

Steps to Install and Configure Arcserve r17.0 on a Microsoft Windows 2012 MSCS Cluster

To start off with, let's try to setup the basic pre-requisites of the cluster setup.

Configuring Windows 2012 MSCS Cluster

- > To begin with Install "Failover Clustering Feature" on both Nodes participating in the cluster
- > Ensure the Cluster Nodes are Joined to the Domain
- > DNS is configured / Check Name Resolution
- Typical Example

1.

You have to see if DNS resolution is working you can see if the DNS server you are configured to query knows what it's talking about. Using the NSLOOKUP command shows this information.

C:\WINDOWS\>nslookup
Default Server: example.testarchyd.com
Address: 167.206.112.3
> www.example.com
Server: example.testarchyd.com
Address: 167.206.112.3
Non-authoritative answer:
Name: <u>www.example.testarchyd.com</u>
Addresses: 216.109.118.74, 216.109.118.75, 216.109.118.77, 216.109.117.110
216.109.117.204, 216.109.117.205, 216.109.118.69, 216.109.118.71
Aliases: www.example.testarchyd.com

Now, it's possible to ping with the –a switch to also verify if DNS resolution is work. Pinging Example's IP address with the –a switch produces the DNS name of the system.

C:\WINDOWS\SYSTEM32>**ping -a** 216.109.118.74 Pinging **.www.example.com** [216.109.118.74] with 32 bytes of data: Reply from 216.109.118.74: bytes=32 time=22ms TTL=51 Reply from 216.109.118.74: bytes=32 time=27ms TTL=51 Reply from 216.109.118.74: bytes=32 time=32ms TTL=51 Reply from 216.109.118.74: bytes=32 time=32ms TTL=51 Ping statistics for 216.109.118.74: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 22ms, Maximum = 32ms, Average = 26ms

- > Firewalls Are Stopped ICMP requests are Enabled
- > Ping from all the servers are successful
- > Continue to configure the disks and network cards
- > Add two network cards each to the virtual nodes from the ESX configuration



Initial Configuration (Network Card/Disks)

- 1. Configuring /Attaching Hard Disks to the NAS (to configure them through iSCSI and present them to the cluster)
- 2. Adding Network Cards to the two Nodes (Public / Private IP's)

Network		Туре			
VM Networ	k	Standard p	ort group		
S INT-NETWO	ORK	Standard p	ort group		
HeartBeat		Standard p	ort group		
File View VM					
• • • • •	0 0	a 13 F	» 📀 i	60	
console Menu					
() Configure () Reset WebG () Reset to F () Ping Host () Shell () Reboot Ser () Shutdown S () Shutdown S	Ver ver erver	lr Huura ₄ord Defaults	155		
as4free: #	di -h Sizo	llead	Qua i 1	Canacitu	Mounted on
/deu/xmd8	119M	34M	85M	29%	/
levfs	1.0k	1.0k	ØB	100%	/dev
dev/xmd1	719M	246M	472M	34%	/usr/local
'dev/da0s1a	743M	148M	594M	28%	/cf
procfs	4.8k	4.0k	ØB	100%	/proc
ExchangeDB	2G	397M	1.6G	20%	/mnt/ExchangeDB
UORUM	983M	52M	931M	5%	/mnt/QUORUM
	7.8G	69M	7.8G	1%	/mnt/asbu
isbu		FT (1) (1) (1)	4 4 5 4 4	4.01	
isbu ′dev∕xmd2	123M	708k	113M	1%	/var
isbu ′dev∕xmd2 tmpfs	123M 64M	708k 32k	113M 64M	1%	/var /var/tmp

This is how the Disks are displayed when NAS4free is connected via IP from a remote machine using IE

From The UI of NAS4Free we need to configure the Disks Attached, through Disk Management -> ZFS Storage Pool and configure iSCSI Initiators/Targets/Portals

	ExchangeDB 19% of 1.98GB Total: 1.98G Used: 398M Free: 1.60G State: ONLINE
	QUORUM 5% of 1016MB Total: 1016M Used: 53.0M Free: 963M State: ONLINE
Disk space usage	asbu 0% of 7.94GB Total: 7.94G Used: 70.0M Free: 7.87G State: ONLINE



NAS4Free Guide for creating an iSCSI target from a ZFS volume

1 - Pull down the "DISKS" Menu from the top navigation bar and then select "MANAGEMENT".

