

Unity EdgeConnect SD-WAN Solution

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. In today's wide area network (WAN), the opportunity to achieve "cloud speed" is better served with a broadband-based WAN, also referred to as a software-defined WAN (SD-WAN).

Silver Peak Unity EdgeConnect enables 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.

Unity EdgeConnect Solution

The Unity EdgeConnect solution comprises three components:

- **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** is included with Unity EdgeConnect appliance deployments and provides unprecedented levels of visibility into both legacy and cloud applications, and the unique ability to centrally assign business intent policies to secure and control all WAN traffic. Policy automation speeds and simplifies the deployment of multiple branch offices.
- **Unity Boost** is an optional performance pack that accelerates application performance as needed. The Boost component is unique to Unity EdgeConnect and allows companies to improve the performance of specific applications or locations.

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) with the likes of Amazon, Microsoft Azure and VMware's vCloud Air.



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

- **Dynamic Path Control (DPC):** Real-time traffic steering is applied over any broadband or MPLS link based on company-defined business intent policies. In the event of an outage or brownout, DPC automatically switches-over to a secondary connection in about one second.
- **WAN Hardening:** Data is secured edge-to-edge via 256-bit AES encrypted tunnels. No unauthorized outside traffic is allowed to 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:** Techniques to improve performance overcome the adverse effects of dropped and out-of-order packets that are common with broadband Internet and MPLS connections. Path Conditioning provides private-line-like performance over the public Internet.
- **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.

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 all network paths. All HTTP and native application traffic are identified by name and location, and alarms and alerts allow for faster resolution of service provider issues.
- **Bandwidth Cost Savings Reports:** Documents the cost savings for moving to broadband connectivity.

Unity EdgeConnect SD-WAN Solution

Orchestrator Enables Faster SD-WAN Deployments

Unity Orchestrator, included with Unity EdgeConnect, enables zero-touch provisioning of Unity 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 business intent policies.
- Simplify branch deployments with EdgeConnect Profiles that describe the virtual and physical configuration of the location.

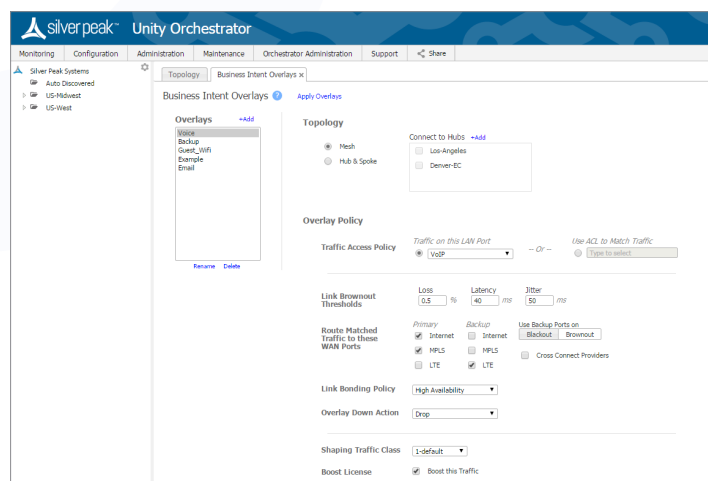


Figure 2: Orchestrator enables the automated distribution of business intent policies to multiple branch offices.

Real-Time Monitoring and Historical Reporting

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 loss, latency, and packet ordering for all network paths.
- Identification of all application traffic by name and location.
- Alarms and alerts allow for faster resolution of service provider issues.
- Bandwidth cost savings report for documenting the cost savings of moving to broadband.

