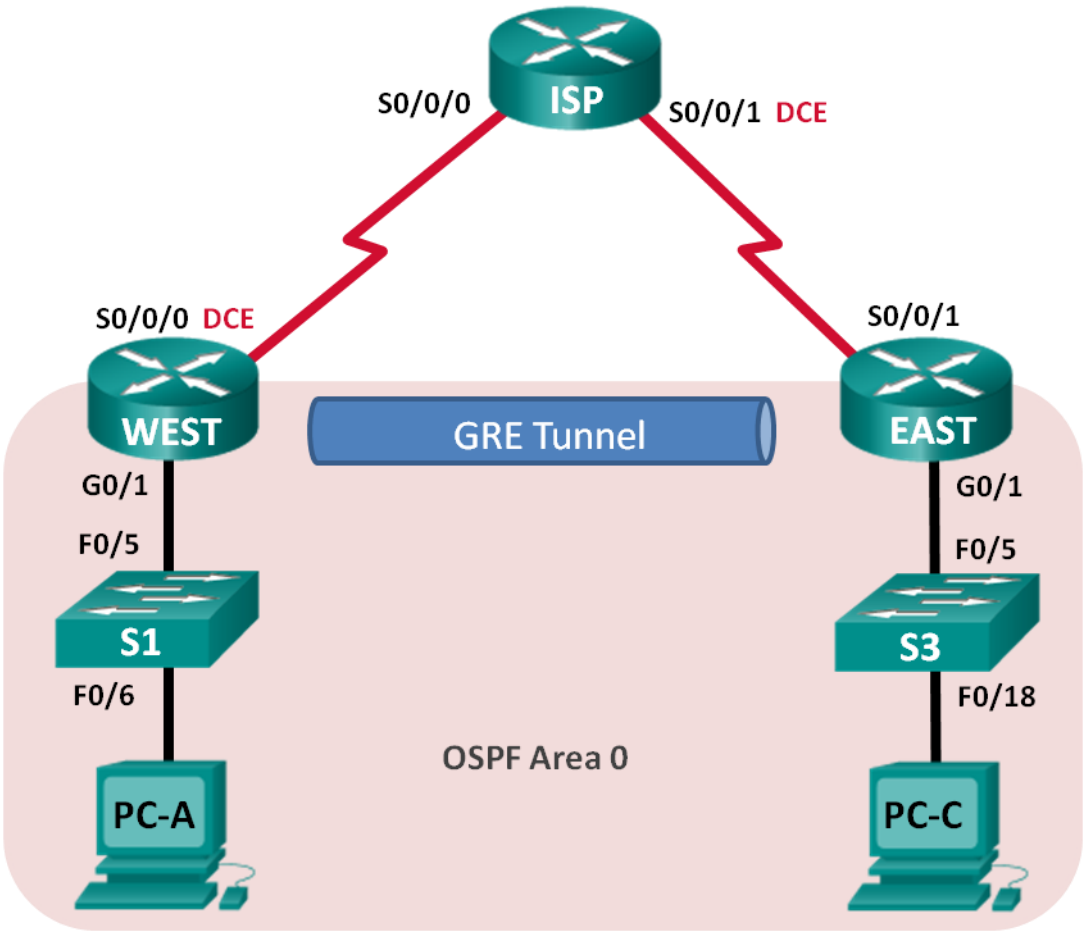
# Lab – Configuring a Point-to-Point GRE VPN Tunnel (Instructor Version)

