

StarWind iSCSI SAN Software: Using StarWind with MS Cluster on Windows Server 2003

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Guide

Introduction

Software clustering technology enables you to make several servers to work as a unit. Various cluster configurations can be implemented. One of the most frequently used configurations is the failover cluster. This configuration assumes that if one of the cluster nodes fails, the reserved node automatically brings online, serving the applications. With that the workflow remains uninterrupted and secured.

Failover cluster configuration includes two (or more) server nodes that share an external storage. Based on the iSCSI technology, **StarWind Software Inc. StarWind** enables to create an external storage in Windows environment without implementation of expensive FC or external SCSI solutions. With **StarWind** you can create a shared disk array on a host running Microsoft Windows.



This document gives you detailed step-by-step instructions on **StarWind** configuring for failover clusters.



Figure 1. StarWind provides shared-disk resources to clusters



Configuring Domain Controller

Network Adapter

The network adapter must be assigned a static IP address. Select the **Use the following IP address** option and type in the IP address you wish to use. The Subnet mask must also be provided. Both values must be correctly chosen given the networking configuration of the Corporate LAN. As AD requires DNS, an address must be provided – in this case we can specify 127.0.0.1 (loopback interface address). DNS will be installed later with the other AD components.

Internet Protocol (TCP/IP) Propertie	s ?X
General	
You can get IP settings assigned autom this capability. Otherwise, you need to for the appropriate IP settings.	natically if your network supports ask your network administrator
Obtain an IP address automatical	ly 📗
Use the following IP address:	
IP address:	192.168.1.1
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	· · ·
C O <u>b</u> tain DNS server address autor	natically
	Iresses:
Preferred DNS server:	127.0.0.1
<u>A</u> lternate DNS server:	<u> </u>
	Ad <u>v</u> anced
	OK Cancel

Press the **OK** button.



Active Directory

Select **Start->Run** and type in **dcpromo**.





The Active Directory Installation Wizard appears.





In the wizard that appears please read the introducing instructions.

ive	Directory Installation Wizard
Op	Derating System Compatibility Improved security settings in Windows Server 2003 affect older versions of Windows.
	Domain controllers running Windows Server 2003 implement security settings that require clients and other servers to communicate with those domain controllers in a more secure way.
	Some older versions of Windows, including Windows 95 and Windows NT 4.0 SP3 or earlier, do not meet these requirements. Similarly, some non-Windows systems, including Apple Mac OS X and SAMBA clients, might not meet these requirements.
	For more information, see <u>Compatibility Help</u> .
	< <u>B</u> ack <u>Next</u> ≻ Cancel



As we are creating a new domain, select **Domain controller for a new domain**.

Active Directory Installation Wizard
Domain Controller Type Specify the role you want this server to have.
Do you want this server to become a domain controller for a new domain or an additional domain controller for an existing domain?
Domain controller for a new domain
Select this option to create a new child domain, new domain tree, or new forest. This server will become the first domain controller in the new domain.
C Additional domain controller for an existing domain
Proceeding with this option will delete all local accounts on this server.
All cryptographic keys will be deleted and should be exported before continuing.
All encrypted data, such as EFS-encrypted files or e-mail, should be decrypted before continuing or it will be permanently inaccessible.
< <u>B</u> ack <u>N</u> ext > Cancel



Create New Domain page appears. Select Domain in a new forest option.

tive Dir	ectory Installation Wizard
Create Se	e New Domain elect which type of domain to create.
Cre	sate a new:
œ	Domain in a new forest
	Select this option if this is the first domain in your organization or if you want the new domain to be completely independent of your current forest.
С	Child domain in an existing domain tree
	If you want the new domain to be a child of an existing domain, select this option. For example, you could create a new domain named headquarters.example.microsoft.com as a child domain of the domain example.microsoft.com.
С	Do <u>m</u> ain tree in an existing forest
	If you don't want the new domain to be a child of an existing domain, select this option. This will create a new domain tree that is separate from any existing trees.
	< <u>B</u> ack <u>N</u> ext > Cancel



Specify the full DNS name of the domain to create.

Active Directory Installation Wizard			X
New Domain Name Specify a name for the new domain.			Solution
Type the full DNS name for the new domain (for example: headquarters.example.micros	ı oft.com).		
Eull DNS name for new domain:			
rds.local			
	< <u>B</u> ack	<u>N</u> ext >	Lancel



Specify Domain NetBIOS name.

e Directory Installation Wizard			
letBIOS Domain Name Specify a NetBIOS name for the new	domain.		A
This is the name that users of earlier v domain. Click Next to accept the nam	versions of Windows ie shown, or type a n	will use to identify ew name.	the new
Domain NetBIOS name:	S		
			1



Customize the directories where the AD database and log files will be stored or leave the values at their defaults.

Active Directory Installation Wizard	X
Database and Log Folders Specify the folders to contain the Active Directory database and lo	ig files.
For best performance and recoverability, store the database and th hard disks.	e log on separate
Where do you want to store the Active Directory database?	
Database folder:	
C:\WINDOWS\NTDS	Browse
Where do you want to store the Active Directory log?	
Log folder:	
C:\WINDOWS\NTDS	Browse
< <u>B</u> ack <u>N</u>	ext > Cancel



Customize the directory where the SYSVOL data will be stored or leave the value at its default.

hared System Volume		
Specify the folder to be shared as the	e system volume.	ŝ
The SYSVOL folder stores the server of the SYSVOL folder are replicated t	r's copy of the domain's pu to all domain controllers in	ublic files. The contents the domain.
The SYSVOL folder must be located	on an NTFS volume.	
Enter a location for the SYSVOL fold	ler.	
Eolder location:		
C:\WINDOWS\SYSVOL		B <u>r</u> owse
	< Back	Next> Cano



DNS Registration Diagnostics page appears. Select Install and configure the DNS server on this computer, and set this computer to use this DNS server as its preferred DNS server option.

Active Directory Installation Wizard	×
DNS Registration Diagnostics Verify DNS support, or install DNS on this computer.	X
Diagnostic Failed	
The registration diagnostic has been run 1 time.	
Warning: Domain Controller functions like joining a domain, logging onto a domain, and Active Directory replication will not be available until the DNS infrastructure for Active Directory is correctly configured.	
None of the DNS servers used by this computer responded within the timeout interval.	
For more information, including steps to correct this problem, see Help.	•
C I have corrected the problem. Perform the DNS diagnostic test again.	
Install and configure the DNS server on this computer, and set this computer to this DNS server as its preferred DNS server.	use
\odot I will correct the problem later by configuring DNS manually. (Advanced)	
< <u>B</u> ack <u>N</u> ext > 0	Cancel



Select default permissions for user and group objects.

Active Directory Installation Wizard	×
Permissions Select default permissions for user and group objects.	×
Some server programs, such as Windows NT Remote Access Service, read information stored on domain controllers.	
Permissions compatible with pre-Windows 2000 server operating systems Select this option if you run server programs on pre-Windows 2000 server operating systems or on Windows 2000 or Windows Server 2003 operating systems that are members of pre-Windows 2000 domains	
Anonymous users can read information on this domain. Bernissions compatible only with Windows 2000 or Windows Server 2003)	
operating systems Select this option if you run server programs only on Windows 2000 or Windows Server 2003 operating systems that are members of Active Directory domains. Only authenticated users can read information on this domain.	
< <u>B</u> ack <u>N</u> ext > Can	;el



Type in the **Directory Services Restore Mode Administrator Password**.

tive Directory Installation Wi	zard
Directory Services Restore This password is used when Mode.	Mode Administrator Password you start the computer in Directory Services Restore
Type and confirm the passwo when this server is started in	ord you want to assign to the Administrator account used Directory Services Restore Mode.
The restore mode Administra account. The passwords for both.	tor account is different from the domain Administrator the accounts might be different, so be sure to remember
Restore Mode <u>P</u> assword:	•••••
<u>C</u> onfirm password:	•••••
For more information about D	irectory Services Restore Mode, see <u>Active Directory Help</u> .
	< <u>B</u> ack <u>N</u> ext > Cancel



Review the options summary. Press the **Back** button should any changes be required.

he options you selected.
as the first domain controller in a new forest of domain trees.
e is rds.local. This is also the name of the new forest.
f the domain is RDS
VINDOWS\NTDS NDOWS\NTDS INDOWS\SYSVOL
be installed and configured on this computer. This computer use this DNS server as its preferred DNS server.
click Back. To begin the operation, click Next.



If successful, the wizard should look like the example image provided below.



Press the **Finish** button to close the wizard.

Active Directory Installation Wi	zard	×
Windows must be restarted before the Directory Installation wizard take effective to the Directory Installation wizard take effective to the Directory Installation wizard take before	he changes made by the Active ect.	
Restart Now	Don't Restart Now	

Press the **Restart Now button** to restart the computer.



DNS

Log on to the Domain controller using an account with administrative privileges. Launch the **DNS Manager** and configure the **Reverse Lookup Zone**.



Press the right mouse button over the **Reverse Lookup Zone** node and select **New Zone...** popup menu item.



New Zone Wizard appears.





On the **Zone Type** page, select **Primary Zone** option and check the **Store the zone in the Active Directory** checkbox.

