

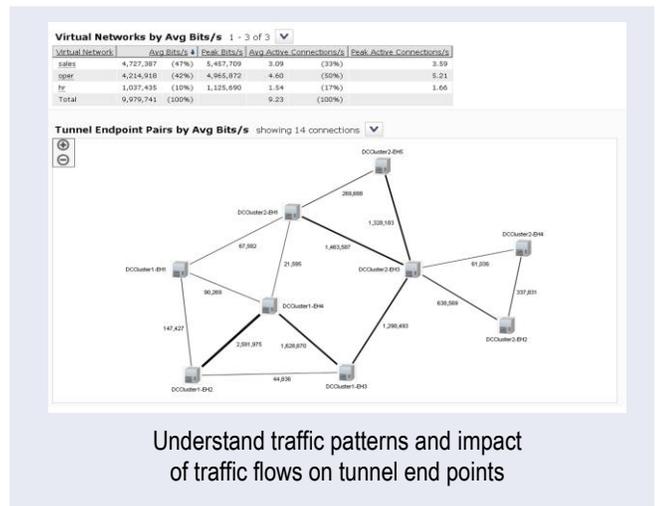
Performance Management for Physical and Virtualized Network Environments

Executive summary

VMware® NSX network virtualization platform is one of the cornerstones of the software-defined data center (SDDC) that is changing the paradigm of data center infrastructure. Network virtualization brings the operational model of provisioning server virtual machines to provisioning virtual networks.

Network virtualization utilizes encapsulation of virtual network traffic between hypervisors, decoupling the virtual network traffic from physical network configuration. The only requirement of the physical network is IP connectivity. This significantly reduces the complexity of the physical network and dramatically reduces operational costs.

Riverbed® and VMware are working together to provide comprehensive monitoring and troubleshooting capabilities across physical and virtual data center networks based on NSX and Riverbed® SteelCentral™ NetProfiler. NetProfiler is an industry-leading, application-aware network performance management solution that provides real-time, end-to-end visibility into the performance of critical business applications, across both physical and virtual networks.



Understand traffic patterns and impact of traffic flows on tunnel end points

The attraction of fully virtualized IT environments

With promises of agility and cost savings, it's no surprise that enterprises are moving to fully virtualized IT environments. However, the network has been a critical limiting factor keeping organizations from realizing the full potential of virtualization. Current network architectures are rigid, brittle, operationally intensive and increasing in complexity with each new feature and protocol.

VMware is the virtualization leader and just as VMware transformed the server operational model by creating a software abstraction layer between physical compute capacity and virtual machines, VMware NSX transforms the network operational model by delivering a software abstraction layer between virtual networks and the underlying physical network infrastructure.

Network virtualization transforms the operational model:

- **Reduce network and security provisioning time from days/weeks to minutes.** Just as a virtual machine (VM) can be provisioned in minutes, network and security services can now be programmatically provisioned at the same time, without any changes to the underlying physical network, no VLANs, no access control lists (ACLs), and no firewall rules changes.
- **More secure than physical networks.** Virtual networks are completely isolated from each other and from the underlying physical network by design; even before firewall rules or ACLs are applied in the virtual network. Virtual networks can have overlapping IP addresses and even support IPv6 over an IPv4 physical infrastructure.
- **Agility and Speed.** Virtual networks are not bound to the configuration or topology of the underlying physical network, so VMs can be attached to a virtual network wherever compute capacity is available. Virtual networks allow generalized physical network capacity to be repurposed on demand and support both virtual and physical workloads. Development, test and production environments, all with the same IP addresses, can operate on the same physical network at the same time.
- **Operational visibility.** Network virtualization enables a whole new level of operational visibility. Network management tools can now monitor and troubleshoot network connectivity for virtualized environments, and correlate flow information from both the virtual and physical domains to deliver unprecedented visibility.

Riverbed and VMware: jointly addressing operational visibility in virtualized environments

Realizing the ability to monitor, troubleshoot and report on network and application performance is necessary and critical for holistically optimizing the data center across physical and virtual environments. Riverbed and VMware have joined together to provide deep operational visibility across both physical and virtual environments. The two companies have jointly developed the instrumentation and management tools to correlate and present performance information across both virtual and physical domains. This new functionality extends NetProfiler performance management capabilities from monitoring the virtual switch/VDS within vSphere to the entire software-defined data center.

NetProfiler is the only application-aware network performance management (ANPM) solution to enable IT organizations to confidently embrace network virtualization by enabling network operations teams to:

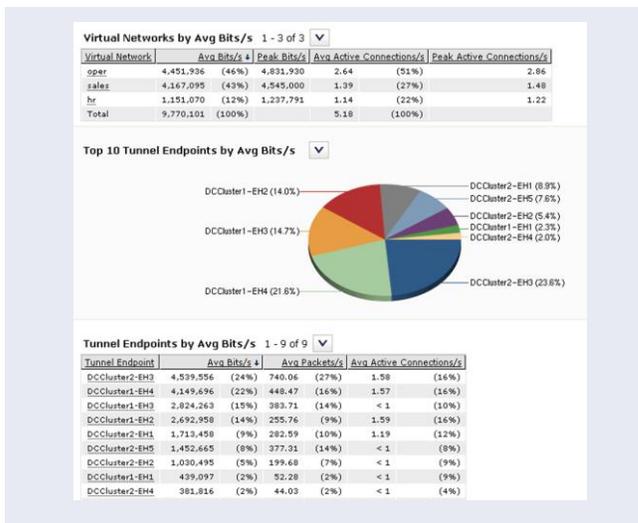
- Control and understand virtual overlay network performance
- Monitor and troubleshoot virtual and the physical network performance in a single solution
- Provide isolated views for each virtual data center performance and SLAs in multi-tenant data centers.

Riverbed end-to-end performance management

NetProfiler provides actionable, real-time information into network and application performance to help organizations make smarter decisions and troubleshoot performance issues faster and easier. It not only alerts to problems but also pinpoints where the problems are occurring and what’s causing them.

NetProfiler provides a simple but elegant architecture that seamlessly combines passive flow and packet collection in a single user interface for true end-to-end visibility across WAN, LAN, virtualized and/or cloud data centers. Some of the capabilities that set NetProfiler apart include:

- Application-centric performance dashboards for business relevance
- Automated performance analytics for early identification of issues
- Top-down troubleshooting workflows that streamline and accelerate troubleshooting
- Application decodes and transaction analysis for fast problem diagnosis
- Automated discovery to clearly understand the relationship and dependencies between infrastructure and applications



SteelCentral NetProfiler is available as an appliance or a fully virtualized software solution to enable enterprises, public cloud and other managed service providers to easily deploy it in support of their performance management requirements.

Solution benefits

The joint Riverbed and VMware solution enables organizations to provide complete visibility into their data center networks, both physical and virtual, allowing operators to make better decisions about their data center network. Riverbed SteelCentral is the first and only solution to provide comprehensive and unified visibility across the WAN, LAN, virtual overlay networks and cloud-based data centers to meet the rapidly changing needs of forward-thinking organizations. It enables network operations to find and fix network and application performance, no matter the architecture—traditional, server virtualized, or fully virtualized data centers.



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