Cisco Open, Scalable, End-to-End Unified Communications:

Combining Real-Time Communications with the Value of the Internet as well as Enterprise and Messaging Applications

Unified Communications Opportunity—A Lot of Upside for Enterprise and Service Providers

Unified Communications. It is much more than unified messaging (the convergence of voice, data, and e-mail) with a facelift! Cisco and its ecosystem partners created Unified Communications (UC) to take Unified Messaging (UM) to the next level by combining it with Voice-over-IP (VOIP) enabled, real-time, two-way call and notification services as well as a broad range of device and media independent enhanced communications services. For the first time, users can respond to an e-mail, fax, or voice message with a real-time connection to the message sender, place the message in context of a real-time conversation and drop back to the UC software to take the appropriate action. Furthermore, inbound calls are managed under the control of the user—through inbound call screening with the options to take the call or send to voice mail.

According to Piper Jaffrey, enhanced services for Unified Communications (including such desirable and incrementally profitable services as real time callback-to-sender response from voice, fax or email messages and single number find-me/follow-me services) is one of the fastest growing segments of the telecommunications market. This is because enhanced services can be combined in integrated bundles that enable communications carriers and service providers to create a compelling up-sell/cross-sell, churn-reducing environment leveraging existing and future IP investments. As UC continues to evolve, it will unify more and more telephony, mobile, Internet, and meta Web applications. A variety of messaging, communications, and content delivery services will arise that service providers will be able to sell either on a usage basis or a transaction basis.

How big is the opportunity? The bad news is that since UC is new, few have been able to project the size of the opportunity. The good news is that since UC integrates telephony, wireless, Internet, it is significantly larger than then current market growth projections for unified messaging.

Market Snapshot

Here are a few ways to look at the Unified Communications opportunity:

- According to Davidson Consulting, the convergence of messaging and communications is going to create a $1 trillion market.
- By 2005, messaging will be demanded by more than 1 billion mobile data users. Internet services will be demanded by 600 million mobile data users. (ARC Group).
- By 2001, IP telephony services will reach the $43 billion mark (Frost & Sullivan)
- Unified messaging will be a $31 billion opportunity by 2006 (Ovum)
- According to the Radicati Group, outsourced messaging (managed and hosted) will be a $7.5 billion industry by 2002.
- International Data Corp (IDC) projects that business email boxes in the U.S. will increase 13.5 percent annually to 166 million in 2003. Consumer mailboxes in the U.S. are projected to grow 10 percent annually to 121 million over the same period. At this rate of growth, within the next two to three years there may be more email accounts in the U.S. than either telephone lines or televisions!

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- Hosted email boxes will grow at a much faster rate than corporate boxes in the U.S., according to IDC. Hosted email boxes will grow 35 percent annually between 1999 and 2003, while corporate mailboxes will increase 9 percent per annum, predicts IDC.
- Every business day some 900 million-voicemail messages are exchanged, according to Radicati Group. Voicemail is currently a $15 billion market, with a 19 percent growth rate for new accounts. While 96 percent of U.S. households have one or more phone lines, only 15 percent have service-provider-based voicemail. Additionally, mobile telephone usage is growing by 26 percent per year, with voicemail accounts fast gaining ground as free add-on services.
- According to Ovum, there will be 25 million unified messaging mailboxes in service by 2003.

How Cisco Unified Communications is Different from the Rest

A key differentiator is the Cisco open, scalable, standards-based, UC software platform called uOne. Built on the Cisco best-in-class IP networking infrastructure, uOne connects a world of traditional communications and IP telephony by bringing together multiple messaging, application, and content driven services including voice, e-mail, fax, and the Web in an integrated fashion.

