Redefining Mobility: Access Personalized Services at Home, at Work, and on the Move

Abstract

Not so long ago, to use a network service you had to be in a certain location. You watched television at home, participated in multimedia conferences in your office, and used a navigation system in your car.

That's changing. In today's Connected Life, people use more services, more often, and in any location. Services come to you, wherever you are and whatever device you're using.

The Connected Life eliminates location restrictions in the following ways:

- **On the move:** From any workspace – car, office corridor, public park – people can use smartphones or laptops for location-based tracking, downloading music, gaming, watching streaming video or video on demand (VoD), conducting e-commerce, and more. The workspace or play space can be anywhere with a wired or wireless connection.
- **At work:** People can collaborate with their colleagues and with partner companies without the time, expense, and environmental costs of travel. Tools that make this possible include Cisco® TelePresence for "face-to-face" collaboration over the network, video conferencing, and rich-media collaboration combining voice, video, and Web sharing.
- **At home:** People can receive practically any content or service – from personalized communications services to video entertainment – on any device, including a PC, TV, or smartphone.

The service provider plays a vital role in the Connected Life. Rather than delivering services that are largely invisible, the service provider now delivers tangible experiences, like video conferencing, gaming, shopping, video, and more. As a service provider, you become the "experience provider" whether your customers are at work, home, or in between.

This paper explores the shift in the definition of mobility; provides scenarios illustrating how mobility is changing the way people access and use services; explains the role of service providers and businesses in realizing the vision; and summarizes Cisco's contributions to the Connected Life.

Redefining Mobility

A critical technology behind the Connected Life is mobility. Mobility used to mean receiving voice services on a cellular phone: one service, one device. Now it has become a characteristic of the IP Next-Generation Network (IP NGN), enriching a large suite of services from VoD and streaming video, to video conferencing and rich-media collaboration, to gaming and shopping. The new mobility lets people access services on any device: cell phone, smartphone, IP phone, dual-mode phone, laptop, or PC. As a result, people can move about freely while remaining continuously connected to other people and services.

Regardless of where they are when they use a service – on the move, at home, or at work – subscribers expect the same service quality they would experience from wireline access.

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Envisioning the Connected Life

The Connected Life enriches the possibilities for how people can conduct their professional and personal lives, as illustrated in the following scenarios. Table 1 describes the technology that makes each experience possible.

Morning

After breakfast, a marketing manager joins a voice, video, and Web conferencing session with colleagues in an overseas office several time zones away. They collaborate on last-minute fixes to a presentation that will be shown to a customer later in the day. The marketing manager has not yet met a new team member in person, but their frequent video conferences have already helped to establish a relationship of trust.

The manager drops off her youngest child at daycare. When she returns to her car, she uses her smartphone to view streaming video from the daycare provider's Webcam. Reassured that her child is busily at play, she continues driving to her older child's school. On the way, the child plays an online video game using a wireless-enabled gaming device. When the child receives an instant message containing a link to a Website containing inappropriate content, the service provider denies access because the family subscribes to a URL filtering service. As a result of the service, the child continues playing safely while the mother continues concentrating on the road.

Workday

A man sits in his doctor's reception area, waiting to be seen to evaluate a possible broken toe. Rather than canceling a meeting with his team members, he joins the meeting using rich-media conferencing software on his laptop, connecting over the guest wireless network that the doctor's office provides as a convenience to patients. When he returns to the office, he uses an intercompany Cisco TelePresence service to meet "face-to-face" with a supply chain partner several time zones away – making him mobile without even traveling. Participants in other locations appear to be sitting across the table, in life size. Ultra-high, 1080p resolution reveals subtle facial expressions that can be important for accurate communications. And both the man and his business partner save the time, cost, and environmental impact of travel.

During lunch, the man needs to purchase some office supplies for his home office. He is alerted to several specials by digital signage placed throughout the store, which the retailer's corporate office has programmed with video and text. He uses an RFID reader built into his smartphone to scan the items he wants and the amount is automatically deducted from the mobile wallet account that he recharges regularly.

Evening

A father picks up his children from their sports practice. On the drive back home, the children settle down by watching a VoD on a wireless laptop. Video quality remains consistent even as the car roams through different coverage zones. After arriving at home, the children resume watching the video on the family room TV, right where they left off. Later that night, the children go out with friends. The parents reassure themselves that the children made it to their destination by using a GPS tracking service from the service provider. The youngest child remains home to rest up for a dance recital the next day. But first, a preview: The parents take her to a public Cisco TelePresence center where she dances for her grandparents, who enjoy the performance from a Cisco TelePresence center in their city, 2000 miles away. The ultra-high resolution lets the

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grandparents see every detail of her outfit and footwork even as the child sees every detail of her grandparents' delighted faces.

