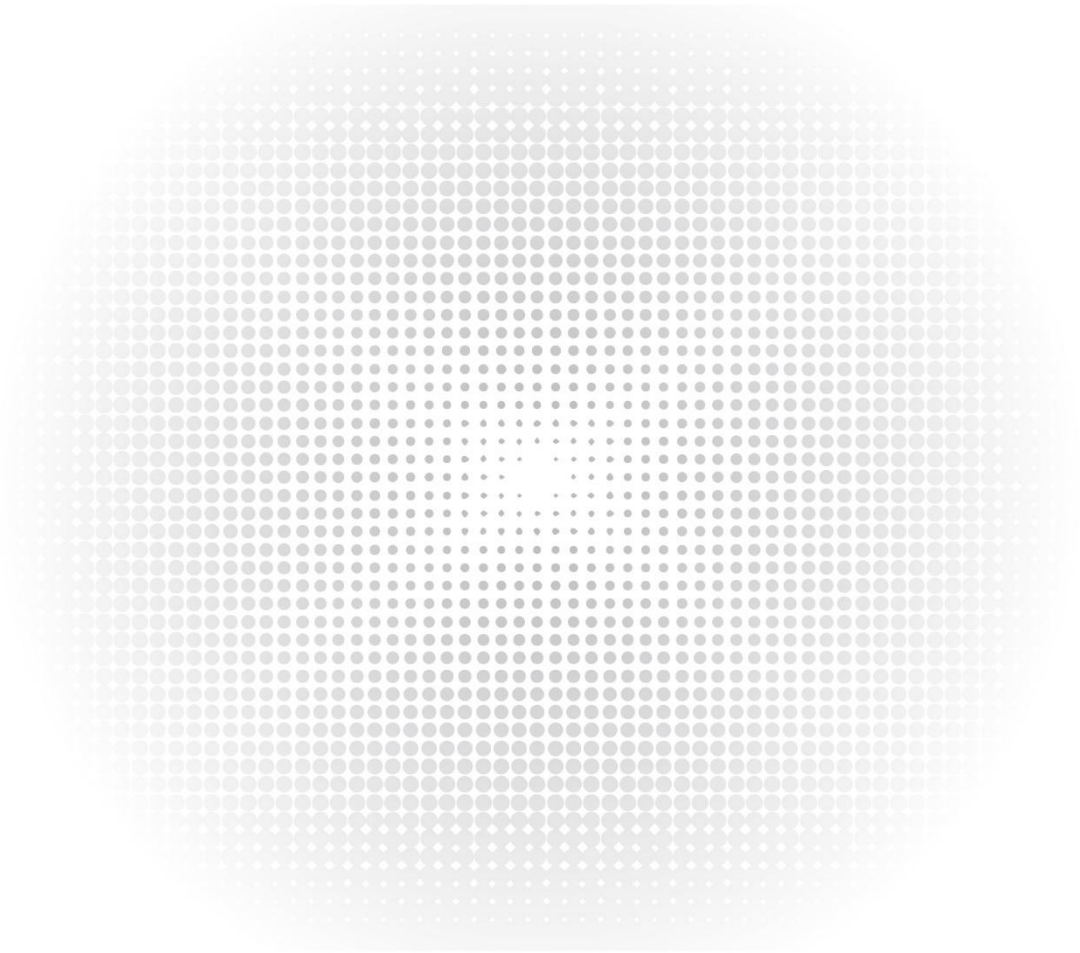
Media Converters

Troubleshooting Manual



Troubleshooting Manual

Chapter 1 Troubleshooting

1.1 The power light is not on

Power failure.

1.2 If the LOS light is on, there must be one of the following faults:

(a) The fiber optic cable from the machine room to the user end has been cut.

(b) The SC pigtail is not properly plugged into the slot of the fiber media converters or has been disconnected.

1.3 If the Link light is off, the following situations may be present:

(a) Check whether the fiber optic line is broken.

(b) Check if the fiber optic line has too much loss, exceeding the receiving range of the equipment.

(c) Check whether the fiber interfaces are correctly connected, with the local TX connected to the distant RX, and the distant TX connected to the local RX.

(d) Check whether the fiber connectors are properly inserted into the device interface, whether the jumper type matches the device interface, whether the device type matches the fiber, and whether the device transmission length matches the distance.

1.4 If the circuit Link light is off, the following situations may occur:

(a) Check if the Ethernet cable is broken.

(b) Check if the connection type matches: use crossover cables for connections between network interface cards and routers, and straight-through cables for switches and hubs.

(c) Check if the devices' transmission rates match.

1.5 Severe network packet loss may be due to the following faults:

(a) The electrical port of the media converter is not compatible with the network device interface, or there is a duplex mode mismatch between the interfaces at both ends of the connection.