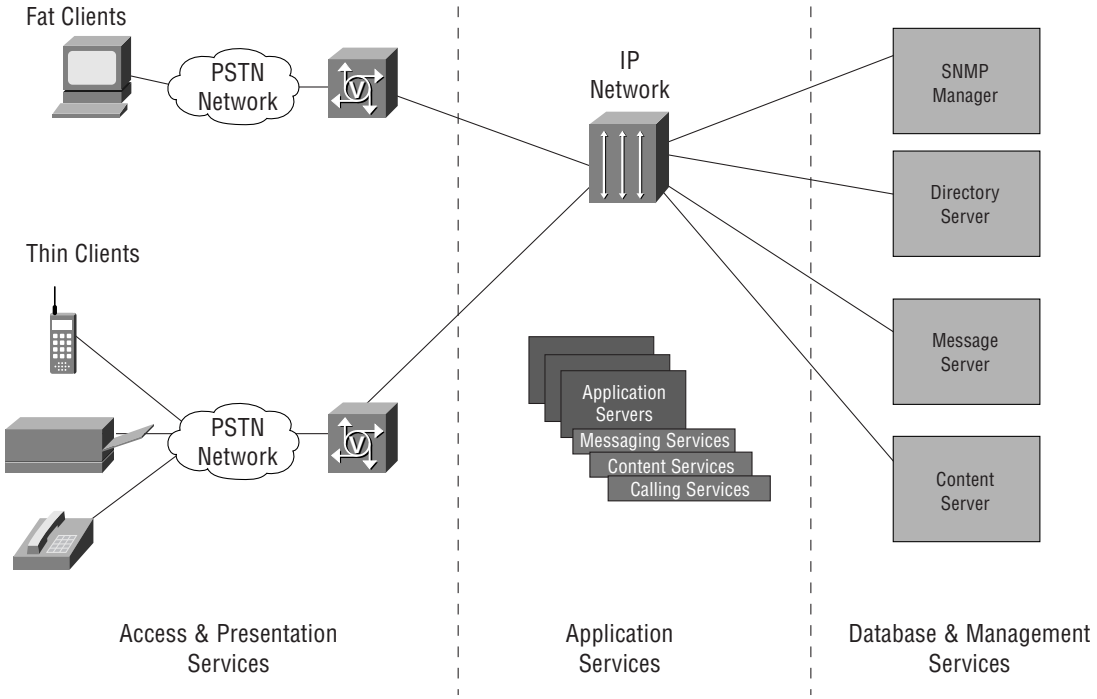
As voice and IP networks converge, carriers, enterprises, and service providers are looking to quickly and cost effectively deploy value-add communications services. The Cisco UC is positioned to provide these markets with a solution that provides end-to-end messaging and communications services, and allows them to adapt to the changing demands for compelling advanced communications.

Since it is based on open standards and leverages existing Internet infrastructure, uOne lowers the cost of investment and communications transport and simplifies administration and management of the services for companies. Additionally, through its enhanced communications services, the platform allows service providers to:

- Generate new revenue streams
- Target new customers
- Reduce customer churn
- Sell inexpensive “sticky” minutes
- Increase brand loyalty.

As seen in the following diagram, the Cisco three-tier software model enables service providers and carriers to deliver anytime, anywhere communications that is device and media independent.

Figure 1 Cisco 3-Tier UC Software Model



The Access and Presentation Services tier terminates the end user access device, providing call control and media control resource management. This tier terminates any device dependencies—essentially allowing all devices to become IP clients.

