

TN-4512A/TN-4516A Transition Firmware Upgrade Guide

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About Moxa

Moxa is a leading provider of edge connectivity, industrial computing, and network infrastructure solutions for enabling connectivity for the Industrial Internet of Things (IIoT). With over 30 years of industry experience, Moxa has connected more than 71 million devices worldwide and has a distribution and service network that reaches customers in more than 80 countries. Moxa delivers lasting business value by empowering industries with reliable networks and sincere service. Information about Moxa’s solutions is available at www.moxa.com.

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1 Introduction

Because of significant optimizations to the BIOS partition in firmware v3.12, a transition firmware is required to upgrade TN-4512A and TN-4516A devices with HW v1.x or HW v2.x from firmware v3.9 to v3.12.

This guide provides information and instructions on how to upgrade TN-4512A and TN-4516A devices with HW v1.x or HW v2.x to v3.12 using transition firmware.

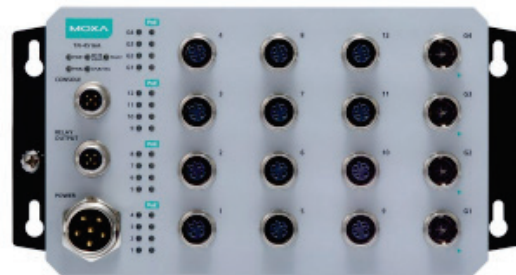
2 Differentiating Hardware Versions

The appearance of different TN-4500A Series hardware versions may vary. For example, the shape and position of the LEDs on TN-4516A models with hardware version 3.x differ from previous hardware versions. Additionally, the trenches on the front side are removed for hardware version 3.x. You can also refer to the **Rev.** field on the device label to identify the hardware version of the device.

Hardware version 1.x, 2.x



Hardware version 3.x



Device label on the back (non-PoE models) or side (PoE models)

MOXA®
Model Type: TN-4528A-16PoE-2GPoE-2GODC-WV-CT-T
MN: TN-4528A-16PoE-2GPoE-2GODC-WV-CT-T
Default IP: 192.168.127.253
Production S/N: 
MAC Address: MAC_01
Rev.: 3.0
I/P : 24-110 VDC, max. 7.0 A
Relay output : 30 VDC, 1 A, Resistance

CLASS 1 LASER PRODUCTS
IEC 60825-1:2014
Made in Taiwan P/N: 

3 Important Notes

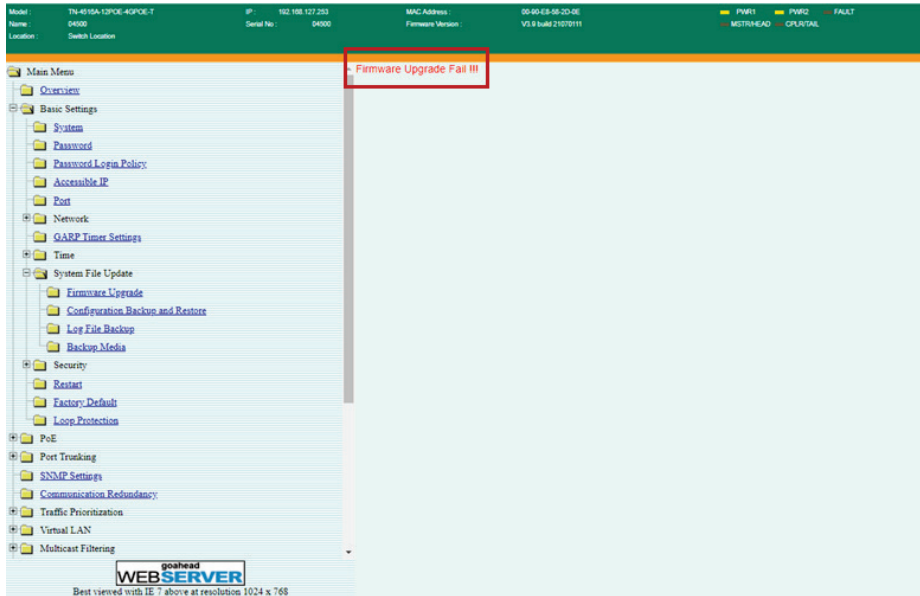
1. Once your device is upgraded to the transition firmware version, it is no longer possible to revert or downgrade to a previous firmware version because of optimizations to the BIOS partition in firmware v3.12. These changes are not backwards compatible with previous firmware versions.
2. Because of optimizations to the configuration file structure, the transition firmware will automatically convert the existing configuration of the device to the new structure.

