

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

Current configuration : 2631 bytes
!
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 Serial10/1/0.34
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
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
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:
```

```
U.U.U
```

```
Success rate is 0 percent (0/5)
```

```
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:  
U.U.U
```

Success rate is 0 percent (0/5)
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:
U.U.U
Success rate is 0 percent (0/5)
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 0 percent (0/5)
```

```
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 = 128/132/140
```

```
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 = 128/132/144  
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 = 1/1/1 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#

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 = 1/1/4 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
Protocol				
FastEthernet0/0	10.1.4.5	YES	NVRAM	up
up				
FastEthernet0/1	10.1.4.9	YES	NVRAM	up
up				
Serial0/0/0	unassigned	YES	NVRAM	down
down				
Serial0/0/1	unassigned	YES	NVRAM	down
down				
Serial0/1/0	unassigned	YES	NVRAM	up
up				
Serial0/1/0.34	10.1.1.10	YES	NVRAM	up
up				
Tunnel34	unassigned	YES	NVRAM	up
up				
Tunnel46	unassigned	YES	NVRAM	up
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 [90/30720] via 10.1.4.10, 00:41:04, FastEthernet0/1
      [90/30720] via 10.1.4.6, 00:41:04, 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 [90/28416] via 10.1.4.10, 00:40:31, FastEthernet0/1
      [90/28416] via 10.1.4.6, 00:40:31, FastEthernet0/0
D    10.2.2.0/24 [90/28416] via 10.1.4.10, 00:40:38, FastEthernet0/1
      [90/28416] via 10.1.4.6, 00:40:38, 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, 00:35:36, Serial0/1/0.34
R4#
```


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	816	621	1314	0.24%	0.14%	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	12	2692	4	0.00%	0.00%	0.00%	0 Net
Background							
30	0	2	0	0.00%	0.00%	0.00%	0 IDB Work
31	0	229	0	0.00%	0.00%	0.00%	0 Logger
32	0	2598	0	0.00%	0.00%	0.00%	0 TTY
Background							
33	52	2605	19	0.00%	0.01%	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
38	0	2	0	0.00%	0.00%	0.00%	0 Eswilp
Storm Con							
39	256	4	64000	0.00%	0.00%	0.00%	0 USB
Startup							
40	0	1	0	0.00%	0.00%	0.00%	0
dev_device_inser							
41	0	1	0	0.00%	0.00%	0.00%	0
dev_device_remov							
42	0	2	0	0.00%	0.00%	0.00%	0 SM Monitor
43	0	1	0	0.00%	0.00%	0.00%	0 IGMP
Snooping Pr							
44	0	1	0	0.00%	0.00%	0.00%	0 IGMP
Snooping Re							
45	0	1	0	0.00%	0.00%	0.00%	0 Platform
Compact							
46	0	88	0	0.00%	0.00%	0.00%	0 Call
Management							
47	0	2602	0	0.00%	0.00%	0.00%	0 PI MATM
Aging Pr							
48	0	2	0	0.00%	0.00%	0.00%	0 DTP
Protocol							
49	0	2	0	0.00%	0.00%	0.00%	0 dot1x
50	0	2	0	0.00%	0.00%	0.00%	0 AAA
Dictionary R							
51	0	2	0	0.00%	0.00%	0.00%	0 AAA Server
52	0	1	0	0.00%	0.00%	0.00%	0 AAA ACCT
Proc							
53	0	1	0	0.00%	0.00%	0.00%	0 ACCT
Periodic Pr							

