



Acer Altos® C700F Cluster Solution Guide

This solution guide will show you how to set up and configure the Acer Altos Cluster Solution C700F using two Altos R701 Server and one S700F Fibre Channel Shared Storage.

Abstract

By using Microsoft Windows 2003 Enterprise Server you can increase your Server availability and scalability for mission-critical applications such as databases, messaging systems, and file and print services using either an active / active or active / passive fail over Microsoft Cluster Service (MSCS). If one of the nodes in a cluster becomes unavailable either due to planned downtime for maintenance or unplanned downtime due to failure, another node takes over to provide the service to the end-user.

The Altos C700F Cluster Solution can provide you with up to 2Gbit (per loop) FC data transfer rate and a Storage capacity of 2 TByte.

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INTRODUCTION

This Cluster solution guide provides information and procedures needed to install and configure the Altos C700F Cluster. The first part looks into the Cluster basics, the second part will review the required hardware, i.e. the Altos R701 and S700F. This guide also includes how to install and configure the Qlogic Fibre Channel HBA controller and the RAID Controller inside of the Altos S700F. In the final chapter, it will present the installation procedures for setting up the Microsoft Cluster Service (MSCS) on Altos R701 servers with Altos S700F Storage System.

Altos R701 is a Rack optimized, dual Intel Xeon DP processor Server with a height of only 2U. It allows for up to 6 internal SCSI hard disk. The Onboard Adaptec AIC-7902W Dual Channel SCSI controller has also host RAID support for mirrored (RAID 1) internal hard disks. The two integrated Gigabit network adapter allow access to the public network as well as the exchange of the heart beat signal between the two Cluster Nodes in the private Network.

Altos S700F is a 2Gb FC RAID storage system and can install fourteen FC drives in 3U height storage enclosure. It supports dual and quad fibre channel loops inside the enclosure to provide over 700MB/s (quad loop) data transmission bandwidth and path redundancy. The RAID Controller can be redundant and fault tolerant to provide high availability for your Cluster.

The Altos C700F is designed as a two Node Cluster, but can easily be converted to a three or four Node SAN Cluster.

Who should read this Guide

This configuration guide is intended for:

- Acer field site engineers who are installing and configuring Altos S700F Series storage systems.
- Acer resellers who are providing technical solutions to customers.
- Customers who are implementing these storage systems in their environment.

Contents of this Guide

This guide's chapters contain the following information:

1. **Cluster Server Basics** – presents an overview on the Cluster Server based on Microsoft Cluster Service.
2. **System Specification**—presents the detailed specification of Altos R701 and S700F Series as well as Qlogic Fibre Channel HBA controller
3. **Installation and Configuration**—presents step-by-step installation and configuration instructions for Altos R701 including the basic Windows 2003 Enterprise Server installation and procedures for configuring the Altos S700F RAID array.
4. **Microsoft Windows 2003 Enterprise Configuration** —presents the procedures, following the basic Windows installation to prepare for the Cluster Service setup.
5. **Microsoft Cluster Server Installation**—presents the procedures for installing Microsoft Cluster Server on Altos C700F.

Course Goals

Enable engineers and partners to fully implement a high available Acer Server Cluster Solution by going step by step though an example installation.*

****Note: This Guide is documentation of the Acer Cluster Solution Workshop in which you will get hands on experience in the Cluster installation and troubleshooting possible issues.***

Prerequisites

Learners should meet the following prerequisites before taking Acer Cluster Solution workshop. Completion of (or equivalent experience):

- Acer Server Product Training (or knowledge about the current Acer Server product range and technology)
- Acer RAID Workshop (or work experience with Server RAID Adapter and RAID technology)
- Fibre Channel technology basics
- Microsoft Windows 2003 Server knowledge or experience (Installation and configuration)
- Installation and configuration of Microsoft Active Directory

CLUSTER SERVER BASICS

What is Microsoft's Cluster Service?

A server cluster is a group of independent servers running a Cluster service and working collectively as a single system. Server clustering provides high-availability, scalability, and manageability of resources and applications by grouping multiple servers running Microsoft® Windows 2000 Advanced Server, Windows 2003 Enterprise Server or a Data center Server.

While a Cluster service does not guarantee non-stop operation, it provides availability sufficient for most mission-critical applications. Cluster services can monitor applications and resources, automatically recognize and recover from disk failure or power outages. This provides greater flexibility in managing the workload within a cluster, and improves overall availability of the system.

Protection Against Downtime

The Acer Cluster Solution using Microsoft cluster technologies protect against:

- **Application/service failure** affects application software and essential services.
- **System/hardware failure** affects hardware components (for example, CPUs, drives, memory, network adapters, power supplies, and others).
- **Site failure** could be caused by natural disaster, power outages or connectivity outages.
- **Downtime due to planned maintenance** allowing applications or the operating system to be upgraded, have service packs applied or hot fixes applied without taking down the service.

Shared-nothing Cluster

In the shared-nothing cluster, each server owns and manages its local devices. Devices common to the cluster, such as a common disk array and connection media, are selectively owned and managed by a single server at any given time.

The shared-nothing model makes it easier to manage disk devices and standard applications. This model does not require any special cabling or applications and enables server clusters to support standard Windows Server 2003 - and Windows 2000-based applications and disk resources.

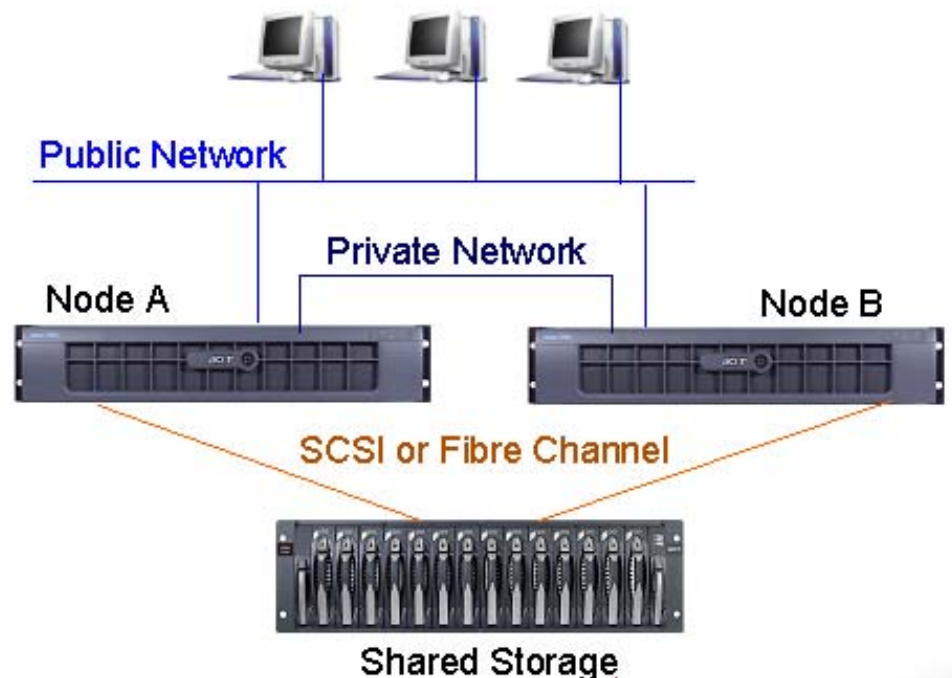
Local Storage Devices and Media Connections

Server clusters use the standard Windows Server 2003 and Windows 2000 Server drivers for local storage devices and media connections. Server clusters support several connection media for the external common devices that need to be accessible by all servers in the cluster.

SCSI and Fibre Connections

External storage devices that are common to the cluster require small computer system interface (SCSI) devices and support standard PCI-based SCSI connections as well as SCSI over fiber channel and SCSI bus with multiple initiators. Fiber connections are SCSI devices, simply hosted on a fiber channel bus instead of a SCSI bus. Conceptually, fiber channel technology encapsulates SCSI commands within the fiber channel and makes it possible to use the SCSI commands server clusters are designed to support. These SCSI commands are Reserve/Release and Bus Reset and will function the same over standard or non-fiber SCSI interconnect media.

Below illustrates components of the Acer two-node server cluster that may be comprised of servers running either Windows Server 2003, Enterprise Edition or Windows 2000 Advanced Server with shared storage device connections using SCSI or SCSI over Fiber Channel.



Virtual Servers

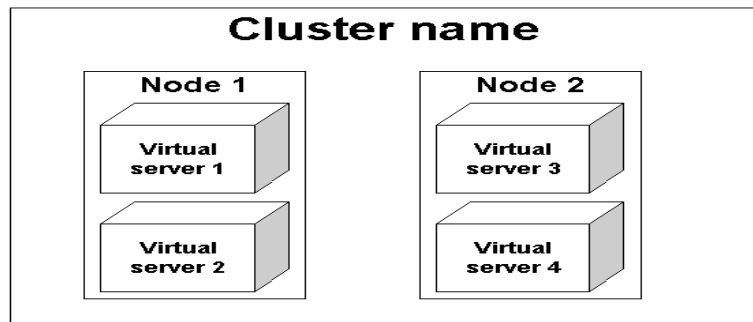
In a cluster one of the benefits is that applications and services can be exposed to users and workstations as virtual servers.

Physical View

To users and clients, connecting to an application or service running as a clustered virtual server appears to be the same process as connecting to a single, physical server. In fact, the connection to a virtual server can be hosted by any node in the cluster. The user or client application will not know which node is actually hosting the virtual server.

Multiple virtual servers representing multiple applications can be hosted in a cluster as illustrated in the Figure below.

Virtual servers (physical view)



Client View

Application client connections to a virtual server are made by a client session that knows only the IP address that the cluster service publishes as the address of the virtual server. The client view is simply a view of individual network names and IP addresses. Using the example of a two-node cluster supporting four virtual servers, the client view of the cluster nodes and four virtual servers is illustrated on the next page.

