Cisco Managed IP Telephony Solution

Service Provider-Managed Cisco AVVID IP Telephony

Executive Summary

Service providers are seeking new, high-margin revenue streams, both to capitalize on their packet networks and to compensate for recent declines in revenues from legacy private-branch-exchange (PBX) sales and Centrex services deployed on legacy time-division multiplexing (TDM) switches. The most profitable voice services share two attributes. One is a “success-based” capital expenditure model, which accelerates return on investment (ROI) because the service provider makes most of its capital investment after acquiring a customer. The other attribute is an infrastructure that can be used to deliver multiple services so that the service provider can increase revenue per customer over time with little incremental investment. To address this new business imperative, Cisco Systems has defined a set of solutions for Managed Voice Services that service providers can profitably deploy and offer to enterprises and small and midsized businesses. These solutions include the Cisco Hosted IP Telephony solution, Cisco Managed IP Telephony solution, and Cisco Multiservice Virtual Private Network (VPN) solution. All managed voice services based on Cisco solutions share the following characteristics:

- Are delivered through a tested and validated combination of the market-leading Cisco AVVID (Architecture for Voice, Video and Integrated Data) IP Telephony solutions, Cisco’s carrier-class packet voice products and solutions, and key Cisco Ecosystem Program partners products and solutions
- Provide a greater return on capital expenditure than traditional TDM voice services because several revenue-generating, enhanced IP services can be deployed on a common network infrastructure
- Take advantage of and complement Cisco enterprise IP telephony expertise and market success by offering business customers the option of outsourcing the operation of their integrated voice and data solutions to a managed service provider

One of the Cisco solutions for Managed Voice Services, the Cisco Managed IP Telephony solution, enables service providers to offer their business customers a cost-effective, richly featured alternative to legacy PBX systems and Centrex services. The service provider sells, deploys, and provides ongoing management for the customer’s Cisco CallManager, which can be located either on customer premises or at a central office or data center. Depending on the business model, the service provider can either lease or resell the customer premises equipment (CPE) to the enterprise.
Management services are offered individually or in tiered bundles and are priced on a monthly per-user basis. Cisco offers clear advantages as a provider of managed IP Telephony solutions. The installed customer base of Cisco—the leading supplier of voice and data IP network infrastructure to enterprises—represents the largest available market for service providers offering managed voice services. This, combined with the Cisco commitment to enhancing and supporting solutions for managed voice services, makes the Cisco Managed IP Telephony solution the choice with the lowest risk and highest revenue potential.

This solution overview describes the market drivers that contribute to the managed IP Telephony service opportunity, the Cisco Managed IP Telephony solution and its components, and the benefits of the solution to service providers and their business customers.

**Market Drivers for Managed IP Telephony Services**

Recent changes in the voice market have set the stage for the profitable introduction of managed IP Telephony services by service providers.

*Accelerated adoption of IP PBX technology by business customers*

As business customers deploy converged voice and data networks to cut Total Cost of Ownership (TCO) and increase productivity, IP PBXs are gaining popularity. In addition to delivering basic business phone services such as call waiting, conferencing, and call forwarding, IP PBX systems enable new communications applications such as unified messaging, notification services, network-based call distribution, and find-me/follow-me services. According to Gartner Group, nearly 50 percent of all PBX sales will be IP-based in 2005.

*Significant interest in outsourcing voice services*

A significant percentage of enterprises want to outsource the provisioning and ongoing management of their voice services so they can focus on their core competencies. By outsourcing, businesses exchange variable internal support and capital costs for a predictable monthly communications bill. The trend is escalating: recent Phillips InfoTech customer surveys showed that 47 percent of customers would prefer to partially or fully outsource the management of their IP Telephony networks.

Furthermore, Gartner Group reports that 28 percent of PBX systems in the United States are sold by carriers and that most of these systems are managed or maintained by the service provider. The carrier share of the European PBX market is even higher: from 30 to 50 percent depending on the country. IP PBX deployments offer greater managed-service opportunities for service providers than PBX systems based on legacy TDM switches. Therefore, service providers can earn higher average revenue per user (ARPU). For example, the service provider can provide remote fault, performance, and configuration management services for the customer’s complete IP telephony infrastructure, delivering a higher level of added-value services to the customer than typical break-fix maintenance services for legacy PBX systems.

