Understanding WAN Technologies

WAN Connections

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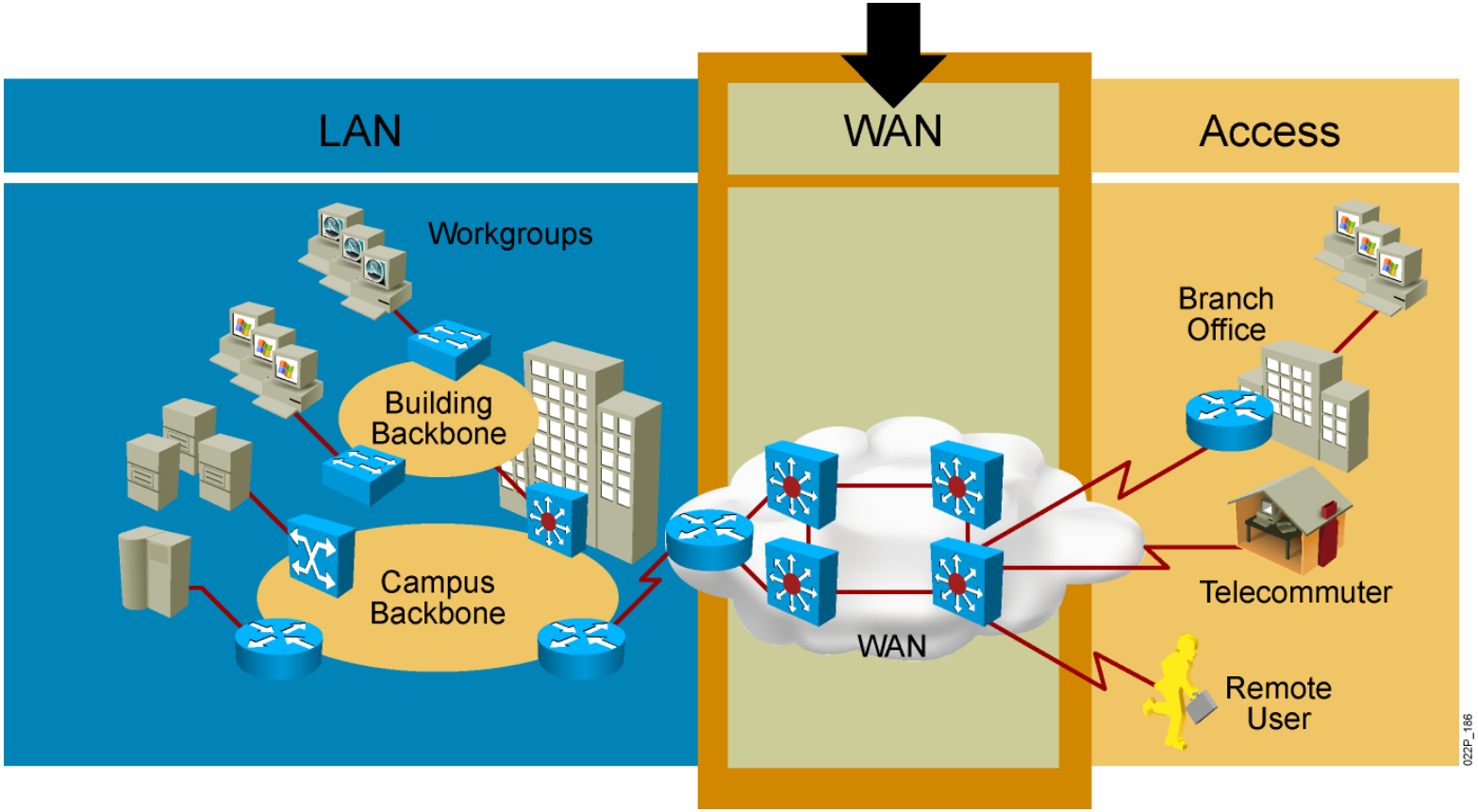
Wide-Area Network



