Beyond BYOD to the Optimal Work Your Way Experience in Healthcare

VIRAL ADOPTION OF CONSUMER TABLETS FORCES HEALTHCARE CIOs TO RETHINK THEIR MOBILE TECHNOLOGY STRATEGY.

Tablets Transform Healthcare Delivery

More and more doctors and healthcare professionals are integrating consumer devices into their clinical workflow and bringing smartphones and tablets into hospital networks without explicit approval of their IT department. That puts healthcare CIOs in catch-up mode, having to devise an appropriate strategy for their organizations. Physicians are creating a high demand for immediate provisioning of their personal devices to allow for personalized experiences, access from anywhere, access to their personal applications, and access to the secure applications provided by the hospital, such as electronic medical records (EMR). Given the highly mobile nature of the jobs of healthcare providers, it is important that they have an effective way to collaborate while protecting patient privacy and data security. With **Cisco® Bring Your Own Device (BYOD)** solutions, healthcare institutions can provide layered access for doctors, administrators, patients, and visitors to fully realize the benefits of mobility while reducing security risk.

The Challenge of Competing Requirements

With mobile access to patient images and an enhanced ability to communicate at the point of care, mobile devices are poised to provide meaningful improvement for healthcare productivity and communications. With over 4000 apps specifically dedicated to the healthcare industry, major medical schools such as the University of California at Irvine and Stanford are embracing the tablet trend and providing iPads to all incoming medical students[i]. And it's not just the iPad that is being adopted: Android devices, Blackberries, and other tablets are making their way into hospital networks.

Exciting as this trend is, it creates new challenges for IT departments. With up to three devices per person on average, users want seamless access no matter which device is used or where it is connecting. And that connection needs to be fast enough to run applications effectively and reliably so that it can support access to real-time patient X-rays, CT scans, and laboratory data during patient consultations or exams.

In an IT environment that is becoming more complex, hospitals face the challenge of allowing access to multiple types of users, with varying degrees of entitlement to resources, on a wide variety of mobile devices. To address this situation, IT is seeking solutions for a number of new challenges:

- Securing both hospital owned and personal devices, with policy enforcement to protect patient data
- Scaling infrastructure to meet the growing number of devices per user
- Delivering an optimal user experience to drive productivity
- Supporting clinical apps, as well as voice and video from any device
- Simplifying management and lowering operational costs

Cisco BYOD Solutions: The Optimal Experience on a Medical-Grade Network

The **Cisco Medical-Grade Network (MGN)** provides the network foundation that enables reliable, seamless, and secure health data exchange and communications for the healthcare community. Cisco's wireless technologies and Cisco BYOD solutions empower IT to go beyond simply connecting user-owned devices, to scaling the experience of many users with multiple devices, anytime, anywhere, for a robust healthcare environment.

Cisco BYOD solutions deliver a unified security policy across the entire organization, providing an optimized and managed experience for many types of users with diverse device and Health Insurance Portability and Accountability Act (HIPPA) security requirements. Cisco is the only provider of a truly experience-centric solution with context-aware on-boarding, secure access to resources, and high-performance network connections for any mobile device. Cisco provides the needed connectivity consistent with the high expectations of the medical community, including connectivity for mobile collaboration applications for leading mobile devices. This is complemented by new end-to-end wired, wireless, and VPN performance management and policy integration with mobile device management (MDM) solutions. The result is a superior user and IT experience, without sacrificing security, visibility, and control.

The Cisco Difference

- Highest-performance, highest-quality wireless infrastructure—Up to 30 percent faster compared with the competition, delivering the best user experience
- Single source of policy for the entire organization: wired, wireless, remote networks, physical or virtual devices
- Broadest mobile device OS support in Cisco AnyConnect VPN software, including iOS®, Android® and Windows Mobile
- Deepest, broadest, and most accurate device knowledge
- Optimized experience for virtual and native desktop infrastructure
- Unified policy management across the wired and wireless networks

BYOD solutions from Cisco include products that provide three main benefits:

- **Uncompromised experience at scale,** delivering the best experience for any user, device, and desktop (native or virtual), with the ability to collaborate from anywhere.
- **Unified security** — Single policy across the entire organization, including guest, posture, device profiling, network access, and MDM solutions.
- **Simplified operations and management** — Simplified deployment, which accelerates troubleshooting and lowers operating cost.