Table 1. Cisco Mobility Technologies that Enable the Connected Life

Connected Life Experience	Underlying Mobility Technology
Morning	
• Telework	• A worker uses Cisco Unified Personal Communicator on laptop. • A Linksys® wireless router lets her work from any workspace in her home or yard. • A Cisco Enterprise Class Teleworker solution provides secure connectivity.
• Real-time video from daycare	• The daycare provider connects video surveillance cameras to a Cisco Integrated Services Router (ISR) with a 3G card.
• Wireless video gaming and parental controls	• The child connects to the gaming site from the car using a communitywide WiMAX broadband connection. • The service provider uses a Cisco Service Control Engine to offer various value-add services, including URL filtering.
Workday	
• Rich-media collaboration from doctor's waiting room	• The doctor's office has a Cisco Aironet® wireless access point configured with a guest VLAN for the convenience of patients. • An intercompany Cisco TelePresence service enables the business owner to meet "face-to-face" with customers and partners.
• Shopping	• The Cisco Digital Media System makes it easy to create and distribute digital content throughout the store.
Evening	
• Mobile video	• The service provider uses a Cisco Content Delivery System, including a Cisco Media Server, to deliver video to in-vehicle devices over a WiMAX network. • At home, a Scientific Atlanta set-top box delivers the video where it left off.
• Location tracking	• The outdoor wireless network can pinpoint the location of the children's cell phones within several meters.
• Dance recital	• The service provider offers a Cisco TelePresence concierge service to connect people in different locations so that they appear to be in the same room.

Realizing the Vision

The enabler for the Connected Life is mobility, integrated into the service provider's and business customer's networks.

The Service Provider's Role

Becoming an experience provider is both an opportunity and a challenge. Providers need to be able to deliver services to:

- Different locations: home, work, on the move
- Different devices: cell phone, smartphone, IP phone, PC, and laptop
- Different types of users (see sidebar)
- Different access networks, including Wi-Fi, Wi-Fi mesh, WiMAX, Long-Term Evolution (LTE), and 3G

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Cisco Provides Solutions For All Participants In The Connected Life

Consumers:

Connections used for gaming, network-based personal video recorders, VoD, Wi-Fi, home networks, and mobility

Small and medium-sized businesses:

Hosting and security solutions

Enterprises

VPNs, remote access, storage, security, and Ethernet services

Wholesalers:

Infrastructure to provide access, local- and long-distance voice, colocation, peering, transport, and content delivery services

Regardless of the location, device, type of user, or access technology, the service provider needs to deliver an experience that is simple and convenient, provides high-quality multimedia, and enables users to roam across networks without losing the connection. For example, a business subscriber who starts a conference on a dual-mode phone on the office Wi-Fi network should be able to continue without interruption as she walks out of Wi-Fi range toward a restaurant for a business lunch. Her connection should transfer smoothly to the community's outdoor network. Similarly, a subway commuter who watches a VoD on his laptop should experience excellent quality and a continuous connection as the train traverses different wireless coverage areas.

The Business's Role

When businesses equip their employees for the Connected Life, they benefit from enhanced productivity, collaboration, and job satisfaction. The technologies that enable the Connected Life in business include:

- Mobility software: Employees can use their smartphones not only for voice, voicemail, and email, but also for company collaboration tools such as extension dialing, instant messaging, presence, contacts, and conferencing.
- Dual-mode (Wi-Fi/802.11) phones: These connect over the Wi-Fi network when in range and over the cellular network when out of range. Employees on the move can start a call with one kind of connection and end with another.
- Extension mobility: Employees can log on to any available IP phone in any company office to personalize it with their own phone number. Employees who rarely work in the office can use shared office space, reducing real estate costs and energy costs.
- Follow-me services: Employees can specify that when their Cisco Unified IP Phone rings, all of their other communications devices – phones in other offices, home phone, and cellular phone – ring as well.

Why Cisco for Mobility?

Cisco offers the experience, technology innovation, and proven solutions that service providers, businesses, and consumers need to realize the potential of the Connected Life:

- **IP experience:** Cisco's leadership in IP is evident in innovative features, advanced quality of service (QoS), and service control. Cisco also offers unique capabilities that enable users to remain continuously connected to their services even as they roam between different networks and access types.
- **IP intelligence in all platforms:** IP is the only standard that enables service providers to converge their voice, video, data, and mobility networks to enable the Connected Life.
- **Commitment to open standards:** Cisco's commitment to open standards gives service providers and businesses the flexibility to use solutions from multiple vendors and also simplifies integration.

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- **End-to-end solutions:** Cisco provides mobility solutions from the service provider core to the devices in the customer's home or office, creating a cohesive customer experience.
- **Commitment to customer success:** Helping service providers, businesses, and consumers meet their goals is Cisco's primary goal (see sidebar).

Conclusion

Mobility has become an attribute of service provider and business networks, delivering services wherever users happen to be when they need them. Mobility is changing and enriching all aspects of the Connected Life.

Service providers that enable the Connected Life become even more relevant to their customers – consumers and businesses alike. They become valued experience providers when they use network solutions to deliver services to every location, to every device, for every type of user, over any kind of access network. Businesses, in turn, can benefit from the Connected Life by empowering their employees with mobility solutions such as conferencing and office voicemail for smartphones, dual-mode phones, extension mobility, and follow-me services.

Cisco offers the technology, services, and experience to help make the mobility vision a reality. When people can access services wherever they are, they gain richer options for how to interact, strengthening the Human Network for us all.

To watch a video on the Connected Life, visit: www.cisco.com/go/connectedlife.

For more information on Cisco mobility solutions, visit: www.cisco.com/go/mobility.

To learn more about redefining mobility, visit: www.cisco.com/go/redefiningmobility.

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