

aruba
a Hewlett Packard
Enterprise company

 silver peak

SILVER PEAK SD-WAN

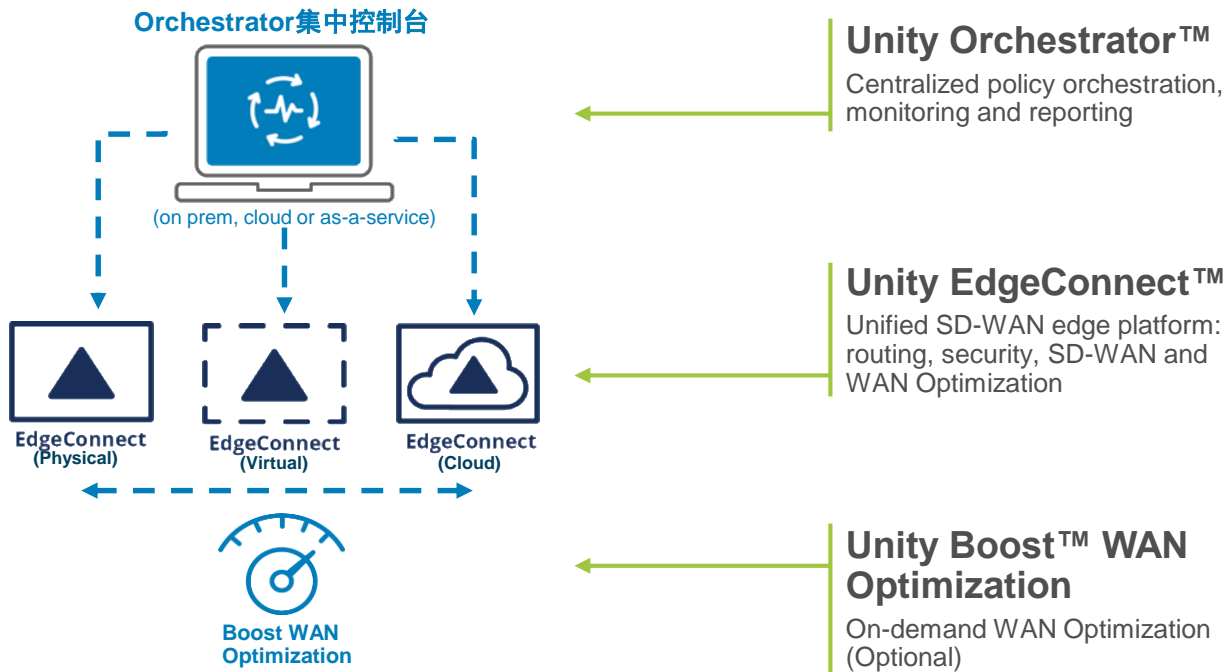


ARUBA SDWAN解决方案概览

UNITY EDGECONNECT™

统一SDWAN边界平台

业界领先的基于应用驱动的广域网边界解决方案



UNITY ORCHESTRATOR 集中控制台

灵活部署

- On-premise 内部部署
- 公有云部署
- Orchestrator-as-a-Service subscription
 - Zero capex, fully managed, global, GDPR compliance



关键功能

统一管理和监控统一管理和监控

集中化管理并简化配置

实时监控广域网链路健康状况

链路故障定位

历史数据分析报表

使用&部署ORCHESTRATOR



On-prem
(虚拟化环境)



Cloud
(云端环境)



Silver Peak
Managed
Orchestration
Service

On-premise 内部部署

ORCHESTRATOR主机系统资源要求



Orchestrator

支持所有的虚拟化环境: VMware ESXi; XenServer; Hyper-V; KVM

Number of Supported Appliances	Processor CPU (>2 GHz)		Memory (Gigabytes)		Storage SSDs (Gigabytes)		VMware	Hyper-V	KVM	Xen
	Recommended	Range	Recommended	Range	Recommended	Range				
Up to 10	2	1 – 4	8	8 – 8	500	500 – 1000	✓	✓	✓	✓
Up to 25	2	1 – 4	16	8 – 24	500	500 – 1000	✓	✓	✓	✓
Up to 50	6	2 – 16	24	16 – 32	500	500 – 1000	✓	✓	✓	✓
Up to 100	16	4 – 24	32	24 – 48	800	500 – 1000	✓	✓	✓	✓
Up to 200	24	8 – 32	64	32 – 96	1000	500 – 1200	✓	✓	✓	✓
Up to 500	32	24 – 48	128	64 – 256	1000	800 – 2000	✓	✓	✓	✓
Up to 1000	48	32 – 96	256	128 – 512	2000	1000 – 4000	✓	✓	✓	✓
Up to 2000	96	48 – 128	512	256 – 1024	4000	2000 – 8000	✓	✓	✓	✓

The following table summarizes the recommended resources required by Orchestrator when deployed on a standard server.

These requirements do not include the resources needed by the hypervisor itself, which will require additional dedicated core, memory, and storage to operate.

You must reserve CPU and memory for your virtual appliances to function optimally.

For non-VMware hypervisors, an extra core should be set aside for hypervisor tasks.

It is necessary to ensure that CPU's hardware Virtualization Technology (VT) feature is enabled in the BIOS, and BIOS should be set to maximize performance. Please refer to the CPU vendor's documentation for guidance on enabling VT in the BIOS.

When using vSphere 4.x, a VMware vSphere Enterprise Plus license is needed for a virtual machine to use 8 or more virtual processors.

When using Hyper-V, Windows Server 2012 is needed for a virtual machine to use 8 or more virtual processors.

The greater value of each resource in the table specifies host system requirements for Orchestrator

Detailed requirements here: https://www.silver-peak.com/sites/default/files/userdocs/orchestrator_system_requirements_revs_december_2019.pdf

ORCHESTRATION 租赁规格大小



SMALL
Suitable for
up to ~50 ECs



MEDIUM
Suitable for
up to ~200 ECs



LARGE
Suitable for more
than ~200 ECs

Note: Orchestrator performance is dependent on multiple factors beyond appliance count. The number of appliances each tier can manage is an approximation.

UNITY EDGECONNECT 设备平台

灵活部署，超高效能，满足各类关键业务需求

灵活部署

物理设备



100Mbps – 10Gbps

虚拟设备



Hypervisor



云端设备



关键功能

基于互联网的QoS

灵活的路由功能

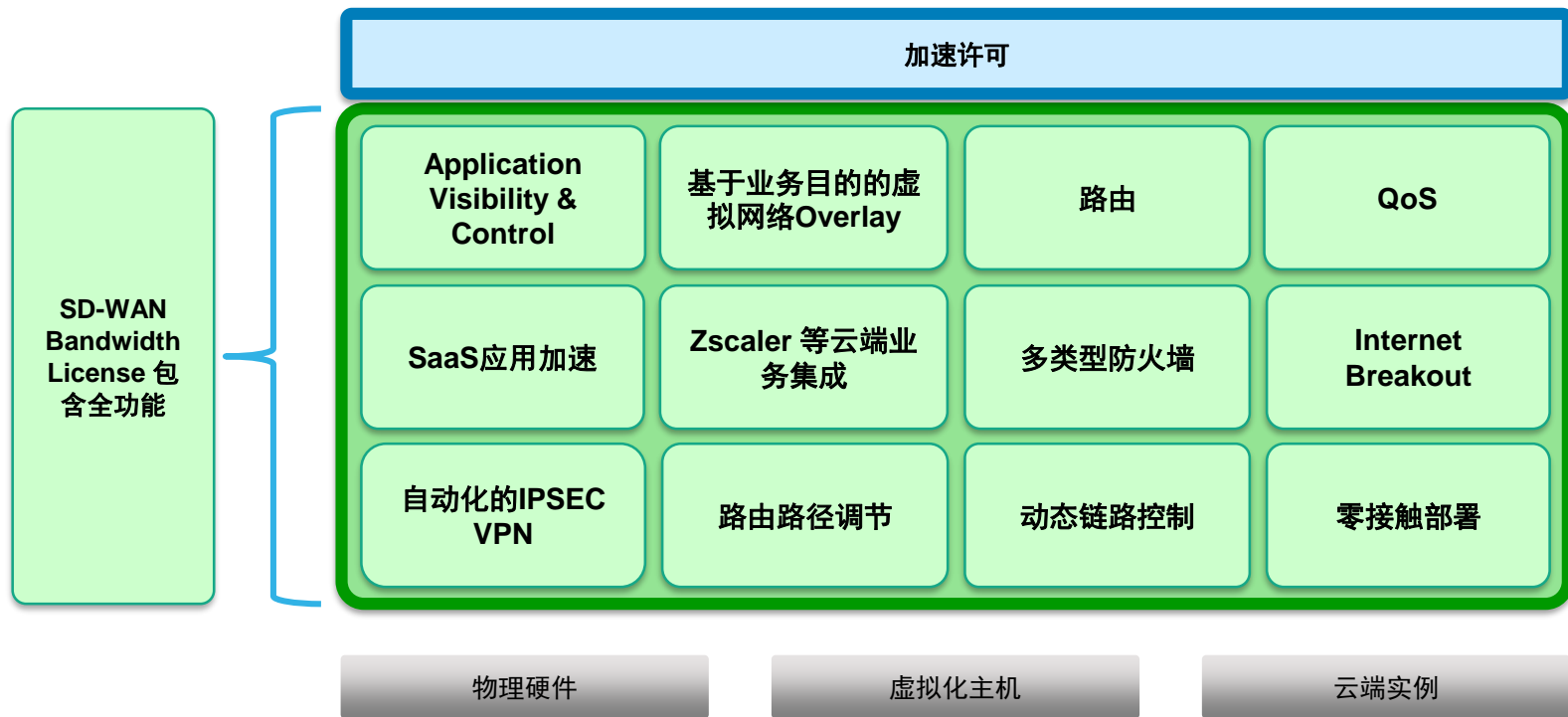
保障互联网出局安全

基于状态的Zone-based Firewall







应用可视化及控制

零接触式分支机构部署

EDGECONNECT FEATURE OVERVIEW



UNITY EDGECONNECT 硬件平台规格

	EdgeConnect US	EdgeConnect XS	EdgeConnect S	EdgeConnect M	EdgeConnect L	EdgeConnect XL
						
