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1. Failover Recovery Procedures

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1.1. Overview

Overview

This document covers failover recovery procedures, the steps to review failover logs and determine which step failed, along with the steps to recover. The tables in this document are labeled to identify the various steps in failover where an error would occur, along with an identification of the error, description of impact on failover, recovery steps and any special instructions or warnings. Failover Preparation and all the Policies, ide.

Each failover log downloaded from DR Assistant contains ALL sections in this document. For any step indicated as failed in the failover log, consult the section in this recovery guide for steps to remediate or recovery from a failed step.

1.2. Failover Log Analysis

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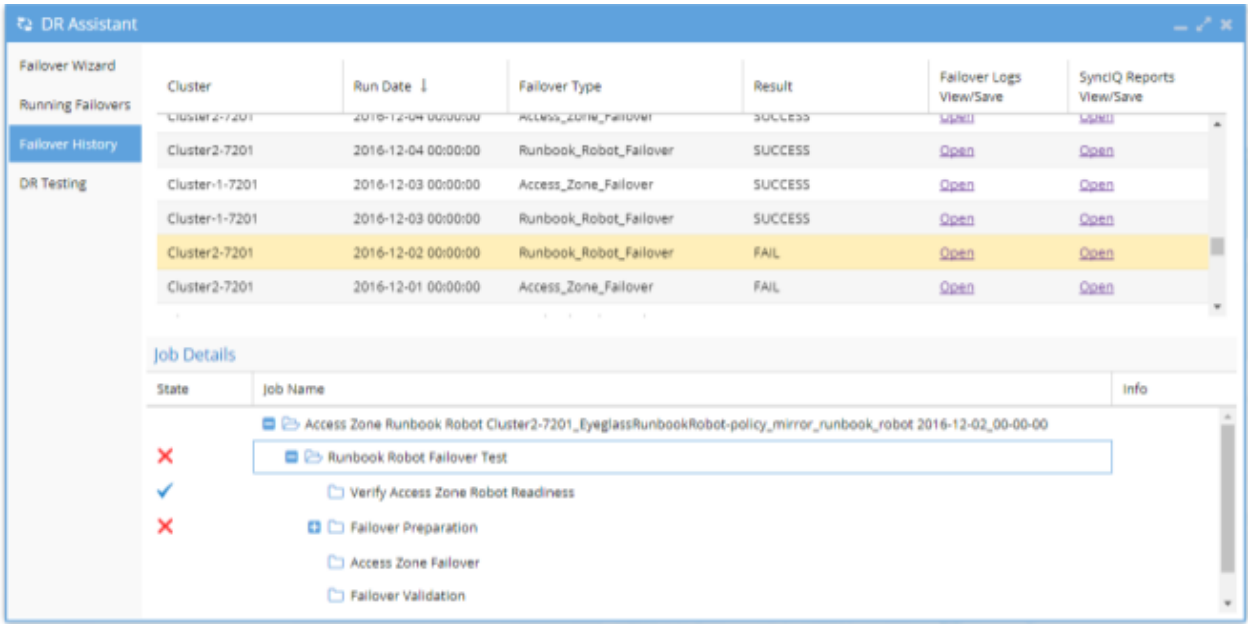
Failover Log Analysis

The Failover Logs can be found by clicking on the DR Assistant on the Eyeglass desktop. Click on the Failover History tab, you'll see the various jobs that have been run, run date and results (Pass or Fail). By clicking on an individual job, the details of that job will appear in the window below (see screenshot below).



Steps to reading a failover log.

1. Identify the section in the log with an error message expand folders to find red X
2. Determine which step failed and which table applies for next step
3. See which scenario in each table applies to the scenario in the failover log

NOTE: Frequently SyncIQ policy issues are source of errors. For steps run policy, make writeable, resync prep (4 steps) and run mirror policy the related SyncIQ job report has details on the error condition.

4. As of 1.8 or later releases: The following SyncIQ job reports are now collected and presented in a separate log, making it easier to see failures on the cluster related to SyncIQ:

1. This error reporting if sent to Support will allow faster resolution and opening of a case with EMC if the root cause is SyncIQ policy failure that cannot be recovered or retried.

- Run Report;
- Resync Prep Report;
- Resync Prep Domain Mark Report;
- Resync Prep Restore Report;
- Resync Prep Finalize Report;

Report added for mirror policy:

- Run Report.

NOTE: If using advanced parallel mode expect more policy reports and errors will potentially exist and need review to see which policy failed. Also note that, sequential failover logs are in order but in parallel mode logging will not be sequential based on failover logic.

1.3. Replication Policy Failover Preparation (Data Sync and Config Sync)

Replication Policy Failover Preparation (Data Sync and Config Sync)

Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
Wait for other failover jobs to complete	Eyeglass only runs one failover job at a time. Failover has not started.	1. Wait until no Failover jobs are present in the running jobs window. 2. Restart failover	**This step will wait for up to two hours in the running state before timing out.**
SOURCE get POLICY info	Eyeglass cannot communicate with source cluster. Failover fails.	1. Validate connectivity between Eyeglass and the source cluster. 2. Restart failover	This step is not run during uncontrolled failover. **Data Loss Impact - Failover cannot proceed, data loss scenario until resolved.**
Wait for existing policy jobs to complete.	Failover fails if this step times out. Default timeout failover timeout in the current release is 180 minutes, this can be increased with igls cli command see Admin Guide to increase timeout for each step in failover. Also see Best Practices for Failover with Eyeglass.	1. Validate no other failover jobs are running on eyeglass. 2. Restart failover. 3. NOTE: SyncIQ policies that return error	The timeout on this step read from the failover timeout value in minutes. **Data Loss Impact - Failover cannot proceed, data loss scenario until resolved.**

		from the cluster will require EMC support case to be opened to resolve policies that will not start or run resync prep or execute make writeable operations	
SOURCE remove schedule POLICY	Eyeglass cannot communicate with source cluster. Failover fails.	1. Validate connectivity between Eyeglass and the source cluster. 2. Restart failover.	This step is not run during uncontrolled failover. **Data Loss Impact - Failover cannot proceed, data loss scenario until resolved.**
Replication Policy Failover run all policies (SyncIQ Data Sync option enabled on failover job and multiple policies failed over)	Final incremental sync of data on the filesystem has failed. Failover Aborted. Source and targets still in initial state meaning target cluster is read-only still	1. Use the Eyeglass Job Details tree to determine which policies ran successfully, and which failed. 2. Open OneFS on the source to determine the reason for policy failure(s). 1. If policy job is	Eyeglass waits for up to failover over timeout value in minutes **for each policy to run**. It will abort with a timeout if the incremental sync takes longer than an hour. **Wait for this job to finish, then restart the failover job to try again.** If the **unsynced** data on the source filesystem is unimportant and it's more important to get the target cluster file system writable, the Failover can be restarted with the "Data Sync" box unchecked. This will skip the final incremental sync, and will result in data loss for any data not previously replicated with SyncIQ. **NOTE: This step is not run during uncontrolled failover.**

		still running, wait for it to complete, or cancel the job in OneFS. 2. Manually run the policy, and see if it can be completed. 3. Open Case with EMC for SyncIQ jobs failing to run. 4. Restart Failover.	
Run Configuration Replication now. (Config Sync enabled in failover job)	Final sync of configuration shares/exports/aliases has failed. Failover wil continue. Source and targets still in initial state meaning target cluster is read-only still	1. Open the Eyeglass Jobs window, and switch to the running jobs tab. 2. Select the most recent configuration replication job. 3. Use the Job Details to determine the reason for failure. 4. Address the config replication failure OR make note of the unsynced	If the configuration on source and target are known to be identical, the Config Sync option can be unchecked when restarting failover to skip this step. If the **unsynced** configuration on the source is unimportant and it's more important to get the target cluster file system writable, the Failover can be restarted with the “Config Sync” box unchecked. This will skip this step. **Note This step is not run during uncontrolled failover.**

		configuration data 5. Restart failover.	

1.4. DFS Mode

DFS Mode

Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
DFS Share(s) rename failure on target or source	DFS clients will not switch clusters	1. Manually remove igls-dfs from share(s) on the target cluster that did not get renamed (consult failover log), will complete the failover and clients will auto switch 2. Manually add igls-dfs prefix to share(s) on the source cluster that did not get renamed (consult failover log), will block client access to source and switch to target Following steps apply for Superna Eyeglass Release < 1.9 **(2.0 and later will run this steps if a share rename fails)** 3. Manually run allow writes from OneFS for the policy(s) that were selected for failover 4. Manually run related Quota Jobs from Eyeglass 5. Manually run re-sync prep from OneFS for the policy(s) that were selected for failover 6. Apply SyncIQ Policy schedule to the target cluster policies that were failed over.	

1.5. Networking Operations

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Networking Operations

Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
Rename Source SC (SmartConnect) zone names & aliases	Failover failed during networking step. **Auto Rollback of networking will be applied to place SmartConnect Zone names and aliases back on the source cluster.** Source and target clusters result in same initial state as before failover and file system will be read/write on the source with SmartConnect Zones return to original configuration	1. Use the info link in the job details tree to determine the reason for failure. (At this point retrying access failover is likely to fail again. **you are now switching to manual failover use this table as a guide on the order of the steps that must be run. See table here of steps.** 2. You will need to know the steps for these procedures (consult EMC documentation on these steps) 3. Restart failover but only select SyncIQ failover job type since Access zone failover will attempt the networking failover again and is likely to fail again. Select the policies that are required to failover. 4. Start failover with policies selected and review the table for manual step order.	This step is not run during uncontrolled failover.
Modify Source SPNs	SPN operation failure does not abort failover but are logged in the failover log **Failover continues.**	1. Post failover, open the failover log, and look for instructions listing which SPNs need to be fixed. 2. Manually create/delete	SPN operations on the source are proxied through the target cluster ISI commands during failover operations, so source cluster availability does not affect Eyeglasses ability to fix SPN during failover to

		SPNs on the source cluster. 3. Use ADSIedit tool and administrator access on the domain to edit source cluster machine account and remove SPN entries (short and long) for each SmartConnect zone that failed over)	target
Rename target SC (SmartConnect) zone names & aliases	Failover failed during networking step. **Rollback will be applied.** Source and target clusters result in same initial state as before failover with SmartConnect zones reverting to original configuration.	1. Use the info link in the job details tree to determine the reason for failure. (At this point retrying access failover is likely to fail again. **you are now switching to manual failover use this table (in the Eyeglass Failover Design Guide) as a guide on the order of the steps that must be run: See table here of steps.** 2. You will need to know the steps for these procedures (consult EMC documentation on these steps) 3. Restart failover but only select SyncIQ failover job type since Access zone failover will attempt the networking failover again and is likely to fail again. Select the policies that are required to failover. 4. Start failover with policies selected and review the table for manual step order.	

