

A top-down view of several people sitting around a table, using various devices like laptops and tablets. The image is slightly blurred and has a blue overlay on the left side.

Small-Medium Business Wi-Fi Buyer's Guide

How to assess market options to ensure
the right investment for your business





INTRODUCTION

Over the past 10 years, wireless connectivity has shifted from “nice to have” to “need to have.” According to Gartner, Inc., mobile devices are increasingly the go-to device for communications, productivity, and content consumption. The need for Wi-Fi has been pervasive across most markets – including education, enterprise, hospitality, health care, and retail – with many organisations upgrading their networks to handle the influx of mobile devices, and adding bandwidth capacity to support increasing wireless traffic demands.

While organisations of all types and sizes have recognised the need for fast, secure, and scalable wireless connectivity, there has been a clear divide in the WLAN (wireless local area network) industry between enterprise-grade connectivity and more

affordable entry-level solutions that have until now each served very specific market segments. Many large businesses have found that deploying a **robust** and **reliable** enterprise-grade wireless infrastructure is essential for business productivity, customer response time, and employee satisfaction, among other benefits. The small and midsize business (SMB) market has relied on vendors such as D-Link and Netgear. Although entry-level offerings provide only limited performance and feature-sets, these vendors have provided SMB organisations with low-cost solutions that have adequately served their basic connectivity requirements.

But requirements change, and so do your options for connectivity.

Use this guide to understand how the enterprise WLAN market is evolving to better serve the needs of small and midsize organisations, and how you can get better connectivity without breaking your budget.

THE HISTORY OF WIRELESS DEPLOYMENTS FOR THE SMB MARKET

Previously, “Ethernet cabling had been the mainstay of business workspace connectivity since the beginning of networking. However, as smartphones, laptops, tablets and other consumer devices have multiplied, the consumer space has largely converted to a wireless-first world,” said Ken Dulaney, vice president and distinguished analyst at Gartner. “As bring your own device (BYOD) has increased in many organisations, the collision of the business and consumer worlds has changed workers’ demands.”

In line with this mobile shift, SMBs started to move from wired connectivity toward consumer-grade wireless networks, because of their low cost and ease of use. Early Wi-Fi networks were often used for convenience rather than business-critical applications. However, as the importance of a robust and reliable WLAN has increased and more business-critical ventures are relying on Wi-Fi networks, many SMBs have started to investigate enterprise-class network options.

BASIC DEFINITION: CONSUMER-GRADE VS. ENTERPRISE-GRADE WIRELESS NETWORKS

What is the difference between consumer-grade and enterprise-grade wireless networks?

CONSUMER-GRADE

Consumer-grade and SoHo (Small Office Home Office) access points (APs) are often bought in single or small quantities at big-box technology retailers. The access points are configured individually, deployed, and then left to function for day-to-day activity. They typically lack a form of centralised management or monitoring.



ENTERPRISE-GRADE

Enterprise-grade access points are often purchased through value-added resellers that can assist with the initial configuration, deployment, and ongoing monitoring and maintenance, if required by the customer. Enterprise-grade wireless networks also have centralised management capabilities available to the customer.



Better performance



Centralised management



Higher scalability

Deploying the management platform in the cloud is ideal for SMB customers, because it can lead to increased agility and lower TCO.

Additional memory and processor enhancements in the access points themselves allow for more features and higher user capacity. Enterprise-grade Wi-Fi delivers meaningful advantages that optimise the user experience, while making it easier to manage

and leverage the high traffic of typical business-based networks.

If your organisation has more than a handful of access points, and you’re using them to provide connectivity for the growing number of essential mobile devices in your workplace, then enterprise Wi-Fi is the way to go.

REQUIREMENTS FOR MODERN SMB WIRELESS DEPLOYMENTS

SMB customers often grapple with the choice between low-cost, low-feature consumer-grade access points and higher-end, higher-feature enterprise-grade APs that may have too many features. However, due to the growing availability

of high-quality WLANs in the SMB market, a few enterprise-grade Wi-Fi vendors have introduced product lines that are cost effective and contain the sophisticated features essential for high-capacity, high-reliability networks.

So what should SMBs be looking for in a wireless network?

GREAT CONNECTIVITY AND RELIABILITY

The first and most important feature that any business-critical network should support is great connectivity and reliability. Your employees need enough bandwidth to complete wireless tasks without fearing that the network may give out under heavy load.

Today, however, because of the increased reliance on Wi-Fi, expanding networks and increased performance requirements, the centralised model has severe architectural limitations, including data bottlenecks, scalability, reliance, and unnecessary cost.

Underlying Architecture

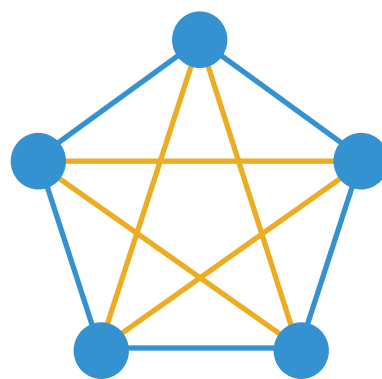
The underlying architecture is a major contributing factor toward the ensured success of connectivity and reliability. Leveraging the increased processing power of today's chipsets – dual core, Cavium processors – combined with a control plane protocol (similar to OSPF and STP used in switching and routing), it has now become possible to create a fully distributed control plane.

