

Dell EMC Z9100–ON System Release Notes, OS Version 9.14(1.10)

This document contains information about open and resolved caveats, and operational information specific to the Dell EMC Networking operating software (OS) and the Z9100-Open Networking (ON) platform.

Current Release Version: 9.14(1.10)

Release Date: 2021-09-30

Previous Release Version: 9.14(1.9P4)

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For more information on hardware and software features, commands, and capabilities, refer to the Dell EMC Networking support website at: <https://www.dell.com/support>

Document Revision History

Table 1. Revision History

Date	Description
2021-09	Initial release.

Requirements

The following requirements apply to the Z9100-ON system.

Hardware Requirements

The following lists the Dell EMC Z9100-ON system hardware requirements:

- 10/25/40/50/100 GbE switch
- Thirty two fixed quad form-factor pluggable (QSFP28) optical ports
- One each 10/100/100BaseT Ethernet management port, micro universal serial bus (MicroUSB-B) 2.0 console port, USB type A port, and RS-232/RJ45 serial console port
- Two small form-factor pluggable plus (SFP+) 1000M/10G ports
- Two AC or DC power supplies units (PSUs) and five fan subsystem with airflow from the I/O side to the power supply unit (PSU) side or from the PSU side to the I/O side

The following lists the individual Dell Z9100-ON system hardware components that are available to order:

- Fan with airflow from I/O side to PSU side
- Fan with airflow from PSU side to I/O side
- AC or DC power supply with airflow from I/O side to PSU side
- AC or DC power supply with airflow from PSU side to I/O side

NOTE: Fan modules and power supplies are field replaceable units.

NOTE: All fans and PSUs must have the same airflow direction. If you mix the airflow direction, the switch detects the discrepancy, issues an alarm, and may auto-shutdown to avoid heat damage to components. You must correct the mixed airflow direction.

Software Requirements

Table 2. Software Requirements

Software	Minimum Release Requirement
Dell EMC Networking OS	9.14(1.10)
ONIE	3.23.1.0-7
DIAG Installer	3.23.3.0-4
EDA Diags	3.23.4.1

NOTE: For information about non-Dell OS versions, see *Dell EMC Z9100-Open Networking (ON) System Release Notes*.

New Dell EMC Networking OS Version 9.14(1.10) Features

The following features have been added to the Z9100-ON with Dell EMC Networking OS version 9.14(1.10):

None

Restrictions

- After you upgrade Dell EMC Networking OS to 9.14(1.10) from an earlier version and update the BIOS using the booted option, the system does not allow you to downgrade the BIOS to an earlier version. To run an earlier BIOS version, use FTP, TFTP, or SCP option from the current OS version.

```
DellEMC#upgrade boot bootselector-image stack-unit 1 tftp://10.16.127.7/FTOS-Z9100-ON-9.14.1.10.bin
Sep 24 09:32:03 : Discarded 1 pkts. Expected block num : 51. Received block num: 50
Sep 24 09:32:06 : Discarded 1 pkts. Expected block num : 65. Received block num: 64
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!.

Current Boot information in the system:
=====
Card                        BootSelector      Current Version    New Version
-----
Unit1                       Boot Selector     3.23.0.0-8        3.23.0.0-8

*****
* Warning - Upgrading boot selectors is inherently risky and should *
* only be attempted when necessary. A failure at this upgrade may *
* cause a board RMA. Proceed with caution ! *
*****

Proceed upgrade Boot Selector image for stack-unit 1 [yes/no]: yes

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!
Bootselector image upgrade for stack-unit 1 completed successfully.
```

- If you downgrade the Dell EMC Networking OS version from 9.14(1.10) to 9.11(0.0) or any older version, the system displays the following error message even though there is no functional impact:

```
CDB boot error: C.cdb file format
```

Before downgrading, save the current configuration and then remove the CDB files (confd_cdb.tar.gz.version and confd_cdb.tar.gz). To remove the files, use the following steps:

```
DellEMC#write memory
DellEMC#delete flash://confd_cdb.tar.gz.version
DellEMC#delete flash://confd_cdb.tar.gz
DellEMC#reload
```

- In a VXLAN scenario, hybrid port is not supported.
- While deploying the system in the normal-reload mode in BMP configuration, use the `ip ssh server enable` command at the beginning of the startup configuration if the `write memory` command is used at the end of the configuration.
- File system partition:
 - The ONIE installer, of OS versions 9.11(0.0P4), 9.11(0.1P1), 9.11(0.2), and later, changes the file system partition scheme to facilitate the installation of certain third-party networking operating systems.
 - If you have installed Dell EMC Networking OS using the `ONIE install` option, you cannot downgrade from Dell EMC Networking OS 9.14(1.10) to versions earlier than 9.11(0.0P4), 9.11(0.1P1), or 9.11(0.2), using the `upgrade system` command, due to file system partition compatibility issues.

NOTE: The above restriction is not applicable if you have upgraded Dell EMC Networking OS using the `upgrade system` command, instead of the `ONIE install` option.

- To downgrade Dell EMC Networking OS version 9.14(1.10) to versions earlier than 9.11(0.0P4), 9.11(0.1P1), or 9.11(0.2), follow these steps:
 1. From the ONIE menu, use the `ONIE uninstall` option to uninstall Dell EMC Networking OS 9.14(1.10).
 2. Use the `ONIE install` option to install the older version of Dell EMC Networking OS.
- The systems shipped with OS 9.11(2.1) and above might contain one of the following chipsets:
 - BCM56960_B1 chipset with part number 0HW2V or 353W9.
 - BCM56960_B0 chipset with part number GTG6M or 2CMPM.

You can check the part number using the `show inventory` command.

- In a system using BCM56960_B1 chipset, you cannot downgrade from Dell EMC Networking OS 9.11(2.1) to OS versions earlier than 9.10(0.2), due to NPU compatibility issues.
- **NOTE:** The above restriction is not applicable for systems using BCM56960_B0 chipset.
- You cannot use the `established` keyword in an ACL rule, along with the other control flags.
- While using the `established` keyword in an ACL rule, all the other TCP control flags are masked, to avoid redundant TCP control flags configuration in a single rule. When you use any TCP control flag in an ACL rule, `established` is masked and other control flags are available.
- The following features are not available in Dell EMC Networking OS versions 9.14(1.10):
 - Protocol-independent multicast (PIM) equal cost multi path (ECMP)
 - Static Internet group management protocol (IGMP) join (`ip igmp static-group`)
 - IGMP querier timeout configuration (`ip igmp querier-timeout`)
 - IGMP group join limit (`ip igmp group join-limit`)
- When 1024 or more VNI profiles are configured, the system takes more time to load. Dell EMC recommends to restrict the VNI profiles to be less than 1000.
- If you use the `interface range` command to select multiple interfaces that are added to the management VRF, the `ipv6 address` command does not display the `autoconfig` option. You can configure the `autoconfig` command on individual interfaces.
- If you use the `interface range` command to select multiple interfaces that are added to the management VRF, the `ipv6 nd` command displays the following options but they do not take effect if you use them:
 - `dns-server`
 - `hop-limit`
 - `managed-config-flag`
 - `max-ra-interval`
 - `mtu`
 - `other-config-flag`
 - `prefix`
 - `ra-guard`
 - `ra-lifetime`
 - `reachable-time`
 - `retrans-timer`
 - `suppress-ra`
- When FRRP is enabled in a VLT domain, no flavor of Spanning tree should concurrently be enabled on the nodes of that specific VLT domain. In essence FRRP and xSTP should not co-exist in a VLT environment.
- Do not configure the `vxlان-instance` command on the port, which is configured with the `portmode hybrid` command. Do not configure the vxlan-instance enabled port as a member of VLAN, which does not have VXLAN-VNI configuration.

