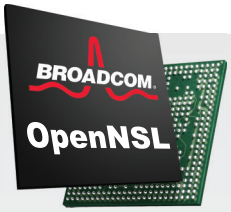
SWITCH

OpenNSL 2.0

Library of Open Networking APIs



- Library of Open APIs
- Rich API library allowing for development of new innovative open applications
- Leverages capabilities of industry leading StrataXGS architecture
- Enables network monitoring, traffic engineering, workload optimization
- Portable across various network switch silicon and platforms
- Open spec and APIs published on GitHub under Apache 2.0 license

OVERVIEW

Open Network Switch Library (OpenNSL) is a library of Open Networking APIs that enable the development of innovative open source networking projects on widely deployed Broadcom network switch-based systems. It allows developers to customize, enhance, and deliver differentiated solutions, leveraging the capabilities of the feature-rich and industry-leading StrataXGS® architecture.

With the OpenNSL software platform, Broadcom is publishing APIs that map Broadcom's Software Development Kit (SDK) to an open, north-bound interface, enabling the integration of new applications and creating the ability to optimize switch hardware platforms. This gives users the freedom to control their technology, share their designs, and boost application innovation. Examples include network monitoring, load balancing, service chaining, workload optimization, and traffic engineering.

OpenNSL software is available in two packages:

- An OEM and ODM Development Package (ODP), which is a full-source code package distributed under the Broadcom SLA.
- A Community Development Package (CDP), which is an Open API library with Application Development Kit distributed on GitHub.

FEATURES

- Rich set of APIs for most commonly used switching and routing functions are as follows:
  - L2/L3/VLAN management.
  - Port and switch management.
  - Link monitoring and error handling.
  - Packet transmit and receive.
  - Trunking.
  - Buffer Statistics Tracking.
  - Packet Tracing and Injection.
- Portable across StrataXGS® architecture today and StrataDNX™ in the future.
- Supported by growing number of OEM and ODM partners.

BENEFITS

- Enables development of Open Networking applications, such as:
  - Open Network Operating Systems.
  - Telemetry applications (e.g BroadView™).
- Open specification and API enables the community, including academia, startups and hobbyists, to develop new applications.
- Enables innovation on top of industry-leading StrataXGS® platform.

SUPPORTED OPEN PROJECTS

OpenNSL is used in multiple open projects driven by the community. A partial list of these projects is given below:

- FBOSS: OpenNSL provides foundational technology that allows the Facebook Open Switching System (FBOSS) to be open.
- Open Network Linux: A Linux distribution for bare metal switches that includes OpenNSL.
- BroadView: A software suite that provides programmable access to the internals of a switch in a fast and scalable manner.
- Open L3 Routing: NTT has developed a pluggable L3 routing agent built on OpenNSL that was demonstrated at the OCP workshop in Oct 2015.
- OpenSwitch: New open source, Linux based fully featured L2/L3 Network Operating System (NOS) platform. All the current OpenSwitch platforms are Broadcom based and built on top of OpenNSL.

DESCRIPTION

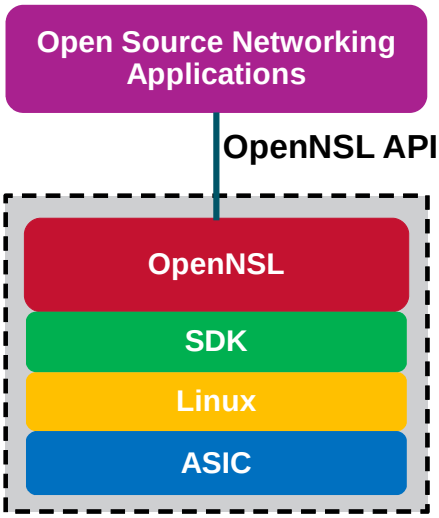
Open Network Switch Layer (OpenNSL) defines an open abstraction interface for switching ASICs. The interface is designed to provide a set of APIs to program and manage switching silicon. OpenNSL software contains the files needed for development of switch applications: C-header files, libraries, documentation, and example applications. It is platform agnostic (*nix/Windows/…).

The OpenNSL API is a local interface between the Network Operating System, the switch SDK, and upper layer applications.

OpenNSL allows the network stack to run over a variety of silicon. More importantly, it also allows for the development and deployment of applications. OpenNSL will allow open sourcing of NOS and Applications that use OpenNSL and run over Broadcom Silicon.

TARGET APPLICATIONS

- Instrumentation software such as BroadView™ network project.
  - Packet Tracing and Injection enables applications to inject purpose built packets and get detailed information on how the packet progresses through the switch pipeline.
  - Buffer Statistics Tracking (BST) enables the user to monitor and observe buffer statistics across the device, providing visibility into individual traffic flows.
- Traffic engineering and network optimization allows operators to customize networks to meet their unique needs.
- Open Network Operating Systems accelerate disaggregation of the network stack. Examples of such NOSS include FBOSS and OpenSwitch, both running on top of multiple ODM platforms.



OpenNSL Component Layering

For more information, visit:
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