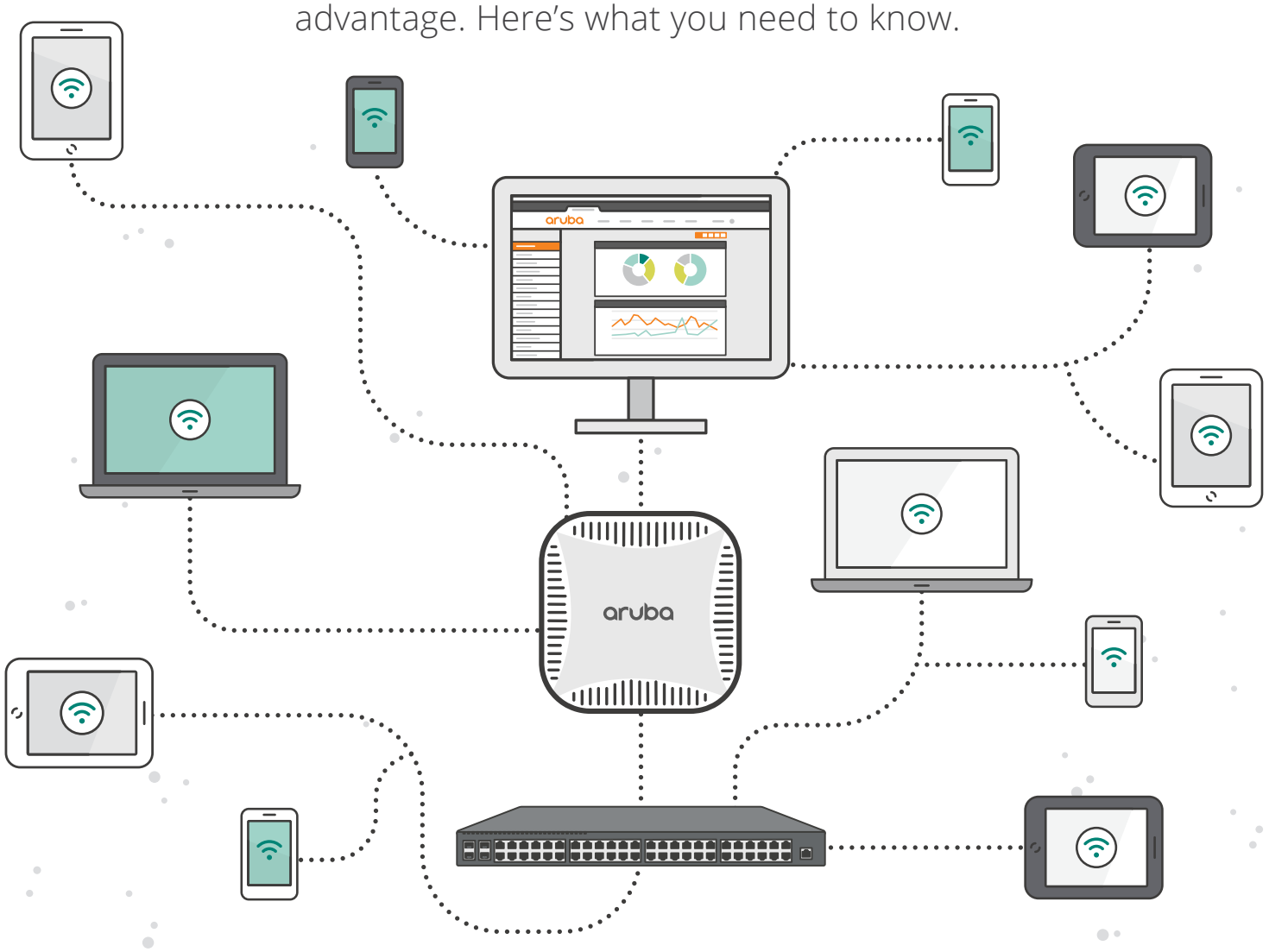
A MOBILE-FIRST NETWORK: IS IT TIME?

