# The Bridge/Router of Centaur3

# User' s Manual

# Universal Access Technology Inc.

## Rev. 0.1
## Preliminary

# 1.Installation

## 1.1  Prerequisites

- **To plug ADSL line cord to RJ11 connector of the modem .**
- **To plug Ethernet cable into the Ethernet connector. The Ethernet cable must be straight if connected to a hub or a network wall plug. When directly connected to a PC , it must be a cross cable.**
- **To connect RS232 cable to serial port of PC and the modem.**

Once the board is connected to the PC and to the line , You can start to download and /or configure the on board software.

The connection of Ethernet cable is as follows :
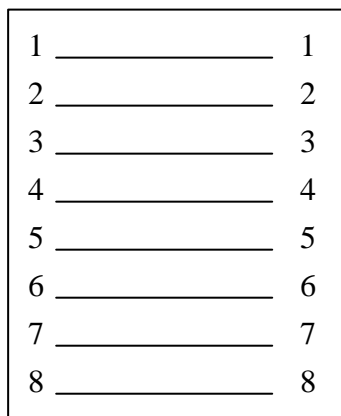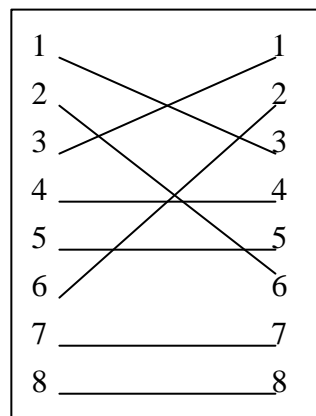
STRAIGHT-CONNECT                    CROSS-CONNECT

## 1.2   Via RS232 serial port

Start Hyperterminal or any such terminal application. Configure the terminal application with the following parameters :
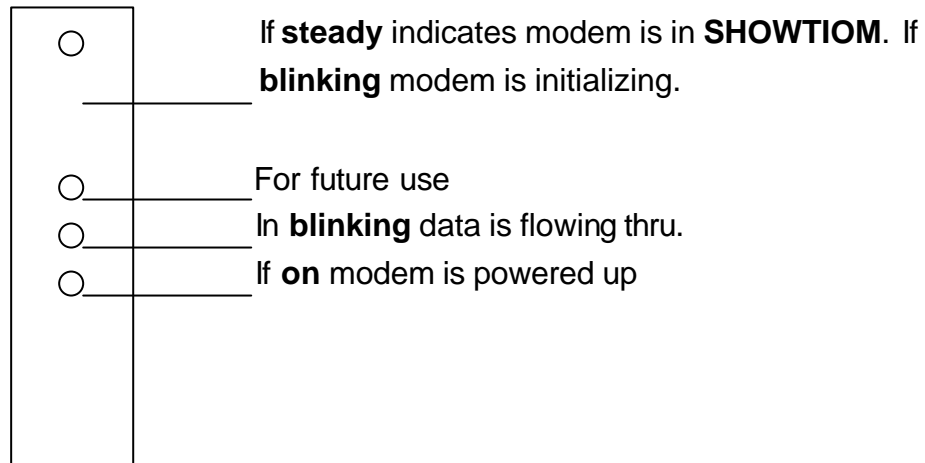
**Speed --- 9600 bps**
**No parity**
**8 bit data**
**1 bit stop**
**no flow control**

Now if you switch on the board , you should see several lines on the terminal window. The terminal window will be written as the **console** henceforth.

## 1.3 The indication of leds

If **steady** indicates modem is in **SHOWTIOM**. If **blinking** modem is initializing.

For future use

In **blinking** data is flowing thru.

If **on** modem is powered up

# 2. Configure the software

Avoiding confusing command you entered , it is recommended to start programming as the modem is in **SHOWTIME** state.

## 2.1 Reset configuration file

**The old configuration file may be existed in the memory , it is recommended to follow the procedure as below to clear them before configuring or swiching any protocols.**

➢ **home ¿**

Remove all existing bridge module (rfc1483)
➢ **config   reset   bridge ¿** *(remove current bridge setting)*
➢ **r1483   pvc   none ¿** *(remove current PVC setting)*

Remove all existing ip device (rfc1577/ppp rfc2364)
➢ **ip   device   flush   all ¿** *(remove current ' ip' router setting)*
➢ **ip   subnet   flush   all ¿** *(remove currect subnet setting)*

➢ **ip route flush all** **¿** *( remove current route setting)*

Save configuration and restart the board
➢ **config save ¿**

Note : Use **dhcpserver config** to check if there are setting for dhcpserver . If yes , do the following command to clear them , otherwise skip the procedures.

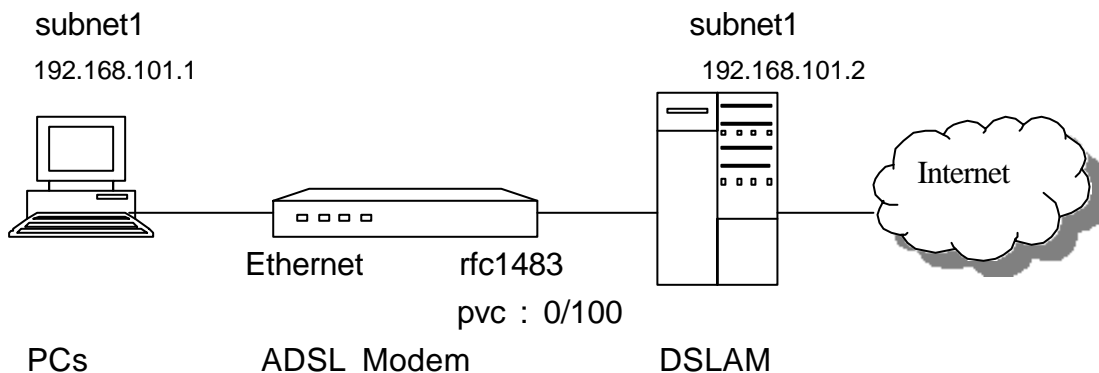        **dhcpserver flush ¿** (remove current dhcp server setting)
        **flushfs update ¿** (update flash memory)
        **restart ¿**

➢ **restart ¿**

## 2.2 Bridged Ethernet Over ATM (RFC1483)

In a bridged configuration , the ADSL modem is transparent to the network . It bridges the ADSL line to the ethernet line making both sides appear as a single subnet. In this configuration , an IP address only needs to be provides to the PC.

subnet1                                    subnet1
192.168.101.1                       192.168.101.2

Internet

                      Ethernet        rfc1483
                               pvc : 0/100
PCs                ADSL Modem          DSLAM

Add the ethernet port to the bridge.
➢ **bridge device add edd ¿**

Add rfc1483 port to bridge

➢ **bridge   device   add   r1483 ¿**

Set the value of PVC .

