Server+ Cram Notes

2.0 Server Administration

2.1 Server Operating systems

Server administration refers to the management and maintenance of servers, which are computers or computer programs that provide specific services to other computers or devices on a network. Server administration involves a range of tasks, including installing, configuring, and maintaining server hardware and software, managing user accounts and permissions, monitoring server performance, and troubleshooting issues that arise.

Server administrators are responsible for ensuring that servers are running smoothly and efficiently, and that they are secure and protected from unauthorized access or attacks. They may also be responsible for backing up data, restoring lost or corrupted files, and performing regular updates and patches to keep the server's software up-to-date and secure.

Server administration can be performed by in-house IT staff or outsourced to third-party providers. It requires a thorough understanding of server hardware and software, as well as networking protocols and security best practices.

Minimum operating system (OS) requirements for server computer

The minimum operating system requirements for a server computer can vary depending on the specific server hardware and software being used. Generally, server operating systems require more resources than desktop operating systems due to the increased demands of server applications and services.

Some common server operating systems include:

1. Windows Server: The minimum requirements for Windows Server 2019 are a 1.4 GHz 64-bit processor, 2 GB of RAM, and 32 GB of storage. However, these requirements may vary depending on the specific edition of Windows Server being used.

2. Linux: The minimum requirements for a Linux server can vary depending on the specific distribution being used. For example, CentOS 8 requires at least a 2 GHz processor, 2 GB of RAM, and 20 GB of storage.

3. Unix: The minimum requirements for a Unix server can vary depending on the specific version and distribution being used.

It is important to note that while meeting the minimum requirements is necessary for the operating system to function, it may not be sufficient to support all the applications and services that will be running on the server. In general, it is recommended to have more resources than the minimum requirements to ensure optimal performance and stability.

Hardware compatibility list (HCL)

A hardware compatibility list (HCL) is a document or a web page that outlines the compatibility of computer hardware components or peripherals with a particular operating system (OS) or software application. The list typically includes information on hardware devices such as motherboards, network adapters, storage controllers, graphics cards, and input/output devices.

The purpose of an HCL is to provide guidance to IT professionals, system administrators, or users who are building, upgrading, or maintaining computer systems. By consulting an HCL, they can ensure that the hardware components they are using are compatible with the OS or application they intend to run on the system. This can help prevent issues such as system instability, crashes, or data corruption. HCLs are often provided by the hardware vendors themselves, as well as b

HCLs are often provided by the hardware vendors themselves, as well as by the OS or software vendors. They may be updated periodically to reflect new hardware or software releases, or changes in compatibility status. Some HCLs may also include information on recommended hardware configurations, performance benchmarks, or other useful details.

Performance baseline: Building a baseline of performance data is an important part of any Server management function. The baseline shows what performance is like under certain load conditions, when the server is known to be operating properly. The data can be used as a yardstick for measuring the impact of configuration changes or for capacity planning.

The most appropriate time for making baseline performance measurements is during the normal utilization of the server resources. This will reflect the normal load, and can be used for future reference. If the baseline performance statistics are taken during idle time or during backup time, it may not truly reflect the actual load on the server. Also, it is recommended to regularly monitor the performance and compare the same with baseline measurements, so that any trend can be detected at an early stage.

Note that, if baseline is taken without load (during weekend) then it will not correspond to the normal activity and is not much useful for later troubleshooting (when actual problem arises).

The most appropriate way to ensure that the newly installed servers are performing in expected lines is to make baseline performance measurements and compare with the known results taken on the other servers in the farm. However, the users also form an important constituent in identifying the bottlenecks. Sometimes, the problem may not have been identified early enough if we depend on user feedback for performance tuning.

File system Types:

FAT32: FAT32 is an older file system that's largely relegated to USB flash drives and other external drives. Windows uses NTFS for its system drive, and it's also ideal for other internal

drives. ExFAT32 doesn't have any realistic file-size or partition-size limits. exFAT is a modern replacement for FAT32

exFAT32: It's a file system optimized for flash drives. It's designed to be a lightweight file system like FAT32 without all NTFS's extra features and overhead, but without FAT32's limitations. Works with all versions of Windows and modern versions of Mac OS X, but requires additional software on Linux.

NTFS: NTFS, an acronym that stands for **New Technology File System**, is a file system first introduced by Microsoft in 1993 with the release of Windows NT 3.1.