Model	EC-US	EC-XS	EC-S	EC-M-[B/P]	EC-L-[B/P][[-NM]	EC-XL-[B/P][[-NM]
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
Recommended 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
Data Path Interfaces	3 x RJ45 10/100/1000	4 x RJ45 10/100/1000	6 x RJ45 2 x 1/10G Option	4 x RJ45 2 x 1/10G Fiber	4 x RJ45 2 x 1/10G Fiber	6 x 10G/25G Fiber

EDGECONNECT VIRTUAL 资源要求



EdgeConnect Virtual

支持所有的虚拟化环境: VMware ESXi; XenServer; Hyper-V; KVM

SD-WAN Bandwidth	Processor Cores (>2 GHz)	Memory	Minimum Storage	Storage IOPs	Storage Bandwidth	Storage Configuration
Up to 1 Gbps	2	4 GB	30 GB	n/a	n/a	2 x 7200 RPM SAS or 2 x SSD
1 to 4 Gbps	4	4 GB	30 GB	n/a	n/a	2 x 7200 RPM SAS or 2 x SSD
4 to 5 Gbps	8	4 GB	30 GB	n/a	n/a	2 x 7200 RPM SAS or 2 x SSD
Added Boost Bandwidth						
Up to 10 Mbps	4	4 GB	100 GB	100	25 MB/s	2 x 7200 RPM SAS or 2 x SSD
10 to 50 Mbps	4	7 GB	100 GB	200	50 MB/s	3 x SSD
50 to 200 Mbps	8	14 GB	250 GB	1000	250 MB/s	4 x SSD
200 to 1000 Mbps	24	30 GB	250 GB	5000	1250 MB/s	8 x SSD

The greater value of each resource in the table specifies host system requirements for EC-V

Detailed requirements here: https://www.silver-peak.com/sites/default/files/userdocs/edgeconnect_host_system_requirements_r8-1_revf_march2017.pdf

SDWAN 许可证说明



广域网加速许可证
(基于带宽流量, 每个许可证
100Mbps)



EdgeConnect SD-WAN 许可证
-基于各个站点总带宽流量



选择相应性能硬件
或者直接使用软件

Boost (EC-BOOST)

SDWAN 带宽
(EC-BW-20/50/100/200/500/1G/2G/无限)



1, 2, 3, 4 & 5 年租赁许可证

核心功能

BUSINESS INTENT OVERLAYS 广域网虚拟化

基于不同业务优先级对各类应用实现广域网链路虚拟化

应用类型

广域网链路

链路绑定策略

拓扑结构

SaaS, 及互联网业务

安全策略

Overlay Defaults

实时通讯类Overlay



MPLS
Internet
LTE (Backup)

高可用模式

Loss: 1%
Latency: 400ms
Jitter: 200ms



Mesh



Best Circuit +
Local Firewall



FW Zone: Real Time
QoS: Real Time
Boost: Disabled

企业核心业务Overlay



MPLS
Internet
LTE (Backup)

智能选路模式

Loss: 2%
Latency: 600ms
Jitter: 300ms



Hub &
Spoke



Best Circuit +
Cloud Firewall



FW Zone: Restrict
QoS: Enterprise
Boost: Enabled

默认 Overlay



MPLS
Internet
LTE (Backup)

