Routing Case Study

Cisco Networking Academy Program
CCNA 2: Routers and Routing Basics v3.1

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Table Of Contents

Scenario

A company has several people responsible for maintaining various sections of the internetwork infrastructure. Many technicians have done an excellent job with the small portion for which they are responsible.

One of the other network associates who was responsible for a larger portion of the infrastructure suddenly left the company. This left redesign and implementation on this portion of the internetwork unfinished. A technician is given the task to complete the design and implementation of the unfinished network.

After taking home the documentation to study over the weekend, it is apparent to the technician why the network associate left suddenly. The few documents that existed were poorly written. So during the weekend the technician reconstructs the diagram from an existing diagram that was found. It represents the new internetwork design. It shows the planned routers, hubs/switches, circuits, and the servers/workstations on this internetwork. The workstation at the center site is used to manage all routers on the internetwork.

After running to work Monday morning, the technician presents the new diagram to the Network Infrastructure Team Leader that assigned the project. After discussion, it is determined that new documentation must be developed for the project. The Team Leader, the instructor, must approve the documentation at each phase of the process. Use the following information to implement the network.

Phase 1: Project Description

The network diagram below is a representation of how the network should be cabled. Three kinds of cable will be needed to bring the network up and running. A straight-through cable will be needed to go from each Ethernet port on the six PC's to a hub or switch. Then another straight-through cable will be needed to run from the hub/switch to the fastethernet port on the router. A rollover cable will run from one PC of each subnetwork to the console port of the router. The PC selected should be dedicated to configuring the subnetwork router. A smart serial cable will run from the Boaz router to the Center router on the "serial 0/0" interface. Another smart serial cable will run from the Eva router to the Center router on interface "serial 0/1". A rollover cable is represented by a blue line. A straight-through cable is represented by a grey line. A smart serial cable is represented by a jagged yellow line.
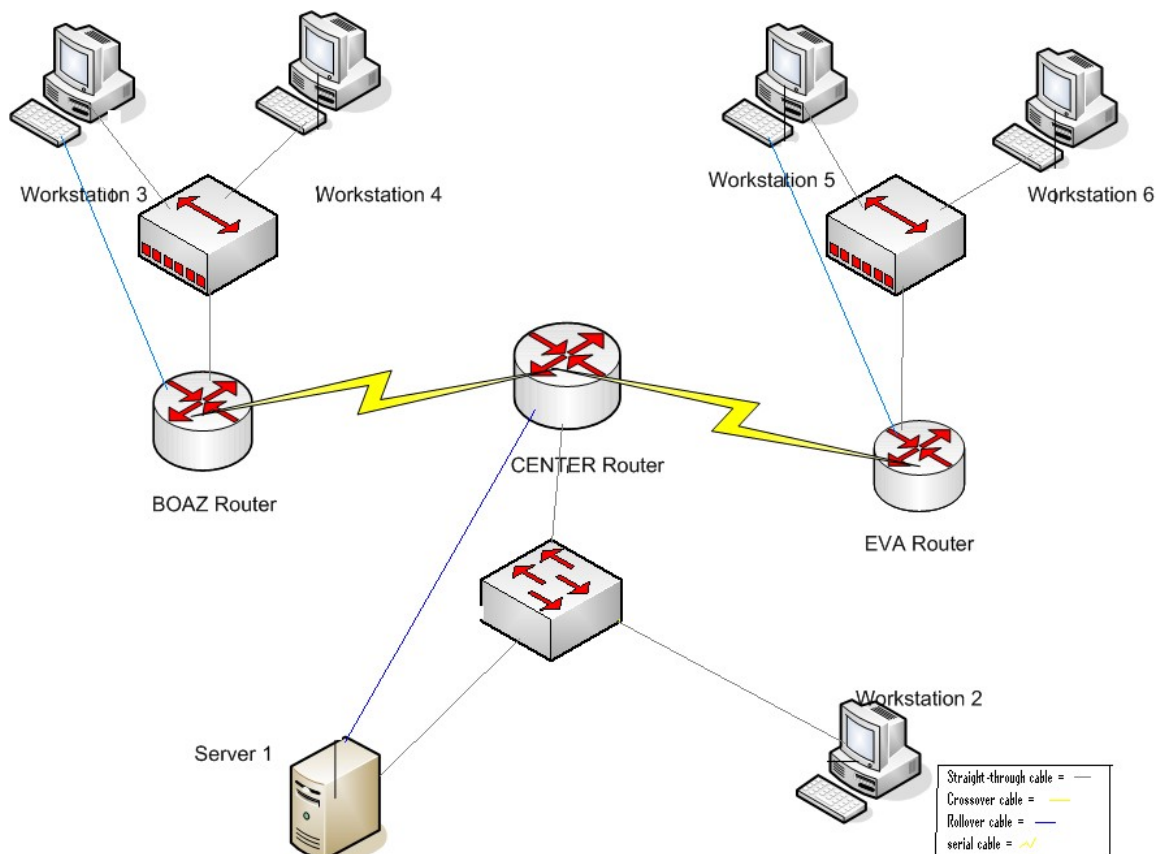
Figure 1.1 Network Diagram

