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Contents

Preliminary

This 'Dark Night' is a very powerful piece of equipment and the NVRAM issue has been resolved, however, it presents significant risk (bricking) that requires careful adherence to the installation process.

Note on 26-Jan-2013: Until someone updates this page (with CFE update etc.), you may want to read here: http://charleswilkinson.co.uk/2012/12/22/dd-wrt-on-the-asus-rt-n66u-with-64k-cfe/

NVRAM issue

22-February-2016. Stay away from K2.6 builds for this router. Chances are you don't have one with the original bootloader and even if you do, the K3.x-big-RT-N66U.trx build will work on the router regardless of bootloader. Use the builds in the ftp://ftp.dd-wrt.com/betas/2016/02-19-2016-r29134/broadcom_K3X/ folder

15-May-2015 The command: nvram get bl_version can be issued to determine the CFE version if you have TELNET or SSH access. The Cellspot wiki contains links to many tools and articles to change the CFE. **Please consider posting a link to a 64K CFE for future users if you have the knowledge \ resource to do so and delete this statement.**

25-May-2013: Since BrainSlayer posted some experimental K3.X Images, the NVRAM Issue becomes almost obsolete. Please have a look at the Installation Instructions for further instructions.

9-Apr-2013: It seems more recently manufactured units come pre-loaded with the 64K v1.0.1.3 CFE and so are not compatible with standard DD-WRT builds. Flashing a standard DD-WRT build on these devices will result in a brick. If you don't know which CFE version your unit has when running the stock firmware,anyone wishing to flash DD-WRT on this device is advised to follow this guide: http://charleswilkinson.co.uk/2012/12/22/dd-wrt-on-the-asus-rt-n66u-with-64k-cfe/

1-Nov-2012: Fractal has indicated that the NVRAM is resolved and that 5Ghz is working. [1]

30-Oct-2012: RT-N66 CFE Thread Link to discussion implementing 64K: not sure that this is ready for prime time yet, however, if you try this and feel it is ready, UPDATE THIS STATEMENT and publish the procedure, limitations, and results.

DD-WRT Alternatives

As of this writing (June 30, 2012) user Merlin has implemented a solution, that lives with 32k NVRAM for CFE, but extends to ~60k NVRAM in firmware.

- download: http://www.mediafire.com/asuswrt-merlin/
- source code: https://github.com/RMerl/asuswrt-merlin/
- home page: http://www.lostrealm.ca/tower/node/79

As of July 16, 2012, TomatoUSB, Shibby http://tomato.groov.pl/download/K26RT-N/build5x-097-EN/Asus%20RT-N66u%2064k/ also has implemented a 64k NVRAM solution that lives with 32K NVRAM for CFE

Hardware

The ASUS RT-N66U is a Dual Band N-Router (2.4GHz and 5GHz bands) with lots of RAM (256Mb) and FlashRAM (32Mb), so it is well equipped to run DD-WRT

The ASUS RT-N66U is in the GigaBit Routing class, meaning it can route at higher speeds than a 100Mbps WAN connection can handle. Performance details below.

If you are looking for less expensive routers, that are also well suited to run DD-WRT, you might want to check out the Asus RT-N16 Single Band N-Router (2.4GHz only) but still with lots of RAM (128Mb) and FlashRAM (32Mb). Even cheaper is the Asus RT-N10U Single Band N-Router with 32Mb RAM and 8Mb FlashRAM. See also ASUS Promo page

Hardware Specifications

- Dual Band Router - 2.4GHz and 5GHz bands
- Wireless controller Broadcom BCM4331
- MIMO 3x3 on both frequencies (see Forum, BrainSlayer)
- Gigabit LAN and WAN switching
- 2x USB 2.0 connectors
- CPU Broadcom 4706 @ 600MHz
- 256MB RAM
- 32MB FlashRAM
- Built-in Micro SDHC socket
- Power supply: DC Output, 19 V, max. 1.58 A current (=> max 30W)

Know your hardware buttons

Reset button: pressing the Reset button while power-up, will put this ASUS router in recovery mode.

That is: press and hold the reset button, keep pressing the reset button while plugging in the power, then keep holding the reset button pressed for about ten seconds until the power led is blinking slowly, then release the reset button. The router is now in recovery mode.

WPS button: pressing the Red WPS button while power-up, will clear the NVRAM. All settings are stored in NVRAM of this ASUS router. Clearing the NVRAM is the most efficient way to reset the router to default settings.

That is: press and hold the WPS button, keep pressing the reset button while plugging in the power, then keep holding the WPS button pressed for about ten seconds, then release the WPS button. All settings have now been wiped, and default settings will be used.

