

White Paper

Backup/Recovery Solutions For Network Appliance Filers

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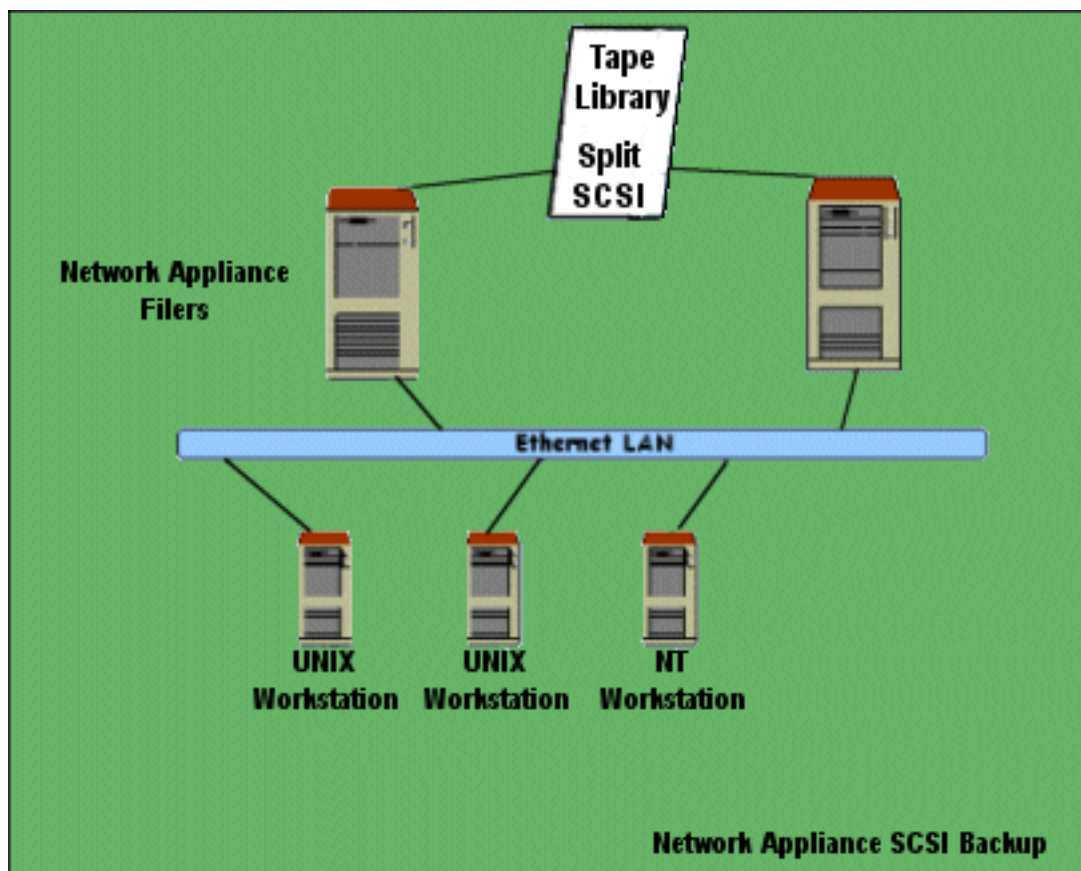
Introduction:

In heterogeneous environments of UNIX and NT platforms, customers need to access data regardless of operating system version or file structure. NAS resolves this problem by providing a common file protocol - Network File Systems (NFS) or Common Internet File System (CIFS) - and large disk arrays accessible via the LAN. The NAS interface to disk is over fiber channel arbitrated loop using SCSI protocol. NAS is thus optimized for data access for the users via the LAN.

Network Appliance filers solve this critical problem for heterogeneous, cross-platform environments. By providing a common NFS or CIFS gateway to storage, both UNIX and NT users can directly access data, and, depending on the models of Filers installed, store terabytes of information.

