



# Cisco Crosswork NSO Telemetry Traffic Collector Function Pack Installation Guide

Version 4.1.0-209

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# Preface

## Abstract

Function packs are installed on the Cisco Network Services Orchestrator (NSO) platform and used to push services and network configurations to devices.

The Telemetry Traffic Collector (TM-TC) function pack utilizes Cisco NSO Reactive FastMap (RFM) nano services to manage the telemetry configuration on devices.

The TM-TC function pack version 4.1.0-209 must be installed on Cisco NSO 5.5.2.9 and is intended for use with Cisco Crosswork 4.1.

This document describes how to install and configure the TM-TC function pack.

## Audience

This document is intended for experienced network users and operators who have a good understanding of Cisco NSO and its usage.

## Additional Documentation

Please refer to the [Cisco NSO documentation](#) for more information about Cisco NSO.

## Before you Begin

Cisco NSO 5.5.2.9 must be installed on your system before installing the Crosswork TM-TC FP. This section outlines the software requirements and platform dependencies that must be met in order to install the Crosswork TM-TC function pack successfully:

- **sudo** user privileges are required to perform the installation. This user must also be part of the **ncsadmin** group.
- OpenJDK 11 or higher must be installed.
- Python 3.8 or higher must be installed. The default Python should point to Python 3.
- If you are running an older version of Cisco NSO, upgrade to Cisco NSO 5.5.2.9. Stop the Cisco NSO instance, uninstall the older version of the NSO then download the Cisco NSO 5.5.2.9 installation bin file from Cisco.com and install using the following command:

```
sudo sh nso-5.5.2.9.linux.x86_64.installer.bin --system-install --non-interactive
```

**Note:** For more complete instructions on installing Cisco NSO 5.5.2.9, follow the steps described in the [Cisco Network Services Orchestrator Installation Guide](#).

- Verify the NSO version.

```
ncs --version
```

The result should be:

```
5.5.2.9
```

## Installing the TM-TC Function Pack

The TM-TC function pack can be installed on either a NSO system installation and local installation. System installation is for a real time production environment and the preferred method of installation

**To access the TM-TC function pack installation file and extract its packages:**

1. Log into the host machine as the **ncs** user. This user must also be part of the **ncsadmin** user group and have sudo access.
2. Download the **cw-na-fp-tmtc-4.1.0-209-nso-5.5.2.9.tar.gz** package from Cisco.com and copy it to the host server. This is the installation file for the TM-TC function pack.
3. Untar the TM-TC **tar.gz** file to the current directory.
 

```
tar -xvzf cw-na-fp-tmtc-4.1.0-209-nso-5.5.2.9.tar.gz
```
4. A new directory 4.1.0-209 is created with all the files in the package.

The following packages/files are extracted:

| Group           | Package Category                       | Packages   |
|-----------------|--|--|
| Core Packages   | TM-TC Function Pack<br>Common Packages | ncs-5.5.2.9-cisco-tm-tc-fp-4.1.0-209.tar.gz<br>ncs-5.5.2.9-tm-tc-multi-vendors-4.1.0-209.tar.gz        |
| Custom Template | Custom template utils                  | ncs-5.5.2.3-custom-template-utils-2.0.6.tar.gz   |
| NEDs            | CLI NED                                | ncs-5.5.2-cisco-iosxr-7.33.12.tar.gz   |
|                 | NETCONF NED                            | ncs-5.5.2-cisco-iosxr_netconf-7.3.2.tar.gz<br>ncs-5.5.2-cisco-iosxr-nc-6.6.3-7c33061-2021-04-26.tar.gz |

All the NED packages mentioned in the above table are mandatory for the TM-TC function pack.

5. Follow the relevant installation procedure below, depending on the type of NSO environment you are using (System or Local).

## System Installation

This section provides the procedure for installing the package on a Cisco NSO instance that was installed using the “system installation” typical for production environments. **sudo** user privileges are required to perform the installation

1. Stop Cisco NSO

```
[root@localhost TM-TC-4.1.0-209]# /etc/init.d/ncs stop
Stopping ncs (via systemctl): [ OK ]
```

2. Copy the function pack packages to the Cisco NSO packages running directory.
3. Make sure there are no duplicate packages. If the NED packages already exist with different names, you do not need to copy those packages.

```
[root@localhost TM-TC-4.1.0-209]# cp *.tar.gz /var/opt/ncs/packages/
```

4. Restart Cisco NSO.

```
[root@localhost TM-TC-4.1.0-209]# /etc/init.d/ncs restart-with-package-reload-force
Restarting ncs (via systemctl): [ OK ]
```

5. Verify the installation and make sure the packages are up and running. For more information, see in this documentation.

## Local Installation

This section provides the procedure for installing the package on a Cisco NSO instance that was installed using the “local installation” typical for lab and demo environments. **sudo** user privileges are required to perform the installation

1. Stop Cisco NSO

```
[root@localhost ncs-run]# ncs -stop
```

2. Copy the function pack packages to the Cisco NSO packages running directory.

```
[root@localhost TM-TC-4.1.0-209]# cp *.tar.gz /home/nso/ncs-run/packages/
```

3. Restart Cisco NSO.

```
[root@localhost packages]# cd /home/nso/ncs-run/
```

```
[root@localhost ncs-run]# ncs --with-package-reload-force
```

4. Verify the installation and make sure the packages are up and running. For more information, see [Verifying the Installation](#) in this document.

