

Offline Upgrade Guide

FortiSIEM 6.6.2



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FortiSIEM 6.6.2 Offline Upgrade Guide

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Change Log

Date	Change Description
09/24/2018	Initial version of FortiSIEM - Offline Upgrade Guide.
10/08/2018	Revision 1: modifications to the Section: 'Upgrading FortiSIEM' - Step 1.
08/19/2019	Revision 2: Updated the location of the image download site.
03/30/2021	Revision 3: Released for 6.2.0.
04/06/2021	Revision 4: Updated "6.1.x to 6.2.0 Upgrade" and "Syncing the Local Repository Mirror".
05/07/2021	Revision 5: Released for 6.2.1.
06/22/2021	Revision 6: Disk size for deployment updated.
07/06/2021	Revision 7: Released for 6.3.0.
07/21/2021	Revision 8: Added "Upgrading Multiple Collector Nodes in an Online and/or Offline Environment".
08/26/2021	Revision 9: Released for 6.3.1.
10/15/2021	Revision 10: Released for 6.3.2.
12/22/2021	Revision 11: Released for 6.3.3.
01/18/2022	Revision 12: Released for 6.4.0.
01/27/2022	Revision 13: Supervisor/Worker Upgrade section updated for 6.4.0 release.
03/09/2022	Revision 14: Supervisor/Worker Upgrade section updated for 6.4.0 release.
05/09/2022	Revision 15: Released for 6.5.0
07/26/2022	Revision 16: Released for 6.6.0
09/12/2022	Revision 17: Released for 6.5.1
09/13/2022	Revision 18: Fix to command line instruction in Syncing the Local Repository Mirror section.
09/14/2022	Revision 19: Released for 6.6.1
09/19/2022	Revision 20: Released for 6.6.2. Updated Supervisor/Worker Upgrade section for 6.6.x releases.
01/03/2023	Revision 21: Released for 6.6.3
03/07/2023	Revision 22: Updated ClickHouse steps in Syncing the Local Repository Mirror section.
08/31/2023	Revision 23: Released for 6.6.4

Offline Install and Upgrade

This document describes the steps needed to install and upgrade FortiSIEM in a closed environment without internet access. In some cases, FortiSIEM communicates with a repository to download the latest updates. This can be eliminated by setting up a local repository.

- Fresh Installation
 - FIPS Disabled
 - FIPS Enabled
- 5.3.x or 5.4.0 to 6.1.x Migration
 - Enabling FIPS after Migration
- 6.6.2 Upgrade
 - Supervisor/Worker Upgrade
 - Collector Upgrade
- Configuring an Existing FSM Install to use Local Repository Mirror
- Local RockyLinux Repository Mirror Installation
 - Repository Mirror Deployment and Apache Staging
 - Configuring the Network Adapter
 - Installing the Yum-Utills Package
 - Preparing the Disk for the Local Repository Mirror
 - Configuring Apache to Publish the Local Repository Mirror
 - Verifying Remote Connectivity to the Local Repository Mirror
 - Syncing the Local Repository Mirror

Fresh Installation

There are two options for fresh installation, FIPS disabled, or FIPS enabled.

- [FIPS Disabled Installation](#)
- [FIPS Enabled Installation](#)

