

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

```
Current configuration : 2440 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 R2
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
enable secret 5 $1$NytN$xb8Trn0Re9vS6jGlygMv00
!
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
```

```
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  
ntp server 10.1.1.1  
ntp peer 10.1.1.1  
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 100 percent (5/5), round-trip min/avg/max = 96/98/100 ms
```

```
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 100 percent (5/5), round-trip min/avg/max = 96/97/100 ms
```

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

```
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 = 64/66/68 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 = 64/66/68 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 = 64/65/68 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 = 128/129/132  
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 = 128/130/132  
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 = 128/143/196
```

```
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 = 128/129/132  
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 0 percent (0/5)
```

```
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 = 128/131/136  
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 0 percent (0/5)
```

```
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 0 percent (0/5)
```

```
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 = 128/130/132
```

```
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 0 percent (0/5)
```

```
R2#
```



R2#show ip interface brief

Interface Protocol	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	unassigned	YES	NVRAM	down
Serial0/0/1 down	unassigned	YES	NVRAM	down
Serial0/1/0 down down	unassigned	YES	NVRAM	administratively
Serial0/2/0 up	unassigned	YES	NVRAM	up
Serial0/2/0.12 up	10.1.1.2	YES	NVRAM	up
Serial0/2/0.23 up	10.1.1.5	YES	NVRAM	up
Serial0/3/0 down down	unassigned	YES	NVRAM	administratively
NVI0 down down	unassigned	YES	unset	administratively

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

209.65.200.0/24 is variably subnetted, 2 subnets, 2 masks  
O E2 209.65.200.240/29 [110/1] via 10.1.1.1, 01:20:36, Serial0/2/0.12  
O E2 209.65.200.224/30 [110/20] via 10.1.1.1, 01:20:54, Serial0/2/0.12  
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, 01:21:09, Serial0/2/0.23  
O IA 10.1.1.8/30 [110/128] via 10.1.1.6, 01:21:09, Serial0/2/0.23  
O E2 10.1.4.8/30 [110/20] via 10.1.1.6, 01:21:09, Serial0/2/0.23  
O E2 10.2.1.0/24 [110/20] via 10.1.1.6, 01:21:10, Serial0/2/0.23  
O E2 10.2.2.0/24 [110/20] via 10.1.1.6, 01:21:10, 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, 01:21:10, 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: 1%/0%; one minute: 2%; five minutes: 2%

PID	Runtime (ms)	Invoked	uSecs	5Sec	1Min	5Min	TTY	Process
1	16	75	213	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	8	989	8	0.07%	0.04%	0.04%	0	Load Meter
3	1244	623	1996	0.00%	0.21%	0.21%	0	Exec
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	6620	581	11394	0.00%	0.12%	0.11%	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	156	2144	72	0.00%	0.01%	0.00%	0	OSPF-1
Hello								
10	0	83	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								





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	4944	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	166	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	83	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	4944	0	0.00%	0.00%	0.00%	0 PI MATM
Aging Pr							
92	0	496	0	0.00%	0.00%	0.00%	0 EtherChnl
93	0	2	0	0.00%	0.00%	0.00%	0 Ethernet
CFM							
94	0	4828	0	0.00%	0.00%	0.00%	0 Ethernet
Timer C							
95	0	4959	0	0.00%	0.00%	0.00%	0 linktest
96	0	2	0	0.00%	0.00%	0.00%	0 Dot11 Mgmt
& Ass							
97	4	2	2000	0.00%	0.00%	0.00%	0 Dot11 aaa
proces							
98	0	83	0	0.00%	0.00%	0.00%	0 pmkid
99	0	2	0	0.00%	0.00%	0.00%	0 Dot11 auth
Dot1x							















282	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED
Ipsla								
283	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
None								
284	0	2	0	0.00%	0.00%	0.00%	0	EEM ED Nf
285	0	3	0	0.00%	0.00%	0.00%	0	EEM ED OIR
286	0	3	0	0.00%	0.00%	0.00%	0	EEM ED RF
287	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
SNMP								
288	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
SNMP Noti								
289	0	130	0	0.00%	0.00%	0.00%	0	EEM ED
Timer								
290	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED
Test								
291	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
Config								
292	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED Env
293	4	9	444	0.00%	0.00%	0.00%	0	Syslog
294	0	1	0	0.00%	0.00%	0.00%	0	VPDN Test
295	0	3	0	0.00%	0.00%	0.00%	0	EEM ED RPC
296	0	2	0	0.00%	0.00%	0.00%	0	Key Proc
297	0	1	0	0.00%	0.00%	0.00%	0	tHUB
299	4	20	200	0.00%	0.00%	0.00%	0	IPv6 RIB
Event H								
300	8	2487	3	0.00%	0.00%	0.00%	0	CEF: IPv6
proces								
301	20	9693	2	0.00%	0.00%	0.00%	0	IP NAT
Ager								
302	0	1	0	0.00%	0.00%	0.00%	0	IP NAT
WLAN								
303	0	1	0	0.00%	0.00%	0.00%	0	IP VFR
proc								
304	180	993	181	0.07%	0.00%	0.00%	0	FR LMI
305	16	88	181	0.00%	0.00%	0.00%	0	FR PVC
event man								
306	8	49612	0	0.00%	0.03%	0.01%	0	FR
Broadcast Out								
307	0	84	0	0.00%	0.00%	0.00%	0	FR ARP
308	4	83	48	0.00%	0.00%	0.00%	0	FR
FRAGMENTATION								
309	4	249	16	0.00%	0.00%	0.00%	0	FR TUNNEL
310	0	1	0	0.00%	0.00%	0.00%	0	FRF9
manager								
311	0	1	0	0.00%	0.00%	0.00%	0	FRF9 timed
event								
312	0	498	0	0.00%	0.00%	0.00%	0	compute
load per								
313	4	4969	0	0.07%	0.00%	0.00%	0	IGMP Input
314	4	49618	0	0.07%	0.03%	0.02%	0	Mwheel
Process								
315	64	99565	0	0.07%	0.14%	0.15%	0	PIM
Process								
316	12	178	67	0.00%	0.00%	0.00%	0	IPv6 IDB