## Verifying the Installation

This section discusses how to verify the TM-TC system installation by checking that the packages are up and package versions are set as expected. You need to verify the build number, TM-TC release information, and package versions.

1. Verify that all the packages are up and running. X indicates that the package is up.

```
[nso@localhost ~]$ ncs_cli -u admin -C
```

```
admin connected from X.X.X.X using ssh on localhost.localdomain
```

```
admin@ncs# show packages package oper-status
```

```
admin@ncs# show packages package oper-status
```

| NAME                  | UP | PROGRAM<br>CODE<br>ERROR | JAVA<br>UNINITIALIZED | PYTHON<br>UNINITIALIZED | BAD NCS<br>VERSION | PACKAGE<br>NAME | PACKAGE<br>VERSION | CIRCULAR<br>DEPENDENCY | PACKAGE<br>META<br>DATA<br>ERROR | FILE<br>LOAD<br>ERROR | ERROR<br>INFO |
|-----------------------|----|--------------------------|-----------------------|-------------------------|--------------------|-----------------|--------------------|------------------------|----------------------------------|-----------------------|---------------|
| cisco-iosxr-cli-7.33  | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |
| cisco-iosxr-nc-6.6    | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |
| cisco-iosxr-nc-7.3    | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |
| cisco-tm-tc-fp        | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |
| custom-template-utils | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |
| tm-tc-multi-vendors   | X  | -                        | -                     | -                       | -                  | -               | -                  | -                      | -                                | -                     | -             |

2. Verify the package versions and the build information.

```
admin@ncs# show packages package package-version
```

```
admin@ncs# show packages package package-version
```

| NAME                  | PACKAGE<br>VERSION |
|-----------------------|--------------------|
| cisco-iosxr-cli-7.33  | 7.33.12            |
| cisco-iosxr-nc-6.6    | 6.6.3              |
| cisco-iosxr-nc-7.3    | 7.3.2              |
| cisco-tm-tc-fp        | 4.1.0-209          |
| custom-template-utils | 2.0.6              |
| tm-tc-multi-vendors   | 4.1.0-209          |

3. Perform post-installation tasks for TM-TC FP. For more information, see [Performing Post-Installation Tasks](#) in this document.

## Performing Post-Installation Tasks

The following post-installation configurations are required for the TM-TC function pack to work with CLI NED devices and Cisco Crosswork.

1. Configure TM-TC CFP configurations.

```
[nso@localhost ~]$ ncs_cli -u admin -J
admin@ncs> config
Entering configuration mode private
admin@ncs%
admin@ncs% set cisco-tm-tc-fp:cfp-configurations dynamic-device-mapping cisco-iosxr-
cli-7.33:cisco-iosxr-cli-7.33 python-impl-class-name tm_tc_multi_vendors.IosXR
admin@ncs% set cisco-tm-tc-fp:cfp-configurations stacked-service-enabled
admin@ncs% commit
Commit complete.
```

## Uninstalling the TM-TC Function Pack

Uninstalling the TM-TC function pack from the NSO involves stopping NSO, removing the packages listed as “core packages” and restarting NSO. Based on the type of NSO environment you are using (System or Local) choose one of the following processes to uninstall the package. **sudo** user privileges are required to perform the un-installation

### Uninstall the System Installation

1. Stop NSO.

```
[root@localhost TM-TC-4.1.0-209]# /etc/init.d/ncs stop
Stopping ncs (via systemctl):
```

2. Remove the core packages from the NSO installation directory.

```
[root@localhost nso]# cd /var/opt/ncs/packages/
[root@localhost packages]# rm -rf ncs-5.5.2.9-cisco-tm-tc-fp-4.1.0-209.tar.gz
[root@localhost packages]# rm -rf ncs-5.5.2.9-tm-tc-multi-vendors-4.1.0-209.tar.gz
```

3. Restart NSO.

```
[root@localhost TM-TC-4.1.0-209]# /etc/init.d/ncs restart-with-package-reload-force
Restarting ncs (via systemctl):      [ OK ]
```

## Uninstall the Local Installation

1. Stop NSO

```
[root@localhost packages]# cd /home/nso/ncs-run/
[root@localhost ncs-run]# ncs --stop
```

2. Remove the core packages from the NSO packages running directory.

```
[root@localhost packages]# cd /home/nso/ncs-run/packages/
[root@localhost packages]# rm -rf ncs-5.5.2.9-cisco-tm-tc-fp-4.1.0-209.tar.gz
[root@localhost packages]# ncs-5.5.2.9-tm-tc-multi-vendors-4.1.0-209.tar.gz
```

3. Restart NSO.

```
[root@localhost packages]# cd /home/nso/ncs-run/
[root@localhost ncs-run]# ncs --with-package-reload-force
```

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