Networking A Small Business Mini Primer

This PDF is designed to give you a few pointers to aspects of networking in a small business environment. It holds true for any small organisation including a Home Office environment. It's not going to tell you all you need to know, but it will give you some idea of the things that you should be aware of.

Since technology moves on so quickly, there may be some aspects of this PDF which become outdated. Sorry about that, I'll try to update when necessary, but feel free to comment via the website at www.woodcom.co.uk

Topics included;

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What level of security do I need.

This is dependant on several things;

1. Do you have personal or confidential information that you wish kept between you and the subject(s).It is required by law that any information kept on computer, be disclosed to the subject of that information on request, but you must keep personal information confidential.

2. Do people other than staff members have access to files across the network.

3. Do you have internet connection to one of the network computers.

Originally Windows networking had little in the way of security for individual computers, but even so could still limit access to disks and directories shared over the network. As Windows Operating Systems developed to specifically allow simple networking, it became a lot easier to set up a small workgroup network which was more secure. As long as the option to logon to the computer is chosen rather than switching between users or worse still no defined users or logon, then most would-be intruders would give up. The thing to remember with Windows is that by and large, ease of use tends to equate to lack of security.

If you have a full server based network, such as Windows Server 2008, NetWare and Unix, the degree of control of access is much better, but with higher capital and running costs, with the exception of Linux which can be free. If you want to go down the Linux route then Ubuntu is probably your best bet, although you need to know it's a very steep learning curve if you have been brought up on Windows. Having said that, a client has a database written in php, using MySQL and running on Apache on Ubuntu which they access internally via

their web browser. Which means that any changes made to the interface are made on the server rather than having to be rolled out to all the clients. It's neat and it works, although a tad off-topic!

In the end, the choice comes down to the cost versus security need. Often the cost wins out initially, only for the savings to be wiped out by needing to change the whole network at a later date, due to expansion or increased security requirements. As with most I.T. taking time to plan in future requirements can save a lot of money further on down the line.

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What sort of cabling is required.

The four main types of network cabling are known as 10Base2, 10BaseT, 100BaseTX and GbE. The first two are really obsolete, but for the sake of completeness, in order they are;

10Base2
10Mbits throughput using thin coaxial cable - this is daisy-chained from one computer to the next with terminators on the end. Requires one card with T piece in each computer, co-ax cable, and two Ohm Terminators. The cheapest option but if you are still using it, you really shouldn't unless you have very compelling reasons such as maybe a hostile environment.

10BaseT
10Mbits throughput using UTP (Telephone-like) cable - Requires one card in each computer, a hub to wire all computers back to, and Cat3 or 5 cable. Normally this will be connected through wall plates with hidden cabling. If only two computers are to be connected, a hub is not required, but a specially wired cross-over cable is. Less prone to cable problems than 10Base2 but with no advantages over 100BaseTX.

100BaseTX
100Mbits throughput using UTP (Telephone-like) cable - Requires one card in each computer, a hub to wire all computers back to, and Cat5 or Cat6 cable. All the components are more expensive, and the cabling has to be installed to at least Category 5 standards, not really a DIY job.

GbE
1000Mbits throughput using several different cable types, including optical fibre (1000BASE-X), twisted pair cable (1000BASE-T), and balanced copper cable (1000BASE-CX). Unless you have the need to move a lot of information quickly and are willing to pay for the privilege, you probably won't be looking at this option.

Which you are using depends on what you inherited, because if you are not using 100BaseT as a minimum you really should be.

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What about wireless.

Having a wireless office is a viable option, although for a number of reasons, not necessarily the best. The potential issues start with security. Most wireless hubs come with some sort of security switched on as a default. If you use wireless networking you absolutely must make sure that your security is switched on. By security, I mean that you should have an absolute minimum of WPA enabled. If all you have is WEP then it's just about better than nothing as long as you realise that it's not too hard to crack and apply other security measures. Other measures would include MAC filtering and turning off the SSID Broadcast. These cause issues of their own, particularly if you have visitors with their own laptops, iPhones etc who want to connect to the wireless network.

Although it's getting better, speed is still an issue. You won't get the same throughput with wireless that you will get with a 100BaseT wired network. It is getting faster with every new ratified standard, but isn't there yet.

As previously mentioned, connecting to a WiFi access point can be tricky as there are no standard ways to do it. It sometimes seems that every computer manufacturer has their own way of enabling and configuring wireless access. There is one thing I have found, if you can't connect using the manufacturers utility, then letting Windows manage the connection will normally work. And vice versa.

Finally you will sometimes find that it just plain doesn't work for no good reason other than the kit from two different manufacturers won't talk to each other. Fortunately this happens less now and tends only to be an issue when you are adding WiFi to a non-enabled computer.

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Do I want or need an internal email service.

For even relatively small office situations you may find that having a fully featured mail server such as Microsoft Exchange is beneficial in keeping track of staff via their Calendars as well as providing email. There is a significant cost overhead for this and you would need to conduct a full feasibility study before deciding.

Otherwise whether internal email will help you depends a lot on the size of the current site and whether all staff members are in the office at the same time. Aside from Exchange or similar, it can be easily set up on a network of Windows computers using one of many small email server programs designed for the purpose. Some have the option of downloading from external mail servers at specified intervals.

Main benefits

- time-lapse communication
- staff pick up email when they are in the office
- messages are held until deliberately deleted

Main disadvantages

- you will probably need to keep a computer dedicated to the purpose
- if emails are kept centrally, backups become very important
- more administration

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How much time will be spent on administration

This is another of the 'How long is a piece of string?' type questions. A simple network, once installed and running, should not normally give many administrative problems. Having said that we don't discount the unfailing ability of computers to do things they shouldn't! Depending on the Operating System, areas where administration may be needed are;

- Setting up and maintaining email accounts.
- Backing up any centrally held files.
- Adding or changing user rights and passwords.