Phase 2: IP Addressing

Network Address→10.11.0.0
# of Subnets→8
Subnet Mask→255.255.0.0

Center Network 10.11.32.0			
	IP address	Subnet Mask	Default Gateway
Server 1	10.11.32.2	255.255.224.0	10.11.32.1
Workstation 2	10.11.32.3	255.255.224.0	10.11.32.1

Table 2.1 Center Network

Boaz Network 10.11.64.0			
	IP address	Subnet Mask	Default Gateway
Workstation 3	10.11.64.2	255.255.224.0	10.11.64.1
Workstation 4	10.11.64.3	255.255.224.0	10.11.64.1

Table 2.2 Boaz Network

Eva Network 10.11.96.0			
	IP address	Subnet Mask	Default Gateway
Workstation 5	10.11.96.2	255.255.224.0	10.11.96.1
Workstation 6	10.11.96.3	255.255.224.0	10.11.96.1

Table 2.3 Eva Network

	Fast Ethernet 0/0	Serial 0/0		Serial 0/1	
Center Router	10.11.32.1	10.11.128.2	DCE	10.11.160.1	DCE
Boaz Router	10.11.64.1	10.11.128.1	DTE	n/a	n/a
Eva Router	10.11.96.1	n/a	n/a	10.11.160.2	DTE

Table 2.4 Router Configuration

Phase 3: Basic Router and Workstation Configuration

Part 1: Basic Configuration table

The table below contains the basic data used for router configuration.

	Boaz Router	Center Router	Eva Router
Hostname	Boaz	Center	Eva
Console Password	Cisco	cisco	cisco
Secret Password	Cisco	cisco	cisco
VTY Password	Class	class	class
Serial 0/0 IP address	10.11.128.1	10.11.128.2	n/a
Serial 0/1 IP address	n/a	10.11.160.1	10.11.160.2
Serial 0/0 Clock Rate	56000	56000	n/a
Serial 0/1 Clock Rate	n/a	56000	56000
Fa 0/0 IP address	10.11.64.1	10.11.32.1	10.11.96.1
Fa 0/1 IP address	n/a	n/a	n/a
Enable the Interfaces	No shutdown	No shutdown	No shutdown
Add Routing Protocol	Router IGRP 60	Router IGRP 60	Router IGRP 60
Add Network Statements	Network 10.11.64.0 Network 10.11.128.0	Network 10.11.32.0 Network 10.11.128.0 Network 10.11.160.0	Network 10.11.96.0 Network 10.11.160.0
Host Table – contains all routers and servers	Ip host B 10.11.64.1 10.11.128.1 Ip host C 10.11.32.1 10.11.128.2 10.11.160.1 Ip host E 10.11.96.1 10.11.160.2		
Message of the day	Do not log in unless authorized		
Serial 0/0 description	Boaz serial 0/0 DTE	Center serial 0/0 DCE	n/a
Serial 0/1 description	n/a	Center serial 0/1 DCE	Eva serial 0/1 DTE
Fa 0/0 description	Boaz Fastethernet 0/0	Center Fastethernet 0/0	Eva Fastethernet 0/0
Fa 0/1 description	n/a	n/a	n/a

