

SMI-10GRT-SFP Managed Media Converter

 perle.com/products/media-converters/10gbase-t-managed-rate-converter.shtml

10/100/1000/2.5G/10GBase-T to SFP Copper or Fiber Converter

- Copper to fiber and copper to copper conversion
- Uses a variety of transceivers supplied by Perle, Cisco or other MSA compliant SFP+
- Advanced features: Cut-Through Forwarding, Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package
- Support for Power Level 1 and 2



The Perle **SMI-10GRT-SFP Managed Media Converter** transparently connects 10/100/1000/2.5G/10GBase-T Ethernet links over multimode or single mode fiber. Each Media Converter comes with one RJ45 port and an empty slot for one SFP or SFP+ module.

The SMI-10GRT-SFP Managed Media Converter supports key features for ultimate network flexibility and growth.

- 10/100/1000/2.5G/10G rate conversion can be enabled to automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. This is ideal in scenarios where disparate networks need to be connected.
- Cut-Through Forwarding can be configured for environments where throughput speed is critical. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible

SMI-10GRT-SFP Managed Media Converters support all authentication, authorization and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-10GT Managed Media Converter**. 10GBASE-T Media Converters are also available for unmanaged applications.

Copper to Fiber conversion is achieved by inserting SFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP+ Direct Attach Cable (DAC), also known as twinax.

The empty transceiver port on the **SMI-10GRT-SFP Managed Media Converter** allows for flexible network configurations to meet any requirement using a variety of 10G transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP. You can use this products to convert:

Copper to Fiber Conversion:

- 10/100/1000/2.5G/10GBase-T to 1G Fiber SFP
- 10/100/1000/2.5G/10GBase-T to 10G Fiber SFP+

Copper to Copper Conversion:

10/100/1000/2.5G/10GBase-T to 1G Copper SFP

The Perle SMI-10GRT-SFP Managed Media Converter provides an economical path to extend Ethernet data transmission distances or convert network speeds. Network Administrators can “see-everything” with Perle’s advanced features such as Smart 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 Perle **SMI-10GRT-SFP Managed Media Converters** the smart choice for IT professionals.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of Perle Managed Media Converters is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.

SMI-10GRT-SFP Managed Media Converter Features

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| Rate Conversion | The Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. |
| Cut-Through Forwarding | When the same Ethernet speed for both ports is enabled, the Media Converter can be configured for Cut-Through Forwarding. This will increase the media converter’s throughput and reduce latency by performing packet forwarding in the most efficient manner possible. Forwarding of a packet will begin as soon as the destination address is processed. |
| SFP Speed Sensing | Automatically detects whether a SFP has been inserted and adjusts the speed accordingly. |
| SGMII Interface Support | The Media Converter supports 1000Mbps SGMII SFPs |
| Copper Auto-Negotiations | The media converter supports auto negotiation on Ethernet copper interface port |
| Copper Duplex | Full and half duplex operation is supported |

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| Smart Link Pass-Through | <p>When Smart Link Pass-Through is enabled (default), each port will reflect the state of its port peer. In this mode, if a link loss is detected on one port the transmit signal on the other port is disabled “passing through” the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS.</p> <p>When Smart Link Pass-Through is disabled, if a link loss is detected on one port the transmit signal remains enabled on the other port.</p> |
| Fiber Fault Alert | With Fiber Fault Alert the state of the 10 Gigabit Ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G Ethernet interface of the media converter. |
| Green Ethernet | <p>Utilizes Green Ethernet energy saving technology based on industry standards such as:</p> <p style="padding-left: 40px;">Energy Efficient Ethernet (EEE) as per 802.3az. This provides power savings during idle network activity.</p> |
| Module Temperature Protection | Protects your DOM/DMI capable SFP or SFP+ module by monitoring its internal temperature and will automatically shut down the SFP or SFP+ if the module is operating above its maximum temperature threshold. |
| Gigabit SFP support | The 10 Gigabit media converter model with the SFP slot can also support Gigabit (1000Base-X) SFPs. This allows users to use Gigabit SFPs today and migrate to 10G SFP+ in the future. |
| Jumbo Packets | Transparent to Jumbo Frames with a maximum MTU size of 10,024 bytes |
| VLAN | Transparent to VLAN tagged packets. |
| Power Strain Relief strap | A strain relief strap is provided to ensure a solid and secure power connection to the media converter. Ideal for areas that may be exposed to any vibration. |
| Remote Loopback | Capable of performing a loopback on the 10 Gigabit interface. In this mode, all frames received on the port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link. |
| Configuration Mode selection | Select whether to use the on-board DIP switches or the management software for mode selection. |

