

How Enterprises Can Reduce Costs and Boost ROI with Cisco's Unified Communications over WLAN

Executive Summary

The Cisco® Unified Communications over WLAN solution helps organizations meet the changing needs of an increasingly mobile, collaborative, and virtual workforce. By delivering a consistent mobile collaboration experience across wired and wireless networks, devices, and applications, organizations can reach new levels of productivity and responsiveness while decreasing corporate cell phone usage by off-loading calls from the cellular network to a wireless LAN network for users who are on campus.

This white paper studies how Cisco Unified Communications over wireless LAN can reduce costs and increase productivity in a typical enterprise deployment. The benefits discussed in this white paper are based on a hypothetical model enterprise, AllMobile, a multinational Fortune 500 company with 1000 employees. In this example, 40 percent of AllMobile's employees are either highly mobile on campus or work frequently away from their primary workspace. Analyzing the costs and associated benefits of deploying Cisco Unified Communication solutions over a wireless LAN for AllMobile resulted in a return on investment of 103 percent over a three-year period and a payback period of one year.

Challenge

With increased competition and globalization, employees are increasingly working in a variety of locations on campus (at their desks, in corridors, or in meeting rooms), as well as outside—for example, at client and partner sites, hotels, airports, or home. The network used and the preferred device may vary based on the location in which work is being done. Users often have to juggle multiple telephone numbers, check more than one voice mailbox and e-mail account, and place calls to multiple phone numbers in order to reach the right person. All of this results in project delays, slow response time, and loss in productivity, making it more important than ever to consolidate voicemail and messages and to use the right tools to reach the right person on the first try.

As mobility is increasingly woven into the fabric of enterprise activities, companies need to be proactive and make mobile communications more intelligent and seamless. By doing so, they allow employees to connect and collaborate more effectively with partners, customers, and other employees anywhere, anytime. For many mobile, customer-facing employees, the ability to be reached the first time can make or break a relationship and has a direct impact on customer satisfaction and profitability.

Workers are increasingly becoming dependent on mobile phones for business communications, whether they are mobile on campus or on the go. For employees who are mobile on campus, it is common to experience poor in-building, cellular coverage and increased mobile phone use when communicating with colleagues who have stepped away from their desks. The increased use of personal mobile phones for business communications when employees are away from the campus makes it challenging for businesses to meet their security and compliance requirements.

Alternatively, businesses that have chosen to provide company-paid mobile phones continue to find that enterprise mobility spending takes a greater share of their IT budgets.

To meet these increased mobility requirements, businesses are looking at technologies that enable them to extend existing investments in business communications systems and corporate networks, while taking advantage of least-cost routing for mobile communications and a common security and compliance framework across fixed and wireless technologies.

For example, considering that 22 to 40 percent of the cell phone calls are made on campus to colleagues, more and more businesses are considering dual-mode phones, with both cellular and wireless LAN capability, to control mobile communication costs by migrating calls from the cellular network to the corporate WLAN. However, existing WLAN deployments may not always be deployed to provide full-building coverage, and can be optimized to deliver high performance for advanced mobility services such as unified communications. In contrast to data applications, voice applications are highly sensitive to degradation in the quality of the connection and are latency-sensitive. This means that if the voice packets are not received in a regular, timely manner, the end user will experience marginal to unintelligible voice quality due to drop-outs. Without a voice-ready wireless LAN that provides continuous coverage, dual-mode devices will not meet end-user expectations.

Solution

Cisco Unified Wireless Network is a unified-communications-ready WLAN that helps streamline business processes by providing anytime, anywhere access to critical information and collaboration tools, while creating a consistent end user experience across applications, networks, and devices.

