

```
R2#
R2#
R2#show running-config
Building configuration...
```

```
Current configuration : 2381 bytes
```

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R2
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
enable secret 5 $1$NytN$xb8Trn0Re9vS6jG1ygMvO0
!
no aaa new-model
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
ip multicast-routing
ipv6 unicast-routing
ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
```

```
!  
!  
!  
voice-card 0  
!  
!  
!  
!  
archive  
  log config  
  hidekeys  
!  
!  
!  
!  
!  
!  
!  
!  
!  
interface FastEthernet0/0  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
interface FastEthernet0/1  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
interface Serial0/0/0  
  no ip address  
!  
interface Serial0/0/1  
  no ip address  
!  
interface Serial0/1/0  
  no ip address  
  ip nat outside  
  ip virtual-reassembly  
  shutdown  
  clock rate 56000  
!  
interface Serial0/2/0  
  no ip address  
  encapsulation frame-relay  
!  
interface Serial0/2/0.12 point-to-point  
  ip address 10.1.1.2 255.255.255.252  
  ip pim sparse-dense-mode  
  ip ospf hello-interval 1
```

```
snmp trap link-status
ipv6 address 2026::12:2/122
ipv6 enable
ipv6 ospf 6 area 12
frame-relay interface-dlci 201
!
interface Serial0/2/0.23 point-to-point
 ip address 10.1.1.5 255.255.255.252
 ip pim sparse-dense-mode
 snmp trap link-status
 ipv6 address 2026::1:1/122
 ipv6 enable
 ipv6 ospf 6 area 0
 frame-relay interface-dlci 203
!
interface Serial0/3/0
 no ip address
 ip virtual-reassembly
 shutdown
 clock rate 56000
!
router ospf 1
 router-id 2.2.2.2
 log-adjacency-changes
 network 10.1.1.1 0.0.0.0 area 0
 network 10.1.1.5 0.0.0.0 area 0
 network 10.2.2.1 0.0.0.0 area 0
 network 10.0.0.0 0.255.255.255 area 12
!
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
!
ip access-list standard DENY_10
 deny 10.0.0.0 0.255.255.255
 permit any
ip access-list standard DENY_ALL
 deny any
ip access-list standard PERMIT_10
 permit 10.0.0.0 0.255.255.255
ip access-list standard PERMIT_ALL
 permit any
!
ipv6 router ospf 6
 router-id 2.2.2.2
 log-adjacency-changes
!
!
!
!
!
```

```
!  
!  
control-plane  
!  
!  
!  
ccm-manager fax protocol cisco  
!  
mgcp fax t38 ecm  
mgcp behavior g729-variants static-pt  
!  
!  
!  
!  
!  
line con 0  
  exec-timeout 0 0  
  logging synchronous  
line aux 0  
line vty 0 4  
  exec-timeout 0 0  
  password cisco  
  login  
line vty 5  
  exec-timeout 0 0  
  login  
!  
scheduler allocate 20000 1000  
end
```

R2#

```
R2#ping 209.65.200.241
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 209.65.200.241, timeout is 2 seconds:
```

```
.....
```

```
Success rate is 0 percent (0/5)
```

```
R2#
```

```
R2#ping 209.65.200.226
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 209.65.200.226, timeout is 2 seconds:
```

```
.....
```

```
Success rate is 0 percent (0/5)
```

```
R2#
```

```
R2#ping 209.65.200.225
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 209.65.200.225, timeout is 2 seconds:
```

```
.....
```

```
Success rate is 0 percent (0/5)
```

```
R2#
```

```
R2#ping 10.1.1.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/68/76 ms
```

```
R2#
```



```
R2#ping 10.1.1.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.2, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.1.1.5
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.5, timeout is 2 seconds:
```

!!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
ms

R2#

```
R2#ping 10.1.1.6
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.6, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/65/68 ms
```

```
R2#
```

```
R2#ping 10.1.1.9
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.9, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 64/66/68 ms
```

```
R2#
```

```
R2#ping 10.1.1.10
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.10, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/131/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.1.4.10
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.4.10, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/129/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.1.4.9
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.4.9, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/129/132  
ms
```

```
R2#
```



```
R2#ping 10.1.4.6
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.4.6, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/131/132  
ms
```

```
R2#
```

```
R2#ping 10.1.4.5
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.4.5, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.2.1.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.1.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.2.2.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.2.2, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132  
ms
```

```
R2#
```

```
R2#ping 10.2.1.254
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.1.254, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/131/132  
ms
```

```
R2#
```

```
R2#ping 10.2.4.14
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.4.14, timeout is 2 seconds:
```

```
!!!!!
```

Success rate is 100 percent (5/5), round-trip min/avg/max = 128/131/132
ms
R2#

```
R2#ping 10.2.4.13
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.4.13, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```



```
R2#ping 10.2.1.2
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.1.2, timeout is 2 seconds:
```

```
!!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```

