



# **Exascend FAE Tool**

## **User Guide**

**Version 2.0  
August 2022**



## Table of Contents

<b>1</b>	<b>REVISION HISTORY</b>	<b>3</b>
<b>2</b>	<b>INTRODUCTION</b>	<b>4</b>
<b>3</b>	<b>SYSTEM REQUIREMENTS</b>	<b>5</b>
<b>4</b>	<b>GUI AND COMMAND LINE VERSION</b>	<b>5</b>
<b>5</b>	<b>FAE TOOL USAGE</b>	<b>6</b>
<b>5.1</b>	<b>WINDOWS OS(GUI)</b>	<b>6</b>
5.1.1	UPGRADE PROCESS .....	6
5.1.2	ANALYSIS PROCESS.....	10
<b>5.2</b>	<b>WINDOWS OS(COMMANDLINE)</b> .....	<b>12</b>
5.2.1	UPGRADE PROCESS .....	12
5.2.2	ANALYSIS PROCESS.....	14
<b>5.3</b>	<b>LINUX OS (GUI)</b> .....	<b>16</b>
5.3.1	UPGRADE PROCESS .....	16
5.3.2	ANALYSIS PROCESS.....	22
<b>5.4</b>	<b>LINUX OS (COMMANDLINE)</b> .....	<b>23</b>
<b>5.5</b>	<b>ARM OS(COMMAND LINE)</b> .....	<b>23</b>
5.5.1	UPGRADE PROCESS .....	23
5.5.2	ANALYSIS PROCESS.....	26



## 1 Revision History

Revision	Date	Description
V1.0	2022-07-08	Initial Version
V2.0	2022-08-10	Support windows command line FAE Tool



## 2 Introduction

This document describes how to upgrade Firmware and collect disk's information to help locate SSD problems with Exascend\_FAE\_Tool.



### 3 System Requirements

Exascend\_FAE\_Tool supports Windows/Linux/Arm64 platform.

Following OS is supported.

Windows: Windows 10

Linux: Ubuntu20.04, Fedora33, CentOS 8.0

ARM: Kylin v10 Desktop

The software does not support 32bit ARM platform. Glibc version is required.

Linux Glibc:>=2.24

Arm Glibc:>=2.27

For Windows 10 OS, please ensure package - KB2999226 is installed on your system.

### 4 GUI and Command Line version

Exascend\_FAE \_Tool supports GUI and Command Line version against different OS.

Please refer to below table to find the version you want.

OS\Version	GUI Version	Command Line Version
Windows	Yes	Yes
Linux	Yes	Yes
ARM64	No	Yes



## 5 FAE Tool Usage

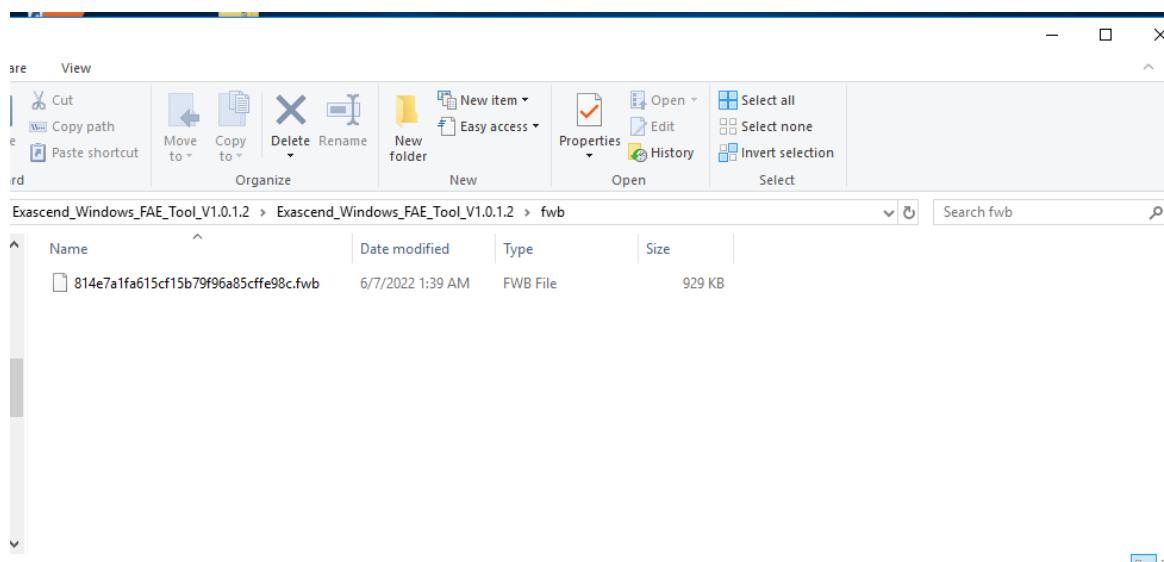
This section describes how to use Exascend\_FAE\_Tool to do SSD FW upgrade, and how to dump SSD information.

### 5.1 Windows OS(GUI)

#### 5.1.1 Upgrade Process

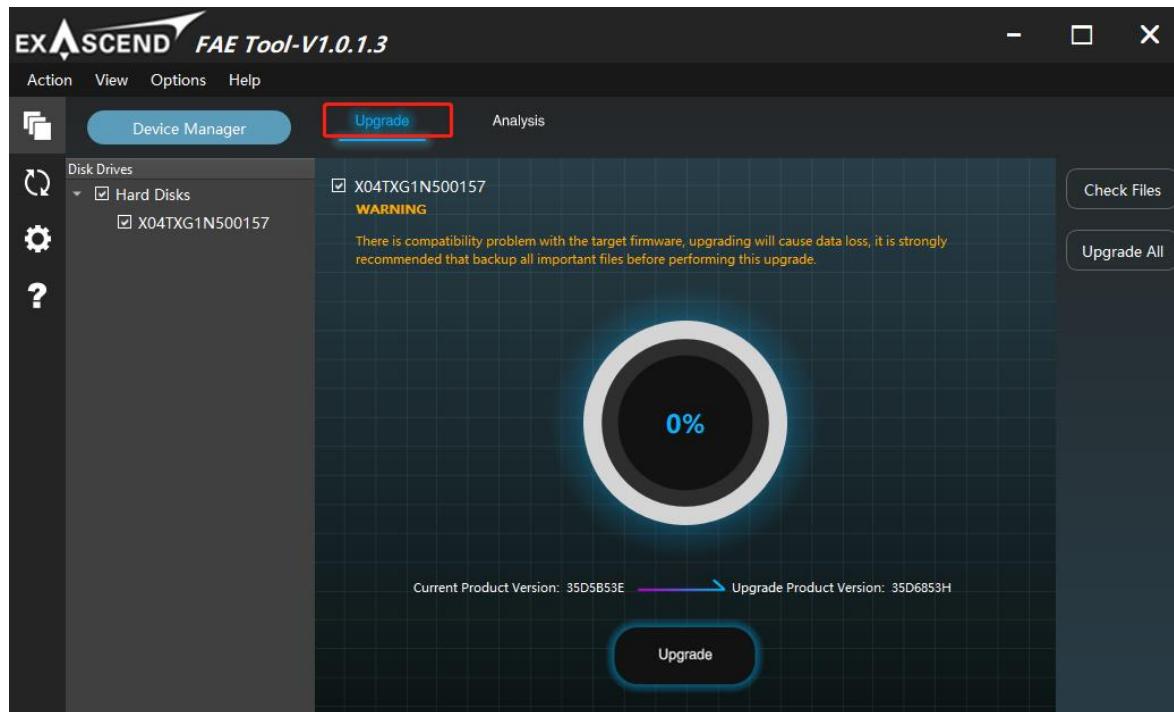
1. Please put the upgrade files (\*.fwb) under the '**fwb**' folder.

**Notes:** Please remove any unnecessary upgrade files in 'fwb' folder first, then copy the upgrade file (\*.fwb) to 'fwb' folder.



