Simplify Multi-Cloud Connectivity with Prisma SD-WAN for Google Cloud Platform

Multi-cloud adoption is on the rise, accelerated by the COVID-19 pandemic. As a result, organizations—mainly distributed enterprises—need a networking solution to provide secure access. According to Gartner, by 2024, 60% of enterprises will use a software-defined wide area network (SD-WAN) to enhance their agility and support for cloud applications, and 60% of SD-WAN customers will use a secure access service edge (SASE) solution.[1] A cloud-first strategy can help organizations achieve digital transformation and accelerate innovation to improve the user experience with reduced cost and complexity.

1. Jonathan Forest, Andrew Lerner, and Naresh Singh, "2020 Gartner Magic Quadrant for WAN Edge Infrastructure," Gartner, September 23, 2020, https://start.paloaltonetworks.com/gartner-wan-edge-infrastructure-mq.html.

Growing Cloud Challenges

Traditional WAN architectures are not designed to optimize cloud application and workload access. In addition, many organizations lack the IT expertise and automation to connect to multi-cloud deployments effectively. These issues add complexity and cost while delivering inadequate implementation that fails to yield the full benefits of cloud services. Major challenges include:

- **Delivering a poor user experience for cloud applications**: Traditional WAN was designed to converge application access and security to resource-intensive data centers. While this approach provides central control, it carries tremendous bandwidth demands and increased latency, significantly impacting the user experience.
- **Facing complex change management and troubleshooting issues**: Distributed infrastructure and legacy CLI operations require meticulous planning and provisioning, which is time-consuming and difficult to troubleshoot. With applications accessed across cloud environments, a lack of granular visibility adds to operational complexity and compounds performance issues.
- **Ensuring simplified cloud connectivity**: To create a cloud operating model, organizations are forced to upskill infrastructure teams to support cloud technologies, troubleshoot network anomalies, and roll out feature roadmaps. Without an automated direct-to-cloud approach, they find it difficult to achieve business agility and consistent connectivity with limited IT staff.
- **Scaling dynamic routing in the cloud**: Complex peering operations with hundreds of virtual private clouds (VPC) causes operational delays that do not scale across applications and compute resources. Relying on static routes for reachability adds another layer of complexity, and organizations spend more time consuming cloud resources.
- **Enabling consistent connectivity across branch locations**: Today, organizations typically connect to data centers for their branch-to-branch connectivity, which delivers suboptimal performance for critical applications like real-time voice and video. In spite of having a roadmap for direct branch connectivity, organizations fail to achieve a reliable and secure enterprise model.

The Industry's First Next-Generation SD-WAN

Palo Alto Networks Prisma® SD-WAN is the industry's first next-generation SD-WAN solution that provides a return on investment (ROI) of up to 243%. With its autonomous infrastructure, organizations can eliminate up to 99% of support tickets using machine learning (ML) and data science capabilities while enabling branch services like security and networking from the cloud.

Prisma SD-WAN takes an application-defined approach that enables intelligent traffic steering, visibility, and control that extends from branch to cloud. It delivers the application performance and granular visibility, combined with a strong security posture, using Prisma Access. These key differentiations significantly improve user experience, remediate network issues, and reduce troubleshooting time.

Introducing Google's Network Connectivity Center

Google Cloud Platform (GCP®) is a part of Google Cloud, which includes the public cloud infrastructure and a wide array of application workspace, operating versions, and ML capabilities. It enables developers to build new applications, providing business insights and advanced security with a strategic partnership that includes Palo Alto Networks.

To enable enterprise connectivity from branch locations to the cloud through highly available, low-latency connections and support dynamic routing, Google Cloud introduced the Network Connectivity Center. It delivers unified connectivity using Google's global backbone, leveraging advanced technologies such as SD-WAN and cloud VPCs through strategic partnerships.

The Network Connectivity Center provides seamless integration to SD-WAN solutions. The SD-WAN deployment on Google Cloud attaches to Network Connectivity Center on demand to extend many advantages of SD-WAN capabilities to the cloud. Organizations can take advantage of this tight integration to:

- Dynamically exchange routes between VPCs and branch locations using Border Gateway Protocol (BGP) at scale
- Automatically learn new subnets within VPCs and advertise them to branch locations
- Enable dedicated interconnect to Google Cloud or through a service provider

Modernize Enterprise Connectivity: Prisma SD-WAN Integrates with GCP

Prisma SD-WAN and GCP are tightly integrated to simplify and fully automate cloud connectivity while reducing operational costs and complexity. This strategic partnership also incorporates Prisma Access in GCP for advanced security. Extending the integration to build enterprise connectivity using Prisma Access and Prisma SD-WAN enables a complete SASE strategy: organizations can reliably and securely connect to applications across public cloud providers without additional investments.