Modify Target SPNs	SPN operation failure does not abort failover. **Failover continues.**	4. Post failover, open the failover log, and look for instructions listing which SPNs need to be fixed. 5. Manually create/delete SPNs on the source cluster. 6. Use ADSIedit tool and administrator access on the domain to edit source cluster machine account and add SPN entries (short and long) for each SmartConnect zone that failed over)	

1.6. Replication Policy Failover - All policies

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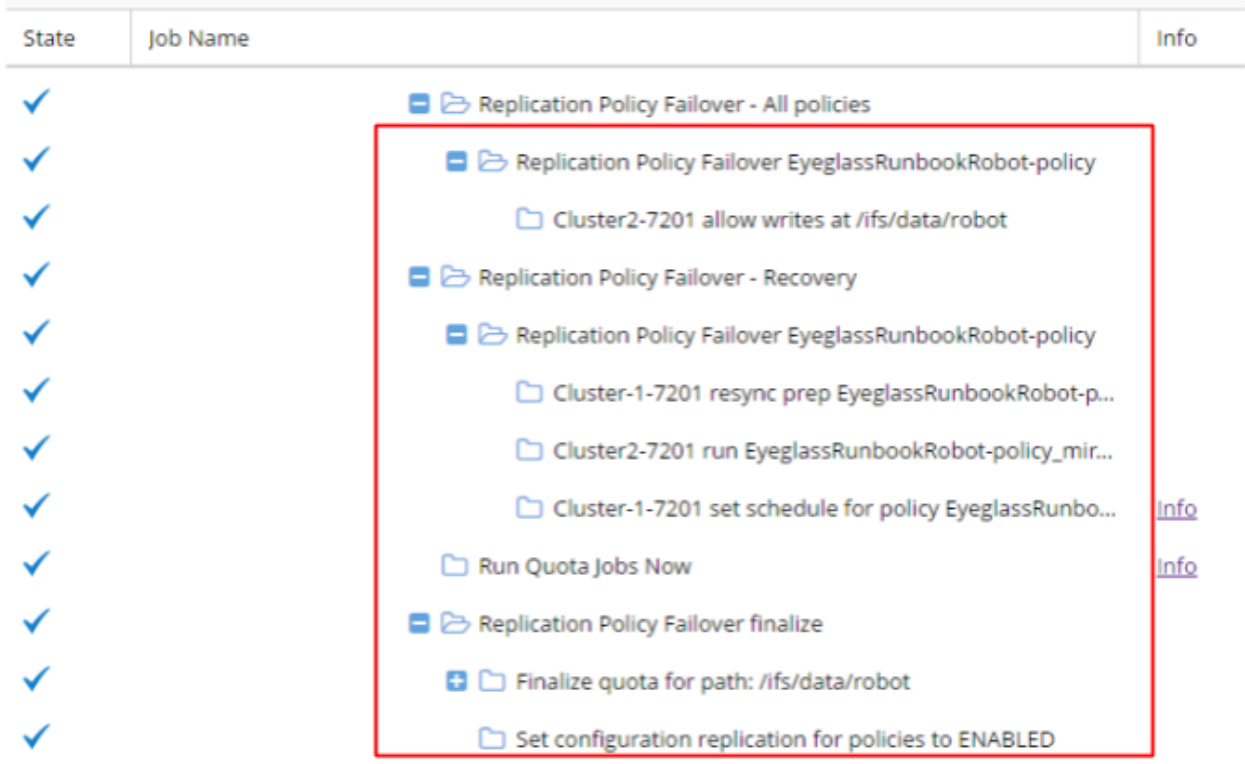
Replication Policy Failover - All policies

To assist use the failover log browser view to map each table to the correct section of the guide.



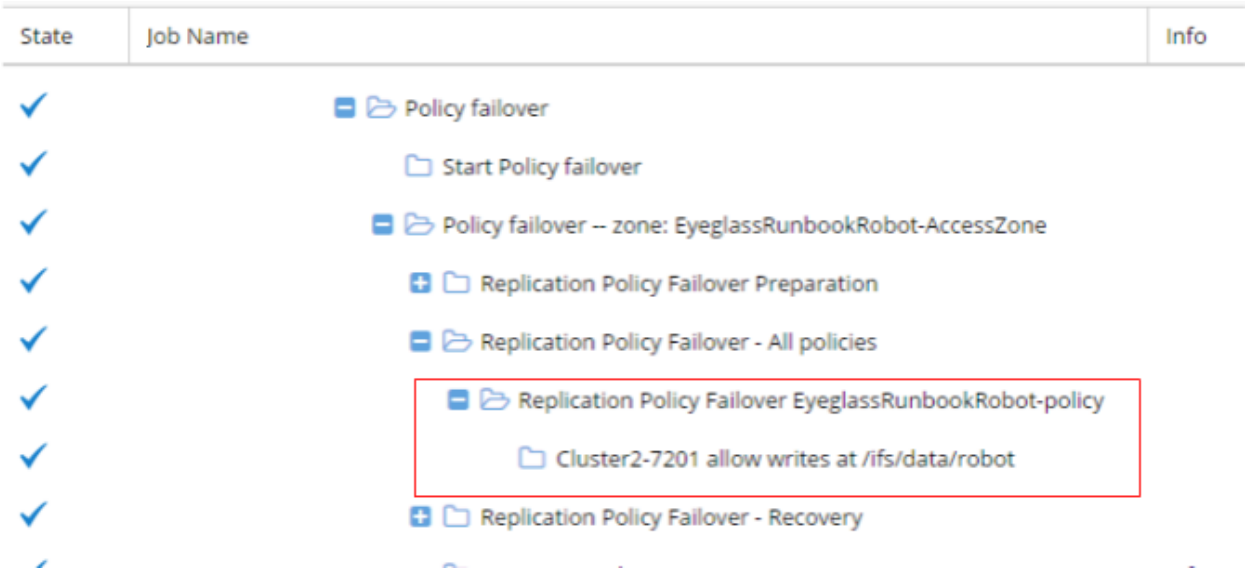
Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings Or Data Loss Impact
Replication Policy Failover all policies	One or more of the SyncIQ policies in the Failover job did not successfully complete its failover operation. This is the parent task containing all sub policies.	1. Use the table in the next section to determine why the SyncIQ policy did not successfully failover and address the issue. 2. Use the Job Details for the policy failover jobs to determine if at	This is a parent step containing sub-steps for each replication policy. Recovery from a failure in this step depends on how far the failover proceeded through the child steps. **Some steps should be reviewed for data loss impact.**

		least one policy has successfully executed the step named **CLUSTERNAME allow writes POLICY PATH.** 1. If yes: the source cluster is failed over. To recover, create a new failover job of type **Sync IQ**, select all of the policies that failed or did not run, and start the SyncIQ failover job. 2. if no: the cluster is not failed over yet. After fixing the error for the SyncIQ policy, start a new **Access Zone Failover** job. 3. **NOTE: SyncIQ policies that return error from the cluster will require EMC support case to be opened to resolve policies that will not start or run resync prep or execute make writeable operations**	

Replication Policy Failover <Policy Name>

Note: On Eyeglass, step names in the following table contain actual name of the cluster(s) and the policy name. These have been replaced with SOURCE, TARGET, and POLICY in the steps below.

To assist use the failover log browser view to map each table to the correct section of the guide.



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings OR Data Loss Impact
TARGET allow writes POLICY PATH	The target cannot be put into writes allowed state. **NOTE: as of 1.6 all policies involved in a failover job, are issued the make writeable command before Re-sync prep is executed.** **NOTE: as of 2.0 an attempt to execute make writeable is made against all policies in the failover even in the case where 1 or more have an error on this step.** Failover fails (only on releases <2.0).	1. Validate connectivity between Eyeglass and the target cluster. 2. From the OneFS UI, manually allow writes again for policy that failed on the target. Address any errors that may arise on OneFS from this step. 3. NOTE: SyncIQ policies that	Data Access Impact - Users will only have access to read-only data for any policy where allow writes failed or was not run due to error.

		return error from the cluster will require EMC support case to be opened to resolve policies that will not start or run resync prep or execute make writeable operations 4. For any policies where allow writes was not attempted due to an error, manually allow writes for those policy that were not run. 5. If this is a controlled failover, manually run resync_prep on the policy on the the source	

		cluster. 6. If this is a controlled failover, manually set the schedule on the mirror policy. 7. Consider this policy job as a success, and relaunch failover according to the logic in the previous table. 8. **(once Resync prep is completed)** Manually run related Quota Jobs from Eyeglass or contact support to use post failover quota sync tool. 9. NOTE: SyncIQ policies that return error from the cluster will require EMC support case to be opened to resolve	

		policies that will not start or run resync prep or execute make writeable operations	

