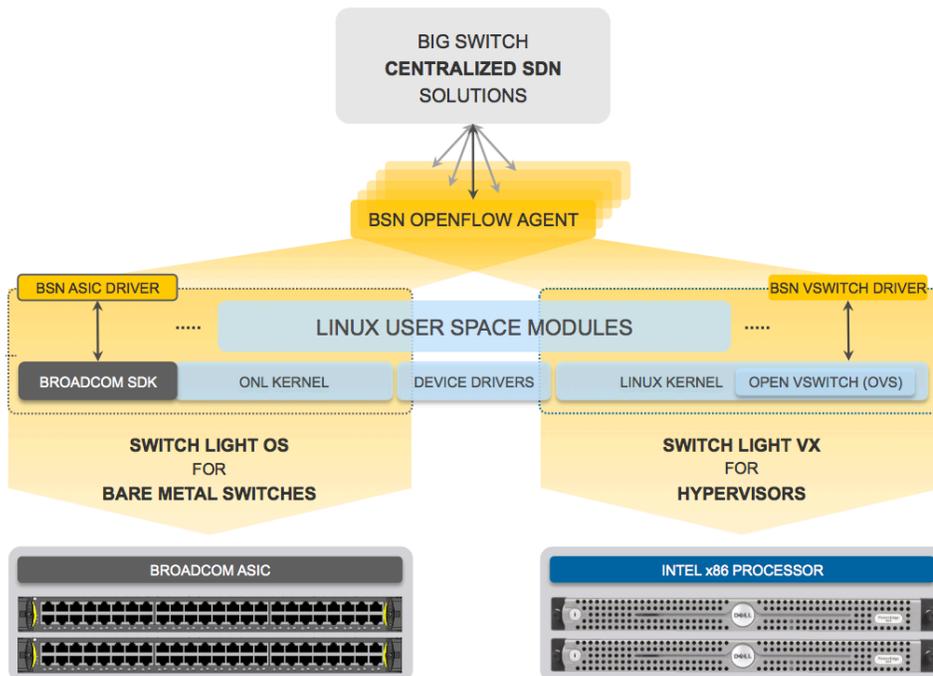# Switch Light

Thin Switching for Bare Metal Physical and Virtual Switches

Switch Light is a Linux-based, thin switching software solution. Switch Light provides consistent data plane programming abstractions across merchant silicon-based physical switches and hypervisor vSwitches. Switch Light can be installed on a variety of physical switch platforms, including Broadcom's high performance switching silicon as well as various Linux distributions utilizing the KVM hypervisor on Intel x86 platforms.

Switch Light is a key enabling technology for Big Switch Networks' centralized SDN applications, and comes in two flavors:

- **Switch Light OS** is a complete SDN operating system for bare metal physical switches, based on Open Network Linux (ONL), an open source effort within the Open Compute Project.

- **Switch Light VX** is a user space software agent for KVM-based virtual switches that adds advanced functionality and improved performance on top of the Open vSwitch kernel.

Together, the Switch Light OS and Switch Light VX enable next generation unified P+V (physical + virtual) fabrics for modern data centers. In conjunction with a centralized SDN controller, Switch Light enables dramatic reductions in the cost of your network operations and eliminates time-consuming, manual procedures by enabling central provisioning, automation and troubleshooting of both switching platforms and service definitions.

As shown in the graphic to the left, Switch Light software provides a common interface for programming L2 and L3 data plane forwarding rules and policies onto physical switches as well as virtual switches. The centralized SDN controller application proactively pushes the optimized forwarding rules and policies to the relevant nodes in the network fabric. The Big Switch agent supports OpenFlow v1.3 with open extensions on the switches and, in turn programs the rules and policies down to the ASIC-based forwarding tables (physical switches) or Open vSwitch software forwarding tables (virtual switches).

Based on Open Network Linux (ONL)

Switch Light OS is the commercial SDN switching software from Big Switch Networks. It builds upon the Open Network Linux distribution available within the Open Compute Project.

- ONL is the open source Linux operating system distribution for "bare metal" Ethernet switch hardware. By separating software and hardware procurement as well as deployment decisions, ONL brings the server or compute industry models to the networking infrastructure.

ONL is a base-level operating system and provides a management interface to the switching hardware. It uses the Open Network Install Environment (ONIE) to install onto on-board flash memory. The components in a standard ONL distribution include: Debian Linux kernel, set of device drivers, installation scripts and a net-boot capable zero touch networking bootloader, customized with enhanced network boot functionality for a variety of bare metal switch devices. ONL also includes several advanced features that optimize headless switch operations, and improved performance by minimizing writes to flash memory.

Designed for Migration to SDN

By leveraging the emerging industry standard ONIE and ONL, and a hardware compatibility list shared across the bare metal switching ecosystem, Switch Light is designed with migration in mind. On startup, a user can opt to boot up either the Switch Light OS, traditional networking OSs from other vendors or a hardware diagnostic OS. There are no hardware or cabling changes required to go between controller-based and traditional box-by-box networking designs -- a simple, low-risk migration path to SDN.

Big Switch SDN Fabric Deployment Mode
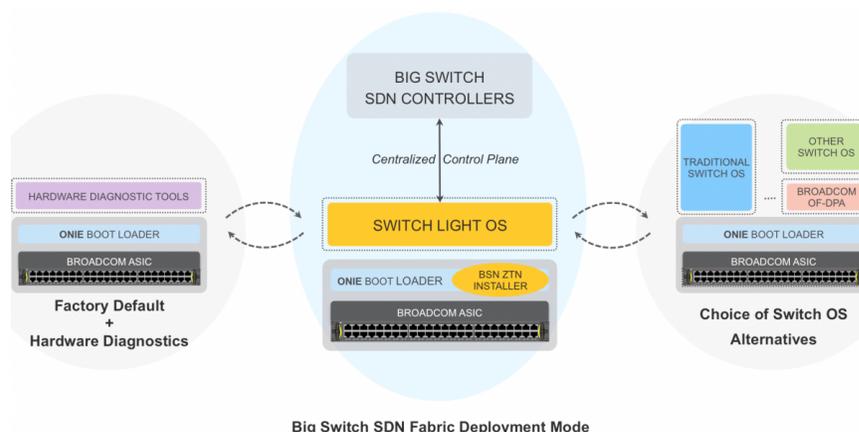
Big Switch supports the following procurement and installation models for Switch Light OS:

- Order switching gear pre-installed with Switch Light OS as a part of SDN Products deployment

- Install the Switch Light OS on existing or separately procured hardware switches as a part of SDN Products deployment.

For a complete list of supported hardware, please consult the Hardware Compatibility List.

About Big Switch Networks

Big Switch Networks is the market leader in bringing hyperscale data center networking technologies to a broader audience. The company is taking three key hyperscale technologies—OEM/ODM bare metal and open Ethernet switch hardware, sophisticated SDN control software, and core-and-pod data center designs—and leveraging them in fit-for-purpose products designed for use in enterprises, cloud providers and service providers. For additional information, email info@bigswitch.com, follow @bigswitch or visit www.bigswitch.com.