For small and midsize businesses, a network optimized for mobile can provide a real competitive advantage. Here's what you need to know.



aruba
a Hewlett Packard
Enterprise company

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INTRODUCTION

The explosion of smartphones, tablets, cloud-based applications, and the Internet of Things has changed the nature of work. This new mobile-first environment is mostly a good thing for small and midsize businesses (SMBs).

Forbes reported SMBs that adopt mobile technologies see double the revenue growth and create up to eight times as many jobs as their less mobile-ready peers.[1] Small businesses alone save over $67 billion a year using mobile apps, tablets, and smartphones.[2]

In fact, 67% of the SMBs are using tablets for business purposes, and 93% are using employee-owned smartphones.[3]

But too often, networks—even networks that are just a few years old—simply aren't robust or flexible enough to keep up with the demands of a mobile environment.

For SMBs with these network challenges, there is a simple, affordable option: an integrated network built around 802.11ac LAN technology, a secure and scalable switching solution, and simple cloud management. While wireless is the primary means by which employees will access the network, the best solution for SMBs is an end-to-end wireless and wired infrastructure that is easy to deploy and offers built-in security and tools to collect and analyze network performance data.

This eBook explores how an integrated network built around 802.11ac can provide SMBs with a higher-performing, secure network for today's business environment. And how simple—and profitable—setting up such a network really is.

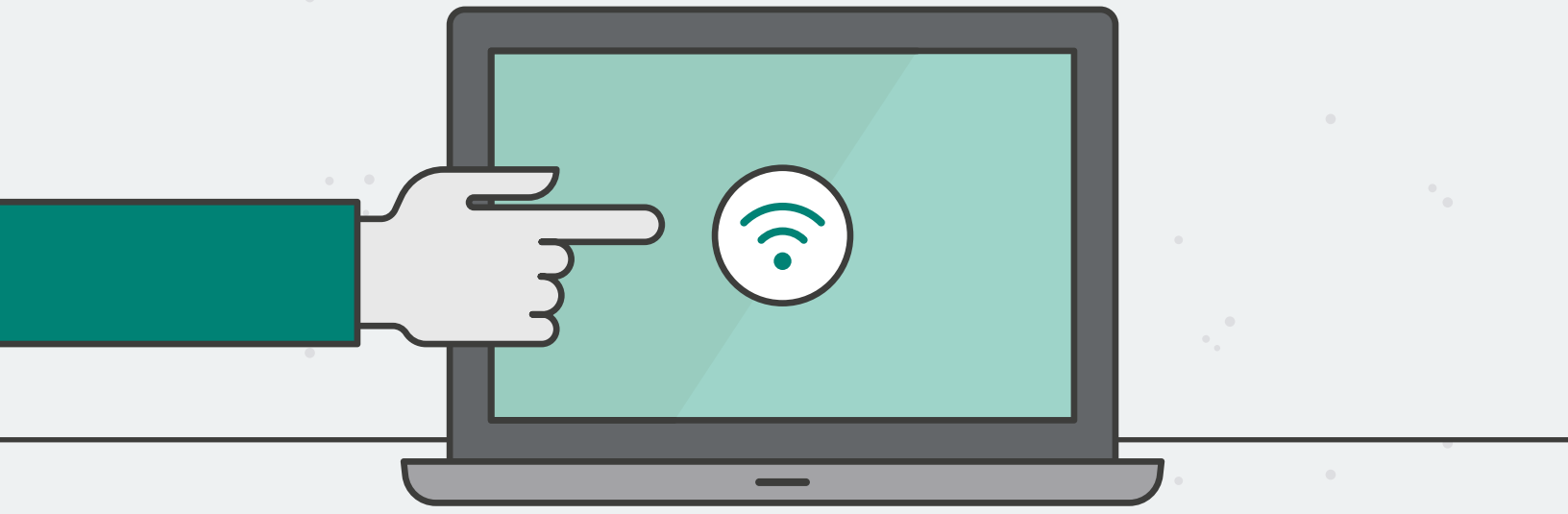
Seven in 10 businesses get user complaints about poor Wi-Fi, but **six in 10 SMBs don't have on-staff networking expertise.[4]**