Installation Instructions

K3.X Builds

8-Mar-2015: 26138 is a good (recommended) build for the RT-N66U:

- Big
- Mega

9-Sep-2014: new K3.X builds are now also available at FTP dd-wrt.com/betas and WWW dd-wrt.com/betas

Select: year -> release number -> broadcom_K3X ->
.....RT-N66U.trx file

25-May-2013: Since the experimental K3.X Broadcom Builds are out, you do not need to care what CFE you have. DD-WRT detects it automatically and extends 32KB NVRAM Version to 64KB. Which Image you have to flash, depends on your previous Image (Stock, Merlin, DD-WRT K2.6).

- If you have Stock or Merlin firmware: flash 26138 mega.
- For DD-WRT K2.6: It depends how much NVRAM (32KB / 64KB) you currently have.
  For 32KB, flash 26138 mega.
- If you are already on a custom 64K Build like Fractal or Kong with CFE 1.0.1.3, you need to flash 26138 mega nv64k. Since K2.6 Builds have an embedded check, you need to use those special nvXXk trailed images. On K3.X this check has been removed and you can simply upgrade from a previous K3.X to newer svn using dd-wrt.v24-YYYYY_NEWD-2_K3.x_mega.bin.

K2.6 Builds

USB does not work in K2.6 builds, any attempt to use a USB device will cause a kernel panic see this trac ticket. If you want USB functionality with DD-WRT you'll need to use a K3.x build as the problem is fixed in K3.x builds, but won't however be fixed for K2.6 builds.

8-Mar-2015: Kong 22000++ is a good (recommended) build for the RT-N66U with 64K CFE
with fix for the serious Heartbleed vulnerability.

9-Apr-2013: It seems more recently manufactured units come pre-loaded with the 64K v1.0.1.3 CFE and so are not compatible with standard DD-WRT builds. Flashing a K2.6 DD-WRT build on these devices will result in a brick. As it is impossible to know which CFE version you unit has when running the stock firmware, anyone wishing to flash DD-WRT on this device is advised to follow this guide: http://charleswilkinson.co.uk/2012/12/22/dd-wrt-on-the-asus-rt-n66u-with-64k-cfe/ These instructions should be updated when an official build becomes available.

26-Jan-2013: Current versions of dd-wrt from the dd-wrt website will quickly run out of nvram (because of 32Kb nvram issue). For a solution where you update CFE to 64Kb NVRAM - AND - use a version of DD-WRT that has N66_64K fix included see:
http://charleswilkinson.co.uk/2012/12/22/dd-wrt-on-the-asus-rt-n66u-with-64k-cfe/ AND
http://forums.smallnetbuilder.com/showthread.php?t=8259 - (someone please update the general instructions below, when the official dd-wrt is ready for general deployment on the N66U).

Otherwise please note: The RT-N66U does REQUIRE the **K26** Firmware builds as Broadcom has not released drivers for the non-K26 builds. (Read more here: Recommended Firmwares).

Note: use build 18946, it fixes the WAN port issue.

Principle steps

- Clear settings (Clear NVRAM) select Factory Default settings
- Install the INITIAL ASUS RT-N66U version of DD-WRT (file name ends in .trx) using either the Web GUI method or the Recover Utility method. Both methods are described below
- Clear settings (Clear NVRAM) select Factory Default settings
- "Upgrade" to your final version of DD-WRT (filename ends in .bin) using Web GUI or Recovery Utility
- Clear settings (Clear NVRAM) select Factory Default settings

    Note: is **IMPORTANT** to clear NVRAM (to select Factory Default settings) **BEFORE** and **AFTER** upload of any new firmware.

Switching from Tomato

1. Download the latest K3.x mega build
2. Navigate to the Tomato firmware update page
    1. Administration > Upgrade
3. Upload the firmware you downloaded in step 1
4. The router will reset several times and change its IP address to the default one (192.168.1.1).
5. Navigate to http://192.168.1.1/Factory_Defaults.asp
    1. The login credentials have been reset to the default dd-wrt username/password (root/admin)
6. Set "Restore Factory Defaults" to yes and click "Apply Settings".

    Note: Many settings carried over from Tomato to DD-WRT for me but it's highly advisable to reset to factory defaults or you will risk damage to your router and instability.

Upload Firmware via Web GUI

- Clear settings (Clear NVRAM) select Factory Default settings.
- Upload the **.trx file** using the stock web GUI.
- Wait for the router to re-boot on its own. **This may easily take 10-15 minutes to happen**, so just be patient. You want both ping response and web-gui response to know that the router is fully re-booted.
- Clear settings (Clear NVRAM) select Factory Default settings. Wait for the router to re-boot on its own!!! May take 10 minutes or more

