Dell / BigSwitch Spine and Leaf Network Deployment Document

Design Goals | Physical Layer 1 | Logical Layer 2 and 3

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1.0	Design Goals	09/17/2019	hmoats

Design Goals

Spine and Leaf Switch Fabric (BigSwitch)

- Dedicated VPC/tenant for production with traditional web, application and database segmentation
- Enable a equal cost multipath horizontally scalable switch fabric (3 x spine, 8 leafs, 4 leaf groups)
- 10Gbps edge ports in 20Gbps LACP bundle
- BigSwitch distributed layer 3
- BigSwitch hitless/in-service network services upgrades
- BigSwitch hitless redundancy for network services and edge ports via multi chassis link aggregation
- Northbound API to the fabric for configuration and monitoring
- Visibility via telemetry from the fabric (e.g., flow data, packet capture)
- Stateful filtering between web and application segments
- Stateless filtering between application and database segments

Next Generation Firewall (Palo Alto)

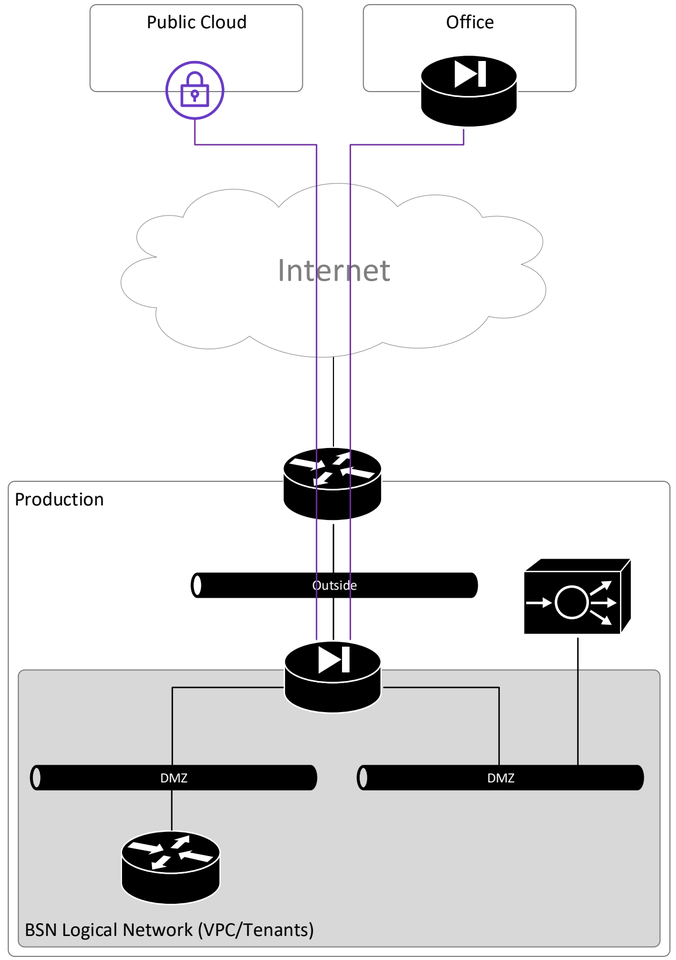
- Palo Alto Networks firewall for edge security
- 1Gbps throughput

Hardware Refresh of Load Balancers (F5)

- F5 ADCs in one-arm topology
- 1Gbps throughput

Compute Capacity

- 3 spines and 16 x leaf groups with 768 20Gbps LAG host ports (server density) approximately 15,360 virtual machines capacity



Datacenter 1

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1Gbe Copper
10Gbe Copper
100Gbe Fiber
10Gbe Fiber (breakout)
40Gbe Copper (DAC)

