Cisco IP Contact Center

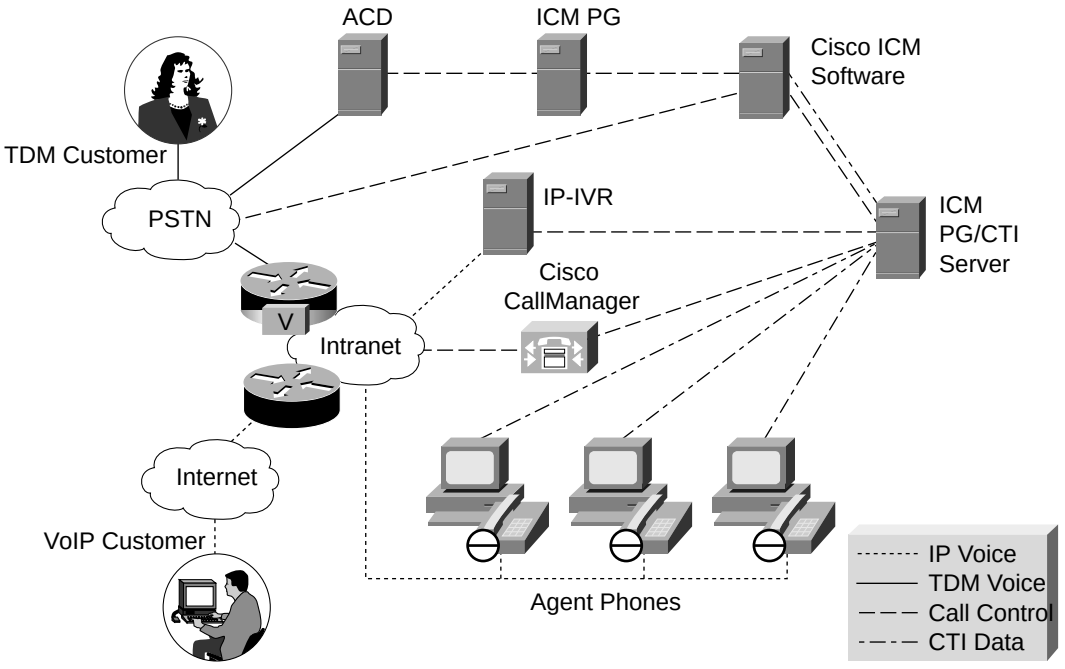
Building a Bridge to Voice over IP in the Contact Center

By combining Cisco IP telephony and contact-center solutions, the Cisco IP Contact Center (IPCC) delivers an integrated suite of proven products that enables agents using Cisco IP phones to receive both time-division multiplexing (TDM) and voice-over-IP (VoIP) calls. Because the IPCC was intended for integration with legacy call-center platforms and networks, it provides a migration path to IP-based customer contact while taking advantage of previous technology investments (Figure 1).

An integral part of Cisco AVVID (Architecture for Voice, Video and Integrated Data), the IPCC can be implemented in a single-site environment or integrated into a multisite contact-center enterprise. Specific capabilities include intelligent call routing, automatic call distribution (ACD) functionality, network-to-desktop computer telephony integration (CTI), interactive voice response (IVR) integration, call queuing, and consolidated reporting. The open, standards-based architecture of the IPCC can also potentially support Web-based customer contact, including collaborative browsing, text chat, and e-mail response management.

The IPCC utilizes a company's existing IP network, optimizing investments in wide-area network (WAN) infrastructure and lowering administrative expenses. Moreover, this IP-centric architecture allows a business to easily extend the boundaries of the contact-center enterprise to include branch offices, at-home agents, and knowledge workers. Whether your company is expanding an existing operation or establishing its first site, the Cisco IPCC can help you realize the cost and performance benefits of converged networking—at your pace.

Figure 1 AVVID Contact Center Architecture



CISCO SYSTEMS

IPCC Capabilities and Benefits

Skills-Based Pre-Routing Function

The Pre-Routing® function makes a routing decision for each call while it is still in the IP network or Public Switched Telephone Network (PSTN) and before it is sent to an agent or other target—enabling the IPCC to segment customers and deliver each call to the best answering resource the first time.

To ensure optimum routing decisions, IPCC agents are grouped according to skills. The system receives real-time skill group and status information directly from each agent's desktop and can even reserve an IPCC agent to ensure availability. The scripting environment provides a set of standard route-selection criteria as well as tools to easily customize call distribution to meet business requirements. For multisite operations, the ability to include IPCC agents in enterprise resource selections improves both contact-center performance and customer service.

