

Configuration of a pair of RAD Communications ASMi-52 G.SHDSL T1 modems over 4-wire copper

General Information:

The application of these two modems is to extend an Ethernet connection over a 4-wire copper for a distance of up to $6.4\text{km} \approx 4\text{mi}$. Here is a schematic drawing of this application at the NSSP site:

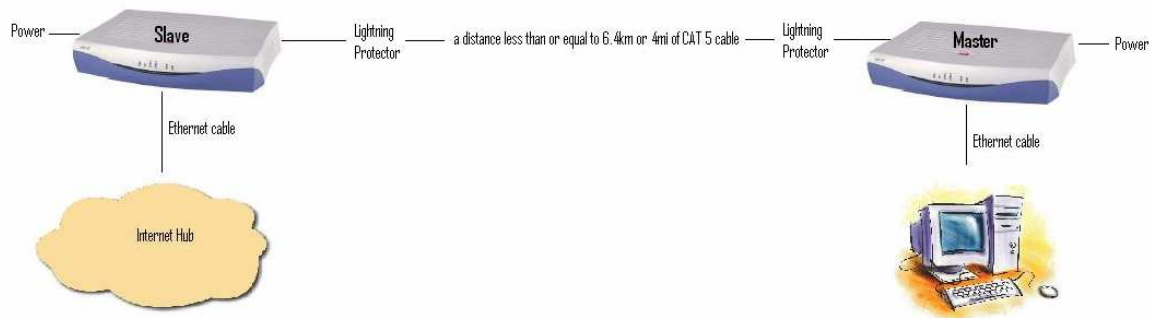


Figure 1: Application of two ASMi-52 modems at the NSSP site.

The two modems have an Access point - Endpoint relationship. New modems out of the box have no access point or endpoint setting, we have to choose which modem gets to be access point and which gets to be endpoint. For our uses we have assigned the modem closest to the computer to be the access point modem and the one closest to the internet hub the endpoint modem.

To get the modems to work requires the following:

- 1) Set up the modems as in Figure 2 (see below)
- 2) Configure one modem to be Access Point
- 3) Configure the other modem to be Endpoint

Before shipping:

- 1) Reset user name and password to match the computer (the symbols & or @ are not allowed)
- 2) Clear log tables

Configuration of the Access Point modem:

To begin the configuration of the access point modem you will have to set up the schematic you see in Figure 2 in the lab.

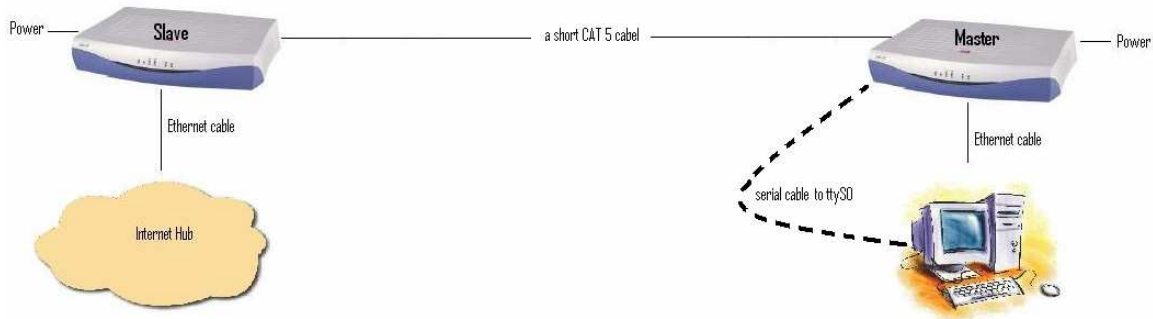


Figure 2: lab setup to configure the Access point modem.

The connection via the serial cable should be from the serial port on the back of the modem to port ttyS* on the back of the computer. (Where * represent the serial port number). Now open up a terminal window and type:

```
[user@localhost ~]# cu -l /dev/ttyS0
```

This command will take you to the following window:

ASMi-52	
USER NAME:	
PASSWORD:	
ESC - clear; & - exit; @-scroll	1 user(s)

To access the modem you will need to enter a USER NAME and a PASSWORD. All modems out of the box have the following USER NAME and PASSWORD scheme:

```
USER NAME = <none just hit enter here>
PASSWORD = 1234
```

For the modems at the NSSP site we have reset the log in and password to be:

```
USER NAME = gpsops
PASSWORD = d2taFMn1
```

WARNING! Never use the symbols & and @ when assigning user names and password to these modems.

