methods for creating PGs and their underlying Peripheral Interface Managers (PIMS). For this solution, two PGs are created. One PG is generic and have the CUCM and VRU_CVP PIMS, the other PG is for Expert Advisor and have the EA PIM. Each ICM server set that is deployed can have a maximum of two Peripheral Gateways. The PG Explorer on the AW Configuration Manager generates and maintains PG records for a logical interface controller, a physical interface controller, associated peripherals, and, if appropriate, an associated routing client.

Create the first peripheral gateway logical controller as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **PG Explorer** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add PG.
- **Step 5** Enter an appropriate name such as **Generic_PG_1**.
- **Step 6** Enter a proper description.

- **Step 7** Set the client type to **PG Generic**.
- **Step 8** Set the IP address for the primary and secondary CTI Servers.
- Step 9 Click Save.

After clicking **Save**, the logical and physical controller IDs will be automatically generated. Note them for later use when installing the peripheral gateways in ICMSetup later. See Figure B-30.

Figure B-30

Logical Controller		
Logical controller ID:* 5000	Physical controller ID: + 5000	
Name:	* Generic_PG_1	1
Client type:	PG Generic 💌	
Configuration parameters:		
Description:	CTI Server to have CTI agents	
Physical controller description:		
Primary CTI address:	192.168.45.151	
Secondary CTI address:	192.168.45.152	FOFOO
		- 8

After creating the logical controller, the first of the underlying peripherals can now be added as follows:

Step 1 Select the Generic_PG_1 PG that was just added from the PG explorer results on the left.

Step 2 Click Add Peripheral.

- **Step 3** Enter an appropriate peripheral name such as **CCM_PIM_1**.
- **Step 4** Select the Client Type as **CallManager/SoftACD**.
- **Step 5** Select the Default Desk Settings option that was created earlier **Agent_Desk_Settings_1**.
- **Step 6** Enter a proper description.
- **Step 7** Check the **Enable post routing** option.
- Step 8 Then Click Save.

After clicking **Save** the peripheral ID will be automatically generated; note it for later use when installing the peripheral gateways in ICMSetup. See Figure B-31.

Skill Group Mask Ro	outing client 📔 Default route 📔 Peripheral Mor	aitor Ì
Peripheral	Advanced Agent Distribution	inton
Peripheral ID:	* 5000	
Name:	* CCM_PIM_1	
Peripheral name:	* CCM_PIM_1	
Client type	* CallManager/SoftACD	•
Location:		
Abandoned call wait time:	* 5	
Configuration parameters:		
Call control variable map:		
Default desk settings:	Agent_Desk_Settings_1	•
Peripheral service level type	Calculated by Call Center	-
Description:	VEM based CCM	
Enable post routing:	Peripheral auto configured:	
	<u>S</u> ave <u>C</u> lose <u>H</u>	elp

Select the Routing Client tab and enter the following information for the peripheral:

- **Step 1** Enter an appropriate name and Peripheral name such as **CUCM_RC**.
- Step 2 Select the Client Type as PCC/Enterprise Agent.
- **Step 3** Select the Default media routing domain option to **Cisco_Voice**.
- **Step 4** Enter a proper description.
- Step 5 Click Save. See Figure B-32.

Peripheral	Ĩ	Advance	d 🏻	A	gent Distribut	ion	
Skill Group Mask	Routing	; client	Defaul	t route	Peripheral	Monito	r I
Name:	*	CUCM_F	Rd		D: * 5000		
Timeout threshold:	*	1500					
Late threshold:	*	500					
Timeout limit:	*	10					
Default media routing do	main:	Cisco_V	oice			•	
Default call type:		NONE				•	
Configuration parameter	s:						
Dialed Number/Label m	ар: *	Do not u	ise DN/La	abel map		-	
Client type:	*	IPCC / E	Interprise	Agent		•	
Description:		CUCM re	outing to a	client			
Network routing client:							
Network transfer preferr	ed:						0001000

Step 1 On the Default Route tab ensure that Cisco_Voice is selected. See Figure B-33.

Figure B-33

Skill Group Mask	Routing client	Default route	Peripheral Monitor
Current default route en	ıtries		
Media routing domain	Route		
Cisco Voice			
1			
1			
1			
1			
1			
I			
New			Delete
Media routing domain:	* Cisco_Voice		₹
Route:	NONE		▼ ▼

After the creation of the CUCM peripheral the second CVP VRU peripheral can now be added as follows:

- Step 1 Select the Generic_PG_1 PG that was added from the PG explorer results on the left.
- Step 2 Click Add Peripheral.
- Step 3 Enter an appropriate name and peripheral name such as CVP_VRU_PIM_2.
- **Step 4** Select the Client Type as **VRU**.
- **Step 5** Select the Default Desk Settings option to **NONE**.
- **Step 6** Enter a proper description.
- Step 7 Check the Enable post routing option.
- Step 8 Click Save.

After clicking **Save**, the peripheral ID will be automatically generated; note it for later use when installing the peripheral gateways in ICMSetup. See Figure B-34.

Skill Group Mask Rout Peripheral		Peripheral Monitor
Peripheral ID: *	5001	
Name: *	CVP_VRU_PIM_2	
Peripheral name:	CVP_VRU_PIM_2	
Client type *	VRU	•
Location:		
Abandoned call wait time: *	0	
Configuration parameters:		
Call control variable map:		
Default desk settings:	NONE	•
Peripheral service level type:*	Calculated by Call Center	T
Description:	VRU for CVP Call routing	
Enable post routing:	Peripheral auto configure	i: 🗖

Select the Routing Client tab and enter the following information for the peripheral:

- Step 1 Enter an appropriate name and Peripheral name such as CVP_VRU_PIM.
- **Step 2** Select the Client Type as **VRU**.
- **Step 3** Select the Default media routing domain option to **Cisco_Voice**.
- **Step 4** Enter a proper description.
- Step 5 Click Save. See Figure B-35.

Figure B-35

Peripheral	ſ	Advanced		Ag	ent Distributi	ion	
Skill Group Mask	Routing	client	Default ro	ute	Peripheral	Monitor	
Name:	*		J_PIM	ID	: ★ 5001		
Timeout threshold:	*	2000					
Late threshold:	*	1000					
Timeout limit:	*	10					
Default media routing dor	main:	Cisco_Vo	ice			•	
Default call type:		NONE				•	
Configuration parameters	:						
Dialed Number/Label ma	p: *	Do not us	e DN/Labe	el map		•	
Client type:	*	VRU				•	
Description:							
Network routing client:							
Network transfer preferre	d:	2					228406

Create the second peripheral gateway logical controller for the Expert Advisor as follows:

Step 1 Open the Configurations Manager on the AW.

- **Step 2** Select the **PG Explorer** option under the **Tools** > **Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add PG.
- **Step 5** Enter an appropriate name such as **EA_PG_2**.
- **Step 6** Enter a proper description.
- **Step 7** Set the Client Type to **Expert Advisor**.
- **Step 8** Leave the IP address for the primary and secondary CTI Servers blank.
- Step 9 Click Save.

After clicking **Save**, the logical and physical controller IDs will be automatically generated; note them for later use when installing the peripheral gateways in ICMSetup later. See Figure B-36.

Figure B-36

Logical Controller	
Logical controller ID:* 5002	Physical controller ID: x 5002
Name:	* EA_PG_2
Client type:	* Expert Advisor
Configuration parameters:	
Description:	PG for EA
Physical controller description	
Primary CTI address:	
Secondary CTI address:	

After the creation of the logical controller the underlying peripheral can now be added.

- **Step 1** Select the **EA_PG_2** PG that was just added from the PG explorer results on the left.
- Step 2 Click Add Peripheral.
- **Step 3** Enter an appropriate peripheral name such as **EA_PG_2_1**.
- **Step 4** Select the Client Type as **Expert Advisor**.
- Step 5 Under Configuration Parameters enter /ExtendedAgent.
- **Step 6** Select the Default Desk Settings option to NONE.
- **Step 7** Enter a proper description.
- Step 8 Check the Enable post routing option.
- Step 9 Check the Peripheral auto configured option.
- Step 10 Click Save.

After clicking **Save**, the peripheral ID will be automatically generated; note it for later use when installing the peripheral gateways in ICMSetup. See Figure B-37.

Skill Group Mask Rou	uting client 📔 Defau	ılt route 📔 Peripheral Monitor 📗
Peripheral	Advanced	Agent Distribution
Peripheral ID:	* 5003	
Name:	* EA_PG_2_1	
Peripheral name:	* EA_PG_2_1	
Client type	* Expert Advisor	•
Location:		
Abandoned call wait time:	* 5	
Configuration parameters:	/ExtendedAgent	
Call control variable map:		
Default desk settings:	NONE	•
Peripheral service level type:	Calculated by Call C	Center
Description:		
Enable post routing:	Peripheral a	auto configured: 🔽

Select the Routing Client tab and enter the following information for the peripheral:

- **Step 1** Enter an appropriate peripheral name such as **EA_PIM**.
- **Step 2** Select the Client Type as **Expert Advisor**.
- **Step 3** Select the Default media routing domain option to **NONE**.
- **Step 4** Enter a proper description.
- Step 5 Click Save. See Figure B-38.

Figure B-38

Peripheral	1 A	Advanced		A	gent Distributi	on	
Skill Group Mask	Routing	client	Default	route	Peripheral	Monitor	
Name:		EA_PIM		_ 10	D: * 500 3		
Timeout threshold:	*	5000					
Late threshold:	*	2500					
Timeout limit:	*	20					
Default media routing d	omain:	NONE				•	
Default call type:	ſ	NONE				•	
Configuration parameter	s:						
Dialed Number/Label m	ap: *	Do not us	se DN/La	bel map		•	
Client type:	*	Expert Ac	lvisor			•	
Description:							
Network routing client:							
Network transfer preferr	ed: [001000

Step 6 On the Advanced tab, ensure that the Agent auto-configuration option is not checked.

Once all of the peripheral gateways and peripheral interface managers have been created in the Admin Workstation Configuration Manager the can then be installed in the ICM servers.

Peripheral Gateway Installation for CUCCE

Each contact center device (ACD, PBX, or IVR/VRU) communicates with ICM software through a Peripheral Gateway (PG). The PG reads status information from the device and passes it back to the ICM software. The PG runs one or more Peripheral Interface Manager (PIM) processes, which are the software components that communicate with proprietary ACD and IVR/VRU systems.

Note

A single PG can support ACD PIMs, VRU PIMs, and Media Routing PIMs, though the ACD PIMs must all be of the same kind and the VRUs must all be of the same kind.

Before you install a Peripheral Gateway (PG), the Windows operating system (for version specifics refer to the Cisco Intelligent Contact Management Software Release 7.5(1) Bill of Materials—including SNMP and (for Windows 2003) WMI—must be installed on the computer, you must have setup the Windows Active Directory services for ICM software, and you must have setup at least one ICM instance.

Further, before you can complete the installation of a Peripheral Gateway, you must create configuration records in the ICM database. To create these configuration records you must have installed the CallRouter, a Logger, and the Admin Workstation.

To configure a PG, you must know the visible network addresses for the CallRouter machines. If the PG is duplexed, you must know the visible and private network addresses of its duplexed peer.

For each PG, you must have defined a *Logical_Interface_Controller* record, a *Physical_Interface_Controller* record, and a Peripheral record for each PIM you intend to configure--though at least one Peripheral record is necessary. (Configure ICM creates these records automatically if you choose Configure a PG using the PG Explorer.)



ICM software restricts running more than two PGs of the same instance on a single machine at the same time.

Figure B-39 shows the deployment of redundant servers with peripheral gateways.



The following section outlines the steps to install two peripheral gateways with three peripheral interface managers for the solution. More information on peripheral gateway installations and configurations can

be found in the *ICM Setup and Installation Guide*. On the servers selected for the peripheral gateways start the ICMSetup.exe application. At least one ICM instance must be added before you can install any ICM components.

In the Cisco ICM Setup dialog box, in the **ICM Instances** section, click **Add**. The Add Instance dialog box opens. Complete the following steps:

- **Step 1** Select the network **Domain** for the instance.
- **Step 2** Select the **Facility** Organizational Unit for the instance.
- Step 3 Select the Instance Name for the instance.



• The ICM Instance Name is the name of the Instance Organizational Unit.

Step 4 Use the **Instance Number** generated by the ICM software. (For standard single-instance ICM configurations, the instance number is 0.)

- **Note** The mappings of instance names to instance numbers must be the same on every node in the system.
- Step 5 Click OK.

Figure B-40

Cisco ICM Setup		×
- ICM Instances	Add	Add
	Add Instance	×
Upgrade All	Domain Facility	cisco_icm_facility
	Instance Name	
Prompt for Secur	The selected facility	does not contain an available ICM instance OU, Please y, or use the ICM Domain Manager to add a new
		Domain Manager

You can now add ICM Instance components.

Step 1 In the ICM Setup application, click the **Add** button on the right under **Instance Components**. See Figure B-41.



- **Step 2** A new dialogue window will appear where you will be able to select the Peripheral Gateway component. In the Peripheral Gateway properties window configure the following:
 - a. Check the **Production** node.
 - **b.** Check the Auto start at system startup.
 - c. Check the duplexed Peripheral Gateway.
 - d. Set the PG Node Properties ID to PG 1 and select the appropriate side for duplexed installations.
 - e. Select the following client types and click the Add button:
 - CallManager

- VRU
- f. Click Next. See Figure B-42.

Figure E	3-42
----------	------

Peripheral Gateway Properties	×
Node Manager Properties PG Node Properties Production model ID: PG 1 Auto start at system startup Side A Duplexed Peripheral Gateway Side B	
Available types: Acailable types: Acailable types: AccP1000 Agent Routing Services Alcatel Aspect Definity DMS100 Expert Advisor G2 Galaxy IPCC E threprise Gateway IPCC E typess Gateway	
Drive:	
Help < Back Next > Cancel	228113

Step 3 For the Peripheral Gateway Component Properties click Add in the Peripheral Interface Managers section. Set the Client type as CallManager and select PIM 1 from the Available PIMS List. Click OK. See Figure B-43.

L

Figure B-43	
Peripheral Gateway Component	Propertie



Step 4 In the PIM Configuration dialogue, configure the PIM as follows:

- a. Select Enable.
- **b**. Enter an appropriate Peripheral name.
- c. Enter the Peripheral ID that was assigned by the Configuration Manager on the Admin Workstation.
- **d.** Specify the appropriate agent Extension length for DN's on the Cisco Unified Communication Manager (this is critical as additional digits are added for call handling to CVP and call handoff will fail when mismatched).
- e. In the CallManager Service Parameter enter the IP address of the call manager cluster publisher.
- f. Enter the CCE username and password created in the Call Manager (i.e., jtapi user).
- g. Click OK. See Figure B-44.

CallManager Configurati	ion (PIM 1)	×
Enabled		
Peripheral name:	CM_PIM_1	
Peripheral ID:	5000	
Agent extension length:	4	
CallManager Parameters		
Service	192.168.45.182	
User Id:	jtapi	
User password:	******	
Mobile Agent Codec	G.711 💌	
ОК Са	incel Help	9116

Step 5 Back on the Peripheral Gateway Component Properties click Add in the Peripheral Interface Managers section again. Set the Client type as VRU and select PIM 2 from the Available PIMS List. Click OK. See Figure B-45.

Figure B-45

Peripheral Gateway Compone	ent Properties	×
	Peripheral Interface Managers PIM 1; Enabled, PID: 5000, CallManager	Add
	Thirty, Enabled, The Sobo, Calimanager	Edit
Add PIM	X	Delete
	Client Type: VRU Available PIMS: PIM 2 PIM 3 PIM 4 PIM 5 PIM 5 PIM 6	1
	DK Cancel Help	ECS Setting: IEAS Mode Mode AS-PHD Mode
	Oueue Benorting	AS-PHD Mode
	Help < <u>B</u> ack <u>N</u> ext >	Cancel

Step 6 In the PIM Configuration dialogue, configure the PIM as follows:

- a. Select Enable.
- **b.** Enter an appropriate Peripheral name.

- c. Enter the Peripheral ID that was assigned by the Configuration Manager on the Admin Workstation.
- d. In the VRU Hostname enter the IP address of the CVP Server.
- e. Enter VRU connection port.
- f. Click OK. See Figure B-46.

Figure B-46

VRU Configuration (PIM 2)	×
✓ Enabled	
Peripheral name:	VRU_PIM_2
Peripheral ID:	5001
VRU host name:	192.168.45.131
VRU Connect port:	5000
Reconnect interval(sec):	10
Heartbeat interval (sec):	5
DSCP:	CS3(24)
OK Cancel	Help 4

Step 7 Back on the Peripheral Gateway Component Properties enter the Peripheral Gateway Logical controller ID that was generated by the Configuration Manager on the Admin Workstation and click Next. See Figure B-47.

Peripheral Gateway Componen	t Properties	×	
	Peripheral Interface Managers PIM 1; Enabled, PID: 5000, CallM PIM 2; Enabled, PID: 5001, VRU	lanager Add Edit Delete	
	- Peripheral Gateway configuration -		
	Logical controller ID:	5000	
	CTI Call Wrapup Data delay:	0	
	Demand command server		
	🔲 Event Link	Advanced	
V M	MIS Enabled		
	VRU Reporting	Definity ECS Setting:	
	C Event Feed	C Non EAS Mode	
	 Service Control 	C EAS Mode	
	🗖 Queue Reporting	Using MAPD	
Help < <u>Back N</u> ext > Cancel			

Step 8 On the Device Management Protocol Properties set **Side A preferred** option and click **Next**. See Figure B-48.

