

Configuring Linux 'pppd' for Skywire[®] EVDO Modem on Verizon

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Updated: November 2016



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1. Configuring Linux 'pppd'

This article discusses the setup, configuration and use of the Linux 'pppd' daemon to enable a full IP network connection over the Verizon network for an embedded Linux platform.

For this demonstration we will use a BeagleBone (white) running the ArchLinux distribution. Configuration of the PPP daemon is not specific to the Beaglebone however and you should have equal success with ArchLinux on other platforms such as Raspberry Pi, Beaglebone (black), Wandboard, etc.

For the EVDO Skywire® modem, we will use the USB interface to the modem, which provides for the greatest bandwidth and most reliable connection, eliminating issues concerning flow control often encountered with traditional UART connections and PPP protocol.

We will connect the Skywire eval kit to the Beaglebone, configure the PPP link and bring up a connection between the Beaglebone and the Internet entirely over the Verizon cellular network.

Follow the ArchLinux documentation to install and update the OS on your Beaglebone while it is connected to the Internet via its Ethernet interface. Installation, maintenance and general administration of Linux are outside the scope of this document.

<http://archlinuxarm.org/platforms/armv7/ti/beaglebone>

After your ArchLinux OS is installed and updated, you will additionally need to install the 'ppp' package as this is not included in the default ArchLinux install,

```
[root@alarm ~]# pacman -S ppp
```

1.1

Connect the Skywire development kit to the Beaglebone using a USB type A to mini-B cable (supplied with the Skywire kit). The mini-B connection goes to J5 on the Skywire baseboard. This is the USB connection to the modem.

You should see the Linux kernel enumerate the new USB device(s).

The EVDO modem presents (4) USB devices:

```
/dev/ttyUSB0  
/dev/ttyUSB1
```

`/dev/ttyUSB2`
`/dev/ttyUSB3`

Additionally, you can query the USB device tree and see the Telit modem on the Skywire module appear,

```
[root@alarm ~]# lsusb
```

```
Bus 001 Device 002: ID 1bc7:1010 Telit Wireless Solutions DE910-DUAL
```

The device **`"/dev/ttyUSB3"`** is the command and data interface to the EVDO modem.

To configure the PPP daemon for use with this Telit modem, two files need to be created in the **`/etc/ppp/peers`** directory.

Note: We have a GitHub page with the necessary PPP files available for customers to use located here:

<https://github.com/NimbeLink/skywire-ppp-scripts>

We highly recommend downloading that repo and following the instructions in the files related to your modem. The other recommended option is to click on the file you want and copy and paste directly from GitHub.

First, clone the repo and navigate to the cloned repo. Next, as superuser (root) copy "vzw-EVDO-V" to **`"/etc/ppp/peers/"`**, or copy-and-paste the contents of "vzw-EVDO-V" from the GitHub repo to **`"/etc/ppp/peers/vzw-EVDO-V"`**. The contents of "vzw-EVDO-V" are shown below:

```
/dev/ttyUSB3
115200
connect "/usr/sbin/chat -v -f /etc/ppp/peers/vzw-EVDO-V-chat"
noauth
defaultroute
usepeerdns
local
debug
updetach
```

Although a serial port speed of 115200 is called out, the actual serial speed on the USB connection is ignored and the interface runs as fast as the modem and the host are capable.

Next, copy "vzw-EVDO-V-chat" to ***"/etc/ppp/peers/"***, or copy-and-paste the contents of "vzw-EVDO-V-chat" from the GitHub repo to ***"/etc/ppp/peers/vzw-EVDO-V-chat"***. The contents of "vzw-EVDO-V-chat" are shown below:

```
' ' 'ATZ'  
'OK' 'ATDT#777'  
'CONNECT' ' '
```

This completes configuration of the PPP daemon.

You are now ready to bring up the PPP link but may wish to bring down your ethernet link first as you may encounter routing problems with two interfaces active simultaneously.

Bring down your ethernet and keep it from coming back up automatically,

```
# systemctl stop netctl-ifplugd@eth0  
# netctl stop eth0
```

Make sure your Skywire modem is powered on and activated (you may need to briefly press the power on button on the Skywire eval board).

Bring up the PPP link,

```
# pon vzw-EVDO-V
```

Confirm the link is active,

```
# ifconfig ppp0
```

You should have an inet address and the interface will be shown as "UP".

Ping someone on the Internet,

```
# ping www.google.com
```

Maybe update your system via cellular,

```
# pacman -Syu
```

You can bring the PPP connection down and disconnect from Verizon with,

```
# poff vzw-EVDO-V
```