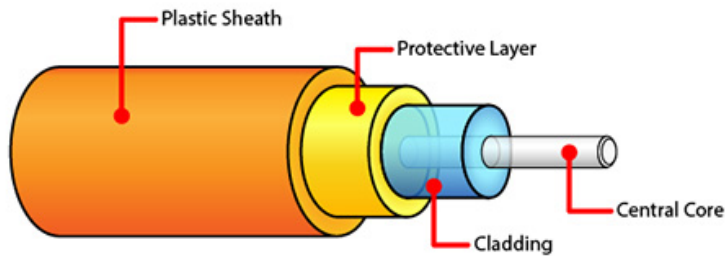


## 6.3.5 Fiber Optic Facts

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

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

Fiber optic cabling uses the following connectors:

Type	Description
<p>ST Connector</p>	<ul style="list-style-type: none"> <li>▪ Used with single mode and multi-mode cabling</li> <li>▪ Keyed, bayonet-type connector</li> <li>▪ Also called a push in and twist connector</li> <li>▪ Each wire has a separate connector</li> <li>▪ Nickel plated with a ceramic ferrule to ensure proper core alignment and prevent light ray deflection</li> <li>▪ 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</li> </ul>
<p>SC Connector</p>	<ul style="list-style-type: none"> <li>▪ Used with single mode and multi-mode cabling</li> <li>▪ Push on, pull off connector type that uses a locking tab to maintain connection</li> <li>▪ Each wire has a separate connector</li> <li>▪ Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection</li> </ul>

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|  | <ul style="list-style-type: none"><li>As part of the assembly process, it is necessary to polish the exposed fiber tip</li></ul>   |
| <p>LC Connector</p>     | <ul style="list-style-type: none"><li>Used with single mode and multi-mode cabling</li><li>Composed of a plastic connector with a locking tab, similar to an RJ45 connector</li><li>A single connector with two ends keeps the two cables in place</li><li>Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection</li><li>Half the size of other fiber optic connectors</li></ul> |
| <p>MT-RJ Connector</p>  | <ul style="list-style-type: none"><li>Used with single mode and multi-mode cabling</li><li>Composed of a plastic connector with a locking tab</li><li>Uses metal guide pins to ensure it is properly aligned</li><li>A single connector with one end holds both cables</li><li>Uses a ceramic ferrule to ensure proper core alignment and prevent light ray deflection</li></ul>                                   |