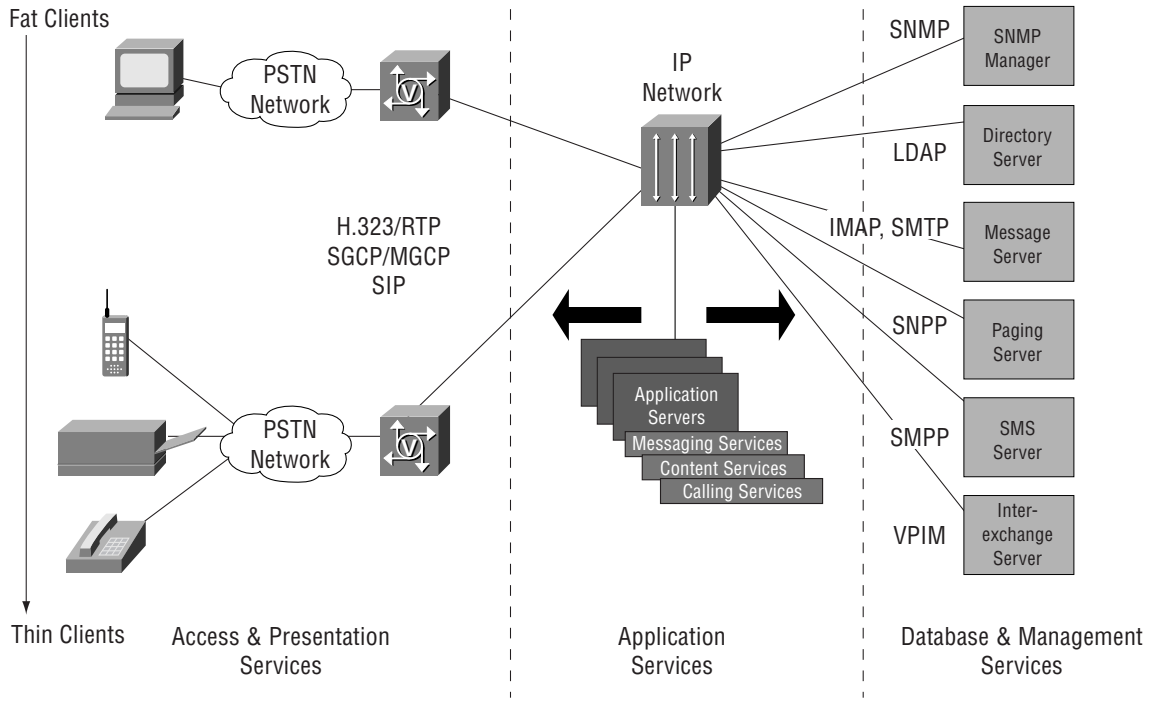
The Applications Services tier provides the application logic and the "user experience" associated with a desired application. This tier fundamentally acts like a bridge between the access device and the back-end databases.

The Database and Management Services tier provides a common set of data and services that form the foundation of UC. This tier includes the directory, message store, Web-based content servers, and other specialized data-oriented servers.

There are three fundamental advantages of the uOne platform:

- Management of client dependencies is isolated to the Access and Presentation Services tier, and therefore does not impact the other two tiers
- IP-standard interfaces are supported between all servers, allowing integration of best-in-class hardware and software components
- By segmenting functions, the architecture achieves scalability in two important dimensions: (1) components in each tier can be scaled independently, allowing scalability for service provider requirements, and (2) components on each tier are dynamically linked, allowing multiple applications to share the common architecture.

Figure 2 Cisco UC Platform: Open and Standards-Based



The above diagram shows the protocols currently supported by the Cisco uOne software platform. From the Access and Presentation Services tier, uOne supports the current (H.323) and evolving (SGCP, SIP) VOIP protocols. These protocols are terminated in the UC application server. From the Database and Management Services tier, uOne supports a wide variety of Internet standard protocols, including LDAP for directory access, IMAP and SMTP for message access, and a variety of standards-based notification and interchange protocols.

As detailed in the next section, Cisco is actively engaged with technology alliances to ensure that the Cisco UC platform interoperates with a broad range of best-of-breed servers.

Cisco UC Platform Technology Alliances

Another key differentiator for Cisco UC is its technology alliances. The Cisco Open Packet Telephony (OPT) architecture establishes the foundation for an open, scalable, UC platform and allows Cisco to create technology alliances with industry-leading technology companies. These technology alliances provide:

- Best-of-breed applications
- Choice
- Faster time-to-revenue opportunities

When best-of-breed technologies and brands are united behind open standards, the risk of becoming stranded on a feature set and being unable to grow is minimized. For example, the Cisco UC technology alliances are building end-to-end solutions that drive demand for specific UC infrastructure components through their own channels. Additionally, a coordinated approach among best-of-breed alliances enhances the overall solution with a long-term growth path for those who adhere to the platform approach. It also builds a multilevel channel that cross-pollinates with and among other alliance suppliers. The result is a whole that is greater than the sum of its parts.

