HPE aruba networking

Business white paper

Architecting SASE with a secure business-driven SD-WAN

HPE

Learn how the HPE Aruba Networking EdgeConnect SD-WAN platform delivers unmatched protection and accelerates your journey to SASE

Executive summary

Software-driven WANs (SD-WANs) are enabling today's geographically distributed enterprises to realize the transformational promise of cloud computing, reduce capital and operating costs, provide the highest quality of experience for employees and customers, and adapt quickly to changing business requirements.

But digital transformation, cloud computing, and hybrid working introduce new security challenges. These include:

— Users connecting from anywhere and from any device
— Increasing cybersecurity risks
— More sensitive data hosted in the cloud
— Proliferation of Internet of Things (IoT) devices increasing the attack surface
— Complying with regulations and industry standards

A key benefit delivered by an SD-WAN is the ability to actively utilize low-cost broadband services. However, because broadband services are "public" instead of "private", advanced security capabilities are required to ensure the confidentiality and integrity of application traffic traversing such connections. With a built-in firewall, secure SD-WANs provide advanced security at the branch including intrusion detection system (IDS) / intrusion prevention system (IPS) and distributed denial of service (DDoS) protection, it isolates IoT traffic from mission-critical applications by segmenting networks into zones and reduces the attack surface to help compliance with industry standards.

Additionally, by moving most of their business applications to the cloud, organizations are facing new security challenges such as providing secure access to remote workers, safeguarding internet users from web-based threats, and ensuring sensitive corporate data hosted in cloud applications remains protected and exempt from data leaks.

By tightly integrating security service edge (SSE) solutions, advanced secure SD-WAN creates a robust secure access service edge (SASE) architecture allowing organizations to tackle the challenges of hybrid working and cloud computing.

This paper discusses why SD-WAN is critical to security, and how a comprehensive SD-WAN security deployment can better safeguard today's dynamic, cloud-first enterprises. It then goes on to reveal the extensive set of security capabilities incorporated in the HPE Aruba Networking EdgeConnect SD-WAN platform, including a next-generation firewall, and how the platform tightly integrates with SSE capabilities, either with HPE Aruba Networking SSE to form a unified SASE solution or with third-party cloud-security vendors.

As more applications and workloads migrate to the cloud, the role of the corporate data center has been significantly reduced. With hybrid working, the security perimeter is also dissolving as users connect from anywhere and from any device, accessing sensitive data hosted in the cloud.

Organizations that try to manage WANs using traditional routers are faced with continual compromises and trade-offs. Manual processes and complex architectures prevent organizations from establishing a secure architecture and effectively respond to malicious threats such as denial of service (DoS) attacks. Security concerns can hamper the use of low-cost broadband connections and slow the move toward the cloud in general, and software-as-a-service (SaaS) applications in particular.

The impact of these changes is that enterprise WAN architecture must change too. A SASE architecture brings a more secure and flexible way to connect to cloud-hosted applications by not backhauling application traffic to a data center before forwarding it to the cloud.

With SASE architecture, the SD-WAN can steer application traffic directly to a trusted SaaS provider or first to a cloud-hosted security service (SSE) where more advanced security inspections can be performed before forwarding to the SaaS provider, all according to enterprise security policies.

Traditional, private line connectivity options (such as multiprotocol label switching [MPLS]) and routing practices — backhauling, in particular — are clearly a poor match for cloud-based apps. Key shortcomings include the negative impact they have on performance (especially for internet or cloud-destined traffic), the high cost of such network services and architectures, and the fact that they require to maintain a myriad of security equipment in branch locations.

The proliferation of IoT devices has become another major concern for organizations, significantly increasing the attack surface. Based on a simple design, these devices usually cannot host a security agent, and therefore they cannot be easily protected. Organizations require a different security solution for IoT devices to protect their networks from potential vulnerabilities that could breach the network. That's why SASE must be complemented with zero trust, identity-based access control security framework, segmenting traffic so that users and IoT devices can only reach network destinations consistent with their role in the business.

"The shift to cloud computing and remote work increases SASE demand to enable secure access from any device."

Gartner[1]

[1] "2024 Strategic Roadmap for SASE Convergence," Gartner, 2023

Why SD-WAN is critical to security

Strong security is a prerequisite and integral element of many of the benefits of a business-driven SD-WAN. For instance, the use of broadband internet as a low-cost connectivity option is core to the SD-WAN value proposition.

However, the fact that broadband is public instead of private introduces the need for capabilities to ensure the confidentiality and integrity of application traffic traversing such connections.

Although local internet breakouts are essential for enhancing performance and reducing the bandwidth needed for backhauling, they also expose branch users and their local networks directly to the internet and its myriad of threats. So, now you need a way to limit outbound destinations, block unwanted/unsolicited inbound traffic, and filter allowed/expected traffic for threats.

However, not all web applications are created equally, and some web traffic can expose the enterprise to viruses, trojans, DDoS attacks, and other vulnerabilities. Therefore, direct internet breakout must also be secure. For example, a web traffic security policy could be defined as follows:

— Send known, trusted business SaaS traffic such as voice and video traffic unified communications as a service (UCaaS) directly to the internet

— Send all other web traffic to a SSE

— Send enterprise data center-hosted application traffic directly to headquarters

To implement such a policy, web traffic must be steered granularly to its intended destination (Figure 1). This requires identifying the application on the first packet because once an application session has been established, it cannot be redirected to an alternate destination without breaking the flow resulting in application disruption. And because IP address ranges utilized by SaaS applications change almost continuously, address table updates must be automated and implemented daily.

