

OpenWrt – Part 2

Includes:

- SSH into HG556a reveals it is actually version B
- Install the OpenWrt Version B binary image
- Turn on wifi
- Wifi disappears

Huawei HG556a Version A ?

According to the OpenWrt documentation at <https://openwrt.org/toh/huawei/hg556a>

Version identification

Router version	Board model	Wifi chip	Vdf Version *	Serial number (first 5 digits)	Flash chip erasesize **	cal_data offset	Flash chip
A	HG55VDFA VER.C	Atheros AR9223	HG556AVDFA	30462, 30562, 30605, 30608, 30634	0x10000	0xf7e000	MX29LV128DB
B			HG556BVDFA	30692, 30693, 31110, 31300	0x20000	0xfe000	S29GL128P10 or MX29GL128EH
C	HG56BZRB VER.A	Ralink RT3062F	HG556CVDFA	30555, 30694, 30695, 31301, 31507, 31525, 31901, 31902, 31935, 32505	0x20000	0xeffe00	

*) You can check the version from the OEM firmware executing the command: `hwversion show`

**) You can check the flash memory chip erasesize with the command (in openwrt): `cat /proc/mtd`

- 0x20000 = 128 KiB
- 0x10000 = 64 KiB

If HG556a is Version A then it has $0x10000 = 64\text{KB}$ of “erasesize”, and Version B has $0x20000 = 128\text{KB}$.

SSH..

Huawei HG556a Version A ?

```
wlug@wlug:~$ ssh root@192.168.1.1
The authenticity of host '192.168.1.1 (192.168.1.1)' can't be established.
RSA key fingerprint is SHA256:kd0MAfDmtk0lef9Ii/qvQS4byFKT/NzCFdZBhdOG5NE.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.1.1' (RSA) to the list of known hosts.
```

```
BusyBox v1.28.3 () built-in shell (ash)
```

WIRELESS FREEDOM

OpenWrt 18.06.1, r7258-5eb055306f

```
==== WARNING! =====
There is no root password defined on this device!
Use the "passwd" command to set up a new password
in order to prevent unauthorized SSH logins.
```

```
root@OpenWrt:~# cat /proc/mtd
dev:      size      erasesize  name
mtd0: 00020000 00020000  "CFE"
mtd1: 00020000 00020000  "nvram"
mtd2: 00fc0000 00020000  "linux"
mtd3: 0015b3e0 00020000  "kernel"
mtd4: 00e64b20 00020000  "rootfs"
mtd5: 00c00000 00020000  "rootfs_data"
root@OpenWrt:~#
```

0x20000 = 128KB
of erasesize.
Implies: Version B.

Upgrade: Huawei HG556a to Version B

Upgrade to Version B. Could try OpenWrt utility...

The screenshot shows the OpenWrt LuCI web interface in a browser. The address bar displays the URL `192.168.1.1/cgi-bin/luci/admin/system/flashops`. The interface has a dark header with the OpenWrt logo, navigation links (Status, System, Network, Logout), and a notification for "UNSAVED CHANGES: 1". The main content area is titled "Flash operations" and contains three sections: "Backup", "Restore", and "Flash new firmware image".

Flash operations

Actions Configuration

Backup

Click "Generate archive" to download a tar archive of the current configuration files.

Download backup: [Generate archive](#)

Restore

To restore configuration files, you can upload a previously generated backup archive here. To reset the firmware to its initial state, click "Perform reset" (only possible with squashfs images).

Restore backup: [Browse...](#) No file selected. [Upload archive...](#)

Flash new firmware image

Upload a sysupgrade-compatible image here to replace the running firmware. Check "Keep settings" to retain the current configuration (requires a compatible firmware image).

Keep settings: ☒

Image: [Browse...](#) No file selected. [Flash image...](#)

Powered by LuCI openwrt-18.06 branch (git-18.228.31946-f64b152) / OpenWrt 18.06.1 r7258-5eb055306f

Upgrade: Huawei HG556a to Version B

Opted to...