Cisco Unified Communications for Enhanced Collaboration

[Cisco Unified Communications](#) combines the convenience and flexibility of mobile communications with the secure and managed benefits of Cisco IP Communications. The solution includes:

- **Single-business-number reach and a single voicemail**, giving users the ability to direct incoming calls to ring on a mobile phone as well as on the business phone, thus providing a single number for callers to reach the user. It extends the rich call control capabilities of Cisco Unified Communications Manager from a mobile worker's primary workplace desk phone to any location or device of their choosing.
- **Rich features such as call control, messaging, conferencing, and presence** capabilities to mobile phones, delivering a consistent mobile collaboration experience in the office and on the go. This rich feature set can be extended to dual-mode phones via either a Session Initiation Protocol (SIP) or a Skinny Client Control Protocol (SCCP) client.
- **Cisco Unified Personal Communicator**, a desktop or laptop computer software application that transparently integrates a wide variety of communications applications and services, such as voice, video, instant messaging, Web conferencing, voicemail, and presence information from a single multimedia interface on your PC or Mac, simplifying communication and collaboration.

Cisco Unified Wireless Network for Enhanced Performance and Reliability of Unified Communications Applications

The [Cisco Unified Wireless Network](#) is a fully integrated, wired and wireless solution that delivers critical features to support unified communications such as quality of service (QoS), fast secure roaming, battery power management, centralized radio frequency (RF) planning, and optimization tools for voice, increasing call coverage for enhanced reachability within the campus. It allows businesses to reduce mobile phone charges by migrating calls from the cellular network to corporate WLAN

Client Device Support

The Cisco Unified Communications over WLAN solution is designed to support devices optimized for specific applications as well as general-purpose devices.

The [Cisco Compatible Extensions program](#) helps a wide variety of clients interoperate securely with Cisco's WLAN infrastructure and provides features that voice communications require, such as power save mode, QoS, and assisted roaming.

Mobile employees can rely on the Cisco Unified Wireless IP Phone 7921G or comparable Cisco Compatible single-mode (Wi-Fi only) or dual-mode (cellular and Wi-Fi) devices to access all their communications capabilities while roaming within the campus.

Cisco has partnered with industry leading dual-mode phone providers to extend the reach of applications from Cisco Unified Communications Manager to dual-mode devices. Calls dialed on campus are sent over the Cisco Unified Wireless Network infrastructure and take advantage of least-cost call routing, higher bandwidth, and enhanced coverage and thus reachability. Calls originating off campus are handled as a traditional cellular phone call.

Cisco Compatible Dual-Mode Devices

Dual-mode phones function as an enterprise IP phone on campus and a cellular phone off campus. They typically provide a wide variety of smartphone capabilities, including group calling, call transfer, paging, and other personal digital assistant (PDA)-like features.

The Cisco Compatible Extensions program helps to ensure that dual-mode phones are designed and interoperate with the Cisco Unified Wireless Network based on Wi-Fi standards. The program also helps accelerate additional, innovative Cisco product features, such as QoS and fast secure roaming.

Implementing QoS in a WLAN makes network performance more predictable and bandwidth usage more effective. Through the use of Layer 2 admission control, QoS can be maintained under a heavy user load so that the Cisco WLAN can meet high demand. Because the role of the wireless voice client also is critical in establishing end-to-end QoS, Cisco also supports Wi-Fi Multimedia (WMM) in its [Cisco Compatible Extensions specification](#).

Efficient roaming is critical for voice applications, which are unforgiving of any delays in authentication. Cisco Fast Secure Roaming is a mechanism that helps clients roam between access points in the same subnet (Layer 2 roaming) or between subnets (Layer 3 roaming) to support time-sensitive applications such as voice.

Financial Benefits

To maximize the return on investment (ROI), enterprises should first study their mobile workforce profile to help identify relevant solutions, including applications and device requirements for each type of mobile workforce. A typical business will have several mobile workforce types, each with different mobile workspace needs. The mobile workforce can be broadly classified into five categories, depending on the type of information needed, the locations they work in, the devices and business applications used.

Campus Mobiles

Campus Mobiles spend more than 70 percent of their time mobile within the campus. Typical Campus Mobile job functions include retail associates, IT support staff, and medical practitioners. Workers in this category have no dedicated workspace, often rely on pagers, and need continuous and seamless access to applications and data while moving around the building or campus. They often use specialized Wi-Fi devices such as ruggedized wireless IP phones.