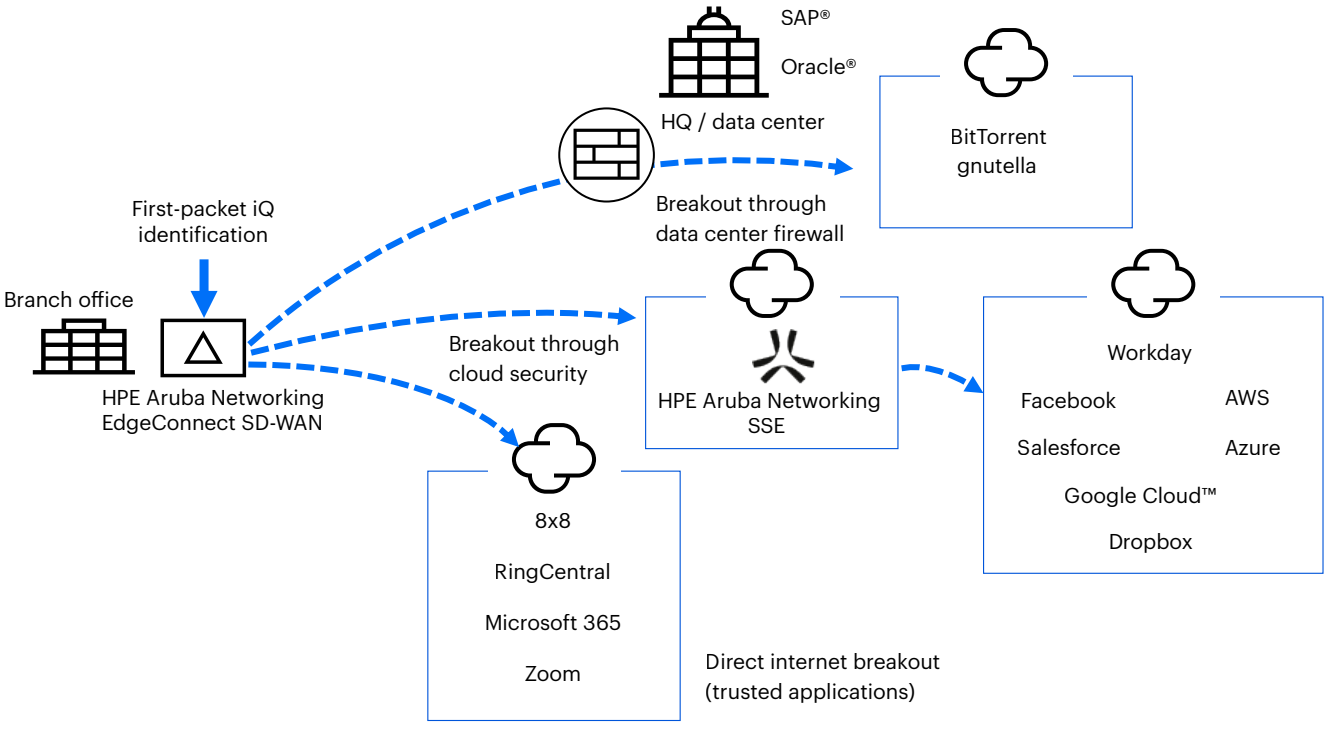


Figure 1. Application traffic on the first packet to steer traffic to its correct destination to enable granular security policy enforcement

Introducing HPE Aruba Networking EdgeConnect SD-WAN

The HPE Aruba Networking EdgeConnect SD-WAN platform (Figure 2) provides enterprises with the flexibility to use any combination of transport technologies — including public broadband services — to connect users to applications without compromising application performance or security.

The four main components of the platform include:

- **HPE Aruba Networking EdgeConnect SD-WAN** zero-touch physical or virtual appliances, which are deployed at an organization's branch offices, central sites, and cloud data centers.
- **HPE Aruba Networking EdgeConnect SD-WAN Orchestrator**, a centralized management system that enables simplified configuration and orchestration of the entire WAN and provides complete observability into both legacy and cloud applications. Quality of service (QoS) and security policies are defined centrally and automatically deployed globally to the appliances in the platform, increasing operational efficiency and reducing human errors that can jeopardize branch security.
- **WAN optimization**, a performance pack that enables IT teams to engage market-leading WAN optimization capabilities, where needed, simply by checking a box in the HPE Aruba Networking EdgeConnect SD-WAN Orchestrator interface.
- **Dynamic threat defense / advanced security**, an optional security license that enables IDS/IPS and adaptive DDoS in the platform.

HPE Aruba Networking EdgeConnect SD-WAN is designed with an extensive set of capabilities to address the branch WAN edge security challenges and requirements inherent in SD-WAN implementations.