- Power on HG556a with restart button held down for +12 seconds.
- Laptop at static address of 192.168.1.2 connected to HG556a ethernet port.
- Firefox polls 192.168.1.1 until HG556a finishes power-on testing and displays Huawei “Update Software” screen.
- Browse to select Version B file...



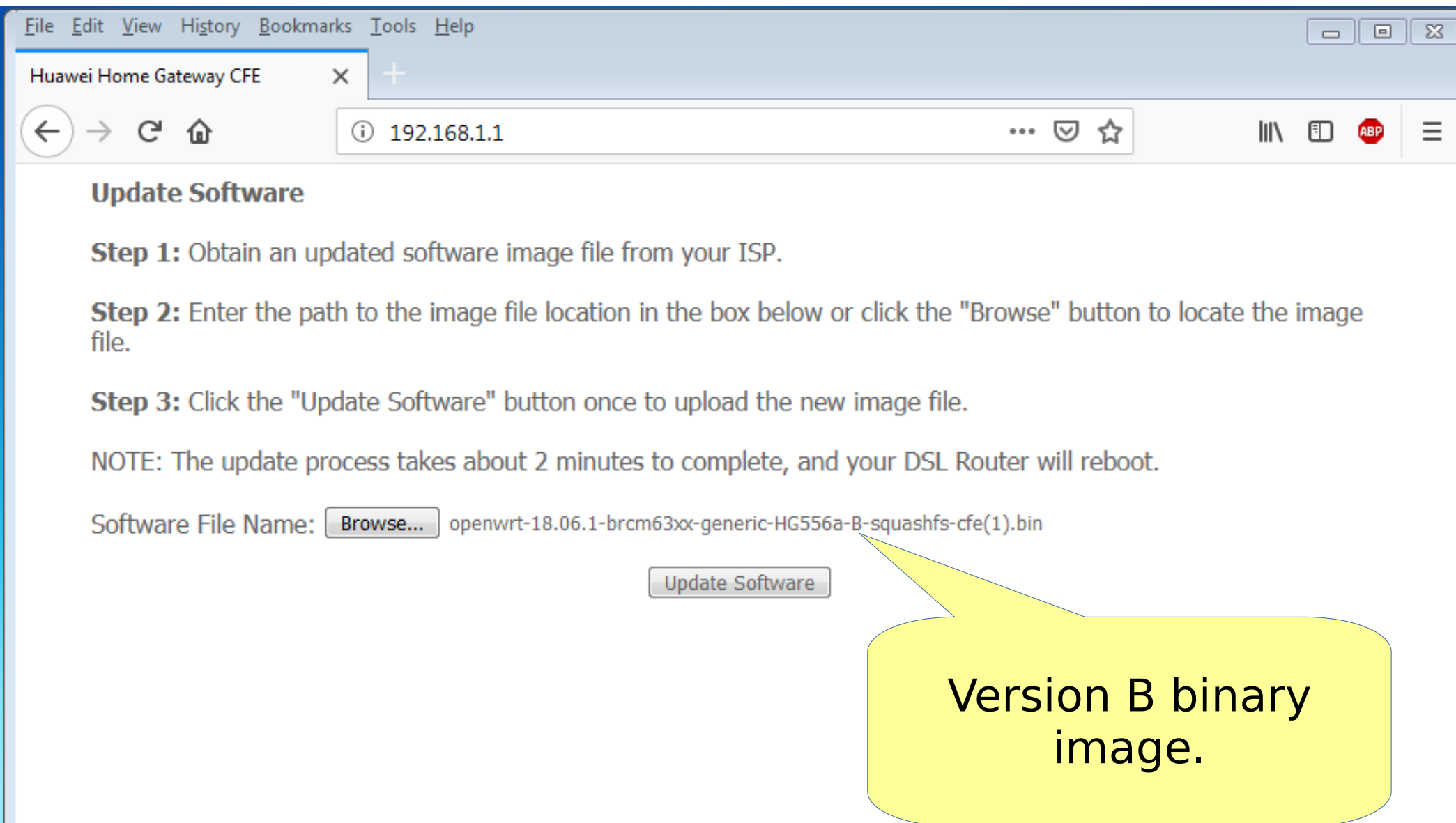
openwrt-18.06.1-brcm63xx-generic
-HG556a-A-squashfs-cfe(1).bin
BIN File



openwrt-18.06.1-brcm63xx-generic
-HG556a-B-squashfs-cfe(1).bin
BIN File

Upgrade: Huawei HG556a to Version B

...