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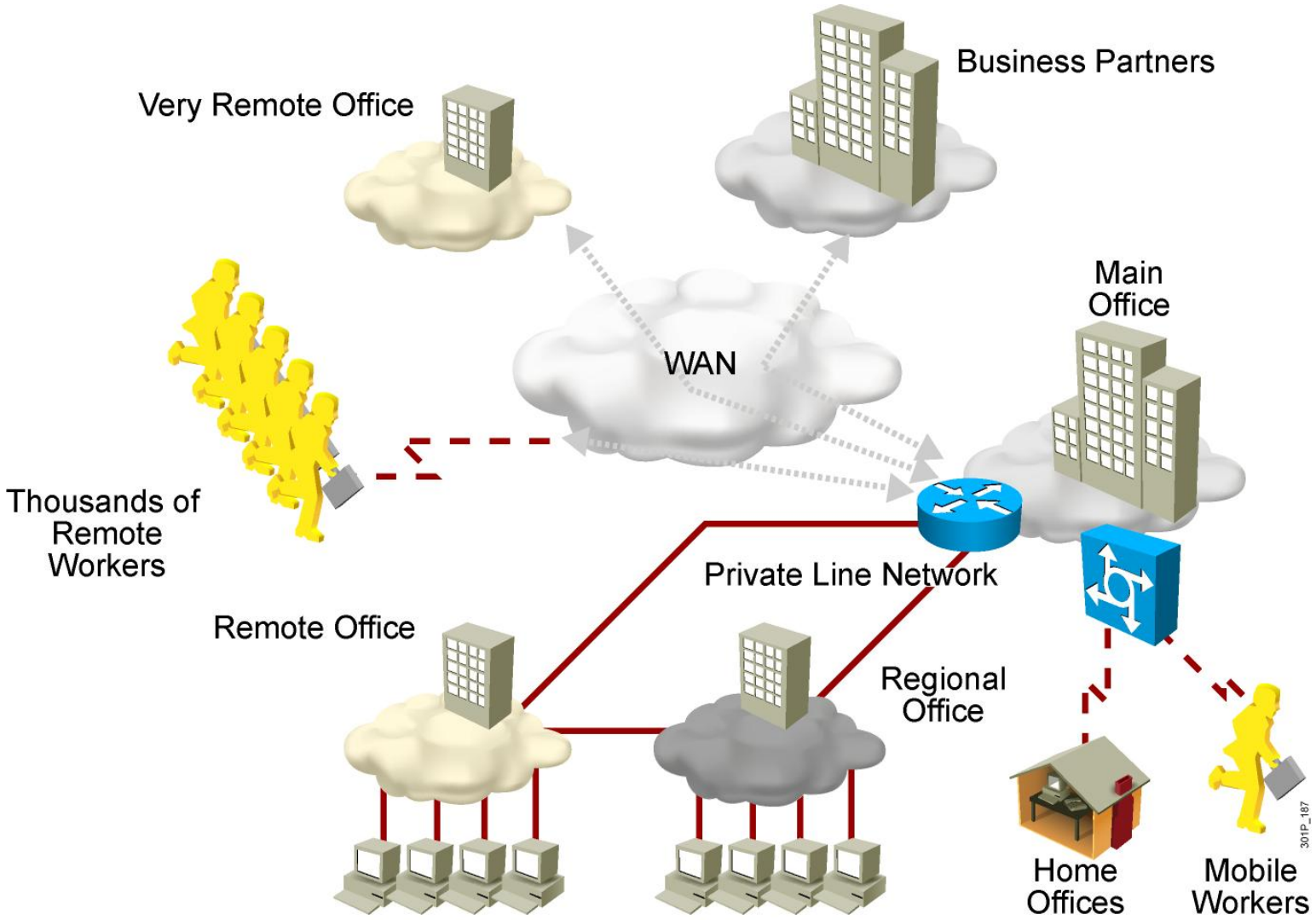
Need for WANs



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WANs vs. LANs

	WANs	LANs
Area	Wide geographic area	Single building or small geographic area
Ownership	Subscription to outside service provider	Owned by Organization

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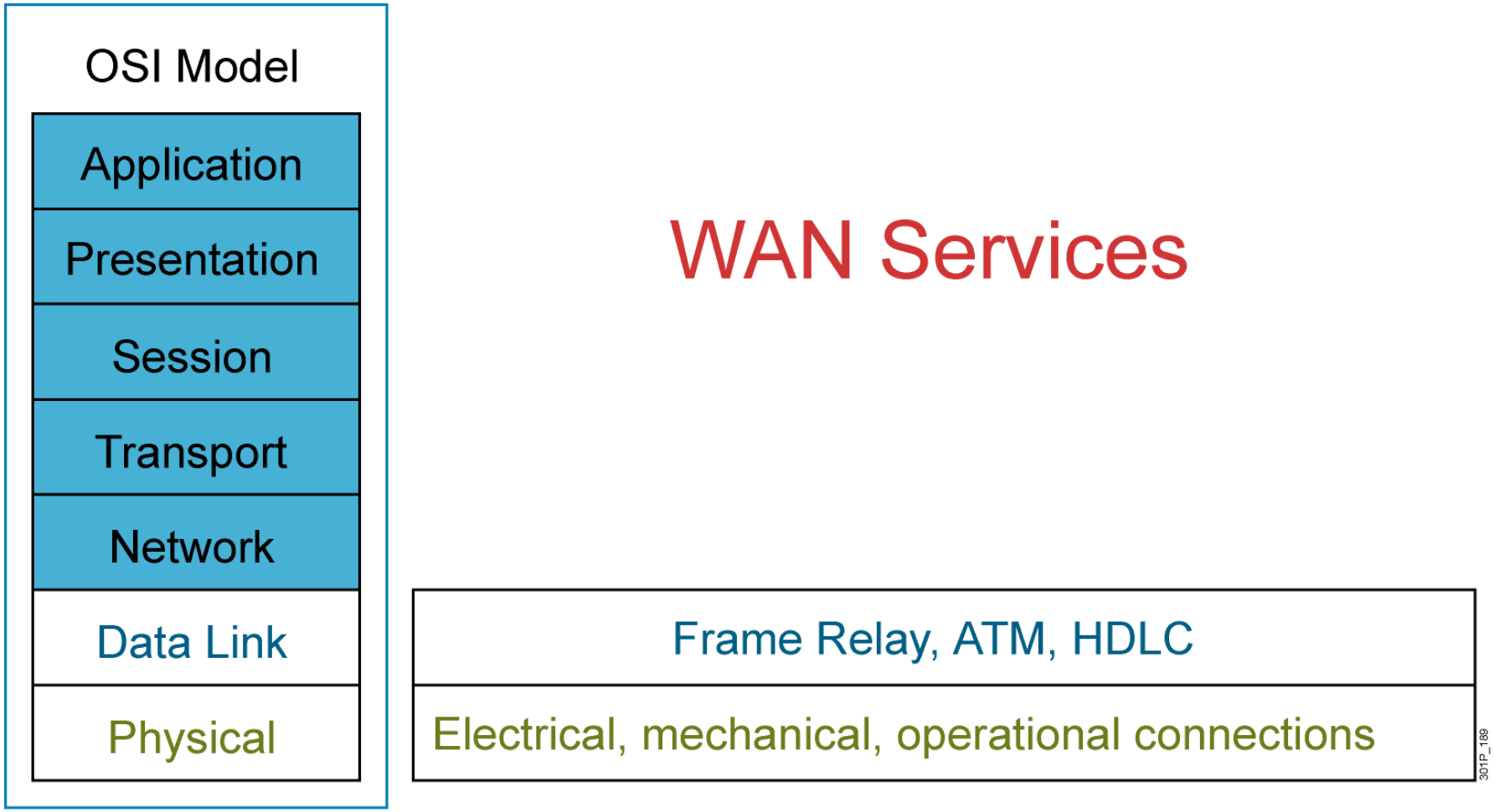
WAN Access and the OSI Reference Model



