

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

Current configuration : 2384 bytes

```
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R3
!
boot-start-marker
boot-end-marker
!
logging message-counter syslog
enable secret 5 $1$p7Bj$JJYJbGT9E4K7craiToCfl.
!
no aaa new-model
!
dot11 syslog
ip source-route
!
!
ip cef
!
!
ip multicast-routing
ipv6 unicast-routing
ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
!
```

```
!  
!  
voice-card 0  
!  
!  
!  
!  
!  
archive  
  log config  
  hidekeys  
!  
!  
!  
!  
!  
!  
!  
!  
interface Tunnel34  
  no ip address  
  ipv6 address 2026::34:1/122  
  ipv6 enable  
  ipv6 ospf 6 area 34  
  tunnel source 10.1.1.9  
  tunnel destination 10.1.1.10  
  tunnel mode ipv6ip  
!  
interface FastEthernet0/0  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
interface FastEthernet0/1  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
interface Serial0/0/0  
  no ip address  
!  
interface Serial0/0/1  
  no ip address  
  clock rate 2000000  
!  
interface Serial0/1/0  
  no ip address  
  shutdown  
!  
interface Serial0/2/0  
  no ip address
```

```
encapsulation frame-relay
!
interface Serial0/2/0.23 point-to-point
 ip address 10.1.1.6 255.255.255.252
 ip pim sparse-dense-mode
 snmp trap link-status
 ipv6 address 2026::1:2/122
 ipv6 enable
 ipv6 ospf 6 area 0
 frame-relay interface-dlci 302
!
interface Serial0/2/0.34 point-to-point
 ip address 10.1.1.9 255.255.255.252
 ip pim sparse-dense-mode
 snmp trap link-status
 frame-relay interface-dlci 304
!
interface Serial0/3/0
 no ip address
!
router ospf 1
 router-id 3.3.3.3
 log-adjacency-changes
 area 34 nssa no-summary
 network 10.1.1.2 0.0.0.0 area 0
 network 10.1.1.9 0.0.0.0 area 34
 network 10.3.3.1 0.0.0.0 area 0
 network 10.3.3.3 0.0.0.0 area 0
 network 0.0.0.0 255.255.255.255 area 0
!
ip forward-protocol nd
no ip http server
no ip http secure-server
!
!
!
ip access-list standard DENY_10
 deny 10.0.0.0 0.255.255.255
 permit any
ip access-list standard DENY_ALL
 deny any
ip access-list standard PERMIT_10
 permit 10.0.0.0 0.255.255.255
ip access-list standard PERMIT_ALL
 permit any
!
ipv6 router ospf 6
 log-adjacency-changes
!
!
!
!
!
```

```
!  
!  
control-plane  
!  
!  
!  
ccm-manager fax protocol cisco  
!  
mgcp fax t38 ecm  
mgcp behavior g729-variants static-pt  
!  
!  
!  
!  
!  
line con 0  
  exec-timeout 0 0  
  logging synchronous  
line aux 0  
line vty 0 4  
  exec-timeout 0 0  
  password cisco  
  login  
!  
scheduler allocate 20000 1000  
end
```

```
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 = 32/34/40 ms
```

```
R3#
```

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 = 32/36/56 ms

R3#

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 = 64/64/68 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 = 128/130/132  
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 = 64/66/68 ms
```


R3#

R3#ping 10.1.1.5

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 10.1.1.5, timeout is 2 seconds:

!!!!

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

R3#

```
R3#ping 10.1.1.6
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.6, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/129/132  
ms
```

```
R3#
```

```
R3#ping 10.1.1.9
```

```
Type escape sequence to abort.
```

```
Sending 5, 100-byte ICMP Echos to 10.1.1.9, timeout is 2 seconds:
```

```
!!!!
```

```
Success rate is 100 percent (5/5), round-trip min/avg/max = 128/130/132
```

```
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 = 192/193/196  
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 = 192/195/200  
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 = 192/195/200
```