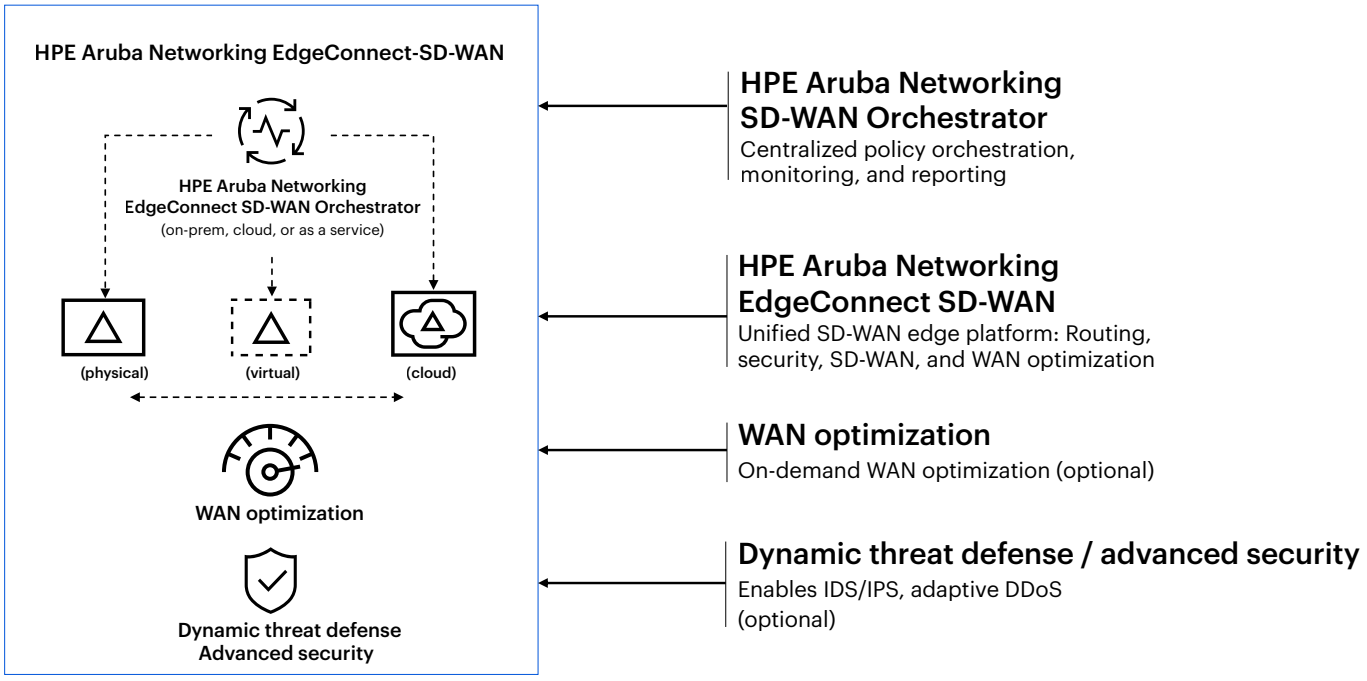


Figure 2. HPE Aruba Networking EdgeConnect SD-WAN platform

How HPE Aruba Networking delivers a secure SD-WAN

HPE Aruba Networking EdgeConnect SD-WAN goes beyond the basics of providing the confidentiality of application traffic traversing public networks. An extensive set of security capabilities provides coverage across four essential areas: the data plane, the management plane, integration with SSE, and compliance. The net result is the full spectrum of protection needed for enterprises to fully realize the benefits of an advanced SD-WAN — enhanced application performance, lower overall WAN cost, and increased business agility — without being exposed to greater security risks.

Application-driven data plane security

Different applications deserve — or perhaps even require — different treatments when it comes to how they are handled from a security perspective (not to mention other perspectives, such as QoS, performance optimization, and tunnel bonding policy). For example, a business application that is processing sensitive transactions might require encryption regardless of the type of transport being used to meet compliance requirements while SaaS applications could be left to rely on their native capabilities (for example, Transport Layer Security [TLS]). This is why it's important to have an application-driven SD-WAN, where policies and configuration settings can be implemented on a per-application basis.

Relevant security capabilities available with HPE Aruba Networking EdgeConnect SD-WAN include:

Next-generation firewall: The platform includes a next-generation firewall that provides in a single entity, advanced security features such as IDS/IPS, DDoS defense as well as application and user identity awareness. It gives IT leaders the ability to block malware from entering the network based on application, identity, and context, regardless of the port/protocol used. Additionally, IT leaders benefit from increased visibility in network activity and potential risks.

IDS/IPS: The platform integrates a rule-based IDS/IPS. The signature-based system monitors network traffic to find patterns that match a particular attack signature. Integrated with the platform's next-generation firewall, the system allows application-level selection for inspection based on firewall zones and provides actions such as dropping or allowing traffic when an intrusion is detected.

The system can operate either in strict or performant mode. In strict mode, the traffic passes through a sensor so that the traffic is immediately blocked when an intrusion occurs. In performant mode, a copy of the traffic is sent for analysis, providing more efficiency without impacting network performance. Using this mode, an intrusion is blocked after its detection. Depending on their security requirements, organizations can choose between the strict or performant mode.

Threat logging provides network and security analytics back to HPE Aruba Networking Central or a third-party security information and event management (SIEM) such as Splunk to monitor threats in real time.

The HPE Aruba Networking EdgeConnect SD-WAN security application for Splunk provides a dashboard view of the security event notifications exported from the platform (Figure 3). IT managers can easily configure the platform to forward the security event notifications to Splunk, centralizing logging, visualization, and analysis of security events alongside other telemetry or network events. From Splunk, users can filter, sort, navigate, and view the collective security event notifications generated across the entire SD-WAN fabric, overall trends, and top talkers to help them pinpoint network events that require further investigation.

