



```
!  
!  
!  
!  
!  
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 access-group 1 in  
  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  
  passive-interface Serial0/2/0  
  network 10.1.1.2 0.0.0.0 area 0  
  network 10.1.1.8 0.0.0.3 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  
!  
access-list 1 deny 10.2.1.0 0.0.0.255  
access-list 1 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 peer 10.1.1.1
ntp server 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 = 128/130/132  
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 = 128/129/132  
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 = 64/67/72 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 = 64/65/68 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 = 128/130/132
```

```
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 = 128/132/140  
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 100 percent (5/5), round-trip min/avg/max = 64/66/68 ms  
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 = 64/65/68 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 100 percent (5/5), round-trip min/avg/max = 64/65/68 ms
```

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

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

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

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

```
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 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
Serial0/2/0.23 up	10.1.1.6	YES	NVRAM	up
Serial0/2/0.34 up	10.1.1.9	YES	NVRAM	up
Serial0/3/0 down	unassigned	YES	NVRAM	down
Tunnel34 up	unassigned	YES	NVRAM	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, 01:14:24, Serial0/2/0.23  
O E2 209.65.200.224/30 [110/20] via 10.1.1.5, 01:14:42, Serial0/2/0.23  
10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks  
O N2 10.2.4.12/30 [110/20] via 10.1.1.10, 01:15:29, Serial0/2/0.34  
C 10.1.1.8/30 is directly connected, Serial0/2/0.34  
O N2 10.1.4.8/30 [110/20] via 10.1.1.10, 01:15:24, Serial0/2/0.34  
O N2 10.2.1.0/24 [110/20] via 10.1.1.10, 01:15:30, Serial0/2/0.34  
O N2 10.2.2.0/24 [110/20] via 10.1.1.10, 01:15:30, Serial0/2/0.34  
O IA 10.1.1.0/30 [110/128] via 10.1.1.5, 01:14:53, Serial0/2/0.23  
O N2 10.1.4.4/30 [110/20] via 10.1.1.10, 01:15:30, Serial0/2/0.34  
C 10.1.1.4/30 is directly connected, Serial0/2/0.23  
R3#

R3#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	8	69	115	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	4	917	4	0.07%	0.04%	0.03%	0	Load Meter
3	3724	926	4021	0.00%	0.13%	0.12%	0	Exec
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	5808	538	10795	0.00%	0.15%	0.12%	0	Check
heaps								
6	0	1	0	0.00%	0.00%	0.00%	0	Pool
Manager								
7	0	2	0	0.00%	0.00%	0.00%	0	Timers
8	0	1	0	0.00%	0.00%	0.00%	0	License
Client N								
9	128	1985	64	0.00%	0.01%	0.00%	0	OSPF-1
Hello								
10	0	77	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	4582	0	0.00%	0.00%	0.00%	0	IPC
Periodic Tim								









131	0	2	0	0.00%	0.00%	0.00%	0	IP Host
Track Pr								
132	0	2	0	0.00%	0.00%	0.00%	0	KRB5 AAA
133	0	2	0	0.00%	0.00%	0.00%	0	Ethernet
LMI								
134	0	2	0	0.00%	0.00%	0.00%	0	PPP IP
Route								
135	0	2	0	0.00%	0.00%	0.00%	0	PPP IPCP
136	0	248	0	0.00%	0.00%	0.00%	0	IP
Background								
137	16	10	1600	0.00%	0.00%	0.00%	0	IP RIB
Update								
138	0	2	0	0.00%	0.00%	0.00%	0	Dot1x
Supplicant								
139	0	2	0	0.00%	0.00%	0.00%	0	Dot1x
Supplicant								
140	0	2	0	0.00%	0.00%	0.00%	0	Dot1x
Supplicant								
141	0	1	0	0.00%	0.00%	0.00%	0	Asy FS
Helper								
142	0	77	0	0.00%	0.00%	0.00%	0	Licensing
Auto U								
143	0	1	0	0.00%	0.00%	0.00%	0	Socket
Timers								
144	0	79	0	0.00%	0.00%	0.00%	0	CEF
background p								
145	12	6741	1	0.00%	0.00%	0.00%	0	CEF: IPv4
proces								
146	0	8	0	0.00%	0.00%	0.00%	0	ADJ
background								
147	0	2	0	0.00%	0.00%	0.00%	0	L2MM
148	0	1	0	0.00%	0.00%	0.00%	0	MRD
149	0	1	0	0.00%	0.00%	0.00%	0	IGMPSN
150	0	1	0	0.00%	0.00%	0.00%	0	L2X Data
