

Enterasys Networks
XSR-XPEDITION Security Routers

XSR-Series
IP-Function and Advanced Services

May 2004



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1.0 IP-Address and Secondary Addresses configuration

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
no shutdown
!
end

XSR-1805#
```

1.1 IP-Static-routing

1.2 IP-Loopback Interface

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
no shutdown
!
interface Loopback0
ip address 192.168.222.1 255.255.255.255
no shutdown
!
ip route 0.0.0.0 0.0.0.0 10.10.10.2
ip route 11.11.11.0 255.255.255.0 10.10.10.254
ip route 21.21.21.0 255.255.255.0 20.20.20.254
ip route 41.41.41.9 255.255.255.255 40.40.40.254
ip route 51.51.51.9 255.255.255.255 50.50.50.254
!
end

XSR-1805#
```

1.3 IP-OSPF-routing

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
no shutdown
!
interface Loopback0
ip address 192.168.222.1 255.255.255.255
no shutdown
!
ip route 0.0.0.0 0.0.0.0 10.10.10.2
ip route 11.11.11.0 255.255.255.0 10.10.10.254
ip route 21.21.21.0 255.255.255.0 20.20.20.254
ip route 41.41.41.9 255.255.255.255 40.40.40.254
ip route 51.51.51.9 255.255.255.255 50.50.50.254
!
router ospf 1
  network 10.10.10.0 0.0.0.255 area 0.0.0.0
  network 20.20.20.0 0.0.0.255 area 0.0.0.0
  network 40.40.40.0 0.0.0.255 area 0.0.0.0
  network 50.50.50.0 0.0.0.255 area 0.0.0.0
redistribute static
!
end

XSR-1805#
```

1.4 IP-RIPv1,v2-routing

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
no shutdown
!
interface Loopback0
ip address 192.168.222.1 255.255.255.255
no shutdown
!
ip route 0.0.0.0 0.0.0.0 10.10.10.2
ip route 11.11.11.0 255.255.255.0 10.10.10.254
ip route 21.21.21.0 255.255.255.0 20.20.20.254
ip route 41.41.41.9 255.255.255.255 40.40.40.254
ip route 51.51.51.9 255.255.255.255 50.50.50.254
!
router rip
  network 10.10.10.0
  network 20.20.20.0
  network 40.40.40.0
  network 50.50.50.0
redistribute static
!
end

XSR-1805#
```

1.5 DHCP server, static / dynamic-pool

1.6 DHCP/Bootp relay agent / ip-helper

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
ip dhcp server
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
ip helper-address 51.51.51.9
no shutdown
!
interface Loopback0
ip address 192.168.222.1 255.255.255.255
no shutdown
!
ip route 0.0.0.0 0.0.0.0 10.10.10.2
ip route 11.11.11.0 255.255.255.0 10.10.10.254
ip route 21.21.21.0 255.255.255.0 20.20.20.254
ip route 41.41.41.9 255.255.255.255 40.40.40.254
ip route 51.51.51.9 255.255.255.255 50.50.50.254
!
router ospf 1
 network 10.10.10.0 0.0.0.255 area 0.0.0.0
 network 20.20.20.0 0.0.0.255 area 0.0.0.0
 network 40.40.40.0 0.0.0.255 area 0.0.0.0
 network 50.50.50.0 0.0.0.255 area 0.0.0.0
 redistribute static
!
ip local pool 10th 10.10.10.0 255.255.255.0
!
ip dhcp pool 10th
 domain-name enterasys.com
 default-router 10.10.10.1
!
end
XSR-1805#

XSR-1805#show ip dhcp binding
IP address           Hardware address     Lease expiration     Type
10.10.10.254         0010.a4ed.cdc2      JUN 10 2003 10:54PM Automatic
XSR-1805#
```

1.7 SNTP Simple Network Time Protocol

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
sntp-client server 51.51.51.88
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
ip dhcp server
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
ip helper-address 51.51.51.9
no shutdown
!
interface Loopback0
ip address 192.168.222.1 255.255.255.255
no shutdown
!
ip route 0.0.0.0 0.0.0.0 10.10.10.2
ip route 11.11.11.0 255.255.255.0 10.10.10.254
ip route 21.21.21.0 255.255.255.0 20.20.20.254
ip route 41.41.41.9 255.255.255.255 40.40.40.254
ip route 51.51.51.9 255.255.255.255 50.50.50.254
!
router ospf 1
 network 10.10.10.0 0.0.0.255 area 0.0.0.0
 network 20.20.20.0 0.0.0.255 area 0.0.0.0
 network 40.40.40.0 0.0.0.255 area 0.0.0.0
 network 50.50.50.0 0.0.0.255 area 0.0.0.0
 redistribute static
!
ip local pool 10th 10.10.10.0 255.255.255.0
!
ip dhcp pool 10th
domain-name enterasys.com
default-router 10.10.10.1
!
end

XSR-1805#
```


2.0 Interface description

2.1 Duplex configuration on Fast Ethernet full/half

2.2 Speed configuration on Fast Ethernet 10/100MBit/s

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
speed 100
duplex full
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 secondary
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
speed 10
duplex half
ip address 20.20.20.1 255.255.255.0
ip address 50.50.50.1 255.255.255.0 secondary
no shutdown
!
end

XSR-1805#
```

2.3 System login banner

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
banner login "#####"
banner login "#"
banner login "#           Welcome on Enterasys Networks           "#
banner login "#           XPedition Security Router           "#
banner login "#                               contact:           "#
banner login "# www.enterasys.com/products/routing/xsr/           "#
banner login "#"
banner login "#####"
!
interface FastEthernet1
description "LAN-Interfacel"
speed 100
duplex full
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 Secondary
no shutdown
!
end

XSR-1805#
```

3.0 Access control list incoming outgoing

3.1 Access control list 1-99 (standard)

3.2 Access control list 100-199 (extended)

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
access-list 2 permit 20.20.20.0 0.0.0.255
!
access-list 110 deny ip 10.10.10.100 0.0.0.0 any
access-list 110 deny ip 10.10.10.111 0.0.0.0 any
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip access-group 110 in
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip access-group 2 out
ip address 20.20.20.1 255.255.255.0
no shutdown
!
end

XSR-1805#
```

```
XSR-1805(config)#access-list ?
<1-99>      Standard access list
<100-199>  Extended access list

XSR-1805(config)#access-list 2 ?
deny        Specify packets to reject
insert      Insert new ACL entry before existing entry
move       Move sequence of ACL entries before another entry
permit      Specify packets to forward
replace     Replace existing entry in Access List

XSR-1805(config)#access-list 110 ?
deny        Specify packets to reject
insert     Insert new ACL entry before existing entry
move        Move sequence of ACL entries before another entry
permit      Specify packets to forward
replace    Replace existing entry in Access List

XSR-1805#
```

3.3 Access control list moving online editing

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
access-list 110 deny ip 10.10.10.100 0.0.0.0 any
access-list 110 deny ip 10.10.10.111 0.0.0.0 any
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip access-group 110 in
ip address 10.10.10.1 255.255.255.0
no shutdown
!
end

XSR-1805(config)#access-list 110 move 1 2
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
access-list 110 deny ip 10.10.10.111 0.0.0.0 any
access-list 110 deny ip 10.10.10.100 0.0.0.0 any
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip access-group 110 in
ip address 10.10.10.1 255.255.255.0
no shutdown
!
end

XSR-1805#
```