After you log in you will be in the Main Menu:

```
ASMi-52
Main Menu

1. Inventory      []>
2. Configuration  >
3. Monitoring     >
4. Diagnostics   >
5. File utilities >

> (your cursor will be here)

Please select item <1 to 5>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
-----
```

Navigating through the menu is quite simple. To move forward within each menu option you enter the numbers that correspond to the menu options you see. To move backwards through the menu options you use the **Esc** key.

The first thing we have to set is the Master Clock setting. This setting governs whether the modem is an access point modem or an endpoint modem. In the Master Clock menu you have to choices “Receive” and “Internal”.

Giving a modem a *Master Clock* setting of “**Internal**” will make it an access point modem.

Giving a modem a *Mast Clock* setting of “**Receiver**” will make it an endpoint modem.

To get to the Master Clock menu from the Main Menu go into Configuration:

>2 (then hit Enter)

```
ASMi-52
Configuration
1. System configuration      >
2. SHDSL configuration      >
3. LAN Configuration       >

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
```

Now choose System configuration from within the Configuration menu:

>1 (then hit Enter)

```
ASMi-52
Configuration>System configuration
1. Master clock             > (Internal)
2. Low Speed E1 operation   (NO)
3. Management               >
4. Control port             >
5. Factory default         >
6. Reset                   >
7. Save

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
-----
```

Now choose Master clock from within the System configuration menu:
>1 (then hit Enter)

```
ASMi-52
...>System configuration>Master clock (Internal)

1. Receive
2. Internal

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
-----
```

You are finally at the menu where we get to choose whether a modem is going to be an access point modem or an endpoint modem. Since this is the modem we have chosen to be closest to the computer we enter 2 at the command prompt and then hit Enter. After hitting Enter you will be back in the System Configuration menu. The new setting now needs to be saved, so enter 7 and hit Enter. Our modem is now an access point modem. To get back to the main menu hit the **Esc** key until you find yourself in the Main Menu window.

This sequence of menu options will be exactly the same to set the second modem to be the endpoint modem. The only two differences are:

- 1) we now switch the serial cable from the back of the access point modem to the modem that will be the endpoint modem. See Figure 3.
- 2) in the Master Clock options we choose “Receive” instead of “Internal” and then Save.

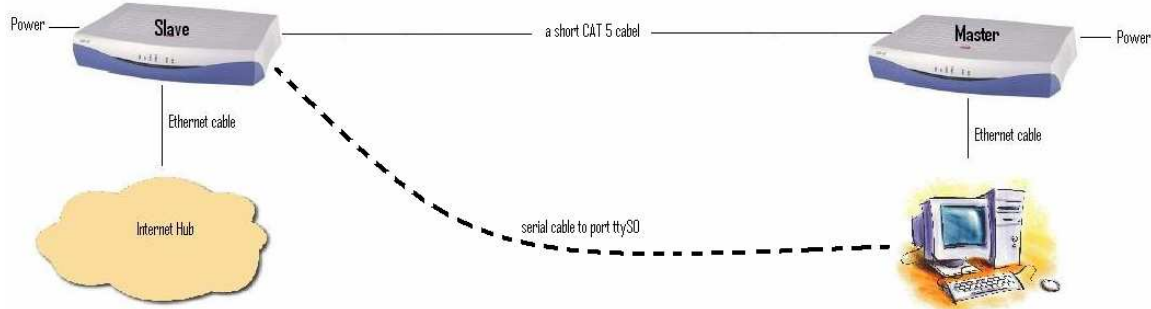


Figure 3: Setup to configure the endpoint Modem.

After saving the “Receive” setting for the Master Clock setting on the endpoint modem the two modems will go through a sequence of light blinking. Once they are done each modem will have three green lights in the front, which means the two modems are now working properly.