Virtual servers (client view)

Node 1	Node 2	Virtual server 1	Virtual server 2	Virtual server 3	Virtual server 4
		Internet Information Server	MTS MSMQ	Microsoft Exchange	SQL Server
IP address: 1.1.1.2 Network name: WHECNode1	IP address: 1.1.1.3 Network name: WHECNode2	IP address: 1.1.1.4 Network name: WHEC.VS1	IP address: 1.1.1.5 Network name: WHEC.VS2	IP address: 1.1.1.6 Network name: WHEC.VS3	IP address: 1.1.1.7 Network name: WHEC.VS4

Application or Server Failure

In the event of an application or server failure, the cluster service moves the entire virtual server resource group to another node in the cluster. When such a failure occurs, the client will detect a failure in its session with the application and attempt to reconnect in exactly the same manner as the original connection. It will be able to do this successfully, because the cluster service simply maps the published IP address of the virtual server to a surviving node in the cluster during recovery operations. The client session can reestablish the connection to the application without needing to know that the application is now physically hosted on a different node in the cluster.

Note: While this provides high availability of the application or service, session state information related to the failed client session is lost unless the application is designed or configured to store client session data on disk for retrieval during application recovery. Server clusters enable high availability, but do not provide application fault tolerance, unless the application itself supports fault tolerant transaction behavior.

Planning your Cluster Server implementation

There are many things that need to be considered before you can get started.

- Identify which applications and services require high availability and can run on a Microsoft Windows 2003 Server Cluster
- Identify network risk, points of failure and possible connectivity problems including external influences
- Determine server and storage capacity as well as performance requirements based on the applications and services you want to cluster. Also consider worst case scenarios.
- Plan your Cluster resource groups and the fail over and fail back settings. (Failover timing, preferred node, fail back timing)
- Define the role of the server nodes in the cluster.

When you size your Altos C700F Cluster make sure you consider that in an active/active installation one Node must be capable of running all Cluster applications and services in case one node fails.

A Cluster resource group consists at least of three components, a network name, an IP address and a physical disk resource. Many applications and servers like SQL or Exchange should have a dedicated physical disk resource. In an active/active Cluster installation you need at least two physical disk resources.

SYSTEM SPECIFICATION

In this part, it will cover the detailed specification summary of all important components that make up the Acer Server Cluster.

Altos S700F Series (Shared Storage)

The Altos S700F Series provides a highly flexible, high performance storage solution that evolves to meet your changing needs. Based on a modular, “building block” enclosure design, the Altos S700 Series offers exceptional scalability. Each enclosure supports up to 14 disk drives, in a dense 3U form factor. As your storage needs grow, simply add Altos S700 enclosures dynamically - up to a total of 8 enclosures.

The Altos S700 Series can be scaled in multiple dimensions, enabling flexible configuration of capacity, performance and functionality, to match and grow with virtually any application or IT environment. The enclosure is available with your choice of copper, or optical I/O modules, with RAID Controller option, and is downward compatible to 1Gbps, protecting your investment. A high performance, industry first Quad Loop (4 FC-AL loops on one Altos S700) capability provides over 700 MB/s from a single enclosure. 2Gb Fibre Channel connectivity provides simplified cabling and extremely high bandwidth, for outstanding performance in demanding applications.

FEATURES

- Redundant data paths with dual-ported fibre drives and dual (200MB/s) fibre channel loops for a total of 400 MB/s.
- Quad Loop feature provides over 700MB/s from a single enclosure (JBOD only).
- RAID controller to give RAID functionality.
- Downward compatible to 1Gbps.
- Dense enclosure with 14 drives in a 3U form factor.
- Scalable to 112 drives, support for 15K rpm drives.
- Enhanced enclosure services (SES) monitoring and reporting.
- No single point of failure, with redundant, hot-swappable components.
- Intuitive, comprehensive management with Spheras Storage Manager.
- User installable, configurable and on-line maintainable.
- Industry-standard 19-inch rack-mount or tower configuration.
- Dual AC power supplies.



Altos S700 Series

Qlogic 2340 (Fibre Channel HBA Controller)

The Qlogic QLA234x controllers bring the latest in Fibre Channel 2 (FC2) technology, doubling speeds from 1Gbps to 2Gbps. The Controller provides multipath and failover capability (when using QLA 2342 or two QLA 2340 Controllers). Each Controller provides an LC cable connector to easily connect to Fibre channel Switches or directly to the Altos S700F Storage.

FEATURES

- Single-integrated Fibre Channel controller (LC connector) for added reliability and optimum performance
- Auto negotiation of Fibre Channel speed bit rate (1 Gbps or 2 Gbps).
- Concurrent support for SCSI and IP protocols
- Simultaneous initiator and target mode support
- 64bits/66MHz PCI 2.2 specification.
- HBA and LUN level failover
- Load balancing for optimized performance
- Supports Microsoft Cluster Service.
- OS supports: Windows Server 2003 (32-bit and 64-bit), Windows NT, Windows 2000, Windows XP, Solaris SPARC, Linux (32-bit and 64-bit), Novell NetWare



QLA2340

Altos R701 Series (Cluster Server Node)

High density computing in a competitive world calls for a server that can keep up and still stay cool in a rack. It's your life in the business fast lane that insists on reliability, performance, and space to move - the Acer Altos R700 with its 2U chassis and excellent thermal design fits the bill. For applications needing high performance and high availability, the Altos R701 is your dual processor, 2U answer. High capacity and high-speed network enabled, this is a server to be reckoned with. With the two on board Gigabit LAN adapters it is also the perfect choice as a Cluster Node.

FEATURES

- Qualified 2U chassis means the Altos R701 is easy to slip into a rack.
- An advanced, four-fan cooling system means that your Altos R700 will run cool.
- 6x DIMM slots offer you ample room for up to 12 GB of registered ECC DDR266 RAM to expand the system memory.
- Equipped with Chipkill memory technology ensures that your system will remain unaffected by multi-bit data errors.
- Two-way interleaved system memory offers superior performance
- Up to two Intel® Xeon™ Processors at 400 or 533 MHz FSB with Hyper-Threading technology for blistering processing power up to 3.06 GHz.
- 1+1 redundant, hot-swappable 500 W power supplies make sure you'll never be left in the dark.
- 6x 64-bit PCI-X support opens up a world of PCI add-on card options.
- Slim line CD-ROM and FDD
- Integrated 2 Channel AIC-7902 SCSI controller connects up to six hot-swappable hard disc drives.
- Dual-channel gigabit-LAN for high-speed connectivity.
- Altos EasyDiagnostic LEDs indicate that you can trust your Altos to keep on going
- OS Supports: Microsoft® Windows® 2000 / 2003 Server, Red Hat® Linux 9.0, Novell® NetWare® 6.0, SCO UnixWare 7.1.1, SCO OpenServer 5.0.7, SCO Linux 4.0 (United Linux)



Acer Altos R701

INSTALLATION AND CONFIGURATION

Here we will cover all details about the hard and software configuration. Please make sure you have all items listed below at hand to successfully complete the Acer Cluster Server installation:

- 2x TT.R71E0.027 Acer Altos R701, 2,8 GHz
- 2x SO.F1000.F01 Qlogic QLA2340
- 1x ST.S70RS.005 S700F Single RAID Controller
- 4x ST.HF073.G10 73GB 10,000rpm 2GB FC Disk Drive
- 10x ST.22906.003 Blank Panel
- 2x ST.CA002.L06 10m 2Gb LC/LC Cable for S700F

You may also need rack mount kits or different Hard Disk configurations for your Altos C700F Cluster Solution.

Configure and Install your Altos R701 Server

Prepare onboard SCSI Driver Disk

Make the device driver disk for onboard Adaptec AIC-7902W SCSI with Host-RAID (if using the host RAID option on your Altos R701) or without Host-RAID (if using only 1 hard disk inside each R701 Server). You will find the latest driver on your EasyBuild CD or you can download it of our Support Website

http://support.acer-euro.com/drivers/server/altos_r700.html

Altos R701 Host-RAID setup

1. Power on the server. When the Adaptec SCSI BIOS is appeared in the screen, press **Ctrl + A** to enter the SCSI BIOS.
2. Select **AIC-7902 B at slot 00 04:07:01**.
3. Select **Enable HostRAID Support**, and there will be an additional item **Configure/View HostRAID Settings**.
4. Select the additional item **Configure/View HostRAID Settings** and press **Enter**
5. From the menu, press **C** to create a RAID.
6. Select the RAID type you want to build and press **Enter**.
7. From the **Select RAID members** menu, press **Spacebar** to select the hard drives that you want to use in the RAID. An **X** will appear next to the drive that you selected. Pressing the **Spacebar** again, the **X** will become **Spare** if the spare is allowed. Press **Enter**.
8. For RAID 0, you have to select the strip size after selecting the drives.

-
9. For RAID 1, you have to select how to build the RAID: **Create new RAID-1, Copy from (0) to (1) or Copy from (1) to (0)**. After the RAID has been created, you have to choose the Build or Rebuild process priority for **High Medium or Low**.

Windows 2003 Enterprise Server Installation

1. Boot the server with the Windows 2003 Enterprise Server installation CD.
2. Press F6 when the screen shows the following message: **"Press F6 if you need to install third-party SCSI or RAID drivers."**
3. Press **S** to specify additional device.
4. When the setup prompt you to insert the driver disk into drive A. Insert the driver disk according to the onboard SCSI Host-RAID is enabled or disabled and press **Enter** to continue.
5. The screen displays the drivers supported on the disk. Select **Adaptec HostRAID U320 RAID driver for Windows 2003** for Host-RAID driver disk. Select **Adaptec Ultra320 SCSI Card (Win2003)** for non-HostRAID driver disk.
6. Follow the rest of Windows 2003 installation instructions to complete the installation.
7. After the Installation process it is recommended to download all critical hot fixes available at the Microsoft Support website.