Changes to Default Behavior and CLI Syntax

Following default behavior and CLI syntax changes occurred during the Dell EMC Networking OS release:

- To enhance security, the default RSA key size has been changed to 2048 bits from 1024 bits from 9.14.1.10 onwards.

Documentation Corrections

This section describes the errors identified in the current release of the Dell EMC Networking OS.

- Dell EMC Networking OS Configuration guide mentions that the maximum number of source sessions supported on a switch is 4. The guide will be updated later with the following information:

When you configure remote port mirroring, you can create a maximum of 3 source RSPAN sessions with port mirroring direction as either RX or TX. If you want to configure port mirroring for both directions (TX and RX), you can configure a maximum of 2 RSPAN sessions with one monitor session for both directions and the other session with only one direction.

Deferred Issues

Issues that appear in this section were reported in Dell EMC Networking OS version 9.14(1.0) as open, but have since been deferred. Deferred issues are those that are found to be invalid, not reproducible, or not scheduled for resolution.

Deferred issues are reported using the following definitions.

Category	Description
PR#	Problem Report number that identifies the issue.
Severity	S1 — Crash: A software crash occurs in the kernel or a running process that requires a restart of AFM, the router, switch, or process. S2 — Critical: An issue that renders the system or a major feature unusable, which can have a pervasive impact on the system or network, and for which there is no work-around acceptable to the customer. S3 — Major: An issue that affects the functionality of a major feature or negatively effects the network for which there exists a work-around that is acceptable to the customer. S4 — Minor: A cosmetic issue or an issue in a minor feature with little or no network impact for which there might be a work-around.
Synopsis	Synopsis is the title or short description of the issue.
Release Notes	Release Notes description contains more detailed information about the issue.
Work around	Work around describes a mechanism for circumventing, avoiding, or recovering from the issue. It might not be a permanent solution. Issues listed in the “Fixed Issues” section should not be present, and the work-around is unnecessary, as the version of code for which this release note is documented has resolved the issue.

Deferred Z9100–ON 9.14(1.0) Software Issues

Issues that appear in this section were reported in Dell EMC Networking OS version 9.14(1.0) as open, but have since been deferred. Deferred caveats are those that are found to be invalid, not reproducible, or not scheduled for resolution.

The following issues have been deferred in the Dell EMC Networking OS version 9.14(1.0):

None

Fixed Issues

Fixed issues are reported using the following definitions.

Category	Description
PR#	Problem Report number that identifies the issue.
Severity	S1 — Crash: A software crash occurs in the kernel or a running process that requires a restart of AFM, the router, switch, or process. S2 — Critical: An issue that renders the system or a major feature unusable, which can have a pervasive impact on the system or network, and for which there is no work-around acceptable to the customer. S3 — Major: An issue that affects the functionality of a major feature or negatively effects the network for which there exists a work-around that is acceptable to the customer. S4 — Minor: A cosmetic issue or an issue in a minor feature with little or no network impact for which there might be a work-around.
Synopsis	Synopsis is the title or short description of the issue.
Release Notes	Release Notes description contains more detailed information about the issue.

Category	Description
Work around	<p>Work around describes a mechanism for circumventing, avoiding, or recovering from the issue. It might not be a permanent solution.</p> <p>The work-around is unnecessary, as the version of code for which this release note is documented has resolved the issue.</p>

Fixed Z9100–ON 9.14(1.10) Software Issues

NOTE: Dell EMC Networking OS 9.14(1.10) includes fixes for issues addressed in previous 9.14 releases. Refer to the respective release notes documentation for the list of issues fixed in earlier 9.14 releases.

The following issues are fixed in Dell EMC Networking OS version 9.14(1.10):

PR#170115

Severity:	Sev 3
Synopsis:	The switch may encounter an exception when an incorrect length field is specified in a TACACS packet.
Release Notes:	The switch may encounter an exception when an incorrect length field is specified in a TACACS packet.
Workaround:	None

PR#170159

Severity:	Sev 3
Synopsis:	SSH connections with Cipher Block Chaining (CBC) ciphers are vulnerable.
Release Notes:	SSH connections with Cipher Block Chaining (CBC) ciphers are vulnerable.
Workaround:	Configure a stronger Cipher/MAC/KEX setting using the <code>ip ssh server</code> command.

PR#170161

Severity:	Sev 2
Synopsis:	SSH connections may be vulnerable with switches running on a 1024 bit RSA key.
Release Notes:	SSH connections may be vulnerable with switches running on a 1024 bit RSA key.
Workaround:	Create a new 2048 bit RSA key using the <code>crypto key generate rsa</code> command.

PR#170206

Severity:	Sev 2
Synopsis:	Addressed OpenSSL CVE's: CVE-2021-3711 and CVE-2021-3712.
Release Notes:	<p>The following CVEs have been addressed:</p> <ul style="list-style-type: none"> • CVE-2021-3711

- CVE-2021-3712

The CVE database can be accessed here: https://cve.mitre.org/cve/search_cve_list.html.

Workaround:	None
PR#170211	
Severity:	Sev 2
Synopsis:	When a switch with scaled VLANs is reloaded, traffic drop may occur due to a delay in VLAN programming.
Release Notes:	When a switch with scaled VLANs is reloaded, traffic drop may occur due to a delay in VLAN programming.
Workaround:	None

Known Issues

Known issues are reported using the following definitions.

Category	Description
PR#	Problem Report number that identifies the issue.
Severity	<p>S1 — Crash: A software crash occurs in the kernel or a running process that requires a restart of AFM, the router, switch, or process.</p> <p>S2 — Critical: An issue that renders the system or a major feature unusable, which can have a pervasive impact on the system or network, and for which there is no work-around acceptable to the customer.</p> <p>S3 — Major: An issue that affects the functionality of a major feature or negatively effects the network for which there exists a work-around that is acceptable to the customer.</p> <p>S4 — Minor: A cosmetic issue or an issue in a minor feature with little or no network impact for which there might be a work-around.</p>
Synopsis	Synopsis is the title or short description of the issue.
Release Notes	Release Notes description contains more detailed information about the issue.
Work around	<p>Work around describes a mechanism for circumventing, avoiding, or recovering from the issue. It might not be a permanent solution.</p> <p>Issues listed in the "Fixed Issues" section should not be present, and the work-around is unnecessary, as the version of code for which this release note is documented has resolved the issue.</p>

Known Z9100–ON 9.14(1.10) Software Issues

The following issues are open in Dell EMC Networking OS version 9.14(1.10):

PR#169841	
Severity:	Sev 2
Synopsis:	In certain scenarios, an MSDP learnt PIM TIB entry stays in <code>registering</code> state indefinitely.
Release Notes:	In certain scenarios, an MSDP learnt PIM TIB entry stays in <code>registering</code> state indefinitely.

Workaround:

Set the affected node as a non-designated router in the RPF neighbor interface.

Upgrading the ONIE Package for the Z9100-ON System

To upgrade the ONIE package, use one of the following two processes:

- Zero touch (dynamic): Copy the updated ONIE installer for your system to the TFTP/HTTP server. Configure the DHCP options using the ONIE specifications shown at the following link: <https://github.com/opencomputeproject/onie/wiki/Design-Spec-SW-Updating-ONIE>
- Manual: Copy the image onto the TFTP/HTTP servers and boot ONIE. Update the ONIE using the `onie-self-update` command, then download and run an ONIE updater image (`onie-updater-x86_64-z9100_c2538-r0`). The supported URL types are: HTTP, FTP, TFTP, and FILE.