Skills-Based Post-Routing Function

The Post-Routing® function provides the intelligent distribution of calls already connected to an agent, ACD, private branch exchange (PBX), or IVR system. IPCC agents take advantage of the Post-Routing function from the agent desktop. When a call requires redirection, ICM software applies the same business logic used in the Pre-Routing function and instructs the peripheral to send the call to the best available enterprise resource. The new target can be another agent, a skill group or service within the IPCC, or a skill group or service on another ACD. For calls flowing between sites, across business applications, and into or out of IVRs, the Post-Routing function optimizes each customer's interaction with your business.

Network-to-Desktop CTI

The Cisco IPCC delivers a uniquely rich set of customer- and transaction-specific information collected from the Internet, carrier networks, IVRs, databases, and other applications to the targeted agent desktop with every call—enabling the full utilization of corporate data at the point of customer contact. Specific capabilities include:

- Data-rich screen pop—Screen pops enable agents to spend more time servicing customers and less time collecting information. Cisco Intelligent Contact Management (ICM) software delivers call and customer data to the IPCC agent's business application, allowing a screen pop to be delivered to the desktop coincident with call arrival. The Cisco solution delivers identical screen-pop data to both IPCC and traditional ACD agents, ensuring that a consistent level of customer service is maintained throughout the enterprise.
- Customizable agent desktop—The IPCC desktop CTI functionality includes a fully functional softphone that enables agents to perform telephony functions from the workstation. Contact-center managers can easily customize this softphone by dragging and dropping controls such as answer, hold, set ready, and so forth into the configuration of choice—creating a softphone with a look and feel that meets business requirements.

  Alternatively, to present agents with a single application interface that includes telephony functions, administrators can simply drag and drop the softphone controls into existing customer relationship management (CRM) applications, providing agents with CTI functionality while reducing training, administration, and management costs.
- Third-party call control—The IPCC third-party call-control features allow agents to control telephony functions such as answer, hold, transfer, and conference from within a desktop application. For example, voice and data collected by an IPCC agent can be transferred within the IPCC or across multivendor switches, allowing customer and transaction data to accompany a call from agent to agent or site to site as required. This capability improves customer service and increases contact-center efficiency by eliminating time spent verbally soliciting information that is already available.
- Agent statistics—Each IPCC agent can be provided with immediate feedback through a visual display of personal statistics such as number of contacts handled, average call work time, average talk time, cumulative available time, and total login time. This functionality offers agents, who are often compensated based on performance, with real-time incentives to meet or exceed goals.

Consolidated Reporting

The open architecture of ICM software allows for the consolidation of timely and accurate information from the Internet, carrier networks, Cisco CallManager, ACDs, IVRs, agent desktops, and other resources. This information is stored in a Microsoft SQL Server (Structured Query Language) database for use in real-time and historical call-center reporting. The ICM system reporting package enables users to generate reports using provided templates; add specific, monitored thresholds to particular data elements; drill down to more granular reports; and schedule reports to run at specified intervals. Users can also build customized reports using the report writer provided with ICM software, use any number of third-party database access tools to manipulate and display information, or export data to industry-standard file formats for use in other applications. Reports can be viewed from an ICM admin workstation, any authorized browser-enabled desktop, or any other Open Database Connectivity (ODBC)-compliant desktop application.

In addition, the IPCC delivers agent-level reporting functionality, including both real-time and historical agent data. Agent reporting allows IPCC users to view consistent information from the enterprise level down to a specific agent.

IPCC Features

Routing Capabilities

- Application-based routing and reporting
- Call-by-call routing
- Call rerouting based on wait time
- Conditional routing
- Database call handling
- Load balancing
- Look-ahead queuing
- Network interflow
- Priority queuing
- Skills-based routing

Caller Interaction Capabilities

- Audiotex
- Automated attendant
- Caller-entered digits
- Controlled busies
- Announcements based on real-time conditions
- Music-on-hold based on caller origin
- Music-on-hold based on real-time conditions
- Visible queuing

Administration Features

- Call detail reporting
- Centralized reporting
- Custom reporting
- Historical reports
- Web-based report viewing
- Real-time management
- Real-time information
- Statistical and graphical reporting
- Trunks utilization
- Windows graphical user interface (GUI)

Agent Features

- Agent statistics on agent desktop
- Auto available
- Auto wrap-up
- Auxiliary work state
- Available state
- Caller information: automatic number identification (ANI), calling line identification (CLID), dialed-number identification string (DNIS), caller-entered digits (CED)
- Fully customizable softphone application
- Hot desking
- Log in/log out
- Remote agents
- Screen pop
- Transfer to queue
- Unavailable (work) state
- Wrap-up
- Wrap-up codes

IPCC System Components

Cisco Intelligent Contact Management Software

Cisco ICM software enables a company to interact with its customers via the Internet or PSTN across an enterprise of ACDs, IVRs, Web and e-mail servers, desktop applications, and more.