Device Management Protocol	Properties	×
	 Side A preferred Side B preferred No side preference Side A properties CallRouter is local CallRouter is remote (WAN) Usable Bandwidth (Kbps): Heartbeat Interval (100ms): 	[30000 [4
	Side B properties CallRouter is local CallRouter is remote (WAN) Usable Bandwidth (Kbps): Heartbeat Interval (100ms):	30000 4
Help	< Back Next >	Cancel

Step 9 Enter the name or IP addresses for the Visible and Private Interfaces of the PG and Router. Optionally, enable QoS for these interfaces as desired. Click **Next**. See Figure B-49.

Peripheral Gateway Network I	nterfaces		×
	Private Interfaces:		
	PG private A:	192.168.9.21	
	PG private A high:	192.168.9.21	
	PG private B:	192.168.9.22	
	PG private B high:	192.168.9.22	QoS
	Visible Interfaces:		
27	PG visible A:	192.168.45.151	
	PG visible B:	192.168.45.152	
	Router visible A:	192.168.45.141	
IT PL	Router visible A high:	192.168.45.141	
	Router visible B:	192.168.45.142	
	Router visible B high:	192.168.45.142	QoS
Hala	- Back No	xt> Cancel	
Help	<u> </u>	xt > Cancel	

Figure B-49

Figure B-48

Step 10 Review the PG setup information and click Next to complete installation of the first PG. The ICM interface will return to the ICM Setup application, click the Add button on the right under "Instance Components" to add the second peripheral gateway. See Figure B-50.



- Step 11 A new dialogue window will appear where you will be able to select the Peripheral Gateway component. In the Peripheral Gateway properties window configure the following:
 - a. Check the Production node.
 - b. Check the Auto start at system startup.
 - c. Check the duplexed Peripheral Gateway.
 - d. Set the PG Node Properties ID to PG 2 and select the appropriate side for duplexed installations.
 - e. Select the Expert Advisor client type from the list of available types and click the Add button.
 - f. Click Next. See Figure B-51.

Figure B-51

Peripheral Gateway Properties	5	×
	Node Manager Properties Image: Production mode Image: Production mode	PG Node Properties ID: PG 2 © Side A © Side B
	Client Type Selection Available types: ACP1000 Agent Routing Services Alcatel Aspect CallManager Definity DMS100 G2 Galaxy IPCC Enterprise Gateway	
	Drive:	
	Help < <u>B</u> ack Nex	t> Cancel

Step 12 For the Peripheral Gateway Component Properties click Add in the Peripheral Interface Managers section. Set the Client type as Expert Advisor and select PIM 1 from the Available PIMS List. Click OK. See Figure B-52.

<u>Note</u>

The number of PIMs is only significant within the respective PG. If you have only a few PGs deployed with few PIMs, it is acceptable to assign PIMs that match the PG numbering for ease of documenting.

Figure B-52

Peripheral Gateway Componen	t Properties	×
	Peripheral Interface Managers	
	Add	
	Edit	
	Delete	
Add PIM		
	Client Type: 1	
	Expert Advisor	
	Available PIMS:	
	PIM 2 PIM 3	
	PIM 4 PIM 5	
	CS Setting:	
ОК		
	Mode	
	Queue Reporting	
		-
	Help < <u>B</u> ack <u>N</u> ext > Cancel]

Step 13 In the PIM Configuration dialogue, configure the PIM as follows:

- a. Select Enable.
- **b.** Enter an appropriate Peripheral name.
- c. Enter the Peripheral ID that was assigned by the Configuration Manager on the Admin Workstation.
- d. Enter the IP address or name of the Expert Advisor Runtime Server.
- e. Accept the default Expert Advisor server port or enter a different one as configured.
- f. Click OK. See Figure B-53.

Figure B-53

Expert Advisor Configuration (PIM 1)		
Enabled		
Peripheral name:	EA_PIM_1	
Peripheral ID:	5003	
Expert Agent Runtime Server name:	192.168.81.101	
Expert Agent Runtime Server port:	42067	
OK Cancel	Help	

Back on the Peripheral Gateway Component Properties, enter the Peripheral Gateway Logical controller ID that was generated for the Expert Advisor PG by the Configuration Manager on the Admin Workstation and then click **Next**. See Figure B-54.



Peripheral Gateway Compone	nt Properties	×
	Peripheral Interface Managers	
	PIM 1; Enabled, PID: 5003, Exp	ert Advisor Edit Delete
	Peripheral Gateway configuration	
	Logical controller ID:	5002
	CTI Call Wrapup Data delay:	0
	Demand command server	
	🔲 Event Link	Advanced
	MIS Enabled	
	VRU Reporting	Definity ECS Setting:
	C Event Feed	C Non EAS Mode
	C Service Control	C EAS Mode
	🗖 Queue Reporting	Using MAPD
		, songthat s
	Help < <u>B</u> ack	Next > Cancel
		8

Step 14 On the Device Management Protocol Properties set **Side A preferred** option and click **Next**. See Figure B-55.

Fia	ure	B-55	,

Device Management Protocol I	Properties	×
	Side A preferred Side B preferred No side preference Side A properties CallRouter is local CallRouter is remote (WAN) Usable Bandwidth (Kbps): Heartbeat Interval (100ms): 4	0000
	Side B properties CallRouter is local CallRouter is remote (WAN) Usable Bandwidth (Kbps): Heartbeat Interval (100ms): 4	0000
Help	< <u>B</u> ack <u>N</u> ext > Canc	el

Step 15 Enter the name or IP addresses for the Visible and Private Interfaces of the PG and Router. Optionally, enable QoS for these interfaces as desired. Click **Next**. See Figure B-56.

Figure B-56

Peripheral Gateway Network	Interfaces		×
	Private Interfaces:		
	PG private A:	192.168.9.21	
	PG private A high:	192.168.9.21	
	PG private B:	192.168.9.22	
	PG private B high:	192.168.9.22	QoS
	Visible Interfaces:		
57	PG visible A:	192.168.45.151	
	PG visible B:	192.168.45.152	
	Router visible A:	192.168.45.141	
NC 192	Router visible A high:	192.168.45.141	
	Router visible B:	192.168.45.142	
	Router visible B high:	192.168.45.142	QoS
Help	< <u>B</u> ack <u>N</u> e	xt > Cancel	

Step 16 Review the PG setup information and click **Next** to complete installation of the PG.

JTAPI Client Installation

It is mandatory to install the JTAPI client on the CUCM PG (which is PG1 in this setup) machine, so that it can talk to the CUCM via JTAPI interface. Once this has been completed, there will be a new process called JTAPIGW, which should be active even if no agents or phones are created in the CUCM.

Associate all of the agent's phone device's with this user in CUCM as well. To install the jtapi client, download the client from the CUCM administration interface and install it on the PG1 machine.

Within the Cisco Unified CM Administration interface select **Application** and then **Plugins**. Click the **Find** button to list all available plug-ins. Download and install the **Cisco JTAPI for Windows** plug-in. See Figure B-57 and Figure B-58.

abab		ed CM Administration Navigation Cisco Unified CM Administration	tion 👻 Go	
cisco	For Cisco Unified	Communications Solutions bmcgloth About	Logout	
tem 👻	Call Routing 👻 Med	dia Resources 👻 Voice Mail 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 👻		
d and I	List Plugins			
tatus —				
	cords found			
Plugin ((1 - 12 of 12)	Rows per Page 5	D 👻	
nd Plugir	where Name	✓ begins with ✓ and Plugin Type equals Installation ✓ Find Clear Filter		
	Plugin Name 🔦	Description		
<u>ownload</u>	Cisco CTL Client	This plugin retrieves the CTL file from the Cisco TFTP server. It digitally signs the CTL file by using a security token and t updates the file on the Cisco TFTP server. MD5(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/CiscoCTLClient.exe)= d3:0fi41:41b6:11:aci42:a18:b107:cdid:3:27:0b	hen	
ownload	<u>Cisco</u> CallManager AXL SQL Toolkit	Cisco CallManager AXL SQL Toolkit, a zip file that contains a Java-based toolkit for sending and receiving SQL statements results. Communicates with the AXL interface of the CallManager. Includes a sample SQL file and instructions for executir client system. MDS(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/axlsqltoolkit.zip)= ce:30:00:57:98:943:38:40:5b:88:48:2b:19:53:08:76		
ownload	<u>Cisco IP Phone</u> Address Book Synchronizer	Cisco IP Phone Address Book Synchronizer allows users to synchronize Microsoft Windows Address Book with Cisco Personal Address Book. The Synchronizer provides two-way synchronization between the Microsoft and Cisco products. MD5(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/TabSyncInstall.exe)= ac:81:36:54:31:e16:a0/93:fc:a1:47:1b:14:b1:b6		
ownload	<u>Cisco JTAPI for</u> <u>Linux</u>	Install this plugin on all computers that host applications that interact with Cisco CallManager via JTAPI. JTAPI provides the standard programming interface for telephony applications written in the Java programming language. JTAPI reference documentation and sample code are included. This plugin is meant for Linux platforms. MDS(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/CiscoJTAPIClient-linux.bin)= 19:f9:76:42:02:1155:03:30:86:16:02f		
ownload	<u>Cisco JTAPI for</u> <u>Solaris Sparc</u>	Install this plugin on all computers that host applications that interact with Cisco CallManager via JTAPI. JTAPI provides the standard programming interface for telephony applications written in the Java programming language. JTAPI reference documentation and sample code are included. This plugin is meant for Solaris Sparc platforms. MDS(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/CiscoJTAPIClient-solarisSparc.bin)= bd:9fr:05:e6:40:d7:c1:94:ea:tbi53:eff:e6:0e:f1:10		
ownload	<u>Cisco JTAPI for</u> <u>Solaris X86</u>	Install this plugin on all computers that host applications that interact with Cisco CallManager via JTAPI. JTAPI provides the standard programming interface for telephony applications written in the Java programming language. JTAPI reference documentation and sample code are included.This plugin is meant for Solaris X86 platforms. MDS(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/CiscoJTAPIClient-solarisX86.bin)= bd19f1051e6140d71c11941a41b513e1f6e10e1f110		
ownload	Cisco JTAPI for Windows	nstall this plugin on all computers that host applications that interact with Cisco CallManager via JTAPI. JTAPI provides the tandard programming interface for telephony applications written in the Java programming language. JTAPI reference documentation and sample code are included. This plugin is meant for Windows platforms. MDS(/usr/local/thirdparty/jakarta-tomcat/webapps/plugins/CiscoJTAPIClient.exe)= 77:6e:6die:51:14ftb5:02:aa:d1:27:69		
ownload	<u>Cisco TAPS for</u> <u>Windows</u>	Cisco Tool for Auto-Registered Phone Support (TAPS) loads a preconfigured phone setting on a phone. Install this compo a machine with a version of CRS that is compatible with the Cisco Unified CallManager version. MDS(/usr/load/thirdpatryljakarta-tomcat/webapes/plugins/ToolforAutoRegisteredPhonesSupport.exe)= ee:36:e2:17:10:62:6a:c9:81:e3:0b:5d:9c:59:73:cd	nent on	
<u>ownload</u>	<u>Cisco Telephony</u> <u>Service Provider</u>	This product contains the Clsco TAPI service provider (TSP) and the Clsco Wave Drivers. Install the application on the Clsco CallManager server or on any other computer that is running a Microsoft Windows operating system that interacts with the Clsco CallManager server via TCP/IP. TAPI, a standard programming interface for telephony applications, runs on the Microsoft Windows operating system. The Clsco TAPI Developer's Guide describes the TAPI interfaces that are currently supported. Install the Clsco TSP and the Clsco Wave Drivers to allow TAPI applications to make and receive calls on the Clsco IP Telephony Solution. MDS/(usr/local/thirdparty/jakarta-tomcat/webaps/plugins/ClscoTSP.exe)= 77:ae:64:b0:5c:2a:24:a1:d5:8b:2d:a3:21:11:0a:22		
ownload	Cisco Unified CM	Cisco Unified CallManager Serviceability Real-Time Monitoring Tool, a client tool, monitors real-time behavior of the comp		
ne		🗸 Trusted sites Protected Mode: Off 🦷 🗸 🤁		

🚟 icm1-PG1A jtapigw - jgw1 - [ACTIVE]
00:29:33 Trace: Calling getProvider() 192.168.93.100;login=jtapi;passwd=<***edit
00:29:51 Trace: Returned successfully from getProvider()
00:29:51 Trace: disableAll(> TraceManager for CTICLIENT
00:29:51 Trace: Waiting for the provider to be in service 🔤 🔤
00:27-31 Trace: ProvoutorserviceEv
00:27.51 Trace: Provider is in service
09:27:51 Trace: Successfully configured JTAPI Object.
00:27:51 Trace: IThread-IThreadAddressManager ends adding observers after 0 mil
09:27:51 Trace: Creating server socket on port 40029 to listen for PIM connectio
00:29:51 Trace: ThreadAddressManager::processNextQueuedMsg: msgHashtable.size =
00:29:51 Trace: ThreadAddressManager::Waiting for next retry
00:30:29 Trace: PIMServer: Accept connection only to loopbackaddress 127.0.0.1/1
00:30:29 Trace: PIMServer: Accepted connection from 127.0.0.1/127.0.0.1
00:30:29 Trace: PIMServer: hostaddress 127.0.0.1/127.0.0.1
00:30:30 Trace: MsgOpenReg: InvID: 7425968 Ver: 2 IdleTimeout: 80000
00:30:30 Trace: Initializing PIM Connection
00:30:30 Trace: Successfully initialized PIM Connection.
00:30:30 Trace: Adding Address Observers to all CTI Addresses
00:30:30 Trace: [Thread-1]ThreadAddressManager ends adding observers after 0 mil
00:30:30 Trace: ThreadAddressManager::processNextQueuedMsg: msgHashtable.size =
00:30:30 Trace: ThreadAddressManager::Waiting for next retry
00:30:30 Trace: MsgOpenConf: InvID: 7425968
00:30:30 Trace: MsgOpenConf: InvID: 7425968 00:35:47 Trace: JUM Total Memory: 33423360 JUM Free Memory: 32899760 JUM Heap in 🗸 🕺

After completion of the JTAPI plug-in, install the CTI Server.

CTI Server Installation

The CTI Server is an optional ICM node that allows a desktop or server application to receive call control information from the ICM and from call center peripherals. This information can be used, for example, in a screen pop on the agent's desktop. The CTI Gateway is available as part of the Cisco Enterprise CTI product.



Cisco supports installation of CTI Server on the same machine where the Peripheral Gateway software is installed. Installing CTI Sever on a machine separate from the PG may cause network problems including, but not limited to, network disconnects, agents missing calls, and agents forced into *Not_Ready*.

Before installing CTI Server, you must have installed/set up all the other components of ICM as described in the preceding sections.

CTI Server (*ctisvr*) is also called CG (short for CTI Gateway) which connects to the CTI OS Server using the *ctidriver* service running on the CTI OS Server machine. Logically, it can be viewed as shown in Figure B-59.

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Figure B-59 CTI Communication



Figure B-60



A new dialogue window will appear where you will be able to select the CTI Server component. In the CTI Server properties window configure the following:

- **Step 1** Check the **Production node**.
- **Step 2** Check the **Auto start at system startup**.
- **Step 3** Check the **duplexed** Peripheral Gateway.
- Step 4 Set the CG Node Properties ID to CG 1 and select the appropriate side for duplexed installations.
- Step 5 Click Next. See Figure B-61.

CTI Server Properties	×
	Node Manager properties Image: Production mode Image: Auto start at system startup Image: Duplexed CTI Server CG node properties ID: CG 1 ID: CG 1 ICM system ID: 1 ICM system ID: 1 ICM side A Image: Side B Drive: Image: Comparison of the system startup
Help	< <u>B</u> ack <u>N</u> ext > Cancel

Step 6 CTI Server as a default connects to the CTIOS Server on port 42027, but can be configured to use a different port. Click **Next**. See Figure B-62.

Figure B-62

- CTI Server configuration -			
	Client Connection Port Number:	42027	00
	🔲 Agent Login Required for Cliv	ent Eivents	2 F d C

Step 7 Configure the PG and CG Public and Private interfaces. Click **Next**. See Figure B-63.

CTI Server Network Interface Pr	operties	×
Charles and Charles and Charles	PG private interfaces	
	Node A:	192.168.9.21
	Node B:	192.168.9.22
	CG private interfaces	,
	Node A:	192.168.9.21
	Node B:	192.168.9.22
	CG visible interfaces	
	Node A:	192.168.45.151
	Node B:	192.168.45.152
V BY		
Help	< <u>B</u> ack	Next > Cancel

Step 8 Review the CG setup information and click **Next** to complete installation of the CTI Gateway.

CTIOS Server Installation

The Computer Telephony Integration Object Server (CTI OS) is Cisco's next generation customer contact integration platform. CTI OS combines a powerful, feature-rich server and an object-oriented software development toolkit to enable rapid development and deployment of complex CTI applications.

