


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

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

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

```
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 = 128/130/132  
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 = 64/65/68 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 = 64/65/68 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 = 128/132/136  
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 = 132/134/140
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 = 64/64/68 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 100 percent (5/5), round-trip min/avg/max = 64/68/76 ms

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 = 64/64/68 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 100 percent (5/5), round-trip min/avg/max = 64/68/76 ms
```

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

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 = 64/67/72 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 100 percent (5/5), round-trip min/avg/max = 64/65/68 ms
```

```
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

209.65.20.0/30 is subnetted, 1 subnets
O E2 209.65.20.224 [110/20] via 10.1.1.5, 00:21:38, 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, 02:00:52, 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, 02:00:52, Serial0/2/0.34
O N2 10.2.1.0/24 [110/20] via 10.1.1.10, 02:00:52, Serial0/2/0.34
O N2 10.2.2.0/24 [110/20] via 10.1.1.10, 02:00:52, Serial0/2/0.34
O IA 10.1.1.0/30 [110/128] via 10.1.1.5, 00:22:34, Serial0/2/0.23
O N2 10.1.4.4/30 [110/20] via 10.1.1.10, 02:00:53, Serial0/2/0.34
C 10.1.1.4/30 is directly connected, Serial0/2/0.23

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	70	114	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	8	357	22	0.07%	0.04%	0.02%	0	Load Meter
3	4	7	571	0.00%	0.00%	0.00%	0	Collection
proce								
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	2172	211	10293	0.00%	0.11%	0.11%	0	Check
heaps								
6	0	1	0	0.00%	0.00%	0.00%	0	Pool
Manager								
7	0	2	0	0.00%	0.00%	0.00%	0	Timers
8	0	1	0	0.00%	0.00%	0.00%	0	License
Client N								
9	36	731	49	0.00%	0.00%	0.00%	0	OSPF-1
Hello								
10	0	31	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	1781	0	0.00%	0.00%	0.00%	0	IPC
Periodic Tim								
13	0	1781	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	61	0	0.00%	0.00%	0.00%	0	
Environmental mo								
19	0	1	0	0.00%	0.00%	0.00%	0	ARP Input

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	30	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	134	0	0.00%	0.00%	0.00%	0	CEF
background p								
145	12	2296	5	0.00%	0.01%	0.00%	0	CEF: IPv4
proces								
146	4	29	137	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	6	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	0	2	0	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	1792	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	1795	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	0	1	0	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


```
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 00:30:19, output 00:30:18, 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
  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 165, LMI stat recvd 163, 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 859/0, interface
broadcasts 822
  Last input 00:00:00, output 00:00:00, output hang never
  Last clearing of "show interface" counters 00:30:17
  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 0/4/256 (active/max active/max total)
    Reserved Conversations 0/0 (allocated/max allocated)
    Available Bandwidth 1158 kilobits/sec
  5 minute input rate 1000 bits/sec, 3 packets/sec
  5 minute output rate 1000 bits/sec, 3 packets/sec
  5069 packets input, 378160 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
  5247 packets output, 395339 bytes, 0 underruns
  0 output errors, 0 collisions, 7 interface resets
  0 unknown protocol drops
  0 output buffer failures, 0 output buffers swapped out
  68 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 00:29:46, output 00:29:52, 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, 63 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 17916 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 GRE/IP
 Key disabled, sequencing disabled
 Checksumming of packets disabled
 Tunnel TTL 255
 Fast tunneling enabled
 Tunnel transport MTU 1476 bytes
 Tunnel transmit bandwidth 8000 (kbps)
 Tunnel receive bandwidth 8000 (kbps)
 Last input 00:23:56, output 00:00:09, output hang never
 Last clearing of "show interface" counters never
 Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 21
 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
 62 packets input, 9112 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
 304 packets output, 30836 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
ID					
R2	Ser 0/2/0.23	134	R S I	2811	Ser
0/2/0.23					
R4	Ser 0/2/0.34	133	R S I	1841	Ser
0/1/0.34					
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 : 126 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 : 125 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 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
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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
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
  4.4.4.4         110          00:26:22
  2.2.2.2         110          00:26:22
  10.1.1.1        110          00:26:12
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/ -	00:00:38	10.1.1.5
Serial0/2/0.23				
4.4.4.4	0	FULL/ -	00:00:37	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 00:00:05
  Supports Link-local Signaling (LLS)
  Cisco NSF helper support enabled
  IETF NSF helper support enabled
  Index 1/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 4, maximum is 4
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 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 00:00:02
  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	507	0x80000009	0x00C69A	2
3.3.3.3	3.3.3.3	550	0x80000008	0x006EEC	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	1570	0x80000001	0x0024C7
10.1.1.8	3.3.3.3	550	0x80000005	0x00AD2E

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	1560	0x80000001	0x001EC8

Router Link States (Area 34)

Link ID count	ADV Router	Age	Seq#	Checksum	Link
3.3.3.3	3.3.3.3	1533	0x80000009	0x00D86C	2
4.4.4.4	4.4.4.4	1631	0x8000000B	0x0071CD	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	550	0x80000006	0x00D450

Type-7 AS External Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	4.4.4.4	104	0x80000008	0x00EB6D	0
10.1.4.8	4.4.4.4	104	0x80000008	0x00C391	0
10.2.1.0	4.4.4.4	104	0x80000008	0x003B21	0
10.2.2.0	4.4.4.4	104	0x80000008	0x00302B	0
10.2.4.12	4.4.4.4	104	0x80000008	0x008FC0	0

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	3.3.3.3	1535	0x80000004	0x00A6C4	0
10.1.4.8	3.3.3.3	1535	0x80000004	0x007EE8	0
10.2.1.0	3.3.3.3	1535	0x80000004	0x00F578	0
10.2.2.0	3.3.3.3	1535	0x80000004	0x00EA82	0
10.2.4.12	3.3.3.3	1535	0x80000004	0x004A18	0
209.65.20.224	10.1.1.1	1518	0x80000001	0x000A84	0

```
R3#show ip route ospf
    209.65.20.0/30 is subnetted, 1 subnets
O E2    209.65.20.224 [110/20] via 10.1.1.5, 00:24:17, 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, 02:03:31, Serial0/2/0.34
O N2    10.1.4.8/30 [110/20] via 10.1.1.10, 02:03:31, Serial0/2/0.34
O N2    10.2.1.0/24 [110/20] via 10.1.1.10, 02:03:31, Serial0/2/0.34
O N2    10.2.2.0/24 [110/20] via 10.1.1.10, 02:03:31, Serial0/2/0.34
O IA    10.1.1.0/30 [110/128] via 10.1.1.5, 00:25:12, Serial0/2/0.23
O N2    10.1.4.4/30 [110/20] via 10.1.1.10, 02:03:31, Serial0/2/0.34
R3#
```