Daemon								
151	0	1	0	0.00%	0.00%	0.00%	0	TCP Timer
152	0	1	0	0.00%	0.00%	0.00%	0	TCP
Protocols								
153	0	16	0	0.00%	0.00%	0.00%	0	HTTP CORE
154	0	1	0	0.00%	0.00%	0.00%	0	IP
Traceroute								
155	0	2	0	0.00%	0.00%	0.00%	0	RLM groups
Proce								
156	0	2	0	0.00%	0.00%	0.00%	0	PPPoE Flow
Contr								
157	0	1	0	0.00%	0.00%	0.00%	0	SNMP
Timers								
158	4	2	2000	0.00%	0.00%	0.00%	0	SCTP Main
Proces								
159	0	1	0	0.00%	0.00%	0.00%	0	IUA Main
Process								
160	0	4592	0	0.00%	0.00%	0.00%	0	RUDPV1
Main Proc								
161	0	1	0	0.00%	0.00%	0.00%	0	bsm_timers



162	0	4596	0	0.00%	0.00%	0.00%	0
bsm_xmt_proc							
163	0	1	0	0.00%	0.00%	0.00%	0 CES Client
SVC R							
164	4	1	4000	0.00%	0.00%	0.00%	0 COPS
165	0	2	0	0.00%	0.00%	0.00%	0 Dialer
Forwarder							
166	0	3	0	0.00%	0.00%	0.00%	0 Flow
Exporter Ti							
167	0	2	0	0.00%	0.00%	0.00%	0 ATM OAM
Input							
168	0	2	0	0.00%	0.00%	0.00%	0 ATM OAM
TIMER							
169	0	1	0	0.00%	0.00%	0.00%	0 RARP Input
170	0	1	0	0.00%	0.00%	0.00%	0 LAPB
Process							
171	0	1	0	0.00%	0.00%	0.00%	0 IPv6
Inspect Tim							
172	0	2	0	0.00%	0.00%	0.00%	0 LFDp Input
Proc							
173	0	1	0	0.00%	0.00%	0.00%	0 PAD InCall
174	0	2	0	0.00%	0.00%	0.00%	0 X.25
Background							
175	4	2	2000	0.00%	0.00%	0.00%	0 PPP Bind
176	0	2	0	0.00%	0.00%	0.00%	0 PPP SSS
177	0	1	0	0.00%	0.00%	0.00%	0 MQC Flow
Event B							
178	4	1144597	0	0.87%	0.87%	0.87%	0 HQF Shaper
Backg							
179	0	45877	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	0	2	0	0.00%	0.00%	0.00%	0 SDEE
Management							
186	0	8970	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	8970	0	0.00%	0.00%	0.00%	0 FW DP
Inspect pr							
189	0	8970	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							









318	112	92310	1	0.15%	0.15%	0.15%	0	PIM
Process								
320	64	4738	13	0.00%	0.01%	0.00%	0	NTP
322	68	4761	14	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 01:16:59, output 01:16:59, 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 461, LMI stat recvd 461, 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 2036/0, interface  
broadcasts 1882  
Last input 00:00:01, output 00:00:02, output hang never  
Last clearing of "show interface" counters 01:16:58  
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  
4436 packets input, 390260 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  
4334 packets output, 378964 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 01:16:26, output 01:16:33, 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, 156 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 00:00:06, output 00:00:01, 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
  494 packets input, 71960 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
  514 packets output, 52252 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 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	150	R S I	2811	Ser
R4	Ser 0/2/0.34	145	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 : 140 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: 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 : 135 sec

Version :  
Cisco IOS Software, 1841 Software (C1841-ADVIPSERVICESK9-M), Version  
12.4(25b), RELEASE SOFTWARE (fc1)  
Technical Support: <http://www.cisco.com/techsupport>  
Copyright (c) 1986-2009 by Cisco Systems, Inc.  
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 1  
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: Access List, 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
10.2.1.0/24	10.1.1.10	Serial0/2/0.34
10.2.2.0/24	10.1.1.10	Serial0/2/0.34
10.2.4.12/30	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
    10.1.1.8 0.0.0.3 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
Passive Interface(s):
  Serial0/2/0
Routing Information Sources:
  Gateway          Distance      Last Update
  2.2.2.2          110          01:16:39
  4.4.4.4          110          01:17:12
  10.1.1.1         110          01:16:12
Distance: (default is 110)
```