317	124	1170	105	0.00%	0.00%	0.00%	0 IPv6 Input
318	12	8	1500	0.00%	0.00%	0.00%	0 IPv6 ND
319	0	1	0	0.00%	0.00%	0.00%	0 IPv6
Address							
320	12	19867	0	0.07%	0.02%	0.02%	0 MLD
321	48	4952	9	0.00%	0.00%	0.00%	0 OSPFv3-6
Router							
323	48	5111	9	0.00%	0.01%	0.00%	0 NTP
325	0	1	0	0.00%	0.00%	0.00%	0 LICENSE
AGENT							
326	68	5103	13	0.00%	0.00%	0.00%	0 OSPF-1
Router							
R2#							

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 497, LMI stat recvd 497, 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 2763/0, interface  
broadcasts 2598  
Last input 00:00:01, output 00:00:00, output hang never  
Last clearing of "show interface" counters 01:22:57  
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  
4520 packets input, 393688 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  
4622 packets output, 403551 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=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 01:23:13, output 01:23:12, 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 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	150	R S I	2811	Ser
R1	Ser 0/2/0.12	155	R S I	2811	Ser

```
R2#
```

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 : 142 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: 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 : 147 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: ''

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 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
NVI0 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	
209.65.200.224/30	10.1.1.1	Serial0/2/0.12
209.65.200.240/29	10.1.1.1	Serial0/2/0.12
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          01:25:20
  10.1.1.1        110          01:24:46
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/ -	00:00:34	10.1.1.6
Serial0/2/0.23				
10.1.1.1	0	FULL/ -	00:00:35	10.1.1.1
Serial0/2/0.12				

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 00:00:08
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 2
Last flood scan time is 0 msec, maximum is 4 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 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 1/2, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 3, maximum is 4
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 10.1.1.1
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	1124	0x80000008	0x00C899	2
3.3.3.3	3.3.3.3	1167	0x80000006	0x0072EA	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	1124	0x80000003	0x0020C9
10.1.1.8	3.3.3.3	1167	0x80000003	0x00B12C

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	1124	0x80000003	0x001ACA

Router Link States (Area 12)

Link ID count	ADV Router	Age	Seq#	Checksum	Link
2.2.2.2	2.2.2.2	1124	0x80000008	0x004127	2
10.1.1.1	10.1.1.1	1086	0x80000004	0x00A6C0	2

Summary Net Link States (Area 12)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.4	2.2.2.2	1124	0x80000003	0x00F7ED

10.1.1.8            2.2.2.2            1125            0x80000003 0x00524F

Summary ASB Link States (Area 12)

Link ID	ADV Router	Age	Seq#	Checksum
3.3.3.3	2.2.2.2	1125	0x80000003	0x0033B2

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	3.3.3.3	1168	0x80000003	0x00A8C3	0
10.1.4.8	3.3.3.3	1168	0x80000003	0x0080E7	0
10.2.1.0	3.3.3.3	1168	0x80000003	0x00F777	0
10.2.2.0	3.3.3.3	1168	0x80000003	0x00EC81	0
10.2.4.12	3.3.3.3	1168	0x80000003	0x004C17	0
209.65.200.224	10.1.1.1	1348	0x80000003	0x004295	0
209.65.200.240	10.1.1.1	1087	0x80000003	0x002DC8	65002

R2#

```
R2#show ip route ospf
    209.65.200.0/24 is variably subnetted, 2 subnets, 2 masks
O E2    209.65.200.240/29 [110/1] via 10.1.1.1, 01:25:33, Serial0/2/0.12
O E2    209.65.200.224/30 [110/20] via 10.1.1.1, 01:25:51, Serial0/2/0.12
    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, 01:26:06, Serial0/2/0.23
O IA    10.1.1.8/30 [110/128] via 10.1.1.6, 01:26:06, Serial0/2/0.23
O E2    10.1.4.8/30 [110/20] via 10.1.1.6, 01:26:06, Serial0/2/0.23
O E2    10.2.1.0/24 [110/20] via 10.1.1.6, 01:26:06, Serial0/2/0.23
O E2    10.2.2.0/24 [110/20] via 10.1.1.6, 01:26:06, Serial0/2/0.23
O E2    10.1.4.4/30 [110/20] via 10.1.1.6, 01:26:06, Serial0/2/0.23
R2#
```

