

```
R2#
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$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
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 = 96/124/228 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 = 64/66/68 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 = 64/65/68 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 = 64/66/68 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 0 percent (0/5)  
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 0 percent (0/5)
```

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

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

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

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

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

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 0 percent (0/5)
```

```
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, 00:48:39, Serial0/2/0.12

O E2 209.65.200.224/30 [110/20] via 10.1.1.1, 00:48:39, Serial0/2/0.12

10.0.0.0/30 is subnetted, 3 subnets

O 10.1.1.8 [110/128] via 10.1.1.6, 00:34:39, Serial0/2/0.23

C 10.1.1.0 is directly connected, Serial0/2/0.12

C 10.1.1.4 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	20	75	266	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	0	726	0	0.00%	0.04%	0.03%	0	Load Meter
3	1184	620	1909	0.00%	0.15%	0.17%	0	Exec
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	4896	432	11333	0.71%	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	4	1	4000	0.00%	0.00%	0.00%	0	License
Client N								
9	84	1411	59	0.07%	0.01%	0.00%	0	OSPF-1
Hello								
10	0	62	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	4	3639	1	0.00%	0.00%	0.00%	0	IPC
Periodic Tim								
13	0	3639	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	122	0	0.00%	0.00%	0.00%	0	
Environmental mo								
19	0	1	0	0.00%	0.00%	0.00%	0	ARP Input
20	4	3799	1	0.00%	0.00%	0.00%	0	ARP
Background								
21	0	2	0	0.00%	0.00%	0.00%	0	ATM Idle
Timer								

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	61	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	3632	0	0.00%	0.00%	0.00%	0 PI MATM
Aging Pr							
92	0	365	0	0.00%	0.00%	0.00%	0 EtherChnl
93	0	2	0	0.00%	0.00%	0.00%	0 Ethernet
CFM							
94	0	3546	0	0.00%	0.00%	0.00%	0 Ethernet
Timer C							
95	0	3646	0	0.07%	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	61	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	32	584	54	0.00%	0.00%	0.00%	0 CDP
Protocol							
106	4	2	2000	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							