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| Converter Information | <ul style="list-style-type: none"> • Media converter model and serial • User configurable name • User configurable fiber port name • Hardware revision number • Firmware version number |
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| Module DIP switch settings | View hardware DIP switch settings. |
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| Port Control | Enable or disable individual fiber ports on the module. |
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| Fiber Port Status | <ul style="list-style-type: none"> • Port Enabled (Yes/No) • Connector • Link Status (Up/Down) • Fiber Fault Alert (OK, Failed) • Fiber Loopback mode (On/Off) |
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| Control | <ul style="list-style-type: none"> • Reset • Reset to factory default • Ability to specific read/write phy registers • Update firmware • Fiber Loopback mode (Yes/No) • Upload/download configuration |
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| Manage Tune-able DWDM XFP modules | Select transceiver ITU 50GHz center wavelengths and channel numbering on tune-able XFP transceivers. |
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SMI-10GRT Advanced Management Features

Enterprise and carrier-grade security is available through the support of strong authentication systems such as TACACS+, RADIUS and LDAP. Secure in-band access is assured via SNMPv3, SSH CLI and secure HTTPS Internet browser.

SNMP

- Full read/write capabilities via central SNMP servers and PerleVIEW
- Send SNMP traps (up to 4 servers)
- SNMPv3, V2C and V1
- SNMPv3 – encryption and authentication for both management and trap support
- RFC1213 MIB II
- Proprietary MIB provided

Telnet / SSH CLI access

In-band command line access via Telnet or SSH application.

Internet Browser access

- Fast and intuitive graphical web interface for use with common internet browsers such Internet Explorer, Mozilla Firefox and Safari
 - HTTP or secure HTTPS
 - PerleVIEW Centralized Management Package
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Console port CLI access

Out-of-band command line access via Cisco compatible RJ45 serial console port using common “rolled” CAT5 cable. Console port can be enabled (default) or disabled.

Concurrent management sessions

Run multiple management sessions simultaneously for multiple users.

Inactivity timeout

Protect secure management sessions by setting an inactivity timeout value.

Alert event reporting

Alert level events are stored in the local event log and sent as:

- SNMP traps to up to 4 servers
 - SYSLOG messages to a SYSLOG server
 - Email to user defined email address
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Advanced IP feature set

- IPV4 and IPV6 address support
 - DHCP
 - DNS
 - Dynamic DNS
 - NTP
 - TFTP
 - Telnet
 - SSH V2 and V1
 - HTTP
 - HTTPS
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| Advanced Management User Authorization and Accounting with primary and secondary server support | <ul style="list-style-type: none"> • TACACS+ • RADIUS • LDAP • Active Directory via LDAP • RSA Secure ID-agent or via RADIUS authentication • Kerberos • NIS |
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| Encryption | <ul style="list-style-type: none"> • AES (256/192/128), 3DES, DES, Blowfish, CAST128, ARCFour(RC4), ARCTwo(RC2) • Hashing Algorithms: MD5, SHA-1, RIPEMD160, SHA1-96, and MD5-96 • Key exchange: RSA, EDH-RSA, EDH-DSS, ADH • X.509 Certificate verification: RSA, DSA |
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| Access Control List | An access control list can be created which can filter out only those workstations that are authorized to access the management resources. Filter on IP and/or Ethernet MAC addresses. |
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| Network Services Filter | Enable only those network services on the management module that are allowed on your network (Telnet, SSH, HTTP, HTTPS, SNMP). |
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| Firmware download | Update the latest level firmware for management and media converter modules via TFTP or PerleVIEW. |
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Power