New Zone Wizard				×
Zone Type The DNS server supports v	arious types (of zones and sto	rage.	
Select the type of zone yo	u want to crea	ate:		
 Primary zone Creates a copy of a zo 	ne that can be	e updated direct	ly on this server.	
Secondary zone Creates a copy of a zo the processing load of	ne that exists primary serve	on another serv rs and provides	ver. This option hel fault tolerance.	lps balance
Stub zone Creates a copy of a zo (SOA), and possibly glu authoritative for that z	ne containing je Host (A) re jone,	only Name Serve cords. A server (er (NS), Start of Ac containing a stub z	uthority cone is not
Store the zone in <u>A</u> ctiv	e Directory (a	vailable only if D	NS server is a dom	ain controller)
	< <u>B</u> ack	<u>N</u> ext >	Cancel	Help



Specify the replication scope or accept the default option.

w Zone	Wizard
Active Yo	e Directory Zone Replication Scope u can select how you want DNS data replicated throughout your network.
Sel	ect how you want zone data replicated:
С	To <u>a</u> ll DNS servers in the Active Directory forest rds.local
¢	To all <u>D</u> NS servers in the Active Directory domain rds.local
c	To all domain controllers in the Active Directory domain rds.local Choose this option if the zone should be loaded by Windows 2000 DNS servers
С	To all domain controllers specified in the scope of the following application directory
	particion:
	< <u>B</u> ack <u>N</u> ext > Cancel Help



Type in the **Network ID** to identify the reverse lookup zone.

w Zone '	Wizard	×
Revers A re	se Lookup Zone Name everse lookup zone translates IP addresses into DNS names.	
Toi @	identify the reverse lookup zone, type the network ID or the name of the zone. Network ID: 192 .168 .1 The network ID is the portion of the IP addresses that belongs to this zone. Enter the network ID in its normal (not reversed) order. If you use a zero in the network ID, it will appear in the zone name. For example, network ID 10 would create zone 10.in-addr.arpa, and network ID 10.0 would create	
o	zone 0.10.in-addr.arpa. Reverse lookup zone name:	
For	more information on creating a reverse lookup zone, click Help.	
	< <u>B</u> ack <u>N</u> ext > Cancel Help	



Specify dynamic update options.

ynamic U You can updates	p date specify that this	DNS zone accej	ots secure, nons	ecure, or no dyna	amic 🧯
Dynamic resource	updates enable I records with a D	ONS client comp NS server whei	uters to register never changes o	and dynamically ccur.	update their
Select th	e type of dynam	ic updates you	want to allow:		
Allov This) only <u>s</u> ecure dyn option is available	amic updates (r e only for Active	ecommended fo Directory-integ	r Active Directory rated zones.))
C Allov Dyn A) both nonsecure amic updates of ra This option is a accepted from 1	and secure dyr esource records significant secu untrusted sourc	namic updates are accepted fr rity vulnerability es.	om any client. because updates	; can be
O <u>D</u> oin Dyna thes	ot allow dynamic (mic updates of re e records manuall	updates source records y.	are not accepte	d by this zone. Y	ou must update
		< Back	Next >	Cancel	Help



Check that all of the parameters are correct. Press the **Back** button should any change be required.

New Zone Wizard			×		
	Completing the New Zone Wizard				
	You have success specified the follow	fully completed the New Zone Wizard. You wing settings:			
	Name:	1.168.192.in-addr.arpa			
	Туре:	Active Directory-Integrated Primary			
	Lookup type:	Reverse			
	Note: You should now add records to the zone or ensure that records are updated dynamically. You can then verify name resolution using nslookup. To close this wizard and create the new zone, click Finish.				
	< <u>B</u> ack	Finish Cancel Help			

Press the **Finish** button.



Press the right mouse button over **rds.local** forward lookup zone and select **New Host (A)...**.pop-up menu item.

🚊 dnsmgmt - [DNS\PDC\Forward Lookup Zones\rds.local]				_ 🗆 🗙
🚊 Eile Action View Window H	lelp			_ 8 ×
← → 🗈 🖬 🗙 😭 🗟	2 🖬 🗐 🗒 🗊			
DNS PDC PDC Forward Lookup Zones Forward Lookup Zones Forward Lookup Zones Forward Lookup Zones Powerse Loc Powerse Loc Power Hogt (A New Hogt (A New Hogt (A New Moat Exc New Moat Exc New Degration New Delegat Other New R All Tasks View New Window Delete Refresh Export List Properties Help	rds.local 10 record(s) Name	Type Start of Authority (SOA) Name Server (NS) Host (A) Host (A)	Data [21], pdc.rds.local., hostma pdc.rds.local. 192.168.1.1 192.168.1.1	
Create a new nost resource record.				



New Host dialog appears. Type in the **hostname** of the **Cluster Node 1 Server** and its **IP address**. Also please check the **Create associated pointer (PTR) record** checkbox.

New Host ? 🗙
Name (uses parent domain name if blank):
node1
Fully qualified domain name (FQDN):
node1.rds.local.
I <u>P</u> address: 192 .168 .1 .11
Create associated pointer (PTR) record
Allow any authenticated user to update DNS records with the same owner name
Add <u>H</u> ost Cancel

Press the Add Host button to add node1 DNS record.



Type in the **hostname** of the **Cluster Node 2 Server** and its **IP address**. Also please check the **Create associated pointer (PTR) record** checkbox.

New Host
Name (uses parent domain name if blank):
node2
Fully qualified domain name (FQDN):
node2.rds.local.
I <u>P</u> address: 192 .168 .1 .22
☑ ⊆reate associated pointer (PTR) record
Allow any authenticated user to update DNS records with the same owner name
Add <u>H</u> ost Done

Press the Add Host button to add node2 DNS record.



If successful, the **DNS Manager** console should look like the example images provided below.

Image: set of the set
Image: Second
Image: DNS rds.local 12 record(s) Image: Porc



🚊 dnsmgmt - [DNS\PDC\Reverse Lookup Zones\192.168.1.x Subnet]				
, File Action <u>V</u> iew <u>W</u> indow Help				
	2 🖬 🗐 🗊 🗊			
DNS DNS DNS Event Viewer Forward Lookup Zones Document Comparison DNS DNS Event Viewer DNS Comparison Comparison DNS DNS DNS Comparison DNS DNS DNS Comparison DNS DNS DNS DNS DNS DNS DNS DNS	192.168.1.x Subnet 4 record(x Name Image: Second seco	;) Type Start of Authority (SOA) Name Server (NS) Pointer (PTR) Pointer (PTR)	Data [7], pdc.rds.local., hostmas pdc.rds.local. node1.rds.local. node2.rds.local.	

User Accounts

Administrator accounts must now be created to manage first and the second cluster node servers. Launch the **Active Directory Users and Computers** management console.

🗳 Active Directory Users and Computers								
🍕 Eile Action View Window	Help			_ _ _ / ×				
← → 🖻 🖬 🐰 🛍 🗡	📽 🖻 🖻 😫 💵 😽	1 🖉 👛 💎 🍕 🤅						
Active Directory Users and Comp	Jter Users 17 objects							
E - ∰ rds.local	Name	Туре	Description					
Builtin Builtin Computers Domain Controllers ForeignSecurityPrincipals Users Dglegate Contr Find New All Tasks View New Window fr Refresh Export List Properties Help	Administrator Cert Publishers DnsAdmins DnsUpdateProxy Domain Admins ain Computers ain Controllers Contact Group InetOrgPerson MSMQ Queue A Printer User Shared Folder etClients	User Security Group Security Group Security Group Security Group Security Group y Group y Group y Group y Group y Group y Group y Group y Group y Group	Built-in account for admini Members of this group are DNS Administrators Group DNS clients who are permi Designated administrators All workstations and serve All domain controllers in th All domain guests All domain users Designated administrators Members in this group can Built-in account for guest Group for the Help and Su Servers in this group can Designated administrators This is a vendor's account Members of this group ha					
Create a new object								

Press the right mouse button over the **Users** node. Select **New->User**.



In the dialog that appears, enter the required fields as shown in the example image.

v Object - User				
Create in:	rds.local/Us	ers		
Eirst name:	node1adm		Initials:	
Last name:				
Full name:	node1adm			
<u>U</u> ser logon name:				
node1adm		@rds.local		-
User logon name (pre-)	<u>//</u> indows 200	0):		
RDS\		node1adm		
	[< Back	Nevts	Cancel



Enter the password and optionally set the additional options.

New Object - User	×
Create in: rds.local/Users	
Password: •••••• Confirm password: •••••••	
 ✓ User must change password at next logon ✓ User cannot change password ✓ Password never evolves 	
Account is disabled	
< <u>B</u> ack <u>N</u> ext > Ca	ncel



Check that all of the parameters are correct. Press the **Back** button should any change be required.

ew Object - User	×
Create in: rds.local/Users	
When you click Finish, the following object will be created:	
Full name: node1adm	<u> </u>
User logon name: node1adm@rds.local	
The user cannot change the password. The password never expires.	
< <u>B</u> ack Finish	Cancel

Press the **Finish** button to create new user.


Once again press the right mouse button over the **Users** node.

line the Active Directory Users and Comp	outers			
🌍 Eile Action <u>V</u> iew <u>W</u> indow <u>H</u>	elp			_ B ×
	P 🖻 🖻 😰 🖬 😽			
	Users 18 objects	1		
rds.local	Name	Туре	Description	
📕 🔄 🛄 Builtin	Administrator	User	Built-in account for admini	
Computers	Cert Publishers	Security Group	Members of this group are	
🕀 🐼 Domain Controllers	M DnsAdmins	Security Group	DNS Administrators Group	
🗄 💼 ForeignSecurityPrincipals	M DnsUpdateProxy	Security Group	DNS clients who are permi	
Users	🕵 Domain Admins	Security Group	Designated administrators	
Delegate Control	, hain Computers	Security Group	All workstations and serve	
Find	hain Controllers	Security Group	All domain controllers in th	
No.	bain Cuasta	Socurity Group	All domain guests	
	Computer	y Group	All domain users	
	Contact	y Group	Designated administrators	
View	Group	y Group	Members in this group can	
New Window from	Here	I	Built-in account for guest	
	MSMQ Queue A	ilas ;y Group	Group for the Help and Su	
Retresh	Printer			
Export List	User	:y Group	Servers in this group can	
Properties	Shared Folder	:y Group	Designated administrators	
	PORT_388945a0	User	This is a vendor's account	
Help	hetClients	Security Group	Members of this group ha	
]			
Create a new object				

Select New->User.