67% of SMBs view mobile solutions and services as critical to their business.[5]

78% of U.S. small businesses will have fully adopted cloud computing by 2020.[5]

CHAPTER 1

The benefits of a mobile-first network



No matter the size of your business, when you have a reliable network, productivity increases. Why? Because employees don't have to wait for the network to get work done—and your limited IT team won't have to respond to as many helpdesk tickets, freeing them to focus on other innovations to help your business grow.

A robust network infrastructure allows you to prioritize and optimize business-critical applications so you can respond faster to customers and make smart business decisions.

A strong integrated solution provides the following benefits:

- An infrastructure that is easy to deploy and offers built-in security and the tools to collect and analyze network performance data
- More insight into users, devices, and apps running on the network to ensure the network runs smoothly
- A flexible and easy-to-use network management solution that can grow with the business
- Integrated and automated security controls and intrusion detection to help protect business data from malware and unauthorized users

Today, that solution should be built around an integrated solution of wired and 802.11ac wireless, which offers wireless access speeds three times faster than 802.11n (1.3 Gbps vs. 0.45 Gbps).[6] An 802.11ac access point has increased signal strength and data range, with 400 Mbps at 75 feet, while 802.11n provides only 200 Mbps at the same distance. Thanks to its eight multi-input multi-output (MIMO) antennas or spatial streams at 80 MHz, 802.11ac allows for a significant increase in user bandwidth.[6]

But those are stats. How do they translate to the real world?

According to Yugendran Pillay, head of IT with North Sydney Boys High School in Crows Nest, South Wales. That school transitioned to an Aruba 802.11ac network to support its modern technologies and electronic resources for students. Their network is now stable and strong enough to support more than 400 devices with no access issues.

"We now have 70 Aruba 802.11ac 220 Series Instant access points distributed throughout the school," Pillay says. "We are not aware of any areas on campus that our wireless network does not reach. There is excellent coverage across the entire site, in and outside classrooms."

EDUCATION

20% of students who are leveraging the internet are more proficient.[7]

Digital textbooks result in annual savings of **$1,000 per student.**[7]

HEALTHCARE

For healthcare companies, Wi-Fi has become the foundation for more meaningful and positive interactions between providers and patients.

69% of hospitals allow physicians to use their personal devices at the point of care.[7]