**Instructor Note**: Red font color or Gray highlights indicate text that appears in the instructor copy only.

## Topology



## Addressing Table

| Device | Interface | IP Address | Subnet Mask | Default Gateway |
|---|---|---|---|---|
| WEST | G0/1 | 172.16.1.1 | 255.255.255.0 | N/A |
| | S0/0/0 (DCE) | 10.1.1.1 | 255.255.255.252 | N/A |
| | Tunnel0 | 172.16.12.1 | 255.255.255.252 | N/A |
| ISP | S0/0/0 | 10.1.1.2 | 255.255.255.252 | N/A |
| | S0/0/1 (DCE) | 10.2.2.2 | 255.255.255.252 | N/A |
| EAST | G0/1 | 172.16.2.1 | 255.255.255.0 | N/A |
| | S0/0/1 | 10.2.2.1 | 255.255.255.252 | N/A |
| | Tunnel0 | 172.16.12.2 | 255.255.255.252 | N/A |
| PC-A | NIC | 172.16.1.3 | 255.255.255.0 | 172.16.1.1 |
| PC-C | NIC | 172.16.2.3 | 255.255.255.0 | 172.16.2.1 |

## Objectives

**Part 1: Configure Basic Device Settings**

**Part 2: Configure a GRE Tunnel**

**Part 3: Enable Routing over the GRE Tunnel**

## Background / Scenario

Generic Routing Encapsulation (GRE) is a tunneling protocol that can encapsulate a variety of network layer protocols between two locations over a public network, such as the Internet.

GRE can be used with:

- Connecting IPv6 networks over IPv4 networks
- Multicast packets, such as OSPF, EIGRP, and streaming applications

In this lab, you will configure an unencrypted point-to-point GRE VPN tunnel and verify that network traffic is using the tunnel. You will also configure the OSPF routing protocol inside the GRE VPN tunnel. The GRE tunnel is between the WEST and EAST routers in OSPF area 0. The ISP has no knowledge of the GRE tunnel. Communication between the WEST and EAST routers and the ISP is accomplished using default static routes.

**Note**: The routers used with CCNA hands-on labs are Cisco 1941 Integrated Services Routers (ISRs) with Cisco IOS Release 15.2(4)M3 (universalk9 image). The switches used are Cisco Catalyst 2960s with Cisco IOS Release 15.0(2) (lanbasek9 image). Other routers, switches, and Cisco IOS versions can be used. Depending on the model and Cisco IOS version, the commands available and output produced might vary from what is shown in the labs. Refer to the Router Interface Summary Table at the end of this lab for the correct interface identifiers.

**Note**: Make sure that the routers and switches have been erased and have no startup configurations. If you are unsure, contact your instructor.

**Instructor Note**: Refer to the Instructor Lab Manual for the procedures to initialize and reload devices.

### Required Resources

- 3 Routers (Cisco 1941 with Cisco IOS Release 15.2(4)M3 universal image or comparable)
- 2 Switches (Cisco 2960 with Cisco IOS Release 15.0(2) lanbasek9 image or comparable)
- 2 PCs (Windows 7, Vista, or XP with terminal emulation program, such as Tera Term)
- Console cables to configure the Cisco IOS devices via the console ports
- Ethernet and serial cables as shown in the topology

## Part 1: Configure Basic Device Settings

In Part 1, you will set up the network topology and configure basic router settings, such as the interface IP addresses, routing, device access, and passwords.

### Step 1: Cable the network as shown in the topology.

### Step 2: Initialize and reload the routers and switches.

### Step 3: Configure basic settings for each router.

a. Disable DNS lookup.

b. Configure the device names.

c. Encrypt plain text passwords.

d. Create a message of the day (MOTD) banner warning users that unauthorized access is prohibited.

e. Assign **class** as the encrypted privileged EXEC mode password.

f. Assign **cisco** as the console and vty password and enable login.

g. Set console logging to synchronous mode.

h. Apply IP addresses to Serial and Gigabit Ethernet interfaces according to the Addressing Table and activate the physical interfaces. Do NOT configure the Tunnel0 interfaces at this time.

i. Set the clock rate to **128000** for DCE serial interfaces.

### Step 4: Configure default routes to the ISP router.

```
WEST(config)# ip route 0.0.0.0 0.0.0.0 10.1.1.2

EAST(config)# ip route 0.0.0.0 0.0.0.0 10.2.2.2
```

### Step 5: Configure the PCs.

Assign IP addresses and default gateways to the PCs according to the Addressing Table.

