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ONE CALL, ONE COMPANY, IT PEACE OF MIND.

LIGHTING FIBER:

The Small Form Pluggable
Transceiver : SFP

INSIDE:


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FOR MORE INFO
SCAN QR CODE

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 Hurricane, WV

SFP - Small Form Pluggable, SFP is the acronym that we have all heard and more than likely used but didn't necessarily know the meaning of. Before small form pluggables, there was GBICs - Gigabit Interface Converters. Sometimes SFPs are referred to as miniGBICs.

Both modules are used to convert digital media to a format that enables us to connect two devices of the same format. SFPs have, for the most part, replaced GBICs on modern interfaces on devices of all types. The type of SFP used depends on the type of media that is used to connect your devices.

Are you using multi-mode fiber that is typically used inside and in campus structured fiber cabling? Are you using single mode fiber that is typically used in outside plant and long-range fiber distribution? Are you just using twisted pair copper wiring?

There are SFPs for each transport media and there are different types of SFPs for each media which vary depending on the speed needed and/or distance of the fiber between points.

There are other SFP options for less typical circuit delivery such as SONET, Fiber Channel, CWDM, DWDM, and PON. Though you should be aware that those types of SFPs exist, we will be concentrating on the SFPs that Enterprise networks use most often for ISP circuit delivery.

Make sure that you are having the hand-off and SFP conversations with your ISP when ordering your service. You need to understand what you will be given in order to purchase the correct hardware to complete the circuit on your side of the DMARC. Remember that the DMARC is the demarcation of where the ISP ends and your network begins. From this point, the ISP is not responsible for your

"THERE ARE SFPs FOR EACH TRANSPORT MEDIA AND THERE ARE DIFFERENT TYPES OF SFPs"



equipment or the hardware necessary to make things work on the other side of that demarcation. The exception to this, of course, is if your ISP is also your managed service provider. If so, contracts and agreements dictate the responsibilities of the service provider beyond the DMARC. Be sure to consult these agreements before making assumptions about who provides what.

If your equipment has only copper ports and no SFP ports, your conversation about hand-off in advance of delivery could prevent delays or extra expense. Ask up front for a copper hand-off. Even if the service delivery type into your building is fiber, your ISP will typically install a NID or Network Interface Device on our premises which can do media conversion.

If they deliver the circuit via fiber, they may still be able to provide a copper hand-off if the NID can convert it. If you prefer a fiber hand-off because you only have a fiber extension from your DMARC to your data room, (or because you want to connect directly to your equipment via fiber) be sure to specify that you need a fiber hand-off and be specific about the mode of fiber you need.

If you have an extension, you must match the fiber type used in that extension. It matters. Single mode (that is used outside plant) and multi-mode (used for short distance inside a building or across a campus) are not interchangeable due to differences in the wavelength of the laser and the core size of the fiber. Make sure you know which type of fiber you have.

This will make a difference in the type of SFP the ISP will put in the NID as well as the accompanying jumper. If you do not know how to identify what type of fiber you have the ISP will usually do a site survey as a courtesy in order to identify the mode. Be sure to ask what they will provide as it may vary from service provider to service provider.

“IF YOU HAVE AN EXTENSION, YOU MUST MATCH THE FIBER USED IN THAT EXTENSION. IT MATTERS”



If you need to purchase an SFP, here is what you need to know.

COPPER SFPs

GLC-TE

- Max Data Rate of 1000Mbps
- Max Distance of 100M
- Operating temperature of 23 to 185 degrees fahrenheit.

SFP-10G-T-X

- Max Data Rate of 10G
- Max Distance of 30 meters
- Cat6A/Cat7 or better required

FIBER SFPS

Single Mode

- Working wavelength is 1310 - 1550nm
- SFP trim is blue
- Inside fiber jacket is yellow
- Transmission distance is up to 200K

1 GIGABIT SINGLE MODE FIBER SFPs

1000Base-LX SFP

- Single mode (or Multimode up to 550 meters with mode conditioning patch cord)
- 1310nm wavelength
- Distance UP TO 10Km
- Connector type - LC

1000Base-LH SFP

- Single mode
- 1310nm wavelength
- Distance UP TO 25-70km
- Connector type - LC



“IF YOU NEED TO PURCHASE AN SFP, HERE IS WHAT YOU NEED TO KNOW”

1000Base-LX/LH SFP

- Single mode
- 1310nm wavelength
- Distance UP TO 20Km
- Connector type - LC

1000Base-EX SFP

- Single mode
- 1310nm wavelength
- Distance UP TO 40km
- Connector type - LC

1000Base-ZX

- Single mode
- 1550nm wavelength
- Distance UP TO 70km
- Connector type - LC

10 GIGABIT SINGLE MODE FIBER SFPs

10GBase-LR SFP

- Single mode
- 1310nm wavelength
- Distance UP TO 10Km
- Connector type - LC

10Base-LR-X

- Same as 10GBase-LR but with extended operating temperature range

10GBase-ER

- Single Mode
- 1550nm wavelength
- Distance UP TO 40km
- Connector type - LC

10Base-ER-I

- Same as 10GBase-ER but the I stands for "Industrial Temperature Range"



10GBase-ZR

- Single mode
- 1550nm wavelength
- Distance UP TO 80km
- Connector type - LC

10G-BXD-I & 10G-BXU-I

These are SFPs that operate on a single strand of fiber rather than a pair of fibers used by other SFPs. In traditional SFPs one fiber is used for transmit (tx) and one fiber is used for receive (rx). These BX class SFPs are also known as BIDI SFPs. One of each is required to create a circuit as the 10G-BXD-I transmits at 1330nm and receives at 1270nm and the 10G-BXU-I transmits at 1270 and receives at 1330nm (wavelengths are based on Cisco specs but your mileage may vary with other manufacturers).

