Overview

Asterfusion CX306P-48Y-M-H is a smart switch platform that provides a combination of 10/25Gbps and 40/100Gbps interfaces, utilizing Marvell Falcon switch ASIC and optional OCTEON CN103 DPU, designed for campus core/gateway, enterprise core/gateway and packet broker. It supports comprehensive Layer 2 and Layer 3 switching functionalities, enabling efficient data forwarding, routing, and network management. With its robust hardware architecture and flexible software capabilities, the CX306P-48Y-M-H is an ideal choice for enterprise/campus networks and telecommunications infrastructure.

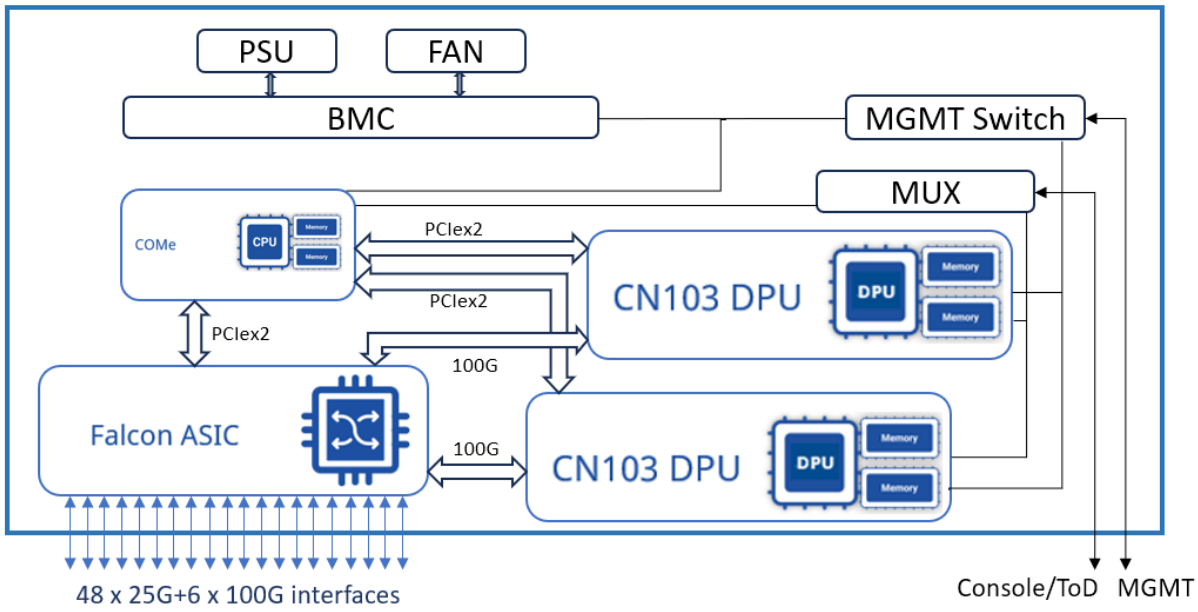
CX306P-48Y-M-H

AsterNOS

AsterNOS is a common software for all Asterfusion products. It is an enterprise distribution of SONiC which is based on Linux kernel and Switch Abstract Interface (SAI) for multi-vendor merchant silicon adaptability. AsterNOS provides rich, standard Layer-2 and Layer-3 functionalities, including VXLAN virtualization across all products, including data center networks, enterprise networks, and service provider access and aggregation networks.

Key Features

The CX306P-48Y-M-H platform is equipped with up to two optional Marvell OCTEON CN103 DPUs, each DPU operating an independent operating system. This architecture enables the system to run two or three isolated OS environments within a single chassis, providing enhanced flexibility, workload separation, and intelligent data processing capabilities.



