CCNA Quick Notes ? WAN

1.The three WAN connection types available are leased lines, circuit-switched, and packet-switched. Define the differences between each connection type.   Leased lines are dedicated point-to-point lines that provide a single preestablished WAN communication path from the customer's network to the remote network. Leased lines are usually employed over synchronous connections. They are generally expensive and are always up. Circuit-switched connections are dedicated for only the duration of the call. The telephone system and ISDN are examples of circuit-switched networks. Packet-switched connections use virtual circuits (VCs) to provide end-to-end connectivity. Packet-switched connections are similar to leased lines, except that the line is shared by other customers. A packet knows how to reach its destination by programming of switches. Frame Relay is an example of a packet-switched connection.

2.Define customer premises equipment (CPE), and give an example.   CPE is equipment that is located on the customer's (or subscriber's) premises. It is equipment owned by the customer or equipment leased by the service provider to the customer. An example is your router.   3.What is the demarcation point (demarc)?   The demarc is the point where the CPE ends and the local loop begins. It is the last responsibility of the service provider and is usually an RJ-45 jack located close to the CPE. Think of the demarc as the boundary between the customer's wiring and the service provider's wiring.   4.What is the local loop?   The local loop is the physical cable that extends from the demarc to the central office.   5.Describe the central office (CO).   The CO is the telco switching facility that connects the customer to the provider's switching network. The CO is sometimes referred to as a point of presence. It is the point where the local loop gains access to the service provider's access lines.   6.What is the toll network?   All the telco switches, COs, and trunk lines inside the WAN provider's network are the toll network.   7.What are synchronous links? Synchronous links have identical frequencies and contain individual characters encapsulated in control bits, called start/stop bits, that designate the beginning and end of each character. Synchronous links try to use the same speed as the other end of a serial link.

8.What are asynchronous links?   Asynchronous links send digital signals without timing. Asynchronous links agree on the same speed, but there is no check or adjustment of the rates if they are slightly different. Only 1 byte per transfer is sent.   List some typical Layer 2 encapsulation methods for WAN links.   . High-Level Data Link Control (HDLC)   · Point-to-Point Protocol (PPP) · Serial Line Internet Protocol (SLIP)   · X.25/Link Access Procedure, Balanced (LAPB)   · Frame Relay· Asynchronous Transfer Mode (ATM)   9.Describe HDLC.   HDLC was derived from Synchronous Data Link Control (SDLC). It is the default encapsulation type on point-to-point dedicated links and circuit-switched connections between Cisco routers. It is an ISO-standard bit-oriented data-link protocol that encapsulates data on synchronous links. HDLC is a connection-oriented protocol that has very little overhead. HDLC lacks a protocol field and therefore cannot encapsulate multiple network layer protocols across the same link. Because of this, each vendor has its own method of identifying the network-layer protocol. Cisco offers a propriety version of HDLC that uses a type field that acts as a protocol field, making it possible for multiple network-layer protocols to share the same link.   10.By default, Cisco uses HDLC as its default encapsulation method across synchronous lines (point-to-point links). If a serial line uses a different encapsulation protocol, how do you change it back to HDLC?   To change a serial line back to HDLC, use the following interface command on the serial interface you want to change: Router(config-if)#encapsulation hdlc   11.What is the Point-to-Point Protocol (PPP)?   PPP is an industry-standard protocol that provides router-to-router or router-to-host connections over synchronous and asynchronous links. It can be used to connect to other vendors' equipment. It works with several network-layer protocols, such as IP and IPX. PPP provides authentication through PAP or CHAP.   12.Describe X.25/LAPB. X.25/LAPB is an ITU-T standard that has a tremendous amount of overhead because of its strict timeout and windowing techniques. LAPB is the connection-oriented protocol used with X.25. It uses the ABM (Asynchronous Balance Mode) transfer mode. X.25/LAPB was used in the 1980s when WAN links were not as error-free as they are today. X.25 is a predecessor of Frame Relay. X.25 supports both switched and permanent virtual circuits.   13.What is Frame Relay?   An industry standard, Frame Relay is a switched data link layer protocol that uses virtual circuits to identify the traffic that belongs to certain routers. It provides dynamic bandwidth allocation and congestion control.   14.How do you view the encapsulation type on a serial interface?   To view the encapsulation type on a serial interface, use the show interface serial interface-number command: RouterB#show interface serial 0

Serial0 is up, line protocol is up Hardware is HD64570   Internet address is 192.168.1.1/24   MTU 1500 bytes, BW 1544 Kbit, DLY 20000 usec, rely 255/255, load 1/255   Encapsulation HDLC, loopback not set, keepalive set (10 sec)   Last input 00:00:00, output 00:00:03, output hang never   Last clearing of "show interface" counters never   Input queue: 0/75/0 (size/max/drops); Total output drops: 0 Queueing strategy: weighted fair Output queue: 0/1000/64/0 (size/max total/threshold/drops)   Conversations 0/1/256 (active/max active/max total)   Reserved Conversations 0/0 (allocated/max allocated)   5 minute input rate 0 bits/sec, 0 packets/sec   5 minute output rate 0 bits/sec, 0 packets/sec   9 packets input, 1730 bytes, 0 no buffer   Received 8 broadcasts, 0 runts, 0 giants, 0 throttles   0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort   7 packets output, 1584 bytes, 0

underruns   0 output errors, 0 collisions, 2 interface resets   0 output buffer failures, 0 output buffers swapped out   5 carrier transitions   DCD=up DSR=up DTR=up RTS=up CTS=up PDF Version | Download

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