



# Connectivity

## Chapter 2



# This presentation covers:

- > Communication Skills
- > Computer Ports
- > Devices Connected to Ports



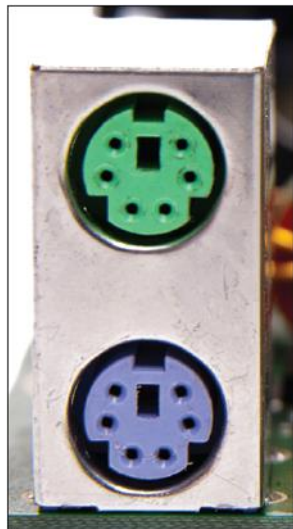
# Qualities of a Good Technician

“Soft skills” as they are known across many industries are essential

# Communication Skills

- > Avoid colloquialisms and slang (e.g. LOL, BTW) in both verbal and written communications with customers
- > Use professional communication methods
- > Address non-IT personnel by his or her title (e.g. Dr., Mr., Professor, and Ms.)
- > Respond to customers with “sir” or “ma’am” unless the person specifies otherwise

# Computer Ports



6-pin mini-DIN PS/2 ports

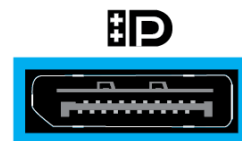


6-pin mini-DIN combo port



USB ports

Mouse and Keyboard Ports



Display Port



Thunderbolt Port

Display Ports



DVI

S-Video

VGA



DB-9



Single link DVI-I



Dual link DVI-I



Single link DVI-D

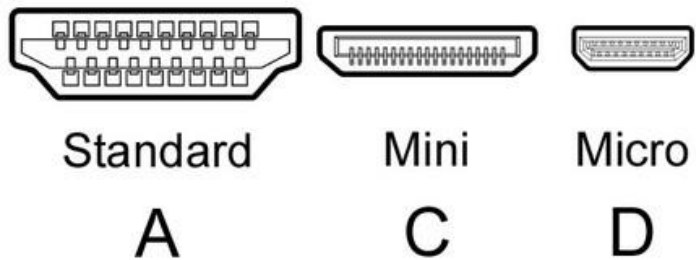


Dual link DVI-D

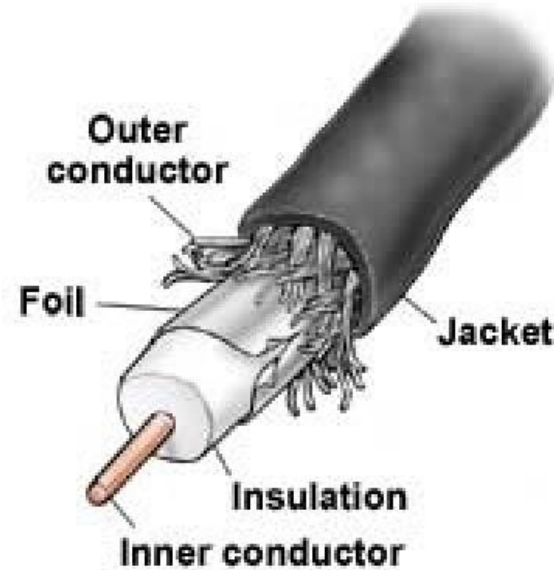
Visual and Video Ports



# HDMI & Coaxial



HDMI Ports



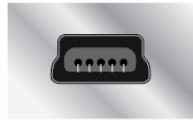
# Video Port Summary

| Port type   | Analog, digital or both | Transfer speeds     | Carries audio? | Max Cable Length  |
|-------------|-------------------------|---------------------|----------------|---|
| VGA         | Analog                  | N/A                 | No             | Depends on resolution   |
| DVI-D       | Digital                 | Dual link 7.92 Gb/s | No             | Up to 15ft for display resolutions up to 1920x1200  |
| DVI-I       | Both                    | Single or dual link | No             | Rule of thumb is 15ft for display resolutions up to 1920x1200                                       |
| DisplayPort | Digital                 | 25.92 Gb/s          | Yes            | 9.8ft for passive and 108ft for active  |
| HDMI        | Digital                 | 48 Gb/s             | Yes            | Rule of thumb is 16ft for standard cable and 49ft for high-speed, good quality cable and connectors |

