

```
R1#
R1#show running-config
Building configuration...
```

```
Current configuration : 2615 bytes
!
! No configuration change since last restart
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
no logging console
enable secret 5 $1$aKZT$RO6SAsRilNacGlsvRsdUg0
!
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  
  shutdown  
  no fair-queue  
  clock rate 2000000  
!  
interface Serial0/0/1  
  no ip address  
  shutdown  
!  
interface Serial0/1/0  
  no ip address  
  shutdown  
  clock rate 2000000  
!  
interface Serial0/2/0  
  no ip address  
  encapsulation frame-relay  
!
```

```
interface Serial0/2/0.12 point-to-point
 ip address 10.1.1.1 255.255.255.252
 ip pim sparse-dense-mode
 ip nat inside
 ip virtual-reassembly
 snmp trap link-status
 ipv6 address 2026::12:1/122
 ipv6 enable
 ipv6 ospf 6 area 12
 frame-relay interface-dlci 102
!
interface Serial0/3/0
 ip address 209.65.200.225 255.255.255.252
 ip nat outside
 ip virtual-reassembly
 clock rate 56000
!
router ospf 1
 router-id 10.1.1.1
 log-adjacency-changes
 redistribute static subnets
 redistribute bgp 65001 subnets
 network 10.1.1.1 0.0.0.0 area 12
 default-information originate
!
router bgp 65001
 no synchronization
 bgp router-id 1.1.1.1
 bgp log-neighbor-changes
 neighbor 209.65.200.226 remote-as 65001
 no auto-summary
!
ip forward-protocol nd
ip http server
no ip http secure-server
!
!
ip nat inside source list 10 interface Serial0/3/0 overload
!
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
!
access-list 10 permit 10.0.0.0 0.255.255.255
ipv6 router ospf 6
 router-id 1.1.1.1
 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  
  password cisco  
  login  
!  
scheduler allocate 20000 1000  
ntp master 5  
ntp peer 10.1.1.2  
ntp peer 10.1.1.6  
ntp peer 10.1.4.6  
ntp peer 10.1.1.10  
ntp peer 10.1.4.10  
ntp peer 10.2.4.13  
ntp peer 10.2.4.14  
end
```

R1#

```
R1#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)
```

```
R1#
```

```
R1#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 100 percent (5/5), round-trip min/avg/max = 32/32/36 ms
```

```
R1#
```

```
R1#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 100 percent (5/5), round-trip min/avg/max = 64/64/68 ms
```

```
R1#
```

```
R1#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 = 128/130/132  
ms
```

```
R1#
```



```
R1#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 = 64/66/68 ms
```

```
R1#
```

```
R1#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 = 64/65/68 ms
```

```
R1#
```

```
R1#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 = 128/132/140  
ms
```

```
R1#
```

```
R1#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 = 128/132/136  
ms
```

```
R1#
```

```
R1#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 = 192/196/204  
ms
```

```
R1#
```

```
R1#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 = 192/197/208  
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/194/196  
ms
```

```
R1#
```



```
R1#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 = 192/196/200
```

```
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/195/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/196/204  
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```



