

HPE Aruba Networking CX Switch Operating System

A modern, cloud-native microservices-based architecture for HPE Aruba Networking CX switches

HPE

Key features

- Common operator experience built with open standards from campus edge to data center, extended with the option of unified cloud management and orchestration with HPE Aruba Networking Central and HPE Aruba Networking Fabric Composer
- Unique visibility and analytics with easy access to network state information through the HPE Aruba Networking CX Network Analytics Engine (NAE) empowered by insights through AIOps
- Secure and simplified access for users and Internet of Things (IoT) with automated role-based policy enforcement through application-aware networking and HPE Aruba Networking Dynamic Segmentation
- Superior resiliency, fault tolerance, and high availability provided by In-Service Software Upgrade (ISSU), hot patching, time series database and continual state synchronization
- Continuous telemetry data with IPFIX and WebSocket subscriptions for event-driven automation
- Fine-grained programmability of network tasks like configuration and onboarding through REST APIs, Python scripting, and CLI
- Full integration with other workflows, systems, and services enabled by a microservices architecture
- Full enterprise functionality available out of the box, at no cost with additional software capabilities delivered through a single, simplified subscription model

Product introduction

The HPE Aruba Networking CX Switch Operating System is a modern, cloud-native microservices-based network architecture that automates and simplifies critical tasks and complex workflows for the network operator. It delivers simplified IT operations with faster meantime to resolution, high availability, and end-to-end security. The HPE Aruba Networking CX Switch Operating System is designed to work with HPE Aruba Networking Central for secure, AI-powered operations and unified management.

Product capabilities

Modern, cloud-native microservices architecture

Today's enterprise needs a network that can grow at the speed of business, going beyond rigid, traditional network system designs and into a modern age of agile and adaptable infrastructure. Investing in a cloud-native, microservices-based switching solution reduces operational complexity and delivers programmability, resiliency, and uniformity.

Built with a cloud-native microservices architecture and a stateful database, all HPE Aruba Networking CX Switch Operating System services and processes can communicate directly with the database and module-to-module for improved efficiency, synchronizing with the database afterward (Figure 1). This modern approach provides near real-time state synchronization and programmability that simplifies operations with independent control of each feature and function available in the switch.

The independent nature of a microservices architecture means the same switch operating system can enable the services necessary for different deployment areas across access, aggregation, core, and data center networks without the burden of oversubscription realized by traditional, monolithic software. It also means that individual service modules can be managed and upgraded without affecting the functioning of other modules, creating a more resilient network.

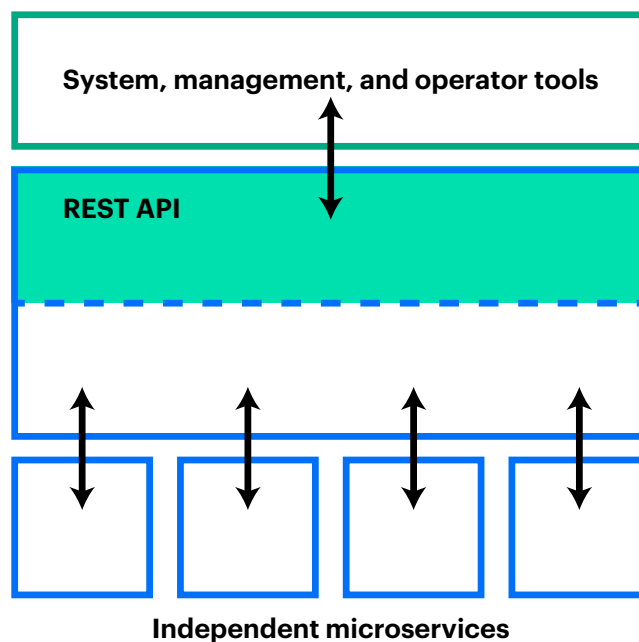


Figure 1. Cloud-native microservices architecture designed for modern networks

Every HPE Aruba Networking CX Switch includes OS at no additional cost with microservices designed for everything a business needs to deploy, connect, and troubleshoot an enterprise network, including Layer 2 switching, Layer 3 services and routing, network security, high availability services, switch stacking and clustering, IP multicast, quality of service (QoS), and integrations through REST API.