At the network level, ICM software profiles each customer using data such as dialed number and calling line ID, caller-entered digits, data submitted on a Web form, and information obtained from a customer-profile database. At the same time, the system knows which resources are available to meet the customer's needs based on real-time conditions continuously gathered from contact-center platforms and agent desktops.

This combination of customer and contact-center data is processed through user-defined routing scripts that reflect a company's business rules—enabling ICM software to route each contact to the optimum enterprise resource. Simultaneously, the Cisco platform delivers customer-profile information to the targeted agent desktop.

As part of the IPCC, ICM software provides ACD functionality including monitoring and control of agent state, routing and queuing of contacts, CTI capabilities, real-time data for agents and supervisors, and historical reporting for management.

Specific ICM system components include:

- ICM software peripheral gateway (PG)—A PG provides an interface between ICM software and a system component. The IPCC includes PG software for Cisco CallManager, the IVR, and the ICM software CTI server. PGs collect information from a peripheral and make this data available to the ICM platform for Pre-Routing and Post-Routing functionality. Each PG tracks events on a per-agent and per-contact basis, ensuring the most accurate routing decisions possible.
- ICM software CTI server and agent desktop—The CTI components of ICM software enable users to deploy a complete network-to-desktop CTI strategy, including comprehensive functionality at the agent's workstation. At the server level, the ICM platform manages the availability of real-time and historical information provided by the Internet, carrier networks, ACDs, IVRs, Web servers, business applications, databases, and the ICM platform itself. Moreover, the CTI server delivers agent, contact, and customer data in real time to a server or workstation application as events occur throughout the life of a call.

  At the desktop, the Cisco solution includes a complete agent softphone using ActiveX controls and Java that provides full access to the CTI server while abstracting the underlying details of the telephony system. As a result, developers and contact-center managers can quickly integrate applications such as CRM into the IPCC without complex programming or systems integration.
- ICM software admin workstation (AW)—The ICM admin workstation is the user interface into the ICM environment, enabling system managers, administrators, and supervisors to define, modify, or view routing scripts; manage the system configuration; monitor contact-center performance; define and request reports; and ensure system security. Tools are designed to interact with company personnel in an intuitive manner, using familiar terminology and simple "point-and-click" commands in the Windows environment.

Cisco CallManager

Cisco CallManager software provides traditional PBX telephony features and functions (basic call processing, signaling, and connection services) to packet telephony devices such as Cisco IP phones and VoIP gateways. Supplementary and enhanced services—including hold, transfer, forward, conference, automatic route selection, speed dial, last-number redial, and more—can also be provided. Call admission control ensures that voice quality of service (QoS) is maintained if WAN links become constrained, and automatically diverts calls to the PSTN when WAN bandwidth is unavailable. Cisco CallManager software is preinstalled on the Cisco media convergence server (MCS).

Cisco VoIP Gateway

Each IPCC solution includes a Cisco VoIP gateway, which provides a connection path between the PSTN and the Cisco AVVID IP telephony network by converting analog and digital voice into IP packets. The gateway is managed, controlled, and administered through Cisco CallManager. Cisco offers a range of VoIP gateways to meet individual business requirements.