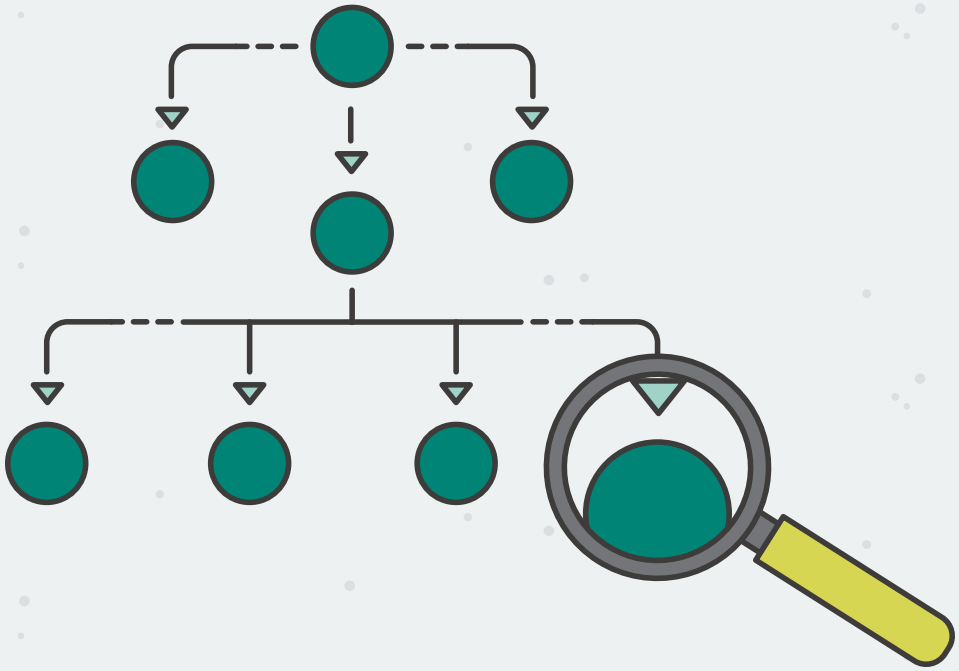
RETAIL

Research shows 42% of shoppers search for product information while in the store—and if a store isn't providing Wi-Fi, those customers might choose to leave rather than waste precious data.

64% of retailers plan to implement mobile POS.[7]

CHAPTER 2

Dispelling modern network myths



Many companies—especially SMBs, which have limited budgets and limited in-house resources—are hesitant to invest in a newer network for fear the new technology is too expensive or beyond their management capabilities. But that fear is unfounded. Here are some all-too-common myths about the newest network solutions that don't hold water in the real business world.

MYTH #1

It's too expensive.

The cost of high-performing networks has come down significantly. Aruba offers enterprise Wi-Fi and switching at a consumer-grade price. And the benefits your company can reap from an upgraded solution—in productivity, increased customer engagement, sales growth, and more—means you quickly achieve ROI.

MYTH #2

It's not easy to set up and maintain.

Thanks to plug-and-play and other innovations designed to simplify setting up, creating, updating, and maintaining your network has never been easier. For example, Zero Touch Provisioning allows IT to directly ship Aruba Instant APs and switches to remote sites where someone with no technical expertise can simply unpack them, power them up, and connect to the network. Configuration is automatically pushed from Aruba Central—so your network is up and running in minutes.

Furthermore, Aruba provides a simple dashboard that gives an overview of the network, along with client and application performance monitoring views. Detailed drill-downs help isolate problems and identify rogue devices, ensuring top-notch performance with a few simple clicks.

MYTH #3

I need to hire an experienced professional to manage the network.

With the right solution, management is easy. For instance, the free local management interface provided with Aruba Instant APs provides visibility into the network and capabilities to manage the network locally. You can also manage multiple locations in the cloud, or on-premises in a simple, straightforward format.

MYTH #4

Wireless networks lack security.

Aruba 802.11ac offers the option for integrated and automated security controls to protect your business data from malware and unauthorized users, and intrusion detection and prevention to safeguard your infrastructure. Aruba's Instant Wi-Fi includes built-in firewall and smart application handling for granular visibility and control to make it even more secure.

