ZebOS-XP®
Network Platform

Version 1.4

Extended Performance

Release Notes

December 16, 2015

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ZebOS-XP Network Platform Overview and Feature Set

This is release 1.4 of the ZebOS-XP Network Platform.

Supported Environments – Generic Platforms

Release 1.4 supports the generic combinations of operating systems, TCP/IP stacks, and processors as outlined in the following table.

Note - This release is qualified for Debian 8 32 bit, Debian 8 64 bit on x86 platform.

Generic or Non-embedded Platform Support	
Operating System	**Processor**
Debian 8 32 bit using Linux kernel version 3.16	x86
Debian 8 64 bit using Linux kernel version 3.16	x86_64
Fedora 17 32-bit using Linux kernel version 3.4.44	x86
Fedora 17 64-bit using Linux kernel version 3.4.44	x86_64
Wind River Linux 5 using Linux kernel version 3.4.10	x86

Compilation Environment

The following are the supported build environments:

Debian 8:

- autoconf version 2.69
- gcc version 4.9.2
- binutils version 2.25
- libc6 version 2.19
- x86 on Debian 8 32 bit
- x86_64 on Debian 8 64 bit

Fedora 17:

- autoconf version 2.68
- gcc version 4.7.0
- binutils version 2.20.x
- glibc version 2.15
- x86 on Fedora 17 32 bit
- x86_64 on Fedora 17 64 bit

Wind River Linux 5:

- autoconf version 2.63
- gcc version 4.6.3
- binutils version 2.19
- glibc version 2.11

See the *Installation Guide* for about compiling.

Typical Server Test Platform Configuration

The following are the minimum system requirements for ZebOS-XP 1.4:

- Disk: 2GB
- Memory: 512MB
- Processor: x86 or x86_64
- Debian 8/Fedora 17/WRL 5
- NIC: Any VM/OS supported NIC

Linux Kernel Patches

IP Infusion ships the kernel patches for the MPLS forwarder, Layer-2 forwarder, and so on. See the *Installation Guide* for how to apply these kernel patches.

Technical Support

IP Infusion maintains an online technical support site that provides a variety of technical support programs for licensed ZebOS-XP Network Platform customers at http://www.ipinfusion.com/customer-support.

IP Infusion's maintenance customers and partners can access the support Web site 24 hours a day, 7 days a week, to receive technical support. The site allows customers and partners to open technical support calls, update open calls with new information and review the status of open and closed calls. The password-protected site includes technical documentation, Release Notes, and descriptions of service offerings.

Technical Documentation

Technical documentation for the ZebOS-XP Network Platform includes the following.

Command References: BFD, BGP, Carrier Ethernet, DCB, ELMI, EVB, Host Protocol, IMI, ISIS, Layer 2, LDP, MPLS, MRIB, NSM, OSPF, PIM, PTP, RIP, RSVP-TE, Segment Routing, SPB, Synchronous Ethernet, TRILL, URIB, VR, and VRRP

Configuration Guides: BFD, Carrier Ethernet, DCB, ELMI, EVB, Host Protocol, Hybrid, Layer 2, MPLS, Multicast, PBR, PTP, Segment Routing, SPB, Synchronous Ethernet, TRILL, Unicast, VR/VRF, and VRRP

Developers Guides: BFD, BGP, Carrier Ethernet, Data Structures, DCB, ELMI, EVB, Hardware Integration, IMI, ISIS, Layer 2, LDP, MPLS, MPLS Forwarder, Multicast, NSM, OSPF, PIM, PTP, RIP, RSVP-TE, Segment Routing, SMI, SPB, Synchronous Ethernet, TRILL, URIB, VR and VRRP

Compliance: Feature Matrix, PICS, L2 MIBs, L3 MIBs, MCast and MPLS MIBs

Other Documents: Architecture, Installation, Troubleshooting

New Features

ZebOS-XP 1.4 has the following new features.

Internet Protocol Security (IPsec)

IPsec is based on set of mechanisms which protect data exchanged on Network. IPsec operates at IP level and processes every IP datagram. It provides data integrity and data confidentiality.

ZebOS IPsec provides:

- Encapsulating security payload extension of IP Protocol, which ensures both integrity and confidentiality of the IP-datagram (Data privacy).
- Tunnel protection mode, i.e., Encapsulation of original packet in a new one.
- Two ways of configuration
    - Manual Keying
    - Automatic Keying

Manual keying is usually only necessary when a device is configured to encrypt traffic to another vendor's device which does not support Internet Key Exchange (IKE). If IKE is configurable on both devices, it is preferable to use automatic keying.

ZebOS-IPsec automatic keying implementation requires StrongSwan for IKE protocol. For traffic mapping to IPsec tunnel, ZebOS will use access-list.

For more about IPsec, see the relevant chapters of the following:

- *Network Service Module Command Reference*
- *Unicast Configuration Guide*
- *Network Service Module Developer Guide*

BGP Selective Fib Install

BGP Selective FIB Download feature would reduce the number of BGP route installation into its Routing Information Base (RIB). By reducing the route installation in the dedicated route reflectors, we can maximize availability of resources and improve routing scalability and convergence.

A new command ‘table map’ is being introduced to achieve this. A table map controls what is put into the BGP routing table. When configured it would reduce or prevent downloading routes to RIB. Table map command references ‘route map’ rules available in BGP to control the routes going into the BGP routing table.

For more about BGP Selective Fib Install, see the relevant chapters of the following:

- *Border Gateway Protocol Command Reference*

Software Forwarder Support for VPLS

Note : This feature is tested only on 3.16.x Debian 8 kernel.