R3#

```
R3#show access-lists
Standard IP access list 1
  10 deny 10.2.1.0, wildcard bits 0.0.0.255 (547 matches)
  20 permit any (1415 matches)
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/ -	00:00:32	10.1.1.5
Serial0/2/0.23				
4.4.4.4	0	FULL/ -	00:00:33	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 00:00:00
  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 6, maximum is 6
  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 00:00:08
  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 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	606	0x80000008	0x00C899	2
3.3.3.3	3.3.3.3	646	0x80000006	0x0072EA	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	606	0x80000003	0x0020C9
10.1.1.8	3.3.3.3	646	0x80000003	0x00B12C

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	606	0x80000003	0x001ACA

Router Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Link
count					
3.3.3.3	3.3.3.3	646	0x80000008	0x00DA6B	2
4.4.4.4	4.4.4.4	760	0x80000009	0x0075CB	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	646	0x80000003	0x00DA4D

Type-7 AS External Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	4.4.4.4	761	0x80000006	0x00EF6B	0
10.1.4.8	4.4.4.4	761	0x80000003	0x00CD8C	0
10.2.1.0	4.4.4.4	761	0x80000003	0x00451C	0
10.2.2.0	4.4.4.4	761	0x80000003	0x003A26	0
10.2.4.12	4.4.4.4	761	0x80000003	0x0099BB	0

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	3.3.3.3	647	0x80000003	0x00A8C3	0
10.1.4.8	3.3.3.3	647	0x80000003	0x0080E7	0
10.2.1.0	3.3.3.3	647	0x80000003	0x00F777	0
10.2.2.0	3.3.3.3	647	0x80000003	0x00EC81	0
10.2.4.12	3.3.3.3	647	0x80000003	0x004C17	0
209.65.200.224	10.1.1.1	831	0x80000003	0x004295	0
209.65.200.240	10.1.1.1	569	0x80000003	0x002DC8	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, 01:16:53, Serial0/2/0.23
O E2    209.65.200.224/30 [110/20] via 10.1.1.5, 01:17:11, Serial0/2/0.23
    10.0.0.0/8 is variably subnetted, 8 subnets, 2 masks
O N2    10.2.4.12/30 [110/20] via 10.1.1.10, 01:17:58, Serial0/2/0.34
O N2    10.1.4.8/30 [110/20] via 10.1.1.10, 01:17:53, Serial0/2/0.34
O N2    10.2.1.0/24 [110/20] via 10.1.1.10, 01:17:58, Serial0/2/0.34
O N2    10.2.2.0/24 [110/20] via 10.1.1.10, 01:17:58, Serial0/2/0.34
O IA    10.1.1.0/30 [110/128] via 10.1.1.5, 01:17:21, Serial0/2/0.23
O N2    10.1.4.4/30 [110/20] via 10.1.1.10, 01:17:58, Serial0/2/0.34
R3#
```