Solution: Campus Mobiles who spend a significant amount of time with customers or in operational settings can benefit from a Cisco Unified Communications over WLAN solution. The solution combines the Cisco Unified Wireless Network, Cisco Unified Communications, and the Cisco Unified Wireless IP Phones such as the 7921G, which can also be used for application access, becoming a single-purpose device for many job processes.

Road Warriors

Road Warriors spend more than 80 percent of their time outside the office. Typical Road Warriors include sales representatives, consultants, and business executives who work primarily offsite at the client or supplier's offices and from hotels when they travel. They are heavy users of productivity tools and applications such as e-mail and voice. In many instances, they use smartphones and dual-mode devices.

Solution: Road Warriors are important contributors to the success of the business since they interact directly with customers, partners, and suppliers. To help ensure that road warriors who work from a variety of locations do not miss a business-critical call, a baseline functionality that this group needs is the single-business-number reach feature. Businesses may further consider extending the desktop unified communications experience to either a laptop or a dual-mode phone. Dual-mode devices can be deployed as mobile extensions of the business IP phones, and the WLAN can be used when inside the enterprise campus or branch.

Corridor Cruisers

Corridor Cruisers work primarily on campus, and have an assigned work area. Typical job functions for this group include office professionals, and plant and facilities management. They are typically away from their desks more than 20 percent of the time, attending meetings both onsite and offsite. They require connectivity to their applications, heavy voice usage and moderate e-mail access, and often use smartphone and dual-mode devices.

Solution: Corridor Cruisers who spend much of their time at a desk may best be served with single-number reach feature that rings a mobile phone when the employee steps away from the office or is in meetings.

For those who spend more time away from their desks, enhanced unified communication and presence capabilities may also be appropriate. Since Corridor Cruisers work primarily on campus, they can benefit from using the WLAN and either a dual-mode mobile phone or the Cisco Unified Personal Communicator to reduce both complexity and cell phone costs when they are on campus.

Field Workers

Field Workers are service technicians who work primarily offsite, managing installation, service, or repairs of systems or equipment, and move to multiple sites during the day. Typical job functions include field service technicians in industries such as transportation or fleet delivery. They require access to specific line-of-business (LOB) applications and often use ruggedized cellular or dual-mode smartphones to communicate with the main office.

Solution: Given their highly mobile jobs and the need to be easily reachable to respond to new customer requests, field force personnel needs to be consistently connected to their business nationwide. Since they will not be able to fully take advantage of the WLAN, they are not part of this ROI.

Teleworkers

Teleworkers are employees whose primary workspace is at home, and who occasionally travel to the main campus—typically, they do not have specific office space at the business site. Typical job functions include call center staff, help desk staff, and a remote or inside sales force. They mainly use laptops and mobile phones.

Solution: This group of workers can benefit from a Cisco Enterprise-Class Teleworker solution, which integrates with Cisco Unified Wireless IP Phones. They will not be using the WLAN and are therefore not considered in the ROI.

Based on these mobility types, Table 1 shows the Cisco portfolio of unified communications solutions for the mobile workforce. Corridor Cruisers, Campus Mobiles, and Road Warriors are the three mobility groups that will be able to take full advantage of a pervasive WLAN deployment and are therefore considered in our solution matrix.

Table 1. Cisco Unified Communications Products for the Mobile Workforce

	Road Warriors	Corridor Cruisers	Campus Mobiles
Devices			
Wi-Fi laptops	—	X	—
Cisco Unified Wireless IP Phone			X
Dual-Mode Devices	X	X	
Applications			
Cisco Unified Mobility (Single-Number Reach)	X	X	X
Cisco Unified Personal Communicator (for laptops)	—	X	
SCCP or SIP client (cell or dual-mode)	X	X	
Infrastructure			
Unified-Communications-Ready Cisco Unified Wireless Network	X	X	X
Cisco Unified Communications Manager	X	X	X
X Recommended — Possible			

