Overview

Big Switch Networks Big Monitoring Fabric Series

Simpler, Scalable, Economical

Product overview

At Hewlett Packard Enterprise, we help customers use technology to slash the time it takes to turn ideas into value. In turn, we transform industries, markets and lives. Open networking solutions from HPE free you from vendor lock-in. We also give you the ability to scale your cloud data center network to meet your business requirements, while using the resources that best suit your needs and lowering your costs. Big Monitoring Fabric together with HPE Altoline strengthen HPE's growing commitment to open networking.

Big Monitoring Fabric enables pervasive security and monitoring of network traffic for an organization and selectively delivers it to multiple security, monitoring, performance measurement and compliance tools—both Inline and Out-of-Band. Leveraging an Open Ethernet switch fabric and an SDN controller, Big Monitoring Fabric is a highly scalable and ultra-low cost (CAPEX and OPEX) network visibility solution.

Big Switch networks

Our mission is to deliver next-generation data center networking/monitoring solutions—enabling enterprises realize the benefits of simplified productivity, improved scalability, and pervasive security with a dramatically improved TCO.

Big Monitoring Fabric is the next-generation network packet broker, which provides a visibility fabric for monitoring and security of out-of-band/inline workloads in the enterprise datacenter, DMZ, extranet or public cloud* environments at cost-effective price points.

Big Monitoring Fabric (Big Mon/BMF) Overview

Big Monitoring Fabric is a modern 10G/40G/100G network visibility fabric that leverages high-performance, open Ethernet switches to provide pervasive security monitoring and visibility of an organization's network traffic at ultra-low CAPEX/OPEX costs. Using an SDN-centric architecture, Big Monitoring Fabric enables scale-out fabric for enterprise-wide monitoring, single pane of glass for operational simplicity, and multi-tenancy for multiple IT teams (NetOps, DevOps, SecOps) to simultaneously perform network monitoring using tenant-specific inline or out-of-band tools and policies.

Architecture: SDN software meets open switch hardware

The Big Monitoring Fabric is a next-generation Network Packet Broker (NPB) that has been designed from the ground-up to build a pervasive visibility fabric that addresses the challenges of current NPB-based monitoring solutions. Big Mon's architecture is inspired by Hyperscale Networking designs, which consist of Open Ethernet switch hardware, SDN controller software and centralized tool deployment.

Overview

The Big Monitoring Fabric architecture consists of the following components:

- **Cluster of SDN-enabled Big Monitoring Fabric Controllers**—an HA pair of virtual machines or hardware appliances—that enable centralized configuration, monitoring and troubleshooting in a simplified manner.
- **Big Switch's SDN-enabled Switch Light OS is a lightweight OS,** that runs on the switches in the Big Mon fabric. The ONIE deployable Switch Light OS leverages complete HW ASIC capabilities to support production-grade data center features.
- **Open Ethernet switches** HPE Altoline 6921, Altoline 6941 and Altoline 6960. The merchant silicon networking ASICs used in these switches are the same as used by most incumbent switch vendors and have been widely deployed in production in hyperscale datacenter networks. These switches ship with Open Network Install Environment (ONIE) for automatic and vendor-agnostic installation of third-party network OS.
- **Big Mon Service Node (optional)**—an x86-based appliance that connects to the Big Mon fabric (either single or as part of a service node chain) to provide advanced packet functions like de-duplication, packet slicing, header-stripping, regex matching, packet masking and NetFlow generation.

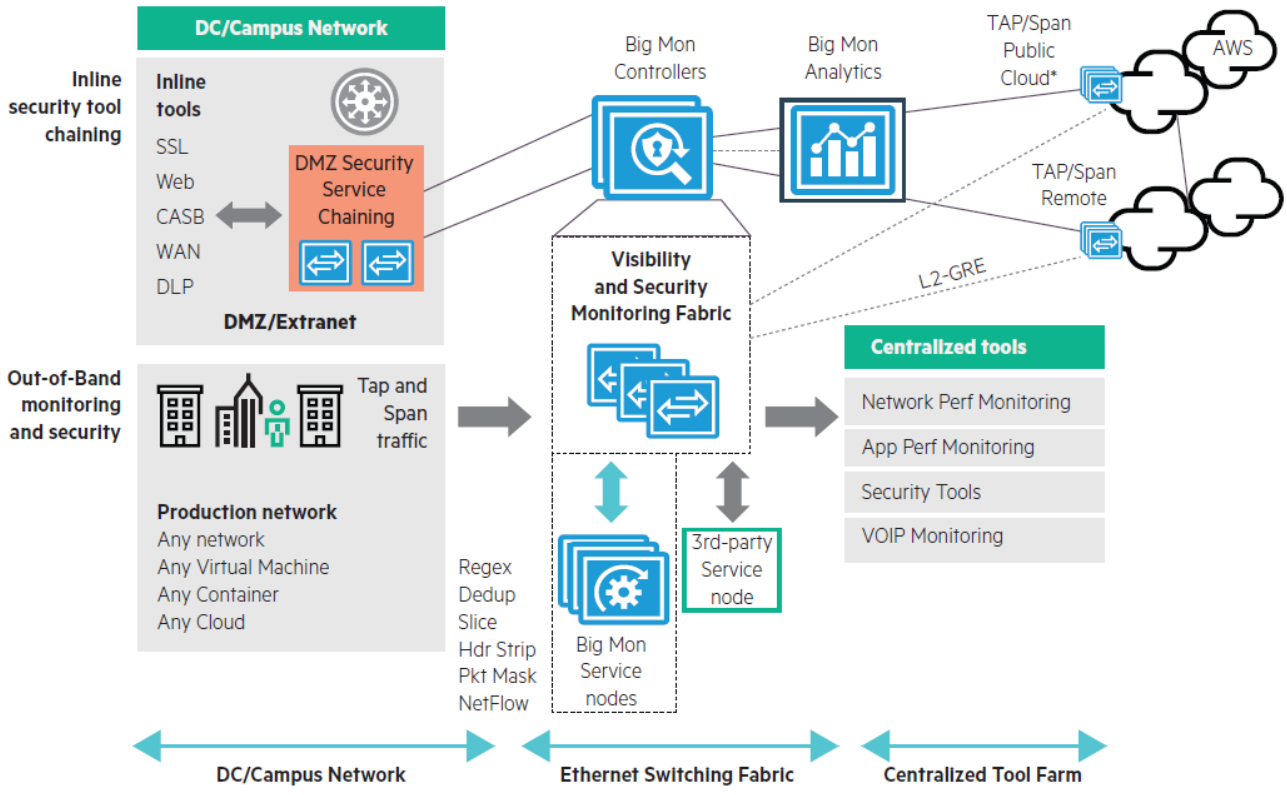

Figure 1. Big Monitoring Fabric—Architecture

Significant CAPEX/OPEX savings

The Big Monitoring Fabric enables optimized and efficient monitoring while providing a multi-fold reduction in total cost of ownership (TCO). High TCO of NPB-based approach is due to ever-expanding box-by-box deployment and proprietary hardware—which results in box-level limited datacenter visibility. Additionally, under-utilization (or inefficient use due to organizational silos) of the monitoring tools further increases TCO.