Refer to the *CTI OS System Manager's Guide for Cisco ICM/IPCC Enterprise & Hosted Editions* for a complete explanation of configuring peripherals and connection profiles in the CTI OS Server. http://www.cisco.com/en/US/partner/products/sw/custcosw/ps14/prod_installation_guides_list.html

From the Server directory on the CD, run **Setup.exe** (or if already installed **C:\icm\CTIOS_bin\setup.exe**). Click **Yes** on the Software License Agreement screen. The CTI OS Instances dialog appears.

- **Step 1** The CTIOS Instances dialog allows you to create CTI OS Instances and add CTI OS Servers to a configured instance of CTI OS. You will create only one CTI OS instance for each ICM instance.
- Step 2 Under the CTI OS Instance List, click Add.
- **Step 3** Enter an instance name (e.g., "ctios").
- Step 4 Now click on Add inside the CTI OS Server List. The Add CTIOS Server dialog appears.

The CTIOS Server Name is filled in with the string "CTIOS" followed by the next available index for a CTI OS Server. If a CTI OS Server has been deleted, the CTIOS Server Name string is filled in with the index that was deleted.

If you are installing CTI OS Server for the first time, an Enter Desktop Drive screen appears. Accept the default installation drive or select another drive from the pull down list. See Figure B-64 and Figure B-65.



Fiaure	R-65
riguie	D-05

CTI Server Information		×
	Instance Name CTIOS1	
	System A Name or IP Address: [192.168.45.151	
	Port: 42027 System B Name or IP Address: 192,168,45,152	
	Port: 42027	
<u>H</u> elp	< <u>B</u> ack Next > Cancel	228136

Step 5 The Peripheral ID here is the same ID that was assigned during the CUCM PG configuration in the Configuration Manager on AW. The agent desktop communicates with the CUCM IP Phone. See Figure B-66.

Figure B-66

Peripheral Identifier		×
	Peripheral ID and Perip configured in the CTI 9	
	Instance Name	ctios
	CTIOS Server Name	CTIOS1
	Logical Name:	IPCC1
	Peripheral ID:	5000
	Peripheral <u>T</u> ype:	IPCC 💌
	Login By	
	🔽 Enable Mobile /	Agent
	Mobile agent mode	Agent chooses
Help	< <u>B</u> ack	Next > Cancel

Step 6 The listen port is where CTI Desktop Agent will connect. This port will also be used if a secondary CTIOS Server wants to talk to this one in an high availability environment or setting. See Figure B-67.

Connection Information	X
	Enter the port number and heartbeat information for the CTIOS Server Instance
	Instance Name ctios
	CTIOS Server Name CTIOS1
	Listen Port 42028
	Heartbeat Retry 5
	Heartbeat Interval 60000
Help	< <u>B</u> ack Next> Cancel %
	<u>< Back</u> <u>N</u> ext>Cancel an N

_____N

Enter the default polling interval for Skillgroup statistics (in seconds). Click Next. See Figure B-68.

Figure B-68

Step 7

Statistics Information		×
	to this server.	0 10 (QoS) Illy functional QoS, you must llation of all clients connecting SABLE STATISTICS. For more
Help	< <u>B</u> ack	lext > Cancel

Step 8 The Peer CTIOS Server dialog is used to configure a CTI OS Peer Server. It is also used for Chat and CTI OS Silent Monitoring. Enter the appropriate information. After you click **Finish**, and the files are laid down, the service is registered, and Registry entries are made. See Figure B-69.

eer CTIOS Server	Duplex CTIOS Install Enter the name (or tcp/ip address) and port number of the other CTIOS server in the duplex configuration. (If there are more than 1 configured, those listed after the 1st will be deleted.):
	Instance Name ctios
	CTIOS Server Name CTIOS1
	Peer CTIOS Server: 192.168.45.152
	Port: 42028
<u>H</u> elp	< <u>B</u> ack <u>F</u> inish Cancel

Step 9 The Security installation is launched with the dialog shown in Figure B-70.

Figure B-70

Cisco CTIOS Server Security	2	4		
A mix of secure and non-secure CTIDS clients is not allowed. If security is enabled, CTIDS clients will automatically operate in secure mode.				
WARNING: Once security is enabled, CTIOS 6.0 and earlier clients will no longer be able to connect, nor will CTIOS clients using .NET CIL or Java CIL.				
Enable Security				
Self Signed Certificate Authori	ţy			
C Third Party Certificate Authorit	y.			
CTIOS Server Certificate Password:				
Peer Server Certificate Password:				
Monitor Mode Password:				
InstallShield				
	Ok Cancel			

Step 10 If you wish to disable Security, just click OK; otherwise, check the checkbox and enter the appropriate information, and click OK. For more information about CTI OS Security, see Chapter 7, "CTI OS Security" in the CTI OS System Manager's Guide for Cisco ICM/IPCC Enterprise & Hosted Editions Guide.

Upon the completion of the CTI OS Server the next step is to create device targets in Configuration Manager. Device targets are the extensions used by the formal Contact Center agents when the login into the Agent Desktop application. These next configuration steps are for formal contact center agents that would be used in addition to the Expert advisor agents. It is recommended to install a few formal agents for testing prior to the completed Expert Advisor implementation.

Create Device Target in Configuration Manager

Create each of the Device Targets using the following steps:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **Device Target Explorer** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add Device Target.
- **Step 5** Enter an appropriate name such as the agent Extension "6001".
- **Step 6** Enter the Global Address, also the extension number for fully qualified number.
- Step 7 Enter the Configuration parameters as follows "/devtype CiscoPhone /dn 6001".
- **Step 8** Enter a description if desired.
- Step 9 Then Click Save. See Figure B-71.

🕭 Device Target Explorer		
Select filter data	Device target	
Optional Filter Condition Value None Image: Condition Image: Condition Save Image: Condition Image: Condition	Global address: * 6001 Configuration parameters /devtype CiscoPhone /dn 6001 Description:	
Hide legend Image: Click on an item to edit or view its contents. Use the Add buttons to create new items. Image: Click on an item to edit or view its contents. Use the Add buttons to create new items. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item to edit or view its contents. Image: Click on an item tor view item tor view item to edit	Label * CUCM_RC Label: * 6001 Label type: * Normal Customer: icm Description:	
Image: Second state state 6102.CUCM_RC Image: Second state 6103.CUCM_RC Image: Second state 0103.CVP_VRU_PIM Image: Second state Image: Second state Image: Second state Image: Delete Image: Second state Image: Second state Instance: Icm Image: Second state	<u>Save</u>	Help

- **Step 10** Add label for each of the routing-clients. In this setup there are the following two routing clients:
 - CU Communication Manager

• CU CVP VRU

These two routing clients can request for labels from CUICM and CUICM will return the label to the routing-client. Figure B-72 shows a label for CUCM Routing Client.

Figure	B-72

Device target				
Name:	*	6001		
Global address:	*	6001		
Configuration parameters	- [/devtype CiscoPhone /dn 6001		
Description:	Γ			
Label				
Routing client:	*	CUCM_RC	7	
Label:	*	6001		
Label type:	*	Normal	•	
Customer:		icm	•	0,
Description:				228143

Figure B-73 shows a label defined for CVP Routing Client.

Figure B-73

Device target	
reality.	6001 6001 /devtype CiscoPhone /dn 6001
Description:	
Label	
Routing client:	CVP_VRU_PIM
Label:	* 6001
Label type:	* Normal
Customer:	icm 🔽
Description:	

Network VRU Configuration in AW Configuration Manager

Create the Network VRU device as follows:

Step 1	Open the	Configurations	Manager on the AW.
--------	----------	----------------	--------------------

Step 2 Select the Network VRU Explorer option under the Tools > Explorer Tools group.

Step 3 Click Retrieve.

- Step 4 Click Add Network VRU.
- **Step 5** Enter an appropriate name such as "**cvp**".
- **Step 6** Select the type as "**Type 10**".
- Step 7 Enter a description such as the extension numbers associated with CVP and the VXML Gateway.
- **Step 8** Then Click **Save**. See Figure B-74.

Figure B-74

Network VRU	Network VRU Banks	
Name:	* OVE	L
Туре:	* Type 10	L
Description:	CCenter # 1005-6	L
		L
		L
		L
		L
		L
		۵
		228145
		<u> </u>

After the Network CVP VRU is created, add labels for each of the Route Clients as follows:

- Step 1 Click Add Label.
- **Step 2** Select the Network VRU **cvp**.
- **Step 3** Select the Route Client **CUCM_RC**.
- **Step 4** Enter the label of the CVP Extension line **1005**.
- **Step 5** Select **normal** for the label type.
- **Step 6** Select **icm** as the Customer.
- **Step 7** Enter a description as desired.
- Step 8 Click Save. See Figure B-75.

Figure B-75

Label		
Network VRU:	сур	•
Routing client:	* CUCM_RC	~
Label:	* 1005	
Label type:	* Normal	•
Label type: Customer:	* Normal	•
	Noma	•

Perform the same steps and add a label for the CVP VRU PIM Route client as follows:

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- Step 1 Click Add Label.
- **Step 2** Select the Network VRU **cvp**.
- **Step 3** Select the Route Client **CVP_VRU_PIM**.
- **Step 4** Enter the label of the CVP Extension line **1006**.
- **Step 5** Select **normal** for the label type.
- **Step 6** Select **icm** as the Customer.
- **Step 7** Enter a description as desired.
- Step 8 Click Save. See Figure B-76.

Network VRU Explorer			_ 🗆 🗙
Select filter data	Network VRU Netw	work VRU Banks	
	Name:	* cvp	
Optional Filter Condition Value	Type:	* Type 10	•
None	Description:	CCenter # 1005-6	
Save <u>Betrieve</u> Cancel filter changes			
▼ Hide legend			
(1) Network VRU			
(2)			
Click on an item to edit or view its contents.			
Use the Add buttons to create new items.			
E— @ cvp — <u>B</u> 1005.CUCM_RC			
	Label		
	Network VRU:	CVP_VRU_PIM	• •
	Routing client: Label:	* 1006	
	Label type:	* Normal	•
	Customer:	icm	
	Description:		
E [®] (2) Add Label Multiple			
		Save Close	Help
M Instance: icm			

Step 9 After the network VRUs have been created, add a Contact Center Agent and Skill Group for testing purposes.
Add Agents

Create the Agent as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **Agent Explorer** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add Agent.
- **Step 5** Enter an appropriate first, last, and login name.
- **Step 6** Enter an appropriate password.
- **Step 7** Verity the Enterprise name that was generated is appropriate.
- **Step 8** Enter an AgentID number or allow one to be generated automatically. This number is used during agent login to the Agent desktop client.
- **Step 9** On the Supervisor tab, check **Supervisor agent** if desired.
- Step 10 Click Save. See Figure B-77.

🚯 Agent Explorer	
Select filter data	Agent Advanced Skill group membership Supervisor
Peripheral CCM_PIM_1	Personal information
	First name: * bart Last name: * mcglothin
Optional Filter Condition Value	Login name:* bmcgloth Login enabled: 🔽
None 🔽	Password: Select Person
Save <u>R</u> etrieve Cancel filter changes	Enterprise name: * Generic_CCM_PG_1.mcglothin_bart
	Peripheral name:
Hide legend	AgentID (Peripheral number):* 9001 (value will be created if left blank)
(2) Route	
(3) Peripheral target	
Click on an item to edit or view its contents.	
Use the Add buttons to create new items.	
Generic_CCM_PG_1.mcglothin_bart	
-	
(1) Add Agent Delete - Multiple	
(2) Add Route	
- g ErAdd Houle	Save Dose Help C
ICM Instance: icm	

Add Skill Group

Create a Skill Group as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **Skill Group Explorer** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add Skill Group.
- **Step 5** Enter a Peripheral name such as **PreSale**.
- **Step 6** Enter an appropriate Name such as **Generic_Presale**.
- **Step 7** Select the Media Routing domain **Cisco_Voice**.
- Step 8 On the Skill Group Members tab click add and select the agent created earlier.
- Step 9 Click Save.
- **Step 10** Add route option in the skill group.
- Step 11 Click Add Route.
- Step 12 Assign an appropriate name such as Generic_PreSale_Route.
- Step 13 Click Save. See Figure B-78.

Fiaure	B-78
riguio	0,0

Select filter data	
Peripheral CCM_PIM_1 Media routing domain All Optional Filter Condition Value None Save <u>Betrieve Cancel filter.changes</u> Hide legend (1) Skill group (2) Route (3) Peripheral target (4) Label Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Jse the Add buttons to create new items. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents. Click on an item to edit or view its contents.	Skill Group Members Subgroup Mask Sub skill groups Skill Group Advanced Media routing domain: * Cisco_Voice Peripheral number: 0 Peripheral name.* PreSale Name: * Generic_Presale Available holdoff delay (sec): Use Peripheral Default Priority Extension: ICM picks the agent ✓ Route

Step 14 The next step is to create Call Type Lists for the Presales group and the Expert Advisor Service.

Add Call Type List

Create a Call Type List as follows:

Step 1	Open the Configurations Manager on the AW.
Step 2	Select the Call Type List option under the Tools > Explorer Tools group.
Step 3	Click Retrieve.
Step 4	Click Add.
Step 5	Enter a name such as PreSales_SanJose or Expert_Advisor_Service.
Step 6	Select the Customer icm .
Step 7	Enter an appropriate description as desired.
Step 8	Click Save. See Figure B-79.
Step 9	Repeat for second list.

🛱 Call Type List			
Select filter data	Attributes		
Customer <alt></alt>		* Expert_Advisor_Service	
	Name Call Type ID	* 5001	
Optional Filter Condition Value		, 	
	Customer	licm	•
	Service level		
Call Type Name			Override System Information Default
Expert_Advisor_Service PreSales_SanJose	Service level threshold	20	
	Service level type	Ignore Abandoned Calls	
			Override System Information Default
	Bucket intervals	Default_Bucket_Intervals	
	Description		
Add Delete Revert		Sav	e <u>C</u> lose <u>H</u> elp
ICM Instance: icm			e <u>C</u> lose <u>H</u> elp

Add Dialed Number/Script Selector List

Create a Dialed Number List as follows:

- Step 1 Open the Configurations Manager on the AW. Step 2 Select the **Dialed Number/ Script Selector List** option under the **Tools > Explorer Tools** group. Step 3 Click Retrieve. Step 4 Click Add. Select the Routing client CUCM_RC. Step 5 Select the Media routing Domain Cisco_Voice. Step 6 Step 7 Enter the Dialed Number string that is called to reach this queue. Enter a name such as CUCM_RC.1000 or CUCM_RC.1301 as appropriate. Step 8 Step 9 Select the Customer icm. Step 10 Leave the default Label as **<None>**.
- **Step 11** Enter an appropriate description as desired.

- Step 12 Click Save. See Figure B-80.
- **Step 13** Repeat for additional dialed numbers.

Select filter data		At	tributes Dialed Number Mapping D	ialed Number Label	
	<alb< th=""><th></th><th>Pouting client</th><th>* CUCM_RC</th><th>7</th></alb<>		Pouting client	* CUCM_RC	7
Customer Optional Filter	<all> _▼ Condition Value</all>		1edia routing domain	* Cisco_Voice	
None			ialed number string / Script selector	* 1301	
🗌 Save	<u>R</u> etrieve Ca	ncel filter changes	lame	* CUCM_RC.1301	
ialed Number / Script Selecto	ır		Customer	icm	•
Name CUCM_RC.1000			efault label	<none></none>	•
CUCM_RC.1301			escription		
			ermit application routing		
		F	Reserved by IVR		

Figure B-80

Step 14 On the Dialed Number Mapping Tab, select the calling line ID, Caller Entered digits (if any) and the Call type. For the 1301 dialed number the Expert_Advisor_Service was selected, for the 1000 dialed number PreSaled_SanJose was selected. See Figure B-81.



E:	D 01
Figure	D-0 I

Calling Line ID All Prefix Match Called-entered digits All None Required Entered CED Call type Entered Call type Entered	Dialed Number Map Entry		
Region Prefix Match Called-entered digits All Required Entered CED	Calling Line ID		
Called-entered digits All Required Entered	• All		
Match Called-entered digits All All All All All All All All Expert_Advisor_Service	O Region	Attributes Dialed Number Mapping Dialed Number Labe	1
C Match Called-entered digits C All None Required Entered CED	O Prefix		
All None Required Entered CED	C Match	All All	Expert_Advisor_Service
None Required Entered CED	Called-entered digits		
Required Entered CED	© All		
CED	C None		
C CED	Required		
	Entered		
Call type Expert_Advisor_Service	C CED		
	Call type Expert_Advisor_Service		
OK Cancel Help Add Edit Remove Up Down	OK Cancel Help	Edit Remove	Up Down &

Enable Expanded Call Context

To ensure proper call routing, ensure that **Expanded call context** is enabled in the System information configuration as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **System Information** option under the **Configure ICM > Enterprise > System Information** group.
- Step 3 Check the Expanded call context option.
- Step 4 Click Save. See Figure B-82.