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| Input Supply Voltage | 12 vDC Nominal |
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| Maximum Power Consumption | 16 watts* |
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| Power Connector | 5.5mm x 9.5mm x 2.1mm barrel socket |
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Power Adapter

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| Universal AC/DC Adapter | 100-240v AC, regulated AC/12v DC adapter included |
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Indicators

- Power / TST
- On: Power indication and in normal operation
 - Blinking slowly: the unit is in loopback or test mode (either port)
 - Red solid: the unit has a hardware error (upon power up)
 - Red and blinking: the unit has a hardware error specified by combination of LK1 and LK2

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- LK1 (SFP)
- On: Link present
 - Blinking quickly: Fiber link present and receiving data.(including test data)
 - Blinking slowly: Fiber link disabled because the other fiber link went down.
 - Blinking 1 sec on 3 sec off – module shut down due to high temperature.
 - Off: No fiber link present or no module inserted

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- LK2
- On: 10GBase-T link present
 - Blinking quickly: Link present and receiving data
 - Blinking slowly: Link disabled because Link 1 went down
 - Off: 10GBase-T link is not active

Switches - accessible through a side opening in the chassis

Smart Link *Enabled (Default - Up)*

Pass-Through When the Link Mode switch is enabled (default), each port will reflect the state of its port peer using Smart Link Pass-Through. In this mode, if a link loss is detected on one port, the transmit signal on the other port is disabled “passing through” the state of the failed link. This enables managed switches and other devices to report link failures to their network NMS.

When the switch is in the down position, Smart Link Pass-Through is disabled. If a link loss is detected on one port, the transmit signal remains enabled on the other port.

Fiber Fault *Enabled (Default - Up)*

Alert With Fiber Fault Alert the state of the 10 Gigabit ethernet receiver is passed to the transmitter. This provides fault notification to the partner device attached to the 10G ethernet interface of the media converter.

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| Cut-through / Rate converting | <i>Rate Converting (Default - Up)</i> The Media Converter can automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. |
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When the same Ethernet speed for both ports is enabled, the Media Converter can be configured for Cut-Through Forwarding. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible. Forwarding of a packet will begin as soon as the destination address is processed

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| Fiber Interface Loopback | <i>Disable (Default - Up)</i> In this mode, all frames received on the fiber port in loopback mode will be transmitted back. This provides users with the capability of utilizing their own in-house test generators for testing the link. |
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| Copper Negotiation | <i>Auto (Default - Up)</i> In this mode, the media converter will auto negotiate copper link parameters. When switch is down, the media converter will be in manual mode and will use the parameters as define by Copper Duplex and Copper Speed switches |
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| Copper Duplex | <i>Full Duplex (Default - Up)</i> In this mode, the copper port will be set to full duplex mode. If switch is down, the copper port is set to half duplex mode |
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| Copper Speed | <i>100Mbps (Default - Up)</i> In this mode, the copper port will be fixed at 100 Mbps. When switch down, the copper port will be fixed at 10 Mbps. Note: Copper Negotiation switch must be set to manual for Copper Speed switch to work. |
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Connectors

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| 1 x RJ45 | 10/100/1G/2.5G/10GBase-T IEEE 802.3an 100 meters on CAT6A or better |
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| 1 x SFP / SFP+ Transceiver slot | Supported 10 Gigabit Fiber pluggable transceivers (IEEE 802.3ae compliant): |
| Power level 1 (1 watt) and level 2 (1.5 watts) as per SFP-8431 | <ul style="list-style-type: none"> • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR • CWDM/DWDM |
| Hot insertion and removable | Supported 1 Gigabit Copper SFPs |
| | <ul style="list-style-type: none"> • 1000Base-T • 1000Base-T SGMII |