Upload Firmware via Recovery Utility

- Set your NIC card to static IP 192.168.1.12, Subnet 255.255.255.0, Default gateway192.168.1.1 (Static IP guide)
- Put router into recovery mode by holding down the reset button while powering up the router, wait until the power led is blinking slowly, then release the reset button.
- In the Asus Recover utility Access the router?s built in recovery mode by issuing 192.168.1.1 in browser field.
- Flash the initial DD-WRT build (e.g.) Asus-RT-N66U_18946_mini.trx build and upload.
- When completed wait until the router re-boots on its own. **This takes at least 10 minutes**.
- Put router into recovery mode by holding down the reset button while powering up the router, wait until the power led is blinking slowly, then release the reset button.
- Flash the final DD-WRT build, could be any of:
    - ◊ 18946 Mega
    - ◊ 18946 Big
    - ◊ 19342 Mega
    - ◊ 19342 Big
- When completed wait until the router re-boots on its own. **This takes at least 10 minutes**.
- Put router into recovery mode by holding down the reset button while powering up the router, wait until the power led is blinking slowly, then release the reset button.
- Select Reset NVRAM defaults when it completes (should be quick), in the browser field, type in http://192.168.1.1/do.htm?cmd=nvram+commit. When done press enter. When complete select reboot and wait 5-10 minutes for the router to reboot and start building its layers.
- Now you should be able to access via web gui 192.168.1.1 and it should be DD-WRT.

Upgrade to newer DD-WRT

- Clear settings (Clear NVRAM)
- Use the DD-WRT web GUI : Administration -> Firmware upgrade
- Clear settings (Clear NVRAM)
- svn24461 BRICKS RT-N66U. Recover possible through mini CFE webinterface.

Revert to original ASUS firmware

- Download firmware from ASUS web site
- Reset to Factory Default Settings or clear NVRAM

- Use the DD-WRT web gui: Administration -> Firmware upgrade
- Reset to Factory Default Settings or clear NVRAM

Install an internal MicroSD card

11 Apr 2014 - Important note: USB (and therefor MMC) support does not work on K2.6 builds - it causes a kernel panic. However it is working on K3.x builds. See SVN Ticket 2580 for more info.

Open the case

- Unscrew the four screws at the bottom
- Then you want to release the plastic clips that holds the top and bottom parts together.
- You want to "pry" the bottom case outward. The clips have the male part moulded into the bottom, the female part is moulded into the top cover.
- For easier access next time, you can either snip off the "U" clips on the top cover, or round off the square edges on the male part of the clip with a nail file. Either solution makes it easier to get the case apart next time.

Install MicroSD card

Make use of the MicroSD card

In addition to the NAS features of DD-WRT, you can use the extra space to install Optware.

11 Apr 2014: Please note that since USB & MMC support is not working on K2.6 builds, you cannot install Optware on K2.6 builds. USB & MCC are working on K3.x builds, however Optware support for K3.x builds is currently considered beta. Having said that, forum member kabadisha has successfully tested installation of Optware on K.3x build 23598 mega on this device using the following instructions: OTRW Take 2

Performance

This router is in the GigaBit Routing class, meaning it can route at quite a bit higher speeds than a 100mpbs internet connection can handle.

```
Test Description                                RT-N66U
WAN - LAN                                              732 Mbps
LAN - WAN                                        729 Mbps
Total Simultaneous                              810 Mbps
Maximum Simultaneous Connections   34,925
Firmware Version                                3.1.0.3.90  (stock firmware number)
```

Sources: [2] Testing methods: [3]

Overclocking

Overclocking is availible, but does not work yet. CFE Bootloader is using old hndmips.c source and it does not support frequencies higher 600 MHZ. Underclocking is working so far.

12-Dec-2015 Overclocking may cause QoS or other services to behave unpredictably. (QoS degradation observed at 632Mhz overclocking with K3.0-r27360 (06/18/15) big, YMMV)

Links and Notes

Primary forum threads

- Forum: RT-N66U General Discussion
- Forum: RT-N66 CFE Thread ? Information specifically about upgrading to the 64k CFE.
- One User's Guide - A users guide for flashing Rt-N66u

Additional forum threads

- Forum: Flashing discussion
- Forum: Reason for starting from Build 18946
- Forum: N66U and 32k/64k NVRAM issue
- Forum: open case, add MicroSD card. A 32Gb SD card tested, see Forum
- techinfodepot.info on RT-N66U
- SmallNetBuilder Review
- Asus Stock UI demo

- WAN issue fixed in svn18835, see Forum post, Eko
- Serial inside is: 8, n, 1, no flow control, 115200.
- Possible ways to update CFE (once a 32k+ CFE is released for this router), see Forum, LOM
- Positive report of running svn18740, see Forum post

Generally good to know

- Peacock Thread-FAQ: EVERYTHING you NEED to know! Really!! All the basics about DD-WRT on Broadcom based routers - A MUST READ Thread!!!
- Get the most speed out of your wireless-N technology
- The CATFISH thread - external antenna choice and use If you need a better WiFi connection - get a more focused antenna!!!
- Linking_Routers to cover a bigger area with WiFi