Cisco IP Telephones

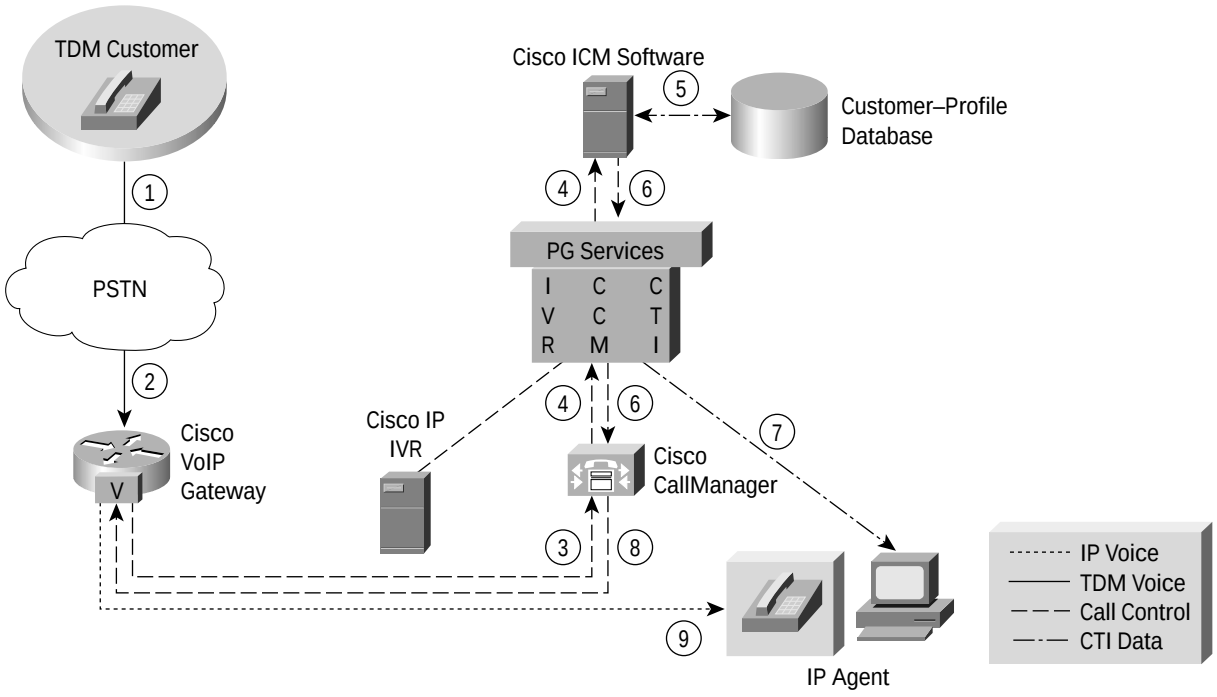
Agents connected to the IPCC utilize the Cisco IP Telephone 7960. This full-featured, second-generation voice instrument uses IP transport technology to permit the consolidation of data and voice into a single network infrastructure—including a single cable plant, a single switched Ethernet fabric for campus or branch offices, and unified systems for operations, administration, and management (OAM).

The Cisco 7960 provides six programmable line/feature buttons and four interactive soft keys that guide a user through call features and functions. The Cisco phone also features a large, pixel-based LCD display, which provides features such as date and time, calling party name, calling party number, and digit dialed. In addition, the display provides feature and line status, speaker (hands free) and headset features, and a mute button that controls speaker or handset or headset microphones.

Interactive Voice Response Unit

Within the IPCC, an IVR can act as a routing client, as a managed resource, and as an information source for consolidated real-time and historical reports. In addition, the IVR provides the queue point for the IPCC solution. If an appropriate agent is not available when a call is received, the IPCC utilizes the IVR for call treatment such as playing announcements, collecting digits, or offering alternate routing options before redirecting the call to a targeted answering resource. A variety of IVR options is available, including the Cisco IP-IVR as well as premises-based systems and network-based solutions from Cisco ecosystem partners.

Sample Voice/Data Flow



1. A customer dials a toll-free number utilizing the PSTN.
2. The contact is received by the Cisco VoIP gateway, which converts the transmission from the TDM protocol to the IP protocol.
3. The VoIP gateway sends a route request containing the dialed number (DN), CLID, and CED to Cisco CallManager.
4. Via the ICM PG, Cisco CallManager forwards this route request to ICM software.
5. ICM software looks up account information and parses information to determine routing.
6. ICM software invokes a customer-defined routing script to select the most appropriate IPCC agent to receive the contact and forwards this route destination to Cisco CallManager via the PG.
7. The CTI server component of the PG sends customer-profile data to the targeted agent's desktop in the form of a screen pop.
8. Cisco CallManager instructs the Cisco VoIP gateway to connect the customer to the targeted agent.
9. The Cisco VoIP gateway establishes the voice connection.

Note 1: Depending on business requirements, the IP IVR can be used to gather customer-profile information, to complete transactions, or to queue calls.

Note 2: This sample voice/data flow depicts a single-site IPCC implementation. Alternatively, the IPCC can be integrated into a multisite contact center and receive the benefits of the enterprise-wide, network-level Pre-Routing capabilities of ICM software.

Summary

The Cisco IPCC offers a proven migration strategy for introducing VoIP into the contact center while preserving legacy investments. Specific capabilities include intelligent call routing, ACD functionality, network-to-desktop CTI, IVR integration, call queuing, and consolidated reporting. The IP-centric architecture of the platform makes it possible to readily extend the boundaries of the contact-center enterprise; this solution can be deployed in both single-site and multisite environments.

Service and Support

Cisco AVVID Service and Support ensures customer success with a complete range of life cycle-enhancing services required for the creation and ongoing health and performance of integrated networks. Cisco AVVID also provides support for an array of customer-contact applications with an open platform model. The Cisco AVVID Application Support services integrate Cisco, partner, and customer competencies to create collaborative support solutions. Together, these offerings improve your clients' customer-contact management through accelerated, converged network application deployment and enhanced network availability.

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