Guide

Cisco Virtual Office Unified Contact Center Architecture

Contents

Scope of Document

This guide provides an overview of Cisco® Unified Contact Center deployment options with the Cisco Virtual Office solution.

Please refer to the Cisco Virtual Office overview (http://www.cisco.com/go/cvo) for more information about the solution, its architecture, and all the related components.

Introduction

Cisco Unified Contact Center is part of the Cisco Unified Communications application suite, which delivers intelligent call routing, network-to-desktop computer telephony integration (CTI), and multichannel contact management to contact center agents over an IP network. It combines software IP automatic call distribution (ACD) functions with Cisco Unified Communications in a unified solution that enables companies to rapidly deploy an advanced, distributed contact center infrastructure.

Cisco Unified Contact Center is an integrated suite of products that includes Cisco Unified Intelligent Contact Management (Unified ICM), Cisco Unified Communications Manager (Unified CM), Cisco Unified IP Interactive Voice Response (Unified IP IVR), Cisco Unified Customer Voice Portal (Unified CVP), Cisco Voice over IP (VoIP) gateways, and Cisco Unified IP Phones. Together these products provide Cisco Unified Communications and contact center solutions with intelligent call routing.

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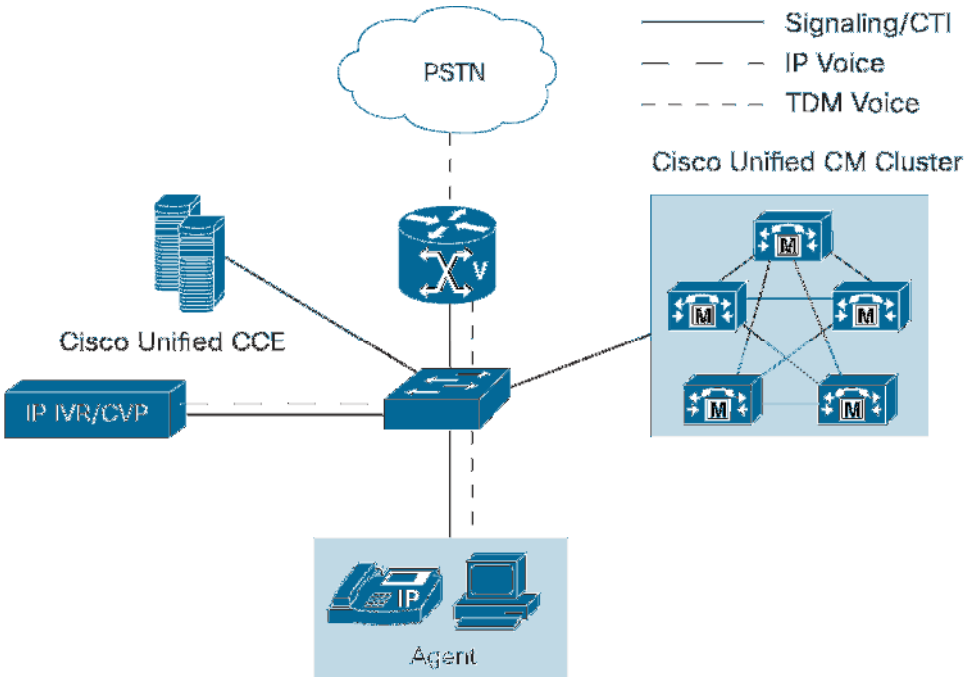
The contact center can extend the boundaries of the enterprise to include branch offices, home agents, and knowledge workers. Figure 2 illustrates a typical Cisco Unified Contact Center setup.

Figure 1. A Typical Cisco Unified Contact Center Setup



Platforms and Images

The platforms and images used in this document follow:

- Spoke router: Cisco 881W Integrated Services Routers
- Image: Cisco IOS® Software Release 15.0(1)M

For a complete list of supported and recommended platforms and images, please refer to the Cisco Virtual Office Supported Hardware and Software document.

