

```
R4#
R4#show running-config
Building configuration...

Current configuration : 2752 bytes
!
! No configuration change since last restart
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R4
!
boot-start-marker
boot system flash:c1841-advipservicesk9-mz.124-25b.bin
boot-end-marker
!
no logging console
enable secret 5 $1$/jV1$vYpms8yDHgGeGsdSbjts//
!
no aaa new-model
ip cef
!
!
no ip dhcp use vrf connected
ip dhcp excluded-address 10.2.1.1 10.2.1.3
ip dhcp excluded-address 10.2.1.254
!
ip dhcp pool VLAN10
    network 10.2.1.0 255.255.255.0
    default-router 10.2.1.254
    domain-name netlearning.com.mx
    dns-server 209.65.200.243
!
!
ip multicast-routing
ip auth-proxy max-nodata-conns 3
ip admission max-nodata-conns 3
!
ipv6 unicast-routing
!
!
!
!
ip ftp username netlearning
ip ftp password netpass
!
!
!
!
interface Tunnel134
    no ip address
```

```
ipv6 address 2026::34:2/122
ipv6 enable
ipv6 ospf 6 area 34
tunnel source Serial0/1/0.34
tunnel destination 10.1.1.9
tunnel mode ipv6ip
!
interface Tunnel46
no ip address
ipv6 address 2026::2:1/122
ipv6 enable
ipv6 rip RIPNG enable
tunnel source 10.1.4.5
tunnel destination 10.1.4.6
!
interface FastEthernet0/0
ip address 10.1.4.5 255.255.255.252
ip pim sparse-dense-mode
duplex auto
speed auto
!
interface FastEthernet0/1
ip address 10.1.4.9 255.255.255.252
ip pim sparse-dense-mode
duplex auto
speed auto
!
interface Serial0/0/0
no ip address
clock rate 56000
!
interface Serial0/0/1
no ip address
clock rate 56000
!
interface Serial0/1/0
no ip address
encapsulation frame-relay
!
interface Serial0/1/0.34 point-to-point
ip address 10.1.1.10 255.255.255.252
ip pim sparse-dense-mode
frame-relay interface-dlci 403
!
router eigrp 10
redistribute ospf 1 metric 10000 10 255 1 1500
network 10.1.4.5 0.0.0.0
network 10.1.4.9 0.0.0.0
metric weights 0 1 1 1 1 1
no auto-summary
eigrp router-id 4.4.4.4
!
router ospf 1
router-id 4.4.4.4
```

```
log-adjacency-changes
area 34 nssa
redistribute eigrp 10 subnets
network 10.1.1.10 0.0.0.0 area 34
!
ip forward-protocol nd
ip route 0.0.0.0 0.0.0.0 192.168.20.1
!
!
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
router-id 4.4.4.4
log-adjacency-changes
redistribute connected
redistribute rip RIPNG
!
ipv6 router rip RIPNG
redistribute connected metric 5
redistribute ospf 6 metric 5
!
!
!
!
control-plane
!
!
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
exec-timeout 0 0
no login
!
scheduler allocate 20000 1000
ntp clock-period 17177887
ntp server 10.1.1.1
end
```

R4#

```
R4#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 = 224/226/228  
ms
```

```
R4#
```

```
R4#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 = 224/226/228  
ms
```

```
R4#
```

```
R4#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 = 192/194/196  
ms
```

```
R4#
```

```
R4#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 = 196/196/200  
ms
```

```
R4#
```

```
R4#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 = 128/130/132  
ms
```

```
R4#
```



```
R4#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 = 128/129/132  
ms
```

```
R4#
```

```
R4#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 = 64/65/68 ms
```

```
R4#
```

```
R4#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 = 64/65/68 ms
```

```
R4#
```

```
R4#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 = 128/129/132  
ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/1/4 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/1/1 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms  
R4#
```

```
R4#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 = 1/2/4 ms  
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/2/4 ms
```

```
R4#
```

```
R4#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 = 1/1/4 ms
```

```
R4#
```

```
R4#show ip interface brief
```

Interface	IP-Address	OK?	Method	Status
FastEthernet0/0	10.1.4.5	YES	NVRAM	up
FastEthernet0/1	10.1.4.9	YES	NVRAM	up
Serial0/0/0	unassigned	YES	NVRAM	down
Serial0/0/1	unassigned	YES	NVRAM	down
Serial0/1/0	unassigned	YES	NVRAM	up
Serial0/1/0.34	10.1.1.10	YES	NVRAM	up
Tunnel34	unassigned	YES	NVRAM	up
Tunnel46	unassigned	YES	NVRAM	up

```
R4#
```