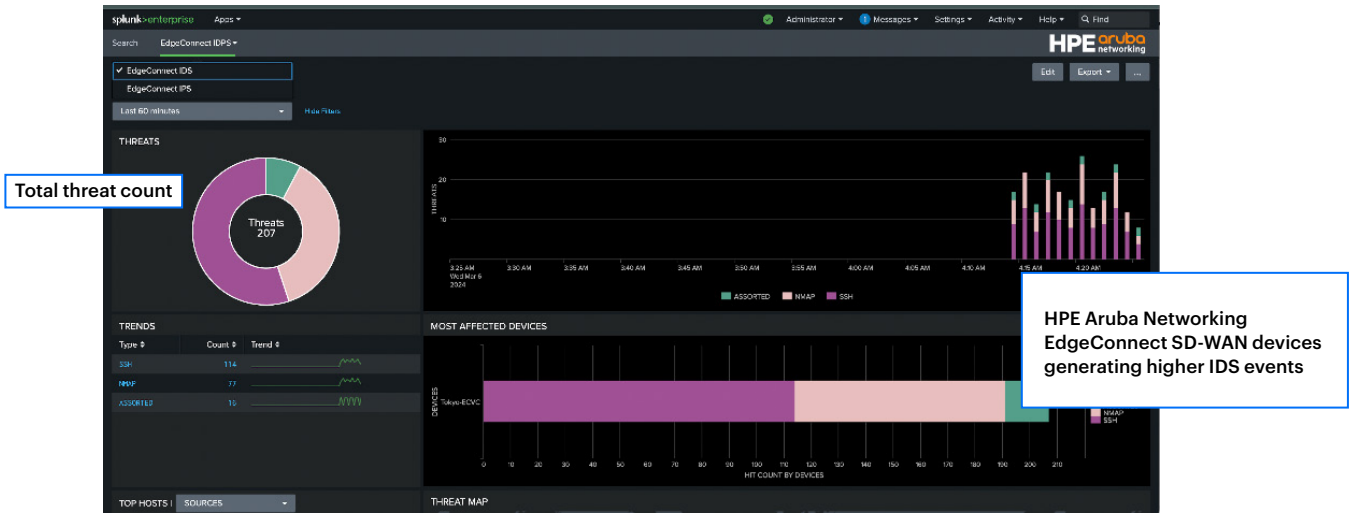


Figure 3. View IDS/IPS events in Splunk stemming from HPE Aruba Networking EdgeConnect SD-WAN

DDoS defense: With the rising frequency of DDoS attacks, organizations must establish cost-effective defenses. With HPE Aruba Networking EdgeConnect SD-WAN deployed at branch locations, that's precisely what you get. In the event of a DDoS attack, the platform limits the number of malicious requests with actions such as rapid aging, drop excess, and block source. Actions are triggered based on preset or configurable DoS thresholds applied to traffic parameters including flow rate, concurrent flows, and embryonic flows. Administrators can define minimum and maximum thresholds. The minimum threshold helps spot problems early on, while the maximum threshold makes sure traffic doesn't drop prematurely. With firewall protection profiles, administrators can enforce different levels of DDoS protection levels across the organization by binding firewall protection profiles to firewall zones. The solution also blocks a list of IP addresses of known attackers and dynamically routes the traffic over unaffected network links in case of a DDoS attack, enabling business continuity. The platform includes a comprehensive set of reports for DoS defense such as threshold violations, flow drops, denied hosts and packets counts, top talkers, and alarms such as exceeded DoS thresholds (Figure 4).

Adaptive DDoS is an optional feature that uses machine learning to automatically adjust DoS thresholds, simplifying DoS threshold configuration and mitigating the need for frequent updates due to changing network conditions. Traditionally, administrators set DoS thresholds manually, often based on estimates, requiring frequent adjustments. Adaptive DDoS automates this process with two key functionalities: auto rate-limiting and smart burst. Auto rate-limiting uses machine learning to regularly calculate a new baseline based on network statistics and patterns. This baseline sets the minimum DoS threshold. Smart burst is applied to the maximum threshold, automatically allocating unused flow capacity across configured firewall zones. Smart burst manages good traffic bursts (for example, login spikes in the morning or backups at night) while preventing bad traffic from consuming bandwidth. It offers four modes: baseline plus (adds a buffer to the baseline), committed burst (proportionally allocates extra flow capacity to firewall zones), excess burst (unused committed burst capacity is pooled and shared as an additional layer of support), and a custom setting.

Figure 4. Number of flows allowed and dropped for each 5 minute time interval per firewall zone in HPE Aruba Networking EdgeConnect SD-WAN

Data-in-transit protection: Each HPE Aruba Networking EdgeConnect SD-WAN datapath is protected by IPSec tunnels that use AES 256-bit encryption to maintain application and data confidentiality. The platform uses an Internet Key Exchange (IKE)-less IPSec UDP protocol; that is, it employs standards-based IPSec UDP encryption but doesn't require IKE pre-shared keys. Encryption keys are not repeated and are directionally unique. The HPE Aruba Networking EdgeConnect SD-WAN Orchestrator manages the encryption keys and rotations automatically, which reduces tunnel setup time without a loss of service. This protocol avoids problems encountered when deploying network address translation (NAT) with IKE, such as failures when branch offices have multiple devices with different VPN requirements. Because IKE-less tunnels use different ports over IPSec, they are unlikely to be limited or blocked by upstream firewalls. These advanced features for protecting data in transit increase the flexibility, security, and robustness of secure communication between remote endpoints.

