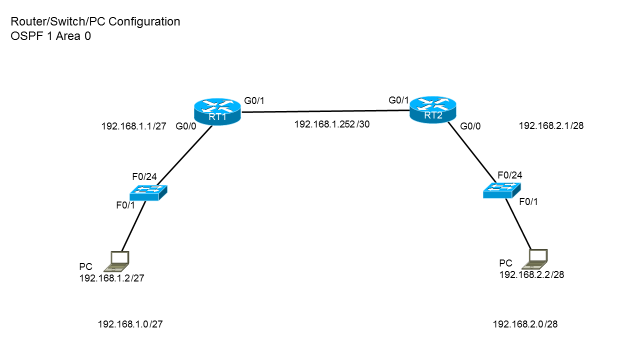
|  |  |
| --- | --- |
| **Command** | **What it Does** |
| Router# -OR- Switch# | Either device can be listed. Router# will be used in this document unless otherwise specified. |
| Router# show run | Displays your current running configuration |
| Router# Copy run start | Copies the current running configuration to memory (saves it!) |
| Router# write -OR- **wr** | Alternative for **copy run start.** Writes config directly to NVRAM |
| Router# show version | Shows the current version of IOS, configuration registry number, uptime, MAC address, and other information |
| Router# erase startup-configuration  Router# reload | Wipes startup config. Allows you to start with a default configuration. Works on routers and switches |
| Router# show ip route | Shows the routing table |
| Router# show ip interface brief | Shows summary of interfaces |
| Routers# show ip ospf neighbor | Shows neighbors directly connected |
| Router# ping 192.168.1.1 | Sends a PING to that IP address |
| exit | Sends you back one level |
| **Keyboard** | **What it Does** |
| CTRL + SHIFT 6 | Press these keys to stop all unwanted process and return to your prompt |
| CTRL Z | Exits all configuration modes and returns you to privileged exec mode (Router#) |
| CTRL A | Moves the cursor to the beginning of the CLI line |
| CTRL E | Moves the cursor to the end of the CLI line |
| SPACE BAR | Advances the CLI a page at a time, scrolling |
| ENTER | Advances the CLI line by line |

**Cable Types**

* Straight-Through: Connect different devices
* Crossover: Connects like devices
* Console: Configuring devices

**Network Diagram**



OSPF

Switch2

Switch1

Router1

Router2

PC1

PC2

Router 1 Admin

**Note: Items displayed in** *italics* **are variable, depending on parameters required**.

Router> **enable**

Router#**configure terminal (** Or **config t**  for short. This enters the global configuration mode)

Router(config)#**hostname *Router1*** (sets the hostname to the italicized portion)

Router1 (config)#**banner motd \*** *This router was configured by me.* **\***

Router1 (config)#**banner login \*** *Unauthorized access is strictly prohibited !***\***

Router1 (config)#**enable password cisco**

Router1 (config)#**no ip domain-lookup**

Router1 (config)#**line console 0** (enables config mode to configure console line )

Router1 (config-line)#**password** *cisco*  (where ***cisco*** is the given console password)

Router1 (config-line)#**login** (tells the router or switch to require the password to gain access)

Router1 (config-line)#**exec-timeout 0 0** (disables your connection from timing out – use only in  
 bench testing, never in a production environment)

Router1 (config-line)#**logging synchronous** (Stops console messages from interfering, always   
 puts the cursor back to where you were typing)

*Router1 (config-line)#* **exit** (drops out of line config mode)

Router1 (config)#**line vty 0 4** (5 total VTY “lines”, numbered 0 through 4. These allow for   
 remote connections to configure your device)

Router1 (config-line)#**password** *cisco*  (where ***cisco*** is the given vty password)

Router1 (config-line)#**login**

Router1 (config-line)#**transport input** *telnet*(other options are ssh, all or none)

Router1 (config-line)#**exit** (drops out of line config mode)

Router 1 Interface Configurations

**(NOTE: Using Ethernet Interfaces - IF YOU ARE INSTRUCTED TO USE SERIAL CONNECTIONS, GO TO PAGE 7)**

Router1 (config)#**interface G0/1** (use F0/1 instead if instructor directs)