Once the installation is complete on both Altos R701 Server Systems make sure you power down both Servers.

Install Qlogic QLA2340 into Altos R701

Insert Qlogic QLA2340

To install the Controller on Altos R701:

1. Remove the Altos R701 front bezel and top panel.
2. Take out the Riser Card
3. Insert the QLA 2340 controller card into one of the PCI slots and put the Riser Card back into the R701

Install Qlogic QLA2340 Driver

Start up the Altos R701 with the Qlogic QLA 2340 Controller inside and follow the steps below to install the correct driver and use the right settings:

1. Enter the Qlogic Bios, load the default settings and verify that the Host Adapter Bios is set to "Disabled" . The Bios Version we recommend is 1.34.
2. Save the settings and start Windows 2000 Advanced Server
3. You need to install the driver for the QLogic QLA2340. To do this right click on the "Fibre Channel Controller" in the Device Manager.
4. After install the driver, the device will be shown as QLogic QLA23xx PCI Fibre Channel Adapter and driver version is 8.2.3.11. (SCSI Miniport Driver). Do not use any other driver Version unless we specifically advise you to do so.

Edit Windows Registry For QLA2340 In Cluster

Press Start Button, at the run prompt type in "regedit"

Choose "HKEY_LOCAL_MACHINE"

Choose "System"

Choose "CurrentControlSet"

Choose "Services"

Choose "ql2300"

Choose "Parameters"

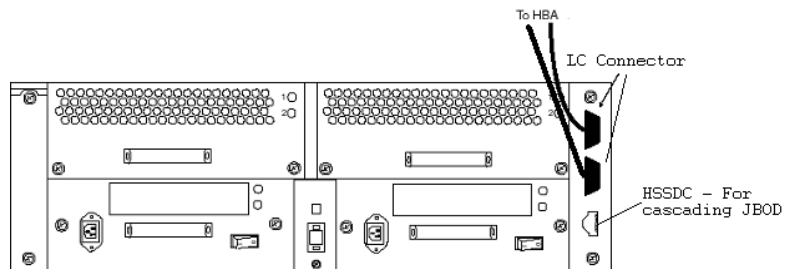
Choose "Device"

Double click on "DriverParameters" to edit

Change the value to "UseSameNN=1;MSCS=2;PseudoDevice=0"

Note: This Cluster is set up as a Single path configuration. If you are using a multipath environment you will see the same disk several times in the Windows Disk Manager. To solve this problem you will need to use specific multi path Software. You can not use the free QLDirect and SANserver utility in a Microsoft Cluster !

Connecting the Altos R701 to Altos S700F



There are two FC port (LC type) on the RAID Module in your Altos S700F and also one HSSDC port for connecting a second Enclosure (S700) if you want to increase your Storage capacity. Please use only the LC ports to connect the Altos R701 Cluster Server Nodes.

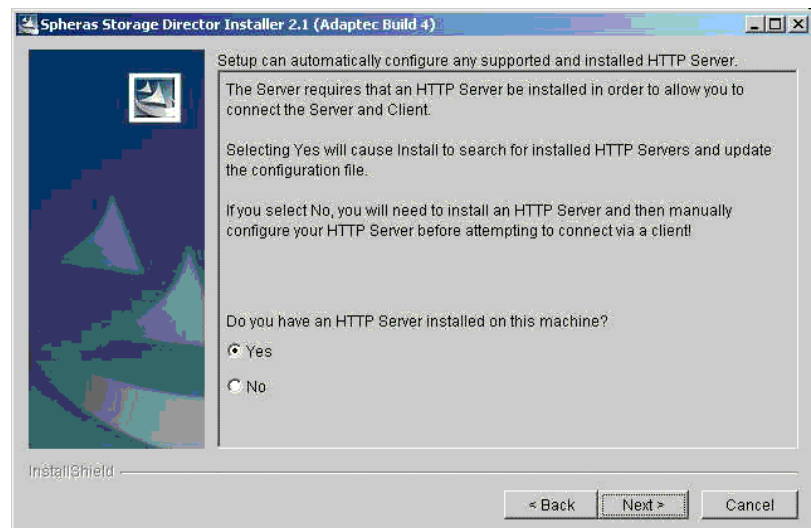
We suggest you can connect to the upper LC port on the RAID I/O module in Altos S700F to connect to Node A and the lower port to connect to the second Controller in Node B.

Configuring Altos S700F RAID Controller

To configure your Altos S700F RAID Controller you need to install the Adaptec SSD (Sphas Storage Director) Utility.

Install Sphas Storage Director Software

1. Insert the SSD installation CD. Launch the installer and follow the installation instruction.
2. As we need install both of the server and client, select 'All' as the installation type.
3. When you see the following screen, just click on 'Next' to use the default Java RIM Port Number.
4. During the Windows installation, we have select IIS Web service. Select 'Yes' and click on 'Next' to the next step.

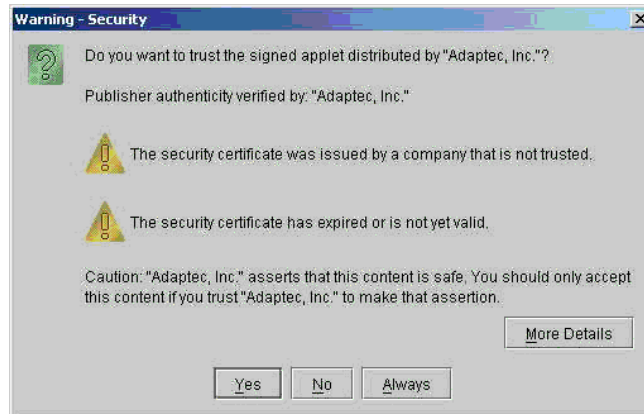


5. We install the server and client on the same machine. You can enter the Loop IP 127.0.0.1 or the real Server IP address.
6. Just following the instructions to finish the remaining installation steps.

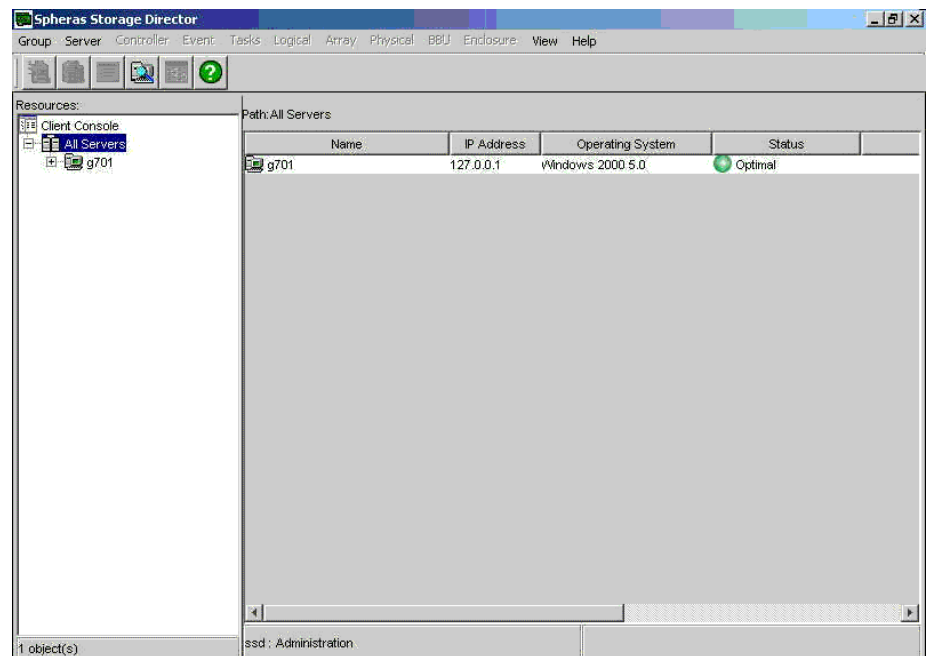
First Time Launch SSD Client

7. After finish the SSD installation, you can launch the SSD client form 'Start -> Programs -> Sphas Storage Director Client -> Sphas Storage Director Client'.
8. To run the SSD client, the JRE (Java Runtime Environment) need to be installed first. The JRE installer would be launched automatically when first time you launch the SSD client. Click on 'Yes' to run the JRE installer.

9. Just following the instructions. Select 'Typical' at 'Setup Type'.
10. After the JRE installation finished, the SSD client would be launched automatically. Select 'Always' on the 'Warning – Security' and the 'Warning – Security' pop-up window would not appear next time you launch the SSD client.

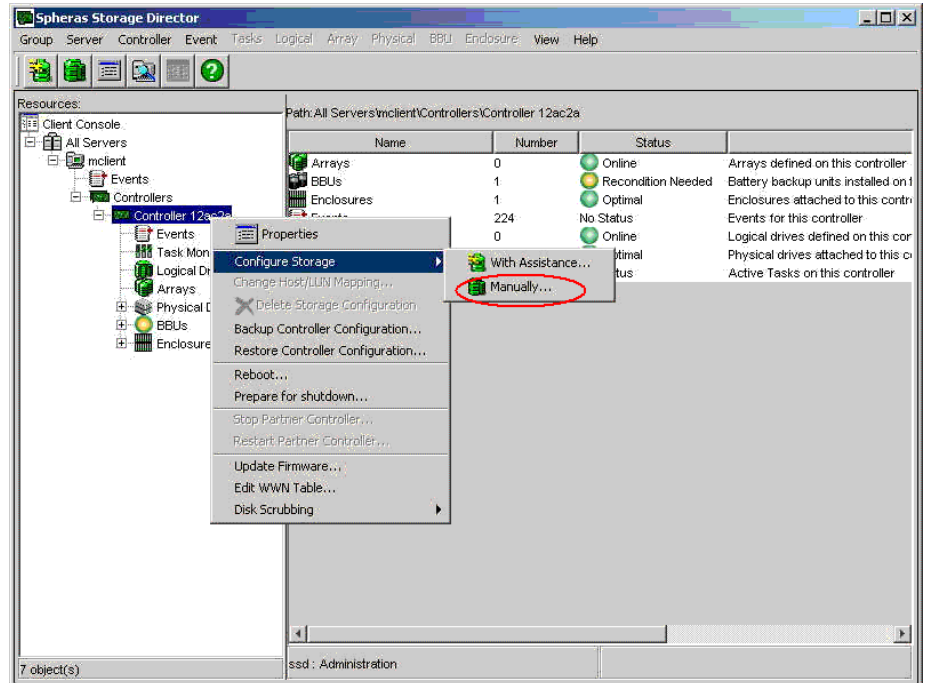


11. You can use the administrator account of the system to login to the SSD or you can create other accounts. The password must not be blank. If you want to use other account to do the full management of the RAID controller through SSD, you must add the account to the administrators group.
12. After you login, you would see the SSD as following.

