



IDC TECHNOLOGY SPOTLIGHT

Making the Business Case for Cloud-Managed WiFi as a Service

July 2017

Adapted from *Worldwide Cloud-Managed Enterprise WLAN Infrastructure and Cloud-Managed Services Forecast, 2016–2020* by Nolan Greene, Curtis Price, Rohit Mehra, et al., IDC #US41650215

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Enterprise-grade WiFi access is a requirement for all organizations seeking success in the era of digital transformation. Cloud-managed WiFi emerged several years ago as a way to streamline wireless deployment and simplify management. But only recently have modern cloud technologies emerged that bring the possibility of true web scale to this burgeoning WLAN market. Advances in artificial intelligence (AI) and Big Data analytics not only can simplify WLAN deployment but also can automate ongoing operations for substantial cost savings. This has allowed the modern WLAN to shift its focus from the infrastructure to the user, enabling WiFi to be delivered as a predictable, reliable, and measurable service. This IDC Technology Spotlight explores the trending of cloud-managed WLAN toward WiFi as a service and discusses the cost benefits of moving WiFi into a modern cloud-managed platform.

Introduction

In the past decade, WiFi has risen from being viewed as a "nice-to-have" complementary network access method in the enterprise to being the predominant access method in many organizations. In IDC's October 2015 *Campus Network Innovation Survey*, over 70% of the 252 respondents indicated that half or more of their network traffic traverses the WLAN. More than 87% of respondents indicated that WLAN use had increased over the previous year, with 31% responding that it had "increased drastically." Indeed, IDC has observed the emergence of "wireless-first" enterprises, where all possible devices and applications will run on wireless connectivity.

In any case, wireless networks are supporting a greater number of devices, a wider variety of devices, and an increasingly robust ecosystem of software-as-a-service (SaaS) applications. In IDC's March 2017 *U.S. Enterprise Communications Survey*, over 78% of the 1,201 respondents indicated that their organizations would operationalize SaaS applications within two years. IDC has observed that as SaaS applications (e.g., Salesforce, Workday, Office 365) grow in tandem with mobile device adoption, they become increasingly mobile device-friendly, spurring a virtuous cycle between cloud applications and mobility.

Add to this an increasing number of enterprise Internet of Things (IoT) deployments in varying stages of maturity. With 66% of respondents in IDC's *U.S. Enterprise Communications Survey* expressing that their organizations either have deployed IoT or will deploy IoT within two years, it becomes clear that enterprises must evaluate whether their current WiFi infrastructures can keep up. While IoT is not a WiFi-only phenomenon, multiple IDC surveys have found that WiFi will be a leading access mechanism for IoT. Most recently, in IDC's December 2016 *IoT Infrastructure Survey*, just over half of the 133 respondents who are currently deploying IoT indicated that WiFi would be among their top 3 IoT access methods.

Finally, 43.1% of respondents to a different survey indicated usage of a cloud-managed location-based services (LBS) solution. IDC forecasts that in the retail sector alone, the market

for location-based mobile marketing solutions will grow from \$815.6 million in 2015 to over \$1.2 billion in 2020. Bluetooth Low Energy (BLE) is a major component of many leading IoT and LBS solutions, with over half of respondents to an IDC survey saying it will be a top IoT connectivity method.

The Move to the Cloud

Outdated WLAN infrastructures cannot meet the needs of the modern enterprise. Controller-based WLAN architectures lack the flexibility and scalability required by large or distributed enterprises (such as those in retail and hospitality). Controllers are often onerous to deploy and manage at the distributed branch level, especially given the centralized nature of enterprise IT teams, the need for redundancy, and the significant capex requirement. To this end, scalability could be limited because additional access points (APs) could exceed the controllers' total capacity, necessitating investment in additional controllers and redundancy. For these reasons, many organizations passed on fully featured enterprise WiFi, instead relying on feature-limited standalone APs, consumer-grade WiFi, or even forgoing wireless networking altogether.

Cloud-managed WiFi first emerged in 2007 as a way to address the limitations of controller-based WiFi. These were primarily virtual controllers placed in the cloud that could be managed from a web-based GUI. These solutions initially found favor in distributed enterprises where one network manager or team was responsible for multiple locations. Ease of installation and the centralization of management and troubleshooting carried cloud-managed WiFi to torrid growth. Over the years, cloud-managed WiFi has seen its market share, vendor representation, feature functionalities, and scalability grow immensely. According to IDC, cloud-managed enterprise WLAN infrastructure accounted for just under 20% of the total enterprise WLAN infrastructure market in 2015. IDC expects that by 2020, cloud-managed WLAN infrastructure will exceed one-third of the total enterprise WLAN infrastructure market.

