



**OcNOS®**

**Open Compute Network Operating System  
for Service Providers**

**Release Notes**

**Version 7.0.0**

**February 2026**

©2026 IP Infusion Inc. All Rights Reserved.

This documentation is subject to change without notice. The software described in this document and this documentation are furnished under a license agreement or nondisclosure agreement. The software and documentation may be used or copied only in accordance with the terms of the applicable agreement. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or any means electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's internal use without the written permission of IP Infusion Inc.

IP Infusion Inc.

3979 Freedom Circle, Suite 900

Santa Clara, CA 95054

+1 408-400-1900

<http://www.ipinfusion.com/>

For support, questions, or comments via E-mail, contact:

[support@ipinfusion.com](mailto:support@ipinfusion.com)

**Trademarks:**

IP Infusion and OcNOS are trademarks or registered trademarks of IP Infusion. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Use of certain software included in this equipment is subject to the IP Infusion, Inc. End User License Agreement at <http://www.ipinfusion.com/license>. By using the equipment, you accept the terms of the End User License Agreement.

# | CONTENTS

|   |           |
|---|-----------|
| <b>Contents</b> .....   | <b>3</b>  |
| <b>Preface</b> .....  | <b>6</b>  |
| About this Guide .....  | 6         |
| Audience .....  | 6         |
| Conventions .....   | 6         |
| IP Infusion Product Release Version .....                           | 6         |
| Related Documentation .....   | 7         |
| Feature Availability .....  | 7         |
| Migration Guide .....   | 7         |
| IP Maestro Support .....  | 7         |
| Technical Support .....   | 7         |
| Technical Sales .....   | 7         |
| Technical Documentation .....                                       | 7         |
| Documentation Disclaimer .....                                      | 8         |
| Comments .....  | 8         |
| <b>Overview</b> .....   | <b>9</b>  |
| Target Users .....  | 9         |
| Key Capabilities .....  | 9         |
| Quick Links .....   | 9         |
| <b>OcNOS Service Providers</b> .....                                | <b>10</b> |
| Key Benefits of OcNOS .....   | 10        |
| <b>Release 7.0.0</b> .....  | <b>11</b> |
| Routing and Security Enhancements .....                             | 14        |
| BGP VRF Export-Map Enhancement .....                                | 14        |
| BGP RT-Filter Visibility Enhancements .....                         | 14        |
| RSVP Session Reoptimization .....                                   | 14        |
| RSVP-TE Shared Risk Link Group (SRLG) Support with IS-IS IGP .....  | 14        |
| IGMP Offlink Log Suppression .....                                  | 15        |
| Display Link Debounce Timer .....                                   | 15        |
| Enhanced Visibility for Re-Optimization Timer .....                 | 15        |
| ECMP Support for L3EVPN .....                                       | 15        |
| BGP Labeled Unicast Next Hop in Route-Map .....                     | 15        |
| BGP Route-map Nesting .....   | 15        |
| IS-IS Route Preference and Support for Prefix Attribute Flags ..... | 16        |
| Optimized Debug Logging via Background Debug Recording (BDR) .....  | 16        |
| Shared Risk Link Groups (SRLG) enhancements .....                   | 16        |
| Disjoint Backup Path .....  | 16        |
| Exclude SRLG Constraints .....                                      | 16        |
| BGP RPKI AS Origin Validation .....                                 | 16        |

|  |    |
|--|----|
| External PHY 100G Port Breakout .....  | 17 |
| Hop-Limit Constraint for Segment Routing Policy .....                          | 17 |
| Flex-Algo FTN Fallback .....   | 17 |
| Hash Offset and Seed Values for ECMP and Trunk .....                           | 17 |
| Route Maps in BGP EVPN .....   | 17 |
| LDP-IGP Synchronization Support Restriction on Loopback Interfaces .....       | 18 |
| VPWS MAC Withdrawal Enhancement for MTU-s Node Switchovers .....               | 18 |
| Layer 2 Service Enhancements .....   | 19 |
| Enhanced LACP Force-up Behavior .....  | 19 |
| EVPN MPLS E-Tree Scenario 2 Support .....                                      | 19 |
| Introduction of Ethernet Data Plane Loopback (EDPL) .....                      | 19 |
| Added Clear LLDP Neighbors .....   | 19 |
| Introduced a command to Disable MAC Learning on Layer 2 Protocol Packets ..... | 20 |
| Layer 2 or Layer 3 Overlay Networking .....                                    | 21 |
| Recursive Next-Hop Resolution with MPLS Next-Hop .....                         | 21 |
| Flow-Aware Transport Label for EVPN over MPLS .....                            | 21 |
| SNMP Traps for TWAMP .....   | 21 |
| Network Management and Automation .....  | 22 |
| Mandatory Migration of Service Template Configuration before Upgrade .....     | 22 |
| RBAC Access to System Bootup Logs .....  | 22 |
| NetConf Support for Dynamic MAC Addresses .....                                | 22 |
| NetConf Access Control Model User Guide .....                                  | 22 |
| Event Manager Action Script Validation Enhancement .....                       | 23 |
| sFlow - Sample Packet Monitoring for Multiple Interfaces .....                 | 23 |
| Secure Upgrade and Downgrade Using HTTPS .....                                 | 23 |
| Support for USB-Based Backup and Restore .....                                 | 23 |
| SNMP SysOID Support for Vendor and Model Identification .....                  | 23 |
| Enhanced Alarm Support in the Fault Management System .....                    | 24 |
| Support for CLI-Script and CLI-Shell Commands .....                            | 24 |
| sFlow Port PVID Update Support for Sampled Traffic .....                       | 24 |
| Enhanced DHCP Snooping and Relay Option 82 Support .....                       | 24 |
| SNMP Configuration for ALARM-MIB Support .....                                 | 25 |
| System Limits and Counters – Show and NetConf Enhancement .....                | 25 |
| sFlow - Ingress and Egress Interface Indexes for Sample Packets .....          | 25 |
| Streaming Telemetry Enhancements .....   | 25 |
| On-Change Stream Mode Support .....  | 25 |
| Enhanced gNMI Authentication and Certificate Management .....                  | 25 |
| Enhanced Port Configuration .....  | 26 |
| IPv6 Interface Support Update .....  | 26 |
| Data Model Support .....   | 26 |
| VxLAN OAM for Overlay Networks .....   | 26 |
| Image Upgrade by Traffic Diversion (IUTD) .....                                | 26 |
| Deprecation of commit dry-run Command .....                                    | 27 |
| Management over User-Defined VRF .....   | 27 |
| Support for Custom GET/SET RPCs .....  | 27 |
| Enhanced Security and Performance .....  | 28 |
| Per-Core CPU Average Setting .....   | 28 |

|   |    |
|---|----|
| SNMPv3 User Password Encryption .....                                       | 28 |
| Fan Duty Cycle Control .....  | 28 |
| L2VPN–L3VPN Stitching .....   | 28 |
| VC Reversion Enhancement with Revert Timer for VPWS and VPLS (H-VPLS) ..... | 28 |
| Container Runtime and Life Cycle Management Using K3S .....                 | 29 |
| NIF LED Behavior Enhancements .....   | 29 |
| LAG Egress Shaping or Policing on Sub-interfaces .....                      | 29 |
| TWAMP Scaling Enhancements .....  | 29 |
| LDP-over-RSVP Phase 2 (OSPF Support) .....                                  | 30 |
| ROAN Application on the UFI9510-28DC board .....                            | 30 |
| Enhanced SSH HostKey Algorithm .....  | 30 |
| Hardware Platform .....   | 31 |
| Multi Firmware Update Version Display .....                                 | 31 |
| UfiSpace S9502-12SM NT (QUX) (No Timing Port Model) .....                   | 31 |
| Ethernet I/O ports .....  | 31 |
| Management interfaces .....   | 31 |
| Edgecore AS5916-54XL (QMX) .....  | 31 |
| Ethernet I/O ports .....  | 32 |
| Management interfaces .....   | 32 |
| Transceivers .....  | 32 |
| Smartoptics IPI-SO-TD8002-S31C-SO .....                                     | 32 |
| ATOP IPI-AT-APQD85KCDMS8C .....   | 33 |
| E.C.I.Networks IPI-EN-QDD800-2LR4-2CS .....                                 | 34 |
| E.C.I.Networks IPI-EN-QDD800DAC-xM .....                                    | 34 |
| Accelink IPI-AL-RTXM600-411 .....   | 34 |
| Accelink IPI-AL-RTXM600-2004 .....  | 35 |
| Accelink IPI-AL-RTXM-600-2001 .....   | 35 |
| Smartoptics IPI-SO-TQ2031-TUNC-SO .....                                     | 36 |
| Smartoptics IPI-SO-TQ2025-TUNC-SO .....                                     | 37 |
| Smartoptics IPI-SO-TOC003-SC4C-SO .....                                     | 37 |
| Smartoptics IPI-SO-TOC004-SC4C-SO .....                                     | 38 |
| Smartoptics IPI-SO-DOC001-003C-SO .....                                     | 38 |
| Security Updates .....  | 39 |
| OcNOS End-of-Sale Notice .....  | 39 |

# PREFACE

## About this Guide

This guide describes how to configure Release Notes in OcNOS.

