

LightSwitch™ 4810



OpenFlow Enabled 48 Port Gigabit Switch

The LightSwitch 4810 is an OpenFlow enabled network switch. In addition to advanced L2 functions, LightSwitch 4810 supports the OpenFlow standard, enabling the deployment of user-defined policies in live production networks. The LightSwitch 4810 is useful for applications in data centers, for virtual machine mobility, high-security networks and next generation IP based mobile networks.



OpenFlow Enabled

Individual ports on the LightSwitch 4810 can be configured to operate as OpenFlow ports, thereby forming a virtual OpenFlow switch coexisting with normal L2 switching on one hardware platform

High Performance Stacking

The LightSwitch 4810 supports high-performance stacking for up to eight switches via two 10 Gigabit Ethernet stacking ports. Connectivity can be added as needed without affecting network performance

Advanced QoS

The LightSwitch 4810 offers Quality of Service (QoS) capabilities that give network administrators the ability to prioritize network traffic based on a variety of user-defined criteria

Advanced Security

Support for L2-L4 Access Control Lists (ACLs) on the switch allows the user to perform deep packet inspection. 802.1x port authentication offers both single and multiple host access. Further security is provided through Denial of Service (DoS) Attack Prevention, whereby the switch can protect against common network attacks

High Density

The LightSwitch 4810 offers 48 ports of 10/100/1000BASE-T Gigabit Ethernet and four 10 Gigabit Ethernet uplinks for connectivity directly to 10GE routers, servers, enterprise backbones and data centers. The LightSwitch 4810 maximizes connectivity in a 1U form factor. Up to 384 hosts can be connected in a stack of switches for maximum density, flexibility and manageability.

10 GigaBit Ethernet Uplinks

The switch supports up to four 10 Gigabit Ethernet uplinks for connectivity to 10GE routers, servers, enterprise backbones and data centers.

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OpenFlow Features

- SSL & TCP connection with controller
- Any port configurable as OpenFlow port
- Virtual OpenFlow switch coexists with normal L2 switch
- OpenFlow commands integrated into CLI and Web UI
- Up to 1536 hardware flow entries

L2 Features

Switching:

- IEEE 802.3ac - VLAN Tagging
- IEEE 802.3ad - Link Aggregation
- IEEE 802.1S - Multiple Spanning Tree
- IEEE 802.1W - Rapid Spanning Tree
- IEEE 802.1D - Spanning Tree
- GARP - Generic Attribute Registration Protocol
- GMRP - Dynamic L2 Multicast Registration
- GVRP - Dynamic VLAN Registration
- IEEE 802.1Q - Virtual LANs with Port based VLANs
- IEEE 802.1v - Protocol-based VLANs
- IEEE 802.1p - Ethernet Priority with User Provisioning & Mapping
- IEEE 802.1X - Port Based Authentication
- IEEE 802.3x - Flow Control

Advanced Layer 2 Functionality:

- Broadcast Storm Recovery
- Double VLAN/vMAN Tagging (Q-in-Q)
- IGMP Snooping
- Independent VLAN Learning (IVL) support
- IPv6 Classification APIs
- Jumbo Ethernet Frames
- Port Mirroring
- Static MAC Filtering

Security

- User/Password protected system management
- L2/L3/L4 ACL (access control list)
- RADIUS client
- SSH v1/v2
- SSL v3/TLS v1
- IEEE 802.1x
- Port MAC lock
- Port violation shutdown
- MAC address filter
- IP address filter
- Denial of Service

ACL (Access Control List)

Permit/Deny actions for Inbound or Outbound traffic classification based on:

- Type of Service (ToS) or Differentiated Services (DSCP)
- Source IP Address
- Destination IP Address
- TCP/UDP Source Port
- TCP/UDP Destination Port
- IP Protocol Number

QoS (Quality of Service)

- RFC 2474 - Definition of Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers
- RFC 2475 - An Architecture for Differentiated Services
- RFC 2597 - Assured Forwarding PHB Group
- RFC 3246 - An Expedited Forwarding PHB (Per-Hop Behavior)
- RFC 3260 - New Terminology and Clarifications for DiffServ

Management

- RFC 854 - Telnet
- RFC 1157 - SNMP
- RFC 1212 - Concise MIB Definitions
- RFC 1867 - HTML/2.0 Forms with file upload extensions
- RFC 1901 - Community based SNMP v2
- RFC 1905 - Protocol Operations for SNMP v2
- RFC 1906 - Transport Mappings for SNMP v2
- RFC 1907 - Management Information Base for SNMP v2
- RFC 1908 - Coexistence between SNMP v1 and SNMP v2
- RFC 2068 - HTTP/1.1 protocol as updated by draft-ietf-http-v11-rev-03
- RFC 2271 - SNMP Framework MIB
- RFC 2570 - Introduction to SNMP v3
- RFC 2571 - Architecture for Describing SNMP Management Frameworks
- RFC 2572 - Message Processing and Dispatching for SNMP
- RFC 2573 - SNMP v3 Applications
- RFC 2574 - User Based Security Model for SNMP v3
- RFC 2576 - Coexistence between SNMP v1, v2, and v3
- RFC 2578 - SMI v2
- RFC 2579 - Textual Conventions for SMI v2
- SSL 3.0 and TLS 1.0
- RFC 2246 - The TLS Protocol, Version 1.0
- RFC 2818 - HTTP over TLS
- HTML 4.0 Specification - December, 1997
- Java and JavaScript 1.3

System Facilities

- Event and Error Logging Facility
- Run-time and Configuration Download Capability
- RFC 2865 - RADIUS Client
- RFC 2866 - RADIUS Accounting
- RFC 2869 - RADIUS Extensions
- Rfc2869bis- RADIUS Support for Extensible Authentication Protocol (EAP)
- RFC 3580 - 802.1X RADIUS Usage Guidelines