Deployment Options for Cisco Unified Contact Center with Cisco Virtual Office

Cisco Unified Contact Center can be deployed in two ways over a Cisco Virtual Office infrastructure:

- Remote Agent option
- Mobile Agent option

A remote agent is classified as limited to a single agent working at a remote site, such as the agent's home or in an office outside the contact center headquarters. Cisco Unified Mobile Agent (Unified MA) enables an agent using any public switched telephone network (PSTN) phone and a broadband VPN connection (for agent desktop communications) to function just like a Cisco Unified Contact Center Enterprise (CCE) agent sitting in a formal call center. Cisco Unified Mobile Agent can also work like Cisco Unified Remote Agent. As shown in Figure 2, both Cisco Unified Mobile Agent and Remote Agent can be supported on the same infrastructure using a converged VPN architecture. This scenario provides a very low TCO and easy migration from one solution to another if necessary. For example, a company may have a policy stating that very-high-end tier 1 and tier 2 services are provided with the Remote Agent solution using Cisco 881 Integrated Services Routers and IP phones, whereas

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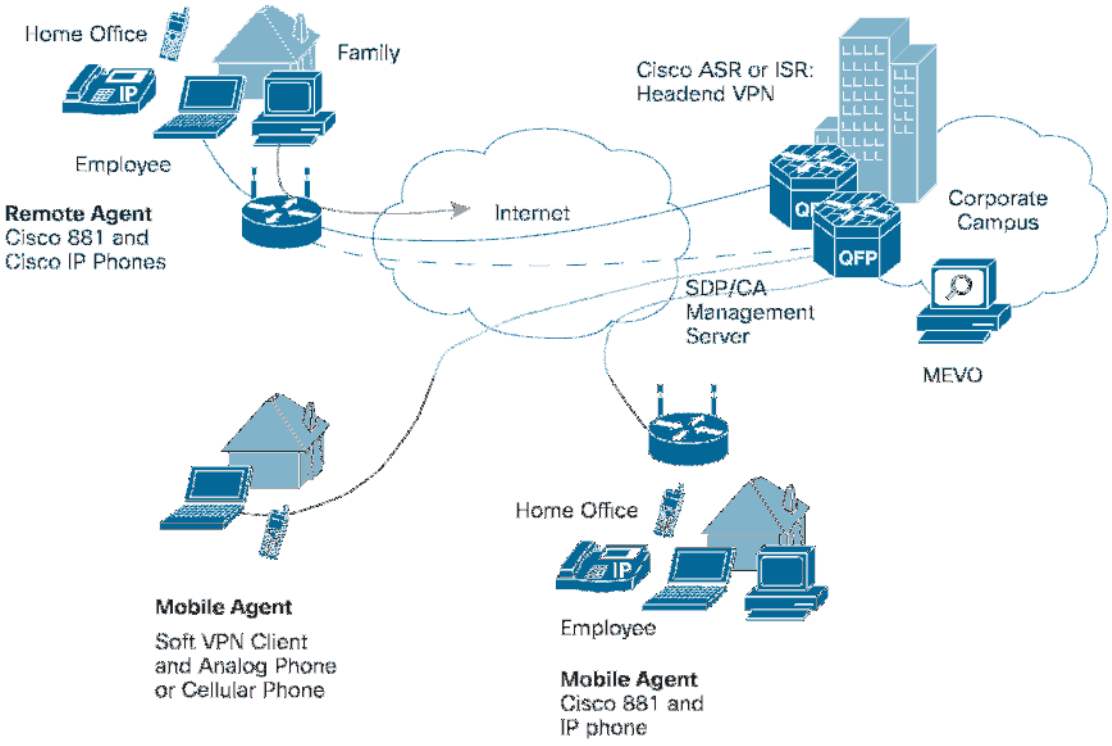
tier 3, dealing with lower-priority cases, may use Cisco Unified Mobile Agent with the SoftVPN client. If tier 3 is promoted to tier 2 in the future, it is easy to migrate its service, because the Cisco Virtual Office infrastructure is already in place. Hence, the options that can be used are based solely on company policies, network scalability, and the number of years over which the return on investment is expected, as well as any regulations against VoIP calls that the country might have.

