

HPE ARUBA CX SWITCHING PORTFOLIO

ENABLING A CLOUD-NATIVE DIGITAL TRANSFORMATION JOURNEY

EXECUTIVE SUMMARY

Widespread adoption of cloud, mobile and Internet of Things (IoT) technologies creates operational complexity and puts stress on enterprise networks. Information technology (IT) leaders supporting digital transformation initiatives need to rethink networking strategies as existing architectures are not designed with these next generation considerations in mind.

Legacy switches in particular feel the strain. In the future, switch reliability will likely suffer and create a network performance bottleneck. Switching must support not only traditional wired access but also aggregate Wi-Fi traffic and both wired and wireless IoT devices and sensors. With the expected astronomical growth in attached network devices over the coming years; simply refreshing existing switching deployments is not enough. Legacy infrastructure will not scale, and inherent challenges in managing disparate platforms, interfaces and licensing structures across different network layers and domains also appear. Fragmented operations can also impact security postures and an administrator's ability to remediate network issues. Furthermore, network administrators need to support the line of business with faster application support, DevOps and other agile processes.

Aging network deployments inhibit IT agility and face the threat of becoming oversubscribed. As digital transformation continues to gain momentum, enterprises will rely on modern networking infrastructure to deliver value to its employees, stakeholders and customers. Modern networking infrastructure by definition is microservices based for scalability, containerized for efficient deployment, and software defined for operational efficiency. Manageability, reliability and automation are also critical components of supporting the future networking needs of the enterprise.

Switching infrastructure, in particular, must be cloud-ready for scale, to support ease of deployment and management, and to provide enterprise-wide visibility in order to enable fast remediation of network issues. This paper explores the switching portfolio of Aruba, a Hewlett Packard Enterprise (HPE) company, and its ability to deliver a platform that meets the needs of enterprise digital transformation—one that includes both a modern switching portfolio and a network operating system in AOS-CX. We believe that

Aruba's approach is differentiated based on its holistic, cloud-native design, unified architecture, and distributed analytics.

CLOUD-NATIVE DESIGN

Network operators struggle to keep up with the demands of today's digital enterprise. These demands include new application delivery, a wide range of device support requirements, and pressure to deliver ubiquitous uptime. Legacy infrastructure tends to also require high levels of manual operator intervention and doesn't scale to meet the needs of remote locations where IT support is typically limited.

To address these challenges, Aruba built AOS-CX from the ground up with a cloud-native, microservices architecture. At a high level, AOS-CX claims to deliver the following capabilities:

- Massive scalability, delivering on the performance and flexibility demands of today's digitally oriented business models;
- Full programmability to automate common, yet complex, networking tasks, bringing new levels of efficiency to ongoing management;
- Resiliency to deliver a simple, yet robust solution for ensuring high availability and zero network downtime, even during upgrades; and
- Native support for intent-based networking topologies, including assurance capabilities to verify intent is implemented correctly that also eliminates the need for additional translations or multiple layers within the overall software stack.

Depth of programmability serves as a key differentiator for AOS-CX relative to other network operating systems, with its support for full Representational State Transfer Application Program Interfaces (REST APIs). REST API coverage provides access to state and time-series databases that deliver robust analytics and the ability to easily integrate with third-party tools used in existing workflows for incident management, collaboration and other capabilities. Aruba also provides extensive developer support through its [Aruba Solutions Exchange](#), as well as its [Airheads Community](#), driving innovation and taking the guesswork out of deployment by providing a wide array of tools and support.

The following intuitive Aruba management tools also help ease the burden on network operators:

- NetEdit automates and simplifies common configuration tasks. What continues to separate Aruba from its competitors is user interface. NetEdit uses a CLI syntax for operator familiarity but simplifies tasks in a number of ways, including the ability to edit multiple devices simultaneously and continuously validate that changes comply with network policy. Embedded analytics passed from the Network Analytics Engine (NAE), an application that runs on AOS-CX, enables faster troubleshooting and remediation action. Lastly, NetEdit integrates with ServiceNow, Slack and TOPdesk, among other applications, to further streamline common IT workflows.
- The Aruba CX Mobile App is a smartphone application that further simplifies network switch installations and deployments with the ability to automatically import configuration files into NetEdit. This allows for quicker provisioning and better ensures network validation and conformance. Aruba consistently executes on a “mobile first, customer first, customer last” mentality at the heart of its portfolio offering—the Aruba CX Mobile App is yet another example.