For a detailed, platform-specific breakout of supported switching features, protocols, and scaling, see the [HPE Aruba Networking Switch Feature Navigator](#).

HPE Aruba Networking CX Advanced Feature Pack

The HPE Aruba Networking CX Advanced Feature Pack is a flexible, subscription-based extension of OS, designed to deliver advanced use cases for visibility, assurance, security, and networking.

It introduces application-aware networking and security that can observe, identify, search, sort, and report on more than 3,800 apps across 22 categories. Granular data point collection enables app-based policy controls that can be applied on a user role through HPE Aruba Networking Dynamic Segmentation or on a switch port. Reflexive policy extends security with the ability to permit or deny traffic based on flow-aware policies, and MACsec extensions on the WAN enable data link layer encryption to service providers. Network customization is extended with container infrastructure that can host applications for flexible and reliable IT services.

The HPE Aruba Networking CX Advanced Feature Pack is available for a 90-day evaluation and in 1-/3-/5-/7-/10-year terms for HPE Aruba Networking CX 6300 Switch Series, HPE Aruba Networking CX 6400 Switch Series, HPE Aruba Networking CX 8xxx Switch Series, and HPE Aruba Networking CX 9xxx Switch Series. They are included at no additional cost for HPE Aruba Networking CX Switches managed through HPE Aruba Networking Central using an HPE Aruba Networking Central Advanced Subscription.

Specific switch models may offer a subset of features. For more information, see the [HPE Aruba Networking CX Switch License Ordering Guide](#).

HPE Aruba Networking CX Feature Packs for HPE Aruba Networking CX 10000 Switches

HPE Aruba Networking CX 10000 Switches distribute advanced services to the data center edge, with unified network and security automation and policy, allowing operators to extend industry-standard leaf-spine networking with 800G of distributed stateful firewall for east-west traffic, zero trust segmentation, and pervasive telemetry services. This functionality requires the HPE Aruba Networking CX Advanced Feature Pack, available for a 90-day evaluation and in perpetual or 1-/3-/5-year terms for HPE Aruba Networking CX 10000 Switches.

Customers have the ability to upgrade to an HPE Aruba Networking CX Premium Feature Pack that includes the HPE Aruba Networking CX Advanced Feature Pack functionality plus accelerated IPsec encryption, NAT, and additional network and security services.

HPE Aruba Networking Central

HPE Aruba Networking CX Switches are supported on HPE Aruba Networking Central, a single, zero trust, AI-powered, and cloud-native point of visibility and control for network operations. Using flexible, cloud-based, or on-premises models, HPE Aruba Networking Central delivers unified wired, WLAN, and SD-WAN management.

It is designed to simplify day 0 through day N operations with streamlined workflows. Switch management capabilities available with an HPE Aruba Networking Central foundation license include configuration, onboarding, monitoring, troubleshooting, and reporting. An HPE Aruba Networking Central Advanced license expands these capabilities with premium security and AIOps, including the HPE Aruba Networking Central NetConductor Fabric Wizard and global policy manager to enable cloud-native dynamic segmentation and distributed enforcement at a global scale.

The HPE Aruba Networking Central Advanced license also includes the functionality of HPE Aruba Networking CX Advanced Feature Packs, so no additional purchase is required. For more information on HPE Aruba Networking Central subscriptions, see the [HPE Aruba Networking Central SaaS Subscription Ordering Guide](#).

AIOps

When managed by HPE Aruba Networking Central, HPE Aruba Networking CX Switches take advantage of advanced AI-powered insights and automated actions to optimize network performance and health. Rich telemetry data is collected and analyzed to provide faster response to identified problems along with proactive prediction and prevention so that potential problems impacting CPU, ports, PoE, and more can be mitigated.

AI insights are available and enabled with the HPE Aruba Networking Central foundation license tier.