Using a distributed control plane is inherently resilient and allows the WLAN devices to self-organise and integrate directly into the access architecture, enforcing security policy before WLAN traffic ever traverses the wired LAN. A distributed control plane can also use load balancing and identify overcrowded access points or radios, and take action to distribute clients for optimal performance. Band steering is a similar principle to load balancing, but it occurs within a single access point that has two radios and ensures that your two-radio access point is being fully utilised.

The control plane is the set of real-time infrastructure operations, such as controlling connections, disseminating connectivity information, and calculating optimal path. In Wi-Fi this can include RF management, roaming, load balancing, mesh, policy enforcement and many more critical operations. A shared control plane in any infrastructure system can be achieved in either of two ways: centralised or distributed.

In the past, the control plane in Wi-Fi technologies was centralised, but this has changed in the last few years with all of the major WLAN vendors moving toward a distributed control plane model.

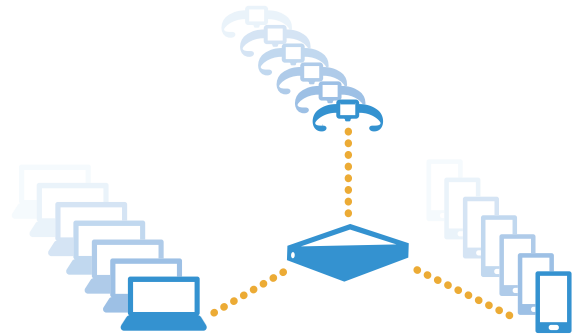
Previously, controllers eased the management and security headaches that non-pervasive networks comprised of autonomous access points would cause.



Multi-Client Support

Wireless is a shared medium, meaning that all clients and APs on the same channel compete for the same limited bandwidth. Each client's throughput varies, depending on the data rate it is using (802.11 a/b/ g/n/ac) at any given point in time, and this data rate may vary multiple times per second.

RSSI values, RF interference sources, signal blockage, and other factors such as processing power and radio sophistication play into a client device's instantaneous data rate.



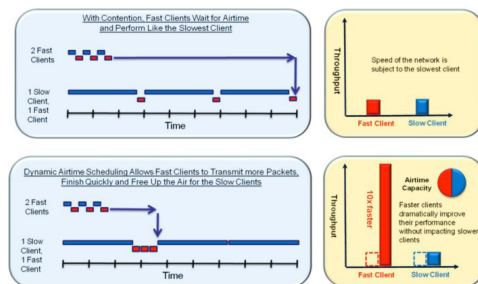
We recommend asking your prospective vendor for performance testing results when 10, 20, 30, and 30+ users connect to a single access point.

Additional Features

Some enterprise-grade wireless vendors support software configurable radios, which further ensures great connectivity and reliability by lessening interference and adding capacity. With software configurable access points, one radio remains fixed in the 5GHz spectrum, and the second radio can be configured to either 2.4GHz or 5GHz. With this advancement, you can instantly deploy dual 5GHz access points in high-capacity areas, then in the areas where you would otherwise disable the 2.4GHz radio, convert it to a 5GHz radio. This maximises your investment both today and in the future, without needing to rip and replace devices.

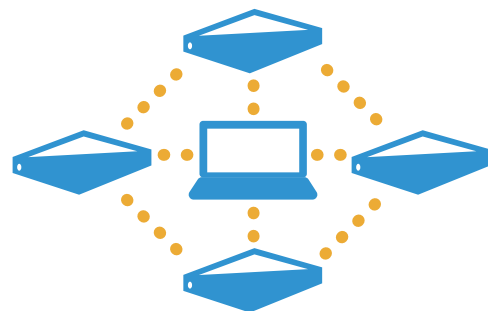
Dynamic airtime scheduling, or airtime fairness, also contributes to great connectivity and reliability. It enables clients connected at higher data rates,

in a mixed data rate environment, to achieve **up to 10 times more throughput than they would get with traditional wireless LAN infrastructures** – without penalising clients connected at lower data rates. This means that users see faster download times and improved application performance.



Roaming

The ability to roam is another requirement of many SMBs. With more users and devices on the move, and many organisations enabling voice and video services over Wi-Fi, it is imperative that handoff between access points is seamless. Enterprise-grade WLAN solutions support fast roaming handoff within layer 2 and layer 3 domains. Without layer 3 roaming capabilities, the client may lose its connection, which could be highly problematic in a situation where the connectivity is business-critical. As mentioned above, fully distributed control and data planes are essential for a mobile-first network, but the management plane plays a key role in the deployment and support of the wireless LAN and should remain centralised.