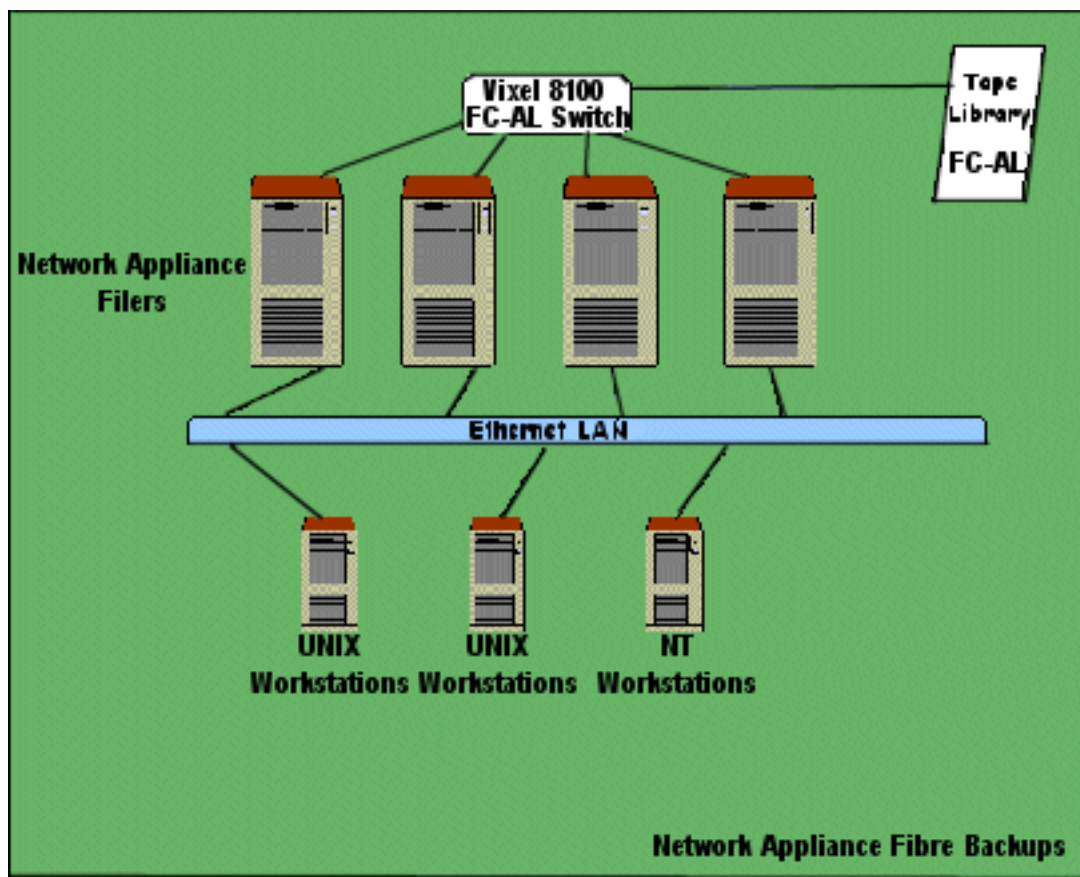
Secure Filer data via tape backup is a common requirement for most installations. Tape backup poses several issues for the customer, including provision of adequate tape capacity and scheduling backups during non-peak periods that do not disrupt end-user traffic.

Filer/SCSI Backup Solution:



This solution overcomes the issue of LAN congestion. Each SCSI bus from the Filer can be attached to two each differential tape drives in the library. You can back up multiple Filers to the library simultaneously. Restoring archive files from one Filer to another cannot be accomplished in this configuration. The majority of Filer systems are currently backed up in this method.

Filer/Fibre Backup Solution:



Fibre Channel offers the flexibility of networking with performance optimized for large block transfers characteristic of tape backup. By moving tape backup traffic off the LAN, a Fibre Channel solution frees the LAN for user transactions and facilitates a wider backup window. And by allowing multiple Filers to share common tape resources, Fibre Channel offers an economy of resources and centralized administration of backup processes.

Filers can be integrated into a Fibre Channel SAN solution by installing a Fibre Channel Host Bus Adapter in the Filer and connecting one or more Filers to a Vixel 8100 switch. Normally, to be cost effective, three or more Filers are used in this application. One or more tape subsystems are attached to the SAN, typically with Fibre Channel-to-SCSI bridges. As shown in the diagrams above, this solution is scalable, and allows additional Filers to be added at any time. Backup jobs can be initiated across the Fibre Channel SAN with no disruption to user transactions, and Fibre Channel's 100MBps bandwidth can accommodate multiple backup streams concurrently.

For large installations, multiple Filers can be integrated into the same extended SAN, and both midrange tape subsystems and large tape libraries can be shared for data access and archiving applications. Since Fibre Channel supports millions of devices and distances of up to 10km, the customer has considerable flexibility in deploying both tape backup and disaster recovery implementations for Filer data.

To accommodate the specific requirements of the Network Appliance Filer, the Vixel 8100 switch incorporates custom microcode and zoning support that allows multiple Filers to be configured on a single switch. Up to 7 Filers and one tape subsystem can be attached to a single Vixel 8100.

Software:

Multiple software vendors who support the NDMP protocol can be used for either the SCSI or SAN backup application.

Library:

Any library that supports multiple SCSI channels or Fibre Channel for SAN can be used in these Fibre backup applications.

Summary:

A Fibre Channel tape backup solution offers several advantages over alternative solutions:

- Tape backup traffic can be removed from the messaging LAN network.
- Tape resources can be shared among multiple Filers.
- By centralizing and sharing tape resources, administration is reduced.
- Costs of expensive tape subsystems and libraries can be amortized over multiple Filers.
- Fibre Channel's 100MBps bandwidth, distance and support for large numbers of devices provides a scalable architecture as the customer's requirements grow.

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