MIBs

Switching MIBs:

- RFC 1213 - MIB-II
- RFC 1493 - Bridge MIB
- RFC 1643 - Ethernet-like MIB
- RFC 2674 - VLAN MIB
- RFC 2618 - RADIUS Authentication Client

QoS MIBs:

- RFC 3289 - Management Information MIB
- RFC 2620 - RADIUS Accounting MIB
- RFC 2737 - Entity MIB version 2
- RFC 2819 - RMON Groups 1,2,3, & 9
- IEEE 802.1X (IEEE 802.1-PAE-MIB)
- Enterprise MIB

Physical / Environmental

- Dimensions (W x D x H): 17.5" x 11.3" x 1.68"
- Size: 19-Inch Rack-Mount Width 1U Height
- Weight: 9 Lb, 4.1kg
- Ventilation DC Fans:
- Operating Temperature: 10°C to 50°C
- Operating Humidity: 80% maximum relative humidity
- EMI/EMC:
- Safety:

Performance

- Switch Fabric: 176Gbps / 176Gbps / 96Gbps
- Packet Buffer: 130.95Mbps / 130.95Mbps / 71.42Mbps
- Hardware Flow Table: up to 1536 Flows
- MAC Address Table: 8K
- Jumbo Frame Size: 9,216 Bytes

Power

- Power Supply: 100—240V AC, 4.0A, 50—60Hz
- Power Consumption (Max.): 500W

Stacking

- Max Number of Stacking Ports Installed: 2 x 10 Gigabit/s
- Stacking Speed: 20Gbps (Full-Duplex)
- Number of Units Per Stack (Max): 8 Units

Interfaces

- 10/100/1000 BASE-T Ports: 48
- 10 Gigabit/s: 4
- Management Service Port: 2
- RJ45 Console Port: 1
- RJ45 Auxiliary Port: 1

ABOUT OPENFLOW

What is OpenFlow?

OpenFlow is an open standard that enables implementation of user-defined policies in live production networks.

Why is OpenFlow needed?

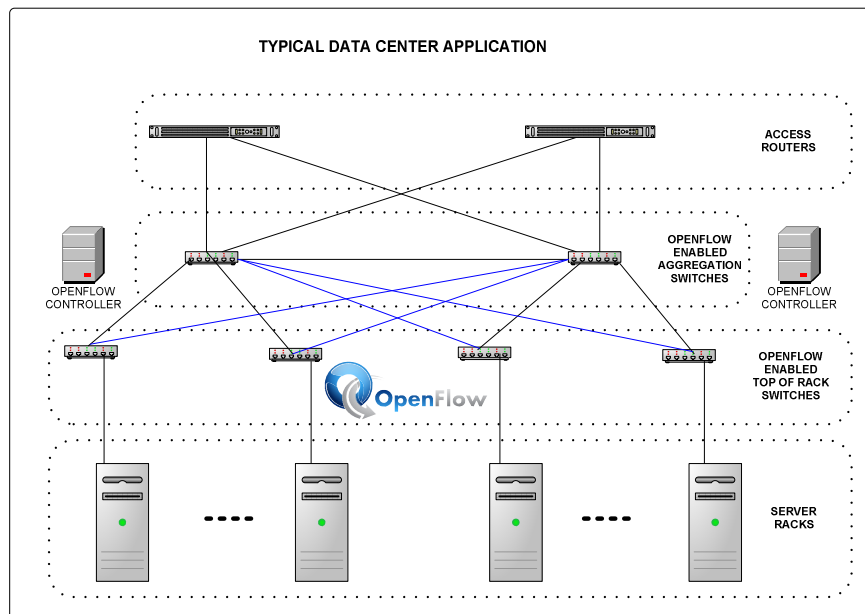
OpenFlow is useful for applications such as shared tenant cloud computing, virtual machine mobility, high-security networks and next generation IP based mobile networks.

How does OpenFlow Work?

OpenFlow support is implemented on standard commercial switches, routers and wireless access points. The control plane resides in servers external to the switch that provide a standardized interface for users to program the switch behavior.

Who is driving OpenFlow?

A team of researchers from Stanford University is driving the technology and evangelizing the concept under the *Clean Slate Internet Design Program*. The OpenFlow Consortium (www.openflowswitch.org) is defining the standard.





ABOUT TOROKI

The Toroki team is highly skilled in communications system design. Our team has years of experience and a proven track record designing, developing, and deploying leading-edge networking equipment in the data/telecommunications, enterprise, SMB, and wireless LAN markets.

TOROKI SUPPORT

For the leading edge users of OpenFlow and advanced networking technology, Toroki provides worldwide 7x24 direct access to OpenFlow and general data networking experts for setup and configuration assistance as well as diagnostics and troubleshooting. Toroki's maintenance contracts also offer routine software updates and enhancements.

ORDERING INFORMATION

Part Number	Description
LS4810SH	LightSwitch 4810 OpenFlow enabled 48 port stackable Gigabit switch (OpenFlow and L2 switching licenses included)
LS4810SS	LightSwitch 4810 Support & SW maintenance—1 year—Silver <ul style="list-style-type: none">• HW repair/replacement/ 30 days• Email support access, best effort
LS4810SG	LightSwitch 4810 Support & SW maintenance—1 year—Gold <ul style="list-style-type: none">• Silver package +• Extended business hours telephone support access
LS4810SP	LightSwitch 4810 Support & SW maintenance—1 year—Platinum <ul style="list-style-type: none">• Gold package +• 7x24 telephone support access• Advance HW replacement• On-Site support

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