负载均衡模式

Loss: 5%
Latency: 800 ms
Jitter: 500 ms



Hub &
Spoke

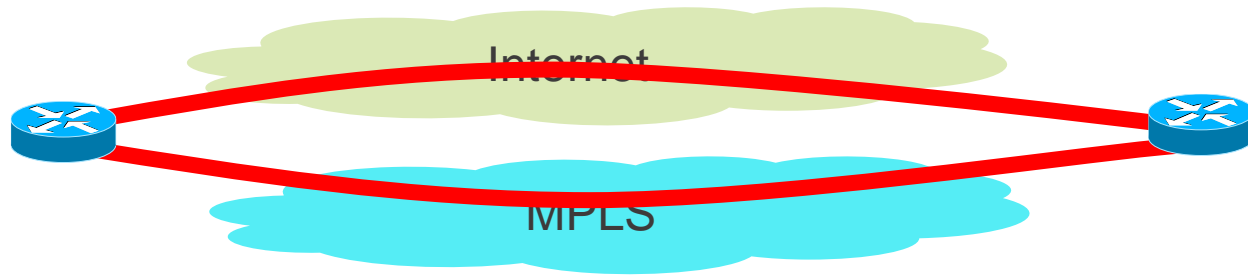


Load Balance +
Cloud Firewall

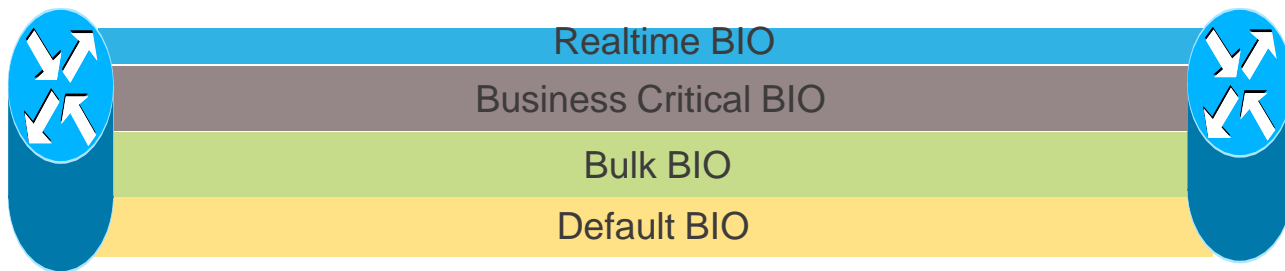


FW Zone: Default
QoS: Best Effort
Boost: Disabled

UNDERLAY & OVERLAY TUNNEL



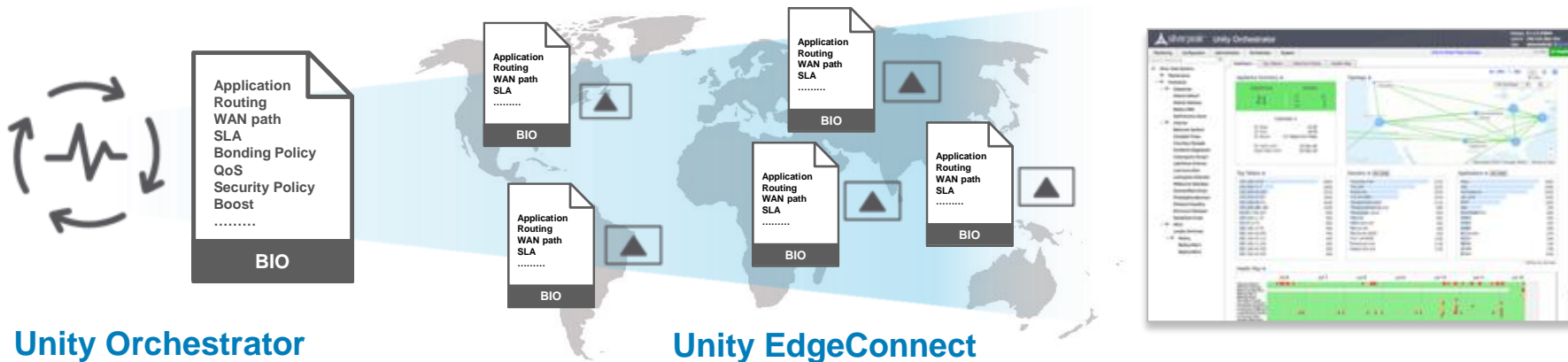
Underlay



Overlay

AUTOMATION AND CENTRALIZED ORCHESTRATION

Top-down approach, automating business intent policies



1 创建OVERLAY

2 下发配置至EC

3 集中化运维及控制

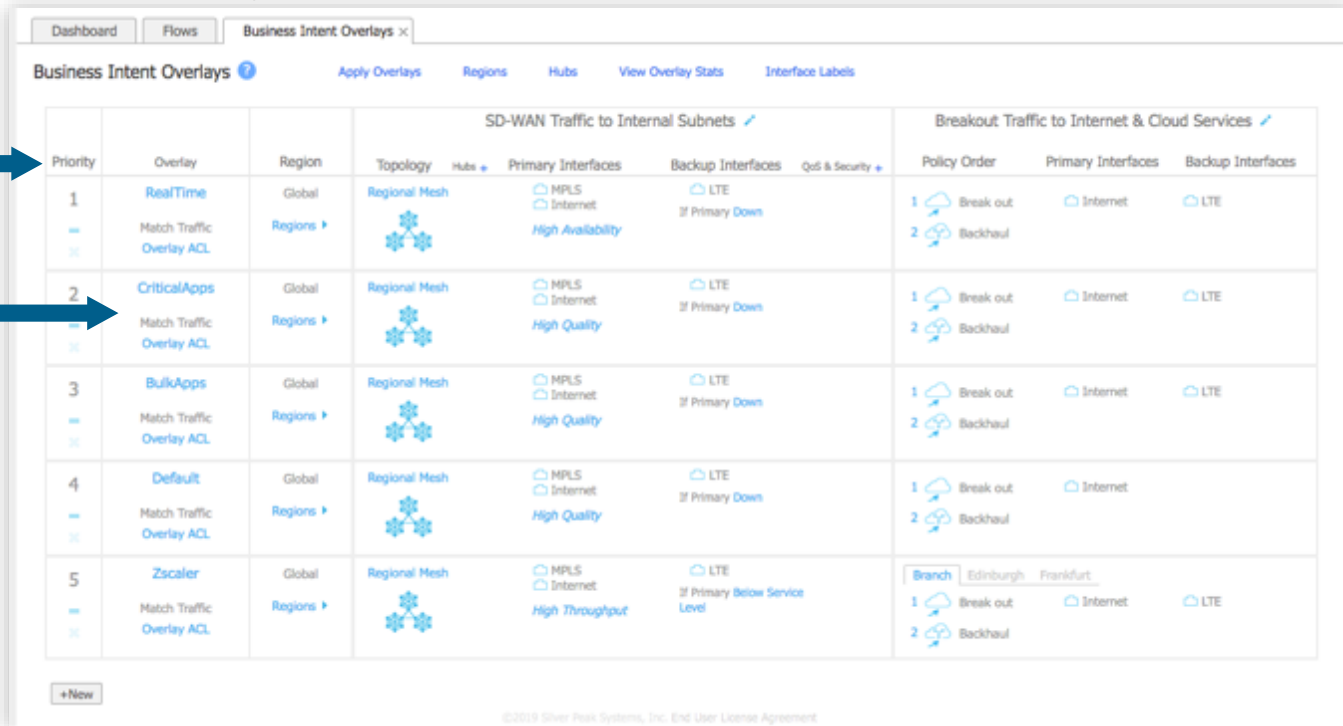
ORCHESTRATION OF BUSINESS REQUIREMENTS

Business Intent Overlay – 主页面

Traffic is matched to an ACL, progressing down the priority list

Default pre-configured Overlays:

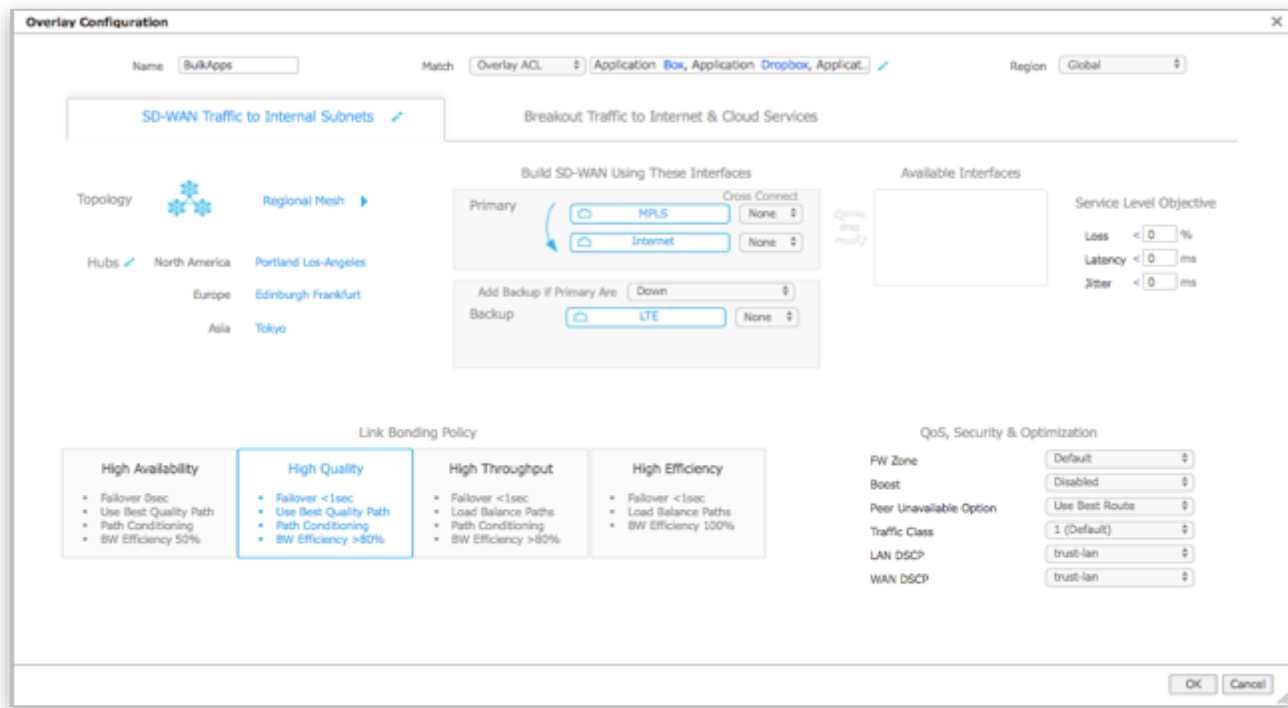
- RealTime
- CriticalApps
- BulkApps
- Default



Priority	Overlay	Region	Topology	Primary Interfaces	Backup Interfaces	QoS & Security	Policy Order	Primary Interfaces	Backup Interfaces
1	RealTime Match Traffic Overlay ACL	Global Regions ▶	Regional Mesh	MPLS Internet High Availability	LTE If Primary Down		1 Break out 2 Backhaul	Internet LTE	LTE
2	CriticalApps Match Traffic Overlay ACL	Global Regions ▶	Regional Mesh	MPLS Internet High Quality	LTE If Primary Down		1 Break out 2 Backhaul	Internet LTE	LTE
3	BulkApps Match Traffic Overlay ACL	Global Regions ▶	Regional Mesh	MPLS Internet High Quality	LTE If Primary Down		1 Break out 2 Backhaul	Internet LTE	LTE
4	Default Match Traffic Overlay ACL	Global Regions ▶	Regional Mesh	MPLS Internet High Quality	LTE If Primary Down		1 Break out 2 Backhaul	Internet	
5	Zscaler Match Traffic Overlay ACL	Global Regions ▶	Regional Mesh	MPLS Internet High Throughput	LTE If Primary Below Service Level		Branch 1 Break out 2 Backhaul	Edinburgh Frankfurt Internet	LTE

BUSINESS INTENT OVERLAY

BIO – 内部子网的OVERLAY配置



The screenshot shows the 'Overlay Configuration' window with the following details:

- Name:** BulkApps
- Match:** Overlay ACL
- Application:** Box, Application Dropbox, Applicat...
- Region:** Global
- Topology:** Regional Mesh
- Hubs:** North America (Portland Los-Angeles), Europe (Edinburgh Frankfurt), Asia (Tokyo)
- Build SD-WAN Using These Interfaces:**
 - Primary: MPLS, Internet
 - Backup: LTE
- Service Level Objective:** Loss < 0%, Latency < 0ms, Jitter < 0ms
- Link Bonding Policy:** High Quality (selected)
- QoS, Security & Optimization:** FW Zone (Default), Boost (Disabled), Peer Unavailable Option (Use Best Route), Traffic Class (1 (Default)), LAN DSCP (trust-ian), WAN DSCP (trust-ian)