➢ **r1483   pvc   0/100 ¿**
  *( '0' is the value of VPI , '100' is the value of VCI which is assigned by telco)*

Save configuration and reboot system

➢ **config   save ¿**
➢ **restart ¿**

Once the modem is in SHOWTIME state , you can access to internet or use "ping" command to check the connection.

## 2.3 DHCP Server

DHCP can be used to assign IP address to PCs connected on the Ethernet Interface of the modem, as long as the modem has been assigned an IP address. In addition to the commands shown in the next sections , use the following command to get information on all of the DHCP server commands :

**dhcpserver help**

### 2.3.1 Enable the DHCP server

To enable the DHCP server , a range of IP address to be provided that the server can assign to clients. The example below shows the commands needed to supply the DHCP server with 99 IP addresses from 192.168.219.1 to 192.168.219.99 on the subnet mask of 255.255.255.0 . The maximum lease time for each client is set to 86400 seconds , or 1 day. BOOTP clients may be services , and requests from unknown clients are allowed.

The following configuration must be performed for the example :

## Set up the DHCP configuration

➢ **home ¿**
➢ **dhcpserver ¿**

At the prompt **dhcpserver >** , you can use the following commands to edit configuration:

**config delete** - to delete the latest command line

**config add** - to add new command

**config** - to review the commands you entered.

The **allow** and **deny** statement can be used to control the behavior of the DHCP server in response to various sorts of requests. Denying the requests is option. Default is allowed.

➢ **config add deny unknow-clients ; ¿**
➢ **config add deny bootp; ¿**
➢ **config add deny booting; ¿**

Configure the subnet , netmask and the range of assigned IP addresses

➢ **config add subnet 192.168.219.0 netmask 255.255.255.0 ¿**
➢ **config add { ¿**
➢ **config add range 192.168.219.1 192.168.219.99; ¿**

Multiple address range may be specified as follows if necessary.

➢ **config add range 192.168.219.150 192.168.219.199 ; ¿**

DHCP leases can be assigned almost any length from zero seconds to infinity. What lease length makes sense for any given subnet , or for any given installation , will vary depending on the kinds of hosts being served.

➢ **config add default-lease-time 3600; ¿**
➢ **config add max-lease-time 86400; ¿**

The following option can be configured if necessary.

➢ **config add option subnet-mask 255.255.255.0 ; ¿**

➢ **config   add   option   broadcast-address   192.168.219.255 ; ¿**
➢ **config   add   option   routers   192.168.219.254 ; ¿**
*( The routers option specifics a list of IP address for routers on the client' s*
*subnet. Router should be listed in order of preference . The option can be*
*configured   as :*
*option   routers   ip-address [, ip-address …] ;   )*
➢ **config   add   option   domain-name-servers   aaa.bbb.ccc.ddd ¿**
*(aaa.bbb.ccc.ddd is the IP address of DNS server. The option can be*
*configured as :*
*option   domain-name-servers   ip-address [ , ip-address .]; )*
➢ **config   add   option   lpr-servers   eee.fff.ggg.hhh ; ¿**
*( eee.fff.ggg.hhh is the line printer server available to the client . Servers*
*should be listed in order of preference. The option can be configured as :*
*option   lpr-servers   ip-address   [ , ip-address …] ;   )*


➢ **config   add   } ¿**
➢ **config   confirm ¿**



Save the configuration and reboot the system
➢ **home ¿**
➢ **flashfs   update ¿**
➢ **restart ¿**



**Note : Before an IP address assigned to ethernet port of the modem , the
function of DHCP server is inactive.**

## 2.3.2  Disable the DHCP Server

To disable the DHCP configuration , the configuration information previously
supplied needed to be flushed. To do so , issue the following commands.

Flush the DHCP configuration
➢ **dhcpserver ¿**

- ➤ **config flush ¿**
- ➤ **config confirm ¿**

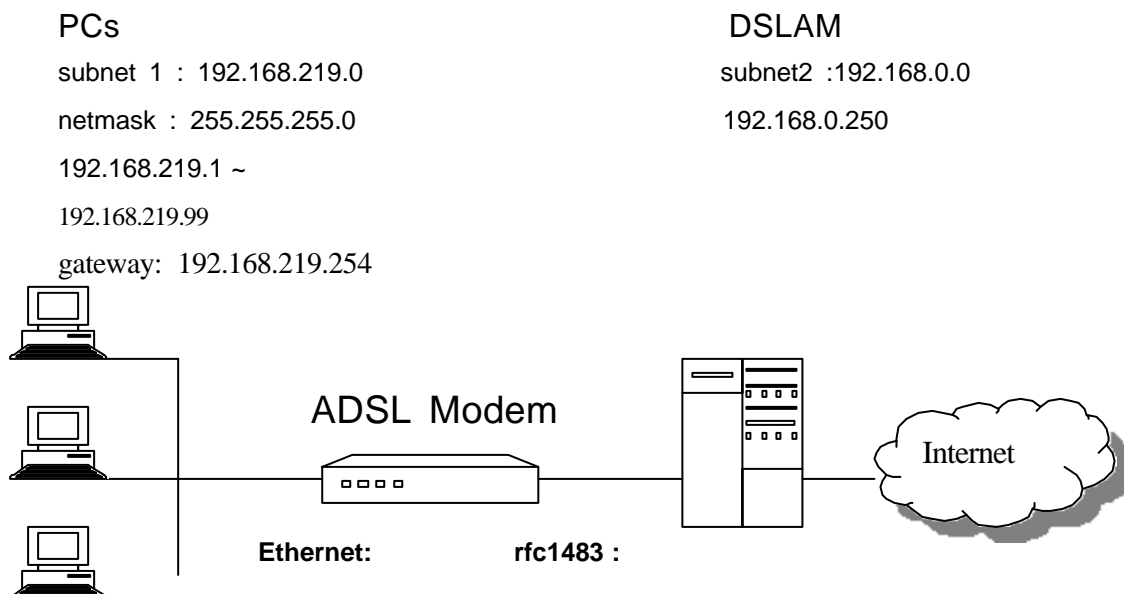Save the configuration and reboot the system
- ➤ **home ¿**
- ➤ **flashfs update ¿**
- ➤ **restart ¿**

### 2.3.3 Re-configuring the DHCP Server

To re-configure the DHCP server , issue the disable procedure followed by the enable procedure.