R4#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 10.1.1.9 to network 0.0.0.0

10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks  
D 10.2.4.12/30 [90/120] via 10.1.4.10, 01:05:27, FastEthernet0/1  
[90/120] via 10.1.4.6, 01:05:27, FastEthernet0/0  
C 10.1.1.8/30 is directly connected, Serial0/1/0.34  
C 10.1.4.8/30 is directly connected, FastEthernet0/1  
D 10.2.1.0/24 [90/111] via 10.1.4.10, 01:04:55, FastEthernet0/1  
[90/111] via 10.1.4.6, 01:04:55, FastEthernet0/0  
D 10.2.2.0/24 [90/111] via 10.1.4.10, 01:05:00, FastEthernet0/1  
[90/111] via 10.1.4.6, 01:05:00, FastEthernet0/0  
C 10.1.4.4/30 is directly connected, FastEthernet0/0  
O\*IA 0.0.0.0/0 [110/65] via 10.1.1.9, 01:05:37, Serial0/1/0.34  
R4#

R4#show processes cpu

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

PID	Runtime (ms)	Invoked	uSecs	5Sec	1Min	5Min	TTY	Process
1	0	3	0	0.00%	0.00%	0.00%	0	Chunk
Manager								
2	0	814	0	0.00%	0.01%	0.00%	0	Load Meter
3	52	856	60	0.00%	0.00%	0.00%	0	OSPF-1
Hello								
4	2484	412	6029	0.00%	0.05%	0.05%	0	Check
heaps								
5	0	1	0	0.00%	0.00%	0.00%	0	Pool
Manager								
6	0	2	0	0.00%	0.00%	0.00%	0	Timers

7	0	1	0	0.00%	0.00%	0.00%	0	OIR
Handler								
8	540	137	3941	0.00%	0.01%	0.00%	0	
Environmental mo								
9	0	1	0	0.00%	0.00%	0.00%	0	Crash
writer								
10	12	95	126	0.00%	0.00%	0.00%	0	ARP Input
11	0	2	0	0.00%	0.00%	0.00%	0	ATM Idle
Timer								
12	0	2	0	0.00%	0.00%	0.00%	0	AAA high-
capacit								
13	0	1	0	0.00%	0.00%	0.00%	0	
AAA_SERVER_DEADT								
14	0	1	0	0.00%	0.00%	0.00%	0	Policy
Manager								
15	0	3	0	0.00%	0.00%	0.00%	0	DDR Timers
16	4	2	2000	0.00%	0.00%	0.00%	0	Entity MIB
API								
17	8	165	48	0.00%	0.00%	0.00%	0	EEM ED
Syslog								
18	0	1219	0	0.00%	0.00%	0.00%	0	HC Counter
Timer								
19	0	2	0	0.00%	0.00%	0.00%	0	Serial
Background								
20	0	1	0	0.00%	0.00%	0.00%	0	RO Notify
Timers								
21	0	2	0	0.00%	0.00%	0.00%	0	SMART
22	0	4062	0	0.00%	0.00%	0.00%	0	GraphIt
23	0	2	0	0.00%	0.00%	0.00%	0	Dialer
event								
24	0	1	0	0.00%	0.00%	0.00%	0	SERIAL
A'detect								
25	0	2	0	0.00%	0.00%	0.00%	0	XML Proxy
Client								
26	824	619	1331	0.08%	0.13%	0.14%	0	Exec
27	0	1	0	0.00%	0.00%	0.00%	0	Inode
Table Dest								
28	0	1	0	0.00%	0.00%	0.00%	0	Critical
Bkgnd								
29	16	4104	3	0.00%	0.00%	0.00%	0	Net
Background								
30	0	2	0	0.00%	0.00%	0.00%	0	IDB Work
31	0	301	0	0.00%	0.00%	0.00%	0	Logger
32	4	4059	0	0.08%	0.00%	0.00%	0	TTY
Background								
33	48	4067	11	0.00%	0.00%	0.00%	0	Per-Second
Jobs								
34	0	1	0	0.00%	0.00%	0.00%	0	AggMgr
Process								
35	0	1	0	0.00%	0.00%	0.00%	0	Token
Daemon								
36	0	1	0	0.00%	0.00%	0.00%	0	Transport
Port A								
37	0	2	0	0.00%	0.00%	0.00%	0	ESWPPM