Overview

Open Ethernet switch economics
Big Monitoring Fabric utilizes the underlying cost efficiencies and high performance (10G/40G/100G) of open Ethernet switches, and as a result, it is much more cost-effective to monitor larger volumes of network traffic than vertically integrated NPB solutions.

SDN-enabled operational efficiencies
Big Monitoring Fabric is provisioned and managed through the single pane of glass— Big Monitoring Fabric controller CLI, GUI or REST APIs. This operating model allows for an easier integration with existing management systems as well as monitoring tools and hence significantly reduces the operational costs associated with box- by-box management of traditional NPBs

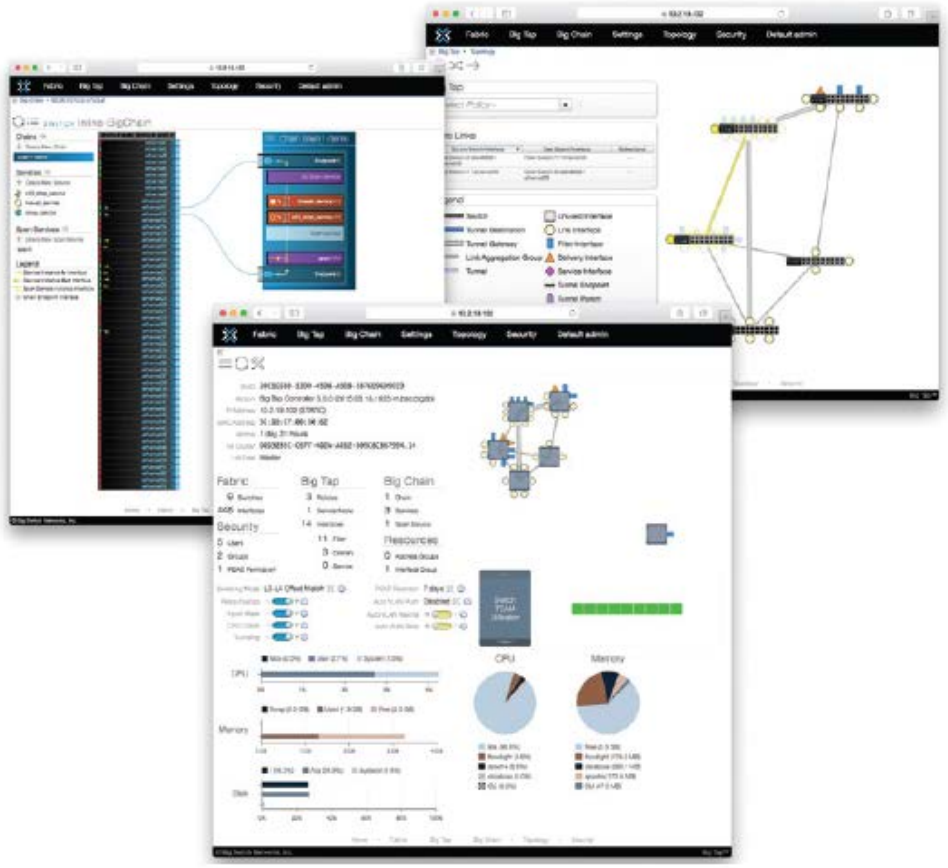

Figure 2. Monitoring Fabric—Graphical User Interface (GUI)

Big Monitoring Fabric—Product description

BMF switches can be deployed in either of the two deployment modes:

- **Out-of-Band**—Deployed adjacent to the production network. Connects to SPAN/TAP ports from the production network.
- **Inline**—Deployed in the DMZ or Extranet (production network).

Big Monitoring Fabric Controller continues to be the single, central point of management for all its out-of-band as well as inline deployed switches.

Some of the advanced features of Big Monitoring Fabric include:

Overview

Application Protocol Recognition (or Deeper Packet Matching): Big Monitoring Fabric enables HW-based deeper packet matching capability (as shown in Figure 3) to recognize application protocols and their attributes. With ability to match up to 128 bytes of each packet at line rate, Big Mon allows more sophisticated monitoring policies to be written that can match on inner header fields for encapsulated packets such as MPLS, VXLAN and GRE and/or mobile 4G/LTE protocols such as GTP and SCTP.

NetFlow/sFlow Generator & Collector: Big Mon supports NetFlow/sFlow generation and collection capability that provides real time flow-level visibility into the production network. It provides real time application level visibility, including tunneled or encapsulated traffic, enables detection of security attacks like DoS/DDoS and supports sub-second triggering.

The NetFlow/sFlow configuration for Big Monitoring Fabric is done centrally through the controller and is applied to the fabric switches/service nodes as applicable. Advantages of using flow generation on Big Monitoring Fabric include:

- Centralized, simple and consistent configuration across all switches, using the centralized configuration through Big Mon controller
- Off-loads NetFlow/sFlow record generation burden from the production switches to the monitoring fabric