149	0	2	0	0.00%	0.00%	0.00%	0	AAA SEND
STOP EV								
150	0	3	0	0.00%	0.00%	0.00%	0	EEM ED CLI
151	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
Counter								
152	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
Interface								
153	0	3	0	0.00%	0.00%	0.00%	0	EEM ED
IOSWD								
154	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
Memory-th								
155	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
None								
156	0	2	0	0.00%	0.00%	0.00%	0	EM ED OIR
157	0	2	0	0.00%	0.00%	0.00%	0	EEM ED
SNMP								
158	0	46	0	0.00%	0.00%	0.00%	0	EEM ED
Timer								
159	4	539	7	0.00%	0.00%	0.00%	0	EEM Server
160	0	263	0	0.00%	0.00%	0.00%	0	RMON
Recycle Pro								
161	0	2	0	0.00%	0.00%	0.00%	0	RMON
Deferred Se								
162	0	1	0	0.00%	0.00%	0.00%	0	Syslog
Traps								
163	8	2	4000	0.00%	0.00%	0.00%	0	VLAN
Manager								
164	0	22	0	0.00%	0.00%	0.00%	0	DHCPD
Timer								
165	0	2	0	0.00%	0.00%	0.00%	0	EEM Policy
Direc								
166	0	119	0	0.00%	0.00%	0.00%	0	Syslog
167	0	1	0	0.00%	0.00%	0.00%	0	VPDN Scal
168	0	44	0	0.00%	0.00%	0.00%	0	DHCPD
Database								
169	0	1	0	0.00%	0.00%	0.00%	0	Net Input
170	0	525	0	0.00%	0.00%	0.00%	0	Compute
load avg								
171	688	44	15636	0.00%	0.02%	0.00%	0	Per-minute
Jobs								
172	4	91	43	0.00%	0.00%	0.00%	0	CEF
Scanner								
173	0	1	0	0.00%	0.00%	0.00%	0	tHUB
175	8	16	500	0.00%	0.00%	0.00%	0	DHCPD
Receive								
176	56	383	146	0.00%	0.00%	0.00%	0	IPv6 Input
177	0	152	0	0.00%	0.00%	0.00%	0	IPv6 IDB
178	0	21	0	0.00%	0.00%	0.00%	0	IPv6 ND
179	8	10461	0	0.08%	0.02%	0.00%	0	MLD
180	4	2615	1	0.00%	0.00%	0.00%	0	OSPFv3-6
Router								
181	4	319	12	0.08%	0.00%	0.00%	0	IPv6 RIP
182	4	2633	1	0.00%	0.04%	0.05%	0	IGMP Input

183	4	26145	0	0.00%	0.03%	0.02%	0 Mwheel
Process							
184	116	3249	35	0.00%	0.03%	0.02%	0 PIM
Process							
185	372	485	767	0.00%	0.00%	0.00%	0 FR LMI
186	16	26146	0	0.00%	0.02%	0.02%	0 FR
Broadcast Out							
187	0	263	0	0.00%	0.00%	0.00%	0 compute
load per							
188	0	50	0	0.00%	0.00%	0.00%	0 FR ARP
189	0	44	0	0.00%	0.00%	0.00%	0 FR
FRAGMENTATION							
190	0	131	0	0.00%	0.00%	0.00%	0 FR TUNNEL
191	0	1	0	0.00%	0.00%	0.00%	0 FRF9
manager							
192	0	1	0	0.00%	0.00%	0.00%	0 FRF9 timed
event							
194	0	24	0	0.00%	0.00%	0.00%	0 IP-EIGRP
Router							
195	216	1759	122	0.00%	0.00%	0.00%	0 IP-EIGRP:
PDM							
196	12	2656	4	0.00%	0.00%	0.00%	0 OSPF-1
Router							
197	104	2319	44	0.00%	0.01%	0.00%	0 IP-EIGRP:
HELLO							
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 00:00:01, 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
    1196 packets input, 121352 bytes
    Received 727 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
    1434 packets output, 127591 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 00:00:02, output 00:00:03, 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
  873 packets input, 89493 bytes
  Received 694 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
  1228 packets output, 102084 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 241, LMI stat recvd 241, 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 409/0, interface
broadcasts 369
Last input 00:00:01, output 00:00:02, output hang never
Last clearing of "show interface" counters 00:43:46
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
1099 packets input, 92698 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
1257 packets output, 104478 bytes, 0 underruns
0 output errors, 0 collisions, 6 interface resets
0 unknown protocol drops
0 output buffer failures, 0 output buffers swapped out
84 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 00:00:08, 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: 12
  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
    241 packets input, 29596 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
    275 packets output, 27920 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 00:00:24, output 00:00:07, 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
```


100 packets input, 11448 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
101 packets output, 14636 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 interfaces counters errors
```

