Configuring an ADSL Interface

Version: 3320

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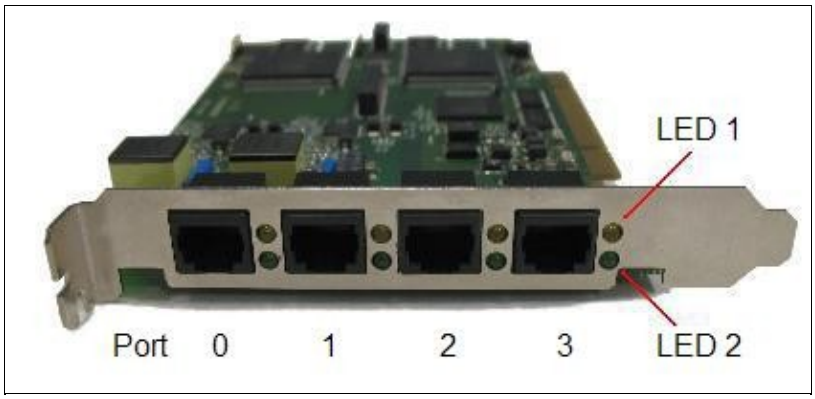

Advanced Configuration Examples

Virtual router example emulating four ADSL routers using PPPoA and Ethernet VLANs

This example is designed to emulate the following multi-router setup on a single ImageStream router with a multi-port ADSL card:

- Four stand-alone ADSL routers each with one ATM ADSL interface and one Ethernet port.
- Each ADSL router provides DHCP server services to its Ethernet LAN.
- Each ADSL router performs source Network Address Translation (SNAT) on the ADSL interface.
- Ethernet switch with one port connected to each ADSL router.
- Ethernet switch has one VLAN trunk port with one VLAN mapped to each ADSL router switch port.

Ethernet VLAN specifications:

- Four Ethernet VLANs

VLAN Interface	ADSL Interface	VLAN IP Address	VLAN DHCP Subnet
Ethernet1.10	ADSL0	192.168.10.1/24	192.168.10.0/24
Ethernet1.11	ADSL1	192.168.11.1/24	192.168.11.0/24
Ethernet1.12	ADSL2	192.168.12.1/24	192.168.12.0/24
Ethernet1.13	ADSL3	192.168.13.1/24	192.168.13.0/24

- Each VLAN may only transmit on one ADSL interface
- Each VLAN must provide DHCP server services

ADSL specifications:

- Four ADSL interfaces:

ADSL Interface	ATM Interface	VPI/VCI	ATM Encapsulation	PPP Username	VLAN Interface
ADSL0	Serial0.1	8/35	VC-Mux	test1@mydomain.com	Ethernet1.10
ADSL1	Serial1.1	8/35	VC-Mux	test1@mydomain.com	Ethernet1.11
ADSL2	Serial2.1	8/35	VC-Mux	test1@mydomain.com	Ethernet1.12
ADSL3	Serial3.1	8/35	SNAP/LLC	test1@mydomain.com	Ethernet1.13

