Solution Brief

Accelerating SDN Monitoring Networks in Enterprise Data Centers

Dell and Big Switch Networks introduce an SDN enabled monitoring network solution that empowers tapping traffic everywhere and delivering it to security and monitoring appliances.

- First in a range of next-generation SDN network solutions from Dell and Big Switch
- Expand choice and capabilities for customers looking for best-of-breed Ethernet switch hardware, SDN OSs and SDN controllers
- Realize operational simplification using a centralized controller for management, automation and policy

Traditional monitoring network challenges

Over the last decade, the number of offline tools for network monitoring, security monitoring and troubleshooting have proliferated. Specialized "monitoring networks" emerged connecting production tap and span ports to these offline tools. First generation solutions relied on 1:1 connections between span ports or passive optical taps to connect offline tools to the production network. Second generation solutions used specialized hardware appliances with custom ASICs known as "network packet brokers" to connect multiple taps to multiple tools. However, price points and engineering complexity limit the number of tap and tool connections practical with this design.

Big Monitoring Fabric™: A practical application of SDN to solve an age-old, costly networking challenge

The Big Monitoring Fabric is an SDN solution that leverages industry-leading, customer proven Dell Ethernet switches to provide a highly scalable, flexible and cost-effective monitoring network. Using an SDN-centric architecture, Big Mon enables tapping traffic everywhere in the network and delivers it to network monitoring, security monitoring and troubleshooting tools. Big Mon is a strong candidate for an enterprise's first SDN deployment, because it operates on the monitoring network and can be deployed incrementally.

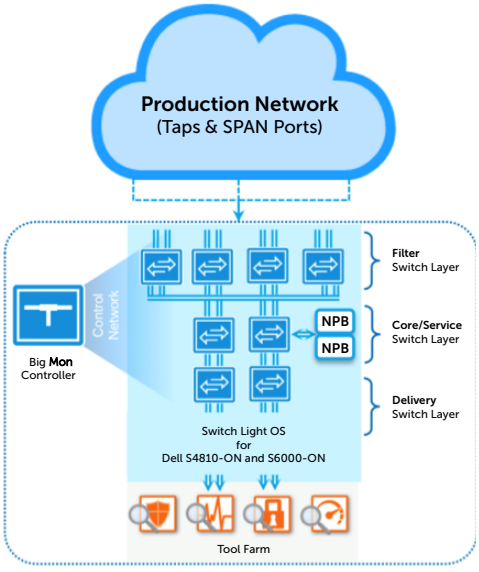

Figure 1. Big Monitoring network architecture

Some of the key features and benefits include:

- **Cost effective scale:** designs that scale from 48 to 1k+ tap/tool ports for network-wide visibility by adding Ethernet switches to the fabric
- **Speed:** Mix and match 1GE/10GE/40GE ports available for taps and tools by using different configurations of Dell switches to build the fabric
- **Filtering and marking:** Filtering and packet marking based on standard 5 tuple, advanced filters on packet header first 128 bytes and marking/decap of RSPAN traffic for VM-to-VM communication
- **Simple management and automation:** Single point of configuration with the Big Mon SDN Controller, with a GUI, CLI or REST API that scales from a single switch monitoring fabric to very large fabrics
- **Mult-tenancy:** Multi-tenant management and overlapping policy support to allow multiple teams (e.g. network operations and security) to share the same taps
- **Investment protection:** Use existing Network Packet Brokers as "service nodes" to leverage their advanced features, surrounding them with the Big Mon monitoring fabric to scale out tap/tool count and bandwidth

Big Monitoring Network Architecture

At the core of the Big Monitoring network is the centralized Big Mon Controller software that compiles user-defined policies into highly optimized flows that are programmed into the forwarding ASICs of Dell Ethernet switches running production grade Switch Light™ SDN operating system.

A typical Big Monitoring Fabric design has a layer of Ethernet switches labeled as "filter" switches and a layer labeled as "delivery" switches. Most switch interfaces in the filter-switch layer are wired to passive optical taps or switch/router/firewall SPAN ports in the production network and are configured as "filter interfaces" in the Big Mon Controller software. Switch interfaces in the delivery-switch layer are wired to tools and are configured as "delivery interfaces."

In smaller deployments, it is possible to have filter interfaces, delivery interfaces as well as service node interfaces on the same switch. In very large designs (500+ filter/delivery ports), an intermediate layer of switches known as the "core" layer can be added to increase bandwidth and scale.

Dell Networking high-performance Ethernet switches

Dell has been delivering high-performance, reliable networking solutions for over a decade and today powers some of the world's most demanding enterprise and cloud/Web 2.0 environments. For data centers, this means feature-rich Top-of-Rack and blade switching solutions and high-performance 10/40GbE networking fabrics that fit an organization's business and budget.

The broad Dell data center switching product portfolio now includes bare-metal options with its high-performance fixed form factor 1/10 Gigabit Ethernet S4810-ON and 10/40 Gigabit Ethernet S6000-ON top-of-rack switches for modern data center fabric architectures. These two new Dell switch offerings will also support the industry standard Open Network Install Environment (ONIE) for zero touch installation of alternate operating systems like the Switch Light OS.

Dell backs up each and every deployment with a comprehensive suite of design, deployment and management services to help customers of any size every step of the way. All of this translates directly into a capability set designed to fit any organization's needs, granting them and their business the power to do more.

Summary

Preventing performance issues and outages in an organization's networks is critical to maintaining the pace of business, and, as networks grow, monitoring and managing performance on these networks becomes increasingly complex and expensive.

Together Dell and Big Switch Networks are helping companies migrate to software defined networks starting with a highly functional and practical monitoring fabric entry point solution using Dell's market leading and field tested Ethernet switching platforms and Big Switch Networks Switch Light SDN OS and Big Mon Controller offerings.

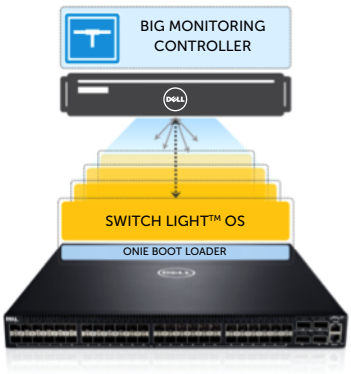

Figure 2. The Dell and Big Switch Network Open Networking solution

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