SR-1110-SFP-XT DIN Rail Media Converter

perle.com/products/media-converters/sr-1110-sfp-xt-din-rail-copper-fiber-converter.shtml

Rate Converting Copper to Fiber Converter

- 10/100/1000Base-T to 100Base-X or 1000Base-X
- Connect 10/100 devices to Fast Ethernet or Gigabit backbone
- Link copper to multimode or single mode fiber
- Empty slot for Cisco and other industry standard SFPs
- -40°C to +75°C (-40°F to +167°F) extended operating temperature
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX
- Triple Power Input: Dual Terminal block power connector & T-Bus

The Perle **SR-1110-SFP-XT DIN Rail Media Converter** transparently connects UTP copper to fiber in industrial grade operating temperatures **-40°F to +167°F (-40°C to +75°C)**. Equipment found in **traffic management, oil and gas pipelines, weather tracking, industrial and outdoor applications** must function in temperatures that cannot be supported by a commercial based media converter. This Rate Converting Media Converter is ideal for use with industrial devices subjected to harsh environments and severe temperatures such as security cameras, wireless access points, alarms, traffic controllers, sensors and tracking devices.

- Extend the data transmission distance of IP-based devices by connecting their 10/100/1000Base-T Copper interface to gigabit fiber.
- Extend the distance of an existing industrial network by linking CAT5/6/7 cabling to multimode or single mode fiber.
- Protect Ethernet data from EMI noise and interference by inter-connecting your copper-Ethernet devices over fiber in industrial plants.

The pluggable fiber optics port allows for flexible network configurations using SFP transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs.

Network Administrators can "see-everything" with Perle's advanced features such as Auto-Negotiation, Auto-MDIX, Link Pass-Through, Fiber Fault Alert, and Loopback. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make the **SR-1110-SFP-XT Rate Converting Media Converter** the smart choice for IT professionals.

SR-1110-SFP-XT Fiber Media Converter Features: 10/100/1000Base-T to 1000Base-X

Fully designed to operate in extreme temperatures	Perle SR-1110-XT Industrial Media Converters only use components that are fully qualified and rated to operate in -40F to +167F. There are other products on the market that claim to operate at -40°F to +167°F however, they use "commercial-grade" components that have not been qualified by the manufacturer (OEM) to operate at the claimed temperature ranges. When "commercial-grade" parts are exposed to extremely high or low temperatures, product failures are inevitable. For example, integrated circuits on the PCB overheat causing premature failures. Under-rated connectors do not allow for proper contact between the device and the cables. These failures eventually stop all data communications in these high and low temperature environments. *By choosing Perle you can be confident you will not be subjected to these failures.*
DIN Rail Enclosure	Easily mount on a DIN rail or inside distribution boxes using native DIN Rail enclosure with grounding clip. No need for add-on brackets.
SFP Speed Sensing	Automatically detects whether a Gigabit or Fast Ethernet fiber SFP has been inserted and adjusts accordingly.
Auto-Negotiation	The media converter supports auto negotiation. The 100/1000Base-X fiber interface negotiates according to 802.3 clause 37. The 10/100/1000Base-T negotiates according to 802.3 clause 28 and 40. The 100/1000Base-X will link up with its partner after the highest common denominator (HCD) is reached and the copper has linked up with its partner. The 100/1000Base-X will continue to cycle through negotiation transmitting a remote fault of offline (provided this is enabled through the switch setting) until the copper is linked up and the HCDs match. The media converter supports auto-negotiation of full duplex, half duplex, remote fault, full duplex pause, asymmetric pause and Auto MDI-X.
Auto-MDIX	Auto-MDIX (automatic medium-dependant interface crossover) detects the signaling on the copper ethernet interface to determine the type of cable connected (straight-through or crossover) and automatically configures the connection when enabled. The media converter can also correct for wires swapped within a pair. The media converter will adjust for up to 120ns of delay skew between the 1000Base-T pairs.
Smart Link Pass-Through	When Smart Link Pass-Through mode is enable, the Ethernet copper port will reflect the state of the Ethernet fiber media converter port. This feature can be used whether fiber auto-negotiation is enabled or disabled.

