



Top Differentiators Between Next-Generation and Legacy SD-WAN

The software-defined wide area network (SD-WAN) market is at a critical inflection point: we are past the early adoption phase, and most enterprises are looking to deploy SD-WAN. Legacy SD-WAN products focus on enabling internet broadband-based connectivity to data centers. However, with the rapid increase in cloud adoption, more recent trends in remote work have shifted organizations' requirements. In addition to gaining the efficiency and cost benefits of broadband, organizations are looking to future-proof their investments by ensuring their SD-WAN solution can:

- Deliver secure, optimized access to the cloud as well as software and unified communications as a service (SaaS and UCaaS) applications.
- Dramatically lower operating costs of delivering branch services, including networking, security, visibility, and multi-cloud access.
- Enable work from anywhere by extending SD-WAN benefits to teleworkers.
- Reduce operational complexity caused by manual configuration and long troubleshooting cycles.

Only next-generation SD-WAN can solve these new challenges. Prisma® SD-WAN from Palo Alto Networks is the industry's only next-generation SD-WAN solution that enables organizations to gain application service-level agreements (SLAs), leverage machine learning (ML) and data science for autonomous operations, and deliver branch services from the cloud.

Characterized by three key architectural benefits, Prisma SD-WAN is:

- **Application-defined:** Gain deep application visibility with Layer 7 intelligence for network policy creation and traffic engineering. This can significantly improve the end user experience while enabling network teams to deliver SLAs for all applications.
- **Autonomous:** Automate operations and problem avoidance using ML and data science methodologies. This enables agile DevOps approaches for deployment by leveraging APIs to simplify network operations.
- **Cloud-delivered:** Enable delivery of all branch services to and from the cloud, including networking and security. This can simplify WAN management while increasing your return on investment (ROI).

Not all SD-WAN solutions are created equal. Understanding the shortcomings of legacy SD-WAN and the benefits of next-generation SD-WAN is essential when evaluating whether a solution will meet your organization's needs.

Legacy and Next-Generation: Key Differences

Advanced functionality in multiple core capabilities differentiates Prisma SD-WAN from other SD-WAN products in the market.

Table 1: Key Differences Between Legacy SD-WAN and Prisma SD-WAN

Legacy SD-WAN Problems	Prisma SD-WAN Benefits
Application Metrics for Path Selection, Visibility, and Reporting	
<p>Built using Layer 3 packet-based policies centered on network metrics such as packet loss, jitter, and latency, legacy SD-WAN requires “dual-sided” bookends, which are unable to provide performance-based traffic engineering of cloud and SaaS traffic. This leads to:</p> <ul style="list-style-type: none"> • Complex architecture that impairs the ability to scale effectively and measure app performance. • Policy definition that doesn't reflect business requirements, and enforcement based solely on network performance. • No ability to deliver application SLAs, negatively impacting the end user experience. 	<p>Prisma SD-WAN is built using Layer 7 (application) intelligence—including fingerprint, transaction time, app reachability, app response time, MOS score, and more—coupled with networking metrics (jitter, latency, and loss). Traffic steering, networking, and security policies are application-centric. This means:</p> <ul style="list-style-type: none"> • “Single-sided” traffic steering based on app performance, allowing seamless scalability with a single appliance. • Tighter control of the network, with policies based on business intent and enforcement based on how the apps perform—not just how the WAN is performing. • SLAs delivered for all apps with an optimal end user experience.
Policy Management	
<p>Legacy solutions use multi-tiered, templated trees through complex configurations. Often, their management relies on manual network-wide provisioning and configuration through the command-line interface (CLI). This leads to:</p> <ul style="list-style-type: none"> • Complex configurations that are error-prone, difficult to manage, and don't allow direct policy-to-application mapping. • Policies that are difficult to configure, manage, and keep aligned with new business requirements, often needing to involve highly skilled/trained network administrators. 	<p>Prisma SD-WAN's policy manager is designed for simplicity so that operators don't need to know nuanced network details to write a policy. It uses stacked policies, which allows a hierarchical means of defining business policies. Prisma SD-WAN expresses complex network goals in a simplified, business-oriented way. This means:</p> <ul style="list-style-type: none"> • Simple and intuitive policy configuration to map business intent directly to the policy, allowing network administrators to create policies for actual applications, such as Google Docs, Dropbox®, or Zoom®, and even sub-apps, to ensure the best user experience. • Policies that are easy to administer and rapidly adjusted for new requirements.

Table 1: Key Differences Between Legacy SD-WAN and Prisma SD-WAN (cont.)