## Audience

This guide is intended for network administrators and other engineering professionals who configure OcNOS.

## Conventions

The [Table 1](#) table shows the conventions used in this guide.

**Table 1. Conventions**

| Convention  | Description  |
|---|--|
| <i>Italics</i>  | Emphasized terms; titles of books                                  |
|  <b>Note:</b> | Special instructions, suggestions, or warnings                     |
| <code>monospaced type</code>  | Code elements such as commands, parameters, files, and directories |

## IP Infusion Product Release Version

Each integer in release numbers indicates Major, Minor, and Maintenance release versions. Build numbers that follow the release numbers are for internal tracking and verification of the software build process and are visible to customers as part of the software version number.



**Product Name:** IP Infusion Product Family

**Major Version:** New customer-facing functionality that represents a significant change to the code base; including a significant marketing change or direction in the product.

**Minor Version:** Enhancements or extensions to existing features, changes to address external needs, or internal improvements to satisfy new sales regions or marketing initiatives.

**Maintenance Version:** A collection of product bugs or issues usually scheduled every 30 or 60 days, based on the number of issues.

---

## Related Documentation

For information about installing OcNOS, see the *Installation Guide* for your platform.

---

## Feature Availability

Each OcNOS SKU contains a set of supported features. For a list of available features based on the SKU that you purchased, refer to the [Feature Matrix](#) .

---

## Migration Guide

Check the *Migration Guide* for necessary configuration changes before migrating from one version of OcNOS to another.

---

## IP Maestro Support

Monitor devices running OcNOS Release 6.3.4-70 and above using IP Maestro software.

---

## Technical Support

IP Infusion maintains an online technical support site that provides a variety of technical support programs for licensed OcNOS customers at the [Technical Assistance Center](#).

Customers and partners enjoy full access to the support website. The site allows customers and partners to open technical support calls, update open calls with new information, and review the status of open or closed calls. The password-protected site includes technical documentation, Release Notes, and descriptions of service offerings.

---

## Technical Sales

Contact the IP Infusion sales representative for more information about the OcNOS solution.

---

## Technical Documentation

For core commands and configuration procedures, visit: [Product Documentation](#).

For training videos, visit: [OcNOS Free Training Videos](#).

For a list of supported platforms and SKUs of OcNOS features, refer to the [OcNOS Feature Matrix](#).

## Documentation Disclaimer

The global documentation site is evolving to provide an enhanced website user experience for select topics included in this release. Some guides are now available outside the existing documentation library and can be accessed directly from custom documentation landing pages. These guides offer robust in-built search functionality.

For the latest documentation, visit the product-specific documentation landing page and select the relevant guide.

## Comments

If you have comments, or need to report a problem with the content, contact [techpubs@ipinfusion.com](mailto:techpubs@ipinfusion.com).

# OVERVIEW

The Open Compute Network Operation System Data Center (OcNOS) Release Notes provide a consolidated summary of all new features, enhancements, hardware additions, and optics support introduced in a specific release. This document serves as the primary reference for understanding the scope and impact of changes delivered in that release.

Release Notes present high-level feature summaries and platform updates. Detailed configuration and operational information is available in the respective module guides within the documentation library.

---

## Target Users

This guide is intended for:

- Network architects evaluating release readiness
- Operations teams planning upgrades
- Technical planners assessing feature availability
- Sales and solution teams aligning capabilities to customer requirements

---

## Key Capabilities

This guide enables users to:

- Quickly identify new features and enhancements introduced in a release
- Review added hardware and optics support
- Assess release impact before upgrade planning
- Navigate to corresponding module documentation for detailed implementation

---

## Quick Links

- [Routing and Security Enhancements \(page 14\)](#)
- [Layer 2 Service Enhancements \(page 19\)](#)
- [Layer 2 or Layer 3 Overlay Networking \(page 21\)](#)
- [Network Management and Automation \(page 22\)](#)
- [Enhanced Security and Performance \(page 28\)](#)
- [Hardware Platform \(page 31\)](#)
- [Security Updates \(page 39\)](#)
- [OcNOS End-of-Sale Notice \(page 39\)](#)

# OCNOS SERVICE PROVIDERS

OcNOS Service Providers (SP) provides a complete solution for access, cell site router and aggregation networks. Support for advanced capabilities such as SR-MPLS, Timing and Synchronization, EVPN Fabric, IP over DWDM with 400G ZR/ZR+ optics, and more is available in OcNOS SP. IP Infusion offers disaggregated solutions that reduces overall Total Cost of Ownership (TCO), expands the vendor landscape, and enables agile service introduction through automation.

Disaggregation is pivotal, separating networking software from hardware to enhance programmability, automation, and control, resulting in better network management and potential cost savings.

Rising network traffic due to remote work applications has prompted efficient data and performance management. Service Providers must deliver high-performance services reliably, efficiently, and securely. Robust carrier-grade capabilities are needed for effective broadband aggregation and edge routing, accommodating the escalating capacities required for advanced networks. This enables efficient management of high-traffic volumes across applications like mobility, cloud networking, video, and gaming.

---

## Key Benefits of OcNOS

Open Compute Network Operating System (OcNOS) is a network operating system designed to run on Commercial Off-The-Shelf (COTS) platforms, following the principles of disaggregated networking. OcNOS provides a softwarebased solution for network switches and routers, offering a flexible and open approach to networking.

Key benefits of OcNOS:

- Robust Protocol Support
- Network Virtualization
- Programmability and Automation
- Resilience
- Scalability and Performance

OcNOS works with applications in diverse network environments, including data centers, service provider networks, enterprise networks, and cloud deployments. It provides an open, flexible environment, extensive protocol support for software-defined networking (SDN) and disaggregated networks.

# RELEASE 7.0.0

OcNOS SP Release 7.0.0 introduces several software features, product enhancements, and support for new optics and hardware devices.

|  |    |
|--|----|
| Routing and Security Enhancements .....  | 14 |
| BGP VRF Export-Map Enhancement .....   | 14 |
| BGP RT-Filter Visibility Enhancements .....                                    | 14 |
| RSVP Session Reoptimization .....  | 14 |
| RSVP-TE Shared Risk Link Group (SRLG) Support with IS-IS IGP .....             | 14 |
| IGMP Offlink Log Suppression .....   | 15 |
| Display Link Debounce Timer .....  | 15 |
| Enhanced Visibility for Re-Optimization Timer .....                            | 15 |
| ECMP Support for L3EVPN .....  | 15 |
| BGP Labeled Unicast Next Hop in Route-Map .....                                | 15 |
| BGP Route-map Nesting .....  | 15 |
| IS-IS Route Preference and Support for Prefix Attribute Flags .....            | 16 |
| Optimized Debug Logging via Background Debug Recording (BDR) .....             | 16 |
| Shared Risk Link Groups (SRLG) enhancements .....                              | 16 |
| BGP RPKI AS Origin Validation .....  | 16 |
| External PHY 100G Port Breakout .....  | 17 |
| Hop-Limit Constraint for Segment Routing Policy .....                          | 17 |
| Flex-Algo FTN Fallback .....   | 17 |
| Hash Offset and Seed Values for ECMP and Trunk .....                           | 17 |
| Route Maps in BGP EVPN .....   | 17 |
| LDP-IGP Synchronization Support Restriction on Loopback Interfaces .....       | 18 |
| VPWS MAC Withdrawal Enhancement for MTU-s Node Switchovers .....               | 18 |
| Layer 2 Service Enhancements .....   | 19 |
| Enhanced LACP Force-up Behavior .....  | 19 |
| EVPN MPLS E-Tree Scenario 2 Support .....                                      | 19 |
| Introduction of Ethernet Data Plane Loopback (EDPL) .....                      | 19 |
| Added Clear LLDP Neighbors .....   | 19 |
| Introduced a command to Disable MAC Learning on Layer 2 Protocol Packets ..... | 20 |
| Layer 2 or Layer 3 Overlay Networking .....                                    | 21 |
| Recursive Next-Hop Resolution with MPLS Next-Hop .....                         | 21 |
| Flow-Aware Transport Label for EVPN over MPLS .....                            | 21 |
| SNMP Traps for TWAMP .....   | 21 |
| Network Management and Automation .....  | 22 |
| Mandatory Migration of Service Template Configuration before Upgrade .....     | 22 |