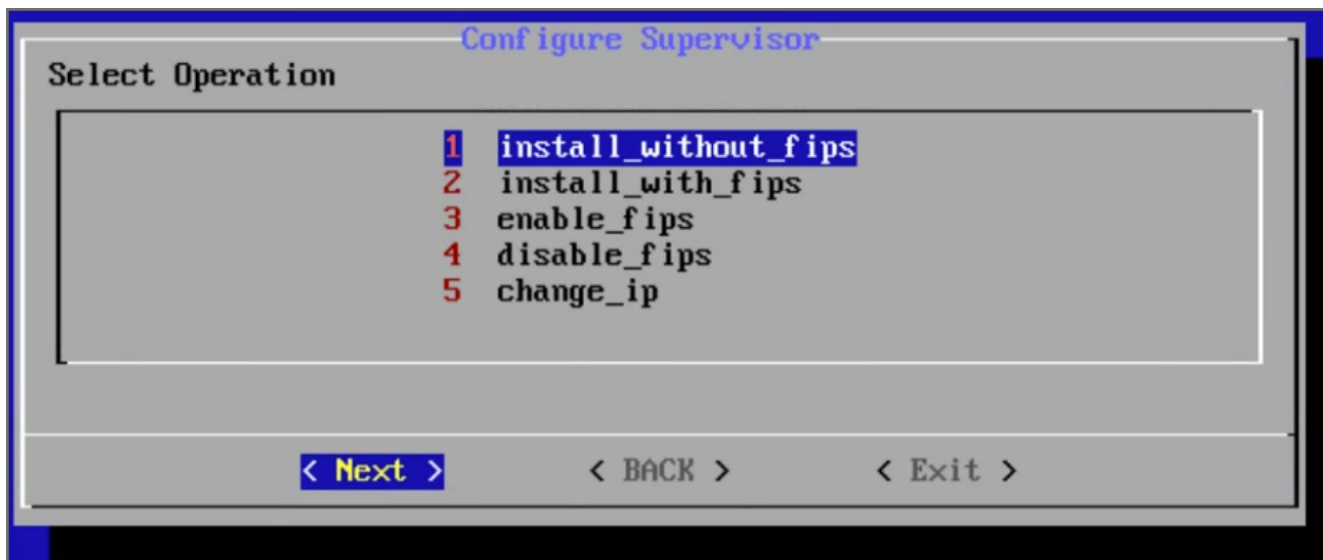
FIPS Disabled Installation

With FIPS disabled, a fresh installation does not require internet access and can be performed in a closed environment.

Run the following command:

```
# configFSM.sh
```

and select **1 install_without_fips**.



FIPS Enabled Installation

A FIPS enabled fresh installation requires internet access to Fortinet's RockyLinux repository. This can be re-routed to an offline repository by taking the following steps.

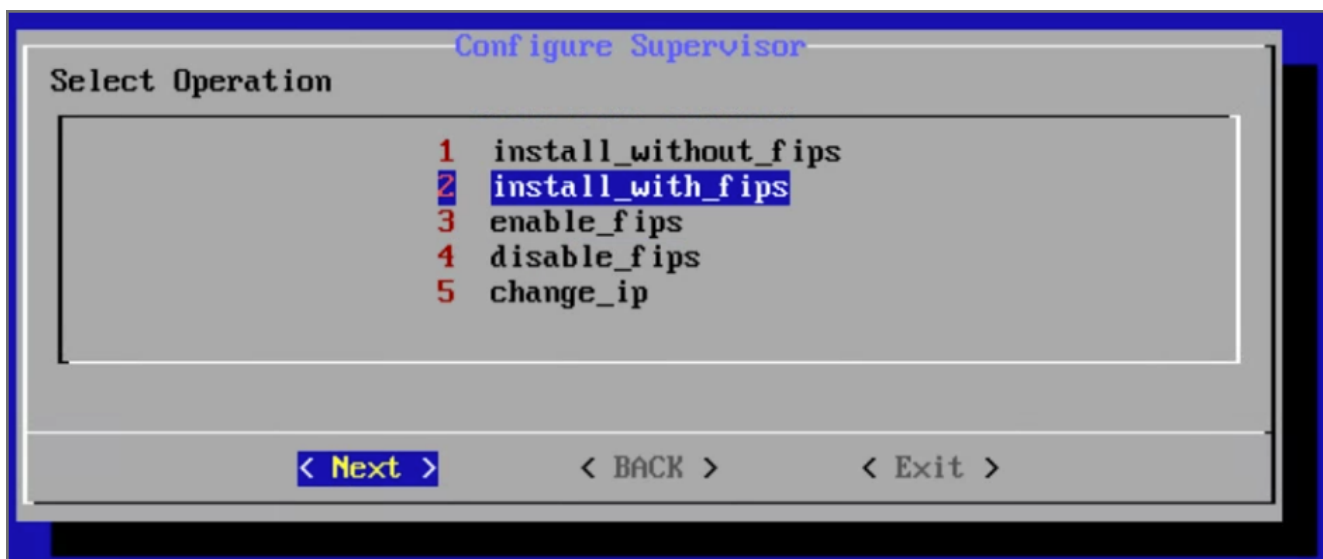
Note: For hardware appliance users, make sure to skip step 2.

1. Complete the [Local RockyLinux Repository Mirror Installation](#).
2. Deploy your FortiSIEM VA onto your hypervisor.
3. Log into the FortiSIEM local console through your hypervisor.
Default login:
User = root
Password = ProspectHills
4. Immediately change the root password.
5. Modify the Yum Repository Files to use the local repository by running the following commands.

```
# cd /etc/yum.repos.d
# sed -i 's/baseurl=https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com\\rockylinux8/baseurl=https:\\\\<REPOSITORY MIRROR
IP>\\repos\\rockylinux8/g' *.repo
# sed -i 's/https:\\\\os-pkgs-r8.fortisiem.fortinet.com.*//g' *.repo
# sed -i 's/enabled=1/enabled=1\\nsslverify=false/g' *.repo
# dnf clean all
```

6. Use the appropriate Installation Guide from [6.6 Installation Guides](#) to continue.
You will need to run the following command, and then select **2 install_with_fips**.

```
# configFSM.sh
```



5.3.x or 5.4.0 to 6.1.x Migration

FortiSIEM Migration does not require internet access and can be performed in a closed environment. However, if you want to enable FIPS after migrating to 6.1.x, then internet access is required. Follow the steps below to enable FIPS without requiring Internet access.