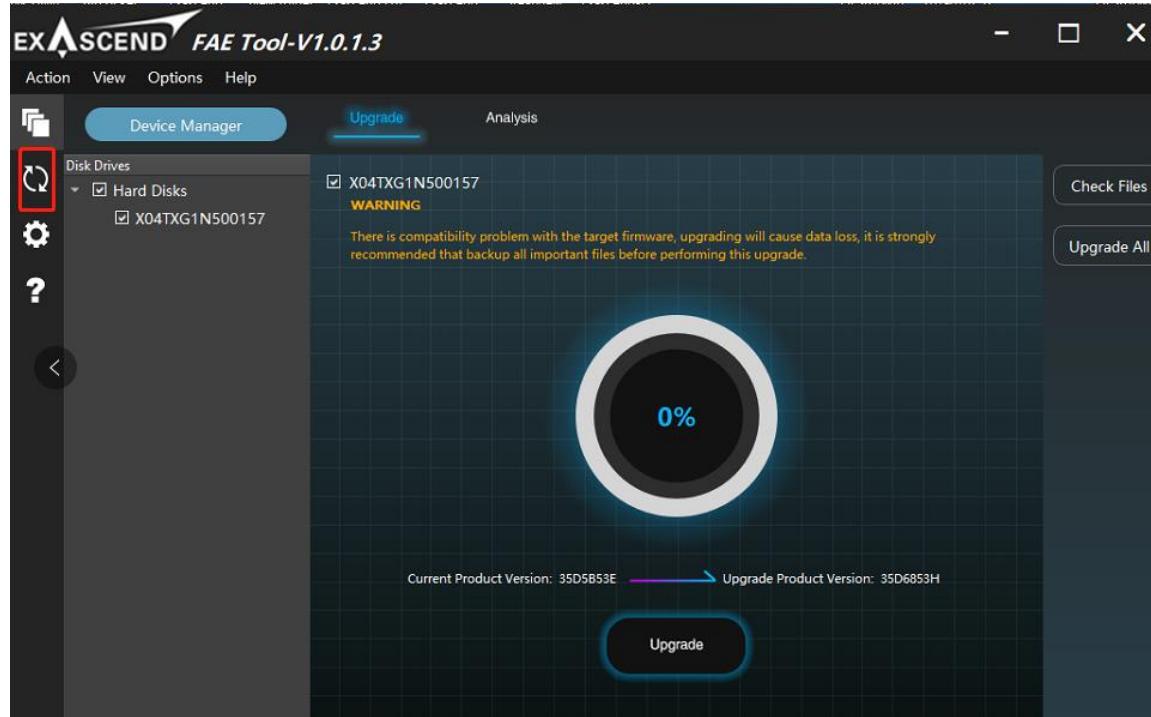


2.Run the tool as **Administrator**, click '**Upgrade**' tab.

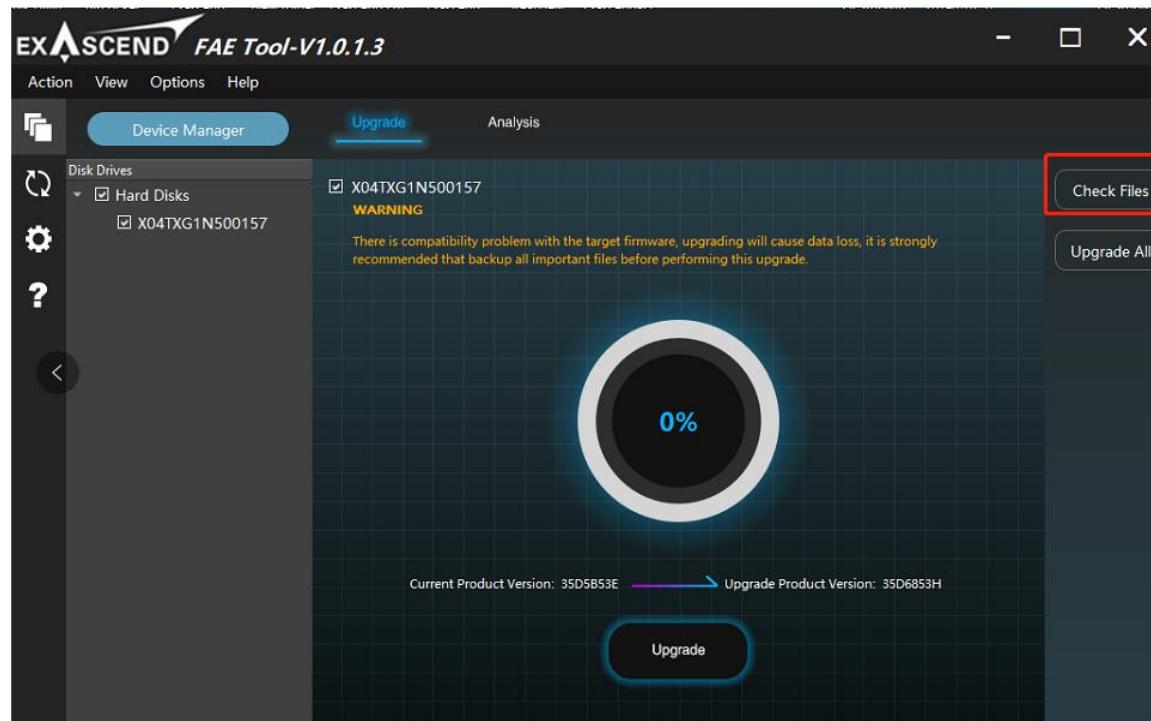




3. Click 'Scan Drives' button, then select the target drive.

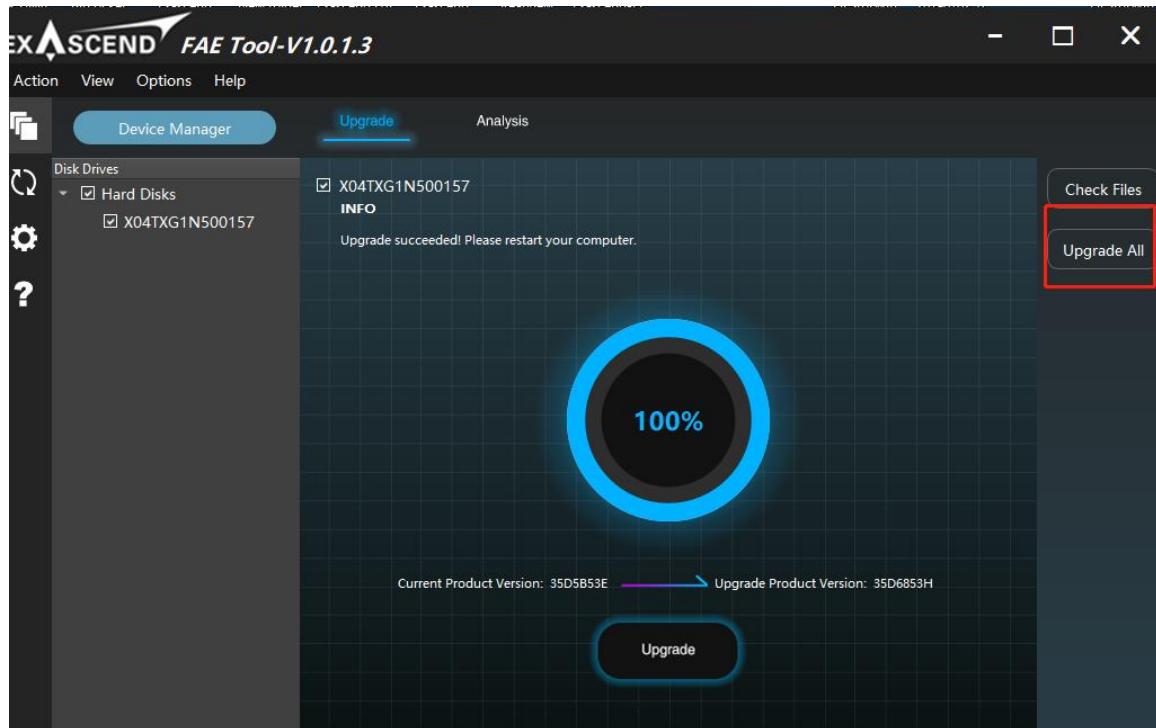


4. Click 'Check Files' button, tool will display the upgrade information of the selected disk as figure below.





5.Click '**Upgrade All**' button, the progress bar goes to 100% that indicates the success of the upgrade.



6.After the FW update is complete, please restart your computer according to the prompts.

7.You could use tool CrystalDiskInfo to double confirm the disk's current firmware version.

