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1. Eyeglass Solutions

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Links to Eyeglass Solutions for integrated failovers, vertical market solutions, business application DR examples.

- [VMware VM and Data Store Failover with eyeglass VMA, PowerScale and eyeglass rest API](#)
- [How to video on for touch-less failover using eyeglass API/scripting and CURL with linux hosts](#)
- [How to use Script Engine to remount Linux Exports post Failover](#)
- [VIPR Controller Data Protection with Eyeglass](#)
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1.1. VMware VM and Data Store Failover with eyeglass VMA, PowerScale and eyeglass rest API

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1.2. How to video on for touch-less failover using eyeglass API/scripting and CURL with linux hosts

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1.3. How to use Script Engine to remount Linux Exports post Failover

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1.4. VIPR Controller Data Protection with Eyeglass

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VIPR Controller Data Protection with Eyeglass

Solution Overview

VIPR Controller can be used to create workflows to create shares and exports or assign quotas to PowerScale file systems.

Eyeglass can be used to protect VIPR created configuration data and failover the data and configuration using all available failover mode include Access Zone and DFS mode failover. The same level of data protection is available for VIPR data and non VIPR data.

This solution is transparent to VIPR controller allowing complete flexibility to use VIPR controller for some data while unifying the failover strategy with Superna Eyeglass.

Solution Test Case

The tested solution used VIPR Controller 3.5 and Eyeglass 1.8 release. Source cluster was OneFS 7.x and target was OneFS 8.x. This was done to show how Eyeglass handles different OneFS releases on each cluster.

The steps taken were the following as shown below.

1. Create shares and exports with VIPR
2. Configure SyncIQ to protect a VIPR project or all VIPR data (can be protected at any level, project, tenant or entire VIPR installation)
3. Eyeglass to Sync vipr created configuration to DR cluster.

VIPR Created Configuration



Create File System

Create a new File System

Order Number: 1
Date Submitted: Jan 17th 2017, 9:38:47 PM
Submitted By: root
Status: ✓ Order Successfully Fulfilled
Execution Time: 10 seconds
Execution Steps: 1 ■

Virtual Array: vsilon
Virtual Pool: vpool1
Project: test
Name: testfilesystem
Size (GB): 10
Advisory Limit (%):
Soft Limit(%):
Grace Period (Days):
Resubmit: [Order](#)

Affected Resources



File System

File System: urn:storageos:FileShare:d2b7a8b8-9499-4483-aba4-05ef22fc46e9:vdC1
Name: [testfilesystem](#)
Capacity: 10.00 GB
Mount Path: /ifs/vipr/vpool1/ProviderTenant/test/testfilesystem
Virtual Array: vsilon
Virtual Pool: vpool1

- [Logs](#)
- [Execution Steps](#)
- [Tasks](#)

VIPR created config on the Prod cluster

[+ Add a Share](#)

SMB Shares Select an action

Name / Path		
<input type="checkbox"/> viprtest	Path: /ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	Hide details Delete

SMB Share Details [Close](#) ✕

Share Name: **viprtest** [Edit](#)

Description: **test** [Edit](#)

Shared Directory: **/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem** [Edit](#)

Home Directory Provisioning: **Path variables will NOT be expanded**
Directories will NOT be automatically created [Edit](#)

Users and Groups: **No permissions** [Edit](#)

Advanced Settings: [+ Advanced SMB Share Settings](#)

[+ Add an NFS Export](#)

NFS Exports Select an action

Export ID / Path	Description	
<input type="checkbox"/> 102	test export	Hide details Delete

NFS Export Details [Close](#) ✕

Export ID: **102**

Description: **test export** [Edit description](#)

Clients: **10.10.10.10** [Edit](#)

Always Read-Write Clients: **10.10.10.10** [Edit](#)

Always Read-Only Clients: **No value** [Edit](#)

Root Clients: **No value** [Edit](#)


Directory Paths: **/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem** [Edit](#)