*Enterprise mandate to achieve operational cost saving and efficiencies via converged services*

Achieving greater cost savings and operational efficiencies is a critical objective for virtually every business. In a Meta Group survey, 50–70 percent of enterprise customers said they expected that converging their networks would help them realize moderate to substantial savings in infrastructure, administration, and toll costs.
Incumbents losing long-term TDM Centrex accounts

Market researcher RHK reports that incumbents have lost millions of lines and billions of dollars in TDM Centrex services revenue since the introduction of IP PBX technology. For example, Probe Research found that when a major university implemented an IP PBX solution, its incumbent carrier saw monthly Centrex revenue decrease from $40,000 to $6,000. Offering managed IP Telephony services is a way to counter the erosion of revenue from the defection of long-term traditional Centrex accounts. And because a managed IP Telephony solution offers richer features and is more flexible than traditional Centrex, the long-term monthly revenue potential is greater.

Service Description

Using the Cisco Managed IP Telephony solution, a service provider sells, deploys, and provides ongoing management for a Cisco AVVID IP Telephony solution, creating a new source of high-margin revenue. The system either replaces or co-exists with the customer’s legacy PBX or Centrex service. Many carriers price the managed service at a fixed per-user monthly fee, including all managed services plus unlimited “on net” calls within the enterprise, and price “off net” calls at competitive per-minute rates for global termination.

The service provider earns revenue from a set of management services offered individually, in tiered bundles, or both. Grouping services into different bundles gives business customers flexibility in determining which IP Telephony management services to outsource. The bundles differ by service provider and can include some or all of the elements shown in Table 1.

Table 1 Components of a Managed IP Telephony Service Offering

<table>
<thead>
<tr>
<th>Managed Service</th>
<th>Description</th>
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<tbody>
<tr>
<td>Site and network assessment</td>
<td>Documentation of the physical infrastructure: switches, cabling, equipment racks, backup power, and so on. Discovery and documentation of the existing data network, voice system, and business applications</td>
</tr>
<tr>
<td>Solution design</td>
<td>Design of WAN, LAN, and voice-over-IP (VoIP) solution elements for quality-of-service (QoS), redundancy, failover, and so on</td>
</tr>
<tr>
<td>Provisioning and installation</td>
<td>Cisco CallManager, Cisco IP Phones, Cisco in-line-powered LAN switches, and all associated Cisco IP telephony components</td>
</tr>
<tr>
<td>Performance management</td>
<td>Measurement of network responsiveness, service-level agreement (SLA) reporting, and trend analysis</td>
</tr>
<tr>
<td>Configuration management</td>
<td>Changes to and backup of CPE configuration; device restoration in event of failure; moves, adds, changes, deletions (MACD); creating and maintaining a database of managed network element configurations, dial plans, site information, and features</td>
</tr>
<tr>
<td>Fault management</td>
<td>Automatic alarm and ticket generation on network problem events, proactive customer notification and escalation, resolution procedures, and fault tracking through life cycle for reporting purposes</td>
</tr>
<tr>
<td>Service Provider and Enterprise Benefits</td>
<td>The Cisco Managed IP Telephony solution offers measurable economic benefits to both the service provider and its enterprise customer</td>
</tr>
<tr>
<td>Device and application management</td>
<td>Operation, configuration, and backups of Cisco CallManager, Cisco IP Phones, Cisco voice gateways, and Cisco Unity™</td>
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</tbody>
</table>
Service Provider and Enterprise Benefits

The Cisco Managed IP Telephony solution offers measurable economic benefits to both the service provider and its enterprise customer.

Service Provider Benefits

- **Generates new, high-margin revenue streams with a success-based capital expenditure model**—Managed IP Telephony services can be profitable from the outset because the service provider makes most of its capital expenditure after the customer has been acquired. With TDM Centrex services, in contrast, carriers must spend millions of dollars for expensive Class 5 switches in advance of any customer acquisition and revenues.

- **Can be used to deliver other managed voice services**—The Cisco Managed IP Telephony solution offers the potential for rapid ROI because the same underlying network components can be used to deliver other managed voice services such as:
  - **Hosted IP Telephony**—The service provider hosts the hosted IP telephony service, shared by multiple business customers, in its central office or data center. The Cisco Managed IP Telephony solution and the Cisco Hosted IP Telephony solution share common network components and similar end-user services but differ in where and how the call-control function is located, physically implemented, and managed.
  - **Multiservice VPN**—The service provider delivers voice/data connectivity and closed user group dialing across multiple enterprise locations.