Because of these changes, it is not possible to use an ABC-01 backup device with a configuration file from firmware v3.9 or earlier to restore the configuration of a device running firmware v3.12. To restore the configuration of a device running v3.12, users must manually update the configuration backup file on the ABC-01 device with a configuration file generated with firmware v3.12.

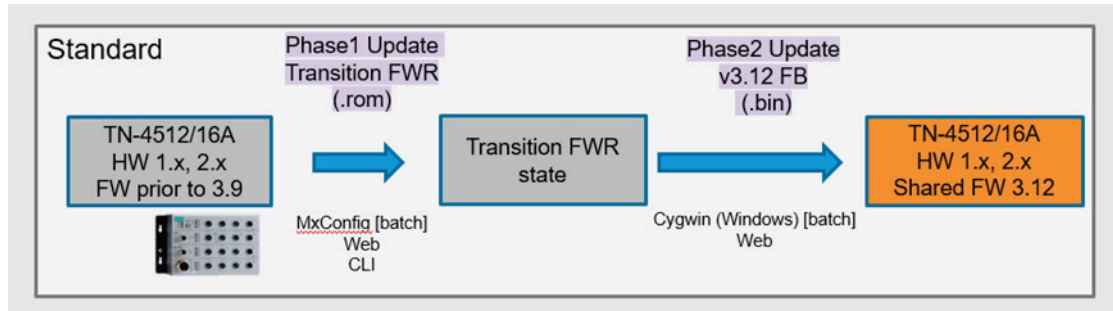
3. It is not possible to upgrade TN-4512A or TN-4516A devices with HW v1.x or HW v2.x to firmware v3.12 from any firmware version prior to v3.9. Attempting to do so will result in a "Firmware Upgrade Fail!!!" error message. Refer to the [Upgrade Instructions](#) section for how to upgrade to v3.12 using transition firmware.



ToughNet Switch TN-4516A Series



4 Transition Flow Overview



Note In this diagram, **FB** refers to a "Firmware and BIOS" file.

Phase 1: Upgrade to the transition firmware version

- Devices are upgraded to the transition firmware via the web UI or MXconfig (for batch upgrading multiple devices).
- The firmware will export the configuration to the flash memory.
- The '**Firmware Upgrade**' function in v3.9 will change to '**FB Upgrade**' in the transition firmware web interface.

Phase 2: Upgrade to firmware v3.12

- Devices are upgraded to v3.12 via the web UI or in bulk using scripts via Cygwin (for information and instructions, refer to <https://www.cygwin.com/install.html>).
- The firmware will import the configuration from the flash memory.
- The BIOS and firmware will update to v3.12.
- The device is manually rebooted by the user.

5 Upgrade Preparations

Before performing the upgrade process, please make sure you have all the necessary files on hand. All these files can either be requested from Moxa Support, or downloaded directly via [Partner Zone](#).

Refer to the list of required files below:

- **Transition firmware file**
Filename: FWR_TN4512A_16A_V3.11.3_Build_23061315.rom
- **v3.12 firmware + BIOS file (FB file)**
Filename: FB_TN4528A_V3.12_V1.12_Build_24010815.bin
- **Upgrade scripts** (for batch upgrading only)
Filename: TN_FBUUpgrade_batch.sh
Filename: TN_FBUUpgrade_once.sh
Filename: TN_ShowDeviceInfo.sh