Hardware Features

- Compact 1RU standard open smart switch.
- 48 x 25G SFP28, 6 x 100G QSFP28 fixed ports.
- ASIC Switching capacity 2.0Tbps and Forwarding rate 1332.9Mpps
- 2 Marvell OCTEON CN103 DPU, 2 x 8 x 2.5GHz ARM64 Neoverse N2 Core.
- One DPU 16GB pluggable DDR5 SO-DIMM, up to 48G.
- One DPU 64G EMMC, support one optional NVME SSD via PCIe 4.0 x4.
- Support IEEE1588v2 and SyncE protocols, 1PPS, ToD, 10MHz time interfaces.
- Rack mountable in standard 19" racks, hot-swappable PSU and FAN modules.

AsterNOS Features

- Layer 2 Features
  - 4K VLANs
  - Voice VLAN
  - Multiple Spanning Tree Protocol (MSTP)
  - QinQ
  - Link Aggregation Control Protocol (LACP)
  - Multi-Chassis Link Aggregation (MC-LAG)
  - VLAN Trunking
  - Link Layer Discovery Protocol (LLDP)
  - LLDP Enhancements for PoE
  - Port Isolation
  - Jumbo Frames (9216 Bytes)
  - IGMP Snooping
  - Storm Control
  - Monitor Link
- Layer 3 Features
  - IPv4/v6 Dual Stack
  - Routing Protocols: OSPF v2/v3, BGP, MP-BGP
  - Policy Based Routing
  - Resilient ECMP
  - ARP-to-Host
  - VRF
  - Bi-Directional Forwarding Detection (BFD)
  - IGMP v2/v3

- Route Map
- GRE
- VRRP

■ Virtualization Features

- VXLAN Centralized/Distributed Gateway
- EVPN Type 2/3/5

■ Security Features

- Service ACLs
- ND Snooping
- ACL Logging and Counters
- 802.1x Authentication
- Control Plane Policing (CoPP)
- Portal Authentication
- Dynamic ARP Inspection (DAI)
- MAC Authentication Bypass (MAB)
- IP Source Guard v4/v6
- Dynamic VLAN Assignment
- DHCPv4/v6 Relay
- TACACS+
- DHCPv4/v6 Snooping
- RADIUS

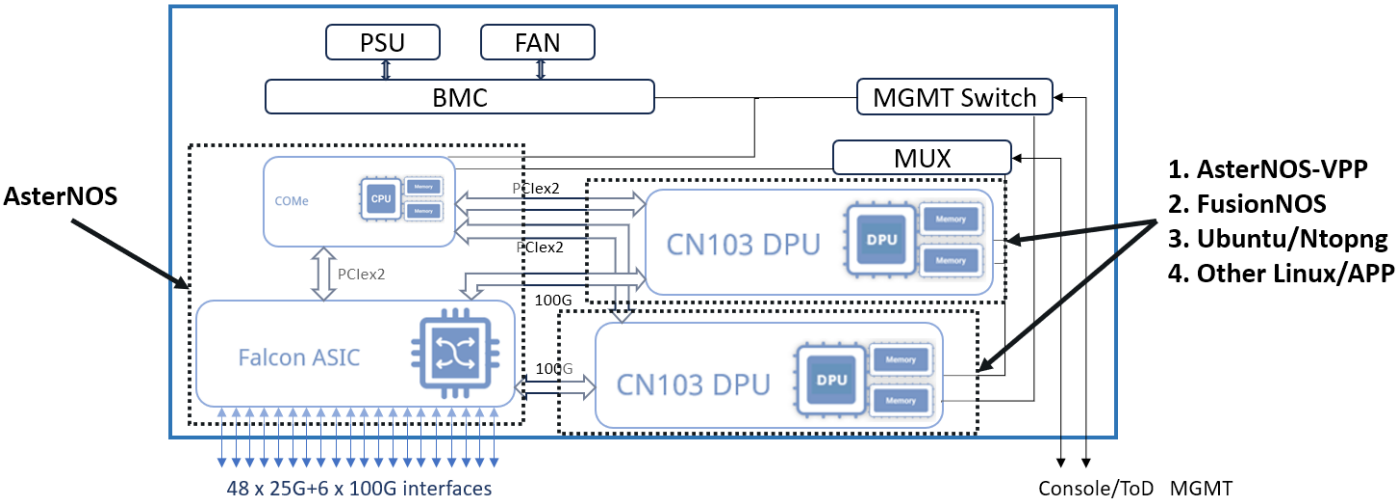
■ Quality of Service (QoS)

