#### Ubiquiti AP Normalization Guide:

### 1. Download and install Winscp and Putty (if not already installed)

- a. Winscp can be found at: https://winscp.net/eng/download.php
- Improvements to sessions and workspace management, so that WinSCP can now easily restore tabs that were open when it was last closed.
- Hardware-accelerated AES.
- Extension Archive and Download to archive remote files and download the archive.
- Improvements to Synchronization checklist window.
- Allowed sorting of find results.
- SSH core upgraded to PuTTY 0.73.
- The binaries are signed with new EV certificate valid until February 2023.
- List of all changes.



## b. Putty can be found at:

https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

Package file	8				
You probably v (Not sure whet	vant one of these. They include versions of her you want the 32-bit or the 64-bit versio	all the PuTTY utilit n? Read the <u>FAQ er</u>	es. I <u>y</u> .)		
MSI ('Windov	vs Installer')				
32-bit:	<u>putty-0.74-installer.msi</u>	<u>(or by FTP)</u>	(signature)		
64-bit:	<u>putty-64bit-0.74-installer.msi</u>	(or by FTP)	(signature)		
Unix source an	chive				
.tar.gz:	<u>putty-0.74.tar.gz</u>	(or by FTP)	(signature)		

2. Plug in AP to be normalized into your computer with an RJ45 cord.

## a. WiFi needs to be turned OFF!



- 3. Open winscp and change the following:
  - a. Protocol: Switch to SCP
  - b. Host name/IP: 192.168.1.20
  - c. Port: 22
  - d. Username: ubnt, and password: ubnt
  - e. Press Login/Connect

4. Press "Yes" or "Accept"

Warning

# Continue connecting to an unknown server and add its host key to a cache?

The server's host key was not found in the cache. You have no guarantee that the server is the computer you think it is.

The server's RSA key details are:

Algorithm:	ssh-rsa 2048
SHA-256:	AdpJdCbbVfcz1Pa/88SUBC190WMl080jxg6W3pe9F6o=
MD5:	8d:f3:86:ec:5b:f1:ef:14:cb:7e:16:61:93:3b:4d:49

If you trust this host, press Yes. To connect without adding host key to the cache, press No. To abandon the connection press Cancel.

Copy key fingerprints to clipboard

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 $\times$ 

Yes 🔻	No	Cancel	Help

5. On the right-hand side, go to top directory "root" in drop down and double click 'tmp' foldera. On the left side open up the folder containing the unzipped AP image files

Local Mark Files Commands Session Options Remote Help         Image: Synchronize       Image: Synchronize         Image: Synch	🖺 tmp - ubnt@192.168.1.	20 - WinSCP			_		-	-		×
Image: Synchronize       Image: Sy	Local Mark Files Comma	ands Session	n Options Remote	Help						
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Image: State of the state	🖵 ubnt@192.168.1.20 (tmj	p) 🗙 🖳 ub	nt@192.168.1.20 (tmp	o) 🗙 📡 New Session						
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C4Users/kbarn/Documents/Community Wi-FlautoInstal/Vasat/       /mp/         Name       Size Type       Changed       Rights       Owner	🗊 Upload 🔹 📝 Edit 🔹	× 🕅 🕞 i	Properties 📔 New -	+ - 4	📲 Download 🔹 📝 Edit	• × 🛛 🖓	Properties 📔 New •	+ - 4		
Name       Size Type       Changed       Name       Size Changed       Rights       Owner         Parent directory       11/9/2020       348.39 PM       1//1970       nvor.vr.v.       ubnt         popenvtr-tath7>genetilitie       11/9/2020       348.39 PM       9/14/2020       12/09 AM       nvor.vr.v.       ubnt         popenvtr-tath7>genetilitie       11/9/2020       343.52 PM       11/9/2020       343.52 PM       16 KB       9/14/2020       12/09 AM       nver-r       ubnt         popenvtr-tath7>genetilitie       11/9/2020       343.52 PM       16 KB       9/14/2020       12/09 AM       nver-r       ubnt         popenvtr-tath7-segnetilitie       11/9/2020       343.52 PM       16 KB       9/14/2020       12/09 AM       nver-r       ubnt         popenvtr-1s0/7.3-ath7       42.89 KB       BIN File       11/9/2020       343.52 PM       9/04/2020       12/09 AM       nver-r       ubnt         popenvtr-1s0/7.3-ath7       42.89 KB       BIN File       11/9/2020       343.52 PM       9/04/2020       10 KB       1/1/1970       nver-r       ubnt         popenvtr-1s0/7.4       10 KB       1/1/1970       nver-r       ubnt       system.clg       4 KB       1/1/1970       nver-r <td>C:\Users\kbarri\Documents\</td> <td>Community <sup>1</sup></td> <td>Wi-Fi\autoInstallViasat</td> <td>٨</td> <td>/tmp/</td> <td></td> <td></td> <td></td> <td></td> <td></td>	C:\Users\kbarri\Documents\	Community <sup>1</sup>	Wi-Fi\autoInstallViasat	٨	/tmp/					
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	0 B of 19.1 MB in 0 of 6				0 B of 36.2 KB in 0 of 6		9	SCP	2	hidden 0:18

