Case study

Wireless Wonderland

HP reinvents its BYOD deployment with IMC and triples its wireless network usage in months

Industry
Technology

Objective
Replace existing wireless network authentication system with a centralized, automated, user-friendly solution

Approach
Engage with HP engineers, IT leaders, software designers, and networking specialists to simplify and streamline wireless guest and employee networks

IT matters
- Eliminates third-party authentication appliances, removing system complexity
- Centralizes user credential management, giving IT improved visibility and reporting
- Provides a highly scalable solution that can accommodate up to 500,000 registered users
- Reduces help desk calls by 95%, giving valuable time back to engineers

Business matters
- Triples wireless network adoption within months after solution deployment
- Simplifies login process for employees and guests, eliminating manual daily processes
- Delivers fivefold increase in mobile device capacity over previous solution
- Enables HP to deliver a better BYOD solution to market

"The fact that we saw our wireless network usage triple since we launched BYOD with IMC is confirmation that this solution is incredibly intuitive from an end-user perspective."

– Jeff Sprankle, Wireless Architect, HP

Since 1939, Hewlett-Packard has been a frontrunner in technology and corporate culture, inspiring innovators and entrepreneurs around the globe. With industry leading solutions in servers, storage, networking, printers and personal computers, HP is a worldwide technology provider and a strategic business partner. Recently, HP sought to improve and expand its wireless network capabilities by deploying HP Intelligent Management Center (IMC) 7.0 at its Palo Alto, California headquarters. With IMC 7.0 and the IMC User Access Manager Module and IMC Wireless Service Manager Module, the project team has significantly simplified its BYOD deployment, tripled wireless network usage, and created a new model for rolling out wireless services globally. "Beyond providing the authentication service, IMC will help to monitor the wireless infrastructure from a single pane of glass," says Juliano Forti, HP global solutions manager for BYOD.

Innovating from the inside out

HP is the quintessential and prototypical Silicon Valley technology company—from its startup days in a Palo Alto garage, to its meteoric international success, to its continuous drive to reinvent itself—HP is a world of engineering, outside-the-box thinking, and problem solving. And yet, as a multi-national business, with a diverse product line, HP experiences the same day-to-day technology struggles as its customers. As such, its search for ways to deliver innovative products often stems from its desire to refine its own business operations.

BYOD for early adopters

Such was the case with wireless networking capabilities at HP offices around the globe. Until recently, offices were using a solution called HP Mobile Net, which provided wireless access to employees and visitors. In use since 2011, the solution was HP's first internal bring-your-own-device (BYOD) initiative, freeing employees from their workstations, while also extending Internet and limited network services to guests.

The system's complexity was cumbersome from an IT and end-user perspective. Because HP was using a third-party authentication appliance to communicate with its wireless controllers, logging into the system meant multiple manual steps for both guests and HP employees.

Do that again

With no database of their own, the wireless controllers required authentication upon each login, and each authentication was only valid for eight hours.

"On the surface, it worked fairly well," recalls Jeff Sprankle, a wireless architect for HP. "Most employees work an eight-hour day, and so you log in once in the morning and you're good until you go home."

Not everybody received the same level of convenience, however. "There were issues with iOS devices, which would log you out of the system whenever they went to sleep, forcing users to have to log back in multiple times per day," Sprankle relates. "Even users who only had to log in once per day were inconvenienced by the portal—it's not as easy to type in your name and password from a small touchscreen as it is from a desktop computer."

The guest dilemma

For guests, the process was more cumbersome. "If you wanted to bring a guest to campus, you as the employee would have to sponsor them and go through the account creation process before their arrival and print out and distribute the credentials to the visitor," Sprankle says. "If you had 10 guests coming for an event, that meant you had to go through that exercise 10 times and then manage the distribution of those credentials—a process that could take up to a minute per guest."

With over 6500 visitors coming just to the Executive Briefing Center in Palo Alto each year, the 'hpguest' network is accessed by more than 6500 guests with most visitors bringing multiple devices and other non-EBC guests visiting the Palo Alto building. Now, hours are saved because manual set up is no longer needed and the process is simplified for guest access to the network.

It wasn't the best way to kick off a visit to one of the world's leading technology companies. The process impacted the productivity of not just the guests, but also the administrative assistants at HP. "Just imagine being an executive assistant at HP, and bringing in hundreds of people—you're spending a lot of time manually managing network access," Sprankle continues. "It was pretty clunky, and not a great experience."

Across the spectrum, the user experience was inconvenient enough that HP began looking for a way to streamline the process. HP saw an opportunity in the making: Why not use HP technology to solve the problem, get rid of the third-party authentication solution, and improve its own networking product at the same time?

A fertile testing ground

"If we look at ourselves as a typical enterprise business with typical enterprise business problems, we can learn a lot about our products by testing them on ourselves," relates Walt Johnson, senior director of IT at HP. "Our BYOD effort is one of the largest in the world—about 100,000 devices are logged in at any one time. We saw this as a perfect way to create a better user experience by using our own technology."

To simplify and expand its BYOD strategy, HP looked at its own network management software suite, HP Intelligent Management Center (IMC), which delivers highly flexible,

scalable deployment models, powerful single-pane-of-glass control, and detailed performance monitoring and management.