UNIFIED ARCHITECTURE

Operators require a unified solution to reduce the complexity associated with siloed legacy networking infrastructure. Legacy infrastructure is typically fragmented based on the inherent nature of its architectural design and the pressure of supporting multi-vendor solutions. Consequently, having the flexibility to deploy the same hardware and software from edge to the data center is key for streamlining network design and simplifying operations.

The Aruba CX switching portfolio is purpose-built to address the demands of an enterprise’s digital transformation journey. First, its distributed, non-blocking architecture supports collapsed 1-tier and 2-tier architectures without the threat of oversubscription. Second, it provides exceptional investment protection for future needs. Case in point, Aruba CX scales to support multi-device access up to 28TB on the same platform and its fully extensible fabric design allows enterprises to flex their bandwidth needs.

From a custom silicon perspective, Aruba claims that it has been developing its own for nearly 30 years. Moor Insights & Strategy believes these investments have the potential to deliver better performance, faster innovation due to theoretically tighter integration

between software and hardware stacks, and flexible programmability for future capability development and subsequent investment protection.

With one operating system, one ASIC architecture, and a common platform, operators benefit from a consistent experience from the access layer at the edge to the data center. Aruba also offers its Dynamic Segmentation technology, which is delivered via integration with Aruba ClearPass, enabling unified policy and secure access across wired and wireless network topologies. This is especially useful for implementing an agile micro-segmentation strategy.

Additionally, Aruba simplifies the customer software licensing experience by eliminating the headaches associated with managing new feature deployment and subscriptions. We feel the combination of a unified architecture and licensing simplicity helps customers ease deployments, reduce management errors, and potentially realize a lower operating expense structure.

DISTRIBUTED ANALYTICS

Operators need better visibility to detect and resolve issues as they occur. Lack of timely, complete network visibility due to a lack of historical data presents a multitude of challenges in troubleshooting today's complex networks. Data must also be actionable to be of value. Manually correlating massive datasets to performance or security events is cumbersome and unmanageable in determining root cause. Network professionals require distributed network analytics to support fast remediation of connectivity issues and other business-impacting problems.

Aruba helps network operators quickly detect and resolve issues through its Network Analytics Engine (NAE). NAE collects rich analytics directly on the switch for network-wide insights, eliminating the need to stream telemetry back to a central location. The obvious benefits are reduced latency and faster decisions. NAE also delivers a more granular level of visibility versus external tools that only sample for the sake of scale, or that fail to capture information during network interruptions.

Full programmability and automation are supported through an open architecture by leveraging Python scripts ("agents") and APIs to establish traffic monitoring and corrective action based on existing policies. The Python scripts monitor for anomalies and can also collect information from neighboring infrastructure. NAE's ability to provide context around telemetry is also key. When an anomaly occurs, data is automatically correlated to events and configuration changes, eliminating the tedium of analyzing logs

and multiple data sources to determine root cause. Analytics and reports are accessible through a customizable, web-based UI and NetEdit, giving operators the dashboards and visualizations to reliably manage network performance.

CALL TO ACTION:

Digital transformation has the potential to bring significant competitive advantages to the enterprise, but the journey is fraught with challenges. Legacy switching infrastructure will not support the increasing demands placed on network operators. What is needed is an architecture that will scale, is easy to deploy and manage, and provides visibility as well as a closed-loop approach that decreases manual intervention and improves network uptime and availability.

Moor Insights & Strategy believes that Aruba is uniquely positioned to support current and evolving networking infrastructure needs with its CX switching portfolio and AOS-CX network operating system. There are many proof points that support our recommendation: depth of programmability with custom silicon, rich toolsets with Aruba NetEdit and CX Mobile App, strong developer support through its robust solutions exchange and Airheads community, ease of overall customer licensing and new feature deployment, and robust integration of security and analytics.

With its purpose-built, cloud-native design, unified architecture, and distributed analytics, we strongly recommend the Aruba CX switching portfolio to enterprises wishing to make the digital transformation journey. It is uniquely positioned to address today's highly taxed, IoT-enabled, and mobile-first network environments.

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