100	0	2	0	0.00%	0.00%	0.00%	0	ATM OAM
TIMER								
101	0	15	0	0.00%	0.00%	0.00%	0	HTTP CORE
102	0	1	0	0.00%	0.00%	0.00%	0	RARP Input
103	0	1	0	0.00%	0.00%	0.00%	0	PAD InCall
104	0	2	0	0.00%	0.00%	0.00%	0	X.25
Background								
105	0	2	0	0.00%	0.00%	0.00%	0	PPP Bind
106	0	2	0	0.00%	0.00%	0.00%	0	PPP SSS
107	0	40685	0	0.00%	0.03%	0.02%	0	RBSCP
Background								
108	0	815	0	0.00%	0.00%	0.00%	0	L2F
management d								
109	0	1	0	0.00%	0.00%	0.00%	0	Inspect
Timer								
110	44	855	51	0.00%	0.00%	0.00%	0	OSPFv3-6
Hello								
111	0	14	0	0.00%	0.00%	0.00%	0	
Authentication P								
112	0	1	0	0.00%	0.00%	0.00%	0	Auth-proxy
AAA B								
113	0	1	0	0.00%	0.00%	0.00%	0	IPS Timer
114	0	2	0	0.00%	0.00%	0.00%	0	SDEE
Management								
115	0	1	0	0.00%	0.00%	0.00%	0	IPv6
Inspect Tim								
116	0	2	0	0.00%	0.00%	0.00%	0	URL filter
proc								
117	0	3	0	0.00%	0.00%	0.00%	0	Crypto HW
Proc								
118	0	2	0	0.00%	0.00%	0.00%	0	ENABLE AAA
119	0	1	0	0.00%	0.00%	0.00%	0	EM
Background Pr								
120	0	1	0	0.00%	0.00%	0.00%	0	Key chain
liveke								
121	0	2	0	0.00%	0.00%	0.00%	0	LINE AAA
122	0	2	0	0.00%	0.00%	0.00%	0	LOCAL AAA
123	0	2	0	0.00%	0.00%	0.00%	0	TPLUS
124	0	2	0	0.00%	0.00%	0.00%	0	VSP_MGR
125	0	1	0	0.00%	0.00%	0.00%	0	encrypt
proc								
126	0	3	0	0.00%	0.00%	0.00%	0	Crypto WUI
127	0	2	0	0.00%	0.00%	0.00%	0	Crypto
Support								
128	0	1	0	0.00%	0.00%	0.00%	0	
RPMS_PROC_MAIN								
129	0	1	0	0.00%	0.00%	0.00%	0	crypto
engine pr								
130	32	4	8000	0.00%	0.00%	0.00%	0	Crypto CA
131	0	1	0	0.00%	0.00%	0.00%	0	Crypto
PKI-CRL								
132	0	1	0	0.00%	0.00%	0.00%	0	Crypto SSL
133	0	4	0	0.00%	0.00%	0.00%	0	Crypto ACL