## 2.4 Routed RFC1483 + NAT + DHCP server

Add the ethernet device to the router and assign it an IP address. In the command , "ethernet " is a label used to refer to this device. The argument "ether" and "//edd" are required for an ethernet device. The IP address and PVC needed to be defined by the service provider. Since the modem is routing , an IP address needs to be assigned on both modem's interface. The PC's default gateway must be set to the Ethernet IP address of the modem.

PCs                                                      DSLAM

subnet 1 : 192.168.219.0                subnet2 :192.168.0.0

netmask : 255.255.255.0                 192.168.0.250

192.168.219.1 ~

192.168.219.99

gateway: 192.168.219.254

ADSL Modem

Internet

**Ethernet:**                **rfc1483 :**

192.168.219.254       **192.168.0.1**

**pvc 0/100**

In case DHCP server is to be configured , just follow the setting of paragraph 2.3 DHCP Server

- **home ¿**
- **ip device add ethernet ether //edd 192.168.219.254 ¿**
  *(219.168.219.254 is the IP address of Ethernet port )*

Add the RFC1483 device to the router and assign it an IP address. In the following command , "rfc1483" is a label used to refer to this device. The argument "ether" and "//r1483" are required for an RFC1483 device.

- **ip device add rfc1483 ether //r1483 192.168.0.1¿**
  *(192.168.0.1 is the static IP address assigned by telco )*

Set the value of PVC .
- **r1483 pvc 0/100 ¿**
  *( ' 0' is the value of VPI and ' 100' is the value of VCI which are assigned by telco . )*

Save configuration and reboot system
- **config save ¿**
- **restart ¿**

Add a default route with the service provider as the gateway.
- **ip route add default 0.0.0.0 192.168.0.250 0:0:0:0 ¿**

  *(192.168.0.250 is the IP address of the remote site like as ISP or telco' s gateway)*

- **ip subnet add ethernet.home . 192.168.219.0 ff:ff:ff.0 ¿**

  *( define subnet 192.168.219.0 and netmask ff:ff:ff.0 for Ethernet port*
  *note : 1) Don' t forget to enter dot " . " between ethernet.home and subnet*

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*192.168.219.0*

*2) The netmask of the subnet being defined is specified as four*

*hexadecimal number separated by colons)*

NAT have to be enabled on the router interface towards the service provider.

➢ **ip nat add rfc1483 ¿**

*( enable NAT on rfc1483 interface)*

Enable forwarding between the router interface.

➢ **ip relay all ¿**

Save configuration and reboot system

➢ **config save ¿**

➢ **restart ¿**

Once the modem is in SHOWTIME state , you can access to internet or use "ping" command to check the connection.

## 2.5 Routed IPoA + NAT+ DHCP server (Classical IP Over ATM RFC1577)

When configured for IPoA , data is routed between Ethernet and Classical IP over ATM (RFC1577). The IPoA data runs over a PVC between Client Access Device and the service provider. IP address , the PVC and the package cell rate need to be defined by the service provider. Since the modem is routing , an IP address needs

to be assigned on both modem's interface. The PC's default gateway to be set to he Ethernet IP address of the modem.

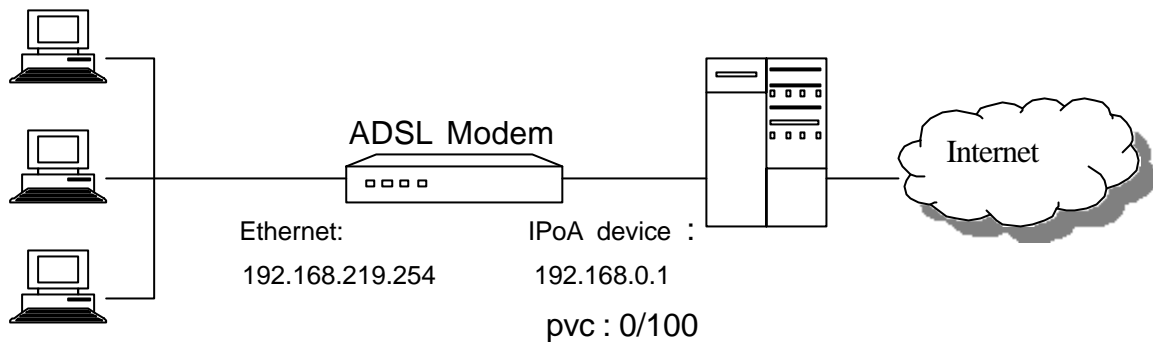PCs                                                    DSLAM

subnet1                                              subnet2

192.168.219.1 ~                                          192.168.0.250

192.168.219.99

gateway:192.168.219.254

ADSL Modem

Ethernet:
192.168.219.254

IPoA device：
192.168.0.1

pvc : 0/100

Internet

In case DHCP server is to be configured , just follow the setting of paragraph 2.3 DHCP Server

➢ **home ¿**

Add the ethernet device to the router and assign it an IP address. In the command , " ethernet " is a label used to refer to this device. The argument " ether" and " //edd" are required for an ethernet device.

➢ **ip  device  add  ethernet  ether  //edd  192.168.219.254 ¿**
   *( 192.168.219.254 is the IP address of Ethernet port )*

Add the IPoA device to the router and assign it an IP address. In the following command , " ipoa" is a label used to refer to this device. The argument " atmpvc" and " //atm" are required for an IPoA device.

➢ **ip  device  add  ipoa  atmpvc  //atm  192.168.0.1 ¿**
   *( 192.168.0.1 is the IP address of ATM port which is assigned by telco)*

Save configuration and reboot system.

