



```
!  
!  
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  
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 = 32/33/36 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 = 32/32/32 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 = 64/71/96 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 = 64/67/76 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 = 64/67/72 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 = 128/130/132
```

```
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 = 192/196/208  
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 = 192/194/196  
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 = 192/194/196  
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 = 192/194/196  
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 = 192/194/196  
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 = 192/195/196
```

```
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 = 192/250/316  
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 = 192/195/196  
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 = 192/196/204  
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 = 192/196/204  
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 = 192/194/200  
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 = 192/195/200  
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 = 192/194/196  
ms
```

```
R3#
```

R3#

R3#show ip interface brief

Interface Protocol	IP-Address	OK?	Method	Status
FastEthernet0/0 down down	unassigned	YES	NVRAM	administratively
FastEthernet0/1 down down	unassigned	YES	NVRAM	administratively
Serial0/0/0 down	unassigned	YES	NVRAM	down
Serial0/0/1 down	unassigned	YES	NVRAM	down
Serial0/1/0 down down	unassigned	YES	NVRAM	administratively
Serial0/2/0 up	unassigned	YES	NVRAM	up
Serial0/2/0.23 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 10.1.1.5 to network 0.0.0.0
```

```
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, 00:28:44, 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, 01:15:27, Serial0/2/0.34  
O N2 10.2.1.0/24 [110/20] via 10.1.1.10, 01:15:27, Serial0/2/0.34  
O N2 10.2.2.0/24 [110/20] via 10.1.1.10, 01:15:27, Serial0/2/0.34  
O IA 10.1.1.0/30 [110/128] via 10.1.1.5, 01:15:37, Serial0/2/0.23  
O N2 10.1.4.4/30 [110/20] via 10.1.1.10, 00:28:44, Serial0/2/0.34  
C 10.1.1.4/30 is directly connected, Serial0/2/0.23  
O*E2 0.0.0.0/0 [110/1] via 10.1.1.5, 01:15:28, Serial0/2/0.23  
R3#
```



R3#show processes cpu

CPU utilization for five seconds: 1%/0%; one minute: 3%; five minutes: 2%

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	1050	3	0.07%	0.04%	0.02%	0	Load Meter
3	0	10	0	0.00%	0.00%	0.00%	0	Collection
proce								
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	6332	620	10212	0.00%	0.14%	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	168	2102	79	0.00%	0.01%	0.00%	0	OSPF-1
Hello								
10	0	88	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	5248	0	0.00%	0.00%	0.00%	0	IPC
Periodic Tim								
13	0	5248	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	176	0	0.00%	0.00%	0.00%	0
Environmental mo							
19	0	1	0	0.00%	0.00%	0.00%	0 ARP Input
20	4	5478	0	0.00%	0.00%	0.00%	0 ARP
Background							
21	0	2	0	0.00%	0.00%	0.00%	0 ATM Idle
Timer							
22	0	2	0	0.00%	0.00%	0.00%	0 AAA high-
capacit							
23	0	1	0	0.00%	0.00%	0.00%	0
AAA_SERVER_DEADT							
24	0	1	0	0.00%	0.00%	0.00%	0 Policy
Manager							
25	0	15	0	0.00%	0.00%	0.00%	0 DDR Timers
26	4	2	2000	0.00%	0.00%	0.00%	0 Entity MIB
API							
27	12	91	131	0.00%	0.00%	0.00%	0 EEM ED
Syslog							
28	0	1575	0	0.00%	0.00%	0.00%	0 HC Counter
Timer							
29	0	185	0	0.00%	0.00%	0.00%	0 Serial
Backgroun							
30	0	1	0	0.00%	0.00%	0.00%	0 RO Notify
Timers							