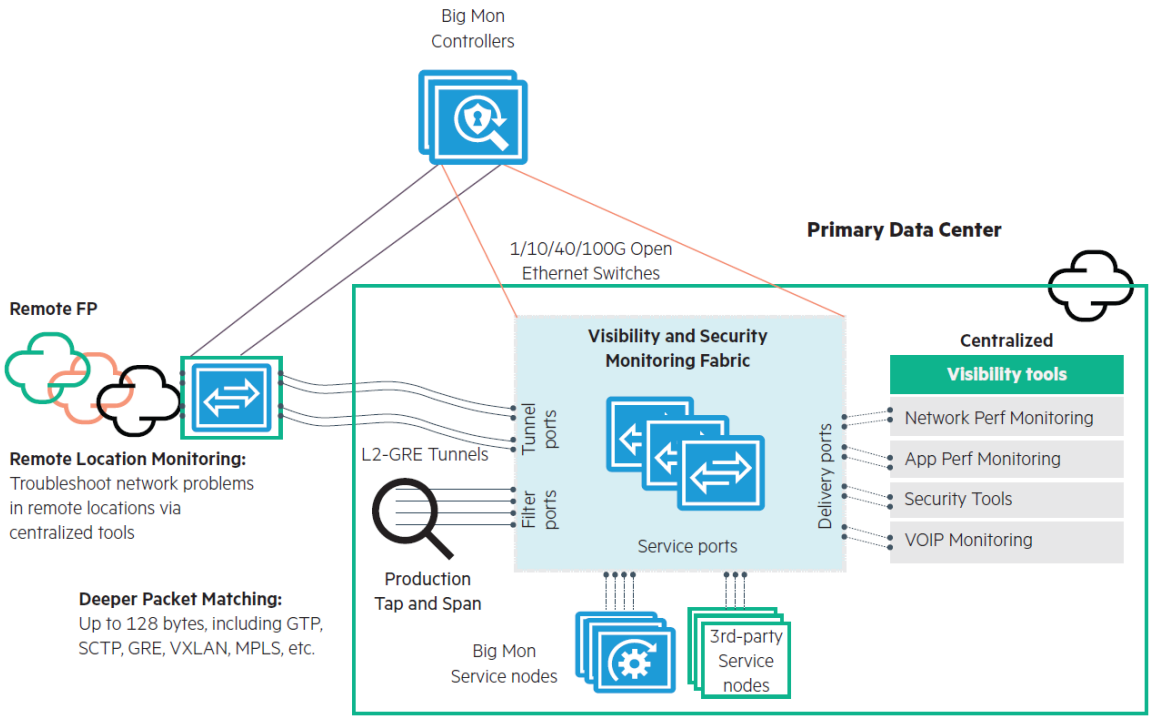

Figure 3. Big Monitoring Fabric—Monitor every location with centralized tools and management

Big Monitoring Fabric: Out-of-Band

As data center networks transition to modern 10G/40G and 40G/100G designs to meet demands of cloud computing, data analytics and/or 4G/LTE mobile services, the corresponding traffic monitoring networks also need to transition to next-generation designs. The exponential growth seen in data center size, bandwidth and traffic, as well as the demand for a higher portion of network traffic to be monitored have been testing the limits of the traditional monitoring/visibility designs. Traditional box-by-box approach based on proprietary Network Packet Brokers (NPBs) has proven to be cost prohibitive and operationally complex for organization wide monitoring.

Overview

With Big Mon's scale-out architecture, simplified operations and open switch economics, the Out-of-Band deployment mode is rapidly becoming an attractive replacement for NPBs, creating two popular use cases:

- **Monitor every Rack** (monitor or tap every link)
- **Monitor every Location** (monitor or tap remote DCs/POPs/branches/sites or public cloud* environments)

Big Monitoring Fabric supports topology agnostic, highly scalable fabrics. Depending on the customers' requirements, a range of topologies is supported—from a single-switch fabric to a scale-out, multi-switch/multi-layer fabric. A typical multi-layer Big Monitoring Fabric design has a layer of open Ethernet switches labeled as "filter" switches and a layer of open Ethernet switches 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 user interface. Switch interfaces in the delivery-switch layer are wired to tools and are configured as "delivery interfaces". Filter interfaces (where packets come in to the fabric) and delivery interfaces (where packets go out of the fabric to tools) represent the primary functions of the Big Monitoring Fabric.

In scale-out designs:

- A 3-layer topology is recommended in which the 3rd "core" layer of switches may be used between the "filter" and the "delivery" switch layers. These switches aggregate traffic from the filter switches and send them to requisite delivery switches to forward to the necessary tools.
- "Service interfaces" may be configured where packets can be sent to one or multiple Big Monitoring Fabric Service Nodes or NPBs for advanced packet services, like de-duplication, packet slicing, regex matching, header stripping, packet masking or NetFlow Generation in a chain prior to delivery to the security or performance monitoring tools. The Big Mon Service node provides a simple, high-performance and cost-effective solution wherever specialized packet functions are required. At the same time, customers can re-purpose (and thus protect their investment on) their existing high-priced NPBs in an even more efficient manner, by chaining them as services nodes to the Big Monitoring Fabric.
- Monitor Every Location: Big Monitoring Fabric can be extended across L3 WAN to enable monitoring of remote DCs/POPs, colo facilities, campus/branch locations, retail sites as well as public cloud* environments. This allows centralization of monitoring tools and staff in few data centers, thus dramatically reducing CAPEX and OPEX cost while allowing operations teams to monitor networks across the entire organization. By simply deploying a commodity Ethernet switch at each monitored location, the entire Big Monitoring Fabric (including remote location switches) is operated and managed centrally via the BMF Controller with high availability.