➢ **config   save ¿**
➢ **restart ¿**

Wait for a while until prompt " > " appear again.

NAT have to be enabled on the router interface towards the service provider.

➢ **ip   nat   add   ipoa ¿**

Enable  forwarding between the router interface.

➢ **ip   relay   all ¿**

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Add a default route with the service provider as the gateway.

- **ip route add default 0.0.0.0 192.168.0.250 0:0:0:0 ¿**

  *( 192.168.0.250 is the IP address of remote site like as ISP or telco's gateway .)*

- **ip ipatm pvc add ipoa atm 0/100 pcr 50000 ¿**

  *('0' is the value of VPI and '100' is the value of VCI which are assigned by telco. "pcr 50000" is the peak cell rate . if omitted , the default value 60000 is used.)*
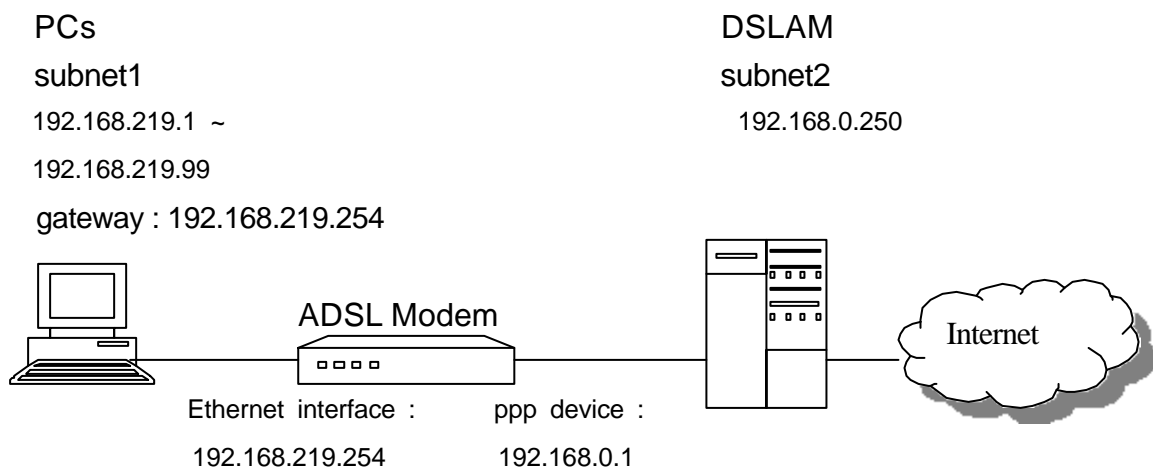
Save configuration and reboot system.

- **config save ¿**
- **restart ¿**

Once the modem is in SHOWTIME state , you can access to internet or use "ping" command to check the connection.

## 2.6 Routed PPPoA + NAT+DHCP server (PPP Over ATM - RFC2364)

When configured for PPP , data is routed between Ethernet and PPP over ATM . The ppp data runs over a PVC between the Client Access Device and the service provider. The IP address and PVC needed to be defined by the service provider. Since the modem is routing , an IP address needs to be assigned on both modem's interface. The PC's default gateway must be set to the Ethernet IP address of the modem.

PCs
subnet1
192.168.219.1 ~
192.168.219.99
gateway : 192.168.219.254

DSLAM
subnet2
192.168.0.250

ADSL Modem

Internet

Ethernet interface :       ppp device :
192.168.219.254            192.168.0.1

In case DHCP server is to be configured , just follow the setting of paragraph 2.3 DHCP Server

➢ **home ¿**

Add the Ethernet device to the router and assign it an IP address. In the commend , " ethernet" is a label used to refer to this device. The arguments "ether" and "//edd" are required for an Ethernet device.

➢ **Ip device add ethernet ether //edd 192.168.219.254¿**
  *( 192.168.219.254 is the IP address of Ethernet port )*

Add the PPP device to the router and assign it an IP address. In the following command , "ppp_device" is a label for this device. The argument " ether" is required for a PPP device. The PPP module supports multiple simultaneous connection, so we explicitly specify Device 1.

➢ **ip device add ppp_device ether //ppp/DEVICE=1 ¿**

We will be using PPP Device 1 and Interface 1, which are able to automatically configure the IP address of the router interface and add a default route, when the connection is made. That is whey the IP address of the router interface was not specified in the previous command.

In case the IP address is assigned by telco , the IP address ,eee.fff.ggg.hhh , of ppp device have to be added behind the command line instead of the above command line.

➢ **ip device add ppp_device ether //ppp/DEVICE=1 eee.fff.ggg.hhh ¿**

The following command configures PPP Device 1 and channel 1 for dial-out on PVC .CHAP authentication will be used ; PPP will supply a username of " peter" and a password of "telecom".

**The interface DEVICE=1 has some special functions associated with it , allowing dynamic IP address assignment to be performed. Channel 1 is by**

**default associated with interface 1 . These two should be used only for IP dial-out function , and for this function should be attached to the router interface named ppp_device.**

Save configuration and reboot the system
➢ **config save ¿**
➢ **restart ¿**

Enter the valus of pvc
➢ **ppp  1  pvc  0  100  ip  ¿**
   *(' 0' is the value of VPI and ' 100' is the value of VCI which are assigned by telco. ' 1 ' is  channel  1 . )*

Enable LLC/SNAP encapsulated PPP in case it is needed. The default value is 0(disabled)
➢ **ppp  1  llc  1**

Enter username and password for dial-out operation
➢ **ppp  1  welogin  peter  telecom  chap ¿**
   *( "peter" is user name , "telecom" is password and  "chap" is authentication )*

Enable channel 1
➢ **ppp  1  enable ¿**

Save the configuration and reboot the system.
➢ **config  save ¿**
➢ **restart ¿**

NAT have to be enabled on the router interface towards the service provider.
➢ **ip  nat  add  ppp_device ¿**

Enable forwarding between the router interface.
➢ **Ip  relay  all ¿**

Save the configuration and reboot the system.
➢ **Config  save ¿**
➢ **restart ¿**

Once the modem is in SHOWTIME state , you can access to internet or use " ping" command to check the connection.

# 3.  Appendix : Console Commands

At the prompt " 00:20:2B:00:04:9F > " or " 192.168.219.254 > " which will be written as the **Mymachine >** henceforth , more console commands are useful to manage the system.