```
R2#ping 10.2.2.1
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.2.1, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/129/132  
ms
```

```
R2#
```

```
R2#ping 10.2.1.4
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.2.1.4, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
ms
```

```
R2#
```

```
R2#show ip interface brief
```

| Interface | IP-Address | OK? | Method | Status |
|-----------------|------------|-----|--------|------------------|
| FastEthernet0/0 | unassigned | YES | NVRAM | administratively |
| down down | | | | |
| FastEthernet0/1 | unassigned | YES | NVRAM | administratively |
| down down | | | | |
| Serial0/0/0 | unassigned | YES | NVRAM | down |
| down | | | | |
| Serial0/0/1 | unassigned | YES | NVRAM | down |
| down | | | | |
| Serial0/1/0 | unassigned | YES | NVRAM | administratively |
| down down | | | | |
| Serial0/2/0 | unassigned | YES | NVRAM | up |
| up | | | | |
| Serial0/2/0.12 | 10.1.1.2 | YES | NVRAM | up |
| up | | | | |
| Serial0/2/0.23 | 10.1.1.5 | YES | NVRAM | up |
| up | | | | |
| Serial0/3/0 | unassigned | YES | NVRAM | administratively |
| down down | | | | |
| NVI0 | unassigned | YES | unset | administratively |
| down down | | | | |