# USB Connectors



Standard Type-A  
USB



Mini-  
USB



Micro-  
USB

USB Type-A, mini, and micro ports

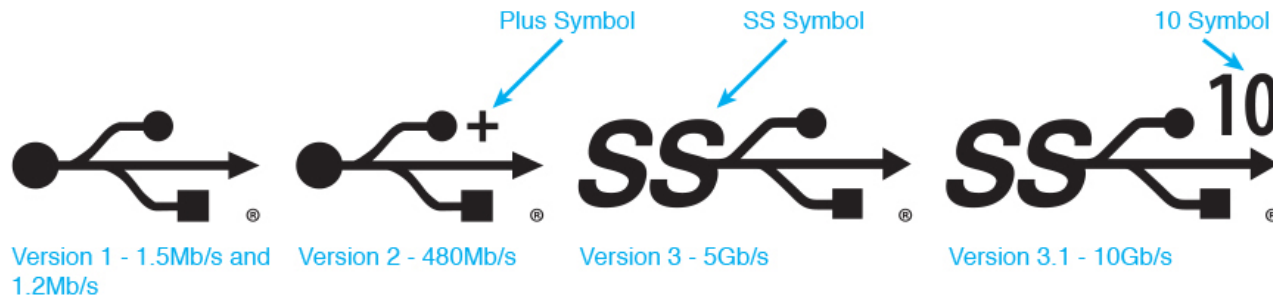


USB Type-C



USB micro-B 3.0 port and cable

USB Type-A, USB Type-B





