

PCUG Broadband connection procedures (SuSE Linux)

## ICS on Home Area Network (HAN)

by Al. Kabaila (a\_kabaila@yahoo.com.au)

Last revised 16 June 2004

### Introduction

I am in a tearing hurry – tomorrow we are going to Sydney. It was a snap decision, so I have to tidy up all the missing bits and pieces. I will tell later my story of developing HAN under windows, flaky DHCP and my desire to use static IP addresses.

In these notes set out are detailed procedure for configuring HAN for SuSE 9.0 version of Linux. It is as easy as falling of a log, as long as you manage to avoid the pitfalls – misconfiguration of Firewall etc...

### Details

To prepare these notes I used the Open Source program from OpenOffice.org. Fine work by that organization for the benefit of PC users is gratefully acknowledged. The setup of my HAN would not have been possible without the help of “my Linux guru” - Rainer Klein. His time and expertise so generous given, are greatly appreciated and acknowledged.

The procedures of Broadband (BB) connection to TIP are described for SuSE distro of Linux, v9.0. Because of the wide variety of available options it is possible to set up BB connection to TIP differently and perhaps better. These notes for the sake of brevity cover only one particular configuration. The exact key-strokes are for inspection (or modification) of an existing configuration. A button or an icon that needs to be pressed is shown as [**button caption**]. A radio button that needs to be selected is shown thus: **(RB)**, followed by description. Of course, a radio button enables only one selection to be made from the group of radio buttons. A square box for item selection that needs to be set is shown thus: [**x**]. Of course, several selections can be made from a group of square selection boxes.

Our HAN will consist of two PC' s- a server a client host. A large number of additional client hosts can be added in the same manner as the first client host, so the procedures are valid for larger HAN's. I differentiate between Local Area Network (LAN) and HAN, because of certain physical limitations on the number of PC's that can be connected on the HAN, which makes the scalability of the network less important for a HAN than for a LAN.

### Gateway PC

Gateway PC has two NIC's – one NIC for HAN and the other – for TIP BB connection. We configure **eth0** for HAN:

Start Yast. [Network devices] on the left window, then [Network cards] on the right window. After the configuration has been read by Yast, [Change].

Select eth0, [**Edit**].

For **eth0** device **select** the Radio Button **(RB)**, entitled “S tatic address setup”

IP Address: 192.168.0.30 (Any 192.168.x.y address can be chosen; the value of x is common to all PC's on the HAN, y is commonly in the range of 2 to 254 and is different for each PC on the HAN).

Subnet Mask: 255.255.255.0

**[Host name and name server]:**

Host name: server

Domain name: **loco.domain** (apparently "local" is now a reserved word, if it occurs at the end of an IP address; loco is well describes my frame of mind in writing these notes.)

Change host name via DHCP

Name server 1: 203.10.76.34 Start search in "loco.domain"

Name server 2: 203.10.76.38 (These settings are for PCUG-TIP; for other ISPS check their relevant IP addresses with "dig" command).

**[OK]**

**[Routing]:**

Enable IP forwarding

**[Back]**

**[DHCP Client options]:**

Host name to send: AUTO

**[OK]**

**[Hardware Details]:** PC dependent.

**[OK]**

**[Next]**

We configure **eth1** for **DSL** communication with internet:

**[Change]**, select **eth1**, **[Edit]**

select the Radio Button (**RB**), entitled "Automatic address setup (via DHCP)"

**[Host name and name server]:**

Host name: server. Domain name: loco.domain

Change Host Name via DHCP

This worked for me, but may well be wrong. User Guide for SuSE 9.1 (ref. p 101) says that a dummy IP address should be entered here as a "place holder".

**[OK]**

[Routing]:  Enable IP forwarding (important!)

**[OK]**

**[DHCP Client Options]:** Notice that the Host Name is set by Yast as AUTO by Yast. <leave all

other fields blank>

**[OK]**

[Hardware Details] will differ between different PC' s.

**[OK]**

**[Next]**

**[Finish]** or **[Abort]**

(Abort will leave all the values unchanged. When inspecting a configuration, instead of [Back] it should be safe to click [OK], since it is possible to abort at this late stage, instead of [Finish]. Only if we click [Finish], the new values are written into configuration files.)

**[DSL]** in the right window.

**[Change]** Select **dsl0** and **[Edit]**.

PPP mode: **PPP over Ethernet** – from a drop down list.

Device Activation from a drop down list: **Manually**

**[Next]:**

**(RB)** Custom Providers

If not already selected, select Internet Service Provider:

**[New]: TIP-BB** (Fills all references to Service Provider as TIP-BB)

**[Next]:**

Name for dialing provider0 (display grayed out, so it can not be changed.)

Provider name: **TIP-BB** (This will now appear in the right window list of providers).

If provider has been entered earlier and is already in the list at the right window, just select TIP-BB instead of the above.

**[Next]:**

Provider name: **TIP-BB**

Username : **jdoo@pcug.org.au** (notice that the domain needs to be specified here).