```
R2#
```

```
R2#show ip route
```

```
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
```

```
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
```

```
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
```

```
       E1 - OSPF external type 1, E2 - OSPF external type 2
```

```
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS
```

```
level-2
```

```
       ia - IS-IS inter area, * - candidate default, U - per-user static
```

```
route
```

```
       o - ODR, P - periodic downloaded static route
```

```
Gateway of last resort is not set
```

```
10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks
O E2    10.2.4.12/30 [110/20] via 10.1.1.6, 00:21:37, Serial0/2/0.23
O IA    10.1.1.8/30 [110/128] via 10.1.1.6, 00:21:54, Serial0/2/0.23
O E2    10.1.4.8/30 [110/20] via 10.1.1.6, 00:21:37, Serial0/2/0.23
O E2    10.2.1.0/24 [110/20] via 10.1.1.6, 00:21:37, Serial0/2/0.23
O E2    10.2.2.0/24 [110/20] via 10.1.1.6, 00:21:37, Serial0/2/0.23
C       10.1.1.0/30 is directly connected, Serial0/2/0.12
O E2    10.1.4.4/30 [110/20] via 10.1.1.6, 00:21:39, Serial0/2/0.23
C       10.1.1.4/30 is directly connected, Serial0/2/0.23
R2#
```

R2#show processes cpu

CPU utilization for five seconds: 2%/0%; one minute: 2%; five minutes: 2%

| PID | Runtime (ms) | Invoked | uSecs | 5Sec | 1Min | 5Min | TTY | Process |
|------------------|--------------|---------|-------|-------|-------|-------|-----|------------|
| 1 | 12 | 75 | 160 | 0.00% | 0.00% | 0.00% | 0 | Chunk |
| Manager | | | | | | | | |
| 2 | 4 | 337 | 11 | 0.00% | 0.04% | 0.02% | 0 | Load Meter |
| 3 | 1464 | 728 | 2010 | 0.79% | 0.21% | 0.20% | 0 | Exec |
| 4 | 4 | 1 | 4000 | 0.00% | 0.00% | 0.00% | 0 | EDDRI_MAIN |
| 5 | 2232 | 198 | 11272 | 0.00% | 0.15% | 0.12% | 0 | Check |
| heaps | | | | | | | | |
| 6 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | Pool |
| Manager | | | | | | | | |
| 7 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | Timers |
| 8 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | License |
| Client N | | | | | | | | |
| 9 | 52 | 1655 | 31 | 0.07% | 0.07% | 0.07% | 0 | OSPF-1 |
| Hello | | | | | | | | |
| 10 | 0 | 29 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC |
| Dynamic Cach | | | | | | | | |
| 11 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC Zone |
| Manager | | | | | | | | |
| 12 | 0 | 1696 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC |
| Periodic Tim | | | | | | | | |
| 13 | 0 | 1696 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC |
| Deferred Por | | | | | | | | |
| 14 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC Seat |
| Manager | | | | | | | | |
| 15 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC |
| BackPressure | | | | | | | | |
| 16 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | OIR |
| Handler | | | | | | | | |
| 17 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | Crash |
| writer | | | | | | | | |
| 18 | 4 | 58 | 68 | 0.00% | 0.00% | 0.00% | 0 | |
| Environmental mo | | | | | | | | |
| 19 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | ARP Input |
| 20 | 0 | 1773 | 0 | 0.00% | 0.00% | 0.00% | 0 | ARP |
| Background | | | | | | | | |
| 21 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | ATM Idle |
| Timer | | | | | | | | |
| 22 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | AAA high- |
| capacit | | | | | | | | |
| 23 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | |
| AAA_SERVER_DEADT | | | | | | | | |
| 24 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | Policy |
| Manager | | | | | | | | |
| 25 | 0 | 8 | 0 | 0.00% | 0.00% | 0.00% | 0 | DDR Timers |

| | | | | | | | |
|------------------|-----|------|-------|-------|-------|-------|--------------|
| 56 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| sal_dpc_process | | | | | | | |
| 57 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 ARL Table |
| Manage | | | | | | | |
| 58 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 ESWPPM |
| 59 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Eswilp |
| Storm Con | | | | | | | |
| 60 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 ESWILPPM |
| 61 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Eswilp |
| Storm Con | | | | | | | |
| 62 | 0 | 6741 | 0 | 0.00% | 0.01% | 0.00% | 0 Netclock |
| Backgro | | | | | | | |
| 63 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 SM Monitor |
| 64 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Bryce I2C |
| CMD Qu | | | | | | | |
| 65 | 272 | 4 | 68000 | 0.00% | 0.00% | 0.00% | 0 USB |
| Startup | | | | | | | |
| 66 | 0 | 284 | 0 | 0.00% | 0.00% | 0.00% | 0 mxt5100 |
| 67 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 VNM DSPRM |
| MAIN | | | | | | | |
| 68 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 DSPFARM |
| DSP READ | | | | | | | |
| 69 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 FLEX DNLD |
| MAIN | | | | | | | |
| 70 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 HDV |
| background | | | | | | | |
| 71 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 VMI |
| Background | | | | | | | |
| 72 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| RF_INTERDEV_DELA | | | | | | | |
| 73 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| RF_INTERDEV_SCTP | | | | | | | |
| 74 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 chkpt |
| message ha | | | | | | | |
| 75 | 0 | 1688 | 0 | 0.00% | 0.00% | 0.00% | 0 Ether- |
| Switch RBC | | | | | | | |
| 76 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 IGMP |
| Snooping Pr | | | | | | | |
| 77 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 IGMP |
| Snooping Re | | | | | | | |
| 78 | 0 | 58 | 0 | 0.00% | 0.00% | 0.00% | 0 Call |
| Management | | | | | | | |
| 79 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 AAL2CPS |
| TIMER_CU | | | | | | | |
| 80 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 CES Line |
| Conditi | | | | | | | |
| 81 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| CF_INTERDEV_SCTP | | | | | | | |
| 82 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Async |
| write proc | | | | | | | |
| 83 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Async |
| write proc | | | | | | | |
| 84 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Async |
| write proc | | | | | | | |

| | | | | | | | |
|--------------|----|------|------|-------|-------|-------|--------------|
| 85 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Async |
| write proc | | | | | | | |
| 86 | 0 | 29 | 0 | 0.00% | 0.00% | 0.00% | 0 DFS flush |
| period | | | | | | | |
| 87 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Dot1x Mgr |
| Proces | | | | | | | |
| 88 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 MAB |
| Framework | | | | | | | |
| 89 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 EAP |
| Framework | | | | | | | |
| 90 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 DTP |
| Protocol | | | | | | | |
| 91 | 0 | 1688 | 0 | 0.00% | 0.00% | 0.00% | 0 PI MATM |
| Aging Pr | | | | | | | |
| 92 | 0 | 170 | 0 | 0.00% | 0.00% | 0.00% | 0 EtherChnl |
| 93 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Ethernet |
| CFM | | | | | | | |