4.0 Virtual Router Redundancy Protocol (RFC 2338)

Router-1-Master

```
XSR-1805_1#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_1
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 Secondary
vrrp 1 ip 10.10.10.254
vrrp 1 ip 40.40.40.254
vrrp 1 priority 250
vrrp 1 master-respond-ping
no shutdown
!
end

XSR-1805_1#
```

Router-2-Backup

```
XSR-1805_2#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_2
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.2 255.255.255.0
ip address 40.40.40.2 255.255.255.0 Secondary
vrrp 1 ip 10.10.10.254
vrrp 1 ip 40.40.40.254
vrrp 1 priority 200
vrrp 1 master-respond-ping
no shutdown
!
end

XSR-1805_2#
```

4.1 VRRP monitor interface function, interface tracking

Router-1-Master

```
XSR-1805_1#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_1
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
ip address 40.40.40.1 255.255.255.0 Secondary
vrrp 1 ip 10.10.10.254
vrrp 1 ip 40.40.40.254
vrrp 1 priority 250
vrrp 1 master-respond-ping
vrrp 1 track FastEthernet2
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
vrrp 1 ip 20.20.20.1
no shutdown
!
end

XSR-1805_1#
```

Router-2-Backup

```
XSR-1805_2#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_2
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.2 255.255.255.0
ip address 40.40.40.2 255.255.255.0 Secondary
vrrp 1 ip 10.10.10.254
vrrp 1 ip 40.40.40.254
vrrp 1 priority 200
vrrp 1 master-respond-ping
vrrp 1 track FastEthernet2
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.2 255.255.255.0
vrrp 1 ip 20.20.20.1
vrrp 1 priority 200
vrrp 1 master-respond-ping
no shutdown
!
end

XSR-1805_2#
```

4.2 NAT static bindings

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 134.161.208.1 255.255.255.0
no shutdown
!
ip nat source static 10.10.10.100 134.161.208.100
ip nat source static 10.10.10.101 134.161.208.101
!
end

XSR-1805#
```

4.3 NAT dynamic with PAT "Port Address Translation"

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
access-list 10 permit      10.10.10.0 0.0.0.255
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 134.161.208.1 255.255.255.0
ip nat source list 10 assigned overload
no shutdown
!
end

XSR-1805#
```

5.0 Dialer Interface

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface bri 1/0
 isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
dialer map ip 11.11.11.2 112233
ip address 11.11.11.1 255.255.255.0
no shutdown
!
interface Dialer1
dialer pool 1
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
dialer map ip 13.13.13.2 131313
ip address 13.13.13.1 255.255.255.0
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```

5.1 Dialer Backup interface function

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
  controller e1 0/2/0
    clock source internal
    no shutdown
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip   any any
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
dialer map ip 11.11.11.2 112233
ip address 11.11.11.1 255.255.255.0
no shutdown
!
interface Serial 2/0:0
backup interface Dialer0
backup delay 5 45
encapsulation ppp
ip address 13.13.13.1 255.255.255.0
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```


5.2 PAP for authentication PPP

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
username remote privilege 0 "password is not displayed"
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip    any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
ppp authentication pap
ppp pap sent-username central "password is not displayed"
ip address 11.11.11.1 255.255.255.0
dialer map ip 11.11.11.2 112233
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```

5.3 CHAP for authentication PPP

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
username remote privilege 0 cleartext iamRemote
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip    any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
ppp authentication chap
ppp chap hostname central
ppp chap password iamCentral
ip address 11.11.11.1 255.255.255.0
dialer map ip 11.11.11.2 112233
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```

Note: If you want to authenticate via CHAP in "passive mode", you need to delete the line "ppp authentication chap". Now a unidirectional CHAP authentication is possible.

5.4.1 VPN via Dialer Interface rtr1

```
XSR-1805-1#show running-config
!!
!   Version 6.0.0.9, Built Dec 12 2003, 14:56:30
!
hostname XSR-1805-1
!
interface bri 0/1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 101 permit ip    20.20.20.0 0.0.0.255 10.10.10.0 0.0.0.255
access-list 101 permit ip    any host 1.1.1.2
access-list 121 permit ip    20.20.20.0 0.0.0.255 10.10.10.0 0.0.0.255
!
crypto isakmp proposal ISDN
authentication pre-share
!
crypto isakmp peer 1.1.1.2 255.255.255.255
proposal ISDN
!
crypto ipsec transform-set isdntr esp-3des esp-md5-hmac
set pfs group2
no set security-association lifetime kilobytes
!
crypto map myisdn 20
set transform-set isdntr
match address 121
set peer 1.1.1.2
!
interface FastEthernet 1
ip address 20.20.20.1 255.255.255.0
no shutdown
!
interface Dialer1
crypto map myisdn
dialer pool 1
dialer string 120
encapsulation ppp
dialer-group 1
ip address 1.1.1.1 255.255.255.0
no shutdown
!
ip route 10.10.10.0 255.255.255.0 1.1.1.2
!
dialer-list 1 protocol ip list 101
!
end

XSR-1805-1(config)#aaa user 1.1.1.2
XSR-1805-1(config-aaa)#password XSR

XSR-1805-1#
```

5.4.2 VPN via Dialer Interface rtr2

```
XSR-1805-2#show running-config
!!
!   Version 6.0.0.9, Built Dec 12 2003, 14:56:30
!
hostname XSR-1805-2
!
interface bri 0/2/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 102 permit ip    10.10.10.0 0.0.0.255 20.20.20.0 0.0.0.255
access-list 102 permit ip    any host 1.1.1.1
access-list 130 permit ip    10.10.10.0 0.0.0.255 20.20.20.0 0.0.0.255
!
crypto isakmp proposal ISDN
authentication pre-share
!
crypto isakmp peer 1.1.1.1 255.255.255.255
proposal ISDN
!
crypto ipsec transform-set isdntr esp-3des esp-md5-hmac
set pfs group2
no set security-association lifetime kilobytes
!
crypto map myisdn 10
set transform-set isdntr
match address 130
set peer 1.1.1.1
!
interface FastEthernet 1
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer1
crypto map myisdn
dialer pool 1
dialer string 110
encapsulation ppp
dialer-group 1
ip address 1.1.1.2 255.255.255.0
no shutdown
!
ip route 20.20.20.0 255.255.255.0 1.1.1.1
!
dialer-list 1 protocol ip list 102
!
end

XSR-1805-1(config)#aaa user 1.1.1.1
XSR-1805-1(config-aaa)#password XSR

XSR-1805-2#
```

5.5.1 Dialer Int. PRI to BRI with D-channel-callback central-site

```
XSR-central#show running-config
!!
!   Version 6.0.0.9, Built Dec 12 2003, 14:56:30
!
hostname XSR-central
!
username remotel privilege 0 password cleartext xsr1
username remote2 privilege 0 password cleartext xsr2
!
controller e1 0/1/0
pri-group
isdn bchan-number-order ascending
no shutdown
dialer pool-member 1 priority 10
!
access-list 120 permit ip    any any
!
interface FastEthernet 1
ip address 10.20.30.1 255.255.255.0
no shutdown
!
interface Dialer0 multi-point
dialer pool 1
encapsulation ppp
multilink load-threshold 20
dialer caller 120 callback
dialer caller 140 callback
dialer-group 1
dialer map ip 1.1.1.2 120
dialer map ip 1.1.1.3 140
ip address 1.1.1.1 255.255.255.0
ppp authentication pap
ppp pap sent-username central password xsr
ppp multilink
no shutdown
!
ip router-id 1.1.1.1
!
ip route 10.10.10.0 0.0.0.255 1.1.1.2
ip route 20.20.20.0 0.0.0.255 1.1.1.3
!
router ospf 1
network 1.1.1.0 0.0.0.255 area 0.0.0.0
network 10.20.30.0 0.0.0.255 area 0.0.0.0
!
dialer-list 1 protocol ip list 120
!
end

XSR-central#
```

Note: Incoming calls may be mapped to a dialer interface based on the **PPP authenticated username** if the following conditions are met:

- **Interface dialer 0** is needed for the **desired PPP authentication** (e.g., ppp authentication pap).
- The username must be configured under the dialer interface using the **dialer remote-name** command.