# USB Converters

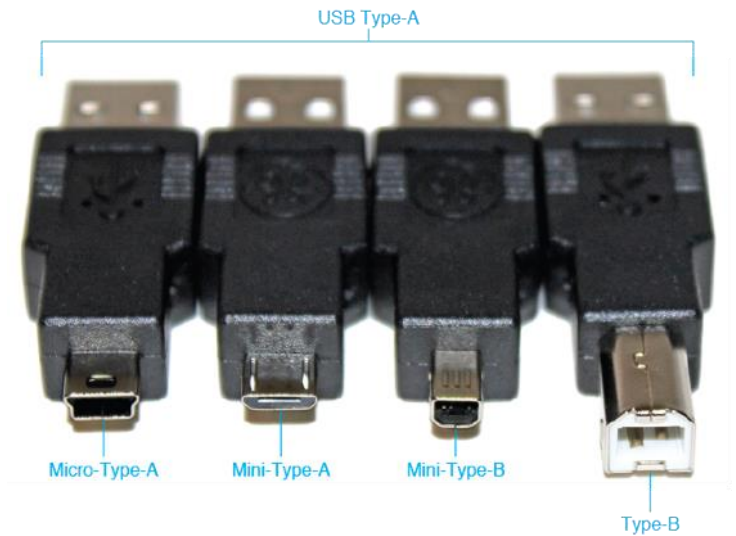


USB-to-Ethernet converter



Mini-DIN-to-USB converter

Mini-DIN-to-USB converter



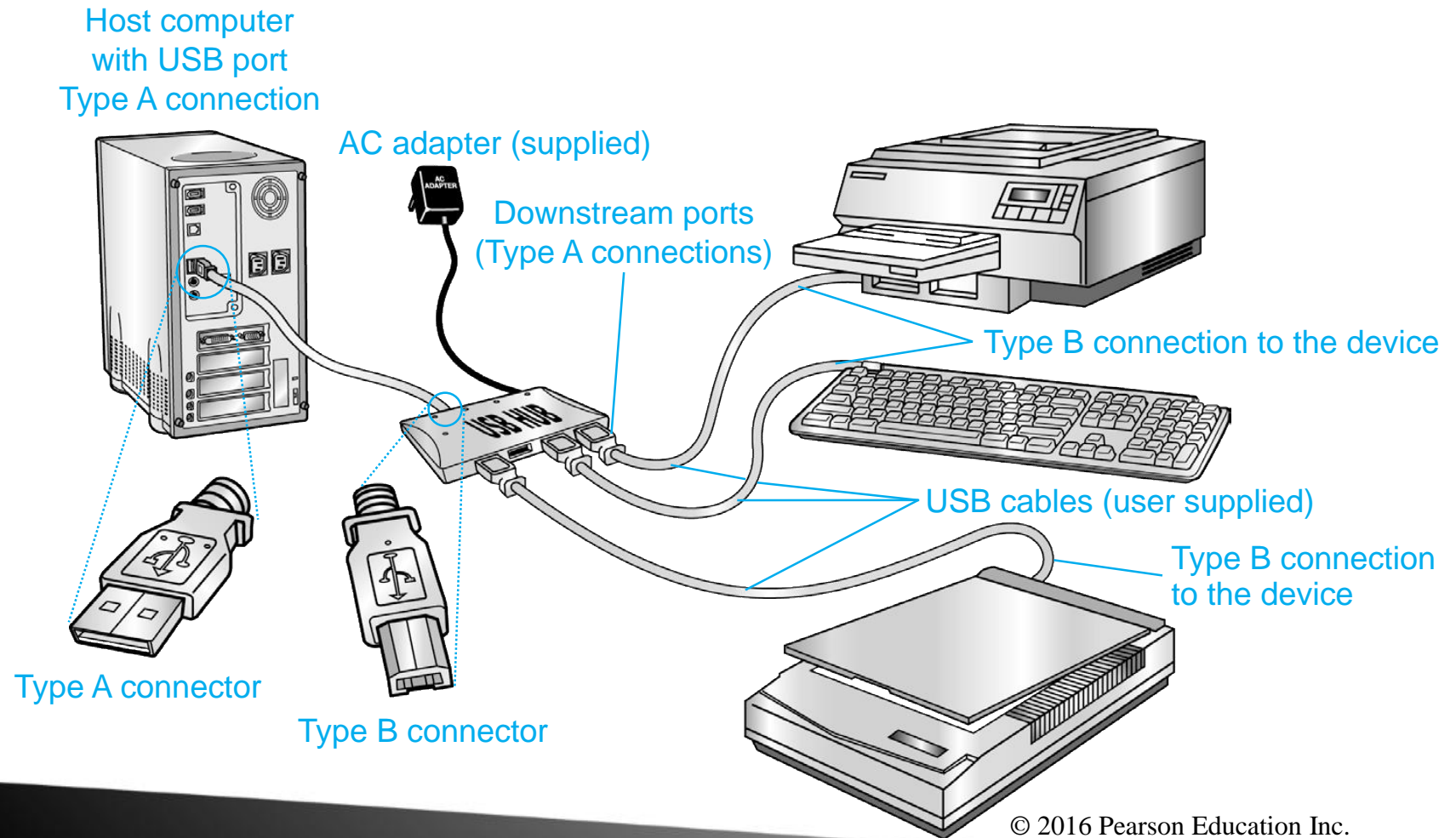
USB-to-PS/2 mouse and keyboard converter