| 94 | 4 | 1649 | 2 | 0.00% | 0.00% | 0.00% | 0 Ethernet |
| Timer C | | | | | | | |
| 95 | 0 | 1703 | 0 | 0.00% | 0.00% | 0.00% | 0 linktest |
| 96 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Dot11 Mgmt |
| & Ass | | | | | | | |
| 97 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Dot11 aaa |
| proces | | | | | | | |
| 98 | 0 | 29 | 0 | 0.00% | 0.00% | 0.00% | 0 pmkid |
| 99 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Dot11 auth |
| Dot1x | | | | | | | |
| 100 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Dot11 Mac |
| Auth | | | | | | | |
| 101 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 AAA |
| Dictionary R | | | | | | | |
| 102 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 AAA Server |
| 103 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 AAA ACCT |
| Proc | | | | | | | |
| 104 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 ACCT |
| Periodic Pr | | | | | | | |
| 105 | 24 | 251 | 95 | 0.00% | 0.00% | 0.00% | 0 CDP |
| Protocol | | | | | | | |
| 106 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 Ethernet |
| OAM Pro | | | | | | | |
| 107 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 CEF |
| switching ba | | | | | | | |
| 108 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 ADJ |
| resolve proc | | | | | | | |
| 109 | 4 | 1 | 4000 | 0.00% | 0.00% | 0.00% | 0 IP ARP |
| Adjacency | | | | | | | |
| 110 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 IP ARP |
| Retry Age | | | | | | | |
| 111 | 84 | 542 | 154 | 0.00% | 0.00% | 0.00% | 0 IP Input |
| 112 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 ICMP event |
| handl | | | | | | | |
| 113 | 0 | 4 | 0 | 0.00% | 0.00% | 0.00% | 0 TurboACL |
| 114 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 TurboACL |
| chunk | | | | | | | |

| | | | | | | | | |
|--------------|----|------|------|-------|-------|-------|---|------------|
| 145 | 12 | 2071 | 5 | 0.07% | 0.01% | 0.00% | 0 | CEF: IPv4 |
| proces | | | | | | | | |
| 146 | 0 | 17 | 0 | 0.00% | 0.00% | 0.00% | 0 | ADJ |
| background | | | | | | | | |
| 147 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | L2MM |
| 148 | 4 | 1 | 4000 | 0.00% | 0.00% | 0.00% | 0 | MRD |
| 149 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IGMPSN |
| 150 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | L2X Data |
| Daemon | | | | | | | | |
| 151 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | TCP Timer |
| 152 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | TCP |
| Protocols | | | | | | | | |
| 153 | 0 | 7 | 0 | 0.00% | 0.00% | 0.00% | 0 | HTTP CORE |
| 154 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IP |
| Traceroute | | | | | | | | |
| 155 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | RLM groups |
| Proce | | | | | | | | |
| 156 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | PPPoE Flow |
| Contr | | | | | | | | |
| 157 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | SNMP |
| Timers | | | | | | | | |
| 158 | 4 | 2 | 2000 | 0.00% | 0.00% | 0.00% | 0 | SCTP Main |
| Proces | | | | | | | | |
| 159 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IUA Main |
| Process | | | | | | | | |
| 160 | 0 | 1695 | 0 | 0.00% | 0.00% | 0.00% | 0 | RUDPV1 |
| Main Proc | | | | | | | | |
| 161 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | bsm_timers |
| 162 | 0 | 1709 | 0 | 0.00% | 0.00% | 0.00% | 0 | |
| bsm_xmt_proc | | | | | | | | |
| 163 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | CES Client |
| SVC R | | | | | | | | |
| 164 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | COPS |
| 165 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | Dialer |
| Forwarder | | | | | | | | |
| 166 | 4 | 3 | 1333 | 0.00% | 0.00% | 0.00% | 0 | Flow |
| Exporter Ti | | | | | | | | |
| 167 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | ATM OAM |
| Input | | | | | | | | |
| 168 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | ATM OAM |
| TIMER | | | | | | | | |
| 169 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | RARP Input |
| 170 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | LAPB |
| Process | | | | | | | | |
| 171 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPv6 |
| Inspect Tim | | | | | | | | |
| 172 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | LFDp Input |
| Proc | | | | | | | | |
| 173 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | PAD InCall |
| 174 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | X.25 |
| Background | | | | | | | | |
| 175 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | PPP Bind |
| 176 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | PPP SSS |

| | | | | | | | |
|------------------|-----|--------|-------|-------|-------|-------|--------------|
| 177 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 MQC Flow |
| Event B | | | | | | | |
| 178 | 4 | 423334 | 0 | 0.79% | 0.80% | 0.79% | 0 HQF Shaper |
| Backg | | | | | | | |
| 179 | 0 | 16932 | 0 | 0.00% | 0.03% | 0.02% | 0 RBSCP |
| Background | | | | | | | |
| 180 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 VPDN call |
| manage | | | | | | | |
| 181 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 CHKPT |
| EXAMPLE | | | | | | | |
| 182 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 CHKPT |
| DevTest | | | | | | | |
| 183 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 IPS |
| Process | | | | | | | |
| 184 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 IPS Auto |
| Update | | | | | | | |
| 185 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 SDEE |
| Management | | | | | | | |
| 186 | 0 | 3313 | 0 | 0.00% | 0.00% | 0.00% | 0 Inspect |
| process | | | | | | | |
| 187 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| cpf_process_msg_ | | | | | | | |
| 188 | 0 | 3313 | 0 | 0.00% | 0.00% | 0.00% | 0 FW DP |
| Inspect pr | | | | | | | |
| 189 | 0 | 3313 | 0 | 0.00% | 0.00% | 0.00% | 0 CCE DP |
| URLF cach | | | | | | | |
| 190 | 4 | 2 | 2000 | 0.00% | 0.00% | 0.00% | 0 URL filter |
| proc | | | | | | | |
| 191 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 Select |
| Timers | | | | | | | |
| 192 | 28 | 2 | 14000 | 0.00% | 0.00% | 0.00% | 0 HTTP |
| Process | | | | | | | |
| 193 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 CIFS API |
| Process | | | | | | | |
| 194 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 CIFS Proxy |
| Proce | | | | | | | |
| 195 | 8 | 3 | 2666 | 0.00% | 0.00% | 0.00% | 0 Crypto HW |
| Proc | | | | | | | |
| 196 | 0 | 70 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| CRM_CALL_UPDATE_ | | | | | | | |
| 197 | 116 | 2 | 58000 | 0.00% | 0.00% | 0.00% | 0 |
| CCVPM_HDSPRM | | | | | | | |
| 198 | 0 | 4 | 0 | 0.00% | 0.00% | 0.00% | 0 HDA DSPRM |
| MAIN | | | | | | | |
| 199 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 STUN_APP |
| 200 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 STUN_TEST |
| 201 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 |
| cpf_process_tpQ | | | | | | | |
| 202 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 AAA Cached |
| Serve | | | | | | | |
| 203 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 ENABLE AAA |
| 204 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 EM |
| Background Pr | | | | | | | |