R4#

```
R4#show interfaces
FastEthernet0/0 is up, line protocol is up
  Hardware is Gt96k FE, address is 0019.5578.1cb2 (bia 0019.5578.1cb2)
  Internet address is 10.1.4.5/30
  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)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
```

```
Last input 00:00:02, output 00:00:01, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue: 0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
  1949 packets input, 191402 bytes
  Received 1124 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
  2339 packets output, 205864 bytes, 0 underruns
  0 output errors, 0 collisions, 4 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 up, line protocol is up
  Hardware is Gt96k FE, address is 0019.5578.1cb3 (bia 0019.5578.1cb3)
  Internet address is 10.1.4.9/30
  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)
  Full-duplex, 100Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 00:00:03, output 00:00:00, 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
    1399 packets input, 140311 bytes
    Received 1080 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
    1939 packets output, 161364 bytes, 0 underruns
    0 output errors, 0 collisions, 5 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 128 Kbit/sec, DLY 20000 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation HDLC, loopback not set
  Keepalive set (10 sec)
  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 0/0/32 (active/max active/max total)  
  Reserved Conversations 0/0 (allocated/max allocated)  
  Available Bandwidth 96 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

Serial0/0/1 is down, line protocol is down  
  Hardware is GT96K Serial  
  MTU 1500 bytes, BW 128 Kbit/sec, DLY 20000 usec,  
    reliability 255/255, txload 1/255, rxload 1/255  
  Encapsulation HDLC, loopback not set  
  Keepalive set (10 sec)  
  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 0/0/32 (active/max active/max total)  
    Reserved Conversations 0/0 (allocated/max allocated)  
    Available Bandwidth 96 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 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)  
  LMI enq sent 408, LMI stat recvd 408, 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 659/1, interface  
broadcasts 588  
Last input 00:00:00, output 00:00:08, output hang never  
Last clearing of "show interface" counters 01:08:09  
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  
2209 packets input, 178315 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  
2271 packets output, 186076 bytes, 0 underruns  
0 output errors, 0 collisions, 2 interface resets  
0 unknown protocol drops  
0 output buffer failures, 0 output buffers swapped out  
8 carrier transitions  
DCD=up DSR=up DTR=up RTS=up CTS=up

Serial0/1/0.34 is up, line protocol is up  
Hardware is GT96K Serial  
Internet address is 10.1.1.10/30  
MTU 1500 bytes, BW 1544 Kbit/sec, DLY 20000 usec,  
reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation FRAME-RELAY  
Last clearing of "show interface" counters never  
Tunnel34 is up, line protocol is up  
Hardware is Tunnel  
MTU 1514 bytes, BW 9 Kbit/sec, DLY 500000 usec,  
reliability 255/255, txload 1/255, rxload 1/255  
Encapsulation TUNNEL, loopback not set  
Keepalive not set  
Tunnel source 10.1.1.10 (Serial0/1/0.34), destination 10.1.1.9  
Tunnel protocol/transport IPv6/IP  
Tunnel TTL 255  
Fast tunneling enabled  
Tunnel transmit bandwidth 8000 (kbps)  
Tunnel receive bandwidth 8000 (kbps)  
Last input 00:00:02, output 00:00:00, output hang never  
Last clearing of "show interface" counters never  
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 5  
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  
434 packets input, 52836 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  
454 packets output, 46016 bytes, 0 underruns  
0 output errors, 0 collisions, 0 interface resets  
0 unknown protocol drops

```
0 output buffer failures, 0 output buffers swapped out
Tunnel46 is up, line protocol is up
Hardware is Tunnel
MTU 1514 bytes, BW 9 Kbit/sec, DLY 500000 usec,
  reliability 255/255, txload 1/255, rxload 1/255
Encapsulation TUNNEL, loopback not set
Keepalive not set
Tunnel source 10.1.4.5, destination 10.1.4.6
Tunnel protocol/transport GRE/IP
  Key disabled, sequencing disabled
  Checksumming of packets disabled
Tunnel TTL 255
Fast tunneling enabled
Tunnel transmit bandwidth 8000 (kbps)
Tunnel receive bandwidth 8000 (kbps)
Last input 00:00:15, output 00:00:25, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 25
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
  153 packets input, 17596 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
  149 packets output, 22844 bytes, 0 underruns
  0 output errors, 0 collisions, 0 interface resets
  0 unknown protocol drops
  0 output buffer failures, 0 output buffers swapped out
```

R4#

```
R4#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					
R3	Ser 0/1/0.34	178	R S I	2811	Ser
0/2/0.34					
DSW1	Fas 0/0	170	R S I	WS-C3550-	Fas
0/1					
DSW2	Fas 0/1	154	R S I	WS-C3550-	Fas
0/1					
R4#					

```
R4#show cdp neighbors detail
```

```
-----
```

```
Device ID: R3
```

```
Entry address(es):
```

```
  IP address: 10.1.1.9
```

```
Platform: Cisco 2811, Capabilities: Router Switch IGMP
```

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

```
Holdtime : 171 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: DSW1
```

```
Entry address(es):
```

```
  IP address: 10.1.4.6
```

```
Platform: Cisco WS-C3550-24, Capabilities: Router Switch IGMP
```

```
Interface: FastEthernet0/0, Port ID (outgoing port): FastEthernet0/1
```

```
Holdtime : 162 sec
```

```
Version :
```

```
Cisco IOS Software, C3550 Software (C3550-IPSERVICESK9-M), Version  
12.2(44)SE6, RELEASE SOFTWARE (fc1)
```

```
Copyright (c) 1986-2009 by Cisco Systems, Inc.
```

```
Compiled Mon 09-Mar-09 20:28 by gereddy
```

advertisement version: 2  
Protocol Hello: OUI=0x00000C, Protocol ID=0x0112; payload len=27,  
value=00000000FFFFFFFFF010221FF0000000000000000DBDE36E00FF0000  
VTP Management Domain: 'netlearning'  
Duplex: full

