

# Not So Stupid Cluster Tricks

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# Agenda

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Clusters without shared storage

Clustering LDAP

Creating Virtual Servers

Adding storage to a cluster post-install

Perl CLI management

# Clusters Without Shared Storage

# N

## Hardware Requirements

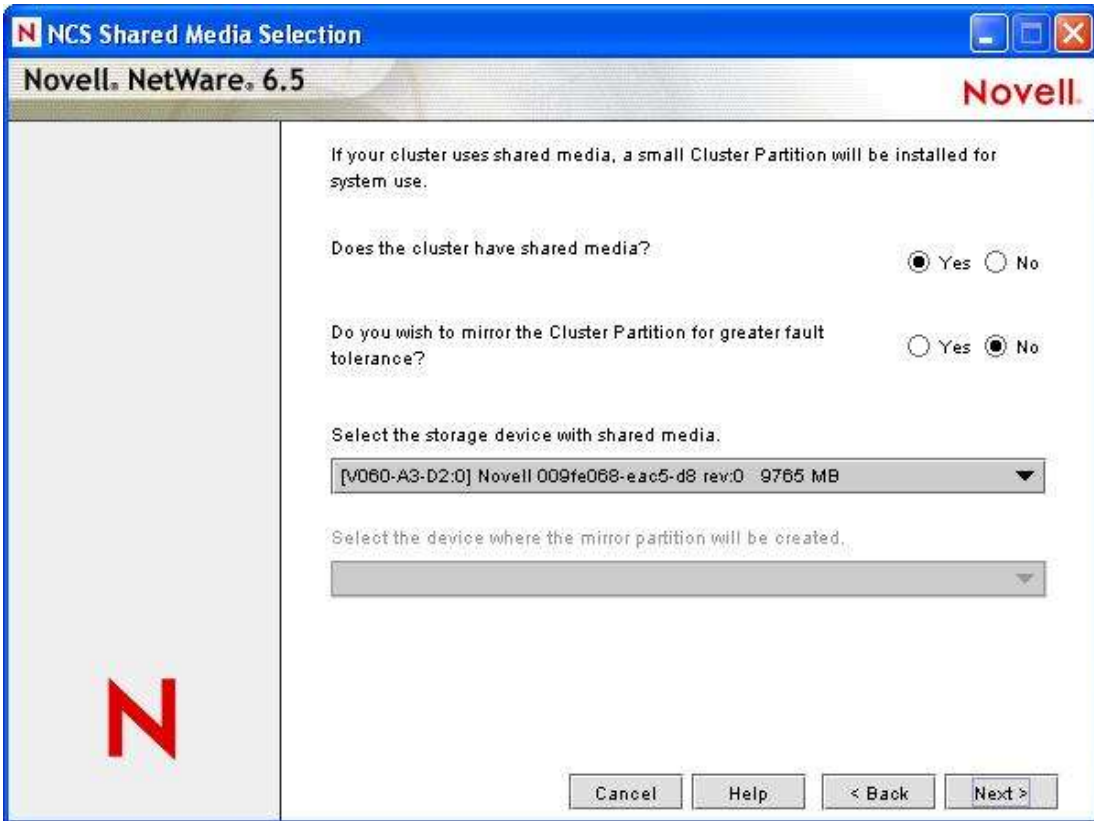
The following list specifies hardware requirements for installing Novell Cluster Services. These requirements represent the minimum hardware configuration. Additional hardware might be necessary depending on how you intend to use Novell Cluster Services.



- A minimum of two NetWare® servers
- At least 512 MB of memory on all servers in the cluster.
- At least one local disk device (not shared) for the SYS: volume on each server

# N

## Selecting the Shared Media



The screenshot shows a window titled "NCS Shared Media Selection" with the Novell logo in the top right corner. The window is divided into two panes. The left pane is gray and contains a large red letter "N". The right pane has a white background and contains the following text and controls:

If your cluster uses shared media, a small Cluster Partition will be installed for system use.

