OcNOS: Industry's First Full-featured Network OS for White Box

Carrier-grade NOS for Bare Metal Switches

OcNOS is the industry's first full-featured network OS for White Box. Its features include advanced capabilities, such as extensive switching and routing protocol support, MPLS (Multiprotocol Label Switching), and SDN (software defined networking). OcNOS features hybrid, centralized or distribute network support; scalable, modular high performance network; and a robust data plane built on merchant silicon.

OcNOS provides seamless transition from traditional networks to open networks with investment protection. OcNOS gives network operators, carriers and enterprises the physical software solution needed to achieve the disaggregated networking model. Instead of a vendor locked-in model, and proprietary solution models, a disaggregated networking model allows network operators to build networks with diverse, manage networks on their own, and rapidly deploy new networking features and services at less TCO.

Based on the widely-deployed and time-tested ZebOS network stack, OcNOS brings the power of the Open Compute Project, an open hardware movement and foundation, to data networking.

Features and Benefits

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. The niche coupling with merchant silicon utilizes key hardware capabilities for better performance and feature set.

Common Software for Multiple Deployments and Hardware

OcNOS is designed using several abstraction layers. The hardware abstraction layer, allows the OcNOS software to run over multiple control plane CPU `and forwarding chipset hardware. The system calls are also well abstracted allowing to switch across operating systems if required. It has been integrated and verified with multiple commodity hardware, which again allows seamless portability across diverse network hardware.
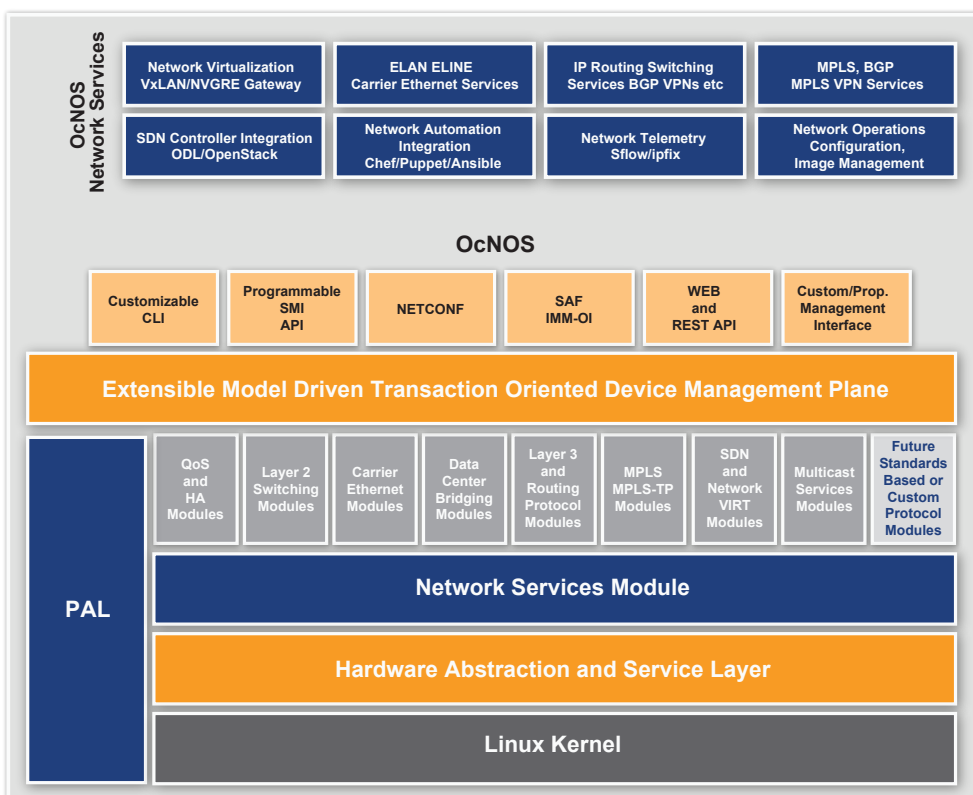
Modular Software Design

OcNOS control plane software design is highly modular with multiple processes handling each individual key protocols. The processes are managed and contained by a process handler framework, which also monitors the processes, restarts and maintains event logging for them. OcNOS can be customized, built and packaged with minimal software features, reducing CapEx and device footprint. The control plane features support for layer 2 switching, Carrier, Data Center Switching, MPLS/MPLS-TP, comprehensive support for multicast and unicast routing support.

Interoperation and Ease of Use

OcNOS solution is built using open networking standards, with semantics for device management extensions. The operation and management is provided using CLI and SNMP which is built on top a fully transactional management plane.

System Architecture

OcNOS Network Services

Network Virtualization VxLAN/NVGRE Gateway	ELAN ELINE Carrier Ethernet Services	IP Routing Switching Services BGP VPNs etc	MPLS, BGP MPLS VPN Services
SDN Controller Integration ODL/OpenStack	Network Automation Integration Chef/Puppet/Ansible	Network Telemetry Sflow/ipfix	Network Operations Configuration, Image Management

OcNOS

Customizable CLI	Programmable SMI API	NETCONF	SAF IMM-OI	WEB and REST API	Custom/Prop. Management Interface

Extensible Model Driven Transaction Oriented Device Management Plane

PAL	QoS and HA Modules	Layer 2 Switching Modules	Carrier Ethernet Modules	Data Center Bridging Modules	Layer 3 and Routing Protocol Modules	MPLS MPLS-TP Modules	SDN and Network VIRT Modules	Multicast Services Modules	Future Standards Based or Custom Protocol Modules

Network Services Module

Hardware Abstraction and Service Layer

Linux Kernel

This allows the OcNOS-based network node to be easy to operate and interoperate with another vendor node. The OcNOS management plane can support a wide variety of management interfaces like CLI, SNMP, REST, NETCONF, SAF IMM-OI and any future or custom north bound management interface.

Support for Disruptive Networking Technologies

OcNOS supports technologies required for bandwidth scaling at data centers and interconnects. The OcNOS centralized transaction based managed object modeling layer allows for multiple modeling layer allows for multiple management interfaces. This, in turn, allows for a central service level provisioning and chaining across multiple devices. OcNOS infrastructure is SDN and NFV ready. The control plane and data plane has support for SDN support through OpenFlow, Segment Routing The

SMI based C APIs provides end users the ability to write user defined functions to program the network control and data plane to provide custom programmable network operations.

High Availability

OcNOS provides standards based redundancy protocols like VRRP, BFD, ring failure recovery protocols, MLAG, and graceful restart mechanisms. This protocol level redundancy provides guaranteed network level redundancy. For device level redundancy, OcNOS supports service availability frameworks based master-slave hot standby syncing. This feature is supported for several key protocols allowing device level redundancy in the absence of peer level network support.

Designed From The Ground Up; Based on ZebOS® Design

- OcNOS has been designed from the ground-up and is optimized to address the needs of public/private/ hybrid cloud network.

- OcNOS enables new applications and ushering in the era of Software Defined Networks (SDN), newer, demanding data center and enterprise network environments.

- OcNOS heavily borrows from the popular ZebOS® line of products, it takes advantage of a rich feature density and robustness that has built up over the years. OcNOS provides industry standard CLI, supports all 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.

ipinfusion™

About IP Infusion

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

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