

```
R3#
R3#show running-config
Building configuration...
```

```
Current configuration : 2469 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 R3
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
enable secret 5 $1$p7Bj$JJYJbGT9E4K7craiToCfl.
!
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 Tunnel34  
  no ip address  
  ipv6 address 2026::34:1/122  
  ipv6 enable  
  ipv6 ospf 6 area 34  
  tunnel source 10.1.1.9  
  tunnel destination 10.1.1.10  
  tunnel mode ipv6ip  
!  
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  
  clock rate 2000000  
!  
interface Serial0/1/0  
  no ip address  
  shutdown  
!
```

```
interface Serial0/2/0
  no ip address
  encapsulation frame-relay
!
interface Serial0/2/0.23 point-to-point
  ip address 10.1.1.6 255.255.255.252
  ip pim sparse-dense-mode
  snmp trap link-status
  ipv6 address 2026::1:2/122
  ipv6 enable
  ipv6 ospf 6 area 0
  frame-relay interface-dlci 302
!
interface Serial0/2/0.34 point-to-point
  ip address 10.1.1.9 255.255.255.252
  ip pim sparse-dense-mode
  snmp trap link-status
  frame-relay interface-dlci 304
!
interface Serial0/3/0
  no ip address
!
router ospf 1
  router-id 3.3.3.3
  log-adjacency-changes
  area 34 nssa no-summary
  network 10.1.1.2 0.0.0.0 area 0
  network 10.1.1.9 0.0.0.0 area 34
  network 10.3.3.1 0.0.0.0 area 0
  network 10.3.3.3 0.0.0.0 area 0
  network 0.0.0.0 255.255.255.255 area 0
!
ip forward-protocol nd
no 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
  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  
!  
scheduler allocate 20000 1000  
ntp server 10.1.1.1  
ntp peer 10.1.1.1  
end
```

R3#

```
R3#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 = 160/162/164  
ms
```

```
R3#
```

```
R3#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 = 160/161/164
```

```
ms
```

```
R3#
```

```
R3#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 = 128/129/132
ms
R3#
```

```
R3#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 = 128/132/136
ms
R3#
```

```
R3#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 = 64/65/68 ms
```

```
R3#
```



```
R3#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 = 64/66/68 ms
```

```
R3#
```

```
R3#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 = 128/129/132
```

```
ms
```

```
R3#
```

```
R3#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 = 128/131/136  
ms  
R3#
```

```
R3#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 = 64/66/68 ms  
R3#
```

```
R3#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)
```

```
R3#
```

```
R3#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 = 64/66/68 ms
```

```
R3#
```

```
R3#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)
```

```
R3#
```

```
R3#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 = 64/65/68 ms  
R3#
```

```
R3#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)
```

```
R3#
```

```
R3#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)
```

```
R3#
```



R3#

R3#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)

R3#

```
R3#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)
```

```
R3#
```

```
R3#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)  
R3#
```

```
R3#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)  
R3#
```

```
R3#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)
```

```
R3#
```

```
R3#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)
```

```
R3#
```

R3#show ip interface brief

Interface	IP-Address	OK?	Method	Status
FastEthernet0/0	unassigned	YES	NVRAM	administratively
down down				
FastEthernet0/1	unassigned	YES	NVRAM	administratively
down down				
Serial0/0/0	unassigned	YES	NVRAM	down
down				
Serial0/0/1	unassigned	YES	NVRAM	down
down				
Serial0/1/0	unassigned	YES	NVRAM	administratively
down down				
Serial0/2/0	unassigned	YES	NVRAM	up
up				
Serial0/2/0.23	10.1.1.6	YES	NVRAM	up
up				
Serial0/2/0.34	10.1.1.9	YES	NVRAM	up
up				
Serial0/3/0	unassigned	YES	NVRAM	down
down				
Tunnel34	unassigned	YES	NVRAM	up
up				