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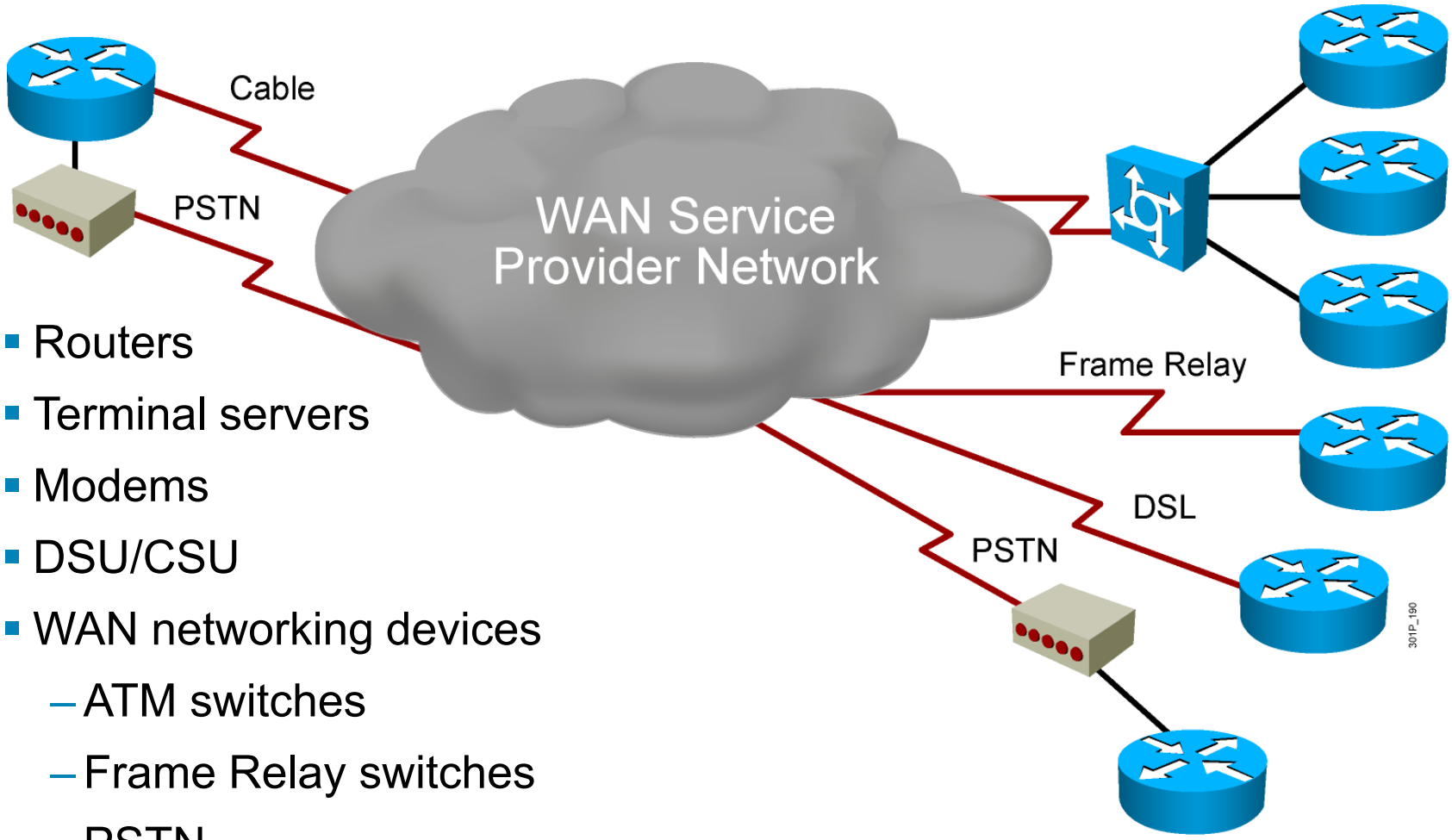
WAN Devices



- Routers
- Terminal servers
- Modems
- DSU/CSU
- WAN networking devices
  - ATM switches
  - Frame Relay switches
  - PSTN

