

BXOS 3.0 Software Release Notes

Release 3.0 R2
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These release notes accompany Release 3.0 R2 of the BXOS software. They briefly describe the hardware and software features, and identify the outstanding issues. The BXOS software runs on the BX 7000 multi-access gateway.

Release 3.0 Features

The following is a list of features for the BX 7000 multi-access gateway and BXOS Release 3.0 R2. Following the description is the title of the manual to consult for further information. For a complete list of manuals, see Table 3 on page 22.

Hardware

- The gateway houses the following ports:
 - 16 T1 or E1 ports with ATM, IMA, PPP, and MLPPP support
 - Ethernet ports: 3 Ethernet (10/100/1000 Base-TX) ports and 2 fiber-optic Ethernet (1000 Base-X-SFP) ports
 - 1 serial console port (RJ-45)
 - 1 USB 2.0 Type B port for console
 - 1 USB 2.0 Type A port for configuration upload
- Four external alarm contacts connect the gateway to external alarm devices. When an alarm is triggered, the alarm relay contacts located at the lower right of the front panel are activated. This in turn activates the external alarm devices. The external alarm contact has eight pins, which accept single-core wire. Four devices can be connected to the wire-trap connector using these eight pins. For more information about ports and alarms, see the *BX 7000 Multi-access Gateway Hardware Guide*.
- A tricolor system LED indicates the status of power supplies, temperature, and conditions based on chassis configuration such as loss of signal (LoS) and Ethernet link down. The red alarm indicates a critical situation or major problem that needs immediate attention, a yellow alarm indicates a noncritical or minor situation that requires monitoring for proper functioning, and a green alarm indicates the normal functioning of the gateway.

Forwarding

The gateway supports the following forwarding techniques. For more information about packet forwarding, see the *BXOS Configuration Guide*.

- Source MAC filtering—The BXOS filtering feature selectively filters packets based on the source media access control (MAC) address. When you enable source address filtering, you can configure interfaces to receive packets from specific MAC addresses. If a MAC address is not configured, packets are dropped. By default, this feature is disabled on all interfaces.
- PPP and MLPPP—The Point-to-Point Protocol (PPP) provides a standard method for transporting multiprotocol datagrams over point-to-point links. The Multilink Point-to-Point Protocol (MLPPP) bundles multiple link-layer channels into a single network-layer channel.
- VLAN tagging—Enables the gateway to receive and forward frames with 802.1Q virtual LAN (VLAN) tags.
- IPv4 forwarding—The gateway can forward IPv4 frames based on destination IP address lookup. Routes can be configured in a static fashion, or can be learned using OSPF or IS-IS.
- ATM encapsulation on a time-division multiplexing (TDM) interface—Asynchronous Transfer Mode (ATM) simultaneously handles different types of traffic streams at a high speed over the same physical connection. ATM uses a fixed cell size of 53 bytes to enable prompt determination of the destination address of each cell.
- ATM IMA 1.0 and IMA 1.1—Inverse multiplexing over ATM (IMA) is a physical layer technology where a high-speed stream of ATM cells is broken up and transmitted across a logical group of multiple T1 or E1 physical connections. These cells are then restored to original ATM cell order at the destination. IMA provides a scalable and cost-effective solution for customers seeking to expand the WAN bandwidth from T1 or E1 speeds without having to pay for DS3 or OC3 circuits.
- VP/VC cross-connect—In the BXOS software, data cells are transmitted in sequential order. At the receiving end, the cells are recombined to form the original cell stream and are passed to the ATM layer. ATM relies on the concepts of virtual paths (VPs) and virtual circuits (VCs). A virtual path, represented by a specific virtual path identifier (VPI), establishes a route between two devices in a network. Each VPI can contain multiple virtual circuits, each represented by a virtual circuit identifier (VCI).
- MPLS and GRE tunnels—MPLS operates between Layer 2 and Layer 3. The MPLS protocols supported by BXOS are RSVP-TE and LDP.

- Static or dynamic provisioning of pseudowire cross-connect over an MPLS or GRE tunnel is supported for the following ATM cell encapsulation modes:
 - ATM 1-to-1 VCC—One ATM virtual channel connection (VCC) is mapped to a single pseudowire. The ATM VPI or VCI value of individual ATM cells is not present in the packet-switching network (PSN) payload. For each ATM cell, 49 bytes (48 bytes payload + 1 byte flag) are copied to a PSN packet.
 - ATM 1-to-1 VPC—One ATM virtual path connection (VPC) is mapped to a single pseudowire. The PSN payload contains only the VCI value of individual ATM cells. For each ATM cell, 51 bytes (48 bytes payload + 2 bytes VC value + 1 byte flag) are copied to a PSN packet.
 - ATM N-to-1 VPC/VCC—One or more ATM VCCs are mapped to one pseudowire. The VPI/VCI values from each ATM cell are present in the PSN payload. For each ATM cell, 52 bytes are copied into a PSN packet.
 - ATM AAL5 PDU— ATM Adaptation Layer 5 (AAL5) protocol data units (PDU) (obtained by the reassembly of ATM cells belonging to a single ATM AAL5 VPI/VCI) are sent over a pseudowire. In this mode, AAL5 trailer and padding bytes are also sent in the PSN packet.
 - ATM AAL 5 SDU—After reassembly of the AAL5 PDU, the padding and trailer bytes are removed to retrieve the AAL5 service data unit (SDU), which is then sent over the pseudowire.
- SAToP—Structure Agnostic TDM over PSN (SAToP) is a method for encapsulating TDM byte streams as pseudowires over PSNs. SAToP addresses only structure-agnostic transport and disregards any structure that may be imposed on these TDM signals; in particular, the structure imposed by standard TDM framing.