In the dialog that appears, enter the required fields as shown in the example image.

w Object - User				J
-				
Create	e in: rds.local/Us	sers		
<u>F</u> irst name:	node2adm		Initials:	
Last name:				
Full n <u>a</u> me:	node2adm			
User logon name:				
node2adm		@rds.local		•
User logon name	(pre- <u>W</u> indows 200	0):		
RDS\		node2adm		
		< Back	Next >	Cancel



Enter the password and optionally set the additional options.

New Object - User	×
Create in: rds.local/Users	
Password: •••••• Confirm password: •••••••	
 ✓ User must change password at next logon ✓ User cannot change password ✓ Password never evolves 	
Account is disabled	
< <u>B</u> ack <u>N</u> ext > Ca	ncel



Check that all of the parameters are correct. Press the **Back** button should any change be required.

ew Object - User	×
Create in: rds.local/Users	
When you click Finish, the following object will be created:	
Full name: node2adm	<u>^</u>
User logon name: node2adm@rds.local	
The user cannot change the password.	
	<u> </u>
< <u>B</u> ack [Finish]	Cancel

Press the **Finish** button to create new user.



Also **Cluster Service Account** must now be created under which the cluster service will be run. Launch the **Active Directory Users and Computers** management console.



Press the right mouse button over the Users node. Select New->User.



In the dialog that appears, enter the required fields as shown in the example image.

v Object - User			
Create in: rds.I	ocal/Users		
<u>F</u> irst name: Cluste	er	Initials:	
Last name:			
Full name: cluste	er		
User logon name:			
cluster	@rds.local		-
User logon name (pre- <u>W</u> indo	iws 2000):		
RDSV	cluster		
	< Back	Next>	Cancel



Enter the password and optionally set the additional options.

New Object - User	×
Create in: rds.local/Users	
Password: •••••• Confirm password: •••••••	
 ✓ User must change password at next logon ✓ User cannot change password ✓ Password never evolves 	
Account is disabled	
< <u>B</u> ack <u>N</u> ext > Ca	ncel



Check that all of the parameters are correct. Press the **Back** button should any change be required.

w Object	- User					×
g	Create in:	rds.local/U	lsers			
When yo	ou click Finish	, the followin	g object will b	e created:		
Full nam	ie: cluster					-
User log	jon name: clu	ster@rds.loc	al			
The use	r cannot chai	nge the pass	word.			
						_
1						
			< Back	Finish		Cancel
					i	

Press the **Finish** button to create new user.



The two users, **node1adm** and **node2adm**, must be made members of both the **Administrators** and **Domain Admins** groups. Select both of the accounts and press the right mouse button over the selection as shown in the example image.

🐗 Active Directory Users and Compu	ıters			
Gile Action View Window He	lp			_ 8 ×
	🗠 🖬 😹 🕷 🐜	V 43 m		
		U 🔍 🛂		
Active Directory Users and Computer	Users 20 objects			
E-Saved Queries	Name	Туре	Description	
	🙍 Administrator	User	Built-in account for admini	
🗄 💼 Computers	🕵 Cert Publishers	Security Group	Add to a group	
🗄 🧭 Domain Controllers	🙎 cluster	User	Di <u>s</u> able Account	
🗄 💼 ForeignSecurityPrincipals	St DnsAdmins	Security Group	Enable Account	
Users	DnsUpdateProxy	Security Group	Mo <u>v</u> e	
	🕵 Domain Admins	Security Group	Open Home Page	
	Bomain Computers	Security Group	Send M <u>a</u> il	
	Domain Controllers	Security Group	Oll Tacks	
	Comain Guests	Security Group		
	Domain Users	Security Group	Cu <u>t</u>	
	Conterprise Admins	Security Group	Delete	
	Group Policy Creato	Security Group	Properties	
	Welesc Crown	Oser Security Croup		
	Coode1adm	Hear	Help	
	C node2adm	User		
	RAS and IAS Servers	Security Group	Servers in this group can	-
	Schema Admins	Security Group	Designated administrators	
		User	This is a vendor's account	
		Security Group	Members of this group ha	
•				
Allows you to add the selected objects to a	group you select.			

Select Add to a group option.



Select Group dialog appears. Enter Domain Admins as the name of the group.

Select Group	<u>? ×</u>
Select this object type:	
Group or Built-in security principal	Object Types
Erom this location:	
rds.local	Locations
Enter the object name to select (<u>examples</u>):	
Domain Admins	<u>C</u> heck Names
Advanced OK	Cancel



Repeat the same steps to to add **node1adm** and **node2adm** users to **Administrators** group.

Select Group	? ×
Select this object type:	
Group or Built-in security principal	<u>O</u> bject Types
Erom this location:	
rds.local	Locations
Enter the object name to select (<u>examples</u>):	
Administrators	<u>C</u> heck Names
Advanced OK	Cancel



Configuring StarWind Server

Network Adapter

The network adapter must be assigned a static IP address. Select the **Use the following IP address** option and type in the IP address you wish to use. The Subnet mask must also be provided. Both values must be correctly chosen given the networking configuration of the dedicate iSCSI network that the cluster will be a part of. This interface is used for iSCSI target storage communications and a default gateway need not be specified.

Internet Protocol (TCP/IP) Propertie	-s ? X
General	
You can get IP settings assigned auton this capability. Otherwise, you need to a the appropriate IP settings.	natically if your network supports ask your network administrator for
C Obtain an IP address automatical	ly 🔤
Use the following IP address:	
<u>I</u> P address:	192.168.2.1
S <u>u</u> bnet mask:	255.255.255.0
Default gateway:	· · ·
C Obtain DNS server address autor	natically
	dresses:
Preferred DNS server:	· · ·
<u>A</u> lternate DNS server:	· · ·
	Advanced
	OK Cancel



Preparing Quorum Volume

Launch the StarWind Management Console selecting Start -> All Programs -> StarWind Software -> StarWind -> StarWind. After the console is launched its icon appears in the system tray. Double click the icon with the left mouse button or single click it with the right and select Start Management pop-up menu item. From the StarWind Servers tree please select the computer you wish to connect to. Press the right mouse button over the desired host (computer) and select the Connect menu item. You will be prompted to enter the login and password. Default ones are: root, starwind. You can always change them later.

After you have successfully connected to the **StarWind Service**, please click the right mouse button over the desired host (computer) and select **Add Target** pop-up menu item. In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.

Add Targ	get Wizard
Com i S	mon target parameters Specify target alias and target name.
Ta	arget Alias:
-	quorum
	Target Name:
[iqn.2003-09.com.starwindsoftware:wishmaster-quorum
	< <u>B</u> ack <u>Next</u> > Cancel



Select Image File device.





Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.





If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual disk you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).

Device Type Selection	×
Virtual disk parameters Specify virtual disk parameters.	\approx
New virtual disk location and name:	
My Computer\C\images\quorum.img	
Size in MBs: 1024	
Compressed	
Encrypted	
User account that will have access to this image	
Name:]
Password:]
Fill with zeroes	
< <u>B</u> ack <u>N</u> ext > Car	ncel



Image File device has some extra parameters. Check Allow multiple concurrent iSCSI connections (clustering) checkbox. Please refer to the online help for details regarding those additional parameters (Asynchronous mode, Allow multiple connections (clustering), Read-only mode and Specify advanced options).

Device Type Selection	×
Image File device parameters Specify Image File device parameters.	≋
Select virtual disk you want to make accessible via iSCSI:	
My Computer\C\images\quorum.img	·
Asynchronous mode	
Read-Only mode	
Allow multiple concurrent iSCSI connections (clustering)	
Advanced options	
Use file system buffering	
Header size in sectors: 0	
< <u>B</u> ack Next >	Cancel



Check the device parameters are correct. Press the **Back** button should any changes be required.

Completing the Add Target Wizard		
	Completing the Add Target Wizard	
	The following device will be added:	
	ImageFile 1	
	You specified the following settings:	
	File : My Computer\C\images\quorum.img Asynchronous : Yes Readonly : No Clustering : Yes	*
		-
	T I	
	Click Next to add new device.	
	< <u>B</u> ack Next > Can	:el



A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.

Preparing Generic Volume

Click the right mouse button over the host and select **Add Target** pop-up menu item.

In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.

Add Target Wizard	x
Common target parameters Specify target alias and target name.	\approx
Target Alias:	
generic	
Target Name:	
iqn.2003-09.com.starwindsoftware:wishmaster-generic	
< <u>B</u> ack <u>Next</u> >	Cancel



Select Image File device.





Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.





If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual disk you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).

Device Type Selection
Virtual disk parameters Specify virtual disk parameters.
New virtual disk location and name:
My Computer \C \images \generic.img
Size in MBs: 2048
Compressed
Encrypted
User account that will have access to this image
Name:
Password:
Fill with zeroes
< <u>B</u> ack <u>N</u> ext > Cancel



Image File device has some extra parameters. Check Allow multiple concurrent iSCSI connections (clustering) checkbox. Please refer to the online help for details regarding those additional parameters (Asynchronous mode, Allow multiple connections (clustering), Read-only mode and Specify advanced options).