Permissions: **Read-write access ENABLED**
Mount access to sub-directories DISABLED [Edit](#)

Map Root User: **Using custom value of:**
User : Map root users to user root
Primary Group : No primary group
Secondary Groups : No secondary groups [Edit](#)



All VIPR Created Resources

▼ Export Rules

Mount Point	Anon	Security	Actions
 quotamgmt.class2ads.test:/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	root	sys	Modify Delete

[Add Export Rule](#)

▼ Shares

Name	Mount Point	Description	Native Path	Actions
 viprtest2	\\quotamgmt.class2ads.test/viprtest2		/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	Access Control Delete
 viprtest	\\quotamgmt.class2ads.test/viprtest	test	/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	Access Control Delete

[Add Share](#)

DR Cluster before Eyeglass

OneFS STORAGE ADMINISTRATION Logged in as root | [Log out](#) | [Help](#)

Cluster Name: probe-clst-8 (OneFS Version: 8.0.0.0)

Dashboard ▾ Cluster Management ▾ File System ▾ Data Protection ▾ Access ▾ Protocols ▾

Windows Sharing (SMB) Current Access Zone: System ▾

SMB Shares | Default Share Settings | SMB Server Settings

SMB Shares [+ Create an SMB Share](#)

Name	Path	Action
ifs	/ifs	View / Edit Delete

Logged in as root | [Log out](#) | [Help](#)

Cluster Name: probe-clst-8 (OneFS Version: 8.0.0.0)

Dashboard ▾ Cluster Management ▾ File System ▾ Data Protection ▾ Access ▾ Protocols ▾

UNIX Sharing (NFS) Current Access Zone: System ▾

NFS Exports | NFS Aliases | Export Settings | Global Settings | Zone Settings

NFS Exports [+ Create Export](#)

Export ID	Paths	Description	Action
1	/ifs	Default export	View / Edit Delete

Eyeglass Job to Protect VIPR config

Inventory View		SRM1_viprt...
Nodes		
+ folder	networking	<input type="checkbox"/>
- folder	nfs	<input checked="" type="checkbox"/>
+ folder	aliases	<input type="checkbox"/>
- folder	exports	<input checked="" type="checkbox"/>
+ folder	System:/ifs/data/migrate	<input type="checkbox"/>
+ folder	System:/ifs/vipr/vpool1/ProviderTenan...	<input checked="" type="checkbox"/>
+ folder	Training-Zone:/ifs/data/training/migrat...	<input type="checkbox"/>
+ folder	quotas	<input type="checkbox"/>
- folder	smb	<input checked="" type="checkbox"/>
- folder	shares	<input checked="" type="checkbox"/>
+ folder	System:migrate-me	<input type="checkbox"/>
- folder	System:viprtest	<input checked="" type="checkbox"/>
- folder	System:viprtest2	<input checked="" type="checkbox"/>
+ folder	Training-Zone:everyoneshare	<input type="checkbox"/>
+ folder	Training-Zone:someothershare	<input type="checkbox"/>
+ folder	snapshot	<input type="checkbox"/>
+ folder	storage	<input type="checkbox"/>
- folder		<input type="checkbox"/>

Eyeglass Job Protecting VIPR Config between Onefs 7 and 8 Prod and DR clusters

Job Details

State	Job Name	Info
✓	SRM1_viprtest	
✓	create System:/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	Info
✓	create System:viprtest	Info
✓	create System:viprtest2	Info
✓	Replicating Snapshot schedules	

DR Cluster post Eyeglass Job



Logged in as root | [Log out](#) | [Help](#)

Cluster Name: probe-clst-8 (OneFS Version: 8.0.0.0)

Dashboard ▾ Cluster Management ▾ File System ▾ Data Protection ▾ Access ▾ Protocols ▾

