aruba
a Hewlett Packard Enterprise company
TECH TALK

George Isaac

Aruba Product Manager

Over Ten Years of experience in Network Presales, Consulting, Design & Proof of concepts

Expert in complex WAN topologies

Focused on Aruba AI-ML platforms

Designed various location-based services and IOT solutions for customers

SILVERPEAK DC-DR CONNECTIVITY

WAN TRANSFORMATION WITH BUSINESS IMPACT

Reduce Replication time by 80% and enhances the reliability of DC-DR Links

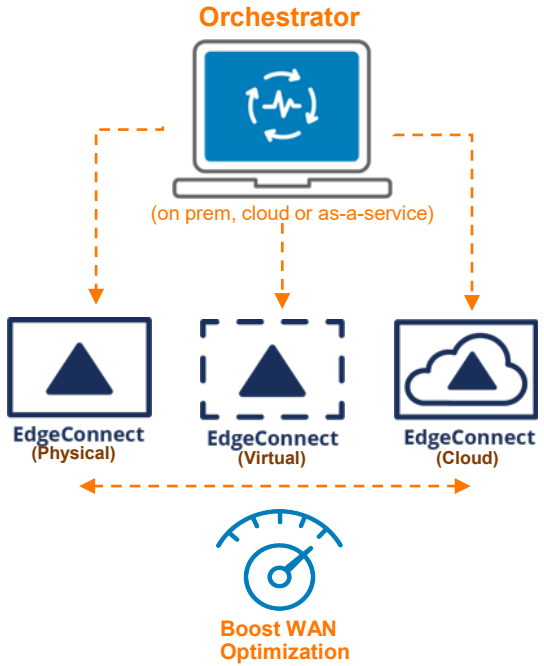
DC-DR connectivity requirements

Key Pillar in Business continuity plan

- Secure and reliable connectivity between DC and DR
- Reduce the time required for DC-DR replication **by 1/5th**
- **WAN links bonding between DC and DR**
- Reduce the WAN traffic **by 80%** between DC using application optimization technologies
- Solution should be able to mitigate the packet drops and out of order packets in the WAN circuits
- WAN Links tunnel bonding and per packet load balancing
- End to End encryption
- End to End QOS and guarantee bandwidth to critical traffic
- Reduce the number of appliances in DC and DR
- Unable to fill the WAN Links – Use Acceleration to sent more data through WAN links

UNITY EDGECONNECT™

Designed for today's cloud-first enterprise and secure DC-DR connectivity



Unity Orchestrator™

Centralized policy orchestration, monitoring and reporting

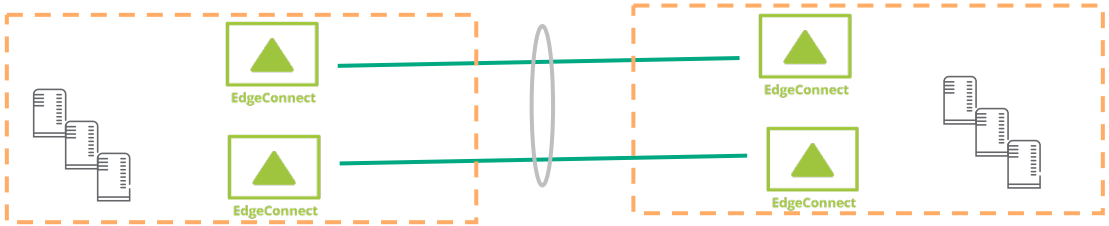
Unity EdgeConnect™

Unified SD-WAN edge platform: routing, security, SD-WAN and WAN Optimization

Unity Boost™ WAN Optimization

On-demand WAN Optimization (Optional)

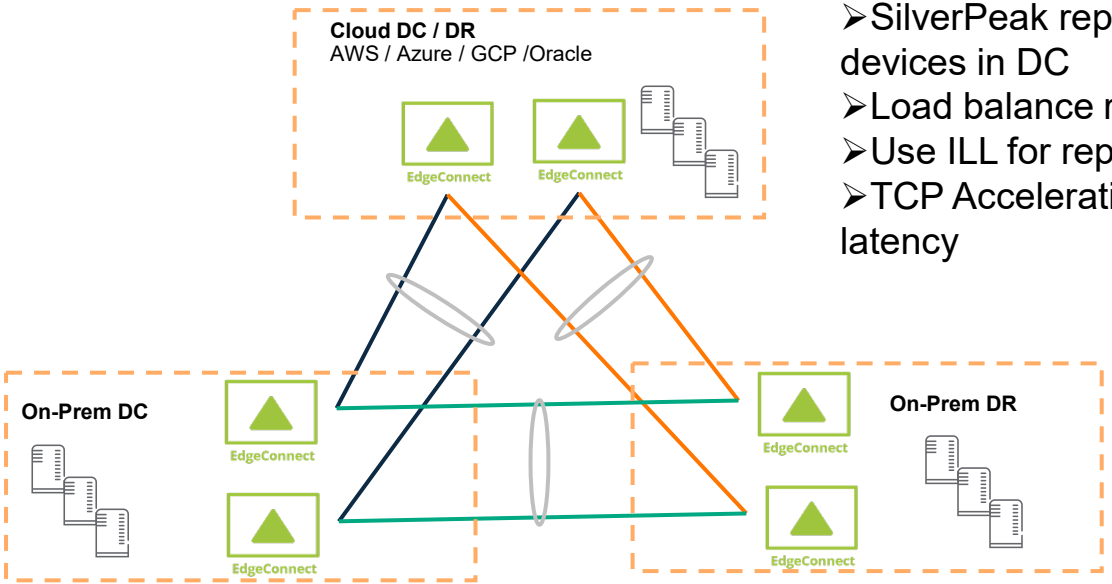
SilverPeak DC-DR Replication Solution



- **Meet Recovery Point Objectives (RPO)**. Replicate more data in less time to remote offsite locations.
- **Solves network bandwidth, distance and quality challenges** to deliver maximum replication throughput over a WAN.
- **Protect all your data,** not just the most important
- **Lower disaster recovery costs.** Eliminate costly dedicated networks for replication; avoid bandwidth upgrades.
- **Improve business continuity.** Maintain redundant data centers for hot failover.

