

OpenWrt - Part 1

An Introduction to OpenWrt embedded Linux operating system on a Huawei / Vodafone HG556a Home Gateway.

Special thanks to Ivan the IT Recycler in Frankton for supplying the Wifi/Router/ADSL products.

Waikato Linux Users Group
25 February 2019
Ian Stewart

OpenWRT

Presentation Contents:

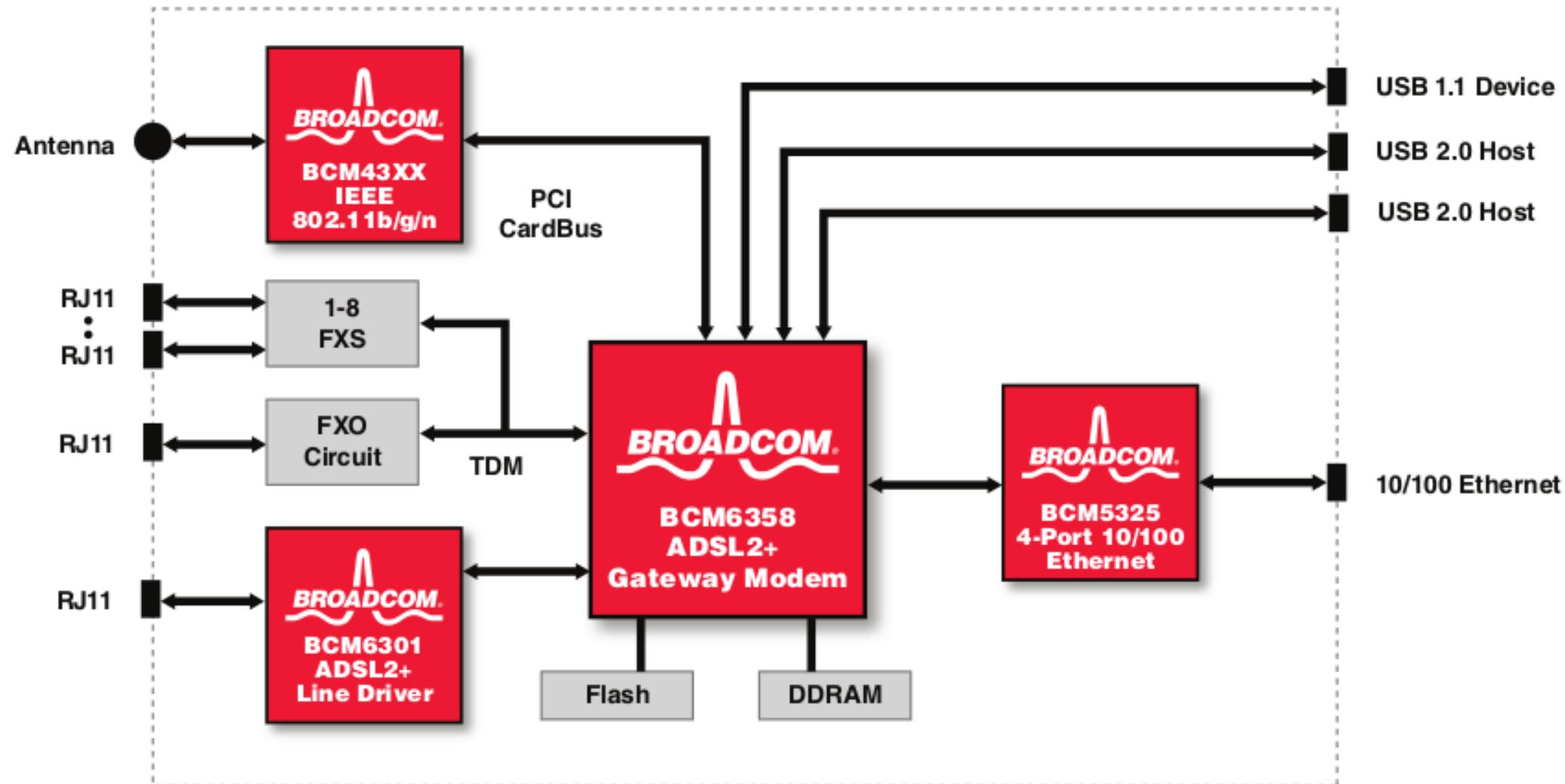
- Home Gateway Routers – Hardware Block diagram
- HG556a hardware overview
- HG556a Vodafone software
- Changing the Vodafone software
- Install of OpenWrt software fails.
- Attempting SSH fails.
- Overview of OpenWrt
- Installation of OpenWrt on HG556a
- Web-Browser connection to OpenWrt on HG556a
- SSH Connection to OpenWrt

Simple Home Gateway - Features

- Connection to a Service Provider. Connection options...
 - Optical Network Terminal ONT via Ethernet
 - Asymmetric Digital Subscriber Line - ADSL
 - Mobile Broadband - 2 to 5G via USB plug in.
- Wifi base station.
- Ethernet ports.
- Analog telephone phone ports.
- Status LED's
- Web-browser based setup and control.
- SSH based setup and control.

Home Gateway - Broadcom Block Diagram

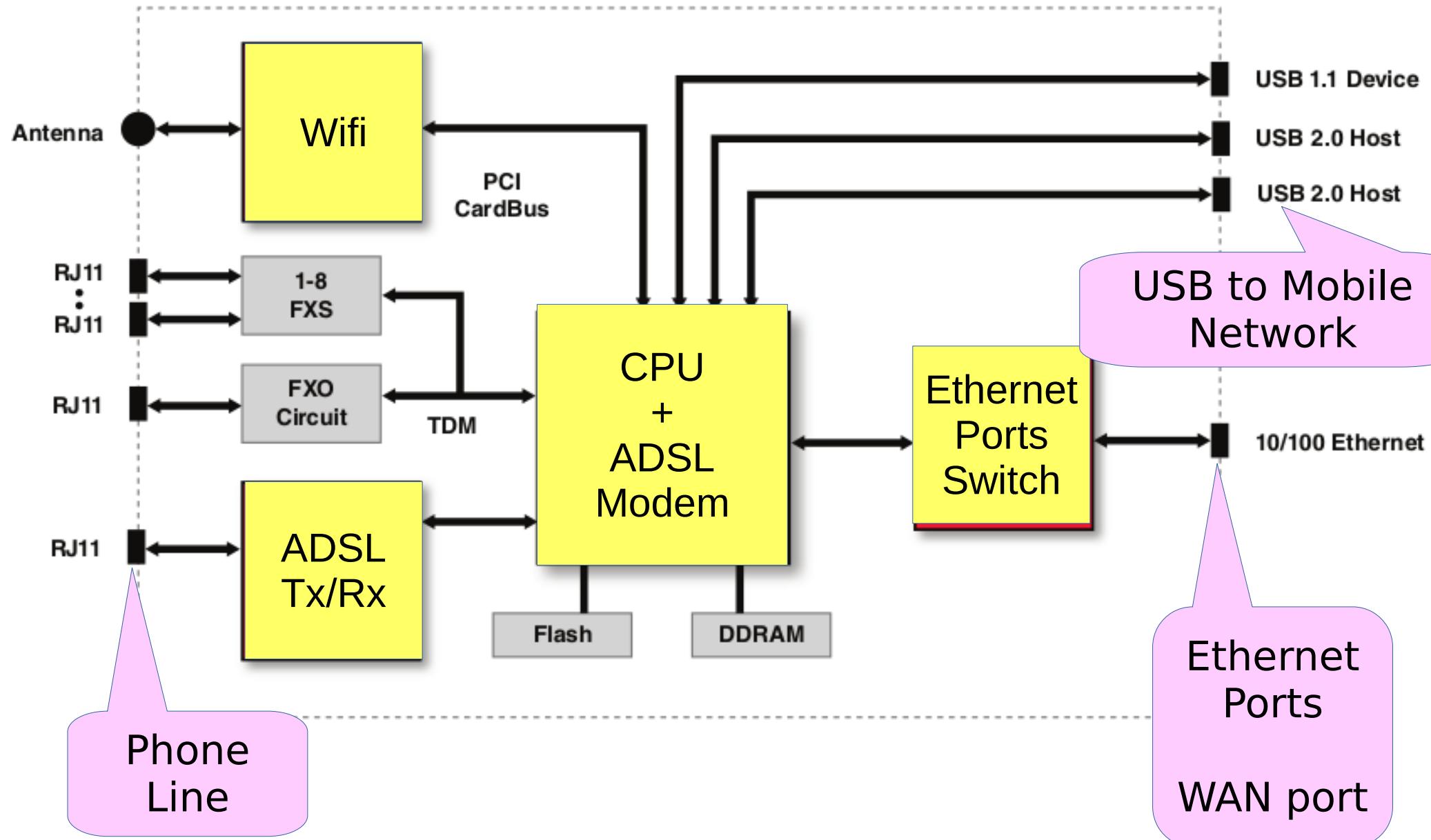
BCM6358-Based ADSL2+ Residential Gateway



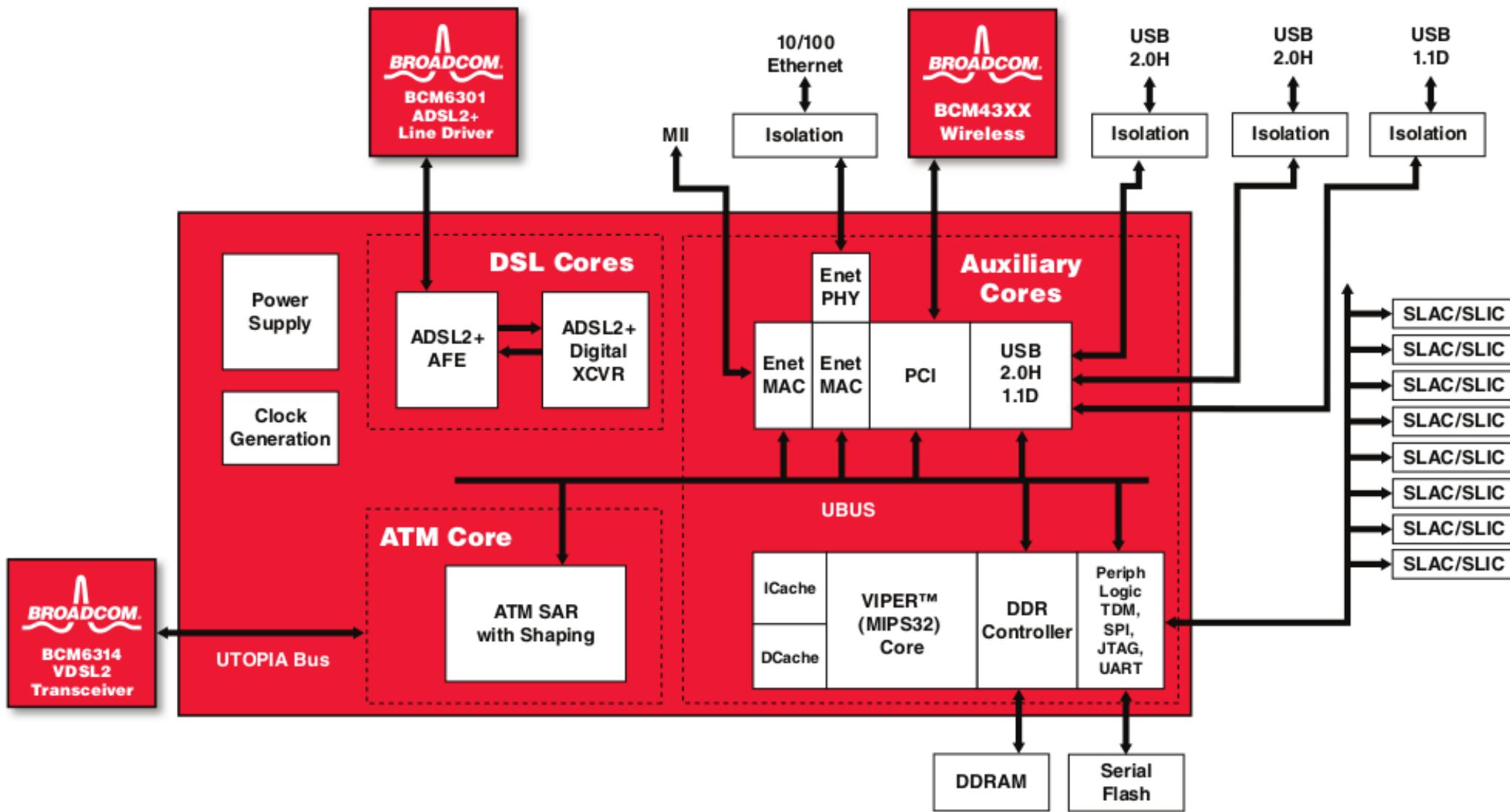
<https://www.datasheets.com/en/datasheet/BCM6358-Broadcom%20Limited-28017805>