To upgrade ONIE, perform the following steps:

1. Reboot the system. During the reboot process, the system displays the following message prompting you to press the Esc key in order to stop the auto-boot process:

```
Press Esc to stop autoboot ..
Grub 1.99~rc1 (Dell EMC)
Built by build at bsdlab on Fri_Sep_24_04:53:46_UTC_2021
Z9100 Boot Flash Label 3.23.2.13 NetBoot Label 3.23.2.13
```

2. At this prompt message, press the Esc key. The following menu appears:

```
GNU GRUB version 1.99~rc1

+-----+
|Dell EMC Networking OS
|Dell EMC-Boot Line Interface
|DIAG-OS
|ONIE
|
|
+-----+

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'f' to boot FTOS, 'b' to go to
BLI, 'o' to boot ONIE, 'd' to boot DIAG-OS, 'e' to edit the commands
before booting or 'c' for a command-line.
```

3. From the menu, choose the ONIE option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The following menu appears:

```
GNU GRUB version 1.99~rc1

+-----+
| ONIE: Install OS
| ONIE: Rescue
| ONIE: Uninstall OS
| *ONIE: Update ONIE
| ONIE: Embed ONIE
| EDA-DIAG
|
+-----+

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands
before booting or `c' for a command-line.
```

4. From this menu, choose the ONIE : Update ONIE option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The ONIE update mode is enabled and the ONIE prompt appears, as shown:

```
ONIE: ONIE Update Mode ...
Version : 3.23.1.0-7
Build Date: 2021-09-24T14:41-0700
Info: Mounting kernel filesystems... done.
Info: Mounting LABEL=ONIE-BOOT on /mnt/onie-boot ...
Info: Using eth0 MAC address: 90:b1:1c:f4:23:56
Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0
DHCPv4 on interface: eth0 failedONIE: Using default IPv4 addr: eth0:
192.168.3.10/255.255.255.0
Starting: dropbear ssh daemon... done.
Starting: telnetd... done.
discover: ONIE update mode detected. Running updater.
Starting: discover... done.

Please press Enter to activate this console. Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0

To check the install status inspect /var/log/onie.log.
Try this: tail -f /var/log/onie.log

** ONIE Update Mode Enabled **
ONIE:/ #
```

5. At the ONIE prompt, to stop the ONIE discovery process, enter the following command:

```
ONIE:/ # onie-discovery-stop
The ONIE discovery stops, as shown:
```

```
discover: ONIE update mode detected.
Stopping: discover... done.
ONIE:/ #
```

6. Configure an interface and assign an IP address to that interface using the following command:

```
ONIE:/ # ifconfig eth0 10.16.129.131/16
```

7. Enter the following command to upgrade ONIE:ONIE:/ # onie-self-update tftp://<tftp-server-address>/onie-updater-x86_64-z9100_c2538-r0.

NOTE: You must copy the onie-updater-x86_64-z9100_c2538-r0 file to the /tftpboot folder in the server.

ONIE is updated on the system, as shown:

```
discover: ONIE update mode detected.
Stopping: discover... done.
Info: Fetching tftp://10.16.127.86/onie-updater-x86_64-z9100_c2538-r0 ...
onie-updater- 100% |*****| 8561k 0:00:00 ETA
ONIE: Executing installer: tftp://10.16.127.86/onie-updater-x86_64-z9100_c2538-r0
Verifying image checksum ... OK.
Preparing image archive ... OK.
ONIE: Version : 3.23.1.10-3
ONIE: Architecture : x86_64
ONIE: Machine : z9100_c2538
ONIE: Machine Rev : 0
ONIE: Config Version: 1
Installing ONIE on: /dev/sda
Rebooting...
ONIE:/ # discover: ONIE update mode detected.
Stopping: discover...start-stop-daemon: warning: killing process 299: No such process
done.
Stopping: dropbear ssh daemon... done.
Stopping: telnetd... done.
Stopping: syslogd... done.
Info: Unmounting kernel filesystems
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL tosd 4:0:0:0: [sda] Synchronizing SCSI cache
```

```

Restarting system.
machine restart

BIOS (Dell EMC, Inc.) Boot Selector
Z9100 3.23.0.0-8 32 port 100G / 2 port sfp+ mgmt

Booting Primary BIOS
  SMF Version 0x12: Last POR=0x11, Reset=0x55

POST Configuration
  CPU Signature 406D8
  CPU FamilyID=6, Model=4D, SteppingId=8, Processor=0
  Microcode Revision 125
  Platform ID: 0x10041A57
  PMG CST_CFG_CTL: 0x40006
  BBL_CR_CTL3: 0x7E2801FF
  Misc EN: 0x840081
  Gen PM Con1: 0x203808
  Therm Status: 0x88440000
  POST Control=0xEA010303, Status=0xE6009F00

BIOS initializations...

CPGC Memtest ..... PASS

```

Upgrading the DIAG Package for the Z9100-ON System

To upgrade the DIAG package, use one of the following two processes:

- Zero touch (dynamic): Copy the update ONIE installer for your system to the TFTP/HTTP server. Configure the DHCP options using the ONIE specifications shown at the following link: <https://github.com/opencomputeproject/onie/wiki/Design-Spec-SW-Updating-ONIE>.
- Manual: Copy the image onto the TFTP/HTTP servers and boot ONIE. Update the ONIE using the `onie-self-update` command, then download and run an ONIE updater image (`diag-installer-x86_64-z9100_c2538-r0.bin`). The supported URL types are: HTTP, FTP, TFTP, and FILE.

NOTE: If Dell EMC Networking OS is already installed on the Z9100-ON system, before upgrading the DIAG package, you must first uninstall Dell EMC Networking OS. For more information on uninstalling Dell EMC Networking OS, see [Uninstalling Dell EMC Networking OS on the Z9100-ON](#).

To upgrade DIAG, perform the following steps:

1. Reboot the system. During the reboot process, the system displays the following message prompting you to press the Esc key in order to stop the auto-boot process:

```

Press Esc to stop autoboot ... 5
Grub 1.99~rc1 (Dell EMC Inc)
Built by build at bsdlab on Fri Sep 24 04:53:46 UTC 2021
Z9100 Boot Flash Label 3.23.2.13 NetBoot Label 3.23.2.13

```

2. At this prompt message, press the Esc key. The following menu appears:

```

GNU GRUB  version 1.99~rc1

+-----+
|Dell EMC NETworking OS          |
|Dell EMC-Boot Line Interface    |
|DIAG-OS                         |
|ONIE                            |
|                                |
+-----+

```

Use the ^ and v keys to select which entry is highlighted. Press enter to boot the selected OS, 'f' to boot FTOS, 'b' to go to BLI, 'o' to boot ONIE, 'd' to boot DIAG-OS, 'e' to edit the commands before booting or 'c' for a command-line.

3. From the menu, choose the ONIE option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The following menu appears:

```
GNU GRUB  version 1.99~rc1

+-----+
|*ONIE:  Install OS          |
| ONIE:  Rescue             |
| ONIE:  Uninstall OS      |
| ONIE:  Update ONIE       |
| ONIE:  Embed ONIE        |
|                           |
+-----+

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, `e' to edit the commands
before booting or `c' for a command-line.
```

4. From this menu, choose the ONIE : Install OS option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The ONIE Installer mode is enabled and the ONIE prompt appears, as shown:

```
ONIE: OS Install Mode ...
Version   : 3.23.1.0-7
Build Date: 2021-09-24T14:41-0700
Info: Mounting kernel filesystems... done.
ERROR: fsck corrected errors.
Info: Mounting LABEL=ONIE-BOOT on /mnt/onie-boot ...
Info: Using eth0 MAC address: 90:b1:1c:f4:23:56
Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0
DHCPv4 on interface: eth0 failedONIE: Using default IPv4 addr: eth0:
192.168.3.10/255.255.255.0
Starting: dropbear ssh daemon... done.
Starting: telnetd... done.
discover: installer mode detected.  Running installer.
Starting: discover... done.

Please press Enter to activate this console. Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0

To check the install status inspect /var/log/onie.log.
Try this: tail -f /var/log/onie.log

** Installer Mode Enabled **
ONIE:/ #
ONIE:/ #
```

5. At the ONIE prompt, to stop the ONIE discovery process, enter the following command:

```
ONIE:/ # onie-discovery-stop
```

The ONIE discovery stops, as shown:

```
ONIE:/ # onie-discovery-stop
discover: installer mode detected.
Stopping: discover... done.
ONIE:/ #
```

6. Configure an interface and assign an IP address to that interface using the following command:

```
ONIE:/ # ifconfig eth0 10.16.129.131/16
```

7. Enter the following command to upgrade DIAG on the Z9100-ON system:

```
onie-nos-install ftp://ftp:ftp@<ftp-server-address>/tftpboot/diag-installer-x86_64-z9100_c2538-r0.bin
```

NOTE: You must copy the `diag-installer-x86_64-z9100_c2538-r0.bin` file to the `/tftpboot` folder in the server.