Enabling FIPS After Migration

Take the following steps to enable FIPS after migration.

1. Complete the [6.1.x Upgrade](#) and below [Local CentOS Repository Mirror Installation](#).

2. Log into FortiSIEM via SSH.

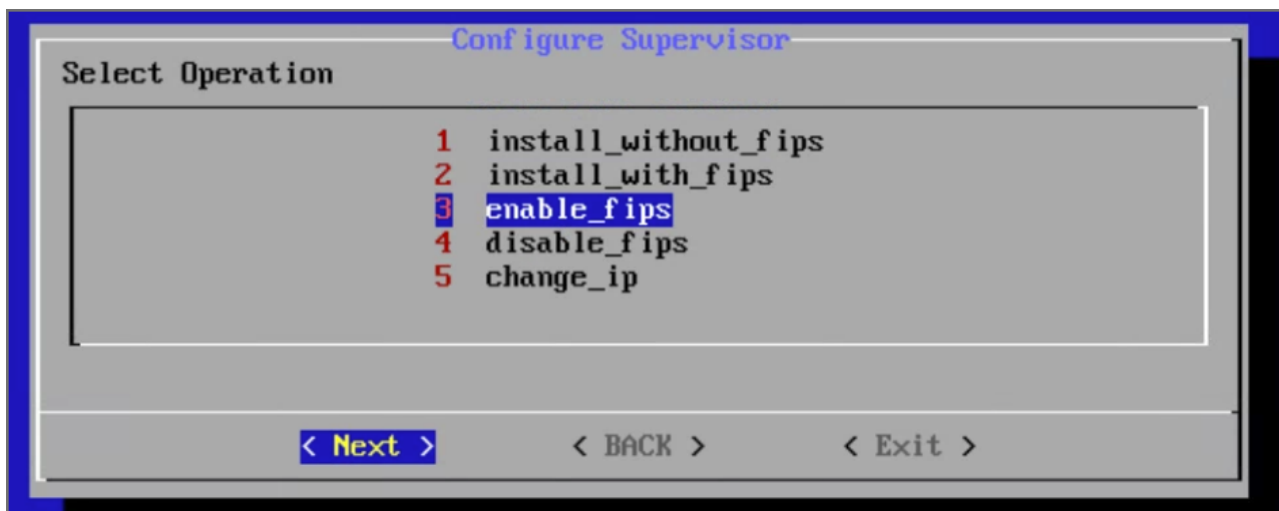
```
# ssh root@<FortISiEM Super/Worker/Collector>
```

3. Modify the Yum Repository Files to use the Local Repository by running the following commands.

```
# cd /etc/yum.repos.d
# sed -i 's/baseurl=https:\/\/\os-pkgs-cdn.fortisiem.fortinet.com\/centos8/baseurl=https:\/\/<REPOSITORY MIRROR IP>\/repos\/centos\/85/g' *.repo
# sed -i 's/https:\/\/\os-pkgs-c8.fortisiem.fortinet.com.*\/g' *.repo
# sed -i 's/enabled=1/enabled=1\nsslverify=false/g' *.repo
# dnf clean all
```

4. Run the following command and select **3 enable_fips**.

```
# configFSM.sh
```



6.6.2 Upgrade

The 6.6.2 upgrade is comprised of two parts, the supervisor/worker upgrade and collector upgrade.

Pre-requisite:

Upgrading with a FortiSIEM build earlier than 6.4.0 requires a CentOS 8.5 repository. This is required for migration, as Rocky Linux scripts will reach out to the CentOS repository to pick up any remaining packages to be updated to the latest, prior to transitioning to Rocky Linux.

- [Supervisor/Worker Upgrade](#)
- [Collector Upgrade](#)

Supervisor/Worker Upgrade

Take the following steps to prepare an offline upgrade from 6.3.3 or earlier 6.x to 6.6.2 for your supervisor and worker(s). If upgrading from FortiSIEM 6.4.0, start with step 1, otherwise continue with the following instructions.

Note: Upgrading with a FortiSIEM build 6.x build earlier than 6.4.0 requires a CentOS 8.5 repository. Please refer to the 6.3.3 Offline Upgrade Guide - [Local CentOS Repository Mirror Installation](#) for information on how to configure a CentOS 8.5 repository.

PDF of guide also available from the following page: <https://docs.fortinet.com/document/fortisiem/6.3.3/offline-upgrade-guide/131018/offline-install-and-upgrade>

If upgrading to 6.6.2 from a FortiSIEM build earlier than 6.4.0, please run the following commands in order to redirect the current `yum.repos.d` to an offline CentOS 8.5 repository before proceeding with step 1:



<REPOSITORY MIRROR IP> is a place holder and should be replaced by the address of your locally configured offline repository.

