

RIVO MULTITRADE OPTICAL SYSTEMS

Gigabit optical modem connected to 10 Gigabit switch

Waterproof and dustproof, reliable and safe

The outer classic sink design allows the sealing ring of the cabinet and door to be seamlessly compressed without leaving a trace of gaps



Overview

To implement different 10GbE physical layer standards, many interfaces consist of a standard socket into which different physical (PHY) layer modules may be plugged. PHY modules are not specified in an official standards body but by multi-source agreements (MSAs) that can be negotiated more quickly. Relevant MSAs for 10GbE include XENPAK (and related X2 and XPAK), XFP and SFP+.

Key Takeaways

A Gigabit optical modem can connect to a 10 Gigabit switch, but the connection will operate at the modem's maximum speed of 1 Gbps. Compatibility and Speed

When connecting a Gigabit (1 Gbps) optical modem to a 10 Gigabit switch, the devices will auto-negotiate to the highest common speed, which in this case is 1 Gbps. The switch's 10G capability will not increase the speed of the connection from the modem; it will simply allow the switch to handle other 10G devices at full speed. This setup is fully compatible as long as the switch supports standard Ethernet speeds (10/100/1000 Mbps) on its ports.

Cabling Considerations

- Fiber connections: If the modem uses an optical interface (e.g., SC/APC connector for XGS-PON), ensure the switch has a compatible SFP/SFP+ slot or a media converter to connect fiber to copper RJ-45 ports.

- Copper connections: For RJ-45 Ethernet, use CAT 5e or CAT 6 cables for 1 Gbps, and CAT 6A or CAT 7 if you plan to upgrade to 10 Gbps in the future .

Multi-Gig and Auto-Negotiation

Some switches have multi-gig ports that support 1, 2.5, 5, and 10 Gbps. If your switch port is 10G-only, it may not support 1 Gbps connections, so verify the port specifications . Most modern switches, however, support auto-negotiation for 1 Gbps devices.

Performance Implications

- The bottleneck will be the modem's 1 Gbps speed. Even if the switch supports 10 Gbps, the connection to the modem cannot exceed 1 Gbps.
- Internal LAN traffic between devices connected to the 10G switch can still operate at 10 Gbps, so upgrading other devices or NAS units will benefit from the switch's higher speed .

Recommendations

- Check switch port type: Ensure it supports 1 Gbps auto-negotiation if connecting a Gigabit modem.
- Use proper cabling: Fiber or copper depending on the modem interface.
- Consider future upgrades: If you plan to upgrade to a 10G modem, using CAT 6A/7 or SFP+ ports will allow full 10G speeds.
- Optional media converter: If the switch lacks fiber ports, a media converter can bridge the optical modem to the switch's copper port. By following these guidelines, your Gigabit optical modem will work seamlessly with a 10 Gigabit switch, with the connection limited to 1 Gbps while still allowing full 10G performance for other devices on the switch .

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