b. Transfer the **bin** (BZ) file by dragging it to the tmp folder and press "OK"

i. DO NOT drag it into a folder within 'tmp', if you do the file must be deleted from that folder.

Local Mark Files Commands Session Options Remote Help		
🖽 🔁 🔯 Synchronize 🔳 🐙 😰 🛞 🎒 Queue 🔹 Transfer Settings Default 🔹 🍠		
🖵 ubnt@192.168.1.20 (tmp) × 🖳 ubnt@192.168.1.20 (tmp) × 🖳 New Session		
🖹 My documents 📲 • 🝸 • 💼 🟹 🖓 🛃 😭 🖓 🚼 🖕 🗢 • 🔶 🕴 📘 tmp 🔹 🚰 • 🕎 • 💼 🏹 🖓 🖉 🖻 Find Files 🔩 🗢 • • •		
🎲 Upload 🔹 📝 Edit 🔹 💥 🕼 Properties 🚔 New 🔹 🗄 🖻 💟		
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openwrt-19.07.3-ath7 4,289 KB BIN File 11/9/2020 3:43:52 PM rwr-r	ubnt	
BZ.qca956x.v3.7.58.63         7,583 KB BIN File         11/9/2020 3:43:52 PM         sysinit.txt         10 KB 1/1/1970         rw-rr	ubnt	
□ system.cfg 4 KB 1/1/1970 rw-rr	ubnt	
0 B of 19.1 MB in 0 of 6 0 B of 7.43 MB in 0 of 7	2	nidden

Session	Basic options for your PuTTY	' session
Logging Terminal	Specify the destination you want to con	nect to
<ul> <li>Keyboard</li> <li>Bell</li> <li>Features</li> <li>Window</li> <li>Appearance</li> <li>Behaviour</li> </ul>	Host Name (or IP address)          192.168.1.20         Connection type:         Raw       Telnet         Rlogin	Port 22 SSH () Serial
— Translation     Belection     Colours	Saved Sessions	
<ul> <li>□ Connection</li> <li>□ Data</li> <li>□ Proxy</li> <li>□ Telnet</li> <li>□ Rlogin</li> <li>□ SSH</li> <li>□ Serial</li> </ul>	Default Settings	Load Save Delete
	Close window on exit: Always Never Only of On	n clean exit
About	Help Open	Cancel

7.

b.