"We had just released BYOD support for IMC, and I thought maybe this could be a potential solution for our authentication problem," says Forti. "It had been on our radar for a while, but the product had evolved to simplify things like authentication."

Centralizing user authentication

Rolling out IMC 7.0 for a massive internal HP deployment would also give the team a chance to do some real-world product testing. "We approached it as being a way to find out what our product can do. Maybe we can learn something. Maybe we can use what we learn here to make the next release of the product better," says Deshraj Singh, program manager for HP on HP, a program designed to improve HP products by using them internally.

With a goal of making the authentication process simple and seamless, the team built a new solution around HP IMC that eliminated the authentication appliance from the equation. Because IMC provides centralized policy creation, the team can set the appropriate access rights for each type of user and device across the network.

The one-time employee solution

For HP employees, logging onto the company's wireless network just got a whole lot easier. "Now IMC automatically does what had to be performed manually before," Sprankle says. "On a daily basis, IMC interfaces with our Lightweight Directory Access Protocol (LDAP) system and populates an internal database with that information. If you're an active HP employee, your information is already in that database." Instead of manual logins, eight-hour time limits, and yearly account creation, IMC manages everything from behind the scenes.

From an end-user perspective, it means setting up your mobile device one time, instead of daily. "As an employee, you see the 'hpinternet' network, your device prompts you for your username and password, and you're in," Sprankle explains. "Your device remembers your credentials, and IMC recognizes you as an employee. Now every time you walk into the building, you're automatically connected. It's absolutely seamless."

The easy-to-use guest solution

For the guest network, HP decided to offer a more limited range of services and do without authentication. "When guests arrive on campus today, a network called 'hpguest' appears in their mobile device, users simply select it, and they are on the network," Sprankle explains.

Gone are the days of manually managing guest accounts, daily logins, and eight-hour usage windows. "Guests don't even need to log in or create a password," Sprankle adds.

Tripling wireless usage

Since the team decommissioned its previous solution and went live with IMC 7.0, HP has seen wireless adoption triple at its Palo Alto headquarters within a few months. By removing barriers to the end user and simultaneously improving security, the solution has been an unqualified success. "The fact that we saw our wireless network usage triple since we launched BYOD with IMC is confirmation that this solution is incredibly intuitive from an end-user perspective," Sprankle says.

The IMC 7.0 solution is replacing the current BYOD solution at HP locations worldwide. And that brings further advantages. "With the previous solution, if you went to a different HP campus, you'd have to login and authenticate yourself with the local appliance before you could connect to the network," Sprankle says. "Once fully deployed, the IMC 7.0 solution will allow for cross-site authentications. So once you're set up at your home campus, you're set up for HP around the globe."

Fivefold capacity increase

With smartphone and tablet markets still growing, and wearable devices promising a new wave of connected possibilities, HP wants to be ready. Forti explains, "the BYOD platform needs to scale to meet the demand that's already here and demand that's in the not-too-distant future."

Customer at a glance:

Hardware

- HP ProLiant BL460c Gen8 Servers
- HP MSM760 Wireless Controllers
- HP MSM460 Wireless Access Points
- HP 6600, MSR50 Routers Series
- HP 12500, 7500, 5820, 5800, 5400 Switch Series

Software

- HP Intelligent Management Center (IMC) Enterprise Software Platform v7
- HP Intelligent Management Center User Access Manager (UAM) Software Module
- HP Intelligent Management Center Wireless Service Manager (WSM) Software Module
- Microsoft Windows Server 2012

Fortunately, the solution HP has designed is highly scalable, and as it grows geographically, it will also grow from a capacity standpoint. "With our old authentication appliance solution, we could handle about 10,000 concurrent connections per region," Sprankle recalls. "Since replacing it with IMC authentication, we've increased our regional capacity to 50,000."

HP's BYOD solution will handle up to 500,000 registered users and 50,000 concurrent users/devices per region. However, Forti believes that number can be increased significantly. "Even though we currently support about 150,000 devices, we're seeing people bringing more and more devices into the work environment," Forti says, "I want to increase this number exponentially."

95% fewer support calls

For the IT team at HP, the IMC 7.0 solution has proved its value by reducing support calls and allowing engineers to reclaim hours of support time. "In the preceding months, we were receiving support calls on a regular basis," Sprankle recalls. "Since rolling out the BYOD solution with IMC, we've reduced our support call frequency by 95%. It's a much better allocation of engineering resources."

And now that the authentication solution is centralized, management of the wireless guest and employee networks has become more efficient. "With IMC, we have all that user data consolidated," Sprankle says. "Now we have better reporting and improved visibility across the enterprise."

R&D in production

By going through the deployment process within HP, the team was able to make tweaks to improve certificate verification and expand synchronization and replication services to accommodate hundreds of thousands of users.

"It's not easy to find a company with 400,000 users to test an environment," Sprankle sums up. "But by becoming our own customer, we've experienced significant benefits, and we've also improved the product for everyone who uses it."

The result is a network management product suite that can accommodate the world's largest international BYOD deployments with increased authentication capabilities and expanded centralized administration controls. "IMC has always been an enterprise product," Sprankle says. "And now with version 7.0, it's been fine tuned for even greater simplicity and scale."

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