R3#

R3#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 10.1.1.5, 00:28:59, Serial0/2/0.23  
O E2 209.65.200.224/30 [110/20] via 10.1.1.5, 00:29:21, Serial0/2/0.23  
10.0.0.0/30 is subnetted, 5 subnets  
C 10.1.1.8 is directly connected, Serial0/2/0.34  
O N2 10.1.4.8 [110/20] via 10.1.1.10, 00:30:04, Serial0/2/0.34  
O IA 10.1.1.0 [110/128] via 10.1.1.5, 00:29:31, Serial0/2/0.23  
O N2 10.1.4.4 [110/20] via 10.1.1.10, 00:30:09, Serial0/2/0.34  
C 10.1.1.4 is directly connected, Serial0/2/0.23  
R3#

R3#show processes cpu

CPU utilization for five seconds: 3%/0%; one minute: 1%; five minutes: 1%

PID	Runtime (ms)	Invoked	uSecs	5Sec	1Min	5Min	TTY	Process
1	12	69	173	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	4	372	10	0.00%	0.03%	0.02%	0	Load Meter
3	1360	622	2186	0.79%	0.19%	0.22%	0	Exec
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	2300	217	10599	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	0	1	0	0.00%	0.00%	0.00%	0	License
Client N								
9	24	835	28	0.00%	0.00%	0.00%	0	OSPF-1
Hello								
10	0	32	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	1860	0	0.00%	0.00%	0.00%	0	IPC
Periodic Tim								
13	0	1860	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	63	0	0.00%	0.00%	0.00%	0	
Environmental mo								
19	0	1	0	0.00%	0.00%	0.00%	0	ARP Input













171	0	1	0	0.00%	0.00%	0.00%	0	IPv6
Inspect Tim								
172	0	2	0	0.00%	0.00%	0.00%	0	LFDp Input
Proc								
173	0	1	0	0.00%	0.00%	0.00%	0	PAD InCall
174	0	2	0	0.00%	0.00%	0.00%	0	X.25
Background								
175	0	2	0	0.00%	0.00%	0.00%	0	PPP Bind
176	0	2	0	0.00%	0.00%	0.00%	0	PPP SSS
177	0	1	0	0.00%	0.00%	0.00%	0	MQC Flow
Event B								
178	32	466244	0	0.79%	0.77%	0.78%	0	HQF Shaper
Backg								
179	0	18680	0	0.00%	0.03%	0.01%	0	RBSCP
Background								
180	0	1	0	0.00%	0.00%	0.00%	0	VPDN call
manage								
181	0	1	0	0.00%	0.00%	0.00%	0	CHKPT
EXAMPLE								
182	0	1	0	0.00%	0.00%	0.00%	0	CHKPT
DevTest								
183	0	1	0	0.00%	0.00%	0.00%	0	IPS
Process								
184	0	2	0	0.00%	0.00%	0.00%	0	IPS Auto
Update								
185	4	2	2000	0.00%	0.00%	0.00%	0	SDEE
Management								
186	0	3655	0	0.00%	0.00%	0.00%	0	Inspect
process								
187	0	2	0	0.00%	0.00%	0.00%	0	
cpf_process_msg_								
188	0	3655	0	0.00%	0.00%	0.00%	0	FW DP
Inspect pr								
189	0	3655	0	0.00%	0.00%	0.00%	0	CCE DP
URLF cach								
190	0	2	0	0.00%	0.00%	0.00%	0	URL filter
proc								
191	0	1	0	0.00%	0.00%	0.00%	0	Select
Timers								
192	32	2	16000	0.00%	0.00%	0.00%	0	HTTP
Process								
193	0	2	0	0.00%	0.00%	0.00%	0	CIFS API
Process								
194	0	2	0	0.00%	0.00%	0.00%	0	CIFS Proxy
Proce								
195	4	3	1333	0.00%	0.00%	0.00%	0	Crypto HW
Proc								
196	0	77	0	0.00%	0.00%	0.00%	0	
CRM_CALL_UPDATE_								
197	116	2	58000	0.00%	0.00%	0.00%	0	
CCVPM_HDSPRM								
198	0	4	0	0.00%	0.00%	0.00%	0	HDA DSPRM
MAIN								
199	8	2	4000	0.00%	0.00%	0.00%	0	STUN_APP