|   |    |
|---|----|
| RBAC Access to System Bootup Logs .....                                     | 22 |
| NetConf Support for Dynamic MAC Addresses .....                             | 22 |
| NetConf Access Control Model User Guide .....                               | 22 |
| Event Manager Action Script Validation Enhancement .....                    | 23 |
| sFlow - Sample Packet Monitoring for Multiple Interfaces .....              | 23 |
| Secure Upgrade and Downgrade Using HTTPS .....                              | 23 |
| Support for USB-Based Backup and Restore .....                              | 23 |
| SNMP SysOID Support for Vendor and Model Identification .....               | 23 |
| Enhanced Alarm Support in the Fault Management System .....                 | 24 |
| Support for CLI-Script and CLI-Shell Commands .....                         | 24 |
| sFlow Port PVID Update Support for Sampled Traffic .....                    | 24 |
| Enhanced DHCP Snooping and Relay Option 82 Support .....                    | 24 |
| SNMP Configuration for ALARM-MIB Support .....                              | 25 |
| System Limits and Counters – Show and NetConf Enhancement .....             | 25 |
| sFlow - Ingress and Egress Interface Indexes for Sample Packets .....       | 25 |
| Streaming Telemetry Enhancements .....                                      | 25 |
| VxLAN OAM for Overlay Networks .....  | 26 |
| Image Upgrade by Traffic Diversion (IUTD) .....                             | 26 |
| Deprecation of commit dry-run Command .....                                 | 27 |
| Management over User-Defined VRF .....                                      | 27 |
| Support for Custom GET/SET RPCs .....                                       | 27 |
| Enhanced Security and Performance .....                                     | 28 |
| Per-Core CPU Average Setting .....  | 28 |
| SNMPv3 User Password Encryption .....                                       | 28 |
| Fan Duty Cycle Control .....  | 28 |
| L2VPN–L3VPN Stitching .....   | 28 |
| VC Reversion Enhancement with Revert Timer for VPWS and VPLS (H-VPLS) ..... | 28 |
| Container Runtime and Life Cycle Management Using K3S .....                 | 29 |
| NIF LED Behavior Enhancements .....   | 29 |
| LAG Egress Shaping or Policing on Sub-interfaces .....                      | 29 |
| TWAMP Scaling Enhancements .....  | 29 |
| LDP-over-RSVP Phase 2 (OSPF Support) .....                                  | 30 |
| ROAN Application on the UFI9510-28DC board .....                            | 30 |
| Enhanced SSH HostKey Algorithm .....  | 30 |
| Hardware Platform .....   | 31 |
| Multi Firmware Update Version Display .....                                 | 31 |
| UfiSpace S9502-12SM NT (QUX) (No Timing Port Model) .....                   | 31 |
| Edgecore AS5916-54XL (QMX) .....  | 31 |
| Transceivers .....  | 32 |
| Security Updates .....  | 39 |

---

|                                |    |
|--------------------------------|----|
| OcNOS End-of-Sale Notice ..... | 39 |
|--------------------------------|----|

---

## Routing and Security Enhancements

### BGP VRF Export-Map Enhancement

OcNOS now supports route-map–based export filtering and attribute modification at the VRF level. Administrators can apply route-maps to VRFs to filter exported routes using match conditions and adjust key BGP attributes with set clauses before the routes leave the VRF. This provides more granular control over inter-VRF route export policies, enhances security, and improves traffic engineering.

For more details, refer to the [export map](#) command in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

### BGP RT-Filter Visibility Enhancements

OcNOS introduces two new commands, `show ip bgp rtfilter neighbors <prefix> advertised-routes` and `show ip bgp rtfilter neighbors <prefix> received-routes`, to display BGP Route-Target (RT) filter routes advertised to or received from a specific neighbor. These commands enhance visibility and make troubleshooting RT-filter route exchanges easier.

For more details, refer to the `show ip bgp rtfilter neighbors` command in the *OcNOS Layer 3 Guide*, Release 7.0.0.

For more details, refer to the [show ip bgp rtfilter neighbors](#) command in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

### RSVP Session Reoptimization

**LSP Re-optimization Visibility:** Re-optimization for LSP sessions was previously managed internally with limited visibility. This enhancement allows users to view LSP names along with the remaining time until the next re-optimization cycle for each LSP.

For more information, see the [Show CSPF LSP](#) command in *OcNOS Layer 3 Guide*, Release 7.0.0.

**LSP Force Re-optimize Enhancement:** OcNOS modifies the existing `rsvp-trunk TRUNKNAME force-reoptimize` command to `rsvp-session SESSIONNAME force-reoptimize`. The earlier command reoptimized only the primary session of a trunk. The new command allows operators to immediately reoptimize any RSVP session (primary or secondary) by specifying its session name. This enhancement provides operators with better control, ensuring that secondary tunnels can be reoptimized on demand.

For more details, see the [rsvp-session force-reoptimize](#) topic in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

### RSVP-TE Shared Risk Link Group (SRLG) Support with IS-IS IGP

OcNOS introduces support for RSVP-TE Shared Risk Link Group (SRLG) with IS-IS IGP, extending the SRLG functionality previously available with OSPF. SRLG enables path computation for secondary backup LSPs and Fast Reroute (FRR) LSPs that are disjoint from primary paths, reducing the probability of simultaneous failures across shared physical resources.

For more details, see the [RSVP SRLG with ISIS IGP](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

## IGMP Offlink Log Suppression

OcNOS adds a new per-interface CLI option `log-suppress` to the `ip igmp offlink` command. When configured, warning messages for IGMP reports from non-local subnets are suppressed entirely, reducing log volume in environments with many offlink receivers.

For more details, see the [ip igmp offlink](#) command in the *OcNOS Multicast Guide*, Release 7.0.0.

---

## Display Link Debounce Timer

Introduced a new CLI command `show interface (IFNAME|) link-debounce (details|)` to display link debounce timer information. This command provides per-interface configuration and status of link-UP and link-DOWN debounce timers, including the active or inactive state, the remaining time before the timer expires, and the number of interface flaps recorded, thereby helping in effective monitoring and troubleshooting of interface stability.

For more information, see the [show interface link debounce](#) command in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Enhanced Visibility for Re-Optimization Timer

Re-optimization for LSP sessions was previously managed internally, with limited visibility for users to monitor when the next re-optimization would occur. This enhancement introduces the ability to view the remaining time until the next re-optimization cycle for each LSP.

---

## ECMP Support for L3EVPN

Equal Cost Multipath (ECMP) support for L3EVPN helps in load-balancing the EVPN-IRB traffic and supports traffic on all the IP paths that are available in an MPLS-based EVPN network with a symmetric IRB (S-IRB) configuration.

For more information, refer to the [ECMP Support for L3EVPN](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

## BGP Labeled Unicast Next Hop in Route-Map

BGP Labeled Unicast Next Hop in Route-Map provides the ability to selectively set the next hop value to self, and the label attributes of the matched routes are replaced with the local BGP peer address and the local label.

For more information, refer to the [BGP Labeled Unicast Next Hop in Route-Map](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

## BGP Route-map Nesting

Route-maps filter incoming updates from a BGP peer and the `match route-map` command within a route-map allows another route-map to be called a subroutine. Such a nested route-map is evaluated and based on the return it is treated as a match or no-match.