Uncompromised Experience at Scale

Cisco network and virtualization infrastructure solutions enable IT organizations to meet user-experience expectations, both on and off the hospital network, with virtual or native desktops. With a high-performance, intelligent 802.11n wireless network from Cisco, doctors, nurses, and administrators have the performance and reliability needed to support a high density of mobile devices per user, running high-bandwidth applications like voice, video, and virtual desktops on any type of client device.

Cisco Virtual Experience Infrastructure
Cisco Virtual Experience Infrastructure (VXI) is an end-to-end systems approach that delivers the next-generation virtual workspace by unifying virtual desktops, voice, and video in a software-based client for mobile devices. Cisco VXI helps IT provide a flexible and secure environment for enabling BYOD and mobility policies, without sacrificing user experience.

Network Infrastructure
Cisco's network infrastructure for BYOD includes **RF excellence** features that have been developed into Cisco's custom chipsets, such as Cisco CleanAir® technology for proactive spectrum intelligence and mitigation; Cisco ClientLink beamforming technology to accelerate connections to 802.11a/g/n clients; and Cisco VideoStream technology to provide 5.0 mean opinion scores (MOS scores) for twice the number of concurrent client connections compared to competition.

Other network infrastructure features include:

- **Cisco Aironet® Access Points,** including the new Cisco Aironet 3600 Series, which delivers up to 30 percent faster performance for mobile devices, compared with competing solutions. The Cisco Aironet family includes a range of feature and performance options, including teleworker solutions.
- **Enhanced Cisco Wireless Controllers,** with new scalability allowing management of up to 3000 access points from a single data center appliance. The Cisco Wireless Controller family includes a range of performance and form-factor options.
- **Enhanced mobility services,** including location tracking, wireless intrusion prevention system (wIPS) and rogue detection, and Cisco CleanAir location, correlation, and history data. Our mobility services now come with high availability and "friendly rogue" handling.

- **IPv6 support:** Cisco solves the most common IPv6 experience problems by providing seamless roaming without drops, video and network communications optimization, and IPv6 security attack containment.

- **New, industry-first Hotspot 2.0 support:** Cisco helped define—and is the first to support—Hotspot 2.0 standards, such as 802.11u. These specifications create a future-ready network for automatic cellular-to-Wi-Fi roaming. This important step in creating seamless mobility is a critical topic for service providers, retailers, and healthcare providers, all of whom are looking for ways to differentiate their products and services with innovative mobile applications.

- **New Cisco 812 Ci-Fi (cellular and Wi-Fi) router:** This new Cisco router provides instant, secure Wi-Fi access and 3G cellular WAN connectivity for untethered micro-branch and retail environments. It enables portable and rapid deployment with unified management through the Cisco Prime™ solution.

Mobile Collaboration Applications That Let You Securely Communicate, Anywhere on Any Device

Cisco provides mobile collaboration applications for leading devices, such as Windows, Mac, iPhone, iPad, Android, and Blackberry. Cisco mobile collaboration applications enable emerging anytime, anywhere mobile use cases. With functionality that lets you be as productive from your mobile device as you are at your desk, organizations can transform processes to improve productivity and customer service and to reduce costs:

- Cisco Jabber™ lets you see users' availability, communicate with instant messaging, access voice messages, and make and manage voice and video calls over Wi-Fi networks.

- **Cisco WebEx®** mobile applications let you join meetings, see shared applications, and see and share video for a rich collaborative experience.

Unified Security to Safely Allow Access on Any Device

Cisco is the only provider of a single policy plane across the entire organization, including guest, posture, device profiling, network access, and mobile device management (MDM). Innovations in the Cisco Identity Services Engine (ISE) include new zero-touch on-boarding, central policy integration via open APIs with MDM solutions (including setting of MDM wipe policy or network access policy based on

MDM posture). Cisco ISE is the only solution to provide both network-based and endpoint-based scanning. Cisco also provides data security in the network (on and off premises) to help ensure IP protection.

Cisco Unified Security solutions include:

- **Enhanced Identity Services Engine (ISE):** Enables IT to offer mobile business freedom with policy for when, where, and how users may access the network. Enhancements improve the user experience by allowing users to easily self-provision. The new device-sensor capabilities offer the most accurate identification of new device types in the network, as well as support for more device types—all in all, ISE provides the industry's most scalable and comprehensive view across the network. ISE also provides real-time endpoint scans based on policy to gain more relevant insight. These automated features result in a better user experience and more secure devices. Cisco is the only vendor to offer a single source of policy across the entire organization for wired, wireless, and VPN networks, dramatically increasing organization-wide security and simplifying management.