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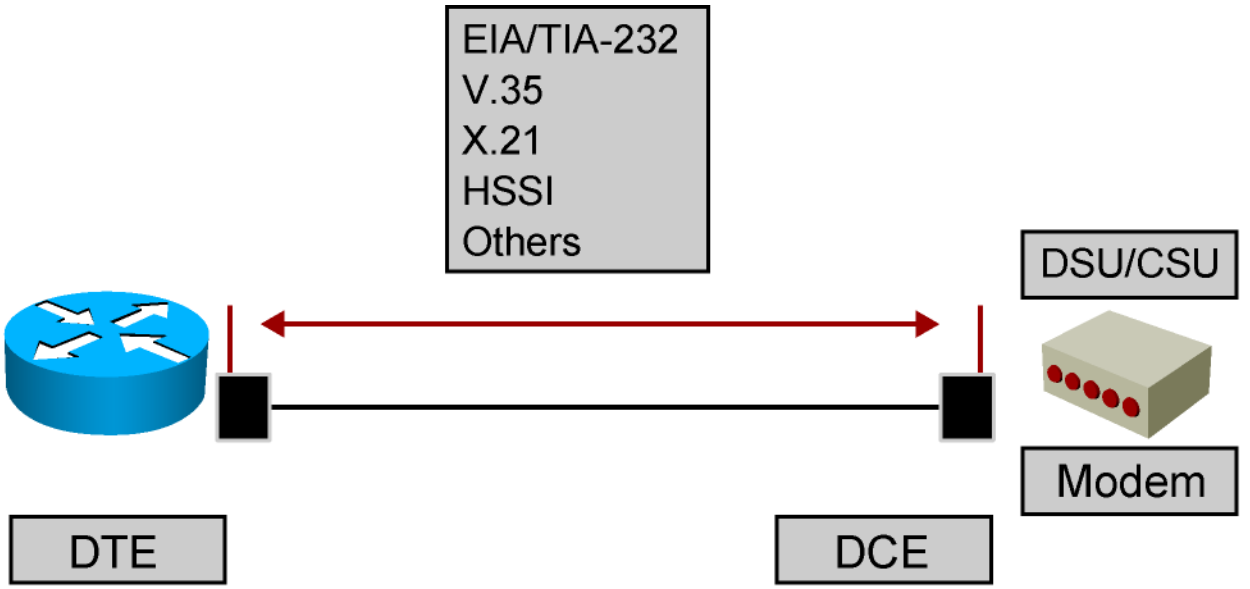
Physical Layer: WANs



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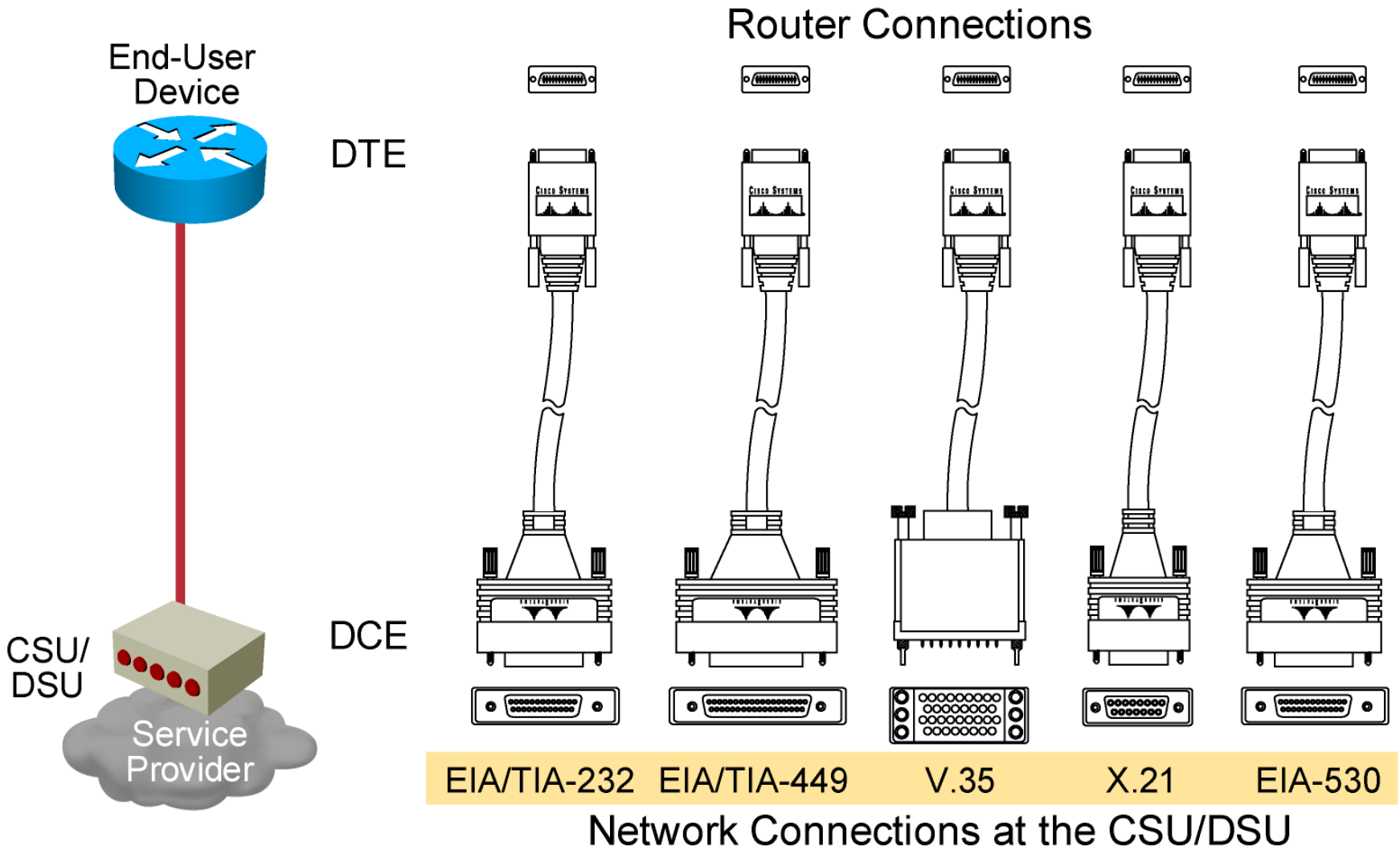
Serial Point-to-Point Connections