(b) There is an issue with the twisted pair cable and the RJ-45 connector, which should be tested.

(c) Fiber connection issues may arise from misalignment of patch cords with device interfaces, or mismatch of fiber types between pigtail, patch cord, and coupler.

1.6 After connecting the fiber optic media converter, the two ends cannot communicate

(a) The fiber optic cables are connected in reverse, with the TX and RX fibers interchanged.

(b) The RJ45 interface is not connected correctly to the external device (pay attention to straight-through and crossover wiring.

(c) The fiber optic interfaces (ceramic ferrules) do not match. This fault is mainly observed in media converters with 100M optoelectronic mutual control capabilities. For example, a tail fiber with an APC ferrule connected to a media converter with a PC ferrule will not be able to communicate normally, but connecting to a media converter without optoelectronic mutual control function will not be affected.

1.7 Intermittent connectivity issues.

(a) This may be due to excessive optical path attenuation. In this case, an optical power meter can be used to measure the received optical power. If it is near the receiver's sensitivity range, within a 1-2dB range, it can be essentially judged to be an optical path fault.

(b) It could be a malfunction with the switch connected to the media converter. In this case, replace the switch with a PC, directly connecting the two media converters to the PC. PING from both ends. If the intermittent connectivity issue does not occur, it can be reasonably inferred that the switch is faulty.

(c) It might be a fault with the media converter. At this point, connect the media converter ends to PCs (without going through a switch) and conduct a PING test. If there are no problems, then transmit a large file (over 100MB) from one end to the other and observe the speed. If the speed is very slow (a file under 200MB taking over 15 minutes to transfer), it can be essentially judged to be a media converter fault.

1.8 The device crashes after communicating for a while, meaning it can no longer communicate. A restart resolves the issue.

This phenomenon is generally caused by the switch, which conducts CRC error checking and length verification on all received data packets. Packets found with errors are discarded, while correct ones are forwarded. However, during this process, some erroneous packets may pass through both CRC error checking and length verification undetected. Such packets are neither forwarded nor discarded, and they accumulate in the dynamic buffer, unable to be sent out indefinitely. When the buffer fills up, it can cause the switch to crash. Since restarting the media converter or the switch can restore normal communication, users typically perceive the problem to be with the media converter.

1.9 Media converters Testing Methods

If a problem with the media converter connection is identified, please conduct the following tests to pinpoint the cause of the fault:

(a) Near-End Test:

PING between the computers at both ends. If they can PING each other successfully, this implies that there is no issue with fiber media converters. If the near-end test fails to establish communication, then the fault can be attributed to the fiber media converters.

(b) Far-End Test:

If a PING test fails between two computers, it is necessary to check whether the optical path connection is normal and whether the transmission and reception power of the fiber media converter is within the allowable range. If the PING is successful, it proves that the optical path connection is normal. The fault can then be determined to be with the switch.

(c) Remote test to determine the point of failure:

Connect one end to a switch and perform a PING test between the two ends. If there is no fault, it can be determined that the fault lies with the other switch.

Chapter 2 Precautions

Fiber media converters have various classifications, but in practical use, the most important distinction is based on the type of optical connectors, such as SC connector fiber media converters and FC/ST connector fiber media converters. When using fiber media converters to connect different devices, it is essential to pay attention to the differences in the ports used.

2.1 Connecting the fiber media converter to a 100BASE-TX device (switch, hub):

(a) Ensure the length of the twisted pair cable does not exceed 100 meters.

(b) Connect one end of the twisted pair cable to the RJ-45 port (Uplink port) of the fiber media converter.

(c) Connect the other end to the RJ-45 port (Common port) of the 100BASE-TX device (switch, hub).

2.2 Connecting the fiber media converter to a 100BASE-TX device (network interface card):

(a) Ensure the length of the twisted pair cable does not exceed 100 meters.

(b) Connect one end of the twisted pair cable to the RJ-45 port (100BASE-TX port) of the fiber media converter.

(c) Connect the other end to the RJ-45 port of the network interface card.

2.3 Connection to 100BASE-FX with a fiber media converter:

(a) Ensure the length of the fiber optic cable does not exceed the distance provided by the device.

(b) Connect one end of the fiber optic cable to the SC/FC/ST connector of the fiber media converter.

(c) Connect the other end to the SC/ST connector of the 100BASE-FX device.

Additionally, it is important to note that many users believe when using a fiber media converter, as long as the length of the fiber optic cable is within the maximum supported distance of single-mode or multi-mode fiber, it can function normally. This is actually a misconception. This understanding is only correct when the connected devices are all full-duplex devices. When there are half-duplex devices, there are limitations on the transmission distance of the fiber optic cable.