31	0	1	0	0.00%	0.00%	0.00%	0 RMI RM
Notify Wa							
32	0	2	0	0.00%	0.00%	0.00%	0 SMART
33	0	5246	0	0.00%	0.00%	0.00%	0 GraphIt
34	8	2	4000	0.00%	0.00%	0.00%	0 Dialer
event							
35	0	1	0	0.00%	0.00%	0.00%	0 SERIAL
A'detect							
36	0	2	0	0.00%	0.00%	0.00%	0 XML Proxy
Client							
37	0	1	0	0.00%	0.00%	0.00%	0 Critical
Bkgnd							
38	96	2642	36	0.00%	0.00%	0.00%	0 Net
Background							
39	0	2	0	0.00%	0.00%	0.00%	0 IDB Work
40	4	111	36	0.00%	0.00%	0.00%	0 Logger
41	0	5243	0	0.00%	0.00%	0.00%	0 TTY
Background							
42	8	5251	1	0.00%	0.01%	0.00%	0 Per-Second
Jobs							
43	0	351	0	0.00%	0.00%	0.00%	0 c2800
Periodic							
44	0	1	0	0.00%	0.00%	0.00%	0 Inode
Table Dest							
45	0	1	0	0.00%	0.00%	0.00%	0 IKE HA Mgr
46	0	1	0	0.00%	0.00%	0.00%	0 IPSEC HA
Mgr							
47	4	4	1000	0.00%	0.00%	0.00%	0 rf task
48	0	3	0	0.00%	0.00%	0.00%	0 Net Input











196	0	212	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	0	2	0	0.00%	0.00%	0.00%	0 STUN_APP
200	4	1	4000	0.00%	0.00%	0.00%	0 STUN_TEST
201	0	1	0	0.00%	0.00%	0.00%	0
cpf_process_tpQ							
202	0	2	0	0.00%	0.00%	0.00%	0 AAA Cached
Serve							
203	0	2	0	0.00%	0.00%	0.00%	0 ENABLE AAA
204	0	1	0	0.00%	0.00%	0.00%	0 EM
Background Pr							
205	0	1	0	0.00%	0.00%	0.00%	0 Key chain
liveke							
206	0	2	0	0.00%	0.00%	0.00%	0 LINE AAA
207	0	2	0	0.00%	0.00%	0.00%	0 LOCAL AAA
208	0	4	0	0.00%	0.00%	0.00%	0 MPLS Auto
Mesh P							
209	4	2	2000	0.00%	0.00%	0.00%	0 TPLUS
210	0	2	0	0.00%	0.00%	0.00%	0 VSP_MGR
211	0	1	0	0.00%	0.00%	0.00%	0
FW_TEST_TRP							
212	0	1	0	0.00%	0.00%	0.00%	0 EPM MAIN
PROCESS							
213	0	3	0	0.00%	0.00%	0.00%	0 Crypto WUI
214	0	2	0	0.00%	0.00%	0.00%	0 Crypto
Support							
215	0	1	0	0.00%	0.00%	0.00%	0 IPSECv6 PS
Proc							
216	0	1	0	0.00%	0.00%	0.00%	0 CCVPM_HTSP
217	0	2	0	0.00%	0.00%	0.00%	0
VPM_MWI_BACKGROU							
218	0	1	0	0.00%	0.00%	0.00%	0 CCVPM_R2
219	0	1	0	0.00%	0.00%	0.00%	0 EPHONE MWI
Refre							
220	0	6	0	0.00%	0.00%	0.00%	0 FB/KS Log
HouseK							
221	0	2	0	0.00%	0.00%	0.00%	0 EPHONE MWI
BG Pr							
222	0	1	0	0.00%	0.00%	0.00%	0 Skinny HW
confer							
223	0	1945	0	0.00%	0.00%	0.00%	0 FLEX DSPRM
MAIN							
224	0	1943	0	0.00%	0.00%	0.00%	0 FLEX DSP
KEEPALI							
225	4	177	22	0.00%	0.00%	0.00%	0 VOICE REG
BG Pro							
226	0	1	0	0.00%	0.00%	0.00%	0 Presence
Process							
227	0	1	0	0.00%	0.00%	0.00%	0 CCSWVOICE







289	0	135	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	8	59	135	0.00%	0.00%	0.00%	0 Syslog
294	0	1	0	0.00%	0.00%	0.00%	0 VPDN Test
295	0	3	0	0.00%	0.00%	0.00%	0 EEM ED RPC
296	0	2	0	0.00%	0.00%	0.00%	0 Key Proc
297	0	1	0	0.00%	0.00%	0.00%	0 tHUB
299	48	105	457	0.00%	0.00%	0.00%	0 IPv6 RIB
Event H							
300	8	2636	3	0.00%	0.00%	0.00%	0 CEF: IPv6
proces							
301	16	452	35	0.00%	0.00%	0.00%	0 IPv6 IDB
302	140	1096	127	0.00%	0.00%	0.00%	0 IPv6 Input
303	32	43	744	0.00%	0.00%	0.00%	0 IPv6 ND
304	0	1	0	0.00%	0.00%	0.00%	0 IPv6
Address							
305	8	21106	0	0.00%	0.02%	0.01%	0 MLD
306	92	5430	16	0.00%	0.00%	0.00%	0 OSPFv3-6
Router							
307	780	953	818	0.07%	0.00%	0.00%	0 FR LMI
308	48	105	457	0.00%	0.00%	0.00%	0 FR PVC
event man							
309	0	52693	0	0.00%	0.03%	0.02%	0 FR
Broadcast Out							
310	0	91	0	0.00%	0.00%	0.00%	0 FR ARP
311	0	88	0	0.00%	0.00%	0.00%	0 FR
FRAGMENTATION							
312	0	264	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	529	0	0.00%	0.00%	0.00%	0 compute
load per							
316	4	5281	0	0.00%	0.00%	0.00%	0 IGMP Input
317	0	52689	0	0.07%	0.03%	0.02%	0 Mwheel
Process							
318	64	105700	0	0.15%	0.15%	0.15%	0 PIM
Process							
321	160	5549	28	0.07%	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 01:28:05, output 01:28:05, 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: 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 474, LMI stat recvd 469, 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 2363/0, interface  