For example: 192.168.1.100

```
# cd /etc/yum.repos.d/

# sed -i 's/baseurl=https\:\/\/os-pkgs-cdn.fortisiem.fortinet.com\/centos85/baseurl=https\:\/\/<REPOSITORY MIRROR IP>\/repos\/centos\/85/g' *.repo

# sed -i 's/https\:\/\/os-pkgs-c8.fortisiem.fortinet.com.*\/g' *.repo

# sed -i 's/enabled=1/enabled=1\nsslverify=false/g' *.repo
```

1. Upload the `FSM_Upgrade_All_6.6.2_build1637.zip` onto the 6.x Supervisor/Worker under the `/tmp/` folder.
2. Log in and unzip the upgrade package by running the following commands.

```
# ssh root@<Super/Worker>
# mkdir -p /opt/upgrade/
```

```
# mv /tmp/FSM_Upgrade_All_6.6.2_build1637.zip /opt/upgrade/
# unzip FSM_Upgrade_All_6.6.2_build1637.zip
```

3. Update the migration script `migrate_centos_to_rocky.sh`:

```
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/files/

# sed -i 's/https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/clickhouse/https:\\\\<REPOSITORY MIRROR
IP>\\repos\\clickhouse/g' migrate_centos_to_rocky.sh

# sed -i 's/https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/rockylinux8/https:\\\\<REPOSITORY MIRROR
IP>\\repos\\rockylinux8/g' migrate_centos_to_rocky.sh

# sed -i 's/https:\\\\os-pkgs-
r8.fortisiem.fortinet.com/rockylinux8/https:\\\\<REPOSITORY MIRROR
IP>\\repos\\rockylinux8/g' migrate_centos_to_rocky.sh

# sed -i 's/curl \-o \\etc\\pki\\rpm\\-gpg\\RPM\\-GPG\\-KEY\\-PGDG /curl \-k \-o
\\etc\\pki\\rpm\\-gpg\\RPM\\-GPG\\-KEY\\-PGDG /g' migrate_centos_to_rocky.sh

# sed -i 's/curl \-o \\etc\\pki\\rpm\\-gpg\\RPM\\-GPG\\-KEY\\-rockyofficial /curl \-k \-o
\\etc\\pki\\rpm\\-gpg\\RPM\\-GPG\\-KEY\\-rockyofficial /g' migrate_centos_to_rocky.sh

# sed -i 's/curl \-o /curl \-k \-o /g' migrate_centos_to_rocky.sh
```

4. Edit the `migrate_centos_to_rocky.sh` script and go to line 697. You can use `vi`.

```
# vi migrate_centos_to_rocky.sh
```

5. Add the following on the line right above “# Distrosync”

```
sed -i 's/baseurl=https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/rockylinux8/baseurl=https:\\\\<REPOSITORY MIRROR
IP>\\repos\\rockylinux8/g' /etc/yum.repos.d/Rocky*.repo
sed -i 's/https:\\\\os-pkgs-r8.fortisiem.fortinet.com.*//g'
/etc/yum.repos.d/Rocky*.repo
sed -i 's/enabled=1/enabled=1\\nsslverify=false/g' /etc/yum.repos.d/Rocky*.repo
sed -i 's/baseurl=https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/clickhouse/baseurl=https:\\\\<REPOSITORY MIRROR
IP>\\repos\\clickhouse/g' /tmp/repos/clickhouse.repo
```