5.5.2 Dialer Int. PRI to BRI with D-channel-callback remote1-site

```
remotel#show running-config
!!
!   Version 6.0.0.9, Built Dec 12 2003, 14:56:30
!
hostname remotel
!
username central privilege 0 password cleartext xsr
!
interface bri 0/2/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 102 permit ip    any any
!
interface FastEthernet 1
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer1
dialer pool 1
dialer string 210
encapsulation ppp
dialer remote-name central
dialer-group 1
ip address 1.1.1.2 255.255.255.0
ppp authentication pap
ppp pap sent-username remotel password xsr1
ppp multilink
no shutdown
!
ip router-id 1.1.1.2
!
ip route 0.0.0.0 0.0.0.0 1.1.1.1
!
router ospf 1
network 10.10.10.0 0.0.0.255 area 0.0.0.0
network 1.1.1.0 0.0.0.255 area 0.0.0.0
!
dialer-list 1 protocol ip list 102
!
end

remotel#
```

5.5.3 Dialer Int. PRI to BRI with D-channel-callback remote2-site

```
remotel#show running-config
!!
!   Version 6.0.0.9, Built Dec 12 2003, 14:56:30
!
hostname remote2
!
username central privilege 0 password cleartext xsr
!
interface bri 0/1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 10
!
access-list 130 permit ip    any any
!
interface FastEthernet 1
ip address 20.20.20.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 210
encapsulation ppp
dialer-group 1
ip address 1.1.1.3 255.255.255.0
ppp authentication pap
ppp pap sent-username remote2 password xsr2
ppp multilink
no shutdown
!
ip router-id 1.1.1.3
!
ip route 0.0.0.0 0.0.0.0 1.1.1.1
!
router ospf 1
network 20.20.20.0 0.0.0.255 area 0.0.0.0
network 1.1.1.0 0.0.0.255 area 0.0.0.0
!
dialer-list 1 protocol ip list 130
!
end

remote2#
```

6.0 ISDN config for BR1/x

6.1 ISDN switch type changing

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer idle-timeout 30
dialer-group 1
ip address 11.11.11.1 255.255.255.0
dialer map ip 11.11.11.2 112233
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```

```
XSR-1805(config-if<BRI-1/0>)#isdn switch-type ?
  basic-dms100
  basic-net3
  basic-nil
  basic-ntt
XSR-1805(config-if<BRI-1/0>)#isdn switch-type basic-net3
```


6.2 ISDN callback

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
dialer string 112233
encapsulation ppp
dialer caller 112233 callback
dialer remote-name XSR-Remote
dialer idle-timeout 30
dialer-group 1
ip address 11.11.11.1 255.255.255.0
dialer map ip 11.11.11.2 112233
no shutdown
!
dialer-list 1 protocol ip list 110
!
end

XSR-1805#
```

6.3 ISDN multilink / ISND channel bundling

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface bri 1/0
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 0
!
interface bri 1/1
isdn switch-type basic-net3
no shutdown
dialer pool-member 1 priority 10
!
access-list 110 permit ip any any
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface Dialer0
dialer pool 1
encapsulation ppp
multilink load-threshold 1
multilink max-links 5
dialer-group 1
dialer map ip 192.168.222.1 110110
dialer map ip 192.168.222.1 120120
ip address 192.168.222.2 255.255.255.0
ppp multilink
no shutdown
!
dialer-list 1 protocol ip list 110
!
ip route 10.11.11.0 255.255.255.0 192.168.222.1
!
end

XSR-1805#
```

7.0 PPPoE on Fast Ethernet interfaces

7.1 IP-address negotiation for PPPoE

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2-4-PPPoE"
no shutdown
!
interface FastEthernet2.1
encapsulate ppp
ip address negotiated
ip mtu 1492
ip nat source assigned overload
ppp pap sent-username my_online-AOL@AOL.com "password is not displayed"
no shutdown
!
end
XSR-1805#
```

7.2 PPPoE on ADSL interface with chap authentication

```
XSR-1805#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805
!
interface FastEthernet1
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface ATM 2/0
no shutdown
!
interface ATM 2/0.1
encapsulation snap pppoe
ip tcp adjust-mss 1452
pvc 8/35
ip address negotiated
ip mtu 1492
ip nat source assigned overload
ppp chap hostname ar01149601067
ppp chap password "password is not displayed"
no shutdown
!
ip proxy-dns enable
ip proxy-dns name-server 145.253.2.11
ip route 0.0.0.0 0.0.0.0 ATM 2/0.1
!
end
XSR-1805#
```

8.0 AAA Authentication Authorization Accounting Radius

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
aaa method radius logon default
enable
group DEFAULT
address ip-address 10.10.10.123
key My-Radius
auth-port 1645
acct-port 1646
attempts 4
retransmit 3
timeout 10
qtimeout 0
!
end

XSR-1805#
```

8.1 SSH / Telnet

SSH and Telnet are enabled by default

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
ip ssh server disable
ip telnet server disable
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
end

XSR-1805#
```

8.2 SYSLOG function, Server local-buffer

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
logging 10.10.10.100
logging Console    low
logging Monitor    high
logging Buffered   debug
logging SNMP       medium
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
end

XSR-1805#
```

8.3 SNMP configuration /contact/location/parameter

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
logging 10.10.10.100
logging Console    low
logging Monitor    high
logging Buffered   debug
logging SNMP       medium
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
snmp-server community private rw
snmp-server community public ro
snmp-server enable traps
snmp-server host 10.10.10.111 traps public
snmp-server location "ENTERASYS_NETWORKS"
snmp-server contact "TEST_XSR_FUNCTION"
snmp-server enable
!
end
XSR-1805#
```

8.4 SNMP v1/v2/v3

```
XSR-1805#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
snmp-server group v3grp v3 auth read v3v write v3v notify v3v
snmp-server user v3Admin v3grp v3 auth md5 v3md5PWD priv des56 v3desPWD
snmp-server view v3v internet included
snmp-server host 10.10.10.111 traps public
snmp-server host 10.10.10.111 informs version 3 priv v3Admin
snmp-server engineID remote 10.10.10.111 800015F8030001F48EF82F
snmp-server user v3Admin v3grp remote 10.10.10.111 v3 auth md5 v3md5PWD
priv des56 v3desPWD
snmp-server enable traps
snmp-server location "ENTERASYS_NETWORKS"
snmp-server contact "XSR_v3_FUNCTION"
snmp-server enable
!
end
XSR-1805#
```

Note: SNMP User and Password will not displayed in config-file.
Use "show SNMP user" to verify the user config.

9.0r1 VPN IPSEC site-to-site tunnel via pre-shared key

Router-1

