

CX campus core switches

Modern switches designed for the enterprise core



HPE Aruba Networking CX switches are purpose-built for cloud, mobility, and IoT. Based on the single AOS-CX switch operating system with a micro-services architecture that spans access to core to data center, CX switches are designed for operational efficiency by providing automation, built-in analytics, and unified management. Deployed at the core of the network, CX switches deliver critical high availability, exceptional scalable performance, and robust end-to-end security.

Network challenges at the core

As enterprises embark on digital transformation initiatives, having always-on connectivity that's scalable and secure for users, IoT devices, applications, and services becomes critical for business success. With 58% of customer interactions digital¹, tremendous growth of up to 15 billion connected IoT devices by 2029², and 40% of companies experiencing network outages due to human error over the past 3 years³, IT operations teams face daily hurdles to keep aging networks up and running 24 x 7. Migrating to a secure, high performance, always-on network infrastructure that's designed for operational efficiency and growth makes staying ahead of these trends possible and brings businesses a competitive edge. Switches deployed at the network core are the beating heart of enterprise connectivity and thus play a key infrastructure role, directly impacting IT operational efficiency, security, and user and device experience.

With these challenges in mind, CX campus core switches are designed to create a scalable, high performance network foundation that delivers greater reliability, with always-on high availability, intelligent automation for operational efficiency, and distributed analytics for faster troubleshooting and resolution. They offer enhanced security to address rampant user and IoT device growth and support flexible management choices including cloud-based unified management, and full API programmability for Dev Ops.

What is a campus core switch?

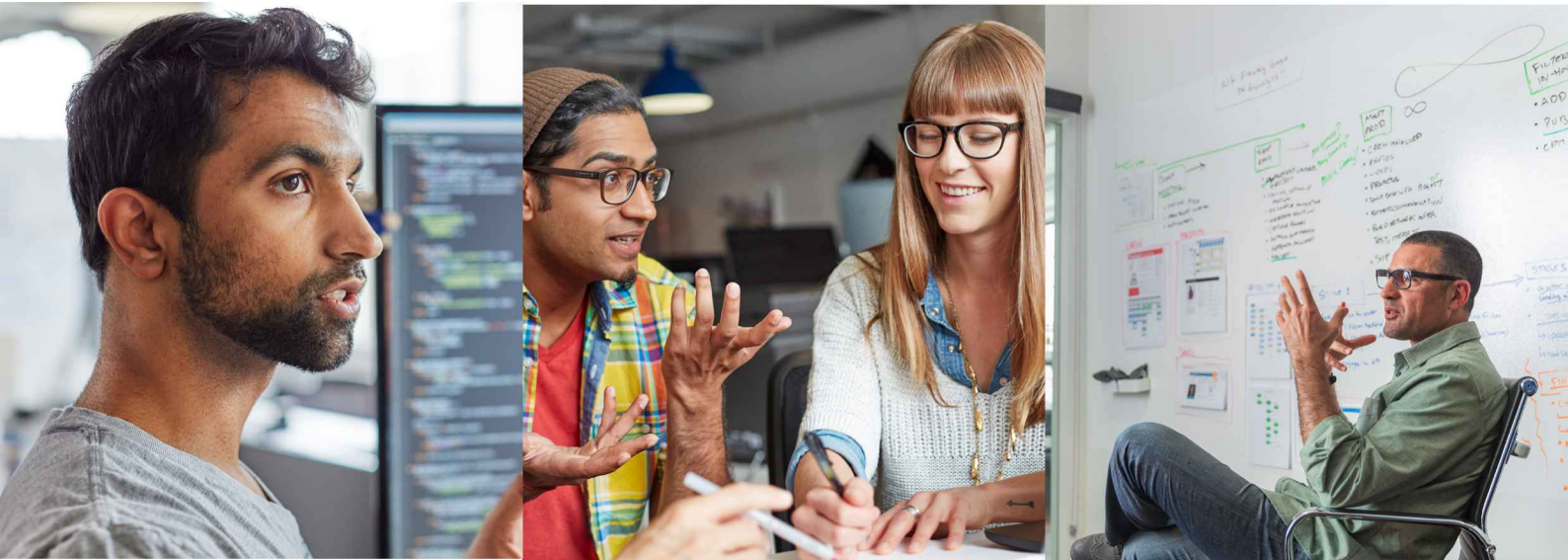
Campus core switches sit at the center of the network, typically connected to a router or gateway. They manage traffic coming to and from aggregation switches, the wide area network (WAN), and the internet and typically offer High Availability (HA) capabilities to ensure continued network access. Network architectures often deploy either 2-tier collapsed core approaches with a single switch playing the role of both core switch and aggregation (distribution) switch or 3-tier design that includes separate core and aggregation switches.