262	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
Routing								
263	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
Track								
264	4	189	21	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	59	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	48	809	59	0.00%	0.01%	0.00%	0	OSPFv3-6
Hello								
271	0	1864	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	1884	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	0	82	0	0.00%	0.00%	0.00%	0	EEM Server
276	4	2	2000	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	4	3	1333	0.00%	0.00%	0.00%	0	EM ED GOLD
280	0	3	0	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	4	3	1333	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	4	3	1333	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	52	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	0	3	0	0.00%	0.00%	0.00%	0	EEM ED Env
293	0	12	0	0.00%	0.00%	0.00%	0	Syslog

294	0	1	0	0.00%	0.00%	0.00%	0	VPDN Test
295	4	3	1333	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	21	190	0.00%	0.00%	0.00%	0	IPv6 RIB
Event H								
300	4	942	4	0.00%	0.00%	0.00%	0	CEF: IPv6
proces								
301	0	139	0	0.00%	0.00%	0.00%	0	IPv6 IDB
302	40	463	86	0.00%	0.00%	0.00%	0	IPv6 Input
303	8	7	1142	0.00%	0.00%	0.00%	0	IPv6 ND
304	0	1	0	0.00%	0.00%	0.00%	0	IPv6
Address								
305	4	7545	0	0.00%	0.02%	0.00%	0	MLD
306	32	1913	16	0.00%	0.00%	0.00%	0	OSPFv3-6
Router								
307	104	377	275	0.00%	0.00%	0.00%	0	FR LMI
308	4	39	102	0.00%	0.00%	0.00%	0	FR PVC
event man								
309	12	18814	0	0.07%	0.03%	0.02%	0	FR
Broadcast Out								
310	0	34	0	0.00%	0.00%	0.00%	0	FR ARP
311	0	32	0	0.00%	0.00%	0.00%	0	FR
FRAGMENTATION								
312	0	95	0	0.00%	0.00%	0.00%	0	FR TUNNEL
313	0	1	0	0.00%	0.00%	0.00%	0	FRF9
manager								
314	0	1	0	0.00%	0.00%	0.00%	0	FRF9 timed
event								
315	0	190	0	0.00%	0.00%	0.00%	0	compute
load per								
316	8	1889	4	0.00%	0.00%	0.00%	0	IGMP Input
317	8	18809	0	0.00%	0.03%	0.02%	0	Mwheel
Process								
318	68	37740	1	0.15%	0.15%	0.15%	0	PIM
Process								
320	36	1936	18	0.00%	0.01%	0.00%	0	NTP
322	48	1986	24	0.00%	0.00%	0.00%	0	OSPF-1
Router								
R3#								

R3#show interfaces

FastEthernet0/0 is administratively down, line protocol is down

Hardware is MV96340 Ethernet, address is 0016.479a.f6e8 (bia 0016.479a.f6e8)

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 0016.479a.f6e9 (bia 0016.479a.f6e9)

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, 5 interface resets  
  0 unknown protocol drops  
  0 output buffer failures, 0 output buffers swapped out  
  0 carrier transitions  
  DCD=up DSR=up DTR=down RTS=down CTS=up

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 00:31:36, output 00:31:37, 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  
  1 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 189, LMI stat recvd 189, 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 1/64, broadcasts sent/dropped 884/0, interface
broadcasts 821
Last input 00:00:00, output 00:00:00, output hang never
Last clearing of "show interface" counters 00:31:36
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
  1663 packets input, 160202 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
  1690 packets output, 152423 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
```

```
Serial0/2/0.23 is up, line protocol is up
Hardware is GT96K Serial
Internet address is 10.1.1.6/30
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
```