Fiber Fault Alert	With Fiber Fault Alert the state of the Ethernet fiber receiver is passed to the Ethernet fiber transmitter. This provides fault notification to the partner device attached to the Ethernet fiber interface of the media converter. If the Ethernet fiber transmitter is off, as a result of this fault, it will be turned on periodically to allow the condition to clear should the partner device on the Ethernet fiber be using a similar technique. This eliminates the possibility of lockouts that occur with some media converters. Applies only when fiber auto-negotiation is disabled.
Pause (IEEE 802.3xy)	Pause signaling is an IEEE feature that temporarily suspends data transmission between two devices in the event that one of the devices becomes overwhelmed. The media converter supports pause negotiation on the 10/100/1000Base-T copper connection and 1000Base-X fiber connection.
Duplex	Full and half duplex operation supported.
Jumbo Packets	Transparent to jumbo packets up to 10KB.
VLAN	Transparent to VLAN tagged packets.
Remote LoopBack	Capable of performing a loopback on the 1000Base-X fiber interface.

Hardware Specifications: SR-1110-SFP-XT Media Converters

Power	
Input Supply Voltage	Triple voltage 12 / 24 / 48 VDC (9.6 – 60 VDC) input supporting: a) 2 x Terminal Block power input and b) 1 x T-Bus power input
Current	0.09 A (@ 24VDC)
Power Consumption	2.16 watts (@ 24VDC)
Power Connector	Dual input Terminal Block and/or T-Bus
Indicators	
Power / TST	This green LED is turned on when power is applied to the media converter. Otherwise it is off. The LED will blink fast/slow when in Loopback test mode or hardware error.
Fiber link on / Receive activity (LKF)	On: Fiber link present. Blinking slowly: Fiber link disabled because of copper link loss. Blinking quickly: Fiber link present and receiving data. Off: No fiber link present
Copper link on / Receive activity (LKC)	On: Fiber link present. Blinking slowly: Fiber link disabled because of copper link loss. Blinking quickly: Fiber link present and receiving data. Off: No fiber link present

Link Pass-Through (LKP)	On: Copper link is present. Blinking slowly: Copper link disabled because of fiber link loss. Blinking quickly: Copper link present and receiving data. Off: No copper link present
10/100/1000 Copper Speed (SP)	Green: 1000 Mbps, Yellow: 100 Mbps, Off: 10 Mbps
Copper Link Activity (LK)	On: Copper link is present, Blinking quickly: Copper link receiving data

Switches - accessible by sliding the chassis open

Auto-Negotiation	Auto (Deafault-Up): In this mode of operation the media converter will negotiate Ethernet parameters on both the copper and the fiber connection. This will ensure the most optimal connection parameters will be in effect. If connecting to another Perle Gigabit Media Converter, this parameter should be set to Auto. Off: Copper Negotiation should only be turned off, if the copper link partner does not support copper link negotiations.
SGMII	100/1000 (Default-Up): In this mode, the fiber characteristics will depend on the SFP inserted.
Smart Link Pass-Through	Smart Link Pass-Through (Default-Up): In this mode, the link state on one connection is directly reflected through the media converter to the other connection. If link is lost on one of the connections, then the other link will be brought down by the media converter. If the installation has a media converter on both ends of the fiber link and both are setup for Smart Link Pass-Through, then a loss of copper link on the far end device will propagate through both media converters and will result in a loss of link at the near end device. This would, therefore, resemble a direct copper connection. Standard Mode (Dwon): In this mode the links on the fiber and copper sides can be brought up and down independently of each other. A loss of link on either the fiber link or copper link can take place without affecting the other connection.
Loopback	Disabled (Default-Up): The loopback feature is disabled. This is the normal position for regular operation. The switch must be set to this position for data to pass through the media converter. Enabled: This is a test mode. All data received on the receive (RX) fiber connection is looped back to the transmit (TX) fiber connection. The state of the copper is not relevant and no data or link status is passed through to the copper side.