### Step 6: Verify connectivity.

At this point, the PCs are unable to ping each other. Each PC should be able to ping its default gateway. The routers are able to ping the serial interfaces of the other routers in the topology. If not, troubleshoot until you can verify connectivity.

### Step 7: Save your running configuration.

## Part 2: Configure a GRE Tunnel

In Part 2, you will configure a GRE tunnel between the WEST and EAST routers.

### Step 1: Configure the GRE tunnel interface.

a. Configure the tunnel interface on the WEST router. Use S0/0/0 on WEST as the tunnel source interface and 10.2.2.1 as the tunnel destination on the EAST router.

```
WEST(config)# interface tunnel 0
WEST(config-if)# ip address 172.16.12.1 255.255.255.252
WEST(config-if)# tunnel source s0/0/0
WEST(config-if)# tunnel destination 10.2.2.1
```

b. Configure the tunnel interface on the EAST router. Use S0/0/1 on EAST as the tunnel source interface and 10.1.1.1 as the tunnel destination on the WEST router.

```
EAST(config)# interface tunnel 0
EAST(config-if)# ip address 172.16.12.2 255.255.255.252
EAST(config-if)# tunnel source 10.2.2.1
EAST(config-if)# tunnel destination 10.1.1.1
```

**Note**: For the **tunnel source** command, either the interface name or the IP address can be used as the source.

### Step 2: Verify that the GRE tunnel is functional.

a. Verify the status of the tunnel interface on the WEST and EAST routers.

```
WEST# show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Embedded-Service-Engine0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/0         unassigned      YES unset  administratively down down
GigabitEthernet0/1         172.16.1.1      YES manual up                    up
Serial0/0/0                10.1.1.1        YES manual up                    up
Serial0/0/1                unassigned      YES unset  administratively down down
Tunnel0                    172.16.12.1     YES manual up                    up

EAST# show ip interface brief
Interface                  IP-Address      OK? Method Status                Protocol
Embedded-Service-Engine0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/0         unassigned      YES unset  administratively down down
GigabitEthernet0/1         172.16.2.1      YES manual up                    up
Serial0/0/0                unassigned      YES unset  administratively down down
Serial0/0/1                10.2.2.1        YES manual up                    up
Tunnel0                    172.16.12.2     YES manual up                    up
```

b. Issue the **show interfaces tunnel 0** command to verify the tunneling protocol, tunnel source, and tunnel destination used in this tunnel.

What is the tunneling protocol used? What are the tunnel source and destination IP addresses associated with GRE tunnel on each router?