🚅 login as: ubnt

PuTTY Secur	rity Alert				×
The second secon	ne server's host l ave no guarante ink it is. ne server's rsa2 l h-rsa 2048 8d:f3 you trust this ho uTTY's cache and you want to car dding the key to you do not trus ponnection.	key is not cac e that the ser sey fingerprin :86:ec:5b:f1:e ost, hit Yes to d carry on connec the cache, hi t this host, hil	hed in the registry ver is the comput f:14:cb:7e:16:61:93 add the key to mecting. ting just once, with t No. : Cancel to abando	y. You eer you :3b:4d:49 hout on the	
	Yes	No	Cancel	Help	
Type in u	JSERNAME '	ubnt' and	d press Ente	er	

- 🗆 X

c. Type in "ubnt" as password (it won't show on screen) and press enter. Verify the following screen appears:



- d. Type 'fwupdate.real -m /tmp/BZ.qca956x.v3.7.58.6385.170508.0957.bin' and press enter
  - i. There is a tab shortcut they can use once starting to type a filename
  - ii. **ONLY PRESS ENTER ONCE** if interrupted the device may break.
  - iii. DO NOT LET CONNECTED DEVICE LOSE POWER OR THE AP MAY BREAK
  - iv. Takes 2 minutes max
  - v. It is supposed to timeout and a "network failure" error will likely appear, this is OK

```
UBNT-BZ.v3.9.54# fwupdate.real -m /tmp/BZ.qca956x.v3.7.58.6385.170508.0957.bin
part:fis:324326, block size:393216
Writing 'u-boot ' to /dev/mtd0(u-boot ) ... [%100]
part:fis:7439025, block size:7929856
Writing 'kernel0 ' to /dev/mtd3(kernel1 ) ... [%100]
```

- 8. Open command prompt and type 'ping 192.168.1.20 -t' and press enter
  - a. Verify that it gets a reply then exit (does not need to stop, will continue endlessly with replies)



## 9. Afterwards, reopen Putty

a. Right click the icon in top left corner and press "New Session"

🛃 192.168.1.20 - PuTTY



- b. Reenter login credentials
- 10. Open winscp
  - a. Click "Session"  $\rightarrow$  "Restore Session"
  - b. Transfer 'openwrt- 19.07...' to the 'tmp' folder

🌯 autoInstallViasat - ubnt	@192.168.1.2	20 - WinSCP							×
Local Mark Files Comm	ands Session	n Options Remote	Help						
🖶 🛃 🎯 Synchronize	• 🖉 🔹	🕸 🗿 Queue 🔹	Transfer Settings Default	• 🧭 •					
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<ul> <li>_pycache_</li> <li>autoUpgradeViasat.py</li> <li>openwrt-ath79 generi</li> <li>scp.py</li> <li>openwrt-19.07.3-ath7</li> <li>BZ.qca956x.v3.7.58.63</li> </ul>	13 KB 7,681 KB 21 KB 4,289 KB 7,583 KB	File folder Python File BIN File Python File BIN File BIN File	11/9/2020 3:48:39 PM 11/9/2020 3:43:52 PM 11/9/2020 3:43:52 PM 11/9/2020 3:43:52 PM 11/9/2020 3:43:52 PM 11/9/2020 3:43:52 PM	<ul> <li>default.cfg</li> <li>openwrt-19.07.3-ath7</li> <li>rc.bt</li> <li>running.cfg</li> <li>sysinit.bt</li> <li>system.cfg</li> </ul>	4 KB 4,289 KB 16 KB 4 KB 10 KB 4 KB	1/1/2021 12:00 AM 11/9/2020 1/1/2021 12:00 AM 1/1/2021 12:00 AM 1/1/2021 12:00 AM 1/1/2021 12:00 AM	TW-TT TW-TT TW-TT TW-TT TW-TT	ubnt ubnt ubnt ubnt ubnt ubnt	
0 B of 19.1 MB in 0 of 6				0 B of 4.22 MB in 0 of 6				1 hic	lden
						•	SCP	0:01:34	8 .