Windows Sharing (SMB) Current Access Zone: System

SMB Shares | Default Share Settings | SMB Server Settings

SMB Shares + Create an SMB Share

Name	Path	Action
<input type="checkbox"/> viprtest2	/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	View / Edit Delete
<input type="checkbox"/> viprtest	/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	View / Edit Delete
<input type="checkbox"/> ifs	/ifs	View / Edit Delete



Logged in as root | [Log out](#) | [Help](#)

Cluster Name: probe-clst-8 (OneFS Version: 8.0.0.0)

Dashboard ▾ Cluster Management ▾ File System ▾ Data Protection ▾ Access ▾ Protocols ▾

UNIX Sharing (NFS) Current Access Zone: System

NFS Exports | NFS Aliases | Export Settings | Global Settings | Zone Settings

NFS Exports + Create Export

Export ID	Paths	Description	Action
<input type="checkbox"/> 1	/ifs	Default export	View / Edit Delete
<input type="checkbox"/> 2	/ifs/vipr/vpool1/ProviderTenant/test/testfilesystem	test export	View / Edit Delete

Ready for failover!!

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1.5. Unified Backup and Recovery and Data Availability Solution

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Unified Backup, Recovery and Data Availability Solution

- [Technical Note](#)
- [Abstract:](#)
- [Overview](#)
- [The Solution Overview](#)
- [Backup and Recovery Architecture](#)
- [Unified DR and Operations Status](#)
- [The Solution Components](#)
- [The Solution Requirements](#)
- [Data Flow](#)
- [Business Case](#)

Technical Note

Abstract:

This technical note provides a backup and data recovery solution combining Superna Eyeglass with Dell EMC PowerScale