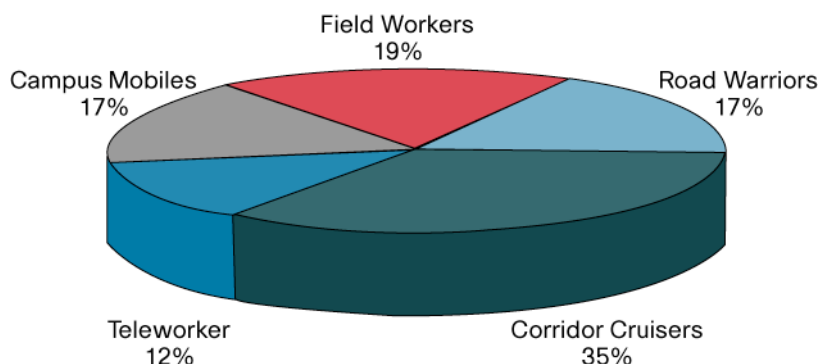
Return On Investment (ROI)

To illustrate the financial impact of deploying Cisco Unified Communications over WLAN, it is useful to look at the ROI of a typical enterprise such as our hypothetical company AllMobile by weighing implementation and ongoing maintenance costs against the predicted cost savings and productivity benefits over a three-year period.

AllMobile has the following characteristics:

- The site has 1000 users of which 40 percent are mobile employees.
- The distribution of mobility types as a percentage of the mobile workforce is as shown in Figure 1:

Figure 1. Mobile Workforce Categories at the Example Company, AllMobile



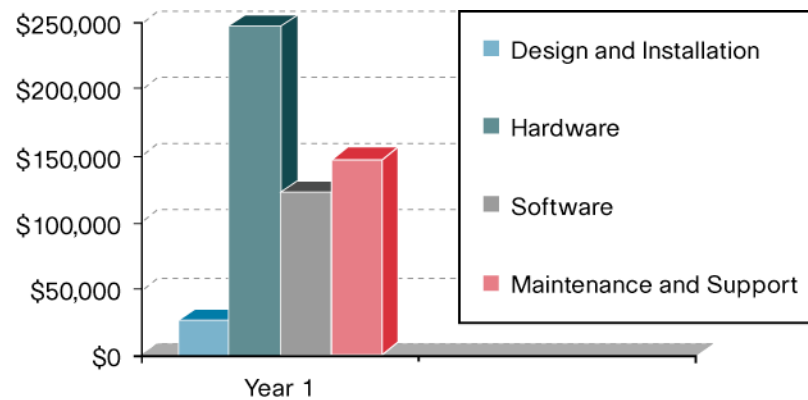
- 60 percent of the remaining employees are fixed-line users (administrative and finance staff) who do not use cellular services.
- The site has deployed a Cisco Unified Communications solution and a small, nonpervasive Cisco Unified Wireless Network with only 50 access points in a standalone architecture.
- The regular customer discount was applied.

Total Cost of Ownership (TCO)

Many enterprises have already deployed wireless networks. But few have a WLAN architecture capable of delivering voice in a pervasive manner and with a satisfactory QoS. In most cases, companies would need to add access points and migrate to a controller-based architecture.

Figure 2 shows the TOC over one year. Additional investment includes the acquisition of dual-mode handsets, wireless IP phones, and mobile unified communications client applications.

We are assuming that AllMobile has the latest Cisco Unified Communications system deployed and that the additional unified communication client licenses (presence and Cisco Personal Mobile Communicator) are purchased for Corridor Cruisers and Road Warriors. The Cisco Unified Wireless Network is upgraded to a controller-based architecture, and additional infrastructure is implemented to support the pervasive, voice-ready deployment. Dual-mode phones are given to Road Warriors and Corridor Cruisers, and wireless IP phones are given to Campus Mobiles. In addition, the model factors in installation, integration, and ongoing maintenance expenses for the access points, wireless IP phones, dual-mode phones, and mobile unified communications clients.