Disks | Management

nent S	.M.A.R.T. iSCSI	Initiator						
Size	Description	Devic	e model	Serial number	Standby time	File system	Status	
n disks								+
ne bad up	the Disk Add	Page.						
twork [Disks Services	Access Status	; Diagnos	tics Advanced	Help			
nagem	ent Disk Add							
S.HJACK	.T. ISCSI Initiator			_				
	ad4: 1907730MB	(WDC WD20EARS-00N	1VW80/50.0A85	0)				
	You may enter a de	escription here for you	r reference.					
	Auto This allows you to a	set the transfer mode f	for ATA/IDE har	d drives.				
/ time	Always on 💌 Puts the hard disk	nto standby mode whe	en the selected	amount of time after the la	ist hard disk access	s has been elapse	sd.	
Management	t Disabled This allows you to l	ower the power consu	mption of the dr	ive, at the expense of per	formance.			
	Disabled This allows you to a	set how loud the drive	is while it's oper	ating.				
	Activate S.M.	A.R.T. monitoring for t	his device.					
options								
	Extra options (usua	ally empty). Please che	ck the documen	itation.				
	size	Size Description Size Description n disks SHART SHART SHART SHART Stabled This allows you to a disk in allows you to a d	Nement S.M.A.R.T. isCSI Initiator Size Description Device n disks Description Device n disks Second status Second status n disks Second status Second status n disks Second status Second status nagement Disk Add Second status nagement Disk Add Second status SHART ISCSI Initiator Auto ad4: 1907730MB (WDC WD20EARS-00P You may enter a description here for you Auto This allows you to set the transfer mode status r time Always on Puts the hard disk into standby mode whe Management Disabled This allows you to lower the power consul Disabled This allows you to set how loud the drive Activate S.M.A.R.T. monitoring for the Status Status Status	S.M.A.R.T. iSCSI Initiator Size Description Device model Idisks Device model Device model Idisks Add Page. Device model Device model Device model Device model Device model Services Access Status Diagnos Device model Disk Add Services Access Status Diagnos Device model Disk Add Made Management Disk Add Management Disk Add Management Deabled This allows you to set the transfer mode for ATA/IDE har r time Always on Puts the hard disk into standby mode when the selected Management Deabled Deabled This allows you to set how loud the drive is while it's oper Disabled This allows you to set how loud the drive is while it's oper Consumption of the drive is while it's oper Options <t< th=""><td>S.M.A.R.T. iSCSI Initiator Size Description Device model Serial number n disks </td><td>SMLA.R.T. iSCSI Initiator Size Description Device model Serial number Standby time n disks </td><td>S.M.A.R.T. ISCSI Initiator Size Description Device model Serial number Standby time File system Indisks </td><td>S.M.A.R.T. ISCSI Initiator Size Description Device model Serial number Standby File Status Indisks Indisks Indisks Indisks Indisks Indisks Indisks Indisks<!--</td--></td></t<>	S.M.A.R.T. iSCSI Initiator Size Description Device model Serial number n disks	SMLA.R.T. iSCSI Initiator Size Description Device model Serial number Standby time n disks	S.M.A.R.T. ISCSI Initiator Size Description Device model Serial number Standby time File system Indisks	S.M.A.R.T. ISCSI Initiator Size Description Device model Serial number Standby File Status Indisks Indisks Indisks Indisks Indisks Indisks Indisks Indisks </td

3 - Using the drop down Menu, select the drive you are adding.

4 - Give it a Description

5 - I left the following settings in their default positions, but depending on your configuration you can change them.

- A Transfer Mode at Auto.
- B Hard Disk Standby Time to "Always on".
- C Advanced Power Management to "Disabled".
- D Acoustic Level.
- E S.M.A.R.T NOT Ticked.

6 - Preformatted file System was left to Unformatted. By setting this to Unformatted we can use the format option in NAS4Free.

7 - Click the **"ADD**" Button.

anagement	Strinking 1								
The configuration has been changed. You must apply the changes in order for them to take effect.									
Apply change	es								
and the second s							1		
Disk	Size	Description	Serial number	Standby time	File system	Status			
1.1	1007720MP	WOC WD20EARS-00MI/WB0/50 0AR50	WD-WMA7	Always on	Unknown or unformatted	Initializing	22 3		

8 - Click the "APPLY CHANGES" Button.

icke M	anagement					
1anageme	nt S.M.A.R.T.	iSCSI Initiator				
Disk	Size	Description	Serial number	Standby time	File system	Status
ad4	1907730MB	WDC WD20EARS+	WD-WMAZA	Always on	Unknown or unformatted	ONLINE
ad6	1907730MB	WDC WD20EARS-	WD-WMAZA	Always on	Unknown or unformatted	ONLINE
ad8	1907730MB	WDC WD20EARS-	WD-WMAZA	Always on	Unknown or unformatted	ONLINE
1.0	1907730MB	WDC WD20EARS-	WD-WMAZA	Always on	Unknown or unformatted	ONLINE

All drives should now appear in the disc Management Page. All Drives should have a "**STATUS**" of "**ONLINE**"

Formatting Drives

When all the drives are added I now format them into ZFS.

1 - Pull down the "DISKS" Menu on the top Navigation Bar and select "FORMAT".

Disks | Format

Disk	Must choose one							
File system								
Don't Erase MBR Don't erase the MBR (useful for some RAID controller cards)								
Format disk								
Warning: UFS is the NATIVE file format fo EXT3, or NTFS can result in unp	Warning: UFS is the NATIVE file format for FreeBSD (the underlying OS of NAS4Free). Attempting to use other file formats such as FAT, FAT32, EXT2, EXT3, or NTFS can result in unpredictable results, file corruption, and loss of data!							

- 2 Select Drive which should now appear in the dropdown.
- 3 Select ZFS Storage Pool Device for the File System.
- 4 I erased my MBR so left the "Don't Erase MBR" Setting UNCHECKED.
- 5 Click the "FORMAT DISK" Button.

Repeat steps 2-5 for all additional drives that you have.

em	Network	Disks	Services Acc	ess Status	Diagnostics	Advanced He	lp	
isks	Manag	gement	£					
Manago	ement S	MART.	iSCSI Initiator					
Disk		Size	Description	Serial number	Standby time	File system	Status	1
ad4		1907730MB	WDC WD20EARS	WD-WMAZA	Always on	ZFS storage pool device	e ONLINE	3
ad6		1907730MB	WDC WD20EARS	WD-WMAZA	Always on	ZFS storage pool device	ONLINE	4
ad8		1907730MB	WDC WD20EARS	WD-WMAZA	Always on	ZFS storage pool devic	ONLINE	3
		1907730MB	WDC WD20EARS	WD-WMAZA	Always on	ZFS storage pool device	ONLINE	3

Pull down the "**DISKS**" Menu on the top Navigation Bar and then select "**MANAGEMENT**" again to <u>check that the formatting of all drives was successful</u>.

