

**Superior University**

**Task 1**

**Course:**

Computer Network Lab

**Teacher:**

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**Assignment Topic:**

Components in Cisco Packet Tracer

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**Section:**

BSSE-5B

**DEPARTMENT OF SOFTWARE ENGINEERING**

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**Questions**

**Question 1:**

**What is the difference between all the routers, and when to use them (mentioned in cisco packet tracer)**

**Answer:**

**1. 4331 Router (ISR 4331):**

**Use Case:** Suitable for medium to large-sized enterprises. This router is part of Cisco's ISR 4000 series and supports high-performance WAN connections, virtualization, and security services.

**When to Use:** For businesses that need advanced security, cloud services, and scalability.

**2. 4321 Router (ISR 4321):**

**Use Case:** Smaller version of the 4331, useful for medium-sized businesses. It supports similar features to the 4331 but with lower throughput and capacity.

**When to Use:** Ideal for small-to-medium offices with limited budget and network demands but needing future scalability.

**3. 1941 Router (ISR 1941):**

**Use Case:** ISR router suitable for small businesses or branch offices. Supports security, routing, and switching.

**When to Use:** Good for small offices needing basic routing and WAN services.

**4. 2901 Router (ISR 2901):**

**Use Case:** Designed for small to medium-sized businesses, providing higher performance than the 1941 model. It supports WAN, VPN, and security features.

**When to Use:** When you need an upgrade from the 1900 series but don’t require the power of the 4000 series.

**5. 2911 Router (ISR 2911):**

**Use Case:** This router is slightly more powerful than the 2901 and supports similar services such as VPN, security, and voice over IP.

**When to Use:** Ideal for slightly larger small to medium-sized businesses with more network traffic.

**6. 819IOX Router:**

**Use Case:** Used in industrial applications, mobile, or remote locations, this compact and rugged router provides connectivity in IoT networks.

**When to Use:** Perfect for IoT, machine-to-machine communication, and mobile applications.

**7. 819HGW Router:**

**Use Case:** Another compact router with cellular connectivity, usually deployed in IoT environments, remote locations, or vehicles.

**When to Use:** Ideal for mobile or remote networks needing wireless connectivity.

**8. 829 Router:**

**Use Case:** Rugged, compact router that supports mobile and remote office networks with security and IoT support.

**When to Use:** For mobile, industrial, or small office environments that need ruggedized equipment.

**9. 1240 Router:**

**Use Case:** This is an older router, typically used for small networks. It’s not very common in modern deployments.

**When to Use:** Mostly used in labs or training environments for learning older Cisco technologies.

**10. PT-Router:**

**Use Case:** This is a general-purpose router in Packet Tracer for educational use. It doesn't correspond to a specific real-world model.

**When to Use:** Use it in basic labs or scenarios where the specific router model doesn’t matter.

**11. PT-Empty Router:**

**Use Case:** This is a customizable, modular router where you can add interfaces manually.

**When to Use:** Use this when you want to simulate adding specific modules or create a custom router.

**12. 1841 Router:**

**Use Case:** Older ISR model for small networks, providing basic routing and security functions.

**When to Use:** Suitable for small networks with limited performance needs.

**13. 2620XM Router:**

**Use Case:** This is an older series of routers typically used in labs or for small network environments.

**When to Use:** Best for labs, training, or extremely small networks with minimal traffic.

**14. 2811 Router:**

**Use Case:** Part of the ISR 2800 series, the 2811 supports services like VPN, voice services, and firewall functionality.

**When to Use:** Good for small to medium-sized businesses needing voice and security services along with basic routing.

**Question 2:**

**What is the difference between all the switches, and when to use them (mentioned in cisco packet tracer)**

**Answer:**

**1. 2960 Switch:**

**Use Case:** Cisco Catalyst 2960 is a Layer 2 switch, which means it mainly deals with MAC addresses and operates at the data link layer. It’s designed for small to medium-sized networks.

**When to Use:** Ideal for small to medium-sized businesses needing basic switching functionality, VLAN segmentation, and security.

**2. PT-Switch:**

**Use Case:** This is a basic switch provided by Packet Tracer for simulation purposes. It doesn’t emulate a specific Cisco model.

**When to Use:** Suitable for basic labs where you only need a simple switch without worrying about specific models.

**3. PT-Empty Switch:**

**Use Case:** This is a modular switch, allowing you to manually add interfaces and modules as needed for the simulation.

**When to Use:** Use this when you need to simulate the process of configuring specific ports or want to customize a switch.