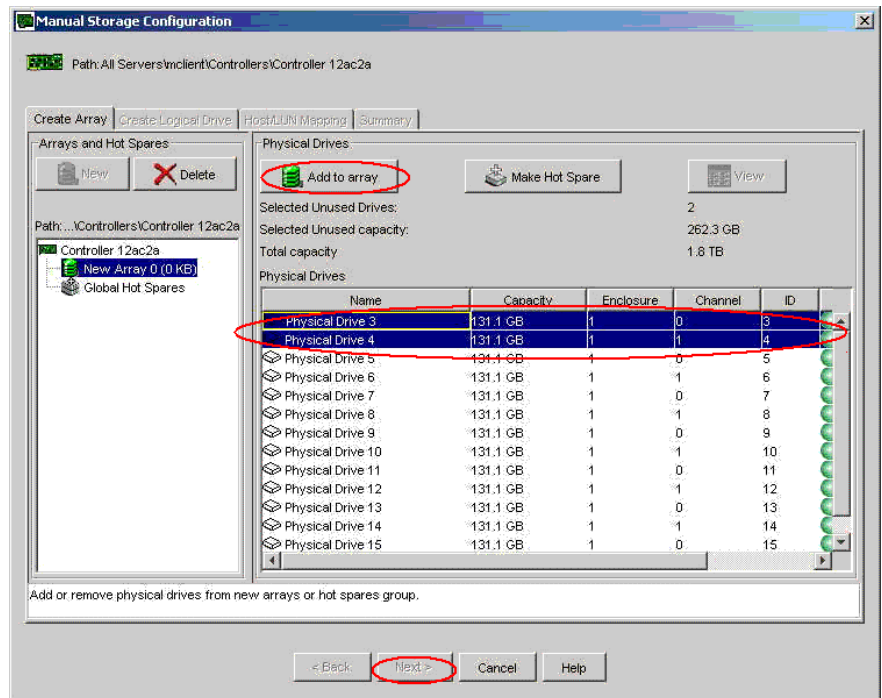


Configuring RAID Array

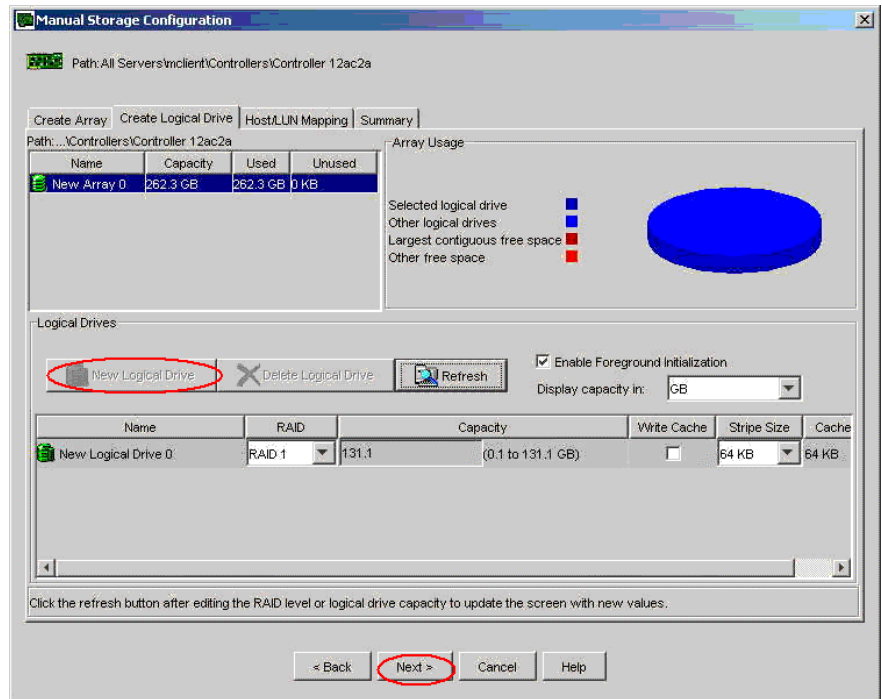
Right-click on the controller, select Configure Storage -> Manually.



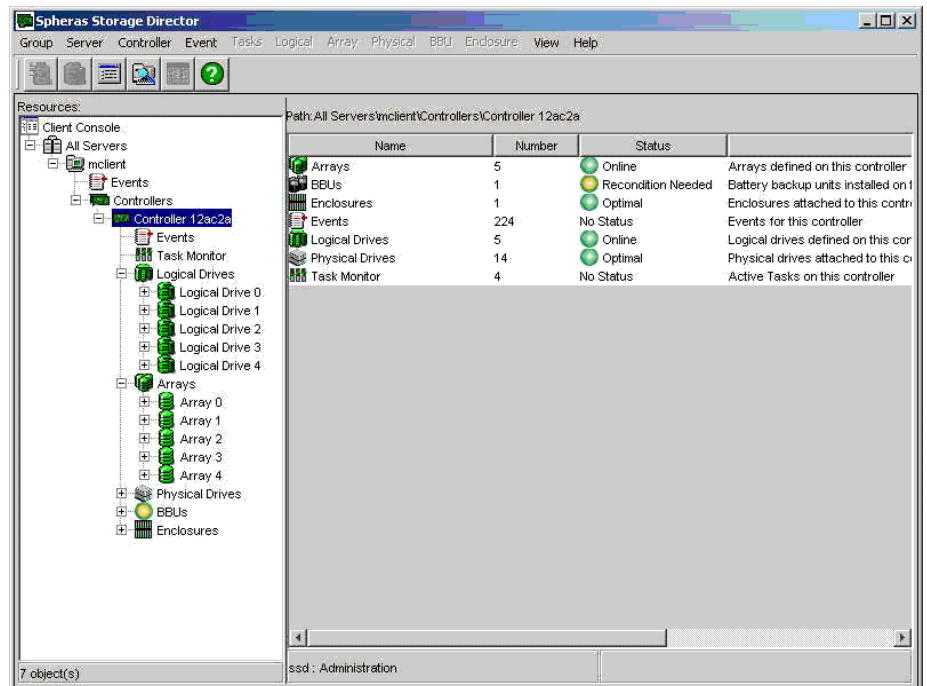
Select the drives that you want to add to the array, click on Add to array and Next



Click on New Logical Drive and Next to use the default setting.



Following the instructions to finish the RAID creation and you will see the listed in SSD. Repeat the step 1 – 3 to configure the arrays as you need. In the Cluster setup make sure you select "Enable All" in the LUN / Host Masking.



MICROSOFT WINDOWS 2003 ENTERPRISE CONFIGURATION

In order to install the Acer Altos C700F Cluster Solution based on Microsoft Windows 2003 Enterprise Server you need to join a Domain with Both Cluster Nodes. It is recommended that the Domain Controller is a different Server and not part of the Cluster.

Set up the Network Connections

There are two network Adapters on each of the Cluster nodes. One is used for “public” access to the Cluster while the other is for “private” communication between the Cluster Nodes. It is recommended to name the network connections accordingly.

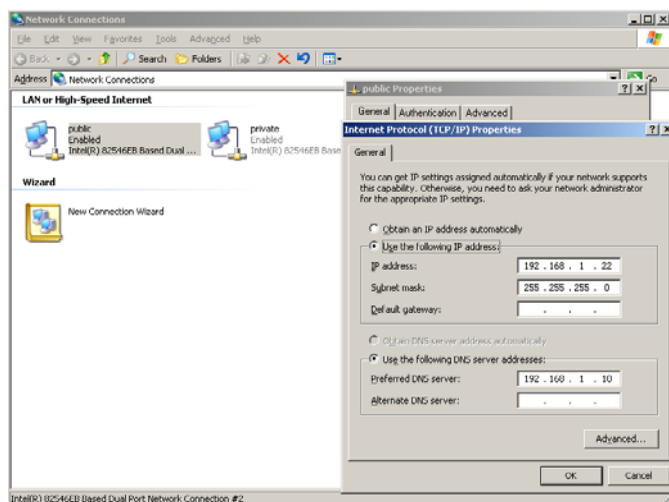
Public Network:

- Connect Cluster Nodes to public network where clients and the Domain Controller reside. This is normally done through an Ethernet Switch or Hub.
- Use a static IP address, subnet mask and add the DNS Server IP address (if needed also the correct Gateway IP address).

Private Network:

- Connect the two Cluster Nodes with a cross cable or with standard Ethernet cables via a Hub to allow private Cluster communication. There will be now clients in this network.
- Set a static IP address and subnet mask on each of the cluster nodes .

Verify these setting by opening up a command prompt on Node 1 and ping the IP address of the DNS Server, the public IP address of Node 2 and the private IP address of Node 2.