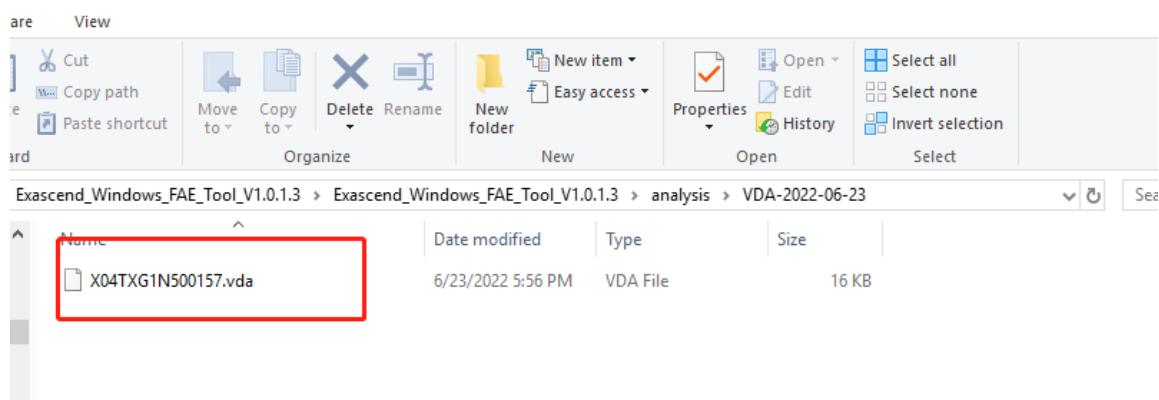
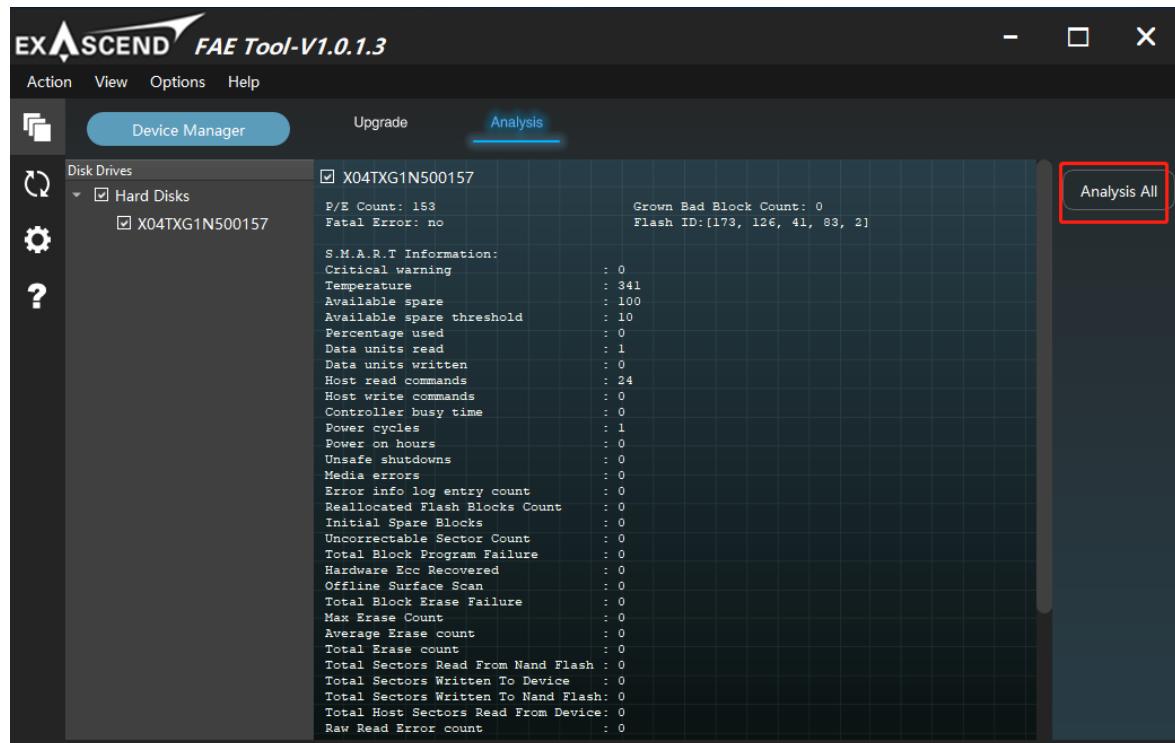


### 5.1.2 Analysis Process

1. Run the tool as **Administrator**, click '**Analysis**' tab.



2. Click '**Analysis All**' button to collect drive information and generate \*.vda file in '**analysis**' folder. Please send back the 'vda' file for further analyzing.

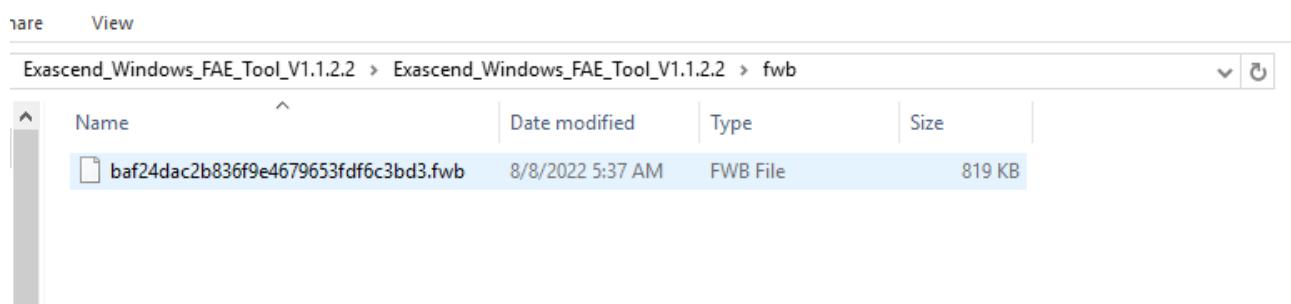


## 5.2 Windows OS(COMMANDLINE)

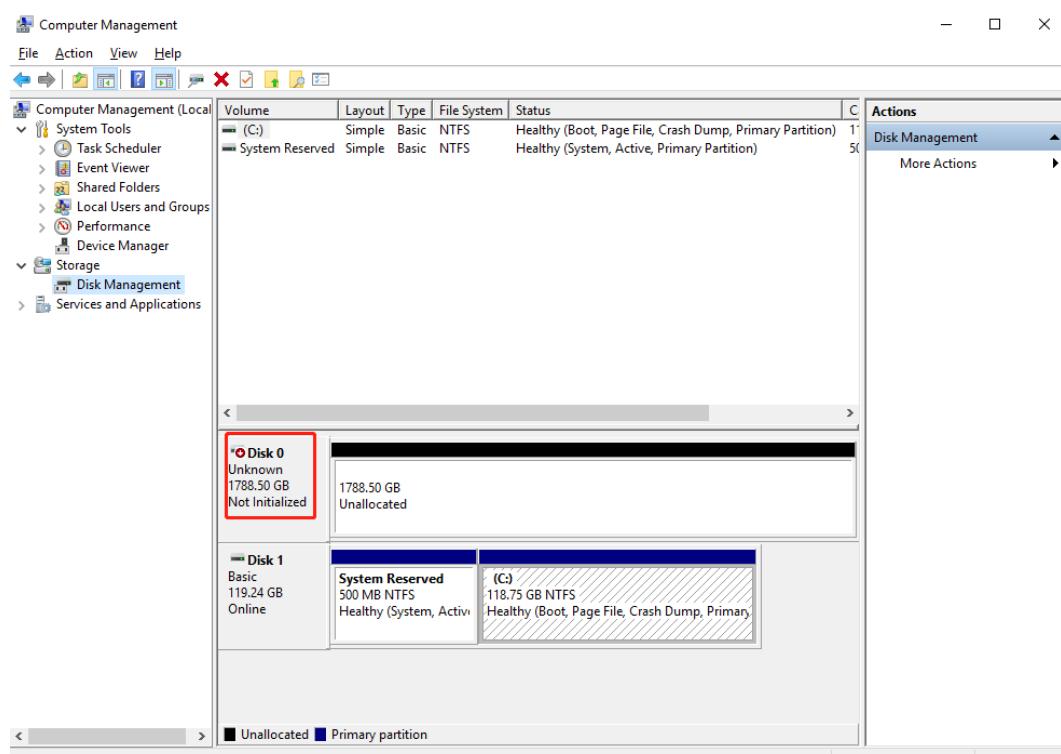
### 5.2.1 Upgrade Process

1. Please put the upgrade files (\*.fwb) under the '**fwb**' folder.

**Notes:** Please remove any unnecessary upgrade files in 'fwb' folder first, then copy the upgrade file (\*.fwb) to 'fwb' folder.