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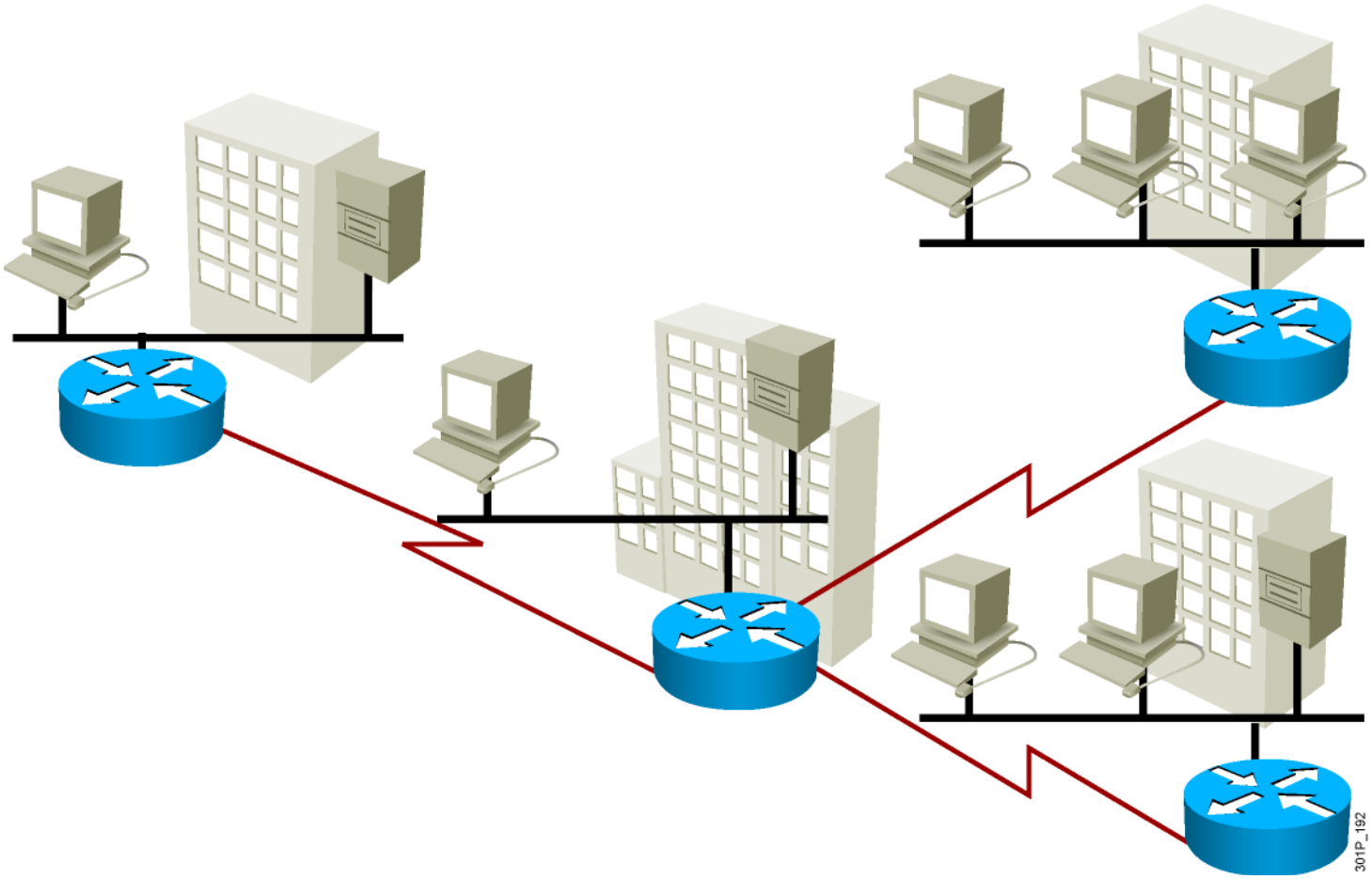
WAN—Multiple LANs