# USB Port Summary

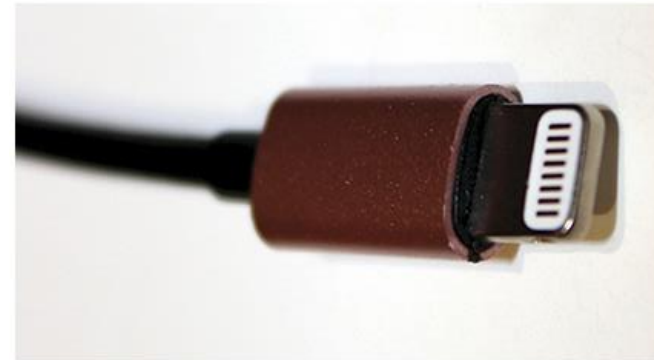
| Port type            | Max transmission speed | Port color            | Alternate name           |
|----------------------|------------------------|-----------------------|--------------------------|
| USB 1.x              | 1.5 and 12 Mb/s        | Usually white         | Low speed and full speed |
| USB 2.0              | 480 Mb/s               | Black                 | High speed               |
| USB 3.0              | 5 Gb/s                 | Blue                  | SuperSpeed               |
| USB 3.1 Gen 1        | 5 Gb/s                 | Blue                  | SuperSpeed               |
| USB 3.1 Gen 2        | 10 Gb/s                | Teal                  | SuperSpeed+              |
| USB 3.2              | 20 Gb/s                | N/A                   | N/A                      |
| USB sleep-and-charge | N/A                    | Yellow, orange or red | N/A                      |

# USB Connectivity

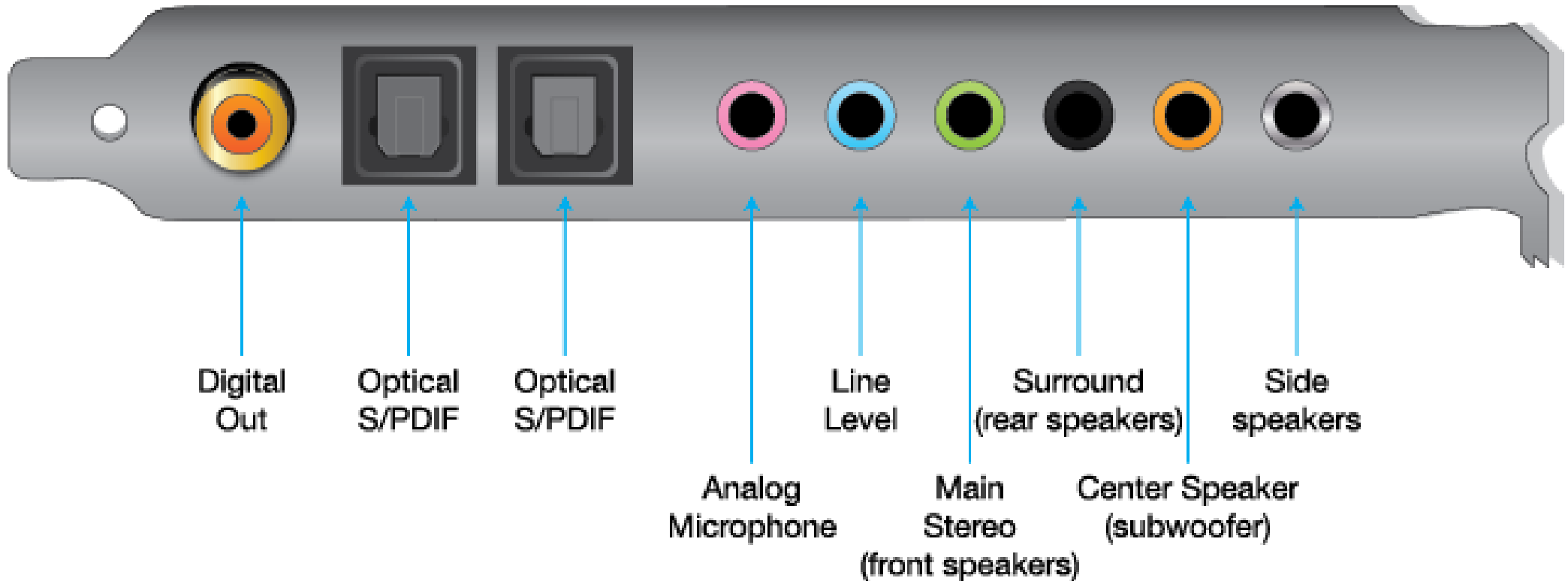


# Thunderbolt & Lightning

| Port type     | Maximum transmission speed                  | Type of connector                      | Platforms                 | What it carries |
|---------------|---|--|---------------------------|-----------------|
| USB 3.2       | 20 Gb/s                                     | USB Type-C 24-pin reversible connector | Found on Apple and PCs    | Data and power  |
| Thunderbolt 3 | 40 Gb/s                                     | USB Type-C 24-pin reversible connector | Intel and Apple developed | Data and power  |
| Lightning     | Speeds up to USB 3.0 with the right adapter | 8-pin reversible connector             | Apple-proprietary         | Data and power  |