```
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 = 192/193/196
```

```
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 = 192/194/196  
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 = 192/195/196  
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 = 192/195/196  
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 = 192/196/200  
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 0 percent (0/5)
```

```
R3#
```

```

R3#
R3#show ip interface brief
Interface          IP-Address      OK? Method Status
Protocol
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 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, 01:21:01, 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, 01:21:01, Serial0/2/0.34
O N2 10.2.1.0/24 [110/20] via 10.1.1.10, 01:21:01, Serial0/2/0.34
O N2 10.2.2.0/24 [110/20] via 10.1.1.10, 01:21:01, Serial0/2/0.34
O IA 10.1.1.0/30 [110/128] via 10.1.1.5, 01:21:11, Serial0/2/0.23
O N2 10.1.4.4/30 [110/20] via 10.1.1.10, 01:21:02, 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, 01:21:02, 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	16	69	231	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	4	1041	3	0.00%	0.04%	0.02%	0	Load Meter
3	0	5	0	0.00%	0.00%	0.00%	0	Collection
proce								
4	0	1	0	0.00%	0.00%	0.00%	0	EDDRI_MAIN
5	6668	621	10737	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								

38	64	2493	25	0.00%	0.00%	0.00%	0 Net
Background							
39	0	2	0	0.00%	0.00%	0.00%	0 IDB Work
40	4	52	76	0.00%	0.00%	0.00%	0 Logger
41	0	5197	0	0.00%	0.00%	0.00%	0 TTY
Background							
42	4	5206	0	0.00%	0.02%	0.00%	0 Per-Second
Jobs							
43	0	348	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
49	0	1042	0	0.00%	0.00%	0.00%	0 Compute
load avg							
50	2088	88	23727	0.00%	0.04%	0.00%	0 Per-minute
Jobs							
51	0	1	0	0.00%	0.00%	0.00%	0 AggMgr
Process							
52	0	1	0	0.00%	0.00%	0.00%	0 Token
Daemon							
53	0	1	0	0.00%	0.00%	0.00%	0 Transport
Port A							
54	0	1	0	0.00%	0.00%	0.00%	0
dev_device_inser							
55	0	1	0	0.00%	0.00%	0.00%	0
dev_device_remov							
56	0	1	0	0.00%	0.00%	0.00%	0
sal_dpc_process							
57	0	1	0	0.00%	0.00%	0.00%	0 ARL Table
Manage							
58	0	2	0	0.00%	0.00%	0.00%	0 ESWPPM
59	0	2	0	0.00%	0.00%	0.00%	0 Eswilp
Storm Con							
60	0	2	0	0.00%	0.00%	0.00%	0 ESWILPPM
61	0	2	0	0.00%	0.00%	0.00%	0 Eswilp
Storm Con							
62	0	20812	0	0.00%	0.01%	0.00%	0 Netclock
Backgro							
63	0	2	0	0.00%	0.00%	0.00%	0 SM Monitor
64	0	2	0	0.00%	0.00%	0.00%	0 Bryce I2C
CMD Qu							
65	276	4	69000	0.00%	0.00%	0.00%	0 USB
Startup							
66	0	868	0	0.00%	0.00%	0.00%	0 mxt5100
67	0	2	0	0.00%	0.00%	0.00%	0 VNM DSPRM
MAIN							
68	0	1	0	0.00%	0.00%	0.00%	0 DSPFARM
DSP READ							