¹ McKinsey, June 2020

² Gartner, February 2021

³ [Uptime's 2022 Data Center Resiliency Survey](#)





CX Core Switch Highlights

- Carrier-class high availability modular switches with extended table sizes and fixed 1U models ideal for very large to small campus core deployments
- Zero downtime during upgrades with VSX Live Upgrades to ensure business continuity
- Scalable performance up to 25.6 TB switching capacity with high-speed, non-blocking 1GbE/10GbE/25GbE/40GbE/100GbE/200GbE/400GbE connectivity
- Intelligent automation for large-scale, error-free provisioning and configuration rollouts
- Deep visibility with analytics built-in to help prevent, detect, and fix issues before operations and users are impacted
- Dynamic VXLAN with BGP-EVPN for secure end-to-end segmentation across data center and campus networks
- Cloud-based and on-premises management with intuitive workflows and unified views of devices and clients for powerful network visibility, analytics, and control

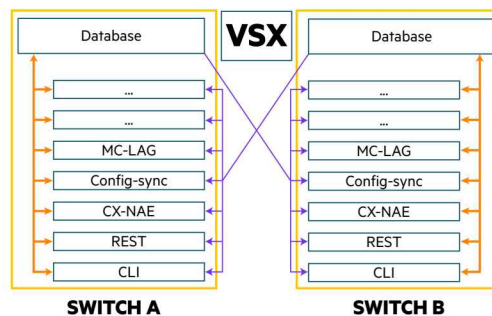
CX campus core switch advantages

HPE Aruba Networking CX switches are built from the ground up with a combination of cutting-edge hardware and the powerful AOS-CX operating system and are designed for the most demanding enterprise campus, branch, and data center networks. Based on over 30 years of continuous investment, our programmable switching ASICs provide unparalleled performance, innovative software feature advancements, and deep network visibility. These programmable ASICs, now in the 7th generation, are purpose-built for a tighter integration of switch hardware and software to maximize network availability and performance.

High availability and resiliency

24x7 network availability requirements leave no windows for upgrades or important configuration changes. Virtual Switching Extension (VSX) has been designed from the ground up to deliver the availability, virtualization, and simplicity required of a non-stop, carrier-class network. With unique control plane synchronization for multi-chassis high availability, VSX Live Upgrade offers a better way to ensure business success with a network that is always available, even during software upgrades. Rapid, interruption-free upgrades can also be done via hot-patching which offers targeted, customer fixes for specific defects, bugs, and vulnerabilities. And the CX 6400 series supports In-Service-Software-Upgrades (ISSU) for non-disruptive upgrades.

To further ensure the entire wired infrastructure is resilient, operations teams can smoothly, safely, and quickly coordinate provisioning and changes using smart automation to validate and deploy error-free configurations with NetEdit or Central Multi-editor. Hardware resiliency provides increased reliability via redundant and hot-swappable modules, fabric, fans, and power supplies.



HOW VSX WORKS

AOS-CX maintains a synchronous state across dual control planes for a unique high-availability solution called Virtual Switching Extension (VSX). VSX redundancy is achieved by deploying two chassis with an inter-switch link, with each chassis maintaining its independent control.

All software processes run as microservices that communicate through the state database of the switch, with no direct communication between microservices. If a software process crashes, the impact of the failure is limited.

VSX supports live upgrades of switch software without requiring maintenance windows. CX switches in a VSX pair can be upgraded successfully in less than an hour while simultaneously delivering high-performing network services without compromise.

Figure 1. VSX for no downtime, even during upgrades





Analytics for visibility and control

Embedded into CX core switches, the Network Analytics Engine (NAE) provides real-time, network-wide visibility so you can troubleshoot and resolve issues before users and business are impacted. Deep visibility with contextual analytics helps simplify network operations, reduces network complexity, and enables faster response times. Designed to monitor and troubleshoot network health and congestion issues, NAE uses the time series database (TSDB) which stores configuration and operational state data that can be used to write troubleshooting scripts, analyze trends, identify anomalies, and predict future capacity requirements.

Amazing scale and performance

A powerful, distributed architecture supports scalable, non-blocking performance needed at the core of the network. CX switches are designed with programmable ASICs that are purpose-built for tighter integration of switch hardware and software within campus and data center architectures, resulting in optimized performance and capacity. Virtual Output Queuing (VOQ) isolates congestion, prevents Head of Line Blocking (HOLB) and allows full line rate on outgoing (egress) ports to maximize performance.

Available with impressive extended table sizes (MAC tables of over 212,000 and over 600,000 routes), switching capacity over 25Tbps, and speeds up to 400GbE, CX campus core switches are ideal for the most demanding large core deployments. With a portfolio of both modular chassis and fixed 1U models, CX switches address requirements for both two-tier, collapsed core network architectures and large 3-tier networks.