The screenshot shows a web browser window with the title "Huawei Home Gateway CFE". The address bar displays "192.168.1.1". The main content area is titled "Update Software" and contains three steps:

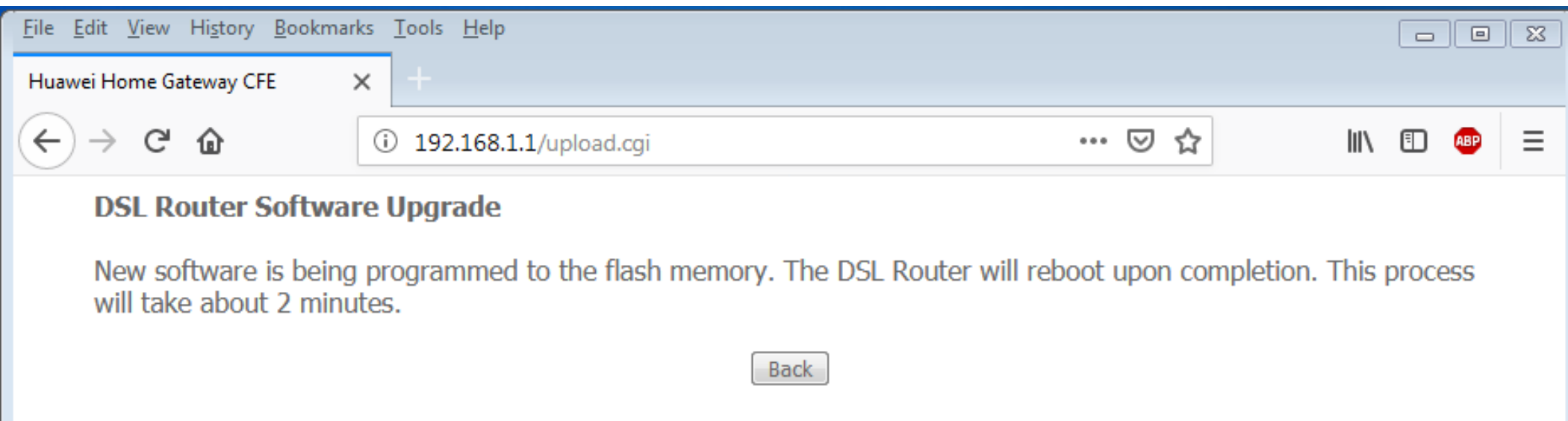
- Step 1:** Obtain an updated software image file from your ISP.
- Step 2:** Enter the path to the image file location in the box below or click the "Browse" button to locate the image file.
- Step 3:** Click the "Update Software" button once to upload the new image file.

Below the steps, a note states: "NOTE: The update process takes about 2 minutes to complete, and your DSL Router will reboot."

