EXTREME NETWORKS

Universal Hardware USB conversion to Fabric Engine

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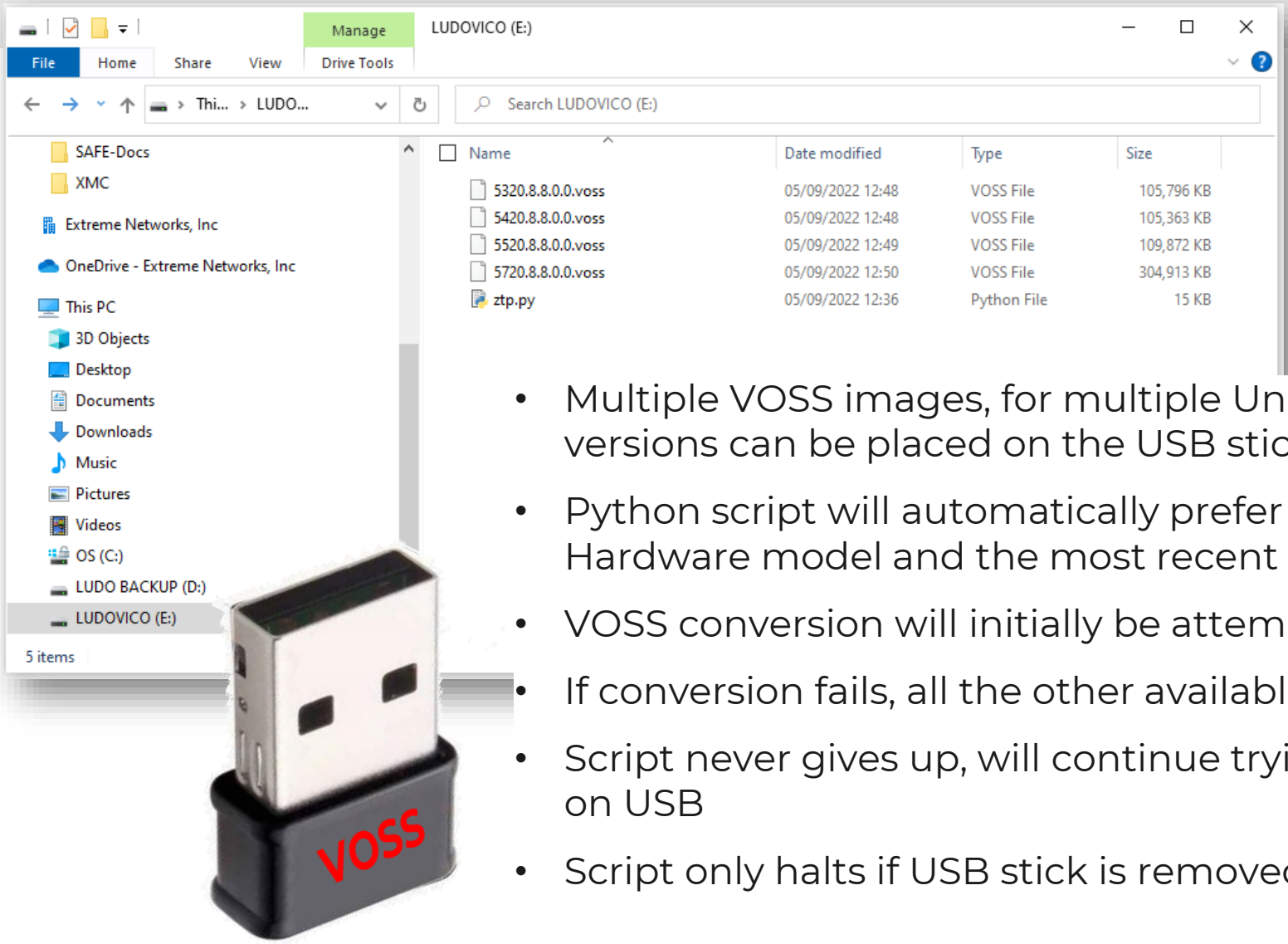
ADVANCE WITH US

Converting Universal Hardware to Fabric Engine via USB stick

- **Universal Hardware: 5720/5520/5420/5320/…**
- **USB stick with files:**
  - ztp.py : Python script; must be named “ztp.py”
  - <uni-hw-image>.voss : VOSS image file(s) for Universal hardware
- **Brand new switch, out of the box:**
  1. Insert USB stick
  2. Power on the switch
- **Switch already booted into EXOS as Switch Engine**
  1. Insert USB stick
  2. Execute CLI command: “`unconfigure switch`”

USB stick VOSS images



- Multiple VOSS images, for multiple Universal Hardware models and VOSS versions can be placed on the USB stick
- Python script will automatically prefer the image for the correct Universal Hardware model and the most recent software version
- VOSS conversion will initially be attempted with above preferred VOSS image
- If conversion fails, all the other available VOSS images are tried consecutively
- Script never gives up, will continue trying with all the VOSS images available on USB
- Script only halts if USB stick is removed

