DELLTechnologies

Dell EMC Z9100–ON System Release Notes, OS Version 9.14(2.10)

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(2.10)
Release Date: 2021-06-30
Previous Release Version: 9.14(2.9P1)

Topics:

(i) **NOTE:** This document may contain language that is not consistent with current guidelines of Dell Technologies. There are plans to update this document over subsequent releases to revise the language accordingly.

Incorrect behavior or unexpected caveats are listed as the Problem Report (PR) numbers within the appropriate sections.

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

Document Revision History

Table 1. Revision History

Date	Description
2021–06	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

(i) **NOTE:** Fan modules and power supplies are field replaceable units.

(i) **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(2.10)
ONIE	3.23.1.0-7
DIAG Installer	3.23.3.0-4
EDA Diags	3.23.4.1

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

New Dell Networking OS Version 9.14(2.10) Features

The following features are integrated into the Dell EMC Networking 9.14.2 branch through this release:

None.

Restrictions

- Prerequisite steps to upgrade the Dell EMC Networking OS from earlier version to 9.14.2.0 or later:
  1. Uninstall the older version of the Open Automation (OA) package
  2. Upgrade the Dell EMC Networking OS to 9.14.2.0 or later version
  3. Install the following OA packages from the respective upgraded version:
     a. SmartScripts

    b. Puppet

    c. Open management infrastructure (OMI)

    d. SNMP MIB

Prerequisite steps to downgrade the Dell EMC Networking OS from 9.14.2.0 or later to the earlier version:

1. Uninstall the OA package of 9.14.2.0 or later version
2. Downgrade the Dell EMC Networking OS to an earlier version
3. Install the respective OA package from an earlier version

For more information about installing, uninstalling and upgrading the Dell EMC Networking OS and OA package, see the respective *Dell EMC System Release Notes*.

● After you upgrade Dell EMC Networking Networking OS to 9.14(2.10) 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-9.14.2.10.bin
May 18 09:32:03 : Discarded 1 pkts. Expected block num : 51. Received block num: 50
May 18 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      3.23.0.0-9


    ***********************************************************************
    *  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(2.10) to 9.11(0.0) or any older versions, 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(2.10) 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(2.10) 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(2.10).
2. Use the `ONIE install` option to install the older version of Dell EMC Networking OS.

- The systems shipped with OS 9.11(2.3) 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(2.3) to OS versions earlier than 9.10(0.2), due to NPU compatibility issues.

  (i) **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(2.0):
  - 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 `vxlan-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.

Documentation Corrections

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

None.

Changes to the Default Behavior and CLI Syntax

The following behavior and CLI changes are applicable to the Z9100–ON switch with Dell EMC Networking OS version 9.14(2.10):

None.

Deferred Issues

Issues that appear in this section were reported in Dell Networking OS version 9.14(2.0) as open, but have since been deferred. Deferred caveats are those that are found to be invalid, not reproducible, or not scheduled for resolution.

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 "Closed Caveats" 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 caveat.

Deferred Z9100-ON 9.14(2.0) Software Issues

Issues that appear in this section were reported in Dell Networking OS version 9.14(2.0) 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(2.0):

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	Work around describes a mechanism for circumventing, avoiding, or recovering from the issue. It might not be a permanent solution.
	Issues listed in the "Closed Caveats" 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 caveat.

Fixed Z9100-ON 9.14(2.10) Software Issues

(i) **NOTE:** Dell EMC Networking OS 9.14(2.10) includes fixes for caveats addressed in the previous 9.14 releases. Refer to the respective release notes documentation for the list of caveats fixed in the earlier 9.14 releases.

The following caveats are fixed in Dell EMC Networking OS version 9.14(2.10):

PR# 170039

Severity:	Sev 3
Synopsis:	The hop limit of neighbor advertisement packets for virtual IPv6 addresses decrease when the packets are incorrectly hashed in VLT.
Release Notes:	The hop limit of neighbor advertisement packets for virtual IPv6 addresses decrease when the packets are incorrectly hashed in VLT.
Workaround:	None

PR# 170044

Severity:	Sev 2
Synopsis:	In certain scenarios, the switch may restart if there is an exception in the `confd` process.
Release Notes:	In certain scenarios, the switch may restart if there is an exception in the `confd` process.
Workaround:	None

PR# 170077

Severity:	Sev 3
Synopsis:	In certain scenarios, the switch may encounter an exception while copying an image from a USB drive to update the operating system.
Release Notes:	In certain scenarios, the switch may encounter an exception while copying an image from a USB drive to update the operating system.
Workaround:	None

PR# 170081

Severity:	Sev 3
Synopsis:	Management port LED does not function.
Release Notes:	Management port LED does not function.
Workaround:	None

PR# 170082

Severity:	Sev 2
Synopsis:	Time zone configuration does not reflect in the `running-config` after reload.
Release Notes:	Time zone configuration does not reflect in the `running-config` after reload.
Workaround:	None

PR# 170098

Severity:	Sev 3
Synopsis:	Unable to change the `root` account password.
Release Notes:	Unable to change the `root` account password.
Workaround:	None

PR# 170104

Severity:	Sev 2
Synopsis:	MIB walk displays the wrong size for the `dot3adAggPortActorOperState` object.
Release Notes:	MIB walk displays the wrong size for the `dot3adAggPortActorOperState` object.
Workaround:	None

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

Known Issues

Known 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.

