

7. Insert the TP type:

Twisted-pair cables:	Cat3	Cat4	Cat5
Is the most popular Ethernet cabling category. It is capable of carrying data at rates up to 100Mbps and is used for 100base-T and 10base-T networks. It is rated to 100MHz.			
Voice-grade cable. It is used primarily in older Ethernet 10base-T LANs and is certified to carry data at 10Mbps. It is rated to 16MHz.			
Is used primarily when implementing token-based or 10base-T/100base-T networks. It is certified at 16Mbps and consists of four twisted wires. It is rated to 20MHz.			

8. Insert the medium type: TP, Coax, or Fiber

<i>Medium</i>	<i>Advantages</i>	<i>Disadvantages</i>
	Relatively fast on short runs	not secure, poor noise immunity
	Voice, data and video, fast, long distance	difficult to install, limited to point-to-point, expensive
	Low cost, easy to install	not secure, worst noise immunity

9. Insert the WAN type: X25, ISDN, ATM

Technology	Bandwidth/ Speed	Switching Mode
	25 Mbps, 100 Mbps, 155 Mbps, 622 Mbps, 2.488 Gbps	Packet (cell)
	64 Kbps - 1.92 Mbps	Circuit
	Up to 64K	Circuit

1. A 10 kHz base-band channel is used by a digital transmission system. Ideal pulses are sent at the Nyquist rate, and the pulses can take 16 levels. What is the bit rate of the system?

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2. Suppose we wish to transmit at a rate of 64 kbps over a 3 kHz telephone channel. What is the minimum SNR required to accomplish this?

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3. Suppose that a low-pass communication system has a 1 MHz bandwidth. What bit rate are attainable using 8-level pulses? What is the Shannon capacity of this channel if the SNR is 20 dB?

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4. Insert the DSL type: ADSL, CDSL, VDSL

Service	Download	Upload	Mode of Operation
.....DSL	1 Mbps	16—160 Kbps	Now ratified as DSL-lite (G.Lite). No splitters. One pair wire.
.....DSL	13—52 Mbps	1.5—6.0 Mbps	Fiber needed and ATM probably used.
.....DSL	1.5--8.192 Mbps	16—640 Kbps	Different up and down speeds, one pair wire