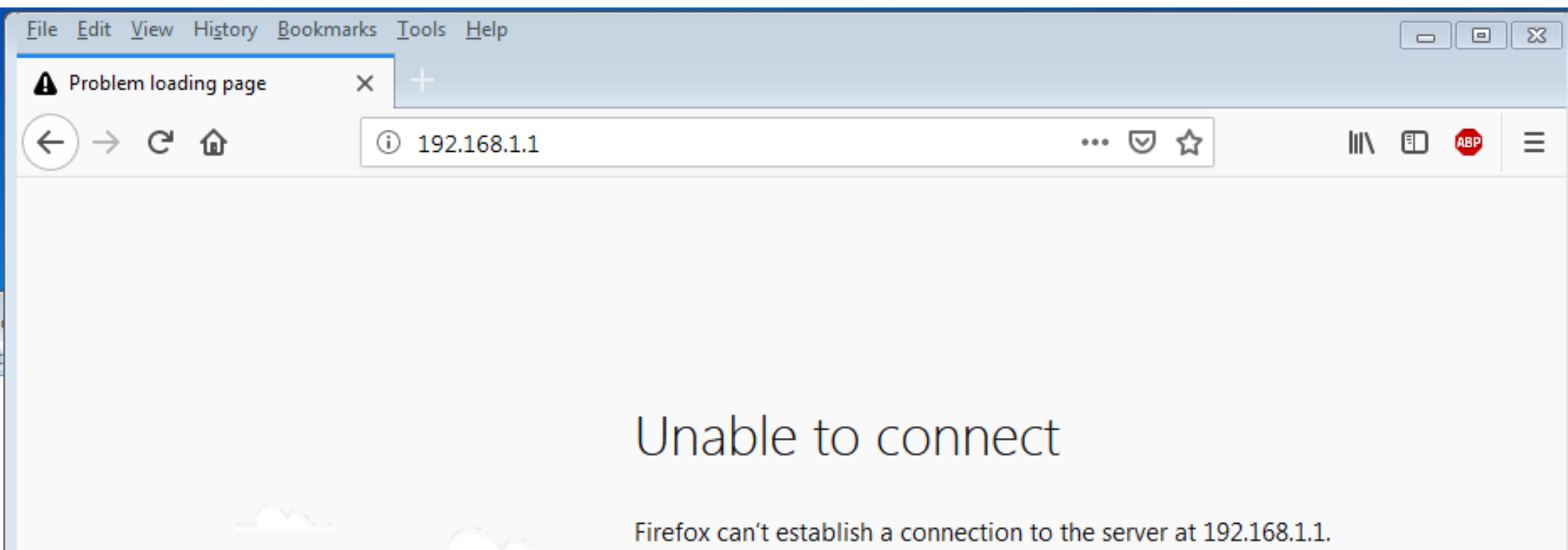
The "Software File Name:" field contains the text "openwrt-18.06.1-brcm63xx-generic-HG556a-B-squashfs-cfe(1).bin". A yellow callout bubble points to this text with the text "Version B binary image."

Buttons for "Browse..." and "Update Software" are visible.