- Each ADSL interface must source NAT for its VLAN

wan.conf:

```
interface Ethernet1
!
interface Ethernet1.10
 ip address 192.168.10.1 255.255.255.0
!
interface Ethernet1.11
 ip address 192.168.11.1 255.255.255.0
!
interface Ethernet1.12
 ip address 192.168.12.1 255.255.255.0
!
interface Ethernet1.13
 ip address 192.168.13.1 255.255.255.0
!
interface Serial0
 encapsulation atm
!
interface Serial0.1
 encapsulation aal5mux ppp
 pvc 8/35
!
interface Serial1
 encapsulation atm
!
interface Serial1.1
 encapsulation aal5mux ppp
 pvc 8/35
!
interface Serial2
 encapsulation atm
!
interface Serial2.1
 encapsulation aal5mux ppp
 pvc 8/35
!
interface Serial3
 encapsulation atm
!
interface Serial3.1
 encapsulation aal5snap
 pvc 8/35
!
```

```
interface ADSL0
 adsl device Serial0.1
 protocol pppoa
 ip address negotiated
 ppp pap sent-username test1@mydomain.com password mypass
!
interface ADSL1
 adsl device Serial1.1
 protocol pppoa
 ip address negotiated
 ppp pap sent-username test2@mydomain.com password mypass
!
interface ADSL2
 adsl device Serial2.1
 protocol pppoa
 ip address negotiated
 ppp pap sent-username test3@mydomain.com password mypass
!
interface ADSL3
 adsl device Serial3.1
 protocol pppoa
 ip address negotiated
 ppp pap sent-username test4@mydomain.com password mypass
!
# Link Ethernet0.10 to ADSL0
ip rule add fwmark 0x10 table 10
ip route add default dev ADSL0 table 10

# Link Ethernet0.11 to ADSL1
ip rule add fwmark 0x11 table 11
ip route add default dev ADSL1 table 11

# Link Ethernet0.12 to ADSL2
ip rule add fwmark 0x12 table 12
ip route add default dev ADSL2 table 12

# Link Ethernet0.13 to ADSL3
ip rule add fwmark 0x13 table 13
ip route add default dev ADSL3 table 13
!
ip dhcp pool 0
 network 192.168.10.0 255.255.255.0
 ip dhcp excluded-address 192.168.10.1
 domain-name <brand info="domain" />
 dns-server 211.52.5.55 205.159.243.2
 default-router 192.168.10.1
 lease 12 hours
!
ip dhcp pool 1
 network 192.168.11.0 255.255.255.0
 ip dhcp excluded-address 192.168.11.1
 domain-name <brand info="domain" />
 dns-server 211.52.5.55 205.159.243.2
 default-router 192.168.11.1
 lease 12 hours
!
ip dhcp pool 2
 network 192.168.12.0 255.255.255.0
 ip dhcp excluded-address 192.168.12.1
 domain-name <brand info="domain" />
```

```
 dns-server 211.52.5.55 205.159.243.2
 default-router 192.168.12.1
 lease 12 hours
!
ip dhcp pool 3
 network 192.168.13.0 255.255.255.0
 ip dhcp excluded-address 192.168.13.1
 domain-name <brand info="domain" />
 dns-server 211.52.5.55 205.159.243.2
 default-router 192.168.13.1
 lease 12 hours
!
```

rc.firewall:

```
iptables -F -t nat

# Ethernet0.10: Mark all incoming traffic with mark 0x10 and NAT outgoing traffic to the PPP address
iptables -A PREROUTING -t mangle -i Ethernet0.10 -j MARK --set-mark 0x10
iptables -t nat -A POSTROUTING -s 192.168.10.0/24 -j MASQUERADE

# Ethernet0.11: Mark all incoming traffic with mark 0x11 and NAT outgoing traffic to the PPP address
iptables -A PREROUTING -t mangle -i Ethernet0.11 -j MARK --set-mark 0x11
iptables -t nat -A POSTROUTING -s 192.168.11.0/24 -j MASQUERADE

# Ethernet0.12: Mark all incoming traffic with mark 0x12 and NAT outgoing traffic to the PPP address
iptables -A PREROUTING -t mangle -i Ethernet0.12 -j MARK --set-mark 0x12
iptables -t nat -A POSTROUTING -s 192.168.12.0/24 -j MASQUERADE

# Ethernet0.13: Mark all incoming traffic with mark 0x13 and NAT outgoing traffic to the PPP address
iptables -A PREROUTING -t mangle -i Ethernet0.13 -j MARK --set-mark 0x13
iptables -t nat -A POSTROUTING -s 192.168.13.0/24 -j MASQUERADE
```

Troubleshooting

To troubleshoot PPP connection issues add the *ppp debug* command to the appropriate ADSL interface.

```
interface ADSL0
 adsl device Serial0.1
 protocol pppoa
 ip address negotiated
 ppp pap sent-username test1@mydomain.com password mypass
!
```

The debugging information will be output to syslog and can be viewed using option 2 (Router event log) from the advanced menu.

```
Router: lab2, Version 4.2.12-22

Advanced
------------------------------------------------------------------------------
1. Bash shell
2. Router event log (syslog)     <- ***
3. Router debug log
4. View the Routing table
5. View internal hardware status
6. View process information (top)
```

```
7. Router license information
0. ISis-Router main menu
```