Figure 2. Cisco Virtual Office with Contact Center (both Remote Agent and Mobile Agent).



Cisco IPCC Remote Agent Option with Cisco Virtual Office

A remote agent is classified as a single agent working at a remote site, such as the agent's home or in an office outside the contact center headquarters. Remote agents are not classified as agents working at one of the contact center sites. Multiple agents working at remote sites are considered branch-office agents. In this scenario the remote agent uses Cisco Business Ready Teleworker setup with Cisco Virtual Office. With this support, remote agents with IP phones can benefit from standard Cisco 881 Integrated Services Routers, persistent VPN, Cisco IOS Software-based security, geographic redundancy, and QoS for voice.

The Remote Agent solution continues to be the product of choice for remote IP phones with the Cisco Business Ready Teleworker setup using Cisco Virtual Office.

Primary Components of the Cisco IPCC Remote Agent Option

The primary components of the Cisco IPCC Remote Agent Option follow:

Cisco IP Contact Center solution: Cisco IP Contact Center (IPCC) combines Cisco IP Telephony and ready-to-use CTI capabilities in a call-center product suite. The software includes intelligent call routing, multichannel ACD capability, IVR, call queuing, and consolidated reporting features.

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Cisco IP Contact Center components include the following:

- Cisco Unified Communications Manager: Provides traditional private branch exchange (PBX) telephony features and functions to packet-telephony devices. Installed on a server-class PC, Cisco Unified Communications Manager software provides basic call processing, signaling, and connection services to Cisco IP phones, VoIP gateways, and software applications.
- Cisco Computer Telephony Integration Object Server (CTI OS) Desktop and Cisco Agent Desktop: Allow an agent to control the remote agent state (for example, login, available/unavailable, and work or wrap-up) and perform call control (answer, release, hold, and transfer).
- Cisco Unified CVP (formerly Internet Service Node) or Cisco Unified IP IVR: Provides announcements, prompting, gathering of caller-entered digits, and a queue point to park calls when all remote agents are busy.
- VoIP gateways
- Centralized monitoring and recording: Provides call-center managers with real-time and historic data for all remote agents.

Cisco Virtual Office teleworker architecture (for IP phones only): The Cisco Business Ready Teleworker architecture, combined with Cisco IP Contact Center, gives remote agents the same accessibility to call-center applications as staff based at central sites. Cisco Virtual Office provides the most comprehensive security and network management available in a teleworking environment over a standard cable or broadband connection, including QoS to help ensure prioritization of mission-critical or delay-sensitive traffic. Cisco Business Ready Teleworker can be quickly and cost-effectively deployed to deliver high-quality, consistent application access for remote agents through an always-on, highly secure, and centrally managed connection to the enterprise network.

Cisco Virtual Office components include the following:

- VPN: Provides highly secure, consistent access to information, call-center applications, and customer data. The VPN tunnel is transparent to applications and the end user and promotes stable, consistent application behavior over the WAN, protecting and extending existing infrastructure investments.

Note: Agents will receive persistent VPN communication from the Cisco 881 Integrated Services Router.

- Advanced application access: With IP telephony, a separate PBX, voice switch, or ACD call-control platform at the remote agent location is not needed. Network-based ACD extends call-center services to thousands of remote agent locations simultaneously.
- QoS: Helps ensure high-quality voice communication between the caller and remote agent. Voice, data, and video can be delivered over the same line by prioritizing applications based on bandwidth requirements or business priorities.

Note: QoS delivers marked tagged packets, but the service is not guaranteed because it is over a service provider network.

- Network security and authentication: Security is integrated completely with all other functions. End-to-end security options for remote agents include trust and identity options (802.1X authentications), integrated firewall, intrusion detection system (IDS), and host-based intrusion detection with Cisco Security Agent.

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- Centralized management and support: Help ensure control over the performance of remote agents as though they were based at the main call center. Administrators can push policies and configurations transparently to remote agent locations, perform quality surveys, and do real-time remote monitoring.

