



ENTERPRISE

Unity EdgeConnect SD-WAN Solution

As cloud-based application adoption continues to accelerate, geographically distributed enterprises increasingly view the wide area network (WAN) as critical to connecting users to applications.

As enterprise applications migrate from the corporate data center to the cloud, private line connections such as multi-protocol label switching (MPLS) have proven to be overly rigid and expensive. With greater reliance on the internet, the opportunity to achieve “cloud speed” is better served by integrating broadband services into the WAN transport mix.

Silver Peak Unity EdgeConnect™ SD-WAN solutions enable enterprises to dramatically reduce the cost and complexity of building a WAN by leveraging broadband to connect users to applications. By empowering customers to use broadband connections to augment or replace their current MPLS networks, Silver Peak improves customer responsiveness, increases application performance, and significantly reduces capital and operational expenses by up to 90%.

Unity EdgeConnect Solution

Three components comprise the Unity EdgeConnect SD-WAN solution:

- > **Unity EdgeConnect** physical or virtual appliances (supporting any common hypervisor) deployed in branch offices to create a secure, virtual network overlay. This enables customers to move to a broadband WAN at their own pace, whether site-by-site, or via a hybrid WAN approach that leverages MPLS and broadband internet connectivity.
- > **Unity Orchestrator™**, included with the EdgeConnect solution, provides unprecedented levels of visibility into both legacy and cloud applications with the unique ability to centrally assign policies based on business intent to secure and

control all WAN traffic. Policy automation speeds and simplifies the deployment of multiple branch offices and enables consistent policies across applications.

- **Unity Boost™** is an optional performance pack that combines Silver Peak WAN optimization technology with EdgeConnect to create a high performance SD-WAN solution. Boost allows companies to accelerate performance of latency-sensitive applications and minimize transmission of repetitive data across the WAN in a single, fully integrated SD-WAN solution.

EdgeConnect Key Features

- **Zero-Touch Provisioning:** A plug-and-play deployment model enables Unity EdgeConnect to be deployed at a branch office in seconds, automatically connecting with other Silver Peak instances in the data center, other branches, or in cloud Infrastructure as a Service (IaaS) such as Amazon Web Services, Microsoft Azure and Oracle Cloud Infrastructure.
- **Tunnel Bonding:** Configured from two or more physical WAN transport services, bonded tunnels form a single logical overlay connection, aggregating the performance of all underlying links. If a link fails, the remaining transport links continue to carry all traffic avoiding application interruption.
- **Virtual WAN Overlays:** The EdgeConnect SD-WAN solution is built upon an application-specific virtual WAN overlay model. Multiple overlays may be defined to abstract the underlying physical transport services from the virtual overlays, each supporting different QoS, transport, and failover characteristics. Applications are mapped to different overlays based upon business intent. Virtual WAN overlays may also be deployed to extend micro-segmentation of specific application traffic from the data center across the WAN to help maintain security compliance mandates.
- **Dynamic Path Control (DPC):** Real-time traffic steering is applied over any broadband or MPLS link, or any combination of links based on



Figure 1: EdgeConnect XS shown here. Also available as a virtual appliance.

company-defined policies based upon business intent. In the event of an outage or brownout, EdgeConnect automatically continues to carry traffic on the remaining links or switches over to a secondary connection.

- **WAN Hardening:** Each WAN overlay is secured edge-to-edge via 256-bit AES encrypted tunnels. No unauthorized outside traffic can enter the branch. With the option to deploy EdgeConnect directly onto the internet, WAN hardening secures branch offices without the appliance sprawl and operating costs of deploying and managing dedicated firewalls.
- **Path Conditioning:** This feature provides private-line-like performance over the public internet. Includes techniques to overcome the adverse effects of dropped and out-of-order packets that are common with broadband internet and MPLS connections to improve application performance.
- **First-packet iQ™ Application Classification:** EdgeConnect First-packet iQ application classification identifies applications on the first packet to deliver trusted SaaS and web traffic directly to the Internet while directing unknown or suspicious traffic to the data center firewall or IDS/IPS. Identifying applications on the first packet is especially important when branches are deployed behind Network Address Translation (NAT); the correct path must be selected based on the first packet to avoid session interruption.
- **Local Internet Breakout:** Granular, intelligent traffic steering enabled by First-packet iQ eliminates the inefficiency of backhauling all HTTP/HTTPS traffic to the data center. The solution eliminates the potential for wasted bandwidth and performance bottlenecks for trusted SaaS and web traffic. Trusted traffic is sent directly

across the Internet while unknown or suspicious traffic may be sent automatically to more robust security services in accordance with corporate security policies.