Creating a ZFS Virtual Device.

Once you have gotten NAS4Free to recognise, format and present your drives in the WebGUI, you will now proceed to create a virtual device consisting of these drives.

- 1 Go to "DISKS" Tab at the top navigation bar and then select "ZFS".
- 2 Click on the "Virtual Device" Tab.



Disks | ZFS | Pools | Virtual device

P	ools Datasets Volu	mes Snapshots Configuration
v	irtual device Manager	ment Tools Information I/O statistics
	Name	Type Description
		+
3 - C	lick the	
+		
	ielze 7EC	Deale Wittun Ldovice LAdd
ν	ISKS	Pools Virtual device Add
F	ools Datase	ts Configuration
N	/irtual device	Management Tools Information I/O statistics
	Name	VD01
	Туре	Single-parity RAID-5
	Devices	ad4 (1907730MB, WDC WD20EARS-00MVWB0/50.0AB50)
		ad6 (1907730MB, WDC WD20EARS-00MVWB0/50.0AB50)
		ad8 (1907730MB, WDC WD20EARS-00MVWB0/50.0AB50) ad10 (1907730MB, WDC WD20EARS-00MVWB0/50.0AB50)
	Advanced Forma	at Enable Advanced Format (4KB sector)
	Description	Virtual Device 1
		You may enter a description here for your reference.
	Add Cance	el

4 - Enter a Name (I called mine VD01).

- 5 Select a Type (I personally selected Single Parity Raid 5 which is RAIDz1 in ZFS speak).
- 6 Now select ALL the DEVICES SO THEY TURN BLUE!! OTHERWISE YOU WILL GET AN ERROR.

7 - I didn't select Advanced Format.

8 - Enter a Description.

9 - Click the **"ADD**" Button. After clicking the **"ADD**" Button you will be returned to the Virtual Device page in ZFS.

System	Network	Disks	Services	Access	Statu	s Diagnostics	Advanced	Help
Disks	s ZFS Po	ools V	irtual de	vice				
Pools	Datasets	Configu	ration					
Virtua	l device M	anageme	nt Tools	Information	1/0	statistics		
							1	
Nan	ne				Туре	Description		
VDO	1				raidz1	Virtual Device 1	d 🗱	
							+	

Now the drives have been added to NAS4Free they still have to be made available for NAS4Free to manage.

Hostname	nas4free01.mzhome					
Version	9.0.0.1 - Sandstorm - Beta (revision 49)					
Built on	Thu Apr 5 00:26:44 CEST 2012					
OS Version	FreeBSD 9.0-RELEASE (revision 199506)					
Platform	x64-embedded on Intel(R) Core(TM) i7 CPU 960 @ 3.20GHz					
System time	Thu Apr 5 21:48:59 CEST 2012					
Uptime	28 minute(s) 22 second(s)					
Last config change	Thu Apr 5 21:23:35 CEST 2012					
CPU temperature	-1.0 °C -1.0 °C					
CPU usage	0%					
Memory usage	30% of 271MiB					
Load averages	0.08, 0.13, 0.14 [Show process information]					
Disk space usage	No disk configured					

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Pull down the "**STATUS"** Menu on the top navigation bar and select "**SYSTEM**", you will see the Disc you have been setting up are still not here "No Disc Configured".



Adding device to ZFS Management page

1 - Pull down the "**DISKS**" Menu on the top Navigation Bar and select "**ZFS**". This will load up the management page.

System	Network	Disks	Services	Access	Status	Diagnostics	Advanced	Help
Disk	s ZFS P	ools M	lanagem	ent				
Pools	Datasets	Configu	iration					
Virtua	al device M	lanageme	nt Tools	Informatio	n I/O sta	tistics		
		-						
Nan	ne	5	ize Used F	ree Capaci	ty Health	AltRoot		
						*		
2 - Click th	e							
+								
Disks ZI	FSIPoolsi	Manade	ementlAd	d				
Pools Da	atasets Confi	iguration						
Virtual devi	ice Managen	nent Too	ls Informati	on I/O stati	stics			
Name	_	_						
Name					VD01			
Virtual de	evices				VD01 (raid	z1, Virtual Device 1) 🔺		
Dest								
Root					Creates the	pool with an alternate	root.	
Mount poin	nt							
					Sets an alte	rnate mount point for t	he root dataset. Def	ault is /mnt.
Description	ı				Virtual Dev	ice 1 tor a description base f	ar your reference	
					rou may en	ter a description here h	or your reference.	
Add	Cancel							

3 - Enter a Name (I gave mine the exact same name as what I gave the Virtual Device: VD01)

- 4 SELECT THE VIRTUAL DEVICE SO IT IS TURNED BLUE!!! AGAIN THIS HAS TO BE SELECTED.
- 5 I kept these options as default:

- A Root.
- B Mount Point.

6 - I entered a name for the Description. Click the "**ADD**" Button. You will then be returned to the Management Page.