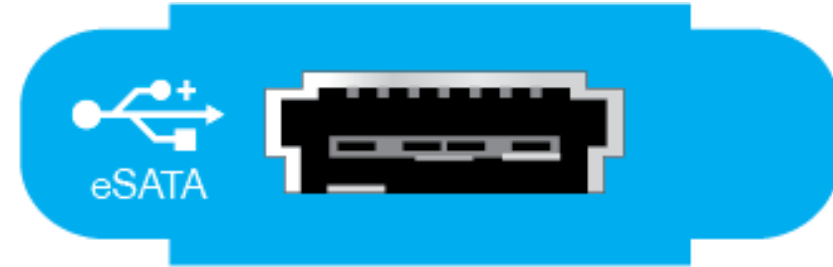
# Sound Card Ports





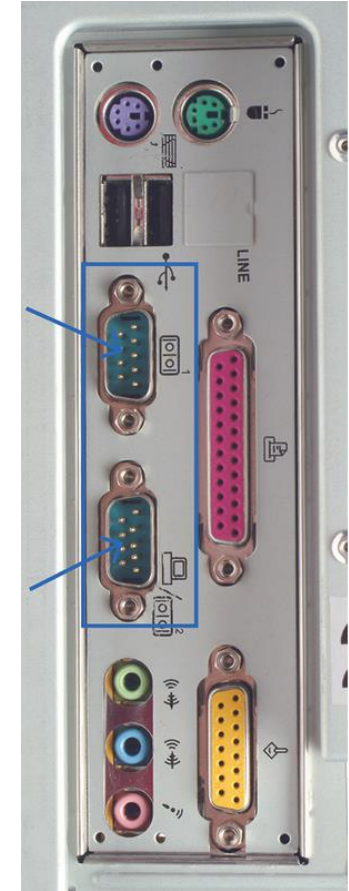
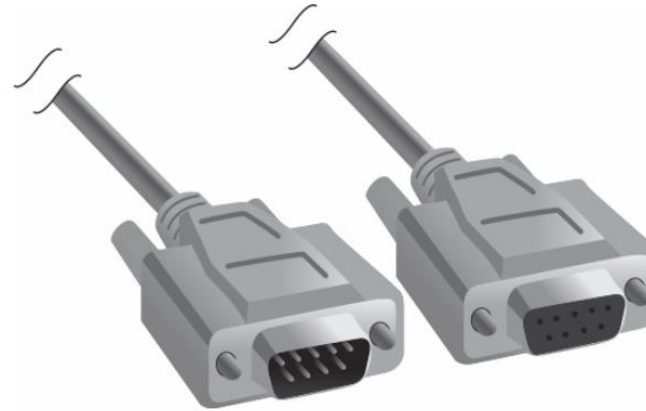
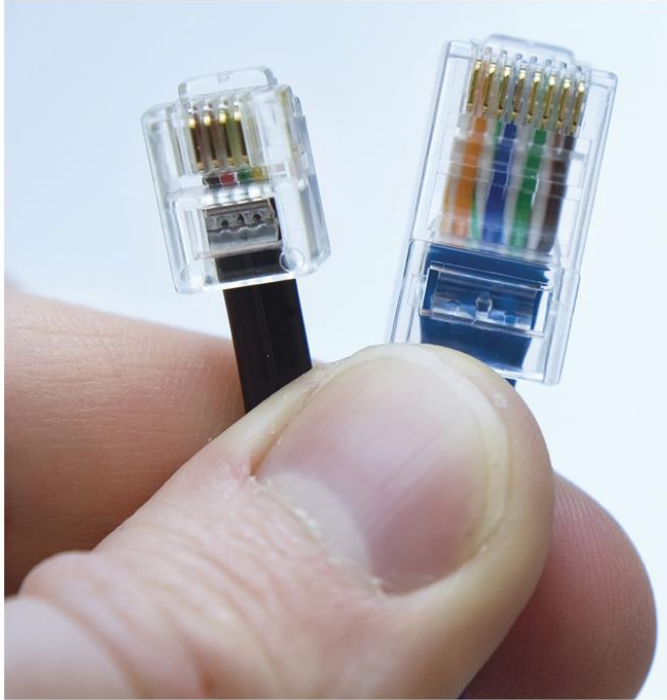
# eSATA Ports