Home Gateway - Broadcom Block Diagram

BCM6358-Based ADSL2+ Residential Gateway



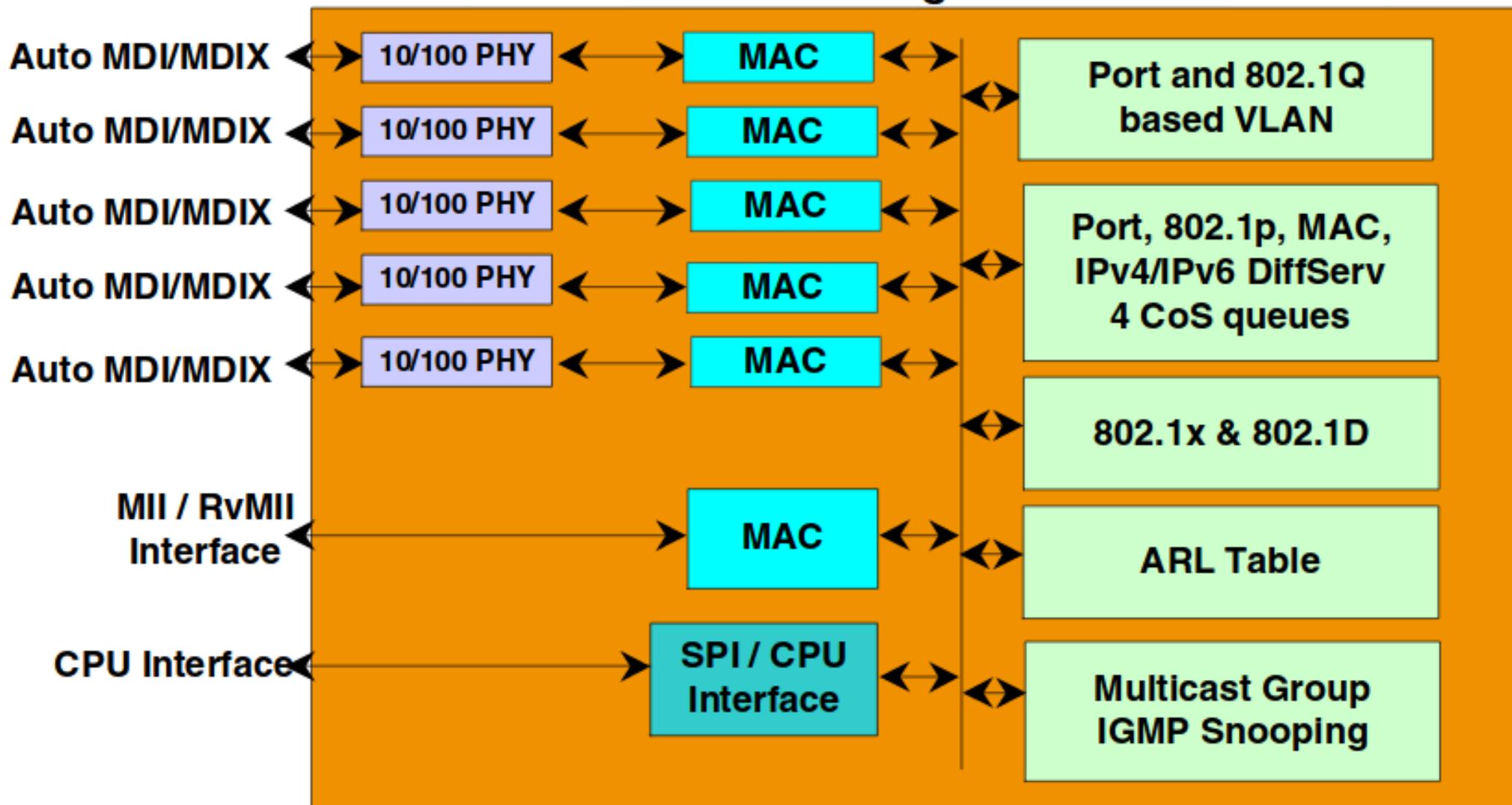
Broadcom BCM6358 Chip



BCM6358 System Diagram

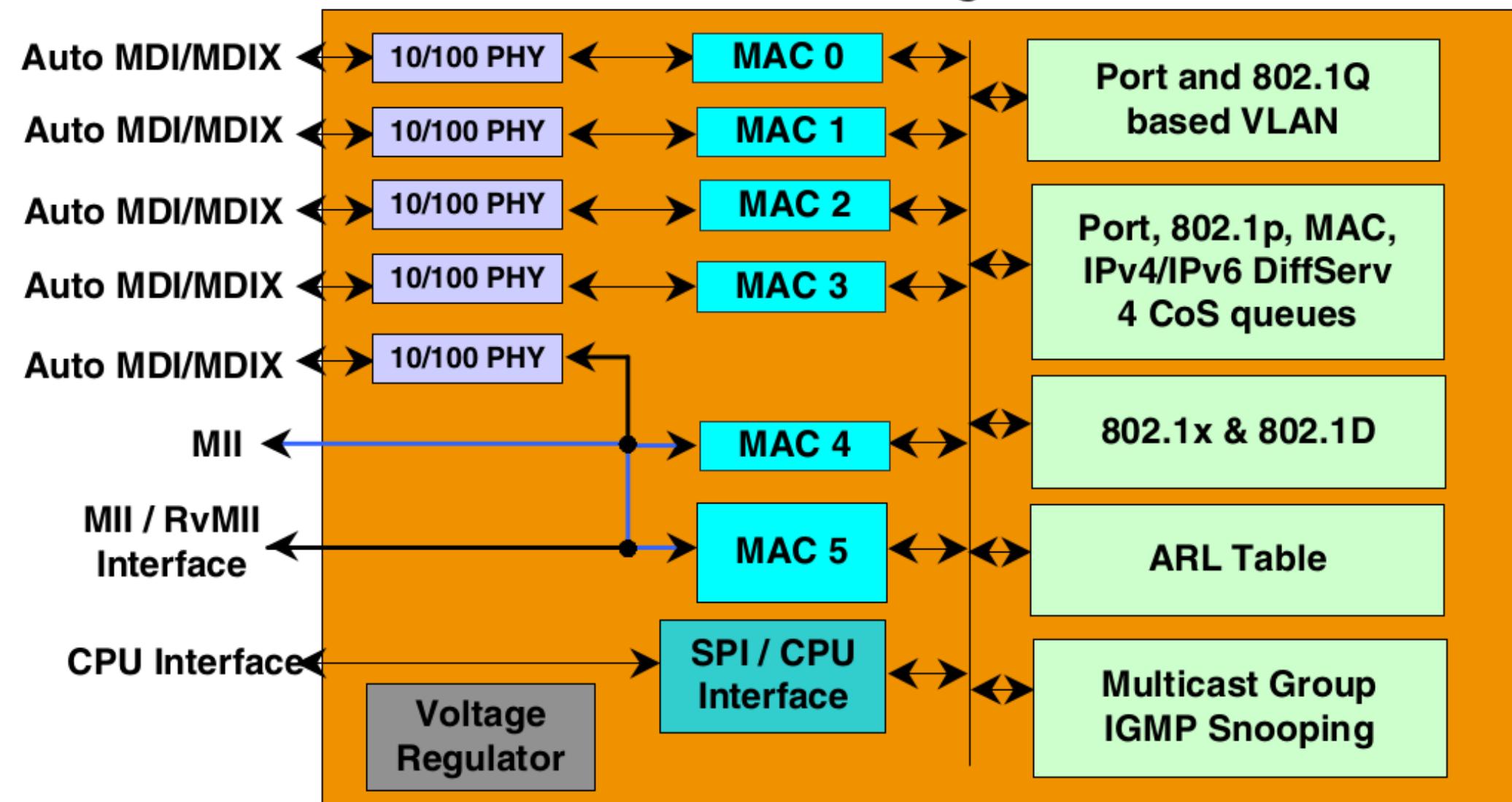
Broadcom Ethernet Switch - BCM5325E

5325E Block Diagram



Broadcom BCM5325F – Ethernet + WAN

5325F Block Diagram



Example: Vodafone / Huawei HG556a A