_____

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The tunneling protocol used is GRE. For the WEST router, the tunnel source is 10.1.1.1 (Serial0/0/0), and the destination is 10.2.2.1. For the EAST router, the tunnel source is 10.2.2.1 and the destination is 10.1.1.1.

```
WEST# show interfaces tunnel 0
Tunnel0 is up, line protocol is up
  Hardware is Tunnel
  Internet address is 172.16.12.1/30
  MTU 17916 bytes, BW 100 Kbit/sec, DLY 50000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation TUNNEL, loopback not set
  Keepalive not set
  Tunnel source 10.1.1.1 (Serial0/0/0), destination 10.2.2.1
   Tunnel Subblocks:
      src-track:
         Tunnel0 source tracking subblock associated with Serial0/0/0
          Set of tunnels with source Serial0/0/0, 1 member (includes iterators), on
interface <OK>
  Tunnel protocol/transport GRE/IP
    Key disabled, sequencing disabled
    Checksumming of packets disabled
  Tunnel TTL 255, Fast tunneling enabled
  Tunnel transport MTU 1476 bytes
  Tunnel transmit bandwidth 8000 (kbps)
  Tunnel receive bandwidth 8000 (kbps)
  Last input 00:00:12, output 00:00:12, output hang never
  Last clearing of "show interface" counters 00:01:29
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  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
     5 packets input, 620 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     5 packets output, 620 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 unknown protocol drops
     0 output buffer failures, 0 output buffers swapped out

EAST# show interfaces tunnel 0
Tunnel0 is up, line protocol is up
  Hardware is Tunnel
  Internet address is 172.16.12.2/30
  MTU 17916 bytes, BW 100 Kbit/sec, DLY 50000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation TUNNEL, loopback not set
```

```
  Keepalive not set
  Tunnel source 10.2.2.1, destination 10.1.1.1
   Tunnel Subblocks:
      src-track:
         Tunnel0 source tracking subblock associated with Serial0/0/1
          Set of tunnels with source Serial0/0/1, 1 member (includes iterators), on
interface <OK>
  Tunnel protocol/transport GRE/IP
    Key disabled, sequencing disabled
    Checksumming of packets disabled
  Tunnel TTL 255, Fast tunneling enabled
  Tunnel transport MTU 1476 bytes
  Tunnel transmit bandwidth 8000 (kbps)
  Tunnel receive bandwidth 8000 (kbps)
  Last input 00:01:28, output 00:01:28, output hang never
  Last clearing of "show interface" counters 00:02:50
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  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
     5 packets input, 620 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
     5 packets output, 620 bytes, 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 unknown protocol drops
     0 output buffer failures, 0 output buffers swapped out
```

c. Ping across the tunnel from the WEST router to the EAST router using the IP address of the tunnel interface.

```
WEST# ping 172.16.12.2
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 172.16.12.2, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 32/34/36 ms
```

d. Use the **traceroute** command on the WEST to determine the path to the tunnel interface on the EAST router. What is the path to the EAST router?

_____ 172.16.12.1 > 172.16.12.2

```
WEST# traceroute 172.16.12.2
Type escape sequence to abort.
Tracing the route to 172.16.12.2
VRF info: (vrf in name/id, vrf out name/id)
  1 172.16.12.2 20 msec 20 msec *
```

e. Ping and trace the route across the tunnel from the EAST router to the WEST router using the IP address of the tunnel interface.

What is the path to the WEST router from the EAST router? _____
172.16.12.2 > 172.16.12.1

With which interfaces are these IP addresses associated? Why?

_____

_____

The tunnel 0 interfaces on both WEST and EAST routers. The traffic is using the tunnel.

f. The **ping** and **traceroute** commands should be successful. If not, troubleshoot before continuing to the next part.

# Part 3: Enable Routing over the GRE Tunnel

In Part 3, you will configure OSPF routing so that the LANs on the WEST and EAST routers can communicate using the GRE tunnel.

After the GRE tunnel is set up, the routing protocol can be implemented. For GRE tunneling, a network statement will include the IP network of the tunnel, instead of the network associated with the serial interface. just like you would with other interfaces, such as Serial and Ethernet. Remember that the ISP router is not participating in this routing process.

## Step 1: Configure OSPF routing for area 0 over the tunnel.

a. Configure OSPF process ID 1 using area 0 on the WEST router for the 172.16.1.0/24 and 172.16.12.0/24 networks.

```
WEST(config)# router ospf 1
WEST(config-router)# network 172.16.1.0 0.0.0.255 area 0
WEST(config-router)# network 172.16.12.0 0.0.0.3 area 0
```

b. Configure OSPF process ID 1 using area 0 on the EAST router for the 172.16.2.0/24 and 172.16.12.0/24 networks.

```
EAST(config)# router ospf 1
EAST(config-router)# network 172.16.2.0 0.0.0.255 area 0
EAST(config-router)# network 172.16.12.0 0.0.0.3 area 0
```