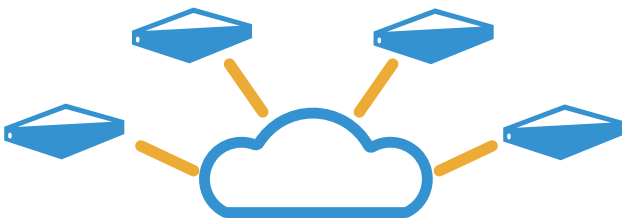


SIMPLE CENTRALISED MANAGEMENT

SMBs need centralised management, so cloud management is a great fit for them. As enterprise-grade networks are introduced in the SMB space, small IT teams are searching for solutions that remove the need to become an RF guru to deploy and manage their Wi-Fi.

Centralised management consoles provide an intuitive user interface with powerful network management tools, such as streamlined configuration workflows, real-time client and event monitoring, simplified troubleshooting and versatile RF planner tools. The ability to have a single pane of glass to configure, deploy, monitor, and troubleshoot is imperative for ease of use. Centralised management platforms allow IT administrators to view the entire network from anywhere in the world, and to make instantaneous changes across the network or to certain sites at any time.

Having a centralised management platform makes the deployment, visibility, and support of your network much simpler, especially if you have multiple locations. When investigating various solutions, make sure you ask the following questions about the centralised management platform:



COST-EFFECTIVENESS

Because SMBs often lack the budget and manpower of larger enterprises, it is important for the wireless network to be cost-effective while retaining the essential sophisticated feature set that is necessary in today's mobile world. Enterprise-grade WLAN options of the past were typically too complex and expensive for the SMB user, while consumer-grade options were cheaper but lacked necessary features. However, due to the necessity of robust Wi-Fi networks across markets, many enterprise-grade vendors have released products that fall into a happy medium built specifically for SMB markets.

Planning

How do you import floor plans and perform predictive surveys? How do you use those plans for a live environment to report coverage, client locations, and access point status, etc.?

Unified Policies

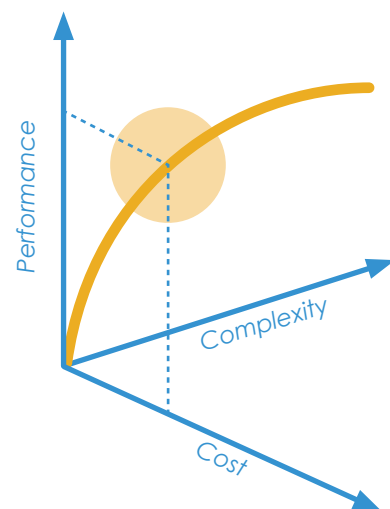
Does the platform support additional devices such as switches? How straightforward is it to configure consistent policies?

Provisioning

What is the process for connecting an access point and configuring features, both basic and advanced? What level of expertise is required to learn the interface, novice or 500-page manual with a week of training?

Support

What happens if we have a problem?



SCALABILITY

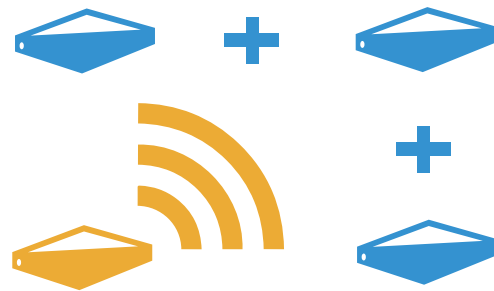
When WLANs were considered a convenience network, scalability was not a large factor in choosing the right equipment. As Wi-Fi moves into the primary access method, however, it is imperative that SMBs choose a wireless vendor that can scale, adapt, and grow as their needs change.

Consideration of scalability applies to the coverage of a deployment, increasing the load on that deployment, and easily adding features and functionality as needed. Additionally, it is important that a vendor's management platform can support one to tens of thousands of access points without the need for pricey upgrades or replacements.

You should also look at what is necessary to deploy remote or branch locations. If this requires the deployment of a new controller (instead of utilising a scalable cloud management platform), or makes the branch subject to variability in the WAN connection, it may not be the best solution for you. The WLAN should scale predictably on both the hardware and software side. New deployments should offer consistent features and organisation as existing networks. With the right vendor, every access point or networking device participates in

the processing of data, much like a grid computer, and the network can provide full functionality to any deployment regardless of size. Every device added to the network increases not only the coverage, but also the total compute capacity of the network.

The last factor to consider in scalability is the physical installation process required to get the network up and running. Check the installation process and instructions to make sure ceiling installation is easy and straightforward.



BEYOND CONSUMER GRADE

With enterprise-grade Wi-Fi vendors now targeting SMBs with aggressively priced offerings, SMBs can benefit from more robust network offerings with simpler network operations. The main advantage of the new offerings is simply having high-capacity, reliable connectivity that can be easily managed and supported for a fraction of previous costs.

Make sure to identify and secure a vendor that utilises the cloud and a distributed architecture to deliver scalable, simple, secure, and smarter

networks that can be cost-effectively deployed. Today's wireless LAN offerings can give organisations tremendous power to enhance the overall business process. The right wireless network can enable SMBs to leverage the power of mobility to increase productivity and engage employees and customers in new ways.



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