```
R1#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 = 192/194/196
```

```
ms
```

```
R1#
```

R1#show ip interface brief

| Interface | IP-Address | OK? | Method | Status |
|------------------------------|----------------|-----|--------|------------------|
| FastEthernet0/0 down down | unassigned | YES | NVRAM | administratively |
| FastEthernet0/1 down down | unassigned | YES | NVRAM | administratively |
| Serial0/0/0 down down | unassigned | YES | NVRAM | administratively |
| Serial0/0/1 down down | unassigned | YES | NVRAM | administratively |
| Serial0/1/0 down down | unassigned | YES | NVRAM | administratively |
| Serial0/2/0 up | unassigned | YES | NVRAM | up |
| Serial0/2/0.12 up | 10.1.1.1 | YES | NVRAM | up |
| Serial0/3/0 up | 209.65.200.225 | YES | NVRAM | up |
| NV10 down down | unassigned | YES | unset | administratively |

R1#

R1#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

209.65.200.0/30 is subnetted, 1 subnets
C 209.65.200.224 is directly connected, Serial0/3/0
10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks
O E2 10.2.4.12/30 [110/20] via 10.1.1.2, 00:23:40, Serial0/2/0.12
O IA 10.1.1.8/30 [110/192] via 10.1.1.2, 00:23:56, Serial0/2/0.12
O E2 10.1.4.8/30 [110/20] via 10.1.1.2, 00:23:40, Serial0/2/0.12
O E2 10.2.1.0/24 [110/20] via 10.1.1.2, 00:23:40, Serial0/2/0.12
O E2 10.2.2.0/24 [110/20] via 10.1.1.2, 00:23:40, Serial0/2/0.12
C 10.1.1.0/30 is directly connected, Serial0/2/0.12
O E2 10.1.4.4/30 [110/20] via 10.1.1.2, 00:23:41, Serial0/2/0.12
O IA 10.1.1.4/30 [110/128] via 10.1.1.2, 00:23:57, Serial0/2/0.12
R1#

R1#show processes cpu

CPU utilization for five seconds: 4%/0%; one minute: 3%; five minutes: 2%

| PID | Runtime (ms) | Invoked | uSecs | 5Sec | 1Min | 5Min | TTY | Process |
|--------------|--------------|---------|-------|-------|-------|-------|-----|------------|
| 1 | 24 | 79 | 303 | 0.00% | 0.00% | 0.00% | 0 | Chunk |
| Manager | | | | | | | | |
| 2 | 8 | 328 | 24 | 0.00% | 0.04% | 0.03% | 0 | Load Meter |
| 3 | 1256 | 652 | 1926 | 0.79% | 0.22% | 0.20% | 0 | Exec |
| 4 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | EDDRI_MAIN |
| 5 | 2228 | 194 | 11484 | 0.79% | 0.17% | 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 | 0 | 1595 | 0 | 0.07% | 0.04% | 0.02% | 0 | BGP |
| Scheduler | | | | | | | | |
| 10 | 0 | 28 | 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 | 1651 | 0 | 0.00% | 0.00% | 0.00% | 0 | IPC |
| Periodic Tim | | | | | | | | |
| 13 | 0 | 1651 | 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 | 0 | 56 | 0 | 0.00% | 0.00% | 0.00% | 0 | |
| Environmental mo | | | | | | | | |
| 19 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | ARP Input |
| 20 | 0 | 1727 | 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 | 6 | 0 | 0.00% | 0.00% | 0.00% | 0 | DDR Timers |
| 26 | 4 | 2 | 2000 | 0.00% | 0.00% | 0.00% | 0 | Entity MIB |
| API | | | | | | | | |
| 27 | 416 | 3847 | 108 | 0.07% | 0.05% | 0.05% | 0 | EEM ED |
| Syslog | | | | | | | | |
| 28 | 0 | 497 | 0 | 0.00% | 0.00% | 0.00% | 0 | HC Counter |
| Timer | | | | | | | | |
| 29 | 0 | 3 | 0 | 0.00% | 0.00% | 0.00% | 0 | Serial |
| Backgroun | | | | | | | | |
| 30 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | RO Notify |
| Timers | | | | | | | | |
| 31 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | RMI RM |
| Notify Wa | | | | | | | | |
| 32 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | SMART |
| 33 | 0 | 1638 | 0 | 0.00% | 0.00% | 0.00% | 0 | GraphIt |
| 34 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | Dialer |
| event | | | | | | | | |
| 35 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | SERIAL |
| A'detect | | | | | | | | |
| 36 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | XML Proxy |
| Client | | | | | | | | |
| 37 | 0 | 1 | 0 | 0.00% | 0.00% | 0.00% | 0 | Critical |
| Bkgnd | | | | | | | | |
| 38 | 32 | 694 | 46 | 0.00% | 0.00% | 0.00% | 0 | Net |
| Background | | | | | | | | |
| 39 | 0 | 2 | 0 | 0.00% | 0.00% | 0.00% | 0 | IDB Work |
| 40 | 140 | 2098 | 66 | 0.00% | 0.01% | 0.00% | 0 | Logger |


```
R1#show interfaces
FastEthernet0/0 is administratively down, line protocol is down
  Hardware is MV96340 Ethernet, address is 001d.70a0.c690 (bia
001d.70a0.c690)
  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 001d.70a0.c691 (bia
001d.70a0.c691)
  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 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: 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, 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

Serial0/0/1 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

Serial0/1/0 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 00:28:09, output 00:28:09, 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
5 packets input, 1026 bytes, 0 no buffer
Received 5 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
3 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
DCD=down DSR=down DTR=up 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 159, LMI stat recvd 158, 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 433/0, interface
broadcasts 414