Does the cluster have shared media? ☒ Yes ☐ No

Do you wish to mirror the Cluster Partition for greater fault tolerance? ☐ Yes ☒ No

Select the storage device with shared media.

[V060-A3-D2:0] Novell 009fe068-eac5-d8 rev:0 9765 MB

Select the device where the mirror partition will be created.

[Empty dropdown menu]

At the bottom of the window are four buttons: Cancel, Help, < Back, and Next >.



# What Can You Run?



LDAP

SLP DA





DHCP

DNS

FTP and Web Services

(If you sync data between the servers)

# N LDAP

	Does LDAP require shared storage?	No
	Do you need to start an application?	No
	What do you need?	Just an IP address
	So the resource load script is just ADD SECONDARY IP ADDRESS a.b.c.d	



# Appnote

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## Cluster-Enabling DHCP, DNS, and SLP Services in NetWare® 6

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Dr. Frieder Schmidt and Hylton Leigh

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<http://developer.novell.com/research/appnotes/2003/october/a031002.html>



# N

## Virtual Servers?



Can you create a virtual server without a shared pool to cluster-enable?

Yes!

```
CLUSTER CVSBIND ADD VSERVERNAME IPADDRESS  
NUDP ADD VSERVERNAME IPADDRESS
```

Create a new NCP server object in DS and point to the virtual server.

Adding Storage



# SAN Requirements

**Split Brain Detector Partition (SBD)** - A partition where the servers mark ticks and keep track of the epoch numbers.



Requires one cylinder of unpartitioned space on a shared LUN.

- May be a dedicated LUN
- Can be mirrored for fault tolerance



# Creating A New SBD Partition

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On any node's console type CLUSTER DOWN

.....

Unload Cluster Services from each node (ULDNCS.NCF)

.....

Load (in order) CLSTRLIB.NLM, VLL.NLM, and SBDLIB.NLM on any node

.....

LOAD SBD INSTALL

.....

Say Yes/No to mirror the Cluster Services Partition, and select the device(s) where the partition should reside.

# N

## Switching the NCF Files

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`_LDNCSS.NCF` - loads clustering with support for shared storage

`_ULDNCSS.NCF` - unloads clustering with support for shared storage

`_LDNCS.NCF` - loads clustering without support for shared storage

`_ULDNCS.NCF` - unloads clustering without support for shared storage



So we need to...