```
R2#show interfaces
FastEthernet0/0 is administratively down, line protocol is down
  Hardware is MV96340 Ethernet, address is 0016.9dfa.cab0 (bia
0016.9dfa.cab0)
  MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Auto-duplex, Auto Speed, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes
    Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
```

```
0 watchdog
0 input packets with dribble condition detected
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 unknown protocol drops
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier
0 output buffer failures, 0 output buffers swapped out
FastEthernet0/1 is administratively down, line protocol is down
Hardware is MV96340 Ethernet, address is 0016.9dfa.cab1 (bia
0016.9dfa.cab1)
MTU 1500 bytes, BW 100000 Kbit/sec, DLY 100 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Keepalive set (10 sec)
Auto-duplex, Auto Speed, 100BaseTX/FX
ARP type: ARPA, ARP Timeout 04:00:00
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
  0 watchdog
  0 input packets with dribble condition detected
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 unknown protocol drops
  0 babbles, 0 late collision, 0 deferred
  0 lost carrier, 0 no carrier
  0 output buffer failures, 0 output buffers swapped out
Serial0/0/0 is down, line protocol is down
Hardware is GT96K Serial
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
CRC checking enabled
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
  Conversations 0/0/256 (active/max active/max total)
  Reserved Conversations 0/0 (allocated/max allocated)
  Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
```

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=down DSR=down DTR=up RTS=up CTS=down

Serial0/0/1 is down, line protocol is down

Hardware is GT96K Serial
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
CRC checking enabled
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 4 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=down DSR=down DTR=up RTS=up CTS=down

Serial0/1/0 is administratively down, line protocol is down

Hardware is GT96K Serial
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
CRC checking enabled
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/0/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles

0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 3 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=down DSR=down DTR=down RTS=down CTS=down

Serial0/2/0 is up, line protocol is up

Hardware is GT96K Serial
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation FRAME-RELAY, loopback not set
Keepalive set (10 sec)
CRC checking enabled
LMI enq sent 150, LMI stat recvd 146, LMI upd recvd 0, DTE LMI up
LMI enq recvd 0, LMI stat sent 0, LMI upd sent 0
LMI DLCI 1023 LMI type is CISCO frame relay DTE
FR SVC disabled, LAPF state down
Broadcast queue 0/64, broadcasts sent/dropped 1976/12, interface
broadcasts 1939
Last input 00:00:01, output 00:00:00, output hang never
Last clearing of "show interface" counters 00:28:41
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
Conversations 0/3/256 (active/max active/max total)
Reserved Conversations 0/0 (allocated/max allocated)
Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 1 packets/sec
1141 packets input, 99919 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
2319 packets output, 194679 bytes, 0 underruns
0 output errors, 0 collisions, 11 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
76 carrier transitions
DCD=up DSR=up DTR=up RTS=up CTS=up

Serial0/2/0.12 is up, line protocol is up

Hardware is GT96K Serial
Internet address is 10.1.1.2/30
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation FRAME-RELAY
CRC checking enabled
Last clearing of "show interface" counters never

Serial0/2/0.23 is up, line protocol is up

Hardware is GT96K Serial
Internet address is 10.1.1.5/30
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
reliability 255/255, txload 1/255, rxload 1/255

```
Encapsulation FRAME-RELAY
CRC checking enabled
Last clearing of "show interface" counters never
Serial0/3/0 is administratively down, line protocol is down
Hardware is GT96K Serial
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation HDLC, loopback not set
Keepalive set (10 sec)
CRC checking enabled
Last input 00:28:57, output 00:28:57, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/1000/64/0 (size/max total/threshold/drops)
  Conversations 0/1/256 (active/max active/max total)
  Reserved Conversations 0/0 (allocated/max allocated)
  Available Bandwidth 1158 kilobits/sec
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  1 packets input, 24 bytes, 0 no buffer
  Received 1 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  1 packets output, 24 bytes, 0 underruns
  0 output errors, 0 collisions, 3 interface resets
  0 unknown protocol drops
  0 output buffer failures, 0 output buffers swapped out
  3 carrier transitions
  DCD=down DSR=down DTR=down RTS=down CTS=down
```

