

**How to connect/configure
Multi-Link PPP to Sangoma card.**

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This manual covers the use of mpd (Multi-Link PPP daemon) with Sangoma Device Drivers based on netgraph(4).

Pre-requisites

Before diving head first into the technicalities of MPD on FreeBSD, let's make sure some basics are met. To complete the setup detailed in this article, you'll need:

- Enable NETGRAPH in a kernel.
- You must be running FreeBSD version 3.4 or higher.

Kernel configuration

The kernel you are going to be using for this project must be configured with:

options NETGRAPH

<enable also all other NETGRAPH options>

You will have to rebuild a kernel in order to be able to use MPD. Please refer to the FreeBSD Handbook, section [Configuring the FreeBSD Kernel](#) for help in doing this.

Sangoma Device Driver configuration

To configure Sangoma card to use Multi-Link PPP daemon, do the following steps:

- Run `wancfg`
- Select '*MultiLink PPP protocol*' for wanpipeN device.
- Configure Hardware Setup options (no network interface will be created for Multi-Link PPP protocol).
- Before exiting from wancfg script, it will create sample MPD configuration (Please refer to ***MPD Configuration*** section for more information) using the following information:
 - Bundle name.
 - Link name (wanpipe1, wanpipe2 and so on).
 - Local IP address (it will ask only once for the first link in this bundle).
 - Remote IP address (it will ask only once for the first link in this bundle).
- Enable NETGRAPH support for Sangoma WANPIPE Device Driver (wanpipe_config.h file). Recompile and install new Sangoma WANPIPE modules.

In case when Multi-Link PPP protocol is using, the Sangoma driver creates netgraph nodes for each link. The netgraph node name is wanpipeN (where N=1,2,...). Use this name in MPD links configuration file.

MPD configuration

Please refer to the [Multi-Link PPP daemon manual](#) for help to install/configure/running it.

This is example of sample MPD configuration that will be created after configuring two Sangoma devices:

- wanpipe1 with link name *san1*
- wanpipe2 with link name *san2*
- Bundle name *Sangoma*
- Local IP address 201.1.1.1
- Remote IP address 201.1.1.2

mpd.conf:

```
#  
# mpd.conf configuration file  
#  
sangoma_config:  
    new Sangoma san1 san2  
    set iface addrs 201.1.1.1 201.1.1.2  
    open iface
```

mpd.links:

```
#  
# mpd.links configuration file  
#  
san1:  
    set link type ng  
    set ng node wanpipe1  
    set ng hook rawdata  
  
san2:  
    set link type ng  
    set ng node wanpipe2  
    set ng hook rawdata
```

Add other options upon your request.

Running Multi-Link PPP daemon

1. Run ``wanrouter start`` script (load all wanpipe's that used by MPD).
2. Run ``mpd`` daemon.

References

[Multi-Link PPP daemon manual](#)

Netgraph (4) manual page

[All About Netgraph](#)

[Configuring the FreeBSD kernel](#)