Last input 00:00:02, output 00:00:01, output hang never
Last clearing of "show interface" counters 00:28:08
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
 859 packets input, 69919 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
 976 packets output, 77754 bytes, 0 underruns
 0 output errors, 0 collisions, 1 interface resets
 0 unknown protocol drops
 0 output buffer failures, 0 output buffers swapped out
 51 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 10.1.1.1/30
 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 up, line protocol is up
 Hardware is GT96K Serial
 Internet address is 209.65.200.225/30
 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 00:00:00, output 00:00:00, 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 1000 bits/sec, 2 packets/sec
5 minute output rate 1000 bits/sec, 2 packets/sec
 4140 packets input, 234449 bytes, 0 no buffer
 Received 200 broadcasts, 0 runts, 0 giants, 0 throttles
 0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
 4155 packets output, 227912 bytes, 0 underruns
 0 output errors, 0 collisions, 5 interface resets
 3 unknown protocol drops
 0 output buffer failures, 0 output buffers swapped out
 5 carrier transitions

DCD=up DSR=up DTR=up RTS=up CTS=up

NVIO 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

R1#

```
R1#show interfaces counters errors
```

```
R1#
```

```
R1#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 |
|-----------|---------------|---------|------------|----------|------|
| R2 | Ser 0/2/0.12 | 164 | R S I | 2811 | Ser |
| 0/2/0.12 | | | | | |
| R5 | Ser 0/3/0 | 164 | R S I | 2811 | Ser |
| 0/3/0 | | | | | |

```
R1#
```

```
R1#show cdp neighbors detail
```

```
-----
```

```
Device ID: R2
```

```
Entry address(es):
```

```
  IP address: 10.1.1.2
```

```
  IPv6 address: 2026::12:2 (global unicast)
```

```
  IPv6 address: FE80::216:9DFF:FEFA:CAB0 (link-local)
```

```
Platform: Cisco 2811, Capabilities: Router Switch IGMP
```

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

```
Holdtime : 157 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
```

```
Copyright (c) 1986-2009 by Cisco Systems, Inc.
```

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

```
advertisement version: 2
```

```
VTP Management Domain: ''
```

```
-----
```

```
Device ID: R5
```

```
Entry address(es):
```

```
  IP address: 209.65.200.226
```

```
Platform: Cisco 2811, Capabilities: Router Switch IGMP
```

```
Interface: Serial0/3/0, Port ID (outgoing port): Serial0/3/0
```

```
Holdtime : 157 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
```

```
Copyright (c) 1986-2009 by Cisco Systems, Inc.
```

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

```
advertisement version: 2
```

```
VTP Management Domain: ''
```

```
R1#
```

```
R1#show frame-relay map
Serial0/2/0.12 (up): point-to-point dlci, dlci 102(0x66,0x1860),
broadcast
                status defined, active
R1#
```



```
R1#show arp
```

```
R1#
```

```
R1#show ip arp
```

```
R1#
```

```
R1#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 administratively down, line protocol is down
  Internet protocol processing disabled
Serial0/0/1 is administratively 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 10.1.1.1/30
  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 enabled, interface in domain inside
BGP Policy Mapping is disabled
Input features: Stateful Inspection, Virtual Fragment Reassembly,
Virtual Fragment Reassembly After IPsec Decryption, MCI Check
Output features: NAT Inside, Stateful Inspection
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
Serial0/3/0 is up, line protocol is up
Internet address is 209.65.200.225/30
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
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 enabled, interface in domain outside

```
BGP Policy Mapping is disabled
  Input features: Stateful Inspection, Virtual Fragment Reassembly,
Virtual Fragment Reassembly After IPsec Decryption, NAT Outside, MCI
Check
  Output features: CCE Output Classification, Post-routing NAT Outside,
Stateful Inspection
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
NVIO is administratively down, line protocol is down
  Internet protocol processing disabled
R1#
```

```
R1#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 |
| 10.1.1.1/32 | receive | Serial0/2/0.12 |
| 10.1.1.3/32 | receive | Serial0/2/0.12 |
| 10.1.1.4/30 | 10.1.1.2 | Serial0/2/0.12 |
| 10.1.1.8/30 | 10.1.1.2 | Serial0/2/0.12 |
| 10.1.4.4/30 | 10.1.1.2 | Serial0/2/0.12 |
| 10.1.4.8/30 | 10.1.1.2 | Serial0/2/0.12 |
| 10.2.1.0/24 | 10.1.1.2 | Serial0/2/0.12 |
| 10.2.2.0/24 | 10.1.1.2 | Serial0/2/0.12 |
| 10.2.4.12/30 | 10.1.1.2 | Serial0/2/0.12 |
| 127.0.0.0/8 | drop | |
| 209.65.200.224/30 | attached | Serial0/3/0 |
| 209.65.200.224/32 | receive | Serial0/3/0 |
| 209.65.200.225/32 | receive | Serial0/3/0 |
| 209.65.200.227/32 | receive | Serial0/3/0 |
| 224.0.0.0/4 | multicast | |
| 224.0.0.0/24 | receive | |
| 240.0.0.0/4 | drop | |
| 255.255.255.255/32 | receive | |