Timing and Synchronization

The gateway supports the following clock sources and clock recovery modes:

- Clock sources are used on the TDM interface to recover the clock from the receiving end. The following clock source support is available for TDM interfaces:
 - Line
 - Loop
 - Local
- The gateway performs clock recovery using the incoming SAToP pseudowire packets. The gateway supports the following modes of clock recovery:
 - Adaptive clock—Clock is recovered based on the packet arrival rates.
 - Differential clock (RTP absolute mode)—Real-time Transport Protocol (RTP) timestamps are used for clock recovery.

Routing and Signaling

- OSPF traffic engineering—OSPF determines the shortest path to a node using a number of statically defined link metrics; the default and most commonly used metric is related to the bandwidth of the link. The traffic engineering extensions to OSPF add dynamic properties to the route calculation algorithm. When traffic engineering is enabled on the gateway, you can enable OSPF traffic engineering support. By default, traffic engineering support is enabled on the gateway.
- IS-IS traffic engineering—IS-IS is a link-state routing protocol used to exchange topology information with nearest neighbors. The extensions are added to the gateway implementation of IS-IS to provide traffic engineering and MPLS with information about network topology and loading.
- LDP for pseudowire signaling—In BXOS, MPLS LDP is used as a protocol for setting up and maintaining the pseudowires.
- RSVP traffic engineering—RSVP traffic engineering (RSVP-TE) is used to create label-switched paths (LSPs) between the MPLS supported nodes. RSVP-TE LSPs are used as the tunnels to carry the pseudowire traffic. RSVP-TE supports fast reroute by creating backup paths.
- BFD MPLS tunnels—The Bidirectional Forwarding Detection (BFD) protocol enables rapid detection of failures in the MPLS network.
- BFD for routing protocol sessions—BFD works with a wide variety of network environments and topologies. The BFD failure detection timers have shorter time limits than the OSPF failure detection mechanisms, thereby providing faster detection.
- MPLS fast reroute through bypass tunnel—On the gateway, you must statically configure the bypass tunnel to protect the primary LSPs that pass through a specific interface. In the event of a failure in the protected links and nodes in the primary LSP, MPLS redirects traffic to the associated bypass tunnel.
- Static MPLS tunnels—Static routes define the next hop from a gateway for a particular destination.
- Static pseudowires—A static MPLS tunnel is used for configuring the static SAToP pseudowire.
- Routing policy—You can configure a routing policy for OSPF and IS-IS protocols. The redistribution of static or connected routes into an interior gateway protocol (IGP) requires policy configuration. The redistribution of routes to IS-IS is accomplished by specifying levels (L1, L2) as the match condition for configuring the policy.

For more information about routing and signaling, see the *BXOS Configuration Guide*.

QoS Classification, Marking, Profiling, and Shaping

The following QoS features are supported by the gateway:

- 5-tuple (source addr, dest addr, source port, dest port, and protocol) and Behavioral Aggregate (DSCP/dot1p)-based classification
- Layer 3 marking—Mark or remark the Differentiated Services code point (DSCP) for forwarded traffic
- Layer 2 marking—Static marking of VLAN dot1p bits for pseudowire traffic over VLAN subinterfaces
- MPLS marking—Static marking of EXP bits for the traffic over MPLS tunnels
- Policing—Single-rate Tricolor Marking (srTCM) and Two-rate Tricolor Marking (trTCM) support
- ATM TM—Constant bit rate (CBR), variable bit rate (VBR), real-time variable bit rate (RTVBR), nonreal-time variable bit rate (NRTVBR), and unspecified bit rate (UBR) classes
- Shaping—Committed information rate (CIR) and committed and peak information rates (CIR-PIR) support.

For more information about QoS features, see the *BXOS Configuration Guide*.

OAM

ATM F4 and F5 OAM support—The gateway supports F4 and F5 ATM Operation, Administration, and Maintenance (OAM) fault management, loopback, and continuity check (CC) cells. These cells perform loopback testing, link integrity, and fault detection and notification events such as alarm indication signal (AIS) and remote defect identification (RDI) for each connection.

Network and Device Management

- Command-line interface—The BXOS command-line interface (CLI) is a text-based interface that provides various commands for configuring and monitoring the gateway. The CLI can be accessed through a console or network connection using a secure shell (SSH) client. The CLI supports two modes of operation: CLI operational mode and CLI configuration mode.
- SNMP support—The gateway supports SNMPv1, SNMPv2, and SNMPv3. SNMP is supported for data integrity, confidentiality, and authentication. The gateway accepts requests in any of the three SNMP formats.
- NETCONF—The gateway provides a NETCONF interface to enable retrieval and manipulation of configuration data. It uses an Extensible Markup Language (XML)-based data encoding for the configuration data and protocol messages. NETCONF uses the XML interface for device manageability. NETCONF uses SSH as the transport layer protocol and RADIUS or TACACS+ for authenticating the SSH session. A maximum of four NETCONF sessions are supported by the gateway.

- Zero touch configuration—The gateway downloads its configuration files from a remote server and configures itself according to the configuration commands in the configuration file. A USB disk drive can also be used instead of a configuration server to configure the gateway. If zero touch bit is enabled and a USB disk has the configuration file (`config.xml`), the gateway uses this file and does not make a Dynamic Host Configuration Protocol (DHCP) request.
- Notification through SNMP traps—The gateway sends events such as interface up/down state, pseudowire up/down state, software upgrade status, and so on, as SNMP traps to the configured trap destinations. The gateway supports both SNMPv1 and SNMPv2 traps. The maximum number of trap destinations is four.
- Bootloader and OS image upgrade—The gateway supports upgrade of BXOS and bxboot software through CLI and the NETCONF interface. The gateway supports the FTP, TFTP, HTTP, or HTTPS protocols for downloading the software image from the server to the gateway.