**4. 3560-24PS Switch:**

**Use Case:** Cisco Catalyst 3560 is a Layer 3 switch, providing both Layer 2 and Layer 3 routing capabilities. The "24PS" model specifically offers Power over Ethernet (PoE), allowing you to power devices like IP phones or wireless access points.

**When to Use:** Ideal for medium-sized networks where you need inter-VLAN routing and PoE to power devices.

**5. 3560-24TS Switch:**

**Use Case:** Similar to the 3560-24PS but without PoE support. It’s a Layer 3 switch, so it can handle routing in addition to switching.

**When to Use:** Best for medium-sized businesses needing Layer 3 routing capabilities but without the need for PoE.

**6. IE 2000 Switch:**

**Use Case:** The Cisco Industrial Ethernet (IE) 2000 switch is a ruggedized switch designed for harsh environments. It’s typically used in industrial networks, supporting applications like manufacturing, transportation, and oil and gas.

**When to Use:** Perfect for industries where the network operates in extreme conditions (e.g., industrial plants, oil rigs).

**7. PT-Bridge:**

**Use Case:** This is a simple bridge, not a switch. It is typically used in simulations for very basic connectivity between networks.

**When to Use:** Suitable for very basic labs where you want to explore the concept of network bridging.

**8. 2950-24 Switch:**

**Use Case:** Cisco Catalyst 2950 is an older Layer 2 switch, used for small networks or labs. It provides basic switching capabilities, but lacks more advanced features like Layer 3 routing or PoE.

**When to Use:** Ideal for small networks or educational labs where only Layer 2 switching is needed.

**9. 2950T Switch:**

**Use Case:** Another model from the 2950 series. The "T" designation means it has some additional port options, such as Gigabit Ethernet uplink ports for faster connectivity.

**When to Use:** Suitable for small networks that require Layer 2 switching and higher-speed uplinks.

**Question3:  
What is the difference between all the connection wires, and when to use them (mentioned in cisco packet tracer**

**Answer:**

**1. Lightning Bolt (Automatic Connection):**

**When to Use:** Use this when you want Packet Tracer to automatically choose the correct cable type based on the devices being connected. Ideal for quick connections where you don’t need to manually choose a specific cable.

**2. Blue Curved Line (Console Cable):**

**When to Use:** Use this for connecting a PC to a network device (like a router or switch) via the console port for device configuration. Typically used when initially configuring a device before network services are up.

**3. Black Line (Copper Straight-Through Cable):**

**When to Use:** Use this to connect different types of devices, such as connecting a PC to a switch or a router to a switch. Commonly used for standard connections between network devices and end-user devices.

**4. Orange Line (Copper Crossover Cable):**

**When to Use:** Use this when connecting similar devices, such as connecting two switches or two PCs directly to each other. This was more commonly used in older networks before auto-sensing ports became the norm.

**5. Black Dashed Line (Copper Rollover Cable):**

**When to Use:** Use this for connecting a terminal or a PC to the console port of a router or switch for configuration, similar to the console cable but in older devices.

**6. Black Dotted Line (Serial DCE Cable):**

**When to Use:** Use this when connecting two routers together for a WAN link where one device acts as the Data Communications Equipment (DCE). Typically used in lab environments to simulate WAN connections.

**7. Blue Straight Line (Serial DTE Cable):**

**When to Use:** This connects routers to WAN networks as the Data Terminal Equipment (DTE). It’s used on the opposite end of a DCE cable in labs or WAN simulations.

**8. Red Zigzag Line (Fiber Optic Cable):**

**When to Use:** Use this to connect devices over long distances or where high-speed connections are needed. Common for connections between switches or routers in data centers or when connecting buildings on a campus.

**9. Red Zigzag Line with a Circle (Clocked Fiber Optic Cable):**

**When to Use:** This is used in simulations where you need to control the clock rate on a fiber connection, usually in WAN or specific lab scenarios.

**10. Green Line (Coaxial Cable):**

**When to Use:** Use this for older networks that use coaxial cabling, such as older TV networks or legacy broadband connections. It’s not commonly used in modern networks but can be useful in specialized labs.

**11. Brown Line (Phone Cable):**

**When to Use:** Use this for connecting phone devices, such as analog phones or devices using RJ-11 connectors, typically in voice labs.

**12. Purple Line (Straight Copper Cable):**

**When to Use:** Similar to the standard copper straight-through cable, used for connecting different types of devices (such as PCs to switches). This may represent a specific type of connection depending on the lab scenario.