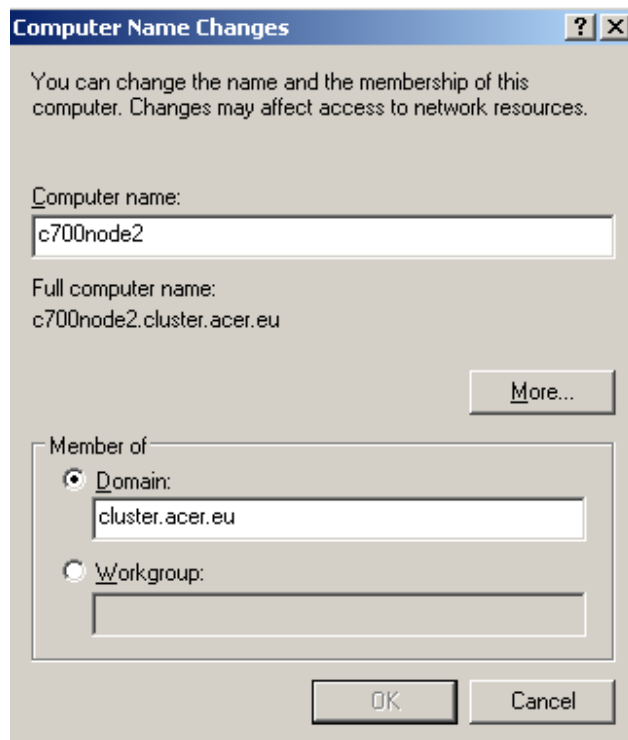


Join an existing Domain with both Cluster Nodes

When your network setting is correct you need to join both Nodes as member of a domain. The Domain Controller Server should be a separate Server running Microsoft Windows 2000 or Windows 2003 Server.

To join the domain right click "My Computer" and select "properties". Here you can select "Computer Name" and click on change. Type in the full domain name and when prompted supply a domain account with administrative rights.

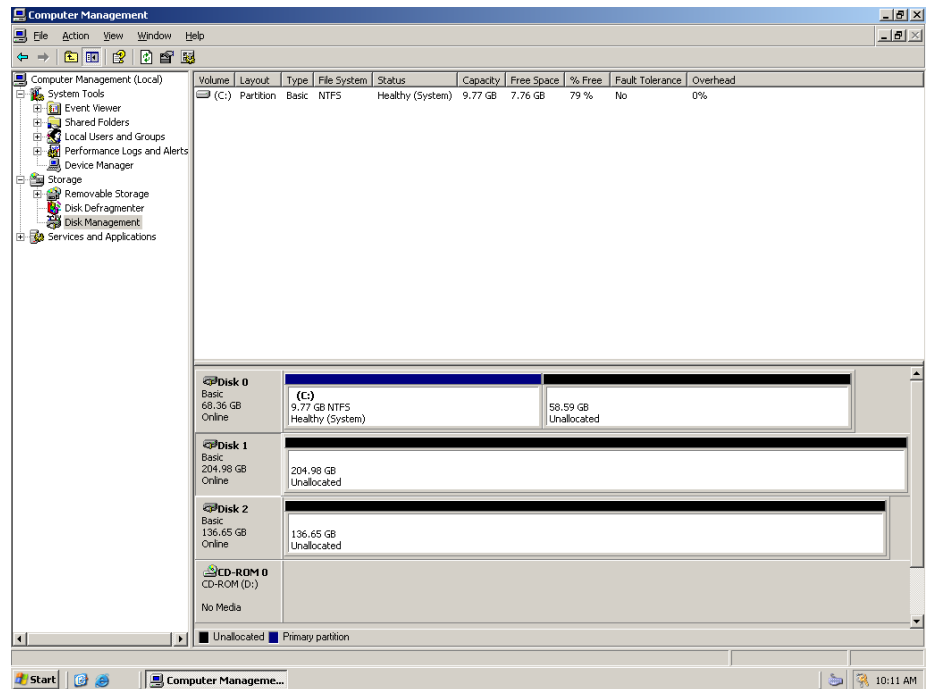
After joining the domain the Cluster Nodes will need to reboot.



Setting up shared disks

Before setting up the shared disks under Windows you must have completed all steps in the RAID Controller menu as described under “Installation and Configuration”. Please make also sure that only Node 1 and the Altos S700 Shared Storage are powered up (Node 2 should be switched off at this point).

1. Open the Computer Management Utility under Administrative Tools
2. Select Disk Management and you will see unconfigured disks. Make sure you write the Windows signature on the disk when prompted.
3. Convert the shared Cluster disk back to Basic disks
4. Create the NTFS partitions you want and make sure you also have a small partition available to create a Quorum drive.



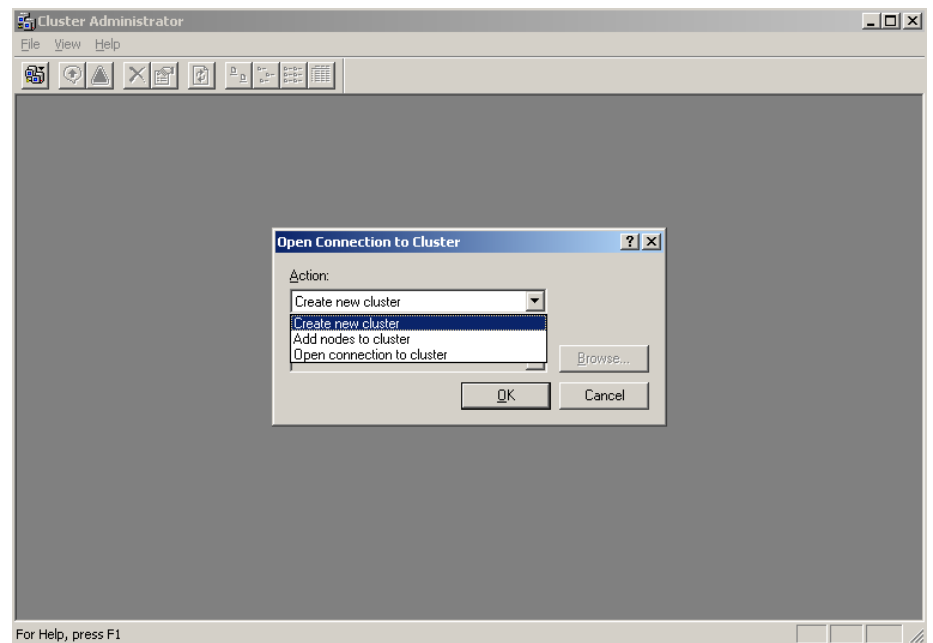
Note: For an active/active Cluster installation you will need to create at least two RAID arrays in the RAID Controller menu. Acer recommends to verify the disk requirements for the Cluster applications and Virtual Servers prior the installation.

MICROSOFT CLUSTER SERVER INSTALLATION

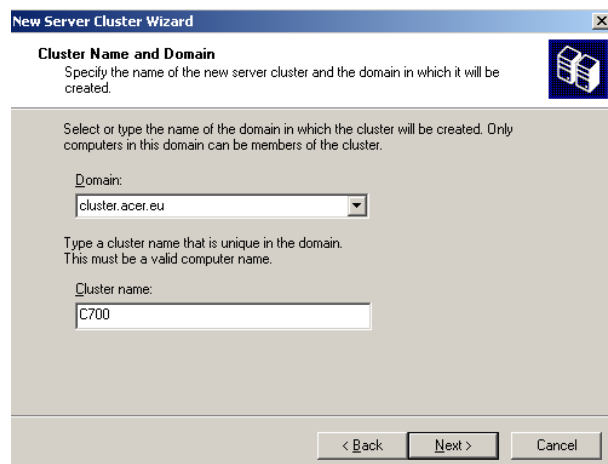
After completing all preparations successfully it is time to Install the Microsoft Cluster Service Software.

Cluster Service Installation

Make sure that at this point Node 2 is powered down and the Storage box as well as Node 1 are up and running. Start the Cluster Administrator tool on Node 1 (available under Administrative tools) and select the option "Create new Cluster"



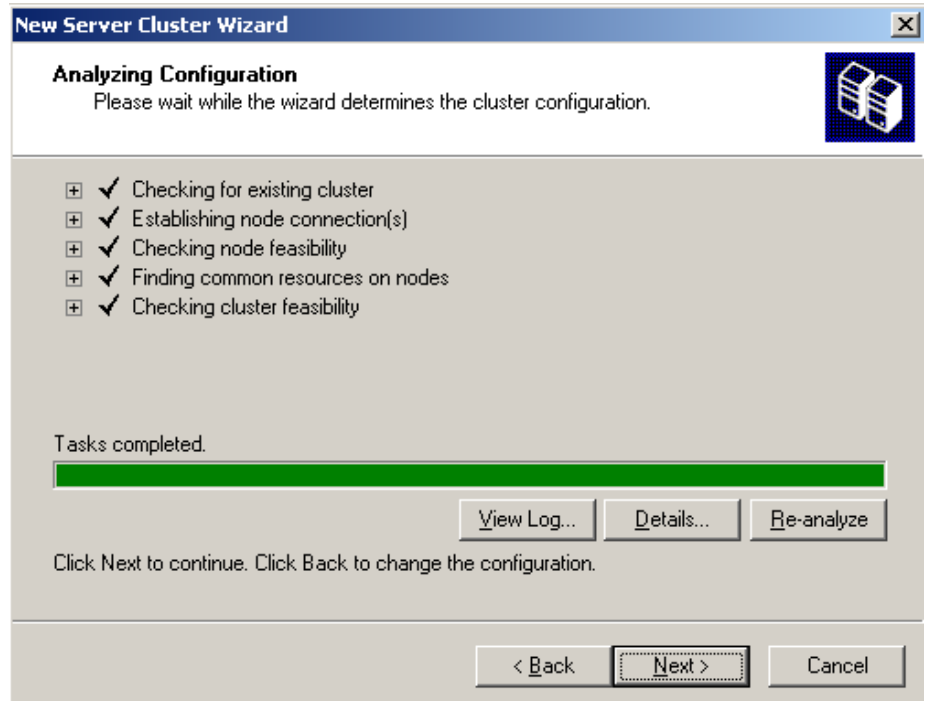
Press OK and enter the domain name and Cluster Name. The Name of the Cluster must be unique and will be the Virtual Server name for the Cluster Server.