```
XSR-1805_1#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_1
!
crypto isakmp proposal prop-map1
authentication pre-share
group 5
lifetime 10800
!
access-list 101 permit ip 10.10.10.0 0.0.0.255 80.80.80.0 0.0.0.255
!
crypto isakmp peer 20.20.20.2 255.255.255.255
proposal prop-map1
config-mode gateway
!
crypto ipsec transform-set VPN-3des esp-3des esp-sha-hmac
set pfs group2
set security-association lifetime kilobytes 1000000
set security-association lifetime seconds 3601
!
crypto map c-map1 75
set transform-set VPN-3des
match address 101
set peer 20.20.20.2
mode tunnel
!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
crypto map c-map1
ip address 20.20.20.1 255.255.255.0
no shutdown
!
ip route 80.80.80.0 255.255.255.0 20.20.20.2
!
end

XSR-1805_1#

XSR-1805_1(config)#aaa user 20.20.20.2
XSR-1805_1(config-aaa)#password XSR
```

9.0r2 VPN IPSEC site-to-site tunnel via pre-shared key

Router-2

```
XSR-1805_2#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_2
!
crypto isakmp proposal prop-map1
authentication pre-share
group 5
lifetime 10800
!
access-list 101 permit ip 80.80.80.0 0.0.0.255 10.10.10.0 0.0.0.255
!
crypto isakmp peer 20.20.20.1 255.255.255.255
proposal prop-map1
config-mode gateway
!
crypto ipsec transform-set VPN-3des esp-3des esp-sha-hmac
set pfs group2
set security-association lifetime kilobytes 1000000
set security-association lifetime seconds 3601
!
crypto map c-map1 75
set transform-set VPN-3des
match address 101
set peer 20.20.20.1
mode tunnel
!
interface FastEthernet1
description "LAN-Interface1"
ip address 80.80.80.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
crypto map c-map1
ip address 20.20.20.2 255.255.255.0
no shutdown
!
ip route 10.10.10.0 255.255.255.0 20.20.20.1
!
end

XSR-1805_2#

XSR-1805_2(config)#aaa user 20.20.20.1
XSR-1805_2(config-aaa)#password XSR
```


9.1 VPN IPSEC site-to-site tunnel certification PKI

```
XSR-1805_1#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805_1
!
crypto isakmp proposal prop-map1
authentication rsa-sig
group 5
lifetime 10800
!
access-list 101 permit ip 10.10.10.0 0.0.0.255 any
!
crypto isakmp peer 20.20.20.1 255.255.255.255
proposal prop-map1
config-mode gateway
!
crypto ipsec transform-set VPN-3des esp-3des esp-sha-hmac
set pfs group2
set security-association lifetime kilobytes 1000000
set security-association lifetime seconds 3601
!
crypto map c-map1 75
set transform-set VPN-3des
match address 101
set peer 20.20.20.1
mode tunnel
!
interface FastEthernet1
description "LAN-Interface1"
ip address 80.80.80.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
crypto map c-map1
ip address 20.20.20.2 255.255.255.0
no shutdown
!
ip route 10.10.10.0 255.255.255.0 20.20.20.1
ip route 0.0.0.0 0.0.0.0 80.80.80.254
!
ip host labor-enterasys 192.168.224.22
ip host Enterasys-Networks-CA 192.168.224.22
!
end

XSR-1805_1#
```

Issue Certificate via SCEP protocol to XSR from Windows 2000 CA:

1.

```
XSR-1805_1(config)#crypto ca identity Enterasys-Networks-CA
XSR-1805_1(ca-identity)#enrollment url http://192.168.224.22/certsrv/mscep/mscep.dll
XSR-1805_1(ca-identity)#exit
```

2.

```
XSR-1805_1(config)#crypto ca authenticate Enterasys-Networks-CA
Certificate has the following attributes:
Fingerprint: 6AEBAF4C 51B85B4C 297F12F0 D3442FF6
Do you accept this certificate (y/n) ? y
```

3.

```
XSR-1805_1(config)#crypto ca enroll Enterasys-Networks-CA
%
% Start certificate enrollment
Create a challenge password. You will need to verbally
provide this password to the CA Administrator in order to
revoke your certificate. For security reasons your password
will not be saved in the configuration.
Please make a note of it.
Password:*****
Re-enter password:*****
Include the router serial number in the subject name (y/n) ? y
The serial number in the certificate will be: 361902300157320D
Request certificate from CA (y/n) ? y
You may experience a short delay while RSA keys are generated.
Once key generation is complete, the certificate request
will be sent to the Certificate Authority.
Use 'show crypto ca certificate' to show the fingerprint.
XSR-1805_1(config)#

<186> 192.168.224.132 PKI: A certificate was successfully received from the CA.
XSR-1805_1(config)#
```

4.

```
XSR-1805_1(config)#crypto ca crl request Enterasys-Networks-CA
<186>Jul 30 11:33:28 192.168.200.1 PKI: A crl has been requested for En-
terasys-Networks-CA, this may take a while, a message will be displayed
when the crl has been
<191>Jul 30 11:33:28 192.168.200.1 VPN: [PKI] The certificate is VALID
XSR-1805_1(config)#
```

9.1.1 Certification control / certificates / CRLS / CA identity

```
XSR-1805_1#show crypto ca certificates
```

Certificate - issued by Enterasys-Networks-CA

```
State: ENTITY-ACTIVE
Version: V3
Serial Number: 458876448087542442491910
Issuer: MAILTO=support@enterasys.com, . . . , CN=LABOR-ETS-CA
Valid From: 2003 Jul 2nd, 10:21:11 GMT
Valid To: 2004 Jul 2nd, 10:31:11 GMT
Subject: CN=Enterasys Networks X-pedition Series - 361902300157320D
Fingerprint: 30451AC4 F2626413 841522E3 2DDB98A4
Certificate Size: 1102 bytes
```

CA Certificate - Enterasys-Networks-CA

```
State: CA-AUTHENTICATED
Version: V3
Serial Number: 116081135157367679818971021752243067231
Issuer: MAILTO=support@enterasys.com, . . . , CN=LABOR-ETS
Valid From: 2003 Feb 11th, 14:45:40 GMT
Valid To: 2013 Feb 11th, 14:52:38 GMT
Subject: MAILTO=labor@enterasys.com, . . . , CN=LABOR-ETS
Fingerprint: 6AEB4F4C 51B85B4C 297F12F0 D3442FF6
Certificate Size: 770 bytes
```

RA KeyEncipher Certificate - Enterasys-Networks-CA-rae

```
State: CA-AUTHENTICATED
Version: V3
Serial Number: 459107753245879167877125
Issuer: MAILTO=support@enterasys.com, . . . , CN=LABOR-ETS
Valid From: 2003 Jul 2nd, 10:21:11 GMT
Valid To: 2004 Jul 2nd, 10:31:11 GMT
Subject: MAILTO=labor@enterasys.com, . . . , CN=LABOR-ETS
Fingerprint: 19952ABA 0F1C6EE1 E9FB4F70 76448739
Certificate Size: 1214 bytes
```

RA Signature Certificate - Enterasys-Networks-CA-ras