6. Modify the necessary repository files by running the following set of commands.

Update the Repos Files

```
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/files/repos/
# sed -i 's/baseurl=https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/clickhouse/baseurl=https:\\\\<REPOSITORY MIRROR
IP>\\repos\\clickhouse/g' clickhouse.repo
# sed -i 's/baseurl=https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/rockylinux8/baseurl=https:\\\\<REPOSITORY MIRROR
IP>\\repos\\rockylinux8/g' *.repo
# sed -i 's/https:\\\\os-pkgs-r8.fortisiem.fortinet.com.*//g' *.repo
# sed -i 's/https:\\\\os-pkgs-
cdn.fortisiem.fortinet.com/rockylinux8/https:\\\\<REPOSITORY MIRROR
```

```
IP>\repos\rockylinux8/g' Rocky-BaseOS.repo
# sed -i 's/enabled=1/enabled=1\nsslverify=false/g' *.repo
Update PSQL DB Repo
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/roles/upgrade-db-
server/files
# sed -i 's/baseurl=https\:\:\os-pkgs-
cdn.fortisiem.fortinet.com\rockylinux8/baseurl=https\:\:\<REPOSITORY MIRROR
IP>\repos\rockylinux8/g' *.repo
# sed -i 's/https\:\:\os-pkgs-r8.fortisiem.fortinet.com.*//g' *.repo
# sed -i 's/enabled=1/enabled=1\nsslverify=false/g' *.repo
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/roles/upgrade-db-
server/tasks/
# sed -i 's/https\:\:\os-pkgs-
cdn.fortisiem.fortinet.com\rockylinux8/https\:\:\<REPOSITORY MIRROR
IP>\repos\rockylinux8/g' main.yml
# sed -i 's/curl \-o /curl \-k \-o /g' main.yml
Update Files that Pick Up the GPG Key for PSQL
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/roles/upgrade/tasks/
# sed -i 's/https\:\:\os-pkgs-
cdn.fortisiem.fortinet.com\rockylinux8/https\:\:\<REPOSITORY MIRROR
IP>\repos\rockylinux8/g' main.yml
# sed -i 's/https\:\:\os-pkgs-
cdn.fortisiem.fortinet.com\clickhouse/https\:\:\<REPOSITORY MIRROR
IP>\repos\clickhouse/g' main.yml
# sed -i 's/curl \-o /curl \-k \-o /g' main.yml
Update Clickhouse and Zookeeper Package Files
# cd /opt/upgrade/FSM_Upgrade_All_6.6.2_build1637/install/group_vars/all
# sed -i 's/https\:\:\os-pkgs-cdn.fortisiem.fortinet.com\rockylinux8\-k\
https\:\:\<REPOSITORY MIRROR IP>\repos\rockylinux8/g' setup-zookeeper.yml.j2
# sed -i 's/https\:\:\os-pkgs-cdn.fortisiem.fortinet.com\clickhouse\-k\
https\:\:\<REPOSITORY MIRROR IP>\repos\clickhouse/g' setup-clickhouse.yml.j2
Perform Clean Up
# dnf clean all
Prepare yum.conf to Ignore SSL Verification
# echo sslverify=false >> /etc/yum.conf
```

7. Use the Upgrade Guide located in 6.6 [Reference Manuals](#) to continue with your upgrade for the supervisor and worker(s).

Collector Upgrade

For FortiSIEM version 6.6.2, the collector offline upgrade is unsupported at this time. If an offline upgrade is required for the collector, the recommended approach is to re-deploy a new collector on 6.6.2, and update the entry. Please

reference Known Issues in the 6.6.2 Release Notes from the [FortiSIEM Documentation Library](#) for any possible additional information.

Link for 6.6.2 Collector Deployment Guide: https://docs.fortinet.com/document/fortisiem/6.6.2/esx-installation-guide/131018/fresh-installation#Install_Collectors

Link for 6.6.2 Collector Registration: https://docs.fortinet.com/document/fortisiem/6.6.2/esx-installation-guide/131018/fresh-installation#Register_Collectors

Configuring Existing FSM on RockyLinux Install to use Local Repository Mirror

Sometimes you may want to run a "yum update" on an existing FortiSIEM installation to get the latest patches. Follow these steps to avoid internet access during this step.

Note: This configuration is needed to run Yum updates without needing to go to the internet.

1. Log into all FortiSIEM Supervisor/Worker(s)/Collector(s) that will pull from the new repository by running the following commands.

```
# ssh root@<Super/Worker/Collector IP>
# cd /etc/yum.repos.d
```

2. Modify necessary repository files by running the following commands.

```
# sed -i 's/baseurl=https:\/\/os-pkgs-cdn.fortisiem.fortinet.com\/rockylinux8/baseurl=https:\/\/<REPOSITORY MIRROR IP>\/repos\/rockylinux8/g' *.repo

# sed -i 's/baseurl=https:\/\/os-pkgs-cdn.fortisiem.fortinet.com\/clickhouse/baseurl=https:\/\/<REPOSITORY MIRROR IP>\/repos\/clickhouse/g' clickhouse.repo

# sed -i 's/https:\/\/os-pkgs-r8.fortisiem.fortinet.com.*\/g' *.repo

# sed -i 's/enabled=1/enabled=1\nsslverify=false/g' *.repo

# dnf clean all
```

3. Connect and update from the local repository mirror by running the following command.

```
# dnf update -y or # yum update -y

Rocky Linux 8 - AppStream
          90 MB/s | 9.5 MB      00:00
Rocky Linux 8 - BaseOS
          103 MB/s | 8.6 MB     00:00
Rocky Linux 8 - Extras
          289 kB/s | 12 kB       00:00
Rocky Linux 8 - PowerTools
          42 MB/s | 2.3 MB      00:00
ELRepo.org Community Enterprise Linux Repository - el8
          8.9 MB/s | 293 kB     00:00
Extra Packages for Enterprise Linux 8 - x86_64
          17 MB/s | 955 kB      00:00
Extra Packages for Enterprise Linux 8 - x86_64
          97 MB/s | 11 MB       00:00
PostgreSQL common RPMs for RHEL/CentOS 8 - x86_64
```

```
17 MB/s | 545 kB    00:00  
PostgreSQL 13 for RHEL/CentOS 8 - x86_64
```

```
12 MB/s | 440 kB    00:00  
Dependencies resolved.  
Nothing to do.  
Complete!
```

Local RockyLinux 8 Repository Mirror Installation

Follow these steps to setup a local RockyLinux repository mirror in your internal network. FortiSIEM will only communicate with this local RockyLinux repository mirror whenever needed, thereby avoiding internet access.