HPE Aruba Networking CX Network Analytics Engine

For enhanced visibility and troubleshooting, HPE Aruba Networking CX Network Analytics Engine (NAE) automatically interrogates and analyzes events that can impact a network's health. With NAE, network administrators and developers can utilize REST APIs, Python scripts, and CLI commands to automate workflows and access configuration data and telemetry stored in the time-series database. Advanced telemetry and automation provide the ability to identify network, system, and application issues through historical troubleshooting, trend analysis, and anomaly detection for fast resolution, reporting, and to help predict capacity requirements for scale, security, and performance.

HPE Aruba Networking Switch Multi-Edit Software

For networks with highly distributed or high-density configuration requirements, HPE Aruba Networking Switch Multi-Edit Software orchestrates multiple switch configuration changes for smoother end-to-end service rollouts. HPE Aruba Networking Switch Multi-Edit Software introduces automation that allows for rapid network-wide changes and policy conformance post network updates. Intelligent capabilities include:

- Centralized configuration with validation for consistency and compliance
- Time savings through simultaneous viewing and editing of multiple configurations
- Customized validation tests for corporate compliance and network design
- Zero touch provisioning (ZTP) for automated large-scale configuration deployment without programming network health and topology visibility through HPE Aruba Networking CX Network Analytics Engine integration

HPE Aruba Networking Switch Multi-Edit Software is available with an HPE Aruba Networking Central subscription license or as a stand-alone, on-premises license.

HPE Aruba Networking CX Mobile App

The HPE Aruba Networking CX Mobile App accelerates Day 0 configuration and deployment of HPE Aruba Networking CX Switches by offering an easy and automated way to connect switches to the network, manage and apply configurations, and validate installation and conformance.

With the HPE Aruba Networking CX Mobile App, you may use an iOS or Android™ device to perform the following operations over a Bluetooth or Wi-Fi connection:

- Configure basic operational settings without needing a terminal emulator or console cable
- View and change the configuration of individual switch features and settings
- Apply built-in configuration templates to save time or create and use your own custom configurations
- Manage the running configuration and start-up configuration of switches, and perform the following tasks:
 - Transfer files between the switch and your mobile device
 - Share configuration files from your mobile device
 - Copy the running configuration to the start-up configuration
 - Access the switch CLI
- Auto detect and add a new switch to a virtualized stack with just a few taps
- Check PoE budget and utilization and see available capacity as new PoE devices are added in real time
- Allow a switch with an HTTP server connection to easily download the latest firmware

Switch information from the app can also be imported into HPE Aruba Networking Switch Multi-Edit Software for simplified configuration management and to continuously validate the conformance of configurations anywhere in the network. The HPE Aruba Networking Multi-Edit Technician feature can also be used to limit network changes and only allow switch additions to the network, preventing the possibility of deployment errors.

The HPE Aruba Networking CX Mobile App is subscription free and available to download from [Google Play™](#) and the [App Store](#)

HPE Aruba Networking Fabric Composer

HPE Aruba Networking Fabric Composer is an intelligent, software-defined orchestration solution that simplifies and accelerates network provisioning, security management, and day-to-day operations across enterprise IT network infrastructures. What makes HPE Aruba Networking Fabric Composer different from other solutions is its ability to orchestrate a discrete set of switches as a single networking fabric to simplify operations and troubleshooting. This infrastructure and application-aware solution also automates various configuration and lifecycle events. HPE Aruba Networking Fabric Composer provides a series of interactive and automated workflows that abstract the administrative complexities of setting up complex enterprise networking environments.

HPE Aruba Networking Fabric Composer supports deep IT ecosystem integrations that enable administrators to manage, provide, and visualize their entire end-to-end network. An intuitive HTML5-based user interface provides a self-documenting real-time map of the environment: from a virtual machine (VM), to host networking, to a specific switch port, and through networks view visualizing virtual switch and spine-leaf connectivity. A robust set of APIs and tight integration into many third-party data center automation stacks provide a seamless configuration and operational experience.

HPE Aruba Networking Fabric Composer is designed to work with HPE Aruba Networking CX Switch Operating System and is optimized for HPE data center products and tools such as HPE SimpliVity, HPE iLO, and Pensando Distributed Services Platform.