Fiber Fault Alert	Enabled (Default-Up): In this mode, when Fiber negotiation is turned on, if the media converter detects a loss of fiber signal on the fiber receiver it will immediately disable its fiber transmitter signal. This notifies the fiber link partner that an error condition exists on the fiber connection. If the remote media converter is set up for FFA Enabled and the local media converter is set up with Smart Link Pass-Through, a loss of fiber link on either the transmit or receive line will be passed through to the local copper connection to notify the connected device. If the media converter has been set to Smart Link Pass-Through mode, the effect will be the same as FFA since the link loss on the fiber receiver will result in bringing down the copper link, which will in turn cause the transmit fiber link to be brought down. Disabled: In this mode, the media converter will not monitor for fiber fault.
Duplex Mode	Full (Default-Up): In this mode, when Auto Negotiation is set to off, the media converter will be set to Full Duplex mode. Half: The media converter will be set to Half Duplex mode
Copper Speed	100 (Default-Up): In this mode, when Auto Neg (copper) is set to off, the media converter will use this switch setting for its Ethernet copper speed connection.The media converter will force the speed to 100 Mbps. 10: The media converter will force the speed to 10 Mbps
Fiber Negotiation (Gigabit SFP)	Auto (Default-Up): The Media Converter will negotiate Ethernet parameters on the fiber connection. This will ensure that the most optimal connection parameters will be in effect. If connecting to another Perle Media Converter, this parameter should be set to Auto. The Media Converter Module will advertise 1000Mbps, Full and Half Duplex, no Pause. Off: The Media Converter Module's fiber will be fixed to 1000Mbps, Full Duplex.

Cables and Connectors

10/100/1000Base-T	RJ45 connector 2 pair CAT 5 (UTP or STP) or better cable for 10/100 Mbps 4 pair CAT 5 (UTP or STP) or better cable for 10/100/1000 Mbps
Small Form Factor Pluggable (SFP) slot	SFP slot models: Empty slot for 100Base-X SFP modules supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs. Hot insertion and removable (hot swappable).Hot insertion and removable (hot swappable).
Magnetic Isolation	1.5kv

Fiber Optic Cable	Multimode: 62.5 / 125, 50/125, 85/125, 100/140 micron Single Mode: 9/125 micron (ITu-T 625)

Filtering

Filtering	1024 MAC Addresses

Frame Specifications

Buffer	1000 Kbits frame buffer memory
Size	Maximum frame size of 10,240 bytes -- Gigabit Maximum frame size of 2048 bytes -- Fast Ethernet

Packet Transmission Characteristics

Bit Error Rate (BER)	$<10^{-12}$

Environmental Specifications

Operating Temperature	-40°C to 75°C (-40°F to 167°F)
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing
Operating Altitude	Up to 3,048 meters (10,000 feet)
Heat Output (BTU/HR)	7.37
MTBF (Hours)	571,991 (Calculation model based on MIL-HDBK-217-FN2 @ 30 °C)
Chassis	Molded plastic DIN Rail case with an IP20 ingress protection rating

Mounting

Din Rail Kit	Native

Product Weight and Dimensions

Weight	0.12 kg, 0.26 lbs
Dimensions	114 x 100 x 22.5mm, 4.5 x 3.9 x 0.88 inches

Packaging

Shipping Weight	0.17 kg, 0.37 lbs

Shipping Dimensions	145 x 105 x 30 mm, 5.7 x 4.1 x 1.2 inches

Regulatory Approvals

Emissions	FCC 47 Part 15 Class A, EN55032 (CISPR32) Class A EN55011 (CISPR11) ICES-003 EN61000-6-4 (Emissions for industrial environments) CISPR 32:2015/EN 55032:2015 (Class A) CISPR 24:2010/EN 55024:2010 EN61000-3-2
Immunity	EN55024 EN 61000-4-2 (ESD) EN 61000-4-3 (RS) EN 61000-4-4 (EFT) EN 61000-4-5 (Surge) EN 61000-4-6 (CS) EN 61000-4-8 (PFMF) EN 61000-4-11 IEC/EN 61000-6-2 (General Immunity for Industrial Environments)
Electrical Safety	IEC 62368-1(ed 2) EN 62368-1:2014
	CE
Laser Safety	EN 60825-1:2007
	Fiber optic transmitters on this device meet Class 1 Laser safety requirements per IEC-60825 FDA/CDRH standards and comply with 21CFR1040.10 and 21CFR1040.11.
Environmental	Reach, RoHS and WEEE Compliant
Other	ECCN: 5A991
	HTSUS Number: 8517.62.0020
	Perle Limited Lifetime Warranty

