External Data Feeder for NFO

Installation and Administration Guide

Version 2.6.0 (Build 2.6.0.1.1)

August 2019
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Installation Guide

Intended Audience

This information is intended for anyone who wants to install, configure, or maintain External Data Feeder for NFO (EDFN). The information is written for experienced Linux or Windows system administrators who are familiar with virtual machine technology and datacenter operations.

Before You Install

Depending on your requirements NetFlow Optimizer and External Data Feeder for NFO can be installed on the same server or separately. If you are going to use NFO NetFlow enhancement functionality, such as GeoIP resolution, Cyber Security Threat Lists – External Data Feeder for NFO must be installed on the server with Internet access, so it can access and provide NFO with information generally unavailable in the data streams supplied by NetFlow/IPFIX exporters. External Data Feeder for NFO is administered through NetFlow Optimizer GUI.

Pre-Installation Checklist

Please be sure to have the following before you begin the installation of the External Data Feeder for NFO software:

- You have to login as root for Linux and administrator for Windows installations and updates
- You have successfully installed NetFlow Optimizer and you know its IP address

Minimum Requirements

NetFlow Logic distributes External Data Feeder for NFO as RPM or TAR.GZ for Linux, or as EXE for Windows.

Supported Platforms

You can install External Data Feeder for NFO on a platform with the following specifications.

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td>Linux kernel 2.6+ on</td>
</tr>
<tr>
<td></td>
<td>OSes which do not support systemd:</td>
</tr>
<tr>
<td></td>
<td>- CentOS 5.5-5.9, 6.x</td>
</tr>
<tr>
<td></td>
<td>- RHEL 5.5-5.9, 6.x</td>
</tr>
<tr>
<td></td>
<td>- Debian 6.0.x</td>
</tr>
<tr>
<td></td>
<td>- Debian 7.x (not certified)</td>
</tr>
<tr>
<td></td>
<td>- Ubuntu Server 12.04, 14.04</td>
</tr>
<tr>
<td></td>
<td>- Open SUSE 11.x</td>
</tr>
<tr>
<td></td>
<td>- SLES 11.x</td>
</tr>
<tr>
<td></td>
<td>- Oracle Linux Server 6.x</td>
</tr>
<tr>
<td></td>
<td>OSes which support systemd:</td>
</tr>
<tr>
<td></td>
<td>- CentOS 7.x</td>
</tr>
<tr>
<td></td>
<td>- RHEL 7.x</td>
</tr>
<tr>
<td></td>
<td>- Debian 8.x</td>
</tr>
<tr>
<td></td>
<td>- Ubuntu Server 16.04</td>
</tr>
<tr>
<td></td>
<td>- Open SUSE Leap 42.x</td>
</tr>
<tr>
<td></td>
<td>- SLES 12.x</td>
</tr>
<tr>
<td></td>
<td>- Oracle Linux Server 7.x</td>
</tr>
<tr>
<td></td>
<td>- Others (not certified)</td>
</tr>
<tr>
<td>CPU, Memory, Disk Space</td>
<td>- CPU: Min 4 CPU cores</td>
</tr>
<tr>
<td></td>
<td>- Memory: 2 GB</td>
</tr>
<tr>
<td></td>
<td>- Disk Space: 2 GB</td>
</tr>
</tbody>
</table>
Required Network Ports

The following network ports must be allowed for outbound connections.

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>80/TCP</td>
<td>External Data Feeder for NFO Agents Internet communication</td>
</tr>
<tr>
<td>443/TCP</td>
<td>External Data Feeder for NFO Agents secure Internet communication</td>
</tr>
<tr>
<td>8443/TCP</td>
<td>NetFlow Optimizer communication</td>
</tr>
</tbody>
</table>

Required Internet Destinations

The following Internet destinations must be allowed for outbound http-connections.