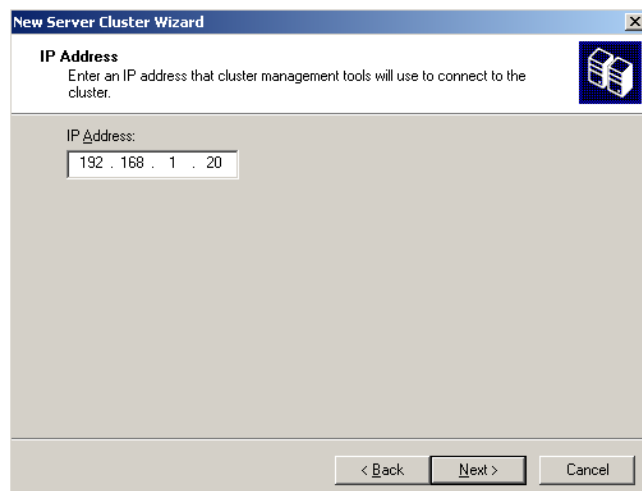
Please select the Cluster Node that you want to use to start the Cluster. We recommend to start the Cluster Service Installation on Node 1 of the Cluster.

In the next step the Cluster Server Wizard will check the configuration. Verify if all boxes are checked and the Task bar turns green.

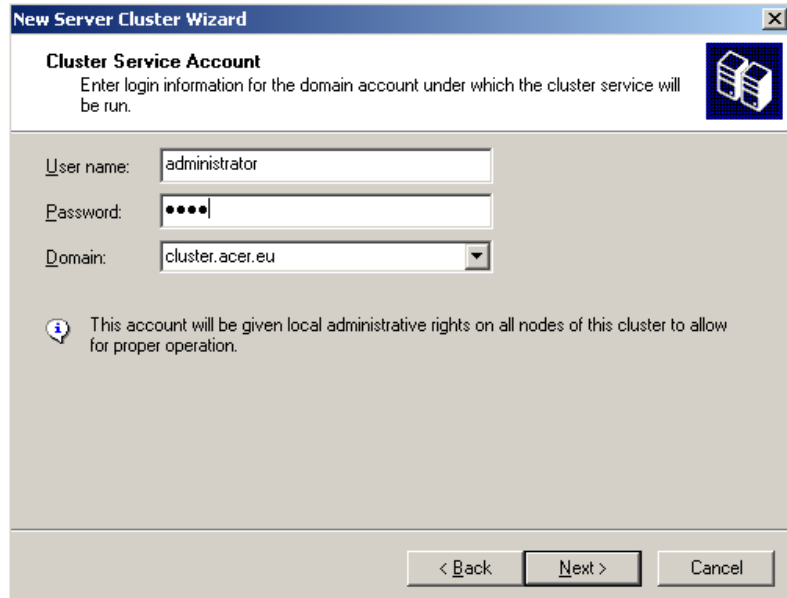
You may find a problem if you have a cross cable connection for private cluster communication and Node 2 is powered down, as the network link would not be available.



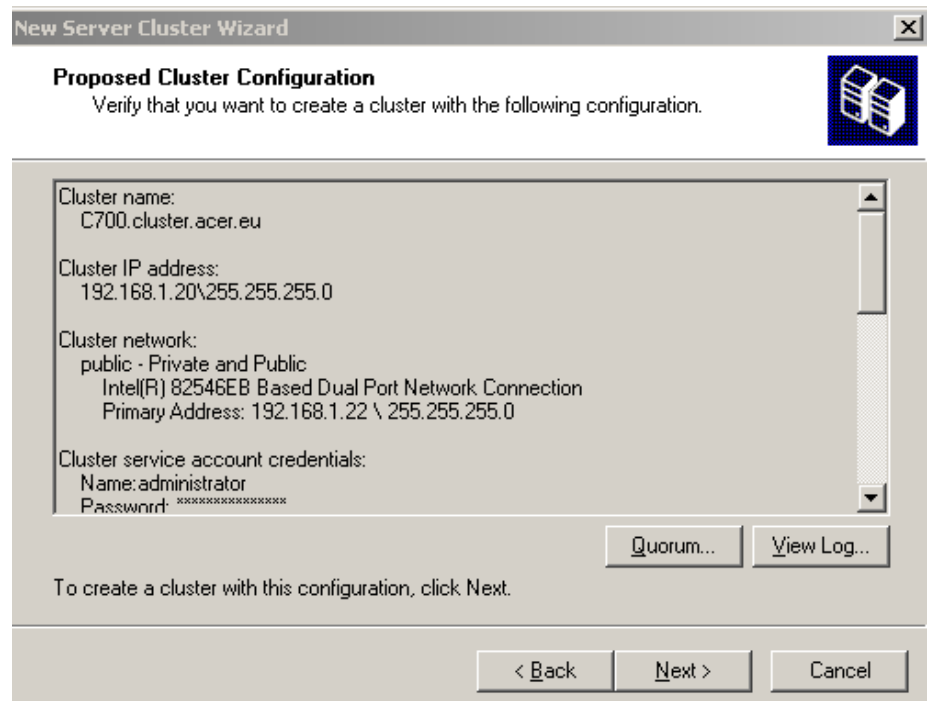
When you hit the next button the setup will prompt for a unique IP address in the public network under which the Cluster will be available.



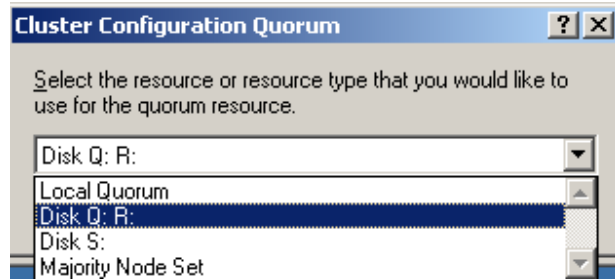
To create all required entries in the active directory and DNS you will need to provide a Cluster Service Account that has administrative permissions in the domain. This is also the account under which the Cluster Service will run.



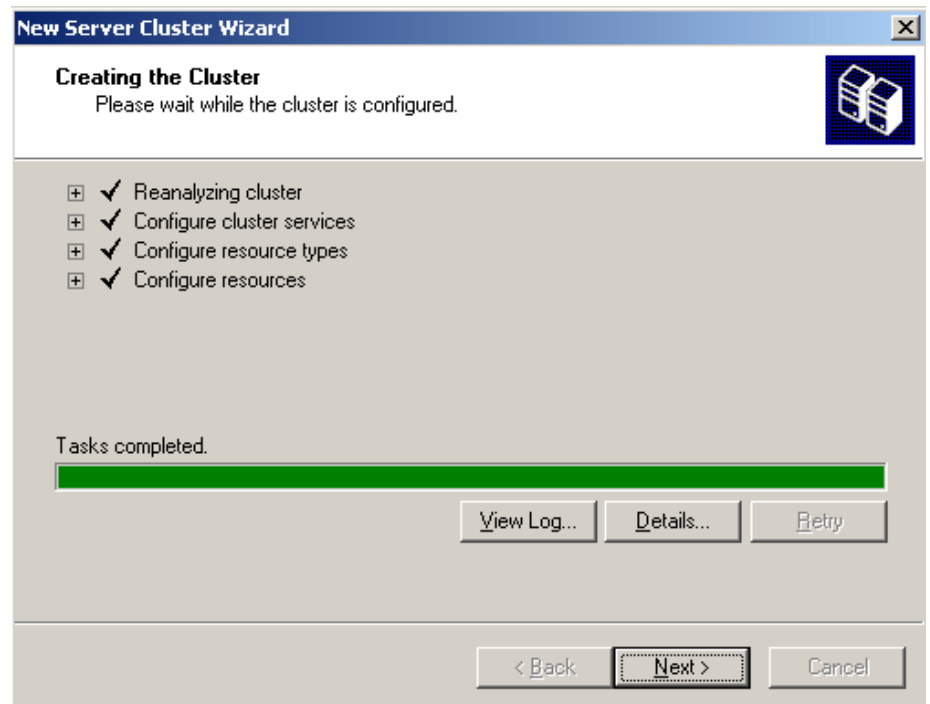
The setup utility will list a summary of the proposed Cluster Configuration. Review the list and verify if the configuration is correct.



By default the installation has also selected the smallest shared drive that is larger than 50 MB as Quorum drive. Please also verify this setting.



Press next to complete the Cluster Service installation and create the Cluster.



After all task are successfully completed press "next" and "finish".

Join the Cluster with Node 2

After successfully creating the Cluster it is time to power up Node 2 and join the Cluster. To do this, log in to Node 2, start the Cluster Administrator Tool and select "Add Node to a Cluster".

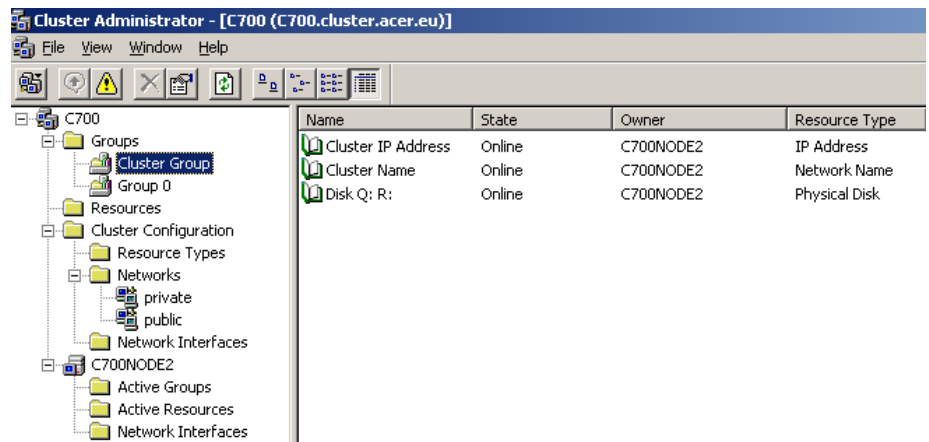
Simply follow the instructions on the screen and the second Node should join the Cluster without any further difficulties.