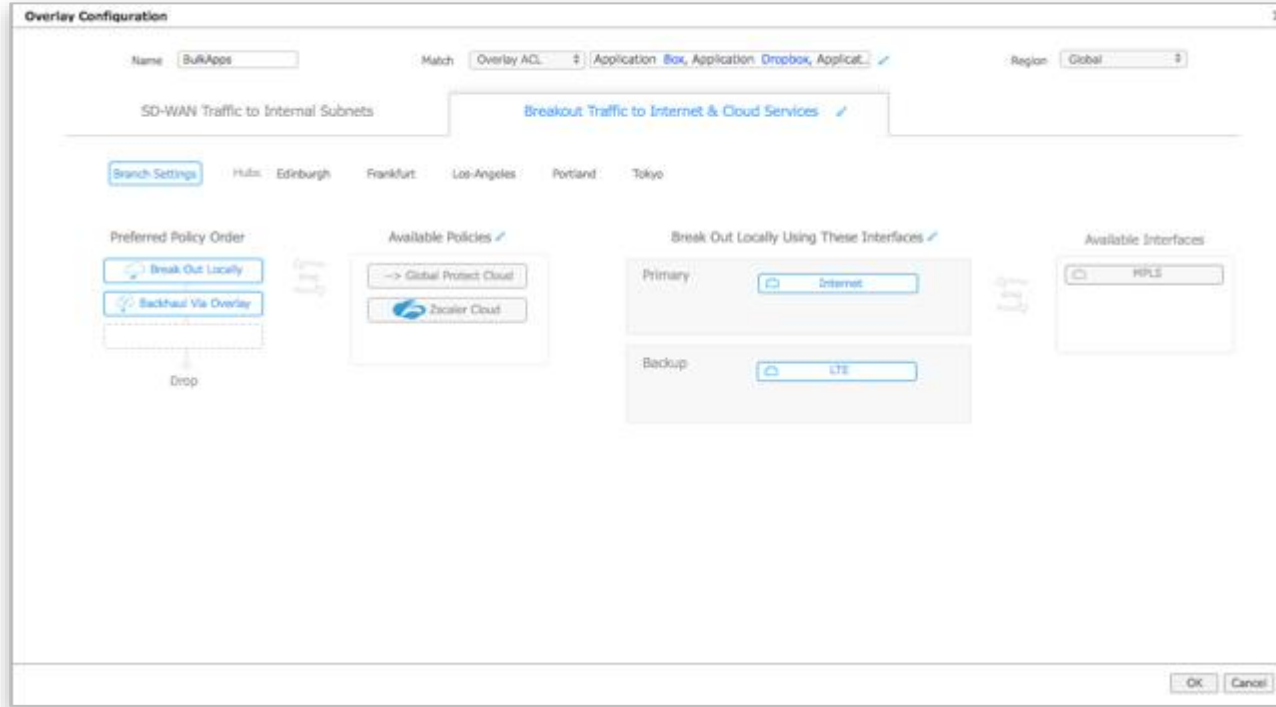
Overlay 名字
ACL 条目
Region

拓扑架构
链路主备状态
SLA切换阈值

Link Bonding Policy
QoS
安全
广域网加速 (可选)

BUSINESS INTENT OVERLAY

BIO – 针对云服务等出互联网的业务配置



The screenshot shows the 'Overlay Configuration' window for a policy named 'BuRApps'. The configuration is set for 'Global' and 'Breakout Traffic to Internet & Cloud Services'. The 'Preferred Policy Order' section shows 'Break Out Locally' and 'Backhaul Via Overlay' as the first two options, with 'Drop' as a third option. The 'Available Policies' section includes 'Global Protect Cloud' and 'Zscaler Cloud'. The 'Break Out Locally Using These Interfaces' section shows 'Internet' as the primary interface and 'LTE' as the backup interface. The 'Available Interfaces' section shows 'HPLS' as the available interface. A blue arrow points from the 'Available Interfaces' section to a callout box on the right.

