

OcNOS® Service-Provider (SP)

Datasheet | October 2021

1.0 Overview

The Service Provider mobile and wireline network of the future will not just need to provide exponentially higher bandwidth at lower operating costs but will also have to be capable of enabling new applications such as pervasive mobile broadband, IoT/sensor networks, autonomous vehicles and smart consumer wireless devices. Mobile network operators are actively seeking cost-effective Cell Site Gateway Solutions to accommodate the mass rollout of 4G/5G services to meet this mobile traffic demands. Disaggregated Open Network Solutions benefit operators as they build out 4G/5G infrastructure by reducing costs, expanding the vendor ecosystem and leveraging automation so they are more agile in introducing new services.

OcNOS Software

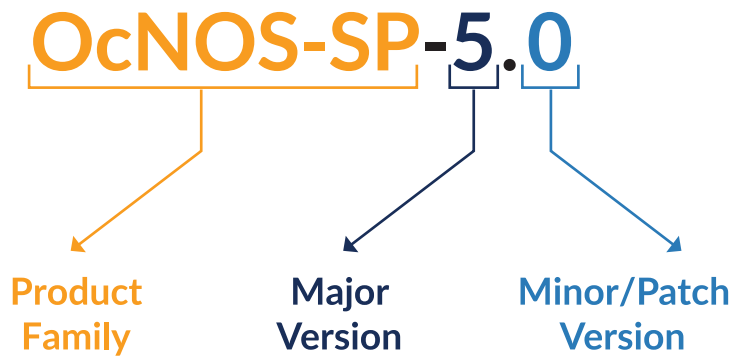
OcNOS (Open Compute Network Operating System) is a robust, programmable and innovative operating system, featuring a single software image that runs across the entire portfolio of Open Compute platforms from leading network device vendors. This guarantees consistent operations, workflow automation and high availability, while significantly reducing operational expenses.

OcNOS borrows heavily from the popular ZebOS line of products, which provides a rich feature density and robustness that has been built up over the years and validated in thousands of diverse customer networks. OcNOS provides industry standard CLIs, supports standard MIBs and other standard operation and management tools. Its integrated centralized management and provisioning layer allows for transaction-based configuration and device feature modelling.

OcNOS is a modular, multi-tasking network operating system, with tight integration capabilities on commodity hardware. This design allows for scaled and performance critical deployments.

2.0 IP Infusion Product Release Version

Release versions are denoted using an integer to indicate Major, Minor, and Hotfix / Patch.



Product Name: Refers to the IP Infusion Product Family (OcNOS-SP, OcNOS-OTN, OcNOS-DC, DVE etc.).

Major Version: New customer-facing functionality and represents a significant change to the code base or change of direction in the product.

Minor Version: Enhancements/extensions to existing features or requests to meet marketing requirements.

3.0 Features on OcNOS-SP Release

The table below lists the new software features in the OcNOS-SP 5.0 release. Note, the following mentioned features are only indicative and the detailed feature list may vary. Please refer to Feature Matrix for complete feature list on supported ODM platforms.

3.1 OcNOS-SP 5.0: Technical Specifications – Feature Support per SKU

Feature	Sub-Feature	CSR	IPADV-CE-AGGR	IPBASE	MPLS	OLT	OLT-IPBASE	OLT-IP-MPLS
Layer 2	Unidirectional Link Detection (UDLD)	Yes	Yes	Yes	Yes	No	Yes	Yes
Routing	Multiple Loopback interfaces in same VRF	No	No	No	Yes	No	No	Yes
Border Gateway Protocol (BGP)	BGP Unnumbered – using extended next hop encoding (ENHE)	Yes	Yes	Yes	Yes	No	Yes	Yes
	BGP Add Path – Advertisement of Multiple Paths in BGP	No	No	No	Yes	No	No	Yes
	BGP community for IANA (Internet Assigned Numbers Authority) reserved address for blackholing	No	No	No	Yes	No	No	Yes
	Advertising IPv4 Network Layer Reachability Information (NLRI) with an IPv6 Next Hop	Yes	No	No	Yes	No	No	Yes
Open Shortest Path First (OSPF)	OSPF Traffic Engineering (TE) Metric Extensions	Yes	No	No	Yes	No	No	Yes
	OSPF Sham-link between VPN (Virtual Private Networks) sites	No	No	No	Yes	No	No	Yes