You will be going through these general steps:

1. Deploying the base VM to state and setup access to the repository
2. Replicating the remote repository into your new internal mirror
3. Testing the internal mirror for accessibility
4. A walk through for all the FSM nodes in order to reach the internal mirror

Instructions are broken down into the following sections.

- [Repository Mirror Deployment and Apache Staging](#)
- [Configuring the Network Adapter](#)
- [Installing the Yum-Utils Package](#)
- [Preparing the Disk for the Local Repository Mirror](#)
- [Configuring Apache to Publish the Local Repository Mirror](#)
- [Verifying Remote Connectivity to the Local Repository Mirror](#)
- [Syncing the Local Repository Mirror](#)

Repository Mirror Deployment and Apache Staging

This server is required to have internet access and be able to resolve `[os-pkgs-cdn.fortisiem.fortinet.com]` or `[os-pkgs-r8.fortisiem.fortinet.com]` in order to prepare the repository mirror. Once the Repository Mirror is completed, the internet connection can then be cut off from this repository mirror until the next time the mirror needs to be updated.

When the above conditions are met, take the following steps:

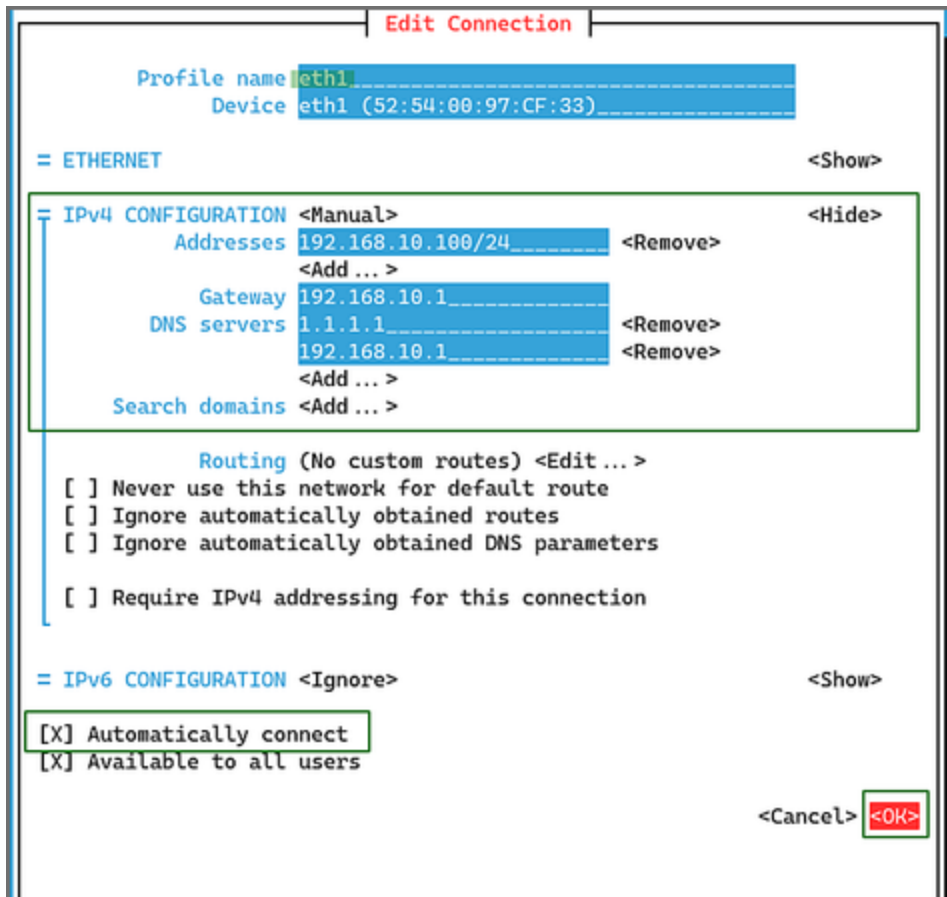
1. Download the 6.6.2.1637 FortiSIEM image and create a VM on your preferred hypervisor.
2. Add an 100GB disk to the FortiSIEM image that was deployed by taking the following steps:
Note: Instructions to add a disk is based off of vSphere 6.7. Your hypervisor may differ in instructions, but the concept is the same.
 - a. Right click the **FortiSIEM VM > Editing Settings**.
 - b. In the pop-up, click "Add New Device".
 - c. Find "Hard Disk" and select it.
 - d. Configure it for 100GB.
 - e. Click "OK" to save the configuration.
 - f. Boot the FortiSIEM image.