Table 3.1 Basic Configuration

Part 2.1: Center Router Configuration

```
hostname CENTER
banner motd # Do not log in unless authorized  #

interface fastethernet  0/0
description Center FastEthernet  0/0
ip address  10.11.32.1 255.255.224.0
no shutdown
exit

interface serial  0/0
description Center serial  0/0 DCE
ip address  10.11.128.2 255.255.224.0
clockrate  56000
no shutdown
exit

interface serial  0/1
description Center serial  0/1 DCE
ip address  10.11.160.1 255.255.224.0
clockrate  56000
no shutdown
exit

ip host C  10.11.32.1 10.11.128.2 10.11.160.1
ip host B  10.11.64.1 10.11.128.1
ip host E  10.11.96.1 10.11.160.2

router igrp  60
network  10.11.32.0
network  10.11.128.0
network  10.11.160.0

line console  0
password cisco
login
exit

line vty  0 4
password cisco
login
exit

enable password cisco
enable secret class
```

Table 3.2 Center Router Configuration

Part 2.2: Boaz Router Configuration

```
hostname BOAZ
banner motd # Do not log in unless authorized #

interface fastethernet 0/0
description Boaz Fastethernet 0/0
ip address 10.11.64.1 255.255.224.0
no shutdown
exit

interface serial 0/0
description BOAZ serial 0/0 DTE
ip address 10.11.128.1 255.255.224.0
no shutdown
exit

ip host C 10.11.32.1 10.11.128.2 10.11.160.1
ip host B 10.11.64.1 10.11.128.1
ip host E 10.11.96.1 10.11.160.2

router igrp 60
network 10.11.64.0
network 10.11.128.0

line console 0
password cisco
login
exit

line vty 0 4
password cisco
login
exit

enable password cisco
enable secret class
```

Table 3.3 Boaz Router Configuration

Part 2.3: Eva Router Configuration

```
hostname EVA
banner motd # Do not log in unless authorized #

interface fastethernet  0/0
description EVA Fastethernet  0/0
ip address  10.11.96.1 255.255.224.0
no shutdown
exit

interface serial  0/1
description EVA serial  0/1 DTE
ip address  10.11.160.2 255.255.224.0
no shutdown
exit

ip host C 10.11.32.1 10.11.128.2 10.11.160.1
ip host B 10.11.64.1 10.11.128.1
ip host E 10.11.96.1 10.11.160.2

router igrp  60
network 10.11.96.0
network 10.11.160.0

line console  0
password cisco
login
exit

line vty  0 4
password cisco
login
exit

enable password cisco
enable secret class
```

Table 3.4 Eva Router Configuration

Phase 4: Access Control Lists

Part 1: CENTER Network

n/a

Table 4.1 Center Router ACL

Part 2: BOAZ Network

Interface Fastethernet 0/0
Ip access-group 101 in
Access-list 101 permit ip 10.11.64.0 0.0.31.255 host 10.11.32.2
Access-list 101 deny ip 10.11.64.3 0.0.31.2 10.11.32.0 0.0.31.255

Access-list 101 deny ip 10.11.64.3 0.0.31.2 10.11.96.0 0.0.31.255
Access-list permit ip any any

Table 4.2 Boaz Router ACL

Part 3: EVA Network

Interface Fastethernet 0/0
Ip access-group 101 in
Access-list 101 permit ip 10.11.96.0 0.0.31.255 host 10.11.32.2
Access-list 101 deny ip 10.11.96.3 0.0.31.2 10.11.32.0 0.0.63.255

Access-list permit ip any any

Table 4.3 Eva Router ACL

Phase 5: Documenting the Network

Part 1: Center Network Documentation

```
CENTER#show ip route
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
      i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
      * - candidate default, U - per-user static route, o - ODR
      P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/19 is subnetted, 5 subnets
C       10.11.32.0 is directly connected, FastEthernet 0/0
I       10.11.64.0 [100/8576] via 10.11.128.1, 00:00:21, Serial0/0
I       10.11.96.0 [100/8576] via 10.11.160.2, 00:00:14, Serial0/1
C       10.11.128.0 is directly connected, Serial 0/0
C       10.11.160.0 is directly connected, Serial 0/1
```