-----

Device ID: DSW2  
Entry address(es):  
  IP address: 10.1.4.10  
Platform: Cisco WS-C3550-24-PWR, Capabilities: Router Switch IGMP  
Interface: FastEthernet0/1, Port ID (outgoing port): FastEthernet0/1  
Holdtime : 146 sec

Version :  
Cisco IOS Software, C3550 Software (C3550-IPSERVICESK9-M), Version  
12.2(44)SE6, RELEASE SOFTWARE (fc1)  
Copyright (c) 1986-2009 by Cisco Systems, Inc.  
Compiled Mon 09-Mar-09 20:28 by gereddy

advertisement version: 2  
Protocol Hello: OUI=0x00000C, Protocol ID=0x0112; payload len=27,  
value=00000000FFFFFFFFF010221FF0000000000000000BFD20BA00FF0000  
VTP Management Domain: 'netlearning'  
Duplex: full

R4#



```
R4#show frame-relay map
Serial0/1/0.34 (up): point-to-point dlci, dlci 403(0x193,0x6430),
broadcast
                status defined, active
R4#
```

```
R4#show ip interface
FastEthernet0/0 is up, line protocol is up
  Internet address is 10.1.4.5/30
  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
    224.0.0.10
  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 disabled
  IP Flow switching is disabled
  IP CEF switching is enabled
  IP CEF Fast 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
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
FastEthernet0/1 is up, line protocol is up
  Internet address is 10.1.4.9/30
  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
    224.0.0.10
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 disabled
IP Flow switching is disabled
IP CEF switching is enabled
IP CEF Fast 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
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is 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 up, line protocol is up
    Internet protocol processing disabled
Serial0/1/0.34 is up, line protocol is up
    Internet address is 10.1.1.10/30
    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 Fast 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
WCCP Redirect outbound is disabled
WCCP Redirect inbound is disabled
WCCP Redirect exclude is disabled
Tunnel34 is up, line protocol is up
  Internet protocol processing disabled
Tunnel46 is up, line protocol is up
  Internet protocol processing disabled
R4#
```

R4#show ip cef

Prefix	Next Hop	Interface
0.0.0.0/0	10.1.1.9	Serial0/1/0.34
0.0.0.0/8	drop	
0.0.0.0/32	receive	
10.1.1.8/30	attached	Serial0/1/0.34
10.1.1.8/32	receive	
10.1.1.10/32	receive	
10.1.1.11/32	receive	
10.1.4.4/30	attached	FastEthernet0/0
10.1.4.4/32	receive	
10.1.4.5/32	receive	
10.1.4.6/32	10.1.4.6	FastEthernet0/0
10.1.4.7/32	receive	
10.1.4.8/30	attached	FastEthernet0/1
10.1.4.8/32	receive	
10.1.4.9/32	receive	
10.1.4.10/32	10.1.4.10	FastEthernet0/1
10.1.4.11/32	receive	
10.2.1.0/24	10.1.4.10	FastEthernet0/1
	10.1.4.6	FastEthernet0/0
10.2.2.0/24	10.1.4.10	FastEthernet0/1
	10.1.4.6	FastEthernet0/0
10.2.4.12/30	10.1.4.10	FastEthernet0/1
	10.1.4.6	FastEthernet0/0
127.0.0.0/8	drop	
224.0.0.0/4	0.0.0.0	
224.0.0.0/24	receive	
240.0.0.0/4	drop	
255.255.255.255/32	receive	

R4#

```
R4#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
R4#
```

```
R4#show ip protocols
Routing Protocol is "eigrp 10"
```

Outgoing update filter list for all interfaces is not set  
Incoming update filter list for all interfaces is not set  
Default networks flagged in outgoing updates  
Default networks accepted from incoming updates  
EIGRP metric weight K1=1, K2=1, K3=1, K4=1, K5=1  
EIGRP maximum hopcount 100  
EIGRP maximum metric variance 1  
Redistributing: eigrp 10, ospf 1  
EIGRP NSF-aware route hold timer is 240s  
Automatic network summarization is not in effect  
Maximum path: 4  
Routing for Networks:  
  10.1.4.5/32  
  10.1.4.9/32  
Routing Information Sources:  
  Gateway          Distance      Last Update  
  10.1.4.10          90          01:06:29  
  10.1.4.6          90          01:06:29  
Distance: internal 90 external 170

