11.1.4 WAN Media Facts

You can use a variety of technologies to implement WANs, and each has its own unique characteristics. When you contract for WAN services, you need to analyze your bandwidth requirements and then choose the appropriate technology. The table below describes several common WAN technologies.

WAN Technologies

Carrier	Speed	Description
POTS	56 Kbps	▪ POTS stands for plain old telephone service, and it uses analog phone technology. ▪ Existing wires use only one twisted pair. ▪ Analog signals are used through the local loop.
T1	1.544 Mbps	▪ T-carrier is a digital standard widely deployed in North America. ▪ T1 lines usually run over two pairs of shielded twisted pair (STP) cabling, but they can also run over other media like coaxial, fiber optic, or satellite. T3 lines usually run over fiber optic cable. ▪ A T1 line has 24 channels that each run at 64 Kbps. A T3 line has 672 channels that each run at 64 Kbps. ▪ A T1/T3 connection requires a channel service unit (CSU) and a data service unit (DSU). A DSU reads and writes synchronous digital signals, and a CSU manages the digital channel. ▪ To connect routers by using their CSU/DSU interfaces, you can use a T1 crossover cable. ▪ T3 is also known as a Digital Signal 3 (DS3).
T3	44.736 Mbps	
E1	2.048 Mbps	▪ E-carrier is a digital standard very similar to T-carrier. It is widely deployed in Europe. ▪ An E1 line has 32 channels that run at 64 Kbps. An E3 line transmits 16 E1 signals at the same time. ▪ E1/E3 connections require a CSU/DSU.
E3	34.368 Mbps	
J1	1.544 Mbps	▪ J-carrier is a digital standard very similar to T-carrier. It is widely deployed in Japan. ▪ A J1 line is virtually identical to a T1 line. A J3 line has 480 channels that each run at 64 Kbps. ▪ J1/J3 connections require a CSU/DSU.
J3	32.064 Mbps	
OC-1	51.84 Mbps	▪ Each OC level is a multiple of the base rate (OC-1). To get the 622.08 Mbps throughput rating of OC-12, multiply the 51.84 Mbps base rate by 12. ▪ Optical carriers use Wavelength Division Multiplexing (WDM) to increase capacity of communication over fiber optic cabling.
OC-3	155.52 Mbps	
OC-12	622.08 Mbps	
OC-24	1244.16 Mbps	
OC-48	2488.32 Mbps	
OC-192	10 Gbps	
OC-256	13.271 Gbps	
OC-768	39.2 Gbps	