Nokia community SONiC

Release SONiC 202605

SONiC Image Management Guide

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1 Getting started

Find information about this documentation.

1.1 About this guide

This guide describes how to build and deploy SONiC images and how to upgrade, recover, and troubleshoot SONiC on supported Nokia hardware platforms, such as the 7215 IXS-A1, 7250 IXR-10e, and 7220 IXR-H routers. It also covers initial management connectivity and SONiC CLI usage.

Supported platforms ship with Nokia community SONiC preinstalled. Customers compile a SONiC deployment image from the open-source SONiC project. The standard deployment workflow is to upgrade from the factory-installed Nokia community SONiC image to the customer-compiled SONiC deployment image. See the *Nokia community SONiC Software Release Notes* for the list of supported hardware platforms. See the installation guide for each platform for hardware-specific installation steps.

Note: This guide describes Release 202605. See the Nokia community SONiC Software Release Notes for the features supported or not supported on each device in Release 202605.

For additional build, configuration, and CLI references, see Resources for Nokia community SONiC users.

1.2 Conventions

This section describes the general conventions used in this guide.

1.2.1 Precautionary and information messages

The following information symbols are used in the documentation.

DANGER: Danger warns that the described activity or situation may result in serious personal injury or death. An electric shock hazard could exist. Before you begin work on this equipment, be aware of hazards involving electrical circuitry, be familiar with networking environments, and implement accident prevention procedures.

WARNING: Warning indicates that the described activity or situation may, or will, cause equipment damage, serious performance problems, or loss of data.

Caution: Caution indicates that the described activity or situation may reduce your component or system performance.

Note: Note provides additional operational information.

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Tip: Tip provides suggestions for use or best practices.

1.2.2 Options or substeps in procedures and sequential workflows

Options in a procedure or a sequential workflow are indicated by a bulleted list. In the following example, at step 1, the user must perform the described action. At step 2, the user must perform one of the listed options to complete the step.

Example: Options in a procedure

1. User must perform this step.
2. This step offers three options. User must perform one option to complete this step.
   - This is one option.
   - This is another option.
   - This is yet another option.

Substeps in a procedure or a sequential workflow are indicated by letters. In the following example, at step 1, the user must perform the described action. At step 2, the user must perform two substeps (a. and b.) to complete the step.

Example: Substeps in a procedure

1. User must perform this step.
2. User must perform all substeps to complete this action.
   a. This is one substep.
   b. This is another substep.

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2 About Nokia community SONiC

Nokia community SONiC is a Linux-based open-source NOS that integrates SONiC software with Nokia's high-performance hardware platforms to enable scalable, automated, and reliable data-center networking.

Nokia community SONiC brings the flexibility of a modular, open-source NOS to data center deployments.

SONiC is an open-source, Linux-based NOS originally developed by Microsoft for the Azure data centers. SONiC runs on switches from multiple vendors and Application-Specific Integrated Circuits (ASICs). It is now part of the SONiC Foundation–Linux Foundation project. Customers can compile and customize their SONiC deployment images for use with Nokia's certified hardware platforms.

The Nokia community SONiC solution includes the following features:

- SONiC NOS functionality runs transparently on Nokia's highly scalable, hardware platforms (for example, 7215 IXS-A1, 7250 IXR-10e, and 7220 IXR-H routers) that provide reliable data center switching architectures for leaf, spine, super-spine, and management top-of-rack (ToR) applications.

  Note: See the applicable *Nokia community SONiC Software Release Notes* for information about Nokia hardware platforms that run community SONiC.

- SONiC open-source NOS offers a full suite of network functionality that is production-hardened in demanding cloud and data center environments.

2.1 Resources for Nokia community SONiC users

Users who want to explore information and learn more about SONiC details beyond this upgrade guide can use the following background information, builds, and configuration resources.

Nokia community SONiC

See Nokia community SONiC for information about the Nokia implementation of community SONiC.

SONiC background and overview

See the SONiC Foundation (Linux Foundation) home page for information about the following topics:

- SONiC background and architecture
- SONiC developer resources including central resources page with links to SONiC documentation, community references, and learning material

SONiC builds, images, and repositories

The following sites provide information about SONiC source code, documentation, and build images:

- SONiC GitHub repository for SONiC build-related files
- Azure DevOps build pipelines and artifacts for SONiC images

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SONiC CLI configuration

See the SONiC GitHub repository for SONiC documentation including the SONiC User Manual, SONiC CLI guide, and SONiC utilities documentation.