Preferred Policy Order
Break Out Interfaces

PATH CONDITIONING链路动态调节技术

Forward Error Correction

数据包校验恢复技术

通过校验包对丢失的数据包进行恢复，
减少数据包重传



Packet Order Correction

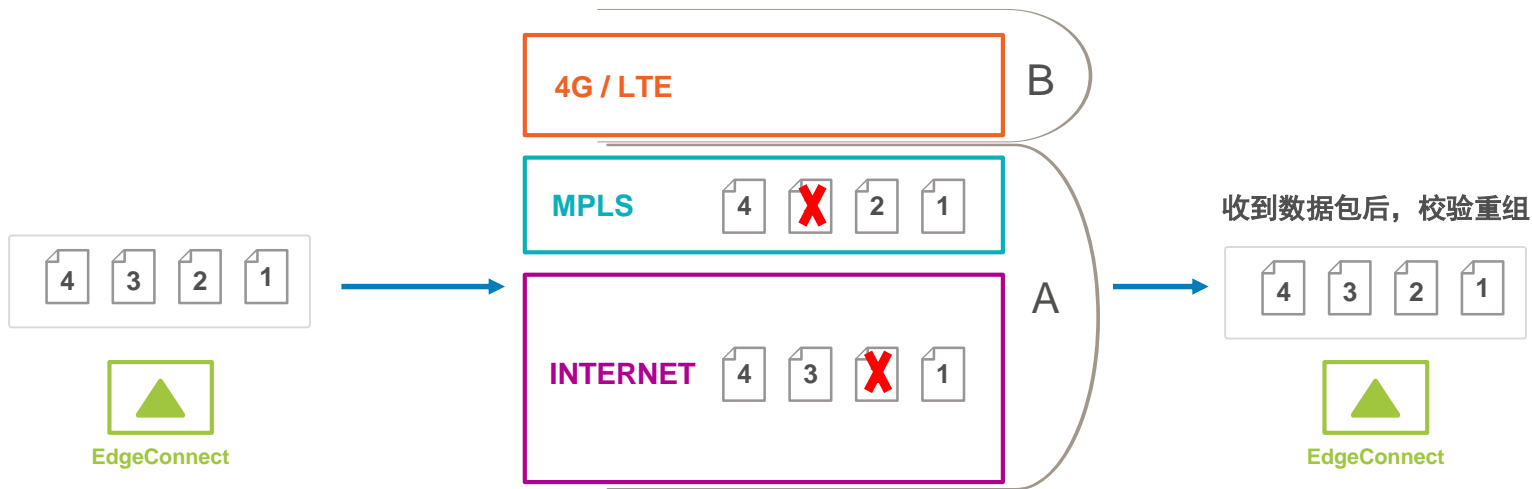
数据包序列控制技术

记录各类数据包发送序列，
并在传输完成时进行校验和纠正，降低数据包乱序比例

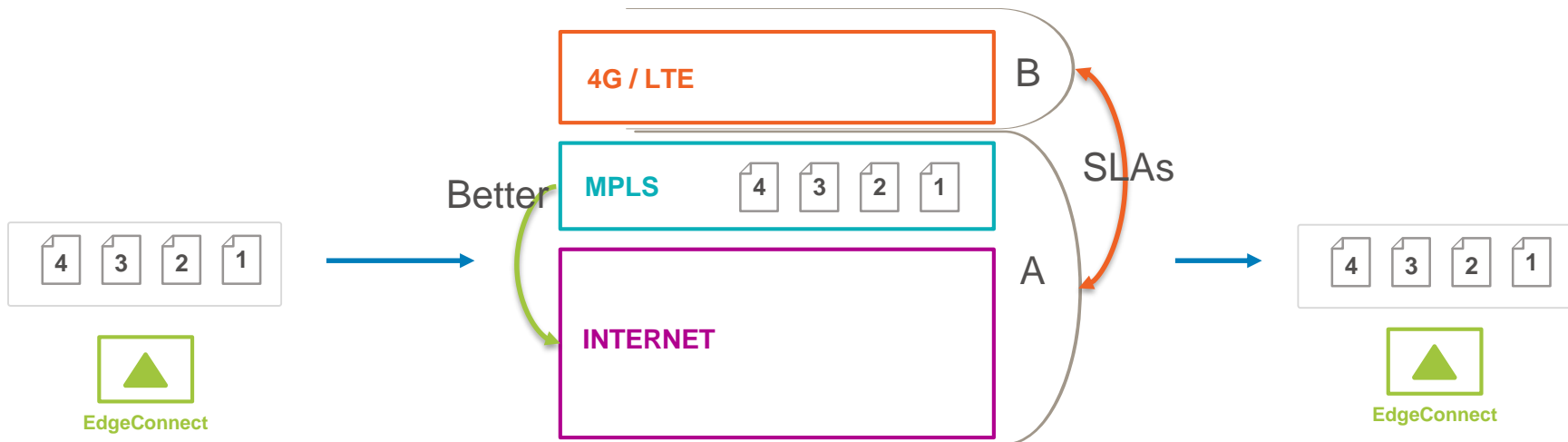


基于数据包的高可用传输

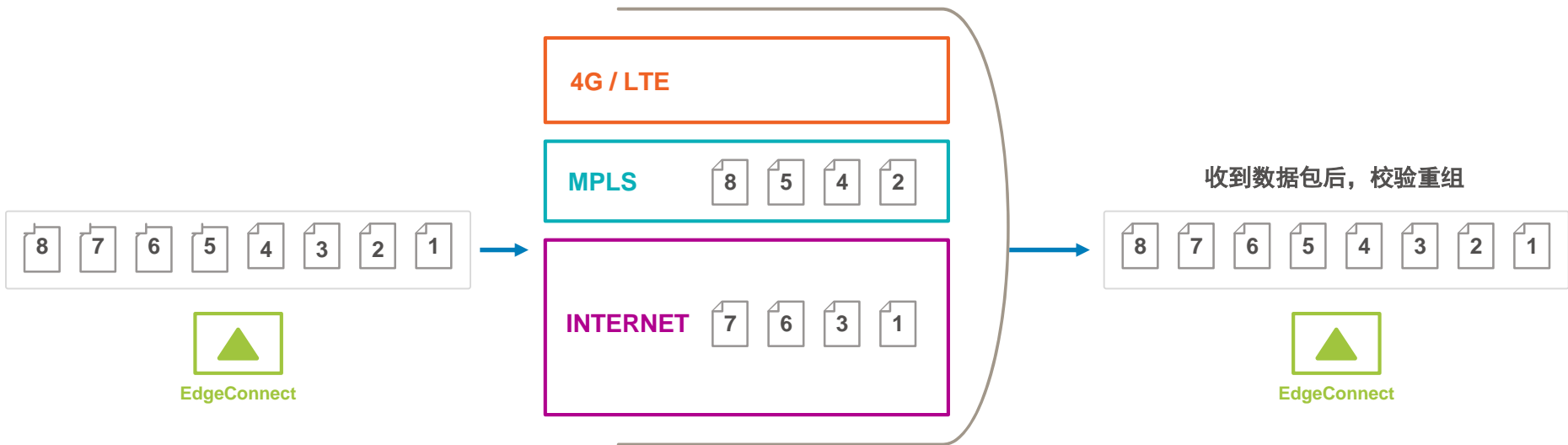
通过HA高可用模式，即使发生网络中断，也可确保应用不间断工作



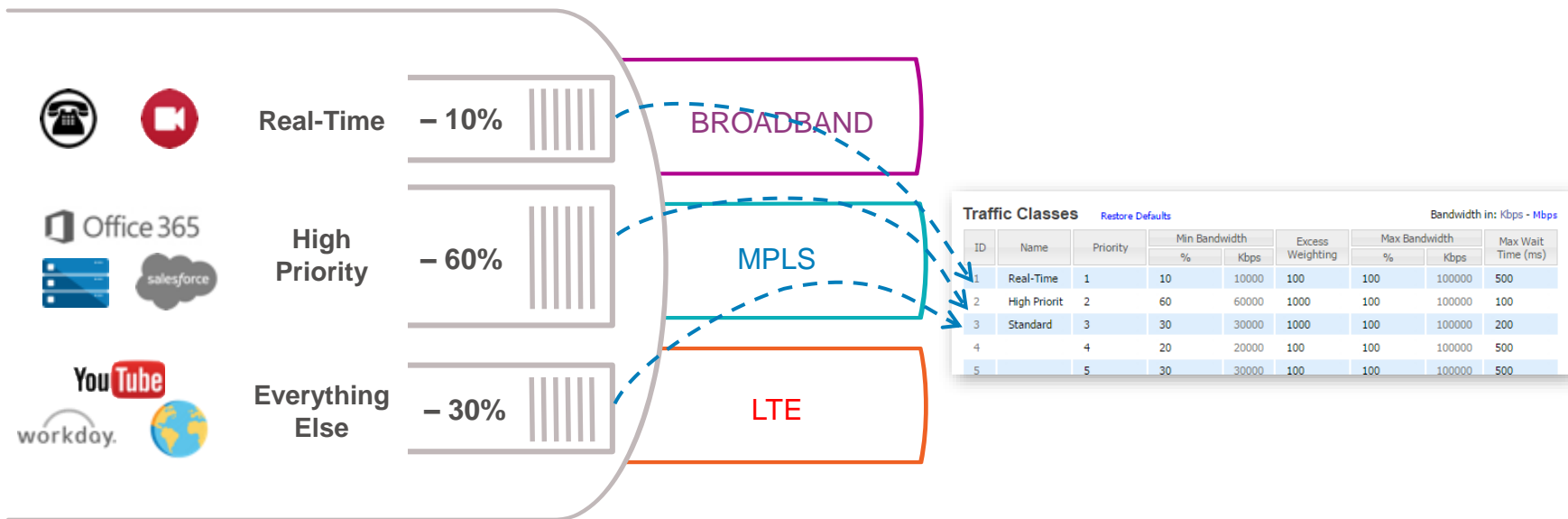
基于数据包的高质量传输



基于数据包的多链路负载



为关键业务确保流量优先级



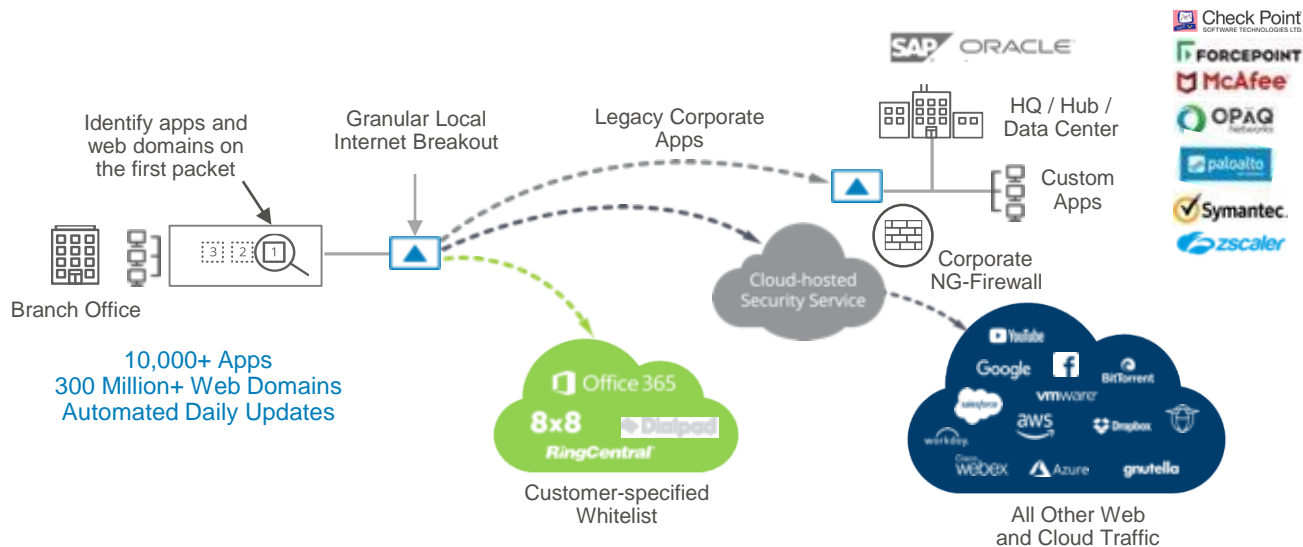
- Ingress shaping assures low priority apps do not compromise business critical apps
- Egress shaping assures no single app can consume all WAN bandwidth
- Up to 10 unique traffic classes (QoS profiles) may be defined



Continuous Adaptation

广域网出局流量管理，特定流量安全保障

First-packet iQ™ 首包检测技术，实现应用可视化及管理



Steer Apps Intelligently

Granular, intelligent breakout of SaaS and trusted internet-bound traffic directly from the branch

Improve App Response Time

Avoid added latency through direct access to where the app resides

Reduce Backhaul

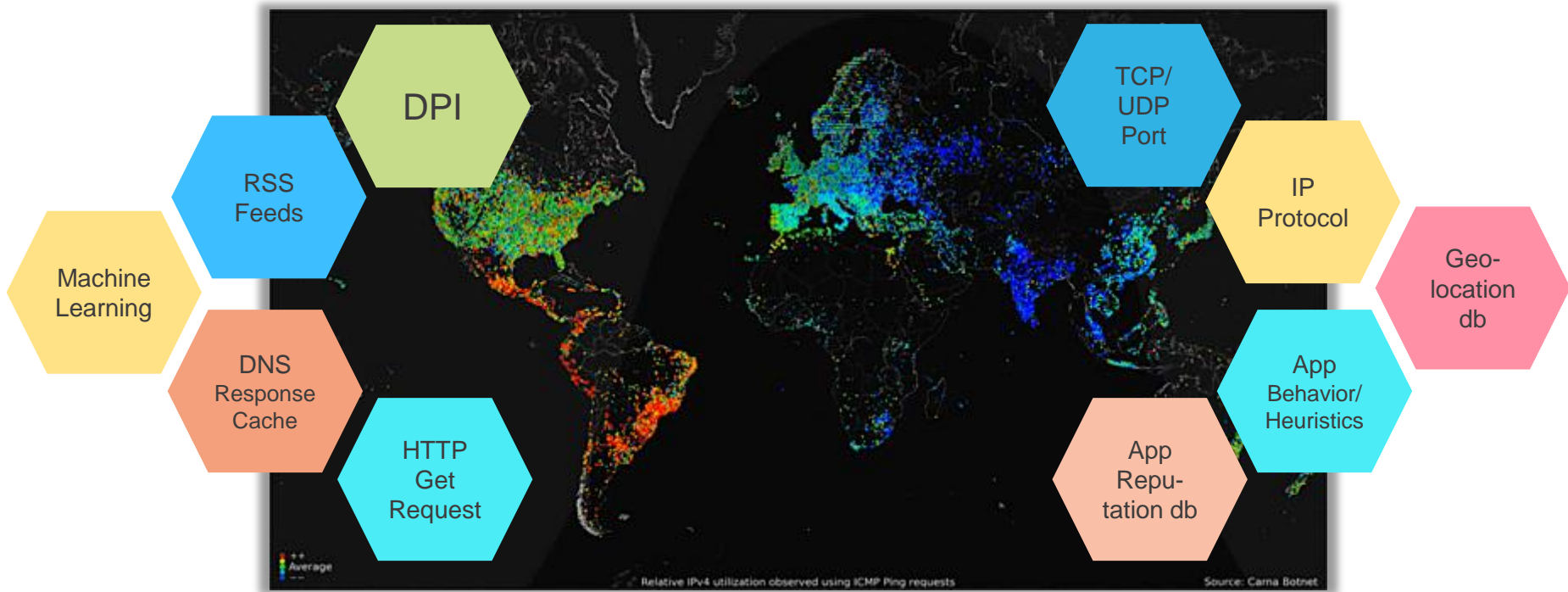
Backhaul only untrusted traffic to corporate FW