Configure User Name and Password:

These two options can be set in the Terminal menu. To get to the terminal menu we need to follow this sequence of menu options:

From the Main Menu select Configure > System Configuration > Control Port > Port Control > Terminal.

The terminal window looks like

```
ASMi-52
...>Port Control > Terminal

1. Change access      >
2. POP ALARM          (NO)
3. Security timeout   (10 min)
4. Save

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
-----
```

Now we select Change access.

>1 (then hit enter)

```
ASMi-52
Change Access

1. User Name          ...()
2. Password...        ...
3. Clear User Name    ...
4. Clear Password     ...

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
-----
```

To enter a new user name enter 1 and hit the Enter key. To enter a new Password enter 2 and then hit the enter key. After this you need to go to the previous, Terminal, menu and save the new user name and password

Clearing Log files:

Before shipping it is a good idea to clear all log files in each of the modems. To do this start from the Main Menu page and follow this sequence of menu options:

Monitoring (3) > System monitoring (2)

Now you are in the System monitoring menu which looks like:

```
ASMi-52
Monitoring>System monitoring

1. System status      []
2. System log file    []
3. System clear log file

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      2 user(s)
-----
```

All you need to do at this menu is enter 3 and then hit the Enter key then “Y” to confirm the clearing of the log files.

Setting the IP address and Manager control:

When the remote site has free IP address we can assign one to the access point modem and have access to it via a web browser. The IP address is given to the modem in the Management menu. To get there start from the Main menu we choose the following sequence of menu options:

Configure (2) > System configuration (1) > Management (3).

You will end up in the Management menu which looks like:

```
ASMi-52
...>System configuration>Management

1. Device info      >
2. Host IP          >
3. Manager list     >
4. Management access >
5. MTU[64 - 1540]   ... (1540)
6. VLAN encapsulation >
7. Save

>

ESC-prev.menu; !-main menu; &-exit; @-scroll      1 user(s)
```

In the Management menu we need to configure two options:

- Host IP and
- Manager list

To configure the Host IP, enter 2 and hit the Enter key. You will now find yourself in the following window:

ASMi-52	
...>Management>Host IP	
1. Host IP address	... (0.0.0.0)
2. Host IP mask	... (0.0.0.0)
3. Host default gateway	... (0.0.0.0)
4. Read community	... (public)
5. Write community	... (public)
6. Trap community	... (public)
>	
ESC-prev.menu; !-main menu; &-exit; @-scroll	
1 user(s)	

Here you will need to enter a Host IP address, a Host IP mask and a Host default gateway. To enter the Host IP address enter 1 and hit the Enter key” and you can now type in an IP address that is assigned to this modem. When you are done hit the Enter key, this will put your cursor to the right of the “>”. Now do the same for Host IP mask and Host default gateway. After this hit the Esc key and Save. Here is what the IP settings look like for the modem at the NSSP site:

Now we configure the Manager list, so enter 3 and hit the Enter key. The IP addresses on this list are the only ones that are allowed to log into the modem and make changes. We can specify up to 10 IP addresses. Each IP address has a corresponding network mask that must also be specified. You can enter these addresses in the same way we entered the Host IP addresses above. Here is the Manager list for the access point modem at the NSSP site:


```
ASMi-52
...>Management>Manager list

1. MNG 1 IP      ... (0.0.0.0)      13. MNG 3 MASK ... (0.0.0.0)
2. MNG 2 IP      ... (0.0.0.0)      14. MNG 4 MASK ... (0.0.0.0)
3. MNG 3 IP      ... (0.0.0.0)      15. MNG 5 MASK ... (0.0.0.0)
4. MNG 4 IP      ... (0.0.0.0)      16. MNG 6 MASK ... (0.0.0.0)
5. MNG 5 IP      ... (0.0.0.0)      17. MNG 7 MASK ... (0.0.0.0)
6. MNG 6 IP      ... (0.0.0.0)      18. MNG 8 MASK ... (0.0.0.0)
7. MNG 7 IP      ... (0.0.0.0)      19. MNG 9 MASK ... (0.0.0.0)
8. MNG 8 IP      ... (0.0.0.0)      20. MNG 10 MASK ... (0.0.0.0)
9. MNG 9 IP      ... (0.0.0.0)
10. MNG 10 IP     ... (0.0.0.0)
11. MNG 1 MASK   ... (0.0.0.0)
12. MNG 2 MASK   ... (0.0.0.0)

>

ESC-prev.menu; !-main menu; &-exit; @-scroll          1 user(s)
-----
```

Once this is done hit the Esc key and Save.