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
R3	Ser 0/1/0.34	127	R S I	2811	Ser
DSW1	Fas 0/0	125	R S I	WS-C3550-	Fas
DSW2	Fas 0/1	169	R S I	WS-C3550-	Fas

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 : 177 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: 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 : 176 sec

Version :

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

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

advertisement version: 2

Protocol Hello: OUI=0x00000C, Protocol ID=0x0112; payload len=27, value=00000000FFFFFFFF010221FF0000000000000000DBDE36E00FF0000

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 : 160 sec

Version :

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

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

advertisement version: 2

Protocol Hello: OUI=0x00000C, Protocol ID=0x0112; payload len=27,
value=00000000FFFFFFFFF010221FF0000000000000000BFD20BA0FF0000

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 arp

Protocol	Address	Age (min)	Hardware Addr	Type	Interface
Internet	10.1.4.10	42	000b.fd20.ba00	ARPA	FastEthernet0/1
Internet	10.1.4.9	-	0019.5578.1cb3	ARPA	FastEthernet0/1
Internet	10.1.4.6	43	000d.bde3.6e00	ARPA	FastEthernet0/0
Internet	10.1.4.5	-	0019.5578.1cb2	ARPA	FastEthernet0/0

R4#

```
R4#show ip arp
Protocol Address           Age (min)  Hardware Addr   Type   Interface
-----
Internet 10.1.4.10             42         000b.fd20.ba00  ARPA
FastEthernet0/1
Internet 10.1.4.9              -          0019.5578.1cb3  ARPA
FastEthernet0/1
Internet 10.1.4.6              43         000d.bde3.6e00  ARPA
FastEthernet0/0
Internet 10.1.4.5              -          0019.5578.1cb2  ARPA
FastEthernet0/0
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
  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
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
```

```
0.0.0.0/0
```

```
Next Hop
```

```
10.1.1.9
```

```
Interface
```

```
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=0, K3=1, K4=0, K5=0
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 00:42:30
 10.1.4.6 90 00:42:30
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 00:37:35
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 [90/30720] via 10.1.4.10, 00:43:20, FastEthernet0/1
          [90/30720] via 10.1.4.6, 00:43:20, FastEthernet0/0
D       10.2.1.0/24 [90/28416] via 10.1.4.10, 00:42:47, FastEthernet0/1
          [90/28416] via 10.1.4.6, 00:42:47, FastEthernet0/0
D       10.2.2.0/24 [90/28416] via 10.1.4.10, 00:42:54, FastEthernet0/1
          [90/28416] via 10.1.4.6, 00:42:54, 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 00:43:42	1	200	0

```
89
```

0 10.1.4.6
98
R4#

Fa0/0

11 00:44:17 1 200 0

```
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          1     0/1          50
0
R4#
```

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

Neighbor ID	Pri	State	Dead Time	Address
Interface				
3.3.3.3	0	FULL/ -	00:00:34	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 00:00:08
  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 0 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	439	0x80000008	0x00DA6B	2
4.4.4.4	4.4.4.4	477	0x80000010	0x0067D2	2

Summary Net Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum
0.0.0.0	3.3.3.3	439	0x80000002	0x00DC4C

Type-7 AS External Link States (Area 34)

Link ID	ADV Router	Age	Seq#	Checksum	Tag
10.1.4.4	4.4.4.4	477	0x80000005	0x00F16A	0
10.1.4.8	4.4.4.4	477	0x80000005	0x00C98E	0
10.2.1.0	4.4.4.4	477	0x80000003	0x00451C	0
10.2.2.0	4.4.4.4	477	0x80000003	0x003A26	0
10.2.4.12	4.4.4.4	477	0x80000003	0x0099BB	0

R4#


```
R4#show ip route ospf
O*IA 0.0.0.0/0 [110/65] via 10.1.1.9, 00:38:43, 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
Automatic
R4#

0100.1c23.8edb.bc

May 28 2010 06:38 PM

```
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		
10.2.1.5	10.2.1.1 - 10.2.1.254	1

R4#

R4#