The DIAG is updated on the system, as shown:

```
ONIE:/ # onie-nos-install ftp://ftp:ftp@10.11.227.233/tftpboot/diag-installer-x86_64-z9100_c2538-r0.bin
discover: installer mode detected.
Stopping: discover... done.
Info: Fetching ftp://ftp:ftp@10.11.227.233/tftpboot/diag-installer-x86_64-z9100_c2538-r0.bin ...
Connecting to 10.11.227.233 (10.11.227.233:21)
installer          100% |*****| 167M 0:00:00 ETA
ONIE: Executing installer: ftp://ftp:ftp@10.11.227.233/tftpboot/diag-installer-x86_64-z9100_c2538-r0.bin
Ignoring Verifying image checksum ... OK.
cur_dir / archive_path /installer tmp_dir /tmp/tmp.nC1CKc
Preparing image archive ...sed -e '1,7^exit marker$/d' /installer | tar xf - OK.
DiagOS Installer: platform: x86_64_z9100_c2538-r0

EDA-DIAG Partiton not found.
Diag OS Installer Mode : INSTALL
INSTALL mode : would remove existing partitions and create fresh...

Creating new diag-os partition /dev/sda3 with label EDA-DIAG ...
Warning: The kernel is still using the old partition table.
The new table will be used at the next reboot.
The operation has completed successfully.

volume label EDA-DIAG on device /dev/sda3
mke2fs 1.42.8 (24-Sep-2021)
Filesystem label=EDA-DIAG
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
65536 inodes, 262144 blocks
13107 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=268435456
8 block groups
```

Installing Dell EMC Networking OS on the Z9100-ON using ONIE

NOTE: You will need the Dell Networking OS installer package, `ONIE-FTOS-Z9100-ON-9.14.1.10.bin` to install the Dell Networking OS on your Z9100-ON system that has only ONIE.

To install the Dell Networking OS version 9.14(1.10) on a new Z9100-ON device, perform the following steps:

1. Reboot the system. During the reboot process, the system displays the following message prompting you to press the Esc key in order to stop the auto-boot process:

```
Press Esc to stop autoboot ... 5
Grub 1.99~rc1 (Dell EMC Inc)
Built by build at bsdlab on Fri Sep 24 06:57:56 UTC 2021
Z9100 Boot Flash Label 3.23.2.13 NetBoot Label 3.23.2.13
```

2. At this prompt message, press the Esc key. The following menu appears:

```
GNU GRUB  version 1.99~rc1
+-----+
```

```

| FTOS
| FTOS-Boot Line Interface
| DIAG-OS
| ONIE
|
+-----+

```

Use the ^ and v keys to select which entry is highlighted.
 Press enter to boot the selected OS, 'f' to boot FTOS, 'b' to go to BLI, 'o' to boot ONIE, 'd' to boot DIAG-OS, 'e' to edit the commands before booting or 'c' for a command-line.

- From the menu, choose the ONIE option.

i **NOTE:** To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The following menu appears:

```

GNU GRUB version 1.99~rc1

+-----+
| *ONIE: Install OS
| ONIE: Rescue
| ONIE: Uninstall OS
| ONIE: Update ONIE
| ONIE: Embed ONIE
|
+-----+

```

Use the ^ and v keys to select which entry is highlighted.
 Press enter to boot the selected OS, 'e' to edit the commands before booting or 'c' for a command-line.

- From this menu, choose the ONIE : Install OS option.

i **NOTE:** To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The ONIE Installer mode is enabled and the ONIE prompt appears, as shown:

```

ONIE: OS Install Mode ...
Version : 3.23.1.0-7
Build Date: 2021-09-24T14:41-0700
Info: Mounting kernel filesystems... done.
ERROR: fsck corrected errors.
Info: Mounting LABEL=ONIE-BOOT on /mnt/onie-boot ...
Info: Using eth0 MAC address: 90:b1:1c:f4:23:56
Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0
DHCPv4 on interface: eth0 failedONIE: Using default IPv4 addr: eth0:
192.168.3.10/255.255.255.0
Starting: dropbear ssh daemon... done.
Starting: telnetd... done.
discover: installer mode detected. Running installer.
Starting: discover... done.

Please press Enter to activate this console. Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0

To check the install status inspect /var/log/onie.log.
Try this: tail -f /var/log/onie.log

** Installer Mode Enabled **
ONIE:/ #
ONIE:/ #

```

- At the ONIE prompt, to stop the ONIE discovery process, enter the following command:

```
ONIE:/ # onie-discovery-stop
```

The ONIE discovery stops, as shown:

```
ONIE:/ # onie-discovery-stop
discover: installer mode detected.
Stopping: discover... done.
ONIE:/ #
```

6. Configure an interface and assign an IP address to that interface using the following command:

```
ONIE:/ # ifconfig eth0 10.16.129.131/16
```

7. Enter the following command to begin the installation process:

```
ONIE:/ # onie-nos-install tftp://<tftp-server-address>/ONIE-FTOS-Z9100-
ON-9.14.1.10.bin
```

i **NOTE:** You must copy the ONIE-FTOS-Z9100-ON-9.14.1.10.bin file to the /tftpboot folder in the server.

i **NOTE:** After the Dell EMC Networking OS installation completes, the system automatically reboots.

Following is the installation and boot log of Dell EMC Networking OS:

```
ONIE:/ # onie-nos-install tftp://10.16.127.86/ONIE-FTOS-Z9100-ON-9.14.1.10.bin
discover: installer mode detected.
Stopping: discover... done.
Info: Fetching tftp://10.16.127.86/ONIE-FTOS-Z9100-ON-9.14.1.10.bin ...
ONIE-FTOS-Z9100-ON-9 100% |*****| 87118k 0:00:00 ETA
ONIE: Executing installer: tftp://10.16.127.86/ONIE-FTOS-Z9100-ON-9.14.1.10.bin
Verifying image checksum ... OK.
Preparing image archive from /installer ... Done.
Verifying Product Platform...
Product Name      : Z9100ON
Image Platform    : FTOS-Z9100-ON
Image File        : FTOS-Z9100-ON-9.14.1.10.bin
Image Compatibility : Verified
Verifying MAC Address...
MAC Address is Configured
Image Platform    : FTOS-Z9100-ON
Deleting Extra partitions... Done.
Creating New partitions... Done.
Creating Hybrid MBR... Done.
Mounting /dev/sda4,/dev/sda5 and /dev/sda6... Done.
Installing GRUB on /dev/sda4...Done.
Copying Images... Done.
Rebooting...
ONIE:/ # discover: installer mode detected.
Stopping: discover...start-stop-daemon: warning: killing process 309: No such process
done.
Stopping: dropbear ssh daemon... done.
Stopping: telnetd... done.
Stopping: syslogd... done.
Info: Unmounting kernel filesystems
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL tosd 4:0:0:0: [sda] Synchronizing SCSI cache
Restarting system.
machine restart
```

8. After the installation completes, the system displays the following DELL EMC prompt:

```
DellEMC#
```

Upgrading the CPLD

The Z9100-ON system with Dell EMC Networking OS Version 9.14(1.10) requires System complex programmable logic device (CPLD) 1 revision 7, CPLD2 revision 4, CPLD3 revision 4, CPLD4 revision 4, MSS FPGA revision 2.1, MSS IAP revision 2.4, and OOB-FPGA revision 1.0.