🧖 System Information		
General		Call T
ICM type	Standard	Defa
Company name	licm	Abar
Controller domain name	cisco-irn.com	Serv
Partitioning enabled		Selv
Maximum partitions	0	Servi
Expanded call context en	abled	Buck
- Script		
Retain script versions	All	

CUICM Instance Explorer Setting

An additional customer definition must be created for CVP under the ICM instance. Create a customer definition as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **ICM Instance Explorer** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- **Step 4** Select the desired instance.
- Step 5 Click Add Customer definition.
- **Step 6** Enter an appropriate name.
- **Step 7** Select the Network VRU as **cvp**.
- **Step 8** Enter an appropriate description as desired.
- **Step 9** Click **Save**. See Figure B-83.

🕎 ICM Instance Explorer	
ICM Instance Explorer Select filter data Optional Filter Optional Filter Condition Value None Save Betrieve Cancel filter changes Hide legend Image: Content in the image is a second se	ICM Instance IEM Node Name: * icm Type: * Standard Instance number * 0 Network ICM instance Description: Customer definition Customer options Name: * Im Network VRU: cvp Description: Feature control set: NDNE
2 (2) Add Customer definition Delete Multiple ICM Instance: icm	Save Close Help

Add Expanded Call Variable List

Call variables are used to carry various pieces of information between systems as a call flows through the queue script steps. The default installation lacks several variables used in an Expert Advisor deployment and as such need to be added.

Add additional call variables as follows:

- **Step 1** Open the Configurations Manager on the AW.
- **Step 2** Select the **Expanded Call Variable List** option under the **Tools > Explorer Tools** group.
- Step 3 Click Retrieve.
- Step 4 Click Add.
- **Step 5** Using the table of information below, configure each variable.
- **Step 6** Enter the variable name.
- **Step 7** Set the variable maximum length.
- **Step 8** If an array size is defined, check the array option and set the size.
- **Step 9** Set the variable as enabled.
- **Step 10** Set as persistent if specified.
- **Step 11** Enter an appropriate description as desired.
- Step 12 Click Save. See Figure B-84.
- **Step 13** Repeat for each call variable.

Table B-1 Expanded Call Variables

Name	Max Length	Array size	Enabled	Persistent
user.cvpmovies_bg_media	40		yes	
user.h323.rftransfer	1		Yes	
user.media.id	36		Yes	
user.microapp.app_media_lib	10		Yes	
user.microapp.caller_input	210		Yes	
user.microapp.charset	10		Yes	Yes
user.microapp.currency	6		Yes	
user.microapp.cvpmovies_params	40		Yes	
user.microapp.error_code	2		Yes	
user.microapp.FromExtVXML	210	1	Yes	
user.microapp.grammar_choices	210		Yes	
user.microapp.inline_tts	210		Yes	
user.microapp.input_type	1		Yes	
user.microapp.locale	5		Yes	
user.microapp.media_server	30		Yes	
user.microapp.metadata	62		Yes	

Table B-1 Expanded Call Variables (continued)

user.microapp.override_cli	1		Yes
user.microapp.pd_tts	1		Yes
user.microapp.play_data	40		Yes
user.microapp.recording	40		Yes
user.microapp.sys_media_lib	10		Yes
user.microapp.ToExtVXML	210	1	Yes
user.microapp.uui	131		Yes
user.microapp.UseVXMLParams	1	1	Yes
user.sip.refertransfer	1		Yes
user.video_media_server	40		Yes

Figure B-84

Select filter data	Attributes	
Select liker data		1
	Name * user.cvpmovies_bg_media	
Dptional Filter Condition Value	Maximum length * 40	
None		
Save <u>B</u> etrieve Cancel filter cha		
panded Call Variable		
Name	Enabled 🔽	
⊻ user.cvpmovies_bg_media ✔ user.h323.rftransfer	Persistent 🗖	
🕑 user.media.id	Cisco provided 🗖	
✔ user.microapp.app_media_lib ✔ user.microapp.caller_input	Description	
user.microapp.charset user.microapp.currency	Description	
user.microapp.cvpmovies_params		
user.microapp.grammar_choices		
ע user.microapp.inline_tts ע user.microapp.input_type		
🕑 user.microapp.locale		
✔ user.microapp.media_server ✔ user.microapp.metadata		
✓ user.microapp.override_cli ✓ user.microapp.pd_tts		
🕑 user.microapp.play_data		
 ✓ user.microapp.recording ✓ user.microapp.sys_media_lib 		
🕑 user.microapp.ToExtVXML		
✔ user.microapp.uui ✔ user.microapp.UseVXMLParams		
🗹 user. sip. refertransfer		
Add Delete Revert	Save Close	Help
	bave Liose	<u> </u>

Network VRU Script List

The Network VRU enables interaction with the caller using a variety of external scripts. The scripts created in the Network VRU Script List are then made available in the Script Editor.

I

Create the following scripts for use later in the Script Editor.

Create the VRU Scripts as follows:

- **Step 1** Open the Configurations Manager on the AW.
- Step 2 Select the Network VRU Script List option under the Tools > Explorer Tools group.
- Step 3 Click Retrieve.
- Step 4 Click Add.
- Step 5 Using the table of information below, create each of the VRU Scripts.
- **Step 6** Enter the script name.
- **Step 7** Set the Network VRU as **cvp** for all entries.
- **Step 8** Enter the VRU script name.
- **Step 9** Enter the Timeout length.
- **Step 10** Enter the Configuration param.
- **Step 11** Set the Customer as **icm**.
- **Step 12** Enter an appropriate description as desired.
- Step 13 Click Save.See Figure B-85.
- **Step 14** Repeat for each Network VRU Script in the table.

Table B-2

Name	VRU Script name	Timeout	Config. Param	Int	Ovr
agentbusy	PM,agentsbusy	180			
get4digits	GD,enter_4_digits,A	180	4,4		
holdmusic	PM,holdmusic	600		у	Y
playdigits	PD,Char	180		у	
playpromptVar7	PM,-7	180		у	
requery_busy	PM,requery_busy	180			
requery_connect_failure	PM,requery_connect_failure	180			
requery_rna	PM,requery_rna	180			

Figure B-85

🛱 Network VRU Script List					[_ <u> </u>
Select filter data	Attributes					
Network VRU						

CTI Toolkit Agent Desktop Client Installation

For Agents located in Contact Centers, or agents that would service more standard call center queues; the cisco Agent Desktop facilitates access to the queue and the tools necessary to track and monitor queue status.

The Cisco agent desktop is installed by running the Setup.exe program on the CTI disc (i.e., **D:\ctios_builds\Release\ctios\Installs\CTIOSClient**).

After running Setup.exe, complete the following steps are complete:

- Step 1 Click Next, to continue.
- **Step 2** Click **Yes** on the confirmation page.
- **Step 3** Select the Installation drive.
- Step 4 Click Next.
- Step 5 Select the Agent Desktop feature.
- Step 6 Click Next.
- **Step 7** Enter the CTIOS Server information.
- **Step 8** Enable QoS as desired.

- Step 9 Click Next.
- Step 10 If the formal agents are also using video endpoints select Enable for CVP Video.
- Step 11 Click Next.
- **Step 12** Verify installation items and click **Next**.
- Step 13 Once the installation is complete you will need to enter a CTIOS Client Certificate password between 8 and 30 characters long to secure communication between the Agent desktop and the CTIOS Server. Click OK.
- Step 14 Review the Important Note content and click Next to install security compontes.
- **Step 15** Once the client security setup is complete click **Finish**.
- Step 16 Once the client setup is complete click Finish. See Figure B-86 and Figure B-87.

CTI OS Client - InstallShield Wizard: Cisco CTI Prod	ucts Family Release 7.5, Build 10 🙁
Select Features Select the features setup will install.	
Select the features you want to install, and deselect the CTI Toolkit Desktop Software (Win32) Agent Desktop IPCC Supervisor Desktop Tools CTI Toolkit SDK Win32 Java Net	e features you do not want to install. Description This feature includes the CTI Toolkit Agent Desktop application.
190.85 MB of space required on the C drive 24031.74 MB of space available on the C drive InstallShield	lack Next > Cancel

CTIOS Server Information		×
	CTIOS Server A Name or IP Address: Port:	192.168.45.151 42028
	CTIOS Server B Name or IP Address: Port:	192.168.45.152 42028
	Enable Quality of Service If you want CTIDS to have fully also enable QoS during installa NDTE: QoS does not apply to .NET CILs.	y functional QoS, you must ition of the CTIOS Server.
Help	< Back N	ext > Cancel

Figure B-87

If all configurations are good and communication to the CUCM via PG is active, then agent should be able to login. At this point, it is also good idea to check if calls are being routed to the agent by making a simple ICM routing script. **Start >LAA >Skill Group Selection >Stop**.

CUICM Routing Script

Create and schedule a routing script on AW by using the Script Editor software. Figure B-88 shows a sample routing script. The logic that is followed for creating this script is as follows:

Step 1	Start the script with the start node.
Step 2	Set the value of media server HTTP URL in Call.user.microapp.media_server variable. This is the web server URL from where .wav files will be played (e.g., http://media.cisco-irn.com).
Step 3	Set the value of language in Call.user.microapp.locale as en-us.
Step 4	Set the value of input type (which is digits in this sample script) in <i>Call.user.microapp.input_type</i> variable to D .
Step 5	Set the value of the Call.user.microapp.app_media_lib to Custom.
Step 6	After setting the variables send the call to IVR using "Send to VRU" node.
Step 7	Run external script called "get4digits" that will ask the customer to enter 4 digits (i.e., an account number).
Step 8	Use the Set Variable to save the value Call.CallerEnteredDigits in the <i>Call.user.microapp.play_data</i> variable.
Step 9	Run another external scrip called <i>playdigits</i> . This script will play the value stored in <i>Call.user.microapp.play_data</i> variable.
Step 10	The select Longest Available Agent (LAA) decision object.
Step 11	If agent is available, send the caller to agent using the Skill Group node.
Step 12	If agent is not available, send the caller to Queue.
Step 13	While the caller is in queue, play agent busy and music on hold .wav files in loop.



Cisco Voice Portal Installation

Prerequisites

- The CVP server hostname should not contain any hyphen.
- Arrange for CVP license.
- Regional and language options should be set to English.

See Figure B-89.

L

R	tegional and Language Options	×
	Regional Options Languages Advanced	
	Standards and formats	
	This option affects how some programs format numbers, currencies, dates, and time.	
	Select an item to match its preferences, or click Customize to choose your own formats:	8
	English (United States)	228160
		0

Text services and input languages options should be set to English (United States) - US. See Figure B-90.

Figure B-90

Text S	ervices and Input Languages	<u>' ×</u>	
Settin	99 Advanced		
Si	efault input Janguage elect one of the installed input languages to use when you start your omputer. inglish (United States) - US	100164	19182

Only one Ethernet connection should be active on the machine. See Figure B-91.

Figure B-91



CVP Call Server, Operation Console and Media Server Installation

In this solution deployment lab validation, CVP Call Server and the Operation Console collocated on the same machine for ease of testing.

Install the CVP server by running the **Setup.exe** program from the installation DVD. Step through the installation using the following information:

Step 1 Select Core Software, Remote Operations and System Media Files. See Figure B-92.

Select the packages setup will install. -Description-Core Software Fundamental Unified CVP software that includes: Unified CVP Operations Console (including help), Call Server (SIP, IVR, ICM, and H. 323 Service - which contains Voice Browser and VBAdmin), IOS VXML Server Remote Operations Video Media Server cisco 🗄 👿 System Media Files 🕞 English Media Browser and VBAdminj, IUS Gateway files, a tar file containing IVP system media folders and files, Operations and Resource Module (ORM), SNMP Monitoring, Support Tools Node Adapter (STNA) and Support Tools Protocol Adapter (STPA). Unified Portal 63 262.04 MB of space required on the C drive 71598.11 MB of space available on the C drive à

Figure B-92

- Step 2 Enter appropriate security certificate information. See Figure B-93.
 - X.509 Certificate Enter the information that you would like to be included in the certificate: Common Name: CVP7 Organization or Company Name: Cisco cisco Organizational Unit or Department: Enterprise Voice System Architect Locality or City: San Jose Unified Customer CA Portal Country Name (2 letter code): US 228164 Email address: syali@cisco.com

Step 3 Enable the Call server and the Operations console.See Figure B-94.

Figure B-94



Step 4 Enter the preshare key to use between servers and node agents software. See Figure B-95.



CVP Component Configuration

There are several components that needs to be configured before CVP can operate properly. They are as follows:

- CVP Media Server Configuration
- CVP Call Server Configuration

CVP Media Server Configuration

This setup used Microsoft IIS as the web server to host the media files. See Figure B-96.

🐌 Internet Information Services (IIS) Manager			
Section View Window Help ← → I I I			
MEDIA (local computer)			
Application Pools Web Sites	Web Service Extension	Status Prohibited	
Web Service Extension Allow	All Unknown ISAPI Extensions Active Server Pages	Prohibited Allowed	
Prohibit Properties	 Internet Data Connector Server Side Includes 	Prohibited Prohibited	
	WebDAV	Allowed	22A167
1 1			Ň

Step 1 Enable read permission to the directory where **.wav** files are saved. See Figure B-97.

Figure B-97

ault Web Sil	te Propert	ies			? >
Directory Se	ecurity	HTTP Headers	Custom Error:	s I	ASP.NET
Web Site	Performa	nce ISAPI Filters	Home Directo	ory	Documents
The conten	• • • •	ource should come from: <u>A directory located on this</u> <u>A share located on anothe</u> <u>A redirection to a URL</u>			
Lo <u>c</u> al path:	C:	\inetpub\wwwroot		Br <u>o</u> w:	se
Read Mrite Directory Application s			ex this resource		
Application r	na <u>m</u> e:	Default Application		R <u>e</u> m	ove
Starting poir		<default site="" web=""></default>		Confi <u>q</u> ur	ation
		Deripes only			
Execute per Application p		DefaultAppPool	•	Unļa	ad
-		DefaultAppPool		Unļo	ad

Step 2 Either create a Virtual Directory linking to the Media Files installed by the CVP **setup.exe**, or copy the "**en-us**" folder to the root of the IIS Web server. See Figure B-98.

Figure B

Virtual Directory	Documents	Directory Security
The content for this res	ource should come from:	
• P	directory located on this compute	r
C A	share located on another comput	er
C 4	redirection to a <u>U</u> RL	
Local path:	\MediaFiles\en-us	Browse
□ Script source access ▼ Read Write	✓ Log visits ✓ Index this real	source
Application settings		
	en-us	Remove
Application settings	en-us <default site="" web="">\en-u</default>	
Application settings	1	Remove Configuration

Step 3 Make sure anonymous access is enabled and the built-in IIS User is assigned. See Figure B-99.

Figure B-99

<u>U</u> ser name:	IUSR_MEDIA <u>B</u> rowse
Password:	•••••
Authenticated	access
	ng authentication methods, user name and passwor
are required w	
are required w - anon	hen:
are required w - anon - acce: 	hen: iymous access is disabled, or
are required w - anon - acce: Integrated Digest auth	hen: wmous access is disabled, or ss is restricted using NTFS access control lists Windows authentication nentication for Windows domain servers
are required w - anon - acce: Integrated Digest auth Basic authe	hen: wmous access is disabled, or ss is restricted using NTFS access control lists Windows authentication nentication for Windows domain servers entication (password is sent in clear text)
are required w - anon - acce: Integrated Digest auth Basic authe	hen: wmous access is disabled, or ss is restricted using NTFS access control lists Windows authentication nentication for Windows domain servers
are required w - anon - acce: Integrated Digest auth	hen: ymous access is disabled, or ss is restricted using NTFS access control lists Windows authentication nentication for Windows domain servers entication (password is sent in clear text) port authentication
are required w - anon - acce: Integrated Digest auth Ba <u>s</u> ic authe .NET Passp	hen: ymous access is disabled, or ss is restricted using NTFS access control lists Windows authentication nentication for Windows domain servers entication (password is sent in clear text) port authentication

Step 4 Create a folder named **Custom** below the **en-us** folder for the audio files in the custom scripts. See Figure B-100.



CVP Call Server Configuration

Before configuring CVP call server, it should be important to know little bit about the setup and SIP call flows. Notices that these call flows are valid for the Type 10 VRU only. Also notice that "**cid**" is actually the correlation ID and is a numerical value.

Call Flow

CUCM Originated Calls

Table B-3 CUCM Originated Calls

CUCCE Pilot Number	IP Phone caller dials CTI route point number 1000		
Routing Client	SIP Gateway is the routing client		
Label Returned to SIP GW by CUICM	1000+cid		
Processing at SIP GW	SIP GW receives the label and sends the call to CVP Call Server		
Processing at CVP	CVP receives this label and send it to CUICM as a new route-request.		
Routing Client	Notice that now CVP is the routing-client		
Processing at CUICM	CUICM receives its own generated label again and knows that loop is complete. And then generates a new label 1000+cid and sends to CVP		

Processing at CVP	CVP Call Server send this label 1000+cid to VXML-GW	
Processing at VXML-GW	VXML-GW has an incoming dial-peer configured that basically invokes the bootstrap tcl service	
	Now a sequence of VXML communications happens between the VXML GW and CVP IVR Service. This communication is called MicroApps.	
Processing at CVP	At this point CVP sends the same label 1000+cid to CUICM to inform that VXML-GW resources are engaged	

Table B-3 CUCM Originated Calls (continued)

Once you understand the high level overview of the call flow, it will be easy to understand the static routes needed by the CVP Call Server. Using the SIP Gateway, a single static route can be used, (e.g., >, sip-1.cisco-irn.com)

CVP Operation Console Server

CVP Operation Console Server provides web-based front-end to configure different components in CVP environment.See Figure B-101 and Figure B-102.