- **Routing:** EdgeConnect supports standard Layer 2 and Layer 3 open networking protocols such as VLAN (802.1Q), LAG (802.3ad), IPv4 and IPv6 forwarding, GRE, IPsec, VRRP, WCCP, PBR, BGP (version 4), OSPF.
- **Cloud Intelligence:** Real-time updates on the best performing path to reach hundreds of Software-as-a-Service (SaaS) applications, ensuring users connect to those applications in the fastest, most intelligent way available. Additionally, automated daily updates of the application IP address database to EdgeConnect appliances keep pace with SaaS and web address changes.

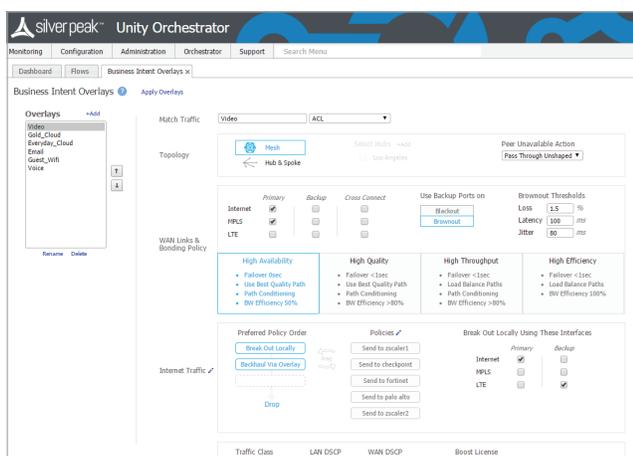


Figure 2: Unity Orchestrator enables centralized definition and automated distribution of network-wide business intent policies to multiple branch offices.

- **Zone-based Firewall:** Centrally visualize, define and orchestrate granular security policies and create secure end-to-end zones across any combination of users, application groups and virtual overlays, pushing configuration updates to sites in accordance with business intent. Using simple templates to create unique zones that enforce granular perimeter security policies across LAN-WAN-LAN and LAN-WAN-Data Center use cases.
- **Service Chaining:** EdgeConnect supports simplified service chaining, using a drag-and-drop interface, to enable enterprises to automate

and accelerate the integration of security partners' advanced services, like Palo Alto Networks, Checkpoint, Fortinet, ForcePoint, Symantec, secure web gateways (e.g., Zscaler), and secure DNS (e.g., Infoblox) utilizing private secure encrypted IPsec tunnels.

- **High Availability:** The EdgeConnect HA cluster protects from hardware, software and transport failures. High Availability is achieved by providing fault tolerance on both the network side (WAN) and on the equipment side. The EdgeConnect appliances are inter-connected with a HA link that allows tunnels over each underlay to connect to both appliances.

Orchestrator Key Features

- **Single Screen Administration:** Enables quick and easy implementation of network-wide business intent policies, which eliminates complex and error-prone policy changes at every branch
- **Real-Time Monitoring and Historical Reporting:** Provides specific details into application, location, and network statistics, including continuous performance monitoring of loss, latency, and packet ordering for each enterprise customers' network path. All HTTP and native application traffic are identified by name and location, and alarms and alerts allow for faster resolution of network issues
- **Bandwidth Cost Savings Reports:** Documents the cost savings for moving to broadband connectivity

Orchestrator Enables Faster SD-WAN Deployments

Unity Orchestrator, included with Unity EdgeConnect, enables zero-touch provisioning of EdgeConnect appliances in the branch. Orchestrator automates the assignment of business intent policies to ensure faster and easier connectivity across multiple branches, eliminating the configuration drift that can come from manually updating rules and access control lists (ACLs) on a site-by-site basis. Unity Orchestrator enables customers to:

- Avoid WAN reconfigurations by delivering applications to users in customized virtual overlays
- Align application delivery to business goals through virtual WAN overlays based on business intent
- Simplify branch deployments with EdgeConnect Profiles that describe the virtual and physical configuration of the location

- Name-based identification and reporting of all cloud applications.
- Tracking of SaaS provider network traffic.
- Cloud Intelligence provides Internet mapping of optimal egress to SaaS services.

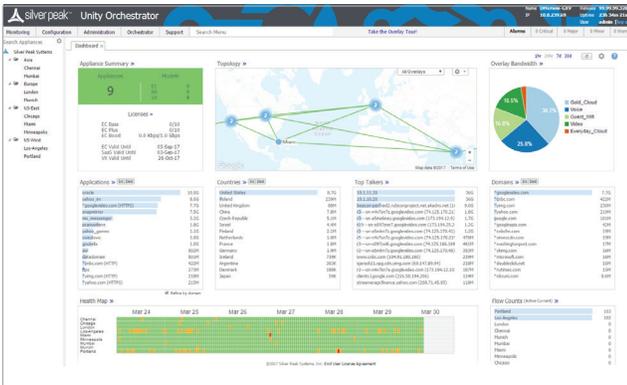


Figure 3: Orchestrator enables centralized and automated overlay management.