NOTE: If your CPLD revisions are higher than the ones shown here, DO NOT make any changes. If you have questions regarding the CPLD revision, contact Technical Support.

NOTE: If you are upgrading to 9.14(1.10), you must upgrade the CPLD firmware to the latest version.

Verify that you need a CPLD upgrade

To identify the CPLD version, use the show revision command.

```
DelleMC#show revision

-- Stack unit 1 --
Z9100-ON CPLD 1      : 7
Z9100-ON CPLD 2      : 4
Z9100-ON CPLD 3      : 4
Z9100-ON CPLD 4      : 4
Z9100-ON MSS FPGA    : 2.1
Z9100-ON MSS IAP     : 2.4
Z9100-ON OOB-FPGA    : 1.0
```

To view the CPLD version that is associated with the Dell EMC Networking OS image, use the following command:

```
DelleMC#show os-version

RELEASE IMAGE INFORMATION :
-----
Platform          Version          Size          ReleaseTime
Z-Series:Z9100-ON  9.14(1.10)      63545883      Sep 24 2021 03:51:10

TARGET IMAGE INFORMATION :
-----
Type              Version          Target          checksum
runtime           9.14(1.10)      Control Processor  passed

BOOT IMAGE INFORMATION :
-----
Type              Version          Target          checksum
boot flash        3.23.2.13       Control Processor  passed

BOOTSEL IMAGE INFORMATION :
-----
Type              Version          Target          checksum
boot selector     3.23.0.0-8      Control Processor  passed

FPGA IMAGE INFORMATION :
-----
Card              FPGA Name        Version
stack-unit 1     Z9100-ON CPLD 1  7
stack-unit 1     Z9100-ON CPLD 2  4
stack-unit 1     Z9100-ON CPLD 3  4
stack-unit 1     Z9100-ON CPLD 4  4
stack-unit 1     Z9100-ON MSS FPGA 2.1
stack-unit 1     Z9100-ON MSS IAP 2.4
```

Upgrading the CPLD Image

NOTE: The upgrade `fpga-image system cpld stack-unit 1 booted` command is hidden when using the `feature` in the CLI. However, it is a supported command.

NOTE: Ensure that the BIOS version is 3.23.0.0-8. You can verify this version using the `show system stack-unit 1` command.

To upgrade the CPLD image, follow these steps.

1. Upgrade the CPLD image.

EXEC Privilege Mode

```
upgrade fpga-image system cpld stack-unit <id> booted
```

```
DellEMC#upgrade fpga-image system cpld stack-unit 1 booted

Current information for the system:
=====
Card                Device Name          Current Version      New Version
-----
Unit1               Z9100-ON CPLD 1     6                    7
Unit1               Z9100-ON CPLD 2     4                    4
Unit1               Z9100-ON CPLD 3     4                    4
Unit1               Z9100-ON CPLD 4     4                    4

*****
* Warning - Upgrading FPGA is inherently risky and should      *
* only be attempted when necessary. A failure at this upgrade may *
* cause a board RMA. Proceed with caution !                    *
*****

Upgrade image for system 1 [yes/no]: yes

FPGA upgrade in progress!!! Please do NOT power off the unit!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
FPGA_UPGRADE: stack-unit 1 fpga upgrade success.

Upgrade result :
=====
Unit 1 FPGA upgrade successful Unit 1. Please power cycle to take effect.

DellEMC#
```

2. Power cycle the system physically. Switch off the system by unplugging the power chords from the Rear PSUs and wait until the PSU Fan-Rear Status LED is OFF.

NOTE: Do not switch on the system with the PSU-Rear LED glowing AMBER.

You can alternatively power cycle the switch using the `power-cycle stack-unit <1-6>` command as follows:

```
DellEMC#power-cycle stack-unit 1
Proceed with power-cycle? Confirm [yes/no]:yes
```

3. Verify the CPLD version using the `show revision` command output.

EXEC Privilege Mode

```
show revision
```

```
DellEMC#show revision

-- Stack unit 1 --
```



```

Z9100-ON CPLD 1      : 7
Z9100-ON CPLD 2      : 4
Z9100-ON CPLD 3      : 4
Z9100-ON CPLD 4      : 4
Z9100-ON MSS FPGA    : 2.1
Z9100-ON MSS IAP     : 2.4
Z9100-ON OOB-FPGA    : 1.0
DellEMC#

```

NOTE: Do not power off the system while the FPGA upgrade is in progress. For any queries, contact Technical Support.

Upgrading the SmartFusion Microcontroller Subsystem — SMF MSS-IAP

To upgrade the SmartFusion Microcontroller Subsystem — SMF MSS-IAP, follow these steps.

1. Upgrade the SMF MSS-IAP image.

EXEC Privilege Mode

```
upgrade mss-iap-image stack-unit <stack-unit-id> booted
```

```

DellEMC#upgrade mss-iap-image stack-unit 1 booted

Current information for the system:
=====
Card                Device Name          Current Version      New Version
-----
CP                  Z9100-ON MSS IAP    1.50                 2.4

*****
* Warning - Upgrading FPGA is inherently risky and should          *
* only be attempted when necessary. A failure at this upgrade may  *
* cause a board RMA. Proceed with caution !                          *
*****

Warning - PSU and FANTRAYS Syslog messages may appear during SMF FPGA upgrade.
Please ignore these messages !!!

Upgrade image for stack-unit 1 [yes/no]: yes

SMF MSS upgrade in progress!!! Please do NOT power off the unit!!! Auto Reset will
happen at the end of Upgrade!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Upgrade result :
=====
UNIT1 SMF MSS upgrade successful UNIT1. will go for reboot to complete the upgrade.

DellEMC#Sep 24 16:23:11: %STKUNIT1-M:CP %DOWNLOAD-6-FPGA_UPGRADE: UNIT 1 fpga upgrade
success.
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PEM_REMOVED: Power entry module 1 of unit 1
is removed
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PEM_REMOVED: Power entry module 2 of unit 1
is removed
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PS_DOWN_CLR: Power supply 2 down reported in
unit 1 is cleared
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 1 of
Unit 1 is removed

```

```

Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 2 of
Unit 1 is removed
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 3 of
Unit 1 is removed
Sep 24 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 4 of
Unit 1 is removed
Sep 24 16:23:13: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 5 of
Unit 1 is removed
Sep 24 16:23:13: %Z9100-ON:1 %CHMGR-2-FAN_SPEED_CHANGE: Fan speed changed to 100 % of
the full speed
Sep 24 16:23:13: %STKUNIT1-M:CP %CHMGR-0-ALL_FANTRAY_DOWN: Major Alarm :All Fan trays
down or removed in Unit 1

```

```

BIOS (Dell EMC, Inc.) Boot Selector
Z9100 3.23.0.0-8 32 port 100G / 2 port sfp+ mgmt

```

```

Booting Primary BIOS
SMF Version 0x12: Last POR=0x11, Reset=0x44

```

After the SMF MSS-IAP upgrade is successfully completed, the system re-boots automatically.

2. After the system re-boots, wait for the Dell prompt. Verify the MSS-IAP version using the `show revision` command output.

EXEC Privilege Mode

```
show revision
```

```

DellEMC#show revision

-- Stack unit 1 --
Z9100-ON CPLD 1      : 7
Z9100-ON CPLD 2      : 4
Z9100-ON CPLD 3      : 4
Z9100-ON CPLD 4      : 4
Z9100-ON MSS FPGA    : 2.1
Z9100-ON MSS IAP     : 2.4
Z9100-ON OOB-FPGA    : 1.0

DellEMC#

```

NOTE: Do not power off the system while the FPGA upgrade is in progress. For any queries, contact Technical Support.

