INTRODUCTION TO SERVERS

Before you start

Objectives: learn the difference between physical server and software server, and why do we need servers at all.

Prerequisites: no prerequisites.

Key terms: network, hardware, service, software, system, fast, workstation, client, efficient, process, request

Server as Physical Hardware

When we say Server, and we are talking about hardware, we are talking about a computer system that is dedicated to provide services on our network. Those computers could be used as ordinary workstations, but we usually reserve servers to provide services to other systems. To fully understand this we have to know the difference between a [Peer-to-Peer netowrk and a Client-Server network](). In Peer-to-Peer networks there are no dedicated servers. In Client-Server networks we have a special computer which has some special hardware, and we call that computer a Server.

Server Requirements

Technically we could use an ordinary workstation and turn it into a server, but if we have many computers on our network, it is possible that our workstation would not be efficient enough. Our server needs to process requests as fast as possible. It also needs to be scalable.

That means that our server needs to be efficient with, for example, 8 clients on the network and it needs to be efficient with 200 clients on a network. It needs to accommodate increasing amount of users without slowing down. Workstation hardware can't deal with that. When we start to talk about 20 users and more, we need to use hardware designed for servers. Server hardware is specialized hardware which can handle a load of requests that's coming from the network. In contrast to workstation hardware, server hardware won't have high-end graphic card installed, because we don't care about video display on a server. We will often have those on workstations. On servers we need fast hard disks, fast network cards, fast CPUs, and huge amount of RAM in order to process requests as fast as possible. Server also has to provide redundancy. The information that is stored on servers is often the most valuable asset of some organization. Because of that that data must be protected at all cost. We need to ensure that the data on our servers is preserved if something goes wrong. There ara various ways to implement redundancy. For example, we could use redundant hard disks, so if one disk goes down, we have our data on another disk. We also don't want that our server to go down for several hours or days. Our users should not even know if we have problems with our server. To accomplish that we could install redundant systems or set up a cluster of systems that all hold the same information. If one server goes down, another server will step in and continue to provide services in a matter of seconds of even milliseconds. Another issue with server hardware is security. We have to make sure that our server is physically protected from ordinary users. We can't allow someone to just enter our server room and start working on our server or to just walk away with it. Depending on how we use our servers, we might need a high hard disk capacity on our servers. That capacity can range from several gigabytes or terabytes to even hundreds of terabytes of space on our servers. Also, we have to have a lot of RAM in our server to process all requests that our coming from the network.

Software Server

When we say Server, we could also refer to some software. On a physically server we install software that provides network services. Well, all services from a server machine are provided from software to be precise. That way we might refer to our server as Web server, directory server, file server, print server, LDAP server, etc. All that software that run on a server hardware are also referred to as servers.

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