2.2 Community SONiC deployment

Describes the deployment model for customer-compiled SONiC images on supported Nokia hardware platforms.

Supported Nokia hardware platforms listed in the *Nokia community SONiC Software Release Notes* ship with a factory-installed Nokia community SONiC image. Customers compile and customize their SONiC deployment image from the open-source SONiC project as described in Appendix A: Building SONiC from the open-source repository.

To deploy the customer-compiled SONiC image, upgrade from the factory-installed Nokia community SONiC image using the standard SONiC upgrade procedure. See Upgrading to a customer-compiled SONiC image for more information.

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3 Using Nokia community SONiC

Learn about the management interface connectivity options, SONiC CLI, and how to verify the Nokia community SONiC image that is running on your hardware platform.

3.1 Connecting to the management interface and verifying the image

The factory-installed Nokia community SONiC image provides initial management connectivity and image verification for supported Nokia hardware platforms. Use these procedures to establish management connectivity to the device for the first time.

Connecting to the management interface using the CLI

If the Nokia community SONiC device is connected to a network with a DHCP server, the Nokia community SONiC device automatically obtains an IP address for its management interface from the DHCP server.

To log in to the factory-installed image:

- For an image earlier than SONiC 202605, use the default username `admin` and password `password`.
- For the SONiC 202605 image, use the default username `admin` and password `YourPaSsWoRd`.

When the user logs into the Nokia community SONiC device, the system automatically enters into the command line interface (CLI). See the SONiC CLI guide available from the SONiC GitHub repository for more information about the SONiC CLI.

Zero-Touch Provisioning

Zero-Touch Provisioning (ZTP) is enabled by default in the factory-installed SONiC image. ZTP automatically provisions the device using tasks defined in a JSON file. The device uses DHCP on the out-of-band Ethernet management interface to obtain the URL of this file through DHCP option 67 for IPv4 or DHCPv6 option 59 for IPv6.

See the *Nokia community SONiC Software Release Notes* for the list of hardware platforms that have ZTP enabled in the factory-installed SONiC 202605 image.

Connect the out-of-band Ethernet management interface to the management network, and power on the device. A console connection is optional and can be used to monitor progress.

The following sequence occurs on first boot:

1. SONiC boots with no startup configuration. ZTP starts automatically and sends DHCP requests from eth0.
2. The DHCP request identifies the device as a SONiC ZTP client and includes the hardware product name and serial number.
3. The device waits for the DHCP server to assign an IPv4 or IPv6 address and provide the URL of the ZTP JSON file using DHCP option 67 for IPv4 or DHCPv6 option 59 for IPv6.
4. The device downloads the JSON file, then downloads and applies the configuration and, optionally, the software image specified in the file.
5. When ZTP finishes, the status is `SUCCESS` or `FAILED`. ZTP does not run again until it is re-enabled.

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Use the **show ztp status** command from the console to monitor progress.

```
admin@sonic:~$ show ztp status
```

Check for ZTP `Status : SUCCESS` and ZTP `Source : dhcp-opt67 (eth0)`.

The device does not send DHCP option 60. Use DHCP option 77 to identify SONiC ZTP clients and DHCP option 61 to identify the platform and device.

```
Option 77 (User Class) = SONiC-ZTP
Option 61 (Client Identifier) = SONiC##<product-name>##<serial-number>
```

For DHCPv6, use option 15 to identify SONiC ZTP clients. SONiC does not send a DHCPv6 client identifier.

```
Option 15 (User Class) = SONiC-ZTP
```

Example: DHCP client identifier for a 7215 IXS-C1 platform

The following ZTP examples use these values.

```
Product name: 7215 IXS-C1
Serial number: NS123456789
HTTP server: http://192.168.1.10/ztp/
Files: ztp-7215-c1.json and 7215-c1-config_db.json
```

The device sends the following DHCP option 61 value.

```
SONiC##7215 IXS-C1##NS123456789
```

Example: ISC DHCP server configuration for ZTP

The following configuration matches devices by product name and returns the URL of the platform-specific ZTP JSON file.

```
option bootfile-name code 67 = text;
option user-class code 77 = text;
class "nokia-7215-c1-ztp" {
    match if substring(option dhcp-client-identifier, 0, 18) = "SONiC##7215 IXS-C1";
}
subnet 192.168.1.0 netmask 255.255.255.0 {
    pool {
        allow members of "nokia-7215-c1-ztp";
        range 192.168.1.100 192.168.1.150;
        option routers 192.168.1.1;
        option domain-name-servers 192.168.1.1;
        option bootfile-name "http://192.168.1.10/ztp/ztp-7215-c1.json";
    }
}
```

Note: To match a single device, use the complete DHCP option 61 value, including the serial number, instead of the substring.