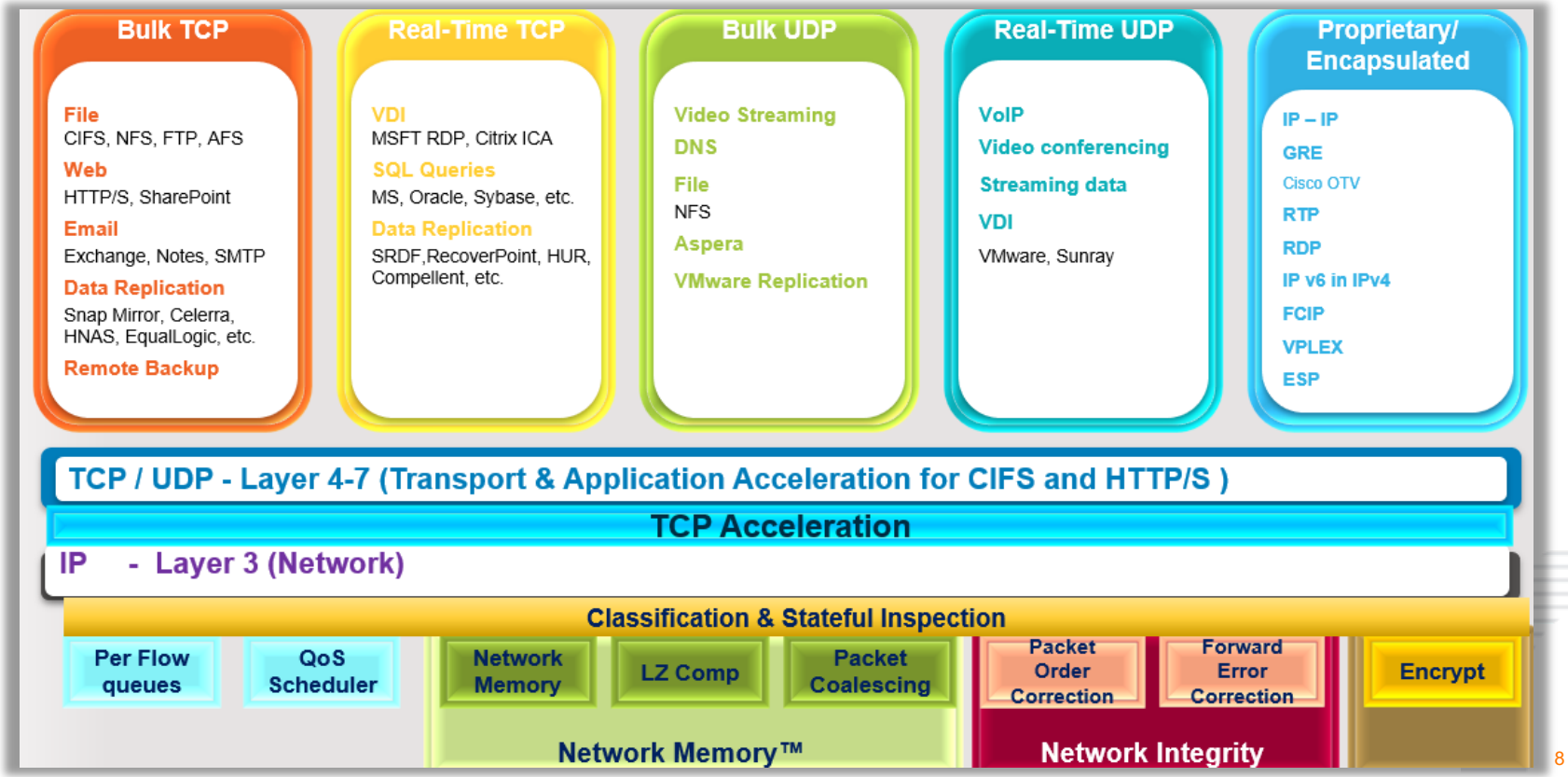
Multi-Cloud architecture

Reduce WAN Usage by 80% - Patented SilverPeak App Optimization



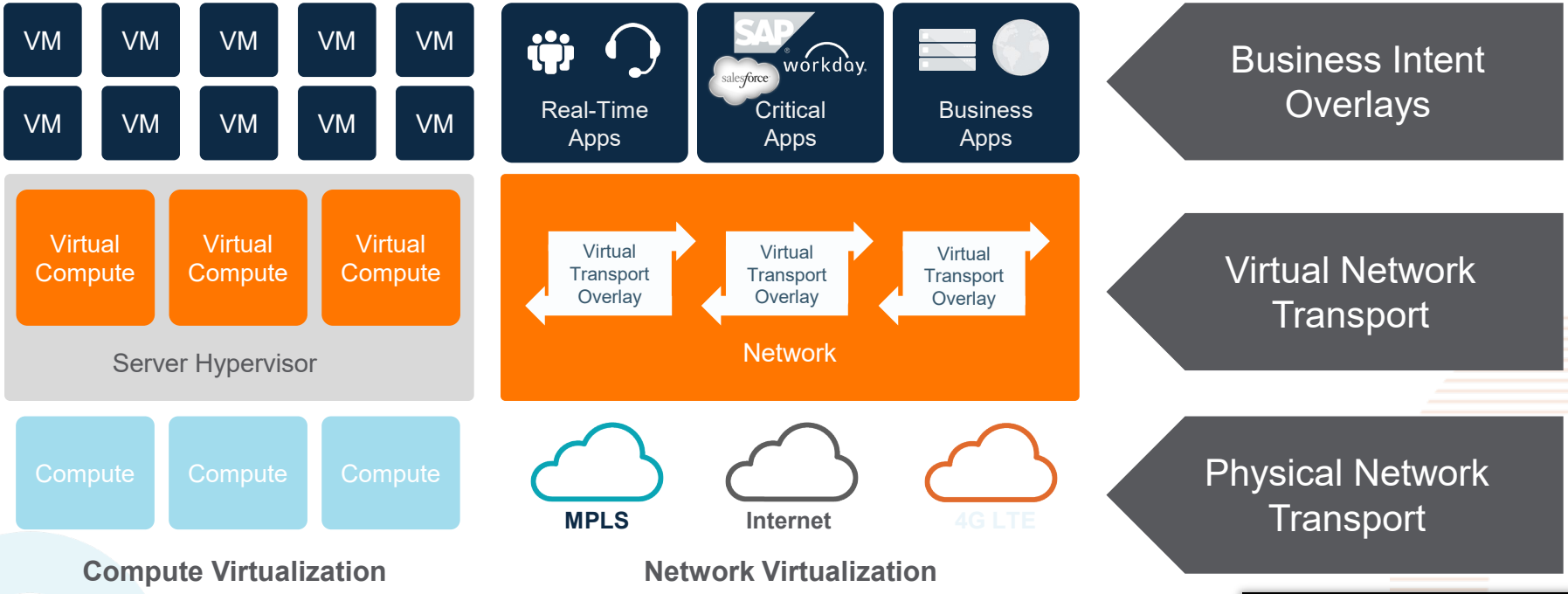
- SilverPeak replaces **router and WAN Optimization** devices in DC
- Load balance replication traffic between various links
- Use ILL for replication traffic
- TCP Acceleration to Optimize the WAN links and reduce latency

Optimizes and secures all applications

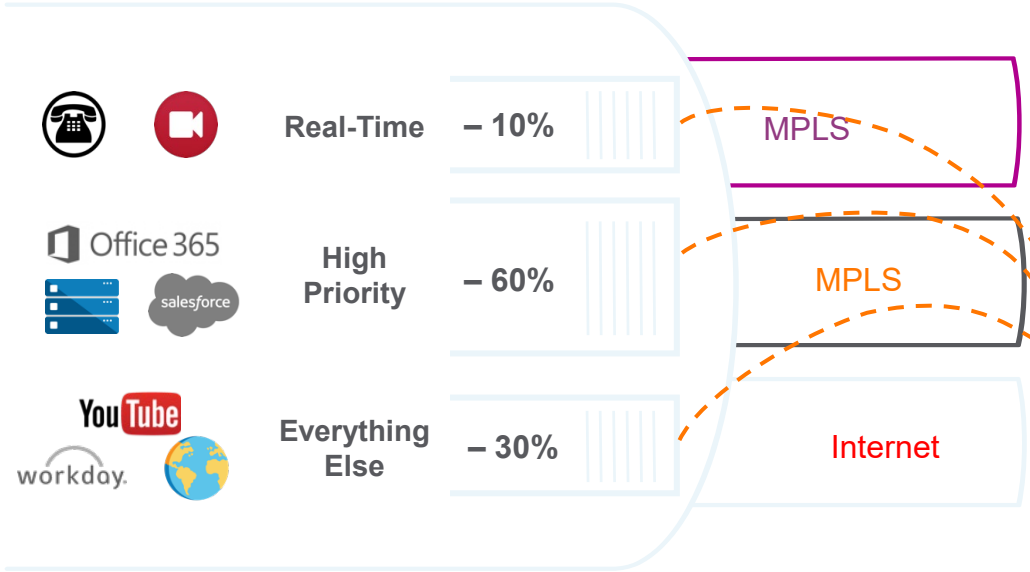


Silver Peak Virtualizes the WAN

