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documentation

- <https://www.turris.cz/doc/en/start>

reset modes

https://www.turris.cz/doc/en/howto/omnia_factory_reset

Available reset modes:





















- 1 LED: Standard (re)boot
- 2 LEDs: Rollback to latest snapshot
- 3 LEDs: Rollback to factory reset
- 4 LEDs: Re-flash router from flash drive
- 5 LEDs or more: Boot to rescue shell

vlan

- https://www.turris.cz/doc/en/howto/vlan_settings_omnia

GPIO pinout

Extension connector description

SIGNAL	CN12		CN11	SIGNAL
GPIO56		PIN10		GND
GPIO51		PIN9		+3.3V
GPIO47		PIN8		I2C6.SCL
GPIO44		PIN7		I2C6.SDA
GPIO42		PIN6		UART1.TXD
GPIO36		PIN5		UART1.RXD
GPIO35		PIN4		SPI0.MISO
GPIO34		PIN3		SPI0.MOSI
GPIO33		PIN2		SPI0.SCK
GPIO18		PIN1		SPI0.NSS

PWM same on all pins

- <https://forum.turris.cz/t/gpio-documentation/2869/5>

Debian

- <https://github.com/tmshlvck/omnia-debian/wiki>
- <https://wiki.debian.org/InstallingDebianOn/TurrisOmnia>

```
root@turris:/mnt/tmp# wget http://aule.elfove.cz/~brill/omnia-debian/omnia-medkit-20170330.tar.gz

# boot into rescue mode

root@(none):~# mount /dev/mmcb1k0p1 /target/

root@(none):~# btrfs subvolume create /target/@debian
```

watchdog will timeout, but you will eventually have subvolume visible from u-boot (which is not case if you just create subvolume from Turris OS

```
root@turris:/# btrfs sub create @debian
Create subvolume './@debian'

root@turris:/# cd /@debian
root@turris:/@debian# tar xf /mnt/tmp/omnia-medkit-20170330.tar.gz
root@turris:/@debian# btrfs fi df .
System, single: total=32.00MiB, used=4.00KiB
Data+Metadata, single: total=3.68GiB, used=2.25GiB
GlobalReserve, single: total=48.00MiB, used=0.00B

root@turris:/@debian# vi etc/network/interfaces
auto br0
iface br0 inet static
    bridge_ports wlan0 eth0 eth2
    address 192.168.3.254
    netmask 255.255.255.0
    gateway 192.168.3.1
root@turris:~# echo b > /proc/sysrq-trigger
[54760.278340] sysrq: SysRq : Resetting
[54760.282039] CPU1: stopping
```

```
U-Boot SPL 2015.10-rc2 (Aug 18 2016 - 20:43:35)
High speed PHY - Version: 2.0
SERDES0 card detect: NONE
```

```
Initialize Turris board topology
Detected Device ID 6820
board SerDes lanes topology details:
```

Lane #	Speed	Type
0	5	PCIe0
1	5	USB3 HOST0
2	5	PCIe1
3	5	USB3 HOST1
4	5	PCIe2
5	0	SGMII2

```
poll_op_execute: TIMEOUT
PCIe, Idx 0: detected no link
PCIe, Idx 1: detected no link
PCIe, Idx 2: detected no link
High speed PHY - Ended Successfully
DDR3 Training Sequence - Ver TIP-1.29.0
Memory config in EEPROM: 0x01
DDR3 Training Sequence - Switching XBAR Window to FastPath Window
DDR3 Training Sequence - Ended Successfully
```

```
U-Boot 2015.10-rc2 (Aug 18 2016 - 20:43:35 +0200), Build: jenkins-omnia-master-23
```

```
SoC: MV88F6820-A0
```

```
Watchdog enabled
I2C: ready
SPI: ready
DRAM: 1 GiB (ECC not enabled)
Enabling Armada 385 watchdog.
Disabling MCU startup watchdog.
Regdomain set to **
MMC: mv_sdh: 0
SF: Detected S25FL164K with page size 256 Bytes, erase size 64 KiB, total 8 MiB
*** Warning - bad CRC, using default environment
```

```
Model: Marvell Armada 385 GP
Board: Turris Omnia SN: 0000000B0000B8E5
Regdomain set to **
SCSI: MVEBU SATA INIT
SATA link 0 timeout.
SATA link 1 timeout.
AHCI 0001.0000 32 slots 2 ports 6 Gbps 0x3 impl SATA mode
flags: 64bit ncq led only pmp fbss pio slum part sxs
Net: neta2
Hit any key to stop autoboot: 0
=>
```

```
=> setenv debbootargs earlyprintk console=ttyS0,115200 rootfstype=btrfs rootwait root=/dev/mmcblk0
=> setenv debboot 'setenv bootargs "$debbootargs cfg80211.freq=$regdomain"; btrload mmc 0 0x01000
=> saveenv
Saving Environment to SPI Flash...
SF: Detected S25FL164K with page size 256 Bytes, erase size 64 KiB, total 8 MiB
Erasing SPI flash...Writing to SPI flash...done
```

```
=> setenv defbootcmd "$bootcmd"
=> setenv debbootcmd 'i2c dev 1; i2c read 0x2a 0x9 1 0x00FFFFFF0; setexpr.b rescue *0x00FFFFFF0; if
=> setenv bootcmd "$debbootcmd"
=> saveenv
Saving Environment to SPI Flash...
Erasing SPI flash...Writing to SPI flash...done
```

u-boot problem

```
Kernel image @ 0x1000000 [ 0x000000 - 0x332588 ]
Wrong Ramdisk Image Format
Ramdisk image is corrupt or invalid
```

