

Open-E[®] Data Storage Server (DSS[™]) **Data Replication**

INSTALATION GUIDE

Integrated Data Replication reduces business downtime.

Open-E DSS Data Replication

Open-E Data Server Storage (DSS) offers enterprise-class Data Replication capability to help protect business data from loss due to system failure, cyber-attack or disaster and to speed backup and restore, all at no extra cost! Because Open-E DSS provides integrated management for all your data - iSCSI, NAS, and Fiber Channel - all your data can be protected with one low-cost, easy-to-use solution.

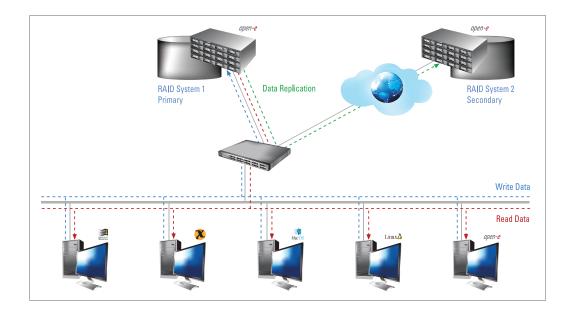
How does it works?

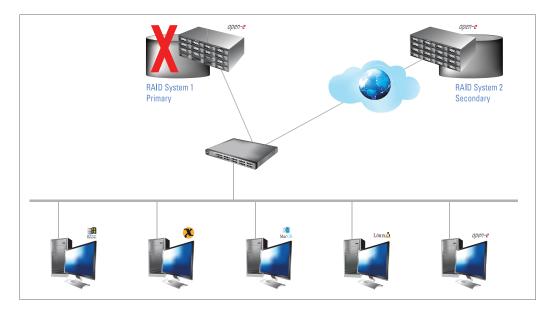
Open-E DSS can be set up in just a few minutes to enable asynchronous file and folder replication from one storage system to another. The Open-E DSS Data Replication feature periodically takes a point-in-time snapshot of the data and then copies it to a target storage system. For efficiency, subsequent replications copy only files or folders that have changed since the previous snapshot.

Open-E DSS Data Replication can be run either locally disk-to-disk, as part of your backup strategy, or remotely via LAN or WAN, as part of your disaster recovery plan. You can set up tasks to replicate to many other systems, giving multiple redundant data points for backup or disaster recovery. You can also increase the volume sizes as needed to accommodate data growth. For maximum flexibility, data replication tasks can be run in two directions. Each system can function as both source and destination, allowing cross-data backups on several systems.¹

¹We recommend a dedicated 1GbE NIC for replication. Replication volume should not exceed 60MB for 1GbE. With 10GbE NICs, the volume can be higher.







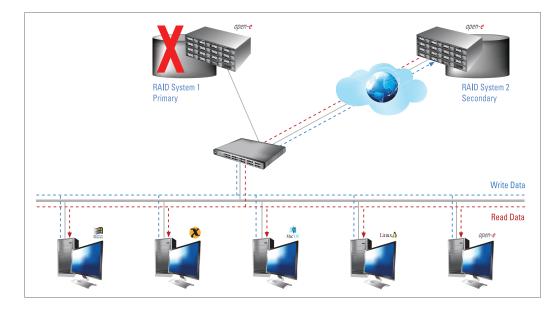


Figure 1

Data is written to a primary Open-E DSS Server and asynchronously copied to a secondary Open-E DSS Server via Open-E DSS Data Replication.

Figure 2

In the event of raid array error or disk drive error on the primary Open-E DSS Server, an email notification is sent to the administrator. Administrator then switches to the secondary server over the LAN or WAN.





Open-E DSS also supports IP security (IPsec), a standard for securing IP communications by encrypting and authenticating all packets. This provides extra security for the network layer to protect enterprise data as it is replicated and accessed from local or remote primary and secondary storage servers.

Data Replication Usage Models

Affordable, Efficient Backup and Fast Restore

Open-E Data Replication can be used in conjunction with backups, using cross-data replication to fully protect data while eliminating the costs of a dedicated backup server. Disk-based backup also offers faster and easier data restoration than tape-based backup systems.

