

Linux optical port switch cannot learn



Overview

How To View Optical Transceiver Information On Network Cards In Special commands are applied to check transceiver data on switches, and Linux systems also.

Key Takeaways

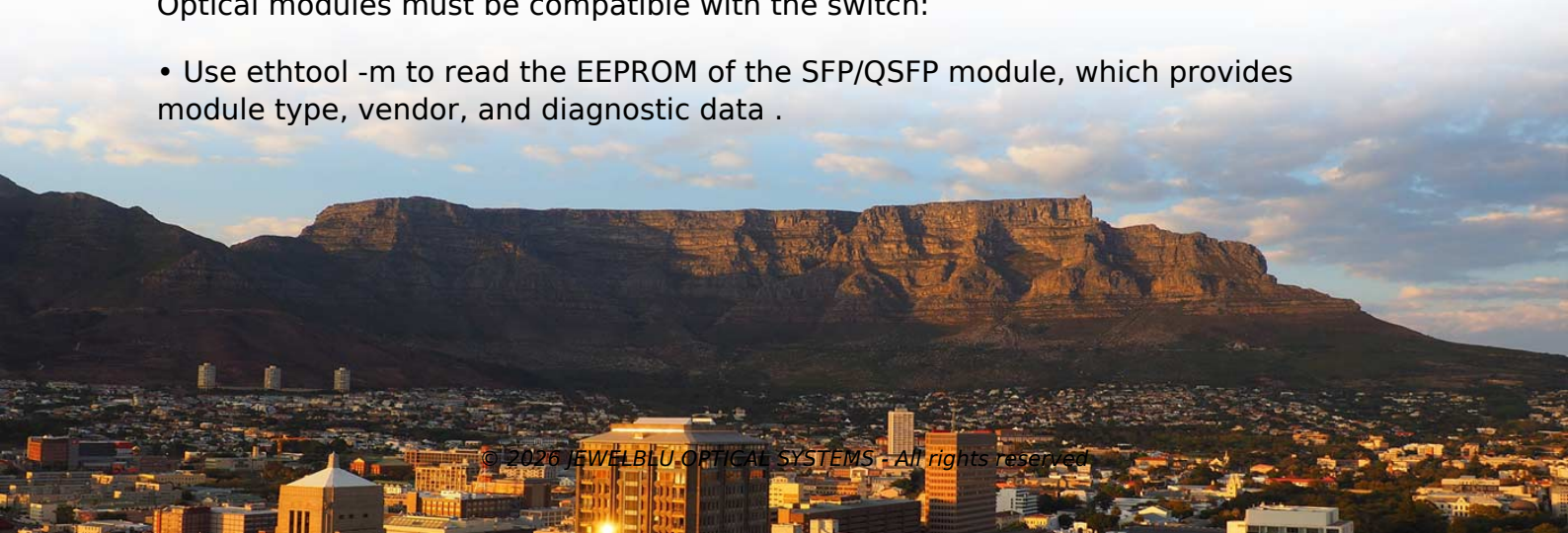
If a Linux optical port switch cannot learn, the issue is often related to link detection, transceiver compatibility, or layer 1 hardware problems, which can be diagnosed using ethtool and transceiver monitoring tools. Check Link Status and Port Configuration

Start by verifying whether the port detects a link:

- Run ethtool to check link status, speed, duplex, and auto-negotiation settings. A healthy link should show Link detected: yes and the correct speed and duplex .
 - Ensure the port is enabled and configured correctly in the switch software. Some Linux switches, like Cumulus Linux, use switchd to synchronize hardware and kernel settings for speed, auto-negotiation, and link detection .
- Verify Transceiver and Module Compatibility

Optical modules must be compatible with the switch:

- Use ethtool -m to read the EEPROM of the SFP/QSFP module, which provides module type, vendor, and diagnostic data .



- Check for DDM (Digital Diagnostic Monitoring) values such as Tx/Rx optical power, temperature, and voltage. Abnormal readings can prevent the switch from learning the port .

- Some switches may reject non-certified modules or show Unsupported for media type, which can block learning .

Layer 1 Troubleshooting

Physical layer issues are common causes:

- Inspect cables and connectors for damage or dirt, as optical signals are sensitive to alignment and cleanliness .

- Confirm the SerDes lanes and port breakout configuration match the module type and speed. Misconfigured lanes can prevent proper link establishment .

- Active optical modules require proper TX signal power from the port; insufficient power can prevent the module from transmitting correctly .

Additional Diagnostics

- Use `ethtool -S` to check interface statistics, including packet drops or errors, which may indicate hardware or signal issues .

- On SONiC or Linux kernels with `optoe` driver support, ensure the driver can access the transceiver EEPROM correctly. Misconfigured I2C addresses or paging issues can prevent module detection .

Summary

To resolve a Linux optical port switch that cannot learn:

- Verify link status with `ethtool` and ensure the port is administratively up.

- Check transceiver compatibility and DDM diagnostics.

- Inspect physical layer components, including cables and SerDes configuration.

- Review interface statistics for errors or drops.

- Ensure the Linux driver (e.g., `optoe`) can properly read the transceiver EEPROM.

Following these steps usually identifies whether the problem is hardware, module, or configuration-related, allowing corrective action to restore learning on the optical port.

Article Content

Troubleshoot Layer 1 | Cumulus Linux 4.4

High Speed Ethernet TechnologiesAuto-NegotiationFECSignal IntegrityL1-Show CommandModule InformationTroubleshoot Layer 1 ProblemsTroubleshoot Down Or Flapping LinksTroubleshoot Physical Errors on A LinkTroubleshoot Signal Integrity IssuesSignal integrity issues are often a root cause of different types of symptoms: 1. If the signal integrity is very poor or non-existent, the link stays down. 2. If the signal integrity is too marginal, the link might flap with or without FEC on. 3. If the signal integrity is marginal, the link might display physical error counts. Depending on the li...See more on docs.nvidia NVIDIA Docs

Monitoring Interfaces and Transceivers Using ethtool

Monitor Switch Port SFP/QSFP Hardware Information Using ethtool To see hardware capabilities and measurement information on

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