## Step 2: Verify OSPF routing.

a. From the WEST router, issue the **show ip route** command to verify the route to 172.16.2.0/24 LAN on the EAST router.

```
WEST# show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is 10.1.1.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.1.1.2
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.1.1.0/30 is directly connected, Serial0/0/0
L        10.1.1.1/32 is directly connected, Serial0/0/0
```

```
      172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
C        172.16.1.0/24 is directly connected, GigabitEthernet0/1
L        172.16.1.1/32 is directly connected, GigabitEthernet0/1
O        172.16.2.0/24 [110/1001] via 172.16.12.2, 00:00:07, Tunnel0
C        172.16.12.0/30 is directly connected, Tunnel0
L        172.16.12.1/32 is directly connected, Tunnel0
```

What is the exit interface and IP address to reach the 172.16.2.0/24 network?

_____

The tunnel 0 interface with an IP address of 172.16.12.2 is used to reach 172.16.2.0/24.

b. From the EAST router issue the command to verify the route to 172.16.1.0/24 LAN on the WEST router.

What is the exit interface and IP address to reach the 172.16.1.0/24 network?

_____

The tunnel 0 interface with an IP address of 172.16.12.1 is used to reach 172.16.1.0/24.

```
EAST# show ip route
Codes: L - local, 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, H - NHRP, l - LISP
       + - replicated route, % - next hop override

Gateway of last resort is 10.2.2.2 to network 0.0.0.0

S*    0.0.0.0/0 [1/0] via 10.2.2.2
      10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        10.2.2.0/30 is directly connected, Serial0/0/1
L        10.2.2.1/32 is directly connected, Serial0/0/1
      172.16.0.0/16 is variably subnetted, 5 subnets, 3 masks
O        172.16.1.0/24 [110/1001] via 172.16.12.1, 00:02:44, Tunnel0
C        172.16.2.0/24 is directly connected, GigabitEthernet0/1
L        172.16.2.1/32 is directly connected, GigabitEthernet0/1
C        172.16.12.0/30 is directly connected, Tunnel0
L        172.16.12.2/32 is directly connected, Tunnel0
```

## Step 3: Verify end-to-end connectivity.

a. Ping from PC-A to PC-C. It should be successful. If not, troubleshoot until you have end-to-end connectivity.

**Note**: It may be necessary to disable the PC firewall to ping between PCs.

b. Traceroute from PC-A to PC-C. What is the path from PC-A to PC-C?

_____

172.16.1.1 > 172.16.12.2 (Tunnel interface on the EAST router) > 172.16.2.3

## Reflection

1. What other configurations are needed to create a secured GRE tunnel?

   _____

   IPsec can be configured to encrypt the data for a secured GRE tunnel.

2. If you added more LANs to the WEST or EAST router, what would you need to do so that the network will use the GRE tunnel for traffic?

   _____

   The new networks would need to be added to the same routing protocols as the tunnel interface.

## Router Interface Summary Table

| Router Interface Summary | | | | |
|---|---|---|---|---|
| **Router Model** | **Ethernet Interface #1** | **Ethernet Interface #2** | **Serial Interface #1** | **Serial Interface #2** |
| 1800 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 1900 | Gigabit Ethernet 0/0 (G0/0) | Gigabit Ethernet 0/1 (G0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 2801 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/1/0 (S0/1/0) | Serial 0/1/1 (S0/1/1) |
| 2811 | Fast Ethernet 0/0 (F0/0) | Fast Ethernet 0/1 (F0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |
| 2900 | Gigabit Ethernet 0/0 (G0/0) | Gigabit Ethernet 0/1 (G0/1) | Serial 0/0/0 (S0/0/0) | Serial 0/0/1 (S0/0/1) |

**Note**: To find out how the router is configured, look at the interfaces to identify the type of router and how many interfaces the router has. There is no way to effectively list all the combinations of configurations for each router class. This table includes identifiers for the possible combinations of Ethernet and Serial interfaces in the device. The table does not include any other type of interface, even though a specific router may contain one. An example of this might be an ISDN BRI interface. The string in parenthesis is the legal abbreviation that can be used in Cisco IOS commands to represent the interface.