<table>
<thead>
<tr>
<th>URL</th>
<th>Agent</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://rules.emergingthreats.net/">http://rules.emergingthreats.net/</a></td>
<td>C&amp;C list</td>
</tr>
<tr>
<td><a href="http://geolite.maxmind.com/">http://geolite.maxmind.com/</a></td>
<td>Geo locations monitor</td>
</tr>
<tr>
<td><a href="http://reputation.alienvault.com/">http://reputation.alienvault.com/</a></td>
<td>Host reputation monitor</td>
</tr>
<tr>
<td><a href="https://secure.dshield.org/">https://secure.dshield.org/</a></td>
<td>Threat Feeds addresses</td>
</tr>
<tr>
<td><a href="https://feeds.dshield.org/">https://feeds.dshield.org/</a></td>
<td>Threat Feeds IP blocks</td>
</tr>
<tr>
<td>https://&lt;custom.threat.list&gt;</td>
<td>Additional Security Threats list</td>
</tr>
</tbody>
</table>

Installing External Data Feeder for NFO

If you installed several instances of NFO, you need to install External Data Feeder for NFO for each NetFlow Optimizer instance.

Linux RPM Installation

Download the External Data Feeder for NFO RPM package.

Procedure

To begin the RPM installation of External Data Feeder for NFO in the default directory `/opt/nfi-updater` perform the following:

Open a shell prompt and enter the following command to begin the installation

```
rpm -ihv <RPM-package>
```

To begin the RPM installation of External Data Feeder for NFO in another directory, perform the following:
Open a shell prompt and enter the following command to begin the installation

```
rpm -ihv --relocate /opt=<new-path> <RPM-package>
```

⚠️ If External Data Feeder for NFO is installed on a separate server, perform the following:

1. Change `uri` parameter in `updater.properties` file located in `/opt/nfi-updater/conf` to IP address of NetFlow Optimizer:
   
   ```
   uri = https://<nfo-host>:8443
   ```

2. Change NFO tomcat configuration:
   
   a. Stop NFO tomcat service
   
   b. Edit `/opt/flowintegrator/tomcat/conf/web.xml` file
   
   c. Change `cors.allowed.origins` parameter value from `http://localhost:8443` to `http://<nfo-host>:8443`. Where `<nfo-host>` is exactly the same string as in the `updater.properties`. Use `http`, not `https` in the `web.xml` property, it is not a typo - secure communication will be used.
   
   d. Start NFO tomcat service.
   
   e. Restart EDFN service (see Working with External Data Feeder for NFO Service on page 14)

**What to do next**

A message will display indicating that the External Data Feeder for NFO installation has been successfully completed.

- Verify that NetFlow Optimizer and External Data Feeder for NFO are connected by going to NetFlow Optimizer > Advanced > External Data Feeders for NFO

- Change default External Data Feeders for NFO user’s password. Login into NetFlow Optimizer using `updater/changeme` credentials and change the password. See Authentication Configuration section on page 10 for more information.

- If you require Proxy Server authentication before External Data Feeder for NFO can access external URLs, see Proxy Server Configuration section on page 13 for further instructions.

**Linux TAR Installation**

Download the External Data Feeder for NFO TAR package.

**Procedure**

To begin the TAR installation of External Data Feeder for NFO in the default directory `/opt/nfi-updater` perform the following:

1. Open a shell prompt and enter the following command to un-compress the installer

   ```
tar zxvf <TAR-package> -C /opt/nfi-updater
   ```
2. Go to the /opt/nfi-updater directory and enter the following command to begin the installation

   setup.sh -i

To begin the TAR installation of External Data Feeder for NFO in another directory, perform the following:

1. Open a shell prompt and enter the following command to un-compress the installer

   tar zxvf <TAR-package> -C <directory>

2. Go to the directory and enter the following command to begin the installation

   setup.sh -i

If External Data Feeder for NFO is installed on a separate server, perform the following:

3. Change uri parameter in updater.properties file located in /opt/nfi-updater/conf to IP address of NetFlow Optimizer:

   uri = https://<nfo-host>:8443

4. Change NFO tomcat configuration:

   a. Stop NFO tomcat service
   b. Edit /opt/flowintegrator/tomcat/conf/web.xml file
   c. Change cors.allowed.origins parameter value from http://localhost:8443 to http://<nfo-host>:8443. Where <nfo-host> is exactly the same string as in the updater.properties. Use http, not https in the web.xml property, it is not a typo - secure communication will be used.
   d. Start NFO tomcat service.
   e. Restart EDFN service (see Working with External Data Feeder for NFO Service on page 14)

What to do next
A message will display indicating that the External Data Feeder for NFO installation has been successfully completed.

