Re: 10Base−T vs. 100Base−T (discussion)

Source: http://coding.derkeiler.com/Archive/General/comp.arch.embedded/2004−11/0784.html

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From: Don (*none_at_given*)
Date: 11/16/04

Date: Mon, 15 Nov 2004 17:56:25 −0700

Grant Edwards <grante@visi.com> wrote in message
news:41942b33$0$95601$a1866201@visi.com...
> *On 2004−11−12, Don <none@given> wrote:*
>
> > *You're assuming there are only two devices on the wire −− the*
> > *unit in question and "something else" talking to it.*
>
> *That's pretty much a requirement for 10BaseT and 100BaseT.*
> *They are both point−to−point connections.*

The point was, the *network* may have more than two nodes
in/on it.

> > *I.e. if you have several devices sharing the wire −− in one or*
> > *more applications −− then the load any one device sees may be*
> > *considerably less (yet still bang the network pretty hard*
> > *overall).*
>
> *That's only going to be a consideration if you're using a dumb*
> *hub rather than a switch, and dumb hubs are really hard to find*
> *these days.*

I don't care how smart your switch is. If 30 nodes all want
to talk to "node 0", the bandwidth of the radial out to node 0
sets the performance of the entire network. And, the reverse
(my comment above) is true −− if node 0 is driving the performance
of the network, then the load that any of the other (30, in this example)
nodes sees is correspondingly throttled by that node.

In many of the distributed applications that I have encountered,
this is often the case. "Node 0" might be a SCADA device
(e.g., often, a "PC" watching / controlling a network of field devices).
Those devices are often dumb and slow. Yet, with enough of
them on the wire, the "PC" ends up as the bottleneck despite the
fact that other nodes are transfering data at ridiculously low rates.

That SCADA function may sit behind a "gateway" (explicit or
otherwise) and, AFTER−THE−FACT impose limits on the traffic by its

mere presence.

Also, there seems to be a steady trend towards replacing
wired networks with wireLESS technologies. Suddenly,
the fact that a switch could give *apparent* bandwidth
multiplication disappears as the "network" reverts to more
of a true star topology −− with, potentially, other UNEXPECTED
devices competing for bandwidth. Sure you can design with
the *expectation* of a particular communication technology;
but, eventually find yourself faced with the aspect of that
"communication subsystem" being increasingly treated like
a commodity item −− swapped out by marketeers for whatever
is "en vogue" down the road.

So, unless you want to "special case" the *types* of traffic you
are going to tolerate and the *virtual* topology of the network
(a function of the application domain), expecting a switch to
magically alter the apparent available bandwidth is wishful thinking.

And, unless you are designing a *truly* distributed application
with roughly level network loads, you are going to find some
node(s) drive the overall performance of the network. And,
indirecly, *limit* the effective data rates for all other nodes
regardless of the technology and topology used.

−−don