Category	Description
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 "Closed Caveats" 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 caveat.

Known Z9100–ON 9.14(2.10) Software Issues

The following caveats are open in Dell EMC Networking OS version 9.14(2.10):

None

Upgrading the sub-components

It is recommended to upgrade the sub-components in the following order and reload the switch where necessary, before proceeding with the next sub-component upgrade.

1. Upgrade the BIOS or Boot-selector - using the `upgrade boot bootselector-image stack-unit 1 booted` command.
2. Upgrade the GRUB or Bootflash - using the `upgrade boot bootflash-image stack-unit 1 booted` command.
3. Upgrade the CPLD - using the `upgrade fpga-image system cpld stack-unit 1 booted` command.
4. Upgrade the SMF MSS-IAP - using the `upgrade mss-iap-image stack-unit 1 booted` command.
5. Upgrade the SMF MSS-FPGA - using the `upgrade mss-fpga-image stack-unit 1 booted` command.
6. Upgrade the OOB-FPGA - using the `upgrade fpga-image system fpga stack-unit 1 booted` command.

Upgrade the BIOS or Boot Selector

To upgrade the BIOS or Boot Selector 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          3.23.0.2-8       3.23.0.0-9

       ************************************************************************
       *  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 Networking OS Version : 9.14(2.10)
Jumbo Capable              : yes
POE Capable                : no
FIPS Mode                  : disabled
Boot Flash                 : 3.23.2.13
Boot Selector              : 3.23.0.0-9
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      05/18/2021-02:42

--  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
```

Upgrade the GRUB or Boot Flash

To upgrade the GRUB or Boot Flash from Dell EMC Networking OS, perform the following steps:

1. Upgrade the Z9100-ON Boot Flash image.

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#
```

2. Reload the unit.

   EXEC Privilege Mode

   ```
   reload
   ```

3. 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 Networking OS Version : 9.14(2.10)
Jumbo Capable              : yes
POE Capable                : no
FIPS Mode                  : disabled
Boot Flash                 : 3.23.2.13
Boot Selector              : 3.23.0.0-9
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             absent     0         0      0         N/A
   1    2    up      AC         up         14752     61     54        05/18/2021-02:42

--  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#
```

Upgrade the CPLD

The Z9100-ON system with Dell EMC Networking OS Version 9.14(2.10) requires System complex programmable logic device (CPLD) 1 revision 7, CPLD2 revision 4, CPLD3 revision 4, CPLD4 revision 4, MSS FPGA revision 2.2, MSS IAP revision 2.5, 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.

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        : 2.2

Z9100-ON MSS IAP         : 2.5

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(2.10)   63545883    May 18 2021 03:51:10

TARGET IMAGE INFORMATION :
---------------------------------------------------------------------
        Type            Version                  Target     checksum
     runtime          9.14(2.10)     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         3.23.0.0-9       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         2.2
stack-unit 1                   Z9100-ON MSS IAP         2.5
stack-unit 1                  Z9100-ON OOB-FPGA         1.0
DellEMC#
```

Upgrading the CPLD Image

(i) **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.

(i) **NOTE:** Ensure that the BIOS version is 3.23.0.0-9. 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!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
   !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!May 18 16:16:54: %Z9100-ON:1 %DOWNLOAD-6-
   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.

   (i) **NOTE:** Do not switch on the system with 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         : 2.2

Z9100-ON MSS IAP          : 2.5

Z9100-ON OOB-FPGA         : 1.0

DellEMC#
```

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

Upgrade 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                2.4            2.5


        **********************************************************************
        *  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#May 18 16:23:11: %STKUNIT1-M:CP %DOWNLOAD-6-FPGA_UPGRADE: UNIT 1 fpga upgrade
    success.
    May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PEM_REMOVED: Power entry module 1 of unit 1
    is removed
    May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PEM_REMOVED: Power entry module 2 of unit 1
    is removed
    ```

```
May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-PS_DOWN_CLR: Power supply 2 down reported in
unit 1 is cleared
May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 1 of
Unit 1 is removed
May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 2 of
Unit 1 is removed
May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 3 of
Unit 1 is removed
May 18 16:23:12: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 4 of
Unit 1 is removed
May 18 16:23:13: %STKUNIT1-M:CP %CHMGR-5-FANTRAY_REMOVED: Major Alarm :Fan tray 5 of
Unit 1 is removed
May 18 16:23:13: %Z9100-ON:1 %CHMGR-2-FAN_SPEED_CHANGE: Fan speed changed to 100 % of
the full speed
May 18 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 3.23.0.0-9 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 EMC 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       : 2.2

Z9100-ON MSS IAP        : 2.5

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.

