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Twisted Pair Ethernet: Requirements and Limitations

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TOPIC -----

I'm debating use of Ethernet and Token Ring in my environment. I'd like some information about Ethernet specifications, especially regarding wiring limitations, termination requirements, and so on.

My environment already has IBM Type 2 wiring installed, with some runs up to 350 feet. The wiring was done with Token Ring in mind, and it seems that it should support Ethernet just fine, but some hard documentation would be nice.

Is there a document somewhere that summarizes the requirements/limitations of Ethernet wiring?

DISCUSSION -----

Ethernet and Token Ring are industry standards, and you can find this information everywhere:

- IEEE standard documentation
- LAN text books

We conform to these standards, and there's no need for separate documentation on our Ethernet implementation. They would be the same as industry standards.

The Token Passing Ring 802.5 standard only specifies shielded twisted pairs, having a characteristic impedance of 150 plus or minus 15 ohms, although other types are implemented in practice. IBM defines its allowed cable types by number. Your Type 2 wiring is supposed to be two shielded, solid wire, twisted pairs, 22 AWG, plus four twisted pairs of solid 26 AWG wires added between the shield and the insulating cable sheath.

Many vendors developed and began marketing products prior to the finalization of the 10BASE-T standard. As a result, some interoperability problems may occur if you use hardware from different vendors. You should investigate the twisted pair Ethernet architecture you want to use, such as the hierarchical topology of SynOptics Communications, Inc's LattisNet or the flat topology of AT&T's StarLAN. Each vendor should be able to provide you with the

following:

- Electrical specifications for the cable used with their equipment
- A list of approved cables
- Limitations between concentrators and repeaters
- Workstations
- Inspection and testing any existing cable wiring

We also suggest that you search the Technical Info Library using the search words "Ethernet and twisted pair" to get more information about the issues.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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