All commands can be used like as
**Mymachine > ip config** , or
**Mymachine ip > config** *("ip " must be entered at the prompt " Mymachine > " first)*

## 3.1 system commands

### 3.1.1 **help**  or  **help all**   or  **?**  or  **?**  **all**

Description :
Displays all commands at the prompt " Mymachine >"

Example :
Mymachine > **help** – displays commands
Mymachine > **ip help** - displays all commands of ip

### 3.1.2  **home**

Description :
return to the main prompt " Mymachine >"

### 3.1.3  **config   save**

Description :
save configuration

Example :
Mymachine > **config save**

### 3.1.4  restart

Description :
reboot the system

Example :
Mymachine > **restart**

## 3.2  ip   commands

### 3.2.1 config  [save]

Description :
Displays the IP configuration (not including the "snmp" configuration ), or
save it in flash memory.

Example :
Mymachine > **ip config**
Mymachine> **ip config  save**

### 3.2.2 device
**device  add  < i/ f >  <type>  [< file >]  [ < IP address ]**
**device  delete  < i / f >**
**device   flush**

Description :
Displays the interfaces that IP is configured to use , or adds an
interface to the configuration , or delete an interface , or all interfaces ,
from the configuration.

   i/f ( interface ) – ethernet , ppp_device , ipoa , rfc1483
   type – ether , atm , atmpvc

file - //edd , //atm , //r1483 , //ppp

Configuration saving saves this information.

Example :
Mymachine > **ip device**
Mymachine > **ip device add ethernet ether //edd 192.168.219.254**


### 3.2.3  disable  [ < i/ f >]

Description :
Disable all interface , or just a specified interface.

Example :
Mymachine > **ip disable ipoa**

### 3.2.4  enable  [ < I / f > ]  [mtu <size]  [ < IP address > ]

Description :
Enable all interface , or just a specified interfaces. Can also be used to set
the MTU and IP address on an interface when enabling it (or change them
on an interface that is already enabled) .

Configuration saving saves this information.

Example :
Mymachine > **ip enable ipoa 192.168.219.254**

### 3.2.5  help
   **help <cmd>**
 **help  all**

Description :
Displays a summary of available commands ,more detailed
information on a particular command , or more detailed
information on all commands.

Example :

Mymachine > **ip help**
Mymachine > **ip help all**
Mymachine > **ip ipatm help all**


## 3.2.6  ipatm   pvc
   ipatm  pvc  add  < I / f>  < vci >/[<IP address>]  [<pcr>]  [<port>]
   ipatm  pvc  delete  <vci>  [<port>]
   ipatm  pvc  flush


Description :
Lists configured PVCs for use by IP-over-ATM; configures
another ;deletes one; or deletes all.

" < I / f > is the name of an interface configured for IP-over-ATM using
PVCs.

" < vci > is the VCI to use for the PVC. The range of possible VCIs
depends on the system.

" < IP address >" is the IP address of the machine at the other end of the
PVC. If it is not specified , TCP/IP will use Inverse ATMARP(RFC1577) to
determine the IP address; if it is specified , then Inverse ATMARP will not
be used.

" < pcr> " is the peak cell rate , in cells per second.

The default is 60000. (If neither IP address nor

PCR is specified , the "/" after the VCI can be omitted)

" < port >" is the port name : it must be specified if the machine is a switch,
and not otherwise.

Configuration saving saves this information.

Example :

Mymachine > **ip ipatm pvc add atm 60 a3**

Mymachine > **ip ipatm pvc add atm 61//50000 b1**
Mymachine > **ip ipatm pvc**

## 3.2.7  norelay  [ all  |  < i/f >  [ <i/f > ]  [forward] ]

Description :
Turns off forwarding between interfaces ; see the " relay" command for
more details.

The command "norelay" with no parameters is equivalent to "norelay all" : it
turns off all forwarding.

Configuration saving saves this information.

Example :
Mymachine > **ip norelay**
Mymachine > **ip norelay etherer ppp_device forward**

## 3.2.8  ping < IP address >

Description :
Sends an ICMP Echo message to the specified address.

Example :
Mymachine > **ip ping 192.168.4.1**

## 3.2.9  relay
   relay   all  |  < i/ f >  [ < i/ f > ]  [forward]

Description :
Displays or sets what forwarding TCP/IP will do between
interfaces . The combinations of setting forwarding can be a bit confusing ;
they behave as follows :

" < i/f> " - means interface .

"forward" indicates one-way relaying

**relay all** : from every interface to every non-loopback
interface.

**relay if1** : from if1 to every non-loopback
interface , and from every interface to if1

**relay if1 forward** : from if1 to every non-loopback interface .

**relay if1 if2** : from if1 to if2 and from if2 to if1

**relay if1 if2 forward** : from if1 to if2

To disable forwarding , use the "norelay " command.
Configuration saving saves this information.

Example :
Mymachine > **ip relay**
Mymachine > **ip relay all**

## 3.2.10 restart

Description :
Reboots the system.

## 3.2.11 rip  accept  [ all  |  <i/f>  [none | <version>]

Description :
Controls for which version or version of RIP (RIP v1 , FC1058 ,
or RIP v2 ,RFC1723) TCP/IP will accept incoming information on each
interface.

By default both RIP version are accepted on all interface ("rip accept all 1 2
").

Configuration saving saves this information.

Example :
Mymachine > **ip rip accept all 1 2**
Mymachine > **ip rip accept ethernet 2**

### 3.2.12　rip　allowed

Description :

Displays the RIP version that will be accepted and send on each interface.

Example :
Mymachine**> ip rip allowed**

### 3.2.13　rip　boot

Description :

Broadcasts a request for RIP information from other machines. TCP/IP does this automatically when it first starts up, and the routing information should be kept up to date by regular broadcast from the other machines , so this command is normally of little use.

Example :
Mymachine > **ip rip boot**

### 3.2.14　rip　help　[ < cmd> | all ]

Description :
Displays help on "rip" subcommands

Example :
Mymachine > **ip  rip  help**
Mymachine > **ip rip help boot**

### 3.2.15　rip　rxstatus

Description :
Displays the status of the RIP package reception mechanism. This command is of little or no use except for debugging.