Data-at-rest protection: Data blocks that persist within HPE Aruba Networking EdgeConnect SD-WAN appliances as a result of the optional WAN optimization data deduplication capability are protected with AES 128-bit encryption.

Zero trust segmentation: HPE Aruba Networking EdgeConnect SD-WAN creates secure end-to-end zones across any combination of users, devices, application groups, and virtual overlays, propagating configuration updates to sites in accordance with business intent. Paired with HPE Aruba Networking ClearPass Policy Manager, the platform enforces a zero trust architecture that dynamically segments the network and applies least privileged access principles. It helps ensure that users and IoT devices only communicate with destinations consistent with their role based on identity, access rights, and security posture.

Additionally, the platform allows organizations to create multiple application-specific virtual WAN overlays (also called business intent overlays). Each virtual overlay specifies priority and quality of service requirements for application groups based on business requirements. Using these specifications, the platform automates traffic steering end-to-end across underlying WAN transport services.

Each virtual overlay is mapped to a LAN-side zone or zones. A zone may be composed of VLANs, physical and logical interfaces, and subinterfaces. Each zone can be assigned security policies that limit connectivity with other zones. For example, a policy could allow only outgoing traffic, allow incoming traffic only from approved applications and services, or block the traffic from less secure zones.

With zero trust segmentation:

- Users and IoT devices access resources based on role and context using the least privilege access principles.
- Traffic within each zone is isolated from traffic in other segments, reducing unauthorized access and limiting the scope of incidents.
- Microsegmentation is extended from the LAN, across the WAN, and to data centers and cloud platforms.
- High-priority applications experience faster, more reliable performance across the WAN, increasing application availability and improving the experience and productivity of end users.

Simple policy creation: IT administrators can create network segments in minutes using an intuitive GUI (Figure 5). These segments can connect LANs with other LANs (LAN-WAN-LAN) and with data centers (LAN-WAN-data center). The virtual WAN overlays are defined based on business requirements and intent, not infrastructure details like IP addresses. Zone-based security policies are displayed in a configuration matrix that makes them easy to understand.

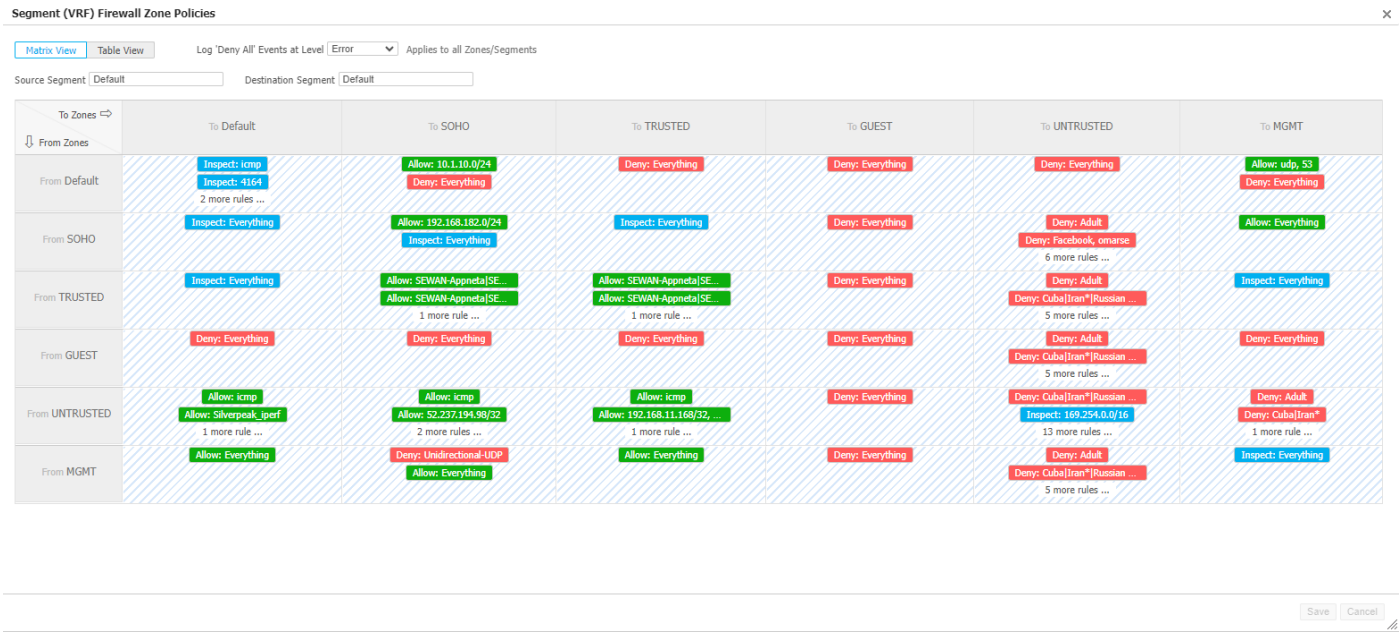
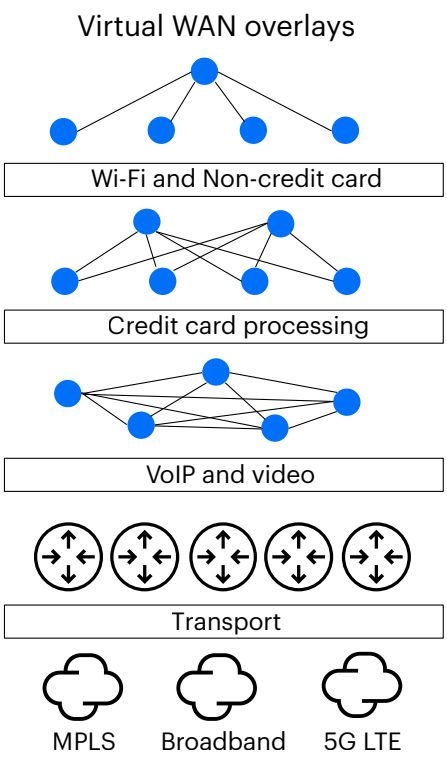