Gigabit to IP Cameras
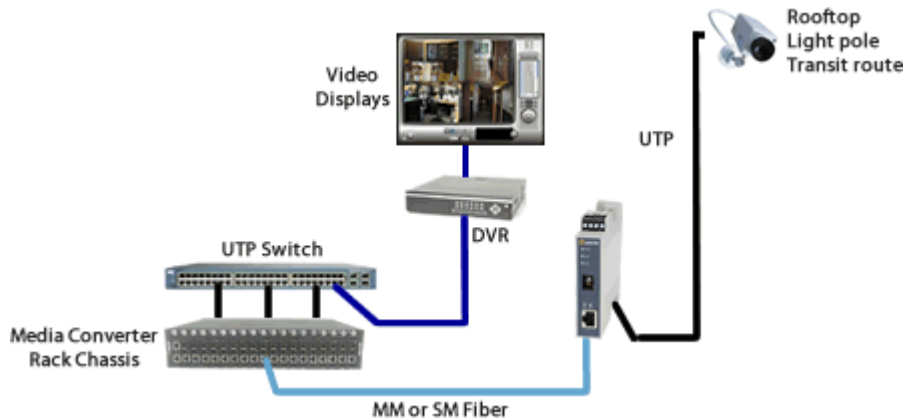
Connect IP Cameras to Fast Ethernet or Gigabit Backbone

Extend the reach to IP cameras using industrial fiber media converters. Security cameras are typically installed in remote locations where extremely high or low temperatures are a concern -- ceilings, rooftops, light poles, along fences, pipelines and transit routes.

Stand-alone Extended Temperature Media Converters are placed at the remote end connecting cameras with copper interfaces to fiber optic cabling. The fiber can extend the distance using single mode or multimode fiber back to a control center. A media converter chassis located in the data closet at the control center accepts the fiber signal, converts it, and connects to the copper equipment at the main site.


Gigabit Fiber to Wireless Access Points

Connect Wireless Access Points to Fast Ethernet or Gigabit Backbone

Extend the reach to wireless access points (AP) using fiber media converters. When a company deploys a wireless network in their office or large warehouse, APs need to be set up throughout the facility to ensure complete coverage for reliability. The network manager will likely need to extend further than the 100 meters allowed by copper cable to reach many of the APs.

When AP's are used in industrial environments where extremely high or low temperatures are a concern, Stand-alone Extended Temperature Media Converters are placed at the remote end connecting APs with copper interfaces to fiber optic cabling. The fiber can extend the distance using single mode or multimode fiber back to a control center. A media converter chassis located in the data closet at the control center accepts the fiber signal, converts it, and connects to the copper equipment at the main site.
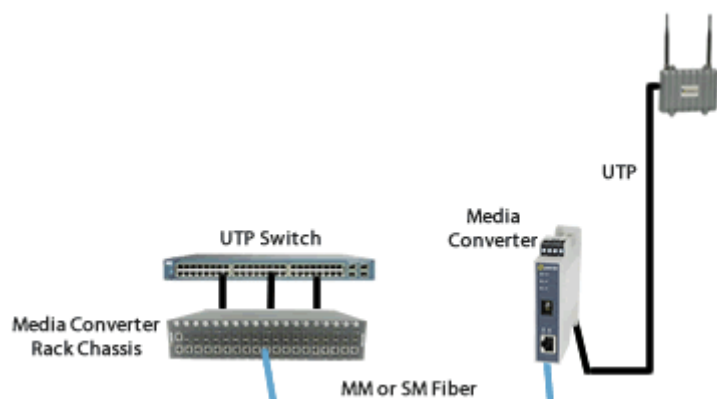
Bridge 10/100/1000 Devices to Fast Ethernet or Gigabit Backbone