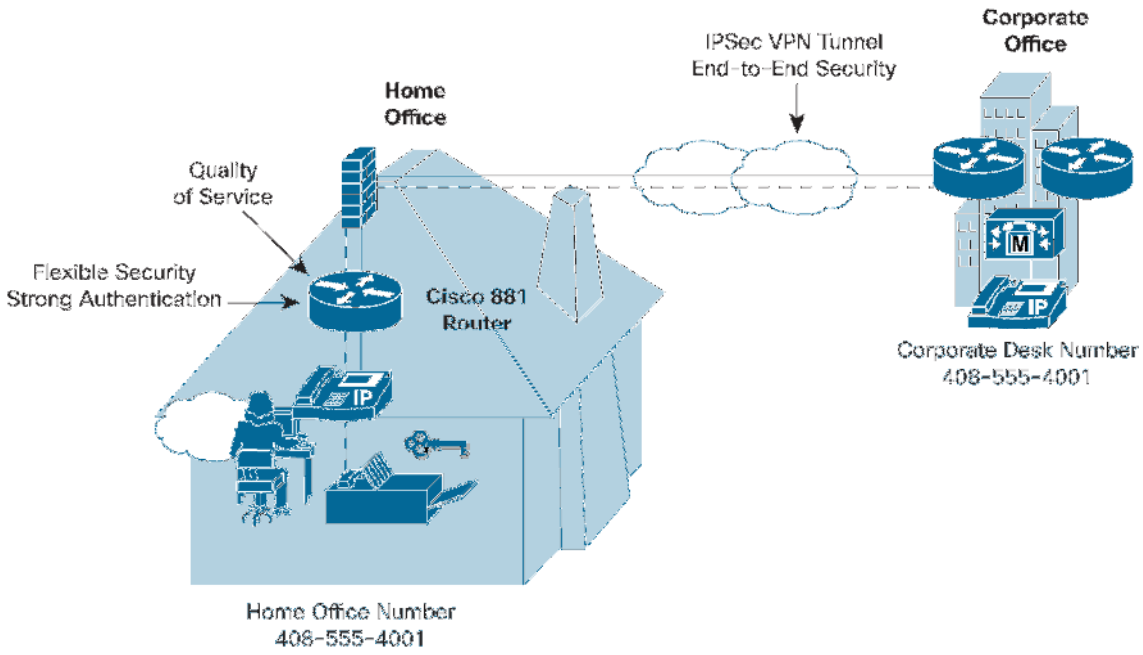
How Cisco IPCC Remote Agent Works with an IP Phone

Note: The Cisco IPCC Remote Agent Option with an IP phone is supported on the Cisco Unified Contact Center Enterprise, the Cisco Unified Contact Center Hosted, and the Cisco Unified Contact Center Express solutions.

At the remote agent site, a Cisco IP phone, with an ACD extension number, connects to a Cisco 881 secure, persistent broadband router that provides a highly secure VPN connection back to the call center over a broadband facility. The router, based on Cisco IOS Software, provides all the features necessary for an always-on, business-ready connection in a single, cost-effective platform. Cisco Unified Communications Manager on the corporate network provides the call management on the IP phone.

Figure 3 shows one option available when using the Cisco IPCC Remote Agent option.

Figure 3. Cisco IPCC Remote Agent Option with IP Phone.



When a call comes in to the call center, the Cisco Unified Communications Manager alerts Cisco Unified Contact Center, which then finds the best available remote agent based on customer-defined business rules. If no remote agents are available, the call is held in an IVR queue, and the caller hears a recorded message or music until an agent becomes available.

For more detailed information about a typical call flow for a Remote Agent with IP phone, please refer to http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/ipcc_enterprise/srnd/75/ccsrnd.

Cisco IPCC Mobile Agent Option with Cisco Virtual Office

Cisco Unified Mobile Agent enables an agent using any PSTN phone and a broadband VPN connection (for agent desktop communications) to function just like a Cisco Unified CCE agent sitting in a formal call center and using a

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Cisco IP phone monitored and controlled by Cisco Unified Communications Manager JTAPI (Figure 4). The broadband VPN connection using the SoftVPN client terminates at a Cisco IOS Software-based VPN gateway. The agent usually uses an analog phone in this scenario.