```
State: CA-AUTHENTICATED
Version: V3
Serial Number: 459107524969673055535108
Issuer: MAILTO=support@enterasys.com, . . . , CN=LABOR-ETS
Valid From: 2003 Jul 2nd, 10:21:10 GMT
Valid To: 2004 Jul 2nd, 10:31:10 GMT
Subject: MAILTO=labor@enterasys.com, , CN=LABOR-ETS
Fingerprint: 6255E200 726DED79 AA5462F2 69397A54
Certificate Size: 1214 bytes
```

```
XSR-1805_1#show crypto ca crls
```

CRL - issued by LABOR-ETS

```
State: VALID
Version: V2
Issuer: MAILTO=support@enterasys.com, . . . , CN=LABOR-ETS
Valid From: 2003 Jul 29th, 14:46:16 GMT
Valid To: 2003 Aug 6th, 03:06:16 GMT
Issuing CDP: http://labor-enterasys/CertEnroll/LABOR-ETS.crl
Crl Size: 378 bytes
```

```
XSR-1805_1#show crypto ca identity
```

CA Identity - Enterasys-Networks-CA

```
Enrollment Information:
URL: http://192.168.224.22/certsrv/mscep/mscep.dll
Retry Period: 5 minutes
Retry Count: 3
Crl Frequency: 60 minutes
```

9.3 VPN PPTP User termination

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
ip address 134.141.130.12 255.255.255.0
no shutdown
!
interface FastEthernet2
ip address 192.168.1.1 255.255.255.0
ip nat source assigned overload
no shutdown
!
interface Vpn1 multi-point
ip address 192.168.2.1 255.255.255.0
!
ip local pool VPN 192.168.2.0 255.255.255.0
!
aaa group DEFAULT
dns server primary 0.0.0.0
dns server secondary 0.0.0.0
wins server primary 0.0.0.0
wins server secondary 0.0.0.0
ip pool VPN
pptp encrypt mppe auto
!
end

XSR-1805#

XSR-1805(config)#aaa user marc
XSR-1805(aaa-user)#password marc
XSR-1805(config)#aaa user phil
XSR-1805(aaa-user)#password phil
XSR-1805(config)#aaa user bob
XSR-1805(aaa-user)#password bob
XSR-1805(config)#aaa user peter
XSR-1805(aaa-user)#password peter

XSR-1805#
```

9.4r1 GRE encapsulated in IPSEC site-to-site tunnel via pre-shared key

Router-1

```
XSR-1805_1#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805_1
!
crypto isakmp proposal prop-map1
authentication pre-share
group 5
lifetime 10800
!
access-list 101 permit gre any any
!
crypto isakmp peer 20.20.20.2 255.255.255.255
proposal prop-map1
config-mode gateway
!
crypto ipsec transform-set VPN-3des esp-3des esp-sha-hmac
set pfs group2
set security-association lifetime kilobytes 1000000
set security-association lifetime seconds 3601
!
crypto map gre-map1 75
set transform-set VPN-3des
match address 101
set peer 20.20.20.2
mode transport

!
interface FastEthernet1
description "LAN-Interface1"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
crypto map gre-map1
ip address 20.20.20.1 255.255.255.0
no shutdown
!
interface Vpn1 point-to-point
ip multicast-redirect 192.168.1.2
tunnel "VPN+GRE"
set protocol gre
set active
set peer 20.20.20.2
set heartbeat 3 3
ip address 192.168.1.1 255.255.255.0
ip firewall disable
ip ospf cost 100
ip ospf dead-interval 4
ip ospf hello-interval 1
!
router ospf 1
network 10.10.10.0 0.0.0.255 area 0.0.0.0
network 192.168.1.0 0.0.0.255 area 0.0.0.0
!
end

XSR-1805_1(config)#aaa user 20.20.20.2
XSR-1805_1(config-aaa)#password XSR
```

9.4r2 GRE encapsulated in IPSEC site-to-site tunnel via pre-shared key Router-2

```
XSR-1805_2#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805_2
!
crypto isakmp proposal prop-map1
authentication pre-share
group 5
lifetime 10800
!
access-list 101 permit gre any any
!
crypto isakmp peer 20.20.20.1 255.255.255.255
proposal prop-map1
config-mode gateway
!
crypto ipsec transform-set VPN-3des esp-3des esp-sha-hmac
set pfs group2
set security-association lifetime kilobytes 1000000
set security-association lifetime seconds 3601
!
crypto map gre-map1 75
set transform-set VPN-3des
match address 101
set peer 20.20.20.1
mode transport
set security-association level per-host
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 80.80.80.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
crypto map gre-map1
ip address 20.20.20.2 255.255.255.0
no shutdown
!
interface Vpn1 point-to-point
ip multicast-redirect 192.168.1.1
tunnel "VPN+GRE"
set protocol gre
set active
set peer 20.20.20.1
set heartbeat 3 3
ip address 192.168.1.2 255.255.255.0
ip firewall disable
ip ospf cost 100
ip ospf dead-interval 4
ip ospf hello-interval 1
!
router ospf 1
network 80.80.80.0 0.0.0.255 area 0.0.0.0
network 192.168.1.0 0.0.0.255 area 0.0.0.0
!
end

XSR-1805_2(config)#aaa user 20.20.20.1
XSR-1805_2(config-aaa)#password XSR
```

9.5r1 GRE native site-to-site tunnel

Router-1

```
XSR-1805_1#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805_1
!
access-list 101 permit gre  any any
access-list 101 deny  ip    any any
!
interface FastEthernet 1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet 2
description "LAN-Interface2"
ip access-group 101 out
ip address 20.20.20.1 255.255.255.0
no shutdown
!
interface Vpn1 point-to-point
ip multicast-redirect 192.168.1.2
tunnel "VPN+GRE"
set protocol gre
set active
set peer 20.20.20.2
set heartbeat 3 3
ip address 192.168.1.1 255.255.255.0
ip firewall disable
ip ospf cost 100
ip ospf dead-interval 4
ip ospf hello-interval 1
!
router ospf 1
 network 10.10.10.0 0.0.0.255 area 0.0.0.0
 network 192.168.1.0 0.0.0.255 area 0.0.0.0
!
end
XSR-1805_1#
```

9.5r2 GRE native site-to-site tunnel

Router-2

```
XSR-1805_2#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805_2
!
access-list 101 permit gre  any any
access-list 101 deny  ip  any any
!
interface FastEthernet 1
description "LAN-Interfacel"
ip address 80.80.80.1 255.255.255.0
no shutdown
!
interface FastEthernet 2
description "LAN-Interface2"
ip access-group 101 out
ip address 20.20.20.2 255.255.255.0
no shutdown
!
interface Vpn1 point-to-point
ip multicast-redirect 192.168.1.1
tunnel "VPN+GRE"
set protocol gre
set active
set peer 20.20.20.1
set heartbeat 3 3
ip address 192.168.1.2 255.255.255.0
ip firewall disable
ip ospf cost 100
ip ospf dead-interval 4
ip ospf hello-interval 1
!
router ospf 1
 network 80.80.80.0 0.0.0.255 area 0.0.0.0
 network 192.168.1.0 0.0.0.255 area 0.0.0.0
!
end
XSR-1805_2#
```