Device Type Selection	×
Image File device parameters Specify Image File device parameters.	\approx
Select virtual disk you want to make accessible via iSCSI:	
My Computer\C\images\generic.img	•
Asynchronous mode	
Read-Only mode	
Allow multiple concurrent iSCSI connections (dustering)	
Advanced options	
Use file system buffering	
Header size in sectors: 0	
< <u>B</u> ack <u>N</u> ext >	Cancel



Check the device parameters are correct. Press the **Back** button should any changes be required.

Completing the Add Target Wizard		
	Completing the Add Target Wizard	
	The following device will be added:	
	ImageFile2	
	You specified the following settings:	
	File : My Computer\C\images\generic.img Asynchronous : Yes Readonly : No Clustering : Yes	*
		-
	٠	
	Click Next to add new device.	
	< <u>B</u> ack Next > Can	:el



A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.



If successful, the **StarWind Console** should look like the sample image provided below.

StarWind Management Console					
File Options Help					
🎯 🔁 🖹 😫 🚅 🛃					
StarWind Servers WISHMASTER (127.0.0.1): 3261	Target List Authentication Access	Rights		≈sta	
- C Targets	Target Alias	Target IQN		Clustered	
quorum	🚗 quorum	iqn.2003-09.com.starwir	ndsoftware:wishmaster-quorum	Yes	
aeneric	👝 generic	iqn.2003-09.com.starwir	ndsoftware:wishmaster-generic	Yes	
	eneric Devices iSCSI Sessions Authentic	ation	111		
	Device Name	Device ID	Device Type	State	
	ImageFile2	0x002185E0	Image File	Active	
A R E	Device properties				
2	Virtual Disk:	Imagenie2 My Computer/Climages/generic img			
	Persistent Reservation:	Yes			
he he	Use File System Buffering:	No			
	Size in MBs:	2048			
1	Read-Only Mode:	No			
(A)	Header Size in Sectors:	0			
W W W	Asynchronous Mode:	Yes			
					_
StarWind Software Ready					



Preparing Cluster Nodes

Node 1

Configuring network interfaces

Each adapter will be assigned a static IP address. Select the **Use the following IP address** option and type in the IP address you wish to use. The Subnet mask and DNS server address must also be provided. All the values must be correctly chosen given the networking configuration of the Corporate LAN that the cluster will be a part of.

Internet Protocol (TCP/IP) Propertie	es ?X			
General				
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.				
O Octain an IP address automatica	шу 			
IP address:	192.168.1.11			
Subnet mask:	255.255.255.0			
Default gateway:	· · ·			
C Obtain DNS server address auto	matically			
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	dresses:			
Preferred DNS server:	192.168.1.1			
<u>A</u> lternate DNS server:	<u> </u>			
	Advanced			
	OK Cancel			



Just as was done for the first network adapter, assign appropriate values to the TCP/IP configuration of the second network adapter using the following example image as guidance. This interface is used for iSCSI target storage communications and a default gateway need not be specified.

Internet Protocol (TCP/IP) Propertie	s ?X		
General			
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.			
Obtain an IP address automatical	ly 🔤		
Use the following IP address:			
IP address:	192.168.2.11		
S <u>u</u> bnet mask:	255 . 255 . 255 . 0		
Default gateway:	· · ·		
C Obtain DNS server address auton	natically		
	resses:		
Preferred DNS server:	· · ·		
<u>A</u> lternate DNS server:	· · ·		
	Ad <u>v</u> anced		
	OK Cancel		



Joining the domain

Launch System Properties tool selecting Control Panel -> System. Select Computer Name tab.

System Properties		<u>? ×</u>
Advanced General	Automatic Updates Computer Name	Remote Hardware
Windows uses on the network	the following information to iden	tify your computer
Computer <u>d</u> escription:		
	For example: "IIS Production S "Accounting Server".	erver" or
Full computer name:	node1.	
Workgroup:	WORKGROUP	
To rename this computer	or join a domain, click Change.	<u>C</u> hange
	OK Can	cel <u>Apply</u>

Press the **Change...** button.



In the **Computer Name Changes** dialog enter domain to join.

Computer Name Changes
You can change the name and the membership of this computer. Changes may affect access to network resources.
Computer name:
node1
Full computer name: node1.
<u>M</u> ore
Member of
• Domain:
rds.local
© <u>W</u> orkgroup:
WORKGROUP
OK Cancel



Enter the name and password of an account with permission to join to the domain (**node1adm**).

Computer Name Changes		
		- And
Enter the name and p to join the domain.	assword of an account (with permission
<u>U</u> ser name:	🕵 node1adm	▼
Password:	•••••	
	ОК	Cancel

Press the **OK** button to join.



If successful, the notification dialog like the one on the image shown below should appear.

Compute	r Name Changes	×
(į)	Welcome to the rds.local domain	۱.
	ОК	



You must restart the computer for the changes to take effect.

Compute	r Name Changes
i	You must restart this computer for the changes to take effect.
	OK

Restart the server. Log in as node1adm and install MS iSCSI Initator.



Configuring iSCSI initiator

The **MS iSCSI Initiator** is a free application that is available for download from the **Microsoft** Web site http://www.microsoft.com/downloads/details.aspx? FamilyID=12cb3c1a-15d6-4585-b385-befd1319f825&displaylang=en.

It is required to connect to the iSCSI devices. Before continuing, ensure that the **MS iSCSI Initiator** is installed.

Launch the Microsoft iSCSI Software Initiator application Start->All Programs->Microsoft iSCSI Initiator-> Microsoft iSCSI Initiator.

iSCSI Initiator Properties	×				
General Discovery Targets Persistent Targets Bound Volumes/Devices					
The iSCSI protocol uses the following information to uniquely identify this initiator and authenticate targets.					
Initiator Node Name: iqn.1991-05.com.microsoft:node1.rds.local					
To rename the initiator node, click Change.					
To authenticate targets using CHAP, click Secret to <u>S</u> ecret <u>S</u> ecret					
To configure IPSec Tunnel Mode addresses, click <u>I</u> unnel					
OK Cancel Apply					

Select the **Discovery** Tab.



In the Target Portals group, click the Add button.

iSCSI Initiator Prope	rties			×
General Discovery	Targets P	ersistent Targets	Bound Volumes/Device	es
Address	Port	Adapter	IP Address	
Add		<u>R</u> emove	R <u>e</u> fresh	
iSNS Servers				
Name				
A <u>d</u> d		Remove	Re <u>f</u> resh	
		ок	Cancel Apply	

Press the **Add** button.


In the Add Target Portal dialog enter IP address or DNS name of the StarWind target server.

Add Target Portal		×
Type the IP address or DNS name a want to add. Click Advanced to sel session to the portal.	and socket number (ect specific settings	of the portal you for the discovery
IP address or DNS name:	<u>P</u> ort:	
192.168.2.1	3260	<u>A</u> dvanced
	ОК	Cancel



Click on the Targets tab. Select the IQN of the target just added.

iSCSI Initiator Properties	×
General Discovery Targets Persistent Targets Bound Volumes/Device	es
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.	
Targets:	
Name Status	
ign. 2003-09. com. starwindsoftware: wishmaster-generic Inactive	
<u>D</u> etails <u>L</u> og On R <u>e</u> fresh	
OK Cancel Apply	

Press the Log On... button.



The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.



Press the **OK** button to continue.

Log On to Target	×
Target name:	
iqn.2003-09.com.starwindsoftware:wishmaster-generic	
Automatically restore this connection when the system boots	
🔲 Enable multi-path	
Only select this option if iSCSI multi-path software is already instal on your computer.	led
Advanced Cancel	



If successful, the initiator is now logged on to **StarWind**.

iSCSI Initiator Properties
General Discovery Targets Persistent Targets Bound Volumes/Devices
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.
Targets:
Name Status
ign.2003-09.com.starwindsoftware:wishmaster-generic Connected
<u>D</u> etails <u>Log On</u> R <u>e</u> fresh
OK Cancel Apply



Initializing, formatting and creating partitions

When the **StarWind** Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be initialized and formatted. Launch the **Computer Management** console.



Select Disk Management.



Follow the **Initialize and Convert Disk Wizard** to initialize the new disks. Use the default settings that Windows provides. By default the disk will be initialized as the basic disk. MSCS works only with the basic disks.





Select Disks to Initialize You must initialize a disk before Lo	ogical Disk Manager can access it.	
Select one or more disks to initialize	e.	
<u>D</u> isks:		
Disk 1		
Uisk 2		



ialize and Convert Disk Wizar Select Disks to Convert The disks you select will be co	d onverted to dyr	namic disks.		E
Select one or more disks to co	nvert:			
<u>D</u> isks:				
□ Disk 1 □ Disk 2				
		< <u>B</u> ack	<u>N</u> ext >	Cancel



Initialize and Convert Disk W	izard	×
	Completing the Initialize and Convert Disk Wizard You have successfully completed the Initialize and Convert Disk Wizard. You selected the following settings: Initialize to MBR: Disk 1, Disk 2 Convert: None	
	To close this wizard, click Finish.	
	< <u>B</u> ack Finish Cancel	

Press the **Finish** button to close the wizard.



