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ADI Linux USB Driver Installation Guide

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This document intends to outline the steps required to install the Linux driver for ADI USB Eagle I/II ADSL modems. The driver is compatible with most of the Linux distributions such as RedHat, SuSE, and Mandrake. The installation is script based and therefore, is not limited to different Linux distribution packaging methods.

The installation package consists of the following directories:

- ADI_DRIVER
- ADI_PPPOA
- ADI_PPPOE

For each Linux distribution, there is an installation script. The installation scripts are located in the ADI_DRIVER directory. There are three scripts for RedHat (Install_*RH7.2*, Install_*RH7.3*, and Install_*RH8.0*), one for SuSE (Install_*SUSE8.1*), and one for Mandrake (Install_*Mandrake9.0*).

Each script has two input arguments, one is the full path of the driver installation directory (or *"./"* if you already changed the directory to that location) and the other one is the directory name of the kernel source code located in "/usr/src/" directory. (e.g. in RedHat 8.0 the directory name of the kernel source code is *"linux-2.4.18-14"*)

The following is the synopsis of the Installation scripts:

./Install_*distribution*   *"driver_installation_directory"*   *"kernelSource_dirName"*

For instance, if you want to install the driver in SuSE version 8.0, and the current directory is ADI_DRIVER, the following is the command:

./Install_*SUSE8.1*   ./   *linux-2.4.19.SuSE*

Or if the installation package is located in the floppy, then you can run:

./Install_*SUSE8.1*   */mnt/floppy/ADI_DRIVER*   linux-2.4.19.SuSE

(Note: To determine the current kernel version you can run "uname –a". This name is usually the same as the name of kernel source code directory; you have to go to */usr/src/* to confirm this. E.g. in *SuSE 8.1* uname returns *2.4.19-4GB* but the actual directory name in */usr/src/* is *linux-2.4.19.SuSE*)

Pre-installation notes:

- The kernel source code has to be installed prior to the driver installation. Kernel source code is located in *"/usr/src/"* directory. Refer to your Linux distribution manual for instructions on installing the kernel source code.

- You should login as root.
- Make sure the modem is not connected to the USB cable. You should plug in the modem when the installation is successfully completed.

Installation steps:

- Unzip the package to some suitable location. (e.g. /root/UsbDriver). At this point you should have 3 directory created in /root/UsbDriver (ADI_DRIVER, ADI_PPPOA, and ADI_PPPOE)
- Change the directory to. …/UsbDriver/ADI_DRIVER
- Run the install script (e.g. for Redhat 8.0 run "Install_*RH8.0* ./ linux-*2.4.18-14*")
- At the end of the installation you should see the message "ADI USB ADSL driver installed successfully"
- Now you can plug in the modem.

Post-installation notes:

When the installation is completed, the following directories are created:

- /usr/ADI_USB/ADI_LINUX.

This directory contains the following files/directory:
- gostatic
    o This script is used to assign a static IP address.
    o Synopsis: *./gostatic   ADIModem   ip-address   subnet-mask*
    o Example: *./gostatic   ADIModem   10.10.10.10   255.255.255.0*
- godhcp
    o This scrip is used to obtain a dynamic ip-address through DHCP.
    o Synopsis: ./godhcp   ADIModem
- ifcfgeth
    o This is the driver interface configuration
- stopip
    o This script brings down the network driver.
    o Synopsis: ./stopip   ADIModem
- ADI_SRC directory
    o This directory contains the driver source code and other necessary files.

- /etc/analog

This directory contains the driver configuration files and firmware codes:
- adiusbadsl.conf

- o This is the driver configuration file. By editing this file you can configure the driver. (E.g. setting vci/vpi, encapsulation, ADSL standard, …)
  - o You can also choose to use a CMV file to configure the modem during the boot time (Set LineType to 10).
- CMVei.txt
  - o CMV file for ISDN Modems.
- CMVep.txt
  - o CMV file for POTS Modems.
- Rtbldei0.bnm, Rtbldei1.bnm, Rtbldei2.bnm, Rtbldei3.bnm, Rtbldei4.bnm (EAGLE ISDN firmware code)
- Rtbldep0.bnm, Rtbldep1.bnm, Rtbldep2.bnm, Rtbldep3.bnm, Rtbldep4.bnm (EAGLE POTS firmware code)

Bridge Mode LLC (LAN) configuration:

To configure the modem in the bridge mode first:
- Run "ifconfig –a". Make sure the *ADIModem* interface is reported by ifconfig.
- Edit */etc/analog/adiusbadsl.conf*
  - o Set VPI and VCI. Values are in HEX; defaults are 00000000 and 00000020 respectively. (Note: do not use 0x in front of the numbers)
  - o Set Encapsulation to 1 (Bridge Mode)
  - o Set LineType to 10 (If you want to use the default CMV file)

Now you can get an IP address through DHCP or set a static IP address running stopip script:

- Bridge mode using static IP Address:
  - o Change the directory to */usr/ADI_USB/ADI_LINUX*
  - o Run "*./gostatic ADIModem ip-address subnet-mask*"
  - o Run ifconfig again to confirm the IP Address assignment.
  - o Ping the CO/ browse the WEB!

- Bridge mode using DHCP:
  - o Change the directory to */usr/ADI_USB/ADI_LINUX*
  - o Edit ifcfgeth and set the following:
    - ▪ `DEVICE = ADIModem`
    - ▪ `BOOTPROTO = DHCP`
    - ▪ `GATEWAY = gateway IP address.`
    - ▪ `NETMASK = 255.255.255.0`
  - o Run *"./godhcp ADIModem"*
  - o Run ifconfig again to confirm the IP Address assignment.
  - o Ping the CO/ browse the WEB!