eSATA port

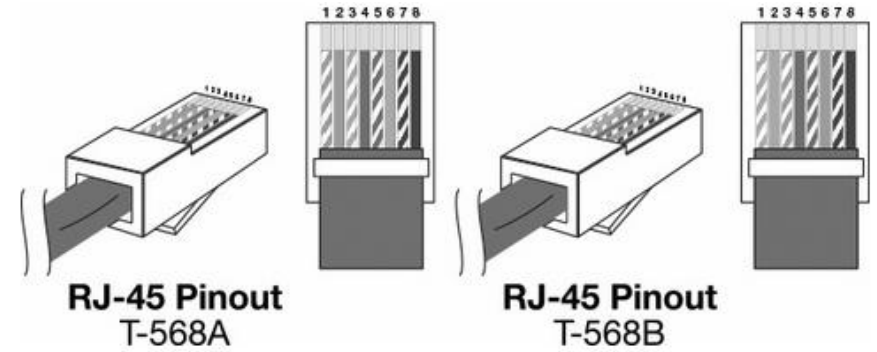
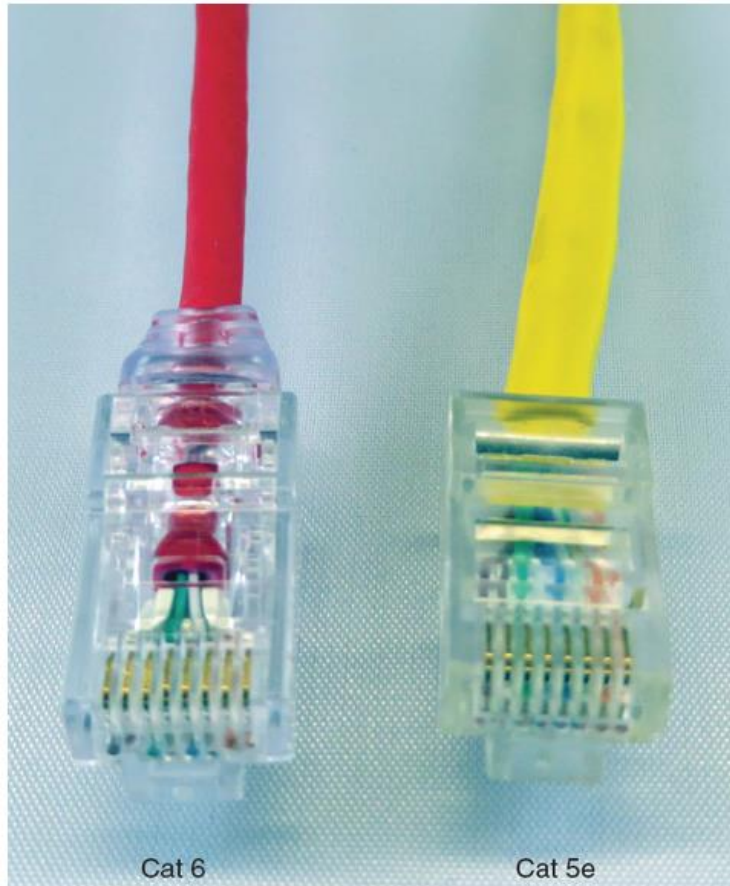