```
NV10 is administratively down, line protocol is down
Hardware is NVI
MTU 1514 bytes, BW 56 Kbit/sec, DLY 5000 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation UNKNOWN, loopback not set
Last input never, output never, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  0 packets input, 0 bytes, 0 no buffer
  Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
  0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  0 packets output, 0 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 unknown protocol drops
  0 output buffer failures, 0 output buffers swapped out
```

R2#

```
R2#show interfaces counters errors
```

```
R2#
```

```
R2#show cdp neighbors
```

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge  
S - Switch, H - Host, I - IGMP, r - Repeater
```

| Device ID | Local Intrfce | Holdtme | Capability | Platform | Port |
|-----------|---------------|---------|------------|----------|------|
| R3 | Ser 0/2/0.23 | 166 | R S I | 2811 | Ser |
| 0/2/0.23 | | | | | |

R1
0/2/0.12
R2#

Ser 0/2/0.12

167

R S I

2811

Ser

R2#show cdp neighbors detail

Device ID: R3

Entry address(es):

IP address: 10.1.1.6

IPv6 address: 2026::1:2 (global unicast)

IPv6 address: FE80::216:47FF:FE9A:F6E8 (link-local)

Platform: Cisco 2811, Capabilities: Router Switch IGMP

Interface: Serial0/2/0.23, Port ID (outgoing port): Serial0/2/0.23

Holdtime : 158 sec

Version :

Cisco IOS Software, 2800 Software (C2800NM-ADVIPSERVICESK9-M), Version 12.4(22)T2, RELEASE SOFTWARE (fc4)

Technical Support: <http://www.cisco.com/techsupport>

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Compiled Fri 19-Jun-09 15:34 by prod_rel_team

advertisement version: 2

VTP Management Domain: ''

Device ID: R1

Entry address(es):

IP address: 10.1.1.1

IPv6 address: 2026::12:1 (global unicast)

IPv6 address: FE80::21D:70FF:FEA0:C690 (link-local)

Platform: Cisco 2811, Capabilities: Router Switch IGMP

Interface: Serial0/2/0.12, Port ID (outgoing port): Serial0/2/0.12

Holdtime : 159 sec

Version :

Cisco IOS Software, 2800 Software (C2800NM-ADVIPSERVICESK9-M), Version 12.4(22)T2, RELEASE SOFTWARE (fc4)

Technical Support: <http://www.cisco.com/techsupport>

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advertisement version: 2

VTP Management Domain: ''

R2#

```
R2#show frame-relay map
Serial0/2/0.12 (up): point-to-point dlci, dlci 201(0xC9,0x3090),
broadcast
                    status defined, active
Serial0/2/0.23 (up): point-to-point dlci, dlci 203(0xCB,0x30B0),
broadcast
                    status defined, active
R2#
```

```
R2#show arp
```

```
R2#
```

```
R2#show ip arp
```

```
R2#
```

```
R2#show ip interface
FastEthernet0/0 is administratively down, line protocol is down
  Internet protocol processing disabled
FastEthernet0/1 is administratively down, line protocol is down
  Internet protocol processing disabled
Serial0/0/0 is down, line protocol is down
  Internet protocol processing disabled
Serial0/0/1 is down, line protocol is down
  Internet protocol processing disabled
Serial0/1/0 is administratively down, line protocol is down
```

```
Internet protocol processing disabled
Serial0/2/0 is up, line protocol is up
Internet protocol processing disabled
Serial0/2/0.12 is up, line protocol is up
Internet address is 10.1.1.2/30
Broadcast address is 255.255.255.255
Address determined by non-volatile memory
MTU is 1500 bytes
Helper address is not set
Directed broadcast forwarding is disabled
Multicast reserved groups joined: 224.0.0.1 224.0.0.2 224.0.0.22
224.0.0.13
    224.0.0.5
Outgoing access list is not set
Inbound access list is not set
Proxy ARP is enabled
Local Proxy ARP is disabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachable are always sent
ICMP mask replies are never sent
IP fast switching is enabled
IP fast switching on the same interface is enabled
IP Flow switching is disabled
IP CEF switching is enabled
IP CEF switching turbo vector
IP multicast fast switching is enabled
IP multicast distributed fast switching is disabled
IP route-cache flags are Fast, CEF
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Policy routing is disabled
Network address translation is disabled
BGP Policy Mapping is disabled
Input features: MCI Check
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
Serial0/2/0.23 is up, line protocol is up
Internet address is 10.1.1.5/30
Broadcast address is 255.255.255.255
Address determined by non-volatile memory
MTU is 1500 bytes
Helper address is not set
Directed broadcast forwarding is disabled
Multicast reserved groups joined: 224.0.0.1 224.0.0.2 224.0.0.22
224.0.0.13
    224.0.0.5
Outgoing access list is not set
Inbound access list is not set
```

```
Proxy ARP is enabled
Local Proxy ARP is disabled
Security level is default
Split horizon is enabled
ICMP redirects are always sent
ICMP unreachable are always sent
ICMP mask replies are never sent
IP fast switching is enabled
IP fast switching on the same interface is enabled
IP Flow switching is disabled
IP CEF switching is enabled
IP CEF switching turbo vector
IP multicast fast switching is enabled
IP multicast distributed fast switching is disabled
IP route-cache flags are Fast, CEF
Router Discovery is disabled
IP output packet accounting is disabled
IP access violation accounting is disabled
TCP/IP header compression is disabled
RTP/IP header compression is disabled
Policy routing is disabled
Network address translation is disabled
BGP Policy Mapping is disabled
Input features: MCI Check
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
Serial0/3/0 is administratively down, line protocol is down
  Internet protocol processing disabled
NV10 is administratively down, line protocol is down
  Internet protocol processing disabled
R2#
```



```
R2#show ip cef
```