Table 5.11 show ip route

```
CENTER#show ip protocol
Routing Protocol is  "igrp 60"
  Sending updates every  90 seconds, next due in  30 seconds
  Invalid after  270 seconds, hold down 280, flushed after  630
  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
  IGRP metric weight K 1=1, K2=0, K3=1, K4=0, K5=0
  IGRP maximum hopcount  100
  IGRP maximum metric variance  1
  Redistributing : igrp 60
  Maximum path : 4
  Routing for Networks :
    10.0.0.0
  Routing Information Sources :
    Gateway      Distance      Last Update
    10.11.128.1       100      00:01:13
    10.11.160.2       100      00:01:05
  Distance: (default is  100)
```

Table 5.12 show ip protocol

```
CENTER#show ip interface brief
Interface            IP -Address      OK? Method Status
Protocol
FastEthernet 0/0          10.11.32.1      YES manual up            up
Serial0/0          10.11.128.2    YES manual up          up
Serial0/1          10.11.160.1    YES manual up          up
```

Table 5.13 show ip interface brief

```
CENTER#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D-M), Version 12.2(7c), RELEASE
SOFTWARE (fc1)
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 10-May-02 22:03 by pwade
Image text-base: 0x80008088, data-base: 0x80AD673C

ROM: System Bootstrap, Version 12.2(6r), RELEASE SOFTWARE
(fc1)

CENTER uptime is 31 minutes
System returned to ROM by power-on
System image file is "flash:c2600-d-mz.122-7c.bin"

cisco 2620 (MPC860) processor (revision 0x00) with 28672K/4096K
bytes of memory.
Processor board ID JAD06300P43 (4022652664)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
1 FastEthernet/IEEE 802.3 interface(s)
2 Serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

Table 5.14 show version

```
CENTER#show hosts
Default domain is not set
Name/address lookup uses domain service
Name servers are  255.255.255.255

Host                 Port  Flags      Age Type   Address (es)
E                    None  (perm, OK)  0   IP    10.11.96.1
                                                 10.11.160.2
B                    None  (perm, OK)  0   IP    10.11.64.1
                                                 10.11.128.1
C                    None  (perm, OK)  0   IP    10.11.32.1
                                                 10.11.128.2
                                                 10.11.160.1
```

Table 5.15 show hosts

```
CENTER#show startup config
%% Non-volatile configuration memory is not present
CENTER#show start
Using 912 out of 29688 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password -encryption
!
hostname CENTER
!
enable secret 5 $1$Rhd1$Vu.H5Tvdn.dlqC508SaBI1
enable password cisco
!
ip subnet-zero
!
!
ip host E 10.11.96.1 10.11.160.2
ip host B 10.11.64.1 10.11.128.1
ip host C 10.11.32.1 10.11.128.2 10.11.160.1
!
!
!
!
interface FastEthernet 0/0
description Center FastEthernet 0/0
ip address 10.11.32.1 255.255.224.0
 duplex auto
 speed auto
!
interface Serial 0/0
 description Center serial 0/0 DCE
 ip address 10.11.128.2 255.255.224.0
 clockrate 56000
!
interface Serial 0/1
 description Center serial 0/1 DCE
 ip address 10.11.160.1 255.255.224.0
 clockrate 56000
!
router igrp 60
 network 10.0.0.0
!
ip classless
ip http server
ip pim bidir -enable
!
banner motd ^C Do not log in unless authorized ^C
!
 line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```

Table 5.16 show startup-config

```
CENTER#show ip interface
FastEthernet 0/0 is up, line protocol is up
  Internet address is  10.11.32.1/19
  Broadcast address is  255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
  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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled
```

Table 5.17 show ip interface

```
Serial0/0 is up, line protocol is up
  Internet address is  10.11.128.2/19
  Broadcast address is  255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
  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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled
```

Table 5.17 show ip interface

Serial0/1 is up, line protocol is up
  Internet address is 10.11.160.1/19
  Broadcast address is 255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
  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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled

Table 5.17 show ip interface

```
CENTER#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
BOAZ            Ser 0/0          131         R      2621XM    Ser 0/0
Switch_C        Fas 0/0          177         T S     1900     2
EVA             Ser 0/1         175          R      2620     Ser 0/1
```