Disks ZFS	Disks ZFS Pools Management										
Pools Datasets Configuration											
Virtual device	Virtual device Management Tools Information I/O statistics										
The con You must Apply changes	The configuration has been changed. You must apply the changes in order for them to take effect. Apply changes										
Name	Size	Used	Free	Capacity	Health	AltRoot					
VD01	VD01 Unknown Unknown Unknown Unknown Unknown Unknown										
							+				

Everything is listed as UNKNOWN. DO NOT WORRY. YOU MUST APPLY THE CHANGES! 7 - Click the **"APPLY CHANGES**" Button!

Disks	Disks ZFS Pools Management									
Pools Datasets Configuration										
Virtual	Virtual device Management Tools Information I/O statistics									
(!) The chang	es have b	een appli	ed succe	ssfully.					
Nam	e	Size	Used	Free	Capacity	Health	AltRoot			
VD01		7.25T	103K	5.34T	0%	ONLINE	-	d 🗱		
								+		

8 - Now all the values should have changed and the virtual device is now online. Just to make sure, Pull down the "**STATUS"** Menu on the top navigation bar and select "**SYSTEM**", you should now see the Disc.

VD01 Disk space usage 0% of 7.25TB Total: 7.25T Used: 103K Free: 5.34T State: ONLINE
--

9 - Take note of the FREE space! You will need this value for later.



Create an iSCSI target

Now with the disc managed and configured correctly in ZFS we are now going to create an iSCSI Target.

1 - Pull down the "SERVICES" Menu on the top Navigation Bar and select "iSCSI target".

SCSI Target	Z Ena
Base Name	iqn.2007-09.jp.ne.peach.istgt
	The base name (e.g. iqn.2007-09.jp.ne.peach.istgt) will append the target name that is not starting with 'iqn.'.
Discovery Auth Method	Auto
Discovery Auth Group	None None
Advanced settings	
I/O Timeout	30
	I/O timeout in seconds (30 by default).
NOPIN Interval	20
	NOPIN sending interval in seconds (20 by default).
Max sessions	
1dx. SCSSI0115	16
	Maximum number of sessions holding at same time (16 by default).
Max. connections	4
	Maximum number of connections in each session (4 by default).
Max. pre-send R2T	32
	Maximum number of pre-send R2T in each connection (32 by default).
FirstBurstl ength	
in scour second en	262144 iSCSI initial parameter (262144 by default)
MaxBurstLength	1048576
	iSCSI initial parameter (1048576 by default).
MaxRecvDataSegmentLength	262144
	iSCSI initial parameter (262144 by default).
MaxOutstandingR2T	16
	iSCSI initial parameter (16 by default).
DefaultTime2Wait	
	iSCSI initial parameter (2 by default).
DefaultTime2Detain	
	60 iSCSI initial parameter (60 by default)
	ISCSI Initial parameter (60 by default).
SCSI Target Logical Unit Controlle	2F



- 2. Click the "ENABLE" checkbox for iSCSI Target in the upper right corner of the page.
- 3. Leave everything else alone, change nothing.
- 4. Click the "Save and Restart" Button.

Adding a Portal

This will allow you to configure how the iSCSI target will be seen or reported on the network. Now click the "**PORTALS**" tab.

Serv	Services iSCSI Target Portal Group								
Setti	ings	Targe	ets Portal	Initiator	s Auths	Media			
Ро	rtal Gro	oups							
Por	rtal Grou	ıp	Tag		Portals				
	A Portal Group contains IP addresses and listening TCP ports to connect the target from the initiator.								
1 - Clic	k the								

2 - For the benefit of this document I left it at its default which is to allow it to be accessed VIA any IP address that the NAS4Free server is configured with.

Services is	SCSI Target Portal Group Add
Settings Tai	rgets Portals Initiators Auths Media
Tag number	1 Numeric identifier of the group.
Portals	0.0.0:3260
Comment	The portal takes the form of 'address:port'. for example '192.168.1.1:3260' for IPv4, '[2001:db8:1:1::1]:3260' for IPv6. the port 3260 is standard iSCSI port number. For any IPs (wildcard address), use '0.0.0.0:3260' and/or '[::]:3260'. Do not mix wildcard and other IPs at same address family.
Comment	You may enter a description here for your reference.
Add Cane	zel



3 - Click the "ADD" Button.

Services iS	SCSI Targe	t Portal Grou)						
Settings Tar	gets Portals	Initiators Auths	Media						
() The co You mu	onfiguration has bee ust apply the change es	n changed. es in order for them to tak	e effect.						
Portal Groups	-				-				
i ortar oroap	Tag	Portals							
	1 0.0.0.3260								
	A Portal Group co	ntains IP addresses and li	stening TCP ports to connect t	ne target from the initiator.	+				

4 - Click the "Apply Changes" Button in the Portal Group Page.

Adding an Initiator

Initiators are systems that can access an iSCSI target (in this case the ZFS storage we created above) here you can specify which machines via IP can initiate a communication with the iSCSI target.

Services iSCSI Target Initiator Group									
Settings Tar	gets Portals	Initiators	Auths	Media					
Initiator Grou	ps								
Initiator Group	Tag		Initiators		Networks				
A Initiator Group contains authorised initiator names and networks to access the target.									
2 - Click the									



ervices iSCSI	Target Initiator Group Add
Settings Targets	Portals Initiators Auths Media
Tag number	1
	Numeric identifier of the group.
Initiators	ALL
	Initiator authorised to access to the ISCSI target. It takes a name or 'ALL' for any initiators.
Authorised network	ALL
	Network authorised to access to the iSCSI target. It takes IP or CIDR addresses or 'ALL' for any IP
Comment	

3 - Here again I left all settings at their defaults and clicked the "ADD" Button. (Anything can access it).