Overview

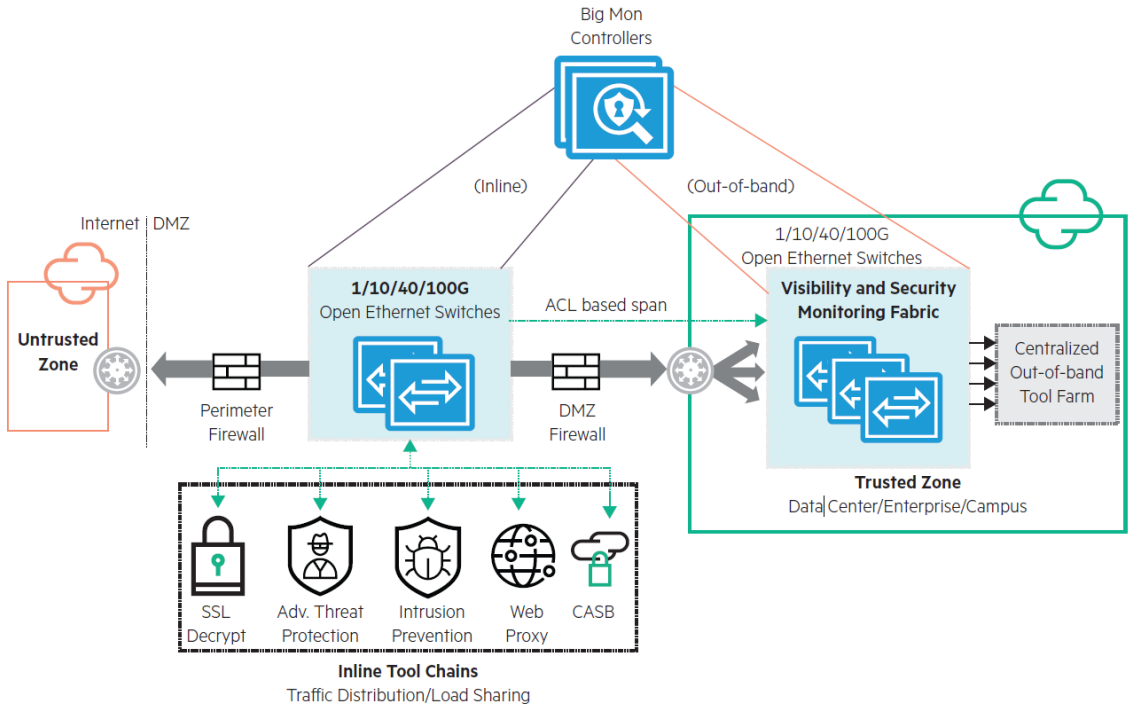

Figure 4. Big Monitoring Fabric Inline—In-band Security and Monitoring Tool Chaining in the DMZ

Inline

Network security for organizations has never been more important in light of continued cyber attacks. Additionally, security practices that monitor/secure the network are rapidly changing, as the networks are demanded to provide more services like cloud computing, Big Data, and BYOD.

As a result, it is paramount to design and maintain the high-performance and resilient characteristics of the network, while ensuring that it is compliant and secure against intrusions/attacks. To address these challenges, customers prefer using inline monitoring and security in their DMZ/Extranet environment. Security tools, by virtue of being inline, can assess every packet and actively prevent or block intrusions that are detected before they can manifest and do the damage. However, inline security architecture poses new challenges in terms of high availability, continued maintenance, and scalability.

Big Mon Inline enables pervasive security in the DMZ and addresses the challenges faced by traditional solutions while offering lower-cost and SDN-centric operational simplicity.

Big Mon Inline consists of a Big Mon Controller and open Ethernet switches deployed in High availability configuration. The inline security tools directly connect (optionally via link aggregation) to these Ethernet switches. Leveraging the Big Mon controller as the central point of management, Big Mon Inline configures policies that create paths through the inline tools. The solution supports load balancing across multiple instances of the same tool as well as chaining of a set of tools on a per-policy basis.

Key feature highlights:

High availability architecture

- Highly resilient against network, tool or controller failures.
- Supports customizable inline health check with aggressive health timers.

Tool chaining and sharing

Overview

- Support chaining of up to 5 tools in a single chain. Supports different tool chains for traffic coming into/leaving the DMZ. Additionally, the same tool interfaces can also be shared (optional) across multiple chains on the switch.
- Support single-armed service/tools

Tool oversubscription/load balancing

- Load balance higher data bandwidth (10G/40G/100G) across multiple instances of lower bandwidth tools (10G/40G).

Enhance tool efficiency

- Send only relevant traffic (as opposed to all traffic).
- Supports dynamic, programmatic (REST API based) configuration to drop certain marked flows (e.g. DDoS) or even bypass (whitelist) certain flows for a tool on the switch. In such scenarios, the fabric switch drops the marked flows, rather than sending the flows to the tool to drop them.

Simplify multi-team operational workflows

- Single-pane-of-glass management/ configuration; No complex, error-prone PBRs needed; easily load-balance or chain tools.
- Replicate certain traffic (at line-rate) via a rule-based SPAN to send to offline tools for further processing.
- The Big Mon Controller is the unified, single point of management for inline/out-of-band monitoring.

Big Monitoring Fabric features

Feature	Description/benefit
Cloud-Native/Virtual Workload Monitoring (VM/Container/Cloud)	• Support scalable, agentless monitoring of Virtual Machines. • Support centralized, dynamic VM monitoring*. • Support centralized, dynamic container monitoring*. • Monitor cloud-native workloads and deliver them to either cloud-based or on-premise monitoring tools*.
BigSecure Architecture	• Architecture enabling Dynamic Cyber-defense for Terabit DDoS attack Mitigation. • Enables DDoS detection tools to offload dynamic, large scale attack mitigation to the underlying network.
Network-Wide Visibility (Monitor or Tap Every Rack)	• Packet Filtering, Aggregation, Tool Port Load-Balancing and Packet Replication functions. • Single switch or scale-out 1/2/3 layer Fabric designs: 10G, 40G & 100G. • Centralized fabric/policy definition and instrumentation of open Ethernet switches within the network. • Programmatic Event-triggered monitoring (via REST API). • Multiple Overlapping Match Rules per Filter Interface based on a variety of L2, L3, L4 header as well as via Deeper Packet Matching (DPM) attributes. • Time/packet based scheduling of Policies. • Ensures efficient utilization of open Ethernet switch capabilities via Controller Policy Optimizer Engine. • High-availability for the Controller as well as the Fabric. • Auto Fabric Path Computation that detects and responds to failures in the monitoring network.

Overview

High performance, highly scalable Network Monitoring Fabric

- Policy-based load balancing of core links with failover detection to efficiently utilize fabric bandwidth and ensure resiliency.
- Detection of service node/link failure and an option to bypass the service.
- Link Aggregation (LAG) in the open Ethernet fabric (including across core links, service node links and delivery links).
- Tagging policy or tap (filter) interfaces.
- Supports a variety of security and monitoring tool vendors.
- Supports a variety of NPBs as stand-alone or chained Service Nodes

Centralized Management, configuration, troubleshooting

Big Monitoring Fabric Controller is single-pane-of-glass for fabric and policy management.

- Policies can be configured from a centralized controller to forward flows from multiple filter interfaces to multiple delivery interfaces, including optional service nodes. Packet replication is made at the last common node to optimize the fabric bandwidth.
- GUI, REST API, and CLI for configuration and viewing operational state.
- Centralized interface, flow and congestion statistics collection.
- Simplified install/upgrade of the fabric via the Big Mon Controller (Zero Touch Fabric)
- Supports IPv6 Management IP address.
- Supports virtual IP addresses for the controller HA pair.