📮 Computer Management					
🔜 Eile Action <u>V</u> iew <u>W</u> indow <u>H</u>	elp				_ 8 ×
Computer Management (Local) System Tools System Tools Computer Viewer Computer Shared Folders Computer Folders Computer Shared Folders Computer Folders Computer Shared Folders Computer Sh	Volume	Layout Type Partition Basic) Partition Basic	File System NTFS CDFS	Status Healthy (System) Healthy	Capacity F 7.99 GB 5 121 MB 0
Disk Management	•				•
⊡ Services and Applications	Cisk 1 Basic 1020 MB Online	1020 MB Unallocated			
	Cisk 2 Basic 1.99 GB Online	1.99 GB Unallocated			
	Unallocated F	rimary partition			



After the **Wizard** completes initialization, press the right mouse button on the unallocated space and select **New Partition** popup menu item. Follow the instructions of the wizard to create an **NTFS** partition for use as the quorum disk. Use the default settings that Windows provides. (The default settings are sufficient for most environments.)

📮 Computer Management						
Eile Action View Window He	elp					_ 8 ×
	B					
Computer Management (Local) System Tools System Tools Computer Viewer Shared Folders Cocal Users and Groups Cocal Users and Cocal Users Cocal Users Coc	Volume (C:) CROECD2_EN (D:	Layout Partition) Partition	Type Basic Basic	File System NTFS CDFS	Status Healthy (System) Healthy	Capacity F 7.99 GB 5 121 MB C
	Disk 1 Basic 1020 MB Online Disk 2 Basic 1.99 GB Online	1020 MB Unallocated 1.99 GB Unallocated		vew Partition Properties		
	Unallocated F	^p rimary partiti	on			



New Partition Wizard appears.





Select partition type to create.

Select the partition you want to create	e:
Primary partition	
© Extended partition	
C Logical drive	
Description	
A primary partition is a volume you Windows and other operating syst create up to 128 primary partitions Record (MBR) basic disk, you car primary partitions and an extended	create using free space on a basic disk. tems can start from a primary partition. You can on a GPT basic disk. On a Master Boot in create up to four primary partitions or three I partition.



Specify new partition size in megabytes.

Maxium disk space in megabytes (MB):	1019
Minimum disk space in MB:	8
<u>P</u> artition size in MB:	1019



Choose the Drive Letter to assign.

ew Partition Wizard			>
Assign Drive Letter or Path For easier access, you can assign a drive letter	r or drive patł	n to your partition.	S
Assign the following drive letter:	Q		
Mount in the following empty NTFS folder:	Brows	e	
Do not assign a drive letter or drive path			
	< <u>B</u> ack	<u>N</u> ext >	Cancel



Specify format options. Provide the Volume Label.

w Partition Wizard	
Format Partition To store data on this partition, yo	ou must format it first.
Choose whether you want to for	mat this partition, and if so, what settings you want to use.
\bigcirc <u>D</u> o not format this partition	n
• Format this partition with t	he following settings:
<u>F</u> ile system:	NTFS
Allocation unit size:	Default
<u>V</u> olume label:	Quorum
Perform a quick form	mat
🔲 Enable file and fold	er compression
	< Back Next > Cancel



Check the settings are correct. Press the **Back** button should any changes be required.



Press the **Finish** button to close the wizard.



If successful, a new volume will be created as shown in the example image below. Repeat the same steps to create the second volume.

📮 Computer Management						- D ×
Eile Action View Window H	elp					_ 8 ×
	· 😺					
Computer Management (Local) System Tools Event Viewer Cold Users and Groups Performance Logs and Alert: Device Manager Storage Cold Users and Groups Performance Logs and Alert: Device Manager Storage Disk Defragmenter Disk Management Services and Applications	Volume C(C:) CROECD2_EN (D:) Quorum (Q:) Constant 1 Basic 1020 MB Online Constant 2 Basic 1.99 GB Online Conline Con	Layout Partition Partition Partition Partition Unolloc MB NT Healthy 1.99 GB Unallocated	Type Basic Basic Basic	File System NTFS CDFS NTFS <u>NTFS</u>	Status Healthy (System) Healthy Healthy	Capacity F 7.99 GB 5 121 MB 0 1020 MB 1
	Unallocated Pr	imary partiti	on	Help		



New Partition Wizard appears.





Select partition type to create.

Select the partition you want to create	e:
Primary partition	
© Extended partition	
C Logical drive	
Description	
A primary partition is a volume you Windows and other operating syst create up to 128 primary partitions Record (MBR) basic disk, you car primary partitions and an extended	create using free space on a basic disk. tems can start from a primary partition. You can on a GPT basic disk. On a Master Boot in create up to four primary partitions or three I partition.



Specify new partition size in megabytes.

w Partition Wizard		2
Specify Partition Size Choose a partition size that is between th	e maximum and minimum sizes.	
Manima di Langara in anggabata (MD).	2020	
Maxium disk space in megabytes (MB).	2033	
Minimum disk space in MB:	8	
Partition size in MB:	2039	
	< <u>B</u> ack <u>N</u> ext >	Cancel



Choose the Drive Letter to assign.

New Partition Wizard			×
Assign Drive Letter or Path For easier access, you can assign a drive lette	er or drive patł	n to your partition.	Ŷ
 Assign the following drive letter: Mount in the following empty NTFS folder: 	F		
I O <u>D</u> o not assign a drive letter or drive path	DIAM	1479 m.	
-			
	< <u>B</u> ack	<u>N</u> ext >	Cancel



Specify format options. Provide the Volume Label.

w Partition Wizard	
Format Partition To store data on this partition, yo	ou must format it first.
Choose whether you want to for	nat this partition, and if so, what settings you want to use.
\bigcirc <u>D</u> o not format this partition	n
Format this partition with the second sec	he following settings:
<u>F</u> ile system:	NTFS
Allocation unit size:	Default
<u>V</u> olume label:	Generic
Perform a quick form	nat
🔲 Enable file and folde	er compression
	Z Rack Nexts Cancel



Check the settings are correct. Press the **Back** button should any changes be required.



Press the **Finish** button to close the wizard.



If successful, both of the disks are now formatted as shown in the example image below.

📮 Computer Management						<u>- 🗆 ×</u>
🖳 Eile Action View Window H	elp					_ 8 ×
	' 😼					
Computer Management (Local) System Tools Computer Viewer Computer Viewe	Volume (C:) CROECD2_EN (D:) Generic (R:) Quorum (Q:) Colored to the second sec	Layout Partition Partition Partition Partition Partition U20 MB N Healthy	Type Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS	Status Healthy (System) Healthy Healthy Healthy	Capacity F 7.99 GB 5 121 MB C 1.99 GB 1 1020 MB 1
	Basic 1.99 GB Online	Generic (1.99 GB NT Healthy	R:) FS			-
	Primary partition			- 1		

Shut down the server.



Node 2

Configuring network interfaces

Each adapter will be assigned a static IP address. Select the **Use the following IP address** option and type in the IP address you wish to use. The Subnet mask and DNS server address must also be provided. All the values must be correctly chosen given the networking configuration of the Corporate LAN that the cluster will be a part of.

Internet Protocol (TCP/IP) Propertie	s ?X			
General				
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.				
Obtain an IP address automatical Obtain an IP address automatical	IY			
IP address:	192.168.1.22			
Subnet mask:	255 . 255 . 255 . 0			
Default gateway:	· · ·			
C. Obtain DNS server address automatically.				
• Use the following DNS server add	resses:			
Preferred DNS server:	192.168.1.1			
<u>A</u> lternate DNS server:	· · ·			
	Ad <u>v</u> anced			
	OK Cancel			

Press the **OK** button.



Just as was done for the first network adapter, assign appropriate values to the TCP/IP configuration of the second network adapter using the following example image as guidance. This interface is used for iSCSI target storage communications and a default gateway need not be specified.

Internet Protocol (TCP/IP) Propertie	s ?X			
General				
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.				
Obtain an IP address automatical	ly 🔤			
• Use the following IP address:				
IP address:	192.168.2.22			
S <u>u</u> bnet mask:	255 . 255 . 255 . 0			
Default gateway:	· · ·			
C Obtain DNS server address auton	natically			
	resses:			
Preferred DNS server:	· · ·			
<u>A</u> lternate DNS server:	· · ·			
	Ad <u>v</u> anced			
	OK Cancel			

Press the **OK** button.



Joining the domain

Launch System Properties tool selecting Control Panel -> System. Select Computer Name tab.

System Properties		?×			
Advanced General	Automatic Updates Computer Name	Remote Hardware			
Windows uses the following information to identify your computer on the network.					
Computer <u>d</u> escription:					
	For example: "IIS Production So "Accounting Server".	erver" or			
Full computer name:	node2.				
Workgroup:	WORKGROUP				
To rename this computer	or join a domain, click Change.	<u>C</u> hange			
	OK Can	cel <u>Apply</u>			

Press the **Change...** button.



In the **Computer Name Changes** dialog enter domain to join.

Computer Name Changes	? ×
You can change the name and the membership of this computer. Changes may affect access to network resourc	ces.
Computer name:	
node2	
Full computer name: node2.	
<u>M</u> ore	e
Member of	
⊙ <u>D</u> omain:	
rds.local	
© <u>W</u> orkgroup:	
WORKGROUP	
OK Cano	cel

Press the **OK** button.



Enter the name and password of an account with permission to join to the domain (**node2adm**).

Computer Name Cha	anges	? ×
		1 al
Enter the name and p to join the domain.	bassword of an account (with permission
<u>U</u> ser name:	🖸 node2adm	▼
Password:	•••••	
	ОК	Cancel

Press the **OK** button to join.



If successful, the notification dialog like the one on the image shown below should appear.

Compute	r Name Changes	×
(į)	Welcome to the rds.local domain	۱.
	ОК	

Press the **OK** button.



You must restart the computer for the changes to take effect.