Configuring the Network Adapter

To complete the configuration, take the following steps:

1. Log into the FortiSIEM console through your hypervisor.
Default login:
User = root
Password = ProspectHills
2. Immediately change the root password.
3. Enter the IP address configuration utility by running the following command:
`# nmtui-edit eth0`
4. Go to **IPv4 CONFIGURATION**, toggle **Automatic**, and select **Manual** from the menu.
5. Toggle **Show** to expand the configuration.
6. In the **Addresses** field, add an IP address/netmask (CIDR).
Example: 192.168.1.1/24
Note: Use the tool at this URL to convert netmask to CIDR.
<https://www.xarg.org/tools/subnet-calculator/>
7. In the **Gateway** field, enter the Gateway IP address.
Example: 192.168.1.254
8. In the **DNS Servers** field, toggle Add, and select IP of DNS.
Example: 1.1.1.1
9. In the **DNS Servers** field, Toggle Add, and add the IP of the second DNS.
Example: 1.0.0.1
10. Toggle the **Automatically connect setting** to enable.
11. Toggle the **Available to all users setting** to enable.

12. Toggle to **OK**.



13. Restart the network adapter.
- ```
ifdown eth0
ifup eth0
```
14. Check if the IP address is assigned to the network adapter.
- ```
# ifconfig eth0
```
- The IP address will be assigned to eth0.
15. Ping an external address to verify network connectivity.
- ```
ping <ip address>
or
ping google.com
```

## Installing the Yum-Utils Package

Take the following steps to install the yum-utils package.

1. Clean the current repository from the VM.
 

```
dnf clean all
```
2. Install the yum-utils package.
 

```
dnf install yum-utils -y
```

## Preparing the Disk for the Local Repository Mirror

Take the following steps to prepare your disk for the local repository mirror.

1. Look for the 100GB disk created when the ova was deployed.

```
lsblk

NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
sda 8:0 0 25G 0 disk
├─sda1 8:1 0 1G 0 part /boot
└─sda2 8:2 0 24G 0 part
├─cl-swap 253:0 0 2.5G 0 lvm [SWAP]
└─cl-root 253:1 0 21.5G 0 lvm /
sdb 8:16 0 100G 0 disk << New disk
```

2. Format the disk using xfs file system.

```
mkfs.xfs /dev/sdb
```

3. Create a new mount point for the new disk.

```
mkdir /repos
```

4. Mount the disk.

```
mount -t xfs /dev/sdb /repos
```

```
chmod 755 /repos
```

5. Edit /etc/fstab and add the mount entry permanently.

```
vi /etc/fstab
```

```
/dev/sdb /repos xfs defaults 0 0
```

6. Test /etc/fstab to verify configuration.

```
mount -a
```

## Configuring Apache to Publish the Local Repository Mirror

Take the following steps to configure Apache to publish the local repository mirror.

1. Create the link to the repository path.

```
cd /var/www/html/
```

```
ln -sf /repos repos
```

```
ls -l /var/www/html/
```

```
result: lrwxrwxrwx. 1 root root 6 Mar 26 16:18 repos -> /repos
```

2. Restart Apache.

```
systemctl restart httpd
```

## Verifying Remote Connectivity to the Local Repository Mirror

Take the following step to verify remote connectivity with the repository mirror.

1. From the local network workstation's browser, go to: `https://<Repository Mirror IP Address>/`

## Syncing the Local Repository Mirror

Take the following steps to sync the local repository mirror.

1. Sync the FSM Mirror to the repository mirror.

```
mkdir -p /repos/rockylinux8/gpg-keys
cd /repos/rockylinux8/gpg-keys
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
EPEL-8
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
PGDG
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
elrepo.org
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
rockyofficial
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
rockytesting
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/CLICKHOUSE-
KEY.GPG
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/gpg-keys/RPM-GPG-KEY-
FortISIEM-rocky
cd /repos/rockylinux8
```

**Note:** Reposync will take a longer period of time as it's replicating the entire mirror.

```
reposync --newest-only --download-meta --downloadcomps
reposync --repoid=epel-testing
reposync --repoid=plus
```

**Note:** Zookeeper has a single file and will not utilize reposync.

```
mkdir -p /repos/rockylinux8/zookeeper
cd /repos/rockylinux8/zookeeper
```

```
wget https://os-pkgs-cdn.fortisiem.fortinet.com/rockylinux8/zookeeper/apache-zookeeper-3.7.0-bin.tar.gz
```

**Note: Create ClickHouse Stable Repo (Using vi)**

```
vi /etc/yum.repos.d/clickhouse-stable.repo
[clickhouse-stable]
name=clickhouse-stable
baseurl=https://os-pkgs-cdn.fortisiem.fortinet.com/clickhouse/clickhouse-stable
gpgcheck=1
enabled=1
retries=2
timeout=10
gpgkey=file:///etc/pki/rpm-gpg/repomd.xml.key
```

Save the configuration .

