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Port Speed and Duplex Settings on Ethernet devices

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Question

- How should Ethernet port settings such as speed and duplex be configured on Ethernet devices?
- What happens when Ethernet port settings are mismatched?

Answer

Ethernet devices, such as computers, switches, ENBT's, PLC5's, and SLC's either have fixed or selectable settings on the Ethernet ports.

The most common source of errors on an Ethernet network is a configuration mismatch for two ports connected by an Ethernet cable. When a device such as a 1756-ENBT is connected to a switch, both the 1756-ENBT and the switch port speed and duplex settings must match. Since many devices are configured for autonegotiate out of the box, autonegotiation is typically the easiest to use. By setting both devices to autonegotiate, they will communicate to establish the optimal settings based on their capabilities. If a device does not support autonegotiate, such as an older PLC5, then the switch should be forced to the same settings on its port. The ports should also be forced if autonegotiation is not desired.

Older PLC5's operated at 10 Mb half-duplex. In this case, the switch port should also be forced to 10 Mb half-duplex. They will not talk if the baud rates are mismatched.

Note: When a mismatch occurs and one of the connected ports is set to autonegotiate, this device will default to half-duplex. If the other connected device is configured for full-duplex, this can cause a major degradation in performance and may result in dropped connections.

For getting optimal performance, both sides connected by a cable must have matched settings. Failure to do this can result in frequent communication failures and degraded performance.

A PLC5 at half duplex can talk to a 1756-ENBT at full duplex. This is allowed. However, the port on the switch connected to the PLC5 needs to be forced to 10/half. The port of the switch connected to the 1756-ENBT module needs to match the ENBT settings. The ENBT settings can be autonegotiate. The 1756-ENBT does not need to match the PLC5.

In short, different devices can operate at different speeds and duplexes. Any port, however, must match the device that is plugged into it to avoid communication issues. Different ports on the same switch do not have to match each other.

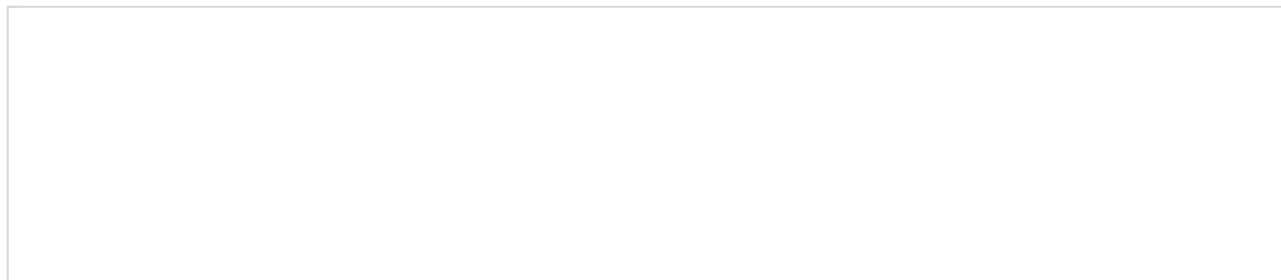
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