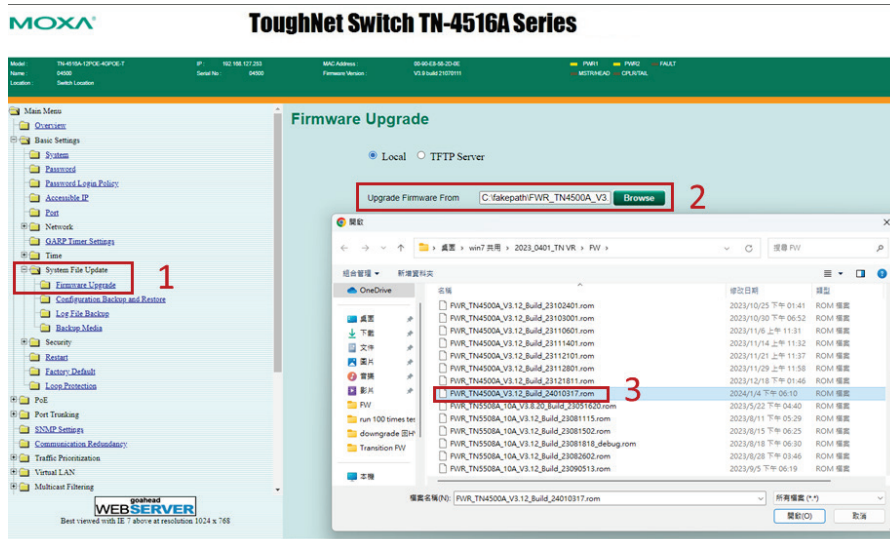
6 Upgrade Instructions

6.1 Manual upgrade via the web interface

Note Make sure you have all the required files before starting the upgrade process. Refer to [Upgrade Preparations](#).

Phase 1: Upgrade the device to the transition firmware

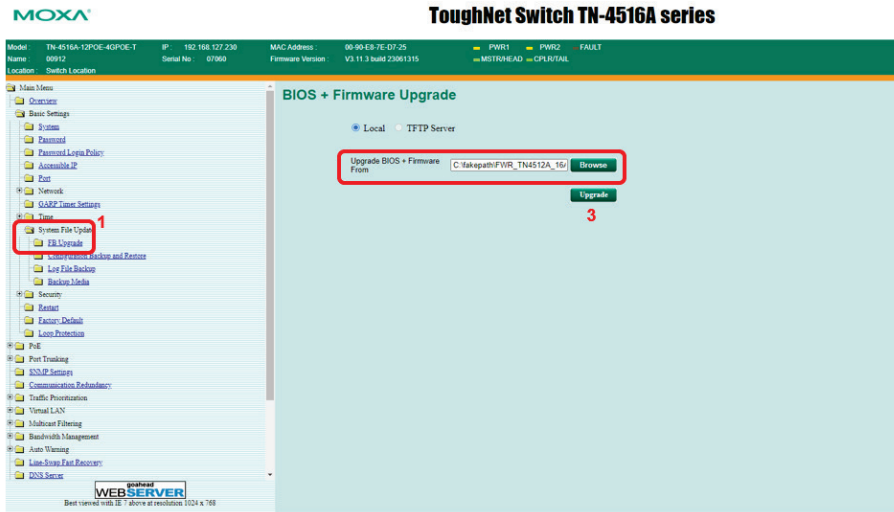
1. Log in to the TN device's web interface.
2. Go to **System File Update > Firmware Upgrade**.
3. Upgrade the device's firmware to the transition firmware version (FWR_TN4512A_16A_V3.11.3_Build_23061315.rom).
Refer to the TN-4500A Series user manual for instructions on how to perform a firmware upgrade.



Phase 2: Upgrade the device to firmware v3.12 using the FB file

1. Log in to the TN device's web interface.
2. Go to **System File Update > FB Upgrade**.

3. Upload the FB file (FB_TN4528A_V3.12_V1.12_Build_24010815.bin) either from your local storage or from a TFTP server.



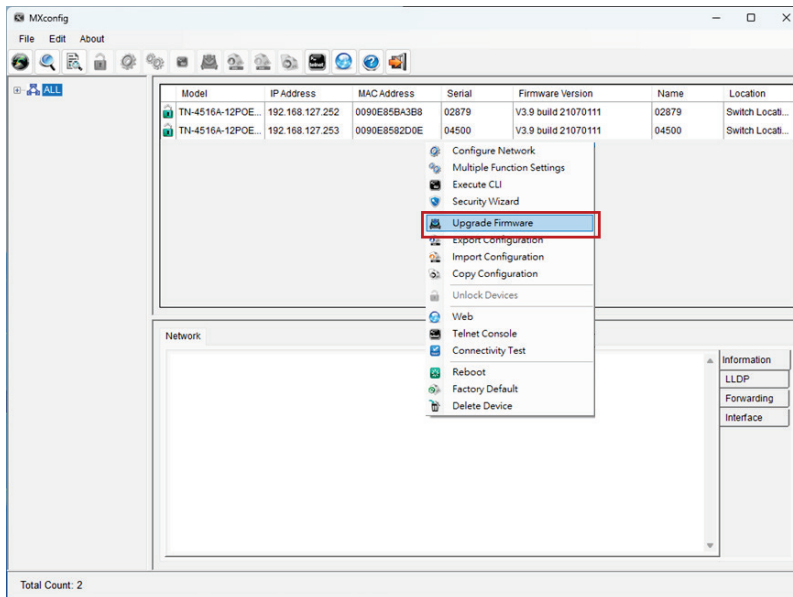
4. Click **Upgrade**.