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WAN Data-Link Protocols

- HDLC
- PPP
- Frame Relay (LAPF)
- ATM

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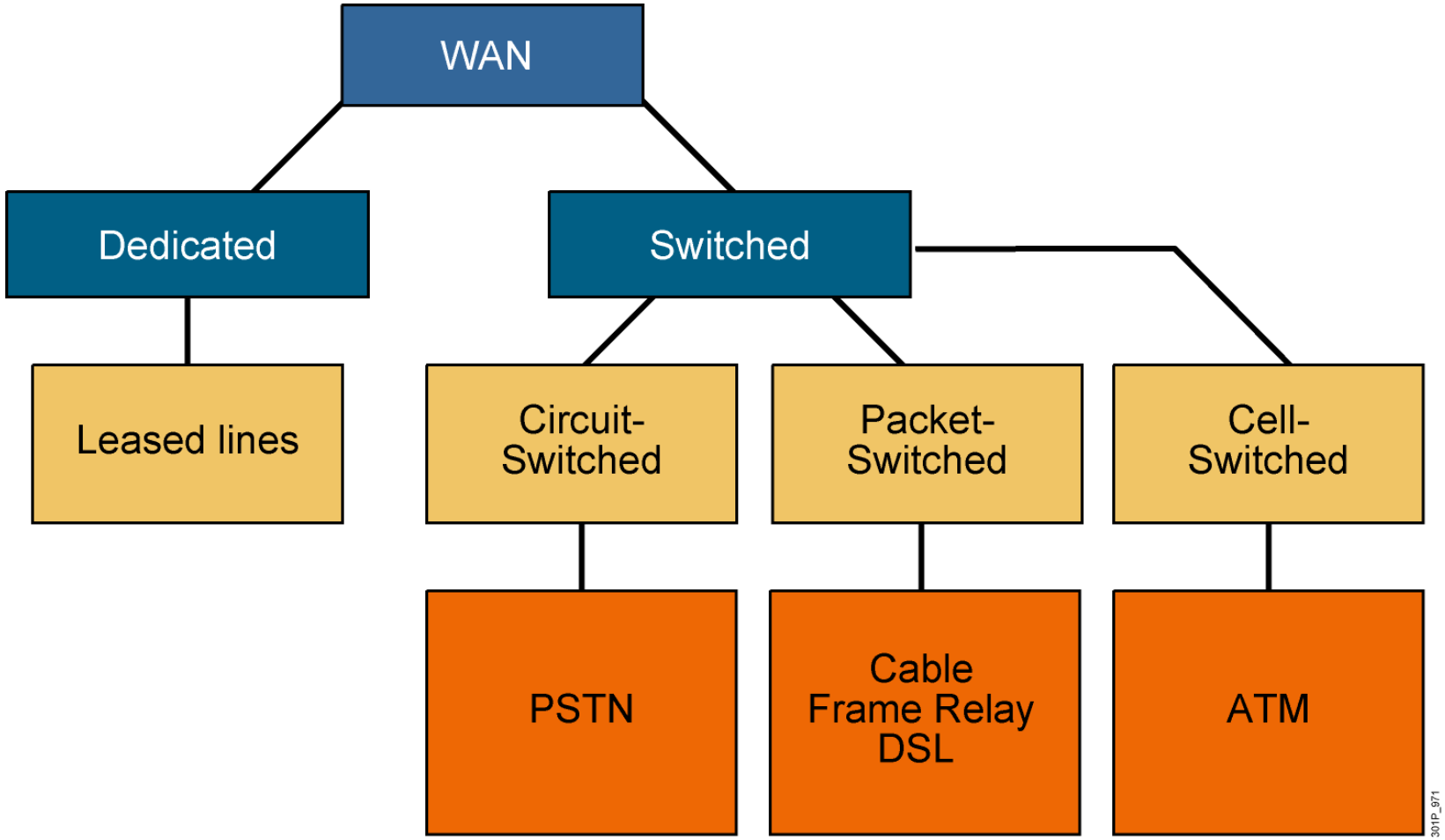
WAN Link Options



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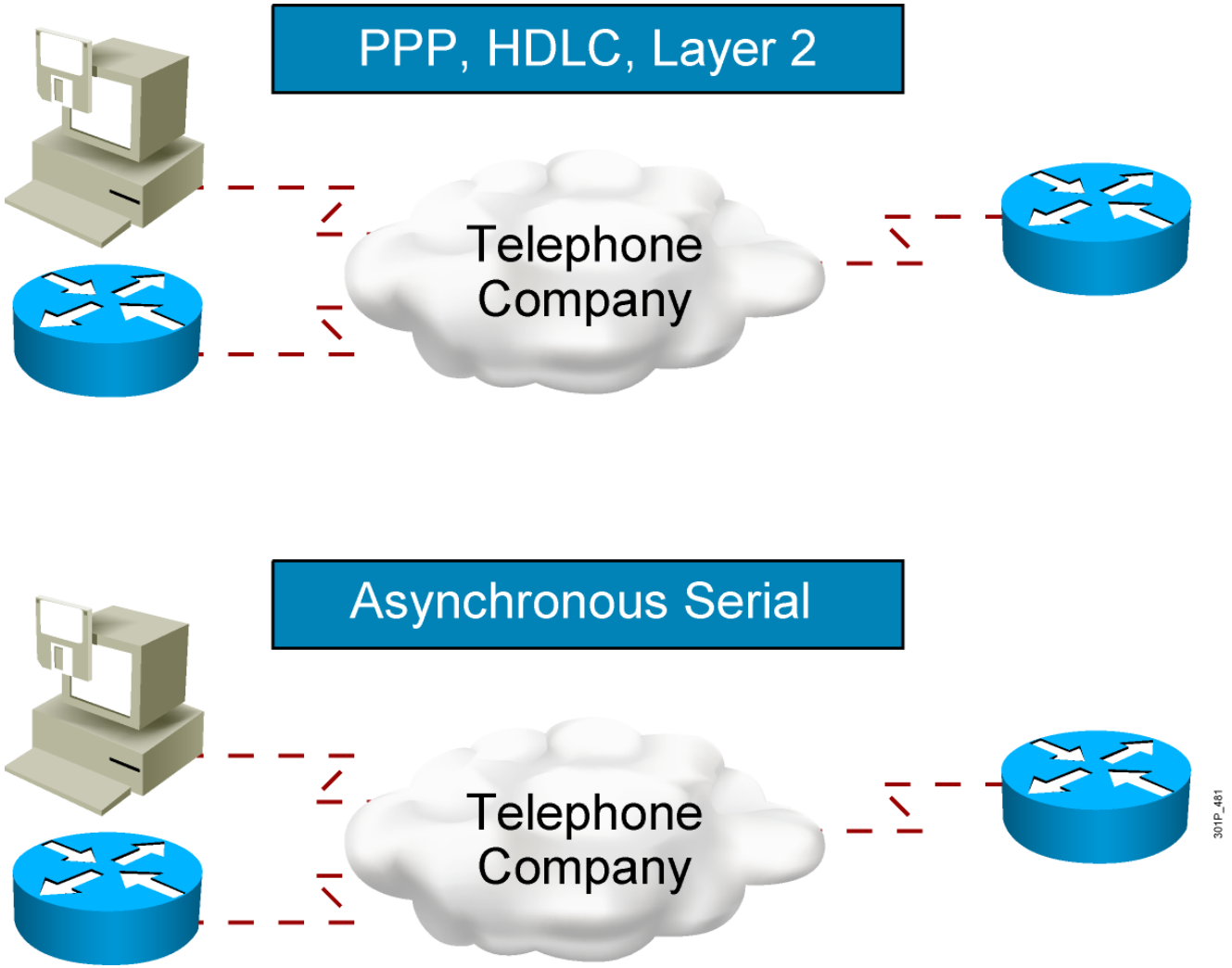
Circuit Switching