For more information about network and device management, see the *BXOS Configuration Guide*.

Authentication

The gateway contacts a RADIUS or TACACS+ server for user authentication. The CLI authentication mechanism (RADIUS or TACACS+) is integrated using the Pluggable Authentication Modules (PAM). The SSH client, used to access the CLI, authenticates the user using these PAM modules.

Platform Software and Firmware

The following software and firmware functionalities are supported by the gateway:

- Manufacturing and field diagnostics—The field diagnostics option is available as part of the gateway boot process when the regular boot process is interrupted. Select the field-diagnostics option from the menu displayed on the console to display the options available as part of field diagnostics.
- Console support through serial and USB interfaces—In the gateway, the data is transferred through a USB console port when the USB connection is established with another end of the USB cable. Either the USB port or serial port can be used as a console, but only one at a time. If both cables are connected, the USB port is activated by default and the console comes through the USB port.
- Support for snapshot of working image in a backup partition—The snapshot option is used to create a backup of the primary software image. The NETCONF GUI or a CLI command is used to create a snapshot. When a snapshot command is received by the gateway, the backup image in flash is erased and the primary image is copied to the backup image location. The backup image is used to recover the gateway in the event of a primary image failure.
- Exception handling support—When a user exception occurs, a core file is generated. By default, once the core file is generated, it is stored in a compressed tar file along with the context information. The contextual information includes the current configuration file and a log messages file.

- Hardware and software watchdog—The motherboard supports a separate hardware watchdog timer circuit external to the main processor. If the hardware watchdog is enabled, the gateway is rebooted if it is not serviced within a specified time. This watchdog protects the system from software failure.
- Process and memory monitoring—Performance monitoring refers to monitoring utilization of memory, CPU, and bandwidth.
- Active image crash recovery—If the BXOS software does not respond during regular operation or bootup, the hardware watchdog is activated. If this happens more than five times in a row, the active image recovery operation is carried out by the boot loader. The autorecovery mechanism copies the backup BXOS image to the active BXOS location and uses the active image to boot the system.
- USB flash media support for device management—The gateway supports USB flash media through a separate USB port available on the system front panel. The gateway supports the default FAT32 file system on the USB flash media.
- NTP—NTP is used to synchronize the date and time of the gateway with a common time base in a network. NTP operates over UDP, and the default port is 123. The factory setting for the system clock is 1970-01-01T00:00:00 UTC. Once the NTP process is up, the system time is synchronized with NTP.
- DHCP relay—The gateway can be configured as a DHCP relay agent. The device can be configured as a DHCP relay agent if it has a locally attached host and a remote DHCP server. This means the local host sends the DHCP request as a broadcast message and the gateway relays the message to the specified DHCP server. For more information about DHCP relay, see the *BXOS Configuration Guide*.

Outstanding Issues

- The VLAN subinterfaces in the gateway do not support the per-VLAN interface statistics. The traffic forwarded through the VLAN interfaces is not displayed as a part of statistics. There is no workaround. [PR/275851] [PR/303313]
- The gateway does not support moving a standalone PPP link into a multilink PPP bundle. As a workaround, delete the standalone PPP link and reconfigure it as a member link in the bundle. [PR/275939]
- The gateway does not support moving a member link from one MLPPP bundle to another bundle. As a workaround, delete the member link from the source bundle and reconfigure the link as a new member link in the target bundle. [PR/275941]
- You cannot remove the primary link you created on the gateway when there are other links present in the bundle. As a workaround, remove all other links created in the bundle before removing the primary link. [PR/275942]
- The gateway does not support configuring cell delay variance tolerance (CDVT) for ATM VCs. There is no workaround. [PR/278451]

- BXOS does not permit Address Resolution Protocol (ARP) entries to age out, but keeps them alive. Prior to aging out, the host operating system sends out proactive ARP requests and keeps the entries alive. There is no workaround. [PR/279807]
- The gateway does not have a provision to clear alarms generated by the power supply unit (PSU). As a workaround, use the **delete alarms power** command at the [edit chassis] hierarchy level to clear the PSU related alarm. [PR/280393]
- The BXOS software does not support OSPF virtual links on the gateway. There is no workaround. [PR/281198]
- The gateway does not support tagged and untagged operations on a single Ethernet interface simultaneously. To configure an Ethernet interface to use tagged mode, you must create at least one subinterface before you associate the Ethernet interface with an IP address. If you associate an Ethernet interface with an IP address before you create a subinterface, the Ethernet interface functions in untagged mode and you cannot create subinterfaces. As a workaround, delete the IP address associated with the Ethernet interface and create VLAN subinterfaces. This interface works only in tagged mode after this operation. [PR/282223] [PR/282225]
- The gateway does not support the octet-aligned T1 mode. There is no workaround. [PR/283641]
- The **show interface** command displays output only for interfaces that you have configured. As a workaround, use the **show ports** command to display all ports in the gateway. [PR/285104]
- The gateway always sends IS-IS hellos packets padded to the MTU size. The BXOS software does not support disabling IS-IS hello padding. As a workaround, configure similar MTU sizes between IS-IS peers. [PR/285794]
- In BXOS, you cannot configure the IS-IS protocol as a level 1 or level 2 router. By default, the IS-IS protocol is configured as both the level 1 and level 2 router. As a workaround, disable level 2 in all IS-IS-enabled interfaces to configure the gateway as the level 1 router or disable level 1 in all IS-IS-enabled interfaces to configure the gateway as the level 2 router. [PR/285796]
- The static MPLS tunnels assume that the next-hop through which the tunnel destination is reached already has an ARP entry present in the ARP cache. If you configure a static MPLS tunnel to a destination for which there is no information in the ARP cache, the tunnel creation fails. As a workaround, use static ARP entries for tunnel destinations before creating static tunnels. [PR/286342]
- The gateway does not support jumbo frames. The maximum Ethernet MTU support is 1500 bytes. There is no workaround. [PR/287113]
- The **file delete** command deletes all files in the current working directory. There is no workaround. [PR/287165]
- The BXOS CLI does not support a specific command to display the number of PPP interfaces. As a workaround, use the **show interface** command to display the summary of all configured interfaces on the gateway. [PR/287229]