Cisco Unified Contact Center Express is not supported for Cisco Unified Mobile Agent, but it does support Remote Agent. Another option allows you to use Cisco Unified Mobile Agent with Cisco Virtual Office with a Cisco 881 Integrated Services Router for secured connectivity and VoIP. However, from a teleworker point of view, similar functions are provided by Cisco Unified CCE Remote Agent (explained in the previous section).

Following are some considerations to consider when using Cisco Unified Mobile Agent with an IP phone behind a Cisco 881 router versus using Remote Agent with a Cisco 881 router:

- Higher performance effect on Cisco Unified Communications Manager
- Caveats with silent monitoring
- Need of media-termination-point (MTP) resources

Figure 4. Agent at Home Using Cisco Unified Mobile Agent with SoftVPN Client Terminating on Cisco Virtual Office Infrastructure.

Connection Modes

Cisco Unified Mobile Agent allows system administrators to configure agents to use either call-by-call dialing or a nailed connection, or the administrator can configure agents to choose a connection mode at login time.

Mobile agents are defined as agents using phones not directly controlled by Cisco Unified Contact Center, irrespective of their physical location. (The term local agent refers to an agent who uses a phone that is under control of Cisco Unified Contact Center, irrespective of physical location.)

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Mobile agents can be configured using either of two delivery modes:

- Call by call: In this mode, the mobile agent's phone is dialed for each incoming call. When the call ends, the mobile agent's phone is disconnected before being made ready for the next call.
- Nailed connection: In this mode, the agent is called at login time and the line stays connected through multiple customer calls.

Note: The administrator can select the Agent Chooses option, which allows an agent to select a call-delivery mode at login.

For more information about the different connection modes and call flows for the Cisco Unified Mobile Agent, please refer to http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/ipcc_enterprise/srnd/75/ccsrnd.

Conclusion

Cisco has deployed Cisco Unified Contact Center with Cisco Virtual Office using Cisco 881 Integrated Services Routers and Cisco IP phones. Because thousands of teleworkers work for Cisco, it became essential to connect them to Cisco in a cost-effective and secure way. Cisco Virtual Office infrastructure meets this need. Unless a country has restrictions on VoIP, the use of VoIP rather than Mobile Agent with PSTN is highly recommended, because VoIP provides a high ROI and a low TCO. For most deployments, it is best to use Cisco Virtual Office with a Cisco 881 Integrated Services Router at home with Cisco Unified Mobile Agent or Remote Agent and an IP phone.

Agents are connected to the corporate network using a residential broadband network connection (such as cable, DSL, WiMAX, or 3G) that can support voice, data, and video traffic. Cisco Virtual Office provides a connection that is highly secure and provides always-on access to call center applications over a VPN. Built-in, end-to-end security helps ensure that confidential customer information, such as medical records and financial information, is protected, and that the corporate network is protected from "back door" attacks.

The primary reasons Cisco IT has deployed Cisco Virtual Office with Cisco Unified Contact Center are to:

- During seasonal high call volume, add and enable temporary staff who can be brought online with reduced startup costs.
- Provide agents the flexibility to work from home with a level of quality, function, performance, convenience, and security similar to that available in the corporate headquarters contact center.
- Allow agents to use the device they are most comfortable with a scenario that improves agent productivity, helps to retain agents, and reduces training costs.
- Hire skilled employees where they live, and integrate remote workers into geographically dispersed teams with access to equivalent corporate applications.
- Provide disaster recovery for remote teleworkers in case of earthquakes, floods, pandemics, and so on.
- Achieve a high ROI by providing enterprise connectivity to the Cisco internal technical support center and Cisco Technical Assistance Center (TAC) employees from remote locations, thereby saving on real estate and other costs related to office employees.

Layered identity, zero-touch deployment, converged VPN, solution scalability, and reduced operating expenses and capital expenditures are some more reasons for adopting Cisco Virtual Office with Cisco Unified Contact Center.

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Printed in USA C07-682987-00 08/11

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