Feature	Sub-Feature	CSR	IPADV-CE-AGGR	IPBASE	MPLS	OLT	OLT-IPBASE	OLT-IP-MPLS
Intermediate System-Intermediate System (ISIS)	IS-IS extensions for Traffic Engineering	Yes	Yes	Yes	Yes	No	Yes	Yes
	ISIS Traffic Engineering (TE) Metric Extensions	Yes	No	No	Yes	No	No	Yes
Multi-Protocol Label Switching (MPLS)	MPLS reachability for LU nexthop tracking	No	No	No	Yes	No	No	Yes
	LDP Graceful Restart	Yes	No	No	Yes	No	No	Yes
	RSVP Multipath (Mapping services over multiple RSVP trunks)	Yes	No	No	Yes	No	No	Yes
	RSVP Graceful Restart	Yes	No	No	Yes	No	No	Yes
	MPLS BFD Detection	Yes	No	No	Yes	No	No	Yes
Carrier Ethernet	Y.1731 Ethernet Bandwidth Notification (EBN)	Yes	Yes	No	Yes	No	No	Yes
	Ethernet Linear Protection (ELPS)	Yes	Yes	No	Yes	No	No	Yes
	EFM-OAM	Yes	Yes	Yes	Yes	No	Yes	Yes
Virtual Extensible LAN (VXLAN)	DHCP Relay for VXLAN IRB	No	No	Yes	Yes	No	Yes	Yes
	Static VXLAN	No	No	Yes	Yes	No	Yes	Yes
	VXLAN Trunk as access port	No	No	Yes	Yes	No	Yes	Yes
	VXLAN - Overlay Equal-Cost Multipath (ECMP)	No	No	Yes	Yes	No	Yes	Yes
Quality of Service (QoS)	IP SLA (ICMP Echo)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	ToS Based queue distribution over Layer 2 Interface	Yes	Yes	Yes	Yes	No	Yes	Yes
Management	Routing Protocols in Management VRF (RIP, RIPng, OSPF, and ISIS)	Yes	Yes	Yes	Yes	No	Yes	Yes
	Zero Touch Provisioning (ZTP) (with IPv6)	Yes	Yes	Yes	Yes	No	Yes	Yes
	DHCPv6 Prefix Delegation	Yes	Yes	Yes	Yes	No	No	No
	DNS Relay (v4 and v6)	Yes	No	Yes	Yes	No	Yes	Yes
	Storing Multiple images on Platform	Yes	Yes	Yes	Yes	No	Yes	Yes
	DHCP Relay over L3VPN	Yes	No	No	Yes	No	No	Yes
Network Configuration Protocol (NETCONF)	NETCONF Protocol over Transport Layer Security (TLS)	No	No	No	Yes	No	No	No
	Transaction based CLI	Yes	Yes	Yes	Yes	No	Yes	Yes
Security	DHCP Snooping	Yes	Yes	Yes	Yes	No	Yes	Yes
	IP Source Guard	Yes	Yes	Yes	Yes	No	Yes	Yes
	Dynamic ARP Inspection	Yes	Yes	Yes	Yes	No	Yes	Yes
	Timed ACL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hardware-Specific Features	PHY/MAC level interface loopback	Yes	Yes	Yes	Yes	No	Yes	Yes

Feature	Sub-Feature	CSR	IPADV-CE-AGGR	IPBASE	MPLS	OLT	OLT-IPBASE	OLT-IP-MPLS
Sub-interface	Subinterface support for L2VPN (VPWS, VPLS)	No	No	No	Yes	No	No	Yes
Optical Line Terminal (OLT)	DDM	No	No	No	No	Yes	No	No
	PPPoE	No	No	No	No	Yes	No	No
	Multi-device licensing for OLT and ONU	No	No	No	No	Yes	No	No
	In-band management	No	No	No	No	Yes	No	No
MPLS with EVPN	Support EVPN MPLS with RSVP-ECMP	Yes	No	No	Yes	No	No	Yes
	EVPN MPLS - L2CP on EVPN Access	Yes	No	No	Yes	No	No	Yes

