

## VFAST™ 100 Mbps Ethernet over Fiber

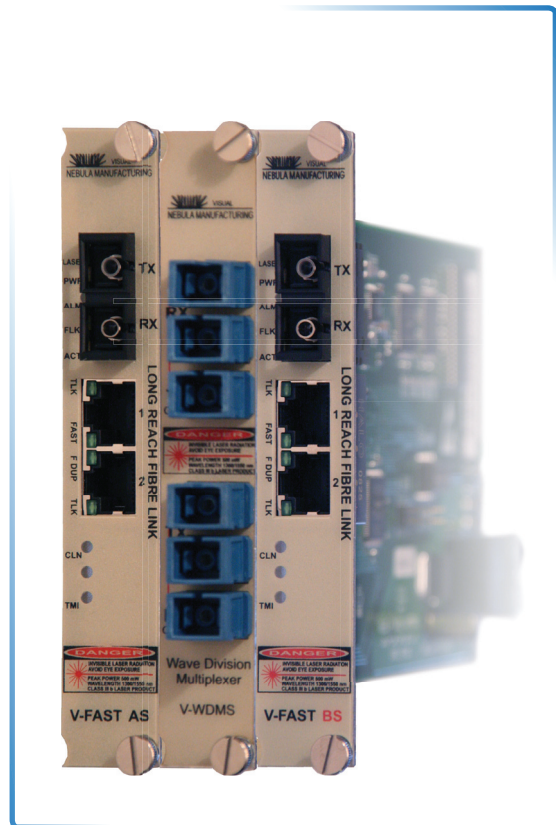
### VFAST2x System Overview

Nebula's VFAST 100 Mbps Ethernet service solution gives service providers a scalable, cost-effective system to deploy Fast Ethernet services over fiber links. The VFAST 100 Mbps Ethernet system is a series of Ethernet to fiber converters, multiplexers and enclosures that let service providers deploy equipment just as needed, minimizing upfront investment and shortening the time to profit.

With Nebula's VFAST Ethernet over Fiber system, service providers can expand services and markets profitably, one customer, one building, one campus at a time.

VFAST 100 Mbps Ethernet products use Nebula's proven EtherOptic platform and offer:

- 100 Mbps Ethernet bridge with bidirectional link supervision,
- Low cost Ethernet /fiber line cards,
- Highly reliable communication links,
- Dedicated management port for link status monitoring,
- Plug and play architecture for non-intrusive deployment, and
- Incremental provisioning for profitable growth.

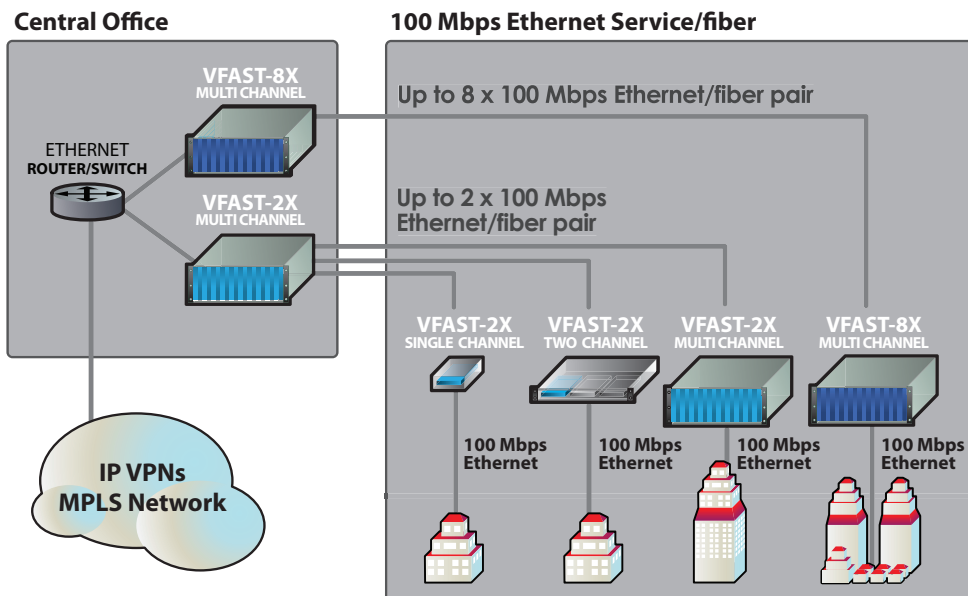


This flexible family of Ethernet products lets service providers:

- Grow cost effectively by initially deploying only single line cards and then doubling capacity by adding the VFAST wavelength multiplexer and second line card
- Serve customers located up to 30 miles (50 km) from the serving office, and
- See rapid return on investment from fiber and optical service infrastructure.