- 8 Queues per Port
- DWRR Scheduling
- 802.1p Based Classification
- Policing/Shaping
- DSCP Based Classification
- Rate Limiting
- Strict priority queueing

■ Management and Monitoring

- Asteria Campus Controller
- Port Mirroring
- Industry Standard CLI
- Syslog
- Zero Touch Provisioning (ZTP)
- Log Management
- SNMP v1/v2/v3
- PTP IEEE 1588v2 (TC and BC)
- sFlow
- Containerized Custom Tools

DPU Software Options



AsterNOS-VPP: AsterNOS-VPP is an open, SONiC-based routing OS that fuses SONiC's powerful control plane with VPP's lightning-fast data plane. Delivering routing, firewall, VPN, and NAT at line rate across hardware and virtual platforms, it empowers operators and enterprises with a next-generation routing solution that is open, scalable, and performance-driven.

FusionNOS: FusionNOS is designed as a high-performance network visibility and processing front end. It supports comprehensive traffic aggregation, replication, and load balancing, along with advanced packet preprocessing such as reassembly, decapsulation, timestamping, and NetFlow/IPFIX export. These capabilities greatly improve backend system efficiency while reducing deployment complexity and operational costs.

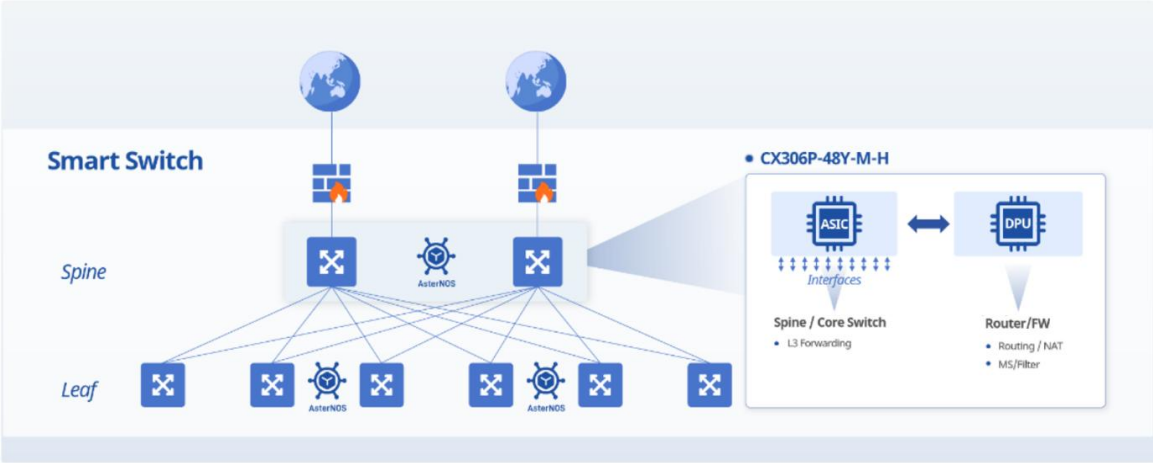
Other Arm64 Linux: Supports Ubuntu, Debian, SONiC and other Linux distribution, such as CentOS, OpenSUSE, Arch Linux, AlmaLinux, Rocky Linux, Linux Mint and Elementary OS.