- **Generates increasing average revenue per user (ARPU)**—Revenue per user tends to increase over time because satisfied customers are likely to outsource more management services to the service provider. A customer who initially opts for a basic service bundle—for example, fault management, backup, recovery, onsite assistance, and reporting—might later add performance management, configuration management, and security management services. Additionally, the service provider can add enhanced IP Telephony services such as unified messaging, IP conferencing and XML IP phone applications. Ultimately, the customer might contract with the service provider for full management of its LAN infrastructure, thus gaining maximum benefit from a fully converged voice and data network.

- **Takes advantage of existing investments**—The Cisco Managed IP Telephony solution coexists with and takes advantage of existing carrier VoIP infrastructure networks as well as customers’ LAN infrastructures and legacy PBX systems.

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<td>Capacity planning management</td>
<td>Statistics on network performance, identifying impending and future issues, and recommendations for enhanced performance</td>
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<tr>
<td>Maintenance</td>
<td>Break-fix support for all systems components</td>
</tr>
<tr>
<td>End-user help desk</td>
<td>24 x 7 support; Tier 1–3</td>
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<tr>
<td>Reporting</td>
<td>Metrics and reporting on management services; call detail records (CDRs); billing; secure Web access to billing data and trouble-ticket status</td>
</tr>
<tr>
<td>Call routing and termination</td>
<td>Routing of “on-Net” and “off-Net” voice and data traffic over the service provider's QoS-Enabled IP network</td>
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</table>
• **Differentiates the service provider from the competition**—By offering managed IP Telephony services, carriers can differentiate themselves from other service providers, reduce customer churn, and attract new customers.

• **Opens doors to new markets**—The Cisco Managed IP Telephony solution gives service providers an entry to new markets. Carriers who had previously offered only TDM voice services, for example, can begin adding Internet and data services. Similarly, managed data network service providers can introduce managed IP telephony services as an overlay option.

### Table 2 Service Provider Go-to-Market Opportunities

<table>
<thead>
<tr>
<th>Type of Service Provider</th>
<th>Selling Opportunities</th>
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<tbody>
<tr>
<td>Carrier that offers maintenance and managed services for legacy PBX systems</td>
<td>Migrate existing legacy PBX customers to Cisco CallManager platform; sell higher-value managed IP Telephony services; eventually sell converged voice/data managed services</td>
</tr>
<tr>
<td>Carrier that resells legacy PBXs but does not offer managed services</td>
<td>Resell Cisco CallManager platform and launch revenue-generating managed IP Telephony services; eventually converged voice/data services</td>
</tr>
<tr>
<td>Network service provider (NSP) that offers managed LAN or WAN services</td>
<td>Sell existing managed data services customers incremental managed IP Telephony services as an add-on option</td>
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</tbody>
</table>

### Enterprise Benefits

Business customers of service providers offering Managed IP Telephony services achieve greater ROI than they could with legacy PBX systems, a result of lower telecommunications staffing and administration costs, reduced network maintenance costs of a converged voice and data network, and lower capital expenditure. Market researcher InfoTech’s study of a 100-user deployment of a converged network showed that the total cost of ownership for an IP PBX solution was 20 percent lower than for an IP-enabled legacy PBX by the second year.

Furthermore, managed IP Telephony services greatly reduce the potential risk of migration to IP telephony because the end customer relies on the service provider’s expert operational support resources and processes. Additional benefits emerge from the increased employee productivity made possible by new IP-enabled communications applications such as unified messaging, notification services, network-based call distribution, and find-me/follow-me services.

The enterprise benefits of IP PBXs are measurable and have been validated by actual customer experiences. For example, one Cisco customer opening a new facility with 650 phones determined that the payback for a Cisco AVVID IP Telephony solution was just nine months. Factors contributing to the rapid return were a reduction in network administration costs by 33 percent, a decrease in total networking equipment costs by 25 percent, and a drop in annual interoffice phone charges by 35 percent.