- Supported Gigabit Fiber SFPs
- 1000Base-SX
 - 1000Base-LX/LH
 - 1000Base-EX
 - 1000Base-ZX
 - 1000Base-BX
 - CWDM/DWDM

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| Supported 10 Gigabit Fiber pluggable transceivers | IEEE 802.3ae compliant: |
| | <ul style="list-style-type: none"> • 10GBase-SR • 10GBase-LRM • 10GBase-LR • 10GBase-ER • 10GBase-ZR |

CWDM/DWDM

Environmental Specifications

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| Operating Temperature | 0° C to 50° C (32° F to 122° F) |
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| Storage Temperature | minimum range of -25° C to 70° C (-13° F to 158° F) |
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| Operating Humidity | 5% to 90% non-condensing |
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| Storage Humidity | 5% to 95% non-condensing |
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| Operating Altitude | Up to 3,048 meters (10,000 feet) |
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| Heat Output (BTU/HR) | 55 |
| MTBF (Hours) | Without power adaptor: 108,334 With power adaptor: 79,592 Calculation model based on MIL-HDBK-217-FN2 @ 30 °C |
| Chassis | Metal with an IP20 ingress protection rating |
| Mounting | |
| Din Rail Kit | Optional |
| Wall / Rack Mount Kit | Optional |
| Product Weight and Dimensions | |
| Product Weight | 0.93 kg, 2.1 lbs |
| Product Dimensions | 8 x 12 x 4.2 cm (3.1 x 4.7 x 1.7 inches) |
| Shipping Weight | 1.5 kg, 3.3 lbs |
| Shipping Dimensions | 26 x 17 x 7 cm (10.2 x 6.7 x 2.8 inches) |
| Regulatory Approvals | |
| Emissions | FCC Part 15 Class A, EN55022 Class A CISPR 22 Class A CISPR 32:2015/EN 55032:2015 (Class A) CISPR 24:2010/EN 55024:2010 EN61000-3-2 |
| Immunity | EN55024 |
| Electrical Safety | IEC 62368-1(ed 2) EN 62368-1:2014 CE |