For more information, refer to the [Route-map Nesting](#) in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

---

## IS-IS Route Preference and Support for Prefix Attribute Flags

Route preference rules have been implemented in IS-IS IPv4 (TLV 135) and IPv6 (TLV 236) in accordance with RFC 7775. In addition, support for Prefix Attribute Flags sub-TLV has been extended. In addition to the previously supported ELC bit, the system now advertises the Prefix Attribute Flags sub-TLV by default for all prefixes, supporting X (External Prefix), R (Re-advertisement), and N (Node/Loopback) flags.

For more information on IS-IS IPv4 and IPv6 and Prefix Attribute Flags, refer to [Intermediate System to Intermediate System Configuration](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

## Optimized Debug Logging via Background Debug Recording (BDR)

Introduced the Background Debug Recording (BDR) feature to optimize debug logging performance by storing debug logs in an in-memory buffer instead of writing them directly to disk, and periodically or manually flushing them to log files to reduce I/O overhead. This enables users to keep debugging active during testing without impacting system performance or requiring test reruns. In the event of a crash, in-memory logs can be retrieved for analysis. The feature supports configurable buffer sizes (1–10 MB), module-based logging, severity level selection, and optional suppression of non-BDR logs. BDR must be explicitly enabled and configured per module.

For more details, see the [Background Debug Recording](#) section of the *OcNOS System Management Guide*, Release 7.0.0.

---

## Shared Risk Link Groups (SRLG) enhancements

### Disjoint Backup Path

This is an enhancement to Topology Independent Loop-Free Alternate (TI-LFA) based calculations of backup path(s) in Flex- Algo that allow the setup of disjoint path(s) for each specific default or flexible algorithm by leveraging deployed SRLG configurations.

### Exclude SRLG Constraints

The SRLG constraints have been introduced to compute flexible algorithm-specific paths that avoid links with the same risk that an operator intends these paths to avoid. When such constraints are configured for a flexible algorithm definition, the computed paths do not traverse any links that advertise the same SRLG(s) as the specific Flexible Algorithm definition.

For more details, refer to [Flexible Algorithm for ISIS with SRLG](#) section in the *OcNOS Segment Routing Guide*, Release 7.0.0.

---

## BGP RPKI AS Origin Validation

OcNOS now enables BGP routers to perform RPKI origin validation while allowing routes with an invalid RPKI status. Operators can configure route-maps to match routes based on RPKI validation states (valid, invalid, not-found) and apply actions such as setting local preference or filtering. This feature provides flexibility in routing policy enforcement and supports the gradual adoption of RPKI without disrupting legitimate traffic.

For more details, refer to [BGP RPKI AS Origin Validation](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

## External PHY 100G Port Breakout

The AS9947-36XKB (J2C+) platform supports 100G QSFP28 port breakout into 4×10G or 4×25G logical interfaces, enhancing port flexibility and migration across 10G/25G/100G networks.

For more details, refer to [External PHY 100G Port Breakout](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Hop-Limit Constraint for Segment Routing Policy

The hop-limit constraint is introduced for the dynamic path of Segment Routing (SR) Policy. This constraint defines the maximum number of hops a packet can traverse along an SR policy path. It helps prevent routing loops and ensures that packets reach the destination within a controlled path length.

For more details, refer to the [SR Policy Hop-Limit](#), [Segment Routing Policy Commands](#), and [On-Demand Nexthop Commands](#) sections in the *OcNOS Segment Routing Guide*, Release 7.0

---

## Flex-Algo FTN Fallback

Flex-Algo FTN Fallback introduces a fallback mechanism for Flex-Algo FTN (FA-FTN). When the primary FA-FTN is unavailable, the system automatically maps colored services to a fallback FTN—either a native SR-FTN or another configured FTN—ensuring service continuity and consistent traffic forwarding.

For more information, refer to [Flex-Algo FTN Fallback](#) section in the *OcNOS Segment Routing Guide 7.0.0*.

---

## Hash Offset and Seed Values for ECMP and Trunk

In previous releases, there was no CLI to configure hash offset and hash seed values for ECMP and Trunk. With this enhancement, administrators can now configure these parameters directly using new CLI commands.

These commands are available only when load balancing is enabled. The `no` form of each command resets the corresponding value to its default.



**Note:** It is applicable only on Qumran1 (Q1) series platforms.

For more details, refer to the [System Configure Mode Commands](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Route Maps in BGP EVPN

Enables operators to apply route maps for the EVPN address family, including BGP L2VPN unnumbered mode. Allows matching on EVPN route-type and MAC lists to filter routes in IN and OUT directions, providing fine-grained policy control, selective advertisement of Type-5 prefixes, and flexible route management across EVPN networks.

For more information, refer to the [Route Maps in BGP EVPN](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

---

## LDP-IGP Synchronization Support Restriction on Loopback Interfaces

Configuring mpls ldp-igp sync on a loopback interface fails to commit, showing an “interface not supported” or IGP validation error. This occurs when attempting to enable LDP-IGP synchronization on loopback interfaces with IS-IS or OSPF. As a result, LDP-IGP sync cannot be applied to loopback interfaces.

For more information, refer to the [EVPN MPLS E-Tree](#), [E-Tree Active-Standby Configuration](#), [Configure TWAMP over EVPN for LDP](#), and [Anycast Gateway Routing for Multiple Subnets in EVPNIRB](#) sections in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

## VPWS MAC Withdrawal Enhancement for MTU-s Node Switchovers

MAC Withdrawal Support for VPWS deployments on MTU-s Node. This enhancement extends MAC withdrawal support to VPWS configurations on MTU-s Node. Previously, MAC flushing was supported for VPLS configured on MTU-s. With this update, MAC withdrawal is now triggered during VC switchover (standby to active or vice versa) even when VPWS is deployed.

For more information, refer to the [MAC Withdrawal - VPLS/H-VPLS](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

## Layer 2 Service Enhancements

### Enhanced LACP Force-up Behavior

OcNOS introduces the 90-second activation delay timer for LACP force-up links. A link enters the force-up state after 90 seconds without PDUs on all member links and immediately exits when PDUs are received. The timer restarts when a member link flaps.

For more details, refer to the [LACP Aggregator Force-up](#) section in the *OcNOS Layer 2 Guide*, Release 7.0.0.

---

### EVPN MPLS E-Tree Scenario 2 Support

OcNOS introduces support for EVPN E-Tree Scenario 2 (SC-2), enabling Root and Leaf sites to co-exist on the same PE within a single EVI. The feature enforces strict Leaf-to-Leaf isolation for both unicast and BUM traffic through ingress and egress filtering, using new E-Tree Extended Community attributes in RT-1 and RT-2 routes. Scenario 2 supports both single-homed and multi-homed topologies and applies only to Qumran2 (Q2) series platforms, ensuring efficient hardware-based Leaf Label enforcement for secure and flexible E-Tree deployments.

For more details, refer to the [EVPN MPLS E-Tree Scenario 2](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

### Introduction of Ethernet Data Plane Loopback (EDPL)

Introduced the Ethernet Data Plane Loopback (EDPL) feature to enable RFC 2544-compliant performance testing on Ethernet interfaces. EDPL allows the device to operate as a reflector by looping back test traffic received from an external traffic generator, swapping packet headers such as MAC addresses, IP addresses, and UDP/TCP ports. The feature supports Layer 2, IPv4, and IPv6 loopback across physical ports, sub-interfaces, and logical interfaces (SVI, IRB, BVI) in both upstream and downstream directions. It enables operators to validate performance metrics such as throughput, latency, and frame loss without requiring external traffic reflection devices. In this release, only reflector functionality is supported, and the feature is available on Jericho2 and Jericho2c+ (J2C+) series platforms.

For more details, see the [Ethernet Data Plane Loopback \(EDPL\)](#) section of the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

### Added Clear LLDP Neighbors

Introduced a new CLI command `clear lldp neighbors` to allow operators to dynamically clear LLDP neighbor information. This enhancement enables users to remove all learned LLDP neighbors at once or selectively clear entries associated with a specific interface, providing operational flexibility for troubleshooting neighbor discovery, validating link changes, and refreshing LLDP state without requiring a system or process restart. The feature is available in both Exec and Privileged Exec modes and helps maintain accurate and up-to-date LLDP topology information.

For more details, refer to the [Link Layer Discovery Protocol Commands Link Layer](#) section of the *OcNOS Layer 2 Guide*, Release 7.0.0.