Figure B-101 CVP Call Server General Setting

eneral ICM SIP IVR Device Pool Infrastructure				
General		Activate Services		
IP Address: *	192.168.45.131	ICM: 🔽		
Hostname: *	cvp-1.cisco-irn.com	IVR: 🔽		
Description:		SIP: 🔽		
Enable secure communication with the Ops console:	1	H.323: Change Type		
		+ acc		

Figure B-102

vic	es					
	Hostname	IP Address	Device Type	Actions	Status	Active Calls
	cvp-1.cisco-irn.com	192.168.45.131	Call Server	1	Up	0
	icm-a.cisco-irn.com	192.168.45.141	ICM Server		N/A	N/A
	icm-b.cisco-irn.com	192.168.45.142	ICM Server		N/A	N/A
	sip-1.cico-irn.com	192.168.45.188	SIP Proxy Server	<u>ل</u> ې	N/A	N/A
						Page 1 of 1

CVP Call Server ICM Configuration

See Figure B-103.

General ICM SIP IVR Device Pool Infrastructure	
General Configuration VRU Connection Port: * 5000 Maximum Length of DNIS: * In DNIS C Add a range: Add DNIS Delete DNIS	Advanced Configuration New Call Service ID: * Pre-routed Call Service ID: * New Call Trunk Group ID: * 100 Pre-routed Call Trunk Group ID: * 200 Select QoS level: cs3

CVP Call Server SIP Configuration and Static Route

Default information was used and no fields were modified. See Figure B-104.

Figure B-104

General ICM SIP IVR Device Pool Infra	astructure		
Configuration		Local Static Routes	1
Enable outbound proxy:	C _{Yes} 🔎 No 1	Static routes for local routing without an outbound proxy -	
Use DNS SRV type query:	C Yes 🖲 No 1	Dialed Number (DN):	
Resolve SRV records locally:	1	IP Address/Hostname:	
Outbound proxy Host:	- 🔽 1	Add Remove	
Outbound SRV domain name (FQDN):	1	>,sip-1.cisco-irn.com Move Up	
Outbound proxy Port:	5060	Move Down	
Outgoing transport type:	UDP • 1		1
Port number for incoming SIP requests: *	5060 1	Dialed Number (DN) patterns Patterns for sending calls to the originator -	1
Incoming transport type:	TCP+UDP 💌 1	Dialed Number (DN):	
DN on the Gateway to play the ringtone: *	91919191	Add Remove	
DN on the Gateway to play the error tone: *	92929292		
Time to wait for ICM instructions: *	2000 milliseconds		175
SIP info tone duration: *	100 milliseconds	Patterns for RNA timeout on outbound SIP calls -	2281

VXML and Ingress Gateway Configuration

In this setup, the same router can be used as an ingress gateway as well as the VXML gateway. Note that due to VXML compatibility issues, all Cisco IOS versions are not supported. In this lab validation tested **c2800nm-ipvoicek9-mz.124-24.T1.bin**.

Copy following files to VXML Gateway router's flash memory:

```
bootstrap.tcl
bootstrap.vxml
cvperror.tcl
CVPSelfService.tcl
CVPSelfServiceBootstrap.vxml
survivability.tcl
handoff.tcl
ringtone.tcl
recovery.vxml
```

holdmusic.wav

```
ringback.wav
pleasewait.wav
critical_error.wav
en_0.wav
en_1.wav
```

Configuration

```
version 12.4
service timestamps debug datetime localtime show-timezone
service timestamps log datetime localtime show-timezone
no service password-encryption
1
hostname VXML
1
boot-start-marker
boot system flash c2800nm-ipvoicek9-mz.124-24.T1.bin
boot-end-marker
logging message-counter syslog
logging buffered 100000
enable password cisco
1
no aaa new-model
clock timezone PST -8
clock summer-time PSTDST recurring
dot11 syslog
ip source-route
1
1
ip cef
1
ip domain name cisco-irn.com
ip name-server 192.168.42.130
no ipv6 cef
ntp server 192.168.0.1
ntp server 192.168.42.130
ntp server 192.168.62.161 prefer
ntp server 192.168.62.162
multilink bundle-name authenticated
1
!
voice service voip
allow-connections h323 to h323
allow-connections h323 to sip
allow-connections sip to h323
 allow-connections sip to sip
 fax protocol cisco
h323
 emptycapability
 no telephony-service ccm-compatible
  no ccm-compatible
 h225 id-passthru
  call start slow
 h245 passthru tcsnonstd-passthru
 sip
  ds0-num
```

```
header-passing
!
I.
ı.
voice class codec 1
codec preference 1 g711ulaw
codec preference 2 g729r8
!
voice class h323 1
 h225 timeout setup 3
!
Т
voice translation-rule 1
rule 1 /987654/ //
I.
Т
voice translation-profile block
translate called 1
1
!
voice-card 0
dsp services dspfarm
1
http client cache memory pool 15000
http client cache memory file 500
ivr prompt memory 15000
1
application
 service new-call flash:bootstrap.vxml
 paramspace english language en
 paramspace english index 0
 paramspace english location flash:
 paramspace english prefix en
 1
 service cvp-survivability flash:survivability.tcl
 paramspace english language en
 paramspace english index 0
 param alert-timeout 20
  paramspace english location flash
 paramspace callfeature med-inact-det enable
 param setup-timeout 7
 paramspace english prefix en
 1
 service ringtone flash:ringtone.tcl
 paramspace english language en
 paramspace english index 0
 paramspace english location flash
 paramspace english prefix en
 1
 service recovery flash:recovery.vxml
 paramspace english language en
 paramspace english index 0
 paramspace english location flash:
 paramspace english prefix en
 1
 service cvperror flash:cvperror.tcl
 paramspace english index 0
  paramspace english language en
  paramspace english location flash
 paramspace english prefix en
 1
 service takeback flash:survivability.tcl
 paramspace english language en
  paramspace english index 0
```

```
paramspace english location flash
 paramspace english prefix en
 Т
 service HelloWorld flash:CVPSelfService.tcl
 paramspace english index 0
 paramspace english language en
 param CVPSelfService-port 7000
  param CVPSelfService-app HelloWorld
  param CVPPrimaryVXMLServer 192.168.45.131
  paramspace english location flash
  paramspace english prefix en
 param CVPBackupVXMLServer 192.168.45.132
 Т
 service handoff flash:handoff.tcl
 paramspace english language en
 paramspace english index 0
 paramspace english location flash
 paramspace english prefix en
 service bootstrap flash:bootstrap.tcl
  paramspace english index 0
 paramspace english language en
 paramspace english location flash:
 paramspace english prefix en
 T
1
vxml version 2.0
1
archive
log config
 hidekeys
!
interface FastEthernet0/0
description Connection to SACCESS-g1/33
 ip address 192.168.45.101 255.255.255.0
duplex auto
 speed auto
I
interface FastEthernet0/1
no ip address
shutdown
 duplex auto
 speed auto
1
interface GigabitEthernet1/0
no ip address
shutdown
1
1
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 192.168.45.1
ip http server
no ip http secure-server
control-plane
mgcp fax t38 ecm
mgcp behavior g729-variants static-pt
1
! <====Configuration for Trusted Relay===>
sccp local FastEthernet0/0
sccp ccm 192.168.45.182 identifier 1 version 7.0
```

```
sccp ccm 192.168.80.181 identifier 2 version 7.0
sccp
Т
sccp ccm group 1
associate ccm 1 priority 1
associate profile 1 register MTP-01
1
sccp ccm group 2
associate ccm 2 priority 1
associate profile 2 register MTP-02
!
dspfarm profile 2 mtp
codec g711ulaw
codec pass-through
maximum sessions software 110
associate application SCCP
1
dspfarm profile 1 mtp
codec g711ulaw
 codec pass-through
maximum sessions software 110
associate application SCCP
! <===End Configuration for Trusted Relay===>
dial-peer voice 9191 voip
service ringtone
 session protocol sipv2
 incoming called-number 9191T
dtmf-relay rtp-nte
codec g711ulaw
no vađ
!
dial-peer voice 9292 voip
service cvperror
session protocol sipv2
incoming called-number 9292T
dtmf-relay rtp-nte
codec g711ulaw
no vad
1
dial-peer voice 1006 voip
translation-profile incoming block
service bootstrap
session protocol sipv2
incoming called-number 1006T
dtmf-relay rtp-nte
codec g711ulaw
ip qos dscp cs3 signaling
no vad
1
dial-peer voice 987654 voip
translation-profile incoming block
incoming called-number 987654
I.
1
1
line con 0
exec-timeout 0 0
line vty 0 4
exec-timeout 0 0
password cisco
login
line vty 5 15
 exec-timeout 0 0
```

```
password cisco
login
!
scheduler allocate 20000 1000
end
```

Expert Advisor Installation

The installation is on VOS. It is very simple. Refer to the *Installation Guide for Cisco Unified Expert* Advisor 7.6(1) for additional information. Follow these steps:

- Step 1 Media Check: select Yes if you want to check the media.
- Step 2 Product Deployment Selection: Click OK.
- Step 3 Proceed with Install: Yes.
- Step 4 Platform Installation Wizard: Click on Proceed.
- Step 5 Apply Patch: Click No.
- Step 6 Basic Install: Click on Continue.
- **Step 7** Timezone Configuration: Select your timezone.
- Step 8 Auto Negotiation Configuration: Select the default option Yes.
- **Step 9** MTU Configuration: Select the default option: No.
- Step 10 DHCP Configuration: Select No.
- **Step 11** Static Network Configuration: Enter the information for your network.
- Step 12 DNS Client Configuration: Click Yes.
- **Step 13** DNS Client Configuration: Enter your DNS information.
- Step 14 Administrator Login Configuration: Enter your Administrator ID and password information.
- Step 15 Certification Information: Enter your Certificate Information.
- Step 16 First Node Configuration: Click Yes if you are installing your first node. If you are installing the second Expert Advisor Server or the reporting server, click No.
- Step 17 Network Time Protocol Client Configuration: Click Yes.
- Step 18 Network Time Protocol Client Configuration: Enter the NTP Client information.
- **Step 19** Database Access Security Configuration: Enter the system security password.
- **Step 20** SMTP Host Configuration: Select **No** if you are not configuring a SMTP Host for this machine.
- **Step 21** Application User Configuration: Enter the Application (GUI) username and password.
- Step 22 Platform Configuration Confirmation: Click on Ok.
 For more information on the installation of the Expert Advisor servers, refer to the *Installation Guide* for Cisco Unified Expert Advisor 7.6(1).

CUP Installation

The CUP installation is very similar to the installation of Expert Advisor, since it is also running on Unified Communications Operating System (UCOS). Follow the steps above for base installation.

Once the server is installed, a few post install steps need to be done; log into the server via the web interface: http://<YourCUPServerAddress>/ccmadmin.

After the install, enter the post install information. See Figure B-105 to Figure B-109.

Figure B-105

12 10	Post-Installation Deployment Wizard	
	The final install steps for this Cisco Unified Presence server need to be completed. The following screens will walk you through this process.	
	The Cisco Unified Communications Manager Publisher is the node that the CUP server will communicate with to receive end user updates.	
	Cisco Unified Communications Manager Publisher configuration:	
TP	Hostname* cm-2	
0-1-0	IP Address 192.168.45.182	
6	- Back Next	228176

12024	Post-Installation	Deployment Wizard	
1.	AXL is the API that CUP uses to communicate with the CUCM Publisher. Communication via AXL requires AXL login information from the CUCM Publisher.		
	AXL Configuration Inform	ation:	
	CUCM Publisher IP Address	192.168.45.182	
	AXL User*	CUPsecureuser	
	AXL Password*	•••••	
0-1-0	Confirm Password*	•••••	
6		,	
	- Back Next		

Figure B-107

	Post-Installation Deployment Wizard The IPSec Security password is used to secure communication among CUCM and CUP nodes. This password must match the security password as configured on the CUCM Publisher node.	
	Security Password configuration:	
	Security Password* Confirm Password*	
0		
	Back	021200

Figure B-108





11	Post-Installation D	eployment Wizard
	Post-Installation Deployment has next.	been completed. Click below where you want to go
1000	Home	- Administration Home Page
	System Dashboard	- System Dashboard
	Topology	- System Topology

I

Obtain a license. Upload the license. See Figure B-110.

Fi	Figure B-110					
Sys	tem 👻	Presence 🔻	Application 👻	User Management 👻	Bulk Administration \bullet	
	Cluster	Topology				
	CUCM Publisher					
	Applics	tion Listeners				
	Licensi	ing	•	License File Upload	· D2	
	Securit	У	•	License Unit Report		
	Service	e Parameters				

Configuration

CUP

Step 1 Activate the Cisco UP SIP Proxy, Cisco UP Presence and Cisco UP Sync Agent Services. See Figure B-111.

Figure B-111

0	Check All Services	
ata	ibase and Admin Services	
	Service Name	Activation Status
\checkmark	Cisco AXL Web Service	Activated
	Cisco Bulk Provisioning Service	Activated
Perf	ormance and Monitoring Services	
	Service Name	Activation Status
•	Cisco Serviceability Reporter	Activated
CUP	Services	
	Service Name	Activation Status
☑	Cisco UP SIP Proxy	Activated
\checkmark	Cisco UP Presence Engine	Activated
$\mathbf{\nabla}$	Cisco UP Sync Agent	Activated

Step 2 Go to **Presence > Routing > Static Routes**. See Figure B-112.

cisco			Unified Pr			Administration	
System 👻	Pre	sence 👻	Application \bullet	User Man	ager	ment 👻 Bulk Administration 👻 Diagnostics 👻	Help 👻
		Settings					
		Gateway	s		P		
		Inter-Clu	stering				
		Inter-Dor	nain Federation				
Cisc		User-Age	ent Configuration			dministration	
		Routing		×		Settings	
System	ve	rsion: 7	.0.4.10000-1	0		Static Routes	
						Method/Event Routing	a
						Number Expansion	228183
							8

- Step 3 And add routes to the Expert Advisor Runtime server. See Figure B-113.

Figure B-113

Sta	tic Route (1 - 7 of 7)							Rows per Pag	e 50 👻
ind	Static Route where Destin	ation Pat	ttern 👻 begins with 👻	Find Clear Fi	iter 🗘 📼]			
	Destination Pattern *	Blocked	Description	Next Hop	Next Hop Port	Priority	Weight	Protocol Type	In Service
	<u>1005*</u>		To send the call to CVP	cvp-1.cisco-irn.com	5060	1	1	UDP	On
	<u>1006*</u>		To send the call to the VXML GW	vxml.cisco-irn.com	5060	1	1	UDP	On
	<u>12</u>		Translation Routes to Expert Advisor	ea-1.cisco-irn.com	5060	1	1	UDP	On
	<u>5</u>		To branch phones	cm-2.cisco-irn.com	5060	1	1	UDP	On
	<u>6</u>		To branch phones	cm-2.cisco-irn.com	5060	1	1	UDP	On
Г	<u>91919191</u>		Ring tone	vxml.cisco-irn.com	5060	1	1	UDP	On
П	92929292		Error Tone	vxml.cisco-irn.com	5060	1	1	UDP	On

Step 4 Create a Presence Gateway so that Unified CM can send presence information to the Cisco Unified Presence Server. Go to **Presence > Presence Gateways**. See Figure B-114.

You can configure a Cisco Unif then send SIP Subscribe mess	ettings (Cisco Unified Communications Manager) ied Communications Manager server as a presence gateway. The Cisco Unified Presence server will ages to Cisco Unified Communications Manager over a SIP trunk which will allow the Cisco Unified esence information (e.g. phone on/off hook status).
Presence Gateway Type*	CUCM
Description*	cm-2 SIP gateway
Presence Gateway*	cm-2.cisco-irn.com
- Save Delete Add New	J

- Step 5 Configure a Proxy Domain so that CUPC users can connect to the CUP server to obtain presence information. Go to System > Service Parameters.
- Step 6 Set the "Proxy Domain" field to the correct DNS domain.
- Step 7 Configure Incoming ACL: configure which hosts, domains, and CUPC clients can access CUP Server.
- Go to System > Security > Incoming ACL. See Figure B-115. Step 8

Incoming <i>i</i>	ACL Entry (1 - 8 of 8)	Rows per Page 50 💌	
Find Incomi	ng ACL Entry where Address Pattern 💌 be	gins with 💌 Find Clear Filter 🕁 📼	
	Address Pattern 🔺	Description	
	<u>10.10.</u>	all store hosts	
	<u>192.168.</u>	all hosts in 192.168.x.x	
	<u>192.168.81.101</u>	Expert Advisor - ea-1.cisco-irn.com	
	cm-2.cisco-irn.com	System Generated Allow Rule	
	cvp-1.cisco-irn.com	CVP Server	
	cvp-2.cisco-irn.com	CVP Server	
	sip-1.cisco-irn.com	System Generated Allow Rule	
	vxml.cisco-irn.com	calls to vxml gateway	
Add New	Select All Clear All Delete Selec	sted	

Step 9 Configure TFTP Server for CUPC.