Upgrading the SmartFusion Microcontroller Subsystem — SMF MSS-FPGA

NOTE: Before upgrading the SmartFusion Microcontroller Subsystem SMF MSS-FPGA, you must first upgrade the SMF MSS-IAP.

To upgrade the SmartFusion Microcontroller Subsystem — SMF MSS-FPGA, follow these steps.

1. Upgrade the SMF MSS-FPGA image.

EXEC Privilege Mode

```
upgrade mss-fpga-image stack-unit <stack-unit-id> booted
```

```
DellEMC#upgrade mss-fpga-image stack-unit 1 booted
```

```
Current information for the system:
```

```
=====
```

```

Card                Device Name          Current Version    New Version
-----
CP                  Z9100-ON MSS FPGA      1.2                2.1

*****
* Warning - Upgrading FPGA is inherently risky and should *
* only be attempted when necessary. A failure at this upgrade may *
* cause a board RMA. Proceed with caution ! *
*****

Upgrade image for stack-unit 1 [yes/no]: yes

SMF FPGA upgrade in progress!!! Please do NOT power off the unit!!! Auto Reset will
happen at the end of Upgrade!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Upgrade result :
=====
UNIT1 SMF FPGA upgrade successful UNIT1. will go for reboot to complete the upgrade.

DellEMC#Sep 24 16:31:15: %STKUNIT1-M:CP %DOWNLOAD-6-FPGA_UPGRADE: UNIT 1 fpga upgrade
success.

```

NOTE: Upgrade takes approximately five minutes and the system may appear unresponsive or powered off. During this time, if you remove power from the system, you might need to return the unit to Dell for repair. For any queries, contact Technical Support.

- After the system re-boots, wait for the DellEMC prompt. Verify the MSS FPGA version using the `show revision` command output.

```
EXEC Privilege Mode
show revision
```

```

DellEMC#show revision

-- Stack unit 1 --
Z9100-ON CPLD 1      : 7
Z9100-ON CPLD 2      : 4
Z9100-ON CPLD 3      : 4
Z9100-ON CPLD 4      : 4
Z9100-ON MSS FPGA    : 2.1
Z9100-ON MSS IAP     : 2.4
Z9100-ON OOB-FPGA    : 1.0

DellEMC#

```

NOTE: Do not power off the system while the FPGA upgrade is in progress. For any queries, contact Technical Support.

Upgrading the OOB-FPGA

To upgrade the OOB-FPGA, follow these steps.

Upgrade the OOB-FPGA image.

```
EXEC Privilege Mode
```

```
upgrade fpga-image system fpga stack-unit <stack-unit-id> booted
```

```

DellEMC#upgrade fpga-image system fpga stack-unit 1 booted
Current information for the system:

```

```

=====
Card          Device Name          Current Version    New Version
-----
CP           Z9100-ON OOB-FPGA      0.7                1.0

*****
* Warning - Upgrading FPGA is inherently risky and should *
* only be attempted when necessary. A failure at this upgrade may *
* cause a board RMA. Proceed with caution ! *
*****

Upgrade image for system 1 [yes/no]: yes

OOB FPGA upgrade in progress!!! Please do NOT power off the unit!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

Upgrade result :
=====
UNIT1 OOB FPGA upgrade successful. Power cycle the UNIT1 to complete the upgrade.

Note: Once upgrade successful, we need to power-cycle the system through software or manually .Power cycle the system using software CLI command is as follows.
(Otherwise we need to manually remove and insert the power chords from the PSUs for power cycle to be happened ) .

DellEMC#power-cycle stack-unit 1
Proceed with power-cycle? Confirm [yes/no]:yes
DellEMC#00:19:56: %STKUNIT1-M:CP %CHMGR-5-STACKUNIT_RESET: stack-unit 1ÿ


BIOS Boot Selector for Z9100
Primary BIOS Version 3.23.0.0-8

SMF Version: MSS 2.4, FPGA 2.1
Last POR=0x11, Reset Cause=0x44

```

Upgrading the Z9100-ON Dell EMC Networking OS Image using Dell EMC Networking OS CLI

Bare Metal Provisioning

 **NOTE:** If you are using Bare Metal Provisioning (BMP), see the Bare Metal Provisioning topic in the Dell EMC Networking OS Configuration Guide or the Open Automation Guide.

Manual Upgrade Procedure

The ONIE installer, of OS versions 9.11(0.0P4), 9.11(0.1P1), 9.11(0.2), and later, changes the file system partition scheme to facilitate the installation of certain third-party networking operating systems.

If you have installed Dell EMC Networking OS using the ONIE `install` option, you cannot downgrade from Dell EMC Networking OS 9.14(1.10) to versions earlier than 9.11(0.0P4), 9.11(0.1P1), or 9.11(0.2), using the `upgrade system` command, due to file system partition compatibility issues. If you try to downgrade, the system displays the following error message:

```

DellEMC#upgrade system tftp: a:
Address or name of remote host [:] 10.16.127.44
Source file name []: FTOS-Z9100-ON-9.11.0.1.bin
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
% Error: Detected System Image is incompatible with flash partition scheme.
% Error: Perform ONIE uninstall followed by onie-nos-install to upgrade to this version.
% Error: Upgrade system image failed.
DellEMC#
Sep 24 04:48:33: %STKUNIT1-M:CP %DOWNLOAD-6-UPGRADE: Upgrade failed

```

To downgrade Dell EMC Networking OS version 9.14(1.10) to versions earlier than 9.11(0.0P4), 9.11(0.1P1), or 9.11(0.2), follow these steps:

1. From the ONIE menu, use the `ONIE uninstall` option to uninstall Dell EMC Networking OS 9.14(1.10).
2. Use the `ONIE install` option to install the older version of Dell EMC Networking OS.

You can upgrade or downgrade to any version, if you have upgraded Dell EMC Networking OS using the `upgrade system` command, instead of the `ONIE install` option.

The systems shipped with OS 9.11(2.1) and above might contain one of the following chipsets:

- BCM56960_B1 chipset with part number 0HW2V or 353W9.
- BCM56960_B0 chipset with part number GTG6M or 2CMPM.

You can check the part number using the `show inventory` command

In a system using BCM56960_B1 chipset, you cannot downgrade from Dell EMC Networking OS 9.11(2.1) to OS versions earlier than 9.10(0.2), due to NPU compatibility issues.

In a system using BCM56960_B1 chipset, if you try to downgrade from OS 9.11(2.1) to OS versions earlier than 9.10(0.2) using `BMP` or the `upgrade` command, the system displays the following error message:

```
DellEMC#upgrade system tftp: a:
Address or name of remote host []: 10.16.127.44
Source file name []: FTOS-Z9100-ON-9.10.0.1.bin
00:12:47 : Discarded 1 pkts. Expected block num : 56. Received block num: 55

% Error: Detected System Image is incompatible with NPU.
% Error: Upgrading Release File Corrupted.
% Error: Upgrade system image failed.
```

You can upgrade or downgrade the OS to any version in systems using BCM56960_B0 chipset.