Integrated Data and Volume Replication

Open-E DSS offers both asynchronous Data Replication, synchronous Volume Replication and Automatic Failover, at no extra cost, to provide zero-data-loss protection for your critical company data. For example, when a system administrator is notified that automatic failover has occurred, they can immediately apply incremental changes from data replication to bring the secondary data source right up to pre-failure state. The combination of these features lets you maintain multiple complete copies of data on remote servers over local area networks (LANs) or wide area networks (WANs) using the integrated block-based replication technologies.

Configuring Data Replication

Hardware Requirements

To run the Data Replication feature of Open-E DSS, a minimum of two systems are required. Logical volumes working in slave mode must have snapshots created and enabled. An example configuration is shown below.

	open-e		0
OURCE		DESTINATION	
Phisical units		Phisical units	
Volume groups	VG00	Volume groups	VG00
Logical volumes	LV0000 SNAP00000	Logical volumes	LV0000
Shares	Data 🕨 SNAPSHOT	Shares	Data-R01

Picture Configuration example for data replication between two systems.



SOFTWARE CONFIGURATION

To set up data replication, perform the following steps:

- 1. Configure the destination node
- 2. Configure the source node
- 3. Define a snapshot to be replicated
- 4. Schedule replication

Step 1

Configure the Destination Node

1. Under the **CONFIGURATION** tab, select **Volume Manager**. Add the selected physical units to create a new **Volume Group** (in this case, vg00).

	logout	DSS	DAT	a Storage	Server			open
	SETUP	CONFIGURATION	MAINTENAN	ICE STATUS	HELP			
	volume mana	nger NAS settings	NAS resource	s iSCSI target r	nanager 🔰 FC target	manager		
	• 🗳 Vol. (groups 🥂 💈	?	Unit rescan				
							rescan)
			?	Unit manager				
				√ Unit	Size (GB)	Serial number	Status	
				Unit MDC	74.62	N/A	available	
	o 🎒 Vol. i	replication 🚽 💈		action:	new volume grou	up 🔽		
	0 🥏 V01. 1		4	lame:	vg00			
ESTINATION								
							apply	
Phisical units			2	Drive identifie	r).			
Volumo groupo	VGO	0		Drive Identifie				
Volume groups	VUU	0		√ Unit			Status	
Logical volumes				Unit F	IO S01JJ50\	/893447		
Shares				Data Storage Se	rver. All rights reserved			
0110100								

Picture Creating a new volume group (destination node).

2. Select the appropriate **Volume Group** (vg00) from the list on the left and create a new NAS volume of the required size. This logical volume will be the destination of the replication process.



NOTE

The sizes of the source and the destination volumes do not necessarily need to be the same.



	logout	DSS	Data Storage Server	open-e
	SETUP	CONFIGURATION	MAINTENANCE STATUS HELP	
	volume manag	er NAS settings	NAS resources \vec{iSCSI target manager \vec{FC target manager}	
	o 🗳 Vol. g	roups 才 ?	Volume group: vg00	
	L . ● vg00		? Volume manager	
			Logical Volume Type Snap. Rep. Init.	Blocksize Size (bytes) (GB)
			Iv0000 🗳	N/A 40.00 🗙
			System volumes	Size (GB)
			Reserved for swap	4.00 🗙
			Reserved for snapshots	0.00
			Reserved for system	1.00
	o 🍠 Vol. re	eplication 🦯 ?	Reserved for replication	0.00
DESTINATION	-	0	Free	29.56
DESTINATION			Action: NAS volume	
Phisical units			Use volume replication	
Volume groups	VG00		0 add: 0.00 GB	29.56
Logical volumes	LV000	0		apply
Shares			Data Storage Server, All rights reserved	

3. After assigning an appropriate amount of space for the NAS volume, click the "Apply" button.

Picture Assigning disk space.

4. Check the Enable Data Replication Agent box, located under the CONFIGURATION tab, under the NAS settings menu.

logout	DSS	Data St	ORAGE SERV	ER		open-e
SETUP	CONFIGURATION	MAINTENANCE	STATUS HE	LP		
volume ma	nager NAS settings	NAS resources is	SCSI target manager	FC target manager		
	? в	ackup agent setting	5			
	Back	up agent:		none	~	
					apply	
					appy	
	? D	ata replication agen	t			r i i
	Er Er	nable Data replication	n Agent			
					apply	
					appiy	
	? A	ntivirus setup				
		se antivirus				
		Use quarantine				~
status: 🗸						
		Da	ta Storage Server, All i	ights reserved		

Picture Click to enable Data Replication.



5. Under the **CONFIGURATION** tab, select the NAS resources menu. A tree listing of NAS shared volumes (Shares) will appear on the left side of the DSS console. In the example below, a shared volume named Data-R01 has been created.

	logout DS:	s	Data Storag	e Serve	R		open- <mark>e</mark>
	SETUP		TENANCE	US HEL	LP		
	volume manager NAS se	ettings NAS re	sources iSCSI targ	et manager	FC target manager		
	• • Shares	1?	? Create new	v share			
	o 🛔 Users	₽?	Name: Comment:		Data-R0	1	
DESTINATION	Lo 1. john		 Default path O Specified path 		//v0001, /	/Data-R01	
Phisical units		⊀?					apply
Volume groups	VG00						
Logical volumes	LV0000		Prowser Users &	s control lis			
Shares	Data-R01		Data Storag	e Server, All ri	ghts reserved		

Picture Click to create a shared volume.

- **6.** After creating the new share, configure the share:
 - Click on the volume name.
 - Check the box Use Data Replication within Data Replication Agent Settings function.
 - Click on the "Apply" button.



NOTE

It is strongly recommended to protect the replication protocol by using a user name and password, along with a list of allowed IP addresses. This will prevent local network users from having access to this shared volume.

SETUP CONFIGURATION MAINTENANCE STATUS HELP volume manager NAS settings NAS resources ISCSI target manager FC target manager Shares ? Share: Data-R01 • 1. Data ? Data replication agent settings • 2. Data-R01 ? Data replication • 3. Pub ? Use data replication • 1. john	gout DSS	DSS DATA STORAGE SERVER	open- <mark>e</mark>
Shares ? • 1. Data • 2. Data-R01 • 3. Pub ? Data replication agent settings • Users ? Use data replication Login name: Password: Confirm password: Allow access IP: apply		IGURATION MAINTENANCE STATUS HELP	
• 0 1. Jata • 2. Data-R01 • 3. Pub	lume manager NAS settings	NAS settings NAS resources iSCSI target manager FC target manager	
2. Data-R01 0 3. Pub Version Visers Visers <td>🕈 Shares 🦯 ?</td> <td>Share: Data-R01</td> <td></td>	🕈 Shares 🦯 ?	Share: Data-R01	
visers Login name: Password: Confirm password: Confirm password: Allow access IP: apply	2. Data-R01		
Q A Groups J Lo 1 users J		Login name: Password: Confirm password:	
		<u>* ?</u>	
status: ✓	tue: d	remove	



The configuration of the Destination Node (storage server) is now complete.

Step 2 Configure the Source Node

The configuration of the source node (storage server) is very similar to the configuration of the destination node.

 Under the CONFIGURATION tab, click on Volume Manager. Add the selected physical units in order to create a new volume group (in this case, vg00).

	logout DS:	5	Data St	ORAGE SE	RVER			oper
	SETUP		ENANCE	STATUS	HELP			
	volume manager NAS se	ttings NAS reso	ources iS	iCSI target mai	nager 🔰 FC target n	nanager		
	• 💐 Vol. groups	* ?	? Uni	t rescan				
							rescan	
			? Uni	t manager				
			V	Unit	Size (GB)	Serial number	Status	
				Unit MD0	466.59	N/A	available	
	o 🧳 Vol. replication	1 2	Action:		new volume grou	p 💙		
		1.	Name:		vgOO			
URCE								
							apply	
hisical units	n n n n n n n n n n n n n n n n n n n		? Driv	/e identifier				
				Unit	Serial nu	ımher	Status	
olume groups	VG00			Unit SOOC			otatus	
ogical volumes			Dat	a Storage Serve	r. All rights reserved			
-			Dat	a otorage serve				
hares								

Picture Creating a new volume group (source node).

2. Choose the appropriate volume group (vg00) from the list on the left and create a new NAS volume of the required size. This logical volume will be the source of the replication process.



NOTE

The sizes of the source and the destination volumes do not necessarily need to be the same.



	logout DS	S	Data S	TORAGE SE	RVER				C	pen- <mark>e</mark>
	SETUP		ENANCE	STATUS	HELP]				
	volume manager NAS s	ettings NAS res	ources	iSCSI target mai	nager F	C target manage	er			
	o 🗳 Vol. groups	1?			١	olume group	vg00			J
	L• vg00		? V	olume manager]
			Logic	al Volume	Туре	Snap. Rep.	Init.	Blocksize (bytes)	Size (GB)	
			1v000	00	-			N/A	40.00 🗙	
				em volumes					Size (GB)	4
				rved for swap rved for snaps					4.00 🗙	-
				rved for syster					0.00	-
				, rved for replica	20 W (0.00	
	o 🥔 Vol. replication	1?	Free						421.53	
			Actio	n:	new NA	S volume	~			
SOURCE			🗆 Us	e volume replica	ation					
Phisical units									421.53	
Volume groups	VG00			add:	0.00	GB			apply	
Logical volumes	LV0000									
Shares			D	ata Storage Serve	r. All rights	reserved				

3. After assigning an appropriate amount of space for the NAS volume, click the "Apply" button.

Picture Defining a snapshot.

Step 3

Define a snapshot of the volume

To run the replication process, you must first define a snapshot to be taken of the volume to be replicated.

1. Choose the Volume Manager under the CONFIGURATION tab.



	logout DS	i s [)ata Storage S	ERVER		open- <mark>e</mark>
	SETUP CONFIGURA	ATION MAINTE ettings NAS reso		HELP mager FC target manager		
	o 🗳 Vol. groups	1?		Volume group: v	vg00	
	L• vg00		? Volume manage	r		
			Logical Volume	Type Snap. Rep.	Init. Blocksize (bytes)	(GB)
			1v0000	4	N/A	40.00 🗙 Size
			System volumes Reserved for swap		_	(GB) 4.00 🗙
			Reserved for snap	220		0.00
			Reserved for syste			1.00
	o 🥩 Vol. replication	1?	Reserved for replic	ation		0.00
	Vol. replication	1	Free			29.56
SOURCE			Action:	new NAS volume	*	
		1	🛛 Use volume replic	ation		
Phisical units	00000		J			
Volume groups	VG00		add:	0.00 GB		apply
Logical volumes	LV0000 SNAP00000					
Shares			- Data Storage Serv	er. All rights reserved		

Picture Assigning a snapshot to a logical volume.

2. Assign the Snapshot to the Logical Volume to be replicated (in this example, lv0000).

logout	DSS	Data Storage Server	open-e
SETUP	CONFIGURATION	MAINTENANCE STATUS HELP	
volume ma	nager NAS settings	NAS resources iSCSI target manager FC target manager	
o 🗳 Vol	l. groups 🤺 ?	Volume group: vg00	
L ● vg00		apply	
		? Snapshot definition	
o 🍠 Vol	replication 🥇 ?	Name LV Status	
Lo Replicatio			
	-0 Kebication_01	snap00000 Iv0000 vnused	
		apply	
			~
status: 🗸			
		Data Storage Server, All rights reserved	

Picture Enabling data replication.



- 3. Check the Enable Data Replication Agent box under NAS Settings on the CONFIGURATION tab.
- **4.** Use the **CONFIGURATION** tab, under NAS Resources, to see a tree listing all the NAS shared volumes (Shares). This listing appears on the left side of the Open-E DSS console. In the example below, a new share named Pictures has been created.

	logout DS	5 5	Data Storage Server		open-e
	SETUP CONFIGUR/	ATION MAIN	TENANCE STATUS HELP		
	volume manager NAS s	settings NAS res	ources iSCSI target manager	-C target manager	
	o 🗬 Shares	1?		Share: Pictures	j
	1. Pictures		? Edit share		^
			Comment:		
			Path:	/lv0000/Pictures/	
	O Deers	1?			apply
SOURCE			SMB settings Read only		
Г			✓ Visible		
Phisical units		1?	Handling large directories		
	00000		Users access permission: O Guest (anyone without pa	ssword)	
Volume groups	VG00		Ousers with password		
Logical volumes	LV0000 SNAP00000				apply
Shares	Data - SNAPSHOT		Data Storage Server. All rights	: reserved	

Picture Creating a new share - pictures.

- **5.** After creating the new share, configure the share:
 - Click on its name.
 - Check the box Use Data Replication, within the Data Replication Agent Settings table.
 - Click on the "Apply" button.

logout	DSS	Data Sto	DRAGE SE	RVER			open- <mark>e</mark>
SETUP	FIGURATION	MAINTENANCE	STATUS	HELP			
volume manager	NAS settings	NAS resources iSC	CSI target man	ager	FC target manage	r	
o 🗬 Shares	1?				Share: Pictu	res	
└• 1. Pictures			replication a	-	ttings		
O 1. max	₹?	Logir Pass Confi	data replicatio n name: word: ìrm passworc / access IP:				
Groups	_ / ?	? Rem	ove share			apply	
status: 🗸						remove	





NOTE

It is strongly recommended to protect the replication protocol with a user name and password, along with a list of allowed IP address. This will prevent local network users from accessing this share. **The user name and password must be the same as on the destination node.**

6. After the share to be replicated has been configured,

go to the MAINTENANCE tab and select Backup to choose the Data Replication function.

logout DSS	Data Storage Server	open-e
SETUP CONFIGURATION	MAINTENANCE STATUS HELP	
shutdown connections snap	shot backup restore antivirus miscellaneous software update	
o 🥪 Backup pools 🛛 🦯	? Create new data replication task	
L _o Tape2	Task name:	
	Source share: 	
	Snapshot:	
o Sackup devices	Destination In. Destination share:	
	Destination agent login:	
	Destination agent password:	
o ≝ Backup tasks 🖌	✓ Log replication errors	
o ⊟ Backup tasks /	Section 2015 Sect	
	apply	J
• 🛹 Data replication 🦯	?	
	? Data replication tasks	
	f Info	
	No tasks have been found.	
status: 🗸		
	Data Storage Server, All rights reserved	

Picture Choosing the data replication function

7. Select the source share to be replicated:

- Under Create New Data Replication Task, enter a name for the task and select the source share to be replicated. At this point, a snapshot of the source share will automatically be assigned.
- In the **Destination IP** field, enter the IP address of the destination server (in this example, 192.168.0.240) and the user name/password (if applicable) for the destination.
- Next, configure the **Destination Share** field by clicking on the *integral* button. In this example, the **Data-R01** share appears.
- Click on the "Apply" button.



logout	DSS	Data St	ORAGE SER	VER				оре	еп-е
SETUP	CONFIGURATION	MAINTENANCE	STATUS	HELP					
shutdown	connections snaps	ot <mark>backup</mark> resto	ore antivirus	miscel	laneous	software update			
o 🥮 Bac	kup pools 👘 🦯 ?	? Cre	ate new data re	plication	task				^
∟о Таре2		Task na Source	64-			Replication_D	001		
		Snapsh Destina				snap00000	40		
ο 🦛 Bac	skup devices 才 ?	Destina	ition share: ition agent logii ition agent pas:			Data-R01	¥	-	
o ॑ Bac	skup tasks 才 ?	☑ Use	replication erro ACL 't delete files	rs					
e 🐗 Dat	a replication 🤾 ?						apply		
		? Data	a replication tas	ks					
		0	Info No tasks have	e been fo	ound.				*
status: 🗸									
		Dat.	a Storage Server	All rights r	eserved				

Picture Selecting the source share to be replicated.

• After the Open-E DSS console, has been reloaded, the new task should appear.

logout	DSS	Data Storage Server	open-e
SETUP	CONFIGURATION	MAINTENANCE STATUS HELP	
shutdown	connections snapsho	ot backup restore antivirus miscellaneous software update	
o 🥮 Ba	ckup pools 🦯 ?	Data replication task: Replication_D01	
Lo Tape2	<u> </u>	? Data replication task	
		Attribute Value	
Ba	ckup devices 🦯 ?	Destination IP: 192.168.0.240	
		Source share: Pictures	
		Snapshot: snap00000	
		Destination share: Data-R01	8
		Log replication errors: Yes	
o 🖉 — Ba	ckup tasks 🛛 🦯 ?	Use ACL: Yes	
	~	Don't delete files: No	
		Create schedule for data replication task	
o 🛹 Data replication 🦯 🕯		Comment:	
Le Replication_D	ion D01	Select time: Interval	
		Interval: 10 min. time period 💌	
		apply	
status: 🗸			
		Data Storage Server, All rights reserved	

Picture Configuring the destination share.

• Obtain additional information about a selected replication task by accessing the Data Replication task function.



Step 4 Schedule or run future replication events

1. Using the Create Schedule for Data Replication Task function, set the desired replication schedules or explicitly start, stop and delete data replication tasks, as desired.



NOTE:

Open-E DSS Data Replication is an asynchronous process; that is, the replication repeats after a specific time interval.



Picture Scheduling future replication events.

logout	DSS	Data Storage Server	open-e
SETUP	CONFIGURATION	MAINTENANCE STATUS HELP	
shutdown	connections snapsho	backup restore antivirus miscellaneous software update	
о 🧼 Вас L _o Tape2	kup pools / ?	 ✓ Log replication errors ✓ Use ACL □ Don't delete files 	~
<u> የ</u> ቆ Bac	kup devices 🖌 ?	? Data replication tasks	
o 🚪 🛛 Bac	:kup tasks 🤺 ?	Name Start time Action	n
		Replication_D01 2008-02-29 23:30:40	X
• • Dat	a replication 7 ?	Destinaion IP: 192.168.0.240 Source share: Pictures Snapshot: snap00000 Destination share: Data-R01 Destination agent login: Log replication errors: Use ACL: yes Don't delete files: no	
status: 🗸			
		Data Storage Server, All rights reserved	

Picture Click to manage data replication tasks.



2. To obtain detailed information about the progress of data replication tasks, under the Running Tasks function, click on the STATUS tab and select Tasks.

logout	DSS	5	Data Storage	Server			open
SETUP	CONFIGURAT		TENANCE STATUS	HELP			
network	logical volume	connections	system hardware	tasks S.M.A.R.	Т.		
о 📒 та	sks	* ?		Tasks:	Data Replication		j
-o Backup -o Restore			? Running tasks				
🗕 Antivirus			Name		Туре	Start ti	me
-o Volume F -o Snapsho			Replication_D	01	Data replication	2008-02-29	23:30:40
			? Tasks log				
			Time	Name	Туре	Status	Action
			2008-02-29 23:31:09	Replication_D01	Data replication	ок	Started
			2008-02-29 23:29:44	Replication_D01	Data replicatior	ОК	Finished
			Files overal: Files transfered: Preparing time: Sent: Transfer:	0.0:	9 sec L MB D MB/s		
			2008-02-29 23:29:23	Replication_D01	Data replicatior	ок	Started
status: 🗸							
			Data Storage Se	rver. All rights reserv	ed		

Picture Displaying the progress of tasks.

SOURCE	open-e	DESTINATION	open-e
Phisical units		Phisical units	
Volume groups	VG00	Volume groups	VG00
Logical volumes	LV0000 SNAP00000	Logical volumes	LV0000
Shares	Data 🕨 SNAPSHOT	Shares	Data-R01

DATA REPLICATION

Picture Complete configuration of nodes.

The configuration of the asynchronous Data Replication is now complete!

open-e



About Open-E

Open-E IP-based storage management products are known throughout the storage industry for their best-in-class performance, reliability, scalability and ROI. The Open-E **DSS**, **NAS-R3** and **iSCSI-R3** line of products offer outstanding flexibility and value with the ability to support a variety of storage protocols, such as iSCSI, Fibre Channel or Infiniband (IPoIB), in either file or block data transmission.

Open-E works extensively with leading technology vendors, allowing system integrators to build affordable, scalable and secure storage systems on a variety of industry-standard hardware platforms.



LEARN MORE To find out more about Open-E DSS, go to www.open-e.com or contact us at 1-781-481-9399