Example: Vodafone / Huawei HG556a A

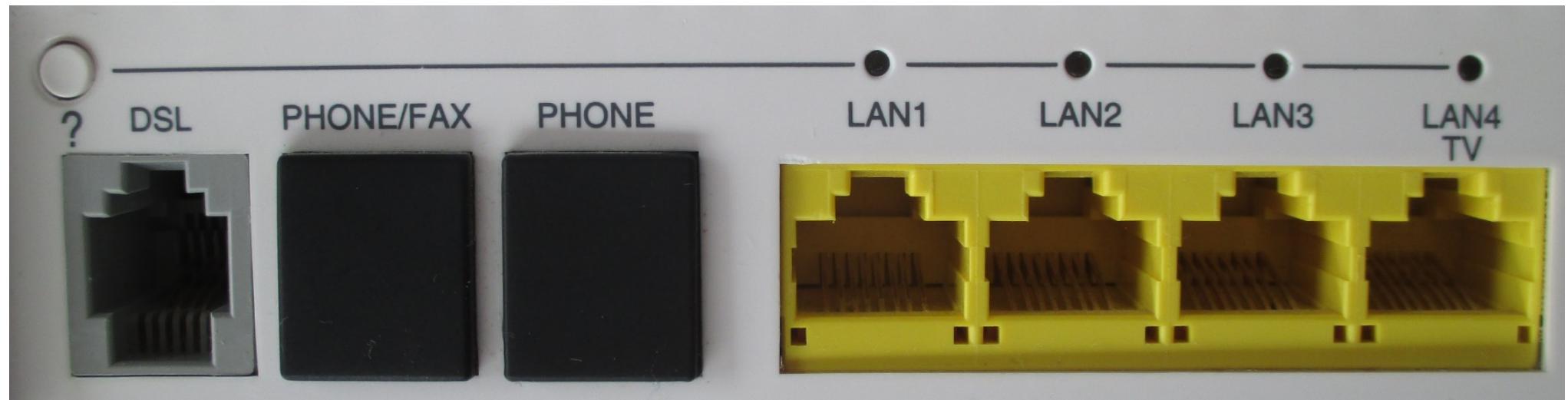
Ethernet port plugged into laptop



Example: Vodafone / Huawei HG556a A



Example: Vodafone / Huawei HG556a A



Example: Vodafone / Huawei HG556a A

Username: vodafone Pa

SSID: vodafone9P

WPA key: LUMJV

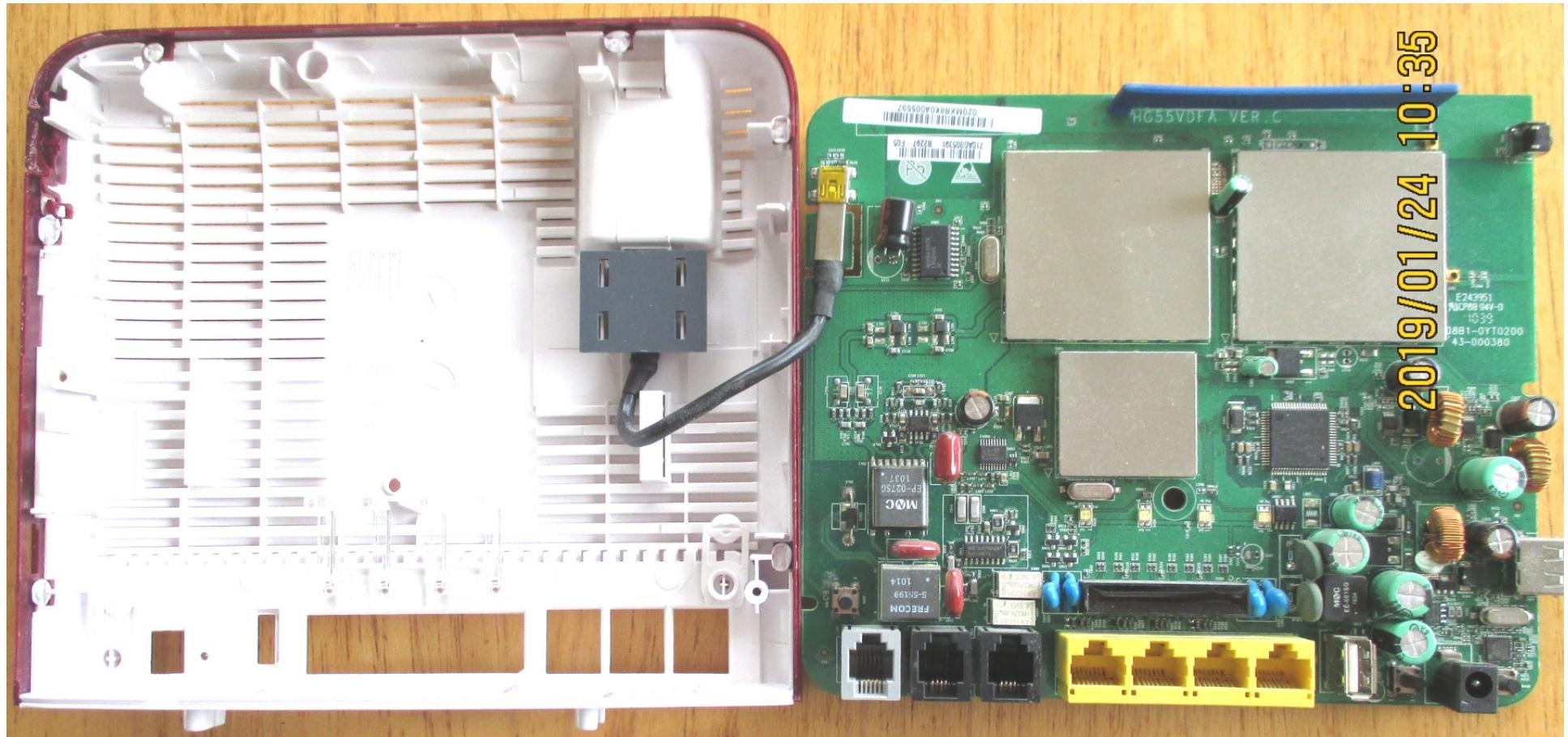


MAC: 30877

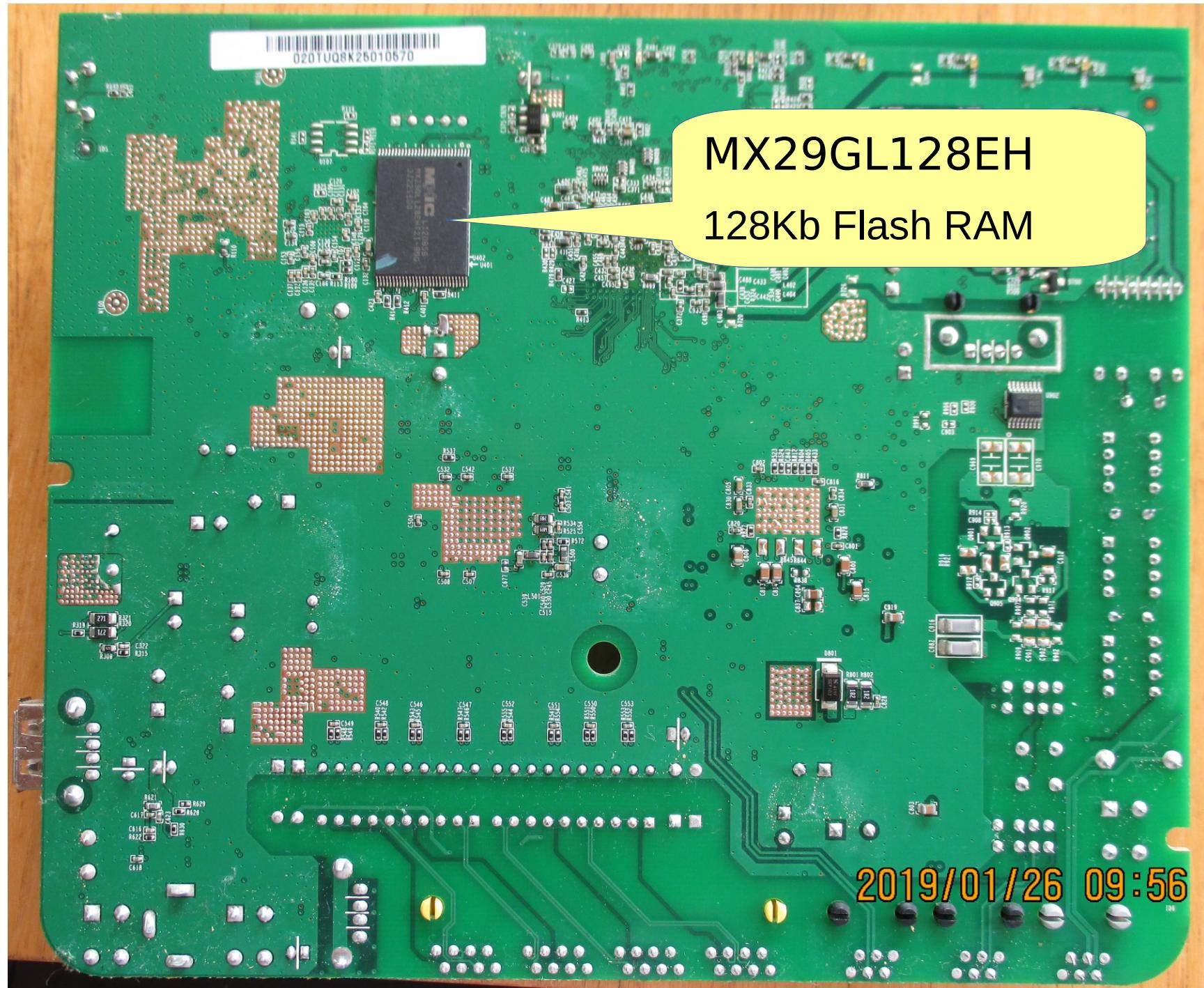


SN:

Example: Vodafone / Huawei HG556a A



Example: Vodafone / Huawei HG556a A



Example: Vodafone / Huawei HG556a A & B

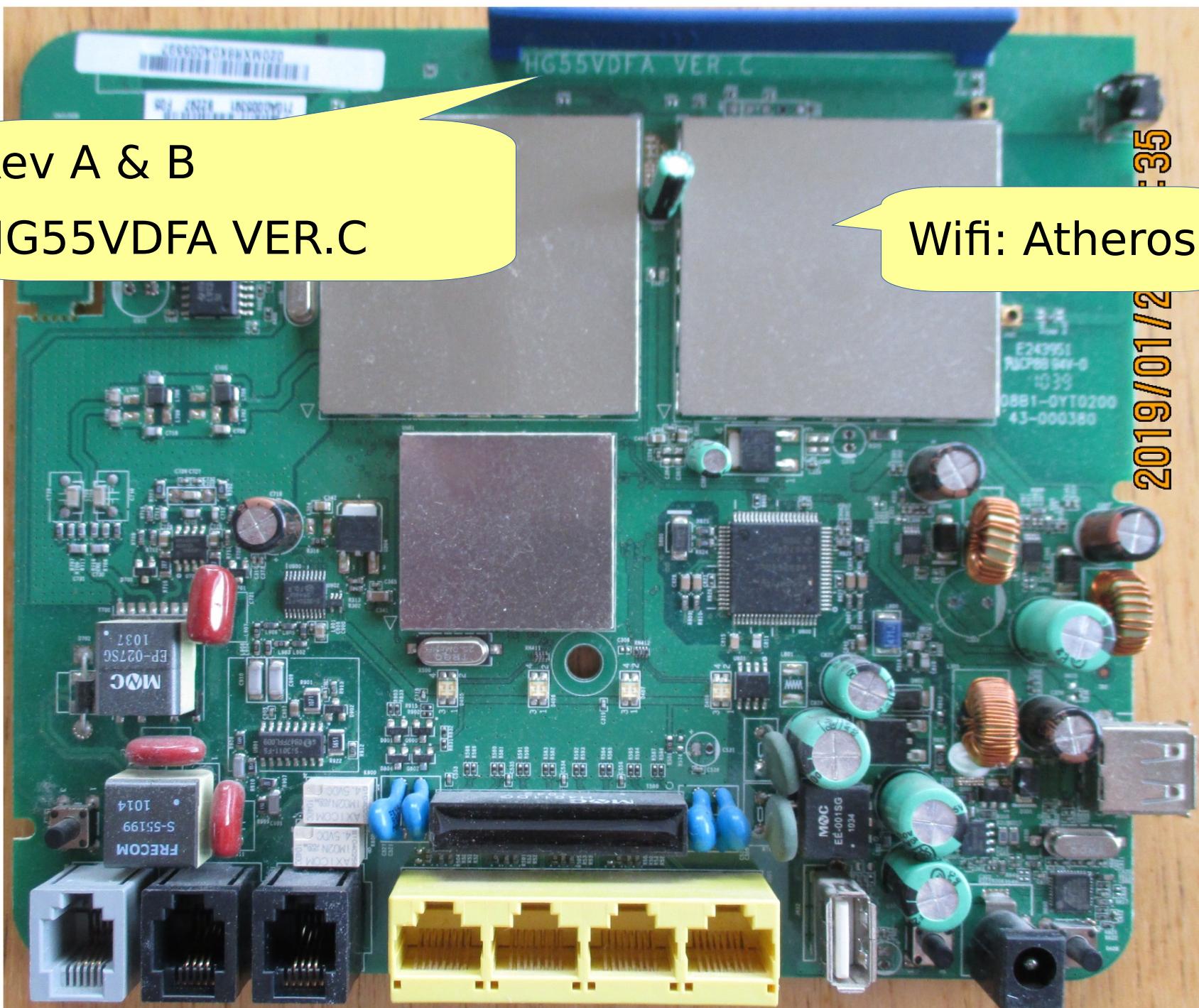
Rev A & B

HG55VDFA VER.C

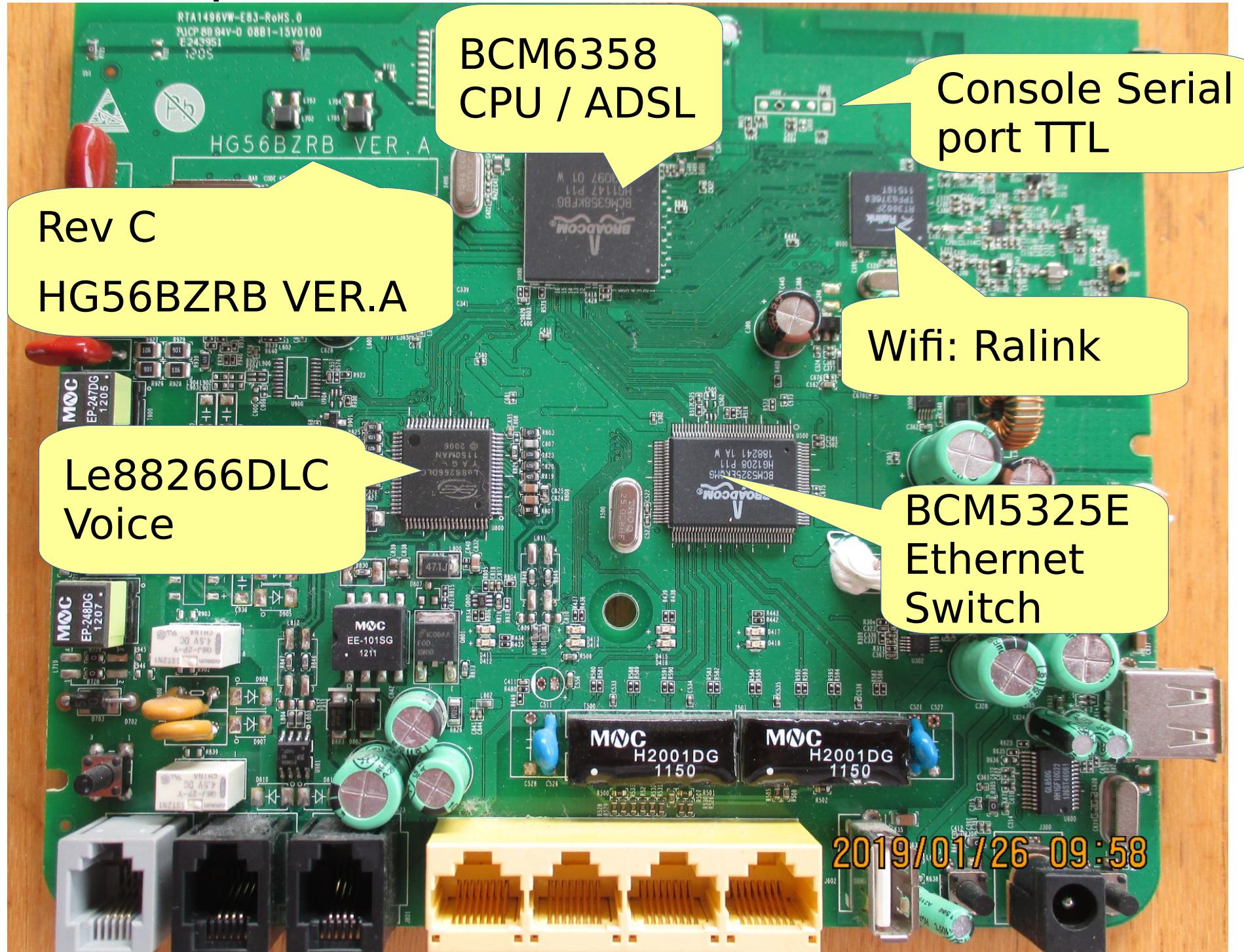
Wifi: Atheros

:35

2019/01/2



Example: Vodafone / Huawei HG556a C

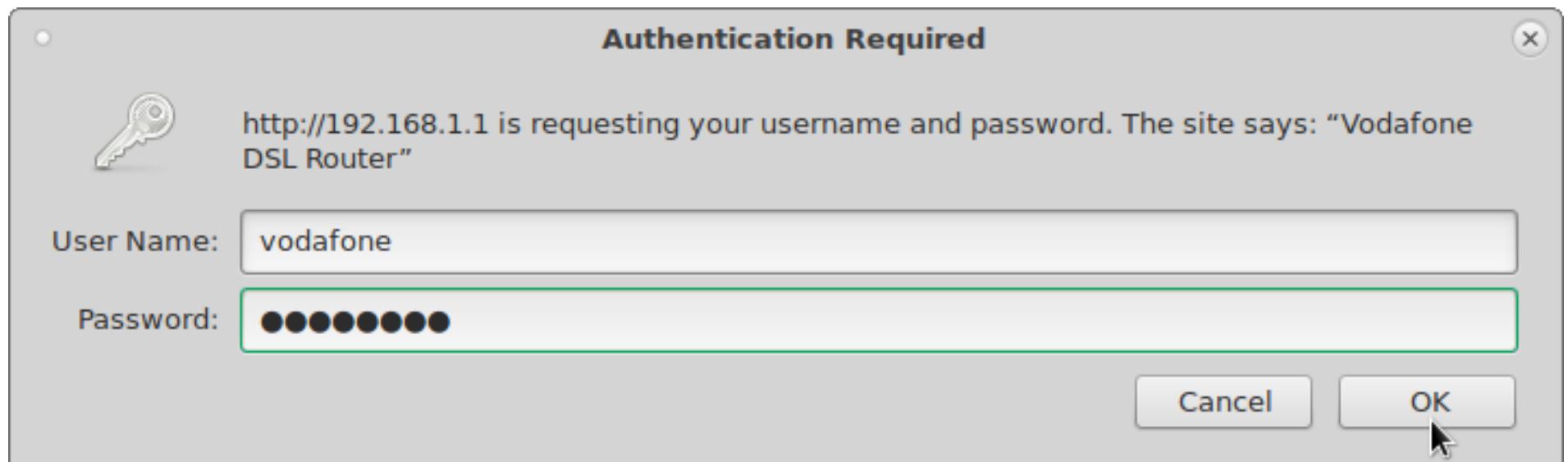


HG556A - Vodafone Firmware

Connect an ethernet cable from your laptop to an ethernet port on the HG556a

Use a web-browser and enter the address:
192.168.1.1

Login to the “basic” account. Defaults:
User Name: vodafone
Password: vodafone



Vodafone - Home Page

192.168.1.1/en_US/basic/index.htm

Home - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Craig Murray - Histor X Why Leslie Evans M X Revealed: the free-m X How to share Guardi X OffGuardian | becaus X Home

192.168.1.1/en_US/basic/index.htm

vodafone

Vodafone DSL Router

Welcome to the Vodafone DSL Router

The Vodafone DSL Router is designed to deliver the very best performance and security. You can also use the Vodafone DSL router to share printers and external storage devices.



Vodafone DSL Router

> Service Status: check the status of all services (Internet connection, WiFi)

> Applications: authorise applications and games so they work in the network

> WiFi: manage wireless access

> Router: manage advanced Vodafone DSL Router parameters

Home Network

> Connected equipment: check the accessories connected to the Vodafone DSL Router

Support

> Troubleshooting: access comprehensive troubleshooting information.

Vodafone

Service Status

Service Status - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Craig Murray - Histor X Why Leslie Evans M... X Revealed: the free-n X How to share Guardi X OffGuardian | because X Service Status X +

192.168.1.1/en_US/basic/statut_services.htm

Vodafone DSL Router

vodafone

Vodafone DSL Router

Service Status

Internet

You are not connected to the Internet: Please check that the connections (cables and filters) are shown as the installation guide

WiFi

WiFi is enabled

Your WiFi connection is secured with (WPA TKIP).

Home > Vodafone DSL Router / Service Status

Service status

Connected Equipment

Hard Disk

Printer

FTP

DLNA

Troubleshooting

Settings

Setup Wizard

Logout

Vodafone

Home Network. Router Address / DHCP Range

Home network configuration - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Craig Murray - Histor X Why Leslie Evans M X Revealed: the free-n X How to share Guardi X OffGuardian | because X Home network config X +

Back Forward Home Address: 192.168.1.1/en_US/expert/config_reseau_dom.htm

Service Status
Applications
Router
LAN
NAT
DMZ
WiFi
HSPA
Administration

HOME NETWORK

Connected Equipment
Hard Disk
Printer
FTP
DLNA

SUPPORT

Troubleshooting
Settings
Setup Wizard
Logout

Home network addresses

You can use this function to automatically configure your home network so that your computers can share the Internet connection. If you prefer, you can enter your parameters manually.

Parameters of home network addresses

IP address of router

IP address: 192.168.1.1
Subnet mask: 255.255.255.0
LAN Domain: Vodafone.DSLRouter

DHCP server configuration

Enabled Disabled

Start of IP address range: 192.168.1.2
End of IP address range: 192.168.1.100

List of reserved IP addresses

Name	IP address	MAC address(e.g. 00:12:1F:E1:3F:3F)	Delete	Change
<input type="text"/>	<input type="text"/>	<input type="text"/>	> Add	

> Save > Save & Reboot

This screenshot shows the 'Home network addresses' configuration page of a Vodafone router. The left sidebar has sections for Service Status, Applications, Router (selected), LAN, NAT, DMZ, WiFi, HSPA, Administration, HOME NETWORK (selected), Connected Equipment, Hard Disk, Printer, FTP, DLNA, and SUPPORT. The main content area has a heading 'Home network addresses' with a note about automatically configuring the network or entering manual parameters. It contains three sections: 'Parameters of home network addresses' (IP address of router: 192.168.1.1, Subnet mask: 255.255.255.0, LAN Domain: Vodafone.DSLRouter), 'DHCP server configuration' (Enabled radio button selected), and 'List of reserved IP addresses' (empty table with columns Name, IP address, MAC address, Delete, Change, and a '>> Add' button). At the bottom are '> Save' and '> Save & Reboot' buttons.

Vodafone

Wifi. Change SSID and Password

WiFi configuration - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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192.168.1.1/en_US/expert/config_wifi.htm

General WiFi parameters

WiFi is enabled. ?

Enabled Disabled

Select channel: Auto

SSID 1 WiFi parameters

SSID (name of WiFi network) ?