A broad range of technology companies have embraced the Cisco UC platform and are working with Cisco to implement UC offerings. Current UC technology alliances include:

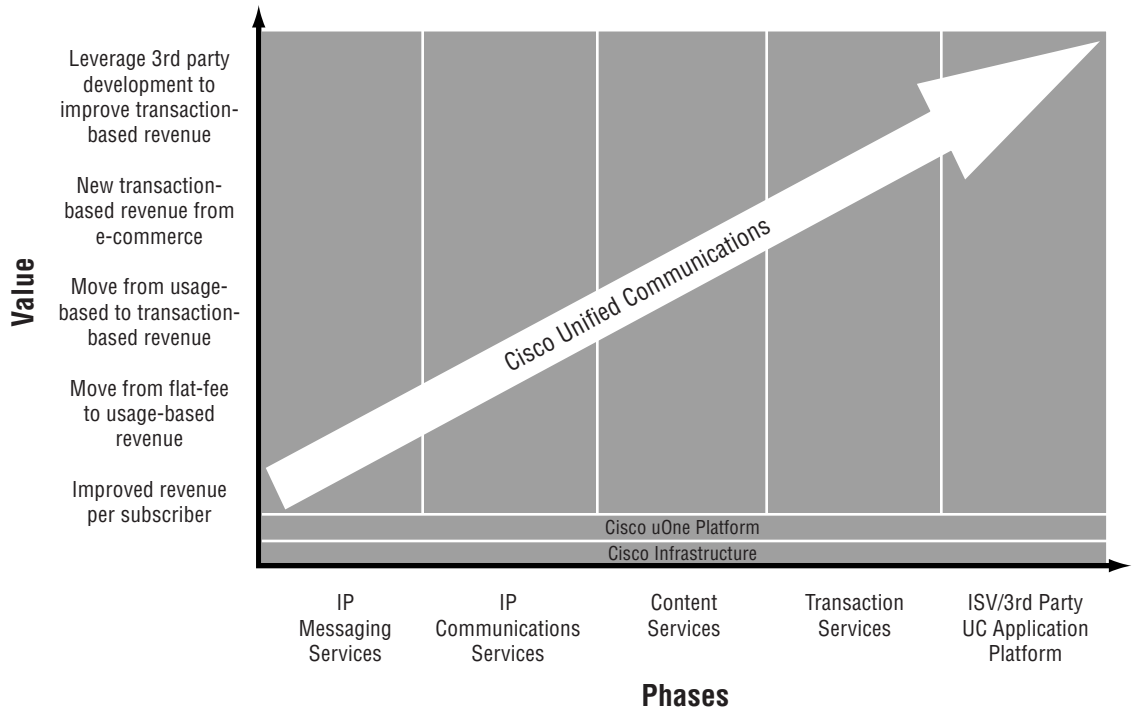
- HP for hardware, OS infrastructure as well as billing integration and usage through its OpenView and Smart Internet Usage products
- Sun's Netra™ Carrier-Grade Servers for hardware, OS infrastructure
- Software.com for message store and directory services
- Sun / iPlanet for message store and directory services
- Lernout & Hauspie (L&H) for text-to-speech applications which enable end-users to read emails and fax headers via a phone
- Nuance for speech recognition capabilities that provide access to information and Web content through speech
- OpenPort for managed fax delivery services

As for systems integrators, each with an established expertise, they will create solution sets built around best-in-class components within the UC platform offerings. Examples include Cap Gemini, HP Professional Services, and Telcordia. In addition to providing specialization services, these integrators and resellers are committed to creating an interoperability, test, and demonstration lab in each geographic theater in which they plan to operate. These service providers are devoting trained engineers, sales staff, and support staff to target market segments and provide unique, value-added applications and branding services within the overall alliance of technology providers.

Cisco Five-Phase UC Software Strategy

The Cisco UC platform is structured to add services and content as the business and market needs demand. The open, scalable UC platform forms the basis for a five-phase software strategy designed to deliver a broad set of enhanced service capabilities which can be deployed individually or in combination by enterprise and service providers. The platform extends and leverages the Cisco Open Packet Telephony (OPT) products with anywhere, anytime, device and media independent enhanced services. As seen in the following diagram, this strategy encompasses a high-level roadmap, direction, and vision not only for Cisco, but for those who need to make critical business and technology decisions around UC. In each phase, there are new value propositions for service providers to consider.