Multi-DC/Multi-site tunneling
(Tap every location)

- Centralized monitoring of remote DCs/POPs/branches/sites (across L3 WAN).
- Support tools located in a single tool farm in the centralized DC in a centralized DC.
- Replication of packets across tunnels.
- Tunneling at 10G, 40G and 100G bandwidths.
- Rate limiting of monitored traffic before entering L3 WAN.
- Tunneling enabled on a per-switch basis.

Production network visibility, telemetry and analytics

Big Monitoring Fabric further facilitates trouble-shooting and simplifies operations and management with the Production Network Visibility features shown in real-time as well as in time- sorted historical views. The modern, graphical GUI provides a lot of information such as:

- Host Tracker: shows detailed information about hosts in the production network.
- Subnet Tracker: shows IP subnets used in the production network.
- Tap Tracker: shows devices connected to TAP interfaces in the production network.
- DHCP Tracker: shows which subnets, served by DHCP servers are in the production network.
- DNS Tracker: shows which DNS are being used to resolve domain names in the production network.
- sFlow/NetFlow Generator & Collector: provides clear visibility on the activities in the production network.
- Display easy to read graphical views on Big Mon's policy, interface and event statistics.
- Provides thresholding and alerting mechanisms to provide up to date visibility on the system status.

Advanced filtering and deeper packet matching capabilities

- L2/L3/L4 header filtering on ingress and packet replication (as required) in the fabric for multiple egress tools.
- Deeper Packet Matching (DPM) with masking (up to 128 bytes in packet). Supports matching on inner header fields for encapsulated packets (e.g., MPLS, VXLAN, GRE) and/or protocols (e.g. GTP, SCTP).
- IPv4 and IPv6 based filtering.
- IPv4, IPv6, MAC Address masking, TCP Flags, DSCP matching.
- Support filtering on inner VLAN of a Q-in-Q packet

Security and controlled access (Monitoring as a service)

- TACACS+, RADIUS based authentication and authorization.
- Role-Based Access Control (RBAC) for administratively defined access control per user.
- Multi-tenancy for advanced overlapping policies across multiple user groups to monitor the traffic from the same tap interface to various tool interfaces.

Overview

	• Tenant-aware Web-based management GUI, CLI and REST API. • Self-service monitoring across multiple groups/business units using the same underlying infrastructure.
Packet capture (with Controller Hardware Appliance only)	• Quick and easy 10G interface available for packet capture on the controller hardware appliance. • Additional 1TB hard disk available • Configurable auto deletion of older pcap files.
Marker Packet Generation	• Injection of a "marker" packet into the tool or pcap file.
Specialized Packet Functions	• Packet De-duplication—Enhances tool efficiency, by dropping duplicate packets. • Packet Slicing—Improves security and tool throughput by stripping off the payload. • Packet Masking—Improves security by hiding user/confidential information such as Credit card, SSN, passwords, medical or financial data to comply with SOX, HIPAA and PCI regulations. • Regex Pattern matching—Improves filtering of traffic based on regex patterns anywhere within the packet. • Header stripping for VXLAN, Cisco Fabric Path, LISP, ERSPAN and MPLS packets. Generic user-defined header stripping function is also supported. • NetFlow Generation Function will also be supported. • L2GRE tunnel packet decapsulation. • VLAN tag stripping—Useful for stripping RSPAN tag. • VLAN tag push—Useful for filter interface tagging. • Match on inner packet post stripping. • Additional specialized packet functions (like packet obfuscation, and time-stamping) can be realized by service chaining third-party NPBs as service nodes.
Fabric wide CRC check (Graphical User Interface)	• Allow/disallow bad CRC packets in the production network to reach the tools for analysis.
Rich Web-based GUI	• The Dashboard shows the resources used by the fabric as well as a bird's eye-view of the topology • A highly attractive as well as functional GUI Topology view which shows: – All the switches/ports in the fabric. – Paths taken across the fabric on a per-policy basis. – An intelligent Context sensitive Properties Panel triggered by a mouse-over on a topology object. • Customizable tabular views which are persisted as user preferences. • Various table export options like JSON, CSV are available throughout the GUI. • Presents a highly intuitive, simplified management and operations workflow.
Support for Ethernet-based open switch vendors	Support for 10G, 40G and 100G HPE Altoline switches (Altoline 6921, Altoline 6941, and Altoline 6960). • For the complete list of supported switch vendors/configurations as well as optics/cables, included in the Big Monitoring Fabric Hardware Compatibility List (HCL), visit **http://www.hpe.com/us/en/networking/data-center.html**

Configuration

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

Hardware Controller Appliance

BSN BMF Appl HWB HPE Prp Need Sup • Big Switch Networks BMF Controller Appliance HWB HPE Server Based Perpetual Need Support	JL552A See Configuration **NOTE:** 1, 3
PDU Cable NA/MEX/TW/JP • C15 PDU Jumper Cord (NA/MX/TW/JP)	JL552A#B2B
PDU Cable ROW • C15 PDU Jumper Cord (ROW)	JL552A#B2C
High Volt Switch to Wall Power Cord • HPE 2.3m C13 to NEMA 6-15P Pwr Cord(J9936A)	JL552A#B2E
No Power Cord • No Localized Power Cord Selected	JL552A#AC3

Virtual Controller Appliance

BSN BMF Cntrlr VM SW 3Rk Prp Nd Sp E-LTU • Big Switch Networks BMF Controller VM SW (Max Scale 3 Racks) Perpetual Need Support E-LTU	JL529AAE See Configuration **NOTE:** 2

Configuration Rules:

NOTE 1 OCA Blue **NOTE:** If Managing > Six (6) but < Thirty Two (32) Leaf Switches, use this HWB Hardware Appliance

NOTE 2 OCA Blue **NOTE:** If Managing < Six (6) Leaf Switches in P Configuration (without Virtual Switch), use this Virtual Controller

NOTE 3 Localization (Wall Power Cord) required on orders without #B2B, #B2C (PDU Power Cord) or #B2E. (See Localization Menu)

Remarks:

OCA Blue **NOTE:**
Attention Sales, Partners/Distributors: All BOMs containing Big Switch Networks SKUs must be registered before a quote can be generated or an order can be placed.
Please request confirmation via the regional email nodes listed here before proceeding.