Example :
Mymachine> **ip rip rxstatus**


## 3.2.16  rip  send  [all | <i/f>]  [none | <version>]

Description :
Controls which version or versions of RIP (RIP version1,RFc1058 ,or RIP version2 ,RFC1723) TCP/IP will use to broadcast routing information on each interface. If both version are specified , routing information is broadcast in duplicate , once using each version.

Specifying "all" affects all interfaces except the loopback interface (if any)

By default RIP version 2 only is used on all non-loopback interfaces ("rip send all 2")

Configuration saving saves this information.

Example :
Mymachine > **ip rip send all 2**
Mymachine > **ip rip send ethernet  1**


## 3.2.17  route
**route  add  <name>  <dest>  <relay>  [<mask>]  [<cost>]**
**                [<timeout>]**
**route  delete  <name>**
**route  flush**


Description :
Lists routes ; add or delete a static route ; or delete all routes.

" <name>" is an arbitrary name specified to "route add " that can be used to delete the route using "route delete".

" <dest>" is the IP address of the network being routed to (only those bits of "<dest>" corresponding to bits set in " <mask>" are relevant.

" <relay>" is the IP address of the next-hop gateway for the route.

"<mask>" (default ff:ff:ff:0) is the subnet mask of the network being route to , **specified as four hexadecimal number separated by colons.** For example , 0:0:0:0 is a default route (matches everything without a more specific route) , ff:ff:ff:0 would match a Class C network , and ff:ff:ff:ff is a route to a single host. (Note: the default is not always sensible ;in particular , if "<dest>" is 0.0.0.0 then it would be better for the mask to default 0:0:0:0. This may change in future version)

"<cost>" (default 1) is the number of hops counted as the cost of the route , which may affect the choice of route when the route is comparing with routes acquired from RIP. (But note that using a mixture of RIP and static routing is not advised)

" <timeout> " (default 0, meaning that the route does not time out) is the number od seconds that the route will remain in the routing table.

Note that the routing table does not contain routes to the directly connected network , without going through a gateway . TCP/IP routes packets to such destination by using the information in the device and subnet tables instead.

The "route" command (with no parameter) displays the routing table. It adds a comment to each route with the following information:

- How the route was obtained ; one of
  MAN - configured by the "route" command

  RIP – obtained from RIP
  ICMP – obtained from an ICMP redirected message
  SNMP – configured by SNMP network management.

- The time-out , if the route is not permanent

- The original time-out , if the route is not permanent
- The name of the interface ( if known) that will be used for the route
- An asterisk ( " ") if the route was added recently and RIP has not yet processed the change . (the asterisk should disappear within 30 seconds , when RIP next considers broadcasting routing information)

Configuration saving saves this information. (only the routes configured by the "route" command are saved or displayed by " config")

Example :
Mymachine > **ip route add default 0.0.0.0  192.168.2.3  0:0:0:0**
Mymachine > **ip route add testnet1 192.168.101.0 192.168.2.4**
Mymachine > **ip route add testnet2 192.168.102.0 192.168.2.34 ff:ff:ff:0**
                                              **1 60**
Mymachine > **ip route**

### 3.2.17  routes

Description :
Lists routes ( The same as "routes" , with no parameter)

Example :
Mymachine > **ip routes**

### 3.2.18  stats  arp  |  icmp  |  ip  |  tcp  |  udp  [reset]
### stats  help  [ <cmd> | all ]

Description :
Displays or clears a subnet of IP statistics.

Example :
Mymachine > **ip stats udp**
Mymachine > **ip stats tcp reset**

### 3.2.19  subnet
**subnet   add   \<name>   \<i/ f>   \<IP address >   \<mask>**
**subnet   delete   \<name>**
**subnet   flush**

Description :

Lists defined subnets ; defines a subnet ; deletes a subnet; or deletes all subnet definitions.

" \<name>" is a label , that can be specified by "subnet add" and later used by "subnet  delete" to  delete  the  subnet.

" \<i/f> " is not used , but is present for historical reasons and must be specified as either " **.** " or a valid interface name.

" \<IP address>" is the IP address of the subnet being defined (only those bits of "\<dest>" corresponding to bits set in "\<mask>" are relevant.

" \<mask>" is the subnet mask of the subnet being defined , **specified as four hexadecimal numbers separated by colons.**

A subnet is defined automatically for each interface , with a name formed by appending " **.** home" to the device name. The only significant use for the "subnet" command is to change the masks for these automatic subnets , if the default masks (see "device" command) are not correct.

(Subnet definition for other subnets can also be useful in conjunction with RIP version 1 , which does not communicate subnet masks , but this is not very common)

Configuration saving saves this information

Example :
Mymachine > **ip subnet add ethernet.home 192.168.55.1  ff:ff:ff:0**
Mymachine > **ip subnet  delete  ethernet.home**

Mymachine > **ip subnet flush**

### 3.2.20   version

Description :

Displays the IP version , ATM address , and MAC Address.

Example :

Mymachine > **ip  version**

## 3.3   Bridge commands

### 3.3.1   device   add   <device>

Description : This command adds a device to the bridge configuration .

" < device > : The table below shows devices which may be
attached to the bridge , although not all systems may
support all devices.
- lec1 – Forum LAN emulation
- edd – Ethernet driver
- r1483 – RFC1483 protocol (PVC)
- ppp    - Point-to Point protocol

Configuration saving saves this information

Example :

my machine > **bridge device add edd**

Mymachine> **bridge  device  add  r1483**

Mymachine > **bridge add ppp/DEVICE=2**

### 3.3.2   device   delete   <device>

Description :

This command deletes a device from the bridge configuration. The
changes will only take place after the configuration is saved and the
system is rebooted.

Example :
Mymachine > **bridge device delete r1483**
Mymachine **bridge > device delete edd**

### 3.3.3   device   list

Description :
This command lists all the devices that are currently attached to the bridge.

Example :
Mymachine > **bridge device list**
Mymachine **bridge > device list**

### 3.3.4   status

Description : This command shows the status of the bridge and its ports.

Example :
Mymachine> **bridge status**

## 3.4  PPP commands

### 3.4.1  <channel> clear

Description :
Clear all aspects of this channel back to their default setting. If there is
an active connection it is torn down.