broadcasts 2234  
Last input 00:00:03, output 00:00:01, output hang never  
Last clearing of "show interface" counters 01:28:04  
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 0 bits/sec, 0 packets/sec  
5 minute output rate 0 bits/sec, 1 packets/sec  
3331 packets input, 295402 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  
3792 packets output, 335815 bytes, 0 underruns  
0 output errors, 0 collisions, 14 interface resets  
0 unknown protocol drops  
0 output buffer failures, 0 output buffers swapped out  
184 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 01:27:33, output 01:27:39, 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, 179 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 00:00:03, output 00:00:08, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 36
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
  495 packets input, 72108 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
  625 packets output, 62484 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
ID					
R2	Ser 0/2/0.23	123	R S I	2811	Ser
0/2/0.23					
R4	Ser 0/2/0.34	129	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 : 175 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 : 122 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 arp
```

```
R3#
```

```
R3#show ip arp
```

```
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	10.1.1.5	Serial0/2/0.23
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
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
    4.4.4.4           110          00:30:53
    2.2.2.2           110          01:17:47
    10.1.1.1          110          01:17:37
  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/ -	00:00:33	10.1.1.5
Serial0/2/0.23				
4.4.4.4	0	FULL/ -	00:00:31	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 00:00:01
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 4 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 00:00:00
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	ADV Router	Age	Seq#	Checksum	Link
count					
2.2.2.2	2.2.2.2	805	0x8000001A	0x00A4AB	2
3.3.3.3	3.3.3.3	897	0x8000001A	0x004AFE	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	805	0x80000003	0x0020C9
10.1.1.8	3.3.3.3	897	0x80000003	0x00B12C

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	805	0x80000003	0x001ACA

Router Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Link
count					
3.3.3.3	3.3.3.3	897	0x8000001B	0x00B47E	2
4.4.4.4	4.4.4.4	682	0x8000001F	0x0049E1	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	897	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	1886	0x80000001	0x00F966	0
10.1.4.8	4.4.4.4	683	0x80000006	0x00C78F	0
10.2.1.0	4.4.4.4	683	0x80000004	0x00431D	0
10.2.2.0	4.4.4.4	683	0x80000004	0x003827	0
10.2.4.12	4.4.4.4	1887	0x80000001	0x009DB9	0

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
0.0.0.0	10.1.1.1	1298	0x80000003	0x00C7DB	1
10.1.4.4	3.3.3.3	1885	0x80000001	0x00ACC1	0
10.1.4.8	3.3.3.3	899	0x80000003	0x0080E7	0
10.2.1.0	3.3.3.3	899	0x80000003	0x00F777	0
10.2.2.0	3.3.3.3	899	0x80000003	0x00EC81	0
10.2.4.12	3.3.3.3	1887	0x80000001	0x005015	0

R3#

```
R3#show ip route ospf
    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, 00:31:35, Serial0/2/0.34
O N2   10.1.4.8/30 [110/20] via 10.1.1.10, 01:18:18, Serial0/2/0.34
O N2   10.2.1.0/24 [110/20] via 10.1.1.10, 01:18:18, Serial0/2/0.34
O N2   10.2.2.0/24 [110/20] via 10.1.1.10, 01:18:18, Serial0/2/0.34
O IA   10.1.1.0/30 [110/128] via 10.1.1.5, 01:18:28, Serial0/2/0.23
O N2   10.1.4.4/30 [110/20] via 10.1.1.10, 00:31:34, Serial0/2/0.34
O*E2  0.0.0.0/0 [110/1] via 10.1.1.5, 01:18:18, Serial0/2/0.23
R3#
```