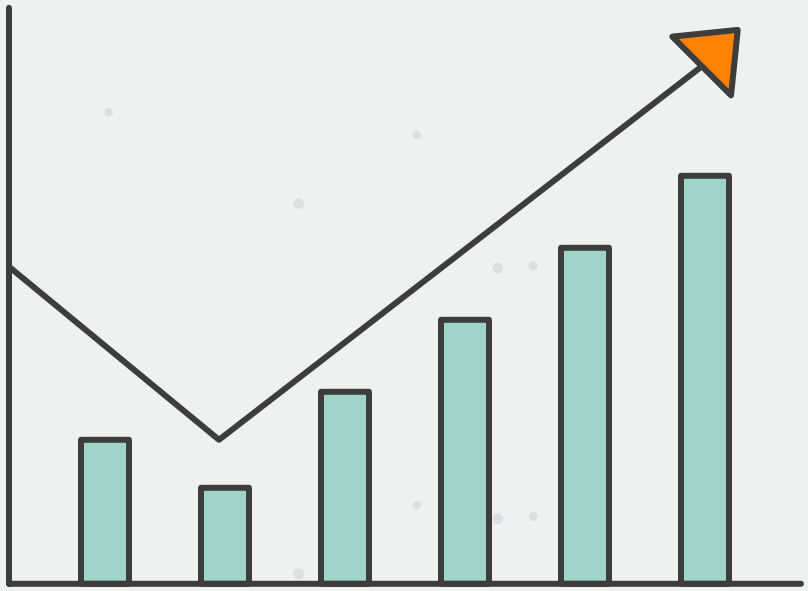
MYTH #5

Wireless networks aren't reliable.

This used to be a valid concern. But with 802.11ac's increased capacity and stronger signal strength and data range, your network will be more reliable than ever. Newer switches, such as the Aruba 2930F switch series, which is designed with a powerful ProVision ASIC, provide PoE+ power and wirespeed 10GbE uplinks so the network can support the media-rich, bandwidth-intensive applications your business demands.

CHAPTER 3

Advantages of a mobile-first network



A mobile-first mentality isn't about written documents or lines of code; it's an organization-wide attitude and approach where everything from infrastructure to applications are designed around offering a consistently positive mobile experience to every user.

But sometimes there is some hesitation to upgrade the network—especially from the financial folks who don't have deep interaction with it daily, but who do have to sign off on any purchase.

So it helps to show them the impact a mobile-first network strategy has on the following:[9]

IMPROVING THE CUSTOMER EXPERIENCE

By the year 2020, customer experience is expected to overtake price and product as a key brand differentiator.[10] A customer's communications with a business is a big part of this experience, and having reliable, fast Wi-Fi can provide an advantage—especially in customer-facing businesses, like restaurants and coffee shops.

INCREASING WORKFORCE PERFORMANCE

Employees who can work from anywhere put in an average of an extra two hours a day and send out 20 more emails per day than the traditional office employee.[11]

INCREASING WORKFORCE PRIDE

Workers who consider their employers "mobile pioneers" are typically more productive, creative, satisfied, and loyal.[11]

INCREASING REVENUE

Modern technologies have made us less patient, and businesses are judged by how quickly calls, emails, and texts are returned. Just a few minutes can be the difference between a sale and a loss; businesses that respond to a web inquiry within five minutes are nine times more likely to convert the lead to a sale.[12]

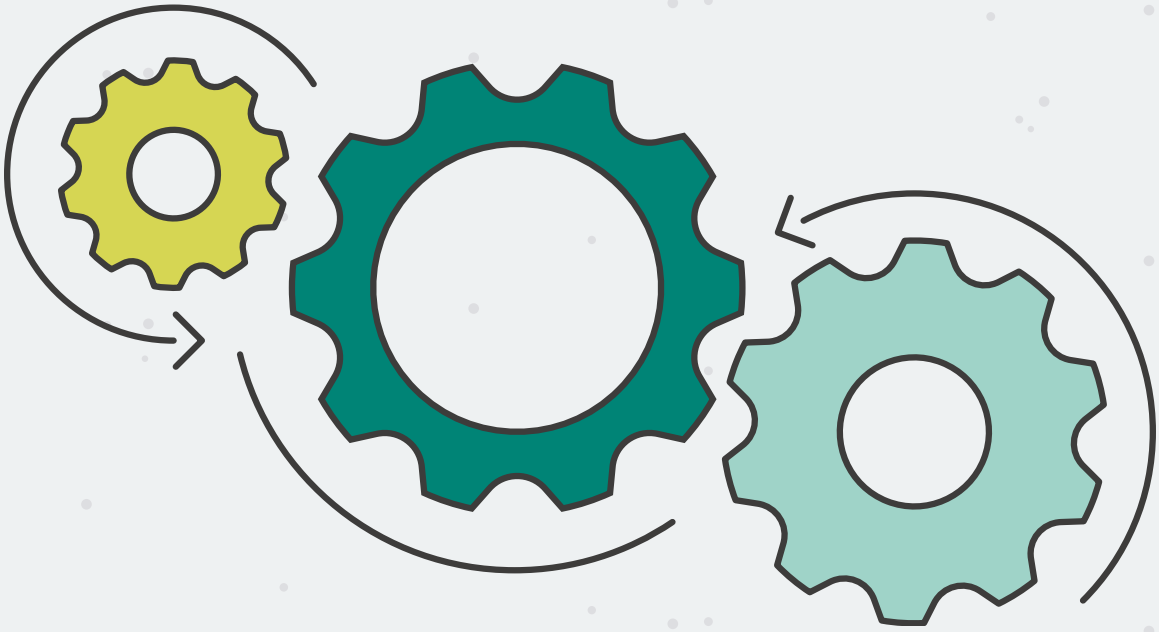
Switch it up: Creating the foundation for high-speed APs