Step 10 Go to **Application > Cisco Unified Personal Communicator > Settings**. See Figure B-116.

Figure B-116

— 🛃 CUPC Global S	ettings	
Proxy Listener*	Default Cisco SIP Proxy TCP Listener	
Primary TFTP Server	cm-2.cisco-irn.com	
Backup TFTP Server		~
Backup TFTP Server		2
		228

- **Step 11** Add SIP Publish capability to the SIP trunk between CUCM and CUP. This will allow CUCM to provide phone presence information to CUP server.
- **Step 12** Go to the CUP server, **Application > Presence > Settings**.
- Step 13 Check the Enable SIP Publish on CUCM.
- **Step 14** Select the SIP trunk configured on CUCM. See Figure B-117.

- 🚮 Global Settings	5	-					
28							
CVP Enable ACL Configuration							
🗹 Enable Instant Messaging (cluster-wide)							
Enable/Disable ability for users to view presence on blocked users							
🗖 Enable Email ID fo	Enable Email ID for Federation						
Max Contact List Size (per user)*	200						
(per user) Max List Box Items*							
Max List box Items	250						
Cluster ID*	StandAloneCluster						
┌─ 🔽 Enable SIP Publish on CUCM──────							
CUCM SIP Publish Trunk	SIP-1_Proxy	228188					
•		18					



Another way to do this is to go directly to the CUCM admin page, Service Parameter, Cisco CallManager, and select the SIP trunk in the field CUP Publish Trunk

Step 15 Configure Conferencing hosts as appropriate. Go to Application > Cisco Unified Personal Communicator > Conferencing Server>New servers. See Figure B-118.

Figure B-118

ind Co	onferencing Host where Name	💌 begins w	ith 💌 Find	Clear Filter	+ -
	Name 📩	Description	Hostname/IP Address	Port	Server Type
	Meeting Place Express	MPX 211	mp3.cisco-irn.com	80	MeetingPlace Express
П	VEM Webex Conference	lab webex	ciscocmo-dev.webex.com	443	WebEx

Step 16 After the server is configured, create a Conferencing profile and add users to the profile. See Figure B-119.

Figure B-119

me*		VEM users Deskto					
escription		VEM collaborative					
rimary Cor	nferencing Server*	Meeting Place Exp	Meeting Place Express				
Backup Con	nferencing Server	< None >					
3ackup Con	nferencing Server	< None >					
	is the default Conference						
00							
ang Users 🚵	s in Profile ———						
y Users	s in Profile User ID		Firstname	Lastname			
		jack3	Firstname	Lastname Large			
	User ID	jack3	Firstname				
Provisio	User ID ack3	jack3 Jack	Firstname				
Provisio	User ID ack3 Oning Guide ack2	-	Firstname	Large			
Provisio	User ID ack3 oning Guide ack2 11	Jack	Firstname	Large Large			
Provisio	User ID ack3 oning Guide ack2 11 12	Jack Jill	Firstname	Large Large Small			
1a Provisic ia i i i i i	User ID ack3 oning Guide ack2 11 12	Jack Jill Jill	Firstname	Large Large Small Small			
12 1 12 1 12 1	User ID ack3 oning Guide ack2 11 12 12 13	Jack Jill Jill jill3	Firstname	Large Large Small Small Small			

- Save Delete Add New

228190

CUCM

Since in this solution calls are originated from an IP Phone, create a CTI RP (you could also send the call to CVP with a Route Pattern, but here, the scenario covers where the call is sent to CVP using a CTI RP) and add a DN for this CTI RP(in our example, 1000 and 1301 DNs are used). If your calls are coming directly to CVP via a PSTN GW, you do not need these steps. See Figure B-120 and Figure B-121.

Figure B-120

Device Information		
Registration	Registered with Cisco Unified Communications Manager	r cm-2.cisco-irn.com
IP Address	192.168.45.152	
Device Name*	CTI-RP-1000	
Description	CTI-RP Cti Route Point 1000	
Device Pool*	Default	<u>View Details</u>
Common Device Configuration	< None >	<u>View Details</u>
Calling Search Space	< None >	
Location *	Hub_None	
User Locale	< None >	
Media Resource Group List	< None >	
Network Hold MOH Audio Source	< None >	
User Hold MOH Audio Source	< None >	
Use Trusted Relay Point*	Default	
Calling Party Transformation CSS	< None >	
Geo Location	< None >	
☑ Use Device Pool Calling Party	Transformation CSS	
Association Information		
<u>נואי Line [1] - 1000 (no partition)</u> פאז		
Line [2] - Add a new DN		
	set Apply Config Add New	
Save Delete Copy Re:	set Apply Config Add New	8

Figure B-121

СТІ	(Route Poi	nt <i>(1 - 2 of 2)</i>					Ro	ows per Page 50	•
	CTI Route Point	where Device I	Name	💌 begins		Select item o	Find	Clear Filter 🕂 🕂	-
	Device Name [▲]	Description	Device Pool	Calling Search Space	Partition	Extension	Status	IP Address	Сору
	<u>CTI-RP-</u> 1000	CTI-RP Cti Route Point 1000	<u>Default</u>			<u>1000</u>	Registered with cm-2.cisco- irn.com	192.168.45.152	ß
	<u>CTI-RP-</u> <u>1301</u>	Route for Expert Advisor	<u>Default</u>			<u>1301</u>	Registered with cm-2.cisco- irn.com	192.168.45.152	ß
Ad	ld New	Select All Clear	r All	Delete Selecte	d R	eset Selecte	d Apply C	onfig to Selected	

Step 1 Associate the CTI-RP to the jtapi user that the Agent PG is using to connect to CUCM. See Figure B-122.

Figure B-122

Application User Inform	nation	
User ID*	jtapi	Edit Credential
Password	•••••	
Confirm Password	•••••	
Digest Credentials		
Confirm Digest Credentials	[
Presence Group*	Standard Presence group	•
Accept Presence Subscr	iption	
Accept Out-of-dialog RE	FER	
🗆 Accept Unsolicited Notifi	cation	
🗆 Accept Replaces Header		
— Device Information —		
Available Devices		Find more Phones
		Find more Route Points
		Find more Pilot Points
	**	
Controlled Devices		
SEP00:	17956DD439	
	17E0355BCD 18199456D4	228 103 228

Step 2 Add the CUP server in the Application server Configuration as shown in Figure B-123 and Figure B-124.

System 👻	Call Routing 👻 Media Reso		
Server			
Cisco L	Cisco Unified CM Cisco Unified CM Group Phone NTP Reference		
Cisco L			
Phone			
Date/Ti	me Group		
Presen	ce Group		
Region			
Device	Pool		
Device	Mobility	+	
DHCP		+	
LDAP		+	
Locatio	n		
Physica	al Location		
SRST			
MLPP		+	
Enterpr	rise Parameters		
Enterpr	rise Phone Configu	ration	
Service	e Parameters		
Securit	y Profile	+	
Applica	ation Server		

Figure B-124

Application Server Type	Application Server Information Application Server Type Cisco Unified Presence Server	
Name*	SIP-1.cisco-irn.com	
URL		
End User URL		
– Save Delete C	opy Add New	228405

Step 3 If the expert advisor user will use CUPC as a softclient, create a phone device on CUCM for the CUPC softclients. Select the **Cisco Unified Personal Communicator** Phone Type. See Figure B-125.

Figure B-125

-Select the type of phone you would like to create			g
Phone Type*	Cisco Unified Personal Communicator	•	281

Step 4 The device name must start with UPC and be followed, all capital letters, by the username of the expert advisor that will use the client. See Figure B-126.
Figure B-126

– Phone Type Product Type: Cisco Unified Personal Communicator Device Protocol: SIP							
Device Information							
Registration	Unknown						
IP Address	Unknown						
🗹 Is Active							
Device Name*	UPCJOHN1						
Description	John 1 Mini]					
Device Pool*	Default	View Details					
Common Device Configuration	< None >	View Details					
Phone Button Template*	Standard Unified Communicator SIP	1 5					
Common Phone Profile*	Standard Common Phone Profile	228407					

Step 5 Add a DN for each of the CUPC device.

Step 6 Add expert advisor users as shown in Figure B-127.

System 👻 Call Routin	ng 🔹 Media Resources 👻 Voice Mail 👻 Device 👻 Application	✓ User Management ✓ Bulk Administration
End User Configur	ation	Credential Policy Default
		Credential Policy
🔜 Save 🗙 Dele	te 🛟 Add New	Application User
		End User
- Status Status: Ready		Role
(1) Status: Ready		User Group
- User Information -		User/Phone Add
User ID*	john1	Application User CAPF Profile
Password	•••••	End User CAPF Profile
Confirm Password	•••••	SIP Realm
PIN	•••••	Edit Credential
Confirm PIN	•••••	
Last name*	mini	
Middle name	1	
First name	john	
Telephone Number		
Mail ID		
Manager User ID		
Department	1passw0rd!	
User Locale	< None >	
Associated PC		
Digest Credentials		
Confirm Digest Cred	Jentials	
Device Association		
Controlled Devices	SEP00258418216A UPCJOHN1	Device Association

Step 7 In the *Directory Number Association* field, select the primary Extension for the user. See Figure B-128.

Directory Number	Associations	
Primary Extension	6002	▼ X
		56

Step 8 If allowing CTI deskphone mode for the users, make the user part of the Standard CTI Enabled user group. See Figure B-129.

Figure B-129

Groups	Standard CCM End Users Standard CTI Enabled	Add to User Group Remove from User Group View Details	
Roles	Standard CCM End Users Standard CCMUSER Administration Standard CTI Enabled	View Details	POD DOH

Step 9 For each Expert Advisor user, go to their phone configuration and then line configuration, go to the section Users Associated with Line, and associate the end user (expert advisor user) that will use this phone. See Figure B-130.

Figure B-130

- User	s Associated with Line			
	Full Name	User ID	1	Permission
	mini,john	john1	(j)	
	Associate End Users	Select All Clear All	Delete Selected	

This will change the CUPC client availability to "On the Phone" when the expert advisor user goes off hook on one of his associated phone devices.

Step 10 Add an CUCM user for each Expert Advisor Runtime server. See Figure B-131.

User Information ——			
User ID *	ExpertAdvisorSystem		
Password	••••••	Edit Credential	
Confirm Password	••••••		
PIN	•••••	Edit Credential	
Confirm PIN	•••••		
Last name*	System		
Middle name	Advisor		ŝ
First name	Expert		220,200

- **Step 11** Enable presence and CUPC capabilities for the Expert Advisor users and also for the user that the Expert Advisor runtime server will use to connect to CUP (in our case, ExpertAdvisor user).
- Step 12 In System > Licensing > Capabilities Assignment, enable CUP and CUPC for each Expert Advisor user. See Figure B-132.

Figure B-131



Step 13 Configure a SIP Trunk between CUCM and CUP server (enter the IP address or DNS name of the CUP server in the *Destination Address* field). See Figure B-133.

Figure B-133

		Name *	Description	Calling Search Space	Device Pool	Route Pattern	Partition	Route Group	Priority	Trunk Type	SIP Trunk Security Profile	
	8	SIP-1 Proxy	Trunk to CUP Server		Default	1005!				SIP Trunk	Non Secure SIP Trunk Profile	
	ë	nice-1	SIP Trunk to NICE Server		Default			Route-to-NICE-1	1	SIP Trunk	Non Secure SIP Trunk Profile	ų,
Ad	d New	Select All	Clear All Delete Selected	Reset Selected	Apply	Config to Select	ed					

CUP Server Configuration

LDAP Configuration

LDAP is an optional component of the Unified Expert Advisor system and is not required for routing requests. It allows Expert Advisor users to search through the AD with their CUPC client.

Step 1 Go to **Application > Cisco Unified Personal Communicator > LDAP Server**. See Figure B-134.

Figure B-134

LDAP Host Config	uration	
Name*	Cisco-IRN LDAP]
Description	Activedirectory server]
Hostname/IP Address*	activedirectory.cisco-irn.com]
Port*	389]
Protocol Type*	ТСР	

Step 2 Go to: **Application > Cisco Unified Personal Communicator > LDAP Profile**.

Step 3 Enter the information of your LDAP directory and click on **Add Users to profile**. The users that are shown are the users entered in CUCM that were downloaded into CUP server, with the right capability settings configured in CUCM administration page. See Figure B-135.

Carl LDAP Profile Configura	tion	
Name*	Cisco-irn LDAP_Profile	
Description	ActiveDirectory Profile	
Bind Distinguished Name (DN)	administrator@cisco-irn.com	🗆 Anonymous Bind
Password	••••••	
Confirm Password	••••••	
Search Context	cn=users, dc=cisco-irn, dc=com	🗹 Recursive Search
Primary LDAP Server*	Cisco-IRN LDAP	
Backup LDAP Server	< None >	
Backup LDAP Server	< None >	20
☑ Make this the default LDAP I	Profile for the system.	202002

- Step 4 If you are deploying OCS/LCS and want to enable deskphone control with CUPC, go to Application > Deskphone Control > Settings.
- Step 5 Select On for the Application Status and enter the jtapi CtiGw information and CTIM information. See Figure B-136.

Figure B-136

— 🐻 Deskphone Control Se	ettings	
	tion provides connectivity between Cisco Unified Communications Manager (CUCM) and soft al/Phone control-type services. You can configure the Deskphone control application to connect up ervers.	
Application Status*	On 💌	
Application Username	CtiGw	
Application Password	••••••	
Confirm Password	••••••	
Heartbeat Interval (seconds) st	8	
Session Timer (seconds)*	1810	
Microsoft Server Type*	MOC server OCS	8
CUCM Address (1 of 8)	192.168.45.182	228208

Step 6 Select Application > Deskphone Control > User Assignment and check the Enable Deskphone Control checkbox. See Figure B-137.

Figure B-137	
Deskphone Control Usage User ID: john1	_
■ Deskphone Control Assignment	_
Save	228209



You do not have to go to **Application > Deskphone Control > Settings** in order to enable **Deskphone Control**, if you are not using OCS/LCS.

Expert Advisor Configuration

Step 1 Go to http://<EA-ip-address>. Expert Advisor system can be deployed with expert advisor users using either Cisco Unified Presence or Microsoft Office Communicator, not both types in the same Expert Advisor deployment. See Figure B-138.

Figure B-138

Please select the type of IM clients your experts will be using to connect to Expert Advisor.

IMPORTANT: This setting is permanent and cannot be changed without re-installing Expert Advisor and re-entering your configuration.

⑦ Cisco Unified Presence
 ⑦ Microsoft Office Communicator

Step 2 Go through the Guided Configuration Wizard. See Figure B-139.



٧

start Guided Configuration Wizard		
Vould you like to configure the System using the Guided Configuration Wizard?		
🗆 Do not ask again	OK Cancel	228211

Step 3 Upload the license. If not, the system comes with a default license of 5 users. See Figure B-140.

Figure B-140

configure License	
Please browse to and upload your license file, which sets	; the number of Expert Advisors you are authorized to enable.
Current License	-
Total Licenses available for Enabled Expert Advisors:	5
Select a local license file to upload :	C:\Documents and Settings\Administrator\Deskt(Browse

Step 4 Configure the Primary Runtime Server. In the *CUP user* field, enter the CUP user that Expert Advisor runtime server will use to connect to the CUP server. See Figure B-141.

onfigure Runtime Server—	Primary	
Туре:		_
Name:	ea-1.cisco-irn.com	
Host Address:	192.168.81.101	
Description:		
isco Unified Presence Serve	er Host Address	Port number
¹ CUP server:	sip-1.cisco-irn.com	5060
¹ CUP server proxy domain:	cisco-irn.com	
¹ CUP user:	ExpertAdvisorSystem	

Step 5 Configure the secondary Runtime Server. Skip if you do not deploy a HA Runtime server. See Figure B-142.

Configure High Availability Serv	er	
⊤Configure Runtime Server—		
Туре:	High Availability	
*Name:		
*Host Address:		
Description:		
Cisco Unified Presence Serve	r Host Address	Deuteursbeit
	Host Address	Port number
*1 CUP server:		5060
*1 CUP server proxy domain:	cisco-irn.com	
* ¹ CUP user:		
*Required fields		
¹ Change in value requires device	restart	
	Back	Skip Cancel Help

Figure B-142

228214

Step 6 Configure an Expert Advisor reporting server. Skip if you do not deploy a Expert Advisor reporting server. See Figure B-143.

Configure Reporting Server				
- General				
*Name:	EA-2.cisco-irn.co	m		
*Host Address:	192.168.81.121			
Description:	EA Reporting Se	rver for VEM		
Reporting Properties				
Define the maximum disk space to use reporting server outages or loss of conr	to persist reportin nectivity.	g data on the runtime s	ervers during	
*Max Storage Size (MB):	2048	Restore Default]	
	[Back Next Skip	Cancel Help	

Step 7 Configure a AD server. See Figure B-144.