2. Check ' Disk Management ' and make sure that system can recognize the Drive correctly and get DeviceName( such as Disk 1 or Disk 0 )





3. Open command line tool with **administrator** privileges. Enter below command to do firmware upgrade.

**'Exascend\_Windows\_FAE\_Tool.exe 0(Device Name) upgrade'**

**Notes:** In above command line, 0 is related to the DUT mentioned in Step2. If your DUT is disk1, please use 1 instead.

```
C:\ Select Administrator: C:\WINDOWS\system32\cmd.exe - Exascend_FAE_Tool.exe 0 upgrade
C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2>Exascend_FAE_Tool.exe 0 upgrade
There is compatibility problem with the target firmware, upgrading will cause data loss, it is strongly recommended that
backup all important files before performing this upgrade.
Current Product Version:35E388G8      Upgrade Product Version:35E388G8
Please check the fw information, if you are sure to upgrade, enter "yes", otherwise enter "no":
```

4. Double confirm the current fw version and target fw version. Enter '**yes**' to start upgrade progress and wait for the upgrade to complete.

```
C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2>Exascend_FAE_Tool.exe 0 upgrade
There is compatibility problem with the target firmware, upgrading will cause data loss, it is strongly recommended that
backup all important files before performing this upgrade.
Current Product Version:35E858GA      Upgrade Product Version:35E388G8
Please check the fw information, if you are sure to upgrade, enter "yes", otherwise enter "no": yes
Progress: |██████████| 100/100
Upgrade succeeded!Please restart your computer.

C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2>
```

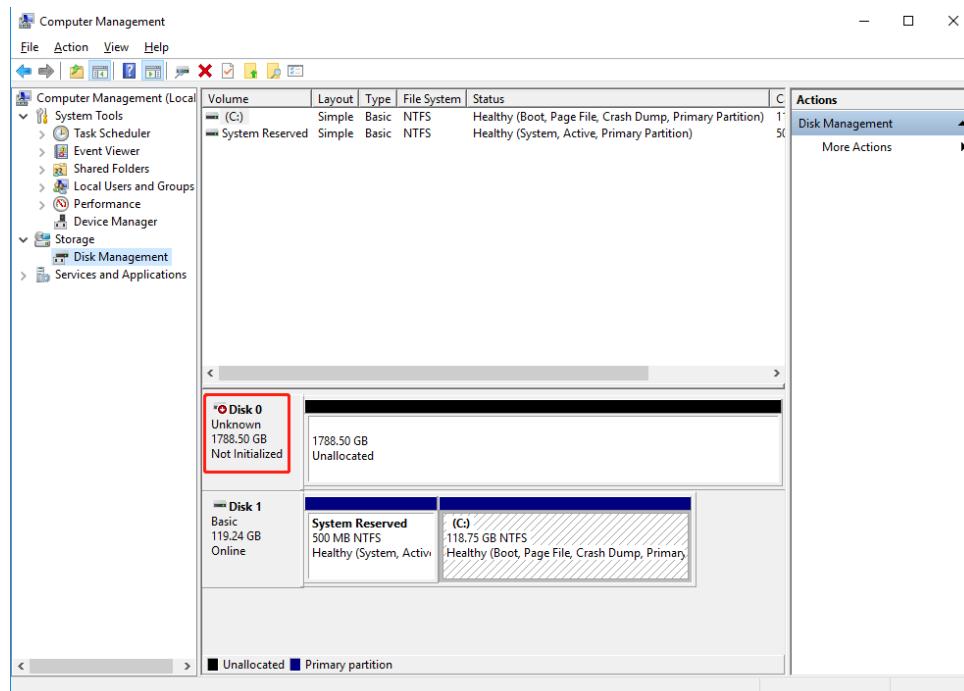
5. After the FW update is successful, please restart your computer according to the prompts.

```
C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2>Exascend_FAE_Tool.exe 0 upgrade
There is compatibility problem with the target firmware, upgrading will cause data loss, it is strongly recommended that
backup all important files before performing this upgrade.
Current Product Version:35E858GA      Upgrade Product Version:35E388G8
Please check the fw information, if you are sure to upgrade, enter "yes", otherwise enter "no": yes
Progress: |██████████| 100/100
Upgrade succeeded!Please restart your computer.
```

6. You could use tool CrystalDiskInfo to double confirm the disk's current firmware version.

## 5.2.2 Analysis Process

1. Check ' Disk Management ' and make sure that system can recognize DUT SSD Drive correctly and get DeviceName( such as Disk 1 or Disk 0)



2. Open command line tool with administrator privileges. Enter below command to collect drive information.

**'Exascend\_Windows\_FAE\_Tool.exe 0(Device Name) analysis'**

**Notes:** In above command line, 0 is related to the DUT mentioned in Step1. If your DUT is disk1, please use 1 instead

```
C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2> Exascend_FAE_Tool.exe 0 analysis
P/E Count: 2 Grown Bad Block Count: 0
Fatal Error: no
The data has saved in "analysis" folder

C:\Users\ssd\Desktop\Exascend_Windows_FAE_Tool_V1.1.2.2\Exascend_Windows_FAE_Tool_V1.1.2.2>
```



3. It will generate \*.vda file in 'analysis' folder. Please send back the 'vda' file for further analyzing

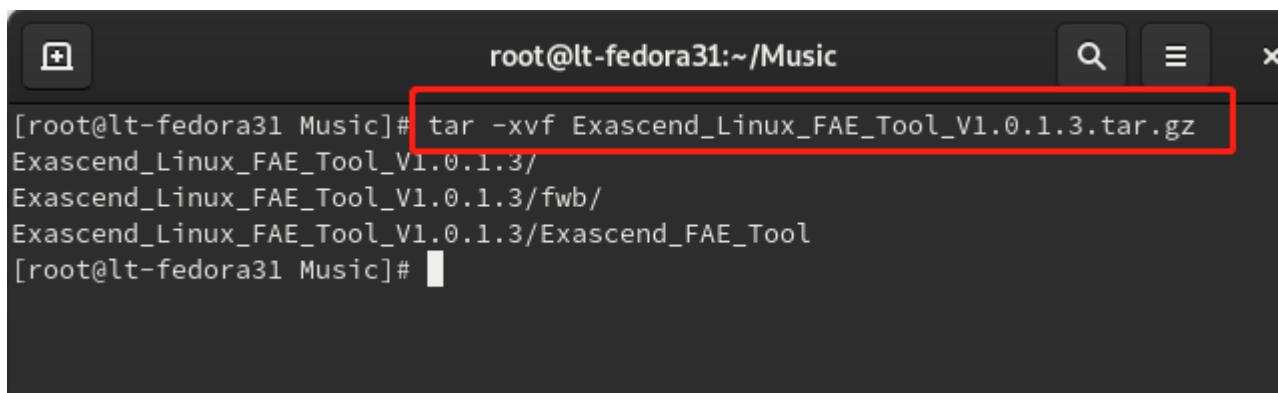
Exascend_Windows_FAE_Tool_V1.1.2.2 > Exascend_Windows_FAE_Tool_V1.1.2.2 > analysis > VDA-2022-08-08			
Name	Date modified	Type	Size
T256XR3P262143.vda	8/8/2022 5:23 AM	VDA File	8 KB

## 5.3 Linux OS (GUI)

### 5.3.1 Upgrade Process

1. Unpress our packaged software with **root** privileges, check if the decompression folder contains fwb and Exascend-FAE-Tool files. Put the upgrade files(\*.fwb) under ‘**fwb**’ folder.

**Notes:** Please remove any unnecessary upgrade files in ‘fwb’ folder first, then copy the upgrade file(\*.fwb) to ‘fwb’ folder.