- Verify that NetFlow Optimizer and External Data Feeder for NFO are connected by going to NetFlow Optimizer > Advanced > External Data Feeders for NFO
- Change default External Data Feeders for NFO user’s password. Login into NetFlow Optimizer using updater/changeme credentials and change the password. See Authentication Configuration section on page 10 for more information.
- If you require Proxy Server authentication before External Data Feeder for NFO can access external URLs, see Proxy Server Configuration section on page 13 for further instructions.

Windows Installation
Download the External Data Feeder for NFO Windows installation package.

Procedure
To begin the Windows installation of External Data Feeder for NFO perform the following:
1. Open the installation file and click ‘Run’ to launch the installer and Click ‘Next’ To begin the ‘External Data Feeder for NFO Setup’

2. Click ‘Next’ to install External Data Feeder for NFO in the default location:
   C:\Program Files\NetFlow Logic\NFI Updater

3. Click on ‘Install’ To begin the installation (follow the installation steps)

4. Click on ‘Finish’ to complete the installation and exit the installer

If External Data Feeder for NFO is installed on a separate server, perform the following:

5. Change uri parameter in updater.properties file located in C:\Program Files\NetFlow Logic\NFI Updater\conf to IP address of NetFlow Optimizer:
   uri = https://<nfo-host>:8443

6. Change NFO tomcat configuration:
   a. Stop NFO tomcat service
   b. Edit %NFO_HOME%\tomcat\conf\web.xml file
   c. Change cors.allowed.origins parameter value from http://localhost:8443 to http://<nfo-host>:8443. Where <nfo-host> is exactly the same string as in the updater.properties. Use http, not https in the web.xml property, it is not a typo - secure communication will be used.
   d. Start NFO tomcat service.
   e. Restart EDFN service.

7. Use Windows Services to check External Data Feeder for NFO status

What to do next

- Verify that NetFlow Optimizer and External Data Feeder for NFO are connected by going to NetFlow Optimizer > Advanced > External Data Feeders for NFO

- Change default External Data Feeders for NFO user's password. Login into NetFlow Optimizer using updater/changeme credentials and change the password. See Authentication Configuration section on page 10 for more information.

- If you require Proxy Server authentication before External Data Feeder for NFO can access external URLs, see Proxy Server Configuration section on page 13 for further instructions.
Upgrading External Data Feeder for NFO

You upgrade a single instance of External Data Feeder for NFO by installing the latest version over your existing installation. During the upgrade the installer package preserves all External Data Feeder for NFO configurations, except configuration files changed manually. These files, if changed, are backed up into conf-backup.<date>.tar.gz file (<date> is archive date), and should be restored manually, if necessary.

The following is a list of some configuration files.

<table>
<thead>
<tr>
<th>File</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>$updater_home/conf/updater.properties</td>
<td>NetFlow Integrator URI and other parameters</td>
</tr>
<tr>
<td>$updater_home/conf/.updater_keystore</td>
<td>Default self-signed certificate for X509 authentication</td>
</tr>
<tr>
<td>$updater_home/conf/.updater_truststore</td>
<td>Default self-signed NFO tomcat certificate</td>
</tr>
<tr>
<td>$updater_home/java/jre8/jre/lib/security/cacerts</td>
<td>Trusted certificates imported into Java Runtime cacerts keystore</td>
</tr>
</tbody>
</table>

After upgrade, validate default configuration and restore from the backup if it is required. If you didn’t modify these files, ignore the caution.

When upgrading External Data Feeder for NFO on RHEL 7, the messages like these might be displayed:

Cleaning up / removing...
2:nfi-updater-2.4.0.3.34-linux warning: file /opt/nfi-updater/lib/wasync-1.4.0.jar: remove failed: No such file or directory
warning: file /opt/nfi-updater/lib/netty-3.9.2.Final.jar: remove failed: No such file or directory
warning: file /opt/nfi-updater/lib/async-http-client-1.8.11.jar: remove failed: No such file or directory

This is a normal situation and these messages should be ignored.

