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**MIDSIZE BUSINESS
SELECTION GUIDE**

CHOOSING THE RIGHT ETHERNET SWITCH

The rapid growth of mobility, IoT and cloud-centric applications is driving the demand for bandwidth to an all-time high. Faster wireless standards are now providing gigabit+ wireless speeds, enabling mobile and IoT devices to transmit and receive more data than ever. But can your wired network handle the extra load? If not, it's time to plan for an upgrade. Determining which switches will best meet your needs can be a challenge unless you know what variables to consider.

Here are some tips to help guide you in the right direction.

LET'S LOOK AT THE DIFFERENT SWITCH TYPES

There are three types of switches you may need for your network. The types you choose will depend on the size of your network, and the scalability and availability required to support the growth of your business.

Access Switches

Often referred to as edge switches, access switches are used to connect access points (APs) and wired devices to the network via Ethernet ports. They often provide Power over Ethernet (PoE) to connected devices to simplify deployment.

Aggregation Switches

Aggregation switches distribute traffic across a campus network. They aggregate outbound traffic from multiple access switches and enable a greater amount of traffic to flow across your network at higher speeds. Aggregation switches also provide redundancy and Layer 3 routing services.

Core Switches

All network traffic traveling outside the local network, such as web or SaaS-based application traffic, will need to be funneled to a wide area network (WAN) link through a router or gateway. In smaller networks, access or aggregation switches can be connected directly to the router or gateway provided by your service provider. For larger networks, it may be necessary to use a core switch to aggregate traffic prior to forwarding it to the WAN.

Switches are available in two form factors: fixed and modular. Fixed switches have a set number of ports, ranging from 8-port to 48-port models. Fixed switches can often be connected (or stacked) together to increase the number of ports needed. Modular (or chassis) switches offer the flexibility to add additional ports, more power, throughput, and more redundancy in a modular fashion. Modular switches can often support hundreds of ports in a single enclosure.

DETERMINE YOUR PORT NEEDS

Make sure to account for the number of access points and wired devices that will be connected to your access switches now and in the foreseeable future. When designing a larger network, make sure that aggregation and core switches have enough ports to accommodate all switches downstream. Unsure of how fast your network will grow? Consider modular switches, as they allow you to add expansion modules when you need additional capacity.

CONSIDER PERFORMANCE REQUIREMENTS

After determining your device count, evaluate the applications being used, the volume of traffic each device will generate, peak network usage requirements, and the quality of service you want your users to experience. Some applications are more bandwidth intensive and/or latency sensitive than others, and the number of clients using these applications will impact bandwidth and quality of service requirements. For example:

- Larger populations of wireless clients generate more traffic than just a few
- The use of Skype, Teams or Zoom will generate more traffic than users just sending email
- High definition video cameras are more latency sensitive and data intensive than mobile inventory scanners
- Wi-Fi 6 access points pass more traffic onto the wire faster than older access points

These factors will influence how much capacity you will need.

Consider the throughput speed needed on both the primary access ports and uplink ports. The primary access ports need to support the maximum throughput requirements of connected devices. Most switches on the market support fixed speeds ranging between 1GbE or 10GbE per access port. Uplink ports, used to forward traffic going in and out of the switch, are typically faster – up to 40GbE or more. Switches often have multiple uplink ports for redundancy, as well as SPF ports for fiber connectivity.

Tip: The bandwidth needs of many devices will vary over time based on activity. Look for switches with ports that will scale dynamically as demand fluctuates. Some next-generation switches support Multigig that enables throughputs to increase to 2.5Gbps, 5Gbps, and higher over a Cat5 or Cat6 cable. Selecting a switch that scales for periodic increases in demand will allow you to get the maximum performance out of your network while optimizing your budget spend.

In addition to throughput and capacity attributes, performance optimization features are also an important consideration. Look for switches that support robust quality of service (QoS) features such as strict priority (SP) queuing robust, static and access OSPF routing, rate limiting, and large buffers for graceful congestion management.

PLAN FOR POE (POWER OVER ETHERNET)

Many devices such as VoIP phones, WLAN APs and IP video cameras can be powered using PoE provided by the switch they are connected to. New generations of devices, such as Wi-Fi 6 APs, require over 30W of power, while others, such as IP cameras, draw less than 15W. Therefore, it's important to know how much power your end devices will draw in order to select a switch that can provide the right amount of power per port. Switches that support 802.3bt (POE++) are recommended for devices that require more than 30W of power. Additionally, make sure the total power budget for the switch will support the aggregate power requirements for all devices during peak network usage.

HOW CRITICAL IS YOUR NETWORK?

Consider your requirements for availability and redundancy. Stackable switches are desirable when network uptime is critical. Stacking provides resiliency by enabling multiple switches, connected to each other through Ethernet connections or dedicated modules, to behave as a single entity. If one switch in the stack fails, the others can then take over. Stacking also allows multiple switches to be managed as a single IP device, simplifying IT workflows.

Hot-swappable hardware components, such as redundant power supplies and management modules, also provide failover protection that ensures individual switches remain operational.

DO YOU NEED LAYER 2 OR LAYER 3 SUPPORT?

Network architecture support varies from Layer 2 (local communication) to Layer 3 which enables switches to pass traffic to and from other network segments. It is likely you will need to support both communication layers at different points of your network. If you are planning for network expansion, choosing Layer 3 switches will ensure your network is staged for growth.

WHAT ARE YOUR MANAGEMENT OPTIONS?