Enabling Business Intent Overlays



Ensure priority for Critical Business Apps



Traffic Classes Restore Defaults — Bandwidth in: Kbps - Mbps

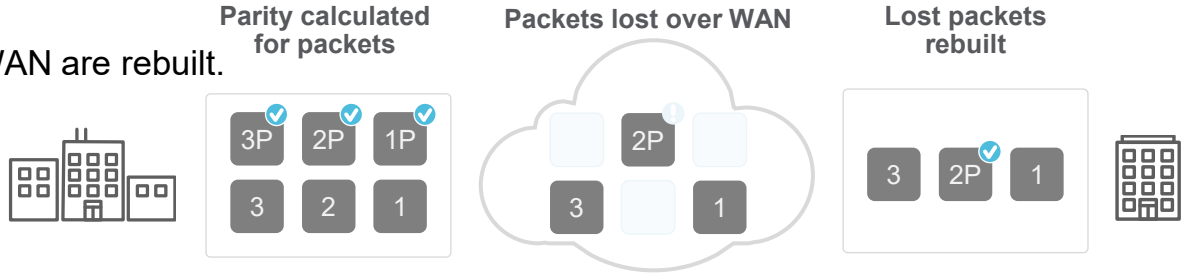
ID	Name	Priority	Min Bandwidth %	Min Bandwidth Kbps	Excess Weighting	Max Bandwidth %	Max Bandwidth Kbps	Max Wait Time (ms)
1	Real-Time	1	10	10000	100	100	100000	500
2	High Priorit	2	60	60000	1000	100	100000	100
3	Standard	3	30	30000	1000	100	100000	200
4		4	20	20000	100	100	100000	500
5		5	30	30000	100	100	100000	500