Upgrade 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              2.1              2.2

    **********************************************************************
    *  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#May 18 16:31:15: %STKUNIT1-M:CP %DOWNLOAD-6-FPGA_UPGRADE: UNIT 1 fpga upgrade
success.
```

> (i) **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.

2. After the system re-boots, wait for the Dell 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         : 2.2

Z9100-ON MSS IAP          : 2.5

Z9100-ON OOB-FPGA         : 1.0

DellEMC#
```

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

Upgrade the OOB-FPGA

To upgrade the OOB-FPGA, follow these steps:
1. 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 3.23.0.0-9

SMF Version: MSS 2.5, FPGA 2.2
Last POR=0x11, Reset Cause=0x44
```

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 Tue_May_18_07:12:52_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.

   (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                              |
| 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.

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

```
ONIE: ONIE Update Mode ...
Version   : 3.23.1.0-7
Build Date: 2021-05-18T14:41-0700
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
```

```
ONIE:/ # onie-self-update tftp://<tftp-server-address>/onie-updater-x86_64-z9100_c2538-
r0.
```

(i) **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 3.23.0.0-9 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)
 Built by build at bsdlab on Tue_May_18_07:12:52_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.

   (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: 2021-05-18T14:41-0700
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:/ #
```

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`

   Enter the following command to upgrade DIAG on the Z9100–ON system: `onie-nos-install ftp://ftp:ftp@<ftp-server-adress>/tftpboot/diag-installer-x86_64-z9100_c2538-r0.bin`

   (i) **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,/^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 (18-May-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-9.14.2.10.bin` to install the Dell EMC Networking OS on your Z9100-ON system that has only ONIE.

To install the Dell EMC Networking OS version 9.14(2.10) 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 Tue_May_18_07:12:52_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.
```

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.

   (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: 2021-05-18T14:41-0700
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:/ #
```

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 begin the installation process:

```
ONIE:/ # onie-nos-install tftp://<tftp-server-address>/ONIE-FTOS-Z9100-
ON-9.14.2.10.bin
```

> (i) **NOTE:** You must copy the `ONIE-FTOS-Z9100-ON-9.14.2.10.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-9.14.2.10.bin
discover: installer mode detected.
Stopping: discover... done.
Info: Fetching tftp://10.16.127.86/ONIE-FTOS-Z9100-ON-9.14.2.10.bin ...
ONIE-FTOS-Z9100-ON-9 100% |*****************************| 87118k  0:00:00 ETA
ONIE: Executing installer: tftp://10.16.127.86/ONIE-FTOS-Z9100-ON-9.14.2.10.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-9.14.2.10.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.
Mouting /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 prompt:

```
DellEMC#
```

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

Bare Metal Provisioning

> (i) **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(2.10) 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#
May 18 04:48:33: %STKUNIT1-M:CP %DOWNLOAD-6-UPGRADE: Upgrade failed
```

To downgrade Dell EMC Networking OS version 9.14(2.10) 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(2.10).
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 9.14(2.10) 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 9.14(2.10) 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:

   EXEC Privilege Mode

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

```
DellEMC#upgrade system tftp: A:
Address or name of remote host []: 10.16.127.35
Source file name []: FTOS-Z9100-ON-9.14.2.10.bin
1d4h22m : Discarded 1 pkts. Expected block num : 51. Received block num: 50
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!.....................
.......................!
61077156 bytes successfully copied
System image upgrade completed successfully.
DellEMC#May 18 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-9.14.2.10.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#May 18 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:

EXEC Privilege Mode

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

```
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(2.10)       9.14(2.9)
DellEMC#
```

4. Change the Primary Boot Parameter of the Z9100-ON to the upgraded partition A: or B:

CONFIGURATION Mode

```
boot system stack-unit 1 primary system: [A: | B: | tftp: | ftp:]
```

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

EXEC Privilege Mode

```
write memory
```

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

DellEMC#
```

6. Reload the unit.

EXEC Privilege Mode

```
reload
```

```
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(2.10).

EXEC Privilege Mode

```
show version
```

```
DellEMC#show version
Dell EMC Real Time Operating System Software
Dell EMC Operating System Version:  2.0
Dell EMC Application Software Version:  9.14(2.10)
Copyright (c) 1999-2021 by Dell EMC Inc. All Rights Reserved.
Build Time: Tue May 18 13:12:15 2021
Build Path: /work/swbuild01_1/build02/E9-14-2/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)
```

Uninstalling the Dell EMC Networking operating system

To un-install the Dell EMC Networking OS version 9.14(2.10) 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 Tue_May_18_07:12:52_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.

   (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                        |
   | 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.

   (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 uninstall process begins, as shown:

```
ONIE: OS Uninstall Mode ...
Version    : 3.23.1.0-7
Build Date: 2021-05-18T16:00-0700
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 3.23.0.0-9 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  Tuesday 05/18/2021 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 installation 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

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

(i) **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.**