264	0	366	0	0.00%	0.00%	0.00%	0	RMON
Recycle Pro								
265	0	2	0	0.00%	0.00%	0.00%	0	RMON
Deferred Se								
266	0	1	0	0.00%	0.00%	0.00%	0	Syslog
Traps								
267	0	115	0	0.00%	0.00%	0.00%	0	Crypto
cTCP proc								
268	4	2	2000	0.00%	0.00%	0.00%	0	VLAN
Manager								
269	88	1309	67	0.00%	0.00%	0.00%	0	OSPFv3-6
Hello								
271	0	3642	0	0.00%	0.00%	0.00%	0	trunk
conditioni								
272	0	1	0	0.00%	0.00%	0.00%	0	trunk
conditioni								
273	0	3663	0	0.00%	0.00%	0.00%	0	CME
Extension Mo								
274	0	1	0	0.00%	0.00%	0.00%	0	IP SLAs
Ethernet								
275	8	218	36	0.00%	0.00%	0.00%	0	EEM Server
276	0	2	0	0.00%	0.00%	0.00%	0	EEM Policy
Direc								
277	0	3	0	0.00%	0.00%	0.00%	0	EEM ED CLI
278	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
Counter								
279	0	3	0	0.00%	0.00%	0.00%	0	EM ED GOLD
280	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED
Interface								
281	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
IOSWD								
282	0	3	0	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	4	2	2000	0.00%	0.00%	0.00%	0	EEM ED
SNMP Noti								
289	0	95	0	0.00%	0.00%	0.00%	0	EEM ED
Timer								
290	0	3	0	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	0	3	0	0.00%	0.00%	0.00%	0	EEM ED Env
293	4	29	137	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	8	63	126	0.00%	0.00%	0.00%	0 IPv6 RIB
Event H							
300	8	1831	4	0.00%	0.00%	0.00%	0 CEF: IPv6
proces							
301	4	7129	0	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	416	622	668	0.00%	0.00%	0.00%	0 FR LMI
305	84	74	1135	0.00%	0.00%	0.00%	0 FR PVC
event man							
306	8	36484	0	0.00%	0.03%	0.02%	0 FR
Broadcast Out							
307	0	61	0	0.00%	0.00%	0.00%	0 FR ARP
308	0	61	0	0.00%	0.00%	0.00%	0 FR
FRAGMENTATION							
309	0	183	0	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	367	0	0.00%	0.00%	0.00%	0 compute
load per							
313	0	3661	0	0.00%	0.00%	0.00%	0 IGMP Input
314	0	36489	0	0.00%	0.03%	0.02%	0 Mwheel
Process							
315	92	73188	1	0.15%	0.15%	0.15%	0 PIM
Process							
316	44	200	220	0.00%	0.00%	0.00%	0 IPv6 IDB
317	88	744	118	0.07%	0.00%	0.00%	0 IPv6 Input
318	40	31	1290	0.00%	0.00%	0.00%	0 IPv6 ND
319	0	1	0	0.00%	0.00%	0.00%	0 IPv6
Address							
320	12	14622	0	0.00%	0.02%	0.01%	0 MLD
321	72	3749	19	0.00%	0.00%	0.00%	0 OSPFv3-6
Router							
323	28	3748	7	0.00%	0.01%	0.00%	0 NTP
325	0	1	0	0.00%	0.00%	0.00%	0 LICENSE
AGENT							
326	100	3742	26	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 309, LMI stat recvd 306, 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 2049/0, interface
broadcasts 1975
  Last input 00:00:02, output 00:00:01, output hang never
  Last clearing of "show interface" counters 01:01:05
  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 0/5/256 (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
    2550 packets input, 220720 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
    2966 packets output, 254662 bytes, 0 underruns
    0 output errors, 0 collisions, 17 interface resets
    0 unknown protocol drops
    0 output buffer failures, 0 output buffers swapped out
    168 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 01:01:21, output 01:01:21, 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 NV1
 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
ID					
R3	Ser 0/2/0.23	126	R S I	2811	Ser
0/2/0.23					
R1	Ser 0/2/0.12	127	R S I	2811	Ser
0/2/0.12					
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 : 179 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 : 179 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: ''

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
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          00:36:34
  10.1.1.1         110          00:50:35
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/ -	00:00:33	10.1.1.6
Serial0/2/0.23				
10.1.1.1	0	FULL/ -	00:00:33	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 00:00:07
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 2, maximum is 2
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 10, Dead 40, Wait 40, 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 1, maximum is 3
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	ADV Router	Age	Seq#	Checksum	Link
count					
2.2.2.2	2.2.2.2	1237	0x80000015	0x00AEA6	2
3.3.3.3	3.3.3.3	280	0x80000016	0x00A24C	3

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	1237	0x80000002	0x0022C8

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	1237	0x80000002	0x001CC9

Router Link States (Area 12)

Link ID	ADV Router	Age	Seq#	Checksum	Link
count					
2.2.2.2	2.2.2.2	1237	0x80000015	0x002734	2
10.1.1.1	10.1.1.1	1231	0x8000000C	0x0096C8	2

Summary Net Link States (Area 12)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.4	2.2.2.2	1237	0x80000002	0x00F9EC
10.1.1.8	2.2.2.2	208	0x80000004	0x005050

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
209.65.200.224	10.1.1.1	1739	0x80000002	0x004494	0

209.65.200.240 10.1.1.1 1739 0x80000002 0x002FC7 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, 00:51:19, Serial0/2/0.12
O E2   209.65.200.224/30 [110/20] via 10.1.1.1, 00:51:19, Serial0/2/0.12
    10.0.0.0/30 is subnetted, 3 subnets
O      10.1.1.8 [110/128] via 10.1.1.6, 00:37:19, Serial0/2/0.23
R2#
```