Replace `LDNCS.NCF` with `_LDNCSS.NCF`

Replace `ULDNCS.NCF` with `_ULDNCSS.NCF`



# Adding a LUN



Create the LUN

Function of the SAN

Grant all servers access to LUN

Configure LUN masking

Scan for new devices

Set sharable for clustering flag

Cluster scan for new devices

Scan for new devices on all nodes

Perl CLI



# NetWare Virtual File Services

## Introduced in NetWare 6



Simple, ubiquitous interface

- File Open, Read, Write, Close
- All Platforms of all times can do this

XML interface

- Scriptable
- Remoteable

Full NetWare Security enforced

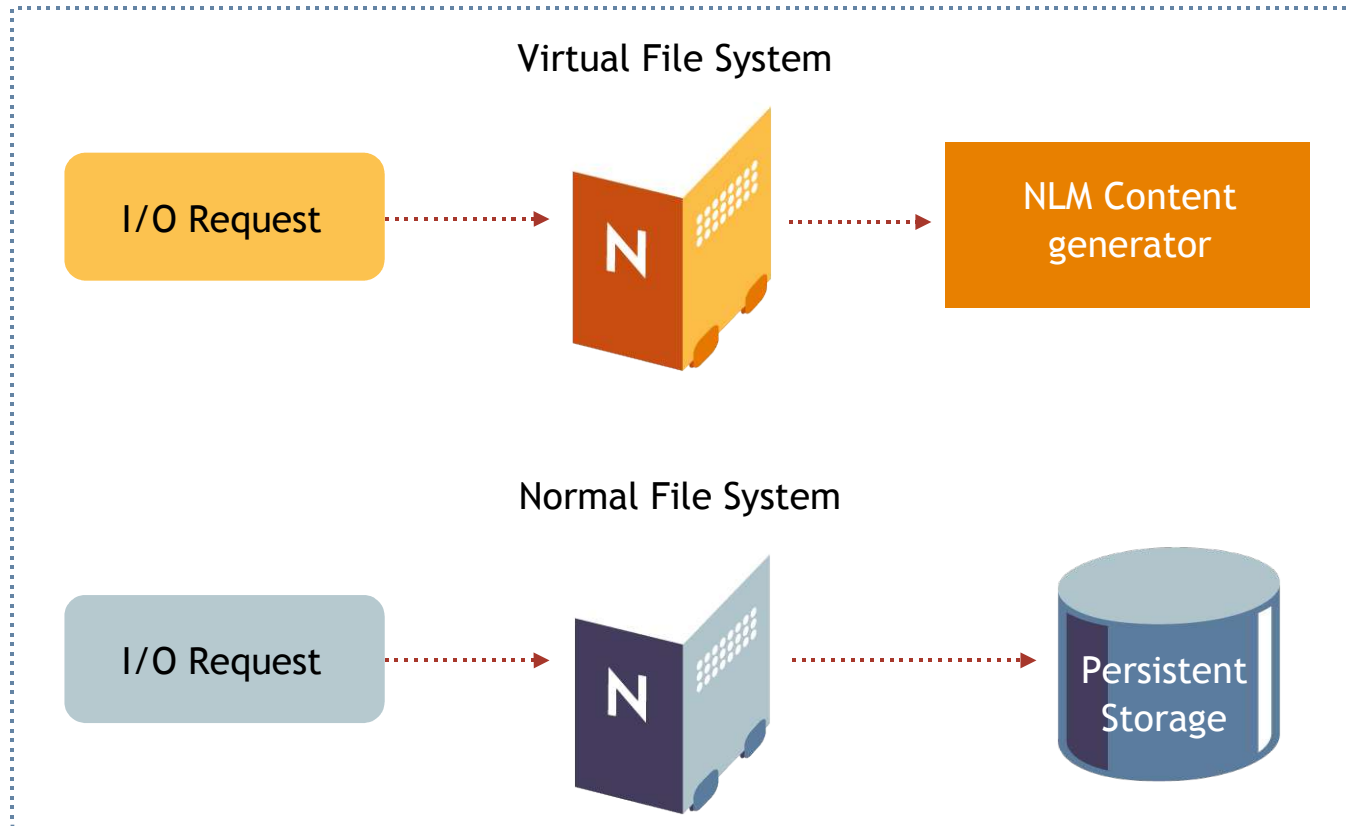
- Must be Admin user

Exposed as “\_admin” volume on each server





# The \_admin volume





## Features

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A new \_ADMIN:\Manage\_Cluster (XML) virtual file interface that enables script based cluster management.

It's now possible to write a script to migrate a cluster resource from one server to another, for example, in automated cluster volume backup by migrating volumes to the server that has a direct attached tape device, and then back again after the backup has completed.



Sample Perl script in SYS:PERL\SCRIPTS

Misc



# Applying a Service Pack



Determine which “half” of the nodes to upgrade

Offline resources that are not required

Migrate required resources

Modify nodes list of active resources (preferred node should be from the “to be upgraded list” )

“Cluster leave” and upgrade OS/support pack

Down second half and restart first half

Upgraded half becomes active cluster and online resources on preferred node

Upgrade other half and restart



# Changing the Heartbeat Interface

- 1 Configure and activate the new networking hardware
- 2 Make sure all nodes can ping through the new hardware
- 3 Using iManager, change the IP address of each node in the properties of the node object within the cluster object
- 4 Down the cluster by executing 'ULDNCS' on each node
- 5 Re-load the cluster by executing 'LDNCS' on the first node, waiting until it has loaded then on each node remaining

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