```
Serial0/2/0.34 is up, line protocol is up
Hardware is GT96K Serial
Internet address is 10.1.1.9/30
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 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 00:31:05, output 00:31:10, 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  
5 packets output, 1026 bytes, 0 underruns  
0 output errors, 0 collisions, 66 interface resets  
0 unknown protocol drops  
0 output buffer failures, 0 output buffers swapped out  
8 carrier transitions  
DCD=down DSR=down DTR=up RTS=up CTS=down

Tunnel34 is up, line protocol is up  
Hardware is Tunnel  
MTU 17920 bytes, BW 100 Kbit/sec, DLY 50000 usec,  
reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation TUNNEL, loopback not set  
Keepalive not set  
Tunnel source 10.1.1.9, destination 10.1.1.10  
Tunnel protocol/transport IPv6/IP  
Tunnel TTL 255  
Tunnel transport MTU 1480 bytes  
Tunnel transmit bandwidth 8000 (kbps)  
Tunnel receive bandwidth 8000 (kbps)  
Last input 00:00:04, output 00:00:05, 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: 0/0 (size/max)  
5 minute input rate 0 bits/sec, 0 packets/sec  
5 minute output rate 0 bits/sec, 0 packets/sec  
223 packets input, 32340 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  
224 packets output, 22700 bytes, 0 underruns  
0 output errors, 0 collisions, 0 interface resets  
0 unknown protocol drops  
0 output buffer failures, 0 output buffers swapped out

R3#

```
R3#show interfaces counters errors
```

```
R3#
```



```
R3#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 0/2/0.23	165	R S I	2811	Ser
R4	Ser 0/2/0.34	157	R S I	1841	Ser

```
R3#
```

R3#show cdp neighbors detail

-----

Device ID: R2

Entry address(es):

IP address: 10.1.1.5

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

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

Platform: Cisco 2811, Capabilities: Router Switch IGMP

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

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>

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Compiled Fri 19-Jun-09 15:34 by prod\_rel\_team

advertisement version: 2

VTP Management Domain: ''

-----

Device ID: R4

Entry address(es):

IP address: 10.1.1.10

Platform: Cisco 1841, Capabilities: Router Switch IGMP

Interface: Serial0/2/0.34, Port ID (outgoing port): Serial0/1/0.34

Holdtime : 149 sec

Version :

Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version 12.4(25b), RELEASE SOFTWARE (fc1)

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

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Compiled Wed 12-Aug-09 10:49 by prod\_rel\_team

advertisement version: 2

VTP Management Domain: ''

R3#

```
R3#show frame-relay map
Serial0/2/0.23 (up): point-to-point dlci, dlci 302(0x12E,0x48E0),
broadcast
                    status defined, active
Serial0/2/0.34 (up): point-to-point dlci, dlci 304(0x130,0x4C00),
broadcast
                    status defined, active
R3#
```

```
R3#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
Serial0/2/0.23 is up, line protocol is up
  Internet address is 10.1.1.6/30
  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  
Serial0/2/0.34 is up, line protocol is up  
Internet address is 10.1.1.9/30  
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 down, line protocol is down
  Internet protocol processing disabled
Tunnel34 is up, line protocol is up
  Internet protocol processing disabled
R3#
```

```
R3#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     10.1.1.5         Serial0/2/0.23
10.1.1.4/30     attached         Serial0/2/0.23
10.1.1.4/32     receive         Serial0/2/0.23
10.1.1.6/32     receive         Serial0/2/0.23
10.1.1.7/32     receive         Serial0/2/0.23
10.1.1.8/30     attached         Serial0/2/0.34
10.1.1.8/32     receive         Serial0/2/0.34
10.1.1.9/32     receive         Serial0/2/0.34
```

```
10.1.1.11/32      receive      Serial0/2/0.34
10.1.4.4/30      10.1.1.10   Serial0/2/0.34
10.1.4.8/30      10.1.1.10   Serial0/2/0.34
127.0.0.0/8      drop
209.65.200.224/30 10.1.1.5     Serial0/2/0.23
209.65.200.240/29 10.1.1.5     Serial0/2/0.23
224.0.0.0/4      multicast
224.0.0.0/24     receive
240.0.0.0/4      drop
255.255.255.255/32 receive
R3#
```