Upgrading the External Data Feeder for NFO RPM Installation

Procedure

To begin the upgrade of External Data Feeder for NFO perform the following:

1. Login directly or SSH and copy the new installation file into the /opt installation directory
2. Backup configuration files from /opt/nfi_updater/conf folder before installation
3. RPM the NetFlow Optimizer for Linux installation file into the /opt installation directory
   
   rpm -Uhv <RPM-package>
4. Restore configuration files from step 2 and restart External Data Feeder for NFO service (see Working with External Data Feeder for NFO Service on page 14)
What to do next
A message will display indicating that the External Data Feeder for NFO installation has been successfully completed.

- Verify the version (Release number) of External Data Feeder for NFO by going to NetFlow Optimizer > Advanced > External Data Feeders for NFO

Upgrading the External Data Feeder for NFO TAR Installation

Procedure
To begin the upgrade of External Data Feeder for NFO perform the following:

1. Login directly or SSH and copy the new installation file into the /opt installation directory
2. Backup configuration files from /opt/nfi_updater/conf folder before installation
3. Enter the following command to begin the uninstall
   setup.sh -u
4. Copy the upgrade installation package for Linux into the existing installation directory
5. Open a shell prompt and enter the following command to un-compress the installer
   tar zxvf <TAR-package> -C <directory>
6. Restore configuration file from step 2
7. Enter the following command and begin the setup
   setup.sh -i

What to do next
A message will display indicating that the External Data Feeder for NFO installation has been successfully completed.

- Verify the version (Release number) of External Data Feeder for NFO by going to NetFlow Optimizer > Advanced > External Data Feeders for NFO

Upgrading the External Data Feeder for NFO Windows Installation

Procedure
To begin the upgrade of External Data Feeder for NFO perform the following:

1. Backup configuration files from C:\Program Files\NetFlow Logic\NFI Updater\conf folder before installation
2. Open the upgrade installation file and click ‘Run’ to launch the installer and Click ‘Next’ To begin the ‘External Data Feeder for NFO Setup’
3. Click 'Next' to install External Data Feeder for NFO in the default location:
   C:\Program Files\NetFlow Logic\NFI Updater

4. Click on 'Install' To begin the upgrade (follow the installation steps)

5. Click on 'Finish' to complete the installation and exit the installer

6. Restore configuration files from step 1 and restart External Data Feeder for NFO Windows Service.

## Removing External Data Feeder for NFO

### Removing the External Data Feeder for NFO RPM Installation

**Procedure**

To remove External Data Feeder for NFO perform the following:

1. Open a shell prompt and enter the following command to begin the uninstall
   ```bash
   rpm -e nfi-updater
   ```

2. Remove the install path if the full uninstall needed
   ```bash
   rm -rf <directory>
   ```

### Removing the External Data Feeder for NFO TAR Installation

**Procedure**

To remove External Data Feeder for NFO perform the following:

1. Go to the existing installation directory and enter the following command to begin the uninstall
   ```bash
   setup.sh -u
   ```

2. Leave the installation directory
   ```bash
   cd ..
   ```

3. Remove the install path if the full uninstall needed
   ```bash
   rm -rf <directory>
   ```

### Removing the External Data Feeder for NFO Windows Installation

**Procedure**

To remove External Data Feeder for NFO perform the following:

1. Go to Control Panel > Programs > Programs and Features and select the External Data Feeder for NFO program.

2. Follow the steps to uninstall the program.
Configuring External Data Feeder for NFO

If you install several instances of External Data Feeder for NFO you can configure the first instance, and then copy configuration from the first instance to another one. Please see Copying External Data Feeder for NFO Configuration section on page 13 for details.

Verifying External Data Feeder for NFO Status

Verifying External Data Feeder for NFO Linux Installation Procedure

To verify if External Data Feeder for NFO is running perform the following:

1. Check the status (see Working with External Data Feeder for NFO Service on page 14)
2. For the list of available commands see Working with External Data Feeder for NFO Service on page 14

Verifying External Data Feeder for NFO Windows Installation Procedure

Use Windows Services to check External Data Feeder for NFO status

![Services Window](image)

Authentication Configuration

External Data Feeder for NFO is authenticated to NetFlow Optimizer as updater user. This user has only access to a data set maintenance and the ability to change password. This user can login using X509 certificate or using user/password authentication method. Default password for this user is `changeme`. Please change it after the installation.