Save Valuable WAN Bandwidth

Avoid consumption of expensive MPLS circuits where not necessary

SILVER PEAK 应用识别能力

通过多种方式协力配合，实现应用识别库每日更新



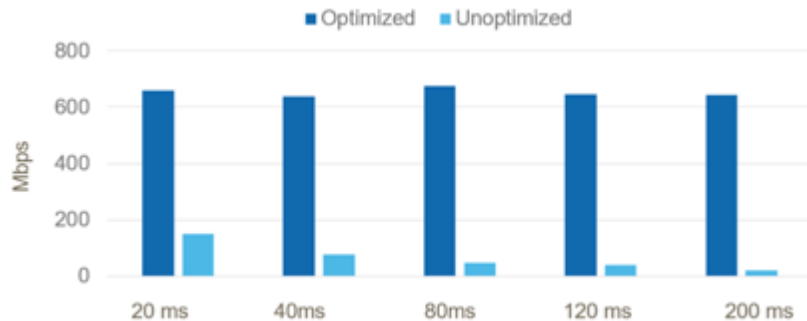


统一广域网加速功能

加速应用业务并最大化利用带宽资源

TCP应用性能加速

- 对TCP以及其他网络协议进行加速，尽可能降低应用延迟
- 显著增强基于各类应用在广域网链路上的响应能力



数据去重

针对广域网传输的数据进行压缩去重

使用先进的数据指纹校验技术快速识别重复数据内容

数据去重前
传输每一个字节



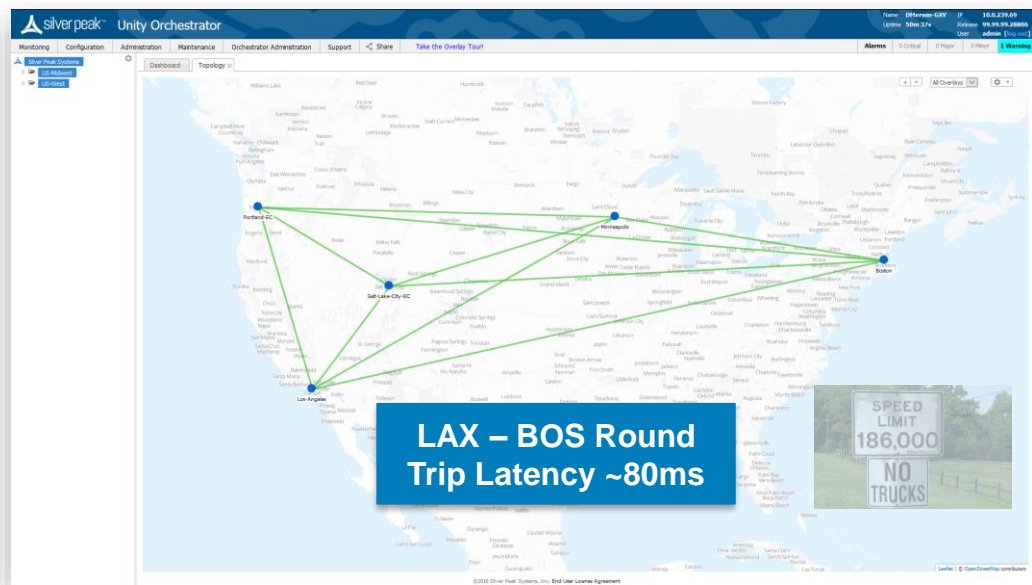
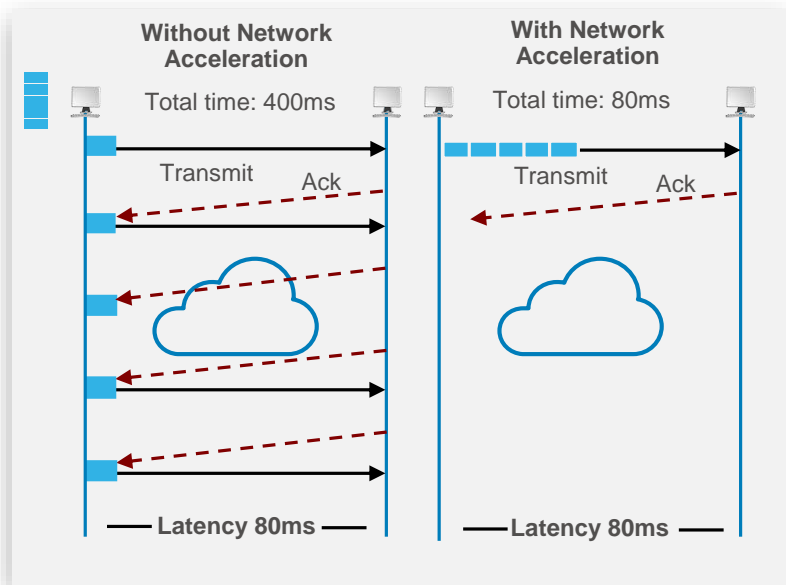
数据去重后

建立本地缓存，只传输非重复数据



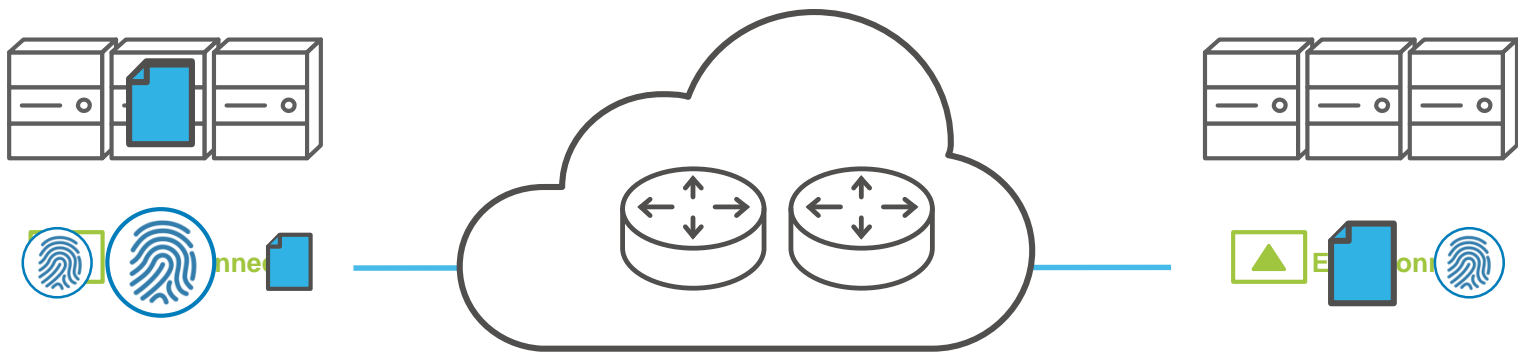
应用性能加速

显著提升各类对延迟敏感的应用性能



数据去重

基于三层的数据字节级去重技术



First Pass

1. Byte fingerprint and store
2. Compress + transmit

3. Byte fingerprint and store
4. Uncompress and deliver

>First Pass

1. Byte fingerprint match
2. Send retrieve instructions

3. Get local data from memory
4. Deliver

为所有的IP应用保障安全以及优化

SILVER PEAK'S NETWORK & APP OPTIMIZATION

Bulk TCP

File

CIFS, NFS, FTP, AFS

Web

HTTP/S, SharePoint

Email

Exchange, Notes, SMTP

Data Replication

SnapMirror, Celerra, HNAS, EqualLogic, etc.

Remote Backup

Real-Time TCP

VDI

MSFT RDP, Citrix ICA

SQL Queries

MS, Oracle, Sybase, etc.

Data Replication

SRDF, RecoverPoint, HUR, Compellent, etc.