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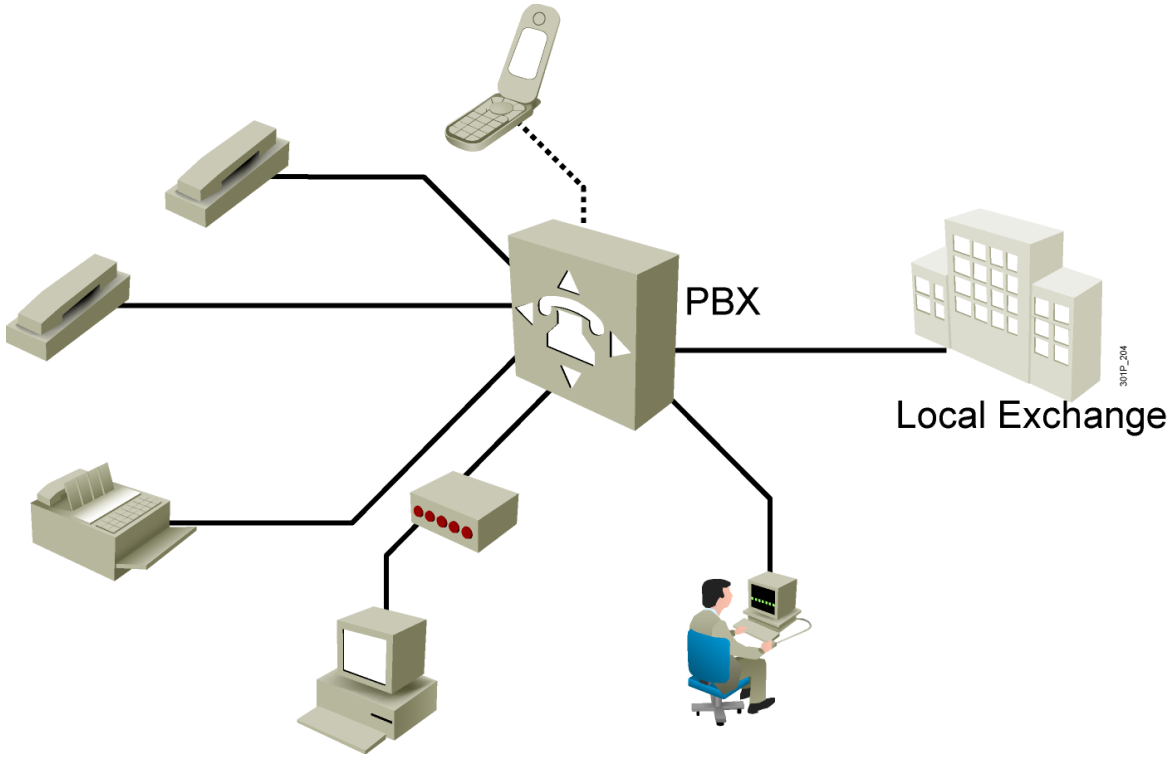
Public Switched Telephone Network