By default External Data Feeder for NFO logsins into NetFlow Optimizer using X509 certificate. We highly recommend changing default self-signed certificate to a new one or switching to a user/password authentication method. In any case default password changing is required.
**X509 authentication**

**Procedure**

Create a Certificate Signing Request (CSR) with keytool and generate a Signed Certificate for the CSR:

1. **Delete previous certificate:**
   
   ```bash
   $UPD_HOME/java/jre8/bin/keytool -delete -alias updater -storepass password $UPD_HOME/conf/.updater_keystore
   $NFO_HOME/java/jre8/bin/keytool -delete -alias updater -storepass password $NFO_HOME/tomcat/conf/.trust_keystore
   ```

2. **Generate the key pair:**
   
   ```bash
   $UPD_HOME/java/jre8/bin/keytool keytool -genkey -alias updater -dname "CN=updater, OU=, O=, L=, ST=, C=" -validity 365 -keyalg RSA -keysize 1024 -storepass password -keypass password -keystore $UPD_HOME/conf/.updater_keystore
   ```

3. **Generate the Certificate Signing Request:**
   
   ```bash
   $UPD_HOME/java/jre8/bin/keytool -certreq -alias updater -keyalg rsa -storepass password -keystore $UPD_HOME/conf/.updater_keystore -file updater.csr
   ```

4. **Generate a signed certificate for the associated Certificate Signing Request.**

5. **Import the CA certificate into the NetFlow Optimizer keystore:**
   
   ```bash
   $NFO_HOME/java/jre8/bin/keytool -import -alias root -file CA.crt -keystore -storepass password $NFO_HOME/tomcat/conf/.trust_keystore
   ```

6. **Import the signed certificate for the associated updater alias in the keystore:**
   
   ```bash
   $NFO_HOME/java/jre8/bin/keytool -import -alias updater -file updater.crt -keystore -storepass password $NFO_HOME/tomcat/conf/.trust_keystore
   ```

**Self-Signed certificate can be exported instead of steps 3-5:**

```bash
$UPD_HOME/java/jre8/bin/keytool -export -alias updater -storepass password -keystore $UPD_HOME/conf/.updater_keystore -file updater.crt
```

**Notes:**

1. Certificate **CN** field value must be **updater**.

2. If keystore type, keystore password, key password or key algorithm were changed, these changes have to be added to the `$UPD_HOME/conf/updater.properties` file:

   ```properties
   keystoreFile = ../.conf/.updater_keystore
   keystoreType = jks
   keystorePass = password
   keyPass = password
   keyAlgorithm = SunX509
   ```
User/password authentication

Procedure
Username/password authentication can be enabled by commenting certificate-related properties and adding following lines into `updater.properties`:

```plaintext
user = updater
password = changeme
# keystoreFile = ../conf/.updater_keystore
# keystoreType = jks
# keystorePass = password
# keyPass      = password
# keyAlgorithm = SunX509
```

User password can be changed in the NetFlow Optimizer: login as updater user, go to “admin” section, and enter old password (`changeme`) and a new password.

Import the Certificate into External Data Feeder for NFO truststore

NFO and External Data Feeder for NFO use secure connection (https) for communication. Tomcat certificate and root chain are imported automatically into `$UPD_HOME/conf/.updater_truststore` during first connection. If tomcat certificate is changed, it should be reimported into `.updater_truststore` file manually or `.updater_truststore` can be removed (it will be recreated after External Data Feeder for NFO service restart).

Procedure
To reimport the certificate perform the following:

1. Enter the following commands to delete previous certificate(s):
   a. Get list of current trusted certificates:
      ```shell
      $UPD_HOME/java/jre8/jre/bin/keytool -list -keystore
      $UPD_HOME/conf/.updater_truststore
      ```
   b. Delete all certificates from the previous step:
      ```shell
      $UPD_HOME/java/jre8/jre/bin/keytool -delete -alias <crtAlias> -keystore
      $UPD_HOME/conf/.updater_truststore
      ```

2. Enter the following command to import the chain certificate into the External Data Feeder for NFO truststore:
   ```shell
   # $UPD_HOME/java/jre8/jre/bin/keytool -import -alias root -keystore
   $UPD_HOME/conf/.updater_truststore -trustcacerts -file rootCA.crt
   ```

3. Enter the following command to import tomcat certificate into the External Data Feeder for NFO truststore:
   ```shell
   # $UPD_HOME/java/jre8/jre/bin/keytool -import -alias tomcat -keystore
   $UPD_HOME/conf/.updater_truststore -file srv.crt
   ```

4. After these actions External Data Feeder for NFO service should be restarted.

What to do next
If certificate is imported automatically (.updater_truststore created automatically), certificate fingerprint (md5) can be verified using following command:

```shell
$UPD_HOME/java/jre8/jre/bin/keytool -list -keystore $UPD_HOME/conf/.updater_truststore
```
Proxy Server Configuration

External Data Feeder for NFO could be configured to use Proxy Server authentication before it can access external URLs.

Procedure

To setup External Data Feeder for NFO Proxy Server configuration perform the following:

1. Click on the gear icon on the right side of the navigation bar, select Advanced and External Data Feeders for NFO tab

2. Click on Configuration and specify your Proxy Server parameters

3. Press ‘Save’ button to save your settings

Copying External Data Feeder for NFO Configuration

This section describes how to copy External Data Feeder for NFO configuration from machine A to B. We assume that External Data Feeder for NFO is already installed and configured on machine A. External Data Feeder for NFO stores all configuration in the installation directory and in the NFO data base, so it can be simply copied from machine A to B.

Procedure

Use the following steps to do this on Linux:

On machine A:

1. Stop External Data Feeder for NFO service (see Working with External Data Feeder for NFO Service on page 14)

2. Create copy of installation: `tar -czf NFO-updater_copy.tar.gz /opt/nfi-updater`
3. Start External Data Feeder for NFO service (see Working with External Data Feeder for NFO Service on page 14)

4. Copy NFO-updater_copy.tar.gz to B.

On machine B:

5. Install same version of External Data Feeder for NFO as on A. Don’t configure External Data Feeder for NFO.

6. Stop External Data Feeder for NFO service (see Working with External Data Feeder for NFO Service on page 14)

7. Remove all External Data Feeder for NFO files:
   ```
   rm -rf /opt/nfi-updater
   ```

8. Extract copy of External Data Feeder for NFO:
   ```
   tar -xzf nfo-updater_copy.tar.gz /opt/
   ```

9. If External Data Feeder for NFO on B should use different client certificate or tomcat has different certificate, reconfigure .updater_keystore or .updater_truststore respectively.

10. If NFO and External Data Feeder for NFO are installed on different machines, set uri property in the /opt/nfi-updater/conf/updater.properties file.

11. Start External Data Feeder for NFO service (see Working with External Data Feeder for NFO Service on page 14)

12. Check that External Data Feeder for NFO has been started (see Status -> History panel in the GUI, logs should contain line like INFO [updater] Updater <updaterUID> (x.x.x.x.x) connected).

### Working with External Data Feeder for NFO Service

Working with External Data Feeder for NFO service depends on OS type it installed on. Below are the methods you can use to start, stop, restart the service or get its status.

**OS Which Does Not Support systemd**

```
/etc/init.d/nfi_updd start|stop|restart|status
```

Command `status` reports the state of the service (running or not) and its PID, if it is running.

**OS Which Supports systemd**

```
systemctl start|stop|restart|status nfi_updd.service
```

Command `status` gives a verbose info about the service. To find the line with info in the style of OS which does not support systemd, you may use option `-l`:

```
systemctl -l status nfi_updd.service
```

This option prevents from replacing trailing portion of long strings by ellipsis.

Command `systemctl` provides more features compared to other methods. For details, see the documentation for this command.

**Universal Method**

```
service start|stop|restart|status nfi_updd
```

This method works on both types of OS but it is deprecated on OS which supports systemd. Actually, the `service` command is translated to the above commands depending on OS type.