USB ZTP execution

- When the Universal Hardware boots up in EXOS mode as a Switch Engine with factory default config AND a USB stick is inserted AND a “ztp.py” Python script is found on the USB stick, the Python script is executed
- On some older versions of EXOS seems the script gets executed twice, but that does not matter, one instance will succeed !
- If a console is connected, the following can be seen:

```
udevd: Starting version 243.2+
init started: BusyBox v1.28.3 (2020-10-25 20:59:38 America)
Starting ExtremeXOS 31.1.1b3
Copyright (C) 1996-2020 Extreme Networks.  All rights reserved.
This product is protected by one or more US patents listed at https://www.extremenetworks.com/compa


System is in evaluation for 30 day(s) and this will expire in 29 day(s) (Wed Oct  5 08:36:49 2022)
(pending-AAA) login:

Authentication Service (AAA) on the master node is now available for login.

Saving configuration primary.cfg  on master ..................... done!
Saving configuration primary.cfg  on master .. done!
USBZTP: usbztp version 1.0.0.6
USBZTP: file ztp.py
USBZTP: usbztp version 1.0.0.6
USBZTP: file ztp.py
Sent SIGTERM to all processesab
Sent SIGKILL to all processes
Requesting system reboot
```

ZTP log files – /usb/ztp-conversion.log

```
5520-24W-FabricEngine:1#% ls /usb
Listing Directory /usb:
drwxr-xr-x  2 0       0           4096 Dec 31  1969  ./
drwxr-xr-x 23 0       0              0 Sep  5 05:48  ../
-rwxr-xr-x  1 0       0      103663552 Sep  1 05:52  5320.8.7.0.0.voss
-rwxr-xr-x  1 0       0      103270235 Sep  1 05:53  5420.8.7.0.0.voss
-rwxr-xr-x  1 0       0      107791763 Aug 31 16:25  5520.8.7.0.0.voss
-rwxr-xr-x  1 0       0       98917052 Apr 23  2021  summit arm-31.1.1.3.xos
-rwxr-xr-x  1 0       0            626 Sep  5 05:43  ztp-conversion.log
-rwxr-xr-x  1 0       0          15109 Sep  5 05:38  ztp.py
5520-24W-FabricEngine:1#%
5520-24W-FabricEngine:1#% more /usb/ztp-conversion.log
2022-09-05 09:42:28.120824: =~=~=~=~=~=~=~=~=~=~= ztp =~=~=~=~=~=~=~=~=~=~=
2022-09-05 09:42:28.120879: Executing ztp - ZTP conversion to Fabric Engine
2022-09-05 09:42:28.316543: Disabled CLI prompting
2022-09-05 09:42:28.324344: Switch has serial number: SB032050G-00102
2022-09-05 09:42:28.416213: Switch is Universal Hardware model: 5520
2022-09-05 09:42:28.417833: Selected VOSS image file 5520.8.7.0.0.voss
2022-09-05 09:42:28.417866: Installing VOSS image 5520.8.7.0.0.voss
2022-09-05 09:43:32.756817: Completed installation of VOSS image 5520.8.7.0.0.voss
2022-09-05 09:43:32.756853: Rebooting the switch into VOSS!!

5520-24W-FabricEngine:1#%
```

- The Python script maintains a log file on the same USB path
  - /usb/ztp-conversion.log
- Python script will always append to this log file
- Log file can be inspected after the conversion to Fabric Engine is completed (as shown) or by removing the USB stick from the switch and inspecting the log file on PC/laptop
- Log file will detail all the Universal Hardware switches (model and serial number) which have been converted (or attempted to be converted) as the USB stick is moved around different switches

ZTP log files – debug log file – unsuccessful conversions

- The Python script also maintains a debug log file on the switch internal flash
  - /usr/local/cfg/ztp-debug.log
- This file contains a log of all the CLI commands executed by the Python script and the output of those commands

```
(CIT_31.1.1.3) 5520-24W-EXOS.13 # cat ztp-debug.log
2022-09-05 11:18:50.179625# disable cli prompting

2022-09-05 11:18:50.181333# show version | include Switch
Switch          : 800992-00-AB SB032050G-00102 Rev AB BootROM: 2.2.1.8    IMG: 31.1.1.3

sendCLI_showRegex() raw data = ['SB032050G-00102']
2022-09-05 11:18:50.184376# show switch | include "System Type:"
System Type:      5520-24W-EXOS

sendCLI_showRegex() raw data = ['5520']
vossImageFiles = ['5320.8.7.0.0.voss', '5420.8.7.0.0.voss']
sortImageFiles() imageDict = {'5420': {'8.7.0.0': '5420.8.7.0.0.voss'}, '5320': {'8.7.0.0': '5320.8.7.0.0.voss'}}
sortImageFiles() orderedImages = ['5420.8.7.0.0.voss', '5320.8.7.0.0.voss']
2022-09-05 11:18:50.274259# download url file:///usr/local/ext/5420.8.7.0.0.voss install

Downloading to Switch.....................................................................................
.............................................
Error: Failed to download image - File 5420.8.7.0.0.voss is not compatible with this platform.


(CIT_31.1.1.3) 5520-24W-EXOS.13 #
```

- Also included in this file are debug information of data extracted by the Python script
- This information is useful to the script author (myself!), if the script, for whatever reason, failed to convert a switch to Fabric Engine
- If the Fabric Engine conversion fails, the debug log file can be recovered from the Switch Engine internal flash