



# OcNOS™

## Version: OcNOS 1.2 Release

The OCNOS-ENT-IPBASE SKU has features which is useful for OcNOS deployment in small enterprises for internal LAN and access to service provider. The speeds are limited to 1G/10G only.

### Introduction

- The goal of this document includes the following:
- Explain the OcNOS features and license categories
- Installing OcNOS on the switch
- Basic Configuration and Verification
- License file and software updates
- Peripheral devices and compatibility

### OcNOS Feature Set and License Categories

OcNOS is available in three feature sets, OCNOS-ENT-IPBASE, OCNOS-DC-IPBASE & OCNOS-DC-MPLS.

Below mentioned are the sub-features present in OcNOS-ENT-IPBASE:

### System Features

- ONIE Support
- Chassis Management
- Multiple load sharing options
- Ingress/Egress Filters
- ARP/Proxy-ARP support
- DHCP Snooping
- DHCP Relay
- RADIUS
- TACACS+
- NTP
- QoS
- In-band management
- Traffic Mirroring
- Flow control support
- SSH/SNMP
- Role based CLI management and access

- Software Watchdog
- Control plane DOS protection and Errdisable
- Debugging and Logging Support
- Management VRF
- Software patch upgrade

### Layer-2 Features

- STP/RSTP/MSTP
- BPDU Guard and Root Guard
- Private VLAN
- LACP
- LLDP
- Routed VLAN Interface
- QinQ
- 802.1x
- Multi-chassis LAG
- Uplink Failure Detection and Trigger Failover

### Layer-3 Features

- IPv4 Routing
- RIP v2
- BFD and support over BGP, OSPF, ISIS
- BGP 4
- OSPF v2
- OSPFv3
- ISIS
- VRRP with multi-VR support

### Multicast Features

- IGMP Snooping
- PIM-SM/SSM/DM
- PIM-SSMv6
- MSDP Support

The OCNOS-DC-IPBASE is designed to be used in the data center network and Enterprise network switch which are based out of L2 or L3 designs. The DC-IPBASE-SKU is designed for 1RU form factor switches of 10G/40G/100G speeds.

### System Features

- ONIE Support
- Chassis Management
- UFT extended table size support
- Multiple load sharing options
- Ingress/Egress Filters
- ARP/Proxy-ARP support
- DHCP Snooping
- DHCP Relay
- RADIUS
- TACACS+
- In-band management
- Traffic Mirroring
- Flow control support
- SSH/SNMP
- Role based CLI management and access
- Sflow
- Software Watchdog
- Hierarchical QoS
- Control Plane DOS protection and Errdisable
- Debugging and Logging Support
- Management VRF
- Software upgrade via management interface

### Layer-2 Features

- STP/RSTP/MSTP
- BPDU Guard and Root Guard
- Private VLAN
- LACP
- LLDP
- Routed VLAN Interface
- QinQ
- 802.1x

- Multi-chassis LAG
- Uplink Failure Detection and Trigger Fail-over
- TRILL

### Layer-3 Features

- IPv4 Routing
- VRF Support
- RIP v2
- Segment Routing – OSPFv2 support
- BFD and support over BGP, OSPF, ISIS
- BGP 4
- OSPF v2
- OSPFv3
- VRRP with multi-VR support

### Data Center Features

- DCBX, PFC, ETS and QCN support

### Multicast Features

- IGMP Snooping
- PIM-SM/SSM/DM
- MSDP Support

The OCNOS-DC-IPMPLS is designed to be used in the data center network and Enterprise network switch which are based out of L2 or L3 designs. The DC-IPBASE-SKU is designed for 1RU form factor switches of 10G/40G/100G speeds.

### System Features

- ONIE Support
- Chassis Management
- UFT extended table size support
- Multiple load sharing options
- Ingress/Egress Filters
- ARP/Proxy-ARP support
- DHCP Snooping
- DHCP Relay
- RADIUS
- TACACS+
- In-band management
- Traffic Mirroring
- Flow control support
- SSH/SNMP
- Role based CLI management and access
- Sflow
- Software Watchdog

- Hierarchical QoS
- Control Plane DOS protection and Errdisable
- Debugging and Logging Support
- Management VRF
- Software patch upgrade

### Layer-2 Features

- STP/RSTP/MSTP
- BPDU Guard and Root Guard
- Private VLAN
- LACP
- LLDP
- Routed VLAN Interface
- QinQ
- 802.1x
- Multi-chassis LAG
- Uplink Failure Detection and Trigger Fail-over
- TRILL