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Example: ISC DHCPv6 server configuration for ZTP

The following configuration identifies SONiC ZTP clients with DHCPv6 option 15, assigns an IPv6 address, and uses DHCPv6 option 59 to provide the URL of the ZTP JSON file.

```
option dhcp6.bootfile-url code 59 = string;
option dhcp6.user-class code 15 = string;

class "sonic-ztp-v6" {
    match if substring(option dhcp6.user-class, 0, 9) = "SONiC-ZTP";
}

subnet6 fd10:168:10::/64 {
    pool6 {
        allow members of "sonic-ztp-v6";
        range6 fd10:168:10::1000 fd10:168:10::2000;
        option dhcp6.name-servers fd10:168:10::1;
        option dhcp6.bootfile-url "http://[fd10:168:10::1]/ztp_config_a1_v6.json";
    }
}
```

Example: ZTP JSON file for configuration provisioning

The following examples show sample JSON configuration files. The first file is `ztp-7215-c1.json`.

```
{
  "ztp": {
    "configdb-json": {
      "dynamic-url": {
        "source": {
          "prefix": "http://192.168.1.10/ztp/",
          "identifier": "product-name",
          "suffix": "-config_db.json"
        },
        "destination": "/etc/sonic/config_db.json"
      }
    }
  }
}
```

The second file is `ztp_config_a1_v6.json`.

```
{
  "ztp": {
    "01-configdb-json": {
      "url": {
        "source": "http://[fd10:168:10::1]/config_db_a1_v6.json",
        "destination": "/etc/sonic/config_db.json",
        "secure": false
      },
      "clear-config": false
    }
  }
}
```

Example: ZTP JSON file for SONiC image installation

To install a SONiC image using ZTP, add the firmware plugin to the ZTP JSON file and specify the URL of the image to install.

```
{
```


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```
  "ztp": {
    "01-firmware": {
      "install": {
        "url": "http://192.168.1.10/ztp/sonic-image.bin"
      },
      "reboot-on-success": true
    }
  }
}
```

Management connectivity with no DHCP

If the Nokia community SONiC device does not have a management IP address automatically assigned, the user must first connect to the device through a console to assign a temporary management IP address. This allows the user to fetch or copy the customer-compiled SONiC deployment image.

SONiC provides the CLI for configuring a static IP address for the management interface. There are different ways to configure the IP address. The following example shows how to use the **config interface ip add eth0** Linux command.

Example: IP address configuration using config interface ip add eth0

```
admin@sonic:~$ sudo config interface ip add eth0 192.168.0.0/16 192.168.0.1
```

See the SONiC CLI guide available from the SONiC GitHub repository for more information about the SONiC CLI.

Verifying the Nokia community SONiC image

To verify the Nokia community SONiC image for the target platform, use the **show version** command. The following example shows the command output for a 7215 IXS-A1 platform.

Example: Version information for a 7215 IXS-A1 platform

```
admin@router:~$ show version

SONiC Software Version: SONiC-OS-HEAD.1086978-202411-ce988a8c
SONiC OS Version: 13
Distribution: Debian 13.1
Kernel: 6.12.41+deb13-sonic-armmp
Build commit: 95bc89dec
Build date: Fri Nov  7 18:51:44 UTC 2025
Built by: gitlab-runner@sonic-armv01