Figure 5. A security policy configuration matrix that greatly simplifies the creation and management of segmentation rules

Central orchestration and automated enforcement: Once virtual WAN overlays and zone-based firewall policies have been defined, HPE Aruba Networking EdgeConnect SD-WAN Orchestrator deploys them to HPE Aruba Networking EdgeConnect SD-WAN appliances, where they are automatically enforced (Figure 6). This replaces the time-consuming manual configuration of routers and firewalls every time a policy changes.

The benefits include:

— Consistent security policy enforcement across LANs and WANs
— Fewer configuration errors
— Improved compliance with regulations and industry standards
— Increased productivity for security and operations staff



Access Policy	Topology	Connection	QoS
Guest VLAN	Hub spoke	Internet	Reduced cost
Data VLAN	Dual hub and spoke	MPLS — internet	Higher availability
Voice VLAN	Full mesh	MPLS — internet — LTE	Greater quality

Figure 6. HPE Aruba Networking EdgeConnect SD-WAN that extends microsegmentation across the WAN

Network access control (NAC) security: The integration of HPE Aruba Networking ClearPass with HPE Aruba Networking EdgeConnect SD-WAN enables administrators to secure the platform's ports using 802.1X and MAC authentication. This is ideal for small locations, home offices, or any place where the platform's ports may be vulnerable to unauthorized access. With NAC enabled, the platform appliance authenticates traffic using 802.1X, supporting EAP-TLS, EAP-TTLS, and EAP-PEAP authentication methods. MAC authentication is also available for devices such as IoT, that don't support the 802.1X protocol.

Unified SASE with HPE Aruba Networking

The unified SASE solution (Figure 7) from Hewlett Packard Enterprise provides a connectivity fabric that comprises HPE Aruba Networking SSE and industry-leading HPE Aruba Networking EdgeConnect SD-WAN into a single solution to meet the increasing demand for integrated networking and security solutions. HPE Aruba Networking SSE is also tightly integrated with HPE Aruba Networking EdgeConnect SD-Branch and HPE Aruba Networking EdgeConnect Microbranch.

The solution helps accelerate organizations' journey to SASE. As a unified SASE solution, it is easy to deploy, thanks to a single, tightly integrated platform, including simplified management.