Configure Active Directory		
Active Directory Server		
*Host Address for Primary Active Directory Server:	* Port:	Use SSL:
activedirectory.cisco-irn.com	389	
Host Address for Redundant Active Directory Server:	Port:	Use SSL:
[389	
* Manager Distinguished Name:	CN=Administrator, CN=us	sers, DC=cisco
* Manager Password:	••••	
* Confirm Manager Password:	••••	
*User Search Base:	CN=users, DC=cisco-irn,	DC=COM
* Attribute for User ID:	sAMAccountName 💌	
*Required fields		
	Back Next Skip	Cancel Help

Step 8 Configure the ICM translation route. These DNIS numbers need to be routable by your system (for example, enter a route in CUP SIP proxy). See Figure B-145.

Configure Unified ICM	Franslation Route Ta	rgets			
Specify Unified ICM			-		1
* Starting DNIS:	1200		_		
*Ending DNIS:	1202				
*Required fields					
		Back	xt Skip	Cancel Help	

Step 9 Configure the Cisco Unified Presence servers. See Figure B-146.

nchronize Presence Users	
Presence Servers	
* Primary Presence Server:	sip-1.cisco-irn.com
Secondary Presence Server:	sip-1.cisco-irn.com
*Presence Server Username:	bmcgloth
* Presence Server Password:	•••••
Test Connection	
Synchronization Schedule	
Frequency	Start Date and Time
C Not Scheduled	Time 12 V AM V
Every 5 minute(s)	Day Sunday 💌
*Required fields	
Click Next to Synchronize Presence Users.	
	Back Next Skip Cancel Help

Step 10 Verify the summary. See Figure B-147.

Guided Initial Configuration Wizard Summary	
You have successfully completed the following steps in the Initial Configuration Wizard:	
 Welcome to Guided Initial Configuration Wizard Configure Primary Runtime Server Configure Primary Runtime Server Configure Unified ICM Translation Route Targets Configure Unified ICM Translation Route Targets Synchronize Presence Users Synchronize Presence Users 	
If you have skipped some steps, return to this wizard at any time by opening it from the System Management drawer.	
Please note that you must supplement this initial configuration by completing some additional procedures. Click Help on this screen for details on full configuration.	
Click Done to close the wizard and return to the Cisco Unified Expert Advisor Welcome screen.	228219

- Step 11 In System Management tab, click on Synchronize Presence Users.
- **Step 12** Click on the **Synchronization** tab, click on **Synchronize Now**. Among other tasks, this will download the list of users from the CUP server. See Figure B-148.

nection Synchronization.					
atus					
Synchronization Task Status					
Synchronization Task Status Refresh	h: No Refresh	GO			
Current Status: Idle					
Duration:					
Last Completion Time:	12/07/2009	9:14:02 PM PST			
Last Result:	Success				
AXL Web Service Status					
Primary Presence Server	Enabled	Enable AXL Web Service			
Secondary Presence Server	Enabled	Enable AXL Web Service			
As of:	12/07/2009 9:15:44 PM PST	15:44 PM Refresh AXL Web Service			
Note: Status may be delayed by 10 ynchronization Schedule Frequency	Start Date and T				
O Not Scheduled	Time 12 🔻	AM V			
Scheduled Imme 122 Imme 122 Every 5 minute(s) Day Sunday					
anual Synchronization					
Synchronize Now					
Click to start the synchronization imm	nediately.				
* Synchronize Now saves the connect	ion and schedule settings				
equired fields					

Step 13 Add Expert Advisor users. In Daily Management tab, click on Expert Advisors.

Step 14 Click on Add New. Select the users from CUP. See Figure B-149.

Ехр	Expert Advisors Items 1-5 of 5 Rows per page: 10 🔽 Go							
Filter: Presence ID 💌 Match if: Contains 💌 🔽 🕼 Clear Filter								
	Presence ID	First Name	Last Name	Locale	Unified ICM ID	Enabled	* Status	
	jack2	Jack	Large	en_US	28	True	Valid 🗖	
	<u>iill1</u>	Jill	Small	en_US	29	True	Valid	
	<u>iill2</u>	Jill	Small	en_US	26	True	Valid	
	<u>john1</u>	john	mini	en_US	25	True	Valid	
	<u>iohn2</u>	John	Mini	en_US	24	True	Valid	
							*	
Lice	Licenses Available: 0 Licenses Used: 5							
Ac	Add New Delete Enable Disable Page 1 of 1 14 4 🕨 🕅							
* Inv	* Invalid means that the Expert Advisor no longer exists in the Presence Server.							

Step 15 Configure settings for the expert advisor users and click on Add as Expert Advisors. See Figure B-150.

Configure Expert Advisors		
🔒 Add as Expert Advisors 🛛 《 Ba	ck	🦻 Help
Expert Advisor Properties		
Copy Existing Expert Advisor P	roperties	
General		
Description:		
*Locale:	nglish (United States) (en_L	JS)
*Message Set:	ystemDefined 💌	
🔽 Enabled	Can Reject Contacts	
Selected Skills		
Skills		Items 0-0 of 0 Rows per page: 50 💌 Go
Skill Name		Expert Advisor Competency Level
No data to display		
Add Edit Edit All Delete		Page 0 of 0 14 4 D
Selected Attributes		
Attributes		Items 0-0 of 0 Rows per page: 50 💌 Go
Attribute Na	ame	Attribute Value
No data to display		
Add Edit Edit All Delete		Page 0 of 0 14 4 10 10
Add as Expert Advisors Bac	k	

Figure B-150

Step 16 In Daily Management, select Skills. Click on Add New.

Step 17 Enter a name for the Skill and click on Add in the Expert Advisors section.

Step 18 Select the users that will belong to this skill and click on **Add and Close**.

Step 19 Click on Save. See Figure B-151.

🛛 Save 🧹 Cancel	💽 Refresh			🤋 н
neral				
eneral Name:	Customer Service			
Description:	Customer Service Expert			
xpert Advisors				
elected Expert Advisors	;		Items 1-4 of 4 Rows	per page: 50 💌 Go
Presence ID	First Name	Last Name	Competency	Status
john1	john	mini	50	Valid 🛁
jill2	Jill	Small	50	Valid
jack2	Jack	Large	50	Valid
jill1	Jill	Small	50	Valid 🚽
Add Edit Edit All	Delete		Page 1	of 1 🖪 🔍 🕨 🔊
ssignment Queues st of Assignment Queues as	ensisted with this cluit			
ssignment Queue Name				
ssignment Quede Name				
	-			

- Step 20 Create an Assignment Queue. In Daily Management, select Assignment Queues. Click on Add New.
- Step 21 Enter a Name for the assignment queue. Enter an incoming label. This label will need to be routable by the CUP SIP Proxy. Select the other appropriate settings, for simplicity use the Queue CTI-RP DN number. Click on Save. See Figure B-152.

Configure Assignment Queue		
🕞 Save 《 Cancel 🔇 Refr	esh	🧿 ны
General Membership		
General		
*Name:	Expert Service	
Description:	Expert Level General Customer Service	- High Touch
Unified ICM		
* ¹ Incoming Label:	1301 Test Uniqu	ieness
* Skill Group Peripheral Number:	47	
*Skill Group Peripheral Name:	Expert_Service	
-Selection Strategy		
Queue ordering	 Longest Available Least Skilled Most Skilled 	
C Queue to Expert C Spatial		
Selected Attributes		Items 0-0 of 0 Rows per page: 50 💌 Go
Name Name	Description	Default Value
No data to display		
Add Delete		Page 0 of 0 🛯 🚽 🕨 🕅
Advanced		
Broadcast Number:	1 Broadcast Number greate	r than 50 can adversely affect performance.
* Offer Task Timeout:	30 (seconds)	
Required fields Changes to the Incoming Label require	e corresponding changes to Unified ICM.	
Save Cancel Refresh	e corresponding changes to onlined ICM.	
Concor Koncon		

- **Step 22** Click on the **Membership** tab.
- Step 23 Add the expert advisor users that should belong to this assignment queue. Click on Add and Close.See Figure B-153.

Figure B-153

iele	cted Expert Advisors				Ite	ms 1-3 of 3 Rows	per page: 50	Go
	Presence ID	First	Name Last	Locale	Pres Active	ence State(s) Inactive	Status	
	john1	john	mini	en_US	Yes	No	Valid	
	jack2	Jack	Large	en_US	Yes	No	Valid	
	jill1	Jill	Small	en_US	Yes	No	Valid	-

- Step 24 Start the Expert Advisor runtime service.
- Step 25 Go to Serviceability > Control Center. Select the runtime server and click on Start. The status should be in "Running (in service)". See Figure B-154.

Figure B-154

Dev	ices		Iter	ns 1-1 of 1 Rows per page: 10 💌	Go
Filter	r: Name 💌 Match if: 🛛 Con	ains 💌	Go Clear Filte	r	
	Name	Host Address	Device Type	Status	
0	<u>ea-1.cisco-irn.com</u>	192.168.81.101	Runtime	Running (in service)	
Sta	art Shutdown Restart			Page 1 of 1 🔣 🖉 🕨	228226

ICM Configuration

To configure ICM, complete the following steps:

- **Step 1** Select the PG for expert advisor and click on **Retrieve**.
- **Step 2** Click on Add Network Trunk group. Enter a name for the Network trunk group.
- Step 3 Click on Add Trunk. Provide a Peripheral name, and select Use Trunk Data for the Trunk count. See Figure B-155.

Network Trunk Group Explorer	
Network Trunk Group Explorer PG EA_PG_2 Optional Filter Condition Value Value None Value Save Retrieve Cancel filter changes Hide legend Image: Condition (2) Trunk group Image: Click on an item to edit or view its contents. Use the Add buttons to create new items. EA_TRUNK Image: EA_PG_2_1.Runtime_PG2_EA_TrunkGr Image:	Network trunk group Name: * EA_TRUNK Description Trunk for EA Trunk group * Peripheral: * EA_PG_21 Peripheral number: * 0 Peripheral name: * Runtime_PG2_EA_TrunkGroup Name: * EA_PG_2.1.Runtime_PG2_EA_TrunkGroup Name: * EA_PG_2.1.Runtime_PG2_EA_TrunkGr Extension: Image: Im
	Save Diose Help

- **Step 4** On the Unified ICM Configuration Manager, select **Explorer Tools > Skill Group Explorer**.
- **Step 5** Select the Expert Advisor PG, select **Retrieve**.
- Step 6 You should see the Skill Group/AssignmentQueue that was configured on Expert Advisor.
- **Step 7** Click on **Add Route** and add the route information.
- Step 8 Click on Save. This adds a new button to Add Peripheral target. Click on that button.
- **Step 9** Enter the DNIS that should be the same as the Incoming Label configured on Expert Advisor Operations Console.
- **Step 10** Select the Expert Advisor Network trunk group. Click on Save.
- **Step 11** Click on **Add Label**. Select the Expert Advisor PIM. Enter the label that should be the same as the DNIS entered above.
- Step 12 Click on Save. See Figure B-156.

Select filter data Peripheral EA_PG_2_1	Skill Group Members Subgroup Mask Sub skill groups Skill Group Advanced
Media routing domain	Skill Group Advanced
	Media routing domain: * Cisco_Voice
Optional Filter Condition Value	Peripheral number:* 47 Peripheral name:* Expert_Service.47
None	Name: * EA_PG_2_1.Expert_Service.47
Save <u>B</u> etrieve Cancel filter changes	Available holdoff delay (sec):
▼ Hide legend	Extension: ICM picks the agent
(1) Skill group	No longer used by peripheral:
← < (1) Skill gloup	
(3) Peripheral target	Route
(4) Label	Skill group priority:
lick on an item to edit or view its contents. se the Add buttons to create new items.	Name: * SG1_R1
□	Description
CA_rd_2_1.Exper(_service.4/	Service name: EA_PG_2_1.Expert_Service.47
DNIS:1301; NTG: EA_TRUNK	
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Peripheral Target
•	DNIS: * 1301
	Description: incoming label configured in Expert Advisor
	Network trunk group: * EA_TRUNK
	Label
	Routing client: * EA_PIM
	Label: * 1301
	Label type: * Normal 💌
	Customer:
(4) Add Label Delete Multiple	Description:

- Step 13 Configure the translation routes. On Configuration Manager, select Explorer Tools > Translation Route Explorer.
- **Step 14** Select the PG for the Expert Advisor runtime server. Click on **Retrieve**.
- **Step 15** Click on Add Translation route. Enter a name for the translation route. Click on Add Route.
- **Step 16** Enter a name for the Route and click on **Save**.
- Step 17 Click on Add Peripheral target. Enter the DNIS to send the call to Expert Advisor runtime. Select the Network trunk group and click on Save.
- Step 18 Click on Add Label. Select the CVP Routing client, enter the label (same as the DNIS configured for the Peripheral target). Click on Save. See Figure B-157.
- **Step 19** Repeat those steps for other Translation Routes assigned to Expert Advisor.

Select filter data PG EA_P6_2 Optional Filter Condition Value Image:	🙊 Translation Route Explorer	
PG EA_PG_2 Dptional Filter Condition Value None None Image: * ExpertAdvisor_TR Save Betrieve Cancel filter changes Ministration noute Image: * ExpertAdvisor_TR_1 Boute Name: * ExpertAdvisor_TR_1 Description ExpertAdvisor_TR_1 Disk to or an env items. Service name: ExpertAdvisor_TR_1 Service name: ExpertAdvisor_TR_1 Description Service name: EA_PG_2_1.Expert_Service.47 Disk to or an env items. Description ExpertAdvisor_TR_1 Description Service name: EA_PG_2_1.Expert_Service.47 Dist 1200: NTG: EA_TRUNK Service name: ExpertAdvisor_TR_1 Description: Dist 1200: NTG: EA_TRUNK Service name: ExpertAdvisor_TR_2 Image: * 1200 Description: * 1200 Description: * 1200 Description: * 1200 Service name: * 1200 Description: * 1200 Label * 1200 Label <	Select filter data	Translation Boute
Optional Filter Condition Value None Generation: Save Betrieve Cancel filter changes Route I) Transition: noute () Peripheral larget () I cancel filter changes Route Route () Peripheral larget () I cancel filter changes Route () Peripheral larget () I cancel filter changes Route () Peripheral larget () I cancel filter changes () Peripheral larget () I cancel filter changes () Peripheral larget () I cancel filter changes () Peripheral larget () Peripheral larget () Peripheral larget () I cancel filter changes () Peripheral larget ()	PG EA_PG_2	
None Image: Type: Type: * DNIS Save Betrieve Cencel Filter changes Image: Type: * DNIS Image: Type: Type: * DNIS Image: Type: T		
Image: Save		
Image:		
Image: Service name: * ExpertAdvisor_TR_1 Click on an item to edit or view its contents. Use the Add buttons to create new items: Image: Service name: EA_PG_2_1Expert_Service.47 Image: Service name: EA_PG_2_1.Expert_Service.47 Image: Service name: ExpertAdvisor_TR_3 Image: Service name: ExpertAdvisor_TR_3 <t< td=""><td></td><td>Route</td></t<>		Route
Image: Contract of the second of the seco		Name: * ExpertAdvisor_TR_1
Click on an item to edit or view its contents. Use the Add buttons to create new items. Image: Click on an item to edit or view its contents. Image: Clic		Description
Use the Add buttons to create new items. Image: ExpertAdvisor_TR_1 Image: ExpertAdvisor_TR_1 Image: ExpertAdvisor_TR_2 Image: ExpertAdvisor_TR_3 Image: ExpertAdvisor_TR_4 Image: ExpertAdvisor_TR_3 Image: ExpertAdvisor_TR_4 Image: ExpertAdvisor_TR_4 Image: ExpertAdvisor_TR_4 Image: ExpertAdvisor_TR_4 Image: ExpertAdvisor	Colt on prior and got	Service name: EA_PG_2_1.Expert_Service.47
Image: SuperAdvisor_TR_1 Image: Description: Image: Distribution of the superAdvisor_TR_2 Image: Description: Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 Image: Distribution of the superAdvisor_TR_3 <		
ONIS:1200:NTG: EA_TRUNK ONIS:1201:NTG: EA_TRUNK ONIS:1201:NTG: EA_TRUNK ONIS:1202:NTG: EA_TRUNK		1200
Image: SpectAdvisor_TR_2 Image: SpectAdvisor_TR_3 Image: Sp		Description:
ONIS:1201; NTG: EA_TRUNK I201; CUCM_RC ExpetAdvisor_TR_3 O DNIS:1202; NTG: EA_TRUNK I202; CUCM_RC UNASSIGNED UNASSIGNED Odd Label Delete - Multiple		Network trunk group: * EA_TRUNK
Image: Sperificity of the second s	🖻 🖳 🎯 DNIS:1201; NTG: EA_TRUNK	
Bouting client: Bouting client		
Label type: Normal Label type: Normal Label type: Normal Label type: Save Gose Help	DNIS:1202; NTG: EA_TRUNK	
Customer: icm Description:		
Description:		
Image:		
CM Instance; icm	EV (4) Add Label Delete Multiple	
CM Instance: icm		Save Close Help
	ICM Instance: icm	

- **Step 20** Edit the Dialed Number for the Expert Advisor. This is the number that customer or agent will dial to reach an expert advisor user.
- Step 21 In Config Manager, go to List Tools > Dialer Number / Script Selector List and edit the Dialed Number for the CM Routing Client that was created previously.
- **Step 22** Go to the **Dialed Number Label** tab and click on **Add**.
- Step 23 Select all the translation routes configured for Expert Advisor and press OK. See Figure B-158.