- 11. Return to Putty
  - a. Enter 'cat /proc/mtd' and press enter

BZ.v3.	.7.58# cat	/proc/mt	:d
dev:	size	erasesize	e name
mtd0:	00060000	00010000	"u-boot"
mtd1:	00010000	00010000	"u-boot-env"
mtd2:	00790000	00010000	"kernel0"
mtd3:	00790000	00010000	"kernel1"
mtd4:	00020000	00010000	"bs"
mtd5:	00040000	00010000	"cfg"
mtd6:	00010000	00010000	"EEPROM"
BZ.v3.	.7.58#		

- b. Take note of which mtd# the "bs" is assigned to (usually mtd4) for later reference
- c. Enter 'mtd write /tmp/openwrt-19.07.3-ath79-generic-ubnt\_unifiac-mesh-squashfssysupgrade.bin **kernel0**' and press enter once
  - i. ONLY PRESS ENTER ONCE (ALWAYS)
  - ii. Tab shortcut doesn't get the 'kernel0' this needs to be typed.

```
BZ.v3.7.58# mtd write /tmp/openwrt-19.07.3-ath79-generic-ubnt_unifiac-mesh-squas
hfs-sysupgrade.bin kernel0
Unlocking kernel0 ...
Writing from /tmp/openwrt-19.07.3-ath79-generic-ubnt_unifiac-mesh-squashfs-sysup
grade.bin to kernel0 ...
```

```
BZ.v3.7.58#
```

d. Type 'mtd erase kernel1' and press enter



- e. Type 'dd if=/dev/zero bs=1 count=1 of=/dev/**mtd4**' use the mtd assigned to 'bs' instead of 4 if it is different and press enter.
  - i. Verify 1+0 record in and out



- ii. May be a way to make the mtd selection automated, but don't worry about it for now
- f. Type "reboot' and press enter. Wait for # line

BZ.v3.7.58#	reboot
BZ.v3.7.58#	

- 12. Open command prompt
  - a. Type 'ping 192.168.1.1 -t' this has changed from the .20 used before!
  - b. Verify it gets a reply then exit
- 13. Open winscp
  - a. Exit out of winscp then reopen to new session
  - b. Enter 192.168.1.1
  - c. Username: root, leave password blank
  - d. Port: 22
  - e. Press connect

🛍 Login

New Site	Session File protocol: SCP Host name: 192.168.1.1 User name: Password root Save	Port number: 22 💽 : Advanced
Tools  Manage Show Login dialog on startup and when the last se	Closed	e Help

Warning

Continue connecting to an unknown server and add its host key to a cache?

The server's host key was not found in the cache. You have no guarantee that the server is the computer you think it is.

The server's RSA key details are:

Algorithm:	ssh-rsa 2048
SHA-256:	AdpJdCbbVfcz1Pa/88SUBC190WMl080jxg6W3pe9F6o=
MD5:	8d:f3:86:ec:5b:f1:ef:14:cb:7e:16:61:93:3b:4d:49

If you trust this host, press Yes. To connect without adding host key to the cache, press No. To abandon the connection press Cancel.

Copy key fingerprints to clipboard

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Yes 🔻	No	Cancel	Help

14. Same viasat image file folder on left and 'tmp' on the right a. Transfer 'openwrt-ath79...' file to 'tmp'



15. Go back to Putty and click new session. Enter the same new credentials as above and click "yes".

餐 PuTTY Configuration	? ×			
Category:				
E Session	Basic options for your PuTTY session			
Terminal	Specify the destination you want to connect to			
Keyboard	Host Name (or IP address)	Port		
- Bell Features	192.168.1.1	22		
Window Appearance	Connection type: Raw Telnet Rlogin SSF	I O Serial		
- Behaviour Translation	Load, save or delete a stored session			
	Saved Sessions			
- Data	Default Settings	Load		
- Proxy Telnet		Save		
Rlogin				
Sorial		Delete		
Sellar				
	Close window on exit: Always Never Only on clean exit			
About Help	Open	Cancel		
PuTTY Security A	lert 2	<		



a. Type in just the login name "root" (no password required) and press enter



- b. Type 'sysupgrade -v -n /tmp/openwrt-ath79-generic-ubnt\_unifiac-mesh-squashfssysupgrade.bin' and press enter
- c. Press OK to any error messages
- d. Press Accept should read closing all shell sessions. Once you see the below the AP has been staged.



## DONE!

If at any point during the process the device cannot be reached or if you want to check if device is bricked it will no longer appear on either IP, but once the process is complete it won't appear on those IPs either.

This process stages the device as well as fixes it!