



LightSwitch 4810

Release 1.1.1

System Release Notes

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Abstract

This document describes Toroki Communications LightSwitch 4810 release 1.1, the release features, supported hardware and software, resolved and known issues, and limitations.

Publication History

Revision	Date	Changes
A00	Oct 09	Baseline

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1 Introduction

This document describes Toroki Communications LightSwitch 4810 minor release 1.1.1, the release features, supported hardware and software, resolved and known issues, and limitations. The key change from Release 1.1 is support for multiple virtual OpenFlow switches per hardware platform. This early implementation separates virtual switches by port assignment, meaning that each port can only belong to a single virtual switch instance at any given time.

2 Release Content

2.1 New Features

This section provides a summary description of the new software features. For detailed information on features, refer to the Release Documentation.

No.	Added in Rel.	Description
1.	LS4810 1.0	Persistent configuration
2.	LS4810 1.0	Active connection initiation
3.	LS4810 1.0	1000+ flow entries
4.	LS4810 1.0	Licensing
5.	LS4810 1.1	“openflow active/passive” commands accept host names (in addition to IP addresses)
6.	LS4810 1.1	New command to determine switch operation when controller connection is down (fail open/closed/fade)
7.	LS4810 1.1	New command to determine the frequency of switch attempts to connect to controller
8.	LS4810 1.1	New command to determine the number of attempts to connect to controller
9.	LS4810 1.1	New command to determine period without controller communication before switch sends inactivity probe to controller
10.	LS4810 1.1	“show openflow” command now shows controller connection status (up/down)
11.	LS4810 1.1	Log messages to console can be redirected to file
12.	LS4810 1.1.1	Multiple virtual OpenFlow switches per hardware platform

2.2 Resolved Issues

This section presents the fixed issues included in this release. Fixed issues are reported from release 0.8.

No.	Issue No.	Description
1.	580	"show running-config" takes a long time to execute
2.	581	Flow setup time is long
3.		Switch does not remove internal VLAN tag when sending packets to controller

2.3 Known Issues

In the interest of the full disclosure of all outstanding issues, even those which Toroki feels are extremely difficult to reproduce or are of low frequency, the list of known issues is provided in the tables below. If an issue is extremely difficult to reproduce, Toroki may not be able to describe the impact, severity, frequency, and work around, until further investigation of the issue is complete.

The following two tables describe the severity and frequency criteria for issues that result from typical working conditions:

Severity Type	Description
Critical	<p>Conditions which affect the primary functionality of the product, and there is no workaround:</p> <ul style="list-style-type: none"> • Product inoperability (total or major subsystem outage) • Subscriber service is affected • Reduction in the capacity capability, such that expected loads cannot be handled • Safety hazard or risk of security breach
Major	<p>Conditions where the product is usable, but the condition seriously degrades product operation, maintenance or administration, and there is no workaround:</p> <ul style="list-style-type: none"> • Subscriber service is not affected • Major subsystem outage, and there may be no workaround • Reduction in product's capacity or scaling capability (but still able to handle the expected load)
Minor	<p>Conditions of a lesser severity than "critical" or "major" that have little or no effect on the functionality of the system. Workaround exists for typical working conditions.</p>

Frequency Type	Description
Consistent	There is a clear reproduction case, and the issue can be reproduced on demand within hours.
Intermittent	There is a reproduction case, and the issue can be reproduced during an extended run (days).
Not Easily Reproduced	The reproduction case is unclear, and the issue occurs on longer than a week extended run.

No.	Issue No.	Description	Severity and Frequency
1.	437	Flows with wildcarded in_port matching field and OFPP_ALL action send packets back to the ingress port.	Minor/Consistent
2.	438	Fragmented IP datagrams are not forwarded correctly by IP-matching flows.	Minor/Consistent

2.4 Limitations

No.	Issue No.	Description
1.	526	Flows that are intended to forward traffic from low port (first 24) to multiple high ports (last 24) and vice versa are not working

3 Release Identification

3.1 LightSwitch 4810 Hardware

HW Module	Functionality	Revision	Remarks
LB4G	48 GigE port switch	1LB4BZZ0ST0	

3.2 Tested Environment

This section lists the products/releases with which LightSwitch 4810 1.1 has been tested.

3.2.1 Controller

- Nox 0.5.0
- Nicira SNAC 0.4.0

3.2.2 Third Party

Product	Version

3.3 Release Documentation

- LightSwitch 4810 spec sheet v1.0
- LightSwitch 4810 CLI Reference Guide for release 1.1.1

4 Feature Support

This section describes the functional baseline of this version..

4.1 OpenFlow

- 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

4.2 Layer 2

4.2.1 Switching

- IEEE 802.3ac - VLAN Tagging
- IEEE 802.3ad - Link Aggregation
- IEEE 802.1S - Multiple Spanning Tree
- IEEE 802.IW - Rapid Spanning Tree
- IEEE 802.ID - Spanning Tree
- GARP - Generic Attribute Registration Protocol
- GMRP - Dynamic L2 Multicast Registration
- GVRP - Dynamic VLAN Registration
- IEEE 802.IQ - Virtual LANs with Port based VLANs
- IEEE 802.Iv - Protocol-based VLANs
- IEEE 802.Ip - Ethernet Priority with User Provisioning & Mapping
- IEEE 802.IX - Port Based Authentication
- IEEE 802.3x - Flow Control

4.2.2 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

4.3 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

4.4 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

4.5 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

4.6 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 0 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

4.7 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.IX RADIUS Usage Guidelines

4.8 MIBs

4.8.1 Switching MIBs

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

4.8.2 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

5 Operational Guidelines

- Switch Fabric: 176Gbps / 176Gbps / 96Gbps
- Packet Buffer: 130.95Mbps / 130.95Mbps / 71.42Mbps
- Hardware Flow Table: up to 1792 Flows
- MAC Address Table: 32K
- Jumbo Frame Size: 9,216 Bytes
- One OpenFlow virtual switch within a single hardware platform
- One Controller per switch
- Any physical port can be designated OpenFlow (default is normal L2 port)
- Ingress traffic on OpenFlow ports can be forwarded to other OpenFlow ports only.
- Ingress traffic on normal L2 ports can be forwarded to other normal ports only.

6 Documentation Feedback

Toroki Communications is interested in your comments and suggestions for improving our customer documentation. Please reference the document by title. Your input will help us develop better information products. Please state whether we may contact you.

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