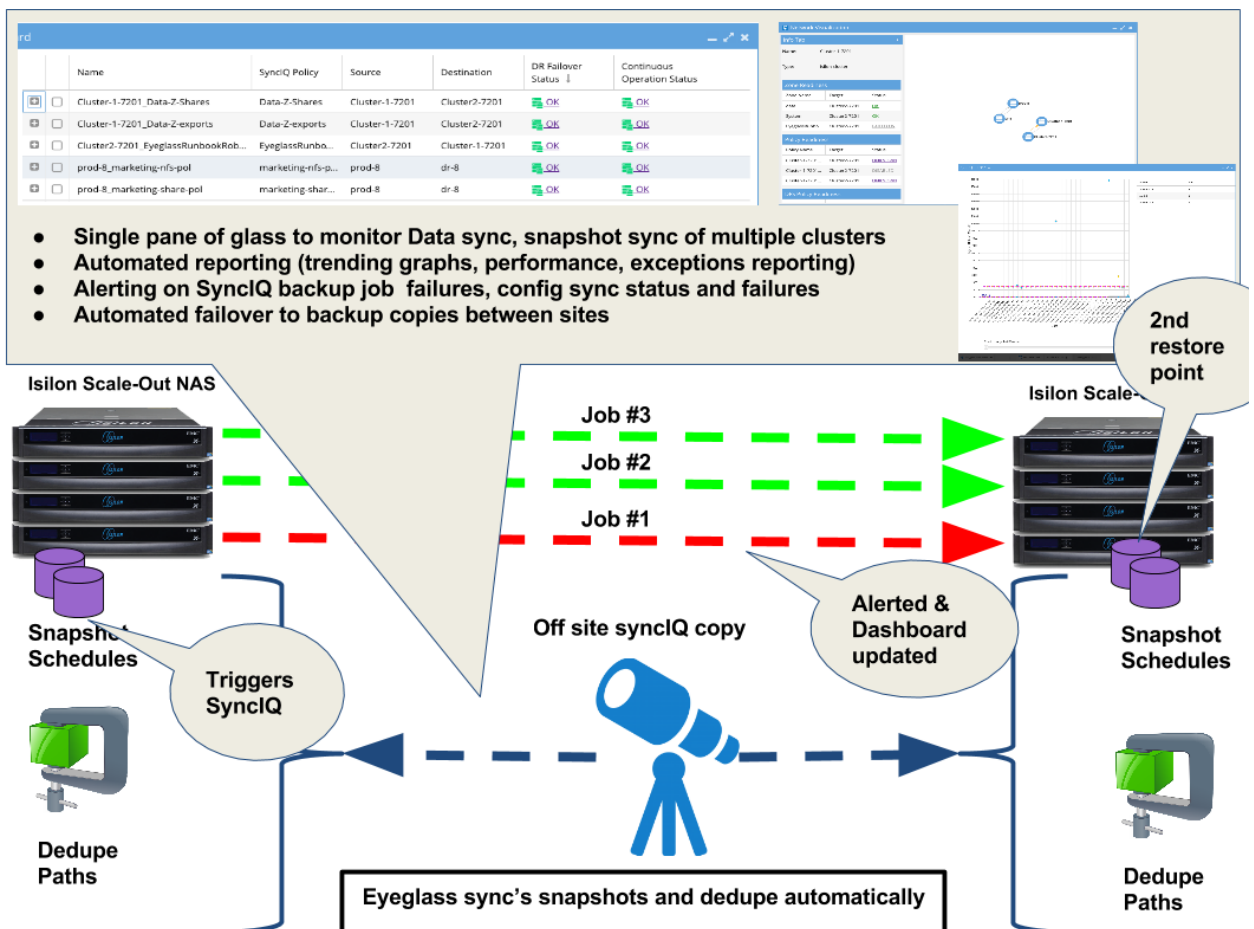
Overview

Scale out NAS centralizes storage but stresses legacy backup software solutions with the sheer volume of data and fixed backup window. Backup software typical uses disk as a target for the backup, or VTL or real tape. The data is then moved off site by backup media servers that are moving whole files between sites for off site protection. These files cannot not be directly accessed by clients over NFS or CIFS and must be restored first. This process is slow for backups and restores.

The Solution Overview

EMC PowerScale offers many tools for protecting data and when combined with Eyeglass can offer a backup software replacement that is lower cost, faster for backups with block level replication and restores by giving direct access to files over NFS and CIFS. Eyeglass can replace the metadata Config sync , monitoring and reporting required by backup administrators.

Backup and Recovery Architecture





Unified DR and Operations Status

Continuous Operation Dashboard					
Readiness Status	Cluster Name ↑	Cluster Reachability	Cluster Version	Effective Cluster Version	Continuous Ope.. Status
Cluster(s)					
	Cluster-1-7201	REACHABLE	7.2	7.2	OK
	Eyeglass Snapshot Schedules Replication Read...				
	Cluster-1-7201_Data-Z-DFS_FILESYSTEM				OK
	Cluster-1-7201_Data-Z-exports_FILESYSTEM				OK
	Cluster-1-7201_Data-Z-Shares_FILESYSTEM				OK
	Cluster-1-7201_EyeglassRunbookRobot-po...				OK
	Cluster-1-7201_system-DFS-data_FILESYST...				OK
	Eyeglass Deduplication Replication Readiness				
	Cluster2-7201	REACHABLE	7.2	7.2	OK
	prod-8	REACHABLE	8.0	7.2	OK
	dr-8	REACHABLE	8.0	7.2	OK

Additional Information

Click on a row to view additional information.

DR Dashboard						
Policy Readiness	Source Cluster	Target Cluster	Zone Name	Last Successful Readiness Check	Network Mapping	DR Failover Status
Zone Readiness	Cluster-1-7201	Cluster2-7201	data	8/18/2016, 8:05:30 P...	View Map	OK
DFS Readiness	Cluster-1-7201	Cluster2-7201	System	8/18/2016, 8:05:30 P...	View Map	OK
DR Testing	Cluster-1-7201	Cluster2-7201	EyeglassRunbookRo...	8/18/2016, 8:05:30 P...	View Map	FAILED OVER
	Cluster2-7201	Cluster-1-7201	data	8/18/2016, 8:05:30 P...	View Map	FAILED OVER
	Cluster2-7201	Cluster-1-7201	EyeglassRunbookRo...	8/18/2016, 8:05:30 P...	View Map	OK
	Cluster2-7201	Cluster-1-7201	System	8/18/2016, 8:05:30 P...	View Map	WARNING
	dr-8	prod-8	marketing	8/18/2016, 8:05:26 P...	View Map	FAILED OVER
	prod-8	dr-8	marketing	8/18/2016, 8:05:29 P...	View Map	OK