- 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

Adaptive QOS

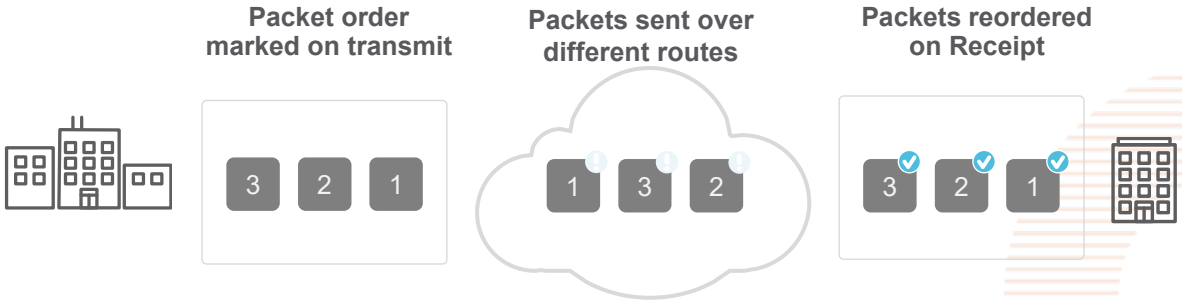
Packet Loss Correction

Packets lost in transmit across the WAN are rebuilt.



Out-of-Order Packet Correction

Packets delivered out-of-order across the WAN are reordered into the correct order.



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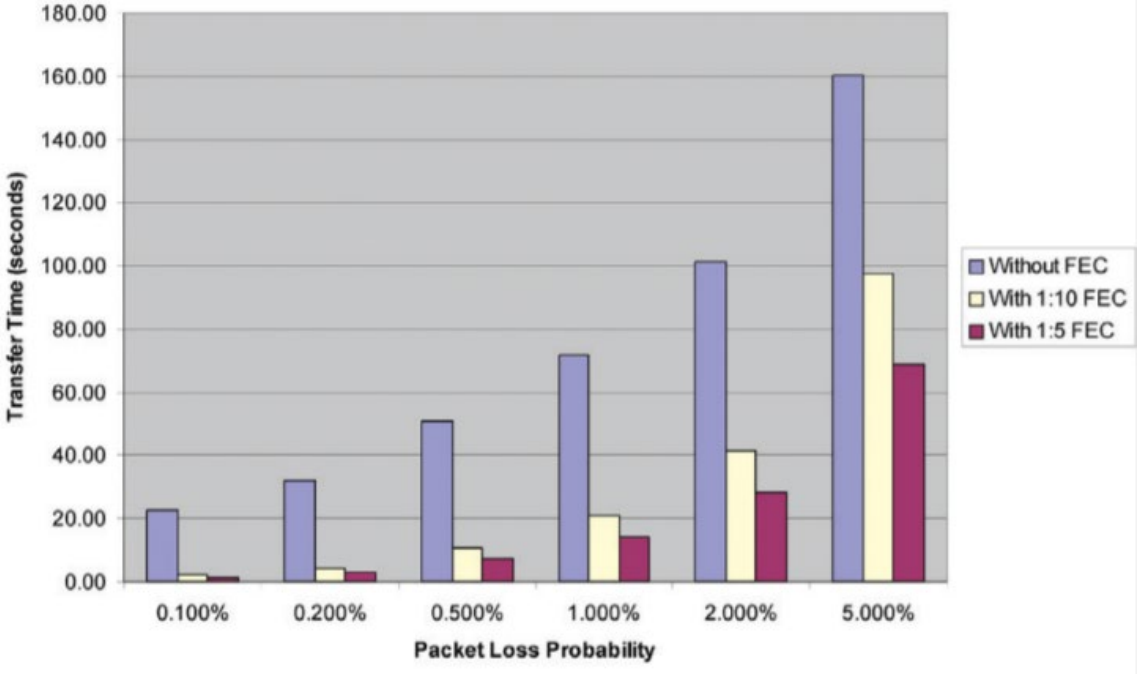
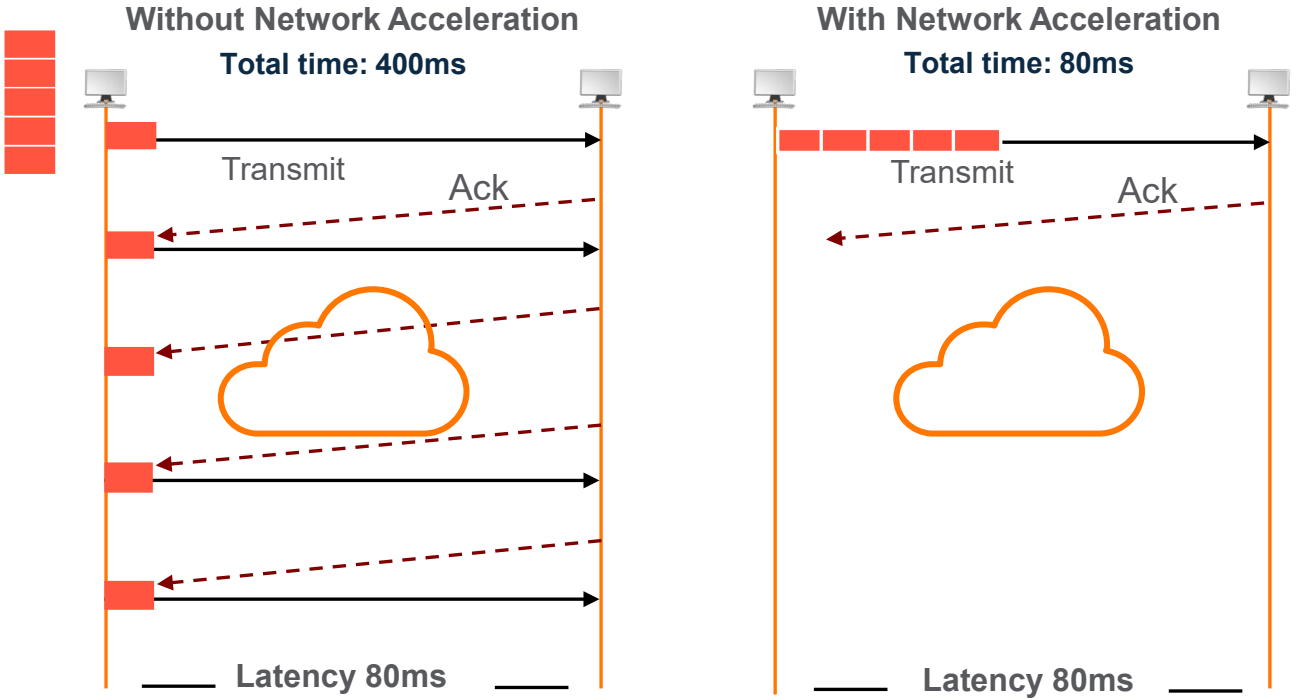
FEC – Mitigate the packet drops