Legacy SD-WAN Problems	Prisma SD-WAN Benefits
Visibility and Analytics	
<p>Visibility and monitoring happen at the network level with legacy SD-WAN. Network-centric troubleshooting methods do not tell the whole story—they rely on external monitoring systems to gather additional application performance information, often requiring the deployment of multiple servers and significant data storage capacity. This leads to:</p> <ul style="list-style-type: none"> • Partial visibility from several disparate systems. • Slow troubleshooting, which requires skilled operators to analyze data gathered across different systems, negatively impacting the end user experience. • High costs and administrative overhead due to complex integrations with different monitoring systems. 	<p>Visibility and monitoring happen at the application level, and Prisma SD-WAN branch appliances collect metadata from every application session. This real-time/historical data is centrally stored in the cloud for analytics and made available through powerful dashboards for operations and troubleshooting. Device telemetry is also available and can be exported to third-party collectors for further analysis. This means:</p> <ul style="list-style-type: none"> • Complete visibility into application behavior and performance to rapidly identify if the root cause of a problem is associated with the application or the network. • Rapid troubleshooting and problem identification, which reduces “time to innocence” and ultimately enhances the end user experience. • Cloud storage to reduce overall cost and operational expenditure.
Operations	
<p>Legacy SD-WAN only captures network Layer 3 data, not application data. These systems can show that loss or slowdown occurred, but they lack data on where in the network it took place. Administrators need to manually correlate alarms to find the root cause of a problem and intervene to remediate issues. This leads to:</p> <ul style="list-style-type: none"> • Costly and manual “Day 2” operations, which cause slow troubleshooting and issue remediation. • Unplanned network downtime often caused by manual errors, negatively impacting user experience. • Substantial operational overhead with low efficiency, raising administrative costs. 	<p>Prisma SD-WAN captures application data and automates operations as well as problem avoidance using ML and data science. A supervised model engine enables operators to make final decisions using the ML model’s insights and recommendations. Advanced AIOps capabilities enable powerful event correlation, which reduces the number of alarms operators need to analyze to point to the root of the problem. This means:</p> <ul style="list-style-type: none"> • Minimized manual “Day 2” operations, with faster troubleshooting and issue remediation. • Elimination of unplanned network downtime due to human errors, with automated recommendations to help remediate issues and provide the best user experience. • More comprehensive management of WAN bandwidth at a lower cost, including greater policy control over events with automatic prioritization.
Scalability	
<p>Legacy platforms struggle with meshed VPNs, and network operators often cannot cope with the demand to maintain the right configuration across the expanding network. This is due to:</p> <ul style="list-style-type: none"> • Infrastructure too complex to scale to more than 100 sites. • Massive operations overhead that requires a large number of highly qualified network engineers to accommodate any expansion. 	<p>A next-gen SD-WAN should meet the demands of any environment. Prisma SD-WAN and the CloudBlades platform can scale horizontally to accommodate enterprises of any size without compromise. Whether you have five branch offices or five thousand, a cloud-delivered branch simplifies WAN management regardless of the number of appliances. This provides:</p> <ul style="list-style-type: none"> • Support for everything from the largest branch offices to thousands of remote users. • Rapid accommodation of any business expansion at lower administrative cost.

Table 1: Key Differences Between Legacy SD-WAN and Prisma SD-WAN (cont.)

Legacy SD-WAN Problems	Prisma SD-WAN Benefits
Migration Models	
<p>Often lacking flexible migration models, many legacy SD-WAN solutions are based on a “rip and replace” of existing WAN infrastructure with new SD-WAN appliances. This leads to:</p> <ul style="list-style-type: none"> • Complex deployments. • Fewer options for organizations to migrate to SD-WAN. • Increased risk of failure that often delays the migration. 	<p>Prisma SD-WAN provides non-disruptive insertion models, including the initial phase “analytics only model” to learn traffic profile and monitor app performance, followed by a “control model” with additional app-based SLAs to drive path selection. Other models include the “router replacement model” and “HA model,” with 100% circuit capacity upon device failure. With these models, organizations have:</p> <ul style="list-style-type: none"> • Options for easy transition from legacy WAN architectures to SD-WAN. • Flexibility to transition at their own pace.
Deployment Model	
<p>New configurations need to be defined directly on the device for the majority of legacy SD-WAN deployments. Moreover, they lack a global, streamlined architecture to facilitate rapid configuration changes, upgrades require software updates across all devices, and high availability is not guaranteed. All this amounts to:</p> <ul style="list-style-type: none"> • Service disruption when new device configurations are needed. • Time-consuming maintenance cycles when updates or upgrades are required on each device network-wide. 	<p>With streamlined architecture for deployment, Prisma SD-WAN allows for easily configurable interconnections and SLAs/policies universally applied to all devices. Settings are abstracted away to streamline configuration and deployment. Its unified security policy dynamically adjusts security policies and configuration to connectivity changes. With Prisma SD-WAN, the controller is always upgraded first and completely backward-compatible with older versions. It uses fail-to-wire interfaces to maintain 100% circuit capacity even if a device fails. This provides:</p> <ul style="list-style-type: none"> • Facilitation of new deployments, globally, without service disruption. • Guaranteed high availability, even upon device failure. • Universally applied SLAs and easily configured connections, making new deployments seamless. • Easy upgrades to the newest version, with no service disruption.
Routing Protocol Requirements	
<p>Routing protocol dependencies—such as proprietary Overlay Management Protocol (OMP) and Multiprotocol Border Gateway Protocol (MBGP)—hold legacy SD-WAN back because of:</p> <ul style="list-style-type: none"> • Constraints imposed on several factors, such as convergence time, memory allocation, etc. • Complex configuration and manipulation where needed. 	<p>Prisma SD-WAN does not leverage a routing protocol for the SD-WAN fabric. Routing is only used if needed for integration into environments outside of the Prisma SD-WAN fabric. This means:</p> <ul style="list-style-type: none"> • Quick deployment of Prisma SD-WAN without constraints. • No need for IT teams with extensive routing expertise.
Cloud-Delivered Service Integration	
<p>Legacy SD-WAN relies on bolt-on branch infrastructure. Integrations are hardcoded into the operating system (OS), requiring full upgrades (hardware, software, and service interruption) and manual setup to deploy new services or integrate with third-party solutions. Many use Yet Another Next Generation (YANG) models that are difficult to integrate and don’t support all use cases. This leads to:</p> <ul style="list-style-type: none"> • Complex manual management and operations. • Slow time to market with new services/features and the need to upgrade all network-wide devices, resulting in a higher cost to deploy. • Service disruption during upgrades for any new integration. 	<p>Prisma SD-WAN is cloud native, purpose-built in the cloud, and based on a microservices architecture. Its CloudBlades platform is based on published REST APIs, enabling the delivery of cloud-delivered services. It doesn’t require new hardware, software, or reboots, and it allows for automation. New integration packs are developed within weeks to support new use cases. This translates to:</p> <ul style="list-style-type: none"> • Streamlined operations, simplified deployment and ongoing management, and improved agility. • One-click high-performance delivery of cloud infrastructure services to the branch or the home office (security, multi-cloud, and more) with lower cost and complexity. • Easy integration with third-party solutions, without service interruption.

