

Re: Ethernet card

Source: <http://sci.tech--archive.net/Archive/sci.electronics.repair/2005-11/msg00659.html>

- *From:* "Bob Shuman" <reshuman@xxxxxxxxxxxxxxxxxxxxxx>
 - *Date:* Sat, 12 Nov 2005 12:20:58 -0600
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I read the Cisco page (mostly marketing spin) and found the following sentence that answered my question:

"1000 Mbps data rates are achieved by sending and receiving a 250 Mbps data stream over each of the four pairs simultaneously (4 X 250 Mbps = 1 Gbps)."

This implies that the 4 twisted pairs are simultaneously both sending and receiving separate 250Mbps data streams giving the 1000Mbps throughput in both directions. The picture showing hybrids in each twisted pair reinforces that each wire pair is indeed full duplex and provides additional detail on the physical link rates. This is what I take away from this, but if I have misunderstood, please correct me.

On your preference for optical fiber or even coaxial copper cable, yes, Fiber does seem to be better for many applications since it provides separate send and receive paths making it more immune to noise and increasing the allowable distance, especially for Single Mode Fiber (SMF). But, this comes at a high price since the cost of optical GbE interfaces, especially SMF are much more than for the copper RJ45.

RJ45 GbE seems to be the best way to interconnect network elements that are in close physical proximity (i.e. the same data cabinet) since it can be done very cheaply. As the article also explained, it is also a good way to increase bandwidth to end users when Cat5 already exists in a facility's wiring closets to desktops.

This was a very good thread. Thanks for correcting the initial reply and providing these links.

Bob

"gb" <onw9mapsgb@xxxxxxxxxxxxxxxxxx> wrote in message
news:zM2dnTGzDe6g5ujeRVn-qw@xxxxxxxxxxxxxxxxxx
> "Bob Shuman" <reshuman@xxxxxxxxxxxxxxxxxxxxxx> wrote in message
> [news:dI27tm\\$130@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:news:dI27tm$130@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)
>> Simple question on your excellent response which answers the 2 pair vs.
4
>> pair question:
>>

Re: Ethernet card

>> 100BaseT is 100Mbps full duplex. This means it can pass 100Mbps in both
>> directions simultaneously. This is done by using a pair of wires in
each
>> direction (uplink=send/downlink=receive). You indicate that GbE is a
full
>> 1000Mbps and uses the 4 pairs which each send 250Mbps. Does this imply
>> that
>> GbE is now half duplex or that the send uses 2 pairs and the receive
>> another
>> pair? What is the maximum SIMULTANEOUS transmission rates in the uplink
>> and
>> downlink?

> Bob –

>

> 1000BASE-T is one (1) of the four (4) physical layers or transceivers

> defined by the two GbE (Gigabit Ethernet) standards:

> IEEE 802.3z or 1000BASE-X and IEEE 802.3ab or 1000BASE-T.

>

> 1000BASE-X supports:

> Multimode fiber media

> Single-mode fiber media and

> A short-reach, 25-meter Copper media jumper.

>

> Because most of the cabling installed inside buildings today is Category 5

> copper, the IEEE 802.3 1000BASE-T standard supports GbE operation over the

> Category 5 cabling systems installed according to the specifications of

> ANSI/TIA/EIA-568A (1992, revision A in 1995).

>

> I will let you read the Cisco web page, Figure 7 answers your question

>

http://www.cisco.com/en/US/tech/tk389/tk214/tech_digest09186a0080091a86.html

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• Follow-Ups:

◆ **Re: Ethernet card**

◇ From: gb

• References:

◆ **Re: ethernet card**

◇ From: gb

◆ **Re: ethernet card**

◇ From: Geoffrey S. Mendelson

◆ **Re: ethernet card**

◇ From: CJT

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- ◆ **Re: ethernet card**
 - ◇ From: CJT
- ◆ **Re: ethernet card**
 - ◇ From: CJT
- ◆ **Re: ethernet card**
 - ◇ From: P. Thompson
- ◆ **Re: ethernet card**
 - ◇ From: CJT
- ◆ **Re: ethernet card**
 - ◇ From: James Sweet
- ◆ **Re: Ethernet card**
 - ◇ From: gb

- Prev by Date: **Sony TV KV-32XBR95S, horizontal light bands**
- Next by Date: **Re: Sony TV KV-32XBR95S, horizontal light bands**
- Previous by thread: **Re: Ethernet card**
- Next by thread: **Re: Ethernet card**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**