## Introduced a command to Disable MAC Learning on Layer 2 Protocol Packets

Introduced a new CLI `l2protocol all learn-disable` command to disable MAC address learning from all Layer 2 protocol data units (BPDUs) received on the device. When configured, the device does not learn the source MAC addresses of Layer 2 control protocol packets, including xSTP, LACP, EAP, LLDP, EFM, SyncE, and ELMI, on any interface.

For more details, see the [l2protocol all learn-disable](#) topic in the OcNOS System Management Guide, Release 7.0.0.

---

## Layer 2 or Layer 3 Overlay Networking

### Recursive Next-Hop Resolution with MPLS Next-Hop

Introduces the ability for OcNOS to resolve recursive BGP and static routes in the default VRF using MPLS transport paths, allowing seamless packet forwarding across a BGP-free MPLS core. It supports BGP-Free Core deployments by recognizing MPLS LSPs (LDP, RSVP-TE, and SR-MPLS) as valid forwarding options, ensuring scalable, resilient, and simplified core designs with improved failover through MPLS ECMP and protection mechanisms.

For more details, refer to the [Recursive Next-Hop Resolution with MPLS Next-Hop](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

### Flow-Aware Transport Label for EVPN over MPLS

OcNOS introduces Flow-Aware Transport (FAT) label support to enable per-flow entropy for ECMP load balancing in EVPN MPLS networks. Enhances traffic distribution, improves core utilization, and reduces congestion in data center and large-scale EVPN deployments.

For more details, see the [Flow-Aware Transport for EVPN over MPLS](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

### SNMP Traps for TWAMP

OcNOS introduces two new SNMP traps, `twamp-overall-rate-crossed` and `twamp-overall-rate-crossed-clear`, to enhance traffic monitoring. These traps provide real-time notifications when the Two-Way Active Measurement Protocol (TWAMP) rate limit is triggered or cleared.

For more information about these **TWAMP** SNMP traps and their specific OIDs, refer to the [TWAMP for Client and Server with SNMP](#) topic in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

## Network Management and Automation

### Mandatory Migration of Service Template Configuration before Upgrade

After the upgrade to OcNOS 7.0.0 Release, the Service Template CLI commands will be hidden. It is recommended to migrate all Service Template configurations to sub-interface–based commands prior to performing the upgrade.

The following CLI commands are deprecated and no longer supported:

- `mpls-l2-circuit <NAME> service-template <NAME> ((primary|secondary))`
- `vc-mode (standby|revertive) service-template <NAME>`
- `mpls-vpls <NAME> service-template <NAME>`
- `service-template <NAME>`

---

### RBAC Access to System Bootup Logs

RBAC users with privilege levels below 15 can now execute the `show system bootup-log` command, enabling secure access without elevated privileges. Previously, RBAC users were unable to run this command due to file permission restrictions. OcNOS now allows RBAC users to view system bootup logs, enhancing troubleshooting and operational visibility while maintaining secure access controls.

For more details, see the [RBAC Bootup Log Access](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

### NetConf Support for Dynamic MAC Addresses

OcNOS supports fetching dynamically learned MAC address entries via NETCONF, mirroring the `show mac address-table dynamic bridge-domain all` command. The new XPath `/network-instances/network-instance/bridge-domain/bridge-domain-mac-table/dynamic-entry` provides details about MAC addresses, interfaces, and bridge-domains. The updated `/static-entry` XPath aligns the model for a clear separation between dynamic and static entries.

For more details, refer to the [NetConf Support for Dynamic MAC Addresses](#) section in the *OcNOS Layer 2 Guide*, Release 7.0.0.

---

### NetConf Access Control Model User Guide

OcNOS introduces the NetConf Access Control Model (NACM) feature, which provides an access control mechanism for the protocol operations and content layers of NetConf. This feature enables administrators to configure and manage permissions for different authorized users, allowing them to control, modify, and access network resources based on defined rule types and modules.

For more details, refer to [NetConf Access Control Model User Guide](#) section in the *OcNOS NetConf User Guide*, Release 7.0.0.

## Event Manager Action Script Validation Enhancement

Event Manager action scripts now require execute permission and a Shebang (`#!`) line at the beginning of the script to indicate the interpreter. This ensures compatibility and correct execution of the configured scripts.

For more details, refer to [Event Manager](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## sFlow - Sample Packet Monitoring for Multiple Interfaces

The sFlow feature has been enhanced to support multiple collectors to monitor multiple interfaces. This functionality is enabled by default.

When more than one collector is configured and sFlow is enabled on an interface, samples from the interface are sent to all configured collectors.

To disable the sending of samples from an interface to a specific collector or to multiple collectors, a new command `no sflow collector-id` has been introduced at the interface level.

The `show sflow detail` CLI command output has also been updated to display all active collectors for each interface.

For more details, refer to the [sFlow - Sample Packet Monitoring for Multiple Interfaces](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Secure Upgrade and Downgrade Using HTTPS

This enhancement introduces HTTPS protocol support for performing system upgrades and downgrades in OcNOS. It enables secure transfer of OcNOS images and licenses through HTTPS URLs, ensuring integrity and confidentiality during version and license updates.

Installing OcNOS using HTTPS through ONIE is not supported.

For more information, refer to the [Install, License, and Upgrade Configuration](#) section in the *OcNOS Licensing Guide*, Release 7.0.0.

---

## Support for USB-Based Backup and Restore

OcNOS introduces support for backing up and restoring critical system files using a USB drive, enabling network administrators to store configurations, images, and licenses on a USB drive and restore them when needed. This functionality streamlines the recovery and the return merchandise authorization (RMA) processes by verifying and preserving the integrity of the stored data through validation mechanisms.

For more information, refer to the [System Backup and Restore from USB Commands](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## SNMP SysOID Support for Vendor and Model Identification

This feature enables device identification based on the SNMP System Object Identifier (SysOID). It allows the retrieval of vendor and hardware model details through SNMP, simplifying device classification and verification in network management environments.

For more information, refer to the [Simple Network Management Protocol](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Enhanced Alarm Support in the Fault Management System

OcNOS introduces new alarm types in the Fault Management System (FMS). This enhances the network monitoring capability. It also enables precise tracking of critical system components, improving fault detection and operational reliability. The new alarms include:

- **LDP\_SESSION\_DOWN**: Indicates that an established LDP neighborship session has transitioned to a down state.
- **LDP\_SESSION\_UP**: Indicates that a LDP neighborship session has successfully transitioned to an up state. **LDP\_SESSION\_FAILURE**: Indicates that a failure has been detected within an active LDP session. **LDP\_INTERNAL\_ERR**: Indicates that an internal error has occurred within the LDP process or component. **ISIS\_OPR\_ADJ\_STATE**: Indicates a change in the operational state of an IS-IS adjacency.
- **ISIS\_OPR\_INTF**: Indicates a change in the operational state of an IS-IS interface. **ISIS\_OPR\_INTF\_CIRCUIT\_STATE**: Indicates a change in the circuit-level operational state of an IS-IS interface.

For more details, refer to the [Fault Management System Configuration](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Support for CLI-Script and CLI-Shell Commands

OcNOS introduces support for the CLI-Script and CLI-Shell commands to enhance automation and operational flexibility. The CLI-Script command enables the creation and execution of predefined sets of configuration and execution mode commands, with support for including delay and message statements within the script.

For more details, refer to the [CLI-Script and CLI-Shell Command](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## sFlow Port PVID Update Support for Sampled Traffic

OcNOS introduces the sflow sampling update-port-pvid command to include the bridge port PVID in sampled untagged packets sent to the collector. This enhancement provides the necessary VLAN context for untagged traffic and is applicable specifically to spanning-tree bridge configurations.

For more details, refer to the [sFlow Commands](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Enhanced DHCP Snooping and Relay Option 82 Support

OcNOS enhances DHCP Snooping and Relay Option82 functionality by enabling the user-defined configuration of the Circuit ID and Remote ID sub-options. Using a template-based approach, parameters such as hostname, interface name, and VLAN ID are included within these sub-options.

For more details, refer to the [DHCP Snooping Commands](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

---

## SNMP Configuration for ALARM-MIB Support

This enhancement introduces SNMP interface support for the Alarms feature in OcNOS and extends the Alarms Data Model to support the retrieval of active alarm information through SNMP get operations and trap notifications. Users can now access alarm data using SNMP Get commands and receive alarm notifications through SNMP traps, ensuring improved monitoring and integration with SNMP-based network management systems.