3.2 OcNOS-SP SKUs

Key	SKU Name	Description
CSR	OCNOS-SP-CSR	Open Compute Network Operating System MPLS image for Cell Site Routing and Fixed Wireless, Microwave Integrated Backhaul with L2/L3 Switching and Routing Support
IPADV-CE-AGGR	OCNOS-SP-IPADV-CE-AGGR	Open Compute Network Operating System image for Carrier Ethernet aggregation with L2/L3 Switching and Routing Support.
IPBASE	OCNOS-SP-IPBASE	Open Compute Network Operating System IPBASE image for Service Providers with L2/L3 Switching and Routing Support.
MPLS	OCNOS-SP-MPLS	Open Compute Network Operating System MPLS image with L2/L3 Switching and Routing Support, and MPLS/MPLS-TP support.
OLT	OCNOS-SP-OLT	Open Compute Network Operating System with Support for XGS-PON of OLT with SFP+ 10 GbE Switching (vOLT adapter).
OLT-IPBASE	OCNOS-SP-OLT-SA-IPBASE	Open Compute Network Operating System for OLT Service Aggregation Node. IPBase image with L2/L3 Switching and Routing Support.
OLT-IP-MPLS	OCNOS-SP-OLT-SA-IPMPLS	Open Compute Network Operating System for OLT Service Aggregation Node for IP, MPLS image with L2/L3 Switching and Routing Support.

4.0 Solution Ordering Guide

4.1 Platforms Supported per SKU

S. No.	Vendor Platform	Chipset	Speed/Interface	CPU	CSR	IPADV-CE-AGGR	IPBASE	MPLS	OLT-LITE	OLT-IPBASE	OLT-IP-MPLS
1	Dell S4248-FB/FBL-ON	Qumran-MX BCM88375	40 x 10GE ports, 2 x 40GE QSPF+, 6 x 100GE QSPF28	Intel C2xxx Rangeley	No	Yes	Yes	Yes	No	No	No
2	DELTA AGC7648A	Qumra-MX BCM88375_B0	48 ports 10GE, 6 ports 100GE	Intel C2xxx Rangeley	No	Yes	Yes	Yes	No	No	No
3	Edgecore AS5912-54X	Qumran-MX BCM88370_B0	48 ports 10GE, 6 ports 100GE	Intel C2xxx Rangeley	No	Yes	Yes	Yes	No	Yes	Yes