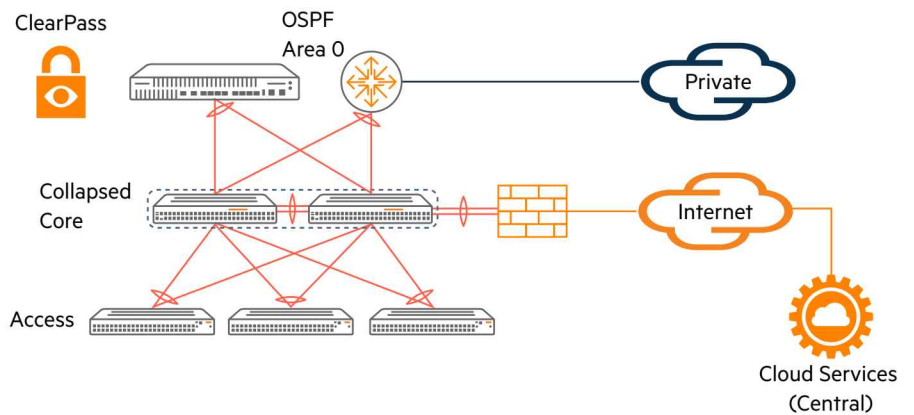


Figure 2. Two tier campus deployment

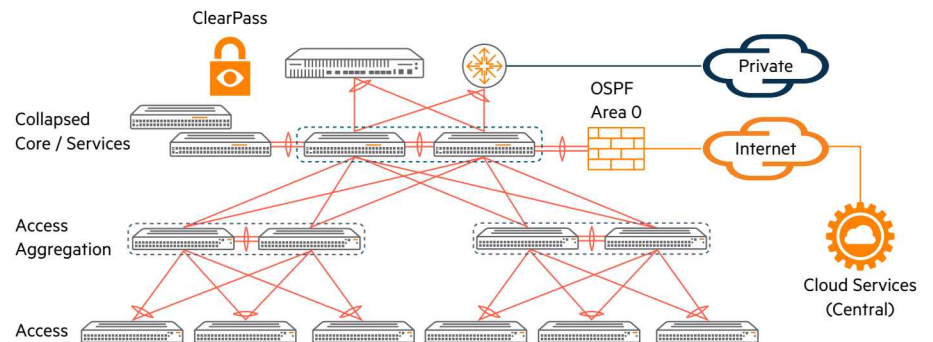


Figure 3. Three tier campus deployment





End-to-end security

Dynamic Segmentation provides scale and flexibility in network design by allowing the stretching of VLANs and subnets across the entire network via EVPN/VXLAN-based distributed overlay fabric. Fabric overlays use VXLAN or VXLAN-GBP tunnels on the data plane and allow for a Multi-Protocol BGP EVPN control plane for large deployments, or a static Layer 2 control plane for simplified deployments.

Operational power and efficiency

CX switches help eliminate the complexities of managing campus and data center networks with management and automation options that customize to fit any IT operating model. Tools include:

- Single pane of glass Central, designed for campus, branch, remote, and data center networks, to deliver full-service AI insights, security, and unified infrastructure management from a cloud-native microservices architecture.
- Central NetConductor to automatically configure LAN, WLAN, and WAN infrastructure to deliver optimal network performance while enforcing granular access control security policies.
- Central Multi-editor and standalone NetEdit to orchestrate configuration of multiple switches with automation and analytics ensuring deployments are consistent, conformant, and error-free.
- Fabric Composer, an intelligent, API-driven, software-defined orchestration solution to simplify and accelerate leaf-spine network fabric provisioning across rack-scale compute and storage infrastructures.
- CX Mobile App to accelerate day 0 configuration and deployment of CX switches, providing easy-to-configure virtualized stacking and a fast and simple way to monitor PoE usage.

Superior portfolio





HPE Aruba Networking products and software deliver a complete network solution. For small to large organizations, the comprehensive CX switching portfolio provides superior solutions for access, aggregation, core, and data center operations.



At a glance

Specifically designed for core deployments, the CX switching portfolio offers built-in automation and analytics, and includes fixed port models and modular chassis with non-blocking speeds from 1 GbE to 400 GbE, for the flexibility to start with a minimal port count and expand to full-density switches easily. Additional features include high resiliency, redundant management, fabric, power, and fans.

Table 1. Key CX switches for the campus core

CX 6400 Switch Series	CX 8360 Switch Series	CX 8400 Switch Series	CX 9300 Switch Series
			
Powerful 5 and 10 slot switches for edge access to data center	Five versatile 1/10/25/40/100GbE switches	High-performance, 8 slot core and data center switch	Flexible, high density 32 port 100/400GbE switch
Explore series	Explore series	Explore series	Explore series

Customer first, customer last support

For maximum reliability and business continuity of your network, trust the backing of HPE Aruba Networking support services. Partner with product experts to increase your team productivity, keep pace with technology advances and software releases and obtain break-fix support. Foundation Care services include priority access to Technical Assistance Center (TAC) engineers 24x7x365, flexible hardware and onsite support options and total coverage for HPE Aruba Networking products.

Network migration services

We offer industry-leading global high touch Professional Network Services for network design, installation, and enablement services. Our team of experts and partners provide in-depth technical know-how to accelerate and simplify your migration to AOS-CX.

Become an expert on CX

HPE Aruba Networking Education Services offers comprehensive training and certification programs from fundamental to advanced levels to give you the skills to fully utilize the power of AOS-CX.

Learn more at

<https://www.arubanetworks.com/products/switches/core>

Make the right purchase decision.
Contact our presales specialists.



Contact us