Connect 10/100/1000 devices to Gigabit Backbone
Industrial switches are often used in environments where extremely high or low temperatures are a concern. Devices in an industrial environment can be connected to a Fast Ethernet or Gigabit backbone through the use of rate converting Industrial Temperature Media Converters.
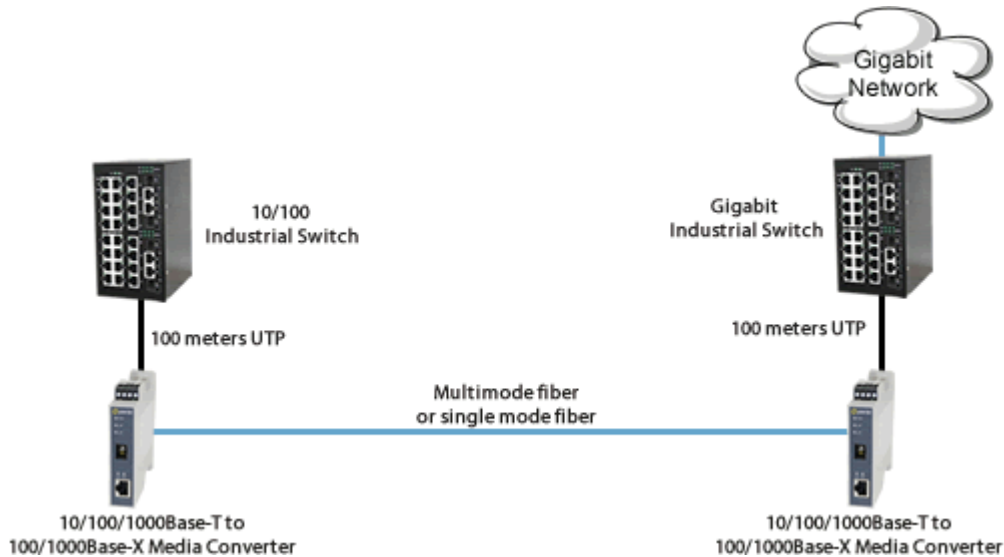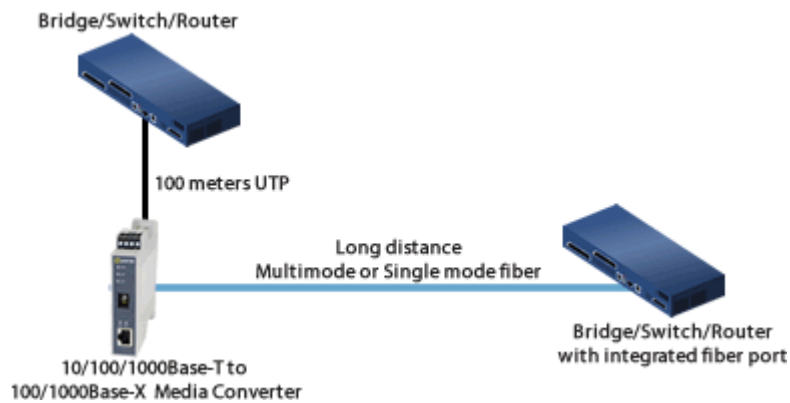

UTP Switch to Fiber Switch

Interconnect a UTP Switch with a Fiber Switch
A media converter can interconnect a UTP copper based Switch port to a remote switch that has integrated fiber.
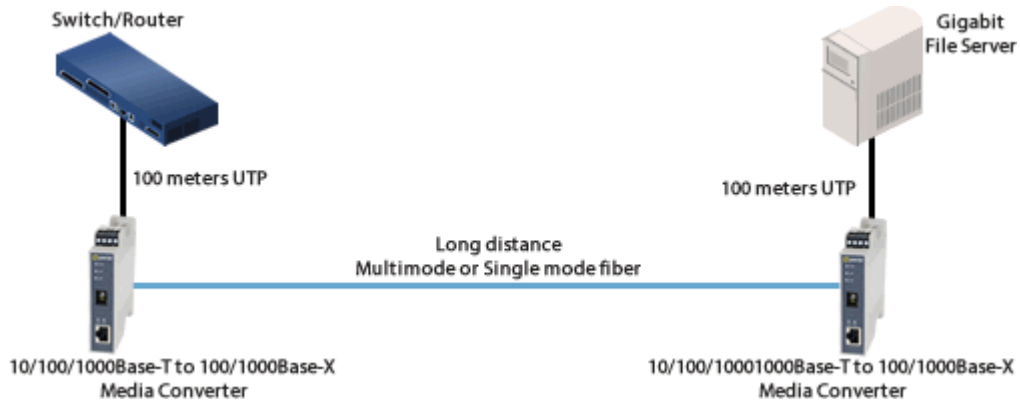