For more details, refer to the [Simple Network Management Protocol](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## System Limits and Counters – Show and NetConf Enhancement

In OcNOS, the System Limits and Counters (Show and NetConf) feature enhances operational visibility by providing real-time access to hardware and software resource utilization through both CLI and management interfaces. It consolidates capacity data for routing, VLANs, MAC, and protocol sessions into a unified view, helping operators validate resource availability before deployment or scaling. Using YANG-based models with NetConf or gNMI, this feature improves troubleshooting accuracy, supports automation, and ensures consistent system capacity monitoring across all platforms.

For more details, refer to the [System Limits and Counters](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## sFlow - Ingress and Egress Interface Indexes for Sample Packets

Ingress and egress interface indexes for a sampled packet are both included in sFlow, resulting in more accurate data and enhanced tracing of packet paths.

For more details, refer to the [sFlow - Sample Packet Ingress and Egress Interface](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Streaming Telemetry Enhancements

### On-Change Stream Mode Support

OcNOS now supports On-Change stream mode for gNMI-based telemetry subscriptions. In this mode, the device sends update notifications only when a subscribed data value changes, reducing telemetry traffic and improving operational efficiency. On-Change mode supports container-level, leaf-level, and wildcard sensor-paths, enabling fine-grained monitoring of dynamic operational states such as interface status, BGP peer state, and transceiver attributes.

For more details, refer to the [On-Change Stream Mode](#) section in the *OcNOS Streaming Telemetry Guide*, Release 7.0.0.

---

### Enhanced gNMI Authentication and Certificate Management

OcNOS now supports gRPC-contained user and password authentication for gNMI TLS connections in addition to X.509 certificate Common Name validation. A new exec-mode command, `crypto pki load`, enables loading of server and CA certificates from external sources to simplify ZTP workflows.

---

For more details, refer to the [User Authentication and Certificate Loading for gNMI TLS Connections](#) section in the *OcNOS Streaming Telemetry Guide*, Release 7.0.0.

## Enhanced Port Configuration

Users can now configure the same port number across multiple VRFs using the "port" command. Users can explicitly set the default port value, which is 9339, and this value will now appear in the output of the "show running-config streaming-telemetry" command. Additionally, updated the valid port range for the "tls tls-port" and "port" commands from <32768-60999> to <1024-65535> to provide flexibility in deployment.

For more details, refer to the [port](#) and [tls tls-port](#) commands in the *OcNOS Streaming Telemetry Guide*, Release 7.0.0.

## IPv6 Interface Support Update

Streaming telemetry now supports connections over IPv6 interfaces in Dial-in mode. IPv6 connections remain unsupported in Dial-out mode.

For more details, refer to the [Dial-In Telemetry Connection over IPv6 Interface](#) commands in the *OcNOS Streaming Telemetry Guide*, Release 7.0.0.

## Data Model Support

OcNOS adds support for additional IPI data model modules. The new and existing modules ipi-vlan, ipi-acl, ipi-qos, ipi-mpls, ipi-l2vpn-vpws, ipi-l2vpn-vpls, and ipi-rib enhance visibility into the operational status and attributes of various components.

For more details, refer to the [IPI Data Models](#) sections in the *OcNOS Streaming Telemetry Guide*, Release 7.0.0.

---

## VxLAN OAM for Overlay Networks

OcNOS supports VxLAN Operations, Administration, and Maintenance (OAM) to enhance visibility and fault management for VxLAN overlays in CLOS data center fabric. Using Maintenance End Points (MEPs) at VxLAN Tunnel End Point (VTEPs) and Spines within VxLAN tunnels, operators can perform the following operations to verify connectivity, and isolate faults.

- Ping /Loopback - Verify reachability to a remote VTEP and that the VxLAN tunnel is operational end-to-end.
- Pathtrace - Discover the full forwarding path inside the VxLAN fabric, hop-by-hop
- Continuity checks - Provide continuous, periodic monitoring of VxLAN tunnel health.

The feature supports both static and dynamic VxLAN tunnels in single- and multi-homed deployments, simplifying troubleshooting and improving operational reliability.

For more details, refer to the [VxLAN Operation Administration Maintenance](#) section in the *OcNOS VxLAN Guide*, Release 7.0.0.

---

## Image Upgrade by Traffic Diversion (IUTD)

In OcNOS, this feature introduces the Image Upgrade by Traffic Diversion (IUTD) method to ensure continuous network operation during critical software installation and upgrade processes. IUTD minimizes traffic loss by manually diverting to the redundant node for update, and restores the flow only after a comprehensive verification of the new OS is complete.

The process relies on a NETCONF client utilizing callhome. It uses a new start-service-tracking RPC to monitor the status (UP/DOWN) of specified services, such as BGP, OSPF, or ISIS, ensuring the network remains stable throughout the maintenance window.

For more details, refer to the [Image Upgrade by Traffic Diversion \(IUTD\)](#) section in the *NetConf User guide*, Release 7.0.0.

---

## Deprecation of commit dry-run Command

The `commit dry-run` command has been deprecated and removed from the Command Reference. It is no longer supported due to inconsistencies with the current commit behavior, leading to incorrect expectations during validation. It is advised to rely on the standard commit work-flow for configuration validation.

---

## Management over User-Defined VRF

OcNOS previously limited support for System Management protocols to the Default and Management VRFs. This support has been extended to address more flexible deployment needs to allow the RADIUS protocols to operate within user-defined VRFs. This enhancement improves management plane connectivity and enables better customization for a broader range of network environments.

For more information, refer to the [RADIUS Commands](#) in the *OcNOS System Management Guide*, Release 7.0.0.

---

## Support for Custom GET/SET RPCs

In OcNOS, this feature supports specialized NetConf RPCs (`transceiver-cmis-read` and `transceiver-cmis-write`) to enable direct access to CMIS custom memory pages. These custom GET/SET commands are sent straight to the protocol module (CMMd) for read/write operations, effectively bypassing the OcNOS configuration database on the transceiver hardware.

For more details, refer to the [Backend API-support for Custom GET/SET RPC](#) section in the *OcNOS NetConf User Guide*, Release 7.0.0.

---

## Enhanced Security and Performance

### Per-Core CPU Average Setting

OcNOS introduces the `cpu-core-monitor-average interval <60-600>` command to set the averaging interval (in seconds) for CPU per-core usage monitoring. This command sets the average window OcNOS uses to calculate and report CPU usage per core. Configure any value between 60 and 600 seconds; the default is 60 seconds. Use the `no cpu-core-monitor-average interval` command to restore the default.

For more details, refer to the [cpu-core-monitor-average](#) topic in the *OcNOS System Management Guide*, Release 7.0.0.

---

### SNMPv3 User Password Encryption

The SNMPv3 user password is now stored in an encrypted format in the `/etc/snmp/snmp.conf` file. Passwords associated with the `CreateUser` and `trapsess` entries are now stored in encrypted form using either MD5 or SHA encryption methods.

For more details, refer to the section in the *OcNOS System Management Guide*, Release 7.0.0.

---

### Fan Duty Cycle Control

OcNOS introduces a new command that allows the user to manually override the fan speed(duty cycle) chosen by the thermal policy to the required RPM by specifying a value between 0% to 100% to enhance system performance on supported BMC devices. Unconfiguring this command will give complete control back to the thermal policy.

For more details, refer to the [fan-duty-cycle](#) command in the *OcNOS System Management Guide*, Release 7.0.0.

---

### L2VPN–L3VPN Stitching

The current release extends the L2VPN–L3VPN stitching functionality, introduced in OcNOS 6.6.0 release, by supporting the Qumran1 (Q1) series platforms.

For more details, refer to the [L2VPN-L3VPN Stitching](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

### VC Reversion Enhancement with Revert Timer for VPWS and VPLS (H-VPLS)

This enhancement adds and improves VC reversion behavior in OcNOS for both VPWS and VPLS (H-VPLS) topologies:

**VPWS:** Introduces a revert timer that delays the bring-up of the Primary VC after a fault is cleared. This ensures traffic convergence is smooth and prevents traffic blackholing.

**VPLS (H-VPLS):** Adds VC reversion support, which was previously unavailable, along with a revert timer. This allows the Primary VC to regain priority and be restored first after faults, improving network resiliency and traffic recovery in Primary/Secondary VC scenarios.