1:5 FEC can even reduce a 5% loss to less than 1%



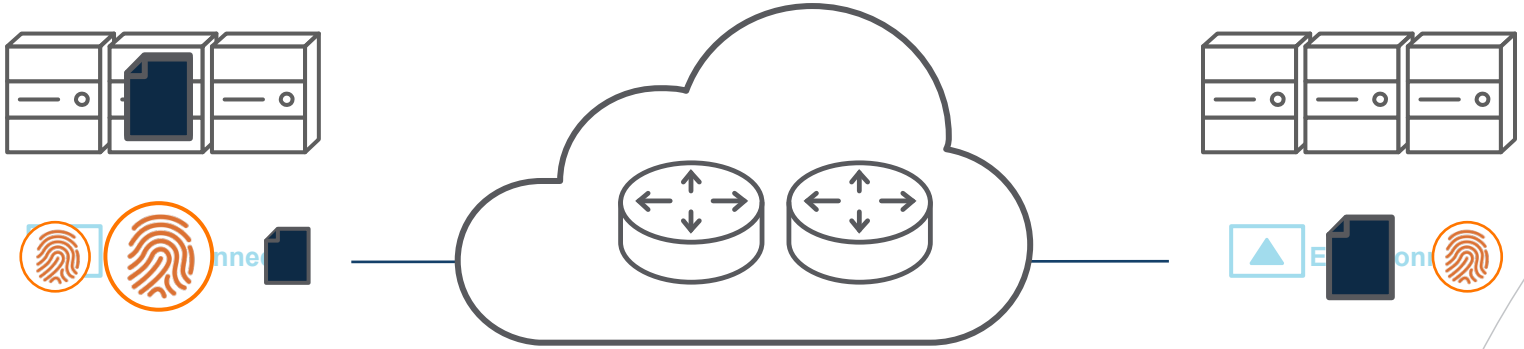
Latency Mitigation: Increased Window Size