Management capabilities vary between switch models, ranging from completely unmanaged to fully-managed with centralized control, AI-driven automation, and analytics. When selecting management options, evaluate whether using the switch GUI or CLI to manage switches individually or managing multiple switches through a cloud management platform or on-site management appliance is better.

Cloud-based management offers the simplicity of unified management of all wired, wireless, and WAN devices at multiple sites from a single console without the footprint and cost of server hardware, as well as simple navigation, natural language search, powerful network visualization and reporting, and automated troubleshooting and remediation capabilities. If your business requires an on-site management solution, consider management appliances for campus and data center locations.

DON'T FORGET SECURITY

The growth of mobile devices and IoT continues to accelerate at a rapid pace, making security a critical consideration. Ensure the switches you choose offer robust security features that keep device traffic separated and protect your network from unauthorized access and malicious attacks. Choosing switches and management software that integrate with advanced security solutions for automated policy enforcement and threat mitigation will enable you to expand your security posture as your needs grow. Key features to look for are:

- Automated traffic segmentation and policy enforcement to separate traffic and eliminate VLAN sprawl.
- Automated denial of service protection to monitor and protect your network from attacks that will disable your network
- Secure Sockets Layer (SSL) support for encrypting web traffic and providing secure access to switch administration through standard web browsers
- Access Control List (ACL) support for limiting access to a specific group of clients by MAC address
- Enforcement of port- and user-based access control based on authentication of login credentials which are validated with a centralized RADIUS server (i.e., IEEE 802.1X)
- TACACS+ support for a secondary layer of control for system administration
- Integration with advanced security solutions that use AI-driven device discovery, profiling and classification, as well as automated access control and dynamic policy enforcement.

THE ARUBA SWITCH PORTFOLIO FOR MIDSIZE BUSINESSES

Along with the cloud-native network management provided by Aruba Central, Aruba's best-in-class switch portfolio is part of the Aruba Edge Services Platform (Aruba ESP) architecture that delivers unified management, AI-driven operations, and zero-trust security to our customers. We offer a broad range of enterprise-class switches, from entry-level access switches to resilient aggregation and core switches in all sizes. Easy to deploy and manage, Aruba's feature-rich CX switches provide flexibility, high availability, and HPE Smart Rate port scaling up to 10Gbps, 50Gbps and 100Gbps. IT benefits include streamlined network operations, reduced network complexity, and outstanding user experiences delivered by an affordable high-performance solution built to meet business needs now and into the future.

Aruba switches are backed by industry-leading warranty and global support. Switch operating system software is included with the price of the switch - no additional license fee required.
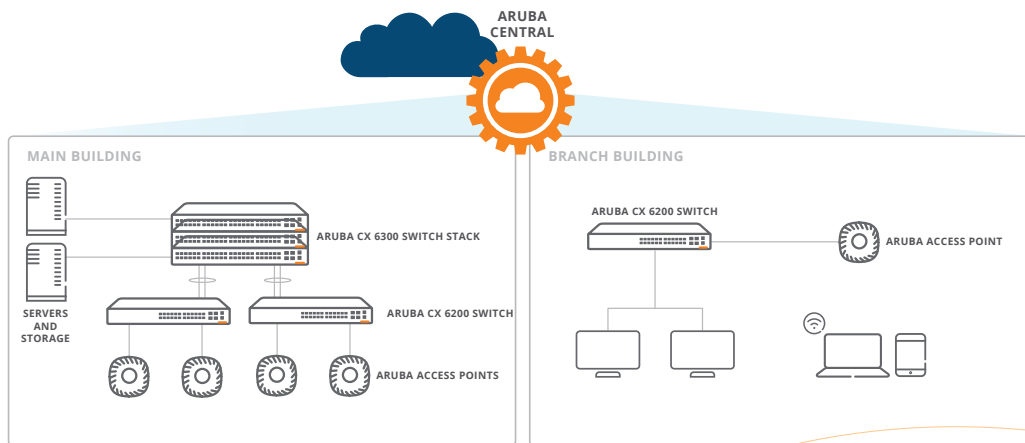
Example of access layer deployment

ARUBA ACCESS SWITCH PORTFOLIO

Aruba Switching	CX 6100	CX 6200	CX 6300
Deployment	Access (L2)	Access (L3)	Access, Aggregation, ToR (1 GbE) (L3+)
Access ports	12, 24, 48 port gig	24, 48 port gig	24, 48 port; full density Smart Rate and 60W High Power PoE models; 24 port SFP+ model; modular and fixed PSU models
Smart Rate multi-gig Ethernet	-	-	●
Uplinks	1/10GbE	1/10GbE	1/10/25/50GbE
Stacking	-	VSF (8)	VSF (10)
Always-on PoE	30W/port*	30W/port	60W/port 60W/port
PoE budget (maximum)	370W	740W	1440W
Hot swappable, redundant PSU	-	-	●
Dynamic Segmentation	-	●	●
REST APIs, Python Scripting	●	●	●
Onboard Analytics (NAE)		●	●
Aruba Central**, AirWave, CLI, Web GUI	●	●	●

*Always On PoE not supported on CX 6100
**Aruba Central support for CX 6100 to be released H2 2021

If your midsize business is like most, it is likely that access and aggregation switches will meet all your switching needs. But one size never fits all, and with additional models to choose from Aruba has you covered. To learn more about Aruba's entire edge-to-core switching portfolio, please visit our website.

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