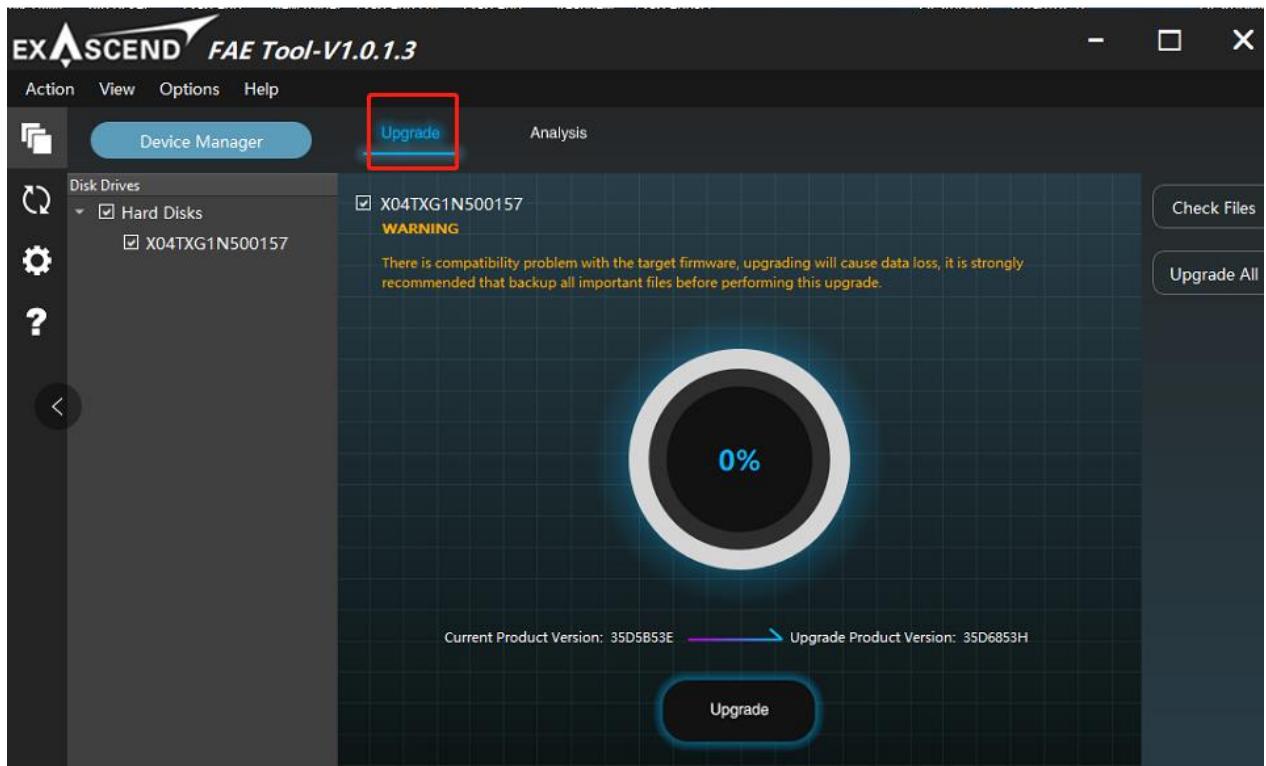


A screenshot of a terminal window titled "root@lt-fedora31:~/Music". The terminal shows the command `tar -xvf Exascend_Linux_FAE_Tool_V1.0.1.3.tar.gz` being entered. The output of the command shows the extraction of files from the tar archive, including "Exascend\_Linux\_FAE\_Tool\_V1.0.1.3/", "Exascend\_Linux\_FAE\_Tool\_V1.0.1.3/fwb/", and "Exascend\_Linux\_FAE\_Tool\_V1.0.1.3/Exascend\_FAE\_Tool". The entire command line is highlighted with a red box.

```
[root@lt-fedora31 Music]# tar -xvf Exascend_Linux_FAE_Tool_V1.0.1.3.tar.gz
Exascend_Linux_FAE_Tool_V1.0.1.3/
Exascend_Linux_FAE_Tool_V1.0.1.3/fwb/
Exascend_Linux_FAE_Tool_V1.0.1.3/Exascend_FAE_Tool
[root@lt-fedora31 Music]#
```

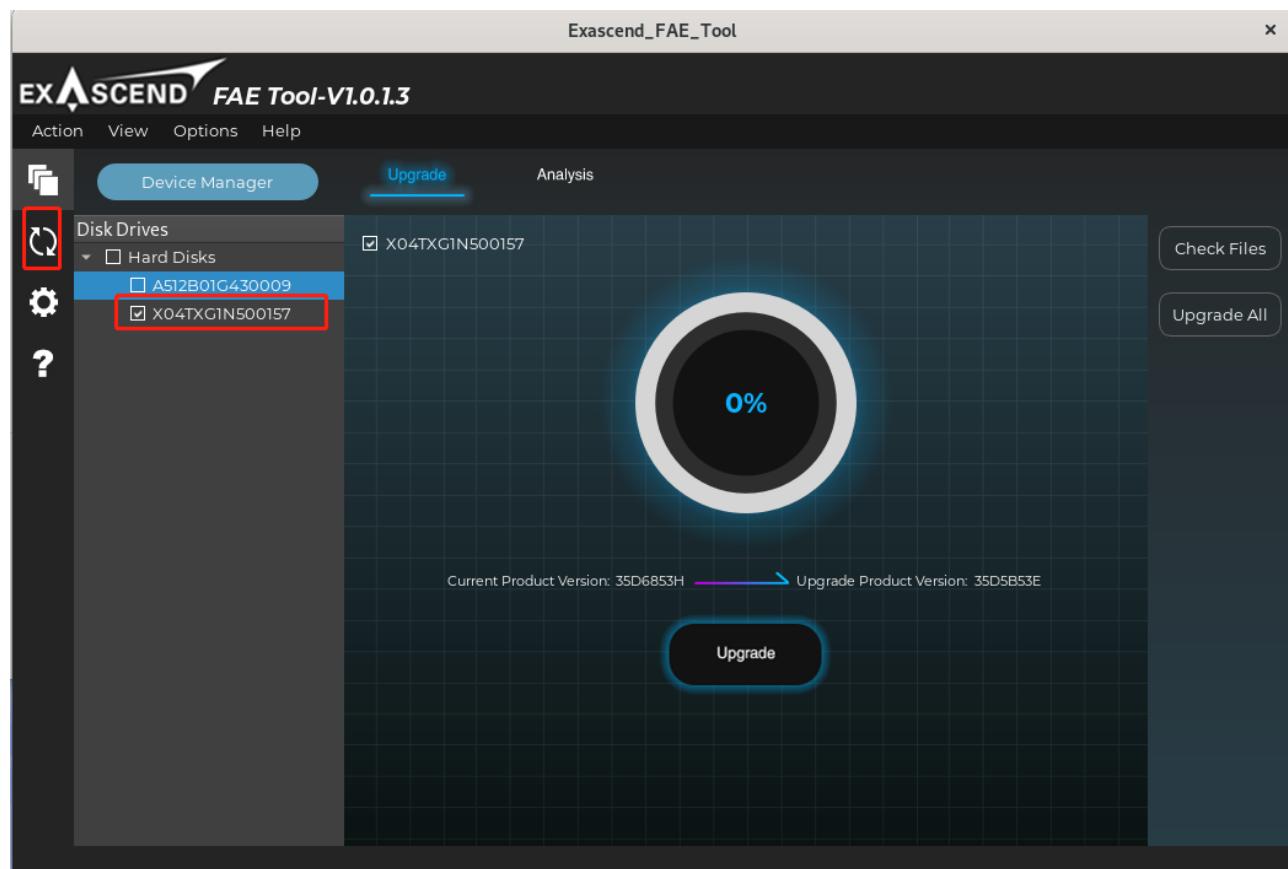


2. Open the software with **root** privileges, click the '**Upgrade**' button to enter the firmware upgrade interface.





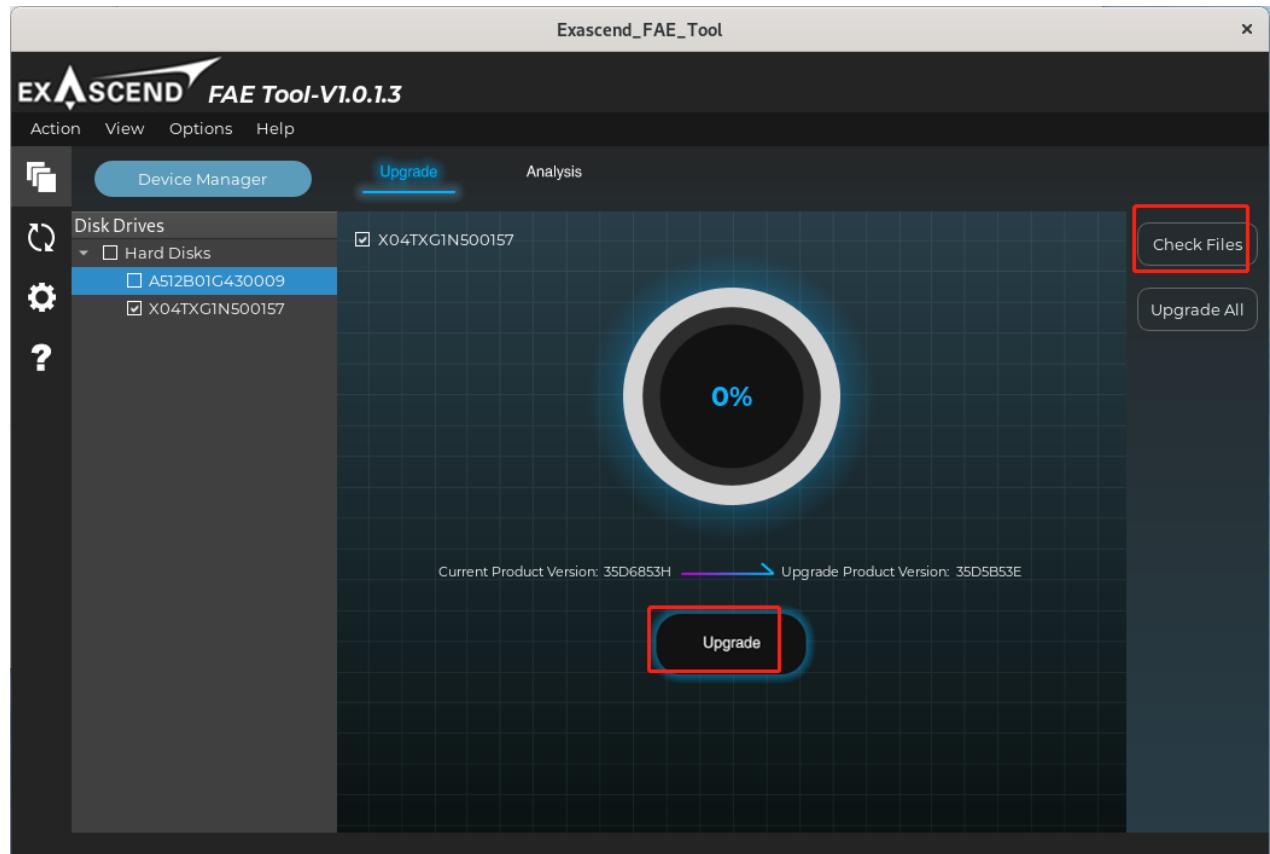
3. Click 'Scan Drives' button, then select the target drive as figure below.





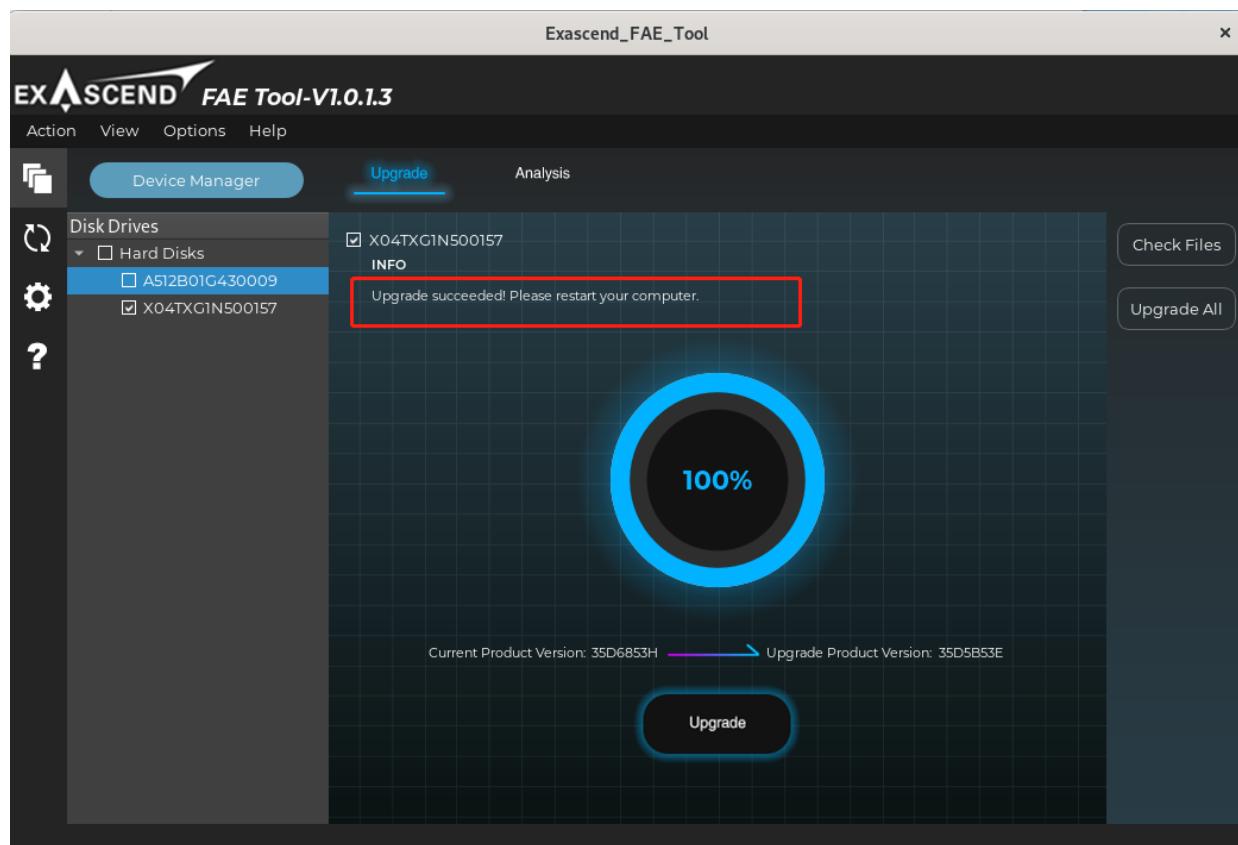
4. Click '**Check Files**' button. Check the current Drive firmware version and the Drive firmware version to be upgraded.

Click the '**Upgrade**' button to do firmware upgrade.





5.The progress bar goes up to 100% that indicates the success of the upgrade.

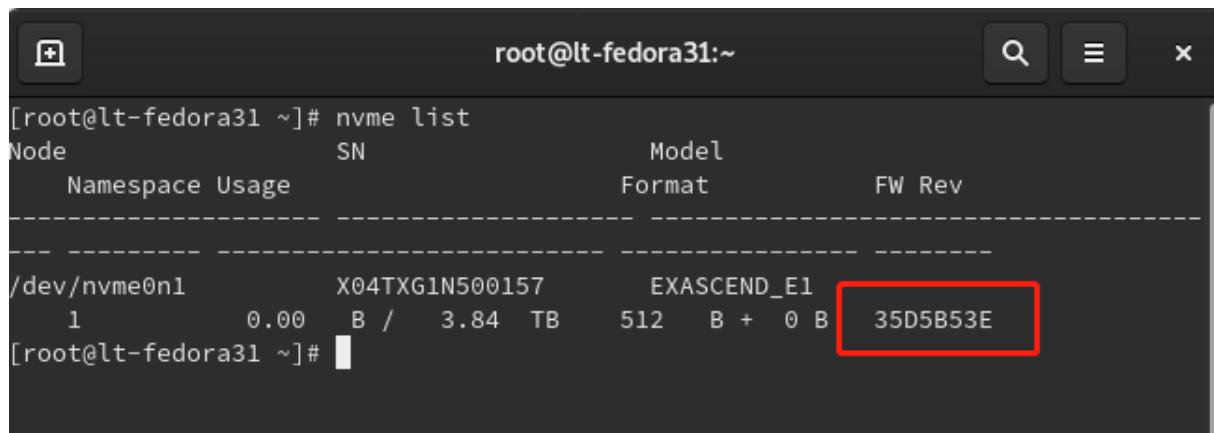


6.After the FW update is successful, please restart your computer according to the prompts.