802.11ac APs, when paired with modern switches, improve data throughput, speeds, and reliability while handling more devices simultaneously. To ensure they operate smoothly, the wired foundation needs to be able to support these new APs. Here are some tips to consider as you help solve some of those pains:[13]

- Switching has to be gigabit Ethernet at the edge to keep up with increased data flow. Multi-gigabit Ethernet ports provide more capacity using existing cabling when you're deploying high-speed Wave 2 802.11ac APs.
- Have 10 GbE from the access to aggregation or core switch to handle the increased traffic, eliminating any bottlenecks. At a minimum, make sure your uplinks can support some type of link aggregation protocol like LACP.
- Switches supporting PoE/PoE+ (Power over Ethernet) provide the power for access points. 802.11ac access points use up to 25 watts of PoE, so make sure your switching solution supports IEEE 802.3 at PoE+ which delivers up to 30 watts per port.
- Integration of deployment and management of switches together with access points can simplify the task of keeping your network up and running. A cloud-based management platform is ideal when you have limited staff.

CHAPTER 4

Implementing the network

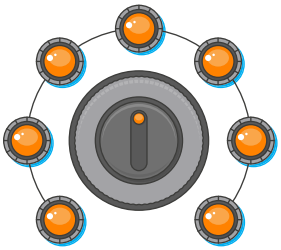


On top of that foundation lies your management system. A cloud management tool can save you money and increase flexibility and scalability. Managing these services can be complex, requiring management and cost evaluations for multiple services running across multiple cloud platforms, resource consumption details, integration with other enterprise tools, and other factors, so a simple tool is best.

Aruba Central, for example, simplifies the management of Aruba Instant APs, switches and mobility controllers while offering remote monitoring and troubleshooting, centralized configuration and firmware management, compliance reporting, and Zero Touch Provisioning.

Some implementation tips:

Invest in a network that can grow over time, so you can add features and functionality as needed.



Make sure your switches and access points are easy to install, use, and manage.

Keep in mind reliability and redundancy when designing your network.

For wireless networks, Aruba Instant 802.11ac APs feature fast set up, an enterprise-grade firewall, a built-in management dashboard, and gigabit Wi-Fi speeds—all in one affordable package. Aruba Instant offers:

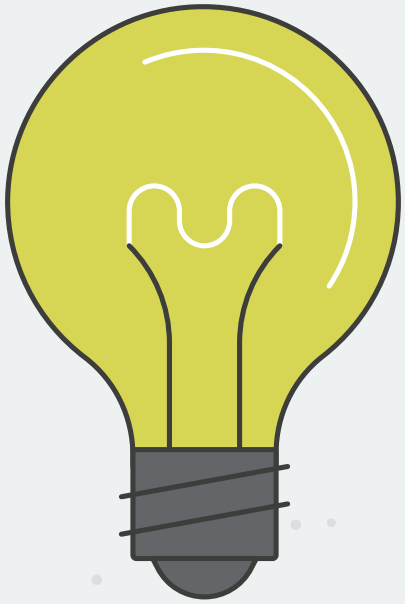
- Simplicity with fast setup that doesn't require network expertise, and a free built-in management interface
- Performance tested 36% faster than competing solutions when connecting multiple mobile devices all at once, and scalability as your business grows
- Security with built-in firewall and smart application handling for granular visibility and control
- Reliability with no single point of failover and network survivability to the last access point
- Investment protection when you decide to add a controller later, using the same Instant APs