For more details, refer to the [Revert timer for Revertive Switchover for LDP Pseudowires](#) section in the *OcNOS OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

## Container Runtime and Life Cycle Management Using K3S

OcNOS introducing the K3S lightweight Kubernetes distribution integrated within OcNOS. The container runtime is directly integrated with K3S, simplifying how applications are deployed on the OcNOS. K3S actively manages the complete container lifecycle, from pulling images and resource allocation to monitoring and healing. When a Pod fails, the orchestration engine immediately detects the issue and instructs the runtime to restart the container. This environment ensures the crucial services remain self-healing and run consistently without manual intervention.

For more details, refer to the [Container Runtime and Life Cycle Management Using K3S](#) section in the *OcNOS System Management Guide*, Release 7.0.0.

---

## NIF LED Behavior Enhancements

OcNOS introducing the port status visibility for configurable interfaces that support both single-port and breakout modes. The LEDs now dynamically adjust their behavior based on the port configuration: In Non-Breakout Mode, all physical LEDs are intended to act as one unified indicator. In Breakout, there are two modes: Mode-1, where LEDs are individually allocated to sub-ports (e.g., one LED per 25G/50G/100G link), which provides granular, per-link status and fault connection indicators, allowing for precise connection monitoring and Mode-2, where ports have a single LED.

For all the breakout and non-breakout port LED behavior details, refer to the `[[[Undefined variable Global-variable.UfiSpace S9510-28DC (Q2A)]]] Port Mapping` and `[[[Undefined variable Global-variable.UfiSpace S9510-30XC (Q2U)]]] Port Mapping` sections in the *OcNOS Installation Guide*, Release 7.0.0.

---

## LAG Egress Shaping or Policing on Sub-interfaces

Egress shaping and policing are supported on MLAG sub-interfaces, ensuring consistent QoS behavior across all active member links. Traffic management actions—such as shaping, WRED, tail-drop, and header compensation—are applied uniformly at the sub-interface level, even during link addition or removal events. This consistency helps maintain predictable bandwidth usage and simplifies QoS configuration for MLAG deployments.

For more details, refer to the [LAG Egress Shaping or Policing on Sub-Interfaces](#) section in the *OcNOS Quality of Service Guide*, Release 7.0.0.

---

## TWAMP Scaling Enhancements

TWAMP scaling has been enhanced on Q2 series platforms to support higher session and rate limits, extended configuration options, and improved monitoring. The burst count range has been updated from 1–5 to 1–10. In accordance with the Q2 scaling specifications, the Dynamic Session and Rate Limits have been updated, with the fixed 64-session limit removed. The show commands provide detailed operational status:

The `show twamp session-count` command displays a full breakdown of sessions, categorized by type (Link, End-to-End, Reflector) and operational state (Idle, Accepted, Running). The `show twamp packet-rate` command shows the overall TWAMP sending rate in packets per second (pps) across all active sessions.

---

For more details, refer to the [delay-profile interfaces subcommands](#) section in the *OcNOS System Management Guide* and the [TWAMP Commands](#) section in the *OcNOS Layer 3 Guide*, Release 7.0.0.

---

## LDP-over-RSVP Phase 2 (OSPF Support)

In earlier releases, LDP-over-RSVP tunneling functionality was limited to ISIS-based environments. This update extends support to OSPF, allowing LDP label distribution over RSVP-TE tunnels when OSPF is configured as the IGP.

For more details, refer to the [LDP Tunneling over RSVP-TE](#) section in the *OcNOS Multi-Protocol Label Switching Guide*, Release 7.0.0.

---

## ROAN Application on the UFI9510-28DC board

This release extends platform support for the RAON container application to the UFI9510-28DC Q2 board. This integration enables customers to deploy custom RAON services on the high-performance Q2 platform, while ensuring independent container lifecycle management and secure access for management.

---

## Enhanced SSH HostKey Algorithm

After upgrading to 6.6.0, SSH sessions from remote servers fail because OpenSSH was updated to version 9.2p1, which deprecates `ssh-rsa` and `ssh-dsa`. The problem is further caused by the absence of the `HostKeyAlgorithms` in the upgraded `sshd_config`, resulting in rejected connections. This has been addressed in the 7.0.0 release by adding the `HostKeyAlgorithms`, enforcing security with modern algorithms such as `Ed25519` and `RSA-SHA`.

The Key Exchange (KEX) algorithm list was subsequently updated to align with the new OpenSSL package, specifically regarding the `sntrup761x25519-sha512` algorithm.

For more details, refer to the [Secure Shell Commands](#) topic in the *OcNOS System Management Guide*, Release 7.0.0.

## Hardware Platform

### Multi Firmware Update Version Display

OcNOS now integrates the Multi Firmware Update (MFU) version for UfiSpace switches into the existing `show system-information board-info` command. The MFU version displayed in the show output matches the vendor's MFU version and lists firmware details, including ONIE, BMC, CPLD, and BIOS versions.

This enhancement enables quick verification of board firmware versions from the CLI, eliminating the need to cross-check vendor MFU versions.

For more information, refer to the [show system-information board-info](#) command in the *OcNOS System Management Guide*, Release 7.0.0.

### UfiSpace S9502-12SM NT (QUX) (No Timing Port Model)

OcNOS supports UfiSpace S9502-12SM NT (QUX), a high-performance, flexible open networking router designed to meet evolving backhaul transport needs as telecom networks transition from legacy systems to 5G.

It supports the following:

#### Ethernet I/O ports

- 8 x 1GE SFP ports
- 4 x 1GE/10GE SFP+ ports

#### Management interfaces

- 1 x RJ45 Console
- 1 x 1000Base-T Ethernet Port for Out-of-Band Management
- 1 x USB 2.0 Type-A General Purpose Port

Figure 1. Front Panel View



For more information, refer to the UfiSpace S9502-12SM NT (QUX) Port Mapping chapter in the *OcNOS UfiSpace Installation Guide*, Release 7.0.0.

For more details on the ASIC Model, Ports, SKU, and Hardware Revision, refer to the “OcNOS Hardware Compatibility List”.

### Edgecore AS5916-54XL (QMX)

OcNOS supports Edgecore AS5916-54XL (QMX), it is based on Broadcom's StrataDNX® Qumran MX™ switch silicon, delivering line-rate Layer 2 and Layer 3 switching performance up to 800 Gbps. It can be deployed as a top-

of-rack switch in data centers or as a carrier-grade access or aggregation switch.

It supports the following:

## Ethernet I/O ports

48 x SFP+ each supporting 10 GbE or 1 GbE

6 x 100G QSFP28 each supporting 1 x 40/100 GbE

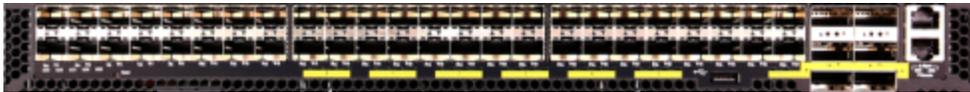
## Management interfaces

1 x RJ-45 serial console

1 x RJ-45 100/1000BASE-T management port

1 x USB (storage)

**Figure 2. Front Panel View**



For more information, refer to the “Edgecore AS5916-54XL (QMX) Port Mapping” section in the *OcNOS Edgecore Installation Guide*, Release 7.0.0.

For more details on the ASIC Model, Ports, SKU, and Hardware Revision, refer to the “OcNOS Hardware Compatibility List”.

---

## Transceivers

OcNOS supports the following transceivers and amplifiers:

### Smartoptics IPI-SO-TD8002-S31C-SO

The QSFP-DD 800G 2xDR4 transceiver (IPI-SO-TD8002-S31C-SO) supports 800Gbps Ethernet in data centers, with a reach of up to 500m over single-mode fiber. It features two MPO-12 connectors, supports various electrical interfaces (800GAUI-8, 2x400GAUI-4, 8x100GAUI-1), and complies with CMIS 5.0 for digital diagnostics. The transceiver consumes less than 14W, and operates from 0°C to +70°C. It supports aggregate line rates for 800Gbps, 2x400GbE, and 8x100GbE configurations.