Services	ervices iSCSI Target Initiator Group										
Settings	Targets	s Po	ortals 1	Initiators	Auths	Media					
(!) T	The configuration has been changed. You must apply the changes in order for them to take effect.										
Apply ch	anges										
Initiator	Groups										
Initiator Gr	oup	Tag	Initiator	rs Netwo	rks						
	1 ALL ALL										
	A Initiator Group contains authorised initiator names and networks to access the target.										

4 - Click the "Apply Changes" Button.



Add Cancel

Create an Extent

To create an iSCSI Target you must create an Extent first. 1 - Go to the "**Targets**" Tab.

ervices	iscs	[Targ	et Targ	et			
Settings	Targets	Portals	s Initiator	rs Auths	Media		
_		_			_		
Targets							
Extent	Name	Path		Size			
ŧ	Extents mu	ust be defir	ned before the	y can be used, a	nd extents cannot l	be used more than	n once.
Target	Name	Flags	LUNs	PG	IG	AG	
	At the high	nest level, a	a target is wha	it is presented to	the initiator, and is	made up of one of	or more exte
Initiator Grou Auth Group w	p which is ide hich is ide	entified by identified b ntified by ta	tag number de y tag number o ag number and	defines authorise is optional if the	ed initiator names ar target does not us	e CHAP authentic	ation
Initiator Group Auth Group w defines autho Click the creating au	p which is iden which is iden prised user	entified by identified b ntified by ta s and secre	tag number de by tag number i ag number and ets for addition	the provide security. Extended to the security.	ed initiator names ar target does not us ent defines the stor	nd networks. e CHAP authentic age area of the ta	ation arget.
Initiator Grou Auth Group w defines autho Click the creating an ervices ettings 1 Extent Nam	n Extent iSCSI fargets ne exte	entified by identified b ntified by t s and secre	tag number de by tag number of ag number and ets for addition et Exter Initiators	nt Add Add Add A Auths	ed initiator names ar e target does not us ent defines the stor	of networks. e CHAP authentic age area of the ta	ation arget.
Initiator Grou Auth Group w defines autho Click the creating an ervices ettings 1 Extent Nam Type	n Extent iscosi	Intified by identified by to and secret and secret	tag number de by tag number de cag number and ets for addition et Exter Initiators	nnes IP address defines authorise dis optional if the al security. Extension at Add	Media	of networks. e CHAP authentic age area of the ta	ation arget.
Initiator Grou Auth Group w defines autho Click the creating an ervices ettings 1 Extent Nam Type Path	n Extent iSCSI fargets me exte String File Type	entified by identified b ntified by tr s and secre Targe Portals nt0 identifier of used as ex ath (e.g. /n	tag number de by tag number i ag number and ets for addition et Exter Initiators of the extent.	nt Add s optional if the al security. Extent A uths Auths // extent/extent0	Media	e CHAP authentic age area of the ta	ation arget.
Initiator Grou Auth Group w defines autho Click the creating an ervices ettings 1 Extent Nam Type Path File size	n Extent iscosi	entified by identified b ntified by tr s and secre Targe Portals nt0 identifier of used as ex ath (e.g. /n	tag number de by tag number in ag number and ets for addition et Exter Initiators of the extent.	ntes IP address defines authorised dis optional if the al security. Extr nt Add Auths e/extent/extent0	Media) used as extent.	depend on your di	ation arget.
Initiator Grou Auth Group w defines autho Click the creating an ervices ettings 1 Extent Nam Type Path File size Comment	n Extent iside isi	entified by identified b ntified by tr s and secre	tag number de by tag number of ag number and ets for addition et Exter Initiators	ntes IP address defines authorise dis optional if the al security. Extent at Add Auths e/extent/extent0	Media) used as extent.	depend on your di	ation arget.

3 - Give the Extent a name I left mine as "extent0".

4 - In 0.7.2 of NAS4Free with ZFS the "**TYPE**", "**ZFS Volume**" option in the Drop-down Menu did not work for me! SO KEEP IT AS "File".

5 - Click on the

Button at the end of the Path text box. This will bring up a simple file system browser. Since we cannot use the ZFS volume, we have to point to the correct directory and create a file which will essentially be the drive you will be writing to.

📀 filechooser - Google	Chrome			_ D X
http://192.168.0.175/fil	echooser.php?p	0=&sd=/	'mnt	
/mnt				Ok Cancel
Name Parent Directory	Size	Туре	Last Modified	
1 VD01	- 0 bytes	Folder	August 08, 2010	1:47 PM

6 - Earlier we created a device called VD01 which is presented here as a folder. Select VD01 or the name of your Virtual Device.

filechooser - Google (Chrome		
http://192.168.0.175/filed	chooser.php?p=/mnt/	VD01/	
/mnt/VD01/			Ok Cancel
Name	Size	Туре	Last Modified
 Parent Directory 			
	0 bytes		

7 - This will change the path from /mnt/ to /mnt/VD01/ in the address bar at the top. Click the "**OK**" Button once you have selected the path.

Dath		
raui	/mnt/VD01/	
	File path (e.g. /mnt/sharename/extent/extent0) used as extent.	