Environmental Reach, RoHS and WEEE Compliant

Other ECCN: 5A991

HTSUS Number: 8517.62.0020

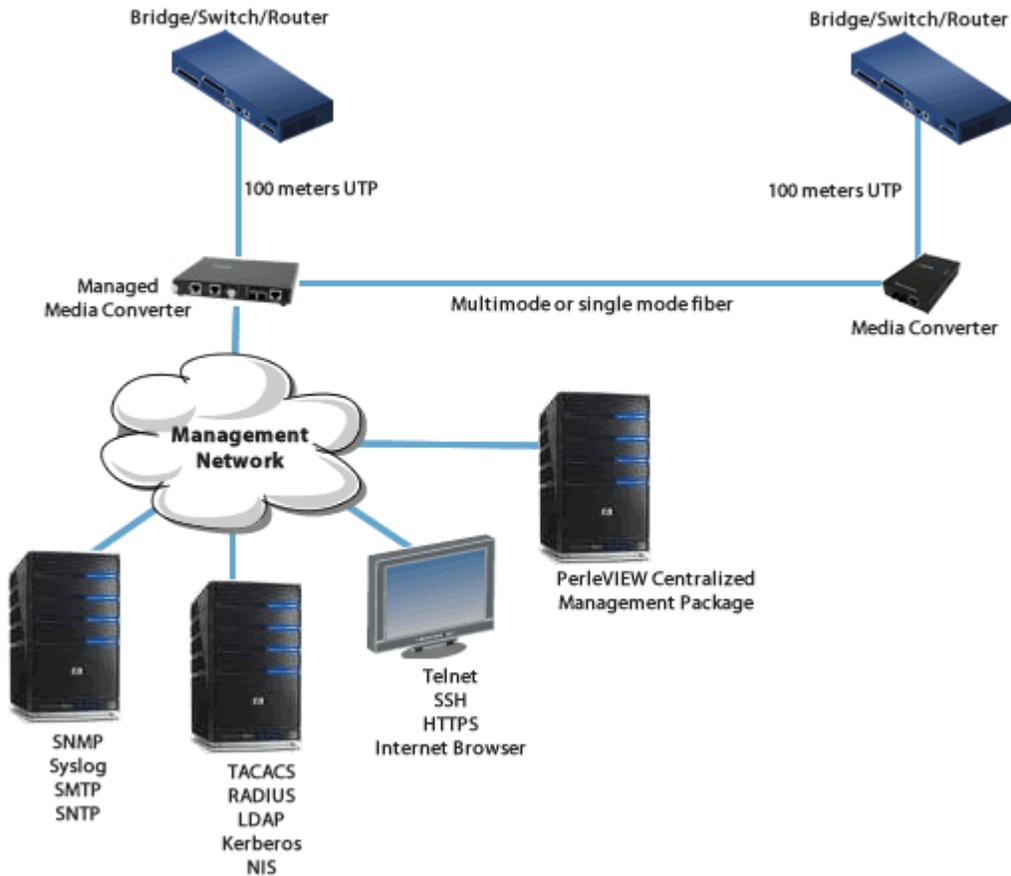
CCATS: G134373

Perle Limited Lifetime Warranty

*Maximum rating for both media converter and modules inserted. Actual rating is dependent on the power consumption of the SFP+ modules inserted.

Managed Ethernet to Fiber Links

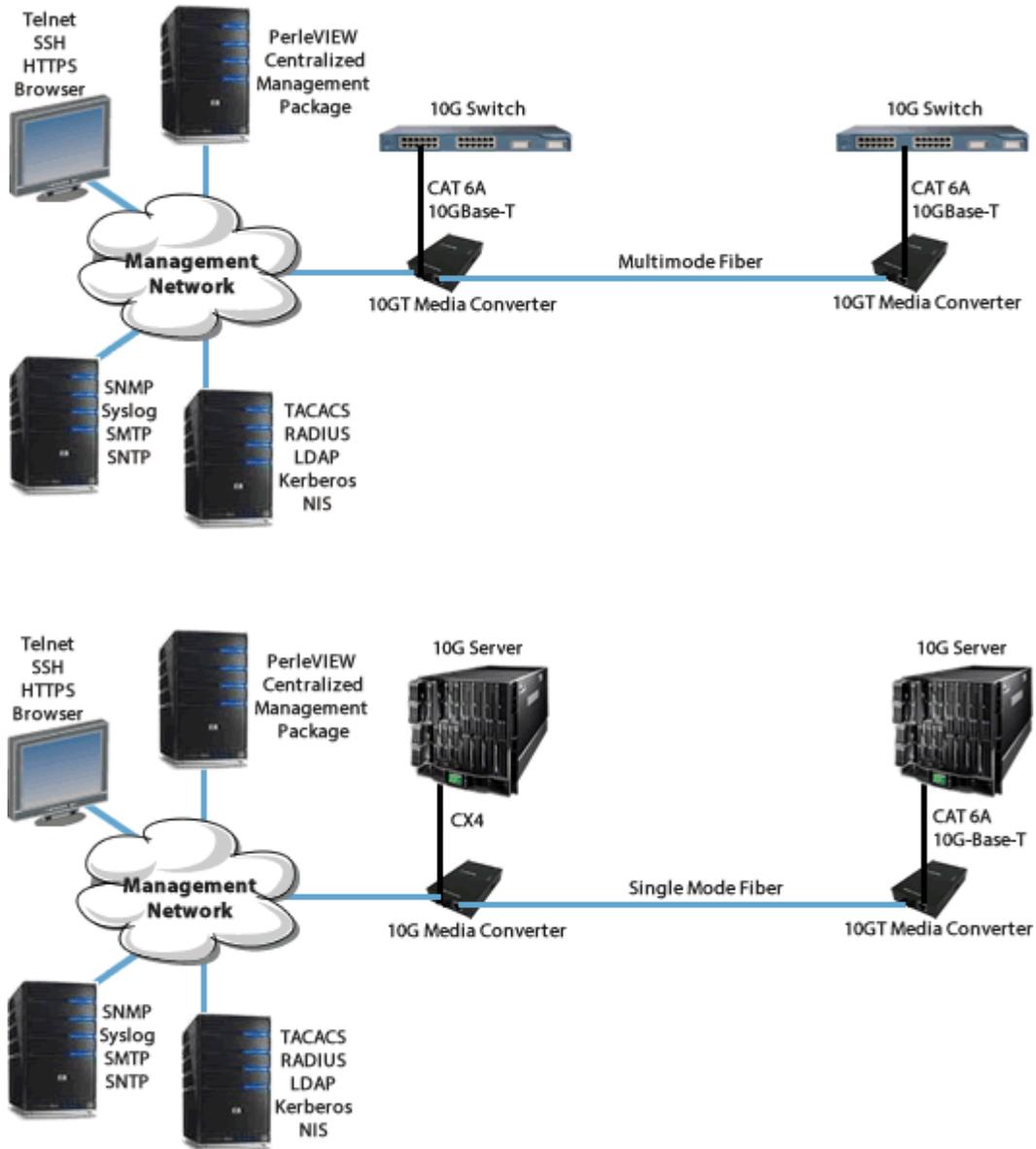
Manage your copper to fiber link with a Managed Standalone Media Converter. Ideal for use in managed networks with low density fiber applications. A Managed Standalone Media Converter is connected across a fiber link to a remote media converter. The copper and fiber link on the managed standalone unit can provide vital information and status to network management tools such as SNMP.



