We will see now how companies interconnect their geographically dispersed LAN's using different WAN technologies.

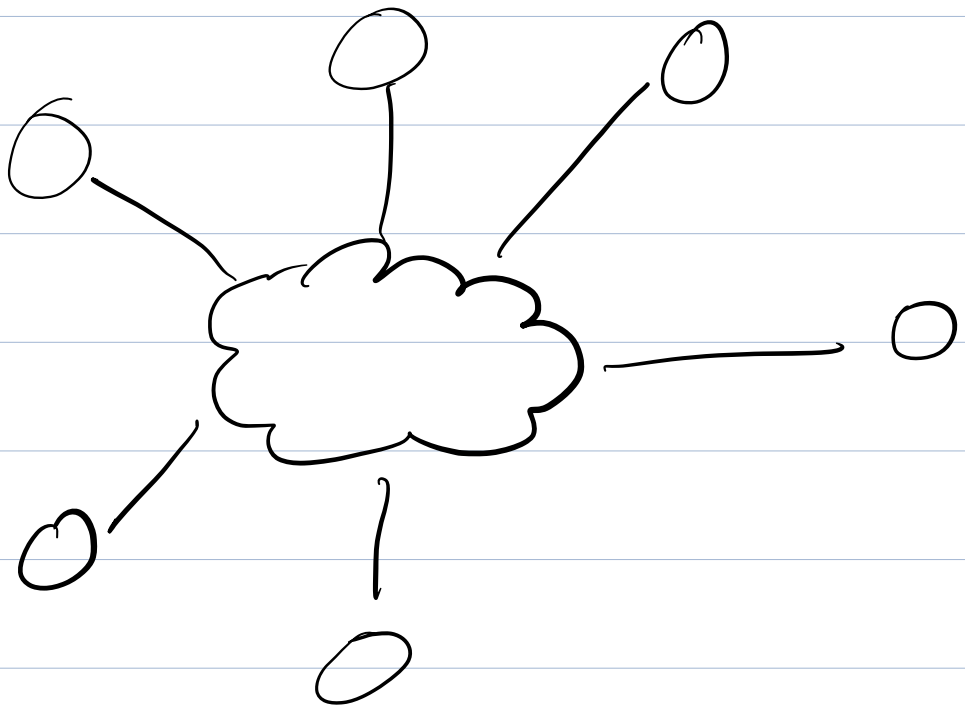
→ WAN operates at Layer 2 & Layer 1

∴ Layer 2: Data Link Layer

Each WAN technology, such as PPP or Frame Relay, uses a different Layer 2 frame format and provides different options for reliability and error recovery.

* Layer 2.5 } MPLS is not a WAN technology, but a WAN service that operates between Layer 2 & 3

- The Network Cloud



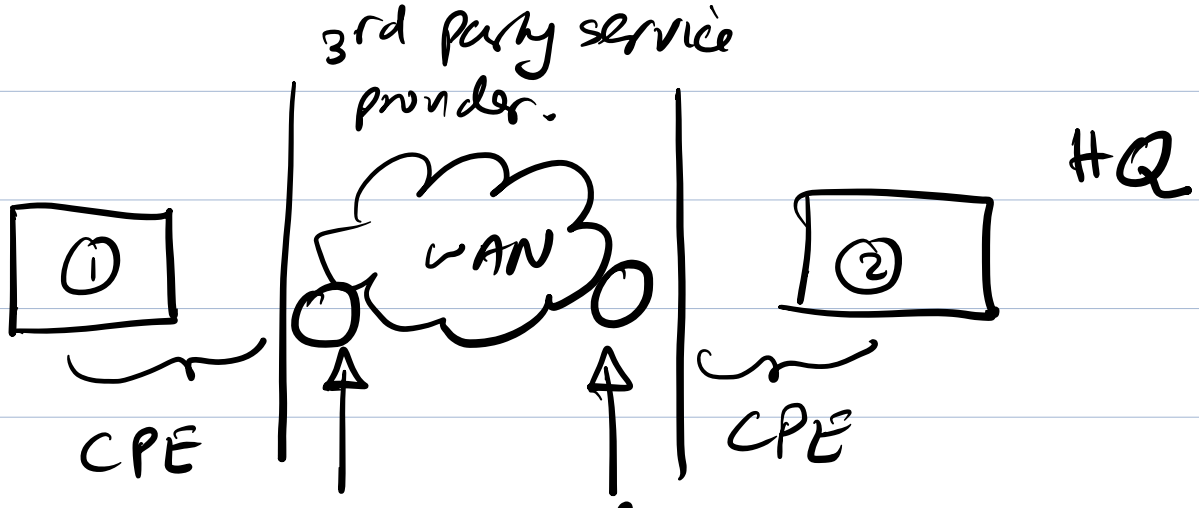
→ A network cloud typically represents the WAN or the internet through which data travels to get from one LAN to another.

[it is called a cloud because its networks: it hides network. devices & network lengths of the provider]

* WAN Terminology and Basic Concepts *

- Customer Premises Equipment : (CPE)
is any communications equipment located on the customer's premises that is used to connect to the services provider's network.
The customer can own the CPE or can lease it from the service provider.

- Central Office (CO)



central offices.

① uses its CPE to connect to the service provider's nearest exchange or central office.

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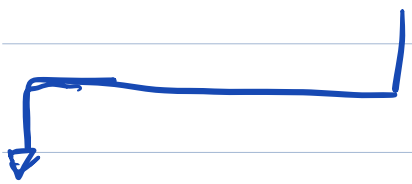
* A modem converts a digital singal into a format for an analog phone line

* A CSU/DSU can be used by a router to connect to a digital line.

CSU/DSU



A device called a Channel Service Unit/ Data Service Unit or CSU/DSU is required to prepare data traffic for digital lines.

- DSU: The DSU converts the digital frames used in the service provider's network into a frame format that the router can understand and vice versa.

CSU: The CSU provides termination for the digital signal and ensures connection integrity through error correction & line monitoring.

Digital lines: Copper / Fibre.

↳ The equipment being used on the line dictates whether the line is analog or digital.

E1 & E3 lines: DSO signal.