Application Scenarios:

Based on the open hardware-software decoupled architecture, CX306P-48Y-M-H DPU combines a rich array of opensource software for control plane with hardware-optimized data plane. Here are some typical scenarios that can be used individually or in combination:

1. **Core/Spine Switch/Gateway: AsterNOS + AsterNOS-VPP**

CX306P-48Y-M-H preloaded with AsterNOS +AsterNOS-VPP, it offers versatile functionality for enterprise and campus environments. The ASIC, driven by SONiC's control plane, operates as a Spine/Core Switch, delivering L2/L3 forwarding. Concurrently, the DPU hosted AsterNOS-VPP functions as router, firewall or VPN server, supporting sophisticated Layer 3 routing, NAT, VPN and stateful firewall capabilities.



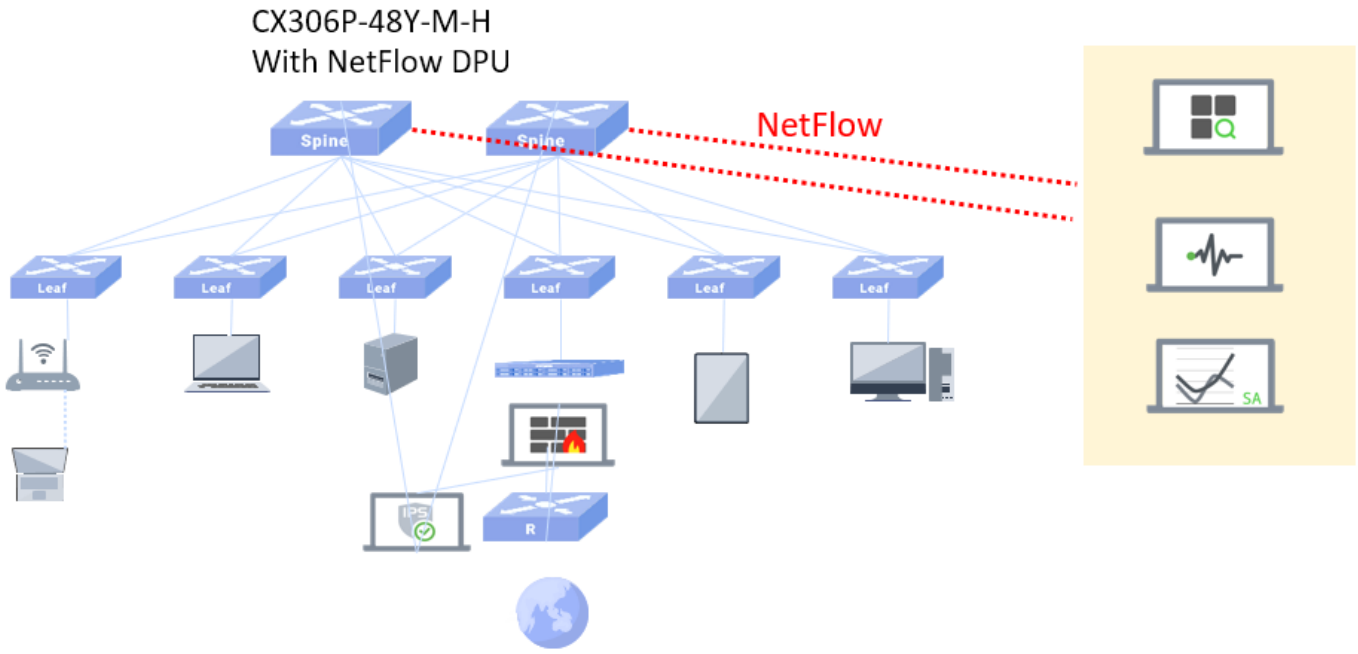
- It integrates routing capabilities into the switch, thus eliminating the need to purchase and deploy an external router.
- AsterNOS-VPP Routing protocol support Static routing, BGP/MP-BGP, OSPF v2/v3, Policy Based Routing. Supports line-rate performance with 2M RIBs entries, including BGP full routing tables and BGP peering capabilities.
- Multi-WAN routing: distributes and routes traffic across different Internet Service Providers (ISPs) or network paths based on predefined policies
- AsterNOS-VPP NAT support: SNAT, DNAT, PAT, MAP-T, Twice NAT, CGNAT, NAT Hairpinning, VRF-aware NAT
- Hardware-optimized vector packet technology and DPDK accelerate data plane forwarding, delivering up to 100Gbps forwarding performance.
- AsterNOS-VPP supports IPsec VPN, WireGuard, VXLAN, GRE, L2TPv3 VPN and policy-based IPSec, it can serve as a flexible and high-performance VPN gateway. And hardware-accelerated VPN with encryption/decryption engine supports up to 80Gbps.
- Robust Security Framework – Includes DHCP snooping, DAI, IPSG, ACLs, SPI, and UPRF for multi-layer protection.
- Supports N-tuple wild match ACL. Support up to 100K ACL line-speed.
- Support local user database and remote user authentication: TACACS+, Radius.
- PPPoE client and server: facilitates broadband access by encapsulating PPP frames over Ethernet, enabling authentication, billing, and IP assignment
- Consistent operation model: inherits SONiC's widely adopted management framework, originally