```
R1#
```

```
R1#show tcp statistics
Rcvd: 4095 Total, 0 no port
      0 checksum error, 0 bad offset, 0 too short
      1237 packets (44797 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
      2875 ack packets (39285 bytes)
Sent: 4112 Total, 0 urgent packets
      1638 control packets (including 0 retransmitted)
      1237 data packets (37647 bytes)
      0 data packets (0 bytes) retransmitted
      0 data packets (0 bytes) fastretransmitted
      1237 ack only packets (0 delayed)
      0 window probe packets, 0 window update packets
418 Connections initiated, 401 connections accepted, 819 connections
established
819 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
R1#
```

```
R1#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 10.1.1.1
  It is an autonomous system boundary router
  Redistributing External Routes from,
    static, includes subnets in redistribution
    bgp 65001, includes subnets in redistribution
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    10.1.1.1 0.0.0.0 area 12
Reference bandwidth unit is 100 mbps
Routing Information Sources:
  Gateway         Distance        Last Update
  3.3.3.3         110             00:25:53
```



```
2.2.2.2          110          00:26:09
Distance: (default is 110)
```

```
Routing Protocol is "bgp 65001"
```

```
Outgoing update filter list for all interfaces is not set
```

```
Incoming update filter list for all interfaces is not set
```

```
IGP synchronization is disabled
```

```
Automatic route summarization is disabled
```

```
Neighbor(s):
```

```
Address          FiltIn FiltOut DistIn DistOut Weight RouteMap
209.65.200.226
```

```
Maximum path: 1
```

```
Routing Information Sources:
```

```
Gateway          Distance      Last Update
Distance: external 20 internal 200 local 200
```

```
R1#
```

```
R1#show access-lists
Standard IP access list 10
  10 permit 10.0.0.0, wildcard bits 0.255.255.255
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
R1#
```

```
R1#show ip ospf neighbor
```

| Neighbor ID | Pri | State | Dead Time | Address |
|----------------|-----|---------|-----------|----------|
| Interface | | | | |
| 2.2.2.2 | 0 | FULL/ - | 00:00:36 | 10.1.1.2 |
| Serial0/2/0.12 | | | | |

```
R1#
```

```
R1#show ip ospf interface
Serial0/2/0.12 is up, line protocol is up
  Internet Address 10.1.1.1/30, Area 12
  Process ID 1, Router ID 10.1.1.1, 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 00:00:03
  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 2.2.2.2
  Suppress hello for 0 neighbor(s)
R1#
```

R1#show ip ospf database

OSPF Router with ID (10.1.1.1) (Process ID 1)

Router Link States (Area 12)

| Link ID | ADV Router | Age | Seq# | Checksum | Link |
|----------|------------|------|------------|----------|------|
| count | | | | | |
| 2.2.2.2 | 2.2.2.2 | 1614 | 0x8000000A | 0x003D29 | 2 |
| 10.1.1.1 | 10.1.1.1 | 1613 | 0x80000003 | 0x00A8BF | 2 |

Summary Net Link States (Area 12)

| Link ID | ADV Router | Age | Seq# | Checksum |
|----------|------------|------|------------|----------|
| 10.1.1.4 | 2.2.2.2 | 1614 | 0x80000001 | 0x00FBEB |
| 10.1.1.8 | 2.2.2.2 | 1604 | 0x80000001 | 0x00564D |

Summary ASB Link States (Area 12)

| Link ID | ADV Router | Age | Seq# | Checksum |
|---------|------------|------|------------|----------|
| 3.3.3.3 | 2.2.2.2 | 1604 | 0x80000001 | 0x0037B0 |

Type-5 AS External Link States

| Link ID | ADV Router | Age | Seq# | Checksum | Tag |
|-----------|------------|------|------------|----------|-----|
| 10.1.4.4 | 3.3.3.3 | 1589 | 0x80000001 | 0x00ACC1 | 0 |
| 10.1.4.8 | 3.3.3.3 | 1589 | 0x80000001 | 0x0084E5 | 0 |
| 10.2.1.0 | 3.3.3.3 | 1589 | 0x80000001 | 0x00FB75 | 0 |
| 10.2.2.0 | 3.3.3.3 | 1590 | 0x80000001 | 0x00F07F | 0 |
| 10.2.4.12 | 3.3.3.3 | 1590 | 0x80000001 | 0x005015 | 0 |

R1#