- The gateway does not support configuring interface alarms for a specific interface. As a workaround, use the **set alarm** command at the **[edit chassis]** hierarchy level to configure alarms on T1, E1, or Ethernet interfaces. [PR/287554]
- The VLAN priority bits can be marked only based on the VLAN subinterface configuration. The gateway does not support the VLAN priority bits marking based on the multifield (MF) or behavior aggregate (BA) classification. There is no workaround. [PR/287562]
- The gateway does not support zero touch configuration from the JUNOScope application. As a workaround, use CLI to configure the zero touch mode. [PR/287964]
- The IP addresses for PPP interfaces are not dynamically negotiated with the peer. As a workaround, configure IP addresses for PPP interfaces. [PR/287982]
- When you reboot the gateway after configuring and saving 200 pseudowires, the gateway takes approximately 45 minutes to restore the configurations. There is no workaround. [PR/289197]
- After configuring the LDP protocol, if you issue the **show ldp overview** command, it does not display LDP configuration details. As a workaround, use the **show protocol ldp** command which displays LDP configuration details. [PR/293862]
- The **show route** command takes approximately 5 seconds to display the output if more than 100 routes are configured on the gateway. There is no workaround. [PR/297833]
- In BXOS, path configuration is inside the LSPs. Therefore, you cannot use a single path configuration for multiple LSPs. As a workaround, configure a path for each LSP. [PR/301511]
- The global BFD protocol configuration which is optional is used for modifying the default BFD parameters. Once you have configured the global BFD, you cannot delete that configuration. As a workaround, set the global BFD parameters to their default values. [PR/302179]
- Pseudowire does not go down when the corresponding physical interface goes down. There is no workaround. [PR/302247]
- In BXOS, VLAN subinterfaces do not support per-VLAN interface statistics. Any traffic that is forwarded through VLAN interfaces is not displayed as part of the statistics. As a workaround, use the **show interface** command to display output of traffic from a host. [PR/303313]
- The delete command for the RMON configuration is not supported by the CLI. There is no workaround. [PR/304825]

- When traffic with packet size of 1500 bytes is sent at a speed of over 750 Mbps or traffic with packet size of 64 bytes is sent at a speed of over 137 Mbps to the gateway, the packets are dropped. The transmit-side packet scheduler does not work when the incoming unidirectional traffic rate is very high. As a workaround, keep the incoming packet rate below 750 Mbps for 1500 byte-traffic or below 137 Mbps for 64-byte traffic to view the effects of packet scheduling. [PR/310273] [PR/453094] [PR/454145]
- If you configure a T1 or E1 interface, issue the `show interface interface-name` command before sending traffic to that interface, the `rx_err_hec` error counter under traffic statistics increments and displays a non-zero value. As a workaround, note down the initial header error control (HEC) error value after configuring the interface and subtract the initial value from subsequent statistics values to obtain an actual count of cells with HEC errors. [PR/311480]
- If a bypass tunnel is created for a peer loopback address, the backup tunnel does not come up. If the bypass tunnel is created for a peer loopback address where a primary tunnel also ends, then the backup tunnel is not created over that bypass tunnel. As a workaround, configure the bypass tunnel to the peer's physical interface address (instead of the loopback address). [PR/312644]
- The CLI does not display statistics of packets that are shaped using traffic shapers. There is no workaround. [PR/312831]
- In the absence of time-zone command, the system time should be set to the local time. There is no workaround. [PR/314980]
- When you configure a SAToP pseudowire with circuit emulation source (CES) as clock source on the T1 interface, the Valid8 test tool connected to the gateway fails to detect the T1 link when it is in UP state and the pseudowire does not send packets from TDM to PSN direction. As a workaround, use the TDM stream analyzers such as GL TDM analyzer or Advanced Network Tester (ANT-20) to perform the SAToP pseudowire testing. [PR/315003]
- Dynamic changes to a loopback address are not advertised to the peer. As a workaround, disable OSPF, change the loopback IP address, and then enable OSPF. [PR/387049]
- The CLI does not support a `delete` command to delete the SNMP protocol. There is no workaround. [PR/388295]
- The CLI does not support deleting the OAM configured on a TDM interface. As a workaround, delete the subinterface and reconfigure the same with new OAM configuration. [PR/388452]
- When you configure fast re-route (FRR), the traffic failover time from the primary tunnel to the backup tunnel is approximately 300 milliseconds. There is no workaround. [PR/389024] [PR/410625]
- When you configure OAM on a switched connection and send a continuous stream of OAM cells to the gateway, the OAM cells are not processed but are dropped. There is no workaround. [PR/389071]

