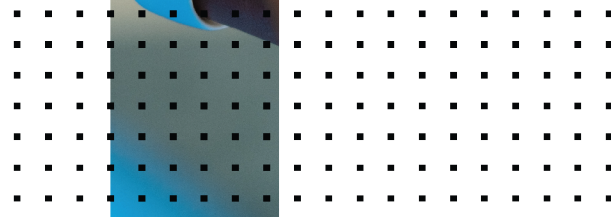


FIPS Support

FortiSIEM 6.4.0



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04/06/2023

FortiSIEM 6.4.0 FIPS Support

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Change Log

| Date | Change Description |
|------------|---------------------------------|
| 06/30/2020 | Initial version of this manual. |
| 03/23/2021 | 6.2.0 release. |
| 05/06/2021 | 6.2.1 release. |
| 07/06/2021 | 6.3.0 release. |
| 08/26/2021 | 6.3.1 release. |
| 10/15/2021 | 6.3.2 release. |
| 12/22/2021 | 6.3.3 release. |
| 01/18/2022 | 6.4.0 release. |
| 05/23/2022 | 6.4.1 release. |
| 12/14/2022 | 6.4.2 release. |
| 04/06/2023 | Minor re-structuring of guide. |

FIPS Support

- Cryptographic Algorithms
- Erasing Disk Contents

Cryptographic Algorithms

The following table displays the certificate numbers for Red Hat Enterprise Linux 7, because Red Hat Enterprise Linux 8 is under certification.

| Rocky Linux 8 Module | Version in FortiSIEM 6.4.0 |
|----------------------------|---|
| NSS | nss-3.44.0-8.el8.x86_64 |
| OpenSSL | openssl-1.1.1c-2.el8_1.1.x86_64 |
| OpenSSH and OpenSSH Server | openssh-8.0p1-3.el8.x86_64 openssh-server-8.0p1-3.el8.x86_64 |
| libSSH | libssh-0.9.0-4.el8.x86_64 libssh-0.9.0-4.el8.i686 |
| OpenJDK | java-1.8.0-openjdk-1.8.0.252.b09-2.el8_1.x86_64 |

The following table displays the cryptographic algorithms and their use in various Rocky Linux 8 modules used by FortiSIEM 6.4.0.

| Algorithm | Used By Rocky Linux 8 Module |
|-------------------|------------------------------|
| SHA256 | NSS, OpenSSL |
| SHA384 | NSS, OpenSSL |
| SHA512 | NSS, |
| HMAC-SHA1 | NSS, OpenSSH |
| HMAC-SHA1-ETM | OpenSSH, libSSH |
| HMAC-SHA256 | NSS, |
| HMAC-SHA2-256 | OpenSSH |
| HMAC-SHA2-256-ETM | OpenSSH, libSSH |
| HMAC-SHA2-512 | OpenSSH, libSSH |

| Algorithm | Used By Rocky Linux 8 Module |
|--------------------------------------|------------------------------|
| HMAC-SHA2-512-ETM | OpenSSH, libSSH |
| HMAC-SHA384 | NSS |
| HMAC-SHA512 | NSS |
| HMAC-SHA2-512 | OpenSSH |
| SECP256R1 | NSS, |
| SECP384R1 | NSS, |
| SECP521R1 | NSS, |
| aes128-gcm | NSS, OpenSSL, OpenSSH |
| aes128-ctr | NSS, OpenSSH |
| aes128-cbc | OpenSSH |
| aes256-gcm | NSS, OpenSSL, OpenSSH |
| aes256-ctr | OpenSSH |
| aes256-cbc | NSS, OpenSSH |
| ECDHE-RSA | NSS |
| ECDHE-ECDSA | NSS |
| ecdh-sha2-nistp256 | OpenSSH |
| ecdh-sha2-nistp384 | OpenSSH |
| ecdh-sha2-nistp521 | OpenSSH |
| DHE-RSA | NSS |
| diffie-hellman-group-exchange-sha256 | OpenSSH, libSSH |
| diffie-hellman-group14-sha256 | OpenSSH |
| diffie-hellman-group16-sha512 | OpenSSH, libSSH |
| diffie-hellman-group18-sha512 | OpenSSH, libSSH |
| rsa-sha2-256 | OpenSSH, libSSH |
| rsa-sha2-256-cert-v01 | OpenSSH, libSSH |
| rsa-sha2-512 | OpenSSH, libSSH |
| rsa-sha2-512-cert-v01 | OpenSSH, libSSH |
| ecdsa-sha2-nistp256 | OpenSSH, libSSH |
| ecdsa-sha2-nistp256-cert-v01 | OpenSSH, libSSH |
| ecdsa-sha2-nistp384 | OpenSSH, libSSH |

