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Installing DD-WRT on a US Robotics USR5461

Introduction

DD-WRT is a third party developed firmware for wireless routers based on a Broadcom or Atheros chip reference design.

The major hardware features of USR5461 router are listed in this table:
http://www.dd-wrt.comhttp://forum.dd-wrt.com/wiki/index.php/Supported_Devices#US_Robotics

The <RESET> button on this router is not recognized by DD-WRT firmware. Therefore, in place of the so-called "30/30/30 Reset" which requires a fully functioning <RESET> button, other steps will be taken.

DD-WRT versions

USR5461 has only 2MB of NVRAM which contains 128KB compressed CFE (Boot Loader). The rest of it (1870 KB) contains OEM/USR firmware.

Therefore, you have to select either DD-WRT **micro** builds (file size about 1700 KB) or DD-WRT **micro-plus** builds (file size less than 1870 KB) for installation on USR5461.

Furthermore, you must use the **generic** version of these builds since you will be doing a first time installation of DD-WRT firmware on your original USR5461 router.

See DD-WRT Forum Firmware Recommendations at:
http://www.dd-wrt.com/phpBB2/viewtopic.php?t=52043

Note: In the example bellow we will use Brain Slayer's 13525 build:
dd-wrt.v24_micro_generic.bin - 1,769,472 B - 12/28/2009

Download link:
ftp://dd-wrt.com/others/eko/BrainSlayer-V24-preSP2/12-28-09-r13525/broadcom/

Preparing to Flash

This document is written assuming your USR5461 router is running OEM/USR firmware, and your PC is running a version of Microsoft Windows.

Please, read and understand all instructions in this section and whichever flashing method you will use before starting the entire procedure.

1. Disable **Media Sensing** feature for TCP/IP in Windows ? read and implement Microsoft article #239924 "How to disable the Media Sensing feature for TCT/IP in Windows" ? http://support.microsoft.com/kb/239924 .

2. Create a new folder on your computer Desktop and name it **usr5461**. Download/save the selected DD-WRT firmware image file to **Desktop\usr5461**. In our example this is "dd-wrt.v24_micro_generic.bin".

3. Connect your PC to a LAN port of the router with an Ethernet cable. DISCONNECT ALL OTHER ROUTER CLIENTS (WIRELESS AND/OR WIRED). Do not flash the router over a wireless connection!

4. Reset your USR5461 router to factory (USR) default settings:
- Press and hold the <RESET> button on the router for 10 seconds; release the button.
- Wait until router control lights stabilize.

5. USR5461 default LAN IP address is **192.168.2.1** Your PC LAN interface/adapter will need a static IP address on the same LAN (192.168.2.x) to reliably transfer DD-WRT firmware image onto the router.

Windows XP: **Start - Control Panel - Network Connections**; double-click on **Local Area Connection** icon: In **Local Area Connection Properties** window, double-click on **Internet Protocol (TCP/IP)**, and set the following static IP address for your PC:

IP Address: **192.168.2.101**

Subnet Mask: **255.255.255.0**

Default Gateway: **192.168.2.1**

Click < OK > button.

6. Start your Web Browser and enter "http://192.168.2.1" in its location/address line to access USR5461 Web UI. USR Setup Wizard will start - it is an introductory configuration procedure you must complete in order to make the router functional:
- Accept the default settings Setup Wizard will display on three successive Web pages.
- Change/Enter the following settings:
- In **Setup 2** page, **Security** section: -Method: "**None**";
- In **Setup 3** page, **Router Login** section: -User Name: "**root**"; -Password: "**admin**".
After you complete USR Setup Wizard, close your Web Browser.

Performing the Flash

Use one of the firmware loading methods listed below.

Method 1: tftp

1. Power off the router (unplug the power supply connector from the router).

2. Open a *Command-Line **window** (*'**Start ? Run...** ? type in "**cmd**" and press **<OK>** button):
- Resize the window to cover the right half of your PC display;
- ENTER the following commands:

>cd desktop\usr5461

>dir

....

The **dir** command will list the contents of **usr5461** folder. Check the presence of DD-WRT firmware image file and its size:
1,769,472 dd-wrt.v24_micro_generic.bin

3. Type in the following command but DO NOT PRESS **<ENTER>** key on your PC keyboard:

>tftp ?i 192.168.2.1 put dd-wrt.v24_micro_generic.bin

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4. Open a second **Command-Line** window:
- Resize it to cover the left half of your PC display;
- Type in the following command and press <ENTER> key on your PC keyboard - you should see continuous error messages:

>ping ?t ?w 60 192.168.2.1

Destination host unreachable.

....

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4. Click on the right **Command-Line** window to make it active;
- Plug the power supply connector back into the router;
- Observe the left **Command-Line** window ? *as soon as you see the first successful ping replay from the router, press for one second <ENTER> key on your PC keyboard*:

>ping ?t ?w 50 192.168.2.1

Destination host unreachable.