eSATAp port

# Network and Modem/Serial Ports



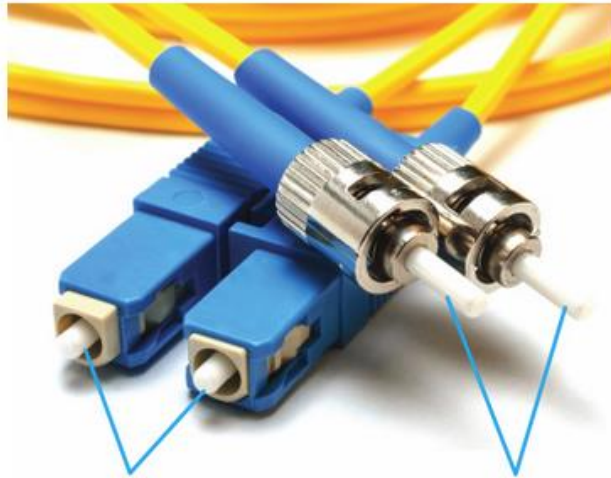
# Network Cabling



| Ethernet cable type | Maximum transmission speed | Bandwidth | Distance limitation |
|---------------------|----------------------------|-----------|---------------------|
| Cat 5               | 100 Mb/s                   | 100 MHz   | 328 feet (100 m)    |
| Cat 5e              | 1000 Mb/s, or 1 Gb/s       | 100 MHz   | 328 feet (100 m)    |
| Cat 6               | 1000 Mb/s, or 1 Gb/s       | 250 MHz   | 328 feet (100 m)    |
| Cat 6a              | 10,000 Mb/s, or 10 Gb/s    | 500 MHz   | 328 feet (100 m)    |