Platform: arm64-nokia_ixs7215_52xb-r0
HwSKU: Nokia-7215-A1
ASIC: marvell
ASIC Count: 1
Serial Number: 123460XXXX
Model Number: 3HE18723AAXXXX
Hardware Revision: 0
Uptime: 23:16:39 up 4 min, 1 user, load average: 4.73, 3.26, 1.38
Date: Fri 15 Aug 2025 23:16:39
```

Using the SONiC CLI

Nokia community SONiC fully supports configuration using the SONiC CLI.

See the SONiC CLI Guide at the SONiC GitHub for more information about the SONiC CLI.

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4 Upgrading to a customer-compiled SONiC image

Users can upgrade from the factory-installed Nokia community SONiC image on supported Nokia hardware platforms to a customer-compiled SONiC deployment image.

Use the procedures described in this section to upgrade from the factory-installed Nokia community SONiC image provided on supported Nokia hardware platforms to a customer-compiled SONiC deployment image. See Appendix A: Building SONiC from the open-source repository for information about compiling the SONiC image.

4.1 Upgrading to a customer-compiled SONiC software image

Upgrade to a customer-compiled SONiC deployment image on your system.

Prerequisites

The following are required to perform the SONiC software upgrade on your hardware platform:

- administrative access to the device CLI
- reachable management interface (SCP or HTTP)
- the customer-compiled SONiC deployment image for the target platform or variant
- the correct filename for the platform; see the following table

Table 1: Image filename for Nokia products and platform architectures

Platform / ASIC	Architecture	Filename	Nokia HW Platform
Broadcom DNX	x86-64	`sonic-broadcom-dnx.bin`	7250 IXR-X3b
Broadcom generic	x86-64	`sonic-broadcom.bin`	7220 IXR-H4, 7220 IXR-H5, 7220 IXR-H6-64
Broadcom generic (GB syncd)	x86-64	`sonic-broadcom-gbsyncd.bin`	7220 IXR-D4
Marvell	ARM64	`sonic-marvell-arm64.bin` Applies to SONiC releases up to 202411	7215 IXS-A1
Marvell Prestera	ARM64	`sonic-marvell-prestera-arm64.bin` Applies to SONiC releases 202505 and later	7215 IXS-A1

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Platform / ASIC	Architecture	Filename	Nokia HW Platform
No ASIC	ARM64	`sonic-nokia-vs-arm64.bin`	7215 IXS-C1

About this task

Use this procedure to upgrade from the factory-installed Nokia community SONiC image that is currently installed on the Nokia hardware platform to a customer-compiled SONiC deployment image See Appendix A: Building SONiC from the open-source repository for information about building the customer-compiled SONiC deployment image.

Note: The examples in the following upgrade procedure use the image filename for the Marvell ARM64 7215 IXS-A1 product. Replace this with the filename corresponding to your specific hardware product as shown in the preceding table.
The examples in the following procedure show an upgrade from the factory-installed Nokia community SONiC image to a customer-compiled SONiC deployment image.

Procedure

Step 1. Verify the version of the Nokia community SONiC software that is currently running on your system.

The Nokia community SONiC software version and commit ID identify the currently installed image. The following example shows output for a 7215 IXS-A1 platform.

Example

7215 IXS-A1 platform

```
admin@router:~$ show version
SONiC Software Version: SONiC-OS-HEAD.677949-202311-bca46cc0
SONiC OS Version: 13
Distribution: Debian 13.1
Kernel: 6.12.41+deb13-sonic-armmp
Build commit: 95bc89dec
Build date: Fri Nov  7 18:51:44 UTC 2025
Built by: gitlab-runner@sonic-armv01

Platform: arm64-nokia_ixs7215_52xb-r0
HwSKU: Nokia-7215-A1
ASIC: marvell
ASIC Count: 1
Serial Number: 123460XXXX
Model Number: 3HE18723AAXXXX
Hardware Revision: 0
Uptime: 23:16:39 up 4 min, 1 user, load average: 4.73, 3.26, 1.38
Date: Fri 7 Nov 2025 23:16:39
```

Step 2. Display the current, available, and next software images.

This information can be used to compare the results after the upgrade.

Example

```
admin@router:~$ sudo sonic-installer list
Current: SONiC-OS-HEAD.677949-202311-bca46cc0
Next: SONiC-OS-HEAD.677949-202311-bca46cc0
Available:
SONiC-OS-HEAD.677949-202311-bca46cc0
```


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Step 3. Install the image using one of the following methods.

Note: The following examples are for ARM64-based platforms; see the preceding table for the list of image filenames for the Nokia product platforms and architectures.

- Copy the SCP image to the system you are upgrading.
  Example

```
# scp sonic-marvell-arm64.bin admin@MGMT-IP:/tmp
admin@MGMT-IP's password:
sonic-marvell-arm64.                100%  877MB  24.7MB/s   00:35
```

- Install the image directly from a URL.
  Example

```
admin@router:~$ sudo sonic-installer install http://server-ip/path/to/sonic-
marvell-arm64.bin
```

- Install the image using a script with the **-y** option to avoid manual interactions.
  Example

```
admin@router:~$ sudo sonic-installer install –y /tmp/sonic-marvell-arm64.bin
```

Step 4. Install the customer-compiled SONiC deployment image.

The installer takes several minutes to verify and stage the image.

Example

Upgrading from SONiC 202311 to 202411