NTFS is the primary file system used in Microsoft's Windows 10, Windows 8, Windows 7, Windows Vista, Windows XP, Windows 2000, and Windows NT operating systems.

The Windows Server line of operating systems also primarily use NTFS.

ReiserFS: ReiserFS is a general-purpose, journaled computer file system. ReiserFS is currently supported on Linux. The Reiser File System was the default file system in SUSE Linux distributions. Reiser FS was designed to remove the scalability and performance limitations that exist in EXT2 and EXT3 file systems.

Note: A journaling file system is a fault-resilient file system in which data integrity is ensured because updates to directories and bitmaps are constantly written to a serial log on disk before the original disk log is updated. In the event of a system failure, a full journaling filesystem ensures that the data on the disk has been restored to its pre-crash configuration.

UFS: The Unix file system (UFS; also called the Berkeley Fast File System, the BSD Fast File System or FFS) is a file system used by many Unix and Unix-like operating systems.

Virtual Machine File System (VMFS): VMFS is a scalable and high performance symmetric clustered file system for hosting virtual machines (VMs) on shared block storage.

ZFS(Zettabyte File System): ZFS is a local file system and logical volume manager created by Sun Microsystems Inc. for highly scalable storage. **ZFS** runs on Solaris, FreeBSD and Linux variants, and includes built-in data services and features such as replication, deduplication, compression, snapshots and data protection.

Installations
Server installations refer to the process of setting up an operating system on a server computer. There are several installation methods available, each suited for different scenarios. Here is an overview of some installation methods:

1. Graphical user interface (GUI): In this installation method, the OS is installed using a graphical interface. This method is suitable for servers with local access or for users who are not familiar with command-line interfaces.

2. Core: This installation method installs the OS without the graphical interface, which reduces the OS footprint and decreases the attack surface.

3. Bare metal: This installation method involves installing the OS directly on the server's hardware, without any virtualization layer.

4. Virtualized: This installation method involves setting up the OS on a virtual machine hosted on a hypervisor.

5. Remote: In this method, the OS is installed remotely over the network.

6. Slip streamed/unattended: This method involves integrating the OS installation media with updates, patches, and drivers to create an updated installation media that can be used to install the OS without requiring additional updates or patches.

i. Scripted installations: This method involves creating scripts that automate the OS installation process.

ii. Additional drivers: Sometimes, additional drivers are required for the OS to function correctly, especially when dealing with newer hardware.

iii. Additional applications and utilities: This method involves installing additional applications and utilities that are required for the server's specific use case.

iv. Patches: This method involves installing security patches and updates to keep the OS up to date and secure.

7. Media installation type:

i. Network: In this method, the OS is installed over the network, typically using a network boot image.

ii. Optical: This method involves installing the OS from a physical CD or DVD.

iii. Universal serial bus (USB): This method involves installing the OS from a USB drive.

iv. Embedded: This method involves installing the OS on a device with limited resources, such as an Internet of Things (IoT) device.

8. Imaging:

i. Cloning: This method involves creating an exact copy of an existing server's hard drive onto a new one, which can be used to quickly set up multiple servers with identical configurations.

ii. Virtual machine (VM) cloning: This method involves creating a virtual machine image of an existing VM that can be used to quickly deploy identical VMs.

iii. Physical clones: This method involves creating a physical copy of a server's hard drive, which can be used to quickly replace a failed hard drive.

iv. Template deployment: This method involves creating a template that can be used to quickly deploy new servers with a predefined configuration.

v. Physical to virtual (P2V): This method involves converting an existing physical server into a virtual machine image that can be deployed on a virtualization platform.

Partition and volume types

Partition and volume types are ways of organizing and managing storage space on a computer. The following are the three common partition and volume types:

1. Global partition table (GPT) vs. master boot record (MBR): These are two different partitioning schemes used on hard disks. MBR is the older and more commonly used partitioning scheme, while GPT is the newer and more advanced partitioning scheme. GPT supports larger disk sizes and is required for UEFI booting.

2. Dynamic disk: A dynamic disk is a type of disk storage that provides features such as software-based RAID, volume spanning, and disk striping. Dynamic disks are primarily used in Windows operating systems.

3. Logical volume management (LVM): LVM is a method of allocating space on mass storage devices that allows for easy management of disk space. LVM allows administrators to create logical volumes that can span multiple physical disks, and resize them as needed without the need for downtime. LVM is commonly used in Linux operating systems.