Example :
Mymachine > **ppp 1 clear**

### 3.4.2  <channel > disable

Description :
Clear the enable flag for a PPP channel. This is the default setting .
Disabling does not remove other configured information about this channel.

In the PPP state machine , this sets the PPP link to " closed" . If it is already

closed , there is no effect.

Configuration saving saves this information. By default all channels are disabled.

Example :
Mymachine > **ppp 1 disable**

### 3.4.3  <channel> enable

Description :
Set the enable flag for a PPP channel. By default this is disabled. In the PPP state machine , this flag sets the PPP link to "open" . If it is already open , there is no effect.

Configuration saving saves this information.

Example :
Mymachine > **ppp 1 enable**

### 3.4.4  < channel>  info  [all]

Description :
Provide information about the current setting of this channel. This includes all configuration state , and also current protocol information.

Example :
Mymachine> **ppp 1 info all**

### 3.4.5  < channel>  interface  <n>

Description :
Logically associated the specified channel with the specified interface.

Interface 1 is always the router port. It should be used for any PPP channel over which IPCP communication with the local system's IP router is desired. Other interfaces can be created for bridging. A single PPP channel can only be associated with a single interface ,or a single tunnel.

Use **info** to find the current setting.

Calling with n=0 removes any association. This is the default state.

Configuration saving saves this information.

Example :

Mymachine > **ppp 1 tunnel <n>**

### 3.4.6   < channel>   llc   [1 | 0]

Description :

If 1 , use an LLC header on the front of transmitted packets and require one on received ones. This consists of four bytes , FE-FE-03-CF , and is required for PPP over AAL5 (RFC2364 p4) when using LLC encapsulated PPP. If 0 , disable this.

The default value is 0 ( disabled )

Configuration saving saves this information.

Example :

Mymachine > **ppp 1 llc 1**

### 3.4.7   <channel >   pvc   none
###            < channel>  pvc   [ [< port>]  <vpi>]  <vci>  [ ip | mac ]  [listen]

Description :

Attached an ATM PVC to the given PPP channel. The port can be specified (only for a multi-port device ), and VPI(default VPI is 0) ,and the VCI.

The allowable range of port , VPI , VCI depends on the atm driver . Normal limits are 0 for port , 0 only for VPI , 1..1023 for VCI.

If a single argument none is supplied , any current connection is torn down.

Note that **enable** must also be used to allow the link to become operational.

The **ip** and **mac** indicates which form of data is transported over the connection: one of IP data (controlled by the IPCP protocol) , or MAC data

(for BCP) . If neither is provided , **ip** is assumed.

If the channel is not linked to an interface , and the channel is
for IP data , the channel is linked to interface 1 . If the

channel is not linked to an interface , and the channel is for MAC data , the
channel is linked to interface 2 .

If **listen** is specified then this is the server end of a PVC . It will not send
out PPP configure Request until it first receives a packet over the PVC.
When a connection is torn down it goes returns to this state.
Use the **info** command to read this information.
Configuration saving saves this information.

Example :
Mymachine > **ppp 3 pvc 3 32** (set channel 3 to be (VPI=0,VCI=32)
Mymachine > ppp 4 info (read PVC setting for channel 4)
Mymachine > ppp 5 pvc 0 (remove any PVC setting from channel 5)

### 3.4.8 <channel> qos [cbr | ubr] [pcr <pcr-tx > [ <pcr-rx> ] ]

Description :
Specified that the VC for a PPP channel should be Constant Bit Rate or
Unspecified Bit Rate , and (optionally for UBR) give a Peak Cell Rate for
the connection. If two values are specified then they are transmit and
receive PCRs respectively.

By default channels are established UBR.

Configuration saving saves this information.

Examples :
my machine > **ppp 3 qos cbr pcr 10000** (set channel 3 to be
                                CBR limited at 10000 cells /sec.

### 3.4.9 <channel> remoteip [ <IP address> ]

Description :

If a PPP link is established using IPCP , this call causes the channel to
provide the given IP address to the remote end of the connection. PPP will
refuse to complete the connection if the other end will not accept this.

This is normally used for channel on which the remote party dials in , to
allocate the IP address to that remote party.

Call with no argument to find the current setting.

Call with 0.0.0.0 to remove any setting. This is the default state.

Configuration saving saves this information.

Example :
Dial –in :
Mymachine > **ip device add ether ether //edd 192.168.219.254**
Mymachine > **ip device add ppp_device ether //ppp/DEVICE=2**
            **192.168.1.2**
Mymachine > **ppp user add peter pwd telecom chap**
                   (user name :peter , password : telecom")
Mymachine > **ppp 2 pvc 0 100 ip listen**
Mymachine > **ppp 2 interface 2**
Mymachine > **ppp 2 remoteip 192.168.1.1**
Mymachine > **ppp 2 theylogin chap**
Mymachine > **ppp 2 enable**
Mymachine > **ip relay all**
Mymachine > **config save**
Mymachine > **restart**

### 3.4.10 <channel> they login pap|chap|none

Description :

This command describes how we requires the far end to login on this
channel.

This command specifies that when using this channel , the user must log on using the specified protocol , and that they must provide any name/password combination which has been defined for that protocols , using the **user** command .

To remove this information on a channel , call **theylogin** with a single argument of **none**.

By default no login is required.

Configuration saving saves this information

Example :  see remoteip

### 3.4.11  &lt;channel&gt;  tunnel  &lt;n&gt;  &lt;tunnel protocol&gt;  &lt;dial direction&gt;

Description :
Logically associated the specified channel with the specified tunnel.
A single PPP channel can only be associated with a single interface ,or a single tunnel.
Use info to find the current setting.
Calling with n=0 removes any association . This is the default state.
The possible tunnel protocols are : **pptp** and **l2tp**.
The dial direction may be : **in** or **out** for dial-in or dial-out respectively.
Configuration saving saves this information.

Example :
Mymachine : **ppp 3 tunnel 1 pptp out**

### 3.4.12  &lt;channel&gt;  welogin  &lt;name&gt;  &lt;password&gt;  [pap|chap]

Description :
This command describes how we should login to the far end when a connection is established.
A name and password are supplied , and whether these should be used with the **PAP** or **CHAP** authentication protocol . CHAP is the default.
To remove this information on a channel , call **welogin** with a single

argument **none**.

