COMPLETE 31 PCs Network Setup - Only PC31 Can Access Website

PART 1: ADDING ALL COMPONENTS

Step 1: Add All Devices to Workspace

1. Open **NEW** Cisco Packet Tracer file
2. Click on **"End Devices"** at bottom panel
3. Click on **"PC"** icon and click **31 times** on workspace to add 31 PCs
   - Arrange them nicely (maybe 6 rows of 5 PCs each, plus 1 extra)
4. Click on **"Server"** icon and click **once** to add 1 Server
5. Click on **"Network Devices"** at bottom panel
6. Click on **"Switches"** folder
7. Click on **"2960"** switch and click **twice** to add **2 switches**
8. Click on **"Routers"** folder
9. Click on **"2811"** router and click **once** to add **1 router**

Step 2: Label Your Devices (Optional but Helpful)

1. Right-click each PC and rename them PC1, PC2, PC3... PC31
2. Rename switches to Switch1 and Switch2
3. Rename server to WebServer
4. Rename router to Router1

PART 2: PHYSICAL CONNECTIONS (VERY IMPORTANT - READ CAREFULLY)

Step 3: Connect First 22 PCs to Switch1

1. Click **"Connections"** → Select **"Copper Straight-Through"** cable (first cable)
2. Connect PCs to Switch1 as follows:
   - **PC1** → Switch1 **FastEthernet0/1**
   - **PC2** → Switch1 **FastEthernet0/2**
   - **PC3** → Switch1 **FastEthernet0/3**
   - **PC4** → Switch1 **FastEthernet0/4**
   - **PC5** → Switch1 **FastEthernet0/5**
   - **PC6** → Switch1 **FastEthernet0/6**
   - **PC7** → Switch1 **FastEthernet0/7**

- **PC8** → Switch1 **FastEthernet0/8**
- **PC9** → Switch1 **FastEthernet0/9**
- **PC10** → Switch1 **FastEthernet0/10**
- **PC11** → Switch1 **FastEthernet0/11**
- **PC12** → Switch1 **FastEthernet0/12**
- **PC13** → Switch1 **FastEthernet0/13**
- **PC14** → Switch1 **FastEthernet0/14**
- **PC15** → Switch1 **FastEthernet0/15**
- **PC16** → Switch1 **FastEthernet0/16**
- **PC17** → Switch1 **FastEthernet0/17**
- **PC18** → Switch1 **FastEthernet0/18**
- **PC19** → Switch1 **FastEthernet0/19**
- **PC20** → Switch1 **FastEthernet0/20**
- **PC21** → Switch1 **FastEthernet0/21**
- **PC22** → Switch1 **FastEthernet0/22**

Step 4: Connect Remaining 9 PCs to Switch2

1. Still using **"Copper Straight-Through"** cable
2. Connect remaining PCs to Switch2:
   - **PC23** → Switch2 **FastEthernet0/1**
   - **PC24** → Switch2 **FastEthernet0/2**
   - **PC25** → Switch2 **FastEthernet0/3**
   - **PC26** → Switch2 **FastEthernet0/4**
   - **PC27** → Switch2 **FastEthernet0/5**
   - **PC28** → Switch2 **FastEthernet0/6**
   - **PC29** → Switch2 **FastEthernet0/7**
   - **PC30** → Switch2 **FastEthernet0/8**
   - **PC31** → Switch2 **FastEthernet0/9** ← **THIS IS OUR TARGET PC!**

Step 5: Connect Switch1 to Switch2 (Inter-Switch Link)

1. Using **"Copper Straight-Through"** cable
2. **Switch1 FastEthernet0/23** → **Switch2 FastEthernet0/23**

Step 6: Connect Switch1 to Router

1. Using **"Copper Straight-Through"** cable
2. **Switch1 FastEthernet0/24 → Router FastEthernet0/0**

Step 7: Connect Server to Router

1. Using **"Copper Straight-Through"** cable
2. **Server FastEthernet0 → Router FastEthernet0/1**

PART 3: CONFIGURING IP ADDRESSES

Step 8: Configure All 31 PCs

Configure each PC with Static IP as follows:

PC1:

- Click PC1 → Desktop → IP Configuration → Static
- IP Address: `192.168.1.1`
- Subnet Mask: `255.255.255.0`
- Default Gateway: `192.168.1.254`

PC2:

- Click PC2 → Desktop → IP Configuration → Static
- IP Address: `192.168.1.2`
- Subnet Mask: `255.255.255.0`
- Default Gateway: `192.168.1.254`

Continue this pattern for ALL PCs:

- PC3: IP = `192.168.1.3`
- PC4: IP = `192.168.1.4`
- PC5: IP = `192.168.1.5`
- PC6: IP = `192.168.1.6`
- PC7: IP = `192.168.1.7`
- PC8: IP = `192.168.1.8`
- PC9: IP = `192.168.1.9`
- PC10: IP = `192.168.1.10`
- PC11: IP = `192.168.1.11`
- PC12: IP = `192.168.1.12`

