

# Backup Express Novell NetWare Cluster Support

Clustering is the use of multiple computers and redundant interconnections to form what appears to be a single, highly available system. Clustering ensures that when a computer unexpectedly fails or is intentionally taken down, the processes and services it is running *fail over* to another machine in the cluster without interruption or the need for immediate user intervention.

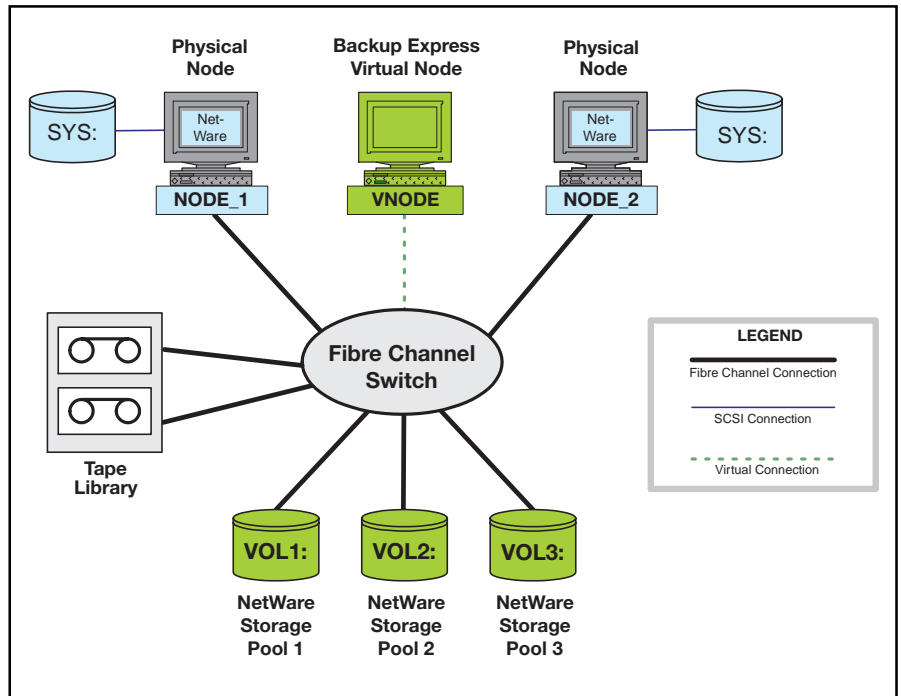
When a cluster is set up with the NetWare clustering software, shared storage pools can be seen from all computers, or nodes, in the cluster. Each node instantly senses if another node in the cluster has failed, and resources hosted on the failed node switch to an operational one. To the user, this failover is usually transparent.

Backup Express, the enterprise-wide backup and restore solution, supports clusters in NetWare 5.x and 6.x environments.

## **NetWare Cluster in a SAN Environment**

Backup Express architecture is based on resource grouping and distributed processing with central control. This design gives Backup Express the inherent flexibility to exploit advances in network technology, such as SAN and NetWare clusters.

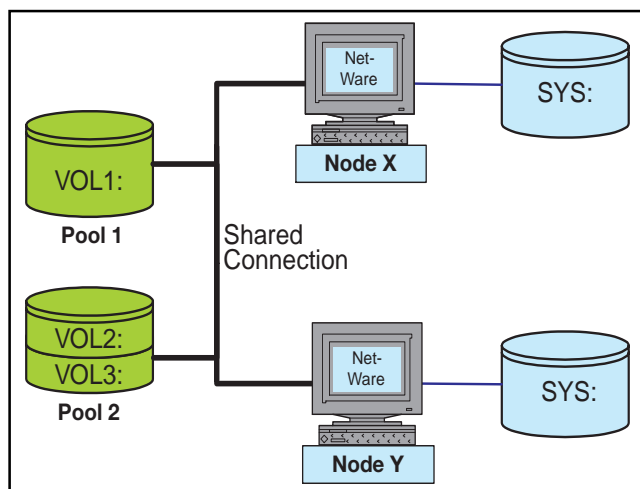
The diagram on the right illustrates a NetWare 6.x cluster on a SAN. This logical representation demonstrates the correspondence between a Backup Express virtual node and NetWare storage pools. The virtual connection does not use up a port on the Fibre Channel switch. All the nodes, physical and virtual, are Backup Express SAN device servers.