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PSTN Considerations

Advantages

- Simplicity
- Availability
- Cost

Disadvantages

- Low data rates
- Relatively long connection setup time

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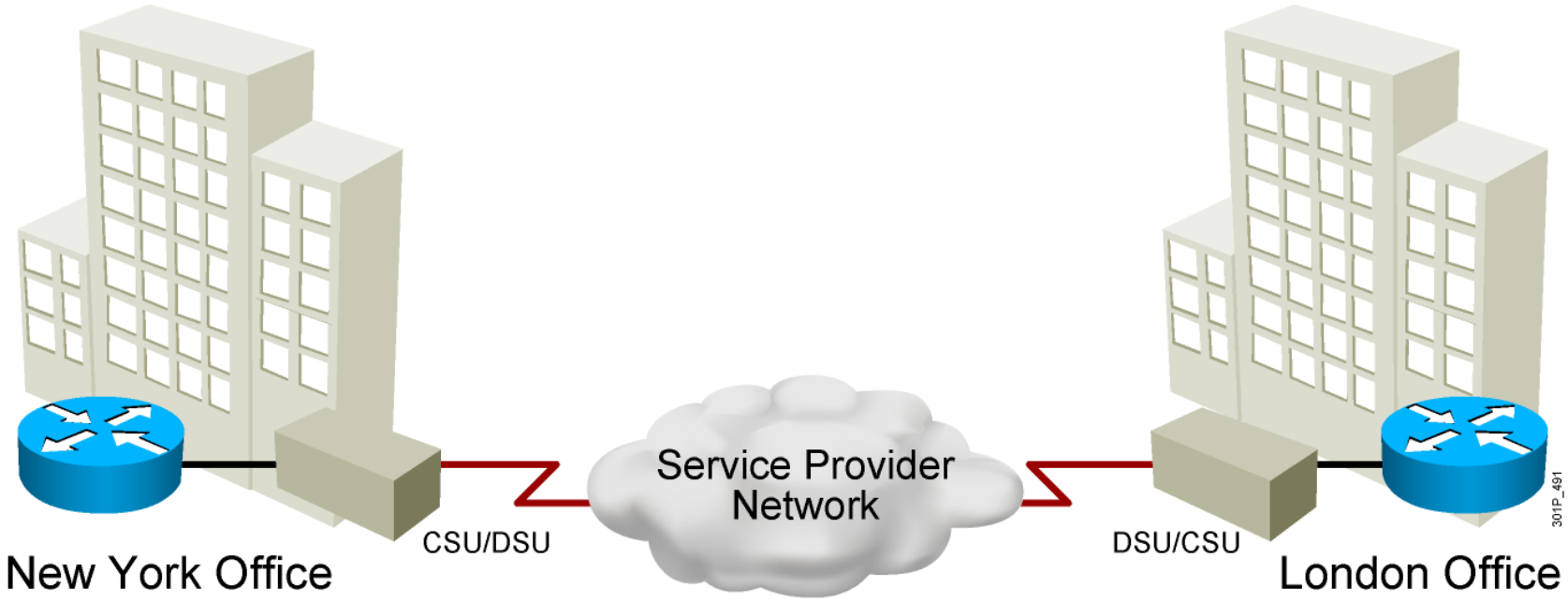
Leased Line



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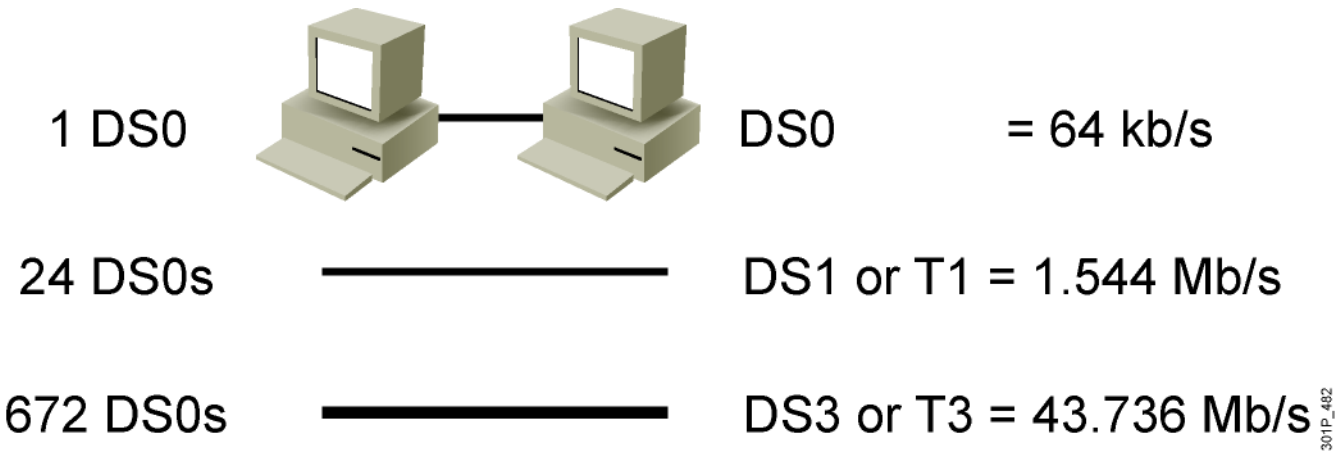
WAN Connection Bandwidth



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Configuring a Serial Interface

Enter global configuration mode.

```
RouterX#configure terminal
RouterX(config)#
```

Specify interface.

```
RouterX(config)#interface serial 0/0/0
RouterX(config-if)#
```

Set clock rate (on DCE interfaces only).

```
RouterX(config-if)#clock rate 64000
RouterX(config-if)#
```

Set bandwidth (recommended).

```
RouterX(config-if)#bandwidth 64
RouterX(config-if)#exit
RouterX(config)#exit
RouterX#
```

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Serial Interface show controller Command

```
RouterX#show controller serial 0/0/0
HD unit 0, idb = 0x121C04, driver structure at 0x127078
buffer size 1524  HD unit 0, V.35 DTE cable
   .
   .
   .
```

Shows the serial cable type

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