<https://docs.turris.cz/hw/omnia/serial-boot/#u-boot>

update u-boot

```
=> dhcp
neta2:1 is connected to neta2. Reconnecting to neta2
neta2 Waiting for PHY auto negotiation to complete..... done
BOOTP broadcast 1
BOOTP broadcast 2
BOOTP broadcast 3
BOOTP broadcast 4
BOOTP broadcast 5
*** Unhandled DHCP Option in OFFER/ACK: 208
*** Unhandled DHCP Option in OFFER/ACK: 208
DHCP client bound to address 192.168.4.113 (5583 ms)
*** Warning: no boot file name; using 'COA80471.img'
```

```

Using neta2 device
TFTP from server 192.168.4.1; our IP address is 192.168.4.113
Filename 'C0A80471.img'.
Load address: 0x800000
Loading: *
TFTP error: 'file /var/tftp/C0A80471.img not found' (1)
Not retrying...
=> tftpbboot 0x1000000 uboot-turris-omnia-spl.kwb
Using neta2 device
TFTP from server 192.168.4.1; our IP address is 192.168.4.113
Filename 'uboot-turris-omnia-spl.kwb'.
Load address: 0x1000000
Loading: #####
          2.6 MiB/s

done
Bytes transferred = 534240 (826e0 hex)
=> sf probe
SF: Detected S25FL164K with page size 256 Bytes, erase size 64 KiB, total 8 MiB
=> sf update 0x1000000 0 $filesize
device 0 offset 0x0, size 0x826e0
534240 bytes written, 0 bytes skipped in 10.563s, speed 51765 B/s

```

fix default variables and boot from mmc (I did 4 leds rescue before)

```

env default -a
saveenv
run mmcboot

```

rescue image

```

root@x230:/var/tftp# wget https://repo.turris.cz/hbs/omnia/packages/turrispackages/rescue-image_3
root@x230:/var/tftp# mkdir tmp
root@x230:/var/tftp# cd tmp/
root@x230:/var/tftp/tmp# tar xvf ../rescue-image_3.4-1_arm_cortex-a9_vfpv3-d16.ipk
./debian-binary
./data.tar.gz
./control.tar.gz
root@x230:/var/tftp/tmp# tar xvf data.tar.gz
./
./usr/
./usr/share/
./usr/share/rescue-image/
./usr/share/rescue-image/image.fit
./usr/share/rescue-image/image.fit.lzma
root@x230:/var/tftp/tmp# cp usr/share/rescue-image/image.fit.lzma ../

```

now flash new rescue

```

=> tftpbboot ${kernel_addr_r} image.fit.lzma
Using neta2 device
TFTP from server 192.168.4.1; our IP address is 192.168.4.113
Filename 'image.fit.lzma'.
Load address: 0x800000
Loading: #####
          #####
          #####

```

```
#####
#####
#####
#####
2.4 MiB/s
done
Bytes transferred = 6115919 (5d524f hex)

=> sf probe
SF: Detected S25FL164K with page size 256 Bytes, erase size 64 KiB, total 8 MiB
=> sf update ${kernel_addr_r} 0x00100000 ${filesize}
device 0 offset 0x5d524f, size 0x22adb1
SPI flash failed in erase step
```

update from shell

```
opkg install u-boot-omnia
opkg install rescue-image
```

```
root@turris:~# nor-update -d
Verifying /dev/mtd0 against /usr/share/omnia/u-boot-devel ...
a107291f748c9b3d9d96dd718e3e471a - /dev/mtd0
15b3b8e4100351677e85b983ef659921 - /usr/share/omnia/u-boot-devel
Failed
Unlocking /dev/mtd0 ...
Erasing /dev/mtd0 ...

Writing from /usr/share/omnia/u-boot-devel to /dev/mtd0 ...
Verifying /dev/mtd1 against /usr/share/rescue-image/image.fit.lzma ...
1ea91207d0fbd4479bb4c8b4a3957371 - /dev/mtd1
82194bc8fc95193cc3f3491a047b0c88 - /usr/share/rescue-image/image.fit.lzma
Failed
Unlocking /dev/mtd1 ...
Erasing /dev/mtd1 ...

Writing from /usr/share/rescue-image/image.fit.lzma to /dev/mtd1 ...
```

This will make route unbootable :-(

Reflash router via usb <https://docs.turris.cz/hw/omnia/rescue-modes/#re-flash-router>