designed for switches, including ZTP, Klish, RESTful API, gNMI, Netconf and uCentral

- Prometheus Exporter collects system and network metrics in a format compatible with Prometheus
- Supports SNMP v1/v2/v3 for device information, network health and performance monitoring

2. Core/Spine Switch with NetFlow Capability: AsterNOS + FusionNOS

CX306P-48Y-M-H runs AsterNOS on the CPU/ASIC and FusionNOS on the integrated DPU. The FusionNOS is tailored to focus on NetFlow processing. This implementation is focused on real-time NetFlow output of switch traffic, which is suitable for scenarios with existing analysis tools.

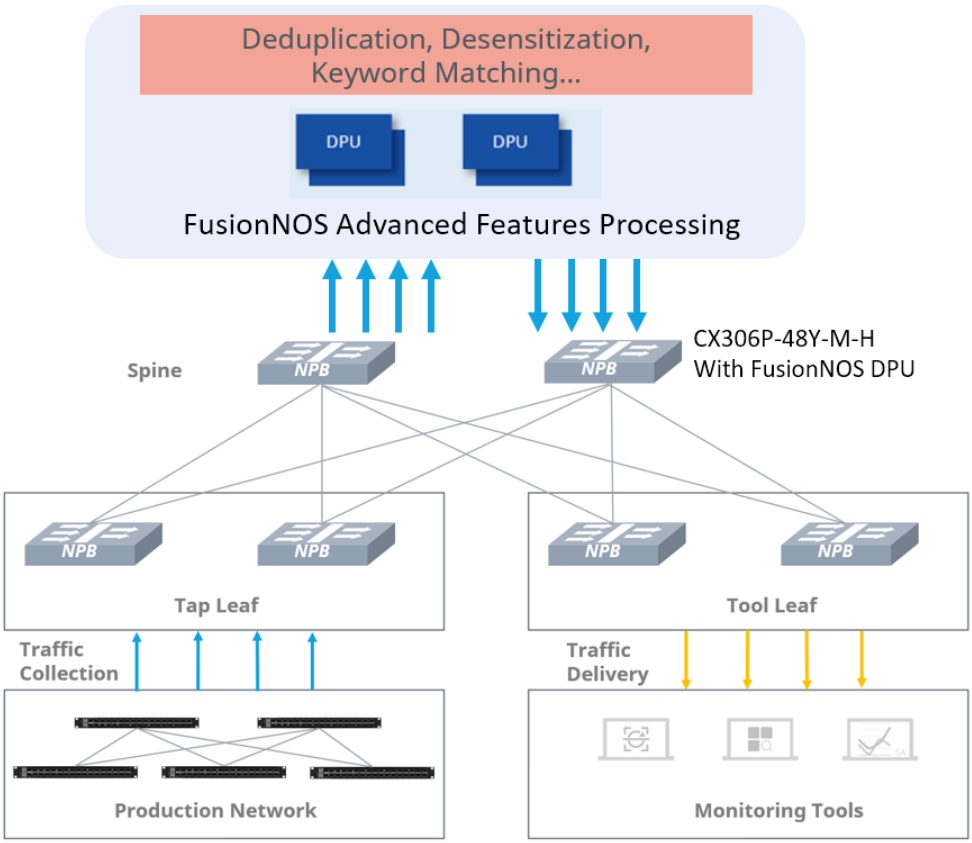


- Specialized DPU hardware for NetFlow processing, it can process full-scale packets with line-speed. Every packet will be processed and analyzed to enhance the traffic visibility.
- Supports NetFlow/IPFIX/sFlow output.
- Supports NetFlow v5, NetFlow v9 and NetFlow v10 output.
- Supports sampling based on 5-tuple or rule matches; sampling ratio is configurable.
- Supports NetFlow load-balance output in case one backend tool cannot handle full NetFlow.
- Supports NetFlow duplication output so that it can be handled by more than one type of tools.

3. NPB2.0 Packet Broker: AsterNOS (Packet Broker Extension) + FusionNOS

CX306P-48Y-M-H runs AsterNOS with packet broker extension on the CPU/ASIC and FusionNOS on the integrated DPU. This implementation operates as a high-performance packet broker which can lower the burden on backend monitoring tools.