Switch to Gigabit Server

Extend the network distance between a Switch and a File Server

Two Ethernet Media Converters can extend the distance between a Switch and a File Server across a fiber link using industry standard SFPs.
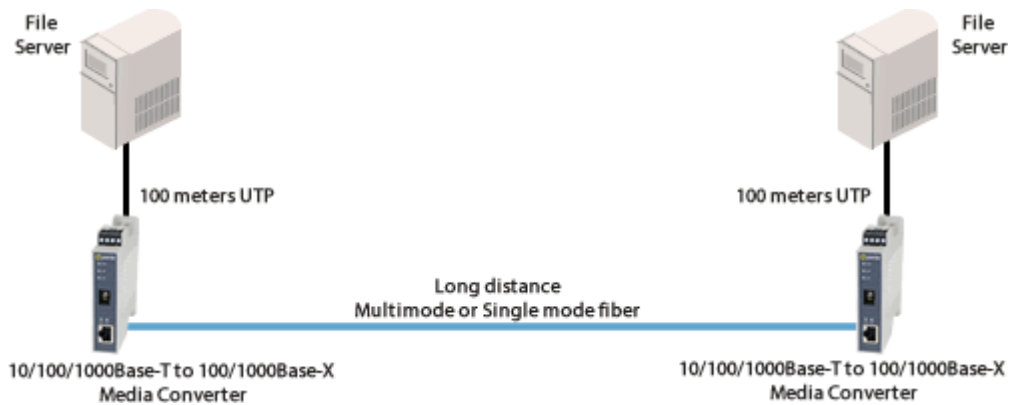
Switch/Router