- GRE interface configuration requires the input of tunnel parameters along with interface creation. You cannot create the interface without any related parameters, and then associate the tunnel parameters at a later point in time. Similarly, after being created, the parameters cannot be modified. As a workaround, delete and recreate the interface. [PR/392812]
- When you create or delete GRE or RSVP tunnel, the operating system does not free the allocated memory completely. There is no workaround. [PR/392833] [PR/392835]
- The `show mpls tunnel <tunnelname> association` command displays the status of the tunnel as up even if the tunnel is down. The system is trying multiple times to find the backup tunnel for the protected tunnel. If the system does not find the backup tunnel, after few minutes, the system declares the tunnel as down. There is no workaround. [PR/397034]
- When you create and delete multiple BA or MF classifiers, the gateway fails to free the allocated memory completely. There is no workaround. [PR/398404]
- The IPv4 fragmentation feature does not work. As a result, packets that are greater than the MTU of the outgoing Ethernet interface are dropped. There is no workaround. [PR/400112]
- Over a GRE interface, you can pass traffic with packet size greater than the configured MTU value. There is no workaround. [PR/400194]
- If you configure the loopback address in a strict path in the RSVP tunnel configuration, the tunnel does not come up. There is no workaround. [PR/402069]
- The `show arp` command displays wrong interface name for VLAN interfaces if the unit ID and VLAN ID are different. This does not have impact on traffic or system functioning. There is no workaround. [PR/402329]
- When you configure an ATM pseudowire in the AAL5 SDU mode, pass pseudowire frames, and issue the `show statistics l2circuit` command, the cyclic redundancy check (CRC) and size error counters under the **Packet Statistics** column display wrong statistics. As a workaround, save the configuration and reboot the gateway, the ATM pseudowire comes up with correct packet statistics. [PR/404150]
- When the OSPF protocol is up on the PPP interface, PPP interface deletion fails. As a workaround, disable OSPF protocol on the PPP interface and then delete the PPP interface. [PR/404259]
- When two gateways are connected through a VLAN subinterface, traffic is passed even if the admin state of the interface is down on one of the gateways. There is no workaround. [PR/404654]
- If you close the current SSH session when an image upgrade is in progress, you cannot upgrade the image by re-opening a new SSH session. As a workaround, do not terminate the SSH session when an image upgrade is in progress. You can also reboot the gateway and open an SSH session to upgrade the image. [PR/405319]

- The BXOS CLI does not support the pipe (|) command to match and filter the output. There is no workaround. [PR/406381]
- You cannot delete or disable an existing segment or e2e-endpoint in ATM OAM configuration over an ATM interface. As a workaround, delete and reconfigure the ATM interface with required ATM OAM configuration. [PR/407982]
- The traffic scheduler does not schedule traffic correctly if the configured weights are not multiples of ten. There is no workaround. [PR/408434]
- The CLI does not support commands to delete the **hold-time**, **strict-targeted-hellos**, and **keepalive-timeout** parameters at the [edit protocols ldp] hierarchy level. There is no workaround. [PR/410603]
- After configuring more number of PPP links and static routes and passing traffic through those routes, if PPP links are deleted and recreated multiple times, the traffic is lost. As a workaround, avoid deleting and recreating PPP links multiple times when traffic is passing through those links. [PR/411490]
- The **show ldp neighbor** command displays only one neighbor. There is no workaround. [PR/414980]
- The gateway does not support statistics for shaper and scheduler. There is no workaround. [PR/415309]
- While configuring interface or protocol if the **admin-state** command is not the last command, the interface or protocol is not configured properly. As a workaround, delete and reconfigure the interface or protocol with **admin-state** command as the last command in the command set. [PR/416045]
- When you reboot the gateway through automation, the CLI displays incorrect output for the first two show commands. There is no workaround. [PR/416335]
- After setting the OSPF interface type to point-to-point, if you disable and enable the Ethernet interface, the OSPF interface type of that interface goes back to LAN interface. As a workaround, disable the Ethernet interface and configure it to point-to-point interface. [PR/417048]
- Applying configuration from zero touch reboots the gateway. There is no workaround. [PR/417906]
- If you delete all ISO addresses configured on the gateway when IS-IS is enabled, the gateway causes inconsistent protocol behavior. As a workaround, retain atleast one ISO address configured on the gateway. [PR/418230]
- The RMON configuration does not check for case sensitivity of the alarm name. As a workaround, enter the RMON object name in a upper or lower case. [PR/419457]
- The gateway reboots if you continuously perform operations such as creating or deleting the interfaces, and enabling or disabling protocols in random. As a workaround, perform the operations in a proper sequence. [PR/419466]