Name of SSID 1: vodafone9DED Mask SSID 1:

Security ?

None (not recommended) WEP WPA-PSK WPA-PSK WPA2-PSK

Select option: TKIP

Password (Ascii) ? LUMJVLJHLJ9JTV

White list of MAC address ?

MAC address (e.g. 00:12:1F:E1:3F:3F)	Delete	Change
<input type="text"/>	<input type="button" value="Delete"/>	<input type="button" value="Change"/>
<input type="button" value="> Add"/>		

Vodafone

Connected Equipment

Connected Equipment - Mozilla Firefox

File Edit View History Bookmarks Tools Help

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vodafone

192.168.1.1/en_US/basic/equipements_raccordes.htm

... ⌂ ⌂

Vodafone DSL Router

- Service Status
- Applications
- Router
- WiFi
- HSPA
- Administration

HOME NETWORK

- Connected Equipment
- Hard Disk
- Printer
- FTP
- DLNA

SUPPORT

- Troubleshooting
- Settings
- Setup Wizard
- Logout

Home > Home Network / Connected Equipment

Connected equipment

The page displays the following connected equipment:

- USB Disk**: not connected
- Printer**: not connected
- Phone1**: Not Active
- Other USB**: not connected
- 3G+**: not connected
- Phone2**: Not Active
- Vodafone BOX**: (highlighted with a green border)

Connected to the router:

- PC** (IP: 192.168.1.2): connected via Ethernet
- PC**: connected via WiFi

Vodafone

Box Diagnostics - Software Version: B037

Troubleshooting - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Craig Murray - Histor X Why Leslie Evans Mi X Revealed: the free-n X How to share Guardi X OffGuardian | becaus X Troubleshooting +

192.168.1.1/en_US/basic/diagnostic.htm

Service Status
Applications
Router
WiFi
HSPA
Administration

HOME NETWORK
Connected Equipment
Hard Disk
Printer
FTP
DLNA

SUPPORT
Troubleshooting
Box Diagnostics
ADSL Statistics
Settings
Setup Wizard
Logout

Vodafone DSL Router Diagnostics

- > Vodafone DSL Router data
- > Connection status
- > Vodafone DSL Router configuration
- > HSPA info
- > WiFi interface
- > Ethernet interfaces
- > USB interfaces
- > Voice info

Vodafone DSL Router data

Product name	EchoLife HG556a
Software version	V100R001C12B037
Serial number	307041010025496
Time since startup	0 days 0 hours 12 minutes 38 seconds

Connection status

ADSL synchronisation	Disconnected
Uptime of current Internet connection	---
Data rate	Upstream data rate: kbps, Downstream data rate: kbps
IP address	---
DNS server	192.168.1.1

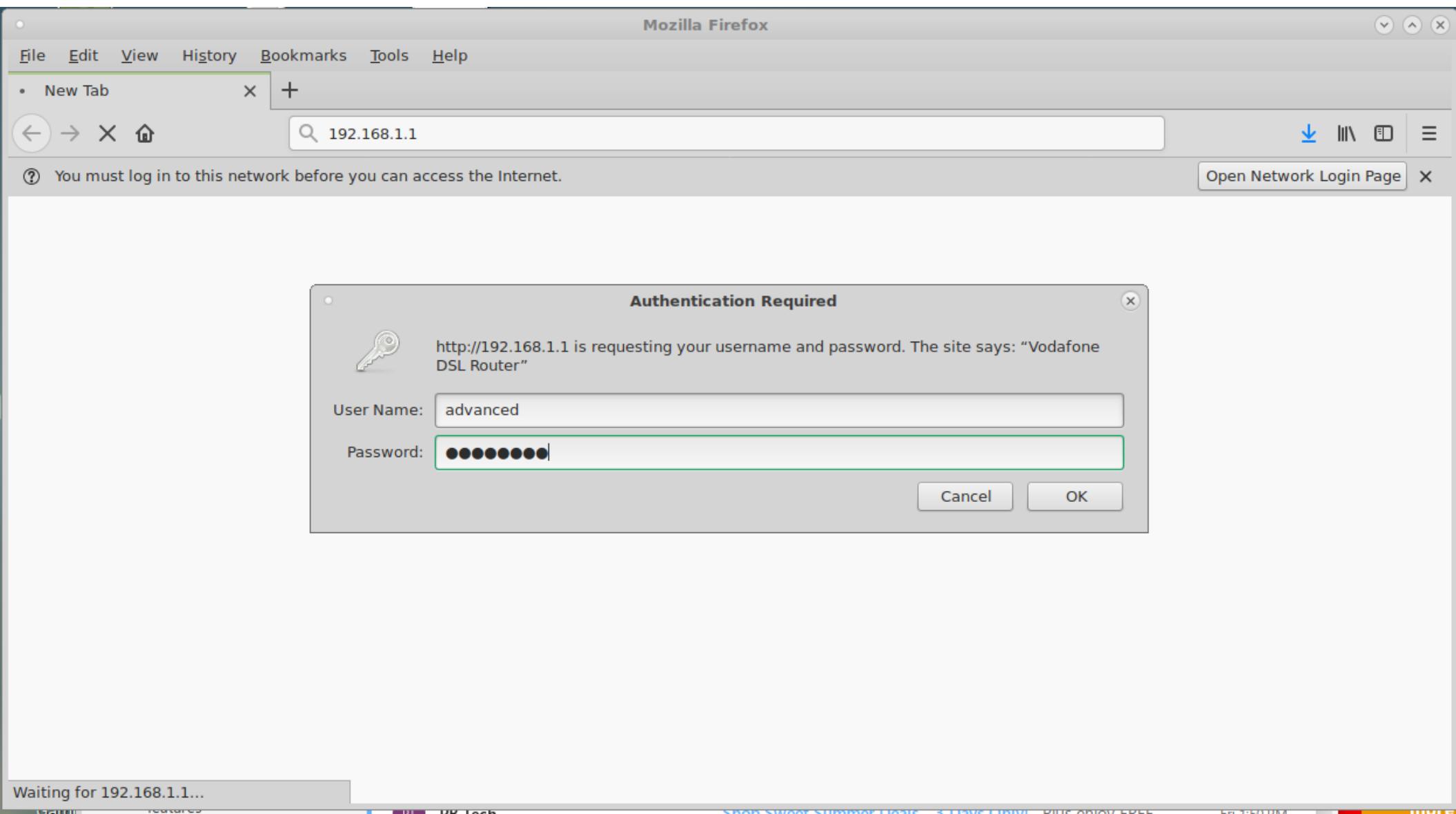
Vodafone DSL Router Configuration

DHCP	Enabled
Firewall	User-defined security level
DMZ	Disabled

Interfaces
WiFi

Vodafone

Username: advanced, Password: advanced



Vodafone

Advanced user Home page

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router +

192.168.1.1/en_US/main.html

You must log in to this network before you can access the Internet.

Open Network Login Page

vodafone Vodafone DSL Router

Device Info

Advanced Setup

Wireless

Voice

Diagnostics

Management

BOX Summary

DSL Router Data

Product Name:	EchoLife HG556a
Serial Number:	307041010025496
Software Version:	V100R001C12B037
Bootloader (CFE) Version:	d081.5003
Wireless Driver Version:	CR-LSDK-1.3.1.71
Time since startup:	0 days 0 hours 1 minutes 54 seconds

Status of DSL Connection

Line Rate - Upstream (Kbps):	
Line Rate - Downstream (Kbps):	
Status:	Idle

Vodafone

Tools Menu. Update Software

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router +

192.168.1.1/en_US/main.html

You must log in to this network before you can access the Internet.

Open Network Login Page

vodafone Vodafone DSL Router

Device Info
Advanced Setup
Wireless
Voice
Diagnostics
Management
Settings
LAN DNS
System Log
Internet Time
Access Control
Update Software
Save/Reboot
Logout

Tools -- Update Software

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.

The size of the file must not be larger than **16384.25KB**, and the path must not contain more than **128** characters.
To activate file checking(including existence and size), please enable ActiveX.
NOTE: The update process takes about 2 minutes to complete, and your Home Gateway will reboot.

Software File Name[Max length is 128]: Browse... No file selected.

No file selected.

Vodafone

Browse and select B031SP03 firmware image

File Upload

Recent Home Desktop Documents Downloads Music Pictures Videos Other Locations

ian Documents open wrt hg556a

Name	Size	Modified
6358-pb01-r.pdf	217.5 kB	08:54
analysis and comparison	4.5 kB	Yesterday
bcm5325_datasheet.pdf	132.7 kB	08:52
HG556a.zip	7.9 MB	Yesterday
HG556a_B027.zip	8.4 MB	Yesterday
HG556a_B031.zip	8.5 MB	Yesterday
HG556aV100R001C08B031SP03.bin	8.7 MB	26 Mar 2013
notes on hG556a	8.9 kB	12:23
Screenshot at 2019-01-26 12-49-27.png	18.7 kB	12:49
Screenshot at 2019-01-26 12-50-39.png	43.4 kB	12:50
Screenshot at 2019-01-26 21-10-00.png	47.5 kB	21:10
Screenshot at 2019-01-26 21-10-32.png	95.7 kB	21:10
Screenshot at 2019-01-26 21-12-21.png	78.3 kB	21:12
Screenshot at 2019-01-26 21-12-52.png	110.3 kB	21:12
screenshots		08:55

All Files

Vodafone

Click Update Software

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router +

192.168.1.1/en_US/main.html

You must log in to this network before you can access the Internet.

Open Network Login Page

 Vodafone DSL Router

Device Info

Advanced Setup

Wireless

Voice

Diagnostics

Management

Settings

LAN DNS

System Log

Internet Time

Access Control

Update Software

Save/Reboot

Logout

Tools -- Update Software

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The size of the file must not be larger than **16384.25KB**, and the path must not contain more than **128** characters.
To activate file checking(including existence and size), please enable ActiveX.

NOTE: The update process takes about 2 minutes to complete, and your Home Gateway will reboot.

Software File Name[Max length is 128]:

Vodafone

Update takes about 2 minutes, hear reboot.
Lose connection

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router +

192.168.1.1/en_US/main.html

You must log in to this network before you can access the Internet.

Open Network Login Page

vodafone Vodafone DSL Router

Device Info Advanced Setup Wireless Voice Diagnostics Management

Settings LAN DNS System Log Internet Time Access Control Update Software Save/Reboot Logout

Unable to connect

Firefox can't establish a connection to the server at 192.168.1.1.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.

Try Again



Vodafone

Log in to Advanced. B031SP03 now installed

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router ! Problem loading page +

① 192.168.1.1/en_US/main.html

② You must log in to this network before you can access the Internet.

Open Network Login Page

 Vodafone DSL Router

Device Info

- [Summary](#)
- [Services Status](#)
- [WAN](#)
- [LAN](#)
- [Statistics](#)
- [Route](#)
- [ARP](#)
- [DHCP](#)
- [Home Network](#)
- Advanced Setup**
- [Wireless](#)
- [Voice](#)
- [Diagnostics](#)
- [Management](#)

BOX Summary

DSL Router Data

Product Name:	EchoLife HG556a
Serial Number:	307041010025496
Software Version:	V100R001C08B031SP03
Bootloader (CFE) Version:	d031.5002
Wireless Driver Version:	CR-LSDK-1.3.1.71
Time since startup:	0 days 0 hours 4 minutes 5 seconds

Status of DSL Connection

Line Rate - Upstream (Kbps):	
Line Rate - Downstream (Kbps):	

Vodafone

Try updating to OpenWRT firmware using Hauwei / Vodofone utility...