APJ: **apj-bsn-deal-registration@hpe.com**
EMEA: **emea-bsn-deal-registration@hpe.com**
America: ams-bsn-deal-registration@hpe.com

Configuration

Switch Licenses

SWITCH LICENSES Out of Band (OOB) for BMF

For JL552A and JL529AAE System (std 0 // max 999) User Selection (min 0 // max 999) per HW or VM Appliance

BSN BMF OOB Swh SW 1800G 1y 24x7 E-LTU JL514AAE

- Big Switch Networks BMF OOB Switch SW for Max 1800G BW 1yr Subscription 24x7 Support E-LTU

BSN BMF OOB Swh SW 1800G 3y 24x7 E-LTU JL515AAE

- Big Switch Networks BMF OOB Switch SW for Max 1800G BW 3yr Subscription 24x7 Support E-LTU

BSN BMF OOB Swh SW 1800G 5y 24x7 E-LTU JL516AAE

- Big Switch Networks BMF OOB Switch SW for Max 1800G BW 5yr Subscription 24x7 Support E-LTU

BSN BMF OOB Swh SW 3200G 1y 24x7 E-LTU JL517AAE

- Big Switch Networks BMF OOB Switch SW for Max 3200G BW 1yr Subscription 24x7 Support E-LTU

BSN BMF OOB Swh SW 3200G 3y 24x7 E-LTU JL518AAE

- Big Switch Networks BMF OOB Switch SW for Max 3200G BW 3yr Subscription 24x7 Support E-LTU

BSN BMF OOB Swh SW 3200G 5y 24x7 E-LTU JL519AAE

- Big Switch Networks BMF OOB Switch SW for Max 3200G BW 5yr Subscription 24x7 Support E-LTU

Configuration Rules:

Remarks:

OCA Blue **NOTE:**
Each Switch Software Subscription SKU contains a per switch price for the period defined by the SKU; includes support. Optional BMF Service Nodes can be added for OOB Licenses.

If the switch has a bandwidth <= 1800G, then select any of the following:
JL514AAE - BSN BMF OOB Swh SW 1800G 1y 24x7 E-LTU
JL515AAE - BSN BMF OOB Swh SW 1800G 3y 24x7 E-LTU
JL516AAE - BSN BMF OOB Swh SW 1800G 5y 24x7 E-LTU

If the switch has a bandwidth > 1800G but <= 3200G, then select any fo the following:
JL517AAE - BSN BMF OOB Swh SW 3200G 1y 24x7 E-LTU
JL518AAE - BSN BMF OOB Swh SW 3200G 3y 24x7 E-LTU
JL519AAE - BSN BMF OOB Swh SW 3200G 5y 24x7 E-LTU

BMF TUNNELING LICENSES

For OOB Switch License System (std 0 // max 999) User Selection (min 0 // max 999)

BSN BMF Switch Tunneling 1y 24x7 E-LTU JL526AAE

Configuration

- Big Switch Networks BMF Switch Tunneling 1yr Subscription 24x7 Support E-LTU

BSN BMF Switch Tunneling 3y 24x7 E-LTU JL527AAE

- Big Switch Networks BMF Switch Tunneling 3yr Subscription 24x7 Support E-LTU

BSN BMF Switch Tunneling 5y 24x7 E-LTU JL528AAE

- Big Switch Networks BMF Switch Tunneling 5yr Subscription 24x7 Support E-LTU

Configuration Rules:

Remarks:

OCA Blue **NOTE:**
Optional Tunneling Licenses are only applicable when OOB Service is required and only for the Switches where tunneling is desired.
Tunneling SKU is to be purchased for every switch that needs the tunneling feature to be enabled (irrespective of whether the tunnel is encap'd or decap'd on the switch). The SKU does not limit the number of tunnels used on the switch.

SWITCH LICENSES INLINE for BMF

For JL552A and JL529AAE System (std 0 // max 999) User Selection (min 0 // max 999) per HW or VM Appliance

BSN BMF Inline Swh SW 1800G 1y24x7 E-LTU JL520AAE

- Big Switch Networks BMF Inline Switch SW for Max 1800G BW 1yr Subscription 24x7 Support E-LTU

BSN BMF Inline Swh SW 1800G 3y24x7 E-LTU JL521AAE

- Big Switch Networks BMF Inline Switch SW for Max 1800G BW 3yr Subscription 24x7 Support E-LTU

BSN BMF Inline Swh SW 1800G 5y24x7 E-LTU JL522AAE

- Big Switch Networks BMF Inline Switch SW for Max 1800G BW 5yr Subscription 24x7 Support E-LTU

BSN BMF Inline Swh SW 3200G 1y24x7 E-LTU JL523AAE

- Big Switch Networks BMF Inline Switch SW for Max 3200G BW 1yr Subscription 24x7 Support E-LTU

BSN BMF Inline Swh SW 3200G 3y24x7 E-LTU JL524AAE

- Big Switch Networks BMF Inline Switch SW for Max 3200G BW 3yr Subscription 24x7 Support E-LTU

BSN BMF Inline Swh SW 3200G 5y24x7 E-LTU JL525AAE

- Big Switch Networks BMF Inline Switch SW for Max 3200G BW 5yr Subscription 24x7 Support E-LTU

Configuration Rules:

Remarks:

Configuration

OCA Blue **NOTE:**
Each Switch Software Subscription SKU contains a per switch price for the period defined by the SKU; includes support.

If the switch has a bandwidth <= 1800G, then select one of the following:
JL520AAE - BSN BMF Inline Swh SW 1800G 1y24x7 E-LTU
JL521AAE - BSN BMF Inline Swh SW 1800G 3y24x7 E-LTU
JL522AAE - BSN BMF Inline Swh SW 1800G 5y24x7 E-LTU

If the switch has a bandwidth > 1800G but <= 3200G, then select one of the following:
JL523AAE - BSN BMF Inline Swh SW 3200G 1y24x7 E-LTU
JL524AAE - BSN BMF Inline Swh SW 3200G 3y24x7 E-LTU
JL525AAE - BSN BMF Inline Swh SW 3200G 5y24x7 E-LTU

Service Node

BSN BMF Sv Node HW HPE Prp Nd Sup — JL555A
- Big Switch Networks BMF 4-port 10G SFP+ Svc Node HWA HPE Server Based Perp Need Support

See Configuration
NOTE: 1

PDU Cable NA/MEX/TW/JP — JL555A#B2B
- C15 PDU Jumper Cord (NA/MX/TW/JP)

PDU Cable ROW — JL555A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — JL555A#B2E
- HPE 2.3m C13 to NEMA 6-15P Pwr Cord(J9936A)

No Power Cord — JL555A#AC3
- No Localized Power Cord Selected

BSN BMF Sv Nod HWBL HPE Prp Nd Sup — JL556A
- Big Switch Networks BMF 16-port 10G SFP+ Svc Node HWBL HPE Server Based Perp Need Support