10 Gigabit Copper to Fiber Media Conversion

Convert one 10G Ethernet media to another

Convert your 10GBaseT copper link to multimode or single mode fiber. Ideal for large data centers and Co-Location applications where the distance required to connect top of rack switches exceeds the 100 meter limitation of 10G copper. All managed media converters are managed by SNMP, Telnet or an internet browser interface. This allows the copper or fiber link to provide vital information and status updates to network various management tools.



Auto-sensing Rate Conversion (10/100/1000/2.5G/10GBase-T)

Using auto-sensing RJ45 Ethernet port and the empty SFP/SFP+ slot, connect and convert copper Ethernet to 1G or 10G multimode or single mode fiber. Or, convert to 1G copper.

| Product Image | Description | Power Cord | Product Number |
|---------------|-------------|------------|----------------|
|---------------|-------------|------------|----------------|

| Product Image | Description | Power Cord | Product Number |
|---|---|--------------------------------------|--|
|  | SMI-10GRT-SFP - Managed 10 Gigabit Media and Rate Converter: 10GBASE-T (RJ-45) [100 m/328 ft.] (CAT6A or better) to fiber 10GBase-X or copper 10GBase-CX1 SFP+. SFP+ slot (empty). AC Adapter included | USA UK EU SA AUS NONE | 05071354 05071351 05071352 05071355 05071356 05071358 |

Accessories

| Accessory Image | Description | Model Number | Accessory Number |
|---|--|----------------------|------------------|
|  | DIN Rail Mounting Kit for 4 & 8 port IOLAN SDS/STS wall mount models, all Stand-Alone Media Converters and all Stand-Alone Ethernet Extenders. Two of these brackets are required for the 8 port STS8-D model. | 4 DIN Rail Mount Bkt | 04030840 |
| | Standalone media converter wall / rack mount bracket | MCSM | 05059999 |