Vodafone DSL Router - Mozilla Firefox

File Edit View History Bookmarks Tools Help

Vodafone DSL Router Problem loading page New Tab

192.168.1.1/en_US/main.html

You must log in to this network before you can access the Internet.

Open Network Login Page

 vodafone Vodafone DSL Router

Device Info **Advanced Setup** **Wireless** **Voice** **Diagnostics** **Management**

Settings **LAN DNS** **System Log** **Internet Time** **Access Control** **Update Software** **Save/Reboot**

Tools -- Update Software

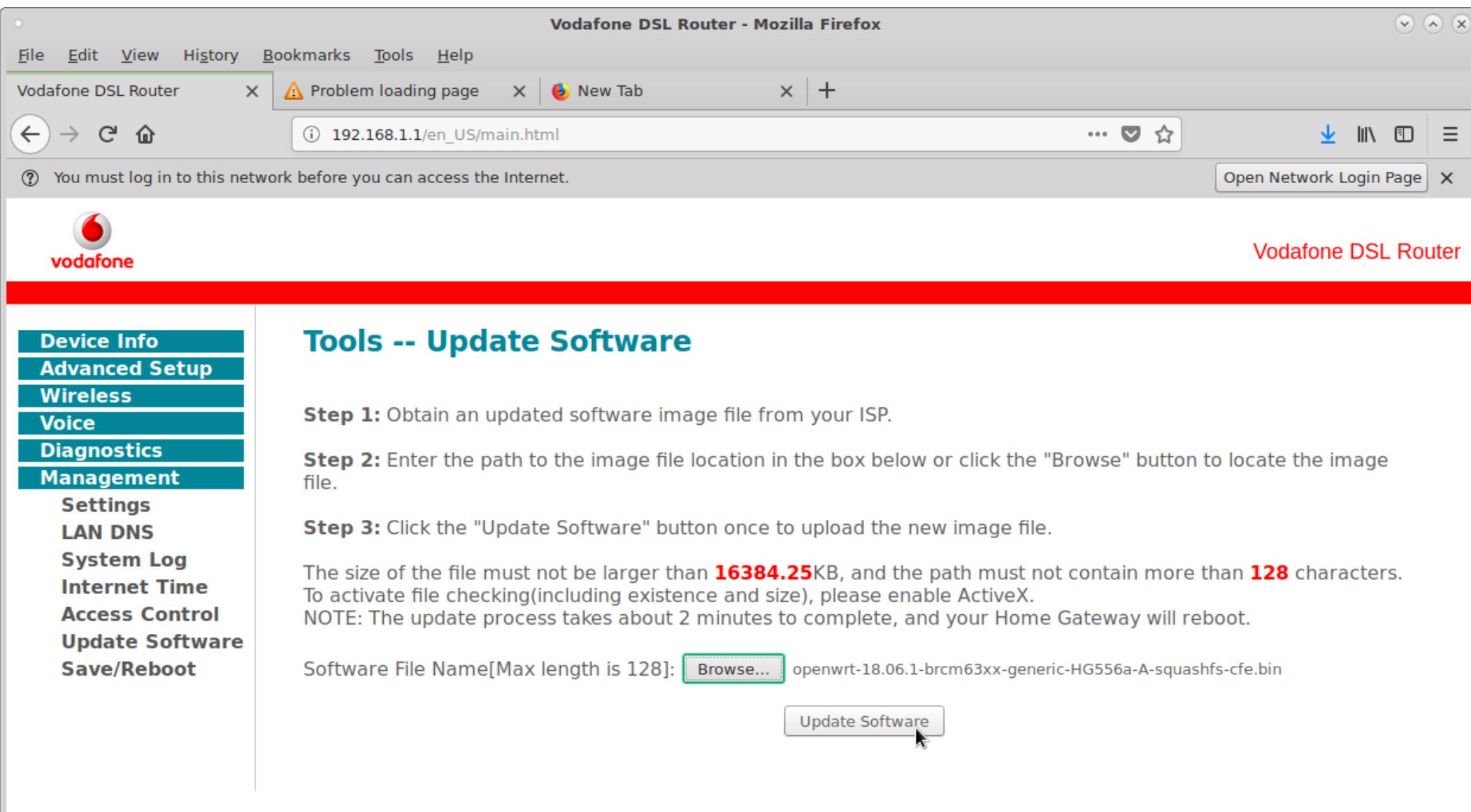
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The size of the file must not be larger than **16384.25KB**, and the path must not contain more than **128** characters.
To activate file checking(including existence and size), please enable ActiveX.
NOTE: The update process takes about 2 minutes to complete, and your Home Gateway will reboot.

Software File Name[Max length is 128]:



Vodafone

Try updating to OpenWRT firmware, using
Huawei / vodafone utility...

A screenshot of a Mozilla Firefox browser window titled "Vodafone DSL Router - Mozilla Firefox". The address bar shows the URL "192.168.1.1/en_US/main.html". The main content area displays the "Home Gateway Update" page from a Vodafone DSL Router. The page indicates a "Fatal error during image uploading." and features a "Back" button. On the left, a sidebar menu lists various management options: Device Info, Advanced Setup, Wireless, Voice, Diagnostics, Management (which is selected), Settings, LAN DNS, System Log, Internet Time, Access Control, Update Software (which is also selected), and Save/Reboot. The Vodafone logo is visible in the top left corner of the page content.

Device Info
Advanced Setup
Wireless
Voice
Diagnostics
Management
Settings
LAN DNS
System Log
Internet Time
Access Control
Update Software
Save/Reboot

Home Gateway Update

Fatal error during image uploading.

Back

...And it fails!

Vodafone

Try to SSH into 192.168.1.1...

```
ian@X200:~$ ssh advanced@192.168.1.1
ssh: connect to host 192.168.1.1 port 22: Connection refused
ian@X200:~$ ssh vodafone@192.168.1.1
ssh: connect to host 192.168.1.1 port 22: Connection refused
ian@X200:~$ 
ian@X200:~$ ssh root@192.168.1.1
ssh: connect to host 192.168.1.1 port 22: Connection refused
ian@X200:~$ ssh huawei@192.168.1.1
ssh: connect to host 192.168.1.1 port 22: Connection refused
ian@X200:~$ ssh 192.168.1.1
. . . . .
```

Cant find any documentation on the internet on how to ssh into a Vodafone / Huawei Home Gateway.

Also connection into Console port and Login not accepted.

Introduction to OpenWrt

OpenWrt History

The OpenWrt project was started in 2004 after Linksys had built the Linux based firmware for their WRT54G series of wireless routers with code licensed under the GNU General Public License.

Using this code as a base and later as a reference, developers created a Linux distribution that offers many features not previously found in consumer-level routers.

In May 2016, OpenWrt forked for one year as Linux Embedded Development Environment (LEDE).

WRT?: With Regard To
Wireless Receiver / Transmitter



More Info...

OpenWrt

Linksys was purchased by Cisco in 2003, and sold to Belkin, the current owners, in 2013.

DD-Wrt and Tomato – Similar projects to OpenWrt

Other embedded Linux:

Android, Debian – used on Raspberry Pi, Emdebian
Grip, BusyBox, OpenMoko, Familiar Linux, Mobilinux

OpenWrt on over 50 platforms:

E.g. BRCM63xx (HG556a), BRCM2708 (R-Pi)

<https://openwrt.org/docs/platforms/start>

Architectures: ARC, ARM, AVR32, i486, MIPS,
PowerPC, x86

OpenWrt

Web site: <https://www.openwrt.org>

The OpenWrt Project is a Linux operating system targeting embedded devices.



A screenshot of a web browser displaying the OpenWrt project website at <https://openwrt.org>. The page features a large "OpenWrt" logo with "Wireless Freedom" underneath. The main content area includes a "Welcome to the OpenWrt Project" section, a sidebar with navigation links, and a footer with social media icons.

OpenWrt
Wireless Freedom

Welcome to the OpenWrt Project

Recent Changes | Media Manager | Sitemap

English (en)

Welcome to the OpenWrt Project

The OpenWrt Project is a Linux operating system targeting embedded devices. Instead of trying to create a single, static firmware, OpenWrt provides a fully writable filesystem with package management. This frees you from the application selection and configuration provided by the vendor and allows you to customize the device through the use of packages to suit any application. For developers, OpenWrt is the framework to build an application without having to build a complete firmware around it; for users this means the ability for full customization, to use the device in ways never envisioned.

See the [Table of Hardware](#) for supported devices. For more information about OpenWrt project organization, see the [About OpenWrt](#) pages.

CCC and OpenWrt: Technical guideline of German BSI for secure routers insufficient

The recently released technical guideline for secure broadband routers is simply a disservice to customers. This guideline will not prevent widespread malfunction of routers and their security problems in the future. The consumers will not get a useful way to distinguish secure and long living devices from risky devices or the possibility to take care of the security by them self.

Vendors are still allowed to block OpenWrt from the devices they sold, even after security support for the device was already terminated, making the device useless.

OpenWRT - Table of Hardware

Link: <https://openwrt.org/toh/start>

Listing all devices that are supported by OpenWrt

#	Brand	Model	Versions	Supported Current Release	Device Page	Device Techdata
1	3Com	3CRWER100-75		14.07	3crwer100_75	View/Edit data
2	4G Systems	AccessCube (MeshCube)		8.09.2	access.cube	View/Edit data
3	7Links	PX-4885		18.06.1	px4885	View/Edit data
4	8devices	Carambola 1		18.06.1	carambola	View/Edit data
5	8devices	Carambola 2		18.06.1	carambola2	View/Edit data
6	8devices	Lima		18.06.1		View/Edit data
7	8devices	Rambutan		18.06.1		View/Edit data
8	8devices	Jalapeno		18.06.1		View/Edit data
9	Abicom International	Freedom CPE	Rev 05	10.03	freedom_cpe	View/Edit data
10	Abicom International	Scorpion SC450	Rev 02	18.06.1	scorpion450	View/Edit data
11	Abicom International	Scorpion SC1750		18.06.1		View/Edit data
12	Abicom International	Scorpion SC300M		18.06.1		View/Edit data
13	Accton	MR3201A		8.09	fonera	View/Edit data
14	Accton	WR6202		18.06.1		View/Edit data

OpenWRT - Table of Hardware

Hardware Models and OpenWRT Versions supported

OpenWRT Version	Qty Models	Release Date	Code Name
18.06.2	(n/a new)	January 31, 2019	18.06.2
18.06.1	944	August 19, 2018	18.06.1
17.01.0-5	57	July 17, 2018	Reboot (LEDE)
15.05._-1	20	September 11, 2015	Chaos Calmer
14.07	8	October 2, 2014	Barrier Breaker
12.09	25	April 25, 2013	Attitude Adjustment
10.03_-1	71	April 7, 2010	Backfire
8.09	4	Kamikaze	Kamikaze
Snapshot	92		
Other	6		
Total	1227		

With the Attitude Adjustment (12.09) release of OpenWrt, all hardware devices with 16 MB or less RAM are no longer supported as they can run out of memory easily. Link: <https://en.wikipedia.org/wiki/OpenWrt>