Compute	r Name Changes
i	You must restart this computer for the changes to take effect.
	OK

Restart the server. Log in as node2adm and install MS iSCSI Initator.



Configuring iSCSI initiator

The **MS iSCSI Initiator** is a free application that is available for download from the **Microsoft** Web site http://www.microsoft.com/downloads/details.aspx? FamilyID=12cb3c1a-15d6-4585-b385-befd1319f825&displaylang=en.

It is required to connect to the iSCSI devices. Before continuing, ensure that the **MS iSCSI Initiator** is installed.

Launch the Microsoft iSCSI Software Initiator application Start->All Programs->Microsoft iSCSI Initiator-> Microsoft iSCSI Initiator.

iSCSI Initiator Properties	×		
General Discovery Targets Persistent Targets Bound Volumes/Devices			
The iSCSI protocol uses the following information to uniquely identify this initiator and authenticate targets.			
Initiator Node Name: iqn.1991-05.com.microsoft:node2.rds.local			
To rename the initiator node, click Change.	<u>C</u> hange		
To authenticate targets using CHAP, click Secret to specify a CHAP secret.	Secret		
To configure IPSec Tunnel Mode addresses, click Tunnel.	Iunnel		
OK Cancel	Apply		

Select the **Discovery** Tab.



In the Target Portals group, click the Add button.

iSCSI Ini	iSCSI Initiator Properties				
Genera	al Discovery	Targets P	ersistent Targets	Bound Volumes/Device	es
	get Portals —				
A	ddress	Port	Adapter	IP Address	
	<u>A</u> dd		<u>R</u> emove	R <u>e</u> fresh	
jSN	S Servers —				
N	ame				
	A <u>d</u> d		Remove	Re <u>f</u> resh	
			OK	Cancel Apply	

Press the **Add** button.



In the Add Target Portal dialog enter IP address or DNS name of the StarWind target server.

	×				
Type the IP address or DNS name and socket number of the portal you want to add. Click Advanced to select specific settings for the discovery session to the portal.					
Port:					
3260	<u>A</u> dvanced				
ОК	Cancel				
	d socket number o t specific settings l <u>P</u> ort: 3260 OK				



Click on the Targets tab. Select the IQN of the target just added.

iSCSI Initiator Properties	×
General Discovery Targets Persistent Targets Bound Volumes/Device	es
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.	
Targets:	
Name Status	
ign. 2003-09. com. starwindsoftware: wishmaster-generic Inactive	
<u>D</u> etails <u>L</u> og On R <u>e</u> fresh	
OK Cancel Apply	

Press the Log On... button.


The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.



Press the **OK** button to continue.

Log On to Target	×
Target name:	
iqn.2003-09.com.starwindsoftware:wishmaster-generic	
Automatically restore this connection when the system boots	
🔲 Enable multi-path	
Only select this option if iSCSI multi-path software is already in on your computer.	stalled
Advanced OK Can	:el



If successful, the initiator is now logged on to **StarWind**.

iSCSI Initiator Properties
General Discovery Targets Persistent Targets Bound Volumes/Devices
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.
Targets:
Name Status
ign.2003-09.com.starwindsoftware:wishmaster-generic Connected
<u>D</u> etails <u>Log On</u> R <u>e</u> fresh
OK Cancel Apply

Assigning drive letters

When the StarWind Disks are connected, they show up on the initiator machine as new disk devices. Before these devices can be used as cluster disks, they have to be mounted. Launch the **Computer Management** console.



Select Disk Management.



The two disks that were formatted on the **Cluster Node 1 Server** should now appear without any drive letter mounted. Assign the same letters to those that were used when these drives were formatted.

📮 Computer Management						
🗐 Eile Action View Window H	elp					_ 8 ×
	🖆 🖻 🏹 😼					
Computer Management (Local) System Tools Computer Viewer Shared Folders Cocal Users and Groups Cocal Users Device Manager Cocal Users Device Manager Disk Defragmenter Disk Management	Volume	Layout Partition Partition Partition	Type Basic Basic Basic Basic	File System NTFS CDFS	Status Healthy Healthy Healthy (System) Healthy	Capacity F 1.99 GB 1 1020 MB 1 7.99 GB 5 121 MB 0
	CPDisk 1 Basic 1020 MB Online CPDisk 2 Basic	1020 MB Healthy				
	1.99 GB Online	1.99 GB Healthy				-
▲	Primary partition					



Press the right mouse button over the Quorum volume.



Select Change Drive Letter and Paths...



Change the Drive Latter for the Quorum to Q.

Change Drive Letter and Paths I	for 1019 MB Primary partiti <mark>?</mark> 🗙
Allow access to this volume by usin	g the following drive letter and paths:
Add Change	Bemove
	Tempre
	OK Cancel

Add Drive Letter or Path	<u>? ×</u>
Add a new drive letter or path for 1019 MB Primary partitio	
Assign the following drive letter:	
Mount in the following empty NTFS folder:	
	<u>B</u> rowse
ОК	Cancel



Press the right mouse button over the Generic volume.



Select Change Drive Letter and Paths...



Change the Drive Latter for the Generic to R.

<u>A</u> llow access	to this volume by usi	ng the following dri	ve letter and paths:
A <u>d</u> d	<u>C</u> hange	<u>R</u> emove	
		OK	Cancel

Add Drive Letter or Path	<u>? ×</u>
Add a new drive letter or path for 2039 MB. Primary partitio	
Assign the following drive letter:	R -
Mount in the following empty NTFS folder:	
	<u>B</u> rowse
OK	Cancel

If successful, the **Computer Management** console should look like the sample image provided below.

📮 Computer Management						
🖳 Eile Action View Window H	elp					_ 8 ×
Computer Management (Local) System Tools Stared Folders Cocal Users and Groups Cocal Users Cocal Users and Groups Cocal Users Cocal Use	Volume CCO CROECD2_EN (D:) Generic (R:) Quorum (Q:) Volume Volume Volume CROECD2_EN (D:) CROECD2_EN	Layout Partition Partition Partition Partition Vartition Vartition (020 MB N Healthy	Type Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS	Status Healthy (System) Healthy Healthy Healthy	Capacity F 7.99 GB 5 121 MB C 1.99 GB 1 1020 MB 1
	Basic 1.99 GB Online	Generic (1.99 GB NT Healthy	R:) FS			Ţ
	Primary partition			- [

Shut down the server.



Configuring Microsoft Cluster Service

Node 1

Turn on the **Cluster Node 1 Server**. Log in to the server using an account with administrative privileges (**node1adm**). Launch the **Cluster Administrator** console.

Select **Create new cluster** item from the **Action** drop-down list of the **Open Connection to Cluster** dialog box.

🛱 Cluster Administrator	
Eile ⊻iew Help	
Open Connection to Cluster	<u>? ×</u>
Action:	
Create new cluster	•
Cluster or server name:	
	Browse
<u><u>D</u>K</u>	Cancel
For Help, press F1	NUM //



New Server Cluster Wizard appears.





On the **Cluster Name and Domain** page, specify the appropriate cluster and domain names.

erver cluster wizaru		_
luster Name and Domain Specify the name of the new server clus created.	ter and the domain in which it will be	
Select or type the name of the domain in computers in this domain can be member	which the cluster will be created. Only rs of the cluster.	
Domain:		
rds.local	•	
Type a cluster name that is unique in the This must be a valid computer name	domain.	
Type a cluster name that is unique in the This must be a valid computer name. <u>C</u> luster name:	domain.	
Type a cluster name that is unique in the This must be a valid computer name. Cluster name: rdscluster	domain.	
Type a cluster name that is unique in the This must be a valid computer name. Cluster name: rdscluster	domain.	
Type a cluster name that is unique in the This must be a valid computer name. Cluster name: rdscluster	domain.	
Type a cluster name that is unique in the This must be a valid computer name. Cluster name: rdscluster	domain.	
Type a cluster name that is unique in the This must be a valid computer name. ©luster name: rdscluster	 domain. < Back Next > 	Cance



On the **Select Computer** page of the wizard the computer name of the first node in the cluster should already be filled in. If not, specify the name of the computer in the edit box.

w Server Cluster Wizard		>
Select Computer The computer must be a member of the	e domain you specified.	
Enter the name of the computer that wi	I be the first node in the new cluster.	
<u>C</u> omputer name:		
node1	Browse	
	Advanced	
	< Back Next >	Cancel
		Cancer



The wizard will analyze the settings, including the shared resource and network connectivity. If everything goes well, the **Next** button becomes enabled. If any errors occurred, review the information and correct the errors before proceeding.

New Server Cluster Wizard	×
Analyzing Configuration Please wait while the wizard determines the cluster configuration.	
 ✓ Checking for existing cluster ✓ Establishing node connection(s) ✓ Checking node feasibility ✓ Finding common resources on nodes ✓ Checking cluster feasibility 	
rasks completed.	
<u>V</u> iew Log <u>D</u> etails <u>R</u> Click Next to continue. Click Back to change the configuration.	e-analyze
< <u>B</u> ack <u>N</u> ext>	Cancel



On the **IP Address** page, specify the IP address for the cluster. This address maps to the cluster name and should not be used by other computers.

w Server Cluster Wizard			
IP Address Enter an IP address that cluster management cluster.	nt tools will use to	o connect to the	Ê
IP <u>A</u> ddress:			
192.168.1.33			
			- ·
	< <u>B</u> ack	<u>N</u> ext >	Cancel



On the **Cluster Service Account** page specify the domain account that the service will run under. This account must be a domain user.