802.3ad
Trunk

Edge Routing and Switching

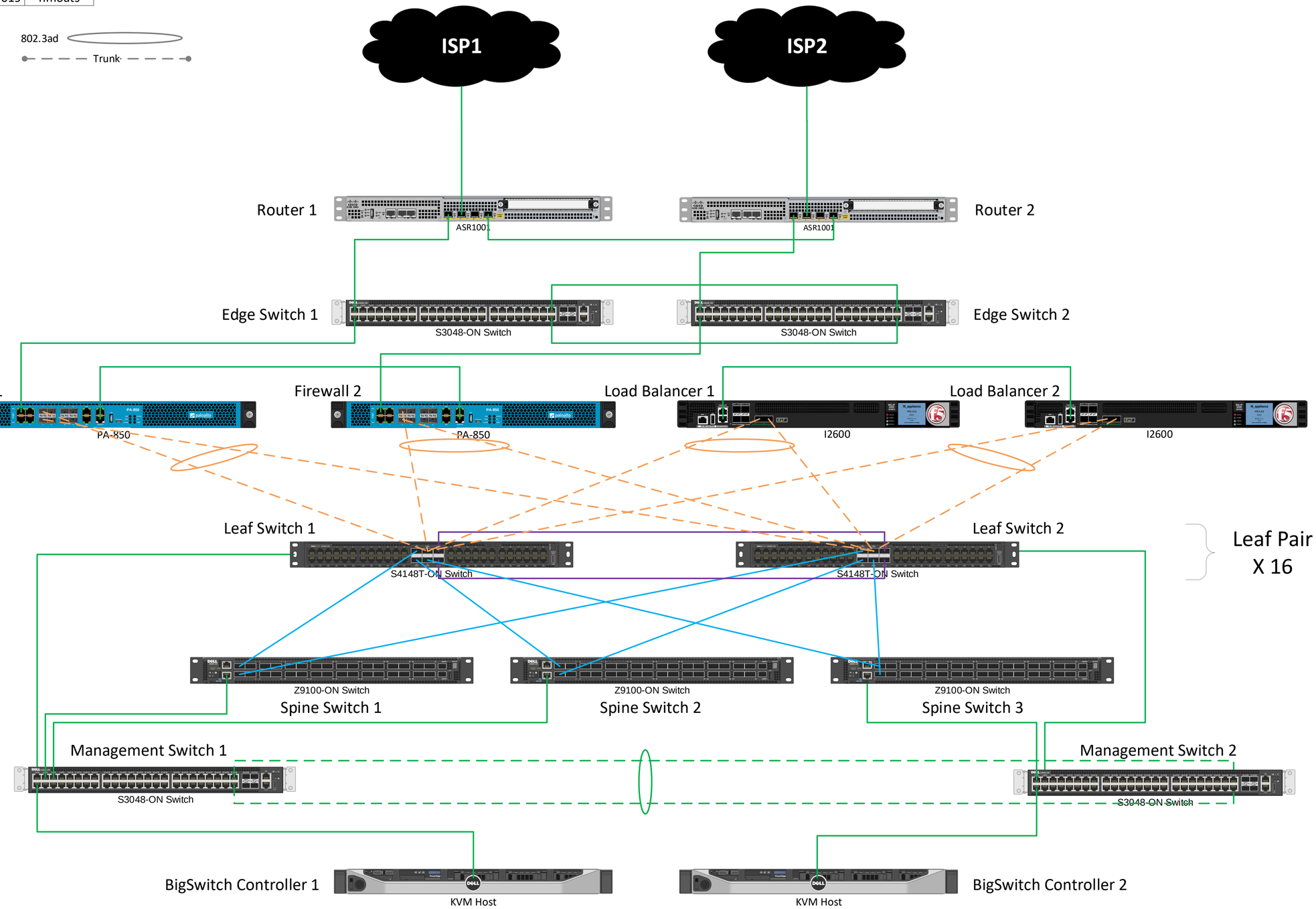
Network Services

Leaf Switches

Spine Switches

Management Switches

Controllers



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1.0	Logical Layer 2 and 3	09/17/2019	hmoats

Network Parameters

VPC/Tenants

- Core
- DMZ
- Production
- System

Networks

- A.B.C.0/X (public network)
- 10.0.0.0/16 (private network)