Upgrade: Huawei HG556a to Version B

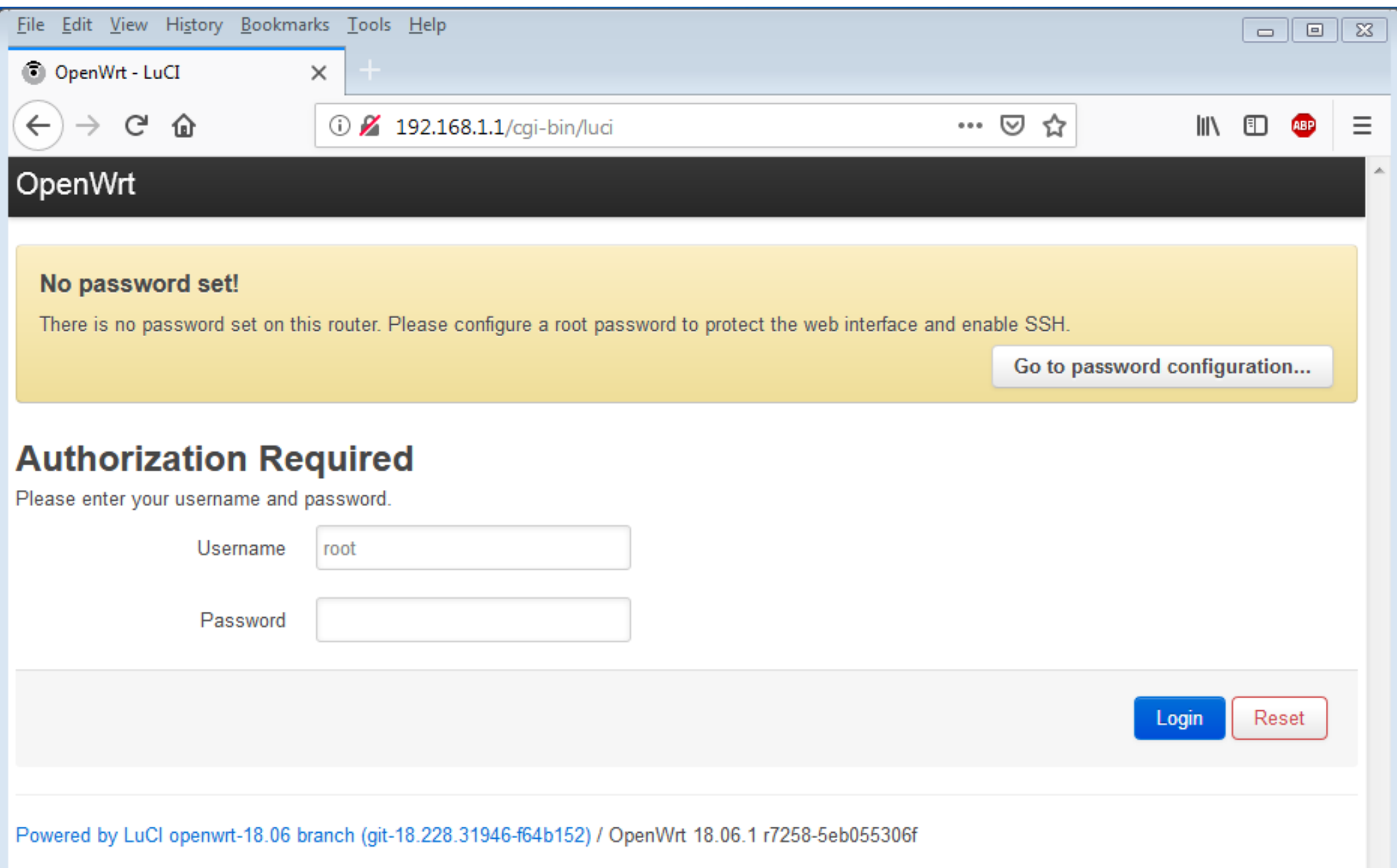


After 1 minute upgrade complete, HG556a reboots, lose connection...



Update: Huawei HG556a to Version B

Connect to new Version B software...



The screenshot shows a web browser window with the OpenWrt LuCI interface. The browser's address bar shows the URL `192.168.1.1/cgi-bin/luci`. The page has a dark header with the 'OpenWrt' logo. A yellow warning box at the top states 'No password set!' and provides instructions to configure a root password and enable SSH, with a button to 'Go to password configuration...'. Below this is an 'Authorization Required' section with a prompt to enter a username and password. The username field is pre-filled with 'root', and the password field is empty. At the bottom right of the form are 'Login' and 'Reset' buttons. The footer indicates the interface is powered by LuCI openwrt-18.06 branch.

File Edit View History Bookmarks Tools Help

OpenWrt - LuCI

192.168.1.1/cgi-bin/luci

OpenWrt

No password set!

There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.

[Go to password configuration...](#)

Authorization Required

Please enter your username and password.

Username

Password

[Login](#) [Reset](#)

Powered by LuCI openwrt-18.06 branch (git-18.228.31946-f64b152) / OpenWrt 18.06.1 r7258-5eb055306f

Huawei HG556a - gTurn on Wifi

Select Network, then Wireless

OpenWrt Status ▾ System ▾ Network ▾ Logout AUTO REFRESH ON

radio0: Master "OpenWrt"

Wireless Overview

radio0

Generic MAC80211 802.11bgn
Channel: 11 (2.462 GHz) | Bitrate: 130 Mbit/s

Restart

Scan

Add

98%

SSID: OpenWrt | Mode: Master
BSSID: 30:87:30:DD:9D:ED | Encryption: None

Disable

Edit

Remove

Associated Stations

Network	MAC-Address	Host	Signal / Noise	RX Rate / TX Rate
Master "OpenWrt" (wlan0)	00:21:6B:3C:38:1E	X200.lan (192.168.1.116)	-40 / -95 dBm	65.0 Mbit/s, 20MHz, MCS 7 130.0 Mbit/s, 20MHz, MCS 15

Clicked to enable wifi.

Ian's laptop has made connection to SSID "OpenWrt", with no password. Allocated 192.168.1.116

Huawei HG556a

...And then it went pear shaped...