......

Destination host unreachable.

Replay from 192.168.2.1: bites=32 time=3ms TTL=100

......

This should start **tftp** file transfer to the router; there will be 7-9 more ping replays like the first one (during this time the file transfer to router RAM completes. At the end, **tftp** will report in the right **Command-Line** window:
"**Transfer successful: 1769472 bytes in 8 seconds, 221184 bytes/s**"
Close both **Command-Line** windows.

5. Wait 5 minutes after **tftp** have reported a successful file transfer. During this time the router is flashing the new firmware image into NVRAM, and then reboots, all on its own.

6. Proceed to "After the Flash" below.

Note: You can also flash back an USR firmware for USR5461 as described in this method. Just use the appropriate resources:
1. Download the latest final USR firmware for USR5461 router from USR Web page:
http://www.usr.com/support/product-template.asp?prod=5461 .
Currently this is: "**USR5461-v.3.93.35.0.8.usr - 1.8 MB - 10-25-06**"
Download/save the file to **Desktop\USR5461** folder. This file has too many dots in its name ? Windows **tftp** cannot open such a file.
RENAME the file to: **USR5461-v3_93_35_08.usr**

2. Use the current LAN IP address of the router and the renamed USR firmware image file in the steps above.

Method 2: the factory firmware's web User Interface

It is possible to install a **generic** version of DD-WRT firmware onto an original USR5461 router using the **<Upgrade Router>** option in USR firmware's Web GUI. The trick is to make DD-WRT firmware image file look like an USR firmware image file, such that the original USR firmware on USR5461 would accept it as an upgrade source. You have to create a custom "USR-like" firmware image file by:

- Adding a special, 28-byte header "USR0?" to DD-WRT firmware image file;

- Naming the new file with ".usr" extension.

1. Download the header file **usr5461_hdr.bin** from:
<http://www.dd-wrt.com/phpBB2/download.php?id=6958>. Save it to **Desktop\usr5461** folder.

2. Open a **Command-Line** window (**Start ? Run...** - type in "**cmd**" and press **<OK>** button); ENTER the following commands:

>**cd desktop\usr5461**

>**dir**

......

>copy /b usr5461_hdr.bin + dd-wrt-v24_micro_generic.bin usr5461-13525_micro-generic.usr

......

>dir

......

The **copy**-command performs a BINARY ("**/b**") copy of the USR header AND ("**+**") the DD-WRT firmware image file to make a single "USR-like" firmware image file. Bellow the last **dir**-command, double-check that the new file is exactly 28 bytes longer than the original DD-WRT firmware image file. In our example:

1,769,472 dd-wrt.v24_micro_generic.bin

1,769,500 usr5461-13525_micro_generic.usr

....

28 usr5461_hdr.bin

3. Start your Web Browser, and enter "**http://192.168.2.1**" in its location/address line to access USR5461 Web UI:

- Click on **<Device>**: in **Upgrade Router** section, click on **<Browse>** button; find and select the new file created in Step 2 (**usr5461-13525_micro_generic.bin**);

- Click on **<Upgrade>** button and WAIT until a message appears: "**The router has been upgraded**" (it takes about three minutes);

- WAIT for a second message to appear: "**Wait until router reboots**";

- Wait until router control lights stabilize, and then close your Web Browser.

4. Proceed to "After the Flash" bellow.

After the Flash

1. Check the current LAN IP address of the router with the **ping** command in a **Command-Line** window. Try first USR default LAN IP address: "**>ping 192.168.2.1**". If you get four successful replays, this is the current LAN IP address of the router. Proceed to Point 4 bellow.

2. If you get four error messages, try DD-WRT default LAN IP address ? 192.168.1.1 . Your PC LAN interface\adapter will need a static IP address on the same LAN (192.168.1.x) in order to TCP/IP connect to the router. You have to:
- Change the static IP address of your PC LAN interface/adapter: **<IP Address: *192.168.1.101*>**;
- Change the IP address of **<Default Gateway: *192.168.1.1*>**.

Note: Consult "Preparing to Flash" section, Point 5.

3. In the **Command-Line** window you enter: ">**ping 192.168.1.1**". If you get four successful replays, this is the current LAN IP address of the router.

4. Start your Web Browser:
- In its location/address line, enter the current LAN IP address of the router ? "**http://192.168.x.1**";
- The DD-WRT firmware Web UI should open - complete the router configuration as you want it.

For More Information

The steps above were gathered from various threads in the dd-wrt forums. These threads in particular contain much helpful information:

[USR5461 compatibility]

[USR 5461]

Thank you to all who contributed. (SiliconWarrior, modervador, many others whose forum posts must not escape recognition.)