This seamless integration leverages Prisma SD-WAN CloudBlades. The API architecture utilizes Prisma SD-WAN software development kits (SDKs) to integrate with third-party applications and cloud services, including Google Cloud. CloudBlades updates are independent of the appliance and controller, making change management quicker with zero service disruptions.

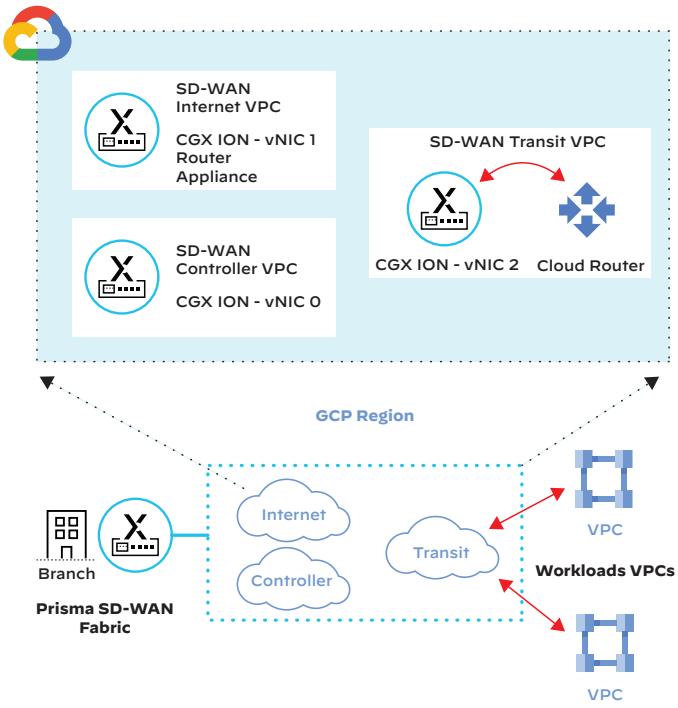

Figure 1: Prisma SD-WAN integrated into Network Connectivity Center with CloudBlades

Automate Branch-to-GCP Connectivity with CloudBlades

CloudBlades enable automated connectivity to VPCs in Google Cloud Platform with a simplified workflow. The infrastructure team needs to configure the required parameters in the Google Cloud CloudBlade in the Prisma SD-WAN user interface. These parameters include Google Cloud account details, cloud regions, gateway Instant-On Network (ION) devices, IP addresses, VPN overlay addresses, and BGP peering. The CloudBlades connect to GCP automatically from the branch to VPCs in Google Cloud Platform (see figure 2) through the cloud router by performing the following steps:

1. Deploy three VPCs to the regions specified—Prisma SD-WAN controller VPC, Prisma SD-WAN internet VPC, and Prisma SD-WAN transit VPC—with each playing a unique role for traffic forwarding, analytics, and dynamic routing.
2. Assign an IP address to subnet in the VPCs from the private IP ranges automatically.
3. Deploy a pair of virtual IONs in the VPC(s) in separate availability zones, and assign each of the three NICs to the respective VPCs created previously. This high availability implementation ensures reliable connectivity to Google Cloud from branches.
4. Assign successfully deployed virtual IONs to a data center site per region. This creates a hub-and-spoke connectivity model between branches to Google Cloud.
5. Configure the Network Connectivity Center Spoke Connect attachment to the virtual ION.
6. Configure the cloud routers in Google Cloud, and configure the BGP parameters on both branch and cloud-deployed virtual ION devices and cloud routers.
7. Activate the data center site to enable branch-to-cloud connectivity and traffic forwarding directly to the cloud.