**Note: Create ClickHouse Repo (Using vi)**

```
vi /etc/yum.repos.d/clickhouse.repo
[clickhouse]
name=clickhouse
baseurl=https://os-pkgs-cdn.fortisiem.fortinet.com/clickhouse/clickhouse
gpgcheck=1
enabled=1
retries=2
timeout=10
gpgkey=file:///etc/pki/rpm-gpg/CLICKHOUSE-KEY.GPG
```

Save the configuration.

**Note: Create ClickHouse LTS Repo (Using vi)**

```
vi /etc/yum.repos.d/clickhouse-lts.repo
[clickhouse-lts]
name=clickhouse-lts
baseurl=https://os-pkgs-cdn.fortisiem.fortinet.com/clickhouse/clickhouse-lts
gpgcheck=1
enabled=1
retries=2
timeout=10
gpgkey=file:///etc/pki/rpm-gpg/repomd.xml.key
```

Save the configuration.

**Note: ClickHouse stable support is required for 6.6.2**

```
mkdir -p /repos/clickhouse/gpg-keys/
cd /repos/clickhouse/gpg-keys/
wget https://os-pkgs-cdn.fortisiem.fortinet.com/clickhouse/gpg-keys/repomd.xml.key
cp -a repomd.xml.key /etc/pki/rpm-gpg/
```

### Note: Pulling ClickHouse from the cloud repository

```
cd /repos/clickhouse/
reposync --repoid=clickhouse-stable --download-metadata
reposync --repoid=clickhouse-lts --download-metadata
reposync --repoid=clickhouse --download-metadata
cd /repos/clickhouse/clickhouse-stable/repodata/
wget https://os-pkgs-cdn.fortisiem.fortinet.com/clickhouse/clickhouse-
stable/repodata/repomd.xml.asc
```

### 2. Verify repository mirror's folder paths.

```
ls -la /repos/rockylinux8/
total 48
drwxrwxr-x. 18 root root 269 Jun 16 15:17 .
drwxrwxr-x. 4 root root 43 Jun 21 01:19 ..
drwxr-xr-x. 4 root root 55 Jun 16 15:17 appstream
drwxr-xr-x. 4 root root 55 Jun 16 15:17 baseos
drwxr-xr-x. 3 root root 4096 Jun 16 15:17 clickhouse
drwxr-xr-x. 4 root root 34 Jun 16 15:17 elrepo
drwxr-xr-x. 3 root root 18 Apr 19 20:20 elrepo-testing
drwxr-xr-x. 4 root root 55 Jun 16 15:17 epel
drwxr-xr-x. 4 root root 38 Jun 16 15:17 epel-modular
drwxr-xr-x. 3 root root 22 Apr 27 18:43 epel-testing
drwxr-xr-x. 4 root root 38 Jun 16 15:17 extras
drwxrwxr-x. 2 root root 212 Jun 16 15:16 gpg-keys
drwxr-xr-x. 3 root root 12288 Jun 16 15:17 pgdg13
drwxr-xr-x. 3 root root 20480 Jun 16 15:17 pgdg-common
drwxr-xr-x. 3 root root 22 Apr 19 20:20 plus
drwxr-xr-x. 4 root root 55 Jun 16 15:17 powertools
drwxr-xr-x. 2 root root 4096 Feb 10 18:32 repodata
drwxr-xr-x. 2 root root 47 Apr 27 15:17 zookeeper
```

```
ls -la /repos/clickhouse/
total 16
drwxr-xr-x. 6 root root 87 Dec 14 19:26 .
drwxrwxr-x. 4 root root 43 Dec 14 18:31 ..
drwxr-xr-x. 3 root root 4096 Dec 14 19:19 clickhouse
drwxr-xr-x. 3 root root 270 Dec 14 19:27 clickhouse-lts
drwxr-xr-x. 3 root root 8192 Sep 13 13:31 clickhouse-stable
drwxr-xr-x. 2 root root 28 Jun 22 15:56 gpg-keys
```

### 3. Modify Permissions and Restart Apache on the repository mirror.

```
chmod -R 755 /repos
systemctl restart httpd
```

### 4. Check repository mirror.

Locally, run the following command:

```
curl -k https://localhost/repos/rockylinux8/
```

Remotely:

Open a browser, and go to: <https://<Repository Mirror IP>/repos/rockylinux8/>



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