Strengthening WAN Security

Advanced capabilities provide cloud-first enterprises with the control to centralize and automate security policy governance and safely connect users directly to applications. They enable distributed enterprises to centrally segment users, applications and WAN services into secure zones and automate application traffic steering across the LAN and WAN in compliance with predefined security policies, regulatory mandates and business intent. For enterprises with multivendor security architectures, Unity Orchestrator offers seamless drag and drop service chaining to next-generation security infrastructure and service.

In addition to centralized and automated control of the entire SD-WAN topology (Figure 3), Unity Orchestrator provides specific detail into WAN performance, including:

- Detailed reporting on application, location, and network statistics
- Continuous performance monitoring of throughput, loss, latency, jitter and packet ordering for all network paths
- Identification of all application traffic by name and location
- Alarms and alerts to visualize and prioritize software and hardware issues within the WAN allow for faster problem resolution
- Bandwidth cost savings report for documenting the cost savings of moving to broadband

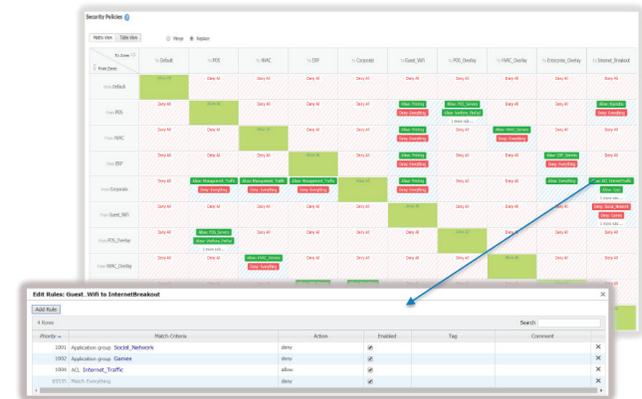


Figure 4: A matrix view from Orchestrator, provides an easy-to-read, intuitive visualization of configured zones and defined whitelist exceptions.

Gain Control over the Cloud

Gain an accurate picture of how Infrastructure-as-a-Service (IaaS) and Software-as-a-Service (SaaS) and are being used within your organization.

Boost Application Performance as Needed

Unity Boost is an optional performance pack that includes:

- Latency Mitigation: TCP and other protocol acceleration techniques are applied to all traffic, minimizing the effects of latency on application performance and significantly improving application response times across the WAN.

- Data Reduction: Data compression and deduplication eliminates the repetitive transmission of duplicate data. Silver Peak software inspects WAN traffic at the byte-level and stores content in local data stores. Advanced finger-printing techniques recognize repetitive patterns for local delivery. Data Reduction can be applied to all IP-based protocols, including TCP and UDP.

Why Add Boost?

Silver Peak Unity EdgeConnect appliances alone provide enhanced application performance for broadband or hybrid WAN deployments, utilizing the included packet-based tunnel bonding, dynamic path control (DPC), and path conditioning for overcoming the adverse effects of dropped and out-of-order packets that are common with Internet connections.

However, sometimes additional performance is needed for specific applications or locations. As distance between locations increases over the WAN, application performance degrades.

This has less to do with the available bandwidth, and is more about the time it takes to send and receive data packets over distance, and the number of times data must be re-sent.

Boost Use Case Examples

- Customers replicating to a disaster recovery (DR) site thousands-of-miles away might want to add Boost to ensure recovery point objectives (RPOs) are not compromised.
- Enterprises with remote sites located in rural areas, or with sites that are exceptionally farther away from the company's data center, might want to add Unity Boost to overcome the effects of high latency.

With Unity Boost, customers gain the flexibility to enable enhanced WAN optimization capabilities where and when it is needed in a fully integrated solution. Boost is licensed per-megabit-per-second, per-month, so customers do not have to pay for WAN optimization across the entire network.

Overcome Effects of Latency

The time it takes for information to go from sender to receiver and back is referred to as network latency. Since the speed of light is constant, WAN latency is directly proportional to the distance traveled between the two network endpoints. Silver Peak offers a variety of TCP acceleration techniques to mitigate WAN latency, including Window Scaling, Selective Acknowledgement, Round-Trip Measurement, and High Speed TCP.

Windows and other applications that rely on the Common Internet File System (CIFS) often take longer to perform common file operations over distance, such as retrieving and sharing files. Unity Boost helps these applications not only by improving the underlying TCP transport, but also by accelerating CIFS through CIFS read-ahead, CIFS write-behind, and CIFS metadata optimizations.