This will appear in the Target Add page. 8 - Add to the path field "extent0"

Pa	ith	h /mnt/VD01/extent0 File path (e.g. /mnt/sharename/extent/extent0) used as extent.					
9 - F	ile Size:						
	Disk sp	oace usage	VD01 0% of 7.25TB Total: 7.25T Used: 103K Free: 5.34T State: 0	ONLINE			

10- In "**File Size**" as it only accepts whole numbers and no Decimal points, enter the value as a whole number with the correct units attached.

Path	/mnt/VD01/extent0 File path (e.g. /mnt/sharename/extent/extent0) used as extent.
File size	5468 GiB Size offered to the initiator. (up to 8EiB=8388608TiB. actual size is depend on your disks.)

11- Add a comment, then click the "Save" Button

12- Click "Apply Changes" on the Services | iSCSI Target | Target page.

(!)	The changes ha	ive been applied s	uccessfully	y.				
Targets	_							
Extent	Name	Path			Size			
	extent0 /mnt/VD01/extent0		5468GiB	5468GiB				
	Extents mus	xtents cannot be	used more	than once	2.			4
Target	Name		Flags	LUNs	PG	IG	AG	
	At the highe	st level, a target i	s what is p	presented t	to <mark>t</mark> he initiator,	and is made up of	one or more extents	ş.



Adding a Target

All that is left is to add a target.

Services Settings	iSCS Targets	I Targe Portals	et Target Initiators	Auths Med	ia		
Extent	Name Path Size						
	Extents must be defined before they can be used, and extents cannot be used more than once.						
Target	Name	Flags	LUNs	PG	IG	AG	
	At the highest level, a target is what is presented to the initiator, and is made up of one or more extents.						extents.
Note: To configure Portal Group Initiator Gro Auth Group defines auth	e the target which is id up which is which is ide norised user	;, you must a entified by t identified by ntified by ta 's and secret	add at least Portal ag number define / tag number defir g number and is o ts for additional se	Group and Initiato s IP addresses and nes authorised initia ptional if the targe ecurity. Extent de	r Group and Extent. I listening TCP ports. ator names and netw t does not use CHAP fines the storage are	orks. authentication a of the target.	

+

1.

to add a target.



Services iSC	SI Target Target Add
Settings Targe	ets Portals Initiators Auths Media
iSCSI Target	
Target Name	disk0 Base Name will be appended automatically when starting without 'iqn.'.
Target Alias	Optional user-friendly string of the target.
Туре	Disk Logical Unit Type mapped to LUN.
Flags	Read/Write (rw)
Portal Group	Tag1 T The initiator can connect to the portals in specific Portal Group.
Initiator Group	Tag1 The initiator can access to the target via the portals by authorised initiator names and networks in specific Initiator Group.
Comment	You may enter a description here for your reference.
LUNO	
Storage	extent0 (/mnt/VD01/extent0) The storage area mapped to LUN0.
Advanced settings	
Auth Method	Auto
Auth Group	None 💌 The initiator can access to the target with correct user and secret in specific Auth Group.
Initial Digest	Auto
Queue Depth	0 0=disabled, 1-255=enabled command queuing with specified depth. The recommended queue depth is 32.
Inquiry Vendor	You may specify as SCSI INQUIRY data. Empty as default. (up to 8 ASCII chars)
Inquiry Product	You may specify as SCSI INQUIRY data. Empty as default. (up to 16 ASCII chars)
Inquiry Revision	You may specify as SCSI INQUIRY data. Empty as default. (up to 4 ASCII chars)
Inquiry Serial	You may specify as SCSI INQUIRY data. Empty as default. (up to 16 ASCII chars)
Logical Block Length	5128 / block

2. Give it a Target Name if you want to, I called mime LUN0 or you can leave it as disk0.

3. Leave all settings at their defaults and click the "ADD" Button at the bottom.

arcserve[.]

ervices	; iSCSI	Target Target						
iettings	Targets	Portals Initiators	Auths	Media				
(!)	The configurat You must apply	ion has been changed. / the changes in order for t	hem to take	effect.				
Apply cl	anges							
Targets								
Extent	Name	Path	Size					
	extent0 /mnt/VD01/extent0		5468GiE	5468GiB				
Extents must be defined before they can be used, and extents cannot be used more than once.								
Target	Name		Flags	LUNs	PG	IG	AG	
	ign.2007-0)9.jp.ne.peach.istgt:LUN0	rw	LUN0=/mnt/VD01/extent0	1	1	none	2 💢
		At the highest level, a target is what is presented to the initiator, and is made up of one or more extents.						
	At the highe	st level, a target is what is	presented	to the initiator, and is made up	ofor	ie or n	nore ext	ents.

4. Click the "Apply Changes" Button

Configuring iSCSI from Windows to Map the Disks

After this is setup, we need to configure iSCSI Initiator to present the Disks to both nodes of the cluster

First enter the IP under Discovery Tab

					Contraction of the second
Target	t portals				Defeeb
The s	ystem wil <mark>l</mark> lo	ok for Targets on fo	llowing portals:	14	Refresh
Addre	ess	Port	Adapter	I	P address
172.	168.0.100	3260	Default	C	Default



Second Step is to Configure Targets

Targets	Discovery	Favorite Targets	Volumes and Devices	RADIUS	Configuration
Quick (Connect				
To disc	over and log	on to a target usin	g a basic connection, t	ype the IP	address or
DING TR	ame of the te	arget and then click	Quick Connect.		
Target	: []			OL	iick Connect
	<u> </u>				
Discove	ered targets			_	1944 - 1946 - 1946
					Defrech
					Refresh
Name				Status	Refresh
Name iqn.2	007-09.jp.ne	.peach.istgt:disk0		Status	d
Name iqn.20 iqn.20	007-09.jp.ne	.peach.istgt:disk0 .peach.istgt:disk1		Status Connecter Connecter	d