1.7. Replication Policy Failover - Recovery

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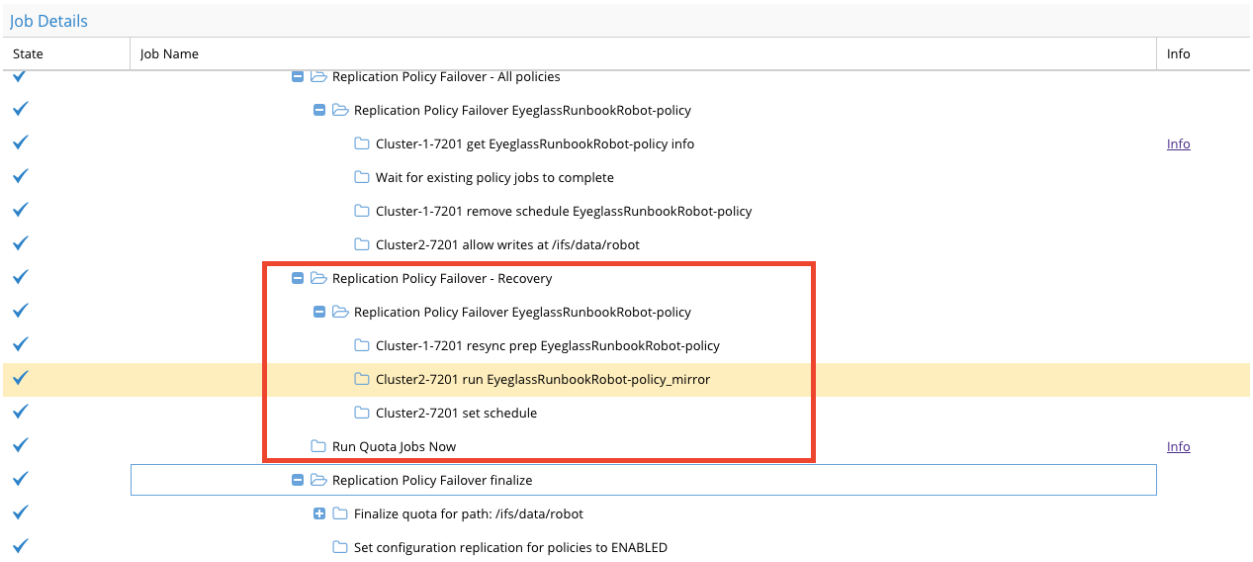
Replication Policy Failover - Recovery

Always review DR Assistant failover log to use this table below.

See screenshot below as reference to column heading name to see how to review the failover log



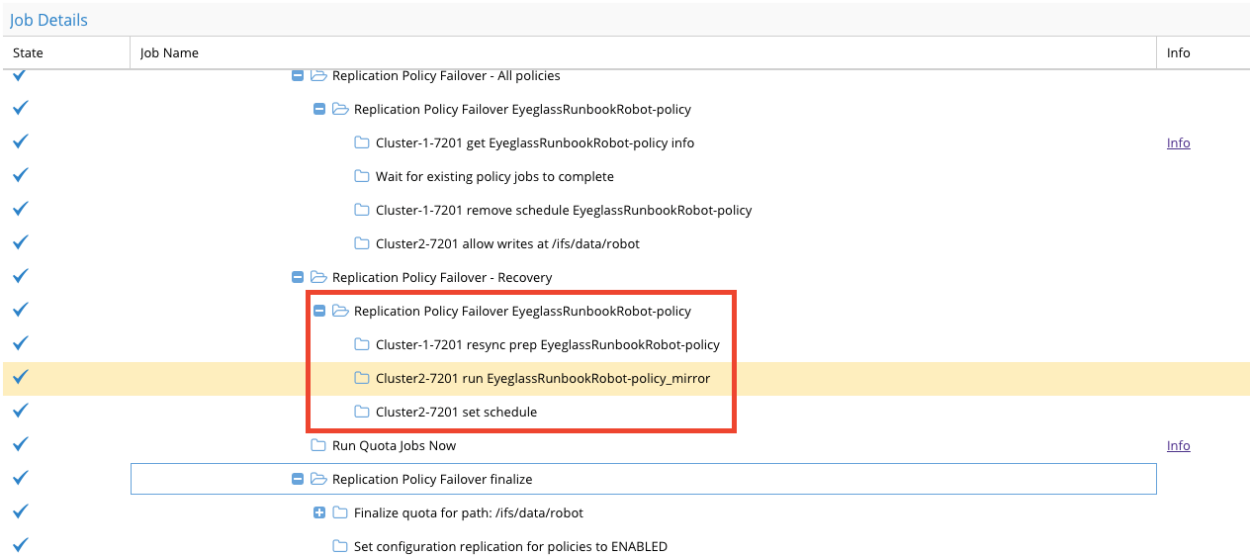
Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings or Data loss Impact
Replication Policy Failover - Recovery	One or more of the SyncIQ policies in the Failover job did not successfully complete its failover operation (multiple steps). This is the parent task containing all sub policy steps **(see screenshot above to see the order of parent and child steps)** **IMPORTANT** The rollback will not be applied in the event of a failure in this section of the failover. Previously networking and allow-writes steps have succeeded and the **cluster is assumed as "failed over".**	1. Use the table in the next section to determine why the SyncIQ policy did not successfully failover and address the issue. 2. **NOTE: SyncIQ policies that return error from the cluster will require EMC support case to be opened to**	This is a parent step containing sub-steps for each replication policy. Recovery from a failure in this step depends on how far the failover proceeded through the child steps. **Data Loss Impact - none (failover for any policy without this step running is completed BUT reprotecting the filesystem is blocked until the mirror policy is created and run successfully)**

	Any policy with an error in this section on resync prep, apply schedule or run policy will need to be completed manually and will likely require EMC technical support to fix root cause on the failure.	resolve policies that will not start or run resync prep and these steps will need to be completed manually	

Replication Policy Failover <Policy Name>

Note: On Eyeglass, step names in the following table contain actual name of the cluster(s) and the policy name. These have been replaced with SOURCE, TARGET, and POLICY in the steps below.

See screenshot below as reference to column heading name to see how to review the failover log



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
SOURCE resync prep POLICY	The mirror policy cannot be created. Policy is failed over. Target cluster is active. Overall fail back readiness status is failed. **NOTE: as of 1.6 all policies involved in a failover job, are issued the**	1. Login to OneFS on the source cluster. 2. Manually execute resync	This step is not run during uncontrolled failover. **Data Loss Impact - none (failover for any policy without this step running is completed BUT reprotecting the filesystem is blocked until the mirror policy is created and run successfully)**

	make writeable command before Re-sync prep is executed. NOTE: as of 2.0 an attempt to execute resync prep is made against all policies in the failover where make writeable has previously succeeded. In the event of an error on a Resync Prep step failover logic continues and attempts Resync Prep for any policy where make writeable succeeded.	prep on the policy. Address any errors that may arise. 3. Manually set the schedule on the mirror policy. 4. Consider this policy job as a success. 5. **(once Resync prep is completed)** Manually run related Quota Jobs from Eyeglass or contact support to use post failover quota sync tool. 6. NOTE: SyncIQ policies that return error from the cluster will require EMC support case to be opened to resolve policies that will not start or run	

		resync prep	
TARGET run POLICY_mirror	The mirror policy is unrunnable. Policy is failed over. Target cluster is active. Overall failover status is failure.	1. Login to OneFS on the target cluster. 2. Manually run the mirror policy. Address any errors. 3. Manually set the schedule on the mirror policy. 4. Consider this policy job as a success 5. **Contact Superna support for quota run procedures.** 6. NOTE: SyncIQ policies that return error from the cluster will require EMC support case to be opened to resolve	This step is not run during uncontrolled failover. **Data Loss Impact- none (failover for any policy without this step running is completed BUT reprotecting the filesystem is blocked until the mirror policy is created and run successfully)**

		policies that will not start or run resync prep	
TARGET set schedule	The schedule on the mirror policy cannot be set. Policy is failed over. Target cluster is active. Overall failover status is failure.	1. Login to OneFS on the target cluster. 2. Manually set the schedule on the mirror policy. 3. Consider this policy job as a success 4. Quotas will not failover contact Superna support.	Data Loss Impact - none (failover for any policy without this step running is completed BUT reprotecting the filesystem is blocked until the mirror policy is created and run successfully)

1.8. Run Quota Jobs Now Failover Recovery Steps

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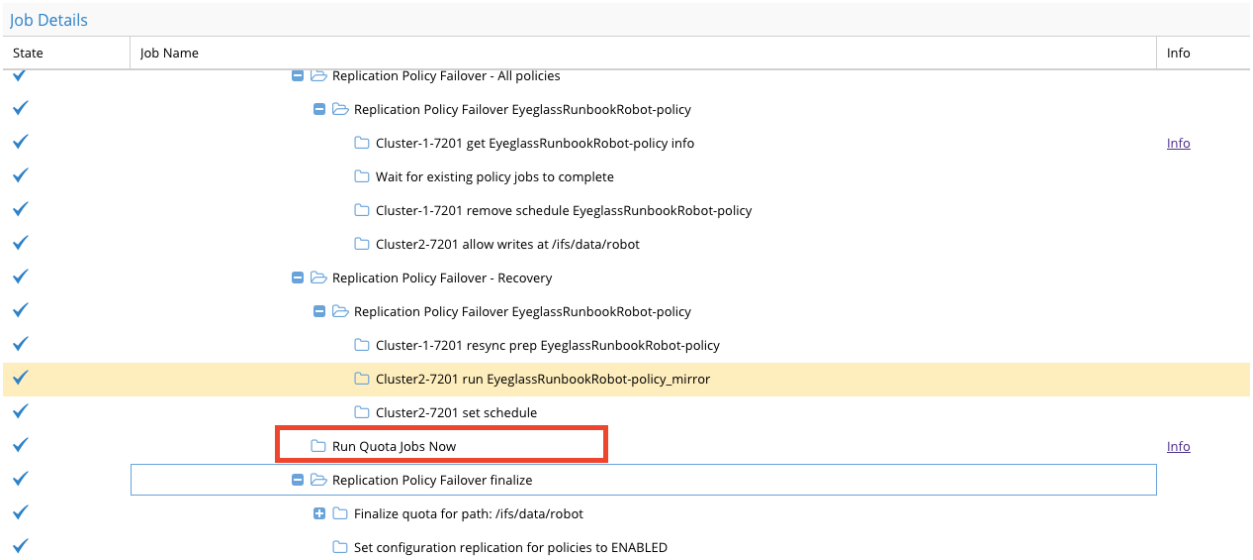
Run Quota Jobs Now Failover Recovery Steps

NOTE: Quota jobs get applied automatically during failover. Contact Support to use post failover quota sync tool to recover quotas that did not failover.