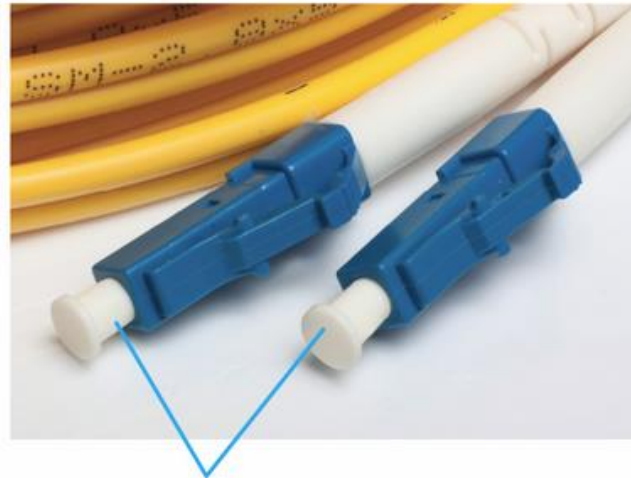


# Network Cabling



SC connectors

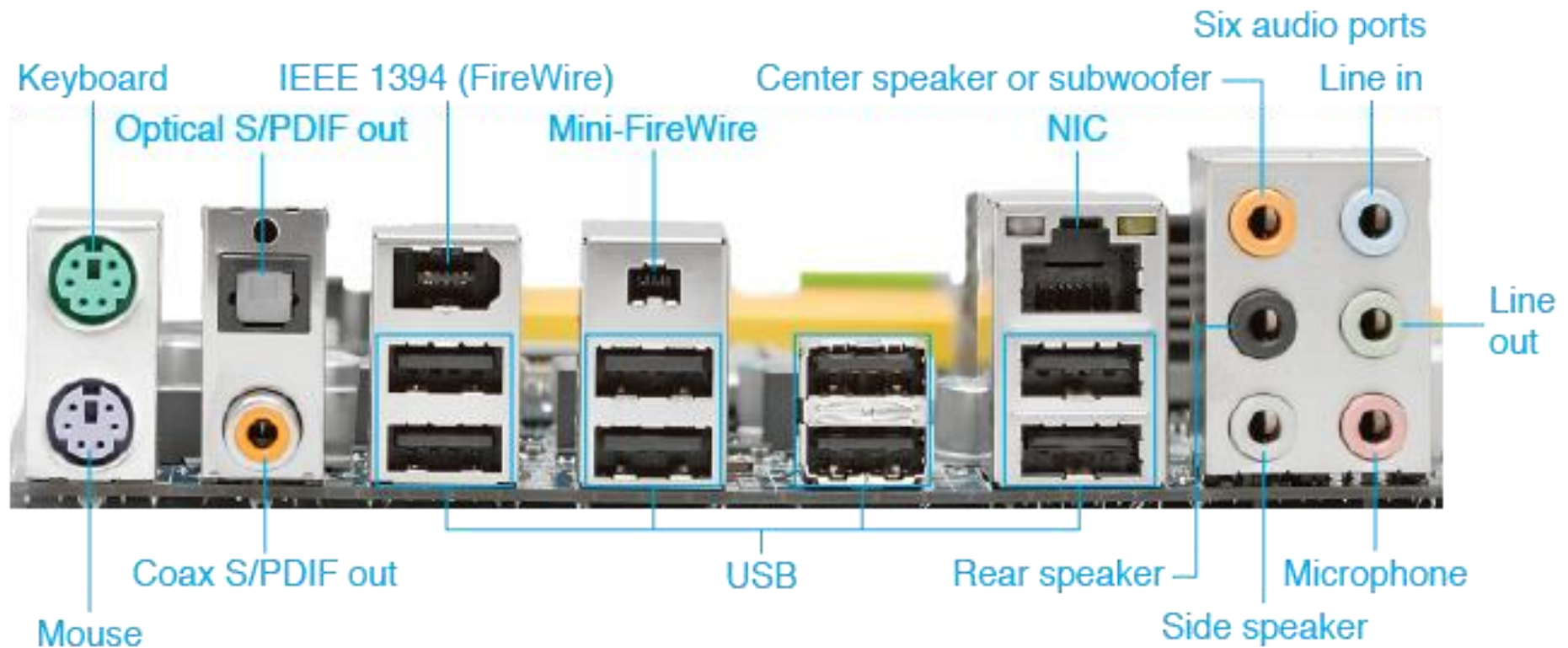
ST connectors



LC connectors

| Type        | Characteristic  |
|-------------|---|
| Single-mode | Classified by the size of the fiber core and the cladding. Common sizes include 8/125 to 10/125 microns, where the first number represents the size of the core, and the second number is the size of the cladding. Single-mode cable allows for distances more than 50 miles (80 km) at speeds more than 100 Gb/s. |
| Multi-mode  | Sizes include 50/125 and 62.5/125 microns. Can support distances more than 1 mile (2 km) and speeds up to 10 Gb/s. ST connectors are used more with multi-mode fiber than with single-mode.   |

# Integrated Motherboard Ports





# Wireless Connectivity

| Technology                              | Description  |
|---|--|
| Infrared ( <b>IR</b> )                  | Used for very short distances. Cheaper than other technologies.  |
| <b>Radio</b>                            | Works in the 27 or 900 MHz, or 2.4, 5, or 60 GHz radio frequency ranges. Longer distances are supported than with infrared.  |
| <b>Bluetooth</b>                        | Includes 128-bit security and works in the 2.4 GHz range. There are four classes of devices, with ranges up to 1.6 feet (0.5 m), 3 feet (1 m), 33 feet (10 m), and 328 feet (100 m). Note that Bluetooth 5 supports a connection between two devices up to 800 feet (242 meters) away. Up to eight devices can be connected in a master/slave relationship, with only one device being the master. |
| Near field communication ( <b>NFC</b> ) | Used to print from a phone or a camera or to transfer data between two smartphones that are positioned very close to one another (less than 6 inches [15.24 cm]). Also used in payment systems. Works in the 13.56 MHz range at transfer speeds up to 424 kb/s.  |



# Computer Terms

**Refer to the glossary terms at the end of the textbook chapter. Review Chapter 2 and become familiar with the terms.**

This PPT deck was developed to support  
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IT Hardware and Software 7th Ed.**

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