Today, the industry is evolving even further, moving from first-generation cloud WLAN solutions to purpose-built cloud solutions based on modern elements such as containers and microservices. The result is web scale, increased agility, and performance. Cloud-managed WLAN is evolving from being seen as a solution specifically for small and medium-sized businesses (SMBs) and distributed enterprises to a solution that can compete directly with controller-based WLAN in most settings. Moreover, application programming interface (API) integration gives next-generation cloud-managed WLAN platforms the ability to serve as software-defined, turnkey digital business platforms.

Given the heightened requirements for enterprise-grade WiFi, it is easy to see why cloud-managed WLAN is the fastest-growing segment of the enterprise WLAN market. In fact, the market for cloud-managed enterprise WLAN infrastructure and managed services is expected to triple from 2015 to 2020, growing from \$1.1 billion to \$3.3 billion. Cloud-managed enterprise WLAN is performing particularly well in distributed and midmarket enterprises, where IT management is centralized but IT resources are dispersed, often meaning that there is little day-to-day onsite support for the network.

Cloud-managed WLAN infrastructure presents the following benefits:

- **Ease of deployment.** Preconfigured WiFi APs are shipped to the end-user site and can be set up in a "plug and play" fashion in a matter of minutes.
- **Ease of maintenance and troubleshooting.** Regular firmware and security updates can be pushed to all sites from the centralized management console, which also allows for remote troubleshooting of many common problems.
- **Minimal on-premises physical infrastructure.** In many distributed enterprises, every inch of space matters. Not having a physical controller can help optimize limited real estate.

- **Greater opex orientation.** Given the lack of a need to purchase physical controllers and the SaaS licensing model for WLAN management, cloud-managed WLAN generally requires a lower capex outlay. This is amenable to the current budget structures of many organizations.

From an end-user perspective, these cloud benefits are obviously a good fit for the distributed enterprise. IDC believes that at the same time, larger organizations will begin to consider cloud-managed WiFi as its performance and license capacity begin to scale. Growing confidence in the security of public cloud technologies, as well as the evolution of private cloud-managed WiFi options, including the emergence of managed service provider (MSP)-supported "WiFi as a service," will have many large enterprises taking a second look at this technology. In an era of "lean IT," the centralized management capabilities of cloud-managed WiFi make it an even more attractive option.

From a go-to-market standpoint, the move to the cloud is creating a new paradigm known as "WiFi as a service" whereby third parties are increasingly deploying and managing WiFi for customers via their own network operations centers (NOCs). This is causing a shift in the WLAN space from traditional resellers to MSPs.

Cost Benefits of a Cloud-Managed WiFi Architecture

The previous section discussed some of the benefits that attract enterprises to cloud-managed WiFi and WiFi as a service. This section drills deeper into the cost benefits of those solutions:

- **Fast, low-touch deployment (plug and play for remote sites).** Cloud-managed WiFi APs are typically shipped to their deployment location preconfigured, which means they can be deployed within minutes. This saves labor costs for onsite staff, as well as the fact that IT does not have to make a truck roll to install WiFi. On average, this can reduce total deployment time by 90%. For example, by reducing the setup time per AP from 4 hours to 24 minutes, an enterprise (with 500 APs) would save \$96,154.
- **Reduction in manual packet sniffing via truck rolls.** This is another potential cost saver for enterprise IT, which can redirect its time to more proactive, revenue-generating tasks. The average truck roll costs \$250, with approximately two truck rolls occurring per month. By eliminating truck rolls, a company can save \$6,000 annually.
- **Faster, more accurate root cause analysis.** Being able to get to the root cause of network problems faster without the downtime of false starts and dead ends helps keep the network up and running and supporting the business and reduces the labor costs associated with fruitless root cause analysis. For example, the average customer claims to spend 9.2 hours per week troubleshooting WiFi. If the time spent troubleshooting WiFi is reduced by 71%, the average enterprise would see an annual cost savings of \$113 per WiFi end user.
- **Integration of other business applications via API.** Newer WLAN solutions are taking an API-first approach to operations, whereby everything can be automated for seamless workflows. Tighter business application integration can improve operational efficiencies, including less manual configuration and faster notification of problems. This can save \$269 per WiFi user per year.
- **Elimination of controller costs.** Physical controllers represent a significant capital investment, especially considering the need for redundancy. Consequently, enterprises sometimes hold off on investing in additional controllers and APs when they need to add capacity. By moving to a controller-less architecture in the cloud, the average enterprise can reduce its infrastructure costs by 71% and save \$720 per AP in initial costs.