After Targets -> we can click the Volumes and Devices which should show like this

largets	Discovery	Favorite Targets	Volumes and Devices	RADIUS	Configuration
If a pro the list l configu This will for use the Fav	gram or serv below, or clic re all availabl bind the voli by the progr orite Targets List:	ice uses a particula k Auto Configure to e devices. ume or device so th am or service. This s List.	r volume or device, add have the iSCSI initiato at on system restart it i is only effective if the	that volur r service a s more rea associated	ne or device to utomatically dily available target is on
Volume	EID CI				
Volume Volum	e/mount poir	nt/device			
Volume Volum	e/mount poir si#disk&ven_	n t/device _freebsd∏_iscs	_disk#1&1c121344&08	.000100#{	53f56307-b6b

Setting up the Network Configuration for Each Node

- > Both Nodes having Two Network Adapters configured
- Each having 1 Public and 1 private IP

Domain network	Access type: No Internet access Connections: Q Ethernet 172.168.0.101
Unidentified network	Access type: No Internet access
Public network	Connections: Heart Beat 8.8.8.1



Install the Failover Clustering Feature on Both Nodes

Once done, run the Cluster configuration to configure the default cluster



Create a Role for Arcserve

Prepare MSCS Cluster Resources on Windows Server 2012 Systems

On Windows Server 2012 systems, use the Failover Cluster Management utility to prepare MSCS cluster resources.

Note: On Windows Server 2012 systems, the utility is named Failover Cluster Manager. The steps that follow describe how to prepare cluster resources on Windows Server 2012 systems.

- From the Windows Start menu, open Failover Cluster Management.
- > The High Availability Wizard, Before You Begin dialog opens.
- > Review the content on the Before You Begin dialog and click Next.
- > The Failover Cluster Management window opens.
- From the directory tree, right-click Services and applications and click Configure a server or application on the pop-up menu.
- > The Select Service or Application dialog opens.
- > In the list of services and applications, click Other Server, and then click Next.
- > The Client Access Point dialog opens.
- Complete the required fields on the Client Access Point dialog. Verify that you provide the following information:
 - Name of the service
 - Public and private IP address for the location of the service

Click Next.

The Select Storage dialog opens. Specify the volume that you want to assign to the service or application.

- > Click Next, and then click Finish.
- > The cluster resource is prepared.
- > Start Installing arcserve after the resources are created

Configuring Arcserve Role

- > Ensure that there is available storage to start the cluster configuration for arcserve
- > Setup the Roles before installing Arcserve. Assign the Available storage to the Role first

Before assigning the role make sure the disk shows up as available storage



Assign Roles





朝	High Availability Wiz	ard
Select F	lole	
Before You Begin Select Role	Select the role that you want to configure for high ava	ilability:
	Generic Service Hyper-V Replica Broker SCSI Target Server	^
	Virtual Machine	=

Configure Network IP's

30 30		High A	Availability Wizard		
Client A	ccess Point				
Before You Begin	Type the name t	hat clients will us	e when accessing this clustere	d role:	
Select Role	Name:	CLUSTER-ARCSERVE			
Client Access Point		-			
Select Storage	The NetBIOS	name is limited t	to 15 characters. One or more Pv4 addresses could not be co	e DHCP IPv4 addresses were configured	
Select Resource Types	network to b	e used, make su	re the network is selected, an	d then type an address.	
Confirmation		Netv	vorks	Address	
Configure High			172.168.0.0/16	172 . 168 . 0 . 🚺	
Availability		-	8.0.0.0/8	Click here to type an address	
Ci immonio i					

Picks up the available storage automatically if there is only 1, if there are multiple available storage, you can

刻	Hi	gh Availability Wizar	rd
Select S	torage		
Before You Begin Select Role	Select only the storage volu You can assign additional st	mes that you want to assign orage to this clustered role a	to this clustered role. after you complete this wizard.
Client Access Point	Name	Status	
Select Storage	🗹 🖯 🔠 Cluster Disk 3	(Online	
Select Resource	Volume: (E)	File System: NTFS	449 MB free of 497 MB

Confirmation Screen

刻	High Availability Wizard				
Confirma	tion				
Before You Begin Select Role	You are ready to configure	high availability for a Other Server.			
Client Access Point	Storage:	Cluster Disk 3			
Select Storage	Network Name:	CLUSTER-ARCSERVE			
Select Resource	OU:	CN=Computers,DC=TeamAPAC,DC=com			
Types	IP Address:	DHCP address on 10.60.12.0/24			
Confirmation	IP Address:	172.168.0.60			
Configure High	IP Address:	8.0.0.1			

After the role configurations are configured proceed to installation of arcserve on the shared disk

For example, here the install path is F Drive

Devices and drives (5)





Install Path:

F:\arcserve r17\

Next Screen should pick up the cluster installation path select the check box for MSCS Cluster Installation