| Prefix | Next Hop | Interface |
|--------------------|-----------|----------------|
| 0.0.0.0/0 | no route | |
| 0.0.0.0/8 | drop | |
| 0.0.0.0/32 | receive | |
| 10.1.1.0/30 | attached | Serial0/2/0.12 |
| 10.1.1.0/32 | receive | Serial0/2/0.12 |
| 10.1.1.2/32 | receive | Serial0/2/0.12 |
| 10.1.1.3/32 | receive | Serial0/2/0.12 |
| 10.1.1.4/30 | attached | Serial0/2/0.23 |
| 10.1.1.4/32 | receive | Serial0/2/0.23 |
| 10.1.1.5/32 | receive | Serial0/2/0.23 |
| 10.1.1.7/32 | receive | Serial0/2/0.23 |
| 10.1.1.8/30 | 10.1.1.6 | Serial0/2/0.23 |
| 10.1.4.4/30 | 10.1.1.6 | Serial0/2/0.23 |
| 10.1.4.8/30 | 10.1.1.6 | Serial0/2/0.23 |
| 10.2.1.0/24 | 10.1.1.6 | Serial0/2/0.23 |
| 10.2.2.0/24 | 10.1.1.6 | Serial0/2/0.23 |
| 10.2.4.12/30 | 10.1.1.6 | Serial0/2/0.23 |
| 127.0.0.0/8 | drop | |
| 224.0.0.0/4 | multicast | |
| 224.0.0.0/24 | receive | |
| 240.0.0.0/4 | drop | |
| 255.255.255.255/32 | receive | |

```
R2#
```

```
R2#show tcp statistics
Rcvd: 0 Total, 0 no port
      0 checksum error, 0 bad offset, 0 too short
```

0 packets (0 bytes) in sequence
0 dup packets (0 bytes)
0 partially dup packets (0 bytes)
0 out-of-order packets (0 bytes)
0 packets (0 bytes) with data after window
0 packets after close
0 window probe packets, 0 window update packets
0 dup ack packets, 0 ack packets with unsend data
0 ack packets (0 bytes)
Sent: 0 Total, 0 urgent packets
0 control packets (including 0 retransmitted)
0 data packets (0 bytes)
0 data packets (0 bytes) retransmitted
0 data packets (0 bytes) fastretransmitted
0 ack only packets (0 delayed)
0 window probe packets, 0 window update packets
0 Connections initiated, 0 connections accepted, 0 connections
established
0 Connections closed (including 0 dropped, 0 embryonic dropped)
0 Total rxmt timeout, 0 connections dropped in rxmt timeout
0 Keepalive timeout, 0 keepalive probe, 0 Connections dropped in
keepalive
R2#

```
R2#show ip protocols
Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 2.2.2.2
  It is an area border router
  Number of areas in this router is 2. 2 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.1.1.1 0.0.0.0 area 0
    10.1.1.5 0.0.0.0 area 0
    10.2.2.1 0.0.0.0 area 0
    10.0.0.0 0.255.255.255 area 12
  Reference bandwidth unit is 100 mbps
  Routing Information Sources:
    Gateway          Distance      Last Update
    3.3.3.3           110          00:23:51
    10.1.1.1         110          00:24:07
  Distance: (default is 110)
```

```
R2#
```

```
R2#show access-lists
Standard IP access list DENY_10
  10 deny 10.0.0.0, wildcard bits 0.255.255.255
  20 permit any
Standard IP access list DENY_ALL
  10 deny any
Standard IP access list PERMIT_10
  10 permit 10.0.0.0, wildcard bits 0.255.255.255
Standard IP access list PERMIT_ALL
  10 permit any
R2#
```

```
R2#show ip ospf neighbor
```