### VFAST2x Highlights

- Two 100 Mbps Ethernet / fiber pair
- Incremental provisioning for rapid ROI
- Carrier grade
- Extends up to 30 miles
- Independently powered
- Highly reliable, high redundancy
- Supervised communication link



## VFAST2x 100 Mbps Ethernet System Details

### VFAST2x Units

VFAST2x Multichannel unit	A 20 slot cabinet designed for CO environments. Fits in a 3U 19" rack. Convection cooled. Can be configured with up to 20 line cards or, using the VFAST WDM, up to 6 sets of multiplexed line card pairs.
VFAST2x Two channel unit	A 3 slot configuration designed for wall mounting or 1U shelf install in a 19" rack. Configured with 2 line cards and 1 VFAST WDM Multiplexer, designed for customer site installation
VFAST2x Single channel unit	A standalone, single card unit for customer premise indoor installation. Can be wall mounted or placed on surface

### VFAST Line Card Technical Specifications

Description	Establishes a 10 or 100 Mbps supervised Ethernet bridge over a fiber pair.	
	<b>VFASTA</b>	<b>VFASTB</b>
Frequency Options	1310 nm	1550 nm
Transmit Level	-7 dBm	-7 dBm
Receive Level	-32 dBm	-32 dBm
Link budget	25 dB (approximately 50 km)	25 dB (dispersion limited to 20 km)
	<ul style="list-style-type: none"> <li>Receiver overload better than -3 dBm (0 dBm typical)</li> <li>Receiver optical damage greater than +3 dBm</li> </ul>	
Connections	<ul style="list-style-type: none"> <li>2 optical connectors (Tx and Rx). Both FC or SC connector types available.</li> <li>2 RJ45 twisted pair ports 2nd port for monitoring</li> </ul>	
Indicators	<ul style="list-style-type: none"> <li>Power/Laser on</li> <li>Fiber problem (alarm)</li> <li>Alarm disabled (test mode)</li> <li>Full duplex</li> <li>Fiber link detected</li> </ul>	<ul style="list-style-type: none"> <li>Collision</li> <li>Twisted pair activity</li> <li>Port one link pulses detected</li> <li>Port two link pulses detected</li> <li>100 megabit operation</li> </ul>
Option Settings	<ul style="list-style-type: none"> <li>10/100 Mbps</li> <li>Simplex/Duplex</li> <li>Increase interpacket gap</li> </ul>	<ul style="list-style-type: none"> <li>Duplicate traffic on both ports</li> <li>Disable alarm (test mode)</li> <li>Enable traffic shaping</li> </ul>
Power	Power Supply	12 V or -48 V (redundant) DC
	Power Consumption	7 W
Environmental	Operating Temperatures	-5 to 150° F (-20 to 65° C)
	Humidity (Relative)	10–90% non-condensing
Dimensions	1 slot (0.8 inches) wide, 3U (5 1/4 inches) high, 7.3 inches deep	

### VFAST WDM Multiplexer Technical Specifications

Description	Combines two wavelengths on a single fiber pair.
Connections	6 optical connectors. Both FC or SC connector types available <ul style="list-style-type: none"> <li>3 [Rx, Rx, Tx] for transmit</li> <li>3 [Tx, Tx, Rx] for receive</li> </ul>
Central Wavelengths	1310 nm, 1550 nm (pass band: +/- 50 nm minimum)
Channel Isolation	Greater than 43 dB
Insertion Loss	Less than 0.9 dB
Dimensions	1 slot (0.8 inches) wide, 3U (5 1/4 inches) high, 7.3 inches deep