Router1(config-if)# **ip address** *192.168.1.253 255.255.255.252* (IP address, Subnet mask -   
 these change when you have a different network)

Router1 (config-if)# **description** *This is my WAN connection to Router2*

Router1 (config-if)#**no shutdown** (opens the interface to allow traffic)

Router1(config-if)#**exit**

Router1 (config)#**interface G0/0** (use F0/0 instead if instructor directs)

Router1 (config-if)# **ip address** *192.168.1.1 255.255.255.224* (IP address, Subnet mask)

Router1 (config-if)# **description** *This is my LAN connection to Switch1*

Router1 (config-if)#**no shutdown**

Router1 (config-if)#**exit**

Router 1 Routing Protocols

Router1 (config)#**router ospf** *100* (This is the Process ID Number)

Router1(config-router)#**network** *192.168.1.0 0.0.0.31* **area 0** (Advertise the proper network, proper wildcard mask and area.)

Router1 (config-router)#**network** *192.168.1.252 0.0.0.3* **area 0** *(Advertise the proper network, proper wildcard mask and area.)*

Router1 (config-router)#**exit** (or CTRL Z. CTRL Z exits all global modes and returns you to the   
 privileged exec mode)

Router1 (config-if*)#* **exit** (this backs you out one level at a time)

Router1 (config)#**exit**

Router1#**copy run start** *or* **wr**

Router1#**show run**

Router 2 Admin

Router> **enable**

Router# **config t** (enables global-config mode)

Router(config)# **hostname** *Router2* (sets the hostname to the underlines portion)

Router2(config)# **banner motd \*** *This router was configured by me.* **\***

Router2 (config)# **banner login \*** *Unauthorized access prohibited* **\***

Router2 (config)# **enable password** *cisco (or enable secret cisco)*

Router2 (config)#**no ip domain-lookup**

Router2 (config)# **line console 0** (enables config mode to configure console line )

Router2 (config-line)# **password** cisco (where **cisco** is the given console password)

Router2 (config-line)# **login** (tells the router or switch to require the password to gain access)

Router2 (config-line)# **exec-timeout 0 0** (disables your connection from timing out – use only in bench testing, never in a production environment)

Router1 (config-line)# **logging synchronous** (Stops console messages from interfering, always puts the cursor back to where you were typing)

Router2 (config-line)# **exit** (drops out of line config mode)

Router2 (config)#**line vty 0 4** (5 total VTY “lines”, numbered 0 through 4. These allow for  
 remote connections to configure your device)

Router2 (config-line)#**password** *cisco*  (where ***cisco*** is the given vty password)

Router2 (config-line)#**login**

Router2 (config-line)#**transport input** *telnet*(other options are ssh, all or none)

Router2 (config-line)#**exit** (drops out of line config mode)

Router 2 Interface Configuration

**(NOTE: When using Ethernet Interfaces - IF YOU ARE TO USE SERIAL CONNECTIONS, GO TO PAGE 7)**

Router2 (config)#**interface G0/1** (use F0/1 instead if instructor directs)

Router2(config-if)# **ip address** *192.168.1.254 255.255.255.252* (IP address, SM – this is the   
 other end of your link. It MUST be in the same subnet to communicate)

Router2(config-if)# **description** *This is my WAN connection to Router1*

Router2 (config-if)# **no shutdown**

Router2 (config-if)# **exit**

Router2 (config)#**interface G0/0** (use F0/1 instead if instructor directs)

Router2(config-if)# **ip address** *192.168.2.1 255.255.255.240* (IP address, Subnet mask)

Router2(config-if)# **description** *This is my LAN connection to Switch2*

Router2(config-if)# **no shutdown**

Router2 (config-if)# **exit**

Router 2 Routing Protocols

Router2 (config)# **router ospf** *100* (This is the Process ID Number)

Router2(config-router)# **network** *192.168.1.0 0.0.0.31* **area 0** (Advertise the proper network, proper wildcard mask and area.)

Router2 (config-router)# **network** *192.168.1.252 0.0.0.3* **area 0** (Advertise the proper network, proper wildcard mask and area.)