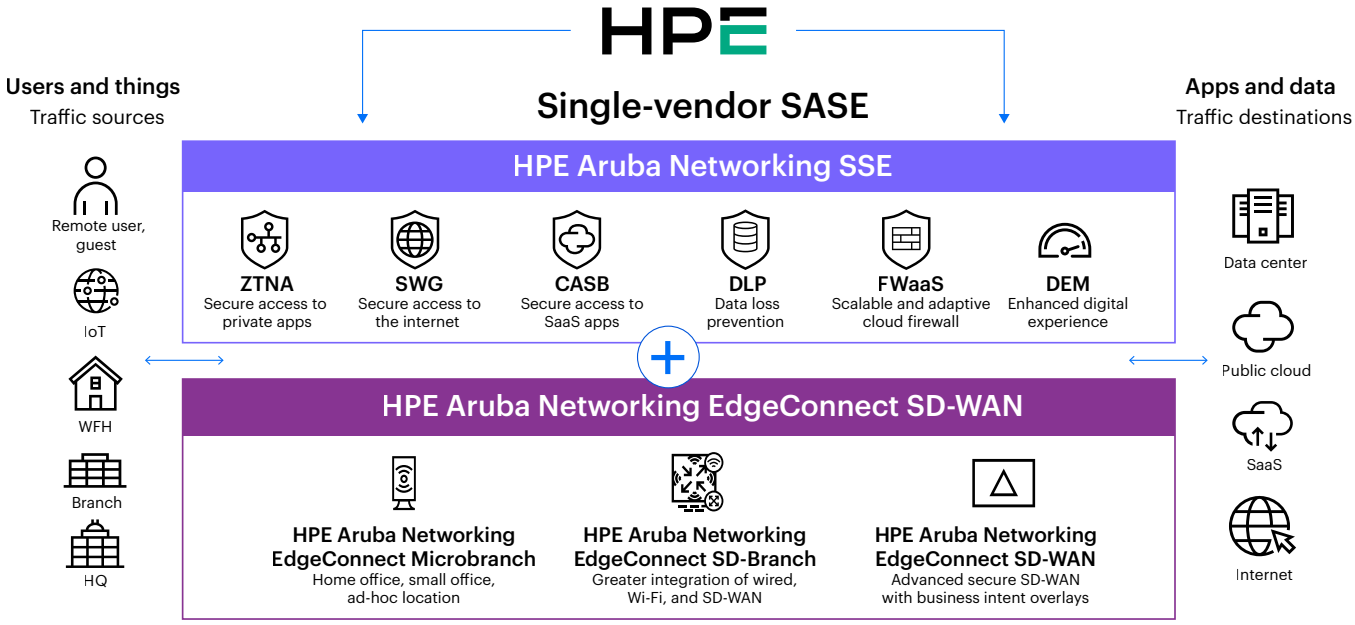


Figure 7. Deploy industry-leading HPE Aruba Networking EdgeConnect SD-WAN with the cloud-native HPE Aruba Networking SSE platform to build a unified SASE solution

SSE is a unified platform where zero trust network access (ZTNA), secure web gateway (SWG), and cloud access security broker (CASB) share a single codebase. The policies are managed from a single user interface, making access control incredibly simple for IT admins. It enables users and authorized third parties to access resources with agent and agentless ZTNA. Users are protected against web-based threats with SWG, and sensitive data hosted in SaaS applications are securely monitored to prevent data exfiltration with CASB. Additionally, the solution harmonizes access across the world through a cloud backbone of Amazon Web Services (AWS), Microsoft Azure, and Google Cloud.

HPE Aruba Networking SSE capabilities include the following:

— **ZTNA** is based on the principle of never trust, always verify so that a device connecting to the network is not trusted by default. Unlike a VPN that gives connected users broad access to the corporate network, ZTNA limits user access to only specific applications or microsegments that have been approved for the user, enforcing the least privileged access. With ZTNA, remote workers can connect from anywhere.

Third-party users can also be easily onboarded in the network with agentless ZTNA. There's no need to install a ZTNA agent on laptops; third-party users simply log in to a ZTNA web portal with their credentials.

— **SWG** sits between a user and a website to secure and protect against malicious threats. It performs several security inspections including URL filtering, malicious code detection, and web access control and provides policies that can limit access to adult sites, gambling, or dangerous sites for example.
— **CASB** helps protect sensitive data hosted in the SaaS applications. It identifies and detects sensitive data in cloud applications and enforces security policies such as authentication and single sign-on (SSO). It monitors user activities in cloud services, identifies potential security risks and policy violations to prevent data loss and control block uploads and downloads of SaaS applications such as Box, SharePoint, Facebook, and Salesforce. It prevents users from signing up for and using cloud applications that are not authorized by an organization's IT and security policies, allowing organizations to reduce shadow IT.
— **Digital experience monitoring (DEM)** helps improve user productivity by measuring hop-by-hop metrics and monitoring app, device, and network performance. IT can easily pinpoint connectivity issues and reduce mean time to resolution.

Integration with multiple SASE partners

HPE Aruba Networking EdgeConnect SD-WAN can also seamlessly connect to a variety of cloud security services from third-party vendors, for organizations preferring to adopt SASE with their choice of security services or to seamlessly integrate with an existing security ecosystem.

HPE maintains technology partnerships with leading SSE vendors covering solution areas such as SWG, CASB, ZTNA, and remote browser isolation (RBI) from security companies like Zscaler, Netskope, Check Point, Skyhigh Security, Palo Alto Networks and Broadcom.

Automated integration and orchestration: HPE Aruba Networking EdgeConnect SD-WAN automates the orchestration with third-party cloud security (SSE) vendors and the configuration of IPSec tunnels between the platform and SSE vendors. With this capability, First-packet iQ application classification feature first identifies applications and web domains based on the first packet. The traffic is then intelligently steered to SSE services based on security policies defined by the organization. Administrators can also take advantage of a simple drag-and-drop interface that makes it easy to assign policies to traffic from specific applications and route the traffic to specific security tools. For example, internet-bound traffic is automatically routed through cloud-based security services for Layer 7 access control, threat filtering, and analytics.

Management plane and system-level security

Despite being less top-of-mind than its data plane counterpart, system and management plane security is no less important. Relevant HPE Aruba Networking EdgeConnect SD-WAN capabilities in this area include:

Secure, zero-touch provisioning: A key part of the HPE Aruba Networking EdgeConnect SD-WAN value proposition is a plug-and-play deployment model that enables rapid installation, without the need for a distributed IT presence. Security for this process takes the form of a two-step authentication and authorization procedure. Before receiving its settings and policies and becoming an active part of the SD-WAN fabric, each newly connected platform appliance first must be authenticated by the cloud portal from HPE and then approved by an IT administrator using HPE Aruba Networking EdgeConnect SD-WAN Orchestrator.

In addition, the software can also be used to subsequently revoke access for a given appliance (for example, if it is stolen or otherwise compromised). This results in any in-flight traffic being dropped and the specified appliance being unable to download configuration information or join the SD-WAN fabric.

Encrypted management communications: The communication sessions between the platform appliances, the software, the HPE Aruba Networking cloud portal, and the administrators' web browsers are protected with TLS 1.2. Furthermore, weak protocols (for example, SSLv2, SSLv3, TLS 1.0, TLS 1.1), weak hashes (for example, message-digest algorithm 5 [MD5]), and weak encryption algorithms (for example, Data Encryption Standard [DES], Rivest Cipher 4 [RC4]) are disabled by default.