If chap is specified , we will also log in using pap if the other end prefers this. If pap is specified we will only log in using pap.

By default no login is performed
Configuration saving saves this information.

Example :
Mymachine > **ppp 1 welogin peter telecom chap**

### 3.4.13   bcp   stp|nostp

Description :
This command describes parameter for BCP , the Bridge Control Protocol , which is used to transport MAC (ethernet) packets over the PPP link.
If **stp** is specified , the Spanning Tree Protocol is in use by the Bridges , to control bridge loops.
In this case STP frames should be carried over any links using BCP.
If **nostp** is specified , STP frames should not be carried.
Configuration saving saves this information.
By default STP is not supported.

Example :
Mymachine >   **ppp bcp stp**

### 3.4.14   interface   <n>   localip   <ipaddress>

Description :
This command describes parameter for IPCP , the IP control protocol, when providing the servers end of an IPCP connection.

The server knows its own IP address (and may allocate an IP address to the remote end). This command tells the PPP process , for a particular interface , the local IP address to be associated with the local end.

For interface 1 , this should be the same IP address as possessed by the device ppp_device in the IP stack. If PPP channels are now associated with this interface , remote users can dial in to those channels and will be

connected to the IP stack. They can be allocated IP address , see the command **<channel> remoteip**.

Call with 0.0.0.0 to remove any IP address setting . This is the default state.

Configuration saving saves this information.

Example :
Mymachine > **ppp interface 1 localip 192.168.1.1**

### 3.4.15  interface  <n>  stats

Description ;
The interface is regarded by the operating system as an Ethernet-like device which can be attached to the bridge or router.

It also provides an **ifEntry** to SNMP providing basic information about traffic through the interface.

This command shows the basic information about byte and package traffic through the interface , in SNMP terms.

Example :
Mymachine > **ppp interface 1 stats**

### 3.4.16  user  add  <name>  [pwd <passwd>  [pap | chap] ]
###    user  [ <name >]
###    user  delete  <name>| all

Description :
This command stores information about a particular login name /password combination.
Use **user delete** to delete an individual user by name , or to delete all users.
Use **user add** to create a new user or update an existing one.

Example :
Mymachine > **ppp user add peter pwd telecom chap**
Mymachine > **ppp user delete peter**
Mymachine > **ppp user delete all**

## 3.5  bsp commands

### 3.5.1  ansi

Description :
Set to ANSI mode T1 413 issue 2

Example :
Mymachine > **bsp ansi**

### 3.5.2  channel

Description :
Get Upstream/Downstream data rate
Example :
Mymachine > **bsp channel**

### 3.5.3  defects

Description :
Get defects

Example :
Mymachine > **bsp defects**

### 3.5.4  down

Description :
Line disable

Example :
Mymachine > **bsp down**

### 3.5.5  gdmt

Description :
Set to G.DMT mode

Example :
Mymachine > **bsp gdmt**

### 3.5.6  glite

Description :
Set G.lite mode

Example :
Mymachine > **bsp glite**

### 3.5.7  line

Description :
Get line data

Example:
Mymachine > **bsp line**

### 3.5.8  mode

Description :
Display current line state/mode

Example >
Mymachine > **bsp mode**

### 3.5.9  multi

Description :
Set to multi mode (G.lite/G.DMt/t1 413 issue2 )

Example :
Mymachine> **bsp multi**


### 3.5.10  perf

Description :
Get performance counters

Example :
Mymachine > **bsp perf**

### 3.5.11 up

Description :
Line enable

Example :
Mymachine > **bsp up**


## 3.6  r1483 commands

### 3.6.1  info

Description:
This command displays build information about the RFC1483 process.

Example :
Mymachine > **r1483 info**

### 3.6.2  interface stats

Description :
Display the statistics of r1483

Example :
Mymachine > **r1483 interface stats**

### 3.6.3 pvc

**pvc   x/y**

Description:

This command sets and displays the PVC used for communication . When setting the PVC , the configuration must be saved And the system restarted before the changes takes effect..

" x " is VPI and " y" is VCI. Normally , VPI is 0 and VCI  is in the range 0~1023.

### 3.6.4 ststus

Description ;

This command displays the status of the RFC1483 process .At present , the status consists of whether the process is active , that is has a valid PVC , or is inactive , that is has no PVC.

Example :
Mymachine > **r1483 status**

Example :
Mymachine > **r1483 pvc**
Mymachine > **r1483 pvc 0/100**

## 3.7 dhcpserver commands

### 3.7.1  config  [add  <text> | confirm | delete | flush]

Description :

This command displays or edits the current configuration of the DHCP server .

To display current configuration , provide no argument to the command.

Use of the " add" argument adds the line <text> to the configuration file.

Use of the " confirm" argument re-parses the configuration file , confirming the changes made if the parse is successful.

Use of the " delete" argument deletes the last line from the configuration file .

Use of the " flush" argument deletes whole configuration.

Following any change to the configuration file , it is necessary to " confirm" the changes , issue a " flashfs update" to commit the change to FLASH , and then restart the system before the changes can take effect.

Example :
Mymachine > **dhcpserver config**
Mymachine > **dhcpserver config add subnet 192.168.1.0 netmask 255.255255.0**
Mymachine > **dhcpserver delete**
Mymachine > **dhcpserver flush**

### 3.7.2 ststus

Description :
This command provides a summary of all leases known to the server on each interface in turn. It also shows remaining available IP address (i.e. those with no specified lease time , or client identifier).

Example :
Mymachine > **dhcpserver status**

### 3.7.3 text line examples for configuration example

Use the command " config add " to edit each line and use " config delete" to deletes the last line.

subnet 192.168.219.0 netmask 255.255.255.0
{
range 192.168.219.1 192.168.219.60 ;
range 192.168.219.100 192.168.219.150;

```
default-lease-time 3600;
max-lease-time 864000;
option subnet-mask 255.255.255.0;
option broadcast-address 192.168.219.255;
option routers 192.168.219.254;
}
```

# Statement

According to the regulation of Federal Communications Commission, the following information must be furnished with the users:

1. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

    If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

    --Reorient or relocate the receiving antenna
    --Increase the separation between the equipment and receiver
    --Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
    --Consult the dealer or an experience radio/TV technical for help

2. Caution: Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.