The MPLS Software Forwarder has been extended to support the following VPLS full mesh and H-VPLS forwarding functionality:

- VPLS with LDP signalling
- VPLS with BGP signalling

- Static VPLS provisioning
- VPLS forwarding
  - Traffic forwarding over VPLS mesh and H-VPLS.
  - VPLS MAC learning

For more about Software Forwarder Support for VPLS, see the relevant chapters of the following:

- *Multi-Protocol Label Switching Forwarder Developer Guide*

Known Issues and Limitations

The following sections contain a summary of the known issues and limitations in this release.

Internet Protocol Security (IPsec)

The following features are not supported in current release:

- Authentication header payload
- Transport mode
- IPsec tunnel interface
- Routing protocols support over IPsec tunnel
- IPsec MIB
- IPsec support in Hardware

Software Forwarder Support for VPLS

- Line rate data traffic forwarding testing is not in scope
- No scalability testing for this feature.

Feature History

This section lists features added in previous versions and the relevant documents. See the release notes for that version for details about a feature.

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Segment Routing	*Segment Routing Command Reference* *Segment Routing Developer Guide* *Segment Routing Configuration Guide*
Multicast Source Discovery Protocol (MSDP)	*Protocol Independent Multicasting Command Reference* *Protocol Independent Multicasting Developer Guide* *Multicast Configuration Guide*
SNMP MIBs L3: OSPFv2,OSPFv3, BGP, VRRP, RIP, VRF Lite, ISIS L2: CMFv1, LLDPv1, LLDPv2, MSTP BRIDGE, VLAN, STP, RSTP, LACP	*L2 MIBS* *L3 MIBS*
Segment routing support for NSM, MPLS, and RIBd OSPF	N/A

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BGP-MPLS label exchange (RFC 3107); Carrier Supporting Carrier (CSC) (section 9 of RFC 4364)	N/A
Carrier Ethernet 2.0 E-Line, E-LAN, E-Tree, and E-Access (MEF 6.1, 6.1.1); compliance with MEF Service Attributes defined in MEF 10.2, 10.2.1, 26.1	*Carrier Ethernet Command Reference* *Carrier Ethernet Developer Guide* *Carrier Ethernet Configuration Guide*
L2VPN provisioning with BGP and LDP (RFC 6074); Generalized PwID FEC signaling (RFC 4447)	*Multi-Protocol Label Switching Command Reference* *Multi-Protocol Label Switching Developer Guide* *Multi-Protocol Label Switching Configuration Guide*
LDP ECMP	*Label Distribution Protocol Command Reference* *Label Distribution Protocol Developer Guide* *Multi-Protocol Label Switching Configuration Guide*
OSPFv3 LFA OSPF On Demand	*Open Shortest Path First Command Reference* *Open Shortest Path First Developer Guide* *Unicast Configuration Guide*

PIM SM-DM PIM ECMP PIM Group to RP Mapping	*Protocol Independent Multicasting Command Reference* *Protocol Independent Multicasting Developer Guide* *Multicast Configuration Guide*
Host Protocols	*Host Protocol Integration Command Reference* *Host Protocol Integration Configuration Guide*
ZebM	*Simple Management Interface Client Developer Guide* *Central Management Layer User Guide* `SMI/ZebOS-XP-SMI-Reference-xxx.pdf`

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Multi-Chassis Link Aggregation	*Layer 2 Command Reference* *Layer 2 Developer Guide* *Layer 2 Configuration Guide*
LDP/RSVP-TE Scalability and Performance Improvements	N/A
High Availability ZebIC Integration	N/A
OSPF Stateful Switchover	*OSPF Developer Guide* *High Availability Configuration Guide*
OSPF on Demand	*OSPF Command Reference* *OSPF Developer Guide* *Unicast Configuration Guide*
Bidirectional PIM	*PIM Command Reference* *PIM Developer Guide* *Multicast Configuration Guide*
SMP Support	N/A

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NSM Architecture Changes: • Unicast Routing Information Base daemon • Virtual Router Redundancy Protocol daemon • Layer 2 Multicast Routing Information Base daemon (IGMP/MLD Snooping) • Bulk Messaging and Asynchronous Messaging • Multicast RIB IPC Performance	*Architecture Guide* *Unicast RIB Command Reference* *Unicast RIB Developer Guide* *Multicast Command Reference*

High Availability	*HA Command Reference* *HA Developer Guide* *HA Configuration Guide*
MPLS-TP Ring Protection Switching	*MPLS Command Reference* *MPLS Developer Guide* *MPLS Configuration Guide*
Virtual Routing/Virtual Routing Forwarding: • Support Based on Linux 3.x Namespaces • Multi-Tenancy	*Virtual Routing Configuration Guide* *Virtual Routing Developer Guide*
Edge Virtual Bridging	*Edge Virtual Bridging Command Reference* *Edge Virtual Bridging Configuration Guide* *Edge Virtual Bridging Developer Guide*
Unicast Reverse Path Forwarding Check	*NSM Command Reference* *NSM Developer Guide*
LLDP: • Version 2 • Media Endpoint Discovery (MED)	*Carrier Ethernet Command Reference* *Carrier Ethernet Developer Guide*
Simple Management Interface (SMI)	*SMI Client Developer Guide* SMI API reference manuals in the SMI subfolder: `ZebOS-XP-SMI-Reference-xxx.pdf`
CFM with SPBv	N/A