Router2 (config-router)# **network** *192.168.2.0 0.0.0.15* **area 0** (Advertise the proper network, proper wildcard mask and area.)

Router2 (config-router)# **exit** (or **CTRL Z**. CTRL Z exits all global modes and returns you to   
 the privileged exec mode)

Router2 (config-if)# **exit** (this backs you out one level at a time)

Router2 (config)# **exit**

Router2# **copy run start**  or **wr**

Router2# **show run**

**Wildcard Mask Rules:**

Used for OSPF commands

|  |  |
| --- | --- |
| Formulas  255.255.255.255  - Subnet Mask  Wildcard Mask | Example:  255.255.255.255  - 255.255.255.128  0 . 0 . 0 . 127 |

**Configure Packet Tracer PCs interface (as needed):**

* Place the PC on the screen
* Select the DESKTOP tab
* Select Interface > Fast Ethernet 0
* Enable the STATIC IP option in IP CONFIGURATION
* Enter the correct **IP Address, Subnet Mask, Default Gateway** per your network diagram

**Setting Your Physical Workstation IP (as needed)**:

* Click on Network Connection on Desktop
* Double-Click Local Connection
* Click Properties
* Scroll to the bottom and double-click Internet Protocol (TCP/IP)
* Replace existing info with your assigned workstation IP, SM, and Default Gateway
* Once information is updated Click on OK then OK again, an hourglass should appear telling you the information is being updated on your NIC.

**Ping the Router from your PC:**

* Create the network in Packet Tracer just like in the network diagram. You do not need to configure the switches yet. Just make sure the switches are powered on.
* Connect a straight-through cable from your PC’s NIC to the local switch’s Ethernet port.
* On your PC, double-click on Command Prompt on your desktop.
* At the command prompt, type **ipconfig** to show the IP settings for your workstation.
* Type **ping XXX.XXX.XXX.XXX** (your Gateway address - The router’s IP address)
* Good: At least 3 *Reply From* lines, Bad: *Destination Host Unreachable*
* If bad, double-check your PC IP Address, your router’s IP address, and ensure your cable is in the correct port and firmly seated.

**CONFIGURATIONS IF YOU ARE TOLD TO USE SERIAL CONNECTIONS**  
Router 1 Interface Configurations

Router1(config-if)#**interface** *s0/0/1*(or S0/0/0 if instructor directs)

Router1(config-if)#**ip address** *192.168.1.253 255.255.255.252* (IP address, Subnet Mask)

Router1(config-if)#**description** *This is my connection to Router2* (Station to your right)

Router1T(config-if)#**encapsulation** *ppp (*Encapsulation is configured on both WAN links S0/0/0 and S0/0/1)

Router1 (config-if)#**no shutdown**

Router1 (config-if)#**exit**

Router1(config)#**interface G0/0** (use F0/0 instead if instructor directs)

Router1(config-if)# **ip address** *192.168.1.1 255.255.255.224* (IP address, Subnet mask)

Router1(config-if)# **description** *This is my LAN connection to Switch1*

Router1(config-if)#**no shutdown**

Router1(config-if)#**exit**

Router1# **copy run start** or **wr**

Router 2 Interface Configurations

Router2(config-if)# **interface** *s0/0/1 (or S0/0/0 if instructor directs)*

Router2(config-if)# **ip address** *192.168.1.254 255.255.255.252* (IP address, SM)

Router2(config-if)# **description** *This is my connection to Router2* (Station to your left)

Router2(config-if)# **encapsulation ppp** (This is the PREFERRED encapsulation to be configured on both WAN links S0/0/0 and S0/0/1)

Router2(config-if)# **no shutdown**

Router2(config-if)# **exit**

Router2(config)#**interface G0/0** (use F0/0 instead if instructor directs)

Router2(config-if)# **ip address** *192.168.2.1 255.255.255.240* (IP address, Subnet mask)

Router2(config-if)# **description** *This is my LAN connection to Switch2*

Router2(config-if)# **no shutdown**

Router2(config-if)# **exit**

Router2# **copy run start** or **wr**