See screenshot below as reference to column heading name to see how to review the failover log



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
Quota partially failed over	1. Disk limits not applied on target cluster. 2. compare quotas manually on source and target	1. Recreate quotas manually and delete on source cluster 2. Open case to get list of failed	1. No data loss impact, quota step runs last in the failover logic

	using oneFS UI consult errors in active alarms to assist with identifying quotas that did not failover .	quota creates or deletes - requires logs to be uploaded to support case	

1.9. Replication Policy Failover Finalize

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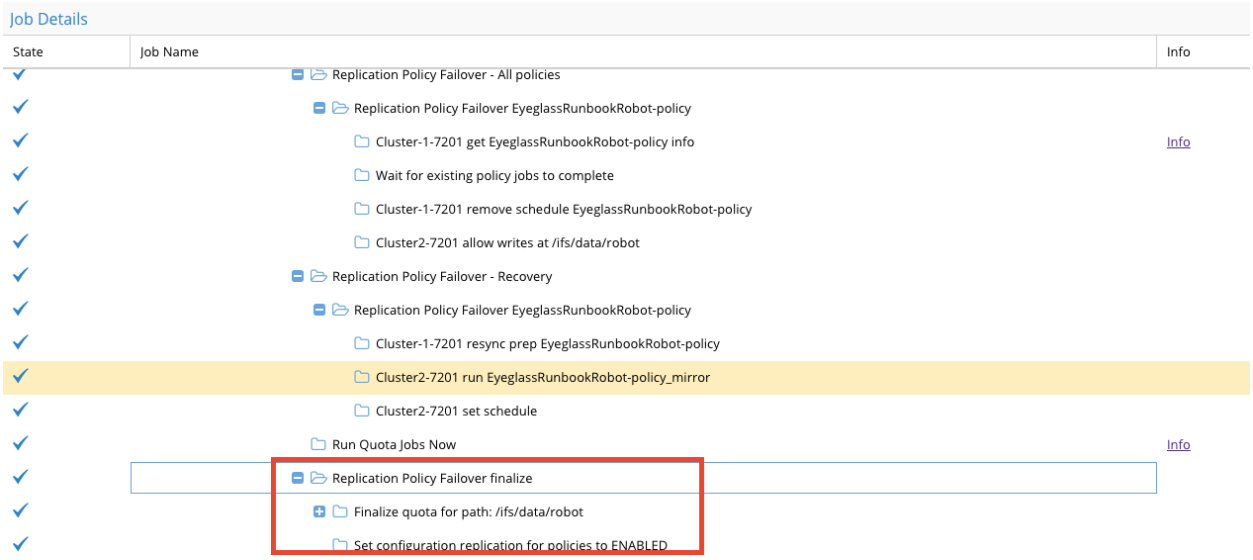
Replication Policy Failover Finalize

Note: this step runs one child step per policy, listed as “Finalize quota for path <policy source path>”. The table below describes failures on those steps, and the following should be done for any failed steps, or steps that did not run.

See screenshot below as reference to column heading name to see how to review the failover log



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings or Data Loss Impact
Finalize quota for path: PATH Delete Quotas on Source	Could not delete quotas from source. Policy is failed over. Target cluster is active. Failover overall status is failure.	1. On SOURCE OneFS, find all quotas on data protected by the SyncIQ policy. 2. Validate that	This step is not run during uncontrolled failover. Data Loss Impact - none (failover for any policy without this step running is completed BUT reprotecting can be impacted by the presence of quotas on the source cluster)

		those quotas are present on the TARGET cluster. 3. Delete these quotas from the SOURCE.	
Set configuration replication for policies to ENABLED	Could not enable Eyeglass Configuration Replication Jobs Policy is failed over. Target cluster is active. Failover overall status is failure.	1. Open the Eyeglass Jobs window. 2. Select configuration replication job and Enable. 3. Use log to determine the reason for failure.	This step enables the newly configured mirror policies post failover (if they did not exist). Eyeglass will detect the new policy and it will be enabled post failure to replicate configuration data back to the source cluster. Data Loss Impact - none (if this step fails, it block config from syncing back to source cluster and can be enabled manually from jobs window.

1.10. Post Failover Script Execution

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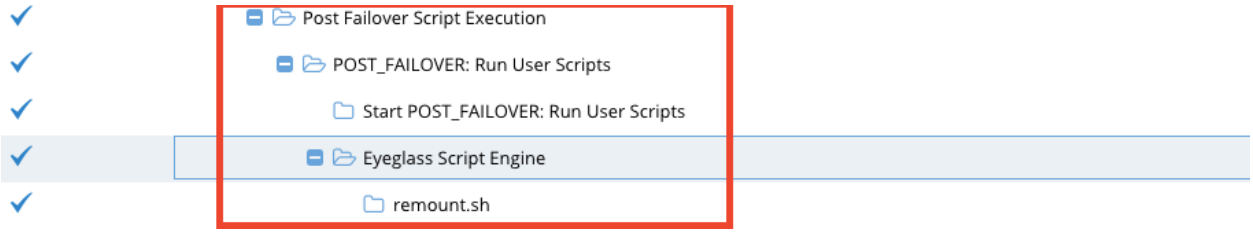
Post Failover Script Execution

See screenshot below as reference to column heading name to see how to review the failover log



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings or Data Loss Impact
Eyeglass Script Engine	A user supplied post-failover script failed. Failover overall status is failure.	1. Use the script engine to fix errors in the failing scripts, and re-run those that failed. 2. Use test script function to validate output and error codes returned to failover jobs	This step relies on user-supplied implementations. Review the script output to verify if it executed correctly. Error codes set by the script should fail the failover job if set correctly. See Pre Post Failover Scripting Guide on proper script exit code values to indicate failure vs successful execution. **Data Loss Impact - This step should only result in failure to remount or start applications post failover. Logs should be reviewed to ensure all steps completed and correct any script failures manually if they failed.**

1.11. Post Failover

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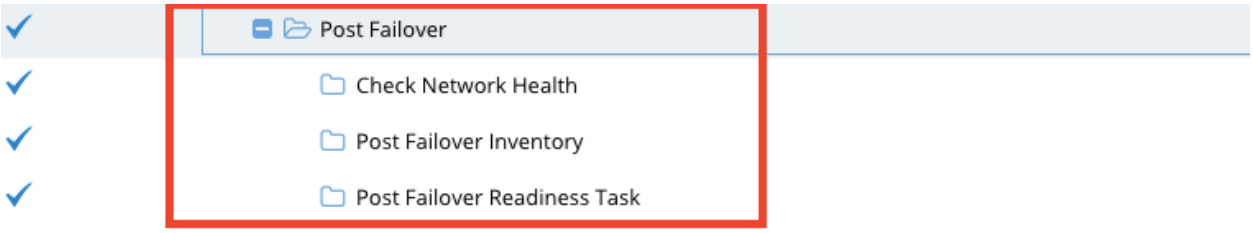
Post Failover

This step completes after all critical steps are executed, if all steps passed to this point then no data loss condition can result from failures. This section is used for SmartConnect roll back to source cluster (no steps for DNS if dual delegation configured).

See screenshot below as reference to column heading name to see how to review the failover log



Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings or Data Loss Scenario
Check Network Health	The Networking Rollback job could not be initiated. Is an impact only if the failover did not reach the make writeable step of a policy.	1. Use the failover log to determine the networking operations that were performed during failover. 2. Use OneFS to manually revert the networking operations on SOURCE	The rollback logic is only executed if the failover job failed before the make writeable step on a policy. Data Loss Impact - In this scenario failover never completed and the source cluster data is still the production copy. Potential data loss scenario of the source data was deemed not usable. Contact EMC to get assistance correcting make writeable step also consult best practises which cover scenario's that block make writeable step. Best Practices for Failover with Eyeglass

		and TARGET as required.	
Post Failover Inventory	The post failover Inventory job failed. Failover is successful, Eyeglass UI may be out of date.	1. Validate source and target cluster connectivity with Eyeglass. 2. Open the alarms window, and look for any alarms related to configuration replication. 3. Manually run configuration replication, or wait until the next automatic cycle.	This step is not run during uncontrolled failover. **Data Loss Impact - None. This step updates the Eyeglass UI.**
Post Failover Readiness Task	The post failover Readiness job failed. Failover is successful, Eyeglass UI may be out of date.	1. Validate source and target cluster connectivity with Eyeglass. 2. Manually run the Access Zone Readiness job, or wait until the next	This step is not run during uncontrolled failover. **Data Loss Impact - None. This step updates the Eyeglass UI.**

		automatic cycle.	

1.12. Check Client Access (Manual Step)

Check Client Access (Manual Step)

Failure to Complete Step	Description of Impact to Failover	Recovery Steps	Special Instructions or Warnings
DNS SmartConnect zone validation	Note: Dual delegation switches DNS automatically with networking failover available in Access Zone Failover	nslookup SmartConnect zone name 1. Confirm the ip address returned is the target cluster ip pool 2. Repeat for all SmartConnect zones that were failed over 3. If incorrect then update target cluster by using isi command to create the missing alias on the ip pool 4. If ip returned is still the source cluster, then rename source cluster SmartConnect zone name to ensure dual delegation will not use this cluster's DNS service to answer queries	
Refresh session to pick up DNS change	SMB Client unable to access data on	Check SPNs using ADSI Edit tool	You cannot create a missing SPN on the Active

	Failover Target cluster despite successful failover and DNS Updates and session refresh	and confirm that 1. Failover Source Cluster - SPN for SmartConnect Zone that Client is using does NOT exist. 2. Failover Target Cluster - SPN for SmartConnect Zone that Client is using DOES exist. 3. If above condition is not met, using ADSI Edit to update SPN to be on correct cluster.	Cluster if it still exists for the Failed Over cluster. You need to remove from Failover Over cluster first and then add to active cluster.
SMB Direct Mount Shares	Dual delegation updates DNS but requires clients to remount and query DNS to get a new cluster ip address	net use //sharename /delete net use //sharename Or use map network drive in Explorer	
NFS mounts	Dual delegation updates DNS but requires clients to remount and query dns to get a new cluster ip address	umount -fl /path of mount -a (reads fstab file and remounts, does force and lazy unmount to handle open files)	
DFS clients	auto switch	no action needed	

2. Cluster Move Procedure to New Data Center

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- Cluster Move Procedure to New Site - Change Cluster IP Address
- Cluster Move Procedure to New Site - Cluster IP Unchanged

2.1. Cluster Move Procedure to New Site - Change Cluster IP Address

Cluster Move Procedure to New Site - Change Cluster IP Address

This procedure is used to move a cluster to a new site and failover, failback and a change of the Cluster IP address is required at the new site.