See Configuration
NOTE: 1

PDU Cable NA/MEX/TW/JP — JL556A#B2B
- C15 PDU Jumper Cord (NA/MX/TW/JP)

PDU Cable ROW — JL556A#B2C
- C15 PDU Jumper Cord (ROW)

High Volt Switch to Wall Power Cord — JL556A#B2E
- HPE 2.3m C13 to NEMA 6-15P Pwr Cord(J9936A)

No Power Cord — JL556A#AC3
- No Localized Power Cord Selected

Configuration

Configuration Rules:

NOTE 1 Localization (Wall Power Cord) required on orders without #B2B, #B2C (PDU Power Cord) or #B2E. (See Localization Menu)

Remarks:

OCA Blue **NOTE:**
Optional Service Nodes are only applicable when OOB Service is desired. Required when customers want specialized packet functions like de-duplication, packet slicing, and regex pattern.

– The Perpetual SKU does not include support. Requisite 1-year / 3-year / 5-year support
SKUs must be added along with the perpetual SKU in order for the customer to avail support for the product.

Support

Support for VM Controller

For JL529AAE System (std 0 // max 1) User Selection (min 1 // max 1) per Virtual Controller Appliance

BSN BMF Cntrl VM SW 1y 24x7 E-LTU JL532AAE
- Big Switch Networks BMF Controller VM Software 1yr Subscription 24x7 Support E-LTU

BSN BMF Cntrl VM SW 3y 24x7 E-LTU JL533AAE
- Big Switch Networks BMF Controller VM Software 3yr Subscription 24x7 Support E-LTU

BSN BMF Cntrl VM SW 5y 24x7 E-LTU JL534AAE
- Big Switch Networks BMF Controller VM Software 5yr Subscription 24x7 Support E-LTU

Support for HWB Hardware Appliance

For JL552A System (std 0 // max 1) User Selection (min 1 // max 1) per Hardware Controller Appliance

BSN BMF Cntrl Appl HWB 1y 24x7 Sup E-LTU JL549AAE
- Big Switch Networks BMF Controller Appliance HW Based 1yr Subscription 24x7 Support E-LTU

BSN BMF Cntrl Appl HWB 3y 24x7 Sup E-LTU JL550AAE
- Big Switch Networks BMF Controller Appliance HW Based 3yr Subscription 24x7 Support E-LTU

BSN BMF Cntrl Appl HWB 5y 24x7 Sup E-LTU JL551AAE
- Big Switch Networks BMF Controller Appliance HW Based 5yr 24x7 Support E-LTU

Support for Service Nodes

System (std 0 // max 1) User Selection (min 0 // max 1) per Service Node

BSN BMF Svc Node HWA 1y 24x7 E-LTU JL535AAE
- Big Switch Networks BMF Service Node HW Appliance 1yr Subscription 24x7 Support E-LTU

See Configuration **NOTE:** 1

BSN BMF Svc Node HWA 3y 24x7 E-LTU JL536AAE
- Big Switch Networks BMF Service Node HW Appliance 3yr Subscription 24x7 Support E-LTU

See Configuration **NOTE:** 1

Configuration

BSN BMF Svc Node HWA 5y 24x7 E-LTU — JL537AAE
- Big Switch Networks BMF Service Node HW Appliance 5yr Subscription 24x7 Support E-LTU

See Configuration
NOTE: 1

BSN BMF Svc Node HWBL 1y 24x7 E-LTU — JL538AAE
- Big Switch Networks BMF Service Node HW Based Large 1yr Subscription 24x7 Support E-LTU

See Configuration
NOTE: 2

BSN BMF Svc Node HWBL 3y 24x7 E-LTU — JL539AAE
- Big Switch Networks BMF Service Node HW Based Large 3yr Subscription 24x7 Support E-LTU

See Configuration
NOTE: 2

BSN BMF Svc Node HWBL 5y 24x7 E-LTU — JL540AAE
- Big Switch Networks BMF Service Node HW Based Large 5yr Subscription 24x7 Support E-LTU

See Configuration
NOTE: 2

Configuration Rules:

NOTE 1 Supported on the HWA Service Node:
JL555A

NOTE 2 Supported on the HWBL Service Node:
JL556A

Services

Training and Professional Services

System (std 0 // max 99) User Selection (min 0 // max 99)

BSN BMF Archt/Feat Ovr 2d Adv Trng E-LTU — JL541AAE
- Big Switch Networks BMF Architecture and Feature Overiew 2-day Advanced Training E-LTU

BSN BMF 3d SW Inst for Cntr/7 Swch E-LTU — JL542AAE
- Big Switch Networks BMF 3-day Software Install for Controller (HA Pair) and 7 Switches E-LTU

Technical Specifications

Big Monitoring Fabric Controller appliance specification

The Big Monitoring Fabric Controller can be deployed either as a Virtual Machine appliance on an existing server or as a Hardware Appliance

Controller VM appliance specification

The Big Monitoring Fabric Controller is available as a Virtual Machine appliance for the following environments.

Environment	Version
Linux KVM	• Ubuntu 12.04 • Ubuntu 14.04
VMware ESXi	• Version 5.5.0 U1 • Version 5.5.0 U2 • Version 6.0

NOTE: The above table explicitly indicates the Major/Minor/Maintenance versions tested and supported by Big Monitoring Fabric. Versions other than the ones listed above will not be supported.

Minimum VM requirements

- 2 vCPU with a minimum scheduling of 1GHz.
- 4 GB of virtual memory
- 20 GB of hard disk.
- One virtual network interface reachable from physical switches.

NOTE: A VM's performance depends on many other factors in the hypervisor setup, and as such, we recommend using hardware appliance for production deployment.

Big Mon Controller hardware appliance specification (HPE DL360 GEN9 JL552A)

The Big Mon controller is available as an enterprise-class, 2-sockets, 1U rack-mount hardware appliance designed to deliver the right combination of performance, redundancy and value in a dense chassis.