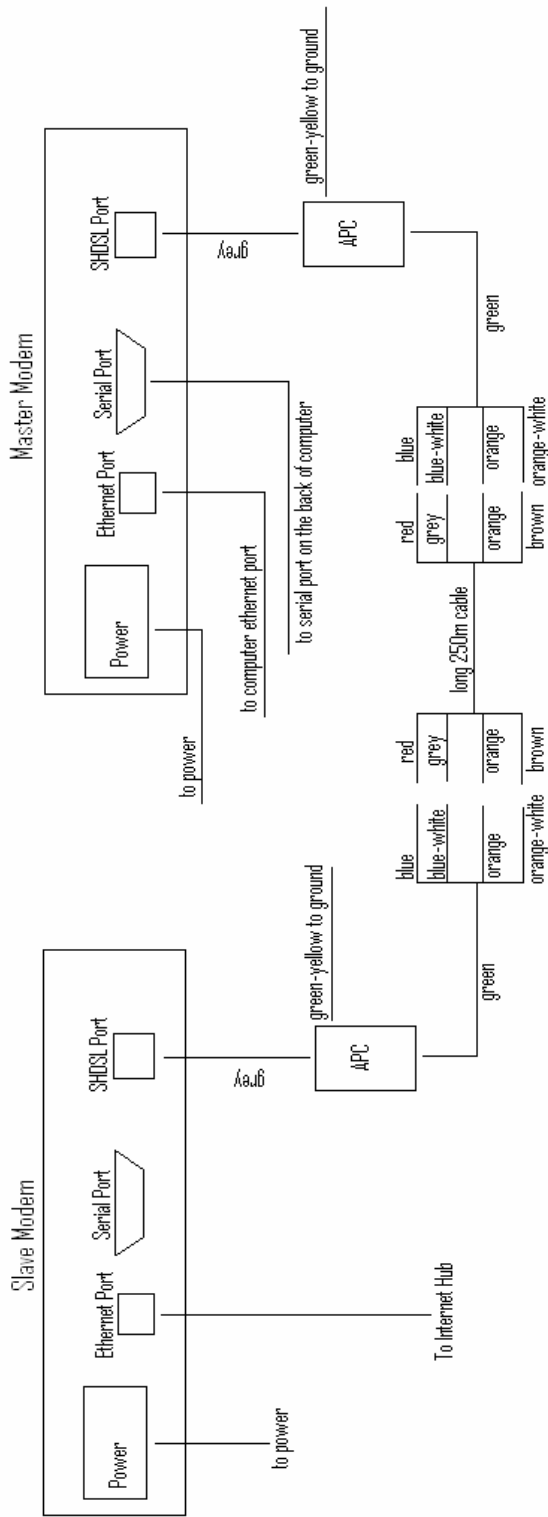
Now you are able to configure the modem through a website by entering the following address into a web browser

<http://<ip number assigned to the access point modem>>

Testing:

- 1) You may want to test that you actually have a live Ethernet coming out of the Ethernet cable that goes into the computer. If they are the red ALM light do not appear.
- 2) Test to see if the modems still give you green lights and an internet connection when you insert lightning protectors.

Connection Set Up Diagram for NSSP



List of Items sent to NSSP

- 1) 1 serial cable
- 2) 2 power cords
- 3) 2 APC Gigabit Ethernet Surge Protector. Model Number = PENT1GB
Serial Number = 3P0651X16332
- 4) 2 ASMI-52 Ethernet 4 wire RAD Communications modems.
Serial Number = DD100052249 (endpoint)
Serial Number = DD100052252 (access point)
- 5) 2 green CAT 5 pieces of cable that go from the surge protectors to the 250 m cable at the site