# 11.1.5 WAN Facts

The following table describes the components a typical wide area network uses.

## Wide Area Network Components

| Component | Description |
|---|---|
| WAN Cloud | The *WAN cloud* is the collection of equipment that makes up the WAN network. The WAN cloud is owned and maintained by telecommunications companies. It is represented as a cloud because the physical structure varies and different networks with common connection points may overlap. As a network administrator, you probably don't know where data goes as it is switched through the cloud. The important thing is that data goes in, travels through the line, arrives at its destination, and remains secure throughout the process. |
| Central Office (CO) | The *central office* is a switching facility connected to the WAN, and it is the nearest point of presence for the WAN provider. It provides WAN cloud entry and exit points. |
| Local Loop | The *local loop* is the cable that extends from the central office to the customer location. The local loop is owned and maintained by the WAN service provider. It typically uses UTP, but it can also be implemented using fiber optic cabling or other media. The local loop is often referred to as the last mile, because it represents the last portion of the WAN up to the customer premises. |
| Demarcation Point (Demarc) | When you contract with a local exchange carrier (LEC) for data or telephone services, they install a physical cable and a termination jack onto your premises. The *demarcation point* marks the boundary between the telco equipment and your organization's network or telephone system.<br>▪ Normally, the LEC is responsible for all equipment on one side of the demarc, and the customer is responsible for all equipment on the other side of the demarc.<br>▪ The demarc is also called the minimum point of entry (MPOE) or the end user point of termination (EU-POT).<br>▪ The demarc is typically located on the bottom floor of a building, just inside the building. For residential service, the demarc is often a small box on the outside of the house. |
| Customer Premises Equipment (CPE) | Devices physically located on the subscriber's premises are referred to as the *customer premises equipment*. CPE includes both the wiring and devices that the subscriber owns and the equipment leased from the WAN provider. CPE can include the smart jack, demarc, local loop, copper line drivers, and repeaters. |
| Channel Service Unit/Data Service Unit (CSU/DSU) | A *CSU/DSU* converts the signal received from the WAN provider into a signal that can be used by equipment at the customer site. A CSU/DSU is composed of these two separate devices:<br>▪ The CSU terminates the digital signal and provides error correction and line monitoring.<br>▪ The DSU converts the digital data into synchronous serial data for connection to a router.<br>The CSU/DSU might be two separate devices, one combined device, or integrated into a router. |
| Packet Switching Exchange (PSE) | A packet switching exchange (PSE) is a mega switch computer capable of handling huge numbers of packets. Its job is to decide which circuit each packet will take. A PSE is typically located in the central offices just inside the cloud. |

WANs employ one of the two following methods to transfer data:

| Method | Description |
|---|---|
| Circuit Switching | A circuit-switched network uses a dedicated connection between sites. Circuit switching is ideal for transmitting data that must arrive quickly in the order it is sent, as is the case with real-time audio and video. |
| Packet Switching | A packet-switched network allows data to be broken up into small units called packets. Packets are transmitted along the most efficient route to the destination. Packet switching is ideal for transmitting data that can handle transmission delays, as is often the case with web pages and email. |