Bulk UDP

Video Streaming

DNS

File

NFS

Aspera

VMware Replication

Real-Time UDP

VoIP

Video conferencing

Streaming data

VDI

VMware, Sunray

专有封装

IP - IP

GRE

Cisco OTV

RTP

RDP

IP v6 in IPv4

FCIP

VPLEX

ESP

TCP / UDP - Layer 4-7 (CIFS和HTTP/S的传输和应用程序加速)

TCP 优化

IP - Layer 3 (Network)

分类与状态检查

Per Flow
queues

QoS
Scheduler

Network
Memory

LZ Comp

Packet
Coalescing

Packet
Order
Correction

Forward
Error
Correction

Encrypt

Network Memory™

Network Integrity

UNITY ORCHESTRATOR 集中控制台

全局SDWAN管理平台



集中化管理并简化配置



自动化链路策略



实时监控广域网链路健康状况



链路故障定位



统一管理和监控
统一管理和监控



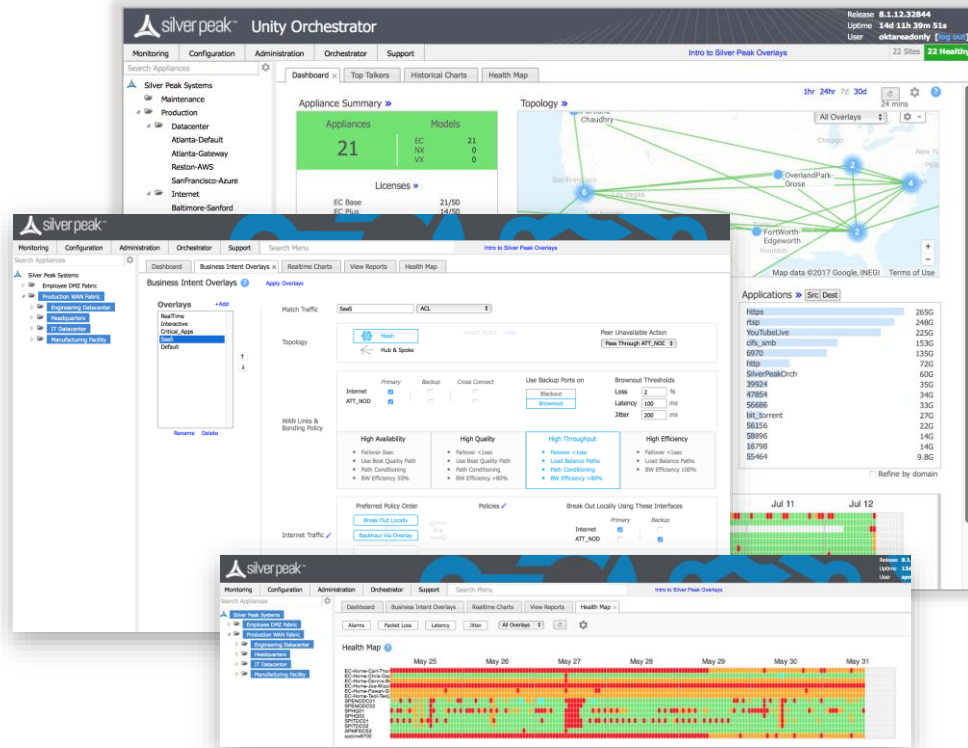
设备认证和配置



宽带成本节省报告

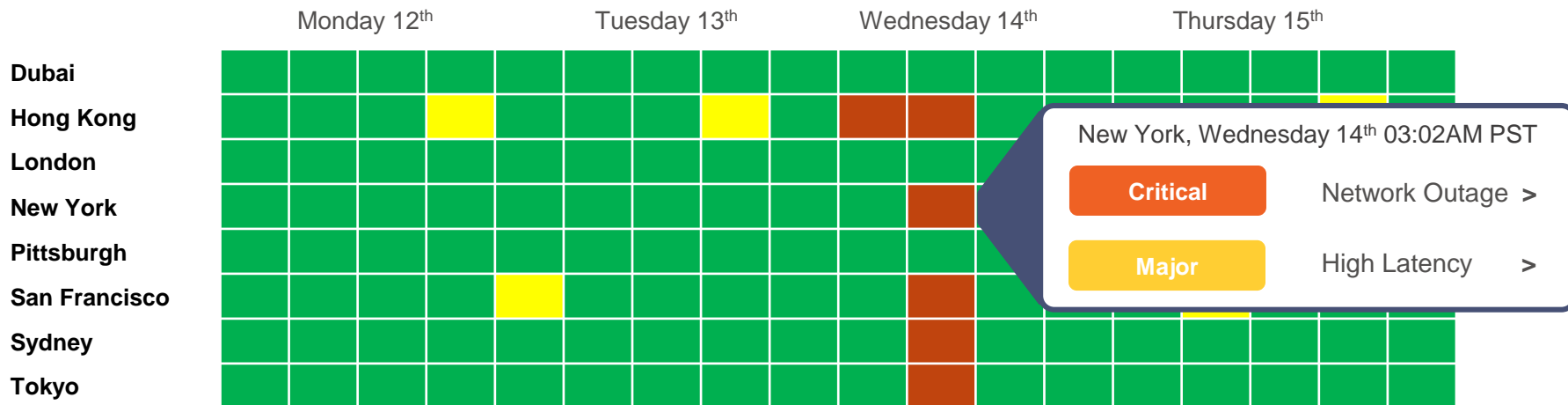


应用可视化



网络故障可视化

在单个运行状况图上关联所有设备以及网络的的中断、性能和配置问题



技术生态

Security



Public Cloud



Applications



Infrastructure



uCPE



Mgmt. & Ops.



行业趋势

安全与网络正在逐渐聚合 但是每个供应商都各自为战

原生数据中心方案

Palo Alto&Checkpoint&Fortinet

“让我们组建NGFW的安全边界，
Oops, 还是先把NGFW安装在云端吧...”

原生云端方案

Zscaler&Netskope&Cloudflare

“让我们用云端搞定一切数据
并且让终端流量都流向我们”

Aruba & Silver Peak

原生边界的 解决方案

“我们将判断数据由谁，什么时候，什么来源，如何尽可能接近数据源的方案
然后将这个策略应用于边界之上
并在必要时，转发到企业首选的云安全服务”



完整的广域网产品组合满足客户需求

WAN Transformation to the Cloud

Silver Peak
SD-WAN
(2020)

SaaS and Apps to the Cloud

SD-WAN for cost efficiencies and app performance

WAN Transformation to the Home

Remote Access Points
(2009)

Market and Tech Pioneer

Secure, remote connectivity for teleworkers

Comprehensive Industry-Leading WAN Solutions

New Category Creation

Unified management and control for SD-LAN + SD-WAN

WAN Transformation at the Edge

Aruba SD-Branch
(2018)