Steps need to follow while moving one cluster to a new site:

1. Shares or exports exist on active cluster (writeable data) and on the read only cluster (Cluster B)
2. Failover one policy or access zone at a time to the target cluster (Cluster B)

1. **Expected Result**: Clients and applications are successfully accessing data from the new active cluster (Cluster B)

1. Completes without error
2. Shares and exports now exist on new active cluster (Cluster B) on the new read only cluster (cluster A)
3. Disable all Eyeglass jobs
4. Move source (Cluster A) to new site
5. Change IP address on Cluster A
6. Bring source (Cluster A) back online
7. Change source (Cluster A) IP address from Eyeglass inventory view using the below procedure:

8. Eyeglass jobs should all be enabled at this step. Confirm this is the case.

1. **Expected Result**: Eyeglass Configuration Replication Jobs are running without error

Note : If Eyeglass Configuration Replication Jobs are in error proceed to Step 11 to reset Eyeglass to pick up IP address changes for Jobs on the new active cluster (Cluster A)

9. Fallback one policy at a time or access zone to the source (Cluster A)

1. **Expected Result**: Clients and applications are successfully accessing data from the new active cluster (Cluster A)

10. **Note :** If Eyeglass Replication Jobs are in error proceed to Step 11 to reset Eyeglass to pick up IP address changes for Jobs on the new active cluster (Cluster A)If the Eyeglass Configuration Replication Jobs and Fallback is working successfully on new active cluster (Cluster A) are working then the relocation procedure is complete.

11. If Eyeglass Replication Jobs are in error reset Eyeglass to pick up IP address changes for Jobs on the new active cluster (Cluster A) with the following procedure:

1. SSH to Eyeglass appliance using admin: sudo -s enter (must use root) then use admin password (default password: 3y3gl4ss)
2. Run command <igls appliance rediscover>
3. Once reset completes, go to the chrome browser and refresh the browser and login with the credentials

4. Login to jobs window and validate that all jobs are in the correct states, Eyeglass will restore all job status but should be double checked,

1. Correct any if jobs in user disabled state or not in DFS state that should be DFS enabled.
2. **IMPORTANT:** You must enable DFS mode on an job that did not rediscover and shows in the DFS job section of jobs window before enabling the Job to prevent creation of active shares on target cluster. Enable DFS mode first, then enable.

5. Using Bulk Actions select a policy in jobs window and use Run now.

1. Using Running jobs tab to watch and verify successful (check mark no red X) on the configuration sync

6. If using Access Zone failover, verify that failover readiness job is enabled.

1. Using bulk actions force run the readiness job wait until it completes (running jobs window)

7. Check DR Dashboard to verify it shows a good DR status

1.

2.2. Cluster Move Procedure to New Site - Cluster IP Unchanged

Cluster Move Procedure to New Site - Cluster IP Unchanged

Steps need to follow while moving one cluster to a new location: using same network setting (same cluster IP address)

Before moving the cluster to a new location, configuration replication jobs in Eyeglass should be working properly and configuration synced to target cluster.

1. Disable configuration replication jobs in Eyeglass before turning off the cluster being moved.

Note: For Failover scenario, the failover away from the cluster that is going to be moved should be completed successfully

- config replication jobs that synced the configuration from source to target in disable mode

- Jobs on the active cluster are green.

Login to Eyeglass → click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *Configuration Replication:Share, Export, Alias replication* and/or *Configuration Replication:Access Zone replication* (if applicable) and/or

Configuration Replication:DFS mode (if applicable) *and/or*

Configuration Replication:Snapshot Schedules (if applicable) *and/or*

Failover: Runbook Robot section (if applicable) → Select bulk a action → Enable/Disable to disable the jobs

2. Then Turn off the cluster to be moved.
3. After the cluster is moved to the new site and powered up, check the connectivity between the cluster and Eyeglass appliance. (Hint: you may ping the cluster IP from Eyeglass.)
4. Enable Configuration Replication:Share,Export, Alias replication jobs in Eyeglass.

Login to Eyeglass → click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *Configuration Replication:Share, Export, Alias replication* section → Select bulk a action → Enable/Disable to enable the jobs.

Note: Enable any *Snapshot Schedules, Configuration Replication:Access Zone replication*, *Failover: Runbook Robot* jobs were enabled before cluster move.

5. Run the configuration for one replication cycle to verify configuration replication jobs working properly.

click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *Configuration Replication:Share, Export, Alias replication* section → Select bulk a action → *Run now*

Steps need to follow while moving one cluster to a new location: using same network setting (different cluster IP address)

Before moving the cluster to a new location, configuration replication jobs in Eyeglass should be working properly and the configuration synced to the target cluster.

1. Disable configuration replication jobs in Eyeglass before turn the source cluster off. For Failover scenario. Failover should be completed successfully - config replication jobs that synced the the configuration in disable mode.

Login to Eyeglass → click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *configuration replication:shares, exports, alias replication* section → Select bulk a action → Enable/Disable to disable the jobs

Notes:

DFS jobs should be disabled; if any, before turn off the cluster.

From Eyeglass 1.6.3, *Snapshot Schedules* and *Access Zone replication* should be disabled.

2. Turn off the Source cluster.
3. Reset the Eyeglass appliance.

Reset Eyeglass to re-add the cluster (different IP address will be added to Eyeglass for the moved cluster) .

SSH to Eyeglass appliance using admin: sudo -s enter (must use root) then use admin password (default password: 3y3gl4ss)

1. cd /opt/superna/sbin
2. ./reset.sh
3. Once reset completes, login to chrome browser and refresh the browser and login with the credentials.
4. Now, add both of clusters using Management subnet SSIP.

4. After the cluster is moved to the new site and powered up, check the connectivity between the cluster and Eyeglass appliance. (Hint: you may ping the Eyeglass IP.)
5. Enable Configuration Replication:Share,Export, Alias replication jobs in Eyeglass.

Login to Eyeglass → click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *Configuration Replication:Share, Export, Alias replication* section → Select bulk a action → Enable/Disable to enable the jobs.

Note: Enable any *Snapshot Schedules* and *Access Zone replication* jobs were enabled before cluster move.

6. Run the configuration for one replication cycle to verify configuration replication jobs are working properly.

click on *Jobs* icon in desktop → *Job Definitions* → check the box to select jobs in *Configuration Replication:Share, Export, Alias replication* section → Select bulk a action → *Run now*

Useful link:

How to - Edit PowerScale IP Address in Eyeglass

3. PowerScale Upgrade Procedure with Eyeglass

Home Top

- ReadMe First - Prior to PowerScale Upgrade
- Cluster OneFS Upgrade is between Major Release Version Eyeglass Procedures
- Cluster OneFS Upgrade is between Minor Release Version Eyeglass Procedures
- Functions Impacted DURING a Cluster OneFS Upgrade and Eyeglass, Ransomware Defender, Easy Auditor, Performance Auditor Procedures

3.1. ReadMe First - Prior to PowerScale Upgrade

Prior to PowerScale Upgrade Determine which process to follow

Check the Feature Release Compatibility table in the appropriate Eyeglass Release Notes to ensure cluster release compatibility listing is supported for the cluster configuration upgrade for the source and destination cluster.

There are procedures to complete before and after a Onefs upgrade, the different scenario's are upgrade OneFS to a Major new release or a Minor release. Follow the guide based on your scenario.

1. If your upgrade process will always have the source and destination cluster in a supported configuration AND upgrade does not change version first 2 digits (for example 7.2.1.1 upgrade to 7.2.1.2 or 8.0.x to 8.0.x, 9.x), follow instructions for *Supported Eyeglass functionality when a Cluster OneFS Upgrade is between Minor Release Version* .
2. If your upgrade process is for OneFS 7.2.x to OneFS 8.0.x or 8.2, 9.x follow instructions for *Supported Eyeglass functionality when a Cluster OneFS Upgrade is between Major Release Version* .
3. If your upgrade process will result in source and destination cluster being in an unsupported configuration at any point follow instructions for *Eyeglass functionality that will be Impacted DURING a Cluster OneFS Upgrade.*

3.2. Cluster OneFS Upgrade is between Major Release Version Eyeglass Procedures

Home Top

- Description
- How To Video
- Read Me - Upgrades to 8.2 or later releases
- Upgrade Procedure
  - Upgrade Target Cluster First Step:
  - Upgrade Source Cluster Second Step:
- What you need to know in Mixed mode Onefs Releases on Source and Target Clusters

Description

The following is the procedure for performing site cluster rolling upgrade from one release to a new major release of OneFS.

How To Video

Read Me - Upgrades to 8.2 or later releases

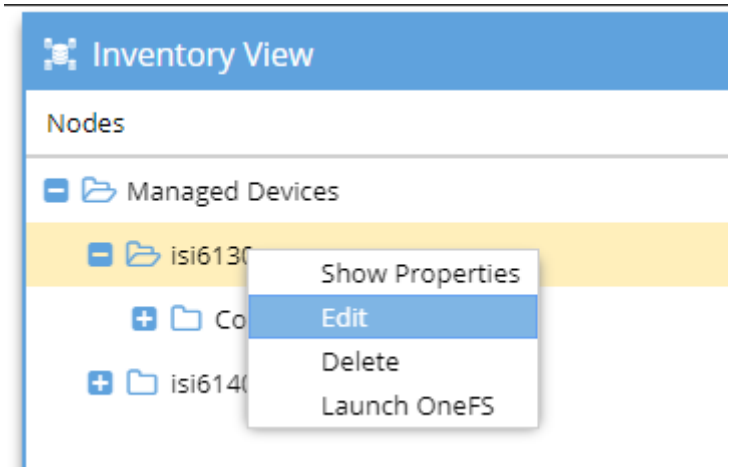
1. **NOTE: As of OneFS 8.2 or later the cluster does not support API calls to the SSIP (subnet service IP). Please ensure you are**

using an IP address from a pool that has System Access Zone assigned to it (Example: IP from the Management Pool). The pool should be configured as a dynamic pool so that the IP address will failover to other nodes in the cluster.