<u>U</u> ser name:	cluster
<u>P</u> assword:	
<u>D</u> omain:	rds.local
This ac for prop	count will be given local administrative rights on all nodes of this cluster to allow



Verify that all information on the **Proposed Cluster Configuration** page is correct. Configure the quorum settings (Press the **Quorum...** button and select the disk to be used as quorum).

v Server Cluster Wizard	2
Proposed Cluster Configuration Verify that you want to create a cluster v	vith the following configuration.
Cluster name: rdscluster.rds.local	<u> </u>
Cluster IP address: 192.168.1.33\255.255.255.0	
Cluster network: Local Area Connection - Private and Publ VMware Accelerated AMD PCNet Ada Primary Address: 192.168.1.11 \ 255.25	ic pter 55.255.0
Cluster service account credentials: Name:cluster Password: ********	•
To create a cluster with this configuration, cli	Quorum View Log
	< <u>B</u> ack <u>Next></u> Cancel

Cluster Configuration Quorum			
Select the resource or resource type that you would like to use for the quorum resource.			
Disk Q:			
	ОК	Cancel	Help

Press the **OK** button.

Press the **Next** button to create the cluster.



The wizard will attempt to create the cluster. The process may take a few minutes. If there any errors occurred, review the log and error messages to solve the problem. When complete, the **Next** button becomes enabled.

New Server Cluster Wizard			×
Creating the Cluster Please wait while the cluster is configured.			
 ✓ Reanalyzing cluster ✓ Configure cluster services ✓ Configure resource types ✓ Configure resources 			
	<u>V</u> iew Log	Details	<u>R</u> etry
	< <u>B</u> ack	<u>[N</u> ext>	Cancel



Completing the **New Server Cluster Wizard** page appears.



Press the **Finish** to complete the task. The cluster is now operational and additional nodes can be added to the cluster.



The new cluster is created.





Node 2

Turn on the **Cluster Node 2 Server**. Log in to the server using an account with administrative privileges (**node2adm**). Launch the **Cluster Administrator** console.

Select **Add nodes to cluster** item from the Action drop-down list of the **Open Connection to Cluster** dialog box.

🛃 Cluster Administrator	<u> </u>
<u>File View H</u> elp	
Open Connection to Cluster	
Action:	
Add nodes to cluster	
Cluster or server name:	
Browse	
<u>D</u> K Cancel	
For Help, press F1	



Press the **Browse** button and specify the name of the recently created cluster in the **Cluster or server name** list.

Open Connection to Cluster	<u>?</u> ×
Action:	
Add nodes to cluster	•
<u>Cluster or server name:</u>	
RDSCLUSTER	Browse
	<u>D</u> K Cancel

Press the **OK** button to add this server to the cluster.



Add Nodes Wizard appears.





On the **Select Computers** page, press the **Add** button to add the server to the cluster.

wse
Add
move
anced



The wizard will start to analyze the configuration provided. If there are no errors, the **Next** button becomes enabled. If any errors occurred, review the detailed information and correct the errors before proceeding.

Add Nodes Wizard		×
Analyzing Configuration Please wait while the wizard determines the	cluster configuration.	
 ✓ Checking for existing cluster ✓ Establishing node connection(s) ✓ Checking node feasibility ✓ Finding common resources on nodes ✓ Checking cluster feasibility 		
Tasks completed.		
Click Next to continue. Click Back to change th	<u>V</u> iew Log <u>D</u> eta e configuration.	ls <u>R</u> e-analyze
	< <u>B</u> ack	xt > Cancel



Enter the password for the user provided to run the cluster service.

d Nodes Wiz	ard
Cluster Ser Enter log be run.	vice Account jin information for the domain account under which the cluster service will
<u>U</u> ser name:	cluster
Password:	•••••
Domain:	rds.local
for prop	ier operation.



The **Proposed Cluster Configuration** page appears.

d Nodes Wizard]
Proposed Cluster Configuration Verify that you want to add nodes to a c	cluster with the following configuration.	
Cluster name: RDSCLUSTER.rds.local		-
Cluster IP address: 192.168.1.33\255.255.255.0		
Cluster network: Local Area Connection - Private and Pub	lic	
Primary Address: 192.168.1.11 \ 255.2	:55.255.0	
Cluster service account credentials: Name:cluster Password: *******		•
To add nodes to a cluster with this configura		
	< Back	el l
		1

Press the **Next** button to add this server to the cluster.



Completing the Add Nodes Wizard page appears.

Add Nodes Wizard	×
	Completing the Add Nodes Wizard
	You have successfully completed the Add Nodes Wizard.
	<u>V</u> iew Log To close this wizard, click Finish.
	< Back Finish Cancel

Press **Finish** to complete the operation. The server is now a node in the cluster.



The new node is added to the cluster.

🖷 Cluster Administrator - RDSCLUST	ER (RDSCLUSTER)			- 🗆 🗵
<u>File View Window H</u> elp				
🚳 🕑 🔺 🖄 🛍 🛍				
🚰 RDSCLUSTER (RDSCLUSTER)				
Resources Cluster Configuration NODE1 NODE2	Name Groups Resources Cluster Configurati NODE1 NODE2	on Up Up	Descriptior	
For Help, press F1			N	



Adding New Shared Disk Resource

StarWind Target

Click the right mouse button over the host and select **Add Target** pop-up menu item.

In the wizard that appears, select a target name. The name must be a unique name by which the device will be declared to the iSCSI initiators connecting to **StarWind** over an IP network.

dd Target Wiza	ard
Common ta Specify ta	rget parameters arget alias and target name.
Target Al	ias:
spool	
📃 Targe	t Name:
ign.2003	3-09.com.starwindsoftware:wishmaster-spool
	< <u>B</u> ack <u>Next</u> > Cancel



Select Image File device.





Select **Create new virtual disk** to create a new virtual hard disk or **Mount existing virtual disk** to mount an existing virtual disk that you've prepared before.





If you have decided to create a new virtual disk please specify the location and the name of the virtual disk you wish to be created. Also you have to provide the virtual disk size in megabytes. Check any additional parameters of the virtual dsik you wish to create. Please refer to the online help for details regarding those additional parameters (**Compressed** and **Encrypted**).

Device Type Selection	×
Virtual disk parameters Specify virtual disk parameters.	\approx
New virtual disk location and name:	
My Computer \C \images \spool.img	▼
Size in MBs: 1024	
Compressed	
Encrypted	
User account that will have access to this image	
Name:	
Password:	
Fill with zeroes	
< <u>B</u> ack <u>N</u> ext >	Cancel



Image File device has some extra parameters. Check Allow multiple concurrent iSCSI connections (clustering) checkbox. Please refer to the online help for details regarding those additional parameters (Asynchronous mode, Allow multiple connections (clustering), Read-only mode and Specify advanced options).

Device Type Selection	×
Image File device parameters Specify Image File device parameters.	≋
Select virtual disk you want to make accessible via iSCSI:	
My Computer\C\images\spool.img	·
Asynchronous mode	
Read-Only mode	
Allow multiple concurrent iSCSI connections (clustering)	
Advanced options	
Use file system buffering	
Header size in sectors:	
< <u>B</u> ack Next >	Cancel



Check the device parameters are correct. Press the **Back** button should any changes be required.

Completing the Add Target Wizard				
	Completing the Add Target Wizard			
	The following device will be added:			
	ImageFile3			
	You specified the following settings:			
	File : My Computer\C\images\spool.img Asynchronous : Yes Readonly : No Clustering : Yes	*		
		-		
	< >			
	Click Next to add new device.			
	< <u>B</u> ack <u>N</u> ext > Can	cel		



A summary of the created device is displayed on the last wizard page (see image below).



Press the **Finish** button to close the wizard.


Node 1

Launch the **MS iSCSI Initiator**. Click on the **Targets** tab. Select the IQN of the target just added.

iSCSI Initiator Properties
General Discovery Targets Persistent Targets Bound Volumes/Devices
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.
<u>I</u> argets:
Name Status
ign. 2003-09. com. starwindsoftware: wishmaster-generic Connected
ign. 2003-09. com. starwindsoftware: wishmaster-guorum Connected
<u>D</u> etails <u>L</u> og On R <u>e</u> fresh
OK Cancel Apply

Press the Log On... button.



The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.





When the **StarWind** Disks is connected, it shows up on the initiator machine as new disk device. Before this device can be used as cluster disk, it have to be initialized and formatted. Launch the **Computer Management** console. Select **Disk Management**.

Follow the **Initialize and Convert Disk Wizard** to initialize the new disks. Use the default settings that Windows provides. By default the disk will be initialized as the basic disk. MSCS works only with the basic disks.





Select Disks to Initialize You must initialize a disk bef	ore Logical Disk	: Manager can a	ccess it.	
Select one or more disks to ir	nitialize.			
<u>D</u> isks:				
		Z Back [Nevt	Cancel



itialize and Convert Disk Wizard			X
Select Disks to Convert The disks you select will be converted to	o dynamic disks.		
Select one or more disks to convert:			
<u>D</u> isks:			
Disk 3			
1			
	(Paak	Nouts	Canaal
		<u>IN</u> ext>	Lancel



Initialize and Convert Disk W	izard	×
	Completing the Initialize and Convert Disk Wizard You have successfully completed the Initialize and Convert Disk Wizard. You selected the following settings: Initialize to MBR: Disk 3 Convert: None	
	To close this wizard, click Finish.	
	< <u>B</u> ack Finish Cancel	

Press the **Finish** button to close the wizard.



After the **Wizard** completes initialization, press the right mouse button on the unallocated space and select **New Partition** popup menu item. Follow the instructions of the wizard to create an **NTFS** partition for use as the quorum disk. Use the default settings that Windows provides. (The default settings are sufficient for most environments.)