### Cisco Managed IP Telephony Solution Components

Based on Cisco AVVID, the Cisco Managed IP Telephony solution includes call processing, voice messaging, line connections, switching, voice-enabled gateways and network management systems.
Call Processing: Cisco CallManager Software

Cisco CallManager is the software-based call-processing component of the Cisco Managed IP Telephony Solution. Enabled by Cisco AVVID, Cisco CallManager software extends enterprise telephony features and capabilities to the business customer’s IP phones and other telephony endpoints.

In the Cisco Managed IP Telephony solution, Cisco CallManager is deployed on the customer premises or in the service provider’s central office or data center—one CallManager implementation per customer. The software can be installed on the Cisco Media Convergence Server (MCS) 7800 Series platform, Cisco Integrated Communication System (ICS) 7750, or selected third-party servers. It ships with a suite of integrated voice applications and utilities, including the Cisco WebAttendant, which is a software-only manual attendant console; a software-only conferencing application; the Bulk Administration Tool (BAT); the CDR Analysis and Reporting (CAR) tool; and the Admin Serviceability Tool (AST).

For managed IP Telephony services, key advantages of Cisco CallManager software are its unmatched scalability, high availability, and voice QoS—essential attributes for attracting and retaining business customers.

- **Scalability**—Scalability is unsurpassed because each Cisco CallManager server can support up to 10,000 IP Phones, and a cluster of Cisco CallManager servers can accommodate up to 35,000 users. If the service provider establishes H.323 links among Cisco CallManager sites, it can network up to 100 Cisco CallManager clusters, scaling to meet the requirements of enterprise customers of any size.

- **High availability**—For high availability, the service provider installs additional Cisco CallManager platforms in a redundant, clustered configuration, configuring the Cisco IP Phones to automatically seek out and register with these backup servers. For companies with centralized call processing—that is, with remote sites such as branch offices connected to a CallManager cluster at headquarters—a feature of Cisco IOS® Software called Survivable Remote Site Telephony (SRST) provides backup phone connectivity and services. Installed on remote site voice-enabled routers, the software ensures that basic phone service is available even if the WAN goes down.

- **Voice quality**—For deployments in which IP is the main transport, a software feature called Cisco Call Admission Control (CAC) helps ensure voice quality. Cisco CAC helps maintain voice QoS across constricted WAN links and automatically diverts calls from the IP network to alternative Public Switched Telephone Network (PSTN) routes if WAN bandwidth is not available.

Service providers who offer the Cisco Managed IP Telephony solution typically deploy Cisco CallManager in one of three configurations: single site; multisite using an IP WAN with Cisco CallManager installed centrally; or multisite IP WAN with distributed call processing.

Figure 1 illustrates a hybrid deployment architecture with both distributed and control call processing.
Voice Mail and Unified Communications: Cisco Unity

Cisco Unity unified communications software, another component of Cisco AVVID, provides voice mail as well as advanced communications services that unify data and voice messaging. Service providers can choose from two products: voice mail or unified messaging. With Cisco Unity Unified Messaging, service providers can offer their business customers converged communications capabilities, such as listening to e-mail over the telephone, checking voice messages from the Internet, and forwarding faxes to any local fax machine. Built on a platform that can scale to meet the changing needs of service providers’ customers, Cisco Unity uses streaming media and an intuitive browser interface for system administration. The latter reduces administrative burden, increasing the profitability of managed IP Telephony services based on Cisco solutions.

Line Connections: Cisco IP Phones

Cisco IP Phones are fully programmable, next-generation intelligent communication devices. The service provider or business customer can customize the phone feature set easily as business needs change. The two-port 10/100BASE-T switch interface can be used to connect the phone to a PC, satisfying most desktop users’ needs with a single Ethernet port. In-line power is accepted from an integrated Cisco Catalyst switch card or the Cisco Catalyst in-line power patch panel.
Service providers can offer their customers a choice of several Cisco IP Phones depending on their price and feature requirements. For example, the Cisco IP Phone 7940 is a full-featured phone for light to medium traffic volume, the Cisco IP Phone 7910 is a basic-feature phone mainly for use in lobby areas, and the Cisco IP Phone 7960 is designed for executives and managers. The Cisco IP Phone 7905 is a low cost, full-featured IP telephone particularly suitable for the small-to-medium business market.