Latency determined by distance, speed, congestion



Data Reduction Removes Congestion

Layer 3 byte-level deduplication



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

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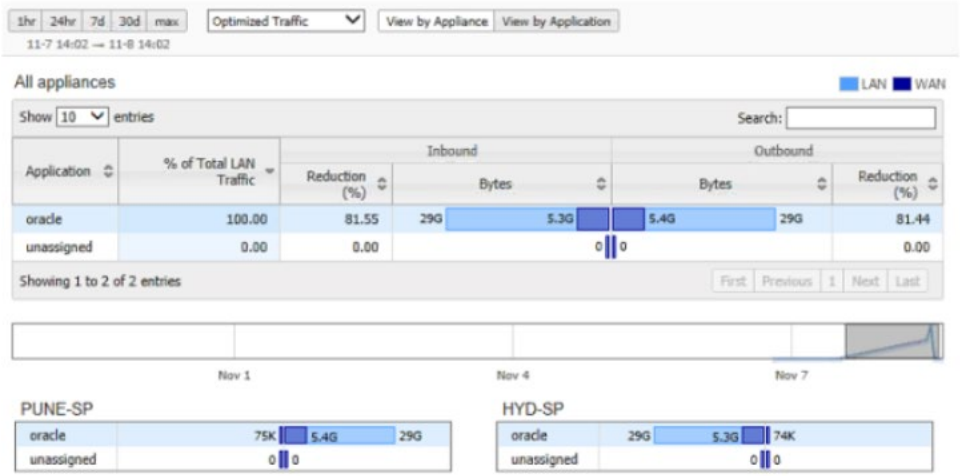
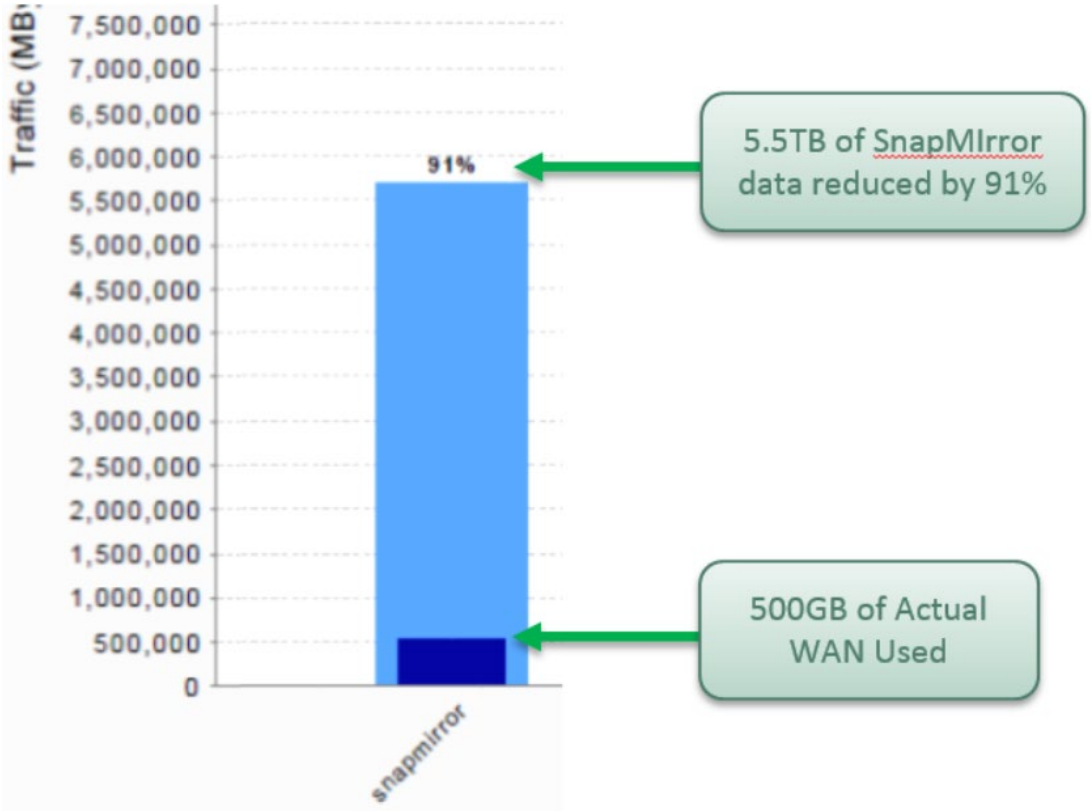
DC-DR Replication for oracle application

– Test results based on
– 29GB data set across 10Mbps WAN
– Test result
– Unoptimized 6.7 Hours
– Optimized 1.3 hours
– Oracle Optimization 81.55%
– 29GB data optimized and reduced to 5.3GB