```
R1#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 10.1.1.2, 00:26:36, Serial0/2/0.12
O IA   10.1.1.8/30 [110/192] via 10.1.1.2, 00:26:51, Serial0/2/0.12
O E2   10.1.4.8/30 [110/20] via 10.1.1.2, 00:26:36, Serial0/2/0.12
O E2   10.2.1.0/24 [110/20] via 10.1.1.2, 00:26:36, Serial0/2/0.12
O E2   10.2.2.0/24 [110/20] via 10.1.1.2, 00:26:36, Serial0/2/0.12
O E2   10.1.4.4/30 [110/20] via 10.1.1.2, 00:26:36, Serial0/2/0.12
O IA   10.1.1.4/30 [110/128] via 10.1.1.2, 00:26:51, Serial0/2/0.12
R1#
```

```
R1#show ip bgp neighbors
BGP neighbor is 209.65.200.226, remote AS 65001, internal link
  BGP version 4, remote router ID 0.0.0.0
  BGP state = Idle
  Last read 00:00:02, last write 00:00:02, hold time is 180, keepalive
interval is 60 seconds
  Message statistics:
    InQ depth is 0
    OutQ depth is 0
```

Sent

Rcvd

| | | |
|----------------|------|-----|
| Opens: | 847 | 847 |
| Notifications: | 847 | 0 |
| Updates: | 0 | 0 |
| Keepalives: | 0 | 0 |
| Route Refresh: | 0 | 0 |
| Total: | 1276 | 847 |

Default minimum time between advertisement runs is 0 seconds

For address family: IPv4 Unicast

BGP table version 1, neighbor version 0/0

Output queue size : 0

Index 1, Offset 0, Mask 0x2

1 update-group member

| | Sent | Rcvd |
|--------------------|------|------|
| Prefix activity: | ---- | ---- |
| Prefixes Current: | 0 | 0 |
| Prefixes Total: | 0 | 0 |
| Implicit Withdraw: | 0 | 0 |
| Explicit Withdraw: | 0 | 0 |
| Used as bestpath: | n/a | 0 |
| Used as multipath: | n/a | 0 |

| | Outbound | Inbound |
|-------------------------------|----------|---------|
| Local Policy Denied Prefixes: | ----- | ----- |
| Total: | 0 | 0 |

Number of NLRIs in the update sent: max 0, min 0

Address tracking is enabled, the RIB does have a route to 209.65.200.226

Connections established 0; dropped 0

Last reset never

Transport(tcp) path-mtu-discovery is enabled

No active TCP connection

R1#

R1#show ip bgp summary

BGP router identifier 1.1.1.1, local AS number 65001

BGP table version is 1, main routing table version 1

| Neighbor | V | AS | MsgRcvd | MsgSent | TblVer | InQ | OutQ | Up/Down | |
|----------------|---|-------|---------|---------|--------|-----|------|---------|------|
| State/PfxRcd | | | | | | | | | |
| 209.65.200.226 | 4 | 65001 | 853 | 1285 | 0 | 0 | 0 | never | Idle |

R1#

```
R1#show ip bgp
```

```
R1#
```

```
R1#show ip route bgp
```

```
R1#
```

```
R1#show ip nat translations
```

```
R1#
```

```
R1#show ip nat statistics
Total active translations: 0 (0 static, 0 dynamic; 0 extended)
Peak translations: 0, occurred 00:31:38 ago
Outside interfaces:
  Serial0/3/0
Inside interfaces:
  Serial0/2/0.12
Hits: 0 Misses: 0
CEF Translated packets: 0, CEF Punted packets: 0
Expired translations: 0
Dynamic mappings:
-- Inside Source
  [Id: 1] access-list 10 interface Serial0/3/0 refcount 0
Appl doors: 0
Normal doors: 0
Queued Packets: 0
R1#
```

