Windows Server 2003 Overview

The Windows Server 2003 family consists of four distinct products:

- Windows Server 2003, Standard Edition—The basic edition supporting the majority of features. This replaces the Windows 2000 Server and Windows NT 4.0 Server products.

- Windows Server 2003, Enterprise Edition—The same as the basic edition with support for additional processors, memory, and clustering. Replaces the Windows 2000 Advanced Server product.

- Windows Server 2003, Datacenter Edition—A specialized version of Windows Server 2003 designed with high stability and availability in mind. It replaces the Windows 2000 Datacenter Server product.

- Windows Server 2003, Web Edition—A new edition designed to provide basic Web serving functionality at a more cost effective price than using the full-blown Standard Edition product.

Standard Edition

Standard Edition supports the entire basic set of Windows Server 2003 features. It can act as a domain controller, public key infrastructure (PKI) server and provide core network services such as Domain Name Serving (DNS), Dynamic Host Configuration Protocol (DHCP), and WINS.

The Standard Edition is aimed at the broadest range of applications—in particular file servicing, print serving, and low-demand application serving (Microsoft Exchange

Server, SQL Server, or similar application-led tasks). It can also support basic Terminal Services, although its memory and processor limitations might make it less than ideal for larger terminal services roles. Although it's not capable of full clustering capabilities, it does support network load balancing.

Technically, Standard Edition supports up to four CPUs in a Symmetric Multi Processor (SMP) environment and up to 4GB of RAM. It can also address up to 4TB of disk space.

Enterprise Edition

The Enterprise Edition (EE) is intended for use in many of the same roles as Standard Edition, but adds features designed to improve the reliability and scalability of these services. In particular, Enterprise Edition doubles the number of CPUs supported to eight—the maximum RAM to 32GB. Enterprise Edition is also the first edition to support 64-bit processors.

Enterprise Edition supports Address Windows Extensions (AWE) that enable the operating system to reserve as little as 1GB for use by Windows, enabling the applications to use 3GB of the remaining memory. EE also enables memory to be added while the machine is running (hot-memory) on the hardware system that supports it, as well as non-uniform memory access (NUMA). Some systems use separate memory busses for separate processes; NUMA enables Windows to access these separate memory areas as one complete memory range (hence the support for 32GB of memory on 32-bit processor systems—4GB for each of eight CPUs).

The primary improvements relate to additional functionality. Enterprise Edition supports clustering technology, enabling multiple servers to appear as one machine and automatically take over in the event of a failure. This works with clustered applications such as SQL Server Enterprise Edition and Exchange Server Enterprise Edition, as well as many applications and systems that do not directly include support for clustering technology.

Finally, EE extends the Terminal Services system with the Terminal Server Session Directory, which allows clients to reconnect to a terminal services system supported by a number of terminal services servers. For example, with eight terminal services servers, if one server fails, the terminal services session directory will allow clients to automatically reconnect to one of the remaining servers.

The Enterprise Edition is obviously all about maintaining the stability and reliability of your network services and should be used in situations in which these parameters are most critical to your business needs.

Datacenter Edition

Datacenter is one of two editions of the operating system that are slightly different to the other versions. You cannot buy Datacenter Edition as a standalone product. Instead, it must be purchased as part of a combination of hardware and software from a supplier.

The reason for this is that Datacenter Edition is sold only on hardware that has been specifically designed to work with the Datacenter Edition. Rules are much more strict about which hardware is supported, and specific solutions have to go through a huge range of tests. The aim is to provide a server that can remain up and running for 99.9999% of the time—that's about nine hours of unplanned downtime each year.

The Datacenter program is 100% focused on reliability:

- All hardware included in a Datacenter server must meet rigid Microsoft standards and have passed hundreds of compatibility and reliability tests. This includes everything from the processors and memory to the network cards, disk drives, and other components.

- All the device drivers must be certified and digitally signed by Microsoft. They must also have gone through similar testing procedures to the hardware, and it can take months for a 'new' piece of hardware to be certified for Datacenter Edition use.

- Customers cannot make unauthorized changes to the server hardware. All changes must have passed the same suite of tests. Even when upgrading a four CPU system to an eight CPU system, you can only do so if the hardware has been certified in its eight CPU configuration.

All of this, combined with the typical expense of a server that would make Datacenter Edition worthwhile to install, means that the Datacenter Edition is the least likely to be installed. It's possible that you'll never even come across a Datacenter Edition server in your entire career.

Web Edition

The Web Edition exists to fill a technological and price-related gap. The modern Web server datacenter is not made up of single machines with vast numbers of CPUs and memory. Instead, it's made up of stacks and stacks of smaller, one or two CPU processors with comparatively low amounts of RAM.

In this instance, using the Standard Edition would just be too expensive—in many cases, more expensive than the hardware on which the OS is running. Some companies have instead switched to Linux and Apache, rather than Windows and IIS, to support their Web sites.

Microsoft has responded by producing the Web Edition. It provides enough of the operating system, IIS, and Web Application platform (ASP, ASP.NET) to enable it to serve Web sites and applications. It also includes network load balancing so that it can be used in a quasi-clustered environment.

However, it has also had a lot of technology removed, including routing and remote access, terminal services, remote installation services, as well as services for Macintosh and Active Directory hosting. You can still connect to an Active Directory from Web Edition, but a Web Edition server cannot act as a domain controller.