- If you configure two alarm values for RMON in a single commit, the CLI stops responding. As a workaround, configure the RMON alarm values separately. [PR/419480]
- If you change the loopback IP when protocols are enabled, the gateway reboots. As a workaround, disable all protocols before changing the loopback IP. [PR/419577]
- When OSPF area parameters are configured with custom values, if you delete the area and reconfigure it, the OSPF area takes the old custom values, not the default values. As a workaround, delete the OSPF protocol and reconfigure it or configure the OSPF area parameters. [PR/419581]
- The BXOS CLI does not support delete command to clear the RMON configuration. There is no workaround. [PR/419800]
- The BXOS CLI does not support delete commands to clear the SNMP name and description. There is no workaround. [PR/420248]
- If you reconfigure the framer mode of a TDM interface from T1 mode to E1 mode in another parallel SSH session while PPP configuration is in progress, the DPM module stops responding. As a workaround, change the framer mode of the TDM interface from the same CLI session. [PR/420654]
- When a bypass tunnel is being used as a backup tunnel to carry the traffic, deleting the bypass tunnel priority brings down the tunnel. As a workaround, delete and configure the bypass tunnel when primary tunnel is carrying traffic. [PR/420967]
- The `show snmp` command does not display the system name configured for SNMP. As a workaround, use the `show configuration` command to view the configured system name. [PR/421075]
- When you create an ATM traffic profile with alpha-numeric naming convention and associate the profile to an ATM interface, the BXOS software considers only the numeric convention as input. As a workaround, use only the numeric convention for naming the ATM traffic profile so that the profile is associated to the ATM interface. [PR/421097] [PR/421239]
- When traffic is passing through a PPP interface, if you modify the clock source for that interface continuously several times, the CLI stops responding. As a workaround, do not configure the clock source continuously. [PR/421446]
- When two E1 interfaces are associated with a MLPPP bundle, if a secondary link comes to operational state before the primary link, the primary link is not operationally up. There is no workaround. [PR/421496]
- While configuring a TDM link to be part of an IMA group, if you supply an existing link-id parameter, the interface configuration fails. However, internally it creates the interface with default trans encapsulation. When you attempt to reconfigure the interface with correct link-id, the command still fails. As a workaround, delete and reconfigure the existing TDM interface, and then configure the link-id. [PR/421939]

- When you configure ATM pseudowires, pass traffic, and delete the MPLS protocol on an Ethernet interface, the tunnels and pseudowires came down but ATM pseudowire frames are getting switched. There is no workaround. [PR/423215]
- When you select a MAC address as the engine ID, save the configuration, and then reboot the gateway, the system configuration does not persist. As a workaround, configure the engine ID using the BXOS CLI. [PR/423295]
- If you configure more than 43 MF classifiers on the gateway, the configuration fails. As a workaround, configure fewer than 43 MF classifiers on the gateway. [PR/424024]
- When you issue the SNMP walk query to the MPLS LSR STD MIB table continuously, the SNMP daemon stops responding, and the request times out for the second query. As a workaround, restart the SNMP daemon using the `snmpd -p /var/net-snmp/snmp.pid` command from the root prompt. [PR/424205]
- The SNMP Get, GetNext, and walk queries are not returning values for the MPLS PWE3 MIB table. There is no workaround. [PR/424210]
- When you delete an SNMPv3 view with more than 30 characters, the view is not deleted, and the CLI terminates. As a workaround, configure the SNMPv3 view name with less than 30 characters. [PR/424489]
- When you configure SNMPv3 with username, security name, and group name greater than 30 characters, the configuration does not exist after reboot. As a workaround, configure SNMPv3 with username, security name, and group name less than or equal to 30 characters. [PR/424529]
- If you perform both operations such as enabling and disabling a Gigabit Ethernet interface in a single commit followed by deleting that interface, the deletion fails. As a workaround, either enable or disable the Gigabit Ethernet interface in a single commit. [PR/425264]
- In an IS-IS configuration, if you delete the passive mode, the IS-IS adjacency does not come up. As a workaround, delete the IS-IS configuration and reconfigure it. [PR/425995]
- When OSPF BFD is up, if the gateway loopback IP is deleted and configured again the OSPF sessions do not come up. As a workaround, do not delete the loopback IP when OSPF BFD is running. [PR/426770]
- During physical link up state and admin down state, the Ethernet traffic passes over an admin-disabled Gigabit Ethernet interface. There is no workaround. [PR/426816]
- When you execute the `show interface ml-ppp extensive` command, the CLI terminates. You can open a new CLI session and work. Also, this does not cause traffic loss or reboot the gateway. As a workaround, use the `detail` option instead of the `extensive` option. [PR/427958]

- The CLI supports modifying the SNMPv3 trap and inform configurations, but does not support commands to delete the configurations. As a workaround, create new target address for the SNMPv3 trap and inform. [PR/428706]
- If you delete the ATM-IMA traffic profile after deleting the associated logical interface, the ATM-IMA traffic profile deletion fails. As a workaround, delete associated traffic profile before deleting the logical interface. [PR/428918]
- While configuring the label-switch-path, if the **from-address** value exceeds 35 characters in length, the CLI terminates. This does not cause traffic loss or reboot the gateway. You can open another CLI session and work. As a workaround, enter a valid IP address. [PR/429530]
- After configuring SNMPv3 inform, the snmpv3 walk/get/getnext requests fail. As a workaround, use SNMPv1 and SNMPv2c queries. [PR/429537]
- When the gateway is configured with 200 RSVP tunnels and 200 pseudowires, if you do an SNMP walk for pseudowires, the gateway reboots. As a workaround, do not do an SNMP walk for pseudowires when the gateway is configured with more than 100 tunnels and 100 pseudowires. [PR/429566]
- When ATM-IMA bundle is operationally down, if you enter the **show ima interface <extensive>** command, the CLI stops responding. There is no workaround. [PR/429809]
- If you configure the subinterface before you associate E1 interfaces with an IMA group, the gateway stops. As a workaround, associate E1 interfaces with the IMA group and then configure subinterfaces. [PR/430456]
- When RSVP protected tunnels are up, if you disable RSVP protocol and then delete MPLS protocol, the CLI stops responding. As a workaround, do not disable the RSVP protocol when the RSVP protected tunnels are up. [PR/430643]
- When traffic is passed, the gateway does not support changing the VPI and VCI values for an ATM subinterface. As a workaround, delete all the associated ATM cross-connects or ATM pseudowires before changing the VPI and VCI for the ATM subinterface. [PR/430649]
- If you reboot the gateway after configuring more than 100 protected tunnels, the configuration fails. As a workaround, configure less than 100 protected tunnels. [PR/430785]
- When you perform the SNMP walk for 300 MIB objects with timeout value set to less than 2 minutes in the MIB browser, the query times out. As a workaround, increase the timeout value for MIB objects in the MIB browser. [PR/432292]
- When LDP targeted session is up, if you change the **hold-time** and **keepalive-timeout** values, then the LDP targeted session goes down and comes back with newly configured values. As a workaround, do not change the **hold-time** and **keepalive-timeout** values when the LDP targeted session is up. [PR/432939]