| Neighbor ID | Pri | State | Dead Time | Address |
|----------------|-----|---------|-----------|----------|
| Interface | | | | |
| 3.3.3.3 | 0 | FULL/ - | 00:00:35 | 10.1.1.6 |
| Serial0/2/0.23 | | | | |

```
R2#
```

```
R2#show ip ospf interface
Serial0/2/0.23 is up, line protocol is up
  Internet Address 10.1.1.5/30, Area 0
    Process ID 1, Router ID 2.2.2.2, Network Type POINT_TO_POINT, Cost: 64
```

```
Transmit Delay is 1 sec, State POINT_TO_POINT
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  oob-resync timeout 40
  Hello due in 00:00:05
Supports Link-local Signaling (LLS)
Cisco NSF helper support enabled
IETF NSF helper support enabled
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 3.3.3.3
Suppress hello for 0 neighbor(s)
Serial0/2/0.12 is up, line protocol is up
Internet Address 10.1.1.2/30, Area 12
Process ID 1, Router ID 2.2.2.2, Network Type POINT_TO_POINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_POINT
Timer intervals configured, Hello 1, Dead 4, Wait 4, Retransmit 5
  oob-resync timeout 40
  Hello due in 00:00:00
Supports Link-local Signaling (LLS)
Cisco NSF helper support enabled
IETF NSF helper support enabled
Index 1/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 3, maximum is 3
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 0, Adjacent neighbor count is 0
Suppress hello for 0 neighbor(s)
R2#
```


R2#show ip ospf database

OSPF Router with ID (2.2.2.2) (Process ID 1)

Router Link States (Area 0)

| Link ID count | ADV Router | Age | Seq# | Checksum | Link |
|------------------|------------|------|------------|----------|------|
| 2.2.2.2 | 2.2.2.2 | 1489 | 0x80000006 | 0x00CC97 | 2 |
| 3.3.3.3 | 3.3.3.3 | 1490 | 0x80000006 | 0x0072EA | 2 |

Summary Net Link States (Area 0)

| Link ID | ADV Router | Age | Seq# | Checksum |
|----------|------------|------|------------|----------|
| 10.1.1.0 | 2.2.2.2 | 1490 | 0x80000001 | 0x0024C7 |
| 10.1.1.8 | 3.3.3.3 | 1491 | 0x80000001 | 0x00B52A |

Router Link States (Area 12)

| Link ID count | ADV Router | Age | Seq# | Checksum | Link |
|------------------|------------|------|------------|----------|------|
| 2.2.2.2 | 2.2.2.2 | 1197 | 0x80000007 | 0x00F8D9 | 1 |
| 10.1.1.1 | 10.1.1.1 | 1490 | 0x80000005 | 0x00A4C1 | 2 |

Summary Net Link States (Area 12)

| Link ID | ADV Router | Age | Seq# | Checksum |
|----------|------------|------|------------|----------|
| 10.1.1.4 | 2.2.2.2 | 1490 | 0x80000001 | 0x00FBEB |
| 10.1.1.8 | 2.2.2.2 | 1480 | 0x80000001 | 0x00564D |

Summary ASB Link States (Area 12)

| Link ID | ADV Router | Age | Seq# | Checksum |
|---------|------------|------|------------|----------|
| 3.3.3.3 | 2.2.2.2 | 1481 | 0x80000001 | 0x0037B0 |

Type-5 AS External Link States

| Link ID | ADV Router | Age | Seq# | Checksum | Tag |
|-----------|------------|------|------------|----------|-----|
| 0.0.0.0 | 10.1.1.1 | 1801 | 0x80000001 | 0x00CBD9 | 1 |
| 10.1.4.4 | 3.3.3.3 | 1466 | 0x80000001 | 0x00ACC1 | 0 |
| 10.1.4.8 | 3.3.3.3 | 1466 | 0x80000001 | 0x0084E5 | 0 |
| 10.2.1.0 | 3.3.3.3 | 1466 | 0x80000001 | 0x00FB75 | 0 |
| 10.2.2.0 | 3.3.3.3 | 1466 | 0x80000001 | 0x00F07F | 0 |
| 10.2.4.12 | 3.3.3.3 | 1466 | 0x80000001 | 0x005015 | 0 |

R2#

```
R2#show ip route ospf
    10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks
O E2   10.2.4.12/30 [110/20] via 10.1.1.6, 00:24:33, Serial0/2/0.23
O IA   10.1.1.8/30 [110/128] via 10.1.1.6, 00:24:50, Serial0/2/0.23
O E2   10.1.4.8/30 [110/20] via 10.1.1.6, 00:24:33, Serial0/2/0.23
O E2   10.2.1.0/24 [110/20] via 10.1.1.6, 00:24:33, Serial0/2/0.23
O E2   10.2.2.0/24 [110/20] via 10.1.1.6, 00:24:33, Serial0/2/0.23
O E2   10.1.4.4/30 [110/20] via 10.1.1.6, 00:24:33, Serial0/2/0.23
R2#
```