Name	SyncIQ Policy	Source	Destination	DR Failover Status
DR Failover Operations				
Sync IQ Policy	 OK			
Job Name:	Data-Z-Shares			
Last Started:	8/22/2016, 3:12:01 PM			
Last Success:	8/22/2016, 3:12:01 PM			
Last Job State:	finished			
Enabled:	true			
Eyeglass Configuration Replication	 OK			
Job Name:	Cluster-1-7201_Data-Z-Shares			
Last Run:	8/22/2016, 3:15:21 PM			
Last Success:	8/22/2016, 3:15:21 PM			
Audit Status:	AUDITSUCCEEDED			
Enabled:	true			

The Solution Components

1. Replicating PowerScale's with SyncIQ
2. SnapshotIQ licenses
3. (Optional dedupe licences)
4. Eyeglass DR Edition

The Solution Requirements

Outlined below are the requirements of a data protection solution with PowerScale and Eyeglass.

1. Make multiple copies of data quickly locally and off site
2. Space efficient copies
3. RBAC roles with Eyeglass to restrict functions and allow monitoring (Eyeglass)
4. Corporate web dashboard widget for quick global view of SyncIQ and snapshot sync across all clusters globally (Eyeglass)
5. Monitoring of job failures to make snapshots (Eyeglass)
6. Monitoring of SyncIQ job failures to move data off site (Eyeglass)
7. Monitoring throughput of off site SyncIQ performance (Eyeglass)
8. Trending of throughout, replication duration , GB transferred (Eyeglass)
9. Logging of errors that affect the data protection (snapshots and SyncIQ) (Eyeglass)

10. Easy of use and single pane of glass to monitor and capture alarms on source cluster , target cluster (Eyeglass)
11. Cluster wide reporting , per SyncIQ policy reporting (Eyeglass)
12. Single device to configure policies
13. Automatic sync of snapshot schedules between clusters (Eyeglass)
14. Multiple cluster support for global monitoring of geographically managed cluster pairs (Eyeglass)

The solution uses snapshots on the source cluster, a very common tool as the primary recovery of file data. Snapshots are fast to create, easy to schedule and space efficient.

OneFs 8 adds a new feature to SyncIQ policies that allows a SyncIQ policy to be triggered by a snapshot creation. This allows the administrator to manage data protection using the primary tool of scheduled snapshots and replication of data offsite is automatic.

Eyeglass syncs the snapshot schedule and Dedupe settings so that the same recovery points exist at the report data center. Built in failover features with Eyeglass allows recovery options at the remote site to automate presentation of recovery data over CIFS or NFS.

Data Flow

Snapshot created → triggers SyncIQ policy to run → Eyeglass syncs snapshot policy to target cluster → target cluster creates remote off site snapshot that matches the same schedule as the source cluster policy

1. All snapshot management is done on the source Cluster (Eyeglass sync to the target)
2. All share, export and quota management is done on the source (Eyeglass sync to the target)
3. All clusters are monitored and failures alarmed by Eyeglass centrally
4. All reporting is done centrally with Eyeglass with automatic daily reports

1. Stats report, raw data CSV, and PNG graphs of 30 trending emailed daily
5. Cluster Alarm and SyncIQ monitoring emailed, or slack channel or syslogism forwarded

Business Case

Reduce spend on backup software and leverage primary storage features and DR investments with SyncIQ and Superna Eyeglass to unify the data availability and backup recovery functions into a single solution.