- The NTP client restarts periodically to update the gateway time. There is no workaround. [PR/432963]
- Ping over an MLPPP interface works even if the primary link alone is operational. The statuses of other member links do not have any impact when the primary link is operational. There is no workaround. [PR/432994]
- The old log messages are not saved in static storage if the gateway is active for more than 48 hours. As a workaround, login into the shell prompt as a root user and copy required files to a remote FTP server using the FTP client application from the gateway. [PR/436390]
- The CLI does not support deleting interfaces that have subinterfaces with IMA link. As a workaround, delete the subinterfaces first and then delete the interface. [PR/436616]
- If you delete all SNMP community names configured on the gateway, you cannot access the gateway through a SNMP MIB browser. There is no workaround. [PR/436684]
- If the primary link, which is the first associated link to the MLPPP bundle, goes down, the entire MLPPP bundle goes down. This affects the traffic flow. There is no workaround. [PR/436890]
- If you create a VLAN interface and associate a static route to that interface, traffic passes through the VLAN interface. But when you delete the VLAN subinterface and recreate, the traffic passing over that interface is dropped. There is no workaround. [PR/437752]
- When ARP or ICMP messages are passed over the Gigabit Ethernet interface at a speed over 30 Mbps, the gateway reboots. There is no workaround. [PR/438944]
- The gateway does not support ATM OAM continuity check functionality. There is no workaround. [PR/439695]
- This release includes support for root, CLI and NETCONF users. All user commands on the system can be executed through one or more of these user IDs. Support for additional users and associated privilege levels will be included in the later release. [PR/441036]
- When you test an MLPPP interface based on the testing methods described in the RFC 2544, the test for zero packet loss fails over the MLPPP interface. There is no workaround. [PR/441052]
- The gateway does not support the loopback address configuration for ATM OAM. There is no workaround. [PR/442888]
- SNMP community configuration is lost when you upgrade the BXOS software. There is no workaround. [PR/445085]
- If both OAM and data cells are sent on the same ATM cross-connection, the data cells are passed but the OAM cells are dropped. There is no workaround. [PR/449028]

- In the ATM traffic profile configuration, the default value for the cell discard mode is disabled. The CLI output does not display the value, if you did not configure the cell discard mode explicitly. As a workaround, configure the cell discard mode value manually. [PR/444711]
- If you configure a SAToP pseudowire with payload size not in multiples of 32, the pseudowire configuration fails. As a workaround, configure the SAToP pseudowire over the T1 or E1 interface with payload size in multiples of 32. [PR/446128]
- If the system is in a continuous loop state, you can recover the system but you will lose the existing configuration. [PR/446191]
To recover the system from a continuous loop:
 1. Reboot the system.
The prompt displays:
Applying configuration. Press Ctrl+C to exit....
 2. Press Ctrl+C to interrupt the startup process.
The prompt displays:
BX7000 login:
 3. Enter the login username and password as root.
BX7000 login: **root**
Password:
The prompt displays:
root@BX7000#
 4. Delete the `startup.cfg` file using the `rm` command:
root@BX7000# **rm /config/startup.cfg**
 5. Reboot the system using the following command:
root@BX7000# **reboot**
The system reboots after several seconds and the existing configuration is lost.
 6. After the system reboot, access the gateway using the root account or CLI user privileges.
To login as a root user, type login username and password as root.
BX7000 login: **root**
Password:
The prompt displays:
root@BX7000
or
To login as a CLI user, type login username and password as cli.
BX7000 login: **cli**
Password:
The prompt displays:
cli@BX7000>
 7. Enter into the configuration mode using the following command:
cli@BX7000> **con**
 8. Configure the gateway from the following prompt:
cli@BX7000#

To set the system to the factory default:

1. Reboot the system.
The prompt displays:
Press ESC Key to enter into Field diagnostics message.
2. Press the Esc key.
The prompt displays:
Enter the password:
3. Enter the password as GetmeIn@7.
Enter the password:
The system displays the following Boot Menu options:
 1. Diagnostics Mode
 2. Setup Mode
 3. Exit and Continue
 Enter the menu option number and press Enter key:
4. Enter the menu option number as 2 for the Setup Mode:
Enter the menu option number and press Enter key: 2
The system enters into the SIDX setup mode.
SIDX>
5. Set the system to the factory default using the `factorydefault` command:
SIDX> **factorydefault**
The system requires password to execute the command.
6. Enter the password as syrah to set the system to the factory default:
Enter the password:
7. The system reboots with the default factory configuration.
8. After the reboot, access the gateway using the root account or CLI user privileges.
9. Enter into the configuration mode using the following command:
cli@BX7000>**con**
10. Configure the gateway from the following prompt:
cli@BX7000#

For information about restoring the configuration file, see the *BXOS Configuration Guide*.