Follow these steps carefully to upgrade your Z9100-ON systems:

1. Dell EMC Networking recommends that you back up your startup configuration and any important files and directories to an external media prior to upgrading the system.
2. Upgrade the Dell EMC Networking OS in flash partition A: or B:

```
upgrade system [flash: | ftp: stack-unit <1-6> | tftp: | scp: | usbflash:] [A: | B:]
```

EXEC Privilege

```
DellEMC#upgrade system tftp: A:
Address or name of remote host []: 10.16.127.35
Source file name []: FTOS-Z9100-ON-9.14.1.10.bin
1d4h22m : Discarded 1 pkts. Expected block num : 51. Received block num: 50
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
.....!
61077156 bytes successfully copied
System image upgrade completed successfully.
DellEMC#Sep 24 07:19:46: %STKUNIT1-M:CP %DOWNLOAD-6-UPGRADE: Upgrade completed
successfully
DellEMC#
```

```
DellEMC#upgrade system tftp: B:
Address or name of remote host []: 10.16.127.35
Source file name []: FTOS-Z9100-ON-9.14.1.10.bin
1d4h26m : Discarded 1 pkts. Expected block num : 51. Received block num: 50
1d4h26m : Discarded 1 pkts. Expected block num : 65. Received block num: 64
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
.....!
61077156 bytes successfully copied
System image upgrade completed successfully.
DellEMC#Sep 24 07:23:45: %STKUNIT1-M:CP %DOWNLOAD-6-UPGRADE: Upgrade completed
successfully
DellEMC#
```

3. Verify that the Dell EMC Networking OS has been upgraded correctly in the upgraded flash partition

```
show boot system stack-unit [1-6] | all]
```

EXEC Privilege

```
DellEMC#show boot system stack-unit all
```

```
Current system image information in the system:
=====
Type          Boot Type      A              B
-----
stack-unit 1  DOWNLOAD BOOT  9.14 (1.10)    9.14 (1.9P4)
DellEMC#
```

4. Change the Primary Boot Parameter of the Z9100-ON to the upgraded partition A: or B:
boot system stack-unit 1 primary system: [A: | B: | tftp: | ftp:]

CONFIGURATION

5. Save the configuration so that the configuration will be retained after a reload using write memory command.

write [memory]

EXEC PRIVILEGE

```
DellEMC#write memory
!
Sep 24 18:58:59: %STKUNIT1-M:CP %FILEMGR-5-FILESAVED: Copied running-config to
startup-config in flash by default
DellEMC#
```

6. Reload the unit

reload

EXEC PRIVILEGE

```
Command      : reload
Mode         : EXEC PRIVILEGE
DellEMC#reload
Proceed with reload [confirm yes/no]: y
```

7. Verify the Z9100-ON has been upgraded to the Dell EMC Networking OS version 9.14(1.10).

show version

EXEC PRIVILEGE

```
DellEMC#show version
Dell EMC Real Time Operating System Software
Dell EMC Operating System Version: 2.0
Dell EMC Application Software Version: 9.14(1.10)
Copyright (c) 1999-2021 by Dell Inc. All Rights Reserved.
Build Time: Fri Sep 24 13:12:15 2021
Build Path: /work/swbuild01_1/build02/E9-14-0/SW/SRC
Dell EMC Networking OS uptime is 18 minute(s)

System image file is "T2-FTOS-Z9100-ON.bin"

System Type: Z9100-ON
Control Processor: Intel Rangeley with 3 Gbytes (3203289088 bytes) of memory, core(s)
4.

16G bytes of boot flash memory.

 1 34-port TE/TF/FO/FI/HU G (Z9100-ON)
122 Ten GigabitEthernet/IEEE 802.3 interface(s)
 8 Twenty Five GigabitEthernet/IEEE 802.3 interface(s)
```

Upgrade the Boot Selector and Boot Flash Images from Dell EMC Networking OS

To upgrade the Boot Selector and Boot Flash images from Dell EMC Networking OS, perform the following steps:

1. Upgrade the Z9100-ON Boot Selector image.

EXEC Privilege Mode

```
upgrade boot bootselector-image stack-unit [<id> | all] [booted]
```

To upgrade the Boot Selector image to the image version packed with the loaded Dell EMC Networking OS image, use the `booted` option. You can find the Boot Selector image version packed with the loaded Dell EMC Networking OS using the `show os-version` command in EXEC Privilege mode.

```
DellEMC#upgrade boot bootselector-image stack-unit 1 booted

Current Boot information in the system:
=====
  Card                BootSelector      Current Version    New Version
-----
Unit1                Boot Selector      3.23.0.2-7         3.23.0.0-8

*****
* Warning - Upgrading boot selectors is inherently risky and should *
* only be attempted when necessary. A failure at this upgrade may *
* cause a board RMA. Proceed with caution !                          *
*****

Proceed upgrade Boot Selector image for stack-unit 1 [yes/no]: yes

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Bootselector image upgrade for stack-unit 1 completed successfully.
```

2. Reload the unit

EXEC Privilege Mode

```
reload
```

3. Verify the Boot Selector image

EXEC Privilege Mode

```
show system stack-unit <id>
```

```
DellEMC#show system stack-unit 1

-- Unit 1 --
Unit Type           : Management Unit
Status              : online
Next Boot           : online
Required Type       : Z9100-ON - 34-port TE/TF/FO/FI/HU G (Z9100-ON)
Current Type        : Z9100-ON - 34-port TE/TF/FO/FI/HU G (Z9100-ON)
Master priority     : NA
Hardware Rev        : 0.0
Num Ports           : 130
Up Time             : 3 min, 41 sec
Dell EMC Networking OS Version : 9.14(1.10)
Jumbo Capable       : yes
POE Capable         : no
FIPS Mode           : disabled
Boot Flash          : 3.23.2.13
Boot Selector       : 3.23.0.0-8
Memory Size         : 3177226240 bytes
Temperature         : 29C
Voltage             : ok
Serial Number       : NA
Part Number         : 3F3W9      Rev X02
Vendor Id           : NA
Date Code           : NA
Country Code        : NA
Piece Part ID       : CN-3F3W9-77931-58H-0004
PPID Revision       : X02
Service Tag         : 20JQG02
Expr Svc Code       : 438 671 117 0
Auto Reboot         : enabled
Burned In MAC       : 4c:76:25:e5:d9:40
No Of MACs          : 3

-- Power Supplies --
Unit  Bay  Status  Type  FanStatus  FanSpeed  InPwr  AvgInPwr  AvgInPwrStartTime
-----
  1     1   absent         absent      0        0        0        N/A
```

```

1      2      up      AC      up      14752      61      54      09/24/2021-02:42

-- Fan Status --
Unit Bay  TrayStatus  Fan1      Speed     Fan2      Speed
-----
1      1      up          up        8492      up        8936
1      2      up          up        8511      up        8699
1      3      up          up        8511      up        8757
1      4      up          up        8604      up        8680
1      5      up          up        8529      up        8816

Speed in RPM

```

4. Upgrade the Dell EMC Networking OS GRUB.

EXEC Privilege Mode

upgrade boot bootflash-image stack-unit <stack-unit-id> booted

```

DellEMC#upgrade boot bootflash-image stack-unit 1 booted

Current Boot information in the system:
=====
Card                      BootFlash      Current Version      New Version
-----
Unit1                      Boot Flash      3.23.2.8             3.23.2.13

*****
* Warning - Upgrading boot flash is inherently risky and should only *
* be attempted when necessary. A failure at this upgrade may cause *
* a board RMA. Proceed with caution ! *
*****

Proceed upgrade Boot Flash image for stack-unit 1 [yes/no]: yes

!!!
Bootflash image upgrade for stack-unit 1 completed successfully.
DellEMC#

```

5. Reload the unit

EXEC Privilege Mode

reload

6. Verify whether the upgrade is successful.

```

DellEMC#show system stack-unit 1

-- Unit 1 --
Unit Type           : Management Unit
Status              : online
Next Boot           : online
Required Type       : Z9100-ON - 34-port TE/TF/FO/FI/HU G (Z9100-ON)
Current Type        : Z9100-ON - 34-port TE/TF/FO/FI/HU G (Z9100-ON)
Master priority     : NA
Hardware Rev        : 0.0
Num Ports           : 130
Up Time             : 1 min, 7 sec
Dell EMC Networking OS Version : 9.14(1.10)
Jumbo Capable       : yes
POE Capable         : no
FIPS Mode           : disabled
Boot Flash          : 3.23.2.13
Boot Selector       : 3.23.0.0-8
Memory Size         : 3177226240 bytes
Temperature         : 32C
Voltage             : ok
Serial Number       : NA
Part Number         : 11ABCD      Rev X02
Vendor Id           : NA
Date Code           : NA
Country Code        : NA
Piece Part ID       : CN-11ABCD-12345-6AQ-0026
PPID Revision       : X02