Cluster Setting		Orcserve [®] Backup
 License Agreement License Key Methods Configuration Installation Type 	Target Host:[CSV01] Custer Environment Installation (MS Installation Path	SCS)
 License Agreement License Key Methods Configuration Installation Type Components 	■Target Host:[CSV01 Cluster Environment Installation Path	I] t Installation (MSCS) Select Folder
 Accounts Database Settings Cluster Setting Messages Setup Summary Installation Progress Installation Report 	You shar M N Recent places Desktop Libraries This PC	in: This PC Local Disk (C:) Local Disk (C:) Local Disk (C:) II.6 GB free of 19.6 GB DVD Drive (D:) IRM_SSS_X64FRE_EN-US_DV5 0 bytes free of 3.97 GB asbu-install-ISCSI (F:) 7.90 GB free of 7.99 GB Quorum (Q:) 950 MB free of 0.99 GB

Select Stand Alone and proceed with installation



Iarget Host:[CSV01]	
Cluster Environment Installation (MSC	CS)
Installation Path	
F:\ARCSERVE R17\	
You are performing a Cluster-aware setur shared disk. (note: this will also change o	 Please select the installation path of Arcserve E catalog path into shared disk)
MSCS Summary	
MSCS Cluster Setting Summary	
Virtual Node Name	ASBUHA
Virtual IP Address	172.168.0.14
Installation Path	F:\ABCSEBVE B17\

With SQL Express as the default database Catalog Database gets installed/configured on the same F drive (available storage)

ioose a database type:	Arcserve Default Database	
Specify the installation path fo	or Arcserve default database	
a set as an a set a set of the set of the product of the	cryrogram i neo (noo) y nei ooorro de oerrei	
C Select a custom path		

After the installation is over, **DO NOT CLICK THE CHECK BOX**



Arcserve Backu You must now r See the Arcserv	p is now installed on a Microsoft Cluster Server un Setup on the other MSCS duster-aware nod /e Backup for Windows Administration Guide for	(MSCS) duster-aware node. es. information about how to start Arcserve high
<	III	> >
cluster-awar	e nodes.	after Arcserve Backup is deployed on all MSCS

After Node 1 is completed, failover to the second node

Failover Components

- 1. Available storage should failover
- 2. Arcserve Role
- 3. IP

Failover Cluster Manager on the second node should now have these resources online

HA Resource (Roles)

Search Name			<u>م</u>	Ouning -	1			
Name		Search P Queries V 🖬 V						
	Status	Туре	Owner Node	Priority	Inform			
asbuHA	🛞 Rur	nning Other	CSV02	Medium				
		ą.	Queries 🔻 📘	• •				
Status	Туре	Owner Node	Priority	Informa				
(1) Running	Other	CSV02	Medium					
101		F	Preferred Owners: A	> ny node				
		() Online						
SI (F:)		() Online						
	Status	Status Type Punning Other	Status Type Owner Node PRunning Other CSV02 Status Status Preve of 8.00 GB	P Queries ▼ Status Type Owner Node Priority Running Other CSV02 Medium Preferred Owners: A Status Information 	Queries Queries Status Type Owner Node Priority Informa Image: Status Other CSV02 Medium Image: Status Information > Status Information (*) Online Status Information (*) Online			



Available Storage

Disks (3)				
Search			P Quer	ies 🔻 🔒 🔻 🗸
Name	Status	Assigned To	Owner Node	Disk Number
📇 Cluster Disk 1	() Online	asbuHA	CSV02	
📇 Cluster Disk 2	(Online	Disk Witness in Quorum	CSV02	
📇 Cluster Disk 3	(ক্ত) Online	Available Storage	CSV02	
<	ш			3
🗸 🦉 Cluster Disk	:1			
Volumes (1)	CSI (F:)			
NTFS 7.64 GE	3 free of 8.00 GB			

Start the install the same way as done on Node 1 After the installation is over select this check box

rcserve Backup 'ou must now ru ee the Arcserve	s now installed on a Microsoft Cluster Ser Setup on the other MSCS cluster-aware Backup for Windows Administration Guide	ver (MSCS) duster-aware nodes. e for information about hov	node. v to start Arcserve high
Create HA res	urces for MSCS. Note: Select this option	only after Arcserve Backup	is deployed on all MSCS
cluster-aware	iodes.		



Launch the Manager after the install

Defa	ult Serve	er Information	x
Choose the server that will	become the	e default Arcserve Backup s	erver.
Arcserve Backup Domain M Arcserve Backup Primary S	Name: Server:	ASBUHA	~
Authentication Type:	Window	ws Authentication	~
Domain\Username:	TEAMA	APAC\Administrator	
Password:			
✓ Login with current W ■ Remember the secu	/indows use rity informat	er ion	, RSA
	OK	Cancel	
Orcser	/ e °	Backup	
benduit: Server and a	Jecuncy		

1		
	Domain:	ASBUHA
	Default Server:	ASBUHA
	User Name:	TEAMAPAC\Administrat 🞇

You will the HA resource displaying the F drive to where Arcserve was installed

Arcserve Backup - [Backup]						
File Quick Start View Backup Window	Help					
ASBUHA V O O	Submit Options Filter	View				
Start > Source Schedule > De: Group View Customize Group	tination > Server Name:	Subnet × × × ×	Agent Type	Update	Reset	
Client Agent	Name ▲ Type Size Last Modified Date Creatio □ □ F: Volume □ □ Arcserve Backup Database					
Microsoft SQL Server Microsoft SharePoint Server Server Server Server Server Server Server Server).0.0.0)				
🖬 📑 Sybase Server		Properties				
	Filter Additional Information					
Other Applications	→ Modify Agent	Name			\\ASBUHA	
Arcserve Replication Scenarios	Pre/Post Option	Operating System		Windows S	ystem	

Failover to Node2

Open the Manager and check if all resources are online