Figure 2. Total Cost of Ownership for the Cisco Unified Communications Solution at AllMobile

Primary Benefits

By deploying Unified Communications over the Cisco Unified Wireless Network, AllMobile will be able to:

- Reduce cellular costs by 17 percent annually. This will be accomplished by using the WLAN rather than cellular network for on-campus business communications and by taking advantage of the Cisco Unified Wireless Network and converged IP network to route mobile business communications on campus and between offices
- Save 14 to 26 percent depending on the mobility type, from enhanced productivity that results when employees have access to their critical business communications tools in a timely manner. The cost savings here result from features such as single-number reach, single voice mailbox, and the ability to move calls between mobile phones and desk phones. Along with presence on dual-mode devices, productivity gains could be realized from the reduced time associated with three common activities:
 - **Checking voicemail**—One voice mailbox to check instead of two or more
 - **Dialing**—Click to call (using a corporate directory, not personal directory), avoiding the need to call back on a landline
 - **Accessing e-mail and messaging**—Mobile e-mail for all mobile employees, not just highly mobile employees
 - Making presence information available to others—Check availability of the person you want to call, avoiding unnecessary callbacks

An average savings of 1 to 2.5 hours per user per week are usually possible, and in this study, we assume that 50 percent of the time savings is translated into productive time.

- Reduce missed sales opportunities by 21 percent thanks to increased reachability, resulting in enhanced customer responsiveness and satisfaction.
- Decrease in cellular cost via:
 - Reduction in cellular minute usage when calls are made on campus.
 - Reduction in international roaming charges when calls are made from enterprise international campuses.
 - Lower overage charges—Fewer employees exceed their monthly cell phone minute allotments as their on-campus calls are not taken from their monthly allocated minutes.

Figure 3 summarizes some of these benefits.

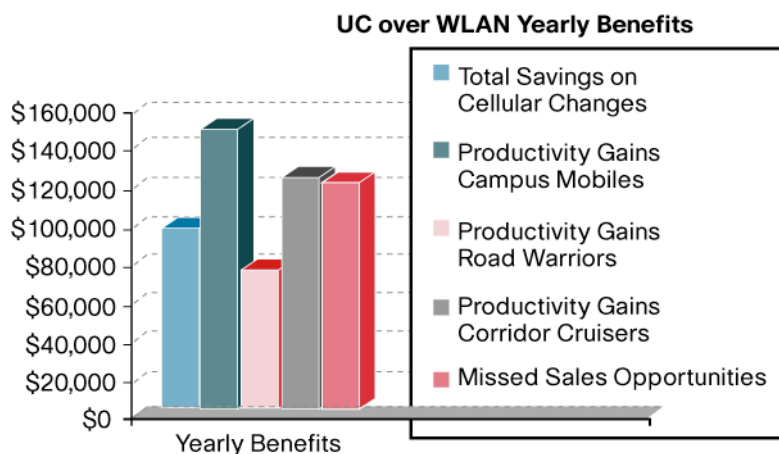

Figure 3. Yearly Benefits of Unified Communications over WLAN

Figure 4 shows how campus calling patterns shift from cellular to private networks after an enterprise migrates from a cell phone solution to a wireless IP and dual-mode phone solution.

Figure 4. Call Flow Migration from Cell Phone to Wireless IP and Dual-Mode Phone Solution

Where Am I ?	What Device Am I Using	Who Do I Call	Before Wireless IP and Dual-Mode	After Wireless IP and Dual-Mode
	My LAN  My Deskphone	Workmate's Desk Phones 	On Net	On Net
	My Campus 22%–40% Off Net  My Mobile	Workmate's Mobile 	Off Net	On Net
	My Foreign Campus 0–25% Off Net  My Mobile	Workmate's Mobile 	Off Net	On Net

Additional Cost Savings

Not included in this model are several additional ways that an enterprise can achieve costs savings:

- **Use of wireless hotspots and VPN connections to corporate networks**—Using hotspots for voice and data communications costs less than connecting across a cellular network.
- **Lower tiered rates**—Employees who use the Cisco Unified Wireless Network more and the cell phone network less can switch to lower base rate plans with lower monthly minute allotments.