System hardening: The platform is a hardened appliance that ships with the factory default harden mode. This approach provides out-of-the-box security for appliances plugged in for the first time.

Other management plane protections include:

Robust user authentication and authorization

- Support for local, RADIUS, TACACS+, and OAuth for authentication and authorization with identity management systems such as Microsoft Entra ID and Okta
- Granular role-based access control with read-only users and multiple administrator roles
- Restriction of administrative access to a specific set of IP addresses or subnets

Extensive logging

- **Event logs/alarms** — For system errors pertaining to memory, CPU, network interfaces, routing, and management plane connectivity
- **Threshold crossing alerts** — Configurable, rising and falling thresholds to signal imminent/approaching conditions for concern, such as high-memory or bandwidth utilization
- **Audit logs** — For tracking the access to an activity conducted through any of the available management interfaces (CLI, WebUI, or REST APIs)
- **Firewall logs** — Traffic flows inspected by the HPE Aruba Networking EdgeConnect next-generation firewall generate deny, accept, and drop events, as well as reasons for those events. Firewall logs can then be streamed to a third-party SIEM tool (for example, Splunk).
- **NetFlow/traffic logs** — For capturing full (nonsampled) flow data so that it can be streamed to a third-party tool (for example, NetFlow collector)

In addition to being critical for network management and incident response, log data can be valuable for complying with standards such as Health Insurance Portability and Accountability Act (HIPAA).

Security certification and compliance

As users connect from anywhere using connections that are inherently insecure, such as broadband internet and 5G, and access sensitive data online, the need to certify an SD-WAN for security has become more pressing. HPE Aruba Networking EdgeConnect SD-WAN has earned the ICSA Labs Secure SD-WAN certification based on a comprehensive and robust set of SD-WAN functionality and platform security requirements.

ICSA Labs Secure SD-WAN certification requirements include:

- **Advanced SD-WAN features** such as tunnel bonding, dynamic path selection, and zero-touch provisioning
- **Native support (or through service chaining) for advanced security** functions such as anti-malware, intrusion prevention, and DoS protection
- **Encryption** of sensitive data, as well as administrative and operational communications
- **Policy enforcement** for both WAN-specific functions and security policies
- **Security events logging**

With the assurance of using a secure SD-WAN, certified by a globally recognized independent, third-party organization, enterprises can simplify network architecture in branch locations by replacing branch firewalls with HPE Aruba Networking EdgeConnect SD-WAN.

Most of the security features covered so far apply to multiple requirements spanning multiple regulations. Authentication, authorization, and auditing capabilities, for instance, are a fundamental requirement of NIST Special Publication 800-53 (Security and Privacy Controls for Information Systems and Organizations) — and, therefore, of practically every regulation that invokes it.

Notable too, especially for its uniqueness among SD-WAN solutions, is the platform's support for microsegmentation. This capability allows IT teams to create encrypted, application-specific overlays to control access to systems that store and process electronic private health information (ePHI) to support HIPAA compliance. Additionally, it enables the segmentation of credit transactions and associated systems to substantially reduce the scope of Payment Card Industry Data Security Standard (PCI DSS) compliance efforts. It also reduces the risk of unauthorized access to information about customers to meet GDPR and other privacy rules.

Last, but not least, there are many ways the platform paired with HPE Aruba Networking SSE helps ease the burden of complying with relevant industry regulations, including HIPAA, PCI DSS, Sarbanes-Oxley Act (SOX), the European Union GDPR, and others.

For example, to achieve compliance with regulations on data protection, CASB and data loss prevention (DLP) help enforce data protection. They monitor data at risk and prevent users from uploading sensitive data into cloud applications intentionally or unintentionally. CASB also helps reduce shadow IT and identify unsanctioned cloud applications in organizations, detect sensitive data in transit, and enforce security policies such as authentication and SSO.

ZTNA protects data from cyber threats by masking private resources from the internet, keeping users off the network. SWG protects against malicious web traffic such as phishing or ransomware, reducing cybersecurity risks and improving compliance.

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Conclusion

Fully realizing the many compelling benefits of a secure SD-WAN depends, to no small extent, on having a solution that accounts for the security issues, challenges, and opportunities that such an approach presents. In this regard, the extensive security capabilities of the HPE Aruba Networking EdgeConnect SD-WAN platform go well beyond the minimum required level of protection afforded by transport-level encryption and message authentication.

With its built-in next-generation firewall, which provides advanced security features such as IDS/IPS and DDoS protection, the platform allows organizations to replace legacy firewalls, as well as routers, in branch offices, reducing hardware footprint, cost, and complexity.

By combining HPE Aruba Networking EdgeConnect SD-WAN with HPE Aruba Networking SSE, organizations can architect a unified SASE solution and accelerate their journey to SASE through seamless deployment and simplified management. For organizations preferring to adopt SASE with their choice of security services, the solution also supports automated integration and orchestration with third-party cloud-delivered security solutions.

Finally, with the increasing use of IoT devices, HPE Aruba Networking EdgeConnect SD-WAN complements SASE with a zero trust architecture to segment the network based on identity so that users and IoT devices can only reach network destinations consistent with their role in the business.

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