When CX306P-48Y-M-H is running AsterNOS with Packet Broker, it can carry out basic visibility functions such as packet filtering, replication and modification, offering packet processing flexibility with the wire speed performance. With DPU running FusionNOS, it can provide advanced service processing functions such as application layer protocol matching, signature matching, and packet header truncation out. Pay attention here that the Packet Broker Web UI can integrate advanced functions offered by FusionNOS to achieve a compositive Web UI management.



- AsterNOS with packet broker itself supports traffic aggregation, filtering, replication, load balancing, message truncation, timestamp, message modification, tunnel encapsulation or decapsulation and other basic traffic processing and message preprocessing functions.

Here lists the details of these advanced features realized by FusionNOS.

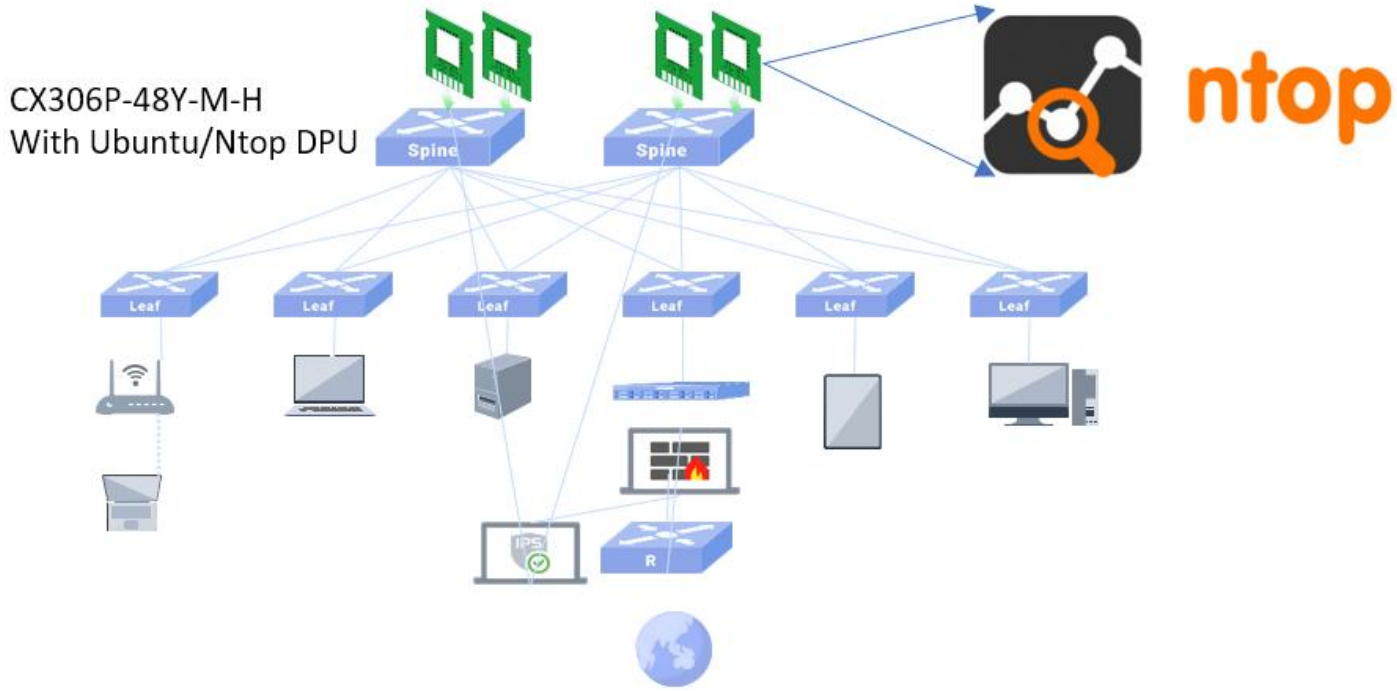
- Supports packet deduplication, with optional ignoring of TTL, MAC, L2, DSCP, interface (CPU interface), TCP (including TCP seq_num and ack_num, TCP checksum), IPID, FCS, and optional fields (sport, dport, sip, dip, smac, dmac).
- Supports timestamping with PTP precision.
- Supports outer MAC address modification.
- Supports TCP out-of-order reassembly. Supports bidirectional reassembly for both transmit and receive traffic.
- Supports packet truncation. Supports forwarding only the network and transport layer headers of the

