9.1.8 NAS Facts

Network-Attached Storage (NAS) is a self-contained storage appliance designed to allow clients to store and share files over the network. It can also be used for backups and media streaming. This lesson covers the following:

- How NAS devices work
- How to install and configure a NAS device
- Clustering and load balancing using NAS devices

How NAS Devices Work

A NAS device is essentially a pared down file server that has been optimized to store files for network users. A NAS appliance has:

- A motherboard with a processor and memory
- One or more NICs
- A RAID array, usually with a terabyte or more of storage space
- A minimal network operating system

A NAS device appears to other network hosts as a file server with shared folders. NAS devices use standard network protocols to provide read and write access to files on the device, including:

- Server Message Block (SMB)
- Common Internet File System (CIFS)
- Network File System (NFS)
- Apple Filing Protocol (AFP)

Install and Configure a NAS Device

Installing a NAS device is as simple as plugging it into a power source and connecting it to a network. This connection can be through either a wired or wireless network interface.

- A NAS appliance has a web-based interface. Through it, you can configure settings such as:
  - Host name
  - IP address
  - Subnet mask
  - Security settings
  - Shared folders
- Authentication can be integrated into your existing network environment.
  - NAS devices can usually be joined to an Active Directory domain.
  - Authentication controls access to the data stored on the NAS device.

Clustering and Load Balancing Using NAS Devices

High-end NAS devices usually provide fault tolerance through clustering.

- Multiple NAS devices are grouped together in a cluster, and all of the data is replicated between the devices.
- To users on the network, the cluster appears as a single file server.
- If one of the devices in the cluster goes down, the other devices immediately take over and continue providing access to the files.

Clustered NAS systems can be configured to load balance.

- A bottleneck can occur if one NAS cluster member is overloaded with requests to access the shared storage provided by a NAS cluster.
- A load balanced NAS cluster can divide up the work and distribute it between multiple NAS devices in the cluster.
- Load balancing can dramatically increase the performance of a NAS cluster.

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