250	0	1	0	0.00%	0.00%	0.00%	0 UNICAST
REKEY AC							
251	0	5224	0	0.07%	0.00%	0.00%	0 Crypto
Device Up							
252	0	2	0	0.00%	0.00%	0.00%	0 Multi-ISA
Event							
253	0	1	0	0.00%	0.00%	0.00%	0 Multi-ISA
Cleanu							
254	0	1	0	0.00%	0.00%	0.00%	0 PM
Callback							
255	0	1	0	0.00%	0.00%	0.00%	0 Licensing
MIB pr							
256	0	26111	0	0.00%	0.01%	0.00%	0 Atheros
LED Ctro							
257	0	2	0	0.00%	0.00%	0.00%	0 Control-
plane ho							
258	0	1	0	0.00%	0.00%	0.00%	0 DATA
Transfer Pr							
259	0	1	0	0.00%	0.00%	0.00%	0 DATA
Collector							
260	0	2	0	0.00%	0.00%	0.00%	0 AAA SEND
STOP EV							
261	8	2	4000	0.00%	0.00%	0.00%	0 EEM ED
Resource							
262	0	2	0	0.00%	0.00%	0.00%	0 EEM ED
Routing							
263	0	3	0	0.00%	0.00%	0.00%	0 EEM ED
Track							
264	0	524	0	0.00%	0.00%	0.00%	0 RMON
Recycle Pro							
265	0	2	0	0.00%	0.00%	0.00%	0 RMON
Deferred Se							
266	0	1	0	0.00%	0.00%	0.00%	0 Syslog
Traps							
267	0	164	0	0.00%	0.00%	0.00%	0 Crypto
cTCP proc							
268	8	2	4000	0.00%	0.00%	0.00%	0 VLAN
Manager							
269	128	2092	61	0.00%	0.00%	0.00%	0 OSPFv3-6
Hello							
271	0	5206	0	0.00%	0.00%	0.00%	0 trunk
conditioni							
272	0	1	0	0.00%	0.00%	0.00%	0 trunk
conditioni							
273	0	5226	0	0.00%	0.00%	0.00%	0 CME
Extension Mo							
274	0	1	0	0.00%	0.00%	0.00%	0 IP SLAs
Ethernet							
275	8	79	101	0.00%	0.00%	0.00%	0 EEM Server
276	4	2	2000	0.00%	0.00%	0.00%	0 EEM Policy
Direc							
277	0	3	0	0.00%	0.00%	0.00%	0 EEM ED CLI
278	0	3	0	0.00%	0.00%	0.00%	0 EEM ED
Counter							

279	0	3	0	0.00%	0.00%	0.00%	0	EM ED GOLD
280	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED
Interface								
281	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
IOSWD								
282	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
Ipsla								
283	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
None								
284	0	2	0	0.00%	0.00%	0.00%	0	EEM ED Nf
285	0	3	0	0.00%	0.00%	0.00%	0	EEM ED OIR
286	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED RF
287	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
SNMP								
288	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
SNMP Noti								
289	4	135	29	0.00%	0.00%	0.00%	0	EEM ED
Timer								
290	4	3	1333	0.00%	0.00%	0.00%	0	EEM ED
Test								
291	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
Config								
292	0	3	0	0.00%	0.00%	0.00%	0	EEM ED Env
293	0	29	0	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	28	52	538	0.00%	0.00%	0.00%	0	IPv6 RIB
Event H								
300	4	2613	1	0.00%	0.00%	0.00%	0	CEF: IPv6
proces								
301	8	395	20	0.00%	0.00%	0.00%	0	IPv6 IDB
302	152	1162	130	0.00%	0.00%	0.00%	0	IPv6 Input
303	16	21	761	0.00%	0.00%	0.00%	0	IPv6 ND
304	0	1	0	0.00%	0.00%	0.00%	0	IPv6
Address								
305	0	20922	0	0.07%	0.02%	0.01%	0	MLD
306	48	5265	9	0.00%	0.00%	0.00%	0	OSPFv3-6
Router								
307	756	1006	751	0.00%	0.00%	0.00%	0	FR LMI
308	16	97	164	0.00%	0.00%	0.00%	0	FR PVC
event man								
309	4	52234	0	0.07%	0.03%	0.02%	0	FR
Broadcast Out								
310	0	89	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	262	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	524	0	0.00%	0.00%	0.00%	0	compute
load per								
316	0	5234	0	0.00%	0.00%	0.00%	0	IGMP Input
317	4	52230	0	0.07%	0.03%	0.02%	0	Mwheel
Process								
318	48	104800	0	0.07%	0.14%	0.15%	0	PIM
Process								
321	64	5388	11	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 01:27:19, output 01:27:20, 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 502, LMI stat recvd 502, 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 2244/0, interface
broadcasts 2095
Last input 00:00:02, output 00:00:00, output hang never
Last clearing of "show interface" counters 01:27:19
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, 0 packets/sec
  3740 packets input, 330171 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
  3907 packets output, 345922 bytes, 0 underruns
  0 output errors, 0 collisions, 9 interface resets
```


0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
60 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 01:26:47, output 01:26:53, 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, 177 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 00:00:07, 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: 17
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
  526 packets input, 76600 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
  601 packets output, 60544 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 unknown protocol drops
  0 output buffer failures, 0 output buffers swapped out
```