**Cisco Catalyst Switches**

Cisco Catalyst switches deliver the QoS capability required to identify voice traffic and give it priority over data traffic. This ensures that the voice quality experienced with the Cisco Managed IP Telephony solution is comparable to TDM voice quality. Cisco Catalyst switches also provide the in-line power required for Cisco IP Phones.

**Cisco Voice Gateways**

Cisco offers a portfolio of gateways for connecting an IP telephony network to the PSTN. Options include specialized standalone customer premise gateways, such as the Cisco VG200 VoIP Gateway; remote-branch integrated-router VoIP gateways, such as the Cisco 2600 Series and Cisco 3600 Series; high-density campus and service provider network VoIP gateways, such as the Cisco AS5000 Series Universal Gateways; and voice-service modules for the Cisco Catalyst switch family. The service provider can often take advantage of the customer’s existing infrastructure—for example, by simply adding a voice gateway card to an existing Cisco Catalyst switch. The service provider selects the appropriate gateway based on the business customer’s port density and network capacity requirements as determined by the service provider during the network assessment process.

**Network Management**

In the managed-services environment, the service provider monitors the enterprise customer’s IP Telephony network remotely, typically from an existing network operations center (NOC). Network management tools are available from both Cisco and Cisco AVVID Partner Program members. Cisco has teamed with partners to provide the optimum feature set for service providers that want to manage multiple customers from a single software tool. Table 3 summarizes the capabilities of network-management software options for the Cisco Managed IP Telephony Solution.

**Table 3  Cisco Network-Management Software Functions**

<table>
<thead>
<tr>
<th>Network-Management Software</th>
<th>Function</th>
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<tbody>
<tr>
<td>Cisco IP Telephony Environment Monitor (ITEM)</td>
<td>Monitors the health of IP telephony installations (including Cisco CallManager, switches, gateways, and IP phones) and the underlying fabric. Provides real-time, detailed fault analysis of Cisco devices in IP telephony environments. Uses synthetic traffic to replicate network activity associated with IP telephony implementations. Alerting functions can send information to paging and e-mail servers as well as to the Managed IP Telephony service provider’s network management system</td>
</tr>
<tr>
<td>Prognosis IP Telephony Manager from Integrated Research</td>
<td>Provides a single point of management for the Cisco CallManager and its underlying infrastructure, including clusters and remote sites; can be partitioned to manage multiple customer deployments</td>
</tr>
</tbody>
</table>
Why Cisco?

The leader in IP telephony, Cisco offers a complete end-to-end solution that enables service providers to deploy managed IP Telephony services profitably. Cisco offers service providers the following advantages:

- **Market leadership in enterprise converged networking**—More enterprise customers have built their LAN networks with Cisco equipment than with any other vendor. These existing Cisco customers can easily upgrade their LAN infrastructures to support IP telephony. Synergy Research reports that Cisco is number 1 in worldwide IP phone and LAN telephony revenue, and Infotech ranks Cisco CallManager number 1 in IP PBX shipments. Therefore, service providers that deploy the Cisco Managed IP Telephony solution gain the largest available market—not only for managed IP Telephony services but also for other high-margin managed voice and data services that can be deployed on the same infrastructure.

- **Technology leadership**—Cisco IP telephony solutions offer an unmatched feature set, scalability, and high availability, and they comply with open standards. Service providers can base their managed service offers on a platform that helps them remain competitive in the market.

- **Commitment to managed services**—Cisco has gained invaluable experience and expertise by offering IP telephony and converged services to enterprise customers. Now Cisco is employing its unique knowledge base to create new revenue opportunities for its service provider partners by affecting the Managed IP Telephony Solution.

- **Ready access to skilled resources**—The extensive sales and support staff at Cisco and its reseller channel for converged voice/data solutions give service providers access to an unparalleled skilled resource base for accelerated market penetration. Cisco IP telephony reseller partners can help the service provider extend its sales reach and also support the installation and configuration of the Cisco Managed IP Telephony Solution.

- **Comprehensive product portfolio**—Service providers that choose Cisco can work with a single source to obtain all necessary enterprise and central office-based Cisco Managed Voice Services solution components.

**For More Information**

To learn more about the Cisco Managed IP Telephony solution and other Cisco solutions for Managed Voice Services, visit:

www.cisco.com/go/telephony
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