2. You should change the Eyeglass IP before upgraded to 8.2 or later releases. Use the steps below.

    a. Login to Eyeglass WebUI

    b. Goto Inventory View
    c. Right click on cluster each cluster, a context menu should open
    d. Select Edit on the context menu



    e.

    f. In the Edit Managed Device window, select **ALL** text (do not edit the ip address replace all text) in the SmartConnect Service IP field and remove it and replace it with the appropriate IP address only for the given cluster.
    g. Enter the **eyeglass** service account password used to add the cluster
    h. Click Submit

i. 

Upgrade Procedure

To upgrade both site's clusters to a new Major OneFS release by performing **upgrade on 1 site at a time**. The plan is to **upgrade the Target Cluster first** and then **follow by upgrade the Source Cluster**.

Upgrade Target Cluster First Step:

1. Verify that prior to upgrade, the Eyeglass has been configured properly and Eyeglass Jobs statuses are OK. No error.
2. Prepare Target Cluster for Upgrade. Refer to EMC PowerScale documentation for detailed instructions, including:
3. Pre-upgrade checks
    a. Supported upgrade paths from current OneFS release to the target release. Might need to upgrade to intermediate release before final upgrade to the target release.
    b. Download and store the PowerScale installer to the Cluster (e.g. /ifs/data folder).

4. Disable Eyeglass Jobs temporary for upgrade process.
5. Perform OneFS upgrade on Target Cluster. Eyeglass will report that the cluster is unreachable.
6. Once upgrade process of Target Cluster has completed successfully, perform the following tasks to let Eyeglass manage the Target Cluster that now has new OneFS Release:
    a. Update the Eyeglass Admin role privileges on this Target Cluster by adding the additional permissions list in the document below:
    b. PowerScale Cluster User Minimum Privileges for Eyeglass
    c. Update the sudo privileges for the Eyeglass service account on this Target Cluster and review the document above.
    d. Restart Eyeglass sca service:
    e. SSH as admin user.
    f. Then sudo -s.
    g. Enter admin password.
    h. To stop: systemctl stop sca.service
    i. To start: systemctl start sca.service
    j. Verify: systemctl status sca.service
    k. Re-enable the Eyeglass Jobs.
7. Manually Run with Run Now bulk actions menu from Jobs Window or wait until the next Replication Job has started. Once Jobs have completed, verify Eyeglass status is OK. **No error.**

8. Verify all Jobs are green and DR Dashboard audit and readiness for zones status
    a. **NOTE: At this point in the site cluster upgrade path, Eyeglass is now in mixed mode, which means OneFS API will use the lower cluster version api and takes priority when syncing configuration information from source to target cluster.**
9. Verify product functionality by following steps here.

Upgrade Source Cluster Second Step:

1. Verify that prior to upgrade, the Eyeglass Jobs statuses are OK. No error.
2. Target Cluster for Upgrade. Refer to EMC PowerScale documentation for detailed instructions.
3. Perform Eyeglass Failover to Target Cluster. (see documentation for the mode of failover and follow the Failover Planning Guide and checklist).

1. Verify Failover has completed successfully. No errors in the failover log.
2. By default, all Eyeglass Jobs for Mirror Policies are in User Disabled state. If not disabled (e.g, have done failover and failback before), manually disable all Eyeglass Jobs temporarily during the cluster upgrade process.
3. Perform OneFS upgrade on Source Cluster. Eyeglass will report that the cluster is unreachable, this is expected.

4. Once upgrade process of Source Cluster has completed successfully, perform the following tasks to let Eyeglass manage the Source Cluster.
5. Update the Eyeglass Admin role privileges on this Source Cluster by adding additional permissions listed in the document below:
    a. PowerScale Cluster User Minimum Privileges for Eyeglass
    b. Update the sudo privileges for the Eyeglass service account on this Source Cluster:
    c. **Additional sudo permissions should be reviewed in the document above:**
        i. Restart Eyeglass sca service:
            1. SSH as admin user.
            2. Then sudo -s
            3. Enter admin password.
        ii. To stop:
            1. systemctl stop sca.service
        iii. To start:
            1. systemctl start sca.service
        iv. Verify:
            1. systemctl status sca.service
        v. Re-enable the Eyeglass Jobs from the Jobs icon
        vi. Run or wait till the next Replication Jobs have started. Once Jobs have completed, verify Eyeglass status is OK. No error.

vii. Verify product functionality by following steps here.

What you need to know in Mixed mode Onefs Releases on Source and Target Clusters

In this mixed mode (Any cluster version combination with 8.x 8.2 or 9.x added to the same eyeglass)

- Config is supported between clusters running lower version to higher version OneFS releases. To ensure you are running a supported release, consult the release notes for exact versions supported.
- Failover is supported.
- Failback is supported.
- Runbook Robot is supported.
- RPO reporting is supported.

NOTE: It is expect this mixed mode will be a temporary scenario before upgrading the source cluster (expectation is a period would be weeks to months at most). It is not intended to be a normal operating mode between replicating clusters

NOTE: if the only one pair of clusters managed by Eyeglass are mixed mode is still active for all clusters. Mixed mode API is disabled only once all clusters managed by Eyeglass are upgraded to the same Major release.

3.3. Cluster OneFS Upgrade is between Minor Release Version Eyeglass Procedures

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- Follow all Steps below when upgrading between minor Onefs versions

Follow all Steps below when upgrading between minor Onefs versions

1. Login to Eyeglass web page prior to upgrade and confirm that configuration replication is in a good state.
2. Begin the upgrade process. Eyeglass is in a running state during upgrade process.
3. If source or destination cluster is not reachable at any point during upgrade you may see failed Eyeglass Configuration Replication Jobs and their related alarms. Subsequent Eyeglass configuration replication Job execution with source and target clusters in reachable state should clear these alarms.
4. Eyeglass Alarms during Isilon/PowerScale Upgrade
    a. The following provides a summary of the Eyeglass alarms that you might encounter during an PowerScale upgrade where source and/or target cluster are unreachable:
    b. One or both clusters may not reachable when Eyeglass Replication Task is starting

i. Replication jobs failed.

ii. DR Dashboard has Error status and readiness alarms will be sent

iii. Multiple Alarms will be raised for each scheduled replication job and this is expected

5. Post Upgrade of Onefs

    a. Verify product functionality by following steps here.

    b. It is recommended to leave Eyeglass running for 30 minutes after the upgrade procedure has been completed and then check the status of the Eyeglass Jobs to confirm that system has returned to pre-upgrade state. Any alarms that occurred can be seen in the Alarms History.

6. done

3.4. Functions Impacted DURING a Cluster OneFS Upgrade and Eyeglass, Ransomware Defender, Easy Auditor, Performance Auditor Procedures

Home Top

Eyeglass functionality that will be Impacted DURING a Cluster OneFS Upgrade

1. **Configuration Sync will have errors during upgrade, they can be ignored until the Cluster upgrade is complete**
2. **Runbook Robot will not execute without errors**
3. **Ransomware Defender and Easy Auditor will not be able to collect events during upgrade.**
4. **Planned Failover execution will not be supported during a failover.**
5. **DR Readiness Dashboard will NOT be accurate**
6. **All Reports will not execute correctly**

Post OneFS Upgrade Steps

1. Eyeglass DR Edition
    a. Restart the SCA service
    b. ssh to appliance as admin user
    c. sudo -s
    d. enter admin password

e. systemctl restart sca
f. Wait 30 minutes
g. Login to gui and verify no errors in jobs or DR dashboard

2. Ransomware Defender, Easy Auditor and Performance Auditor
    a. login to node 1 of the ECA cluster
        i. ecactl cluster down
    b. once all steps to shutdown complete
        i. ecactl cluster up
    c. Wait for all steps to complete
    d. Login to Eyeglass, open Managed service icon and verify all nodes show green (you may need to wait 5 minutes)
        i. Ransomware Defender run Security guard, verify it completes successfully
        ii. Easy Auditor run Robot Audit, verify it completes successfully
        iii. Performance Auditor - open the tool icon to verify performance data is shown
3. done

4. Eyeglass Simulated Disaster Event Test Procedure

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4.1. Introduction

Introduction

This document outlines Eyeglass simulated disaster test scenario for clients who want to perform disaster testing during a scheduled maintenance window:

1. Controlled failover with production SyncIQ policies, and uncontrolled failover with a DFS mode Test SyncIQ policy, **without** impacting or **exposing** production data to data loss or resync risks.
2. Controlled failover of production Access Zone, and uncontrolled failover with EyeglassRunbookRobot Access Zone, **without** impacting or **exposing** production data to data loss or resync risks.
3. Optional: this can be used to only perform simulated failover without any production data failed over within the same maintenance window.
4. Open a case with Superna support to review this document prior to attempting the procedures within this document

Support Statement on Use of this Procedure

1. **This procedure is the only supported process.** Any variant of the process that uses uncontrolled failover on production data is unsupported. If a support request is raised for a test that intentionally used uncontrolled failover on production data, the customer will have to take responsibility for recovery steps using documentation without support assistance.
2. **This procedure requires the "Failover Planning Guide and checklist" to be followed to maintain support as per the support contract for planned**

failovers. The Failover Planning Guide and checklist will be requested for validation from Superna support when any case is opened regarding failover.

Important Note

Note: Production SyncIQ policies should target and protect directories in Access Zones **other** than the EyeglassRunbookRobot Access Zone or the test DFS SyncIQ policy.

4.2. Initial Environment Setup

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Initial Environment Setup

If you have already configured the Eyeglass RunbookRobot feature in your environment for Access Zone or DFS Continuous DR Testing, you may skip this initial environment setup section and proceed to Verify Environment Setup section.

