

DIFFERENCE BETWEEN THE NETWORK AND THE WORKSTATION OPERATING SYSTEMS

Before you start

Objectives: Learn the difference between the workstation OS and the network (server) operating system.

Prerequisites: no prerequisites.

Key terms: operating, network, workstation, system, server, windows, design, users, services, run

Workstation Operating System

Workstation operating system are for example, Windows XP, Windows Vista, Windows 7, Windows 8 and similar. Workstation operating system is primarily designed to run applications. Those applications can be text processor, a spreadsheet application, presentation software, video or audio editors, games, etc. Workstation operating systems can run services, but are not really designed for it. By services we mean on services that other users can use on the network. For example, services like DHCP, DNS, FTP, Mail, Web servers, etc. Well, some of that services actually are available on workstation operating systems, but they are not optimized for them. As we know, almost all workstation operating systems support multiple user accounts on the same workstation, but the thing is they are not designed to be concurrent multi-user. Workstation OS are not designed to support multiple users at the same time, meaning they don't do it very well. Most Windows operating systems have a limit of 10 concurrent users at the time. This limit is applied when

we share something on our workstation computer, for example printer or some folder. Only 10 users maximum will be able to utilize our shared resources on the workstation OS. Also, workstation operating systems are designed to run on lower end hardware. That's why the workstation operating system can run on many different and cheap computers. Examples of workstation operating systems include Windows 95, Windows 98, Windows ME, Windows 2000, Windows XP, Windows Vista, Windows 7, Windows 8, and various Macintosh operating systems as well.

Network (Server) Operating System

Network operating system (NOS) is optimized to do a lot of the things that workstation operating system doesn't do very well. NOS is often referred to as the server operating system. The difference between a workstation operating system and the network operating system is that the NOS is designed and optimized to provide network services to remote network clients. NOS can also run ordinary applications like a workstation operating system, but it's not optimized to do it. For example, servers will usually come with relatively low end video board installed. The thing is, most of the time we don't have to look at the monitor on a network server, since we're only running services. We only need to look at it when we make some configuration change. Also, often we will have management utilities or consoles which we can use to control our server from our workstations over the network. We can also have web-based applications that we can use to manage our server. Another key difference is that network operating systems are designed and optimized to support concurrent multi-user environment. That means that with the network operating system we can have lots of users all concurrently using resources on our server. The maximum number of supported users depends on the network operating system we use, but the number can range up to 1000 users or even more. Another feature of most network operating systems is scalability. As we said, workstation operating system is really designed to be used by one person the time. With the NOS the server needs to provide the same level

of performance with an increasing number of users. This is not always possible, because there is always a limit in which the server will start to degrade in its performance. This is usually related to the number of users connected to the server at the same time. To support all this, the NOS is usually designed to run on higher-end hardware. Another issue with network operating systems is redundancy. The thing is, if the network operating system goes down, then all the client computers that rely on that server stop working. Therefore we need redundancy built into the system. On typical workstation operating system, we usually have only one hard drive, or if we have more we usually use those as separate units. On network operating systems we need various measures implemented to provide redundancy. For example, when one hard drive goes down, we need to have another hard drive that has the copy of the information that was on the hard drive that went down. That way our NOS can continue to work even if something happens to the first hard drive. Similar is with NICs, we can have multiple network boards installed on the server system so if one network card goes down, the other one will continue to work.

One of the most important aspects about server operating systems is the security. Workstation OS provides great security for end-users, but it's still not as tight as the security offered by the network operating systems. The reason for that is that with the network operating system were providing services to hundred or thousands of concurrent users. Therefore security is critical. We need to define who can access the network operating system and what can they do inside the NOS. To provide the security feature NOS will provide some kind of authentication service. Workstation operating systems also provide some type of authentication by using user names and passwords which reside on local database on the local system. Server operating system allows us to use some type of directory service, which can be used to represent every resource in the network as an object in the directory tree. That way we can assign permissions to different objects in the tree, which controls what they can do.

Remember

Workstation operating systems are optimized to run applications, and are not intended to provide network services. Workstation OS can support multiple users, but have a limit on how many users can work concurrently. Workstation OS usually designed to run on lower-end hardware. Network operating systems are optimized to provide services to remote network clients. NOS can support many concurrent multi-users, and are highly scalable. They are designed to run on high-end hardware, and rely on redundancy. With redundancy the server can continue to work even if something on it fails. Server OS usually provides and requires high security implementations.

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