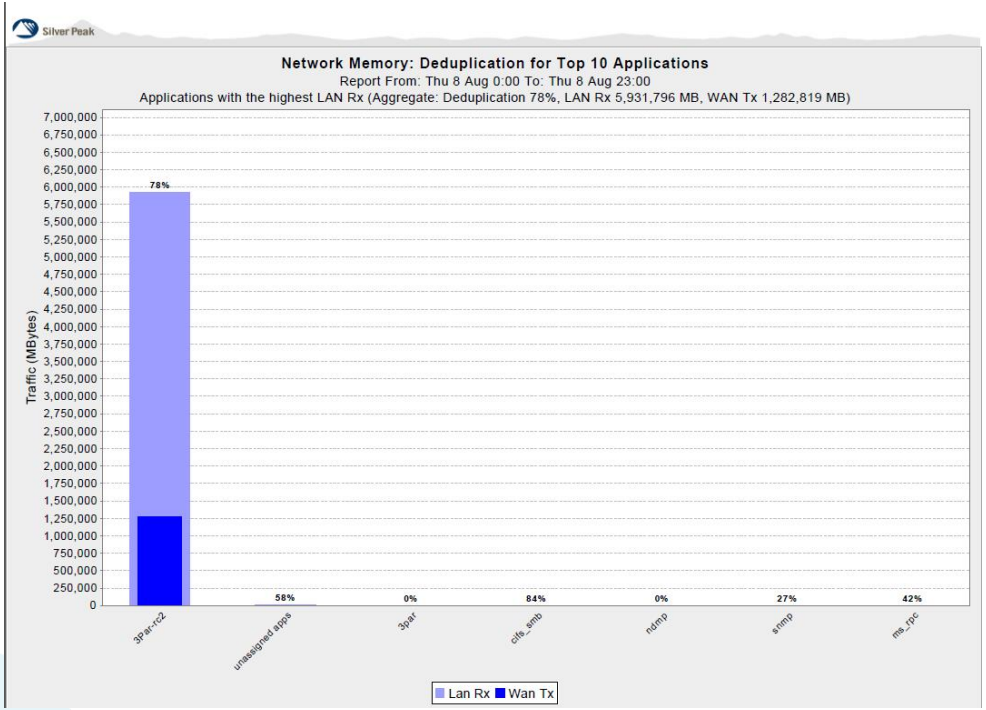


Netapp DC-DR Replication



Hadoop DC-DR Replication

3PAR DC-DR Replication



EMC DC-DR replication

1hr | 4hr | 12hr | 24hr | 72hr

All Traffic

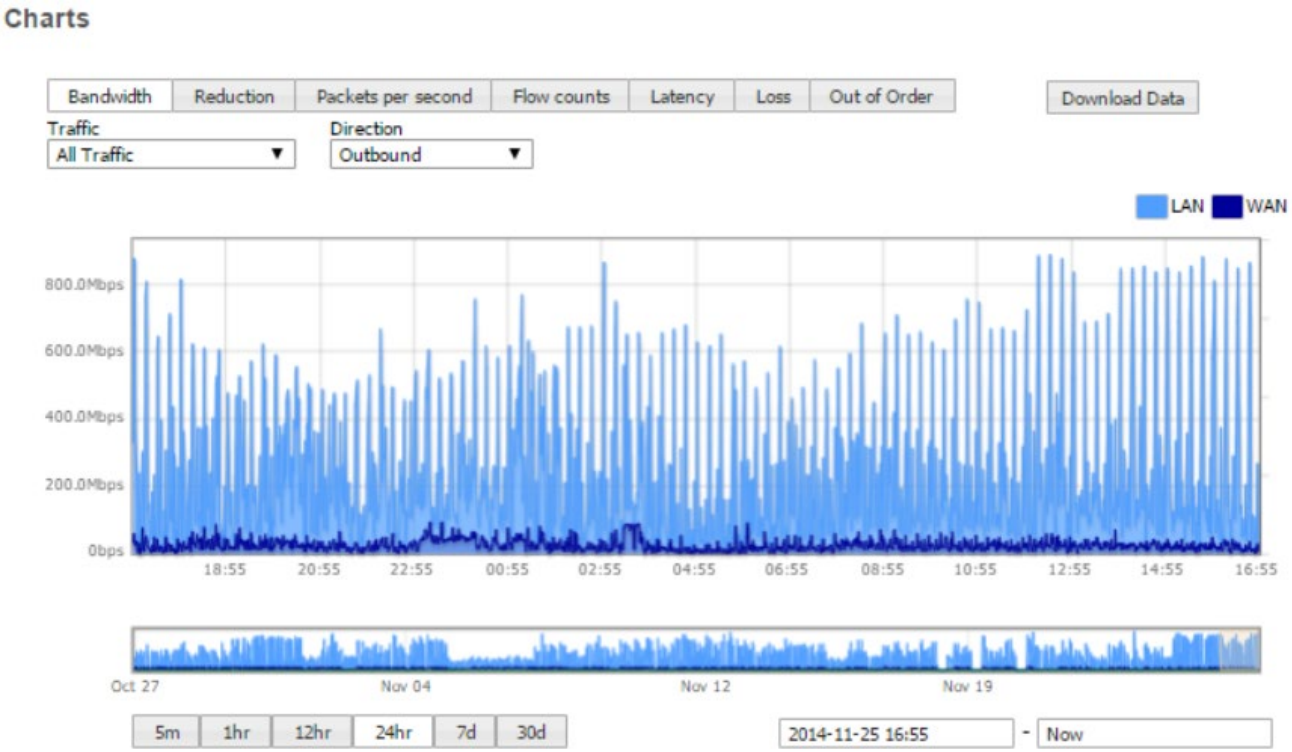
Download Data

LAN WAN

Show 100 entries

Application	% of Total LAN Traffic	Inbound		Outbound	
		Reduction %	Bytes	Bytes	Reduction %
recoverpoint	52.61	74.28	1.9G	65G 366G	82.14
datadomain	41.26	68.61	2.1G	154G 286G	46.17

Hyper-V Replication



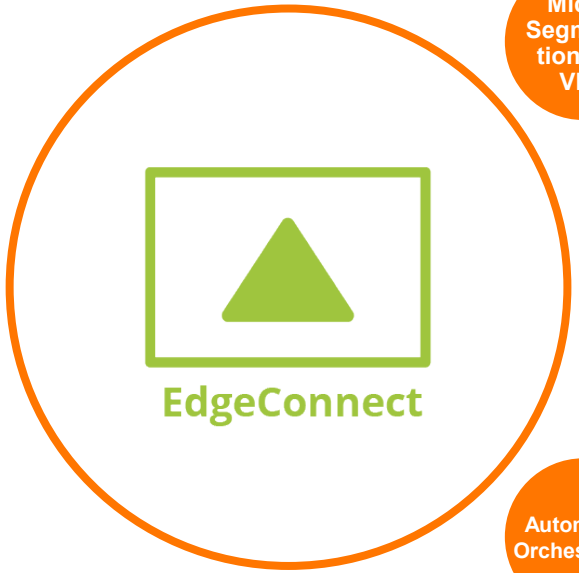
DC-DR Replication applications

Tight Integration with backup and replication products

– Hitachi Data Systems / Hitachi Data Systems / Hitachi Data Systems HDI
– HP 3Par
– IBM DS
– NetApp
– Veeam
– Double-Take
– Vmware
– Zerto
– Dell EqualLogic
– Cisco MDS
– EMC Symmetrix (VMAX/DMX) / EMC Data Domain / EMC Isilon / EMC Celerra / EMC VPLEX

Comprehensive DC-DR Security

Multi-dimensional approach to securing applications and achieving compliance



Micro-Segmentation and VRF

Segment traffic based on application security, compliance and performance requirements according to business intent

Data & Control Plane Security

Secure traffic between sites, ensures data integrity based on AES-256 encryption and SHA-2 hashing; control plane security

Stateful Zone-based Firewall

Eliminate the requirement for a separate firewall at branches to streamline the WAN architecture

Automated Orchestration

Automated orchestration with leading cloud-delivered security

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Management plane security

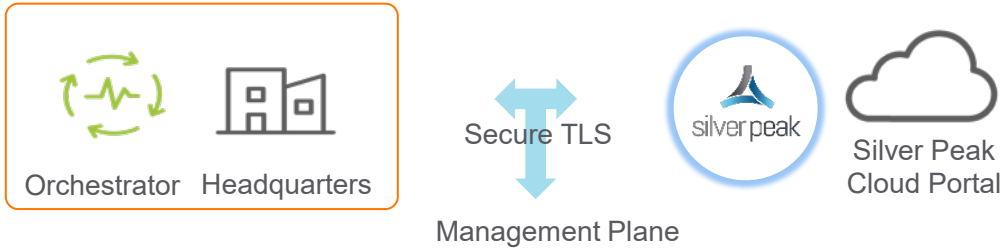
Secure Zero-Touch Provisioning provided by Cloud Portal and Orchestrator