| Algorithm | Used By Rocky Linux 8 Module |
|------------------------------|------------------------------|
| ecdsa-sha2-nistp384-cert-v01 | OpenSSH, libSSH |
| ecdsa-sha2-nistp521 | OpenSSH, libSSH |
| ecdsa-sha2-nistp512-cert-v01 | OpenSSH, libSSH |

Erasing Disk Contents

- Run the `prepare_boot_loader` Script
- Run the `boot_loader_operations` Script
- Verify the Disk is Erased

One of the requirements for FIPS compliance is the ability to erase the contents of any disk. The Disk Zeroization feature removes the contents of the disk by replacing it with zeros (0).

The shell scripts `prepare_boot_loader.sh` and `boot_loader_operations.sh` erase all of the data from all of the disks in the FortiSIEM system. The `prepare_boot_loader.sh` script loads the FortiSIEM boot loader. The `boot_loader_operations.sh` script automatically reads all the disks, including OS disk, and iteratively fills them with zeros twice to ensure that no data remains on the disk.

Only the root user can run the `prepare_boot_loader.sh` and `boot_loader_operations.sh` scripts. Once the scripts complete the erasing, the user will not be able to login into the system. No utilities will be able to fetch data from the erased disks.

Run the prepare_boot_loader Script

Follow these steps to run the `prepare_boot_loader.sh` script:

1. Log in to the system as user `root` and password `ProspectHills`. **Note:** you might be required to change your password after logging in.
2. Navigate to `/usr/local/bin` in the FortiSIEM server.

```
localhost login: root
Password:
You are required to change your password immediately (administrator enforced)
Current password:
New password:
Retype new password:
[root@localhost ~]# cd /usr/local/bin
[root@localhost bin]# _
```

3. Run the script `prepare_boot_loader.sh`. The system will be rebooted.
`prepare_boot_loader.sh`
4. Use the arrow keys on the keyboard to select **FortiSIEM Boot Loader** from the boot menu. Press **Enter**.

```
CentOS Linux (4.18.0-147.8.1.el8_1.x86_64) 8 (Core)
CentOS Linux (4.18.0-147.el8.x86_64) 8 (Core)
CentOS Linux (0-rescue-c9d73af0d5f746ceba8ad499bdb6c990) 8 (Core)
FortiSIEM Boot Loader
```

5. After some minutes, the Boot Loader shell will appear.

```
#####  
#  
#  
# Welcome to FortSIEM BootLoader Shell.  
# Use this Shell only for specific FortiSIEM operations (Migration and Zeroize).  
# Do not use the Shell to run FortiSIEM.  
# Disconnect IMMEDIATELY if you want to run FortiSIEM  
#  
#  
#  
#####  
  
fsmshell login: _
```

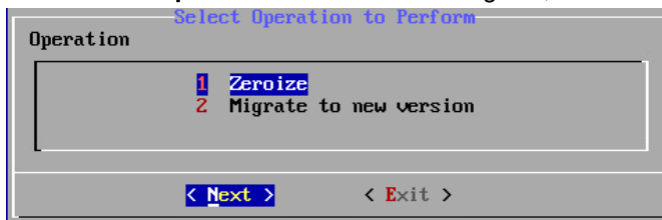
Run the boot_loader_operations Script

Follow these steps to run the `boot_loader_operations.sh` script:

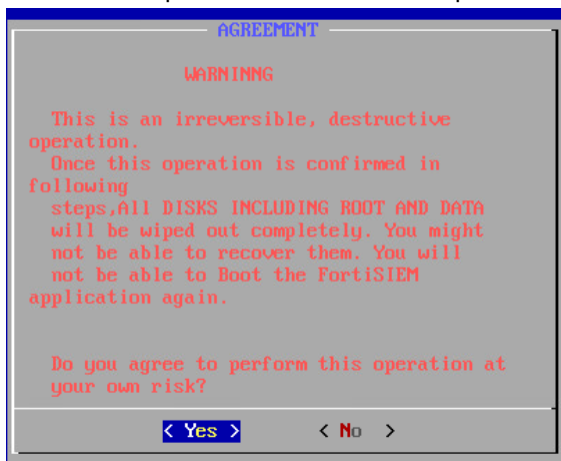
1. Log in to the Boot Loader shell as user `root`, with the default password. If you changed the password [above](#), use the new password instead.
2. Navigate to `/usr/bin`.
3. Run the `boot_loader_operations.sh` script.
`# boot_loader_operations.sh`

A simple UI will open where you can initiate the Zeroize operation.

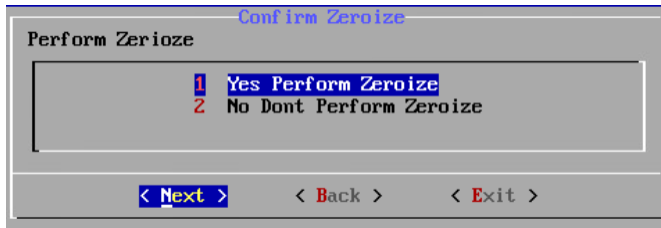
4. In the **Select Operations to Perform** dialog box, select **1 Zeroize**. Select **Next** and press **Enter** to continue.



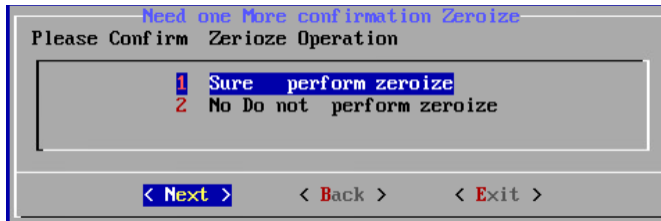
5. Read the contents in the **AGREEMENT** dialog box carefully. Select **Yes** and press **Enter** to continue. Otherwise, select **No** and press **Enter** to exit the script.



6. If you click **Yes**, a dialog box to confirm Zeroize appears. Click **1 Yes Perform Zeroize**. Select **Next** and press **Enter** to continue.



7. If you click **Next**, another dialog box to reconfirm Zeroize appears. Click **1 Sure perform zeroize**. Select **Next** and press **Enter** to continue.



8. The Zeroize process starts:

```
===== FortiSIEM ZEROIZING DISK START =====
The BootLoader environment is running zeroize
Root user is running the utility
PROCEEDING WITH ZEROIZING DISK !!!!!
sda: 169MiB 0:00:17 [9.79MiB/s] [ <=>
```

Depending on the size of disks and amount of data present, it may take a long time to complete the Zeroize operation. After the script completes, you should not be able to boot the system.

Verify the Disk is Erased

Run the following command for each disk to verify that the script has erased all of the data. The purpose of the command is to determine if any non-zero characters exist.

```
dd if=/dev/sdx 2>/dev/null | /iszero >sdx-nonzerochars.txt
```

Where **x** represents the name of the disk you attached. The contents of the `sdx-nonzerocharars.txt` file should be empty.

For example, if you attached a disk **b**:

```
dd if=/dev/sdb 2>/dev/null | /iszero >sdb-nonzerochars.txt
```

If you attached a disk **c**:

```
dd if=/dev/sdc 2>/dev/null | /iszero >sdc-nonzerochars.txt
```



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