📙 Computer Management						
📕 Eile Action View Window H	elp					_ 8 ×
	' 😼					
Computer Management (Local) System Tools Computer Viewer Shared Folders Cocal Users and Groups Performance Logs and Alert: Device Manager Storage Computer Manager Disk Defragmenter Disk Management	Volume C(C:) CROECD2_EN (D:) CROECD2_EN (D:) COUPLING (Q:)	Layout 1 Partition Partition Partition	Type Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS	Status Healthy (System) Healthy Healthy Healthy	Capacity F 7.99 GB 5 121 MB 0 1.99 GB 1 1020 MB 1
Services and Applications	Disk 2 Basic 1020 MB Online Disk 3 Basic 1020 MB Online Unallocated Pr	Quorum (Q 1020 MB NTF Healthy 1020 MB Unallocated	2:) =5 <u>N</u> ev	w Partition		•
		indiy parado	Hel			



New Partition Wizard appears.





Select partition type to create.

Select the partition you want to create:	
Primary partition	
C Extended partition	
C Logical drive	
Description	
A primary partition is a volume you cre Windows and other operating system create up to 128 primary partitions on Record (MBR) basic disk, you can cr primary partitions and an extended pa	eate using free space on a basic disk. s can start from a primary partition. You can a GPT basic disk. On a Master Boot eate up to four primary partitions or three artition.



Specify new partition size in megabytes.

w Partition Wizard		3
Specify Partition Size Choose a partition size that is between the	e maximum and minimum sizes.	
Maxium disk space in megabytes (MB):	1019	
Minimum disk space in MB:	8	
Partition size in MB:	1012	
	< <u>B</u> ack <u>N</u> ext >	Cancel



Choose the Drive Letter to assign.

New Partition Wizard			×
Assign Drive Letter or Path For easier access, you can assign a drive lette	er or drive patł	n to your partition.	S
 Assign the following drive letter: Mount in the following empty NTFS folder: Do not assign a drive letter or drive path 	Bīows	E	
	< <u>B</u> ack	<u>N</u> ext >	Cancel



Specify format options. Provide the Volume Label.

w Partition Wizard	
Format Partition To store data on this partition, yo	ou must format it first.
Choose whether you want to form	nat this partition, and if so, what settings you want to use.
C Do not format this partition	n
Format this partition with the second sec	he following settings:
<u>F</u> ile system:	NTFS
Allocation unit size:	Default
<u>V</u> olume label:	Spool
Perform a quick form	nat
Enable file and folde	er compression
	< Back Next > Cancel



Check the settings are correct. Press the **Back** button should any changes be required.



Press the **Finish** button to close the wizard.



If successful, the disk is now formatted as shown in the example image below.

📮 Computer Management						
📃 Eile <u>A</u> ction <u>V</u> iew <u>W</u> indow H	elp					_ 8 ×
	' 😼					1
Computer Management (Local) System Tools System Tools Computer Viewer Computer Shared Folders Cocal Users and Groups Cocal Users Cocal Users and Groups Cocal Users Cocal Users and Groups Cocal Users Cocal User	Volume (C:) CROECD2_EN (D:) Generic (R:) Quorum (Q:) Spool (S:)	Layout Partition Partition Partition Partition Partition Partition	Type Basic Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS NTFS	Status Healthy (System) Healthy Healthy Healthy	Capacity F 7.99 GB 5 121 MB 0 1.99 GB 1 1020 MB 1 1020 MB 1
	Basic 1020 MB Online	Spool (S: 1020 MB N Healthy) TFS			
	Primary partition			- [

Shut down the node.



Node 2

Launch the MS iSCSI Initiator. Click on the **Targets** tab. Select the IQN of the target just added.

iSCSI Initiator Properties	×
General Discovery Targets Persistent Targets Bound Volumes/Device	es
Select a target and click Log On to access the storage devices for that target. Click details to see information about the sessions, connections and devices for that target.	
Targets:	
Name Status	
ign. 2003-09. com. starwindsoftware: wishmaster-generic Connected	
ign. 2003-09. com. starwindsoftware: wishmaster-quorum Connected	
4	
<u>D</u> etails <u>L</u> og On R <u>e</u> fresh	
OK Cancel Apply	

Press the Log On... button.



The **Log On to Target** dialog now appears. In this dialog click on the checkbox **Automatically restore this connection when the system boots** to make this connection persistent.





If successful, the initiator is now logged on to **StarWind**.

iSCSI Initiator Properties	×
General Discovery Targets Persistent Targets Bour	nd Volumes/Devices
Select a target and click Log On to access the storage d target. Click details to see information about the sessions, devices for that target.	evices for that , connections and
Targets:	
Name	Status
iqn. 2003-09. com. starwindsoftware: wishmaster-generic iqn. 2003-09. com. starwindsoftware: wishmaster-guorum	Connected Connected
ign. 2003-09. com. starwindsoftware: wishmaster-spool	Connected
•	
<u>D</u> etails <u>Log On</u>	R <u>e</u> fresh
OK Cance	el <u>A</u> pply



When the StarWind Disk is connected, it shows up on the initiator machine as new disk device. Before this devices can be used as cluster disk, it have to be mounted. Launch the **Computer Management** console.

📮 Computer Management							
🗐 Eile Action View Window H	Ele Action View Window Help						
	🖆 🖻 🏹 😼						
Computer Management (Local)	Volume Volume (C:) CR0ECD2_EN (D:) Generic (R:) Quorum (Q:)	Layout Partition Partition Partition Partition	Type Basic Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS	Status Healthy Healthy (System) Healthy Healthy Healthy	Capacity F 1020 MB 1 7.99 GB 5 121 MB 0 1.99 GB 1 1020 MB 1	
	Disk 2 Basic 1020 MB Online Disk 3 Basic 1020 MB Online Primary partition	Quorum (1020 MB NT Healthy 1020 MB Healthy	(Q:) TFS				
	- Timary partition						

Select Disk Management.

The disk that was formatted on the **Cluster Node 1 Server** should now appear without any drive letter mounted. Assign the same letter to this that was used when this drive was formatted.



Press the right mouse button over the **Spool** volume.



Select Change Drive Letter and Paths...



Change the Drive Latter for the Spool to S.

Allow access to this vo	lume by usir	ng the following	g drive let	ter and paths	:
A <u>d</u> d <u>C</u> h	ange	<u>R</u> emove			
					_

Add Drive Letter or Path	? ×
Add a new drive letter or path for 1019 MB Primary partitio	
Assign the following drive letter:	5 -
Mount in the following empty NTFS folder:	
	<u>B</u> rowse
OK	Cancel

If successful, the **Computer Management** console should look like the sample image provided below.

📮 Computer Management						
🖳 Eile Action View Window H	elp					_ 8 ×
Computer Management (Local) System Tools Computer Viewer Shared Folders Cocal Users and Groups Performance Logs and Alert: Device Manager Storage Storage Storage Disk Defragmenter Services and Applications	Volume CROECD2_EN (D:) Generic (R:) Quorum (Q:) Spool (S:)	Layout Partition Partition Partition Partition	Type Basic Basic Basic Basic Basic	File System NTFS CDFS NTFS NTFS NTFS	Status Healthy (System) Healthy Healthy Healthy Healthy	Capacity F 7.99 GB 5 121 MB 0 1.99 GB 1 1020 MB 1 1020 MB 1
	Disk 2 Basic 1020 MB Online Disk 3 Basic 1020 MB Online Primary partition	Quorum (1020 MB NT Healthy 5 pool (S: 1020 MB NT Healthy	(Q:) IFS) IFS			



Launch the **Cluster Administrator** console and open connection to the cluster.

🖏 Cluster Administrator - RDSCLUST	ER (RDSCLUSTER)			
<u>File View Window H</u> elp				
<u>6 (a × 1) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 </u>				
🚰 RDSCLUSTER (RDSCLUSTER)				
E- 🗐 RDSCLUSTER	Name	State	Owner	
Groups	Duster IP Address	Online	NODE2	
Resources View	er Name	Online	NODE2	
	2:	Online	NODE2	
	R:	Online	NODE2	
Tile Horizontally				
Close All				
<u>New Constants</u>	<u> </u>	Itrl+G		
Configure Applic	ation III <u>R</u> esource III			
	Node			
	Cluster			
J Creates a new cluster resource			NU	M

Right-press on the Resources node and select **New -> Resource**.



Specify a name for this new resource. For **Resource Type**, specify **Physical Disk** from the list. For **Group**, select the group to which this resource should belong.

New Resource			
	Image: Spool Name: Description: Description: Resource type: Group: Image: Image: Run this resource To continue, click	Spool StarWind Disk Physical Disk Group 0 rce in a separate Resource Next.	▼ Monitor
	< [Back. <u>N</u> ext >	Cancel



On the **Possible Owners** page, specify all nodes in the cluster as the possible owners.

pecify the possible owners f	or this resource.
Name	Add -> Name Add -> Image: NoDE1 Image: NoDE2



The disk resource should not require any dependencies.

	ce dependencies:	B	ICIES TOF CHIS TE	vailable resource
Res	ource	Add->	Resc Phys	Resource
		C. Tennove		
		(Tempte		



Select the recently created partition from the list of disks.

Disk Parameters			
Spool			
Disk: S: (Spool)			-
	< <u>B</u> ack	Finish	Cancel

Press the **Finish** button to complete the operation.





The new resource should appear as offline in the details view of the **Resource** node.



Right-press on the resource and select **Bring Online** item of the context menu.



When completed, the disk is now a cluster disk.





Start the other servers in the cluster.





Contacts

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