Simplify data recovery with multiple online accessible copies locally and remotely secured by PowerScale share and export security.

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1.6. HDFS Failover guide With Cloudera

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Kerberized HDFS and NFS Failover with Superna Eyeglass

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- [Kerberized HDFS](#)
- [Test setup:](#)
- [Required SPN for Cloudera CDH Kerberized HDFS](#)
- [Access Zone Failover:](#)
- [Kerberized NFS](#)
- [Test Setup:](#)
- [Required SPN for Kerberized NFS](#)
- [Access Zone Failover:](#)

Overview

It is possible to failover HDFS with Superna Eyeglass. The test setup and post failover instructions are outlined below for HDFS and NFS typical configurations. NOTE: in a release coming soon, the ability to manage NFS and HDFS SPN's will be supported to fully automate all steps of failover. See the feature page here <https://www.supernaeyeglass.com/feature-descriptions> This

solution will simplify and automate key steps required for HDFS failover and ensures Big Data solutions can failover seamlessly.

Kerberized HDFS

Test setup:

Cloudera CDH VM:

- Guest OS: Ubuntu Server version Ubuntu 16.04.2 LTS

Cloudera CDH

- Version 5.16.1 (Cloudera Express)

PowerScale Cluster

- OneFS 8.0.0.7

Active Directory

- Windows Server 2012 R2

Required SPN for Cloudera CDH Kerberized HDFS

SPN	Name	Rule
hdfs/clustername.fqdn	Clustername that is joined to AD	Hdfs authentication to AD
hdfs/namenode.smartconnectname.fqdn	NN FQDN used	Hdfs authentication to aD per smartconnect zone
HTTP/namenode.smartconnectname.fqdn	NN FQDN used	WebHDFS authentication to AD per Smartconnect Zone

Access Zone Failover:

Follow Eyeglass Access Zone Failover configuration as per normal

- Create required SPN as per the above table on Production Cluster. Example:

```
isi auth ads spn create ad1.test HTTP/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn create ad1.test hdfs/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn create ad1.test hdfs/rnsm04-c07.ad1.test
```

After Access Zone Failover

- Delete the following SPNs on Production cluster

```
isi auth ads spn delete ad1.test HTTP/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn delete ad1.test hdfs/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn delete ad1.test hdfs/rnsm04-c07.ad1.test
```

- Create the following SPNs on DR Cluster

```
isi auth ads spn create ad1.test HTTP/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn create ad1.test hdfs/rnsm04-c07-z01.ad1.test
```

```
isi auth ads spn create ad1.test hdfs/rnsm04-c07.ad1.test
```

- Verify that HDFS is able to access data successfully (test with Cloudera CDH, do not need to reboot cloudera cdh machine after failover, able to access data successfully)

Kerberized NFS

Test Setup:

NFS Client - Linux

- Centos 7.6

PowerScale Cluster

- OneFS 8.0.0.7

Active Directory

- Windows Server 2012 R2

Required SPN for Kerberized NFS

SPN	Name
-----	------

nfs/smartconnectzonename.fqdn	Smartconnect zone name of the pool for this kerberized NFS
-------------------------------	--

Access Zone Failover:

- Follow Eyeglass Access Zone Failover configuration as per normal
- Create required SPN as per the above table on Production Cluster. Example:
`isi auth ads spn create ad1.test nfs/rnsm04-c07-z01.ad1.test`

After Access Zone Failover

- Delete the following SPNs on Production cluster
`isi auth ads spn delete ad1.test nfs/rnsm04-c07-z01.ad1.test`
- Create the following SPNs on DR Cluster
`isi auth ads spn create ad1.test nfs/rnsm04-c07-z01.ad1.test`
- Need to reboot NFS client machine, before able to access data from DR successfully
(Due to cached kerberized ticket)

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