7 Input 'apt install nvme-cli' command to install nvme-cli.

```
root@ssd:/home/ssd# apt install nvme-cli
Reading package lists... Done
Building dependency tree
Reading state information... Done
nvme-cli is already the newest version (1.5-lubuntul.2).
0 upgraded, 0 newly installed, 0 to remove and 372 not upgraded.
root@ssd:/home/ssd#
```

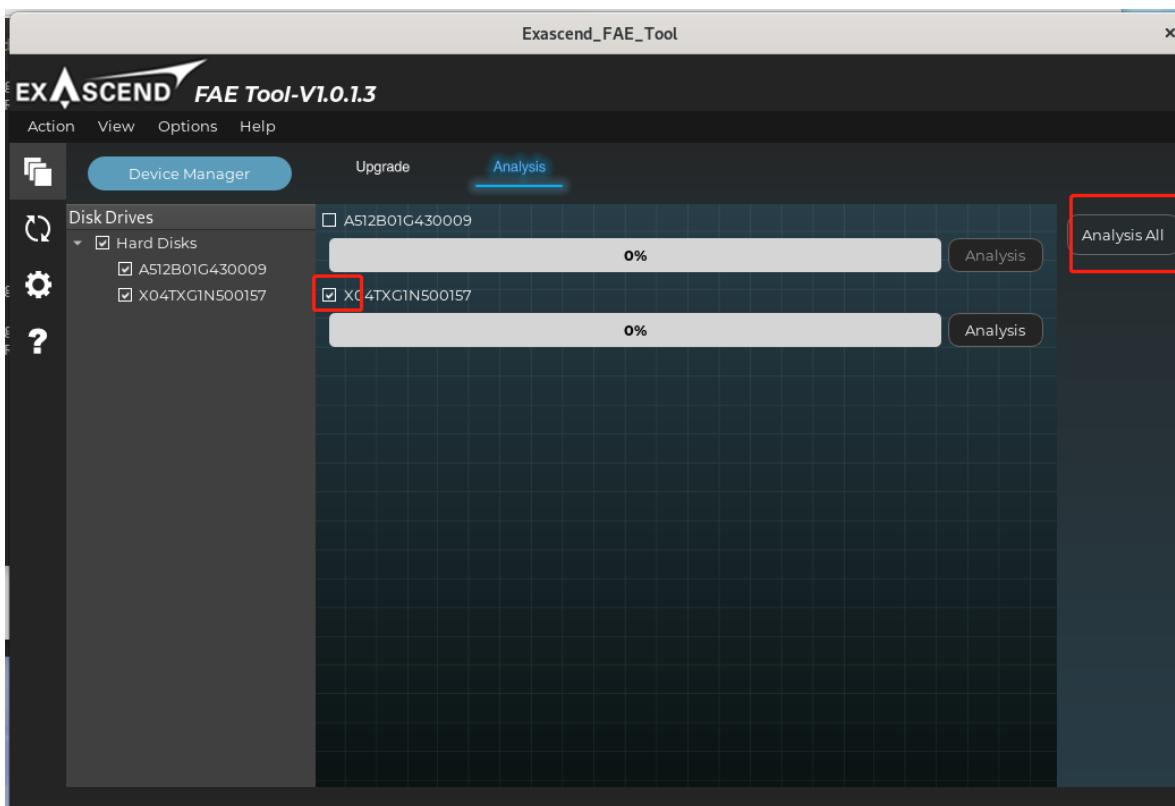
8. After the installation is complete, we can see if the firmware update is successful through '**nvme list**'



Node	Namespace	Usage	SN	Model	Format	FW	Rev
/dev/nvme0n1	1	0.00 B	X04TXG1N500157	EXASCEND_E1	512 B + 0 B	35D5B53E	

### 5.3.2 Analysis Process

1. Run the tool as **Administrator**, then select the target drive as figure below and click '**Analysis**' tab.



2. Click '**Analysis All**' button to collect drive information and generate \*.vda file in 'analysis' folder, send the file to us to analyze.

## 5.4 Linux OS (CommandLine)

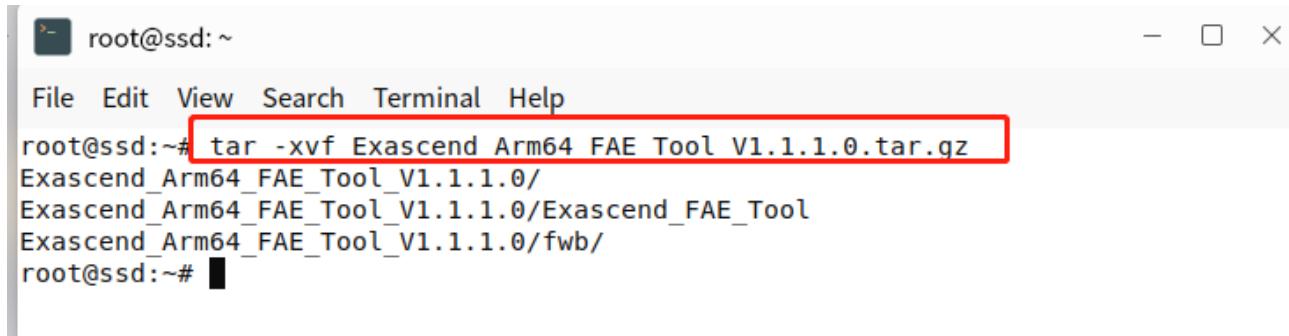
The Linux command-line operation is same with the following ARM platform operation.

## 5.5 ARM OS(Command Line)

### 5.5.1 Upgrade Process

1.Unpress our packaged software with **root** privileges, check if the decompression folder contains fwb and Exascend-FAE-Tool files. Put the upgrade files(\*.fwb) under ‘**fwb**’ folder.

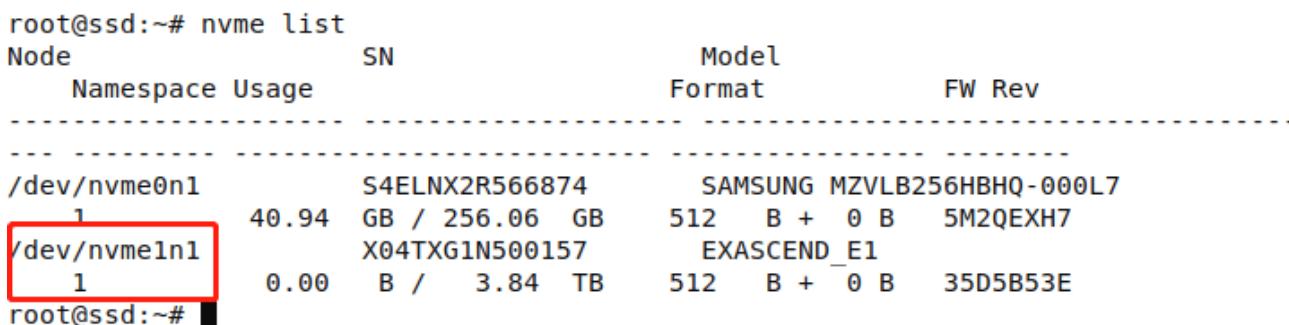
**Notes:** Please remove any unnecessary upgrade files in ‘fwb’ folder first, then copy the upgrade file(\*.fwb) to ‘fwb’ folder.



```
root@ssd:~#
File Edit View Search Terminal Help
root@ssd:~# tar -xvf Exascend_Arm64_FAE_Tool_V1.1.1.0.tar.gz
Exascend_Arm64_FAE_Tool_V1.1.1.0/
Exascend_Arm64_FAE_Tool_V1.1.1.0/Exascend_FAE_Tool
Exascend_Arm64_FAE_Tool_V1.1.1.0/fwb/
root@ssd:~#
```

A screenshot of a terminal window titled "root@ssd: ~". The window has a standard Linux-style menu bar with File, Edit, View, Search, Terminal, and Help. The terminal itself shows a command being run: "tar -xvf Exascend\_Arm64\_FAE\_Tool\_V1.1.1.0.tar.gz". This command extracts a tar.gz archive named "Exascend\_Arm64\_FAE\_Tool\_V1.1.1.0" into the current directory. The output shows the creation of a directory structure: "Exascend\_Arm64\_FAE\_Tool\_V1.1.1.0/", "Exascend\_Arm64\_FAE\_Tool\_V1.1.1.0/Exascend\_FAE\_Tool", and "Exascend\_Arm64\_FAE\_Tool\_V1.1.1.0/fwb/". The command concludes with a prompt "root@ssd:~#".

2.Enter '**nvme list**' and check our DeviceName.



```
root@ssd:~# nvme list
Node          SN           Model
  Namespace Usage
-----  -----
/dev/nvme0n1   S4ELNX2R566874  SAMSUNG MZVLB256HBHQ-000L7
    1        40.94  GB / 256.06  GB  512 B + 0 B  5M2QEXH7
/dev/nvme1n1   X04TXG1N500157  EXASCEND_E1
    1         0.00    B /  3.84   TB  512 B + 0 B  35D5B53E
root@ssd:~#
```

A screenshot of a terminal window titled "root@ssd: ~". The terminal shows the output of the "nvme list" command. The output is a table with columns for Node, SN, Model, Namespace, and Usage. The table shows two NVMe devices: "/dev/nvme0n1" and "/dev/nvme1n1". The "/dev/nvme0n1" device has a SN of "S4ELNX2R566874" and is a Samsung MZVLB256HBHQ-000L7 model. It has one namespace with 40.94 GB usage. The "/dev/nvme1n1" device has a SN of "X04TXG1N500157" and is an EXASCEND\_E1 model. It has one namespace with 0.00 GB usage. The command concludes with a prompt "root@ssd:~#".