NOTE: ONLY 1 RUNBOOK ROBOT SUPPORTED PER EYEGLASS

1. **Both (DFS, Access Zone):** On both Cluster1 and Cluster2, create an Access Zone with name format "EyeglassRunbookRobot-XXXX", where XXXX is a string or number of your choice.
2. **Both (DFS, Access Zone):** On both Cluster1 and Cluster2, as best practice, create an IP pool dedicated for SyncIQ data replication.

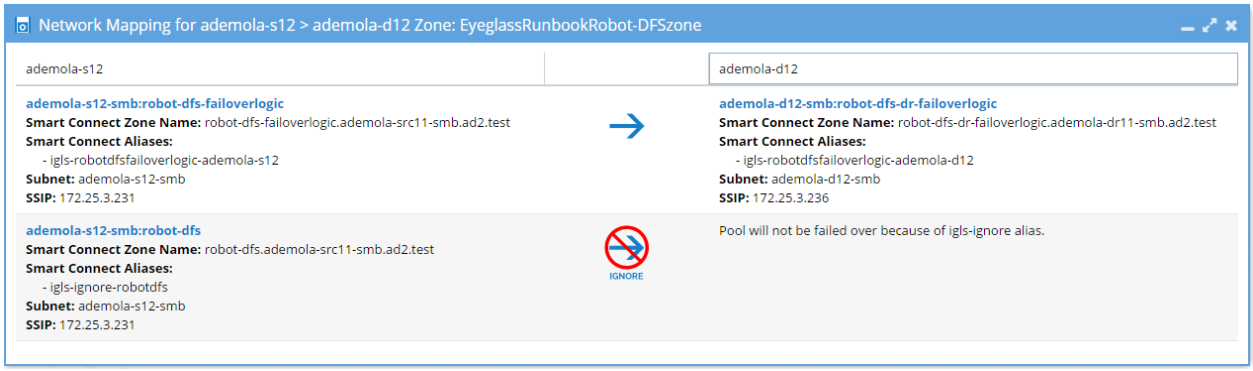
1. Note that the *Replication IP pool should be in the System Access Zone.* While configuring your production or test SyncIQ policies, for the “Restrict Source Nodes” option, make sure to select the second option that says “Run the policy only on nodes in specified subnet and pool”, then select the IP pool that you have dedicated to SyncIQ data replication.
2. For the Replication IP pool, make sure to configure a SmartConnect Zone Alias with syntax igls-ignore-xxxx, where xxxx is a string that makes the alias (as a whole string) unique across your infrastructure.

3. **Both (DFS, Access Zone):** On both Cluster1 and Cluster2, create an IP pool for clients to access data in the EyeglassRunbookRobot-XXXX Access Zone.

1. The IP pool for DFS client access will be configured with SmartConnect zone alias of the format igls-ignore-xxxx

2. The Access Zone failover logic pool will be configured with SmartConnect zone alias of the format igls-aaaa-bbbb, where aaaa is the same string on Cluster1 and Cluster2, and bbbb make the alias (as a whole string) unique across your infrastructure. Eyeglass uses the first two sections (igls-aaaa) to map the pool from Cluster1 to Cluster2.

See below a sample pool mapping for the DFS and Access Zone as seen from Eyeglass Zone Readiness:



4. **Both (DFS, Access Zone)** Create Test SyncIQ policy on Cluster1 with name format "EyeglassRunbookRobot-yyyy", where yyyy is a number or string of your choice.

Note that you can only have **one** SyncIQ policy within each EyeglassRunbookRobot-XXXX Access Zone.

1. Make the test SyncIQ policy target host the SmartConnect zone FQDN of the dedicated SyncIQ replication IP Pool on Cluster2.
2. Restrict Source Nodes option should be selected when configuring the test SyncIQ policy.
3. The test SyncIQ policy source directory path should be below the EyeglassRunbookRobot access zone base directory.
4. Run the policy on OneFS UI once it has been created.

5. **Both (DFS, Access Zone)** On Cluster1 EyeglassRunbookRobot Access Zone, create test SMB shares (and quotas if required) at folder paths below the Test SyncIQ policy source folder.

1. **DFS Mode:** In DFS snapin for AD configure the DFS folder targets using FQDN(s) for Cluster1 and Cluster2 IP pool for client access.

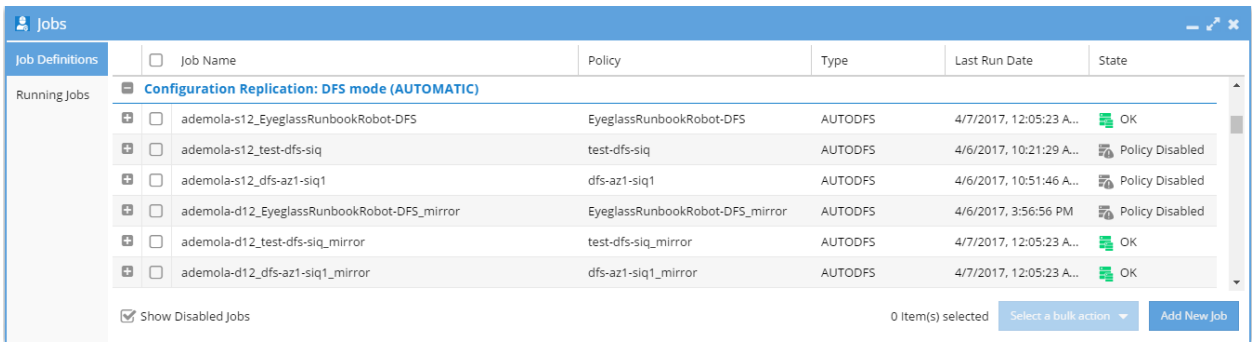
Example format for DFS folder targets are:

<\\fqdn-of-DFS-testdata-IPpool-on-cluster1\SMBsharename>, and <\\fqdn-of-DFS-testdata-IPpool-on-cluster2\SMBsharename>. Windows client will mount this DFS share using the path <\\AD domain name\dfsrootname\dfsfoldername>.

6. **DFS Mode:** On Eyeglass, change the configuration replication job associated with Test DFS policy to DFS mode. (See product documentation for details)

7. **Both (DFS, Access Zone)** In order to have a Test SyncIQ mirror-policy in place (and also as best-practices), using Eyeglass, perform an initial ***controlled failover*** (Cluster1 to Cluster2) of the EyeglassRunbookRobot Access Zone or Test DFS SyncIQ policy, followed by a ***controlled failback*** (Cluster2 to Cluster1) of the EyeglassRunbookRobot Access Zone or Test DFS SyncIQ policy.

See sample screenshot below showing that mirror policies are in place for all the
Jobs.



8. **Access Zone Mode:** Must have DNS Dual Delegation in place and AD permissions for cluster to read and write SPNs.

4.3. Verify Environment Setup

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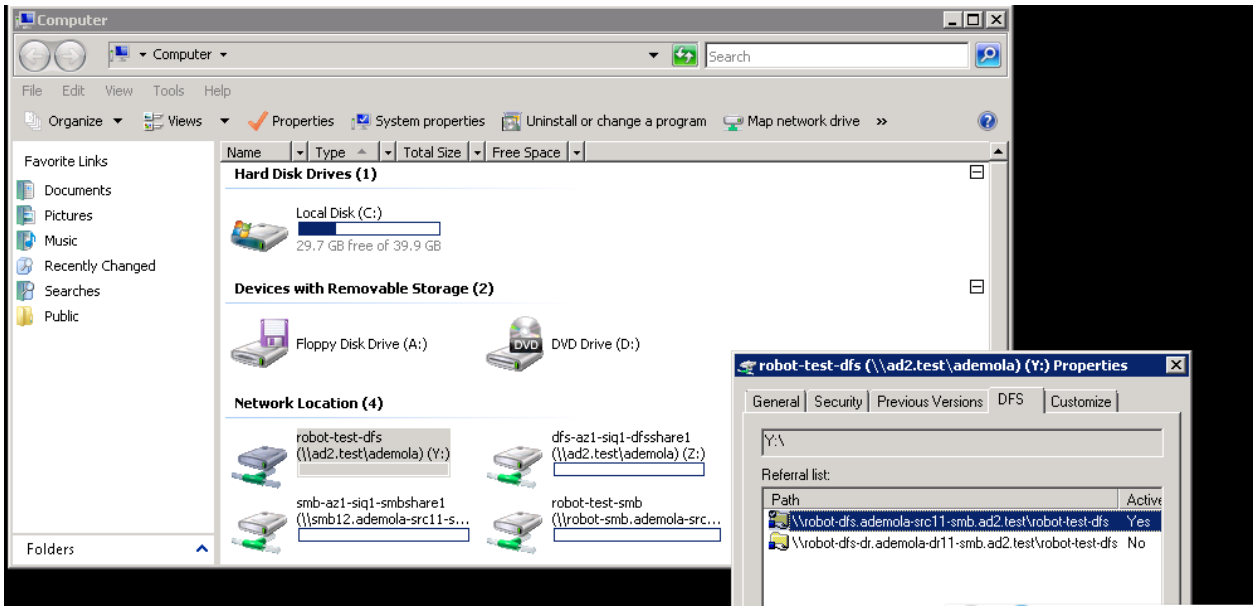
Verify Environment Setup

1. **Verify production DFS policies** are setup correctly with dual folder targets.
2. **Verify test DFS policy:** Write data to the share added to the DFS namespace which is protected by the EyeglassRunbookRobot DFS SyncIQ Policy on a Windows Client before attempting the uncontrolled failover. Verify using DFS tab on properties of the DFS folder name in Explorer to confirm that Cluster 1 contains the active folder target.



3. **Verify test non-DFS policy:** Repeat write test of the non DFS policy in the Access Zone. This will verify DNS resolution to the correct cluster.
4. **Access Zone Mode:** Verify AD permissions by following the document: How to Validate AD Cluster Delegation is Ready for Failover and failback of SPNs.

4.4. Simulated Disaster Scenario - DFS Test SyncIQ Policy Failover

Simulated Disaster Scenario - DFS Test SyncIQ Policy Failover

Use this procedure to simulate a DFS policy failover using uncontrolled mode to simulate a real DR event. This assumes a DFS mode policy has been enabled inside the Runbook Robot Access Zone.

