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# Sagem Fast 800 E4 ADSL USB modem under Gentoo GNU/Linux
# Tested with gentoo-sources-2.6.19-r2 kernel (required kernel is >= 2.6.16)
#
# A patch is posted at https://mail.gna.org/listinfo/ueagleatm-dev that
# fixes kernels >= 2.6.20

USE="symlink" emerge gentoo-sources
cd /usr/src; ln -l
# Symbolic link should point to: linux -> /usr/src/linux-2.6.19-gentoo-r2/

cd linux
make menuconfig

# Select following:

Code maturity level options --->
[*] Prompt for development and/or incomplete code/drivers
    - CONFIG_EXPERIMENTAL

Device Drivers --->
Generic Driver Options --->
[ ] Select only drivers that don't need compile-time external
    firmware (*unselected*) - CONFIG_STANDALONE
[*] Hotplug firmware loading support - CONFIG_FW_LOADER

Networking --->
[*] Networking support - CONFIG_NET
Networking options --->
[*] Packet socket - CONFIG_PACKET
[M] Asynchronous Transfer Mode (ATM) - CONFIG_ATM
[M] RFC1483/2684 Bridged protocols-CONFIG_ATM_BR2684 (only needed for PPPoE)

Device Drivers --->

Network device support --->
[*] Network device support - CONFIG_NETDEVICES
[*] PPP (point-to-point protocol) support - CONFIG_PPP
[M] PPP Deflate compression - CONFIG_PPP_DEFLATE (only useful if
    compression is supported - rare)
[M] PPP BSD-Compress compression - CONFIG_PPP_BSDCOMP (only useful
    if compression is supported - rare)
[M] PPP over Ethernet - CONFIG_PPPOE (only needed for PPPoE)
[M] PPP over ATM - CONFIG_PPPOATM (only needed for PPPoATM)

USB support --->
[*] Support for Host-side USB - CONFIG_USB
[*] USB device filesystem - CONFIG_USB_DEVICEFS
[M] (O or U)HCI HCD support
USB DSL modem support --->
[M] USB DSL modem support - CONFIG_USB_ATM
[M] ADI 930 and eagle USB DSL modem - CONFIG_USB_UEAGLEATM

# Exit and save .config
make bzImage && make modules && make modules_install
# Copy bzImage to "boot" partition and edit /boot/grub/grub.conf block
# Reboot

USE="atm" emerge net-dialup/ppp net-dialup/ueagle-atm
# This will create /lib/firmware/ueagle-atm/ structure and put some
# documentation into /usr/share/doc/ueagle-atm/
# Download http://download.gna.org/ueagleatm/ueagle-atm4.tar.gz
tar -zxvf ueagle-atm4.tar.gz
cd ueagle-atm4/driver

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# Apply the patch (put newer ueagle-atm.c file here) from ml if using
# kernel >=2.6.20
make && make install
cd .. && cd firmware && cp * /lib/firmware/ueagle-atm/

modprobe ueagle4-atm
# Open a new terminal screen and watch
tail -f /var/log/messages
# Wait about 2 minutes, led blinks in meantime, expect message:

# usb 1-2: [ueagle-atm] modem operational
# usb 1-2: [ueagle-atm] setting new timeout 0
# usb 1-2: [ueagle-atm] setting new timeout 0

# if everything is ok, led stop blinking

emerge br2684ctl

# Edit /etc/conf.d/net.ppp0 , create if it doesn't exist and copy this:
# http://www.eunet.yu ISP uses PPPoE, LLC encapsulation, VPI/VCI = 8/64
# Edit your username and password!

config_nas0=( null )
br2684ctl_nas0="-e 0 -a 8.64"
config_ppp0=( "ppp" )
link_ppp0='nas0'
plugins_ppp0=( "pppoe" )

username_ppp0='adsl.your_username@eunet'
password_ppp0='your_password'

pppd_ppp0=( lock defaultroute usepeerdns noipdefault noauth holdoff 4 maxfail 0
persist asyncmap 0 lcp-echo-interval 2 lcp-echo-failure 7 debug )

depend_ppp0() {
    need net.nas0
}

# Done

# Edit /etc/conf.d/net.nas0 , create if it doesn't exist and copy this:

config_nas0=( "192.168.0.1/24" )

# Done

cd /etc/init.d && ln -sf net.lo net.ppp0 && ln -sf net.lo net.nas0

# Starting the Connection:
br2684ctl -c 0 -e 0 -b -a 8.64
/etc/init.d/net.ppp0 start

# Put this into /etc/resolv.conf (alter to your ISP nameservers) or better use
# opensns system for faster lookups:

nameserver 208.67.222.222
nameserver 208.67.220.220
nameserver 194.247.192.1
# nameserver 194.247.192.33

# Done
# and this into /etc/modules.autoload.d/kernel-2.6 :
br2684

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# Done

# Note: next is non gentoo way of starting services - see TODO
# This is to allow common users to start/restart adsl connection
# Make a script like this and name it "myadsl.sh":

#!/bin/bash
br2684ctl -c 0 -e 0 -b -a 8.64
sleep 5
/etc/init.d/net.ppp0 restart

# put it into /usr/local/bin and chmod +x it
# and add the line at the end of /etc/sudoers file:

user_list_separated_by_semicolons ALL=(ALL) NOPASSWD: /sbin/br2684ctl,
/usr/local/bin/myadsl.sh

# Launcher on GNOME Desktop can be created if you right click above Desktop
# and select "Create Launcher". Set name, choose icon and in command field
# enter: "sudo /usr/local/bin/myadsl.sh"

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# Appendix:
# TODO: How to tell if "modem is operational" so one can, from that moment,
# start net.ppp0 - RC_NET_STRICT_CHECKING /etc/conf.d/rc for other net services.
# TODO: If tel. line cable is unplugged pppd dies - it shouldn't dissapear that
# easy, check is this happening even if persistant is on?
# Note: ueagle4-atm behaves correctly in suspend to ram/resume cycle.
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