Note: You need to run one of the above scripts(gostatic or godhcp) whenever you unplug/plug-in the USB cable.

Routed Mode configuration:

We use static IP Address in routed mode:

- Run "ifconfig –a". Make sure the *ADIModem* interface is reported by ifconfig.
- Edit */etc/analog/adiusbadsl.conf*
    o Set VPI and VCI. Values are in HEX; defaults are 00000000 and 00000020 respectively. (Note: do not use 0x in front of the numbers)
    o Set Encapsulation to 3 (for routed LLC) or 4 (for routed VC)
    o Set LineType to 10 (this will use the default CMV file)
- Change the directory to */usr/ADI_USB/ADI_LINUX*
- Run "ifconfig –a". Make sure the *ADIModem* interface is reported by ifconfig
- Run "*./gostatic   ADIModem   ip-address   subnet-mask*"
- Run ifconfig again to confirm the IP Address assignment.
- Edit "resolv.conf" in */etc/* directory; add your DNS [nameserver 64.5.221.13]
- Add the default gateway to the routing table
    o E.g. [route add default gw 192.168.50.100]

Now you are ready to browse the web!

PPPoX configuration:

The main alternative to the bridge mode/DHCP explained above is PPPoX, which is one of the PPPoE (PPP over Ethernet) or PPPoA (PPP over ATM designed specifically for DSL). PPPoX is very similar to the old dial-up method. A routable IP-address is returned to you after CO authentication. User needs to have a user name and password. (Note that no actual dialing takes place.)

PPPoE configuration:

To Configure PPPOE you need to have a "PPPoE client". Refer to the following links for some of the current available clients for free-download:

- http://www.roaringpenguin.com/pppoe (Roaring Penguin is used in our test. You should download/install both Core software and its GUI)

- http://www.davin.ottawa.on.ca/pppoe/

- http://www.ecf.toronto.edu/~stras/pppoe.html (PPPoE redirector for Linux)

To configure the modem:
- Install the LAN driver (refer to the bridge mode configuration)

- o Make sure Encapsulation in "*/etc/analog/adiusbadsl.conf*" is set to 1(Bridge LLC) or 2(Bridge VC)
- Install the PPPoE client. (Refer to Roaring Penguin web site for instruction on installing the software.) You can also find the installation package under "ADI_PPPOE/" folder, which also includes the installation script "PPPOEPATCH". In order to execute script run "./PPPOEPATCH */pppoe-installation-directory*"
- There should be no IP assigned to the driver at this point.
- Execute the application (run usr/bin/tkpppoe). Now the PPPoE GUI should be up and running.
- Go to the properties and setup the following:
  - o `User name:  YOUR USER NAME`
  - o `Network:    (can be blank)`
  - o `Password:   YOUR PASSWORD`
  - o `Ethernet Interface: ADIModem`
  - o `Setup the DNS (if required by the ISP under/etc/resolve.conf)`
- Now you are ready to dial and get connect!

Note: If you using mandrake 9.0 you might get a message saying "*Error Starting connection: /usr/sbin/adsl-start line 1:/usr/bin/id: No such file or directory adsl-start you must be root to run this script*". In this case, copy the '*id*' file from '*/bin/*' to */usr/bin/*' (e.g.   "*cp /bin/id /usr/bin/*")

PPPoA configuration:
The PPPoA driver should be installed after LAN driver installation. To configure the modem for PPPoA:
- Install the LAN Driver (don't plugin modem)
- install PPPoA driver. The installation package can be found under "*…/ADI_PPPOA*", which also includes the installation script "*PPP_INSTALL*". To execute the script run "*./PPP_INSTALL */pppoa-installation-directory*" (don't plugin the modem)*
- Change the driver encapsulation to PPPoA(VC or LLC). Edit "*adiusbadsl.conf*" in two locations:
  - o "*usr/ADI_USB/ADI_LINUX/ADI_SRC/OTHER/*" and
  - o "*/etc/analog*"
  - o Set Encapsulation to 6 (for PPPOA_VC) or 5 (for PPPOA_LLC)
- Set the User and Password. Modify the following files with the provided username and password:
  - o "options".
  - o "pap-secrets" and
  - o "chap-secerts".
- The above files can be found in the following locations (make sure to modify the files in both locations):
  - o "*/etc/ppp/*"

- o *"usr/ADI_USB/ADI_PPPOA/PPP_CONF"*
- In order to connect/dial to the server, execute "ADI_PPP_Go". The script can be found in *"usr/ADI_USB/ADI_PPPOA/PPP_SCRIPTS"*
- While you are connected, a virtual interface (ppp0) will be created. This interface will contain your IP address.

Note: To disconnect from the server, run "ADI_PPP_Stop" script. It can be found in the same directory.

CMV Text file:

As indicated in the post-installation section, after the installation, there will be two CMV files in */etc/analog/* directory—*"CMVei.txt"* for ISDN modems and *"CMVep.txt"* for POTS.

If the LineType in "adiusbadsl.conf" is set to 10, then the driver discards the CMV settings in *"adiusbadsl.conf"*, and instead reads the CMVs from the CMV file. The following is the file format:

```
-   Maximum 100 CMV commands.
-   Use ';' at the beginning of each line for comments.
-   Each CMV command has to start from the beginning of the line.
-   General command format: "CW [CMV name] [Offset] [value]". There
    should be only one space between each token.
-   [CMV name] is four-character long; it is not case sensitive.
    (E.g. OPTN/optn or STAT/stat or RATE or ..)
-   [Offset] is in decimal format.
-   [Value] is in hexadecimal format. (E.g. 80020066 or 0x80020066 or
    0X80020066)
-   "CW CNTL 0 1" should always be the first line in the file.
-   "CW CNTL 0 2" should always be the last line in the file.
```