```



```

Service Tag           : 20HRG02
Expr Svc Code        : 438 339 859 4
Auto Reboot          : enabled
Burned In MAC        : 00:12:32:12:42:11
No Of MACs           : 3

-- Power Supplies --
Unit  Bay  Status  Type  FanStatus  FanSpeed  InPwr  AvgInPwr  AvgInPwrStartTime
-----
  1     1  absent
  1     2    up    AC      up         14752     61     54     09/24/2021-02:42

-- Fan Status --
Unit  Bay  TrayStatus  Fan1  Speed  Fan2  Speed
-----
  1     1     up         up    8366  up    8642
  1     2     up         up    8529  up    8680
  1     3     up         up    8623  up    8699
  1     4     up         up    8492  up    8623
  1     5     up         up    8366  up    8757

Speed in RPM

DellEMC#

```

Uninstalling the Dell EMC Networking OS

To un-install the Dell EMC Networking OS version 9.14(1.10) from the Z9100-ON system, perform the following steps:

1. Reboot the system. During the reboot process, the system displays the following message prompting you to press the Esc key in order to stop the auto-boot process:

```

Press Esc to stop autoboot ... 5
Grub 1.99~rc1 (Dell EMC Inc)
Built by root at bsdlab on Fri Sep 24 06:57:56 UTC 2021
Z9100 Boot Flash Label 3.23.2.13 NetBoot Label 3.23.2.13

```

2. At this prompt message, press the Esc key. The following menu appears:

```

GNU GRUB  version 1.99~rc1

+-----+
|Dell EMC Networking OS          |
|Dell EMC-Boot Line Interface   |
|DIAG-OS                        |
|ONIE                           |
|                                |
+-----+

Use the ^ and v keys to select which entry is highlighted.
Press enter to boot the selected OS, 'f' to boot FTOS, 'b' to go to
BLI, 'o' to boot ONIE, 'd' to boot DIAG-OS, 'e' to edit the commands
before booting or 'c' for a command-line.

```

3. From the menu, choose the ONIE option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The following menu appears:

```

GNU GRUB  version 1.99~rc1

+-----+
| ONIE: Install OS              |
| ONIE: Rescue                  |
| *ONIE: Uninstall OS          |
+-----+

```

```
| ONIE: Update ONIE |
| ONIE: Embed ONIE |
| EDA-DIAG |
| |
+-----+

```

Use the ^ and v keys to select which entry is highlighted.
 Press enter to boot the selected OS, `e' to edit the commands
 before booting or `c' for a command-line.

4. From this menu, choose the ONIE : Uninstall OS option.

NOTE: To choose an option from the menu, highlight one of the options using the up or down arrow key and press Enter.

The uninstall process begins, as shown:

```
ONIE: OS Uninstall Mode ...
Version : 3.23.1.0-7
Build Date: 2021-09-24T16:00-0700
Info: Mounting kernel filesystems... done.
Info: Mounting LABEL=ONIE-BOOT on /mnt/onie-boot ...
Info: Using eth0 MAC address: 90:b1:1c:f4:23:56
Info: eth0: Checking link... up.
Info: Trying DHCPv4 on interface: eth0
DHCPv4 on interface: eth0 failedONIE: Using default IPv4 addr: eth0:
192.168.3.10/255.255.255.0
Starting: dropbear ssh daemon... done.
Starting: telnetd... done.
discover: Uninstall mode detected. Running uninstaller.
Erasing internal mass storage device: /dev/sda4 (32MB)
  Percent complete: 100%
Erase complete.
Deleting partition 4 from /dev/sda
Erasing internal mass storage device: /dev/sda5 (500MB)
  Percent complete: 100%
Erase complete.
Deleting partition 5 from /dev/sda
Erasing internal mass storage device: /dev/sda6 (500MB)
  Percent complete: 100%
Erase complete.
Deleting partition 6 from /dev/sda
Erasing internal mass storage device: /dev/sda7 (13085MB)
  Percent complete: 100%
Erase complete.
Deleting partition 7 from /dev/sda
Installing for i386-pc platform.
Installation finished. No error reported.
Uninstall complete. Rebooting...
discover: Uninstall mode detected. No discover stopped.
Stopping: dropbear ssh daemon... done.
Stopping: telnetd... done.
Stopping: syslogd... done.
Info: Unmounting kernel filesystems
The system is going down NOW!
Sent SIGTERM to all processes
Sent SIGKILL to all processes
Requesting system reboot
sd 4:0:0:0: [sda] Synchronizing SCSI cache
Restarting system.
machine restart

BIOS (Dell EMC, Inc.) Boot Selector
Z9100 3.23.0.0-8 32 port 100G / 2 port sfp+ mgmt

Booting Primary BIOS
  SMF Version 0x12: Last POR=0x11, Reset=0x55

POST Configuration
  CPU Signature 406D8
  CPU FamilyID=6, Model=4D, SteppingId=8, Processor=0

```

```
Microcode Revision 125
Platform ID: 0x10041A57
PMG_CST_CFG_CTL: 0x40006
BBL_CR_CTL3: 0x7E2801FF
Misc_EN: 0x840081
Gen PM Con1: 0x203808
Therm Status: 0x88440000
POST Control=0xEA010303, Status=0xE6009F00
```

BIOS initializations...

CPGC Memtest PASS

POST:

```
RTC Battery OK at last cold boot
RTC date Friday 09/24/2021 8:49:12
```

POST SPD test PASS

POST Lower DRAM Memory test
.... Perf cnt (curr, fixed): 0x1DA77F97A, 0x3B4F007C8

POST Lower DRAM Memory test PASS

POST Lower DRAM ECC check PASS

5. After the uninstallation completes, the system displays the following ONIE prompt:
ONIE:/ #

Installing a Third Party Operating System

Apart from the Dell EMC Networking OS, you can also install a supported third party operating system on the Z9100-ON system. For more information on installing a third party operating system, refer to the third party OS vendor's website for OS installation instructions.

Support Resources

The following support resources are available for the Z9100-ON system.

Documentation Resources

This document contains operational information specific to the Z9100-ON system.

For information about using the Z9100-ON, see the following documents at <http://www.dell.com/support>:

- *Installation Guide for the Z9100-ON System*
- *Getting Started Guide for the Z9100-ON System*
- *Dell EMC Open Networking (ON) Hardware Diagnostic Guide*
- *Dell EMC Networking Command Line Reference Guide for the Z9100-ON System*
- *Dell EMC Networking Configuration Guide for the Z9100-ON System*

For more information about hardware features and capabilities, see the Dell Networking website at <https://www.dellemc.com/networking>.

For more information about the open network installation environment (ONIE)-compatible third-party operating system, see <http://onie.org>.

Issues


Issues are unexpected or incorrect behavior and are listed in order of Problem Report (PR) number within the appropriate sections.

Finding Documentation

This document contains operational information specific to the Z9100–ON system.

- For information about using the Z9100–ON, refer to the documents at <http://www.dell.com/support>.
- For more information about hardware features and capabilities, refer to the Dell EMC Networking website at <https://www.dellemc.com/networking>.
- For more information about the open network installation environment (ONIE)-compatible third-party operating system, refer to <http://onie.org>.


Contacting Dell EMC

 **NOTE:** If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell EMC product catalog.

Dell EMC provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell EMC for sales, technical support, or customer service issues:

Go to www.dell.com/support.

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.