With wireless networks hitting gigabit speeds, your switches need to keep up with the performance of new devices and applications. The Aruba 2930F switch series, for example, provides a convenient and cost-effective basic Layer 3 access switching solution that sets up quickly with Zero Touch Deployment and built-in 1 GbE or 10 GbE uplinks to deliver right-size network access and performance for your mobile campus.

To avoid potential future bottlenecks, Aruba's 3810 switches allow you to raise the data rates to 2.5 Gbps, 5 Gbps, and even 10 Gbps. With multi-gig capability, the 3810 series enables you to future-proof your network infrastructure as new, higher capacity wireless technologies emerge.

CHAPTER 5

Tips, how-tos and questions to ask



Before diving into network migration, you should lay the groundwork to establish the best plan.

Of course, the most efficient method might be bringing in a trusted, experienced consultant to lead your migration. But, if you want to do some or all of it on your own, here are a few crucial steps you should complete to make your transition as smooth and successful as possible:

STEP #1

Consider: Wired or wireless connections for your users? Or a mix of both?

Wired (or Ethernet) networks do have some advantages, including greater reliability and faster speeds. And they provide the connections for your access points. But, 802.11ac wireless nearly matches the speed and reliability of wired networks with added flexibility. Many businesses choose to incorporate both wired and wireless access with cloud management, a robust solution that provides flexible access and a reliable connection for your critical devices and peripherals.

STEP #2

Complete a wireless site survey

A new wireless site survey conducted specifically for 802.11ac will help point out the adjustments that have to be made. For example, migrating to the new standard means transitioning to a 5 GHz network, which has less ability to penetrate walls and other building materials.

A proper wireless site survey will allow you to optimize your new network to take advantage of the higher throughput and increased number of channels that 802.11ac has to offer.

Ask yourself:

- How many computers and peripherals need to connect to the network?
- What kinds of data and files are you storing and sharing?
- What applications will you be using?
- Will employees need or want to access the network from remote locations or using mobile devices?

STEP #3

Make accommodations for 802.11ac Wave 2

Wave 2 is faster, more reliable, and has more capacity than wave 1. Even if you decide Wave 1 is best for now, be mindful of the future. Although Wave 2 is fairly new, some vendors are already offering wave 2 APs or APs that support Wave 2 technology.

STEP #4

Allocate budget for upgrades

The capital investment for 802.11ac equipment is not much different from when you upgraded to 802.11n, although Wave 2 compatibility may increase the cost and you might need higher density of APs. The price tag on your last deployment should give you a good idea of the upgrade cost, though.

Many times, businesses and organizations upgrade to 802.11ac in phases, concentrating on their highest priority areas first and completing the entire migration over time. It all comes down to your specific environment, who and what you're trying to support, and what sorts of IT goals you have going forward.

WAVE 1 VS. WAVE 2

802.11ac features will come in two waves.

WAVE 1

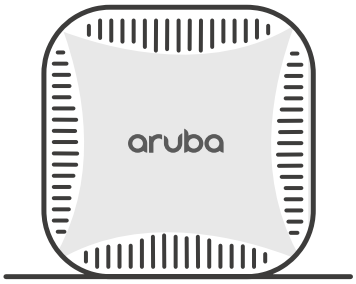
Wave 1 refers to the first-generation of 802.11ac products, which use 20, 40, and 80 MHz channels of bandwidth in the 5 GHz band. In some cases, this is combined in the same AP with the older 802.11n in the 2.4 GHz band. This increase in bandwidth means those who use the 5 GHz band get a "less crowded highway" and faster communication speeds; those who still have the 2.4 GHz band have fewer people crowding the channels and slowing traffic.