Upon turning off and back on...

- The wireless disappeared and was never seen again.
- Possibly the “cal_data” partition in Memory Technology Device (mtd) is corrupted.
- Cal_data holds the wireless chip configuration data.
- This forum posting covers the issues <https://forum.openwrt.org/t/no-wifi-in-18-06-with-hg556a/19510/2> and links to this Spanish forum <http://www.ipv6labs.es/2015/02/26/mi-router-huawei-hg556a-no-reconoce-el-wifi-tras-cargar-varios-firmwares/>
- Comments on forum still in progress as of 22 Jan 2019. Troubleshooter: Didac P. Cuéllar

Huawei HG556a

...The End of Huawei ...for now.

OR... Carry on and show summary of OpenWrt packages...

OpenWrt Packages Summary

administration		9
administration	openwisp	4
administration	zabbix	8
base system		54
boot loaders		1
development		25
development	libraries	2
firmware		113
firmware	wireless drivers	4
fonts	dejavu	22

OpenWrt Packages Summary

kernel modules		728
kernel modules	cryptographic api modules	3
kernel modules	firewall	23
kernel modules	hardware monitoring support	1
kernel modules	i2c support	1
kernel modules	led modules	1
kernel modules	libraries	1
kernel modules	network devices	24
kernel modules	network support	12
kernel modules	other modules	23
kernel modules	proprietary bcm43xx wifi driver	5
kernel modules	spi support	1
kernel modules	usb support	2
kernel modules	voice over ip	6
kernel modules	w1 support	1
kernel modules	wireless drivers	82

OpenWrt Packages Summary

languages		1
languages	erlang	12
languages	java	1
languages	lua	47
languages	node.js	9
languages	perl	150
languages	php	53
languages	python	235
languages	ruby	65

OpenWrt Packages Summary

libraries		472
libraries	compression	3
libraries	database	6
libraries	filesystem	5
libraries	firewall	5
libraries	instant messaging	1
libraries	ip addresses and names	1
libraries	languages	1
libraries	libelektra	16
libraries	linux atm tools	1
libraries	lua	1
libraries	networking	9
libraries	ruby	1
libraries	sound	1
libraries	ssl	4
libraries	telephony	193

OpenWrt Packages Summary

luci	applications	69
luci	collections	5
luci	freifunk	10
luci	libraries	11
luci	modules	6
luci	protocols	10
luci	themes	4
mail		26
multimedia		146
multimedia	streaming	1

OpenWrt Packages Summary

network		297
network	bittorrent	12
network	captive portals	8
network	dial in up	2
network	download manager	3
network	file transfer	12
network	filesystem	12
network	firewall	64
network	firewall tunnel	2
network	freeradius version 3	30
network	instant messaging	63
network	ip addresses and names	66
network	linux atm tools	26
network	nmap suite	6
network	ntrip	3
network	olsr.org network framework	4

OpenWrt Packages Summary

network	open vswitch	20
network	printing	1
network	routing and redirection	79
network	ssh	10
network	tcprelay	8
network	telephony	878
network	telephony lantiq	2
network	thc ipv6 attack and analyzing toolkit	52
network	time synchronization	8
network	version control systems	8
network	vpn	108
network	web servers proxies	66
network	wireless	11
network	wwan	5

OpenWrt Packages Summary

sound		37
utilities		660
utilities	boot loaders	4
utilities	compression	15
utilities	database	51
utilities	disc	17
utilities	editors	9
utilities	encryption	11
utilities	filesystem	34
utilities	image manipulation	2
utilities	libelektra	1
utilities	microcontroller programming	3
utilities	rtklib suite	5
utilities	shells	6
utilities	telephony	5
utilities	terminal	16
utilities	virtualization	6
utilities	zoneinfo	12
xorg	font utils	1

OpenWrt Packages Summary

Total Packages (January 2019): 5498

<https://openwrt.org/packages/table/start>

Good code examples...

<https://unix.stackexchange.com/questions/157097/how-to-know-disk-space-occupied-by-packages-in-openwrt>

...