original packets.

- Supports SSL decryption.
- Supports packet de-identification.
- Supports IP fragmentation reassembly. Supports reassembly for both outer and inner IP fragments. Supports reassembly for both outer and inner IP fragments.
- Supports NetFlow v5 and NetFlow v9 output.
- Supports sampling based on 5-tuple or rule matches; sampling ratio is configurable.
- Supports fixed-offset signature matching, full-packet offset range matching, and dynamic front-section pattern matching.

4. Core/Spine Switch and Network Traffic Analyzer (NTA): AsterNOS + Ubuntu(ntopng)

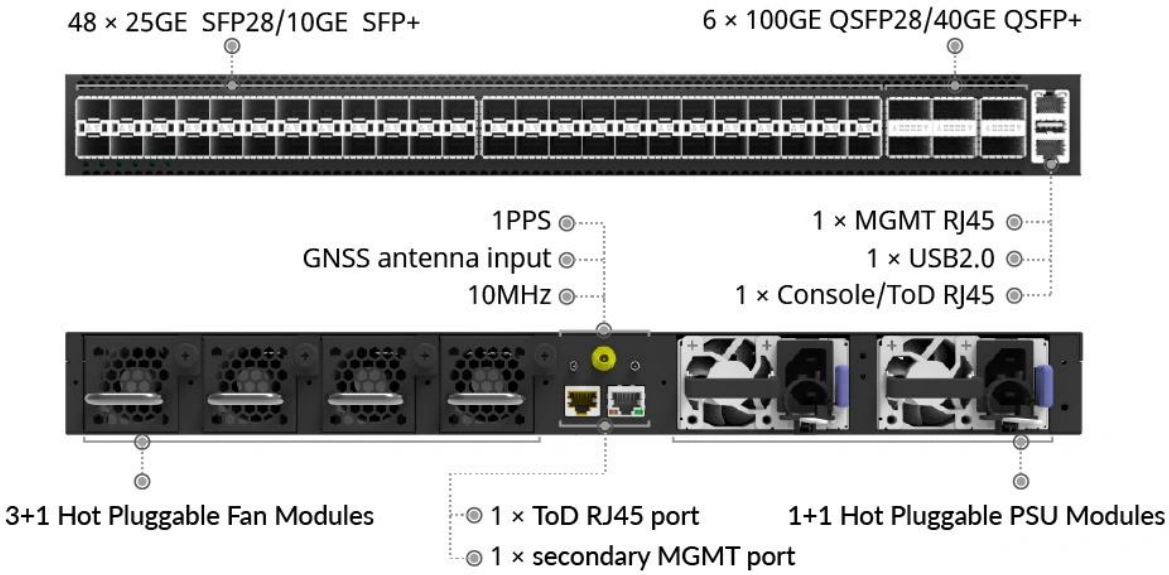
CX306P-48Y-M-H runs AsterNOS on the CPU/ASIC and Ubuntu(ntopng) on the integrated DPU. This deployment enables on-device, real-time traffic visualization and analysis, suitable for lightweight visibility with direct access to analysis results scenarios.



