The rapid growth of mobility, personal devices and cloud-centric applications today are driving the demand for bandwidth to an all-time high. New faster wireless standards are now giving us access points capable of gigabit+ speeds – enabling user and IoT devices to transmit and receive more data than ever. But can your wired network handle the extra load? If not, you most likely need to plan for an upgrade to your wired network. However, 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 ones you choose will depend on the size of your network, as well as the scalability and availability needed to support your business needs.

- **Access Switches**
  Often referred to as edge switches, access switches are layer 2 or 3 capable. They’re used to connect access points (APs) and wired devices to the network via Ethernet ports. They often provide Power over Ethernet (PoE) to APs to simplify the deployment of your network infrastructure.

- **Aggregation Switches**
  These provide connectivity across a campus network or a secondary switching layer that is commonly referred to as the distribution layer. The purpose is to aggregate traffic from multiple access switches. This allows you to handle a greater amount of traffic, while supporting higher speeds, 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 through a router or gateway to the Internet over WAN links. 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 from the distribution layer prior to forwarding it to the WAN.

All these switch types are available in two form factors: fixed and modular (chassis). 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 are available with a different number of available slots to use and give you flexibility to add more ports, more power, faster speeds, and more redundancy with the use of modules. Chassis switches can often support hundreds of ports in one 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 chassis switches, as they allow you to add expansion modules in different form factors as you need additional capacity.

**CONSIDER PERFORMANCE REQUIREMENTS**

Once determining your device count, evaluate the applications being used and the amount 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 when it comes to client density, the number matters. For example:

- Larger populations of wireless clients generate more traffic than just a few
- The growing use of Skype, Teams or Zoom will generate more traffic than users just send email
- High definition video cameras are more latency sensitive and data intensive than mobile inventory scanners
- 802.11ax access points pass more traffic onto the wire faster than older access points
These factors will influence what capacity your switches should support.

Consider the speed needed on both the primary access ports and uplink ports. The primary access port needs 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, and the higher the throughput, the more expensive the switch. Uplink ports, used to forward traffic going in and out of the switch, are typically faster – up to 40GbE or more – and switches often have multiple uplink ports for redundancy as well as SPF ports for fiber connectivity.

Tip: if you are connecting devices that will only require maximum throughput infrequently, look for switches that will dynamically scale access port speed based on demand. This will allow you to get the maximum performance out of your network while optimizing your budget spend.

**PLAN FOR POE (POWER OVER ETHERNET)**

Many devices such as VoIP phones, WLAN APs and IP video cameras that connect to access switches can be powered using PoE technology. New generations of devices, such as some 802.11ax APs, may require over 30W of power, while IP cameras draw less than 15W. Therefore, it's important to know how much power your end devices will actually require so that you can select a switch that provides the adequate amount of power. Switches that support 802.3bt are recommended for devices that require more than 30W of power.

**HOW CRITICAL IS YOUR NETWORK?**

Consider your requirements for availability and redundancy. Stackable switches are desirable where network availability is critical. Stacking allows multiple switches connected to each other through Ethernet connections or dedicated modules to behave as a single virtual switch, which delivers resiliency. If one switch in a stack fails, the others can then take over. Stacking also simplifies IT tasks since you are managing just one IP device instead of many.

Also, consider your requirements for network availability. Hardware components such as redundant, hot swappable power supplies and management modules provide additional protection for important aggregation switches.

**DO YOU NEED LAYER 2 OR LAYER 3 SUPPORT?**

Switching features vary from Layer 2 (local communication) to advanced Layer 3 capabilities that support advanced routing protocols that communicate with users across different buildings or 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 capable switches will ensure your network is staged for growth.

**WHAT ARE YOUR MANAGEMENT OPTIONS?**

Switches range from completely unmanaged to fully managed with comprehensive, multi-vendor network management tools. When selecting management options, consider what models and brands are being used in your network and whether on-premises or cloud is better. Cloud-based management offers intuitive wired and wireless network management from a single console without the footprint and cost of server hardware. If your business requires your network management solution to reside on site, or if you have a multi-vendor network environment, consider an on-premises solution for your wiring closet and/or data center.

**DON’T FORGET SECURITY**

Ensure the switches you choose offer robust security features, including easy integration with advanced security solutions for policy enforcement and threat mitigation. Key features to look for are:

- 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 central RADIUS server (i.e., IEEE 802.1X)
- TACACS+ support for a secondary layer of control for system administration
- Integration with network access control tools such as Aruba ClearPass Policy Manager
THE ARUBA SWITCH PORTFOLIO FOR MIDSIZE BUSINESSES

Aruba offers a comprehensive portfolio that includes everything from entry level access switches to resilient aggregation and core switches, big or small. Easy deployment, simple to manage, flexibility, high availability, and HPE Smart Rate port scaling are attributes that Aruba switches are known for. IT benefits include streamlined network operations, reduce network complexity, and an affordable high-performance solution that’s built to meet today and tomorrow’s business needs.

Aruba switches are backed by industry-leading warranty and global support. All required switch operating software is included, with no licensing fees.

Example of access layer deployment

<table>
<thead>
<tr>
<th>ARUBA ACCESS SWITCH PORTFOLIO</th>
<th>Gigabit Access</th>
<th>Multi-Gig Access</th>
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</thead>
<tbody>
<tr>
<td>Aruba 2530</td>
<td>L2</td>
<td>L3 + RIP, Access OSPF</td>
</tr>
<tr>
<td>Aruba 2540</td>
<td>L2 + RIP/Static</td>
<td>L3 + RIP, Access OSPF</td>
</tr>
<tr>
<td>Aruba 2930F</td>
<td>L3 + RIP, Access OSPF</td>
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<td>Aruba 2930M</td>
<td>Advanced L3</td>
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<td>Aruba 5400R</td>
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</tbody>
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- Modular Power & Uplinks
- Smart Rate Multi-Gig Ports
- Dynamic Segmentation
- Stacking
- REST APIs
- Airwave, ClearPass, Central
- PoE/PoE+
- PoE Class 6 (60W)

Recommended switch models for most midsize business networks
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 if you also need to consider Core switches, Aruba has you covered. To learn more about Aruba’s entire edge-to-core switching portfolio, please visit our website.