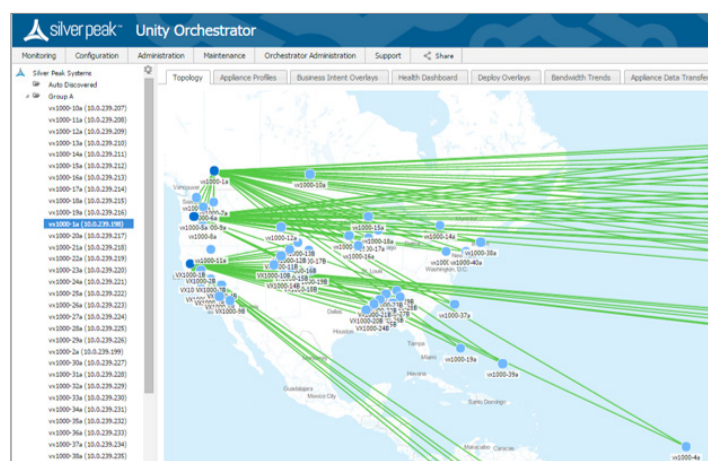


Figure 3: Orchestrator enables centralized and automated overlay management.

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.

- 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.

Unity EdgeConnect SD-WAN Solution

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:** WAN 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 fingerprinting 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 Dynamic Path Control (DPC) for real-time traffic steering over multiple WAN links, and Path Conditioning for overcoming the adverse effects of dropped and out-of-order packets that are common with Internet connections. (Also see Unity EdgeConnect data sheet.)

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 that are located in a 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. Boost is licensed per-megabit-per-second, per-month, so customers do not have to pay for WAN optimization across the entire network.

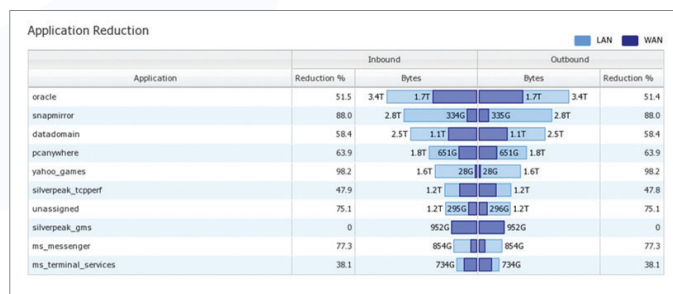


Figure 4: Boost enables customers to add application performance as needed.

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, which include Window Scaling, Selective Acknowledgement, Round-Trip Measurement, and HighSpeed 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.

Increase Throughput

As packets flow through Silver Peak Unity EdgeConnect appliances, Unity 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.

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Unity EdgeConnect Hardware Platforms

	EdgeConnect XS	EdgeConnect S	EdgeConnect M	EdgeConnect L	EdgeConnect XL
					
Part Identifier	EC-XS	EC-S	EC-M	EC-L	EC-XL
Typical Deployment	Small Branch	Large Branch	Head Office Small Hub	Data Center Large Hub	Data Center Large Hub
Typical WAN Bandwidth	2 - 200 Mbps	10 - 1000 Mbps	50 - 2000 Mbps	1 - 5 Gbps	2 - 10 Gbps
Recommended Boost up to	50 Mbps	200 Mbps	500 Mbps	1 Gbps	5 Gbps
Redundancy / FRUs	No	No	Power and SSD	Power and SSD	Power and SSD
Datapath Interfaces	4 x RJ45 10 / 100 / 1000	6 x RJ45 1/10G Option	4 x RJ45 2 x 1/10G Fiber	4 x RJ45 2 x 1/10G Fiber	4 x 1/10G Fiber

Unity EdgeConnect Technical Support

Term	Support is included as part of the EdgeConnect Base 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	Advanced Replacement: ships same business day via Priority Overnight Shipment 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 vSphere, Microsoft Hyper-V, Citrix XenServer, and KVM.
- 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.

Licensing

Licensing for Unity EdgeConnect, which includes Unity Orchestrator, begins at \$199 per-site, per-month. Unity Boost is an optional performance pack that can be ordered on-demand and is \$5 per-megabit-per-second (Mbps), per-month.