```
admin@router:~$ sudo sonic-installer install /tmp/sonic-marvell-arm64.bin
New image will be installed, continue? [y/N]: y
Installing image SONiC-OS-HEAD.1086978-202411-ce988a8c and setting it as default...
Command: bash ./sonic-marvell-arm64.bin
Verifying image checksum ... OK.
Preparing image archive ... OK.
Installing SONiC in SONiC
ONIE Installer: platform: arm64-marvell-r0
onie_platform: arm64-nokia_ixs7215_52xb-r0
Preparing for installation ...
Intalling SONiC from sonic on Platform arm64-nokia_ixs7215_52xb-r0
/dev/mmcblk0
Selected mmc /dev/mmcblk0
Installing SONiC to /host/image-HEAD.1086978-202411-ce988a8c

<truncated>

ONIE_IMAGE_PART_SIZE=32768
EXTRA_CMDLINE_LINUX=
Sync up cache ...
Setting up U-Boot environment...
Using pre-configured uboot env
Installed SONiC base image SONiC-OS successfully

Command: config-setup backup
Taking backup of current configuration

<truncated>

Command: sync
```


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```
Command: sleep 3

Done
```

Step 5. Display the software images and confirm the new version is available and selected as the next image to boot.

The following example shows the new image has been installed and is set as the next boot, replacing the older version (shown in step 2).

Example

```
admin@router:~$ sudo sonic-installer list
Current: SONiC-OS-HEAD.677949-202311-bca46cc0
Next: SONiC-OS-HEAD.1086978-202411-ce988a8c
Available:
SONiC-OS-HEAD.1086978-202411-ce988a8c
SONiC-OS-HEAD.677949-202311-bca46cc0
```

Step 6. Reboot the node.

This process may take several minutes to complete.

Example

```
admin@router:~$ sudo reboot
requested COLD shutdown
/var/log: 221.7 MiB (232480768 bytes) trimmed on /dev/loop1
/host: 267.3 MiB (280330240 bytes) trimmed on /dev/mmcblk0p2
Thu 10 Jul 2025 08:35:02 PM UTC Rebooting with platform arm64-nokia_ixs7215_52xb-r0
 specific tool ...
Fri 7 Nov 2025 08:35:04 PM UTC Platform specific reboot failed!
Fri 7 Nov 2025 08:35:04 PM UTC Issuing OS-level reboot ...
```

Expected outcome

The system reboots and applies the new load.

Step 7. Display the new version information and confirm that the SONiC software version and the build commit match the expected new version.

Example

```
admin@router:~$ show version

SONiC Software Version: SONiC.HEAD.1086978-202411-ce988a8c
SONiC OS Version: 13
Distribution: Debian 13.1
Kernel: 6.12.41+deb13-sonic-arm64
Build commit: ce988a8c
Build date: Fri Nov  7 11:55:35 UTC 2025
Built by: gitlab-runner@sonic-armv16

Platform: arm64-nokia_ixs7215_52xb-r0
HwSKU: Nokia-7215-A1
ASIC: marvell
ASIC Count: 1
Serial Number: 124080XXXX
Model Number: 3HE18723AAXXXX
Hardware Revision: 0
```


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Step 8. Display the software loads and confirm that the current and next software load match the expected version.

Example

```
admin@router:~$ sudo sonic-installer list
Current: SONiC-OS-HEAD.1086978-202411-ce988a8c
Next: SONiC-OS-HEAD.1086978-202411-ce988a8c
Available:
SONiC-OS-HEAD.1086978-202411-ce988a8c
SONiC-OS-HEAD.677949-202311-bca46cc0
```

What to do next

You can optionally manage images after upgrading. See Managing SONiC images. For deeper build and CLI topics, see Resources for Nokia community SONiC users.

4.2 Managing SONiC images

Use the **sonic-installer** CLI commands to manage images after an upgrade. These commands are optional and supplemental to the main upgrade procedure.

```
admin@router:~$ sonic-installer --help
Usage: sonic-installer [OPTIONS] COMMAND [ARGS]...
Commands:
  cleanup            Remove installed images which are not current and next
  install            Install image from local binary or URL
  remove             Uninstall image
  verify-next-image  Verify the next image for reboot
```


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5 Recovery

If the SONiC image in the system becomes corrupted, it may be necessary to perform recovery procedures to correct the image.

5.1 Recovery using ONIE

The user can recover a Nokia community SONiC device by reinstalling the SONiC image from a local image through the Open Network Install Environment (ONIE). This method is typically used when it is not possible to boot the existing image.