Password: dodo777

**[Next]**

**Dial on demand**

Idle timeout: 300 ms (accepted default)

**Modify DNS** when connected.

Name Servers: First: **203.10.76.34**

Second: 203.10.76.38

[Next]

[Finish] After recording the configuration, Yast asks <Configure mail now?>. Answer **NO**.

If instead of NO, one chooses YES, Yast attempts the configuration of full mail services, including such daemons as postfix. As I prefer to configure KMail to send and receive my mail using the ISP's mail servers, I answer here NO.

## **Fire Wall settings on the server**

The setup of the firewall has caused me more pain than I care to talk about. Watch it and make sure that the firewall does not stop you from using your HAN!

[Security and Users] in the left window.

[Firewall] in the right window.

(RB) Reconfigure Firewall settings.

[Next]

External Interface: **ppp0** (from a drop-down list)

Internal Interface: **eth0** (from a drop-down list)

[Next] Firewall Configuration (Step 2 of 4): Services.

Leave all blank

[Next] Firewall Configuration (Step 3 of 4): Features

Allow traceroutes

Forward Traffic and Do Masquerading

Protect all running services

It is important NOT to select "Protect from Internal Network", as this can inhibit normal operation of HAN.

[Next] Firewall Configuration (Step 4 of 4): Logging

Log critical Dropped packets

Log critical Accepted packets

[Next] Save settings and activate Firewall

[Continue] Completes Firewall setup.

## **Client Host PC**

Start Yast. [Network devices] on the left window, then [Network cards] on the right window.

After the configuration has been read by Yast, [Change].

Select eth0, [Edit].

For **eth0** device **select** the Radio Button (**RB**), entitled 'Static address setup'

IP Address: 192.168.0.5 (Any 192.168.x.y address can be chosen; the value of x is common to all PC's on the HAN, y is commonly in the range of 2 to 254 and is different for each PC on the HAN).

Subnet Mask: 255.255.255.0

**[Host name and name server]:**

Host name: dell

Domain name: **loco.domain**

**[OK]**

**[Routing]:**

Default Gateway: 192.168.0.30

**[Back]**

**[DHCP Client options]:**

Host name to send: AUTO

**[OK]**

**[Hardware Details]:** PC dependent.

**[OK]**

**[Next]**

**[Finish]** completes configuration or **[Abort]** leaves the configuration unchanged.

All other client hosts are setup similarly. The file "hosts" should be placed in /etc/ directory on all 'participating' PC's. My hosts file looks like this:

```
#
# hosts          This file describes a number of hostname-to-address
#                mappings for the TCP/IP subsystem.  It is mostly
#                used at boot time, when no name servers are running.
#                On small systems, this file can be used instead of a
#                "named" name server.
# Syntax:
#
# IP-Address    Full-Qualified-Hostname  Short-Hostname
#
127.0.0.1      localhost

# special IPv6 addresses
::1           localhost ipv6-localhost ipv6-loopback

fe00::0       ipv6-localnet

ff00::0       ipv6-mcastprefix
ff02::1       ipv6-allnodes
ff02::2       ipv6-allrouters
ff02::3       ipv6-allhosts
192.168.0.2   laptop.loco.domain laptop
```

```

192.168.0.3      guest.loco.domain guest
192.168.0.30   server.loco.domain server
192.168.0.4    op.loco.domain op
192.168.0.5    dell.loco.domain dell
192.168.0.10   p4.loco.domain      p4

```

In this hosts file a provision is made for my main two client PC's (p4 and dell). Provision is also made for the connection of laptop and the "old pentium" which used to be my server of printer, whilst the "g uest" entry takes care of "live" CD's, such as Knoppix.

Some or all client hosts can run under Windows OS. Here is the configuration for two versions of Windows OS's:

### Win98SE

**[Control Panel] [Network]**

Select **TCP/IP** -> {Name of NIC used for HAN} **[Properties]**.

[Gateway tab] Set the IP address of the Gateway PC (in our example 192.168.0.30)

**[DNS Configuration tab]**

Enable DNS

DNS Server Search Order:

203.10.76.34 **[Add]**

203.10.76.38 **[Add]**

Press the required number of [OK]'s, reboot, as required. Finished – you have ICS (Internet Connection Sharing).

### Win2000

[Settings] [Network and Dial Up Connection]

Name it **HAN** (for the NIC configured for HAN)

Internet Protocol (TCP/IP)

[Properties] [Advanced]

**[IP Settings tab]**

Default gateways **[Add]** 192.168.0.30 (leave "Metric" as 1)

**[DNS tab] [Add]**

203.10.76.34 **[Add]**

203.10.76.38 **[Add]**

**[OK] [OK] [OK]**

**[Close]**

**Finished – you have ICS (Internet Connection Sharing).**

There also are also \winnt\system32\drivers\etc\hosts files, which must play some role. Are they really necessary and what do they do? Here is not the place and not the time to delve into windows.

1. Revision of 16 June 2004: Omitted suggestion to configure mail at this time. Removed some other minor bugs and some omissions. Added warning about Firewall setup. Domain name "local" c hanged to loco.domain.