The performance speeds of Wave 1 can reach 750 Mbps for a single three-stream client and 250 Mbps for single stream such as a smartphone. Data rates for Wave 1 products are capable of supporting up to 1.3 Gbps with three spatial streams.

WAVE 2

Wave 2 is the second generation of 802.11ac products. The PHY (physical) rate, which affects the throughput rate of data transfer, maxes out at 2.34 Gbps.[8] For SMBs, Wave 2 offers greater density by supporting multi-user, multiple input, multiple output—meaning the spectrum is used more efficiently for multiple connected devices, and devices can more easily get on and off the network.

Wave 2 supports additional 5 GHz channels. In addition, Wave 2 can support higher client density because it can communicate with multiple devices at once (MU-MIMO), as opposed to communicating with a single device in Wave 1. And the Wave 2 standard adds a fourth spatial stream, which should mean better overall performance.



CONCLUSION

San Francisco, California-based creative firm First Person has firsthand experience with the ease of setting up a cutting-edge network and the benefits it provides. Because the agency's culture is heavily team-centric and collaboration-oriented, they need the right wireless infrastructure to support employees, clients, and contractors. Even an hour delay costs thousands of dollars in lost productivity and innovation.

To meet its burgeoning needs, First Person decided to not only adopt equipment running the latest generation Wi-Fi standard, but also to move to a traditional wireless infrastructure model of APs combined with a mobility controller.

Through its established relationship with Aruba, First Person was aware of Aruba's new 802.11ac-enabled APs with patented ClientMatch technology for seamless connectivity xperiences. Whether an organization needs controller-less, no-touch Instant APs or a controller-managed AP setup, these solutions represent fundamental elements of Aruba's secure and reliable architecture.

After an implementation that took less than a week from testing to full deployment, First Person is getting reduced costs, greater staff engagement, improved customer experiences, and more sales opportunities from its new Aruba 802.11ac Wi-Fi network, according to Systems Administrator Dennis Alikpala.

With proactive management tools and an integrated wired and wireless access layer portfolio that secures mobile and IoT devices, Aruba is ready to power the mobile-cloud world—today and into the future. Notably, Aruba solutions fit SMB budgets and IT staff resources, ensuring technology staff can focus on initiatives that add business value.

The Aruba portfolio includes:

Aruba Switch Series
This selection of high performance Layer 2 and Layer 3 switches provides robust security, quality of service (QoS), stacking capabilities, energy efficiency, and ease of use for SMB deployments.

Aruba Access Points
Based on the 802.11n and 802.11ac standards, Aruba APs deliver secure Wi-Fi client access to a variety of indoor and outdoor enterprise wireless LAN environments.

AirWave
AirWave offers end-to-end clarity and control over mobile users on multi-vendor, multi-site networks. It includes user location and mapping capabilities, real-time monitoring, proactive alerts, historical reporting, and troubleshooting.

Aruba Central
Aruba Central is a cloud-based software-as-a-service subscription that simplifies the management of Aruba Instant, switches and mobility controllers. It offers remote monitoring and troubleshooting, centralized configuration and firmware management, compliance reporting, and Zero Touch Provisioning.

About Aruba, a Hewlett Packard Enterprise company

At Aruba, we understand that small and midsize business owners need simple, reliable wireless networks that can be supported with limited IT resources and still provide the connectivity required by today's mobile employees. That's why we provide an integrated wired and wireless access portfolio with simplified network management to minimize business disruption.

Our fast, ultra-reliable Wi-Fi gives everyone in the office the speed they need to get the job done. You'll significantly reduce network downtime and scale effortlessly as your business grows.

It's networking made simple, reliable, and affordable. So you can focus on your business—not managing your network.

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