Sample output:

```
Jun 12 17:01:11 lab1 pppd[14990]: Plugin /usr/lib/pppd/pppoany.so loaded.
Jun 12 17:01:11 lab1 pppd[14990]: PPPoAny plugin version 1.0 compiled against pppd 2.4.4
Jun 12 17:01:11 lab1 pppd[14990]: pppd 2.4.4 started by root, uid 0
Jun 12 17:01:11 lab1 pppd[14990]: using channel 2224
Jun 12 17:01:11 lab1 pppd[14990]: Using interface ppp0
Jun 12 17:01:11 lab1 pppd[14990]: Connect: ppp0 <--> Serial8.30387
Jun 12 17:01:11 lab1 pppd[14990]: sent [LCP ConfReq id=0x1 <mru 1492> <asyncmap 0x0> <magic 0x81f
Jun 12 17:01:11 lab1 pppd[14990]: rcvd [LCP ConfReq id=0x1 <auth pap> <magic 0xb14fa57d> <mrru 15
Jun 12 17:01:11 lab1 pppd[14990]: sent [LCP ConfRej id=0x1 <mrru 1500>]
Jun 12 17:01:11 lab1 pppd[14990]: rcvd [LCP ConfReq id=0x2 <auth pap> <magic 0xb14fa57d> <endpoin
Jun 12 17:01:11 lab1 pppd[14990]: sent [LCP ConfAck id=0x2 <auth pap> <magic 0xb14fa57d> <endpoin
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [LCP ConfReq id=0x2 <auth pap> <magic 0xb14fa57d> <endpoin
Jun 12 17:01:14 lab1 pppd[14990]: sent [LCP ConfAck id=0x2 <auth pap> <magic 0xb14fa57d> <endpoin
Jun 12 17:01:14 lab1 pppd[14990]: sent [LCP ConfReq id=0x1 <mru 1492> <asyncmap 0x0> <magic 0x81f
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [LCP ConfRej id=0x1 <asyncmap 0x0>]
Jun 12 17:01:14 lab1 pppd[14990]: sent [LCP ConfReq id=0x2 <mru 1492> <magic 0x81f37706>]
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [LCP ConfAck id=0x2 <mru 1492> <magic 0x81f37706>]
Jun 12 17:01:14 lab1 pppd[14990]: sent [LCP EchoReq id=0x0 magic=0x81f37706]
Jun 12 17:01:14 lab1 pppd[14990]: sent [PAP AuthReq id=0x1 user="test@mydomain.com" password=<hid
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [LCP EchoRep id=0x0 magic=0xb14fa57d]
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [PAP AuthAck id=0x1 ""]
Jun 12 17:01:14 lab1 pppd[14990]: PAP authentication succeeded
Jun 12 17:01:14 lab1 pppd[14990]: sent [IPCP ConfReq id=0x1 <addr 0.0.0.0>]
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [IPCP ConfReq id=0x1 <addr 1.2.3.4>]
Jun 12 17:01:14 lab1 pppd[14990]: sent [IPCP ConfAck id=0x1 <addr 1.2.3.4>]
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [IPCP ConfNak id=0x1 <addr 8.0.0.1>]
Jun 12 17:01:14 lab1 pppd[14990]: sent [IPCP ConfReq id=0x2 <addr 8.0.0.1>]
Jun 12 17:01:14 lab1 pppd[14990]: rcvd [IPCP ConfAck id=0x2 <addr 8.0.0.1>]
Jun 12 17:01:14 lab1 pppd[14990]: local  IP address 8.0.0.1
Jun 12 17:01:14 lab1 pppd[14990]: remote IP address 1.2.3.4
Jun 12 17:01:14 lab1 pppd[14990]: Script /etc/ppp/ip-up started (pid 14992)
Jun 12 17:01:14 lab1 pppd[14990]: Script /etc/ppp/ip-up finished (pid 14992), status = 0x0
```

To view traffic on either the PPP interface or Serial interface see the section on Viewing Traffic using the Interface Statistics Program