- **New mobile device management (MDM) integration:** To protect data on mobile devices and help ensure compliance, Cisco is partnering with multiple MDM vendors. MDM gives IT greater visibility into the endpoint as well as control over endpoint access based on the compliance of these devices to company policy (such as requiring PIN lock or disallowing jail-broken devices). Our new MDM capabilities also make it possible to do remote data wipes on lost or stolen mobile devices. Cisco uses context information from the MDM to set policy. Cisco is the only vendor to announce an evolving ecosystem of partners for integrated MDM policy controls.

- **New device profiling sensor:** Cisco Wireless LAN Controllers now support scalable, network-embedded device sensors that assist with device identification and classification.

- **Cisco AnyConnect™ Secure Mobility Client:** Make the VPN experience simpler and more secure with the enhanced remote access technology of Cisco AnyConnect VPN client. This software includes 802.1x authentication and provides an always-on VPN experience across the industry's broadest array of laptop and smartphone-based mobile devices, including iOS®, Android®, and Microsoft Windows Mobile® platforms.

Simplified Operations and Management

With an increasing number of new network clients pouring into the network, visibility into service status and the end-user's experience are critical. Cisco offers lifecycle management for all network devices across the wired and wireless enterprise network in a single package. In addition, we offer a new experience-centric management solution for analyzing and troubleshooting applications, services, and mobile devices—from network core to access layer, and from the branch to the campus and data center. Solutions include:

- **New Cisco Prime Assurance Manager:** A new product that provides visibility for applications and services end to end by collecting and normalizing data from multiple sources of intelligent instrumentation across the network. This data is used to show end-to-end, hop-by-hop application performance and troubleshoot any problems in end-user experience.
- **New Cisco Prime Infrastructure bundle:** A single package that provides complete infrastructure—wired and wireless, and mobility lifecycle management—configuration, monitoring, troubleshooting, remediation, and reporting. This package includes: **Cisco Prime Network Control System** (NCS) for converged wired/wireless monitoring and troubleshooting, plus wireless lifecycle management, with new branch management functionality; and the Cisco Prime **LAN Management Solution**, for wired lifecycle management and Borderless Networks services management.
- **Updated wired/wireless functionality,** with updated controller modules for the Cisco Integrated Services Router (ISR) G2 router and Cisco Catalyst® 6500 Series Switches, for lower cost of ownership and simplified operations.

Why Cisco?

Cisco's wireless networking products have the exclusive endorsement of American Hospital Association (AHA). The AHA represents and serves all types of hospitals, healthcare networks, patients, and communities. AHA members include nearly 5000 hospitals, healthcare systems, networks, and other care providers, as well as 37,000 individuals. With the One Network, One Policy, One Management strategy for access networks, Cisco is the only solution provider to have all the components to efficiently create a secure and seamless user experience across all scenarios. Cisco empowers IT to provide greater business freedom with high-performance, context-aware network solutions that go beyond BYOD to fully address many types of users with different device, security, and business requirements.

One Network

Cisco wired, Wi-Fi, and 3G/4G networks are converging. Hotspot 2.0 unifies cellular and Wi-Fi, and Cisco is developing small-cell solutions to remove the border between networks. Policy and management for wired and Wi-Fi are unified in a single platform. And Cisco VXI offers policy-based access to desktops from anywhere, regardless of underlying device or network. This provides a scalable platform for deploying new services and secures enterprise data off the device to take advantage of new mobility and BYOD trends. The network is the place where the business policy is enforced through a combination of ISE and infrastructure (wireless or wired).

One Policy

To handle the rate of increase of mobile devices on enterprise networks, IT must set policy centrally with automated enforcement. The Cisco Identity Services Engine provides a single point of policy across the organization, rather than several that must be kept manually in synch. This allows IT to create a centralized policy governing access to the network, whether wired or wireless.

One Management

With ever-increasing numbers of mobile devices on the network, IT managers need solutions that give a single entry point into solving access and experience problems. Cisco Prime management solutions have a single workflow to identify problems by user rather than by network element. Experience monitoring, fed with network instrumentation and intelligence, provides a single source of truth for application performance.

1. [i] iMedicalApps. Stanford School of Medicine is giving the iPad to all incoming medical students. Available at http://www.imedicalapps.com/2010/07/stanford-school-of-medicine-ipad-incoming-class/. Accessed 9/2010.

2. iMedicalApps. UC Irvine School of Medicine joins the party - giving incoming med students iPads with their white coats. Available at http://www.imedicalapps.com/2010/08/uc-irvine-school-of-medicine-ipad/. Accessed 9/2010.