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Legacy SD-WAN Problems	Prisma SD-WAN Benefits
Security Integration	
<p>Legacy SD-WAN lacks integrated security. IT teams have to create an overlay security solution with bolted-on point products to compensate. Moreover, it cannot adapt to the rapid changes dynamic connections require. This results in:</p> <ul style="list-style-type: none"> • Inconsistent security. • Security becoming a performance bottleneck and a barrier to flexibility. • Increasing networking and security costs and complexity as many products are bolted on and managed disparately. 	<p>Prisma SD-WAN can provide consistent security fully integrated into on-premises devices, along with cloud native security as part of a secure access service edge (SASE). It includes automatic hourly VPN key rotation and device security based on multiple certificate handling, temporary logins, individual routing tables, and more. Prisma SD-WAN combines with Prisma Access (cloud-delivered security) to deliver the most complete SASE solution. This translates to:</p> <ul style="list-style-type: none"> • Consistent security across all traffic. • Security that does not negatively affect performance or flexibility. • Pre-integrated, cloud-delivered security for anywhere, anytime access from any device.
Management	
<p>Legacy SD-WAN solutions might include some centralized management, but their vendors often push integration with other products to address feature gaps (e.g., NPM tools) for application analytics. These systems normally require manual CLI configuration, which is error-prone and relies on skilled IT personnel, leading to:</p> <ul style="list-style-type: none"> • A large, difficult-to-maintain hardware footprint with multiple failure points. • Error-prone configuration (CLI model), disjointed policy configuration across the network, and partial visibility that all impair troubleshooting. • Dependency on skilled network operators to keep the lights on. 	<p>Prisma SD-WAN and the CloudBlades platform are fully managed from the cloud and require no additional systems for policy management, data storage, or backup of statistics and reporting data. With an intuitive user interface and superior reporting capabilities, Prisma SD-WAN enables:</p> <ul style="list-style-type: none"> • Simple, complete observability and control of the WAN network from the cloud. • Streamlined operations, simple change management, consistent policy enforcement, minimized configuration errors, and expedited troubleshooting. • Easy enablement of the cloud-delivered branch with simple management and operations.

Migrating to a Next-Generation SD-WAN

To achieve successful digital transformation and realize the full benefits of their cloud investments, organizations must transform their existing networking infrastructure. For this transformation to succeed, organizations need next-generation SD-WAN that delivers speed, lower total cost of ownership (TCO), and a rich set of security and networking services from the cloud. For organizations feeling stuck with legacy solutions not built for today's complex environments, next-generation SD-WAN offers an easy migration path that includes hardware trade-in, migration services discounts, complimentary workshops, flexible deployment models for a seamless transition, and more.

Unlike legacy SD-WAN, Prisma SD-WAN delivers cloud-scale economics to enterprise branch environments, with customers gaining **243% ROI on average within three years**. In addition, Prisma SD-WAN combines with Prisma Access, our cloud-delivered security platform, to deliver the industry's most comprehensive secure access service edge (SASE) solution. This offering provides security and application SLAs for all applications, best-in-class networking and security, and the power of data science-based automation of IT operations. Start your next-generation SD-WAN migration today with a [free trial of Prisma SD-WAN](#).