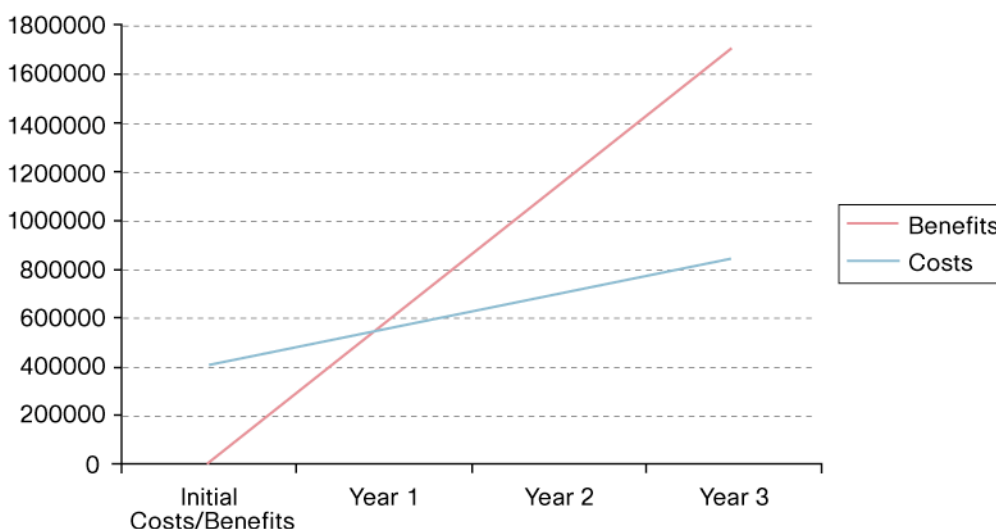
Return On Investment and Payback Period

The model compared the costs against the benefits of deploying Cisco Unified Communications over WLAN over a three-year period for 400 mobile users. The costs included the upgrade to a pervasive, voice-ready WLAN, the purchase of the devices, and unified communication mobile applications as well as ongoing maintenance, support, and additional help desk calls.

Benefits included savings by routing on-campus calls on the WLAN, productivity gains through the use of time-saving applications, and a reduction in missed sales opportunities due to enhanced customer responsiveness.

As Figure 5 shows, the deployment for our model enterprise resulted in a ROI of 103 percent over a three-year period and a payback period of one year.

Figure 5. UC over WLAN Cumulative Costs/Benefits over Time



Conclusion

Using Cisco Unified Communications over WLAN solutions can help enterprises lower costs and enhance productivity. However, cost savings alone are not the only reason enterprises should consider implementation. In a wide variety of industries, including healthcare, manufacturing, and retail, and in large organizations, such as universities or airports, businesses can benefit from a solution that allow mobile employees to respond and communicate faster.

Enterprises embracing unified communications over a WLAN can help their employees distribute and access information, build consensus, and reach decisions more quickly. As a result, businesses can become more agile and can respond more rapidly and decisively to unforeseen changes and new business requirements, giving them a powerful competitive advantage that can help them achieve and maintain market leadership.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

CCDE, CCVP, Cisco Eos, Cisco StadiumVision, the Cisco logo, DCE, and Welcome to the Human Network are trademarks; Changing the Way We Work, Live, Play, and Learn is a service mark; and Access Registrar, Aironet, AsyncOS, Bringing the Meeting To You, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Collaboration Without Limitation, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Event Center, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, IronPort, the IronPort logo, LightStream, Linksys, MediaTone, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PCNow, PIX, PowerPanels, ProConnect, ScriptShare, SenderBase, SMARTnet, Spectrum Expert, StackWise, The Fastest Way to Increase Your Internet Quotient, TransPath, WebEx, and the WebEx logo are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0801R)