Gigabit
File Server

100 meters UTP

100 meters UTP

Long distance
Multimode or Single mode fiber

10/100/1000Base-T to 100/1000Base-X
Media Converter

10/100/10001000Base-T to 100/1000Base-X
Media Converter

Direct Connect - Long Distance

Direct Connection between two remote devices

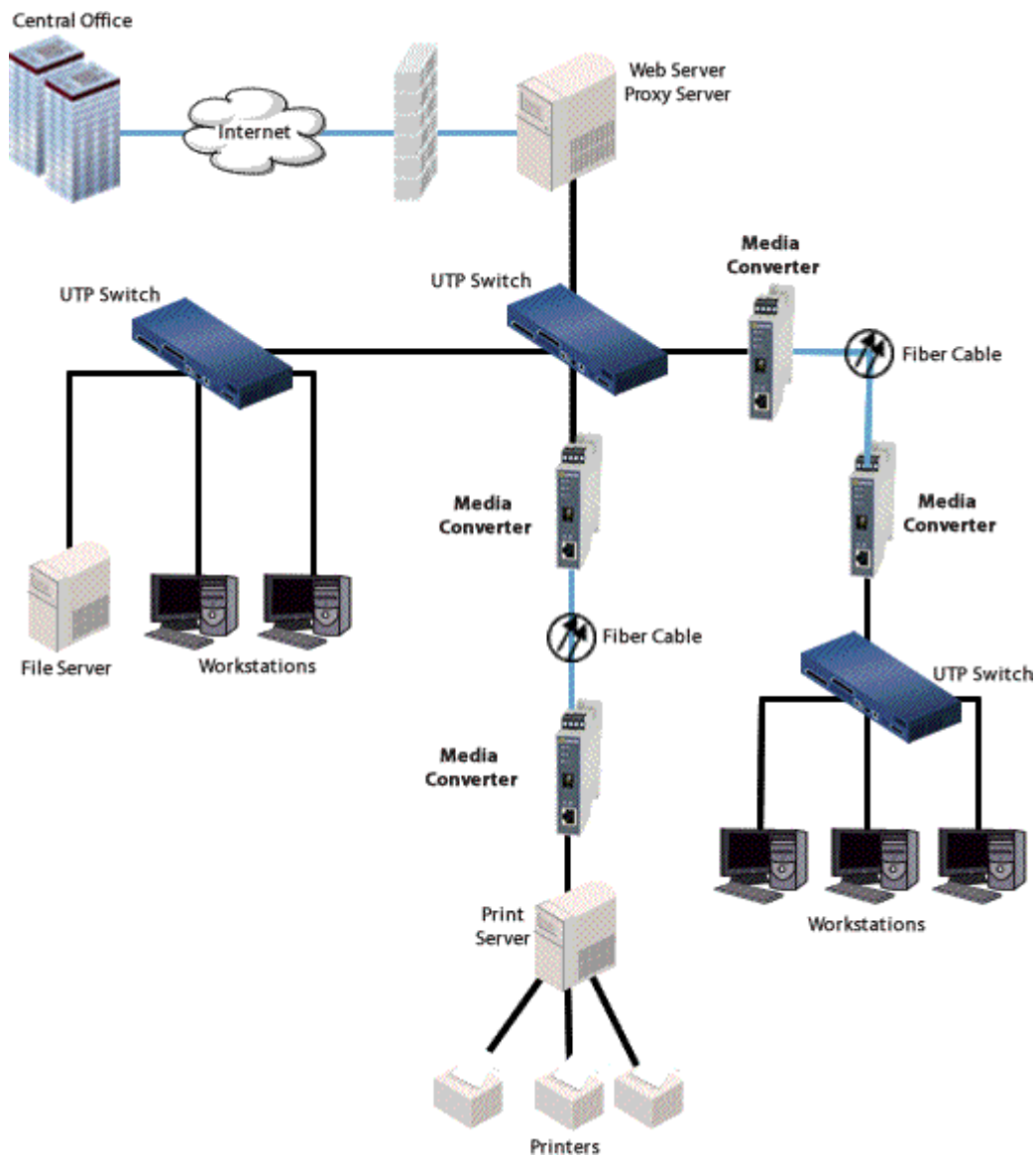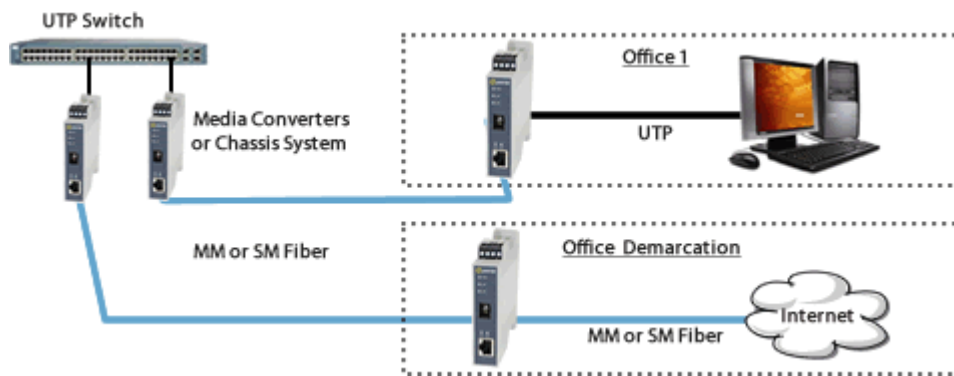With a pair of Media Converters two devices, such as file servers, can be connected across a fiber link.

File
Server

File
Server

100 meters UTP

100 meters UTP

Long distance
Multimode or Single mode fiber

10/100/1000Base-T to 100/1000Base-X
Media Converter

10/100/1000Base-T to 100/1000Base-X
Media Converter

Enterprise Infrastructure

Enterprise Infrastructure using Fiber Optics

Create a fiber infrastructure for your enterprise network without any wholesale replacement of existing copper-based equipment.

Error processing SSI file