Prerequisites

- Ensure the RS-232 console is connected to the front port; the rate depends on the platform, for example, 9600 baud or 115200 baud.
- Have the ability to power cycle the device.
- Ensure the local image file is available, for example, in the directory `/tmp/IMAGE_FILE.bin`, on a USB drive or an SD card, or another method supported on your platform (for example, over the network).

About this task

Use this procedure for recovery purposes. For a standard upgrade, see Upgrading to a customer-compiled SONiC software image for instructions.

This procedure uses the UEFI GRUB menu and ONIE installer. The boot-timing windows are short.

The examples in this task show reimaging of a 202411 software version.

Procedure

Step 1. Use the following steps to run the ONIE boot.

a. Display the GNU GRUB menu by pressing the up arrow key during power on.

b. Select ONIE from the GNU GRUB menu as shown in the following figure.

c. Select **ONIE: Install OS** from the ONIE boot options.

d. Go to step 2.

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Figure 1: GNU GRUB menu



Expected outcome

ONIE starts automatic discovery by default.

Step 2. Stop the ONIE automatic discovery before running a manual installation.

Example

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

Step 3. If you are transferring the SONiC image over the network, configure the management IP address and default route.

Example

Configure the ONIE management interface and default route

```
ONIE:/ # ifconfig eth0 10.12.19.7 netmask 255.255.255.0
ONIE:/ # ip route add 0.0.0.0/0 via 10.12.19.1
```

Expected outcome

The management interface and default route are configured for transferring the image over the network.

Step 4. Make the SONiC image available locally using one of the following methods.

- Copy the image over the network using SCP.
  Example

  ```
  ONIE:/ # scp <user>@<server-with-sonic-image>:<path-to-sonic-image-binary> <local-destination>
  ```

- Copy the image from a USB drive or SD card.
  Example

  ```
  ONIE:/ # fdisk -l
  ```


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```
ONIE:/ # mkdir /mnt/usb
ONIE:/ # mount /dev/sdb1 /mnt/usb
ONIE:/ # cp /mnt/usb/sonic-image.bin /root/
```

Step 5. Reinstall the image (from your local storage, a USB drive or SD card, or over your network), using the **onie-nos-install** command.

Example

Reinstall image from local disk

```
ONIE:/ #
ONIE:/ # ls /tmp
sonic-marvell-prestera-arm64.bin
ONIE:/ #
ONIE:/ # onie-nos-install /tmp/sonic-marvell-prestera-arm64.bin
```

Expected outcome

The system installs the SONiC image.

Step 6. After the installation completes, allow the device to reboot and boot the installed SONiC image.

Expected outcome

The device boots using the installed SONiC image and displays the SONiC login prompt.

Step 7. When the reinstallation completes, use the **show version** command to verify the SONiC image software version and build details.

Example

```
admin@router:~$ show version

SONiC Software Version: SONiC.HEAD.1086978-202411-ce988a8c
SONiC OS Version: 13
Distribution: Debian 13.1
Kernel: 6.12.41+deb13-sonic-arm64
Build commit: ce988a8c
Build date: Fri Nov  7 11:55:35 UTC 2025
Built by: gitlab-runner@sonic-armv16

Platform: arm64-nokia_ixs7215_52xb-r0
HwSKU: Nokia-7215-A1
ASIC: marvell
ASIC Count: 1
Serial Number: 124080XXXX
Model Number: 3HE18723AAXXXX
Hardware Revision: 0
```

Expected outcome

The output confirms that the expected SONiC image is reinstalled and active.

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6 Troubleshooting

Troubleshooting may be required to identify and correct problem situations when the SONiC image is not operating normally.

Troubleshooting includes identifying the symptoms of a problem, detecting the fault that caused it, and correcting the fault.

Before contacting the Nokia technical support service for assistance with troubleshooting, use the **show techsupport** CLI command to collect diagnostic information about the device.

This command gathers information such as syslog entries, database state, and routing-stack state, and then compresses it into an archive file. The system saves the archive as `/var/dump/<DEVICE_HOST_NAME>_YYYYMMDD_HHMMSS.tar.gz`. Provide this information when you contact Nokia technical support.

Example

```
admin@sonic:~$ show techsupport [--since=<time_specifier>]
```

See the SONiC documentation at the SONiC GitHub for more information about troubleshooting community SONiC.

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7 Appendix A: Building SONiC from the open-source repository

Users can build a SONiC deployment image using the open-source SONiC project, including environment setup and image compilation.

This section describes how to build a SONiC deployment image using the open-source SONiC repository. The procedures apply to supported Nokia hardware platforms.

After completing the build process, perform an upgrade as needed. See Upgrading to a customer-compiled SONiC software image for more information.

7.1 Building the SONiC software image

Build the SONiC image from source using the open-source SONiC build framework.

About this task

This task describes how to compile a SONiC image. It follows the open-source SONiC build process with Nokia-specific board support packages (BSPs) and platform adapters. This build procedure can be performed on a physical server or on a virtual machine (VM) in a cloud environment. Ensure that the build environment meets the required operating system, architecture, compute, memory, and storage requirements.

Note: The following task provides an example of how to perform a build for a SONiC Broadcom-based (x86) platform. Contact your Nokia technical support representative if you require build information for other supported Nokia hardware platforms.

Prerequisites

The following are required to perform the build:

- Ubuntu 20.04 build server with **docker** and **python3** installed
- administrative access and sufficient disk space
- Internet access to clone community SONiC repositories from GitHub

Procedure

Step 1. Install and set up Docker.

If Docker was installed via **snap**, first remove it. Then add the Docker repository and install the Docker Engine and related tools.

Example

```
# If your Ubuntu 20.04 server already includes an instance of docker installed by
 snap, the SONIC build may not work. Please uninstall it first.

>> sudo snap remove docker

# and follow the instructions below to install docker
```


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```
>> sudo apt-get update
>> sudo apt-get install ca-certificates curl
>> sudo install -m 0755 -d /etc/apt/keyrings
>> sudo curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo tee \ /etc/apt/
keyrings/docker.asc > /dev/null
>> sudo chmod a+r /etc/apt/keyrings/docker.asc
>> echo \
"deb [arch=$(dpkg --print-architecture) signed-by=/etc/apt/keyrings/docker.asc] \
 https://download.docker.com/linux/ubuntu \
$(. /etc/os-release && echo "$VERSION_CODENAME") stable" \
| sudo tee /etc/apt/sources.list.d/docker.list > /dev/null
>> sudo apt-get install -y docker-ce docker-ce-cli containerd.io docker-buildx-plugin
 dockercompose-plugin
>> sudo gpasswd -a ${USER} docker
>> newgrp docker
```

Step 2. Use the Python `pip` utility to install the `j2cli` template utility used by the community SONiC build systems.

Example

```
>> sudo apt install python3-pip
>> pip install j2cli
>> export PATH="$HOME/.local/bin:$PATH"
>> source ~/.bashrc
```

Step 3. Clone the community SONiC build repository.

a. Download the community SONiC build framework.

b. Switch to the working directory.

The following example shows cloning a community SONiC 202505 build.

Example

```
git clone https://github.com/sonic-net/sonic-buildimage.git -b 202505
cd sonic-buildimage
```

Step 4. Run the following command to initialize the sub-repositories, fetch sub-modules, and prepare the build environment.

```
make init
```

Step 5. Configure the Broadcom build settings.

Example

```
make configure PLATFORM=broadcom
```

Step 6. Start the compilation to build the image.

The build time depends on the server resources and network speed.

Example

```
make SONIC_BUILD_JOBS=4 target/sonic-broadcom.bin
```

Expected outcome

The output directory contains the built image file, for example `sonic-broadcom.bin`.

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What to do next

You can now use the generated image to upgrade a device. See Upgrading to a customer-compiled SONiC software image for instructions.

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8 Appendix B: NIST Purge

Provides guidance on embedded MultiMediaCard (eMMC) data removal on 7215 IXS-A1 and 7215 IXS-C1 platforms.

The eMMC storage on these platforms is not normally removable. Software-based methods can remove the NOS and its associated data while preserving ONIE, or erase the entire eMMC device, including ONIE. Because eMMC storage uses wear-leveling, deleted NOS data can remain in unallocated space after the NOS partitions are removed.

The procedures described in this section start from the ONIE boot menu.

The **ONIE: Uninstall OS** menu option removes the NOS partitions but does not securely purge the eMMC storage. Data can remain recoverable after the partitions are removed.

See the Removing the NOS with ONIE Uninstall procedure to remove the NOS partitions. This procedure preserves ONIE and is not a secure purge.

See the Purging NOS data while preserving ONIE procedure to purge NOS data while preserving ONIE.

See the Purging the entire eMMC device, including ONIE procedure to purge the entire eMMC device, including ONIE.