- PC13: IP = `192.168.1.13`
- PC14: IP = `192.168.1.14`
- PC15: IP = `192.168.1.15`
- PC16: IP = `192.168.1.16`
- PC17: IP = `192.168.1.17`
- PC18: IP = `192.168.1.18`
- PC19: IP = `192.168.1.19`
- PC20: IP = `192.168.1.20`
- PC21: IP = `192.168.1.21`
- PC22: IP = `192.168.1.22`
- PC23: IP = `192.168.1.23`
- PC24: IP = `192.168.1.24`
- PC25: IP = `192.168.1.25`
- PC26: IP = `192.168.1.26`
- PC27: IP = `192.168.1.27`
- PC28: IP = `192.168.1.28`
- PC29: IP = `192.168.1.29`
- PC30: IP = `192.168.1.30`
- **PC31: IP =** `192.168.1.31` **← SPECIAL PC**

For ALL PCs, use same Subnet Mask and Gateway:

- Subnet Mask: `255.255.255.0`
- Default Gateway: `192.168.1.254`

Step 9: Configure Server

1. Click Server → Desktop → IP Configuration → Static
2. IP Address: `192.168.2.10`
3. Subnet Mask: `255.255.255.0`
4. Default Gateway: `192.168.2.1`

PART 4: CONFIGURE ROUTER

Step 10: Configure Router Interfaces

1. Click Router → CLI tab

2. Press **Enter** when prompted
3. Type these commands **EXACTLY**:

```
enable
configure terminal
interface fastethernet 0/0
ip address 192.168.1.254 255.255.255.0
no shutdown
exit
interface fastethernet 0/1
ip address 192.168.2.1 255.255.255.0
no shutdown
exit
```

PART 5: SETUP WEB SERVER

Step 11: Enable HTTP Service

1. Click Server → Services tab
2. Click **HTTP** from left menu
3. Make sure **HTTP Service** is **ON**
4. Leave default webpage content (or customize if you want)

PART 6: TEST BEFORE RESTRICTION

Step 12: Test Basic Connectivity (Optional)

1. Pick any PC (like PC15):
   - PC15 → Desktop → Web Browser
   - URL: `192.168.2.10`
   - Should load the webpage
2. Try PC31:
   - PC31 → Desktop → Web Browser
   - URL: `192.168.2.10`
   - Should also load the webpage

At this point, ALL PCs can access the website. Next we'll restrict it.

PART 7: CREATE ACCESS RESTRICTION

Step 13: Configure Access Control List (ACL)

1. Click Router → CLI tab

2. Type these commands **EXACTLY**:

```
configure terminal
access-list 100 permit tcp host 192.168.1.31 host 192.168.2.10 eq 80
access-list 100 deny tcp 192.168.1.0 0.0.0.255 host 192.168.2.10 eq 80
access-list 100 permit ip any any
interface fastethernet 0/0
ip access-group 100 in
exit
exit
write memory
```

PART 8: FINAL TESTING

Step 14: Test PC31 (Should Work)

1. Click **PC31**
2. Desktop → Web Browser
3. URL: `192.168.2.10`
4. Press Enter
5. **RESULT: Website should load successfully** ✅

Step 15: Test Other PCs (Should be Blocked)

Test PC1:

1. Click PC1 → Desktop → Web Browser
2. URL: `192.168.2.10`
3. **RESULT: Should NOT load (blocked)** ❌

Test PC15:

1. Click PC15 → Desktop → Web Browser
2. URL: `192.168.2.10`
3. **RESULT: Should NOT load (blocked)** ❌

Test PC30:

1. Click PC30 → Desktop → Web Browser
2. URL: `192.168.2.10`
3. **RESULT: Should NOT load (blocked)** ❌

SUMMARY OF CONNECTIONS

Switch1 (22 PCs + Links):

- **Ports 0/1 to 0/22:** PCs 1-22
- **Port 0/23:** Connected to Switch2
- **Port 0/24:** Connected to Router

Switch2 (9 PCs + Link):

- **Ports 0/1 to 0/9:** PCs 23-31
- **Port 0/23:** Connected to Switch1

Router:

- **FastEthernet 0/0:** Connected to Switch1 (IP: 192.168.1.254)
- **FastEthernet 0/1:** Connected to Server (IP: 192.168.2.1)

Final Result:

- ✅ **Only PC31** can access the website
- ❌ **PCs 1-30** are blocked from the website
- ✅ All PCs can still ping each other and communicate normally

TROUBLESHOOTING

If PC31 doesn't work:

- Check PC31 IP is exactly `192.168.1.31`
- Verify HTTP service is ON in server
- Check all cables are connected

If other PCs still work:

- Verify ACL commands were typed exactly
- Check ACL is applied to correct interface (FastEthernet 0/0)
- Type `show access-lists` in router CLI to verify ACL exists

Connection problems:

- Wait 30 seconds after configuration
- Check all port lights are green
- Verify no port conflicts in connections