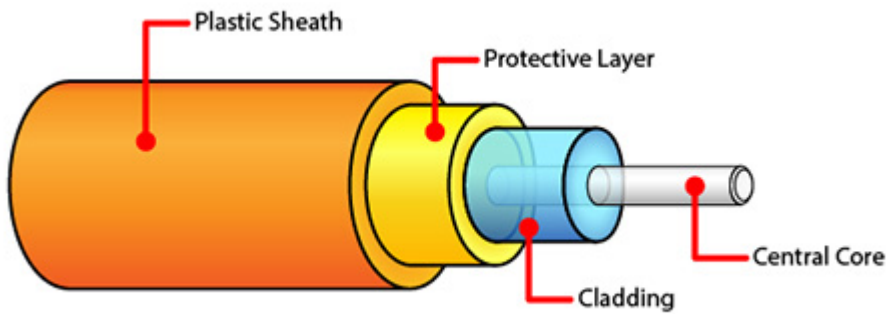


6.3.5 Fiber Optic Facts

Fiber optic cabling is composed of the following components:



- The central core carries the signal. It is made of plastic or glass.
- The cladding maintains the signal in the center of the core as the cable bends.
- The protective layer provides a stiff structure to prevent the cladding and central core from breaking.
- The plastic sheath encases everything and protects the cable.

To connect computers using fiber optic cables, you need two fiber strands: one for transmitting and the other for receiving.

Fiber optic cabling offers the following advantages and disadvantages:

| Advantages | Disadvantages |
|---|--|
| <ul style="list-style-type: none"> ▪ Completely immune to EMI ▪ Highly resistant to eavesdropping ▪ Fastest available transmission rates ▪ Greater cable distances without a repeater | <ul style="list-style-type: none"> ▪ Very expensive ▪ Difficult to work with ▪ Special training required to attach connectors to cables |

Multi-mode and single-mode fiber cables are distinct from each other and not interchangeable. The table below describes multi-mode and single-mode fiber cables:

| Type | Description |
|-------------|--|
| Single-mode | <ul style="list-style-type: none"> ▪ Transfers data through the core using a single light ray (the ray is also called a mode) ▪ Has a core diameter of around 10 microns ▪ Supports a large amount of data ▪ Allows cable lengths to extend a great distance |
| Multi-mode | <ul style="list-style-type: none"> ▪ Transfers data through the core using multiple light rays ▪ Has a core diameter of around 50 to 100 microns ▪ Limits the distance of cable lengths |

Fiber optic cabling uses the following connectors:

| Type | Description |
|--|---|
| <p>ST Connector</p>  | <ul style="list-style-type: none"> Used with single mode and multi-mode cabling Keyed, bayonet-type connector Also called a push in and twist connector Each wire has a separate connector Nickel plated with a ceramic ferrule to ensure proper core alignment and prevent light ray deflection As part of the assembly process, it is necessary to polish the exposed fiber tip to ensure that light is passed on from one cable to the next with no dispersion |
| <p>SC Connector</p>  | <ul style="list-style-type: none"> Used with single mode and multi-mode cabling Push on, pull off connector type that uses a locking tab to maintain connection Each wire has a separate connector Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection As part of the assembly process, it is necessary to polish the exposed fiber tip |
| <p>LC Connector</p>  | <ul style="list-style-type: none"> Used with single mode and multi-mode cabling Composed of a plastic connector with a locking tab, similar to an RJ45 connector A single connector with two ends keeps the two cables in place Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection Half the size of other fiber optic connectors |
| <p>MT-RJ Connector</p>  | <ul style="list-style-type: none"> Used with single mode and multi-mode cabling Composed of a plastic connector with a locking tab Uses metal guide pins to ensure it is properly aligned A single connector with one end holds both cables Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection |