

Setting up Dell[™] DR Series Deduplication Appliance as NFS Backup Target on EMC Networker

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Revisions

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Executive Summary

This paper provides information about how to set up the Dell DR Series Deduplication Appliance as a backup target for EMC Networker[™] software. This paper is a quick reference guide and does not include all DR Series Deduplication Appliance deployment best practices.

See the DR Series Deduplication Appliance documentation for other data management application best practices whitepapers at <u>http://www.dell.com/support/troubleshooting/us/en/04/Product/powervault-dr4100</u>, under "Manuals & Documentation".

NOTE: The DR Series Deduplication Appliance/Networker build versions and screen shots used for this paper may vary slightly, depending on the version of the DR Series Deduplication Appliance/Networker software version used.

Install and Configure the DR Series Deduplication Appliance

- 1. Rack and cable the DR Series Deduplication Appliance appliance, and power it on.
- 2. Please refer to *Dell DR Series System Administrator Guide*, under sections of "iDRAC Connection", "Logging in and Initializing the DR Series System", and "Accessing IDRAC6/Idrac7 Using RACADM" for using iDRAC connection and initializing the appliance.
- 3. Log into iDRAC using the default address **192.168.0.120**, or the IP that is assigned to the iDRAC interface. Use user name **root**, and the password **calvin**.

	TED DELL RE	MOTE R 6 - ENTERPRISE			Support About Logout
System Dell DR4000 root , Admin	Properties System Sun	Setup Power nimary System I		vPlash Remote File Share	
System IDRAC Settings Datteries	System	Summary			● C ?
Fans	Server	Health			
Power Supplies	Status	Component		Virtual Console Preview	
Removable Flash Media Temperatures		Batteries		Options : Settings	
Voltages		Fans			-
Power Monitoring		Intrusion			
		Power Supplies			
		Removable Flash	Media		
		Temperatures			
		voitages		Ref	esh Launch
	Server	Information		Quick Launch Tasks	
	Power:	Situte	ON	Power ON LOFF	
	System	Model	Dell DR4000	Power Cycle System (cold boot)	
	System	Reviacon	н	Launch Virtual Console	
	System	HostName	DR4000-DKCV6S1 asglab roundrock	View System Event Log	
	Operati	ing System	CentOS	View IDRAC Log	
	Operati	Operating System Version 2.6.18-164.e Update Firmware	Update Firmware		
	Service	Tao	DKCV6S1	ResetIDRAC	
		s Service Code	29529104401		
	BIOS V		1.9.0		
	Farmwa	re Version	1.80 (Build 17)		

4. Launch the virtual console.

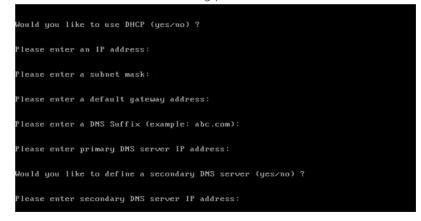
em DR4000 Admin	Properties System Summ	Setup Power ary System D	Logs Alerts Console/Media Details System Inventory	vFlash Remote File Share		
m	System Su	ummary			a (3 3
C Settings ries	Server He	ealth				
r Supplies	Status C	component		Virtual Console Preview		
ovable Flash Media eratures	B	latteries		Options : Settings		
205	1 E	ans				
er Monitoring	💌 In	noisunte			-	
	2 P	ower Supplies				
	R	temovable Flash I	ledia			
	🖬 11	emperatures			-	
		oitages		Retre	sh Launch	>
	Server Info	ormation		Quick Laurich Tasks		
	Power Stat	de	ON	Power ON / OFF		
	System Mo	odel	Dell DR4000	Power Cycle System (cold boot)		
	System Re	evision	н	Launch Virtual Console		
	System Ho	ost Name.	DR4000-DKCV6S1.asglab.roundrock	View System Event Log		
	Operating	System	CentOS	View IDRAC Log		
	Operating	System Version	release 5.4 (Final) Kernel 2.6.18-164.e	Update Firmware		
	Service Ta	0	DKCV6S1	Reset/DRAC		
	Express 5	lervice Code	29529104401			
	BIOS Veral	ion	1.9.0			
	Firmware	Version	1.80 (Build 17)			

1

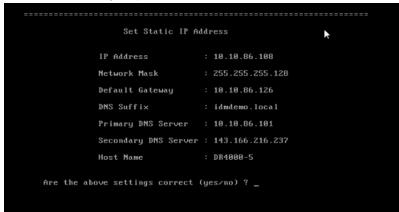
5. Once the virtual console is open, log in to the system as user **administrator** and the password **StOr@ge!** (The "0" in the password is the numeral zero).



6. Set the user-defined networking preferences.



7. View the summary of preferences and confirm that it is correct.



8. Log into the DR Series Deduplication Appliance administrator console, using the IP address you just provided for the DR Series Deduplication Appliance, user **administrator** and the password **St0r@ge!** (The "0" in the password is the numeral zero).

⇒ C 隆	#ps://10.250.242.206/#	50000	\$
DØLL	DR4100 ootb-config-01		Help
Login			Reset Password
		Please enter your password: Username: administrator Password: Log in	
Copyright © 2011 - 2	013 Dell Inc. All rights reserved.		

9. (Optional) Join the DR Series Deduplication Appliance to Active Directory --- only when the DR is also providing CIFS access to backup servers.

NOTE: if you do not want to add DR Series Deduplication Appliance to Active Directory, see the *Owner's Manual* for guest login instructions.

a. Select **Active Directory** in the tree on the left hand side of the dashboard.

-Dashboard Alerts	Dashboard				
Events Health Usage Statistics: Container	System State: optimal	HW State: optimal	Number of A	lerts: 0 Number of E	Events: <u>1242</u>
Statistics: Replication	Capacity	Storage Savings		Throughput	
Storage Containers Replication Compression Level	Physical	Zoom: 1h 1d 5d 1m Savings (%)	<u>1v</u> ©	Zoom: 1h 1d 5d 1m 3 MiB/s	<u>ا ب</u>
Clients		75		0.75	
Schedules Replication Schedule		50		0.50	
Cleaner Schedule		25		0.25	
System Configuration	99%	0		0.00	
Networking		12:00 12:10 12:20 12		12:00 12:10 12:20 12	
Active Directory	Used (49.0 GiB)	Time (n	ninutes) Savings	Time (m	
Local Workgroup Users	Eree (31.38 TiB)		Savings		
Email Alerts Admin Contact Info					
Email Relay Host	System Information				
Date and Time	Product Name: DR4				
Support	System Name: 000			f Files in All Containers:	
Diagnostics Software Upgrade	Software Version: 2.0.0			tainers:	0
Software Upgrade License	Current Date/Time: Tue			tainers: tainers Replicated:	
License	Current Time Zone: US/	1		taitiers Replicated.	-
	Cleaner Status: Pen		ricare Dytes,		

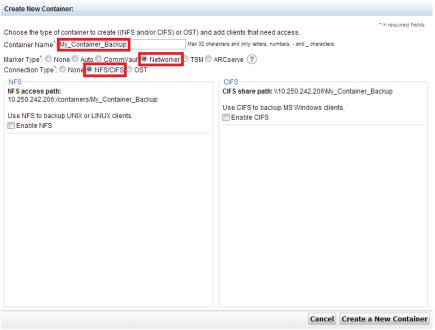
b. Enter your Active Directory credentials.

E	CR4100	g-01			Help Log out
=	Dashboard Alerts Events	Active Directory			Join
	Health Usage Statistics: Container Statistics: Replication	Settings The Active Directory settings have not been configur	ed. Click on the 'Join' link to confi	gure them.	
	Storage Containers	CIFS Container Share Path			
	Replication	Active Directory Configuration			
	Compression Level Clients Schedules Replication Schedule Cleaner Schedule System Configuration Nutricities	Domain Name (FODN)"; Username"; Password"; Org Unit		= fields are required.	
=	Networking -Active Directory Local Workgroup Users Email Alerts Admin Contact Info Email Relay Host Date and Time Support Diagnostics Software Upgrade License		Cance	l Join Domain	
Copy	right © 2011 - 2013 Dell Inc. All rig	hts reserved.			

- 10. Create and mount the container.
- a. Select **Containers** in the tree on the left side of the dashboard, and then click the **Create** link at the top of the page.

Dashboard Alerts Events	Containers				Crea	te Edit Delete Dis	play Statis
Health	Number of Containers: 7					Container Pa	th: /contain
Usage Statistics: Container	Containers	Files	NFS	CIFS	OST	Replication	Select
Statistics: Replication		58	~	~		Not Configured	0
Storage	d2d2t	2			~	N/A	0
Containers	DDTest	0	~	~		Online	0
Replication Compression Level	demo2Zhuhai	22	~	~		Not Configured	0
Clients	My_Container_Backup	27	~	~		Not Configured	0
Schedules	ofs	44	~			Not Configured	0
Replication Schedule	e ootb-ost-test	254			~	N/A	0
Cleaner Schedule		2.34			Ŷ	DVA	
Networking Active Directory Local Workgroup Us Email Alerts Admin Contact Info Email Relay Host Date and Time Support	ers						
Diagnostics Software Upgrade							

b. Enter a **Container Name**, select **Networker** as **Marker Type**, and select the **NFS/CIFS** check box for **Connection Type**.



c. Under **NFS** section, note down the **NFS access path** (this will be used in configuring device on Networker server), and select **Enable NFS**. For **Client Access** section, choose either **Open Access**, or manually add clients into the allow list with having NFS Options as "rw"

Create New Container:	
Choose the type of container to create ((NFS and/or CIFS) or OST) and	* = required fields add clients that need access.
Container Name*: My_Container_Backup Max 32 oh	aracters and only letters, numbers, - and _ characters.
Marker Type*: O None O Auto O CommVault O Networker O TSM O Connection Type*: O None O NFS/CIFS O OST	ARCserve ?
NFS NFS UD250.242.206 //containers/My_Container_Backup UD250.242.206 //containers/My_Container_Backup UD260.242.206 //containers/My_Container_Backup UD260.242.206 //containers/My_Container_Backup Client Access Open Access (all clients have access) Add client (IP or FQDN Hostname): Clients:	CIFS CIFS share path: \\10.250.242.206\\Wy_Container_Backup Use CIFS to backup MS Windows clients. Enable CIFS
Map root to: -select-	
	Cancel Create a New Container

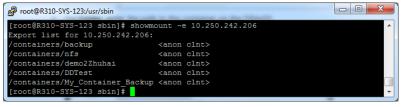
Note: For improved security, Dell recommends adding IP addresses for the following (Not all environments will have all components):

- Backup console (Networker Server)
- Network Storage Nodes
- Networker Clients
- d. Click Create a New Container.
- e. Confirm that the container is added.

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2 Configure the Networker Storage Node

1. Log into the networker storage node and run the command as shown, to display the NFS exports on DR Series Deduplication Appliance



2. Make a mount point on the Networker Storage Node and mount the DR Series Deduplication Appliance export



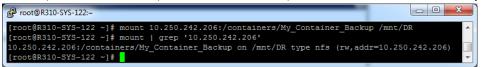
3. Test writing to the DR Series Deduplication Appliance export, make sure it completes successfully



4. Create a subdirectory to be used as device path in configuring DR Series Deduplication Appliance export onto the storage node



5. If Client Direct feature will be used, on each of the client, mount the DR export and note down the mount point. This mount point is needed in step 9 of the next section of **Set up Networker**



NOTE: On DR4x00 models, the maximum supported CIFS connections per Appliance is 32, and on DR6000 model the max is 64, so there should be no more than 32 and 64 corresponding clients connected/mapped to a single DR Series Deduplication Appliance for backup at the same time.

3 Set up Networker

- 1. Open the Networker Management Console (NMC)
- 2. Click the **Enterprise** menu button, high-light the storage node that the DR Series Deduplication Appliance export will be configured as backup device, right-click on the host and select **New**, then select **Managed Application**

EMC NetWork	er Management	Console ¥8	3.0 - r310-sys-123	.ocarina.loc	ai		
U	erprise Librarie					User:	administrator
File Edit Viev	v Enterprise S	Start Wind	ow Help				
+ 🕕 🗙 🚱	🔍 🍠						
E-B Enterprise	(0.132 III I	Host: r310-	-sys-123		-		
	New	•	Managed Applic	ation			
	Properties	Ctrl-O	Capture Events, Ga	ther Reporting) Data		
	Delete	Delete					
	Сору	Ctrl-C					
	Move						
	Refresh	F5					
			-				

3. Select Networker and click on Next

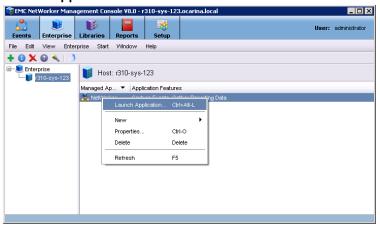
elect Managed Application	
Select managed application for the host	
NetWorker	
Backup and recover for the department and enterprise	
Avamar	
Deduplication backup and recover for the enterprise	



4. Click on Finish

Create Managed Application Manage NetWorker Configure Console to monitor managed application activities on the host			
Managed Application Name:	NetWorker		
Description:	Backup and recover for the department and enterprise		
Vendor Name:	EMC Corporation		
Features			
Gather Reporting Data			
	< Back Finish Cancel		

5. High-light the newly created Networker application, right-click on the application and select **Launch Application**



6. A new Devices window will open. On left side panel right-click on **Device**, select **New Device Wizard**

💑 EMC Ne	tWorker Admir	nistration ¥8.0 - r3	10-sys-123 (Net)	Vorker 8.0.0.1.Bui	ld.153 Eval -	Linux)			_	
S Monitori	ng Configura	ntion Devices	K. Media					User:	administr	rator
File Edit	View Devic	es Recover Wi	ndow Help							
+ 0 ×	C 🕜 🔦 I 🌖	📰 📰 🔛 🕑		DY@ B						18
	Libraries	R	Devices (0)							
	Devi Stor New	Ct	rl-N Parent	jukebox Desc	iption	Volume name	M Enabled			
		vice Wizard								
	Ave Refresh	ı F5								
	Scan fo	r Devices								
	Configu	re All Libraries								
Log					Alerts				1 - 7	ί×
Priority Tim	e 🕶	Source	Category Messag		Priority Time	•	Category Message			
	sday 4:55:24 AM		server Started	-						
Tue	sday 4:55:30 AM		index Checkin	g index for Y31						

7. Select Advanced File Type Device (AFTD)

💑 Device Configuration Wizard	×
Select the Device Type	
Select the type of stand alone device to cor	rligure.
Select the Device Type Select Storage Node Select Device Path Configure Attributes Label and Mount Devices Review Configuration Settings Check Results	Data Domain Choose this option to create a Data Domain type device on Data Domain system running DDOS version 43.10 or greater. This option requires a Meth/forter DD Boost Ilconse. Order the type Device AFDD Choose this option to create a deity type device. This option can also be used to create devices on a non DD Boost enabled Data Domain system. Avamar Deduptication Node
0	< Beck Next > Cancel

8. On next window, Select Device storage is remote from this Storage Node, in Network Path enter DR Series Deduplication Appliance export mount point on the storage node (if name resolution works, hostname or FQDN can be used in the server portion of the network path). Choose Manually enter local or remote device paths and type in the subdirectory name previously created as device path (please refer to step 4 of previous section Configure the Networker Storage Node). In Authentication section, type in DR Series Deduplication Appliance administrator

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with password to access the DR Series Deduplication Appliance export. Click on Next

🖥 Device Configuration Wizard		
Select Storage Node		
Select the storage node to place this AFT and password to browse the storage an		o be configured is remote to that storage node, enter a network path to the storage. Supply a username , or manually enter the paths.
Select the Device Type	Storage Node:	r310-sys-123.coarina.local
 Select Storage Node 	Dedicated Sto	orage Node
O Configure Attributes	_	
Label and Mount Devices	🗹 Device storag	ge is remote from this Storage Node.
Review Configuration Settings	Network Path:	/mnt/DR_export_Networker8
Check Results	Browse or Ma	
		anuai prage node or network path
	O Browse su	rage node or network pain
		nter local or remote device paths
	DR-AFTD	
	Authentication	n
	Username:	administrator
	Password:	•••••
0		< Back Next > Cancel

9. Set the sessions attributes according to Networker administration document. If **Client Direct** feature will be used, enter each of the client machine DR export mount points as a separate line into the **Client Direct Paths list** (Please refer to step 5 of last section **Configure the Networker Storage Node**). Click on **Next**

Device Configuration Wizard					
Configure Device Attributes					
Fill in any device attributes. Give each de CIFS or Unix Automounter paths.	vice a unique name. If client	ts will backup directly to this storage (Client Dire	ect), then enter those	access paths in the	form of
Select the Device Type	NetWorker D 🔻 C	omment Device Path	Client Direct Paths	Target Sessions	Max Sessions
Select Storage Node	DR-AFTD	/mnt/DR_export_networker8/DR-AFTD	/mnt/DR-AFTD	4	32
Configure Attributes					
Label and Mount Devices					
Review Configuration Settings					
Check Results					
	NetWorker Device Nam	e: DR-AFTD			
	Comment:				
	Device Path:	/mnt/DR_export_networker8/DR-AFTD			
	Client Direct Paths:	imnt/DR-AFTD			
	Target Sessions:	4	•		
	Max Sessions:	32	*		
อ				< Back	lext > Cancel



NOTE: On DR4x00 models, the maximum supported CIFS connections per Appliance is 32, and on DR6000 model the max is 64, so there should be no more than 32 and 64 corresponding clients connected/mapped to a single DR Series Deduplication Appliance for backup at the same time.

Device Configuration Wizard				
Label and Mount Devices				
Choose to label and mount any device. Th	is operation may take an extended an	nount of time. Only devices who's s	storage has not been lab	eled appear below.
Select the Device Type	NetWorker Device Name 💌	Label Pool Type	Disk Pool	
Select Storage Node	DR-AFTD	🧭 Backup	Default	
Configure Attributes				
Label and Mount Devices				
Review Configuration Settings				
Check Results				
	Label and Mount device after of	P		
		creation device operation may take an exter	where a mount of time	
	Pool Type	demos operation may take an exter	accionate of the.	
	Backup			
	O Backup Clone			
	Pool			
	Default		_	
2				< Back Next > Cance

10. The new Networker device should have **Backup** as Pool Type, click **Next**

11. Review the configuration, then click on **Configure**

Device Configuration Wizard			
leview the Device Configurati	on Settings		
Review the device configuration summary	. To modify the configuration, click Back. To	accept and create the configuration, click Co	onfigure.
	, , ,		
Select the Device Type	Adding new AFTD "DR-AFTD"		
Select Storage Node	AFTD Name:	DR-AFTD	
Configure Attributes	Device Access Information:		
Label and Mount Devices	Target Sessions: Max Sessions:	4 32	
Review Configuration Settings	Remote User:	administrator	
Check Results	Password	*****	
	Labeling device "DR-AFTD"		
	Device Name: DR-AFTD		
	Pool Name: Default		
			< Back Configure Cancel
			Carlee

12. Click on Finish

💑 Device Configuration Wizard		×
Device Configuration Results		
Results of device configuration.		
0		
Select the Device Type	Adding new AFTD "DR-AFTD"	-
Select Storage Node	Successfully added new AFTD "DR-AFTD"	
O Configure Attributes	Labeling device "DR-AFTD"	
Label and Mount Devices	Successfully labeled device "DR-AFTD"	
Review Configuration Settings Check Results		
Check Results		
		•
	< Back	Finish Cancel

13. Under **Configuration** tab, select **Clients**, right-click on the client that will be backed up, select **Client Backup Configuration**, then **New**

💑 EMC NetWorker Administration V8.0 - r310-sys-1	123 (NetWorker 8.0.0.1.Build.1	53 Eval - Linux)						
	R. ledia							User: administrator
File Edit View Configuration Recover Window	v Help							
🕂 🚯 🗶 🕲 🔍 । 🐧 🗏 🛒 🔍 🔍 💢 🥬								15
r310-sys-123 Archive Requests Clients (2)								
Audit Log Name 🔻	Backup type	Comment	Scheduled backup	Save set	Client direct	Group	Schedule	
Cients 🦉 r310-sys-123.ocari	ina.local			NMCASA:/gst_on	 Image: A set of the set of the		Default	
Clones GonnectEMC				<u>^</u>	<i><</i>	Default	Default	
- B Directives	Client Backup Config	uration 🕨	New Ctrl+Alt-N					
⊞-∭ Groups	New	Ctrl-N	Modify Ctrl+Alt-M					
🗷 🕞 Local Hosts	Properties	Ctrl-O						
- 🛍 Lockboxes	· ·	GING						
Notifications	Edit Name	I						
	Add To Name	I						
- Probes	Remove From Name.							
Registrations	Delete	Delete						
- 👶 Restricted Data Zor								
Snapshot Policies	Copy	I						
Staging	Refresh	F5						
A ¥	Recover							•
Log			₽ × Alerts					
Priority Time Category	y Message		Priority Time		egory Message			
Tuesday 4:55:24 AM event server	Started		A					
Tuesday 4:55:30 AM event index	Checking index for 'r310-sys-123	3.ocarina.local'	•					
• · · · · · · · · · · · · · · · · · · ·	1 1 1 1010 100 1		. 🗵					

14. Go through the procedure of creating a new backup group

🛃 Client Backup Configuration					×
Specify the Client Name and Ty	/pe				
		nt' for non-VMware clients. Select 'VMware client' for virtual clients that ha	ve the		
NetWorker client software installed or to c	onfigure as a proxy-based backup.				
Specify the Client Name and					
Туре	Client Name: r310-sys-123.oc	arina.local			
Specify the Backup Configuration Type					
Specify the VMware Backup	Traditional NetWorker client	the NetWorker client best definite. Net for Williams clients			
Туре	_	y the NetWorker client host software. Not for VMware clients.			
Select the VCB Options	O VMware client Configure a VMware clien	nt for traditional backup using the NetWorker client software (if ins	alled) or		
Select the Client Properties Choose the Backup Group	for proxy based backups	using a proxy host (VCB or VADP).			
Specify the Storage Node	O VMware proxy host	Denne her das her hurs visional en e bieres			
Options Specify the Client Backup	Configure a visiware visio	P proxy host to back up virtual machines.			
Options					
 Specify the Proxy Backup Options 					
Specify the vCenter and Filesystem Mount Point					
Specify the Retry, Lookup and Transport Options					
Specify the Proxy Host Backup Option					
Specify the Snapshot Policy					
Backup Configuration					
Summary Check Results					
CHECK Results					
0				Neste	Cancel
0			< Back	Next >	Cancer
💑 Client Backup Configuration					×
Select the Backup Configuration	on Type				
Select the backup configuration type from	the available applications. The availa	able applications represent which NetWorker modules are installed on the cli	ent.		
Specify the Client Name and Type	Client Operating System:	Linux 2.6.18-308.16.1.el5			
Specify the Backup	NetWorker Version:	8.0.0.1			
Configuration Type					
Specify the Client Backup Options	Available Applications Filesystem			- 1	
Select the Client Properties					
O Choose the Backup Group					
Specify the Snapshot Policy					
 Specify the Storage Node Options 					
Backup Configuration Summary					
O Check Results					
			< Back	Next >	Cancel
2					

Note: Pay special attention to the following step while setting the other options appropriately according to the backup environment:

Deduplication should be set as None;

Target Pool should be set as the pool that has DR Series Deduplication Appliance device included; **Client Direct** can be enabled if client directly backing up data to DR is preferred, thus bypassing the storage node managing the DR share (please refer to step 9 above in the same section, and step 5 in **Configure the Networker Storage Node** section).

💑 Client Backup Configuration	×
Specify the Client Backup Optio	ns
	requires either a Data Domain or Avamar storage server to be configured on the NetWorker server. By default, NetWorker
will choose a target pool for the backups. C	lient Direct, supported for Data Domain and AFTD storage only, sends backups directly to the storage devices,
bypassing the NetWorker storage node, wh	ere possible. The Checkpoint Restart option enables failed scheduled backups to restart from the point of interruption.
Specify the Client Name and Tune	Deduplication
Type	None
Specify the Backup Configuration Type	O Data Domain backup
Specify the Client Backup	Avamar deduplication backup
Options	The second secon
Select Files to Backup	
Select the Client Properties	Pool
Choose the Backup Group	Target Pool: Default
Specify the Snapshot Policy	
Specify the Storage Node	Backup to Disk
Options Backup Configuration	Client Direct:
Backup Configuration Summary	
O Check Results	Checkpoint Restart
	Checkpoint Enabled:
	Checkpoint Granularity: Directory
0	< Back Next > Cancel
🚠 Client Backup Configuration	×
	X
Select the Filesystem Objects	
Select the Filesystem Objects	
Select the Filesystem Objects	
Select the Filesystem Objects Select the client filesystem objects to back u Specify the Client Name and	ip. By default, the entire contents of the client will be backed up.
Select the Filesystem Objects Select the client filesystem objects to back of Specify the Client Name and Type	By default, the entire contents of the client will be backed up. Un-check any items you do not want to include in the backup.
Select the Filesystem Objects Select the client filesystem objects to back of Specify the Client Name and Type Specify the Backup	ip. By default, the entire contents of the client will be backed up. Un-check any items you do not want to include in the backup. □ □ □ □ □ □ □ □ 10-sys-123.occina.local □ □ □ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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💑 Client Backup Configuration			×
Select the NetWorker Client F	Properties		
Select the NetWorker client properties. 1	o accept the default properties, click Next.		
Specify the Client Name and Type	Browse Policy: (Maintain backup entries in the online file index)	Month	+
Specify the Backup	Retention Policy:	Year	• •
 Configuration Type 	(Maintain backup entries in the save set index)		
Specify the Client Backup Options	Backup Schedule:	Default	•
Select Files to Backup	Client Comment:		
Select the Client Properties			
Choose the Backup Group Specify the Snapshot Policy	Remote Access:		
Specify the Storage Node			
 Options 			
Backup Configuration Summary			
O Check Results			
0			< Back Next > Cancel
💑 Client Backup Configuration			×
Specify the NetWorker Backu	p Group		
Select or create the NetWorker group fo	r this configuration.		
	Add to an existing group		
Specify the Client Name and Type	Name 💌 Start Time		
Specify the Backup	Default 21:00		
Configuration Type			
Specify the Client Backup Options	 Create a new group 		
Select Files to Backup	Group Name: NVV_DR		
Select the Client Properties	Client Retries:	1 🗬	
Choose the Backup Group Specify the Snapshot Policy	Schedule Options		
Specify the Storage Node	Scheduled Backup Start Time 21:00		
Options	(24-hour clock)		
Backup Configuration Summary	Automatically start the backup at the scheduled	i time	
O Check Results			
0			< Back Next > Cancel



		×
Specify the Storage Node Opti	ons	
Select the backup and recovery storage n	nodes to use for this client.	
 Specify the Client Name and Type Specify the Backup Configuration Type Specify the Client Backup Options Select Files to Backup Select the Client Properties Choose the Backup Group Specify the Storage Node Options Backup Configuration Summary Check Results 	Changing the storage node options for this configuration will affect all configurations for this client. Backup Storage Nodes Backup to NetWorker server only Backup to the following storage nodes Recovery Storage Nodes Recover from NetWorker server only Recover from NetWorker server only Recover from the following storage nodes Name Type Config Device Sharin Number of Devices Name Yes Server default	
🕝	< Back Next > Co	incel
Backup Configuration Summar	y utify the configuration, click Back. To accept and create the configuration, click Create.	×
Backup Configuration Summary Review the configuration summary. To more Specify the Client Name and Type	Adding new group "NW_DR"	×
Backup Configuration Summary Review the configuration summary. To more Specify the Client Name and Type Specify the Backup Configuration Type Specify the Client Backup	Adding new group "NW_DR" Name: NV_DR Client Retries: 1 Start Time: 21:00 Autostart: No	
Backup Configuration Summary Review the configuration summary. To more Specify the Client Name and Type Specify the Backup Configuration Type	Adding new group "NW_DR" Name: NW_DR Client Retries: 1 Start Time: 21:00	

Client Backup Configuration		
lient Configuration Results		
Results of client configuration.		
Specify the Client Name and	Adding new group "NW DR"	
Туре	Successfully added new group "NW_DR"	
Specify the Backup Configuration Type	Adding new client "r310-sys-123.ocarina.local"	
Specify the Client Backup Options	Successfully added new client "Y310-sys-123.ocarina.local"	
Select Files to Backup		
Select the Client Properties		
Choose the Backup Group		
Specify the Storage Node Options		
Backup Configuration Summary		
Check Results		
		< Back Finish Canc

15. Once the backup group is successfully created, start the backup

🛃 EMC NetWorker	Administra	tion ¥8.0 - r310)-sys-123 (Nel	Worker 8.0.0.1.Build.1	53 Eval - Linux)					_ 🗆 🔺
S Monitoring Co	nfiguration	evices	R. Media							User: administrator
File Edit View	Configuratio	n Recover	Window Help							
+ 🕕 🗙 🙆 🔦	. 1 🔳 目	14 Q Q D	N 막 -							
B-10-sys-123 - Chive F	tequests	🐠 NVV_DF	R (1)							
— 👰 Audit Log		Name 🔻		Backup type	Comment	Scheduled backup Si	ave set Client direc	t Group	Schedule	
- 🗾 Clients		厦 r310-sys-1:	23.ocarina.local	Filesystem		🗸 🗸	a 🗸 🗸	NW/_DR	Default	
Clones ConnectE Suprectives Groups Comps C	at and	ckup Configuratio	n 🕨							
- Policies	Propertie:	s	Ctrl-O							
Probes	Delete		Delete							
- 🔏 Restricte	Сору									
Schedule	Copy with	h Clients								
A T	Start									•
Log	Staff				001	Alerts				0 87 9 ×
Priority Time 💌	Refresh		FS a	ge		Priority Time 🔻	Category Messag	e		
Tuesday 4:50		nt i		ng index for 'r310-sys-12	3.ocarina.local					

16. Monitor the job status through Monitoring tab

	Administration ¥8.0	- r310-sys-123	3 (NetWorker 8.0.0.1.Build	l.153 Eval - Linux)		
۵	11					User: administrator
Monitoring Co File Edit View	nfiguration Device Monitoring Recover		dia elp			
+ 0 X 0 4						14
Groups						
Status Group 🔻	Last Run		Duration	% Complete Next Ru		
default ✓ NW_DR	4/30/13 10	:16:26 AM		% disabled % disabled		
Groups	Clones					
All Sessions						0 7 9 ×
Client Name 💌	Type Start Time save 4/30/1310):18:33 AM	Duration Device 00:00:30 DR-AFTI	>	Volume r310_sys_123.oc 12 MB	Size
厦 r310-sys-12			00:00:30 DR-AFT		r310_sys_123.oc 93 Ki	
	r====	(
	s 📜 Save Sessions	Recover S	essions 🔲 Clone Session	is 📜 Synthetic Full.	Rehydrated Sessions 🔲 Browse	
Devices Status Device 🕶		Storage No.	- Library	Volume	Pool Message	
DR-AFTD		r310-sys-1		r310_sys_123.0		vered from volume r310
		7				
Operations	Archive Requests					•
Log			0 8 9 ×	Alerts		0 8 9 ×
Priority Time Tupodou 4:54	Source 5:24 AM event	Category M server S	Message Started	Priority Time -	Category Message	
Tuesday 4:5	5:30 AM event		Checking index for 'r310	-		
<u> </u>			· · · · · · · · · · ·	1		
💑 NW_DR Detail:	5					×
Start Time: 📝 4/3	0/13 10:16:26 AM	•	Status: Succeeded	ł	10	0%
Duration: 130 Sec	:		Total Amount: 4003 MB		Percentage	e Complete
Waiting to Run:						
Client Name 🔻	Save	e Set	Comm	and	Level	
Currently Running:						
Client Name 🔻	Save Set	Level Type	Start Time	Duration Device		Rate (KB/S)
	,					
Completed Success	sfully:					
Client Name 🔻	Save Set	Level Type	Start Time	Duration Size	File Co Messages	
厦 r310-sys-12		full			96447 🚺 86705:save: Successfu	Illy established DFA s
J r310-sys-12		full	4/30/13 10:16:29			
🛛 💭 r310-sys-12	r310-sys-123.ocari r310-sys-123.ocari		4/30/13 10:18:34 4/30/13 10:18:34		5 86705:save: Successfu 138 86705:save: Successfu	
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4 Set up DR Native Replication & Restore from Replication Target

4.1 Create Replication Session between Two DR Appliances

Note: below screenshots show as CIFS containers, but the procedure is exact the same for NFS containers

1. Create a source container on the source DR appliance

ivan	n-sw-03.ocarina.local	Containers				Crea	te Edit Delete Dis	play Statistic
-	Dashboard Alerts	Number of Containers: 10					Container Pa	th: /containe
	Events	Containers	Files	NFS	CIFS	RDA	Replication	Select
	Health	backup	2	-	~		Not Configured	0
	Usage Container Statistics	cifs1	6		~		Not Configured	0
	Replication Statistics	cifs11	0		~		Not Configured	0
	Storage	kknfs	0	~			Not Configured	0
	Containers	nbu-cifs-01	14		~		Not Configured	0
	Replication Clients	nybu	7	~	~		Stopped	0
	Schedules	nvbu1	7		-		Online	0
	Replication Schedule	nw-cifs-01	21				Not Configured	0
	Cleaner Schedule	A CONTRACTOR OF			~			
	System Configuration	rep-source	0				Not Configured	•
	Active Directory	sample	12		-		Not Configured	0
	Local Workgroup Users Email Alerts Admin Contact Info Password Email Relay Host Date and Time Support							

2. Create a target container on target DR appliance

vanw-sw-01.testad.ocari	Containers				Crea	te Edit Delete Dis	play Statistic:
Dashboard Alerts	Number of Containers: 10					Container Pa	th: /container
Events	Containers	Files	NFS	CIFS	RDA	Replication	Select
-Health	backup	0	~	~		Not Configured	0
Usage Container Statistics	cifs1	11		-		Not Configured	0
Replication Statistics		0		~		Not Configured	0
Storage	kknfs	0	~			Not Configured	0
Containers	kknfs2	0	~			Not Configured	0
-Replication	nfs-01	0	~			Not Configured	0
Clients						5	
Replication Schedul	nfs1	0	~			Not Configured	0
Cleaner Schedule	nw-cifs-01	9		~		Not Configured	0
System Configurat	rep-target	0		4		Not Configured	•
Networking	sample	7		~		Not Configured	0
Active Directory Local Workgroup Us Email Alerts Admin Contact Info Password Email Relay Host Date and Time Support	sers						



3. On source DR appliance, go to **Replication** menu, and then click **Create**

van-sw-03.ocarina.local	Replication		Create Edit	Delete Stop Start	Bandwidth Disp	lay Statisti
Dashboard Alerts	Number of Source Replication	ns: 2				
Events	Local Container Name	Role	Remote Container Name	Peer State	Bandwidth	Select
Health Usage	nvbu	source	10.250.243.18 nvbu	Stopped	Default	0
Container Statistics Replication Statistics	1004041		A CONTRACTOR OF			
Clients Schedules	nvbu1	source	10.250.243.18 nvbu1	Online	Default	0

4. Select the newly created container as source container, then enter the target DR related info in **Step 4** menu item

DELL DR4100-VM		administrator (Log out) Help
Create Replication	Step 3: Select a role * Source Target	* = required fields Step 4: Remote container settings Create container on remote system Map to container on remote system Username*_administrator Password* Peer System*_10.250.242.133 Remote Container: Retrieve Containers(s)
Passwurd Email Relay Host Date and Time Support Copyright © 2011 - 2013 Dell Inc. All rights reserved.		Cancel Create Replication

5. Click **Retrieve Container(s)** button, then select the newly created target container from the list

Step 1: Select a local container * backup cifs1 cifs11 ktmfs nuv-cifs-01 rep-source sample Step 2: Select Encryption * ● None ● 128 bit ● 256 bit	Step 3: Select a role Source Target Source	* = require Step 4: Remote container settings Create container on remote system Map to container on remote system Username*: administrator Password*: Peer System*: 10.250 242 133 Remote Container Remote Container Cris1 Cris2 kknfs kknf
Password Email Relay Host Date and Time Support		Cancel Create Replin

6. Click Create Replication button

Create Replication Step 1: Select a local container* backup crifs1 crifs11 kknfs	Step 3: Select a role Source Target Source	* = required fiel Step 4: Remote container settings Create container on remote system Map to container on remote system Username*: administrator
nbu-cifs-01 rep-source sample Step 2: Select Encryption * None 128 bit 256 bit		Passwort* Peer System* 10 250 242.133 Remote Container: Retrieve Containers(s) backup cifs1 cifs1 cifs2 kknfs kknfs2 nfs-01 nfs1 nw-cifs-01 rep-target sample
Password Email Relay Host Date and Time Support		Cancel Create Replication

7. Verify the replication relation between DRs is created, and Peer Status is Online

an-sw-03.ocarina.local 🔹	Replication		Create Edit	Delete Stop Start	Bandwidth Disp	lay Statis
Dashboard Alerts	Number of Source Replication	ns: 3				
Events	Local Container Name	Role	Remote Container Name	Peer State	Bandwidth	Select
Health Usage	nvbu	source	10.250.243.18 nvbu	Stopped	Default	0
Container Statistics	nvbu1	source	10.250.243.18 nvbu1	Online	Default	0
Storage Containers	rep-source	source	10.250.242.133 rep-target	Online	Default	•
Clients Schedules Replication Schedule Cleaner Schedule System Configuration Networking Active Directory Local Workgroup Users Email Alerts Admin Contact Info Password Email Relay Host						

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4.2 Restore from Replication Target Container

1. Add the target container onto NetWorker Storage Node (Right-Click **Device** -> **New Device Properties**, then fill in necessary information for the target device). After it's done, **Mount** the device

#.	EN	C NetWorker Adn	ninistration V8.1 - zhuhai-2012-02 (NetWorker 8.1.0.1.Build.199 NetWorker Source Capacity Data Zone Enabler - Windows NT Server on Intel)	- C X
Monitoring Configurat	on Dovices	Media	Precover	Daen- amendiator
File Edit View Devices Window	v Help			
+ 0 × 0 ×) 50 m				
🗟 🔰 zhuhai-2012-02	C Devices (2)			
B-110 Libraries		jukebox Description	Volume name M. Enabled	
😸 😠 Storage Nodes	C rep-source	hannes (percenting	zhuna 2012 02. m. Yes	
🗄 🙀 Data Domain Systems	🗢 rep-target			
Avamar Deduptication Nodes			New Device Wilzard Ctri-W	
			New Device Properties Ctr/LN	
			Modity Device Properties On-O Edit Description	
			Ear Decorption	
			And to Checkport.	
			Delete 2 Delete	
			Cory	
			Mount	
			MOUT F	
			Unnount	
			Labet	
			Exc.LAVIBLANS	
			EnableCisable	
			Configure Drive	
			Down for Devices	
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Log			D d' ♀ × Alerts	0 d + ×
hiority Time · Source	Category Message	,	Priority/Time (Category/Message	
VVednesday 7:23:40 zhuhai-201		012-02 testad ocarina lo		
 Wedneoday 7:23:40 zhuhai-201 Wedneoday 7:23:41 zhuhai-201 		012-02 testad ocarina lo	cel browsing cel (200473) starting read from zhuhai 201	
Viednesday 7.23.41 zhuhai-201 Viednesday 7.24.21 zhuhai-201			Sal C views (120417) attenting end from 204ma_201 Cal C views (120417) attenting i from 204ma_201	
VVednesday 7:24:21_event			successfully recovered zhuha-2012-02 testad oce.	
-				

Note: Don't label the target device

2. **Unmount** the source container

	ton Devices	Media	Recover				-User: -odmit
Edit View Devices Window							
× 🔍 👌 🗆 🗇 🖬		STY & S					
zhuhai-2012-02	Devices (2)						
B Libraries	and the source of the bay	t Jukebox Description	Volume name M_	Enabled			
	rep-source		and a contract of	and the second se			
Data Domain Systems	rep-target			Chry			
Avamar Deduplication Nodes				CHIN CHIO			
			Edit Description	Gino			
			Add To Description				
			Famove From Description				
				Delete			
			Сору				
			Mount	rs			
			Unnount	-			
			Label	_			
			Enclastration				
			Enable/Disable				
			Contrigure Drive				
			Scan for Devides				
			Cooligare All Libraries				

3. Go to **Recover**, click +, select a backup source host, then click **Next**

Monitoring Configuration Devices	Media PRecover			
Eat Vew Recover Williadw Hep	A.	Recover Configuration	1	x
bil Pecovers note indegrand Recovers tatus Name Source Clent Destination Cle		at, and the recovery type. The Recovery Vitzerd queries the source host clear recovery type must be installed on the destination host.	and the distinution host, then displays the recovery types that are supported by eth	*
		Source Host	Destination Host	
	Select the Recovery Hosts	Name: Sturies 2012/02 Instant occuring Social	Recover to the same host	
	Ottom the Volume Information	OS. Windows NT Server on Intel	Select a destination host	
	O Pedarm the Recovery			
	O Check the Recovery Results	NetWorker version: 81.0.1 Build 199	None	
		Earliest backup: Nov 28, 2013 9.41 21 PM	05	
		Latest backup Dec 4, 2013 7 20:06 PM	Net/Yorker version	
		Available Recovery Types		
		Types of Backups *	Backups Found in Last Week Number Found	
		Block Based Beckup	0	
		Block Based Backup (cloned to tape)	0	
		Tractyston Stratenet		6
ently Running		Station of annual formula	0	
us Name 💌 Source Client Destination Clie				Complete Rate
				00
Time Source Calegory Messag	The second s			
Viednesday 7.24.42 zhuhai-2012-02 media Zhuhai- Viednesday 7.24.58 zhuhai-2012-02 media Zhuhai-	0		- Dans Next a Close	
Viednesday 7.24.50			Manager Manager Manager	
	012-02 testad ocarina local: browsing			

4. Select the data set to recover, click **Versions** to view **Select Versions** window, make selection on the data then click on **OK**

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5. Select the **Recovery Options**, choose **Original path** or enter a **New destination path** to recover data to, then click **Next**

EM	IC NetWorker Administration V8.1	- zhuhai-2012-02 (NetWorker 8.1.0.1.Build.199 NetWorker Source Capacity Data Zone Enabler - Windows NT	Server on Intel)
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6. Specify a **Recover name**, then click **Run Recovery**

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7. Check the Recovery Results

EN EN	C NetWorker Administration V8.1	- zhuhai-2012-02 (NetWorker 8.1.0.1.Build.199 NetWorker Sour	ce Capacity Data Zone Enable	r - Windows NT Server on Intel)	
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Re Edit View Recover Window Help	M.	Recover Configuration		×	
0 × 0 × 0 0					
Total Recovers:	Check the Recovery Results				
Bincer		ration. When you close this window, the recovery operation continues. To display thi t Cancel Recovery to stop the recovery operation.	s page again, right-click the recovery con	riguration in the Recover	
onfigured Recovers:					
Satus Name Source Client Destination Clie Client Source Client Destination Clie Client Client					
	O Select the Recovery Hosts	Recover Name: RC01	Size: 1873 MB	Succeeded	
	Select the Date to Recover	Source Client zhuhai-2012-02 testad.ocarina.local	Completed: 1873 MB	Carpel Recovery	
	Select the Recovery Options	Start time: Dec 5, 2013 1:20:01 AM			
	Obtain the Volume Information	Duration 00:01:26			
	O Perform the Recovery	Drives: rep-berget			
	Check the Recovery Results	Volumes used zhuhai 2012 02 testad ocarina local 003			
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Set up the DR Series Deduplication Appliance Cleaner

The cleaner will run during idle time. If you workflow does not have a sufficient amount of idle time on a daily basis then you should consider scheduling the cleaner which will force it to run during that scheduled time.

If necessary you can do the following procedure as described in the screenshot to force the cleaner to run. Once all the backup jobs are setup, the DR Series Deduplication Appliance cleaner can be scheduled. The DR Series Deduplication Appliance cleaner should run at least 6 hours per week when backups are not taking place, generally after a backup job has completed.

Performing scheduled disk space reclamation operations are recommended as a method for recovering disk space from system containers in which files were deleted as a result of deduplication.

Dashboard Alerts	Cleaner Sched	lule	Schedule Cleaner	Schedu
Events Health Usage	System time zone: US/C	entral, Mon Jan 23 15:18:49 2012		
Statistics: Container	Day	Start Time	Stop Time	
Statistics: Replication	Sun	-		
Storage	Mon	-	-	
Containers	Tue	-	-	
Replication	Wed	-	-	
Compression	Thu	-		
Schedule Replication	Fri	-		
Cleaner	Sat	_		
System Configuration				
Networking	Note: When no schedule	e is set, the cleaner will run as needed.		
Active Directory				
Email Alerts				
Date & Time				
Support				
Diagnostics				
Software Upgrade				

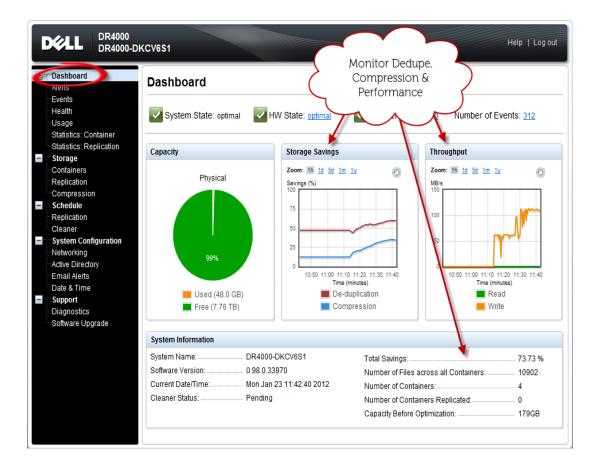


5

Monitoring Dedupe, Compression & Performance

After backup jobs have run the DR Series Deduplication Appliance will track Capacity, Storage Savings and Throughput on the DR Series Deduplication Appliance dashboard. This information is valuable in understanding the benefits the DR Series Deduplication Appliance.

NOTE: Deduplication ratios increase over time, it is not uncommon to see a 2-4x reduction (25-50% total savings) on the initial backup. As additional full backup jobs complete the ratios will increase. As mentioned before backup jobs with 12 week retention will average a 15x ratio in most cases.



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