Figure	R-158
riyure	D-130

Dialed Number / Script S	elector List					
Select filter data			Attrit	outes	Dialed Number Mapping	Dialed Number Label
Routing client	<alb< th=""><th>•</th><th></th><th></th><th></th><th></th></alb<>	•				
Customer	<alb< td=""><td>•</td><td></td><td>-Label Nam</td><td></td><td></td></alb<>	•		-Label Nam		
Optional Filter	Condition	Value		1200 1201 1202		
Save	<u>R</u> etrieve	Cancel filter changes				
-Dialed Number / Script Sele	ctor					
Name				L		
CUCM_RC.1301				L		
				L		
				L		
				L		
				L		
				Ad	d Remove	

- Step 24 Click on Save.
- Step 25 In the Config Manager on the Admin Workstation open the Service Explorer option under Tools >Explorer Tools. Check that the Expert Advisor server has connected to the queue service. See Figure B-159.

Select filter data	Service Advanced Convice membran
Peripheral EA_PG_2_1 Media routing domain All Optional Filter Condition Value None	Service Advanced Service members Media routing domain.* Cisco_Voice Image: Cisco_Voice Peripheral number: * 47 Peripheral name.* Expert_Service.47 Name: * EA_PG_2_1.Expert_Service.47
Save <u>Retrieve</u> Cancel filter changes	Configuration parameters: Description: Expert Level General Customer Service - High Touch
_ Hide legend	Service level vel * 0 No longer used by
Image: Service (2) Route Image: Service (3) Peripheral target Image: Service (4) Label Click on an item to edit or view its contents. Use the Add buttons to create new items.	threshold: peripheral:
EA_PG_2_1.Expert_Service.47	

Expert Advisor Script

Create the ICM Script for the Expert Advisor Queue on the AW by using the Script Editor software. shows a sample routing script. The logic that is followed for creating this script is as follows:

- **Step 1** Start the script with the start node.
- **Step 2** Set the value of media server HTTP URL in *Call.user.microapp.media_server* variable. This is the web server URL from where **.wav** files will be played (e.g., http://media.cisco-irn.com).
- **Step 3** Set the value of language in *Call.user.microapp.locale* as **en-us**.
- **Step 4** Set the value of input type (which is digits in this sample script) in *Call.user.microapp.input_type* variable to "**D**".
- **Step 5** Set the value of the *Call.user.microapp.app_media_lib* to **Custom**.
- **Step 6** After setting the variables send the call to IVR using **Send to VRU** node.
- Step 7 Perform a DB lookup based on the calling number and/or caller entered digits for an account number.
- **Step 8** Use the Set Variable to save the values of the data retrieved from the Database as PeripheralVariables under the Call object type.
- **Step 9** Send the caller to Queue using the Queue to Skill Group, add the EA_PG_2_1 Skill group.
- **Step 10** While the caller is in queue, play agent busy and music on hold **.wav** files in loop. See Figure B-160.

- 1

¢

8) (1)

Q

228232

Wait



🛃 Run Ext. Script

enr connect failu

x

Figure B-160

Trouble Shooting Tip

If using CUPC in the deskphone mode, you might see the following error message when the expert advisor is replying with a "Yes" that you will not see in the softphone mode. See Figure B-161.

📴 Run Ext. Script

requery_ma

×

÷, 🔬 Release Call

Figure B-161

۰.

ExpertAdvisor@ipcc.vse.cisco.com (10:59 AM): Are you available to handle this contact? expert 1 (10:59 AM): y ExpertAdvisor@ipcc.vse.cisco.com (10:59 AM): Sorry, the system could not find your phone number. Please specify a phone number where you would like to receive the contact.

Run Ext. Script

*

As a remedy, configure the Phone Numbers in the Expert Advisor page. See Figure B-162.

Phone Number	Description	
5402001 Provided Phone Number	Expert 1 Primary Phone Number Phone Number Provided by the Presence Client	
Edit Delete Phone Number Description 5402001 Expert 1 Primary Phone	Number Update Add	000000000000000000000000000000000000000

Database Lookup and Passing Data to the Expert

- **Step 1** Prepare your Database/CRM. Make sure you configure a primary key in your table.
- **Step 2** On the ICM Router servers execute the ICM setup utility (Run C:\icm\bin\ICMSetup.exe) and turn on Database Routing. See Figure B-163.

Router Properties	×	1
	Node Manager properties Production mode Auto start at system startup Duplexed Router Database routing Application gateway Remote Network Bouting NAM ID: No system reboot on error Side Side Side Side	
	Help < <u>B</u> ack <u>N</u> ext > Cancel	00004

- **Step 3** On the ICM Router server, open the regedit utility and edit the registry key for the Database configuration as follows:
 - a. Locate HKEY_LOCAL_MARCHINE\SOFTWARE\Cisco Systems, Inc.\ICM\<instance>\RouterA\Router\CurrentVersion\Configuration\Database.
 - **b.** For the SQLLogin key, enter the information of your database:

\\<ipaddress-or-name>\<Database_name>=(<username>, <password>)
Figure B-164.

Figure B-164

e <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>H</u> elp				
	Name (Default) AbandonTimeout SQLLogin Threads Timeout	Type REG_SZ REG_DWORD REG_SZ REG_DWORD REG_DWORD	Data (value not set) 0x00001388 (5000) \\192.168.45.141\MyTest=(vem,cisco) 0x00000005 (5) 0x0000015e (350)	
	•			

Note

You need to do that only on one side. This setting will be automatically replicated to the other side.

- **Step 4** In ICM Configuration, open the DB Lookup Explorer.
- **Step 5** Enter a name for the Script Table. For side A and B, enter the DB server information with DB name and table as: \\<*IPorHostname*>\<DB>.<*Table*>. See Figure B-165.

Select filter data Database lookup: So Name:	cript Table * CustomerLU
Optional Filter Condition Value Access type: None Image: Save Image: Save Side A: Save Retrieve Cancel filter changes Side B: Description: Image: Save Description:	SQL \\192.168.45.141\MyTest.Balances \\192.168.45.141\MyTest.Balances
✓ Hide legend Image: Control of the second seco	
Column name: * Click on an item to edit or view its contents. Use the Add buttons to create new items. Customeri.U Customeri.U	AccountNumber
AccountNumber Balance Name	
(2) Add Column Delete Multiple	Save Dose Help

Step 6 In the ICM script, perform add a DB Lookup step to select the row you are looking for. For example, if the account number should match "1111", then enter the following information in the Database Lookup step. See Figure B-166.

🐝 DB Lookup Properties	×
Database Lookup Comment Connection Labels	
Iable:	
CustomerLU	
Lookup value:	
"1111"	
Formula <u>E</u> ditor	
	,
OK Cancel Help	

Step 7 After a match is found other column data can be retrieved for this record. In the following example, we set the *PeripheralVariable1* to the AccountNumber column of the DB record, using the set step. Later on, with Expert Advisor, we will map this Peripheral Variable1 to an Expert Advisor variable, also called Expert Advisor attribute. See Figure B-167.

Figure B-167

Set Properties	×
Set Variable Comment Connection Labels	
Object type: Object:	⊻ariable: ▼ PeripheralVariable1
Array index:	
	Formula <u>E</u> ditor
Vaļue:	
Database.CustomerLU.AccountNumber	
	<u>F</u> ormula Editor

Step 8 On Expert Advisor OAMP, if you want to display this information to the expert, create new Attribute Definitions. Go to Daily Management, select Attribute Definitions. See Figure B-168.

Figure	B-168
Inguie	D-100

	Attrib	ute Definitions				
 Daily Management Expert Advisors 	4	Add New 📑 Delete		_	2 Help	,
🧇 Skills 🦃 Assignment Queues	Attri	ibute Definitions	Items 1-10 of 3	9 Rows	per page: 10 💌 Go	
Son Message Sets	Filter	: Name 💌 Match if: Con	itains Go Clear Filter			
Sources Contact Attribute Sources Sources Sources Sources Source Client State Map		Name	Description	Data Type	System Defined	
Server Users Server Users		AccountNumber		String	No	1
		Balance		String	No	
		CustomerName		String	No	
		MMCA.ApplicationId	SystemDefined: The application ID in the OAMP configuration.	String	Yes	
		MMCA.ApplicationLastUpdate	System Defined: Last update of the application ID in the OAMP configuration.	String	Yes	
		MMCA.AssignmentQueueId	System Defined: The assignment queue ID in the OAMP configuration.	String	Yes	
		MMCA.AssignmentQueueLastUpdate	System Defined: Last update of the assignment queue ID in OAMP configuration.	String	Yes	
		MMCA.CallerAddress	System Defined: The address of the caller.	String	Yes	
Ī		MMCA.ConnectTime	System Defined The duration the contact was connected to the resource.	String	Yes	
		MMCA.ContactDisposition	System Defined: Disposition code associated with the terminated contact.	String	Yes	
	Ac	dd New Delete		Page	1 of 4 🖪 🔍 🕨	

Step 9 Add new attribute definitions. Click on Disabled in the In Expert Advisor Client. See Figure B-169.

Figure B-169

→	Configure Attribute Definition	
Second Paragement	🔚 Save 《 Cancel 🔇 Refresh	💡 Help
🥎 Skills	General	
S Assignment Queues Assignment Queues	General	
Attribute Definitions		
🏟 Contact Attribute Sources	*Name: AccountNumber	
Presence Client State Map Presence Server Users	Description:	
	*Data Type: String 💌	
	¹ Default Value:	
	Security Flags	
	In Log Files	
	C Enabled - Appears as clear text	
	O Disabled - Does not appear O Masked - Appears as masked text	
	In Expert Advisor Client C Enabled - Appears as clear text	
	 Cliabled - Appears as clear text Disabled - Does not appear (unless explicitly included in a token replacement string) 	
	C Masked - Appears as masked text	
	In Reporting Database	
	O Enabled - Stored as clear text	
	Oisabled - Is not stored	
	O Masked - Stored as masked text	
	*Required fields	
	¹ Required if Data Type is Numeric.	
	Save Cancel Refresh	

Step 10 In Contact Attribute Sources, map the new Attribute Definitions to Variables you use in the ICM script. See Figure B-170.

۵	Configure Contact Attribute Source	
Baily Management Second Advisors	🔜 Save 🔇 Cancel 💽 Refresh	? Help
Skills	General	
 Message Sets Attribute Definitions Contact Attribute Sources Presence Client State Map Presence Server Users 	General External Source: Unified ICM Call Variable External Name: PeripheralVariable1 Description:	
	* ² Attribute Name: AccountNumber Add/Update * Required fields ¹ External Name is case sensitive only for External Source Unified ICM ECC Variable. ² Added/Updated with the adjacent button. Save Cancel Refresh	

- Step 11 Modify the messages sent to the expert. Go the Daily Management > Message Sets. You can for example use the Clone functionality to clone the System Defined Message for English.See Figure B-171.
 - Figure B-171

	IM Message Sets				
 Daily Management Expert Advisors 	Add New 📄 D	elete			? Help
🧇 Skills 🦃 Assignment Queues	IM Message Sets Items 1-2 of 2 Rows per page: 10				e: 10 🔻 Go
Message Sets	Filter: Name	▼ Match if: Contains ▼	Go Clear Filter		
Sources Contact Attribute Sources	Name Name	Description	Default Locale	System Defined	Actions
Presence Server Users	SystemDefined	System Defined Message Set for English (US)	en_US [English (United States)]	Yes	Clone
	VEM Custom	System Defined Message Set for English (US)	en_US [English (United States)]	No	Clone
					V
	Add New Delete			Page 1 of 1	

- **Step 12** Edit the new message set and choose the **To Expert** tab.
- Step 13 Edit the Contact Offer Request Notice.
- Step 14 Edit the Contact Offer Notice. See Figure B-172.

	Edit Message Set	
Son Daily Management Expert Advisors	🔚 Save 🔃 Refresh 🔏 Cancel ?	Help
🥎 Skills	r Edit Message Set	
S Assignment Queues		
Sttribute Definitions	* Name: VEM Custom	
Sources Sources Sources Sources	Description: System Defined Message Set for English (US)	
Sp Presence Server Users	Default Locale: English (United States) (en_US)	
	Configure Messages	
	*Name:	
	Locale: English (United States) (en_US)	
	Format :	
	From Expert To Expert	
	*Logon Greeting: Welcome to Cisco Expert Advisor %NCD:UserName%!	
	* Contact Offer Request Notice: Are you available to handle an Expert Assistance call for 📑 Edit	
-	* Contact / Cisco Expert Advisor Webpage Dialog	
	Configure Messages	
	Configure Messages in the text area and click Save.	
	*Unexpec Are you available to handle an Expert Assistance call for customer % A hse. Edit CD:CustomerName%?	
	*Device N ber, Please 🧮 Edit	
	* Contact · Edit	
	*Select Re	
	*Help:	
	*System i Save Close The Edit	
🕨 🎭 User Management		
 System Management 		4
Bulk Management	*System (0 P C 0 C C

The dialogue with the Expert will then look like to what is shown in Figure B-173.



For more information on DB Lookup, refer to the Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted and the Administration and Configuration Guide for Cisco Unified Expert Advisor 7.6(1) at the following URLs:

http://www.cisco.com/en/US/products/sw/custcosw/ps1001/products_user_guide_list.html

http://www.cisco.biz/en/US/products/ps9675/prod_maintenance_guides_list.html

WebEx Access Anywhere

WebEx Access Anywhere is a simple method for an Agent to control the desktop and system that the customer used when contacting the agent from within the enterprise. The WebEx Access Anywhere service uses an agent installed on the remote system to allow connection and control from an Expert Agent without the customer having to connect to, navigate or share the system they are using via services such as WebEx meeting or Cisco Meeting Place sessions.

Step 1 To install the WebEx Access Anywhere agents on a system, login to the WebEx account. Select My WebEx from the tool menu and then click on My Computers. See Figure B-174.

Fig	ure B-174							
C V								cisco
	Welcome Meeti	ng Center	Event Center	Sales Center	More Services 🔻	🔵 My WebEx		Log Out
~		Му	WebEx Co	nputers			Welcome, john	1 mini
B	My Meetings							?
6	Productivity Tools Setup	Co	omputer		Status	Application	Action	
	My Computers	🗆 хр	01		Available	Desktop	Connect	
Ś	My Files	Remov	/e Set Up Co	mputer			Download manu	ual installer
Y	My Contacts							
8	My Profile							
Ş	My Audio							
Ma	My Reports				POWERED BY			
Y	Training				Cisco WebEx Technology			
2	Support			©2009 <u>WebE</u> >	<u>Communications, Inc.</u> Privacy Terms of Serv			228245

Step 2 Click on Set up Computer. Accept the Security Warning for ActiveX. See Figure B-175.

🕃 WebEx Access Anywhere Setup Wizard	×			
Welcome to WebEx Access Anywhere Setup Wizard				
This wizard will help you to set up this computer for Access Anywhere.				
Click Next to continue.				
< Back Next> Can	cel 042			

- Step 3 Click Next.
- **Step 4** Enter the Computer name and WebEx Account Info and click **Next**. See Figure B-176.

Figure B-176

😴 WebEx Access Anywl	here Setup Wizard	×
Account Information		
Please enter a nicknar	ne for this computer.	
Computer name:	xp03-Branch 123	
Please provide your W	'ebEx account information.	
	ge containing your account information was you once you downloaded Access Anywhere to	
WebEx account in	formation	
URL:	ciscocmo-dev.webex.com/cis	
User name:	john1	
Password:	*****	
Please provide the UR	L for your WebEx service.	
	< Back Next> Cancel	

Step 5 Click Next.

Step 6 For Virtual Expert Kiosks in an Enterprise Branch configure the session options to enable both the Expert and the customer to access and control the System at the same time. Click Next. See Figure B-177.

Session options Automatically reduce screen resolution to match local computer
Disable this computer's keyboard and mouse
Make this computer's screen blank
End this session after it remains idle for 45 Minutes
Disable pop-up messages
Lock computer after session ends

Figure B-177

Step 7 Configure access for the entire Desktop and click Next. See Figure B-178.

🔂 WebEx Access Anywhere Se	tup Wizard		×
Applications			
On this computer, access:			
		Add Rename	
		Remove	
	< Back	Next>	Cancel

Step 8 Set the Access code for this system and click Next.Figure B-179.

💕 WebEx Access Anywhere Setup Wizard	×
Authentication	
To provide greater security for your remote computer, select a method of authentication.	
Method O Access code O Phone	
Your access code	
Access code: ******	
Confirm access code: ******	
Note: Combine special characters (\$, @, $\%$), numbers (1, 2, 3), and letters (a, b, c) to create a secure access code.	
	_
< Back Next> Cancel	

Step 9 With setup completed, click **Finish**. See Figure B-180.

Figure B-180

🔂 WebEx Access Anywhere Setup Wizard	×
Setup Complete	
You have successfully installed the Access Anywhere agent software and set up this computer for Access Anywhere.	
To access this computer remotely: - it must be connected to the Internet - the Access Anywhere agent must be running	
To start the Access Anywhere agent now, click Finish.	
< Back	nish

Step 10 The newly added system will be listed in the My WebEx Computer table and the WebEx Access Anywhere agent will be running in the System Task Tray waiting for a connection. See Figure B-181.

Figure	В-	181
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APPENDIX C

References

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