R3#

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

```
R3#
```

```
R3#show cdp neighbors
```

```
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
```

S - Switch, H - Host, I - IGMP, r - Repeater

Device ID	Local Intrfce	Holdtme	Capability	Platform	Port
R2	Ser 0/2/0.23	149	R S I	2811	Ser
R4	Ser 0/2/0.34	154	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 : 141 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 : 146 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 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          01:23:19
 2.2.2.2           110          01:23:29
 10.1.1.1          110          01:23:19
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/ -	00:00:30	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 00:00:02
  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 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 count	ADV Router	Age	Seq#	Checksum	Link
2.2.2.2	2.2.2.2	1048	0x8000000C	0x00C09D	2
3.3.3.3	3.3.3.3	1075	0x8000000C	0x0066F0	2

Summary Net Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.0	2.2.2.2	1048	0x80000003	0x0020C9
10.1.1.8	3.3.3.3	1075	0x80000003	0x00B12C

Summary ASB Link States (Area 0)

Link ID	ADV Router	Age	Seq#	Checksum
10.1.1.1	2.2.2.2	1048	0x80000003	0x001ACA

Router Link States (Area 34)

Link ID count	ADV Router	Age	Seq#	Checksum	Link
3.3.3.3	3.3.3.3	1075	0x8000000D	0x00D070	2
4.4.4.4	4.4.4.4	1166	0x8000000F	0x0069D1	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	1075	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	1167	0x80000006	0x00EF6B	0
10.1.4.8	4.4.4.4	1167	0x80000005	0x00C98E	0
10.2.1.0	4.4.4.4	1167	0x80000004	0x00431D	0
10.2.2.0	4.4.4.4	1167	0x80000004	0x003827	0
10.2.4.12	4.4.4.4	1167	0x80000005	0x0095BD	0

Type-5 AS External Link States

Link ID	ADV Router	Age	Seq#	Checksum	Tag
0.0.0.0	10.1.1.1	1257	0x80000003	0x00C7DB	1
10.1.4.4	3.3.3.3	1077	0x80000003	0x00A8C3	0
10.1.4.8	3.3.3.3	1077	0x80000003	0x0080E7	0
10.2.1.0	3.3.3.3	1077	0x80000003	0x00F777	0
10.2.2.0	3.3.3.3	1077	0x80000003	0x00EC81	0
10.2.4.12	3.3.3.3	1078	0x80000003	0x004C17	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, 01:24:04, Serial0/2/0.34
O N2   10.1.4.8/30 [110/20] via 10.1.1.10, 01:24:04, Serial0/2/0.34
O N2   10.2.1.0/24 [110/20] via 10.1.1.10, 01:24:04, Serial0/2/0.34
O N2   10.2.2.0/24 [110/20] via 10.1.1.10, 01:24:04, Serial0/2/0.34
O IA   10.1.1.0/30 [110/128] via 10.1.1.5, 01:24:14, Serial0/2/0.23
O N2   10.1.4.4/30 [110/20] via 10.1.1.10, 01:24:04, Serial0/2/0.34
O*E2  0.0.0.0/0 [110/1] via 10.1.1.5, 01:24:04, Serial0/2/0.23
R3#
```