Feature	Technical specification
Form Factor (H x W x D)	1U Rack Server SFF Drives: 3.44 x 17.54 x 26.75 in (8.73 x 44.55 x 67.94 cm)
Processor	Intel® Xeon® Processor E5-2620 v4 20M Cache, 2.10 GHz # of Cores: 8 # of Threads: 16 Processor Base Frequency: 2.10 GHz Max Turbo Frequency: 3.00 GHz Cache: 20 MB SmartCache Bus Speed: 8 GT/s QPI # of QPI Links: 2 TDP: 85 W VID Voltage Range: 0
Memory	4 x HPE 16 GB (1x16 GB) Single Rank x4 DDR4-2400 CAS-17-17-17 Registered Memory Kit

Technical Specifications

Hard drive	2 x HP 1TB 6G SATA 7.2K rpm SFF (2.5-inch) SC Midline 1yr Warranty Hard Drive
Networking	HPE Ethernet 10 GB 2-port 560SFP+ Adapter HPE H240ar FIO Smart HBA
Power	2 x Hot Plug Power Supplies 500W
Additional features	Fan fault tolerance; ECC memory, interactive LCD screen; ENERGY STAR® compliant

Environment	Specification
Temperature–Continuous Operation	10°C to 35°C (50°F to 95°F)
Temperature–Storage	-30°C to 60°C (-40°F to 149°F) with a maximum temperature gradation of 20°C per hour
Relative humidity–Continuous	8% to 90% with 24°C (72.5°F) maximum dew point
Relative humidity–Storage	5% to 95% at a maximum wet bulb temperature of 38.7°C (101.7°F)
Altitude–Continuous	3050m (10,000ft)
Altitude–Storage	9144m (30,000ft)

Big Monitoring Fabric Analytics VM Specification

The Big Monitoring Fabric Analytics functionality is available as a Virtual Machine appliance for the following environments.

Environment	Version
Linux KVM	• Ubuntu 12.04 • Ubuntu 14.04
VMware ESXi	• Version 5.5.0 U1 • Version 5.5.0 U2 • Version 6.0

NOTE: The above table explicitly indicates the Major/Minor/Maintenance versions tested and supported by Big Monitoring Fabric. Versions other than the ones listed above will not be supported.

Minimum VM requirements
• At least 100 GB of disk space. • 16 GB RAM

Technical Specifications

- 8 vCPUs
- Reachability to the Ubuntu time server or other NTP server.

Big Monitoring Fabric Service Node hardware appliance Specification (BMF-SN-HW, BMF-SN-HWBL)

The Big Monitoring Fabric Service Node appliance is an enterprise-class, NEBS Level 3 & ETSI Compliant, 2-sockets, rack-mount hardware appliance, designed to deliver the right combination of performance and value. It is available in 2 form-factors:

1U w/ 4x10G bi-directional interfaces, and 2U w/ 16x10G bi-directional interfaces.

The Big Mon Service Node provides specialized packet functions like de-duplication, packet slicing, regex matching, header stripping, packet masking and NetFlow Generation. Once connected to the fabric, the Big Mon controller auto-discovers the service node, and becomes the single, central point of management and configuration of the service node. This highly scalable architecture allows chaining of multiple service nodes that are connected to the fabric via the service node chaining function of the Big Monitoring Fabric.

Feature	Technical specification HPE DL360 Gen9 JL555A	Technical specification HPE DL380 Gen9 JL556A
Form Factor (H x W x D)	1U Rack Server 1.7" (4.32cm) Height x 17.11" (43.47cm) Width x 27.5" (69.85cm) Length	2U Rack Server 3.44 x 17.54 x 26.75 in (8.73 x 44.55 x 67.94 cm)
Processor	Intel Xeon E5-2650v4 (2.2GHz/12-core/30MB/105W)	Intel Xeon 12 CORE PROCESSOR E5-2650V4 2.2GHZ 30MB SMART CACHE 9.6 GT/S QPI TDP 105W
Memory	4 x HPE 8 GB (1x8 GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit	8 x HPE 8 GB (1x8 GB) Single Rank x8 DDR4-2400 CAS-17-17-17 Registered Memory Kit
Hard drive	Hard drive 1 TB hot-swap 2.5" SFF SAS 12 Gbps 7200 rpm with HP SmartDrive carrier	Hard drive 1 TB hot-swap 2.5" SFF SAS 12 Gbps 7200 rpm with HP SmartDrive carrier
Networking	4 x 1GbE Embedded 1 x HP H240ar FIO Smart HBA 2 x HPE Ethernet 10 GB 2-port 562SFP+ Adptr	4 x 1GbE Embedded 1 x HP H240ar FIO Smart HBA 4 x HPE Eth 10 GB 4p 563SFP+ Adptr
Power	Dual HPE 500W Flex Slot Platinum Hot Plug Power Supply Kit	Dual HPE 800W Flex Slot Platinum Hot Plug Power Supply Kit

Feature	Technical specification BMF-SN-HW	Technical specification BMF-SN-HWBL
Temperature–Continuous Operation	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)
Temperature–Storage	-30°C to 60°C (-40°F to 149°F) with a maximum temperature gradation of 20°C per hour	-30°C to 60°C (-40°F to 149°F) with a maximum temperature gradation of 20°C per hour
Relative humidity–Continuous	8% to 90% with 24°C (72.5°F) maximum dew point	8% to 90% with 24°C (72.5°F) maximum dew point
Relative humidity–Storage	5% to 95% at a maximum wet bulb temperature of 38.7°C (101.7°F)	5% to 95% at a maximum wet bulb temperature of 38.7°C (101.7°F)
Altitude–Continuous	3050m (10,000ft)	3050m (10,000ft)
Altitude–Storage	9144m (30,000ft)	9144m (30,000ft)

Technical Specifications

About Big Switch

Big Switch Networks is the Next-Generation Data Center Networking Company, which leverages the principles of software-defined networking (SDN) coupled with a choice
of industry-standard hardware to build intelligent, agile and flexible networks for customers around the world. Big Switch Networks has two solutions: Big Monitoring Fabric, a feature-rich Network Packet Broker, which enables pervasive security and monitoring of data center and cloud
traffic for inline or out-of-band deployments, and Big Cloud Fabric, the industry's most advanced open networking switching fabric intended for new data center pods such as OpenStack private cloud, VMware NSX, Big Data, and VDI. Big Switch Networks is headquartered in Santa Clara, CA, with offices located in Sydney, London, Tokyo and Istanbul.

Date	Version History	Action	Description of Change
04-Sep-2017	From Version 2 to 3	Changed	Configuration section updated
11-Aug-2017	From Version 1 to 2	Changed	Images fixed
07-Aug-2017	Version 1	Created	Document creation.

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a00018427 - 15987 - Worldwide – V3 – 04-September-2017