Third-party integrations

A robust set of APIs and tight integration into many third-party data center automation stacks provide a seamless configuration and operational experience. The event-driven automation engine within HPE Aruba Networking Fabric Composer supports integration packs that are easily installed and offer integrations with VMware Cloud Foundation™, VMware vCenter®, VMware vSphere®, VMware vSAN™, VMware NSX®-T, Nutanix, HPE SimpliVity, and HPE iLO Amplifier. Integrations allow customers to enjoy the benefits of automated fabric provisioning, event-based workflow automations, end-to-end network and host visibility, and automatic storage traffic optimization.

HPE Aruba Networking Dynamic Segmentation

HPE Aruba Networking Dynamic Segmentation provides consistent policy automation and enforcement for wired and wireless clients across any centralized or distributed network. Using standardized policy definitions and role-based access, devices can only communicate with destinations consistent with their role, keeping traffic secure and separate. RADIUS-based access control completely automates the onboarding experience with Downloadable User Roles (DUR) so port-based controls are no longer required. HPE Aruba Networking Dynamic Segmentation is supported on HPE Aruba Networking CX Switches with and without Application Recognition and Control (ARC) enabled, on HPE Aruba Networking CX Switches with Layer 4 role-to-role ACLs enabled, or on HPE Aruba Networking CX Switches that are deployed alongside Layer 7 firewall-enabled HPE Aruba Networking gateways.

HPE Aruba Networking Dynamic Segmentation provides scalability and flexibility in network design by allowing the stretching of VLANs and subnets across the entire network with an EVPN/VXLAN-based distributed overlay fabric. Fabric overlays use VXLAN or VXLAN-GBP tunnels on the data plane and provide the option of a Multiprotocol Border Gateway Protocol (MP-BGP) EVPN control plane for large deployments, or a static Layer 2 control plane for simplified deployments.

East-west microsegmentation

Microsegmentation extends Layer 2 VLAN segmentation to an individual workload level using isolated and primary VLAN constructs available in the private VLAN (PVLAN) feature set. Similar to a hypervisor-based firewall, a PVLAN microsegmentation strategy provides the ability to enforce policy between VM guests on the same hypervisor. This same strategy can enforce policy between containers.

Role-based micro-segmentation delivers benefits of reduced subnet and VLAN sprawl, simplified policy definition, and scalable policy enforcement by introducing the concept of client user roles. Independent of network constructs such as VLANs and VRFs, clients can be grouped into a user role based on their identity, allowing the colorless ports technology to be extended to the centralized overlay fabric, as clients are on-boarded with automatic tunnel creation based on the associated user roles policy. The user roles policy offers the choice between micro-segmentation using centralized and unified policy enforcement for wireless and wired traffic with Layer 7 stateful firewall on gateways or a distributed approach with a Layer 4 role-role ACL on switches.

Additional resources

HPE Aruba Networking CX Switch Operating System software releases and features

For additional details along with search and sort through specific features:

- [HPE Aruba Networking CX Switch Operating System Switch Software Documentation Portal](#)
- [HPE Aruba Networking Switch Feature Navigator](#)

HPE Aruba Networking CX Feature Pack software subscriptions

For details and complete listing of HPE Aruba Networking CX Feature Pack software subscription SKUs, see the [HPE Aruba Networking CX Switch License ordering guide](#).

HPE Aruba Networking Central supported devices

For details and listings of HPE Aruba Networking CX Switch Operating System platforms and corresponding software versions supported in HPE Aruba Networking Central, see the [Supported HPE Aruba Networking CX Switch Operating System Platforms documentation portal](#)

HPE Aruba Networking Central licenses

For details and a complete listing of HPE Aruba Networking Central licensing options, see the [HPE Aruba Networking Central SaaS Subscription ordering guide](#).

HPE Aruba Networking ClearPass Policy Manager

For details around securing your network with policies based on the principles of zero trust, see the [HPE Aruba Networking ClearPass Policy Manager webpage](#).

Learn more at

[HPE.com/Aruba-CX-Switches](https://hpe.com/Aruba-CX-Switches)

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