

Oops

or

How to Recover from Problems with your WRT54G(L)



Topics Covered

- What can go wrong
- WRT54GL startup
- How to do various Procedures to the Router
- Problems vs Solutions
- Resources



Possible Problems



What can go wrong?

- Unknown/Lost Password
- Unknown IP address
- Broken startup scripts, locked out by bad firewall rules, corrupted the JFFS2 partition
- Aborted/broken image upload



Router Familiarization and Startup



WRT54GL rear Panel



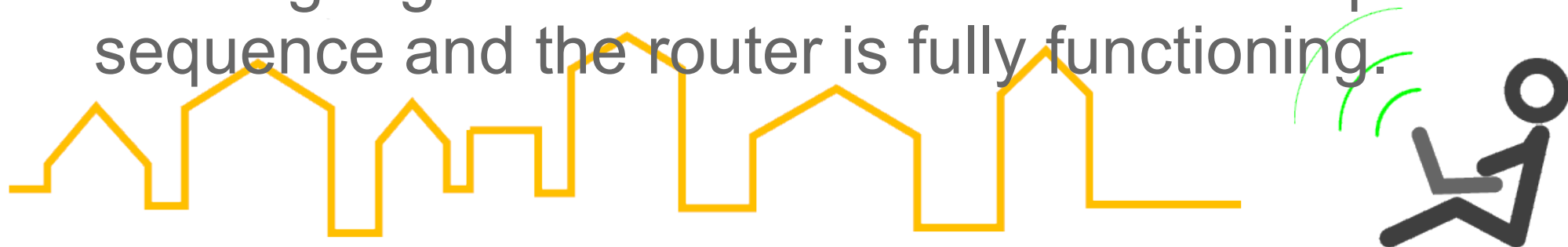
Boot Loader

- The Router runs the Broadcom CFE (Common Firmware Environment) Boot Loader from Flash when the Router is rebooted or powered up.
- Power LED flashes while Boot Loader running.
- The Boot Loader loads the firmware image and passes control to it.
- The firmware image can be in Flash, or transferred from a TFTP connection.



OpenWRT Firmware Startup

- Transfer of control to the OpenWRT firmware from the Boot Loader starts a bunch of things
- Power LED initially flashing. The DMZ light comes on.
- The startup scripts run including checking for the reset button being pressed. (failsafe check)
- The Power LED stays on and eventually the DMZ light goes out at the end of the startup sequence and the router is fully functioning.



Router Reset Button

- The Boot Loader and firmware image react differently to the reset button.
- Holding the Reset button during the time the Boot Loader is running resets the NVRAM to the default.
- Reset button is used by the OpenWRT firmware image to enter Failsafe mode. It will not reset the NVRAM if pressed during the time OpenWRT is running.



Procedures



Resetting the NVRAM

- Holding the Reset button while the Boot Loader is running sets the NVRAM to the default values.
 - 1) Disconnect the power from the router
 - 2) Hold in the reset button while simultaneously powering up the router. Keep holding reset button for 5 seconds.
 - 3) Release reset and wait for router to boot.
 - 4) Now has default settings.



Failsafe Mode

- OpenWRT needs to run to get into Failsafe mode.
- If you have a Windows PC, download and install recvudp from <http://downloads.openwrt.org/people/florian/recvudp/>
- Hardwire an Ethernet cable from your PC to a LAN port on the router.
- Reset the router NVRAM
- Set your computers network address to static IP 192.168.1.2



Failsafe Mode (continued)

- On your Linux computer, run “nc -l -p 4919 -u” or on Windows run “recvudp”.
- Reboot router, when you see the message “Press reset now, to enter Failsafe!” from nc or recvudp, press and hold the reset button until you see the message “Entering Failsafe!” which takes approximately 2 seconds. You need to be fast on the reset button.



What to do in Failsafe

- In failsafe, the router address is 192.168.1.1 and boots into a telnet server.
- Telnet to 192.168.1.1 to access the router's command line.



Problem vs Solution



Unknown/Lost Password

- You will need to Reset the password as follows:
- Enter failsafe mode
- Issue the following commands
 - `mount_root`
 - `passwd`



Unknown IP Address

- If you just want to reset the IP address to the default of 192.168.1.1 then reset the NVRAM



Broken Startup script, Bad Firewall Rules, Bad JFFS2 partition

- Enter Failsafe mode
- Telnet into the router to fix your problem.



Aborted/Broken Firmware Image

- The Boot Loader will not load a corrupted image.
- You need to TFTP a new image to the router.
- The directions are different for each version of tftp program used. Consult

<http://wiki.openwrt.org/OpenWrtDocs/Installing/TFTP?action=show&redirect=OpenWrtViaTftp>
for your specific OS/tftp program.

- (continued)



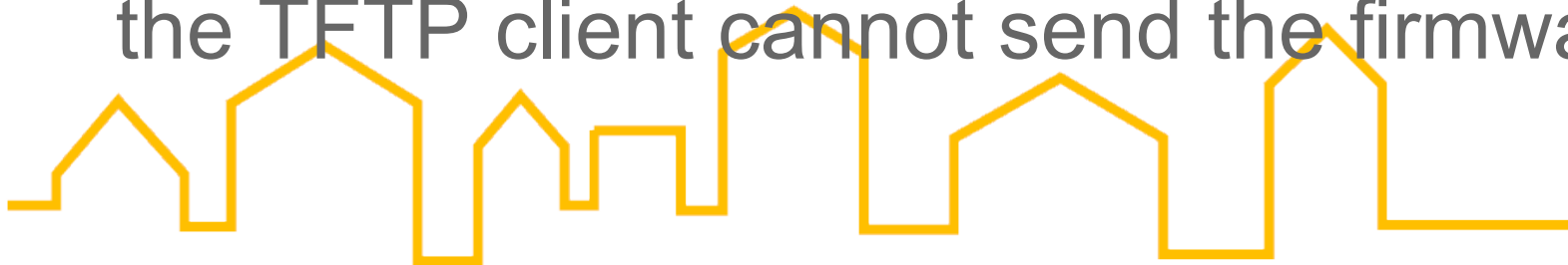
Overview of TFTP Firmware Upload

- Set your computer to static IP 192.168.1.2
- Plug Ethernet cable from your PC into one of the Router's LAN ports
- Remove power to your router by unplugging the power connection at the router.
- Start your TFTP client
- (continued)



Overview of TFTP Firmware Upload (continued)

- Power up your router, while having the TFTP client running which constantly probes for a connection
- The TFTP client will receive an ACK from the Boot Loader and starts sending the firmware
- Boots into new image once re-flashed.
- Note: The TFTP window is short so you may have to perform this procedure multiple times if the TFTP client cannot send the firmware.



TFTP on Linux

- tftp 192.168.1.1
 - binary
 - rexmt 1
 - timeout 60
 - trace
 - Packet tracing on.
 - put openwrt-xxx-x.x-xxx.bin



Resources

- <http://wiki.openwrt.org/OpenWrtDocs/Troubleshooting>
- <http://wiki.openwrt.org/OpenWrtDocs/Customizing/Firmware/CFE>
- <http://wiki.openwrt.org/Faq>
- http://wiki.openwrt.org/OpenWrtDocs/Customizing/Hardware/JTAG_Cable
- <http://wiki.openwrt.org/OpenWrtDocs/Hardware/Linksys/WRT54GL>