Cluster Administrator

Using Microsoft Windows 2003 Server, the Cluster Administrator Utility can run remote on a Standard Server and doesn't require the Enterprise Edition. This is beneficial for later administration of the Cluster Server.

Start the Cluster Administrator Utility on Node 1 and connect to the newly created Cluster. Click on the Cluster Group and you should see that all resources are listed Online and the Owner is Node 1.

To verify if your Cluster Service is working on both nodes right click on the "Cluster Group" and select "Move Group". After a little while the Cluster Group should be back online on Node 2.



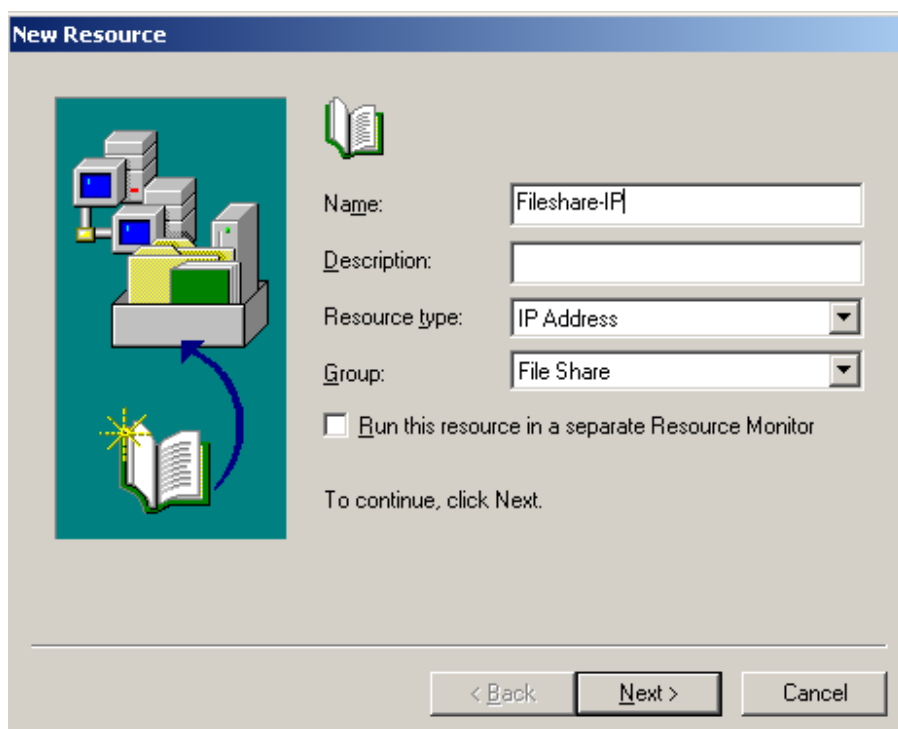
Create a Cluster Resource Group

Once the Cluster Service is running it is time to install all Cluster Applications and Services. Here is an example using a simple file share. To configure a file share in a Cluster you use the Cluster Administrator tool.

During setup a Cluster Group for each physical disk resource was created. We are going to use Group 0 for our file share. To identify it later we are also going to rename it to "File Share".

Resource type: IP Address

Right Click on the Cluster Group "File Share" and create a "New" Resource.

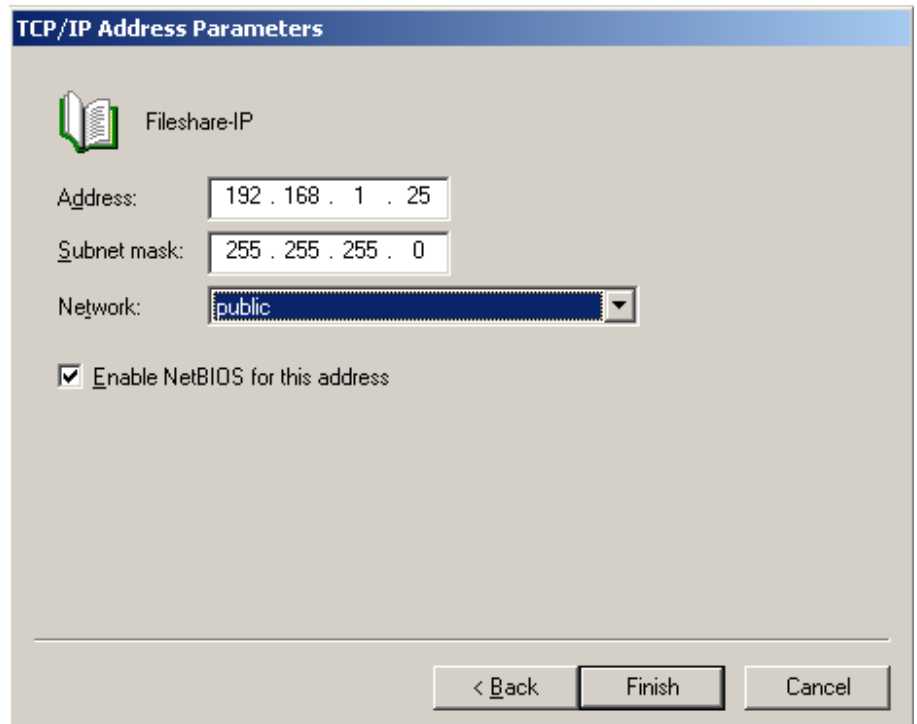


The first resource we need is the IP Address, so select the correct Resource Type, make sure the correct Cluster Group is selected, then type in a Name and Description to identify the resource later.

Press next and select the possible owner. In the Altos C700F two Node Cluster Solution you will most likely select both nodes as possible owners to allow fail over.

In the following window you can define the dependencies for the Cluster resource, though for the IP Address there are no dependencies.

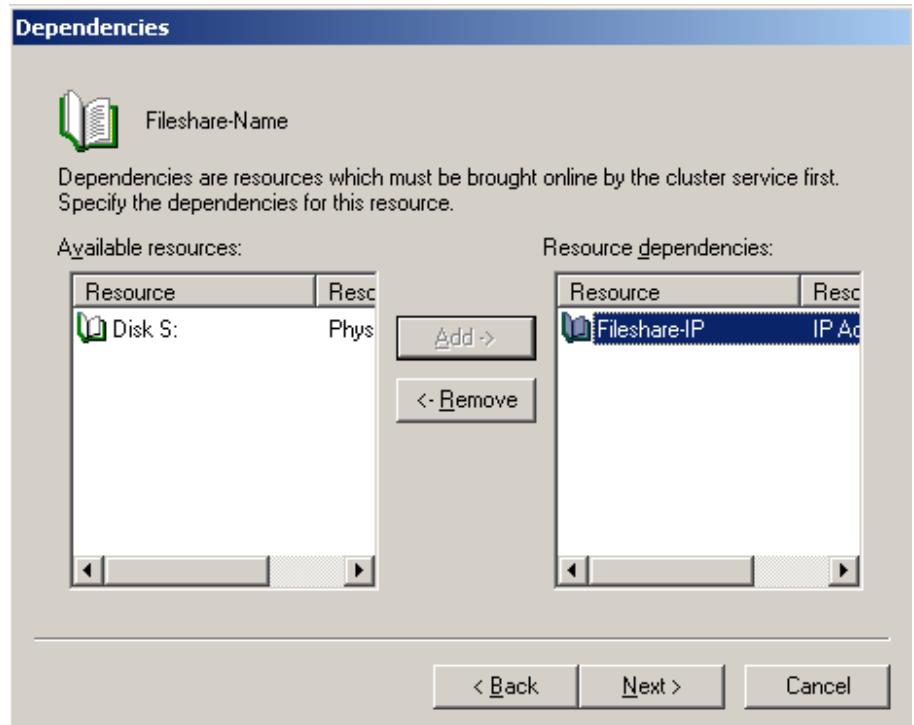
After pressing next you will get to the window where you configure the resource. In this case you will need to specify the actual IP address and subnet mask. Make sure to use a unique IP address.



The screenshot shows a dialog box titled "TCP/IP Address Parameters" with a blue header bar. Below the title bar, there is a green book icon and the text "Fileshare-IP". The dialog contains three input fields: "Address" with the value "192 . 168 . 1 . 25", "Subnet mask" with the value "255 . 255 . 255 . 0", and "Network" with a dropdown menu showing "public". Below these fields is a checked checkbox labeled "Enable NetBIOS for this address". At the bottom right, there are three buttons: "< Back", "Finish", and "Cancel".

Resource type: Network name

The next required Resource Type is the network Name. The steps to create this resource are similar to the once to create an IP Address. However, the Network Name does have a dependency. It depends on the IP Address.



Resource type: Physical Disk

There is no need to create a Physical Disk resource in this case, as it was created during the initial Cluster setup.