OpenWRT - Table of Hardware

Vendors with 10 or more hardware products mostly wifi routers:

ALFA Network, Arcadyan / Astoria, Asus, Buffalo, COMFAST, Compex, Comtrend, D-Link, Gateworks, GL.iNet, Huawei, Linksys, MikroTik, Netgear, Olimex, PC Engines, TP-Link, TRENDnet, Ubiquiti, ZBT, ZyXEL

Other Vendors Listed: ~ 150 including Raspberry Pi Foundation (All R-Pi Versions)

Example: Huawei HG556a Version A

454	Huawei	E970		18.06.1	e970	View/Edit data
455	Huawei	HG255D		18.06.1	hg255d	View/Edit data
456	Huawei	HG520v		18.06.1	hg520v	View/Edit data
457	Huawei	HG553				View/Edit data
458	Huawei	HG556a	C			View/Edit data
459	Huawei	HG622				View/Edit data
460	Huawei	HG655b				View/Edit data
461	Huawei	HG655d		18.06.1	hg655d	View/Edit data
462	Huawei	HG556a	B	18.06.1	hg556a	View/Edit data
463	Huawei	HG556a	A	18.06.1	hg556a	View/Edit data
464	Huawei	HG622u		18.06.1	hg622u	View/Edit data

Right-click and
open in a new tab

Link: https://openwrt.org/toh/hwdata/huawei/huawei_hg556a_a

The screenshot shows the OpenWrt website with the following details:

- Header:** Register, Log In
- Search Bar:** Search
- Page Navigation:** Recent Changes, Media Manager, Sitemap
- Main Logo:** OpenWrt Wireless Freedom
- Breadcrumbs:** Welcome to the OpenWrt Project » Table of Hardware » Hardwaredata » Huawei » Techdata: Huawei HG556a A
- Page Content:** Techdata: Huawei HG556a A, Usage
- Page Footer:** toh:hwdata:huawei:huawei_hg556a_a

Example: Huawei HG556a Version A

Link: https://openwrt.org/toh/hwdata/huawei/huawei_hg556a_a

Dataentry

Device Type: WiFi Router

Brand: Huawei

Model: HG556a

Version: A

Availability: Discontinued

Supported Since Commit:  <https://git.lede-project.org/?p=source.git;a=commit;h=e952eaa112417637d67f1774e641c1cade49ed23>

Supported Since Rel: 14.07

Supported Current Rel: 18.06.1

Unsupported Functions: DSL modem, FXS, ~~2nd core~~

Target: brcm63xx

Subtarget: generic

Package architecture: mips_mips32

Bootloader: CFE

CPU: Broadcom BCM6358

CPU Cores: 2

CPU MHz: 300

Flash MB: 16

RAM MB: 64

Ethernet 100M ports: 4

Ethernet Gbit ports: -

Switch: Broadcom BCM5325

VLAN: Yes

Modem: ADSL2+

WLAN Hardware: Atheros AR9223

WLAN 2.4GHz: b/g/n

WLAN 5.0GHz: -

WLAN driver: ath9k

Example: Huawei HG556a Version A

Link: https://openwrt.org/toh/hwdata/huawei/huawei_hg556a_a

Detachable Antennas: -

Bluetooth: -

USB ports: 3x 2.0

SATA ports: -

Video ports: -

Audio ports: -

Phone ports: 2

Serial: Yes

Serial connection parameters: 115200 / 8N1

JTAG: Yes

LED count: 12

Button count: 4

GPIOs: -

Power Supply: 12 VDC, 2.0 A

Device Page: [hg556a](#)

Forum search: [HG556a](#)

Git search: [HG556a](#)

Firmware OpenWrt Install URL: <http://downloads.openwrt.org/releases/18.06.1/targets/brcm63xx/generic/openwrt-18.06.1-brcm63xx-generic-HG556a-A-squashfs-cfe.bin>

Firmware OpenWrt snapshot Install URL: <http://downloads.openwrt.org/snapshots/targets/brcm63xx/generic/lede-brcm63xx-generic-HG556a-A-squashfs-cfe.bin>

Installation method(s): CFE TFTP + serial recovery, CFE web recovery, see devicepage

Recovery method(s): CFE TFTP + serial recovery, CFE web recovery

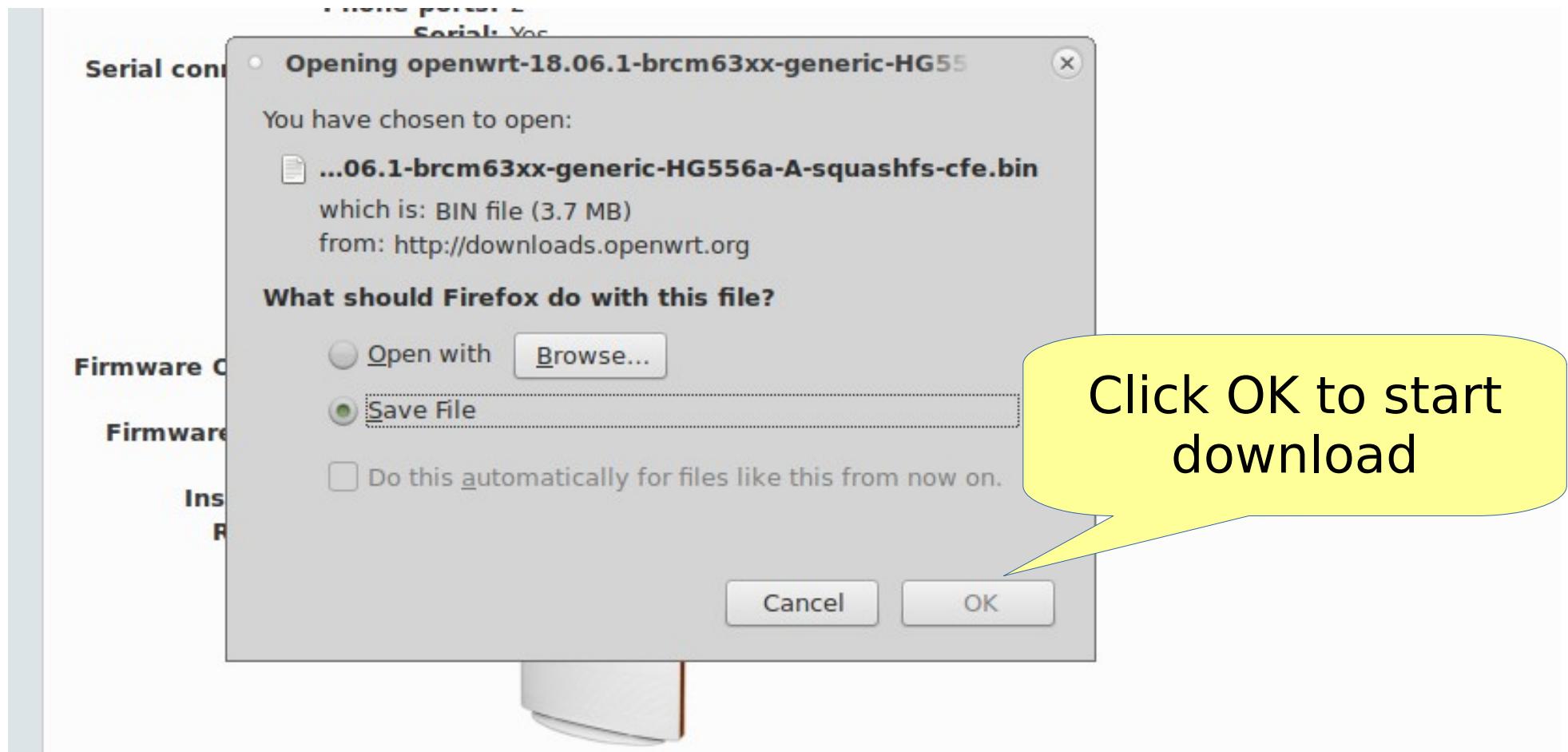
Picture:



Right-click and open in a new tab

Example: Huawei HG556a Version A

Link: https://openwrt.org/toh/hwdata/huawei/huawei_hg556a_a



OpenWRT filesize: 3.7MB

Original Vodafone binary image file size: 8.5MB

3866628 openwrt-18.06.1-brcm63xx-generic-HG556a-A-squashfs-cfe.bin

Example: Huawei HG556a Version A

- Setup a PC with ethernet port at static IP of 192.168.1.2
- Prepare PC with web-browser address 192.168.1.1
- Use ethernet cable to connect to Huawei HG556a (Version A) ethernet port.
- Power off HG556a
- Press and hold “Restart” button on HG556a
- Power on HG556a and keep holding “Restart” for 12 seconds
- Release “Restart” button.
- Refresh the web-browser on address 192.168.1.1
- Software update screen in web-browser...

Example: Huawei HG556a Version A

Update Software. Browse to select OpenWrt file

The screenshot shows a web browser window titled "Huawei Home Gateway CFE". The address bar displays the IP address "192.168.1.1". The main content area is titled "Update Software". It contains three steps for updating the software:

- 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.

A note at the bottom states: "NOTE: The update process takes about 2 minutes to complete, and your DSL Router will reboot."

Below the steps, there is a form field labeled "Software File Name:" with a "Browse..." button. The message "No file selected." is displayed next to the button. At the bottom right is a large "Update Software" button.

Example: Huawei HG556a Version A

File selected, Update Software.

The screenshot shows a web browser window with the following details:

- Address Bar:** Shows the URL `192.168.1.1`.
- Toolbar:** Includes standard browser icons for Back, Forward, Stop, Refresh, Home, and others.
- Search Bar:** Displays the Google logo and the word "Google".
- Bookmark Bar:** Lists "Most Visited", "Getting Started", "Suggested Sites", "Web Slice Gallery", "All items - Google Drive", "Google", and "Sign In".
- Content Area:** The main content is titled "Update Software".
 - 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.
- Input Fields:** A "Software File Name:" field contains the value `openwrt-18.06.1-brcm63xx-generic-HG556a-A-squashfs-cfe(1).bin`. Next to it is a "Browse..." button.
- Buttons:** A large "Update Software" button is located at the bottom of the form.

Example: Huawei HG556a Version A

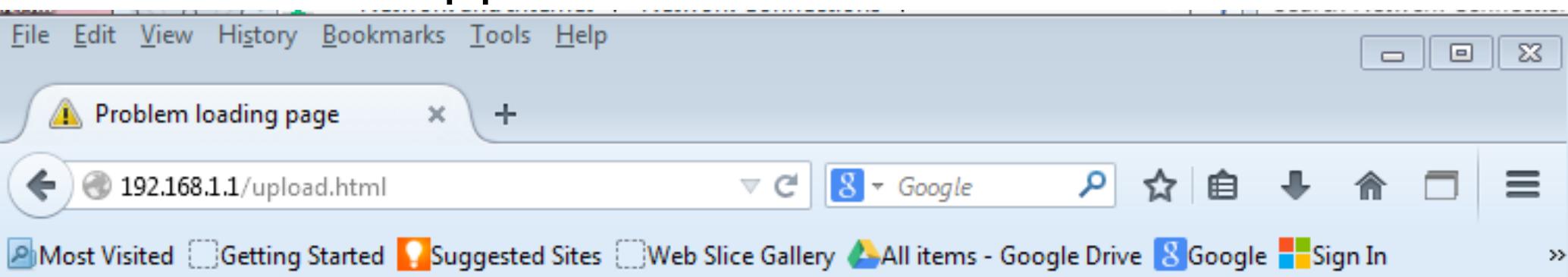
Updating...