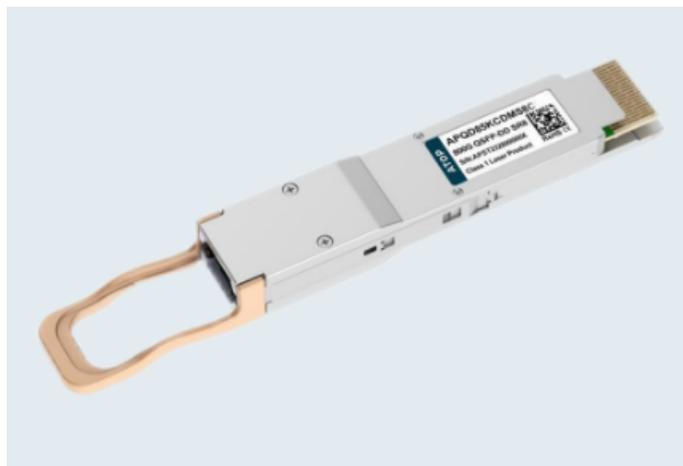
**Figure 3. QSFP-DD800 800G-2xDR4 SM Transceiver**



### **ATOP IPI-AT-APQD85KCDMS8C**

The ATOP IPI-AT-APQD85KCDMS8C is an 800Gb/s QSFP-DD SR8 optical transceiver. It is designed for 50m OM4/OM5 optical communication, converting 8 channels of 100Gb/s (PAM4) electrical input to 8 parallel 100Gb/s optical signals, and vice-versa, for an aggregate data rate of 800Gb/s. It supports 800GBASE-SR8 and 2x400GBASE-SR4 applications and has an MPO16 connector. Power consumption is less than 15W.

**Figure 4. 800G QSFP-DD SR8 Transceiver**



## E.C.I.Networks IPI-EN-QDD800-2LR4-2CS

The IPI-EN-QDD800-2LR4-2CS is an 800G QSFP-DD 2xLR4 transceiver from E.C.I. NETWORKS, supporting up to 10km transmission on single-mode fiber with duplex LC connector. It handles 8-channel 106.25Gb/s (PAM4) electrical data, converting it into 8-channel 106.25Gb/s optical signals for an aggregated 800G optical transmission. It is specifically designed for 2x400GBASE-LR4 applications, with each lane operating at a signaling rate of 53.125 GBd. Power consumption is less than 16W.

**Figure 5. 800G QSFP-DD 2xLR4 Transceiver**



## E.C.I.Networks IPI-EN-QDD800DAC-xM

The IPI-EN-QDD800DAC-xM is an 800G QSFP-DD Passive DAC TWINAX Cable that provides a high-speed, cost-effective, and power-efficient alternative to fiber optics for short-distance interconnects in data centers and high-performance computing. It supports an aggregate data rate of 800Gbps (PAM4) over 16 copper pairs, with each lane operating up to 100Gb/s. The cable is powered by a 3.3V supply and is compliant with the IEEE 802.3ck 800G Ethernet standard.

## Accelink IPI-AL-RTXM600-411

The 800G QSFP-DD800 2x400G FR4 Transceiver (IPI-AL-RTXM600-411) supports up to 106.25Gbps data rate per channel via PAM4 modulation, enabling 800GBASE 2x400G FR4 Ethernet over 2km of single-mode fiber with dual duplex LC connectors. Each lane operates at a signaling rate of 53.125 GBd. Power consumption is less than 14W.

**Figure 6. 800G QSFP-DD800 2×400G FR4 Transceiver****Accelink IPI-AL-RTXM600-2004**

The Accelink IPI-AL-RTXM600-2004 is an 800G OSFP Closed TOP DR8 Transceiver with an MPO16 connector, designed for 800GBASE-DR8 Ethernet applications and data centers. It supports data rates up to 106.25 Gbps per channel (PAM4 modulation) across 8 duplex channels over single-mode fiber with a maximum link length of 500m. The selectable data rates are 106.25 Gbps and 53.125 Gbps, with a signaling rate of 53.125 GBd per lane. Power consumption is less than 16W.

**Figure 7. 800G OSFP Closed TOP DR8 Transceiver****Accelink IPI-AL-RTXM-600-2001**

The Accelink 800G OSFP DR8 Transceiver (IPI-AL-RTXM-600-2001) with dual-LC connector, is designed for 800GBASE-DR8 Ethernet applications and data centers. It transmits and receives serial optical data links at up to 106.25 Gbps per channel (PAM4 modulation) over single-mode fiber. The module's signaling rate is 53.125 GBd. Power consumption is less than 16W.

**Figure 8. 800G OSFP DR8 Transceiver**



### **Smartoptics IPI-SO-TQ2031-TUNC-SO**

The IPI-SO-TQ2031-TUNC-SO is a high-performance 100G ZR QSFP28 Coherent transceiver. Supporting a 103.12Gbps bit rate via a CAUI-4 (4x25G NRZ) electrical interface, this HP CMIS-compliant module offers versatile long-haul capabilities, reaching up to 120km natively and extending to 300km with amplification.

**Figure 9. QSFP28 100G Coherent DWDM 120km Transceiver**



### Smartoptics IPI-SO-TQ2025-TUNC-SO

The IPI-SO-TQ2025-TUNC-SO is a QSFP28 DWDM transceiver for 100GbE and OTU4 applications with CMIS5.2 and C-CMIS1.2 compliant interface, supporting unamplified reach up to 80km and amplified reach up to 300km. It transmits at a bit rate of 103.12Gbps by splitting the 100Gbps signal into four parallel 25Gbps NRZ electrical streams (CAUI-4). Power consumption is less than 5.5W.

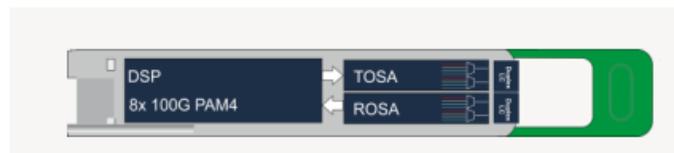
Figure 10. QSFP28 100G Coherent DWDM 80km Transceiver



### Smartoptics IPI-SO-TOC003-SC4C-SO

The IPI-SO-TOC003-SC4C-SO is an OSFP112 form-factor transceiver designed for 800Gbps or 2x400G Ethernet applications, compliant with CMIS 5.0. It is intended for use in data center interconnects between switches, routers, and storage equipment, supporting optical distances up to 2km over single-mode fiber (SMF). The electrical interface consists of eight 106.25G signals (800GAUI-8) converted to eight PAM4-modulated channels, while also supporting 2x400GAUI-4 and 2x200GAUI-4 breakout modes. The optical interface features two duplex LC connectors, enabling the aggregation of two 400G-FR4 transceivers. Power consumption for this module is less than 14W.

Figure 11. OSFP112 800G Coherent DWDM 2km Transceiver



## Smartoptics IPI-SO-TOC004-SC4C-SO

The IPI-SO-TOC004-SC4C-SO is an OSFP112 form-factor transceiver for 800Gbps or 2x400G Ethernet applications with a CMIS5.0 compliant interface, supporting optical distances up to 10km over single-mode fiber. It transmits at an aggregated bit rate of 800Gbps by converting eight 106.25G electrical signals (800GAUI-8) into eight PAM4-modulated optical channels. The transceiver features two duplex LC connectors and can be configured in 2x400GAUI-4 mode to enable breakout configurations. Power consumption is less than 14W.

**Figure 12. OSFP112 800G Coherent DWDM 10km Transceiver**



## Smartoptics IPI-SO-DOC001-003C-SO

The IPI-SO-DOC001-003C-SO is an OSFP800 Active Electrical Cable (AEC) designed for 800Gbps Ethernet applications, providing a reliable solution for high-density connections within and across adjacent racks. It features a 3-meter reach using AWG32 cabling and is equipped with a CMIS 5.0 compliant management interface.

For more information about the transceivers, contact the IPI sales team.

---

## Security Updates

To ensure product security, OcNOS undergoes rigorous vulnerability scanning and promptly addresses any issues that are found. OcNOS version 7.0.0 provides a detailed list of CVEs that are included in the OcNOS Security Updates document. In addition, request a detailed OcNOS Security Guide from the IPI sales team.

---

## OcNOS End-of-Sale Notice

The Edgecore AS5912-54X (QMX), Edgecore AS7316-26XB (QAX), and Edgecore AS7315-30X (QAX) platforms have reached End of Sale (EOS). As part of this change, all software updates, enhancements, and technical support for this platform have been discontinued. The platforms are no longer supported for new deployments.

For more details refer [IP Infusion End of Sale and End of Listings](#).