Table 5.18 show cdp neighbors

There are no access control lists set on this router

Table 5.19 show access-list

Part 2: Boaz Network Documentation

BOAZ#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
CENTER	Ser 0/0	157	R	2620	Ser 0/0

Table 5.21 show cdp neighbors

BOAZ#show ip route
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
    i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
    ia - IS-IS inter area, * - candidate default, U - per-user static route
    o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

    10.0.0.0/19 is subnetted , 5 subnets
I   10.11.32.0 [100/8576] via 10.11.128.2, 00:01:06, Serial0/0
C   10.11.64.0 is directly connected , FastEthernet 0/0
I   10.11.96.0 [100/10576] via 10.11.128.2, 00:01:06, Serial0/0
C   10.11.128.0 is directly connected , Serial 0/0
I   10.11.160.0 [100/10476] via 10.11.128.2, 00:01:06, Serial0/0

Table 5.22 show ip route

```
BOAZ#show ip protocol
Routing Protocol is  "igrp 60"
  Sending updates every  90 seconds, next due in 26 seconds
  Invalid after  270 seconds, hold down 280, flushed after  630
  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
  IGRP metric weight K 1=1, K2=0, K3=1, K4=0, K5=0
  IGRP maximum hopcount  100
  IGRP maximum metric variance   1
  Redistributing : igrp 60
  Maximum path : 4
  Routing for Networks :
    10.0.0.0
  Routing Information Sources :
   Gateway        Distance     Last Update
   10.11.128.2        100      00:01:22
  Distance : (default is  100)
```

Table 5.23 show ip protocol

```
BOAZ#show ip interface brief
Interface          IP - Address      OK? Method Status
Protocol
FastEthernet 0/0        10.11.64.1     YES manual up              up
Serial0/0              10.11.128.1    YES SLARP  up              up
FastEthernet 0/1        unassigned     YES unset  administratively
down down
Serial0/1              unassigned     YES unset  administratively down
down
```

Table 5.24 show ip interface brief

```
BOAZ#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D-M), Version 12.2(31), RELEASE
SOFTWARE (fc2)
Technical Support : http ://www.cisco.com/techsupport
Copyright (c) 1986-2005 by cisco Systems, Inc.
Compiled Thu 11-Aug-05 17:23 by tinhuang
Image text-base: 0x8000808C, data-base: 0x80B5ECC0

ROM: System Bootstrap, Version 12.2(8r) [cmong 8r], RELEASE
SOFTWARE (fc1)
ROM: C2600 Software (C2600-D-M), Version 12.2(31), RELEASE
SOFTWARE (fc2)

BOAZ uptime is 25 minutes
System returned to ROM by reload
System image file is  "flash:c2600-d-mz.122-31.bin"

cisco 2621XM (MPC860P) processor (revision 0x200) with 93184K/
5120K bytes of memory.
Processor board ID JAE08093XN7 (3516796268)
M860 processor: part number 5, mask 2
Bridging software.
X.25 software, Version 3.0.0.
2 FastEthernet/IEEE 802.3 interface (s)
2 Serial(sync/async) network interface (s)
32K bytes of non-volatile configuration memory .
 32768K bytes of processor board System flash  (Read/Write)

Configuration register is  0x2102
```

Table 5.25 show version

```
BOAZ#show hosts
Default domain is not set
Name/address lookup uses domain service
Name servers are  255.255.255.255

Host              Port  Flags     Age Type   Address (es)
E                 None  (perm, OK) 0   IP    10.11.96.1
                                          10.11.160.2
B                 None  (perm, OK) 0   IP    10.11.64.1
                                          10.11.128.1
C                 None  (perm, OK) 0   IP    10.11.32.1
                                          10.11.128.2
                                          10.11.160.1
```

Table 5.26 show hosts

```
BOAZ#show ip interface
FastEthernet 0/0 is up, line protocol is up
  Internet address is  10.11.64.1/19
  Broadcast address is  255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 disabled
  IP Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
 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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled
```