## Device Configs

## Router WEST

```
WEST# show run
Building configuration...

Current configuration : 1798 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname WEST
```

```
!
boot-start-marker
boot-end-marker
!
!
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2
!
no aaa new-model
memory-size iomem 15
!
ip cef
!
!
!
!

!
!
no ip domain lookup
no ipv6 cef
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
!
!
interface Tunnel0
 ip address 172.16.12.1 255.255.255.252
 tunnel source Serial0/0/0
 tunnel destination 10.2.2.1
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address 172.16.1.1 255.255.255.0
 duplex auto
```

```
 speed auto
!
interface Serial0/0/0
 ip address 10.1.1.1 255.255.255.252
 clock rate 128000
!
interface Serial0/0/1
 no ip address
 shutdown
!
router ospf 1
 network 172.16.1.0 0.0.0.255 area 0
 network 172.16.12.0 0.0.0.3 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 10.1.1.2
!
!
!
!
control-plane
!
!
banner motd ^C
Unauthorized Access Prohibited.
^C
!
line con 0
 password 7 14141B180F0B
 logging synchronous
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 05080F1C2243
 login
 transport input all
!
scheduler allocate 20000 1000
```

```
!
end
```

## Router ISP

```
ISP# show run
Building configuration...

Current configuration : 1406 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname ISP
!
boot-start-marker
boot-end-marker
!
!
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2
!
no aaa new-model
memory-size iomem 15
!
ip cef
!
!
!
!
!
!
no ip domain lookup
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
!
redundancy
!
!
!
!
!
!
```

```
!
!
!
!
!
!
!
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface Serial0/0/0
 ip address 10.1.1.2 255.255.255.252
!
interface Serial0/0/1
 ip address 10.2.2.2 255.255.255.252
 clock rate 128000
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
!
!
!
!
control-plane
!
!
banner motd ^C
Unauthorized Access Prohibited.
^C
!
line con 0
 password 7 02050D480809
```

```
 logging synchronous
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 045802150C2E
 login
 transport input all
!
scheduler allocate 20000 1000
!
end
```

## Router EAST

```
EAST# show run
Building configuration...

Current configuration : 1802 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname EAST
!
boot-start-marker
boot-end-marker
!
!
enable secret 4 06YFDUHH61wAE/kLkDq9BGho1QM5EnRtoyr8cHAUg.2
!
no aaa new-model
memory-size iomem 15
!
ip cef
!
!
!
!
!
!
!
```

```
no ip domain lookup
no ipv6 cef
!
multilink bundle-name authenticated
!
!
!
!
!
redundancy
!
!
!
!
!
!
!
!
!
!
!
!
!
!
interface Tunnel0
 ip address 172.16.12.2 255.255.255.252
 tunnel source 10.2.2.1
 tunnel destination 10.1.1.1
!
interface Embedded-Service-Engine0/0
 no ip address
 shutdown
!
interface GigabitEthernet0/0
 no ip address
 shutdown
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address 172.16.2.1 255.255.255.0
 duplex auto
 speed auto
!
interface Serial0/0/0
 no ip address
 shutdown
 clock rate 2000000
!
```

```
interface Serial0/0/1
 ip address 10.2.2.1 255.255.255.252
!
router ospf 1
 network 172.16.2.0 0.0.0.255 area 0
 network 172.16.12.0 0.0.0.3 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
ip route 0.0.0.0 0.0.0.0 10.2.2.2
!
!
!
!
control-plane
!
!
banner motd ^C
Unauthorized Access Prohibited.
^C
!
line con 0
 password 7 00071A150754
 logging synchronous
 login
line aux 0
line 2
 no activation-character
 no exec
 transport preferred none
 transport input all
 transport output pad telnet rlogin lapb-ta mop udptn v120 ssh
 stopbits 1
line vty 0 4
 password 7 030752180500
 login
 transport input all
!
scheduler allocate 20000 1000
!
end
```