Figure 3 Cisco 5 Phase UC Software Strategy



Phase 1: IP Messaging Services

Messaging services provide a scalable, open messaging application that is built to integrate with best-of-breed third-party components. Features of messaging service applications include e-mail, voice mail, fax and unified messaging. Service provider benefits of this phase include increased brand loyalty and improved revenue per subscriber. End users benefit from IP messaging services by consolidating the barrage of daily personal and business voice, fax, and e-mail messages into a common mailbox that is accessible from any device (mobile, land line, PC, or Web) regardless of time, media, or location.

Phase 2: IP Communications

IP communications services unify real-time communications with unified messaging services. For the first time, users can respond to an e-mail, fax, or voice message with a real-time connection to the message sender, place the message in context of a real-time conversation, and then drop back to the UC software to take the appropriate action. Furthermore, inbound calls are managed under the control of the user—through inbound call screening with options to take the call or send to voice mail. In this phase, service providers move from flat fee-based revenue to usage-based revenue by tying communications services into messaging. Businesses and individuals gain increased productivity and control by unifying inbound call screening with outbound calling and multimedia messaging in a single, personalized user environment. Cisco is currently delivering Phase 1 and 2 to its customers.

Phase 3: Content Services (Access and Delivery)

Content services build on Phase 1 and 2 by providing access and delivery of Internet data to both IP messaging and IP communications services. In this future phase, features of content services will include personalization, calendaring, filtering, and support for integrated UC messaging, communications, and content delivery services. Service provider benefits of this phase will include the ability to move from flat fee- or usage-based revenue to transaction-based revenue on value-added customer services. End users will benefit from regaining control over their business and personal communications by unifying all of their communication needs including inbound call screening, messaging and access/personalized delivery of Internet content based on their preferences.

Phase 4: Transaction Services

In this future phase, transaction services will offer network infrastructure support for e-commerce management and exception handling through the Cisco UC platform. By unifying e-commerce transactions with the power of the Cisco UC messaging, communications, and content delivery services, users will be able to define how, when, and where they wish to be notified of critical events and chose the method of response appropriate to the situation: real-time communication, messaging or call/message routing. A key benefit for service providers will be the ability to gain additional transaction-based revenue by providing value to the e-commerce purchasing chain. End users will gain yet more control over their personal and business communications needs.

Phase 5: ISV/Third Party UC Application Platform

In the near future, the ISV/third party UC application platform will open up all of the features, functions, and benefits of prior phases to application and Web developers. With Phase 5, third party ISVs and solution providers will be able to enhance and extend Cisco messaging, communications, content delivery, and transaction-based services. A primary benefit of this phase will include the ability to enable UC services through a proven application environment that allows Cisco technology alliance partners to innovate UC services. Another benefit will include the ability to leverage the third party development community to sustain and improve transaction-based revenue with innovative applications and services.

A Platform for New Revenue Tomorrow

The unified messaging and real-time communications services outlined in Phases 1 and 2 are available today. One only needs to use his or her imagination to see how the Cisco UC platform and technology alliance can address the market demand of tomorrow. Here are only a few of the applications that will emerge in the near future:

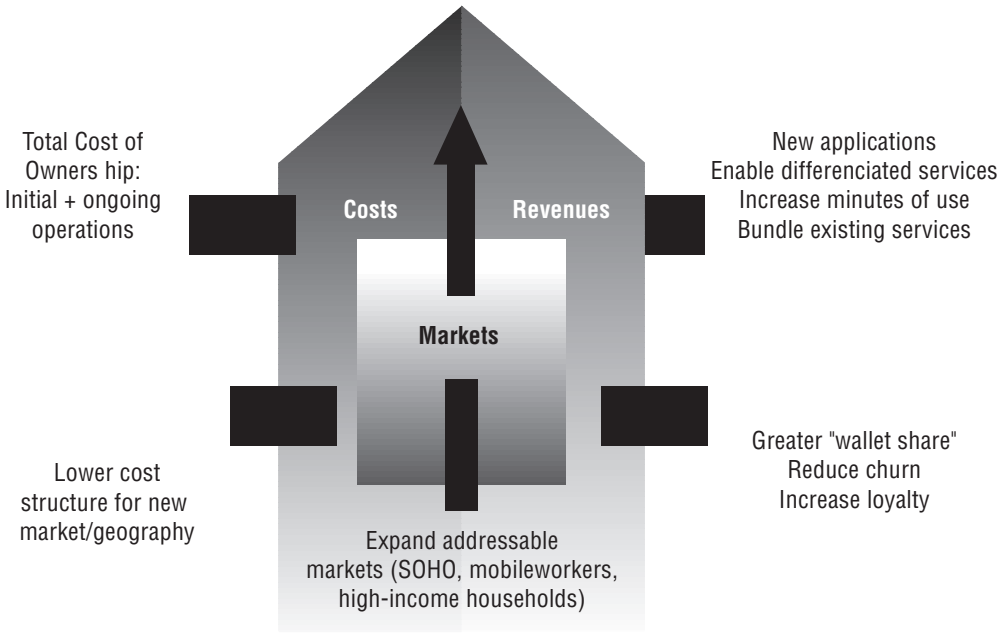
- **Enterprise Application Integration—**Mobile workers or factory floor personnel, for example, can obtain a standard voice interface to any enterprise Web application, such as inventory, quality control, and supply management. Additionally, incoming emails and telephone calls are screened and compared with a set of filtering rules from the subscriber's profile. High priority contacts can be directed to the user's cell phone, and actions such as a fax response can be initiated from the Cisco uOne platform.
- **On-Demand Conferencing—**Using Cisco IP infrastructure and UC software, conventional telephony conferencing takes on Web-enabled features. For example, two UC subscribers engaged in a two-way call can engage a third party during the call. One of the initial callers goes to his or her UC Web site, or uses a second line if available to connect to the site via voice. Callers request a conference with a third subscriber by clicking on a directory entry or through a dial-by-name feature. In the background, as the conference continues, Cisco UC platform automatically determines the best way to reach the third user, in this case an SMS message on a cell phone. The user can then select "connect" from the display, and all parties join in conversation.
- **WAP Message Callback—**Because WAP displays limit the ease of email, fax, and voice message management, this communications feature allows subscribers to reply and resolve mixed-media messages quickly and easily from a WAP-enabled device. For example, a subscriber uses WAP to scan message store listings, choose which messages to attend to, and then redirects or selects messages to be accessed—be they text or voice. After each message is read, the UC system allows actions such as call sender, reply, forward, or delete.
- **Voice-Enabled Web Application—**Cisco UC provides a foundation that blends voice and data services into an integrated customer response experience. For example, a transportation company can integrate its logistics application with UC to better manage delivery communication and provide higher customer service. If a truck is scheduled to pass close by a customer, for example, a UC-directed call finds the appropriate customer representative at that location and offers a set of options: Order a package pickup at discount, press 1) if there are no pickups, press 2) to speak with a customer service representative, press 3) and so on. The responses are directed to the proper support personnel, truck driver, or back into the messaging system. The interaction could be delivered at any point through the Web, instant messaging, pagers, or SMS.

Summary

Whether the market is small/medium businesses, residential, SOHO, mobile, or enterprise "deskless workers," UC offers strong appeal today and tomorrow. UC is open, scalable, and unifies a number of technologies and markets. That is why it is so hard to pinpoint how large the overall UC market will be.

However, when considering a UC vendor, be sure to investigate whether that company has a vision for today and tomorrow. Be sure that the company uses an open, standards-based approach and offers a host of best-of-breed applications through leading partners. How will that company deploy UC? If they do not have an IP-based infrastructure or platform, chances are they are not going to get passed Phase 1. It simply is not possible for them to do so. With its vast amount of resources, Cisco has already ensured that its customers will be able to take advantage of incremental services as the market demands and build new streams of revenue. While UC is just beginning to emerge, the decisions that are made by customers today will determine how they can do business tomorrow. Choice of applications; best-of-breed applications; an open, scalable Internet software infrastructure; and fast time-to-revenue opportunities must be on the evaluation list. In today's world, all of these benefits point to one company...Cisco Systems.

Figure 4 Why Service Providers Should Care About Cisco UC



Source: Ovum Research

For more information, please visit the Cisco Web site, www.cisco.com, and search on the term, unified communications.

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