8.1 Removing the NOS with ONIE Uninstall

Remove the NOS partitions while preserving ONIE. This procedure is not a secure purge.

Prerequisites

To reach the ONIE boot menu, see Recovery using ONIE. Go to step 1 and stop when the ONIE boot menu is displayed. Do not go to step 2.

About this task

This procedure removes the NOS partitions but does not securely purge the eMMC storage. Data can remain recoverable after the NOS is removed.

Procedure

Remove the NOS using one of the following methods.

- From the ONIE boot menu, select **ONIE: Uninstall OS**.
- From the ONIE boot menu, select **ONIE: Rescue**. At the ONIE prompt, run the following command:

```
ONIE:/ # onie-uninstaller
```

The NOS is removed and ONIE remains installed.

What to do next

See the Purging NOS data while preserving ONIE procedure to securely purge eMMC data while preserving ONIE.

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8.2 Purging NOS data while preserving ONIE

Purge SONiC data from the eMMC storage while preserving ONIE.

Prerequisites

To reach the ONIE boot menu, see Recovery using ONIE. Go to step 1 and stop when the ONIE boot menu is displayed. Do not go to step 2.

About this task

This procedure uses the eMMC secure-trim commands to remove SONiC data while preserving the ONIE partitions.

WARNING:
This procedure permanently removes data from the selected eMMC sectors. Verify the partition layout and sector range before running the commands.

Procedure

Step 1. Boot the device to **ONIE: Rescue**.

Step 2. Display the eMMC partition table.

Record the start sector of the SONiC OS partition and the last sector immediately before the SWAP partition. Do not delete the SWAP partition. The NOS partitions are before the SWAP partition.

Example

```
ONIE:/ # sgdisk -p /dev/mmcblk0
```

Step 3. Delete the SONiC OS partition and any other partitions created by the NOS, and then update the partition table.

The following example uses partition 3. Replace it with the NOS partition number from the partition table.

Example

```
ONIE:/ # sgdisk -d 3 /dev/mmcblk0
ONIE:/ # partprobe
```

Step 4. Run the eMMC secure-trim commands for the identified sector range.

The sector values shown are examples only. Replace them with the sector range identified for the device. Run secure-trim1, and then run secure-trim2.

Example

```
ONIE:/ # mmc erase secure-trim1 788480 76543999 /dev/mmcblk0
ONIE:/ # mmc erase secure-trim2 788480 76543999 /dev/mmcblk0
```

Step 5. Check the content of the selected eMMC sectors.

Replace the skip value shown in the example with the start sector recorded for the device.

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Example

```
ONIE:/ # dd if=/dev/mmcblk0 bs=512 skip=788480 count=100 | od
```

What to do next

See Purging the entire eMMC device, including ONIE to purge the entire eMMC device, including ONIE.

8.3 Purging the entire eMMC device, including ONIE

Purge all data from the eMMC device, including ONIE.

Prerequisites

Have the required USB ONIE recovery image available before starting this procedure.

To reach the ONIE boot menu, see Recovery using ONIE. Go to step 1 and stop when the ONIE boot menu is displayed. Do not go to step 2.

About this task

WARNING:
This procedure permanently removes all data from the eMMC device, including the SONiC image, customer data, and ONIE. Only the U-Boot image in the boot PROM remains. After the purge, the device can recover only by reinstalling ONIE from a USB drive.

Procedure

Step 1. Boot the device to **ONIE: Rescue**.

Step 2. Verify that the eMMC device supports secure erase operations.

Example

```
ONIE:/ # mmc extcsd read /dev/mmcblk0 | grep Secure
```

Step 3. Unmount the ONIE partitions and disable swap.

Example

```
ONIE:/ # umount /dev/mmcblk0p1
ONIE:/ # umount /dev/mmcblk0p2
ONIE:/ # swapoff -a
```

Step 4. Erase the partition table and sanitize the entire eMMC device.

Example

```
ONIE:/ # dd if=/dev/zero of=/dev/mmcblk0 bs=512 count=34
ONIE:/ # mmc sanitize /dev/mmcblk0
```

Step 5. Check the content of the selected eMMC sectors.

The skip value is an example from the NOS partition. Replace it with a sector range that was erased on the device.

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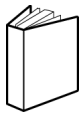
Example

```
ONIE:/ # dd if=/dev/mmcblk0 bs=512 skip=788480 count=100 | od
```

Step 6. Reinstall ONIE from a USB drive.

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