6.2 Batch upgrade via MXconfig and Cygwin

Note Make sure you have all the required files before starting the upgrade process. Refer to [Upgrade Preparations](#).

Phase 1: Upgrade the device to the transition firmware using MXconfig

1. Open **MXconfig**.
2. Upgrade the device's firmware to the transition firmware version (FWR_TN4512A_16A_V3.11.3_Build_23061315.rom).



Phase 2 – Upgrade the device to firmware v3.12 using the FB file

1. Create a .txt file containing the following information of the devices to upgrade:
 - Device IP address
 - Login account name
 - Login password

Note Each row represents one device. The format of each row should be: [Device IP] [Account name] [Account password].

```
192.168.127.200 admin moxa
192.168.127.240 admin moxa
192.168.127.230 admin moxa
```

2. Place the 3 upgrade scripts, the .txt file with the device information, and the FB file (FB_TN4528A_V3.12_V1.12_Build_24010815.bin) together in a folder.
3. Execute the script in Linux Shell or Cygwin using the following format:
[TN_FBUpgrade_batch.sh] [txt file name] [FB file name]
For example: TN_FBUpgrade_batch.sh devices_info.txt xxx.bin.
4. The script will check the configuration of each device. If any device fails the check, the script will stop immediately.

```
$ ./TN_FBUpgrade_batch.sh upgrade.txt FB_TN4528A_V3.12_V1.12_Build_23080710
```

```
==== config test =====
[192.168.127.253 admin moxa] check pass: 192.168.127.253 TN-4516A-12POE-4GPOE-T V3.11.3 build 23061315
[192.168.127.240 admin moxa] check pass: 192.168.127.240 TN-4516A-12POE-4GPOE-T V3.11.3 build 23061315
[192.168.127.230 admin moxa] check pass: 192.168.127.230 TN-4516A-12POE-4GPOE-T V3.11.3 build 23061315
==== config test success!!! =====
```

- 5. If all devices pass the configuration check, the script will upgrade the devices to firmware v3.12 one by one.

```
===== FB upgrade =====
[192.168.127.253 admin moxa] BIOS and FWR upgrade start
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100  232      0  205 100    27  11347  1494  --:--:--  --:--:--  --:--:-- 12888
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100 4430k      0  616 100 4429k    4  36375  0:02:04  0:02:04  --:--:--  148
[192.168.127.253 admin moxa] BIOS and FWR file OK, upgrading...
[192.168.127.253 admin moxa] BIOS and FWR upgrade success!
[192.168.127.240 admin moxa] BIOS and FWR upgrade start
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100  6264      0 6237 100    27  194k   862  --:--:--  --:--:--  --:--:--  197k
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100 4430k      0  616 100 4429k    5  37793  0:02:00  0:02:00  --:--:--  145
[192.168.127.240 admin moxa] BIOS and FWR file OK, upgrading...
[192.168.127.240 admin moxa] BIOS and FWR upgrade success!
[192.168.127.230 admin moxa] BIOS and FWR upgrade start
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100  6264      0 6237 100    27  190k   846  --:--:--  --:--:--  --:--:--  197k
  % Total      % Received % Xferd  Average Speed   Time    Time     Time  Current
   Dload  Upload  Total    Dload  Upload  Total   Dload  Upload    Spent    Left  Speed
100 4430k      0  616 100 4429k    4  35234  0:02:08  0:02:08  --:--:--  169
[192.168.127.230 admin moxa] BIOS and FWR file OK, upgrading...
[192.168.127.230 admin moxa] BIOS and FWR upgrade success!
===== FB upgrade done=====
```

- 6. If a device fails to upgrade, the script will record an error message and continue upgrading the next device in line.
- 7. Restart the device by manually powering it off and back on again.