**Lab Task 1**

**Computer Networks (Lab)**



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# Question 1

## Cisco 1941 Router

The Cisco 1941 is an older model in the Integrated Services Router (ISR) series. It’s designed for small to medium-sized businesses or branch offices. It supports a variety of network services, including security and voice. It is ideal for small to medium networks where basic routing, security, and some advanced features like VPN are needed.

## Cisco 2811 Router

The Cisco 2811 is part of the 2800 Series ISR. It offers more capabilities than the 1941, including higher performance and more expansion options. It supports multiple interfaces, modular expansion, and advanced features like VoIP and security. It is suitable for medium-sized enterprises that require more flexibility and performance. It's a good choice when you need to connect multiple sites or handle more complex routing tasks.

## Cisco 2911 Router

Another model in the 2900 Series ISR, offering even more performance and capabilities compared to the 2811. Enhanced processing power, modularity for expansion, and support for a wide range of services including advanced security and unified communications. It is ideal for larger branch offices or small to medium-sized enterprises that need high performance, advanced features, and scalability.

## Cisco 7200 Router

The Cisco 7200 series is designed for high-performance needs and is used in larger enterprise networks or service provider environments. It is offers high throughput, extensive scalability, and advanced features including high-speed interfaces and high capacity. It is best suited for enterprise edge, service provider environments, or high-demand scenarios where performance and reliability are critical.

## Cisco 7600 Router

The Cisco 7600 series is designed for carrier-grade applications and service providers. It supports extremely high performance, modular design, and support for a wide range of high-capacity interfaces and advanced services. It is typically used in large ISP environments or as core routers in large enterprise networks due to their high scalability and performance.

# Question 2

## Cisco 2960 Series Switches

It is a Layer 2 switch with basic switch functionalities, such as VLAN support, STP (Spanning Tree Protocol), and basic port security. It has no Layer 3 capabilities. It is ideal for small to medium-sized networks where routing and more advanced Layer 3 functionalities are not required. Suitable for scenarios where you need basic switching capabilities without routing.

## Cisco 3560 Series Switches

It is a Layer 3 switch. It combines Layer 2 switching with Layer 3 routing capabilities. It supports VLAN routing (Inter-VLAN Routing), advanced routing protocols (OSPF, EIGRP, etc.), and enhanced security features. It is useful in larger networks where routing between VLANs is required. It provides more advanced features for routing and traffic management compared to the 2960.

## Cisco 3750 Series Switches

It is a Layer 3 switch. It is similar to the 3560 but with added features such as stackable capabilities, which allow multiple switches to operate as a single unit for better scalability and redundancy. It is suitable for enterprise environments that need both Layer 2 switching and Layer 3 routing with added flexibility for scaling through stacking.

## Cisco 3850 Series Switches

It is a Layer 3 switch with enhanced capabilities compared to the 3750, including support for higher throughput, more advanced security features, and better QoS (Quality of Service). They also support stackable configurations. It is best for modern enterprise environments requiring high performance, scalability, and advanced features. Useful where high-speed connections and advanced network management are critical.

## Cisco Catalyst 9300 Series Switches

It is a Layer 3 switch with advanced Layer 3 features, high performance, support for high-density 10G/25G/40G/100G interfaces, enhanced security, and programmability with Cisco DNA (Digital Network Architecture) integration. It is ideal for next-generation enterprise networks, supporting high-density, high-throughput environments with advanced capabilities and future-proofing for evolving network demands.

# Question 3

## Console Cable

A console cable is used to connect a computer’s serial port to the console port of a network device, such as a router or switch. This allows network administrators to access the command-line interface (CLI) of the device for configuration and management purposes. In many simulation tools like Cisco Packet Tracer, the console cable is often depicted similarly to a rollover cable. It’s essential for initial device setup and troubleshooting.

## Straight-Through Cable

A straight-through cable is used to connect devices of different types, such as a PC to a switch or a switch to a router. This cable has a one-to-one wiring configuration where each pin on one end is connected to the corresponding pin on the other end. It's commonly used in Ethernet networks for connecting devices like computers and network equipment.

## Copper Crossover Cable

A copper crossover cable is used to connect similar types of devices directly, such as switch to switch or router to router. The wiring inside the cable crosses over, which allows the transmit pins on one end to connect to the receive pins on the other end. This type of cable is useful in scenarios where you need to connect two devices of the same type without a hub or switch.

## Fiber Optic Cable

A fiber optic cable is used for high-speed, long-distance data transmission. It consists of glass or plastic fibers that transmit data as light signals, allowing for much higher bandwidth and less signal degradation over long distances compared to copper cables. Fiber optic cables are used for backbone connections between network switches, routers, or across buildings.

## Phone Cable

A phone cable is typically used for connecting telephones to wall jacks or to connect telephone lines for data services like DSL. It is a type of twisted-pair cable with smaller gauge wiring compared to Ethernet cables and is commonly used in home telephone systems.

## Coaxial Cable

A coaxial cable is used for transmitting cable television signals and Internet data. It has a central conductor surrounded by insulation, a metallic shield, and an outer insulating layer. Coaxial cables are known for their ability to handle high-frequency signals and are commonly used in cable TV and broadband Internet connections.

## Serial DCE Cable

A serial DCE (Data Communications Equipment) cable is used in serial communication setups where the device acting as a data source (such as a modem) is connected to a Data Terminal Equipment (DTE) device (like a computer). The DCE device provides the clocking signal, and the cable often has specific wiring to facilitate proper data transmission.

## Serial DTE Cable

A serial DTE (Data Terminal Equipment) cable connects a device like a computer (the DTE) to a Data Communications Equipment (DCE) device such as a modem or router. In this setup, the DTE device is the source of the data, and the cable facilitates the communication by connecting to the DCE, which usually provides the clocking signal.