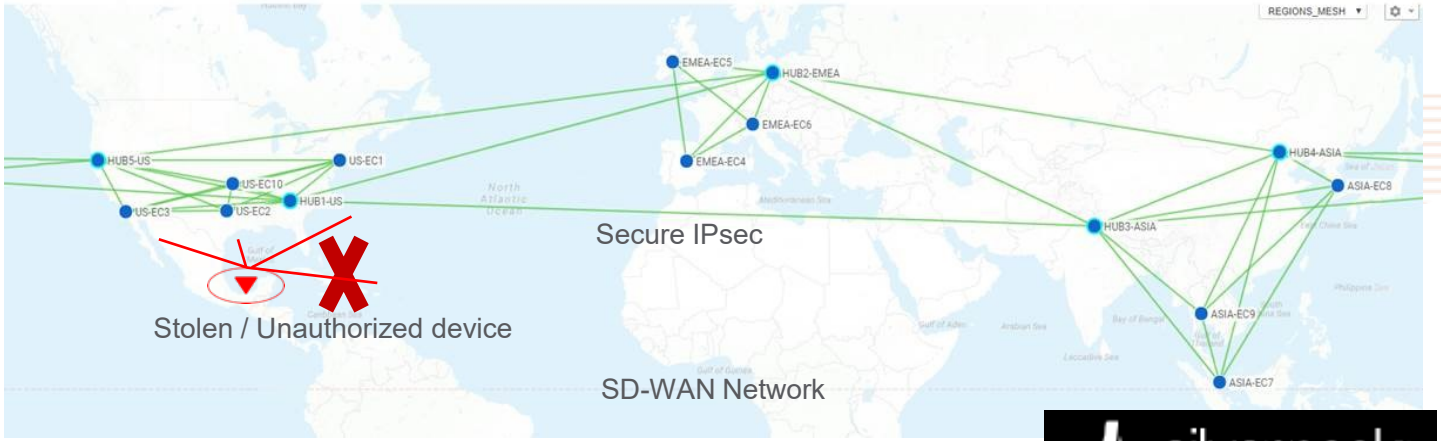
Two-step authentication authorization

- Silver Peak Cloud Portal
- Customer's Orchestrator

Rogue / Unauthorized devices

- Customer revokes access through the Orchestrator
- Drop all traffic
- Cannot download config
- Cannot join the SD-WAN





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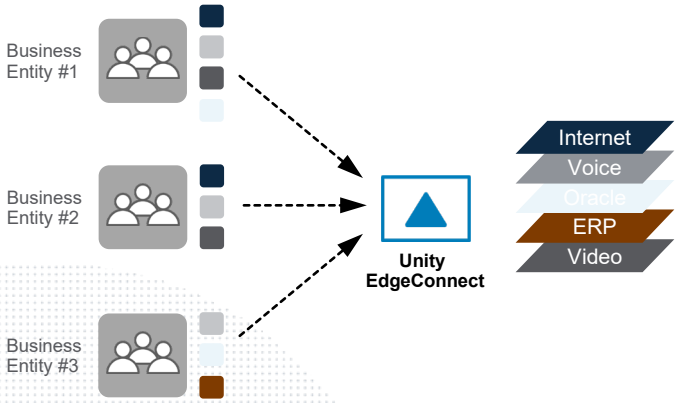
Advanced Segmentation (VRF)

- Establish granular policies across the network; reduce attack surface
- Configure microsegments: separate business entities share the same applications and WAN infrastructure
- Eliminate overlapping IP address conflicts - no service disruptions



Overlays & Breakout Policies for VRFs

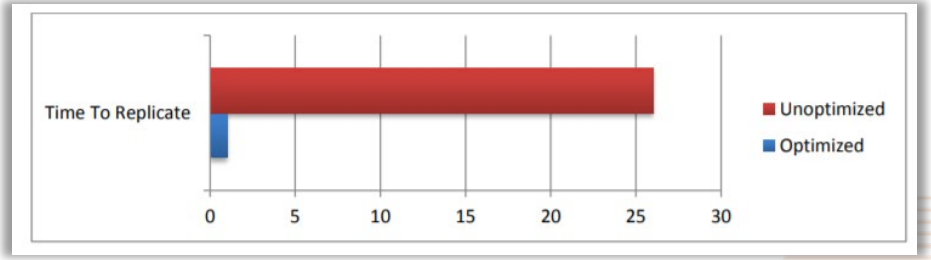
Segment Name: All

Segment Name	Internet	Voice	Oracle	ERP	Video
Default	Include	Include	Skip	Skip	Skip
Business Entity #1 (VRF1)	Include	Include	Include	Skip	Include
Business Entity #2 (VRF2)	Include	Include	Skip	Skip	Include
Business Entity #3 (VRF3)	Skip	Include	Include	Include	Skip

Save Cancel

Solution Highlights

- Solution can support various physical interfaces like 1 Gig / 10 Gig / 25 Gig
- VM or Hardware options
- Up to 5 Gbps optimized throughput and supports 10 Gbps WAN speed.
- Optimizes all IP enabled applications
- Solution supports both on-premise or cloud DCs
- Up to 512,000 optimized connections
- Horizontal scaling



MPLS time to replicate with and without Silver Peak

Thank you
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