10.1 DIFFSERV DSCP field addressing

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
class-map DSCP_EF
  match access-group 2
  match ip dscp EF
!
policy-map DSCP_EF
  class DSCP_EF
    priority high 12000
!
access-list 2 permit 10.10.10.0 0.0.0.255
!
interface FastEthernet1
description "LAN-Interfacel"
ip address 10.10.10.1 255.255.255.0
no shutdown
!
interface FastEthernet2
description "LAN-Interface2"
ip address 20.20.20.1 255.255.255.0
service-policy output DSCP_EF
no shutdown
!
end
XSR-1805#
```

```
DSCP default values:
af11 Match packets with AF11 DSCP (001010)
af12 Match packets with AF12 DSCP (001100)
af13 Match packets with AF13 DSCP (001110)
af21 Match packets with AF21 DSCP (010010)
af22 Match packets with AF22 DSCP (010100)
af23 Match packets with AF23 DSCP (010110)
af31 Match packets with AF31 DSCP (011010)
af32 Match packets with AF32 DSCP (011100)
af33 Match packets with AF33 DSCP (011110)
af41 Match packets with AF41 DSCP (100010)
af42 Match packets with AF42 DSCP (100100)
af43 Match packets with AF43 DSCP (001010)
cs1  Match packets with CS1  DSCP (001000)
cs2  Match packets with CS2  DSCP (010000)
cs3  Match packets with CS3  DSCP (011000)
cs4  Match packets with CS4  DSCP (100000)
cs5  Match packets with CS5  DSCP (101000)
cs6  Match packets with CS6  DSCP (110000)
cs7  Match packets with CS7  DSCP (111000)
default Match packets with default DSCP (000000)
ef Match packets with Expedited Forwarding (EF) DSCP (101110)
```

11.1 Firewall configuration

```
XSR-1805#show running-config
!!
!   Version 4.0.0.0, Built Mar 26 2003, 19:47:17
!
hostname XSR-1805
!
interface FastEthernet1
description "Internal_network_Private"
ip address 10.10.10.1 255.255.0.0
no shutdown
!
interface FastEthernet2
description "External_network_Intranet"
ip address 192.168.224.133 255.255.255.0
no shutdown
!
interface Loopback0
description "internal_loopback_Private"
ip address 13.13.13.1 255.255.255.0
no shutdown
!
ip firewall network 192 192.168.224.1 192.168.224.255 external
ip firewall network 13 13.13.13.1 13.13.13.255 internal
ip firewall network 10 10.10.10.1 10.10.255.255 internal
!
ip firewall network-group g192 192
ip firewall network-group g13 13
ip firewall network-group g10 10
ip firewall network-group g10+g13 13 10
!
ip firewall policy inSSH g192 g13 SSH allow-log bidirectional
ip firewall policy inTelnet g10+g13 g10+g13 Telnet allow-log bidirectional
ip firewall policy FTP_okay g10 g192 FTP allow bidirectional
ip firewall policy HTTP_okay g10 g192 HTTP allow bidirectional
!
ip firewall load
!
end

XSR-1805#
```

12.1 Vlan configuration 802.1q tagged routing

```
XSR-1805#show running-config
!!
!   Version 6.0.0.0, Built Sep 14 2003, 11:09:28
!
hostname XSR-1805
!
interface FastEthernet 1
description "UnTagged-Native-Interface"
ip address 11.11.11.1 255.255.255.0
no ip proxy-arp
no shutdown

interface FastEthernet 1.10
description "vlan 10 tagged"
vlan 10
ip address 10.10.10.1 255.255.255.0
no ip proxy-arp
no shutdown
!
interface FastEthernet 1.20
description "vlan 20 tagged"
vlan 20
ip address 20.20.20.1 255.255.255.0
no ip proxy-arp
no shutdown
!
interface FastEthernet 1.30
description "vlan 30 tagged"
vlan 30
ip address 30.30.30.1 255.255.255.0
no ip proxy-arp
no shutdown
!
end

XSR-1805#
```

Appendix:

Important commands for using the XSR platform:

A1.1 show version - Software, Bootrom, RAM, Flash, System Uptime

```
XSR-1805#show version
Enterasys Networks Operating Software
Copyright 2002 by Enterasys Networks Inc.

Hardware:
  Processor board ID: 9002854-02 REV0A
  Serial Number: 361903091537210L
  Processor: IBM PowerPC 405GP Rev. D at 200MHz
  RAM installed: 32MB
  Flash installed: 8MB on processor board
  CompactFlash not present
  Real Time Clock
  FastEthernet 1
  FastEthernet 2 Rev 0
  H/W Encryption Accelerator Rev 1
  Empty NIM slot 1
  Empty NIM slot 2
  Empty internal NIM slot 3

Bootrom:
  Version 2.02, Built Feb 24 2003, 14:03:08

Software:
  Version 4.0.0.0, Built Mar 26 2003, 19:47:17
  CLI revision 1.2
  Software file is "xsr1800.fls" without VPN; without Firewall
  XSR-1805 uptime is 0 days, 2 hours, 23 minutes.

XSR-1805#
XSR-1805#
```

A1.2 ping & traceroute

```
XSR-1805#ping 10.10.10.10

Reply from 10.10.10.10: time=1ms
Reply from 10.10.10.10: time=1ms
Reply from 10.10.10.10: time=1ms
Reply from 10.10.10.10: time=1ms
Reply from 10.10.10.10: time=1ms
Ping statistics for 10.10.10.10:
    Packets: Sent = 5, Received = 5, Lost = 0
XSR-1805#

XSR-1805#traceroute 10.10.10.10
Traceroute to 10.10.10.10 from 10.10.10.1, 30 hops max, 40 byte packets
 1  10.10.10.10          2.00 ms    2.00 ms    2.00 ms
XSR-1805#
```

A1.3 show interface - IP address, speed, duplex, statistics, errors

```
XSR-1805#show interface
FastEthernet1 is Admin Up
Description: LAN-Interface1
Internet address is 10.10.10.1, subnet mask is 255.255.255.0

The name of this device is Eth1.

The physical link is currently up.
The device is in polling mode, and is active.
The last driver error is '(null)'.

The duplex mode is set to auto-negotiated.
The current operational duplex mode is negotiated to full.

The speed is set to auto-negotiated.
The current operational speed is negotiated to 100 Mb/s.

The primary MAC address is (in hex) 00:01:f4:a3:5d:92.
The MTU is 1500.
The bandwidth is 100 Mb/s.

Other Interface Statistics:
  ifindex           0
  ifType            6
  ifAdminStatus     1
  ifOperStatus      1
  ifLastChange      01:10:36
  ifInOctets        155686754
  ifInUcastPkts     751980
  ifInNUcastPkts   5288
  ifInDiscards      0
  ifInErrors        0
  ifInUnknownProtos 0
  ifOutOctets       147786961
  ifOutUcastPkts   734848
  ifOutNUcastPkts  1358
  ifOutDiscards     0
  ifOutErrors       0
  ifOutQLen         256

XSR-1805#
```

A1.4 telnet to other routers

```
XSR-1805#telnet ?
  A.B.C.D IP address of telnet server

XSR-1805#telnet 10.10.10.99
Trying 10.10.10.99 ...