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 4.4.4.4  
It is an autonomous system boundary router  
Redistributing External Routes from,  
  eigrp 10, includes subnets in redistribution  
Number of areas in this router is 1. 0 normal 0 stub 1 nssa  
Maximum path: 4  
Routing for Networks:  
  10.1.1.10 0.0.0.0 area 34  
Reference bandwidth unit is 100 mbps  
Routing Information Sources:  
  Gateway          Distance      Last Update  
  3.3.3.3          110          01:07:10  
Distance: (default is 110)

R4#



```
R4#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
R4#
```

```
R4#show ip route eigrp
    10.0.0.0/8 is variably subnetted, 6 subnets, 2 masks
D       10.2.4.12/30 [90/120] via 10.1.4.10, 01:07:16, FastEthernet0/1
          [90/120] via 10.1.4.6, 01:07:16, FastEthernet0/0
D       10.2.1.0/24 [90/111] via 10.1.4.10, 01:06:44, FastEthernet0/1
          [90/111] via 10.1.4.6, 01:06:44, FastEthernet0/0
D       10.2.2.0/24 [90/111] via 10.1.4.10, 01:06:49, FastEthernet0/1
          [90/111] via 10.1.4.6, 01:06:49, FastEthernet0/0
R4#
```

R4#show ip eigrp neighbors

IP-EIGRP neighbors for process 10

H	Address	Interface	Hold	Uptime	SRTT	RTO	Q
Seq			(sec)		(ms)		Cnt
Num							
1	10.1.4.10	Fa0/1	10	01:07:38	2	200	0
44							
0	10.1.4.6	Fa0/0	10	01:08:13	1	200	0
48							

R4#

```
R4#show ip eigrp interfaces
```

```
IP-EIGRP interfaces for process 10
```

	Xmit Queue	Mean	Pacing Time	Multicast	
Pending					
Interface	Peers	Un/Reliable	SRTT	Un/Reliable	Flow Timer
Routes					
Fa0/0	1	0/0	1	0/1	50
0					
Fa0/1	1	0/0	2	0/1	50
0					

```
R4#
```

```
R4#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address
Interface				
3.3.3.3	0	FULL/ -	00:00:35	10.1.1.9
Serial0/1/0.34				

```
R4#
```

```
R4#show ip ospf interface
Serial0/1/0.34 is up, line protocol is up
  Internet Address 10.1.1.10/30, Area 34
  Process ID 1, Router ID 4.4.4.4, 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 00:00:04
  Supports Link-local Signaling (LLS)
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 5, maximum is 5
  Last flood scan time is 0 msec, maximum is 4 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 3.3.3.3
  Suppress hello for 0 neighbor(s)
R4#
```

R4#show ip ospf database

OSPF Router with ID (4.4.4.4) (Process ID 1)

Router Link States (Area 34)

Link ID count	ADV Router	Age	Seq#	Checksum	Link
3.3.3.3	3.3.3.3	69	0x80000008	0x00DA6B	2
4.4.4.4	4.4.4.4	180	0x80000009	0x0075CB	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	69	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	180	0x80000006	0x00EF6B	0
10.1.4.8	4.4.4.4	180	0x80000003	0x00CD8C	0
10.2.1.0	4.4.4.4	180	0x80000003	0x00451C	0
10.2.2.0	4.4.4.4	180	0x80000003	0x003A26	0
10.2.4.12	4.4.4.4	180	0x80000003	0x0099BB	0

R4#

```
R4#show ip route ospf
O*IA 0.0.0.0/0 [110/65] via 10.1.1.9, 01:08:16, Serial0/1/0.34
R4#
```



```
R4#show ip dhcp binding
```

```
Bindings from all pools not associated with VRF:
```

IP address	Client-ID/ Hardware address/ User name	Lease expiration	Type
10.2.1.4	0100.1c23.8edb.bc	Jun 09 2010 06:55 PM	

```
Automatic
```

```
R4#
```

```
R4#show ip dhcp conflict
IP address      Detection method  Detection time    VRF
R4#
```

```
R4#show ip dhcp pool
```

```
Pool VLAN10 :
```

```
Utilization mark (high/low) : 100 / 0
```

```
Subnet size (first/next) : 0 / 0
```

```
Total addresses : 254
```

```
Leased addresses : 1
```

```
Pending event : none
```

```
1 subnet is currently in the pool :
```

Current index	IP address range	Leased
addresses		
10.2.1.1	10.2.1.1 - 10.2.1.254	1

```
R4#
```