```
R3#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  
R3#



```
R3#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 3.3.3.3
  It is an area border and autonomous system boundary router
  Redistributing External Routes from,
  Number of areas in this router is 2. 1 normal 0 stub 1 nssa
  Maximum path: 4
  Routing for Networks:
    10.1.1.2 0.0.0.0 area 0
    10.1.1.9 0.0.0.0 area 34
    10.3.3.1 0.0.0.0 area 0
    10.3.3.3 0.0.0.0 area 0
    0.0.0.0 255.255.255.255 area 0
Reference bandwidth unit is 100 mbps
Routing Information Sources:
  Gateway         Distance      Last Update
  2.2.2.2         110          00:31:25
  4.4.4.4         110          00:31:58
  10.1.1.1        110          00:30:52
Distance: (default is 110)
```

```
R3#
```

```
R3#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
R3#
```

```
R3#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address
Interface				
2.2.2.2	0	FULL/ -	00:00:39	10.1.1.5
Serial0/2/0.23				
4.4.4.4	0	FULL/ -	00:00:38	10.1.1.10
Serial0/2/0.34				

```
R3#
```

```
R3#show ip ospf interface
```

```
Serial0/2/0.23 is up, line protocol is up
  Internet Address 10.1.1.6/30, Area 0
  Process ID 1, Router ID 3.3.3.3, 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 1/2, 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)
Serial0/2/0.34 is up, line protocol is up
Internet Address 10.1.1.9/30, Area 34
Process ID 1, Router ID 3.3.3.3, Network Type POINT_TO_POINT, Cost: 64
Transmit Delay is 1 sec, State POINT_TO_POINT
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
  oob-resync timeout 40
  Hello due in 00:00:05
Supports Link-local Signaling (LLS)
Cisco NSF helper support enabled
IETF NSF helper support enabled
Index 1/1, flood queue length 0
Next 0x0(0)/0x0(0)
Last flood scan length is 1, maximum is 1
Last flood scan time is 0 msec, maximum is 0 msec
Neighbor Count is 1, Adjacent neighbor count is 1
  Adjacent with neighbor 4.4.4.4
Suppress hello for 0 neighbor(s)
R3#
```

R3#show ip ospf database

OSPF Router with ID (3.3.3.3) (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	1923	0x80000006	0x00CC97	2
3.3.3.3	3.3.3.3	1949	0x80000004	0x0076E8	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	1918	0x80000001	0x0024C7
10.1.1.8	3.3.3.3	1954	0x80000001	0x00B52A

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	1909	0x80000001	0x001EC8

Router Link States (Area 34)

Link ID count	ADV Router	Age	Seq#	Checksum	Link
3.3.3.3	3.3.3.3	1954	0x80000006	0x00DE69	2
4.4.4.4	4.4.4.4	54	0x80000008	0x0077CA	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	1949	0x80000002	0x00DC4C

Type-7 AS External Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	4.4.4.4	55	0x80000005	0x00F16A	0
10.1.4.8	4.4.4.4	55	0x80000007	0x00C590	0

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	3.3.3.3	1953	0x80000001	0x00ACC1	0
10.1.4.8	3.3.3.3	1943	0x80000001	0x0084E5	0

```
209.65.200.224 10.1.1.1 1946 0x80000001 0x004693 0
209.65.200.240 10.1.1.1 1887 0x80000001 0x0031C6 65002
R3#
```

```
R3#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 10.1.1.5, 00:31:32, Serial0/2/0.23
O E2   209.65.200.224/30 [110/20] via 10.1.1.5, 00:31:55, Serial0/2/0.23
10.0.0.0/30 is subnetted, 5 subnets
O N2   10.1.4.8 [110/20] via 10.1.1.10, 00:32:37, Serial0/2/0.34
O IA   10.1.1.0 [110/128] via 10.1.1.5, 00:32:05, Serial0/2/0.23
O N2   10.1.4.4 [110/20] via 10.1.1.10, 00:32:42, Serial0/2/0.34
R3#
```