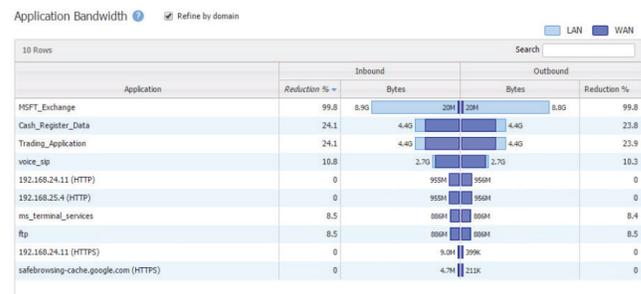


Figure 4: Boost enables customers to add application performance as needed.

Increase Throughput

As packets flow through EdgeConnect appliances, Boost inspects WAN traffic at the byte-level and stores content in local data stores. As new packets arrive, Silver Peak computes fingerprints of the data contained within the packets, and checks to see whether these fingerprints match data that is stored locally.

If the remote appliance contains the information, there is no need to resend it over the WAN. Instead, specific start-stop instructions are sent to deliver the data locally.

Unity EdgeConnect Hardware Platforms

	EdgeConnect US	EdgeConnect XS	EdgeConnect S	EdgeConnect M*	EdgeConnect L	EdgeConnect XL
Part Identifier	EC-US	EC-XS	EC-S	EC-M*	EC-L	EC-XL
Typical Deployment	Small Branch/ Home Office	Small Branch	Large Branch	Head Office Small Hub	Data Center Large Hub	Data Center Large Hub
Typical WAN Bandwidth	1-100 Mbps	2 - 200 Mbps	10 - 1000 Mbps	50 - 2000 Mbps	1 - 5 Gbps	2 - 10 Gbps
Simultaneous Connections	256,000	256,000	256,000	2,000,000	2,000,000	2,000,000
Recommend Boost up to	25 Mbps	50 Mbps	200 Mbps	500 Mbps	1 Gbps	5 Gbps
Redundancy / FRUs	No	No	No	Power and SSD	Power and SSD	Power and SSD
Datapath Interfaces	3 x RJ45 10/100/1000	4 x RJ45 10/100/1000	6 x RJ45 1/10G Fiber Option	4 x RJ45 2x1/10G Fiber or 2 x SFP+ Transceivers	4 x RJ45 2 x 1/10G Fiber	4 x 1/10G Fiber

*EC-M is available in two models with the following connectivity distinctions:

- EC-M-B (Bypass) – 4 x RJ45 plus 2 x 1/10G fiber; Fail-to-Glass
- EC-M-P (Pluggable) – 4 x RJ45 plus 2 x SFP+ transceiver cages. Transceivers available: EC-SFP-SR (up to 300m over multi-mode fiber) and EC-SFP-LR (up to 10Km over single mode fiber)

Unity EdgeConnect Technical Support

Term	Support is included as part of the EdgeConnect Base subscription license
Web-based Support Portal	Unlimited access 24 / 7 / 365 includes software downloads, technical documentation, and online knowledge base
Software Updates	Major and minor features releases; maintenance releases
Technical Support	24 / 7 / 365 Phone / E-mail / Web
Response Time	2 Hours
Extended Warranty	EdgeConnect hardware purchase options include a 1, 3 or 5-year warranty. Advanced replacement hardware ships the same business day if submitted and verified by 12:00PM local time of the supporting depot.

Flexible Deployment Models

- EdgeConnect Virtual (EC-V) – Download and install EdgeConnect from anywhere in the world. The software runs on all common hypervisors, including VMware ESX, Microsoft Hyper-V, Citrix XenServer, and KVM. Silver Peak customers who have an IaaS presence in AWS, Microsoft Azure or Oracle Cloud Infrastructure can deploy EdgeConnect within their hosted cloud environment.
- EdgeConnect Physical (EC) – For enterprises that are not virtualized in the branch, choose one-of-five EdgeConnect hardware appliance models for plug-and-play deployment.

Unity EdgeConnect Subscription Licensing

The EdgeConnect Mini license supports up to 50 megabits-per-second (Mbps) and is \$99 per-site, per-month. The EdgeConnect Base license supports up to 200 Mbps and is \$199 per-site, per-month. An additional Plus license is required for sites requiring more than 200 Mbps and is only available with the EdgeConnect Base license.

EdgeConnect includes Unity Orchestrator on-premise. An optional cloud-hosted Orchestrator license provides a highly reliable alternative deployment model supporting all Orchestrator features without the complexity of managing on-premise virtual compute and storage resources. Unity Boost is an optional performance pack that may be ordered and deployed flexibly to sites that require application acceleration. Boost is \$5 per-Mbps, per-month, offered in 100Mbps blocks.



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