Compare and contrast server roles and requirements.

There are many different roles that a server can be in and servers are not always only performing one isolated role but in fact could be performing multiple roles at the same time. Granted this is not an ideal situation primarily because of the specific requirements that are needed for servers to perform their identified roles to the best of their ability.

The Major roles for servers and the requirements for them are as follows:

Web Server:

For the web server the Disk subsystem, the RAM and the NIC would be the be requirements that are vital to its functionality. Your disks and RAM will need to have fast access times to keep up with the demand on the system for content. The CPU is not as important unless your web server is handing its own encryption and decryption then you will want a beefier CPU and the NIC is the gateway in and out so the more speed or individual NICS you have the faster you would be able to take in request and deliver the requested data.

Application Server:

With the Application Server the CPU and the RAM are the most important because the server is doing the processing for the applications that it is hosting and the disk should be quick but it is not the most vital part of the system an likewise with the NIC

Directory Server

You will need the disks to have quick read and write times and you should use multiple of them in a RAID configuration that allows for fault tolerance and performance. You will need multi-core processors especially if the server is doing it’s own encryption. The size of the RAM as I stated earlier is dependent on the AD database and it should be able to hold the database in memory with some to spare.

Database Server

This particular server will be one of the most important assets in your company so you will want to set it up on hard drives that are running in a RAID array that emphasizes redundancy and speed. The CPUs for this system should be as fast as you can buy and there should be multiple CPUs to handle the load of all the queries that are pushed through the systems. The RAM is not the most important part of this server.

File Server

In this server role the main focus is on the actual storage media so you should have large capacity drives that have good read/write speeds set up in a RAID configuration that focuses on redundancy and speed. The CPU and RAM requirements are very much tied to the amount of users that are using the system at the same time to access resources. And while a 1 Gbps NIC is the minimum that I would recommend it can quickly become the bottleneck in the system if you are not careful about scaling.

Print Server

This server role revolves around the memory and CPU you need the memory to hold all of the print jobs that are in the queue and the CPU would also be impacted by the amount of users and will dictate how many print jobs the server can handle. As far as disk space it kind of depends on how much memory is onboard the printers that the print server hosts, the more memory that the printers have the less memory the print server will need.

Messaging Server

Just like the name implies, this server role will host messaging services. Instant messaging, Availability information, voicemail, and collaboration tools. The requirements for this role are based largely on the number of users you have using the system and how active they are. The more active they are the more CPU and RAM they will need and also the more NIC throughput you will need.

Mail Server

The requirements for this server role are very much based on the amount of email generated and received by the users of the system. The more email that is generated and received on the system the more RAM and CPU you will need to handle the traffic. The most often overlooked hardware requirement on this type of server seems to be the Hard drives as most people recognize that they need capacity but fail to realize that speed is also an issue that will turn into a bottleneck as the system is used more and more.

DHCP Server

This server handles passing out the companies IP addresses to the network hosts and as such does not really require a really fast CPU or a lot of disk space what it does need is a pretty decent amount of RAM and a decent NIC to handle the amount of traffic that will come through the server to gain access to the network.

DNS

This server handles translating easy to remember URLs like [www.google.com](http://www.google.com) into IP addresses that computers use to navigate the world wide web. These servers do not require a lot of disk space or CPU power but they do need a decent amount of RAM and decent NIC to handle the flood of queries that will constantly hit it.

So, as you can see every server role has a very specific job and set of preferred requirements to do that job. It is very important that we, as administrators, pay attention to those requirements to get the most out of the equipment that we have on hand.