ipinfusion™

Product Bulletin

OcNOS™ 1.2

Introduction

This product bulletin describes the features which are available with OcNOS 1.2 software release.

Please refer to Release Notes to see compatibility with qualified hardware.

System Features

System management and diagnostics is a key feature required on all networking switches and routers. It helps to validate correct operation of hardware, allows system software upgrades and is very useful for failure resolution. OcNOS 1.2 supports all key standard system level features.

Software Upgrade and Installation: OcNOS supports ONIE, an industry wide accepted initiative to allow a transparent mechanism for software upgrades. OcNOS can run on any open networking compliant which supports ONIE. ONIE allows software loading using multiple mechanisms like HTTP, FTP and USB options. It also allows for individual patch upgrades.

Chassis Management: OcNOS supports chassis peripheral device management and monitoring. The chassis management allows monitoring board temperature, Fan and power supply status and control, including SFP monitoring.

Layer-2 Features

With OcNOS software the switch implements all standards based Layer-2 protocols required for Enterprise LAN networking.

XSTP: Supports STP, MSTP and RSTP with feature add-on's such as BPDU Guard and Root Guard to protect from traffic disruption.

QinQ VLAN Support: OcNOS supports IEEE 802.1Q with support upto 4096* VLAN's for LAN segregation.

Sub-Feature	Standard Supported
STP	IEEE 802.1D
MSTP	IEEE 802.1S
RSTP	IEEE 802.1W
BPDU Guard	Industry Standard
Root Guard	Industry Standard

Private VLAN Support: OcNOS supports Private VLAN feature which allows the switch for traffic segregation in the same VLAN, a feature used for campus deployments.

Link Aggregation: Supports standards based 802.3ad link aggregation. A OcNOS switch can bundle up to 128 Link aggregation groups with standards based third-party switch/router. It also supports load sharing using MAC/IP and RTAG hash mechanisms. OcNOS also supports Multi-chassis link aggregation with up to two nodes, this allows for redundancy at the node level.

Layer-3 Features

Layer-3 standard networking features allow for interoperation across LAN boundaries. OcNOS supports various Layer-3 technologies for enterprise, service provider and data-center usage.

Enterprise class and for campus deployments, the aggregation to core/edge network segment often run standard legacy IP layer-3 protocols. OcNOS supports all major legacy standards based Layer-3 protocols, which allows for easy interoperation with other vendor switches.

Sub-Feature	Standard Supported/Description
RIP for IPv4	Support for RIP version 2
OSPFv2 & v3	Support for RFC 2328,5340 RFC 3623 – Graceful Restart, RFC 3101 – NSSA support, RFC 1765 – Database overflow support, BFD Integration
VRRP	Support for RFC 5798, with interface tracking support for quick convergence.
ISIS	Supports OSI based ISIS IPv4
MPBGP	Supports RFC 4271, with additional BGP control features like prefix based route filtering

BFD or Bi-directional Forwarding Detection is a feature used for fast link failure detection, OcNOS 1.2 supports software based BFD detection. It allows for link failure detection within 250ms* ,and integrates with Layer-3 protocols OSPF, BGP and ISIS such that the route failure can be propagated in the domain.

There is a growing interest in strict routing mechanism for controlled traffic paths. OcNOS supports one-level Segment routing with OSPF and static configuration.

OcNOS also provides service provider edge CPE capable features. Important features in this respect are IGP with strict access list and route import / export control. OcNOS 1.2 supports most popularly used OSPFv2, ISIS protocols with complete access-list based policy control. It is qualified to interop with industry leading switches and routers.

Layer-3 Data Centers use BGP as the Leaf-Spine routing protocol with large ECMP support, to utilize multiple paths. OcNOS has been enabled with key features enabling it for its use as a BGP based Layer-3 data center.

Multicast Features

This feature enables OcNOS to run as Multicast router in the enterprise core. When running as an access switch it supports IGMP snooping, report suppression; this features allows for reduced IGMP report messages from flooding to the router as well sends only the subscribed groups to the hosts. With IGMP querier functionality the switch can be used in a layer-2 deployment in absence of a layer-3 multicast router.

OcNOS when as a layer-3 multicast router, supports PIM-SM, PIM-SSM and PIM-DM(for IPv4 and IPv6) these are again standards based and interop with industry leading switches and routers.

MPLS Features

OcNOS 1.2 introduces support for MPLS based transport networks. It supports MPLS as a basic tunnelling mechanism for setting up LSP based on LDP or RSVP strict path route.

Sub-Feature	Standard Supported/ Description
MPLS LSR/LER functionality	Supports RFC 3031, 3032. It allows for IP prefix route preference over a MPLS tunnel
LDP and RSVP with Integrated and Differentiated Services Support	Supports RFC 5036, 3037 for LDP and RSVP RFC 2205, 2961 and FRR RFC 4090
MPLS Psuedowire(PW) support	OcNOS supports PW setup using static provisioning and LDP (RFC 4447, 4448)
Virtual Private LAN Service (VPLS)	Support for LDP based VPLS signalling (RFC 4762)
MPLS-BGP-Layer3 VPN	Support for MPBGP based Layer-3 VPN

MPLS is also used presently as the primary VPN methodology to interconnect Layer-2 and Layer-3 customer domains. OcNOS supports both VPLS and VPWS L2VPNs, which emulate a LAN and P2P layer-2 connectivity across a service provider.

OcNOS can be used as the CPE device and have it connected with the customer's LAN on either end for transparent Layer2 services.

For Layer-3 VPNs OcNOS supports upto 250* VRF's again which can be used to connect to customer layer-3 domains.

Management and QoS Features

OcNOS presents a industry standard configuration CLI, thus allowing minimal learning curve for operations. It again features full standards based SNMP support for all Layer-2/ Layer-3 features*.

User additions and role allocation is again as per standard industry CLI's. Remote user authentication can be controlled using 802.1x and RADIUS, the user can login in via telnet or SSH. OcNOS also supports NETCONF for select protocols and has Ansible support for automated configurations.

The system supports network diagnostic tools like extended ping and traceroute.

For system diagnostics OcNOS also supports a software watchdog, which recovers the system in case of a process crash, additionally it collects sufficient logs for analysis later.

Traffic monitoring tools can be used to monitor the traffic pattern, with support of sFlow and traffic mirroring from a port. The traffic mirroring feature can restrict traffic using ACL match patterns.

Controlling and varying the traffic to suit QoS requirement for high priority traffic is critical for business deployments. OcNOS supports Hierarchical QoS, with this feature traffic flows can be fine grained and given different QOS policies from the same egress queue. OcNOS supports upto three levels of hierarchical QoS.

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About IP Infusion

IP Infusion, the leader in disaggregated networking solutions, delivers enterprise and carrier-grade software solutions to unlock your network's true potential. IP Infusion offers network operating systems for both physical and virtual networks to carriers, service providers and enterprises to achieve the disaggregated networking model. With the OcNOS™ and VirNOS™ network operating systems, IP Infusion offers a single, unified physical and virtual software solution to deploy new services quickly at reduced cost and with greater flexibility. Over 300 customers worldwide, including major networking equipment manufacturers, use IP Infusion's respected ZebOS platform to build networks to address the evolving needs of cloud, carrier and mobile networking. IP Infusion is headquartered in Santa Clara, Calif., and is a wholly owned and independently operated subsidiary of ACCESS CO., LTD. Additional information can be found at http://www.ipinfusion.com.

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