- Single Mode
- 1310nm and 1270nm respectively
- Distance UP TO 10km
- Connector type - LC

1 GIGABIT MULTI-MODE FIBER SFPs

Distances achieved by multi-mode fiber is based on the OM classification of the fiber in your cabling infrastructure. The distances below are based on OM2.

1000Base-SX

- Multi-mode
- 850nm
- Distance UP TO 550m
- Connector type - LC

10GBase-SR - Not supported on OM1

- Multi-mode
- 850nm
- Distance UP TO 600m
- Connector type - LC



WHAT TO CONSIDER:

Single Mode Fiber

- Distance required
- Speed required
- Operating temperature
- Patch panel connection type (to ensure you have the appropriate jumper).
 - LC
 - SC
 - ST
- Equipment compatibility

Multi-mode fiber

- Distance required
- Speed required
- OM type of your multi-mode fiber
- Patch panel connection type (to ensure you have the appropriate jumper)
 - LC
 - SC
 - ST
- Equipment compatibility

If you ever have questions, encounter issues, or need assistance with selecting the correct SFP's, please don't hesitate to reach out to our dedicated team. We're here to support you every step of the way. Your satisfaction is our top priority, and we look forward to helping you achieve the best possible results with your fiber solutions.

CONNECT WITH US!

Phone: 304 . 201 . 2616

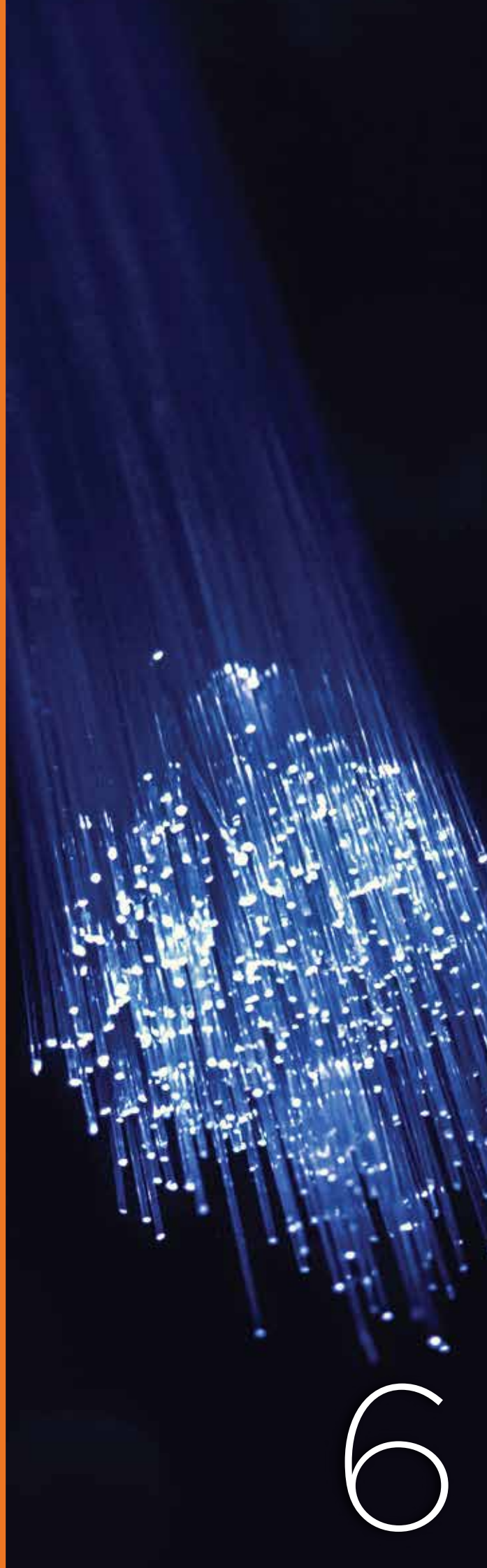
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BLAZING FAST BROADBAND!

Stronger internet can create a more efficient way of conducting business. A connection that amplifies reliability and speed has the ability to offer you and your employees a web experience that takes your business to the next level. When you get Alpha Connect Fiber that next level can be yours. With several speed options to fit your needs, you get the benefits of high-speed, higher-bandwidth internet that your business can rely on.

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WHAT CAN 1-GIGABIT FIBER DO FOR YOUR BUSINESS?

- Instant cloud-based business applications from virtually anywhere
- Backup everything to the cloud, including large photos and videos - at the speed of light
- Collaborate in real-time
- Upload and download files at symmetrical speeds
- Hold video conferences and stream high-definition videos on multiple devices in your office
- Customized speed options
- Commercial business only
- Minimal latency
- Improved service reliability
- Supports multiple users
- Enhanced security
- Managed by a WV based company



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