XSR-1805#
```

A1.5 flash:/ cflash:/ - dir, rename, copy commands

```
XSR-1805#dir
Listing Directory flash:/

  size      date      time      name
  -----
4000669    JUN-26-2003  11:00:12  xsr1800.flc
   1777    OCT-01-2003  12:46:40  persistent-data
   308    OCT-01-2003  12:46:40  startup-config
    21    OCT-01-2003  12:46:40  private-config

  2,369,536 bytes free
  6,381,568 bytes total
XSR-1805#

XSR-1805#
  cd          Change current directory
  copy       Copy from one file to another
  delete     Delete a file
  dir        List files on a filesystem
  help       Description of the interactive help system
  more       Display the contents of a file
  pwd        Display current working directory
  rename     Rename a file within a file system

XSR-1805#

XSR-1805#copy ?
  cflash:    Copy from cflash: file system
  flash:     Copy from flash: file system
  running-config Copy from current system configuration
  startup-config Copy from startup configuration
  tftp:      Copy from tftp: file system

XSR-1805#
```

A1.6 verify the flash file checksum

```
XSR-1805#verify flash:xsr1800.flc
Verifying flash:xsr1800.flc file ...
File chksum=0xba45
Router size=11769944 sum=0x2b10 compressed_size=3713722 entry=0x10000
Diagnostics size=894636 sum=0xa0db compressed_size=286907 entry=0x10000
OK

XSR-1805#
```

B1.0 show ip route

```
XSR-1805#show ip route

Codes: C-connected, S-static, R-RIP, O-OSPF, IA-OSPF interarea
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       * - candidate default, D - default route originated from default net

   C    192.168.224.0/24    [0001] directly connected, FastEthernet2
* S    0.0.0.0/0          [0001] via 192.168.224.1, FastEthernet2

XSR-1805#
```

B1.1 show ip arp

```
XSR-1805#show ip arp

Protocol          Address Age(min)  Hardware Address Type Interface
Internet         192.168.224.11    -        00a0.c9c8.004f ARPA FastEthernet2
Internet         192.168.224.132  -        0001.f425.c2b2 ARPA FastEthernet2

XSR-1805#
```

B1. show ip interface

```
XSR-1805#show ip interface

FastEthernet1 is Admin Up
  Internet address is 10.10.10.1, subnet mask is 255.255.255.0
  Rcvd: 0 octets, 0 unicast packets,
        0 discards, 0 errors, 0 unknown protocol.
  Sent: 0 octets, 0 unicast packets,
        0 discards, 0 errors.
  MTU is 1500 bytes.
  Proxy ARP is disabled.
  Helper address is not set.
  Directed broadcast is enabled.
  Outgoing access list is not set.
  Inbound access list is not set.
  Router discovery is disabled.

FastEthernet2 is Admin Up
  Internet address is 192.168.224.132, subnet mask is 255.255.255.0
  Rcvd: 8932656 octets, 5900 unicast packets,
        0 discards, 0 errors, 5472 unknown protocol.
  Sent: 177264 octets, 3272 unicast packets,
        0 discards, 0 errors.
  MTU is 1500 bytes.
  Proxy ARP is enabled.
  Helper address is not set.
  Directed broadcast is enabled.
  Outgoing access list is not set.
  Inbound access list is not set.
  Router discovery is disabled.

XSR-1805#
```

C1.0 show tunnels

```
XSR-1805_2#show tunnels
```

```
Tunnel MIB:
```

ID	Creation Time	Proto	Username
	Peer IP		Packets In/Out
40000001	12/02/03, 13:21	IPSEC	(Unknown)
	0.0.0.0		0000003976/0000003949

```
XSR-1805_2#
```

C1.1 show crypto isakmp sa

```
XSR-1805_2#show crypto isakmp sa
```

Connection-ID	State	Source	Destination	Lifetime
1	QM_IDLE	20.20.20.2	20.20.20.1	10268

```
XSR-1805_2#
```

C1.2 show crypto ipsec sa

```
XSR-1805_2#show crypto ipsec sa
```

```
10.10.10.0/24, ANY, 0 ==> 80.80.80.0/24, ANY, 0 : 6663 packets
ESP: SPI=cb2df6f0, Transform=3DES/HMAC-SHA, Life=3015S/999571KB

80.80.80.0/24, ANY, 0 ==> 10.10.10.0/24, ANY, 0 : 6651 packets
ESP: SPI=637d49f, Transform=3DES/HMAC-SHA, Life=3015S/999623KB
XSR-1805_2#
```

C1.3 show crypto map

```
XSR-1805_2#show crypto map
```

```
Crypto Map Table
```

Name	Policy rule list
c-map1	c-map1.75

```
IPSec Policy Rule Table
```

Name	ACL	Disp	Mode	Bundle	Gateway	Proposals
c-map1.75	101	Process	Tunnel	SPD	20.20.20.1	VPN-3des

```
XSR-1805_2#
```


C1.4 show tunnels / GRE via IPSEC

```
XSR-1805_2#show tunnels

Tunnel MIB:

ID          Creation Time   Proto Username
          Peer IP                               Packets In/Out

40000001 12/02/2003, 16:14 GRE
          20.20.20.1                               0000003528/0000002552
XSR-1805_2#
```

C1.5 show interface vpn / GRE via IPSEC

```
XSR-1805_2#show interface vpn

Vpn1 is Admin Up
Internet address is 192.168.1.2, subnet mask is 255.255.255.0
Multicast redirect to 192.168.1.1 is enabled.
This interface includes the VPN tunnel 'VPN+GRE'.
The tunnel peer's Internet IP address is 20.20.20.1.
The tunnel encapsulation protocol is GRE.
The identity used to initiate the tunnel is 'n/a'
The tunnel's current state is Connected.

XSR-1805_2#
```

C1.6 show crypto ipsec sa / GRE via IPSEC

```
XSR-1805_2#show crypto ipsec sa

20.20.20.2/32, GRE, 0 ==> 20.20.20.1/32, GRE, 0 : 2709 packets
ESP: SPI=5e39f5c0, Transform=3DES/HMAC-SHA, Life=1961S/999796KB

20.20.20.1/32, GRE, 0 ==> 20.20.20.2/32, GRE, 0 : 3813 packets
ESP: SPI=f56d8f4, Transform=3DES/HMAC-SHA, Life=1961S/999718KB

XSR-1805_2#
```

C1.7 show ip route / GRE via IPSEC

```
XSR-1805_2#show ip route

Codes: C-connected, S-static, R-RIP, O-OSPF, IA-OSPF interarea
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       * - candidate default, D - default route originated from default net
C      192.168.1.0/24          [ 0/0001] directly connected, Vpn1
C      80.80.80.0/24          [ 0/0001] directly connected, FastEthernet 1
C      20.20.20.0/24         [ 0/0001] directly connected, FastEthernet 2
O      10.10.10.0/24         [108/0110] via 192.168.1.1, Vpn1

XSR-1805_2#
```

D1.1 show ip interface atm 1/0.1

```
XSR1805-ADSL#show ip interface atm 1/0.1
ATM 1/0.1 is Admin Up
  Internet address is 212.184.161.76, subnet mask is 255.255.255.255
  Rcvd: 766 octets, 6 unicast packets,
        0 discards, 0 errors, 0 unknown protocol.
  Sent: 800 octets, 8 unicast packets,
        0 discards, 0 errors.
  MTU is 1492 bytes.
  Proxy ARP is enabled.
  Helper address is not set.
  Directed broadcast is enabled.
  Outgoing access list is not set.
  Inbound access list is not set.
  IP Policy Based Routing is not enabled.

XSR1805-ADSL#
```

D1.2 show controllers atm 1/0

```
XSR1805-ADSL#show controllers atm 1/0

***** ATM Controller Stats *****
ATM 1/0

DSP Image File: cflash:adsl.flb
DSP File Rev. : 1.0.0.1
DSP Image Rev.: 40e4be30

DMT state: 41

OAM counters:          UNK counters:          Cells:
ifInOctets             00258672    ifInOctets             00278016    AIS in                00000000
ifInUcastPkts         00005390    ifInUcastPkts         00002773    RDI in                00000000
ifInDiscards          00000002    ifInDiscards          00000000    RDI out               00000000
ifInErrors             00000000    ifInErrors            00000000    CC in                 00000000
ifOutOctets            00000000    ifOutOctets           00000000    CC out                00000000
ifOutUcastPkts        00000000    ifOutUcastPkts        00000000    LBBK in               00000000
ifOutDiscards         00000000    ifOutDiscards         00000000    LPBK out              00000000
ifOutErrors           00000000    ifOutErrors           00000000
total_count            50
tx_notready            0
tx_toomany             0

XSR1805-ADSL#
```

D1.3 show controllers atm 1/0.1

```

XSR1805-ADSL#show controllers atm 1/0.1

***** ATM Sub-Interface Stats *****
ATM 1/0.1

Packet Processor Tx Scheduler Stats:
Output Q length is 0/40/40(5)
48 Packet Tx OK
0 Packet not Tx: drop
0 Packet not Tx: MUX_END_ERR_BLOCK
0 Packet not Tx: MUX_ERROR
0 Packet not Tx: Unknown Msg from MUX
Statistic Counters:
      Rx PacketTotalCount      42
      Rx PacketDiscardCount    0
      Rx MuxHeaderError        0
      Rx SnapHeaderError      0
      Rx PPPoEethTypeError     0
      Rx PPPoEethTypeARP       0
      Rx PPPoEethTypeIP        0
      Rx PPPoEethTypeRARP      0
      Tx PacketTotalCount      50
      Tx PacketDiscardCount    0

***** ATM Data Object Stats *****
Upper Adjacent is CONNECTED and UP, ATM PassData is TRUE
FE: Admin Up / Oper Up PPPoE: Oper Up

***** Driver Virtual Circuit Stats *****
VPI/VCI 1/32:
ccRx1          42
ccRx2          42
received-adslr1 42
noeop          0
crc            0
wor            0
ovr            0
toomany        0
stop           0
bel            0
be2            0
receivertnerr  0
nonewmbk       0
receivertnnull 0
tx_null_mblk   0
tx_no_enable   0
tx_length_err  0
sent-adslt     50
tx_no_free_slots 0
tx_no_showtime_loop 0

XSR1805-ADSL#

```

D1.4 show interface atm 1/0

```
XSR1805-ADSL #show interface atm 1/0

***** ATM Interface Stats *****
ATM 1/0 is Admin Up / Oper Up
Description: "ADSL-connection"

The name of this device is adsl.

Administrative State is ENABLED

Operational State is UP.

The upstream data rate is 192 kbit/sec.
The downstream data rate is 928 kbit/sec.

General info:
ifindex          0
ifType           94
ifAdminStatus    1
ifOperStatus     1
ifLastChange    00:16:09
ifInOctets       539868
ifInUcastPkts   8205
ifInNUcastPkts  0
ifInDiscards     2
ifInErrors       0
ifInUnknownProtos 0
ifOutOctets      5184
ifOutUcastPkts  50
ifOutNUcastPkts 0
ifOutDiscards    0
ifOutErrors      0
ifOutQLen        50
AAL5 in          42
AAL5 out         50
HEC errors       0
AIS F4           0
RDI F4           0
CC F4            0
LPBK F4          0

VPI/VCI      AAL5      AIS/F5      RDI/F5      CC/F5      LPBK/F5  AIS/RDI
1/32      00000042  00000000  00000000  00000000  00000000

XSR1805-ADSL#
```

D1.5 show interface atm 1/0.1

```
XSR1805-ADSL #show interface atm 1/0.1

***** ATM Sub-Interface Stats *****
ATM 1/0.1 is Admin Up / Oper Up

Internet address is 212.184.161.76, subnet mask is 255.255.255.255
LCP State: OPENED
IPCP State: OPENED

PPPoE is Oper Up
The logical link is currently Up
The Name of the Access Concentrator is ERX1400
The Session Id is 0x0054
The MAC Address of the Access Concentrator is 0x00:90:1a:01:03:84
The MTU is 1492

The name of this device is adsl-0.

Administrative State is ENABLED

Operational State is UP
Circuit monitoring disabled.

VPI is 1.
VCI is 32.

    ifindex          0
    ifType           94
    ifAdminStatus    1
    ifOperStatus     1
    ifLastChange     00:16:09
    ifInOctets       3180
    ifInUcastPkts    42
    ifInNUcastPkts   0
    ifInDiscards     0
    ifInErrors       0
    ifInUnknownProtos 0
    ifOutOctets      5184
    ifOutUcastPkts   50
    ifOutNUcastPkts  0
    ifOutDiscards    0
    ifOutErrors      0
    ifOutQLen        50

XSR1805-ADSL#
```

D1.6 show ppp interface atm 1/0.1

```
XSR1805-ADSL#show ppp interface atm 1/0.1

***** PPP Stats *****
ATM 1/0.1: PPP is Admin Up / Oper Up
LCP Current State:                OPENED
IPCP Current State:                OPENED

LCP STATS
Total Rcv Pck:                      40
Total Rcv Control Pck:              26
Total Rcv Data Pck:                 14
Total Rcv Pck Discarded:            0

Total Tx Pck:                       33
Total Tx Control Pck:               25
Total Tx Data Pck:                  8
Total Tx Pck Discarded:             0

Rx Control Pck Discarded:           0
Rx Control Pck Error:               0
Rx Control Pck Unknown protocol:    0
Rx Control Pck Too Long:            0

LocalToRemoteProtocolCompression:   Disabled
RemoteToLocalProtocolCompression:   Disabled
LocalMRU:                            1500
RemoteMRU:                            1492
ReceiveFcsSize:                       16
TransmitFcsSize:                       16

LQR STATS
No LQM Monitoring

Remote Authentication:
CHAP authentication success with

LCP CONFIGURATION
InitialMRU:                           1500
MagicNumber:                           true
FcsSize:                                16
LQR CONFIGURATION
Period:                                 10 sec
Status:                                 Disabled

XSR1805-ADSL#
```

Getting Help

For additional support related to the XSR, contact Enterasys Networks using one of the following methods:

World Wide Web	http://www.enterasys.com
Phone	(978) 684-1000 1-800-872-8440 (toll-free in U.S. and Canada) For the Enterasys Networks Support toll-free number in your country: http://www.enterasys.com/support/gtac-all.html
mail	mailto:support@enterasys.com To expedite your message, please type [xsr] in the subject line.
FTP	ftp://ftp.enterasys.com Login: anonymous Password: Email address
Acquire the latest image and Release Notes	http://www.enterasys.com/download/
Additional documentation / manuals	http://www.enterasys.com/support/manuals
Forward comments or suggestions	techwriting@enterasys.com To expedite your message, type [techwriting] in the subject line, and include the document Part Number in the Email.