3. Open the software with **root** privileges, Enter below command:

**./Exascend-FAE-Tool /dev/nvme1n1 upgrade**

It will display firmware information. Check whether the version of the current firmware is consistent with that of the firmware to be upgraded.

```
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0
File Edit View Search Terminal Help
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0# ./Exascend_FAE_Tool /dev/nvme1n1 up
grade
There is compatibility problem with the target firmware, upgrading will cause da
ta loss, it is strongly recommended that backup all important files before perfo
rming this upgrade.
Current Product Version:35D5B53E          Upgrade Product Version:35D6853H
Please check the fw information, if you are sure to upgrade, enter "yes", otherw
ise enter "no": █
```

4. Enter **yes**.

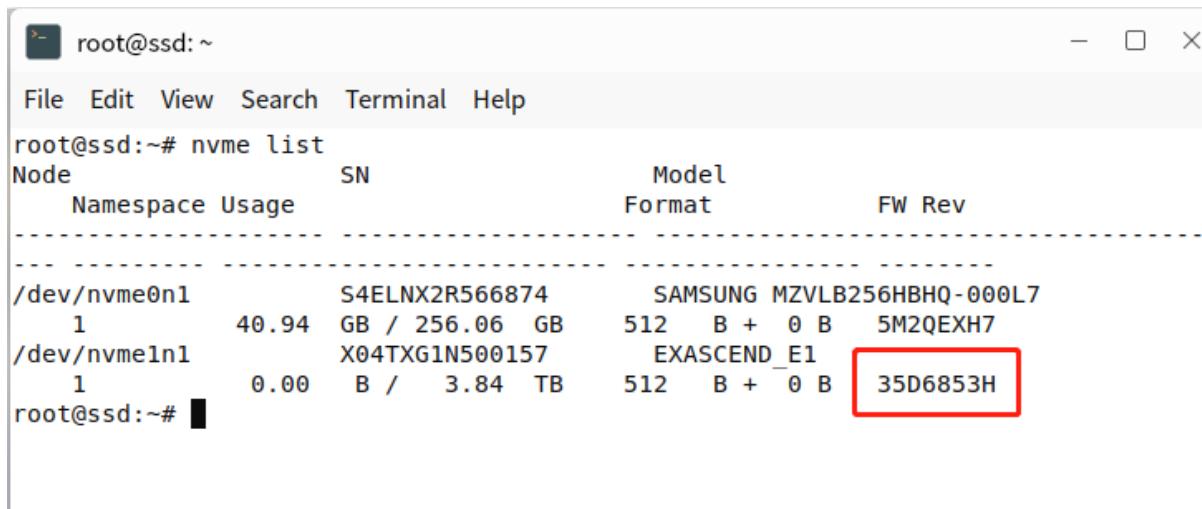
The upgrade process starts.

If the progress bar reaches 100%, the upgrade is successful.

```
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0# ./Exascend_FAE_Tool /dev/nvme1n1 up
grade
There is compatibility problem with the target firmware, upgrading will cause da
ta loss, it is strongly recommended that backup all important files before perfo
rming this upgrade.
Current Product Version:35D5B53E          Upgrade Product Version:35D6853H
Please check the fw information, if you are sure to upgrade, enter "yes", otherw
ise enter "no" yes
Progress: ██████████ | 100/100
Upgrade succeeded! Please restart your computer.
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0# █
```



5. After the update is complete, double confirm if the firmware update is successful through '**nvme list**'.



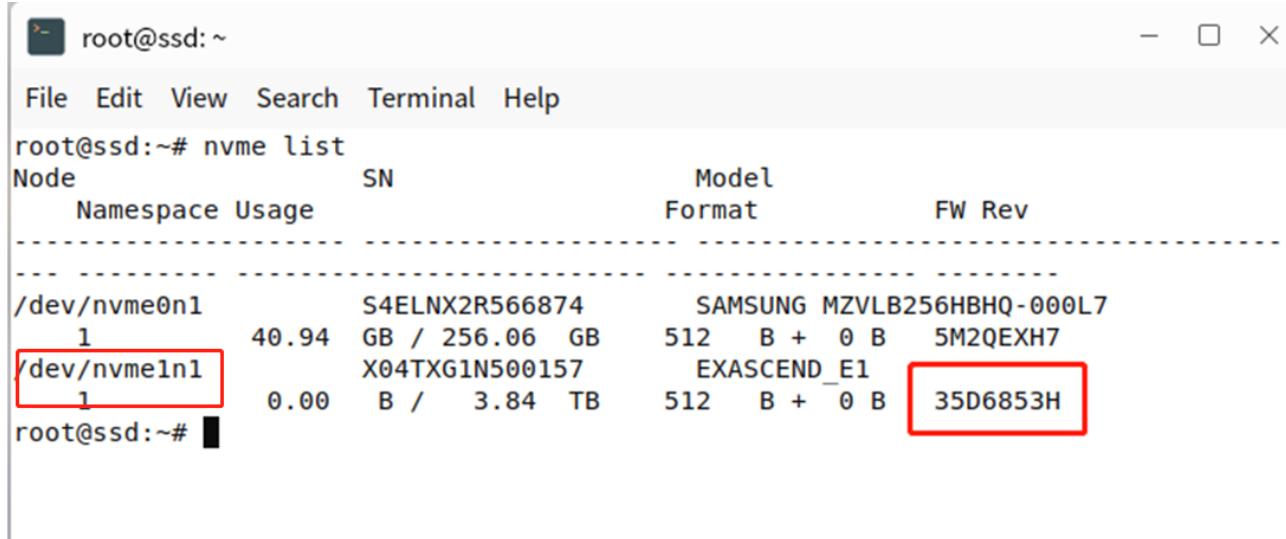
A screenshot of a terminal window titled 'root@ssd: ~'. The window contains the command 'root@ssd:~# nvme list' followed by its output. The output is a table with columns: Node, Namespace, Usage, SN, Model, Format, FW, and Rev. Two entries are shown:

Node	Namespace	Usage	SN	Model	Format	FW	Rev
/dev/nvme0n1	1	40.94 GB / 256.06 GB	S4ELNX2R566874	SAMSUNG MZVLB256HBHQ-000L7	512 B + 0 B	5M2QEXH7	
/dev/nvme1n1	1	0.00 B / 3.84 TB	X04TXG1N500157	EXASCEND_E1	512 B + 0 B	35D6853H	

The 'Rev' column for the second entry, '35D6853H', is highlighted with a red box.

## 5.5.2 Analysis Process

1.Unpress our packaged software, enter '**nvme list**' and check our DeviceName.



A terminal window titled 'root@ssd: ~' showing the output of the 'nvme list' command. The window has standard Linux terminal menu options: File, Edit, View, Search, Terminal, Help. The command 'root@ssd:~# nvme list' is run, followed by a table of SSD details. The table has columns: Node, SN, Model, Format, FW, Rev. It lists two devices: /dev/nvme0n1 and /dev/nvme1n1. The second device, /dev/nvme1n1, is highlighted with a red box around its entire row. The 'Rev' column for this device also has a red box around its value, '35D6853H'. The rest of the table and terminal prompt are visible without boxes.

Node	SN	Model	Format	FW	Rev
Namespace	Usage				
/dev/nvme0n1	S4ELNX2R566874	SAMSUNG MZVLB256HBHQ-000L7			
1	40.94 GB / 256.06 GB	512 B + 0 B	5M2QEXH7		
/dev/nvme1n1	X04TXG1N500157	EXASCEND_E1			
1	0.00 B / 3.84 TB	512 B + 0 B	35D6853H		



2. Enter below command to collect drive information.

**./Exascend-FAE-Tool /dev/nvme1n1 analysis**

It will generate \*.vda file in '**analysis**' folder, send back the file for further analyzing.

```
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0# ./Exascend_FAE_Tool /dev/nvme1n1 analysis
P/E Count: 0                                     Grown Bad Block Count: 0
Fatal Error: no
```

The data has saved in "analysis" folder

```
root@ssd:~/Exascend_Arm64_FAE_Tool_V1.1.1.0#
```