Table 5.27 show ip interface

```
Serial0/0 is up, line protocol is up
  Internet address is  10.11.128.1/19
  Broadcast address is  255.255.255.255
  Address determined by Reverse ARP from host  10.11.128.2
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 disabled
  IP Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
 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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled
 FastEthernet0/1 is administratively down , line protocol is down
  Internet protocol processing disabled
 Serial0/1 is administratively down , line protocol is down
  Internet protocol processing disabled
```

Table 5.27 show ip interface

```
BOAZ#show startup-config
Using 1105 out of 29688 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname BOAZ
!
enable secret 5 $1$ps90$oG64w0Yw9korK5tFOJUT3.
enable password cisco
!
ip subnet-zero
!
!
!
ip host C 10.11.32.1 10.11.128.2 10.11.160.1
ip host B 10.11.64.1 10.11.128.1
ip host E 10.11.96.1 10.11.160.2
!
!
!
!
interface FastEthernet 0/0
 description Boaz Fastethernet 0/0
 ip address 10.11.64.1 255.255.224.0
 ip access-group 101 in
 duplex auto
 speed auto
!
interface Serial 0/0
 description BOAZ serial 0/0 DTE
 ip address 10.11.128.1 255.255.224.0
!
interface FastEthernet 0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial 0/1
 no ip address
 shutdown
!
router igrp 60
 network 10.0.0.0
!
 ip classless
ip http server
!
access-list 101 permit ip 10.11.64.0 0.0.31.255 host 10.11.32.2
access-list 101 deny   ip 10.11.64.1 0.0.31.2 10.11.32.0 0.0.31.255
access-list 101 deny   ip 10.11.64.1 0.0.31.2 10.11.96.0 0.0.31.255
access-list 101    permit ip any any
banner motd ^C Do not log in unless authorized ^C
!
line con 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```

Table 5.28 show startup-config

```
BOAZ#show access-list
Extended IP access list  101
    permit ip  10.11.64.0 0.0.31.255 host 10.11.32.2 (4 matches)
    deny ip 10.11.64.1 0.0.31.2 10.11.32.0 0.0.31.255 (24 matches)
    deny ip 10.11.64.1 0.0.31.2 10.11.96.0 0.0.31.255 (24 matches)
    permit ip any any
```

Table 5.29 show access-list

Part 3: Eva Network Documentation

EVA#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
CENTER	Ser 0/1	139	R	2620	Ser 0/1

Table 5.31 show cdp neighbors

EVA#show ip route
Codes: C - connected, S - static, I - IGRP, 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, E - EGP
    i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
    * - candidate default , U - per-user static route , o - ODR
    P - periodic downloaded static route

Gateway of last resort is not set

   10.0.0.0/19 is subnetted , 5 subnets
I   10.11.32.0 [100/8576] via 10.11.160.1, 00:00:06, Serial0/1
I   10.11.64.0 [100/10576] via 10.11.160.1, 00:00:06, Serial0/1
C   10.11.96.0 is directly connected , FastEthernet 0/0
I   10.11.128.0 [100/10476] via 10.11.160.1, 00:00:06, Serial0/1
C   10.11.160.0 is directly connected , Serial0/1

Table 3.32 show ip route

```
EVA#show ip protocol
Routing Protocol is  "igrp 60"
  Sending updates every  90 seconds, next due in  13 seconds
  Invalid after  270 seconds, hold down 280, flushed after  630
  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
  IGRP metric weight K 1=1, K2=0, K3=1, K4=0, K5=0
  IGRP maximum hopcount  100
  IGRP maximum metric variance  1
  Redistributing : igrp 60
  Maximum path : 4
  Routing for Networks :
    10.0.0.0
  Routing Information Sources :
    Gateway        Distance     Last Update
    10.11.160.1        100       00:00:14
  Distance : (default is  100)
```

Table 3.33 show ip protocol

```
EVA#show ip interface brief
Interface           IP - Address      OK? Method Status
Protocol
FastEthernet 0/0         10.11.96.1      YES manual up              up
Serial0/0               unassigned      YES unset  administratively down
down
Serial0/1               10.11.160.2     YES SLARP  up               up
```

Table 3.34 show ip interface brief