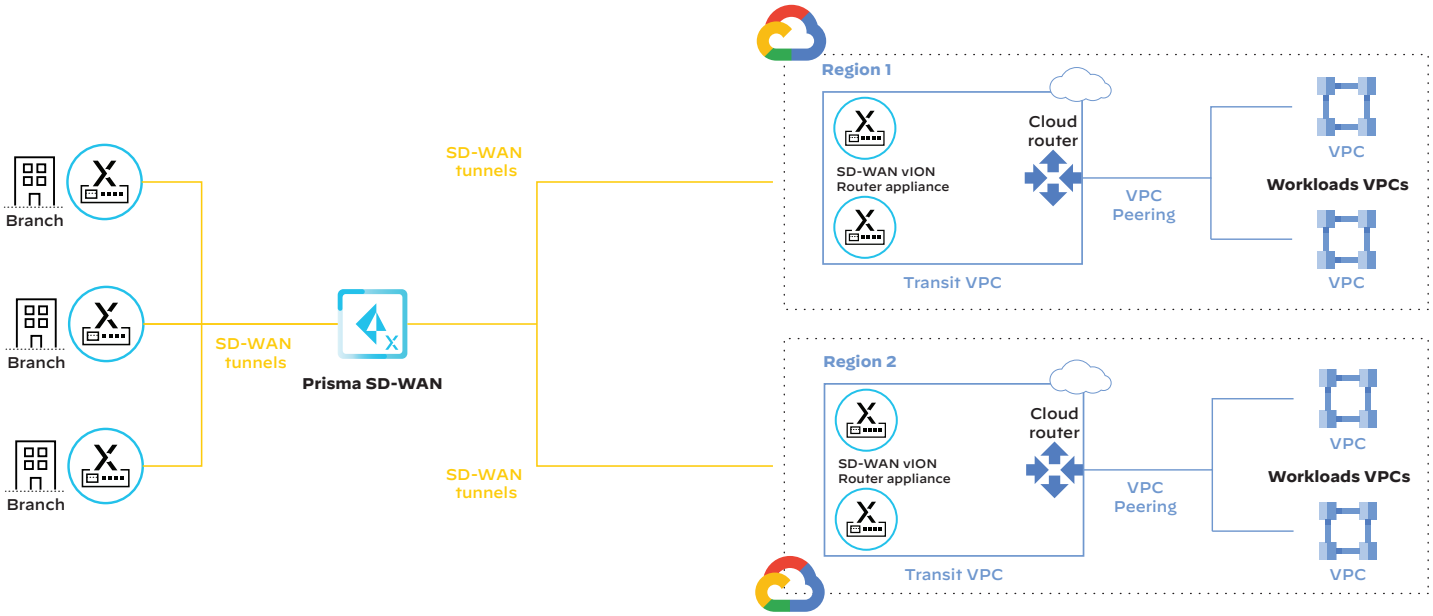

Figure 2: Prisma SD-WAN integrated into Network Connectivity Center with CloudBlades

Leverage Prisma SD-WAN and GCP Integration for a Complete SASE Solution

Prisma SD-WAN's turnkey integration with Google Cloud's Network Connectivity Center offers huge benefits.

Reduce Costs and Complexity with Simplified Branch-to-Cloud Connectivity

The unique API-based architecture of CloudBlades provides automated workflows for low-latency branch-to-cloud connectivity without any service disruption. This ensures zero downtime caused by appliance or controller upgrades that other solutions typically mandate. In addition, support for high availability of cloud gateways in the GCP delivers application resilience with improved redundancy and seamless failover. CloudBlades enables automatic deployment of virtual IONs in GCP with advanced provisioning, including dynamic routing, attachment to Network Connectivity Center, and policy management.

Enable Intelligent Traffic Steering with Complete Visibility and Control

Extend deep application visibility with Layer 7 intelligence to GCP with the application-defined approach of Prisma SD-WAN. This eliminates the need to backhaul traffic to the data center, enables accurate steering of cloud application traffic, and provides granular performance insights in GCP. This application session-based decision-making and traffic forwarding significantly improves the user experience and reduces troubleshooting with automation using ML and data science capabilities.

Gain Reliable, Secure Branch-to-Branch Connectivity with Prisma Access

Integrate cloud-delivered security and ensure best-in-class networking for your branches with Prisma Access, which runs natively on GCP. Prisma Access enables high-performance, secure branch-to-branch connectivity when used in conjunction with Prisma SD-WAN. With Prisma Access, organizations can take advantage of our complete SASE solution by extending its capabilities into a multi-cloud environment. Protect your infrastructure with continuous security monitoring, consistent security enforcement, and world-class security capabilities to defend your business across the entire threat landscape.

Summary

Prisma SD-WAN simplifies enterprise connectivity by fully automating branch-to-cloud connectivity while providing complete visibility into network and application performance to remediate network issues and ensure application resilience. Prisma SD-WAN integration with GCP further expands the capabilities to the cloud, including deep application visibility, intelligent steering, and ease of troubleshooting to reduce costs and operational complexity. Using Prisma Access on GCP, branch-to-branch connectivity is enabled without any additional resources. The integration delivers automation that allows organizations with distributed infrastructure to simplify operations and achieve business agility as they move to the cloud.

Visit us online for more information on how Prisma SD-WAN enables the cloud-delivered branch.

3000 Tannery Way
Santa Clara, CA 95054

Main: +1.408.753.4000
Sales: +1.866.320.4788
Support: +1.866.898.9087

www.paloaltonetworks.com