- The DPU and ASIC are interconnected via high-speed internal channels (100G), allowing direct access to mirrored traffic for analysis.
- Real-time traffic monitoring, protocol recognition, application analysis, historical data logging, and visual reporting capabilities without additional TAP/NPB/Tools requirements.
- Intuitive GUI for visualizing and analyzing network traffic and performance metrics.
- Dedicated hardware resource and accelerator guarantee traffic analysis efficiency.
- Based on Ubuntu, it supports customized development and API integration.

Additionally, users have the flexibility to install new software or develop their own software using the built-in toolchain as needed to address additional use cases.

Interfaces



Specifications

Product Model		CX306P-48Y-M-H
Network interface	100G (QSFP28)	6
	25G (SFP28)	48
Switching chip	Chip model	Marvell Prestera (Falcon)
	Switching capacity	2.0Tbps
	Forwarding rate	1332.9Mpps
CPU	CPU	Broadwell DE D-1508
	Memory	16GB DDR4, extensible to 96GB
	SSD	128G/-，m.2 SATA
DPU	DPU Slot	2
	DPU model	Marvell OCTEON CN103
	DPU core	8 ARM V9 cores
	Memory	16GB DDR5, extensible to 48GB
	SSD	Optional PCIe Gen4 x4 NVME
	L2/L3 Switching capacity	100Gbps
	Routing capacity	100Gbps
	Firewall capacity	80Gbps
	Encryption and Decryption capacity	80Gbps
	NetFlow capacity	100Gbps
	Ntopng capacity	60Gbps
Management interface	USB	1xUSB2.0
	Console	1xConsole/1PPS+ToD RJ45
	MGMT	2xMGMT RJ45
Dimensions	Dimensions (WxHxD mm)	440x44x560
	Weight	10kg

Electrical characteristics	Maximum power consumption	480W
	Power and fan	1+1 power modules, 3+1 fan modules, hot-pluggable
	Input voltage	100-240V AC / 36-72V DC
Operating conditions	Operating temperature	0-45℃
	Relative humidity	5%-90% (non-condensing)

Ordering Information

Part Number	Description
CX306P-48Y-M-H	Enterprise core/spine switch system, 48x25G/10G SFP28, 6x100G QSFP28, 2xDPU extension slots, 1 x 1PPS+ToD port, hot-pluggable 1+1 PSU, hot-pluggable 3+1 FANs, front-to-power airflow
Ordering Components	
MT3608-CX3	8-core CN103 DPU module inside CX306P series, Ubuntu preloaded
HW-WNT-1Y-CX306P-M	Hardware platform warranty for CX306P-M series, 1 Year
AsterNOS-UG-1Y-CX306P-M	Major version upgrade of AsterNOS for CX306P-M series, 1 Year
AsterNOS-RT-VPP-LIC-M3	Enterprise Network Operating System SONiC distribution, running on Octeon 103, 100Gbps performance 103, 100Gbps performance

Warranty and Service Support

Asterfusion CX306P-48Y-M-H switch comes with 2-year Basic H/W service and warranty, preloaded perpetual licensed AsterNOS and 1-year AsterNOS upgrade subscription.

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