S. No.	Vendor Platform	Chipset	Speed/Interface	CPU	CSR	IPADV-CE-AGGR	IPBASE	MPLS	OLT-LITE	OLT-IPBASE	OLT-IP-MPLS
4	Edgecore AS5915-18X	Qumran-UX BCM88272_A1	6 x 10GE ports, 8 x 1GE ports, 4 x 100/1000 Base-T RJ45 ports	Intel ATOM C3308	Yes	No	No	No	No	No	No
5	Edgecore AS5916-54XKS	Qumran-MX BCM88375 + BCM52311 TCAM	48 ports 10GE, 6 ports 100GE	Intel® Xeon® D-1548 processor 8 cores 2.0 GHz	No	Yes	Yes	Yes	No	No	No
6	Edgecore AS7316-26XB	Qumran-AX BCM88470	16 x 10GE ports, 8 x 25GE ports, 2 x 100GE ports	Intel Broadwell-DE D-1519 1.5G 4C	Yes	No	No	No	No	Yes	Yes
7	Edgecore ASXvOLT16	Qumran-AX BCM88470	16 ports XGS-PON, 4 ports 100GE QSFP28	Intel Broadwell-DE XeonD-1518 2.2 GHz	No	No	No	No	Yes	No	No
8	UfiSpace S9500-22XST	Qumran-AX BCM88470	2 x 100GE QSFP28 ports, 8 x 25GE SFP28 ports, 8 x 10GE SFP+ ports, 4 x 1GE RJ45 ports	Intel Broadwell-DE D-1519 1.5GHz 4-Core	Yes	No	No	No	No	Yes	Yes
9	UfiSpace S9500-30XS	Qumran-AX BCM88470	2 x 100GE QSFP28 ports, 8 x 25GE SFP28 ports, 20 x 10GE SFP+ ports	Intel Broadwell-DE D-1519 1.5GHz 4-Core	Yes	No	No	No	No	Yes	Yes
10	UfiSpace S9501-18SMT	Qumran-UX BCM88272_A1	6 x 10GE ports, 8 x 1GE ports, 4 x 1GE Base-T RJ45 ports	Intel Denverton-NS C3508 4 Cores @1.6GHz	Yes	No	No	No	No	No	No
11	UfiSpace S9501-28SMT	Qumran-UX BCM88270	8 x 10GE ports, 16 x 1GE ports, 4 x 1GE Base-T RJ45 ports	Intel Denverton-NS C3508 4 Cores @1.6GHz	Yes	No	No	No	No	No	No
12	TIBIT XGS-PON 10G SFP+ OLT	MicroPlug OLT	1 x 10G Ethernet-to-XGS-PON OLT MAC bridge	Tibit Hardware version 180713	No	No	No	No	Yes	No	No
13	Zyxel SDA3016SS	Aspen BCM68650	2 x 1GE/10GE/25GE SFP28, 2 x 40GE/100GE QSFP28, 16 x Flexible PON port (XGS-PON, GPON & Combo PON)	Intel ATOM C3308	No	No	No	No	Yes	No	No

4.2 Supported ONU Hardware Platforms

The OcNOS-SP SKU for ONU support is OCNOS-SP-ONU-64

S. No.	Vendor	Model	Firmware Version	Technology Supported
1	Alpha Networks	PON-34000B XGS-PON Business ONU	5.02L.07_008	XGS-PON
2	BFW	WAC5-40PG-TLAB-SR3.2.20	3.2.20	XGS-PON

4.3 Maintenance & Support

SKU	Maintenance & Support
OCNOS-MS-1Y	1 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
OCNOS-MS-3Y	3 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
OCNOS-MS-5Y	5 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for Severity 1 issues, normal business hours for all other issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
OCNOS-MS-1Y-Premium	1 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
OCNOS-MS-3Y-Premium	3 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.
OCNOS-MS-5Y-Premium	5 Year Maintenance & Support with Upgrades - Includes Technical support resources, software updates & upgrades, email and phone support, access to Support web site including case management system. Access to technical support team 24 x 7 for all 1 issues. "Upgrade" means a version change for the licensed software with substantial improvements, enhancements and bug fixes.

5.0 Relevant Links

Additional information about the following documents is available on the IP Infusion website (<https://www.ipinfusion.com/products/ocnos/>)

- Feature Matrix
- Software Feature Summary
- Supported Optical Transceivers & Cables
- NETCONF Support
- Configuration Guide
- Platform Datasheets

More Information

For more information about the OcNOS Service Provider Solution, contact your IP Infusion sales representative.

ABOUT IP INFUSION

IP Infusion, the leader in disaggregated networking solutions, delivers enterprise and carrier-grade software solutions allowing network operators to reduce network costs, increase flexibility, and to deploy new features and services quickly. 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>

© 2021 IP Infusion, Inc. All rights reserved. ZebOS and IP Infusion are registered trademarks and the IP Infusion logo, OcNOS and VirNOS are trademarks of IP Infusion, Inc. All other trademarks and logos are the property of their respective owners. IP Infusion assumes no responsibility for any inaccuracies in this document. IP Infusion reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Phone | +1 877-MYZEBOS
Email | sales@ipinfusion.com
Web | www.ipinfusion.com

U.S. (Santa Clara) | +1 408-400-1912
Japan (Tokyo) | +81 03-5259-3771
Korea (Seoul) | +82 10 2733 3016

India (Bangalore) | +91 (80) 6728 7000
China (Shanghai) | +86-186 1658 6466
EMEA | +49 (208) 8290 6464