When everything is added up, a typical enterprise (500 WiFi users) can save over \$340,000 per year (three-year total cost of ownership [TCO]).

- **Convergence.** It is worth noting that enterprises — particularly in public-facing verticals such as retail, hospitality, and healthcare — are embarking upon improving customer engagement and network monetization through LBS such as wayfinding and contextualized push notifications. While WiFi offers some location positioning ability, WiFi infrastructure platforms natively integrated with BLE offer the ideal platform to support LBS initiatives. By combining BLE and WiFi in a single infrastructure, enterprises can avoid deploying separate overlay networks for substantive hardware and opex savings.

Considering Mist

Mist has built a "new wireless network" designed specifically for the smart device and IoT era. Having considered how Big Data companies correlate massive amounts of information using the cloud and machine learning, Mist asked, "How do we harness these same principles to build a user-centric wireless network?"

In response, Mist designed its own control plane that exposes over 100 mobile device user states in real time for management visibility. Mist also built its own APs for enterprise-grade WiFi, BLE, and IoT convergence and created a purpose-built modern cloud for scale and reliability. Most importantly, Mist leverages state-of-the-art AI technology for proactive operations, predictive recommendations, rapid troubleshooting, and more. The result is a "learning WLAN," which delivers the following three key benefits:

- **WiFi with assurance (via artificial intelligence).** Mist moves the wireless IT paradigm from reactive troubleshooting of APs to proactive management of the end-user experience through meaningful insight and automation. With Mist, the WiFi user experience is reliable, predictable, and measurable. For example, the Mist platform provides the following unique capabilities:
 - **Ability to set, monitor, and enforce service levels.** Mist lets you set up and track service-level thresholds for key wireless criteria, such as time to connect, capacity, coverage, roaming, and throughput. At any given time, you can see how your network is performing against service-level expectations (SLEs), with specific drilldown into users, applications, and devices.
 - **Simple root cause analysis and remediation.** Mist dynamically collects information from all mobile devices (over 100 states are captured for each device every few seconds) and correlates it for quick wireless, wired, and device problem identification. Predictive recommendations and automated workflows let you quickly remediate problems or prevent them entirely.
 - **Network rewind and dynamic packet capture.** When a user is experiencing a network anomaly (e.g., authorization failure), the Mist system automatically detects it and starts capturing packets for you. In addition, Mist lets you rewind to see what was going on exactly when the event occurred.
- **Personalized user engagement: High-fidelity location-based services.** The Mist platform enables highly accurate location services using virtualized BLE. Patented vBLE antenna and virtual beacon technologies are combined with machine learning to ensure the highest location accuracy (1–3 meters) and performance (subsecond latency), without requiring physical battery-powered BLE beacons. In addition, no manual calibration or ongoing BLE site surveys are required with Mist, which means BLE location services are easy to deploy and manage at scale.
- **Open programmable platform built using modern cloud elements.** The Mist cloud is built on a microservices architecture that brings the agility of SaaS to wireless networks. On-demand network upgrades and patches take minutes instead of months. All of Mist's capabilities are 100% programmable via open APIs. IT organizations can remotely configure and activate a new site in just minutes, automate the overnight testing of point-of-sale devices, and create alerts notifying when baseline metrics aren't being met or are negatively trending. A wide variety of services are now possible using Mist automation.

Challenges

While Mist is built to be user-friendly, any transition to a new network architecture comes with a learning curve and the perception of adjustment challenges. Implementing a new WLAN architecture represents a change from potentially long-established methods of managing the network and may require the learning of new skills and an adjustment period once the technology is implemented. Similarly, there is still resistance to cloud-managed network infrastructure in some corners as historical concerns about security and scalability persist.

Levels of comfort and knowledge around cloud-managed networking also vary from region to region; it is important to be aware of how this plays out in your organization. Deliberate education and change management efforts, including demonstration of the technology in action, may be necessary to weather a transition to cloud-managed WiFi. Where applicable, it is important to seek resellers, integrators, and/or service partners that have a proven history of successful transitions while also leveraging vendor resources.

Conclusion

The digitization of the modern world means that WiFi must serve as an "always-on" utility. Enterprises making the most of DX must also ensure the agility, flexibility, and scalability of WiFi so that it can provide maximum business benefit, supporting new business initiatives such as location-based services. IDC believes that Mist offers a viable cloud-managed WiFi platform for enterprises seeking a WLAN solution that can be delivered as a predictable, reliable, and measurable service.

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