### Layer-3 Features

- IPv4 Routing
- VRF Support
- RIP v2
- Segment Routing – OSPFv2 support
- BFD and support over BGP, OSPF, ISIS
- BGP 4
- OSPF v2
- OSPFv3
- VRRP with multi-VR support

### MPLS Features

- MPLS
- LDP and RSVP Support
- RSVP FRR
- VPLS with LDP Signaling
- VPWS with 1:1 backup support

- BGP MPLS L3VPN
- RSVP TE and DS-TE
- MPLS-DiffServ Support

### Data Center Features

- DCBX, PFC, ETS and QCN support

### Multicast Features

- IGMP Snooping
- PIM-SM/SSM/DM
- MSDP Support

### Installing OcNOS

OcNOS can be installed on the hardware platform, using ONIE. ONIE stands for Open Network Install Environment, it is an open initiative which allows for multiple install methods for the network operating system on network switches (Refer to [www.onie.org](http://www.onie.org) for more information).

The switch comes factory manufactured with the base ONIE installer. When the switch is powered on the ONIE installer software attempts to load the network operating system. It attempts to load the operating system by either one of the many ways like http, ftp or tftp.

In order to load OcNOS into the switch using http, the preferred mechanism is to connect the management port to a DHCP server. Boot the switch and choose install ONIE using DHCP option. The DHCP server in turn gives the http download URL path to the switch. For other methods of loading OcNOS image please refer to “Chapter: Installation and Recovering OcNOS” in the OcNOS Configuration Guide.

After the OcNOS installation is over, ensure successful installation by running network diagnostic tools like ping, traceroute etc.



DHCP Server, hosting http service and OcNOS image

## Basic Configuration and Verification

Depending on the OcNOS License type there are several features which can be configured. It is suggested to attempt the following configurations to become familiar with user interface and features.

- **System Management:** Refer “Chapter: System Management” in the OcNOS Configuration Guide. This allows the creation of a user.
- **System Configuration:** Refer “Chapter: System Configuration” ,this section explains the various modes available for users for configuration.
- **Port Layer2/3 Configuration:** Refer “Chapter: Hybrid Switch Router Configuration”, this section explains how to configure a port for Layer2, Layer3 or in a mixed mode.
- **Layer-2: Refer “Chapter: VLAN Configuration”,** this section explains how to configure VLAN's on the port level, including access and trunk port concepts.
- **Layer-3: Refer “Chapter: Static Routes”,** using static routes the user can verify network connectivity by ping/traceroute commands ( Refer “Chapter: IMI Shell commands”)

## License File and Software Updates

OcNOS installation should be followed by a License file installation. The License mechanism present in OcNOS is a node locked license mechanism which implies the given software can run on the specific hardware.

The License file is generated at backoffice and it uses the Service Tag of the switch as the hardware identifier of the switch. The License file is loaded automatically by the switch from the server which is loading the ONIE installer. In the absence of the license file or an incorrect license file the system will not work, in which case the license file can be loaded manually using a command line argument.

Please refer to “OcNOS Install Guide for your switch on how to install and verify..

OcNOS software updates come as ONIE packages. It may include software, hardware defect fixes or new features. OcNOS software update does not affect the user configuration file if it has been saved prior to the upgrade operation. Similarly it does not affect the license file and its reinstallation, automatic or manual is not required, as long as the upgrade is within the license period. If the upgrade is attempted beyond the license period, the software upgrade will fail and the system continues to run on the latest valid OcNOS image.

## Peripheral Devices and Compatibility

- Dell DAC-QSFP-40G 0.5m, 1m, 3m, 5m, 7m cable
- Dell DAC-QSFP-4SFP-10G-1M
- Dell 40G Fiber S/N DSL0A06
- Dell Cable, 40GbE QSFP+, Active Fiber Optic, 10M DP/N: 00C2YV
- QSFP Transceiver part no AFBR-79EEPZ-FT1 850nm LASER PROD 21 CFR(J) CLASS 1M
- Amphenol DAC FRU QSFP-40G PN 49Y7935
- Amphenol QSFP+ to 4xRJ45 Mega-bit Breakout cable P/N CN-0XJYD0-76962-4B6-6PGR-A00 40 GbE
- DELL-QSFP28 (100G) - 4WJ41
- AVAGO-QSFP (40G) - AFBR-79E4Z
- FINISAR CORP - SFP (10G) - FTLF-8519P2BNL
- EVERTZ- SFP (10G) - SFP10G-TR13S



### About IP Infusion

IP Infusion, the leader in disaggregated networking solutions, delivers the best network OS for white box and network virtualization. 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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