Data Transmission, Jordan Snelling, 9/10/12

Local Area Network:

A Local Area Network is something that can and might be connected around the house, since the connection to the other computers are “linked” in such as fashion, that allows them to send and receive data between the computers whether they be Linux, Mac OS X or Windows.

Data generally free flows along the network, since the LAN IP Address can be:

- 192.168.2.1-100
- 192.168.1.1-100

But sometimes the inbuilt firewall will block access.

And if the machine is truly local, then it would be the same LAN IP if there were no other uses on that LAN / WAN, or;

127.0.0.1

The advantages to Local Area Networks are:

- Intruders cannot break into the network if it is not wired into the Internet.
- Printers can be shared without buying several for each end user.
- More cost effective to send a message. Rather than sending it through the Internet.

The disadvantages to a Local Area Network is:

- Large amounts of data can tie the network up and make it difficult to send data if a “huge” (2.5Gb) file is being sent through.
- Some users may complain of the lack of Internet, since it ‘might’ not be connected to the Internet.
- Once a virus, worm or trojan gets in, it quickly spreads among the Local Network quickly.
- News is not sent instantly to the users, so users MUST, use a WAN to find out about company events and such.

General Networking:

General Networking is a term for WANs, LANs and other types of networking. Since it is used as a general term, the user may find themselves confused by WANs, LANs and the like.

Because of the “one term” suits all approach with this, it can also mean that it might be a WAN and LAN as a whole, this confusion is easily sorted by using the terms LAN and WAN.

Wide Area Network:

These are generally what people call the “Internet”, this very Google Document is being read from a WAN right at this second, or perhaps from a LAN, “if” it has been downloaded as a Word Document.

The Internet generally means this:

“A huge network that can and will span the globe, using satellite, wires and wireless connections to send data from the US, to the UK and from other countries in the world.”

There are many advantages to the Internet:

- An almost indefinite amount of information.
- Can find out about world events without having to rely on another form of electronic communication.
- Access a computer from home, while you are on the job.
- Keep files away from LAN snoops, so that your private info can remain a secret.

However, the WAN can also have disadvantages:

- Viruses, trojans and worms spread through the Internet, hence the term; “virus.”
- Hackers can gain access to your private LAN, since it is connected to the Internet, but only if it has the firewall disabled.
- Any information may, or may not be technically correct.

Network Interface Card:

This card translates all electronic data and sends it to the right computer, server and LAN/WAN attached to it, through mediums such as single wires and fibre optic.

Some cards can carry up to several terabits of information at once, since the binary is sent at the speed of light, or at a very close speed. However, these cards cost a high price, but some of the bonuses that come with that card can and sometimes will outweigh the price, or monetary value.

Some NICs, can be wireless, (think of your wifi dongle), some hardwired into the house, buildings and the buildings internal power sockets.

Serial Data Transmission VS Parallel Data Transmission.

Serial Data Transmission:

This type of protocol sends the data bit by bit, so that it sometimes, but not always is a guaranteed network bottleneck.

If I had this single byte:

01010101; and wanted to send it via this method, it would essentially do it like this:

0
01
010
0101
01010
010101
0101010
01010101*

*Assumes data is the same throughout.

Which may take time depending on the amount of bytes to send, via the wireless or wired connection.

Advantages:

- Very similar to Packet switching.
- Speed depends on the network “bottleneck”.

Disadvantages:

- Data can be intercepted.
- Can be slowed down by the network “bottleneck”.

Parallel Data Transmission:

This method sends the data in a similar fashion to circuit switching, which can travel across several LAN / WAN wires.

If I were to send:

10101010; it would re-appear like this:

10101010. Rather than sending the data bit by bit, it sends the whole byte on many wires,

normally 1 bit per wire.

Advantages:

- Difficult to trace the data.
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