The screenshot shows a web browser window with the following details:

- Title Bar:** File Edit View History Bookmarks Tools Help
- Tab:** Huawei Home Gateway CFE
- Address Bar:** 192.168.1.1/upload.cgi
- Toolbar:** Back, Forward, Stop, Refresh, Google search bar, Favorites, Downloads, Home, Stop, Refresh, More
- Bookmark Bar:** Most Visited, Getting Started, Suggested Sites, Web Slice Gallery, All items - Google Drive, Google, Sign In
- Content Area:**
 - Section Header:** **DSL Router Software Upgrade**
 - Text:** New software is being programmed to the flash memory. The DSL Router will reboot upon completion. This process will take about 2 minutes.
 - Buttons:** Back

Example: Huawei HG556a Version A

Connection dropped as HG556a reboots new software



i Unable to connect

Firefox can't establish a connection to the server at 192.168.1.1.

- The site could be temporarily unavailable or too busy. Try again in a few moments.
- If you are unable to load any pages, check your computer's network connection.
- If your computer or network is protected by a firewall or proxy, make sure that Firefox is permitted to access the Web.

[Try Again](#)

Example: Huawei HG556a Version A

HG556a booted. Connection re-established. Login...

The screenshot shows a web browser window with the following details:

- Title Bar:** File Edit View History Bookmarks Tools Help
- Tab:** OpenWrt - LuCI
- Address Bar:** 192.168.1.1/cgi-bin/luci
- Toolbar:** Back, Forward, Stop, Refresh, Home, etc.
- Bookmark Bar:** Most Visited, Getting Started, Suggested Sites, Web Slice Gallery, All items - Google Drive, Google, Sign In
- Content Area:**
 - No password set!** (Yellow box)

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**

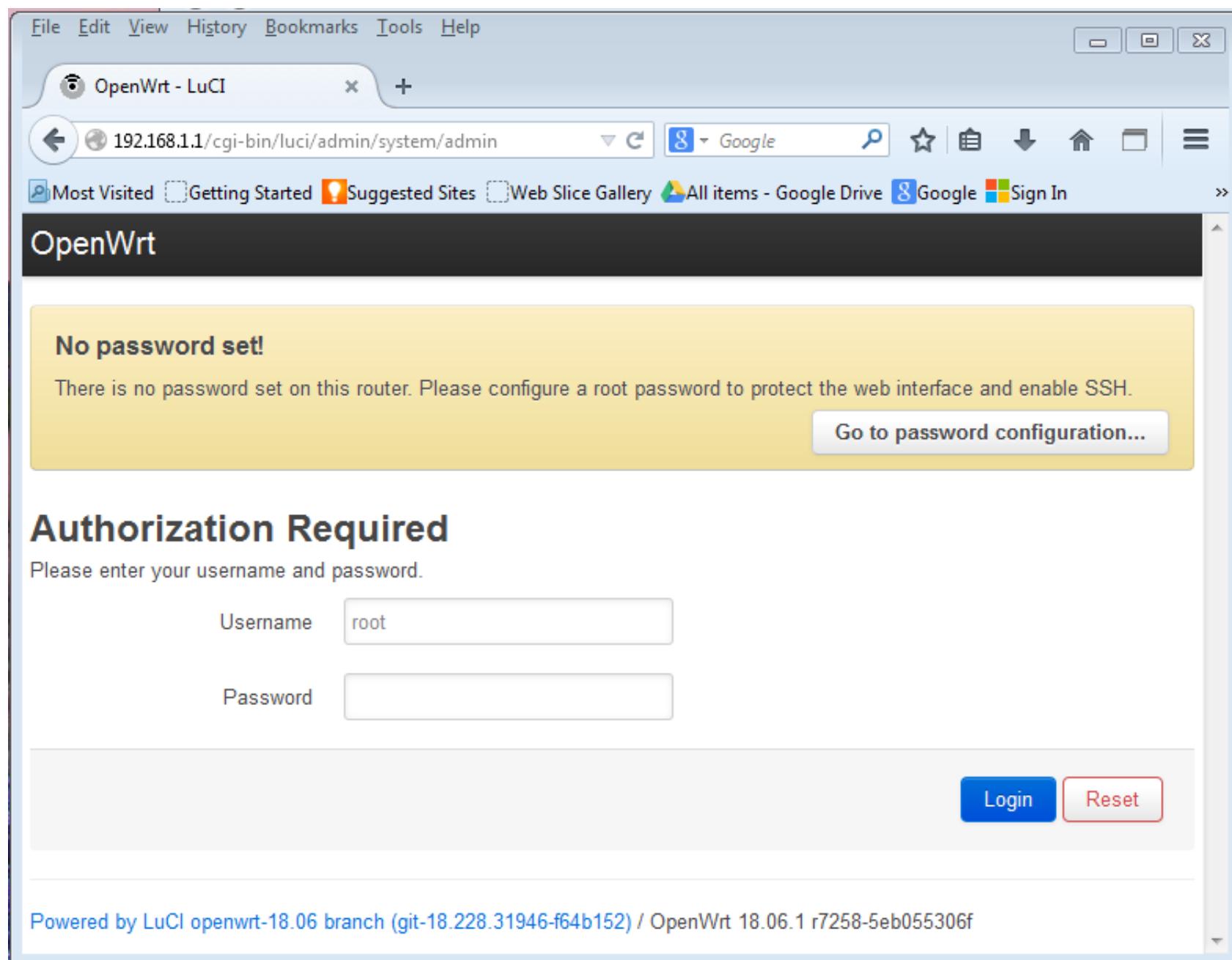
Please enter your username and password.

Username	<input type="text" value="root"/>
Password	<input type="password"/>

A yellow speech bubble points from the "No password set!" message to the "root" field in the login form, indicating that the default password is not set.

Example: Huawei HG556a Version A

Click Login...



Example: Huawei HG556a Version A

System Administration.

Password change and SSH Access screen...

The screenshot shows a web browser window with the following details:

- Title Bar:** File Edit View History Bookmarks Tools Help
- Address Bar:** OpenWrt - Administration ... 192.168.1.1/cgi-bin/luci/admin/system/admin
- Toolbar:** Back, Forward, Stop, Refresh, Google search bar, Favorites, Downloads, Home, Stop, Reload, More
- Bookmark Bar:** Most Visited, Getting Started, Suggested Sites, Web Slice Gallery, All items - Google Drive, Google, Sign In
- Header:** OpenWrt Status System Network Logout
- Message Box:** No password set! (Yellow background)
 - Text: There is no password set on this router. Please configure a root password to protect the web interface and enable SSH.
 - Button: Go to password configuration...
- Form Section:** Router Password
 - Text: Changes the administrator password for accessing the device
 - Fields: Password (text input), Confirmation (text input)
- Section:** SSH Access
 - Text: Dropbear offers SSH network shell access and an integrated SCP server
- Section:** Dropbear Instance
 - Text: Delete (red button)

Example: Huawei HG556a Version A

OpenWrt Menu: Status, System, Network, Logout

OpenWrt Status ▾ System ▾ Network ▾ Logout **AUTO REFRESH ON**

Status

System

Hostname	OpenWrt
Model	Huawei EchoLife HG556a (version A)
Architecture	bcm63xx/HW556_A (0x6358/0xA1)
Firmware Version	OpenWrt 18.06.1 r7258-5eb055306f / LuCI openwrt-18.06 branch (git-18.228.31946-f64b152)
Kernel Version	4.9.120
Local Time	Thu Aug 16 08:21:53 2018
Uptime	0h 30m 52s
Load Average	1.45, 0.64, 0.27

Memory

Total Available	41512 kB / 60360 kB (68%)
Free	39448 kB / 60360 kB (65%)

Example: Huawei HG556a Version A

Status continued...

Buffered 2064 kB / 60360 kB (3%)

Network

IPv4 Upstream		IPv6 Upstream	
Protocol:	<i>Not connected</i>	Protocol:	<i>Not connected</i>
Address:	0.0.0.0	Address:	::
Netmask:	255.255.255.255	Gateway:	::
Gateway:	0.0.0.0	Device:	-

Active Connections 51 / 16384 (0%)

Active DHCP Leases

Hostname	IPv4-Address	MAC-Address	Leasetime remaining
<i>There are no active leases.</i>			

Active DHCPv6 Leases

Host	IPv6-Address	DUID	Leasetime remaining
ct-PC	fd86:e37e:3d11::639/128	000100011b3ab0ca001b2489700f	11h 28m 59s

Example: Huawei HG556a Version A

Menus...

This screenshot shows the 'Status' section of the OpenWrt web interface. It includes tabs for 'Overview', 'Firewall', 'Routes', 'System Log', 'Kernel Log', 'Processes', and 'Realtime Graphs'. Below these are sections for 'Hostname', 'Model', 'Architecture', 'Firmware Version', 'Kernel Version', 'Local Time', 'Uptime', and 'Load Average'.

This screenshot shows two main configuration pages. The top window is titled 'System' and displays 'System Properties' with tabs for 'General Settings' and 'Logs'. A dropdown menu is open over the 'Logs' tab, listing options: System, Administration, Software, Startup, Scheduled Tasks, LED Configuration, Backup / Flash, Firmware, and Reboot. The bottom window is titled 'Interfaces' and shows 'Time Sync' settings. A yellow speech bubble with the text 'Hmmm... No wifi' points to the 'Interfaces' menu, which includes options for LAN, Switch, DHCP and DNS, Hostnames, Static Routes, Firewall, and Diagnostics. The status bar at the bottom right shows 'TX: 569.77 KB (4237 Pkts.)'.

Example: Huawei HG556a Version A

SSH...

Example: Huawei HG556a Version A

SSH...

```
root@OpenWrt: ~
File Edit View Search Terminal Help
ian@X200:~$ 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:Jxlr16AD21/VE52p0Ln/+LyafJ1u7NLqEl3PIKEm+MM.
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.
root@192.168.1.1's password:

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

[          ] [-----] [-----] [-----] [-----]
| - | | - | | - | | - | | - | | - | | - | | - | | |
|   | | W | | I | | R | | E | | L | | E | | S | | S |
|   | |   | |   | |   | |   | |   | |   | |   |
|   | | F | | R | | E | | E | | D | | O | | M |
|   | |   | |   | |   | |   | |   | |   | |   |
[          ] [-----] [-----] [-----] [-----]

-----
OpenWrt 18.06.1, r7258-5eb055306f
-----
root@OpenWrt:~#
```

Example: Huawei HG556a Version A

SSH...

```
root@OpenWrt: ~
File Edit View Search Terminal Help
root@OpenWrt:~# ash --help
BusyBox v1.28.3 () multi-call binary.

Usage: ash [-/+OPTIONS] [-/+o OPT]... [-c 'SCRIPT' [ARG0 [ARGS]] / FILE [ARGS]]

Unix shell interpreter
root@OpenWrt:~# ls -l
root@OpenWrt:~#
```

```
ian@X200: ~
File Edit View Search Terminal Help
root@OpenWrt:~# exit
Connection to 192.168.1.1 closed.
ian@X200:~$
```

OpenWrt

Continues in Part 2...