SILVER PEAK AND ARUBA ESP



远程接入客户



分支站点



云端实例



园区网



数据中心

ARUBA CENTRAL



Onboarding



Provisioning



Orchestration



Analytics



Location



Management

自动化运维



Visibility



Authentication



Continuous Monitoring



Policy Enforcement



Unified Threat Management

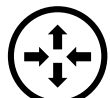
零信任安全



Wireless



Wired



SD-WAN



5G



IoT

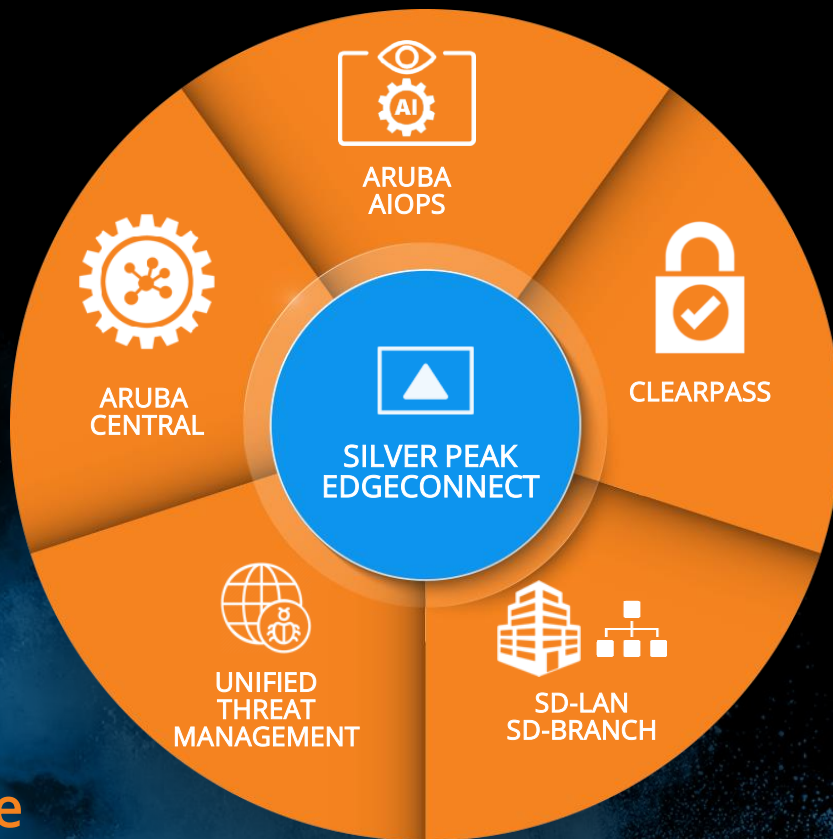
统一基础网络设施



ARUBA AND SILVER PEAK: 1+1=3

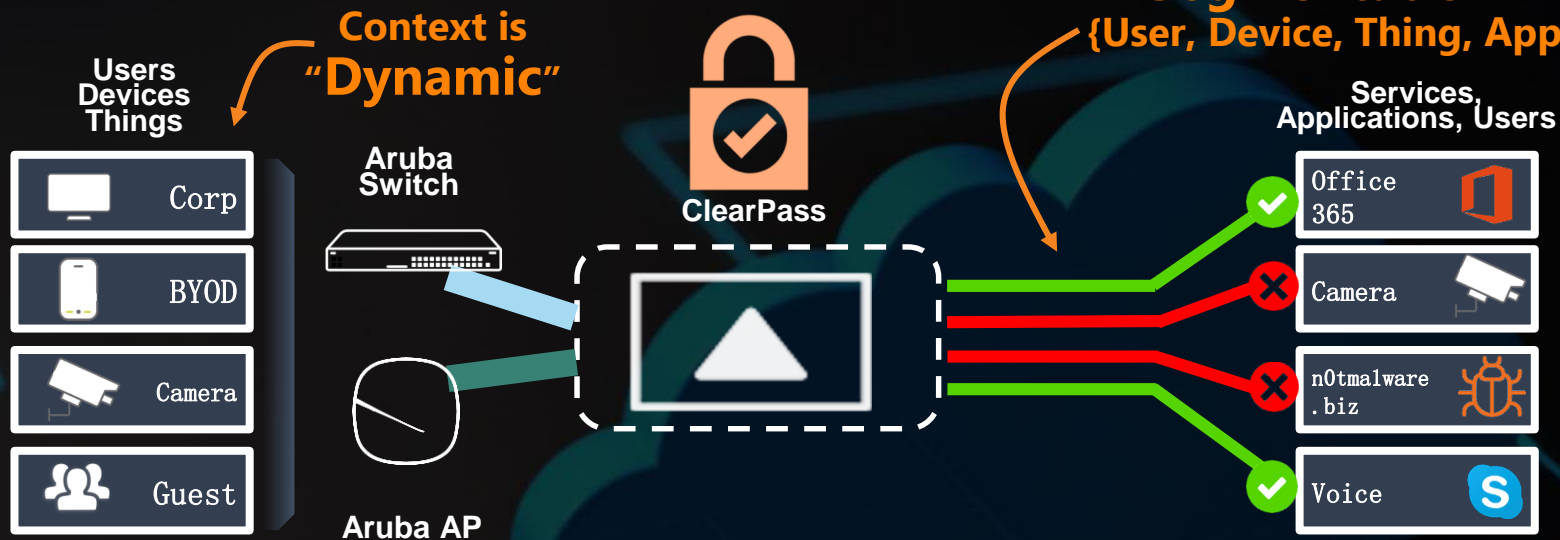
全面的边界安全
动态的业务分片
统一可视化的管理

WAN & Security
Transformation... at your pace



增强BUSINESS INTENT OVERLAYS 与“Who, What, Where, When”的关联

“Dynamic Segmentation”
{User, Device, Thing, App}



用户案例

某制造业 SDWAN项目介绍

项目目标

1. 降低成本:

从长期来看可以降低专线的投资费用, 在满足业务需求的前提下, 以价格上更有优势的互联网线路来进行带宽扩容, 从而实现降低成本。

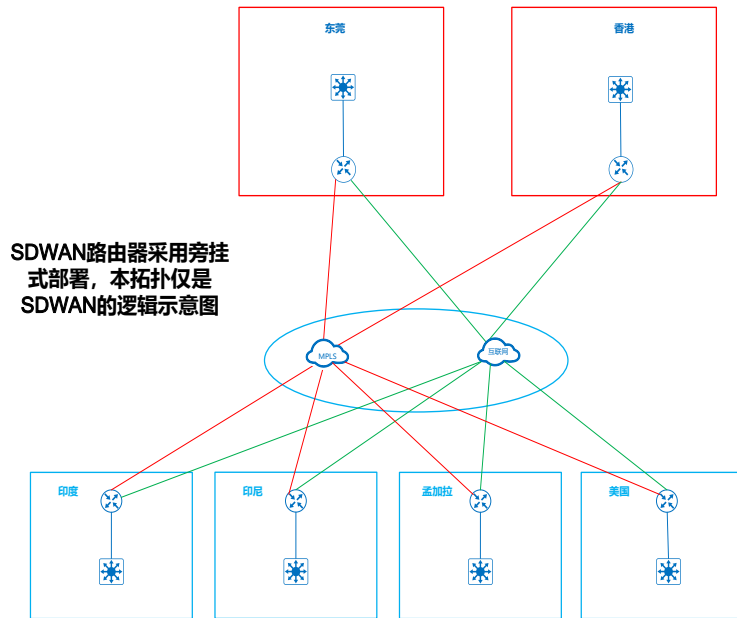
2. 增加成效:

第一: 能更好利用和整合现有的链路资源, 提高链路带宽利用率。

第二: 能对数据传输进行加速和优化, 提高传输效率;

项目亮点

本期项目项目涉及的地域很广, 涵盖了海内外6个站点。部署方式上采用了虚拟化部署及硬件部署两种方式, 虚拟化的部署帮忙客户快速上线及交付, 大大缩短了部署周期。Silver Peak SDWAN方案在很好的实现基础功能的前提下, 如实现: 多类型线路组网、基于应用的灵活调度、支持可视化运维管理等, 还拥有自身独特的技术亮点, 该亮点很好的匹配了客户的场景, 那就是广域网加速功能, 该功能集成在SDWAN路由器上, 可以对数据传输文件进行压缩、缓存、优化, 提高传输的效率, 突显“增效”亮点! 在负载均衡的方式上, 采用基于包的负载, 让负载更“彻底”和更“灵活”! 以上几个技术点是Silver peak的闪光点, 也是其他SDWAN厂商所缺少的, 正是这独特的价值让客户选择了Silver Peak, 这在需求实现程度上也是最高的, 很好的贴切了客户的需求, 解决了客户的痛点。



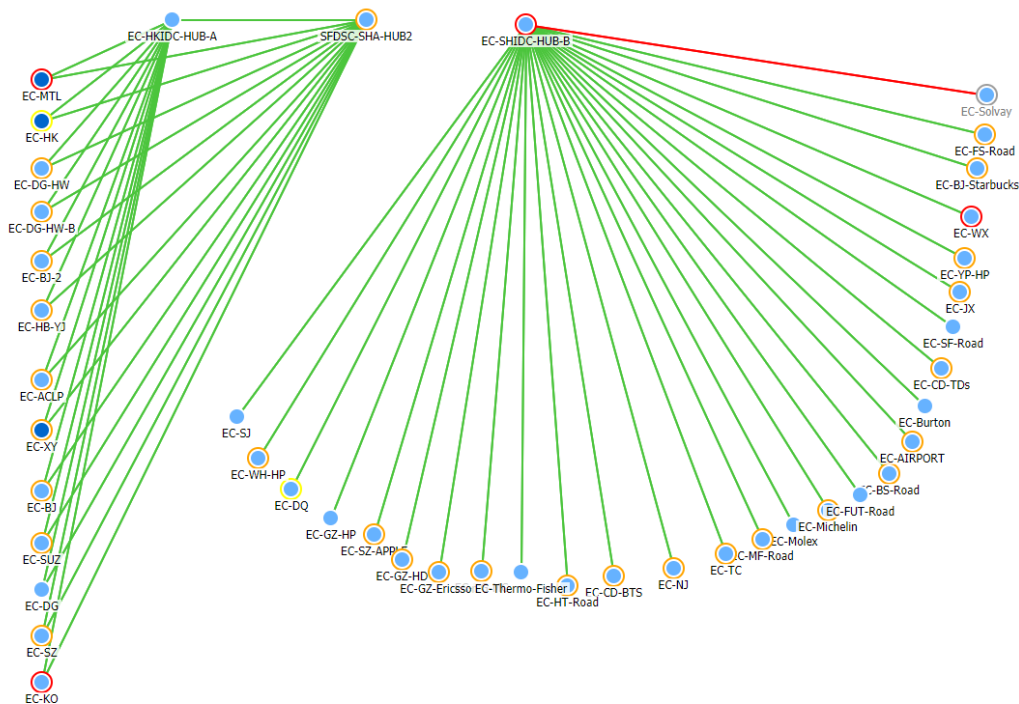
某物流行业 SDWAN项目介绍

项目目标

解决国内访问O365、zoom等SAAS应用慢

项目亮点

本期项目为解决outlook等应用上云访问慢的问题，将用户的数据中心作为O365，zoom等SAAS应用Overlay的HUB，将所有站点访问SAAS应用的流量中转至拥有国际线路节点的IDC出局，其他业务保持用户先有架构，不做更改，同时，silverpeak将自动检测所有的SAAS CDN节点，来计算RTT值，做到最优路径访问。



The Aruba logo consists of the word "aruba" in a lowercase, orange, sans-serif font. The letters are closely spaced, and the 'a' and 'u' have a distinctive shape with a small gap at the top.

a Hewlett Packard
Enterprise company

The text "THANK YOU" is written in a large, bold, blue, sans-serif font. The letters are widely spaced and centered horizontally. The background behind the text is a light blue grid of small dots that fades out towards the right.