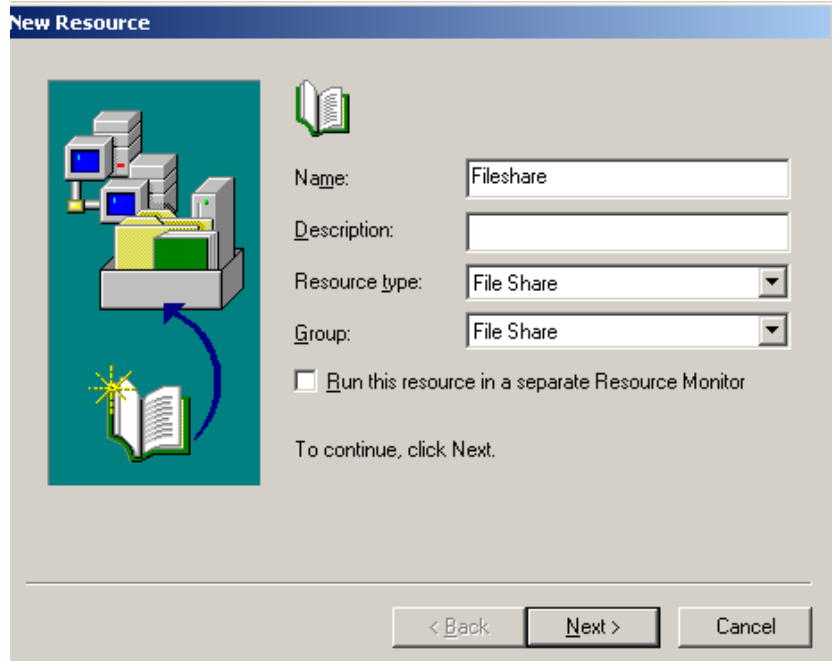
Resource type: File Share

All basic resource types are created and you can now create the specific resource type, in this case the File Share.

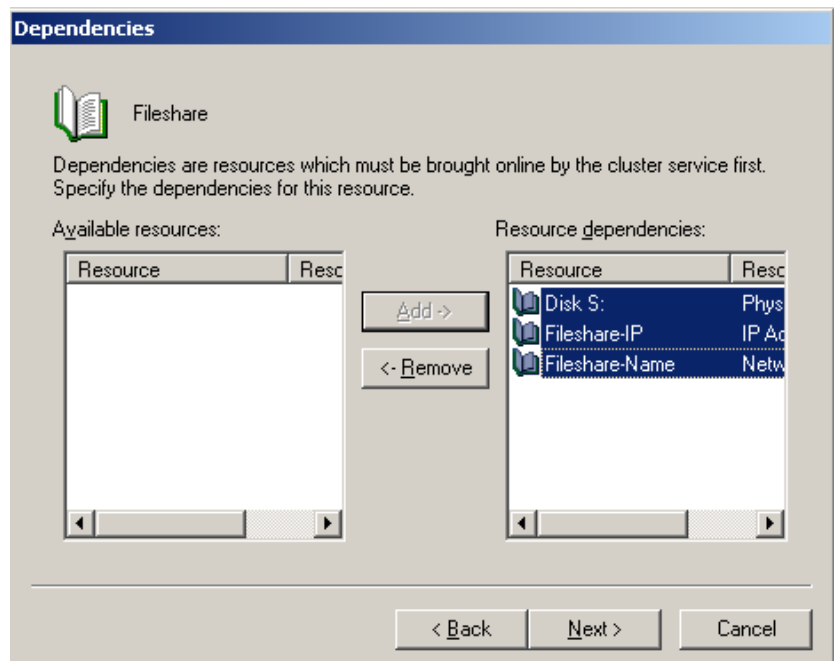
When creating a file share you need to specify a directory on the Disk Resource. You can create the Directory using the Windows Explorer.

Note: Do not create a normal Windows share or use a share name that already exists in your Network. The File share will be created by the Cluster Administrator.

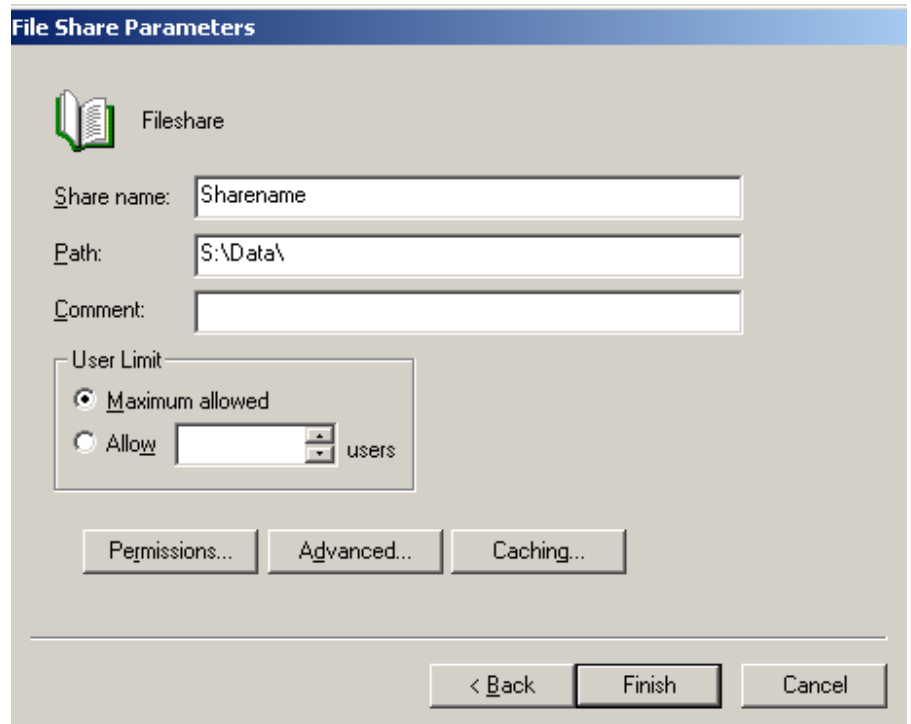
To create a file share follow the same steps as before.



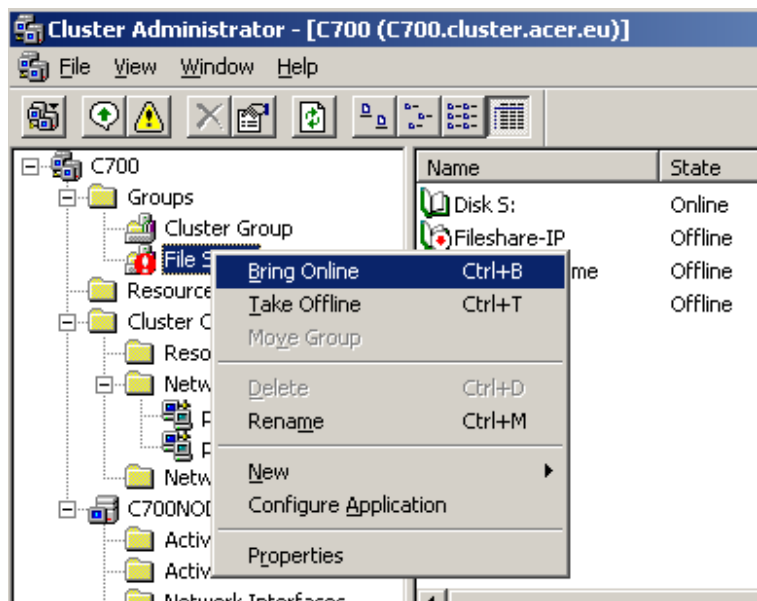
Select all dependencies and in this case that would be Physical Disk, IP Address and Network Name.



In the following Window you can define all settings for your File Share.

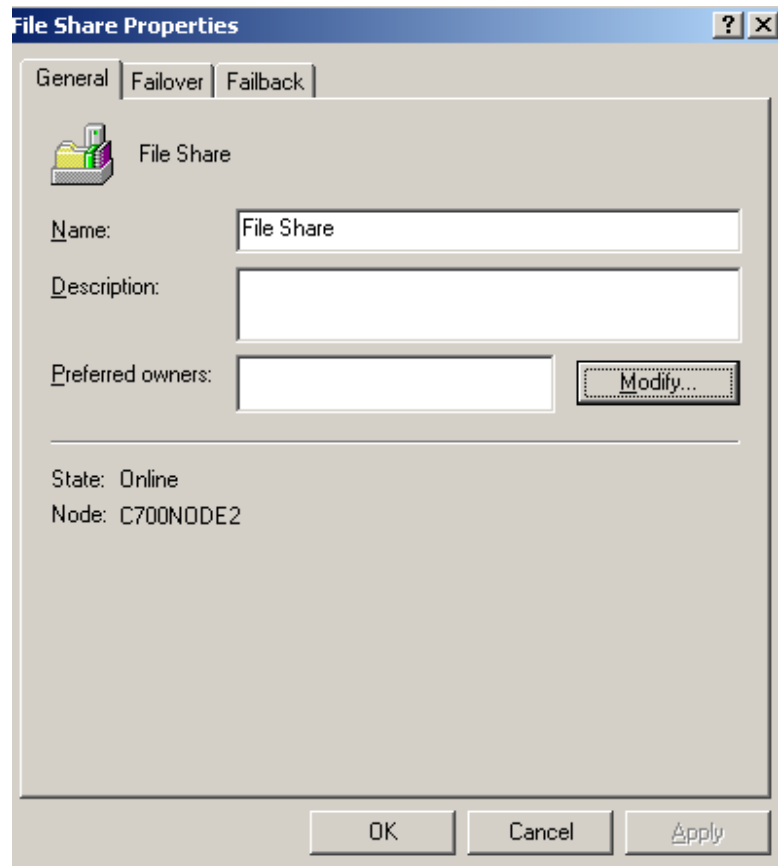


You now have successfully created all required resources for a File Share. The Group with all newly created resources are currently offline. This is normal during the setup. To bring the Cluster Group online right click on it and select "Bring Online"



Set Cluster resource Group Properties

Once you have created and tested all Cluster Resource groups we recommend to set the properties, such as Failover timing, preferred owner and fail back timing.



**FOR MORE
INFORMATION**

You will find more Information about the Acer Altos C700F Cluster Solution on the Acer EMEA websites. Please follow the link below and select your Country.

- <http://www.acer-euro.com/>

Detailed Information about Microsoft Windows Server 2003 Clustering Service can be found here:

- <http://www.microsoft.com/windowsserver2003/technologies/clustering/default.mspx>

The latest Acer Drivers and Utilities are available for download at:

- <http://support.acer-euro.com/drivers/downloads.html>