```
EVA#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-D-M), Version 12.2(7c), RELEASE
SOFTWARE (fc1)
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Fri 10-May-02 22:03 by pwade
Image text-base: 0x80008088, data-base: 0x80AD673C

ROM: System Bootstrap, Version 12.2(6r), RELEASE SOFTWARE
(fc1)

EVA uptime is 39 minutes
System returned to ROM by power-on
System image file is "flash:c2600-d-mz.122-7c.bin"

cisco 2620 (MPC860) processor (revision 0x00) with 28672K/4096K
bytes of memory.
Processor board ID JAD06300PG4 (1104623083)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
1 FastEthernet/IEEE 802.3 interface(s)
2 Serial(sync/async) network interface(s)
32K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

Table 3.35 show version

```
EVA#show hosts
Default domain is not set
Name/address lookup uses domain service
Name servers are 255.255.255.255

Host            Port Flags    Age Type  Address(es)
E               None (perm, OK) 0  IP   10.11.96.1
                                        10.11.160.2
B               None (perm, OK) 0  IP   10.11.64.1
                                        10.11.128.1
C               None (perm, OK) 0  IP   10.11.32.1
                                        10.11.128.2
                                        10.11.160.1
```

Table 3.36 show hosts

```
EVA#show startup-config
Using 1007 out of 29688 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname EVA
!
enable secret 5 $1$O5eO$ARFmp6FYOuh9tgR/g1dwV/
enable password cisco
!
ip subnet-zero
!
!
ip host C 10.11.32.1 10.11.128.2 10.11.160.1
ip host B 10.11.64.1 10.11.128.1
ip host E 10.11.96.1 10.11.160.2
!
!
!
!
interface FastEthernet 0/0
 description EVA Fastethernet 0/0
 ip address 10.11.96.1 255.255.224.0
 ip access-group 101 in
 duplex auto
 speed auto
!
interface Serial 0/0
 no ip address
 shutdown
 no fair-queue
!
interface Serial 0/1
 description EVA serial 0/1 DTE
 ip address 10.11.160.2 255.255.224.0
!
router igrp 60
 network 10.0.0.0
!
ip classless
ip http server
ip pim bidir-enable
!
access-list 101 permit ip 10.11.96.0 0.0.31.255 host 10.11.32.2
 access-list 101 deny   ip 10.11.0.0 0.0.96.3 10.11.0.0 0.0.63.255
access-list 101 permit ip any any
banner motd ^C Do not log in unless authorized ^C
!
line con 0
 exec-timeout 0 0
 password cisco
 login
line aux 0
line vty 0 4
 password cisco
 login
!
end
```

Table 3.37 show startup-config

```
EVA#show ip interface
FastEthernet0/0 is up, line protocol is up
  Internet address is  10.11.96.1/19
  Broadcast address is  255.255.255.255
  Address determined by setup command
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound  access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
  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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled
```

Table 3.38 show ip interface

Serial0/0 is administratively down , line protocol is down
  Internet protocol processing disabled
 Serial0/1 is up, line protocol is up
  Internet address is 10.11.160.2/19
  Broadcast address is 255.255.255.255
  Address determined by Reverse ARP from host 10.11.160.1
  MTU is 1500 bytes
  Helper address is not set
  Directed broadcast forwarding is disabled
  Outgoing access list is not set
  Inbound access list is not set
  Proxy ARP is enabled
  Security level is default
  Split horizon is enabled
  ICMP redirects are always sent
  ICMP unreachables 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 Fast switching turbo vector
  IP multicast fast switching is enabled
  IP multicast distributed fast switching is disabled
  IP route-cache flags are Fast
  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
  Probe proxy name replies are disabled
  Policy routing is disabled
  Network address translation is disabled
  WCCP Redirect outbound is disabled
  WCCP Redirect inbound is disabled
  WCCP Redirect exclude is disabled
  BGP Policy Mapping is disabled

Table 3.38 show ip interface

EVA#show access-list
Extended IP access list 101
   permit ip 10.11.96.0 0.0.31.255 host 10.11.32.2 (4 matches)
   deny ip 10.11.0.0 0.0.96.3 10.11.0.0 0.0.63.255 (8 matches)
   permit ip any any

Table 3.39 show access-list