- The BXOS software does not support a separate command to view the static route configuration. As a workaround, use the `show configuration` command to view all the static routes configured on the gateway. [PR/446239]
- In FRR setup with SAToP pseudowire, the primary and bypass tunnel statistics are not updated after the traffic switches back to the bypass tunnel interface. There is no workaround. [PR/446941]
- When you remove policer profile from an ATM interface, the policer action still persists on that interface. The traffic flowing on that interface is still being policed. There is no workaround. [PR/450403]

- When you delete a policy profile from an ATM IMA interface and commit the configuration, the CLI does not respond. There is no workaround. [PR/452072]
- BXOS supports Ethernet shape rate from 256 kbps to 6250 kbps. When applying shaper with shape rate below 256 kbps to Ethernet scheduler, an error message “Error: Failed to configure scheduler for interface 'ge-1/0/2' - PQ block Channel modify failed.” displays. As a workaround, apply the shape rate above 256 kbps to the Ethernet scheduler. [PR/452415]
- When an ATM or ATM IMA interface is attached to a pseudowire, the ATM traffic profile cannot be associated to that interface and an error message Error: Configuration failed for 'im-ima1.0' - (null) displays. As a workaround, delete the pseudowire before associating the ATM traffic profile to the ATM interface. [PR/454835]

Operational Notes



NOTE: Whenever you update the gateway configuration, save the latest configuration file to an external memory. You can use this file if you have any issues with the system that corrupts the configuration file.



NOTE: When you install the cable management bracket, ensure that the mounting flanges are pointed outward.



NOTE: The output of the show chassis hardware command is as follows:

```
cli@BX7000> show chassis hardware
Hw name: BX-7000
revision: 02
serial: D0000 - H9999
description: BX7000 Multi-access Gateway
```

Changes in the CLI Commands

Table 1 on page 20 lists the commands removed in the 3.0 R2 release.

Table 1: The CLI Commands Deleted in the 3.0 R2 Release

Command	PR Number
<ul style="list-style-type: none"> ■ The exceed-action command option for configuring two-rate policer: drop 	311352
<ul style="list-style-type: none"> ■ The SAToP pseudowire configuration commands: set alarm-set-time set alarm-clear-time 	304292
<ul style="list-style-type: none"> ■ The stub area commands for OSPF: Set area-range Set stub default-metric Set stub summaries Set stub no-summaries delete area-range delete stub default-metric ■ The virtual link commands for OSPF: set virtual-link < neighbor-id > transit-area < area-id > delete virtual-link < neighbor-id > 	411565
<ul style="list-style-type: none"> ■ The SAToP pseudowire configuration commands: Intermediate-state packets Sequence-window lossy-state-exit octet-aligned 	289579
<ul style="list-style-type: none"> ■ The SAToP pseudowire configuration command: omit-payload 	304823
<ul style="list-style-type: none"> ■ The ATM configuration commands: clp clp01-threshold clp1-low-threshold clp1-threshold epd-threshold 	306171
<ul style="list-style-type: none"> ■ The MPLS label-switched-path configuration command: adaptive enable 	303031
<ul style="list-style-type: none"> ■ the ATM QoS profile configuration command: statistics (enable disable) 	396505

Table 2 on page 21 lists the new commands included in the 3.0 R2 release.

Table 2: The CLI Commands Added in the 3.0 R2 Release

Commands	PR Number
<ul style="list-style-type: none"> ■ The ATM OAM CLI commands for configuring an IMA group on an ATM interface: <ul style="list-style-type: none"> set ais-rdi alarmdowncount cell set ais-rdi alarmcleartimeout seconds set cc (source sink both) set e2e-endpoint enable set oam-liveness { <ul style="list-style-type: none"> up-count cells down-count cells set oam-period (seconds disable) set seg-endpoint enable 	310534
<ul style="list-style-type: none"> ■ The command to assign the default overload time period to the gateway: <ul style="list-style-type: none"> delete overload timeout 	312904

List of Technical Publications

Table 3 on page 22 lists the software and hardware guides for the gateway and describes the content of each document.

Table 3: BX 7000 Multi-access Gateway Supported Documentation

Book	Description
<i>BX 7000 Multi-access Gateway Hardware Guide</i>	<p>Provides a detailed hardware description of the gateway. This guide:</p> <ul style="list-style-type: none"> ■ Explains how to unpack, install, mount, access, and maintain the gateway. ■ Explains the various hardware components such as power supply, chassis, and ports. ■ Provides troubleshooting of the hardware-related issues.
<i>BXOS Configuration Guide</i>	<p>Provides a detailed software description of the BXOS software. This guide:</p> <ul style="list-style-type: none"> ■ Explains the configuration statements used to configure various properties of the gateway. ■ Describes how to configure the basic system properties, protocols, interfaces, pseudowires, and tunnels. ■ Explains statement hierarchies and parameters used in configuration.
<i>BXOS CLI Users Guide and Command Reference</i>	<p>Provides a detailed description of all the configuration mode and operational mode commands. This guide:</p> <ul style="list-style-type: none"> ■ Explains how to start the CLI and the components of the CLI. ■ Contains information about the commands used to set the gateway properties (set commands) and the commands used to view the outputs (show commands).
<i>BX 7000 Multi-access Gateway Getting Started Guide</i>	<p>Provides an overview on installing the gateway. This guide:</p> <ul style="list-style-type: none"> ■ Explains how to quickly set up the gateway. ■ Contains the basic steps to install the gateway and establish the basic gateway connectivity.

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