NetWare 6.x Cluster in a SAN Environment

## **Physical Representation of a NetWare Cluster**

A simple NetWare cluster is illustrated below. Each of two physical computers (Node X and Node Y) contains a local



Physical Representation of a NetWare 6.x Cluster

disk (SYS: in each case). Also, the two computers share two disks (Pool 1 and Pool 2) via a shared connection. Though not shown in the illustration, each of the computers is instantly able to sense if the other has failed or is down.

## **Logical Representation of a NetWare Cluster in Backup Express**

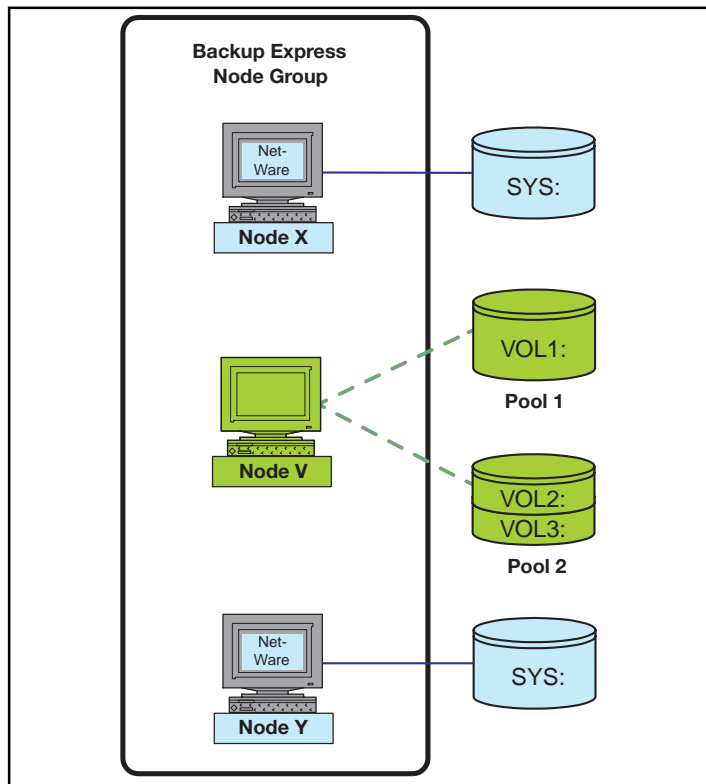
In Backup Express, you define node groups and nodes. For a NetWare 6.x cluster, you define physical nodes for local storage and a single virtual node for all shared storage. All nodes (physical and virtual) for a cluster are members of the same Backup Express node group.

The following diagram shows a logical representation for the physical NetWare cluster illustrated to the left.



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You define one virtual node (Node V) and two physical nodes (Node X and Node Y). The virtual node is associated with all the shared storage pools (Pool 1 and Pool 2). Logically, the Backup Express node group contains three nodes: Node V, Node X, and Node Y.



Logical Representation of a NetWare 6.x Cluster in Backup Express

Shared storage pools are viewed by Backup Express as local storage of the virtual node. With this structure, Backup Express backs up storage pools through the virtual node and backs up true local storage, such as SYS volumes, through the physical nodes.

During backup of a storage pool, if the physical node hosting the storage pool fails over to another physical node in the cluster, Backup Express continues to execute the backup by retrying the task.

## Backup Express and NetWare

Backup Express supports clusters for NetWare 5.x and 6.x. Note the differences between Backup Express cluster support on NetWare 6.x versus 5.x:

- On NetWare 6.x, Backup Express is a cluster aware application, ensuring that data on a shared disk is not backed up twice (from two different nodes in a cluster). On NetWare 5.x, the NetWare TSA is not cluster aware, and you must define

the backup job so that a shared disk is not backed up more than once.

- On NetWare 6.x, Backup Express creates a single virtual node for all shared storage pools. On NetWare 5.x, Backup Express creates a virtual node for each NetWare shared volume.

## Compatibility

- **Backup Express Release 2.1.5 or higher.**
- **Supported Peripherals.** Backup Express supports all major tape devices and formats, including 4mm, DDS2, DDS3, DDS4, DAT, 8mm, AIT, AIT-2, AIT-3, Mammoth, Mammoth-2, Ecrix, DLT1, DLT4000, DLT7000, DLT8000, SDLT, LTO, 9840, 9940, Sony DTF, Sony DTF-2, Magstar, and IBM 348x/349x/35xx. Backup Express also supports numerous automated tape libraries from various vendors, including ADIC, Compaq, Exabyte, HP, IBM, MaxOptix/Peak Storage, Overland Data, Plasmon, Qualstar, Quantum/ATL, Seagate, Sony, Spectra Logic, StorageTek, and Sun.

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