Note: This test can be done with or without production data failover in the same maintenance window.

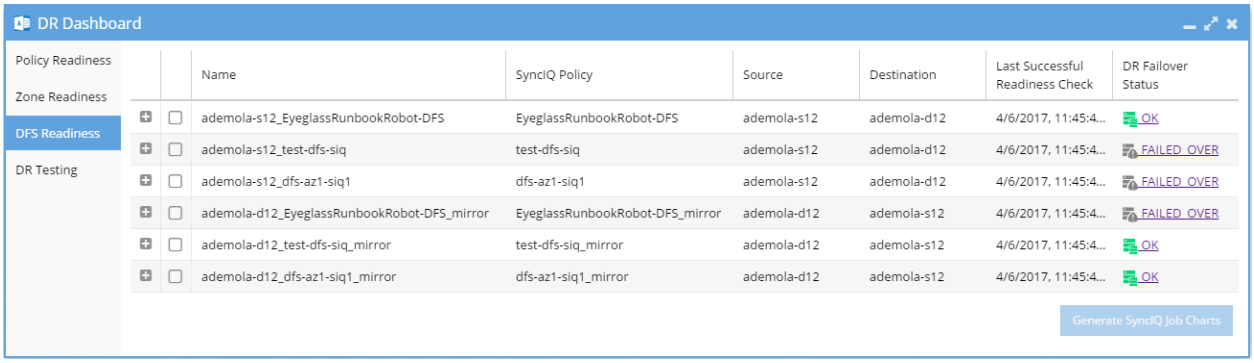
Note: *Before implementing the following simulated disaster scenario DFS Test SyncIQ policy failover steps, please make sure you have followed instructions/steps in the "Important Note" , "Initial Environment Setup", "Verify Environment Setup" and "Support Statement" sections.*

Pre Simulated Disaster - Cluster1 (prod cluster) is available - Controlled Failover

1. Review all steps in the Failover Planning Guide and checklist before beginning. This is required to maintain support for this procedure. **See support statement above on planning guide requirement.**
2. Perform Microsoft DFS ***controlled failover*** for **Production SyncIQ policies (the uncontrolled test policy will NOT be failed over at this step)** from Cluster1 to Cluster2 using Eyeglass.
3. On Eyeglass, enable the Production SyncIQ mirror-policy job in the Jobs window if it is in **USERDISABLED** state post failover.

4. Write data to **production** shares protected by **Production SyncIQ Policy** from DFS mount (confirm that Cluster2 share path is the active target) on Windows Client after controlled failover.

5. **Production data controlled failover completed.** See below sample DFS Readiness at this stage.



Simulated Disaster - Cluster1 (prod cluster) becomes unavailable - Uncontrolled Failover

This procedure simulates a source cluster that has been destroyed or is unreachable on the network for a long period of time and requires a failover to the secondary site.

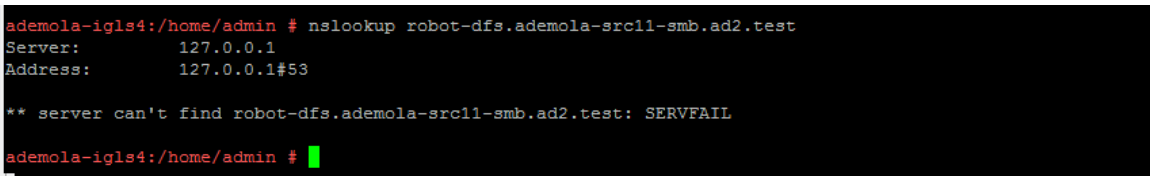
Note: This step will only operate against test policy and Access Zone created in initial setup section only, to maintain access to support for this procedure.

1. **Simulate Cluster 1 failure**:

1. On Cluster1 OneFS UI, remove the node interfaces from dedicated IP pool used for ***client access*** to EyeglassRunbookRobot-DFSzone Access Zone (**NOTE:** perform only on this 1 IP pool). Consult EMC documentation. *The DFS folder target path from Cluster1 will now be failed when the node interfaces are removed from the pool.*

2. Step 1a. above simulates DNS response failure to Cluster1 EyeglassRunbookRobot-DFSzone Access Zone, without actually impacting SSIP

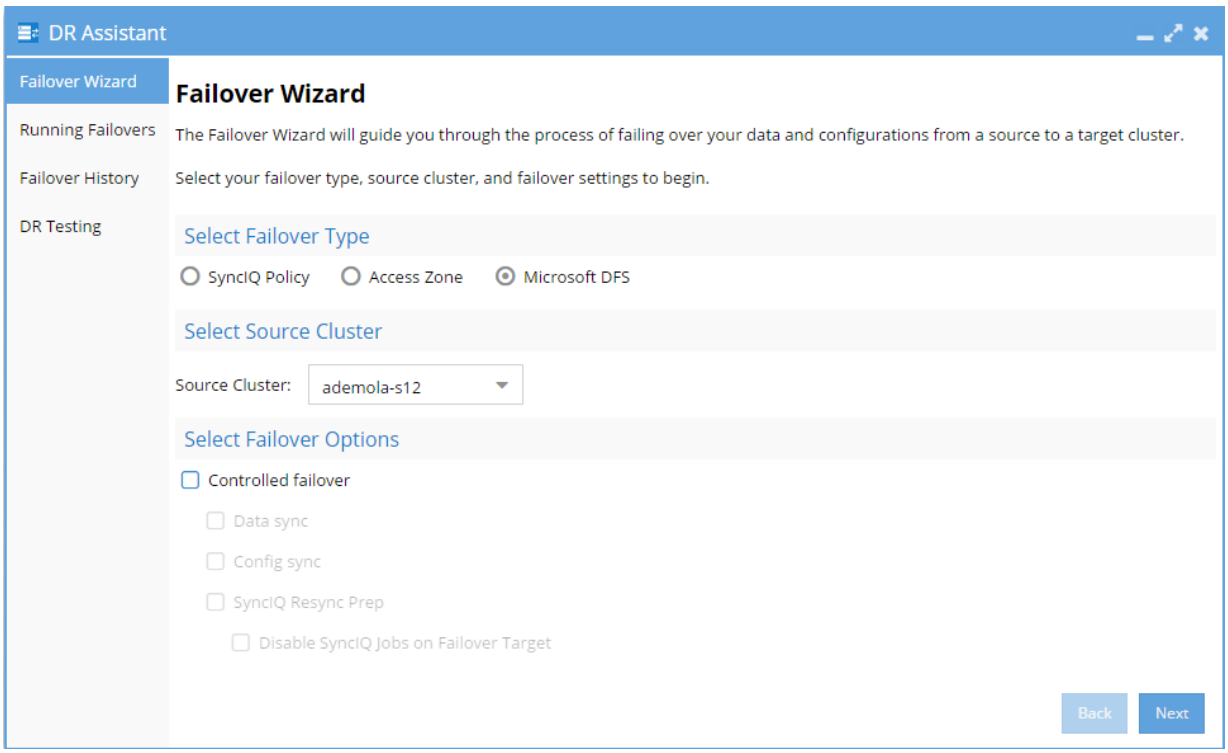
or normal DNS operations. At this point in the process, name resolution is down, and NetBIOS sessions are disconnected from the Cluster1 EyeglassRunbookRobot-DFSzone Access Zone.

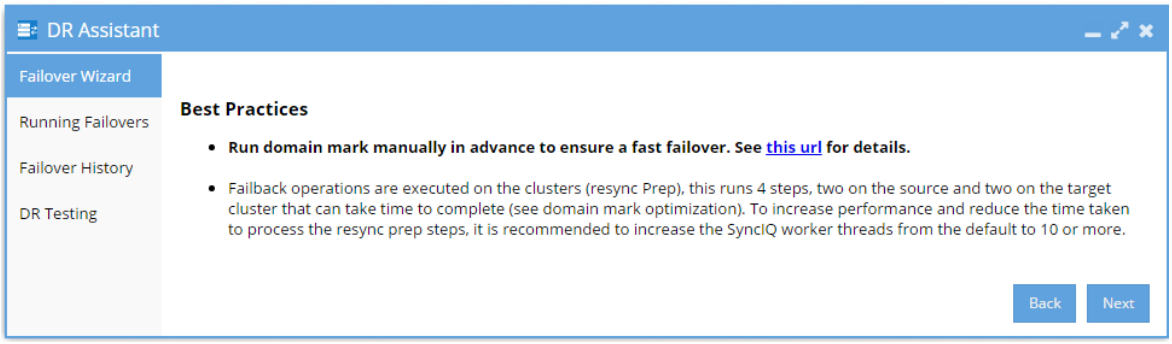


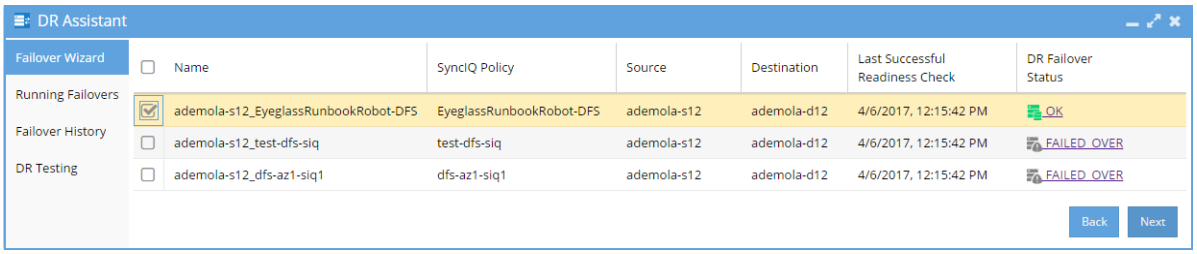
Notice from the above screenshot, that name resolution to the SmartConnect zone name is not resolving as expected (SERVFAIL is returned). **At this point we have simulated a disaster** as Cluster1's EyeglassRunbookRobot-DFSzone Access Zone SmartConnect zone name resolution is failing, and no shares can be access on Cluster1 on this Access Zone.

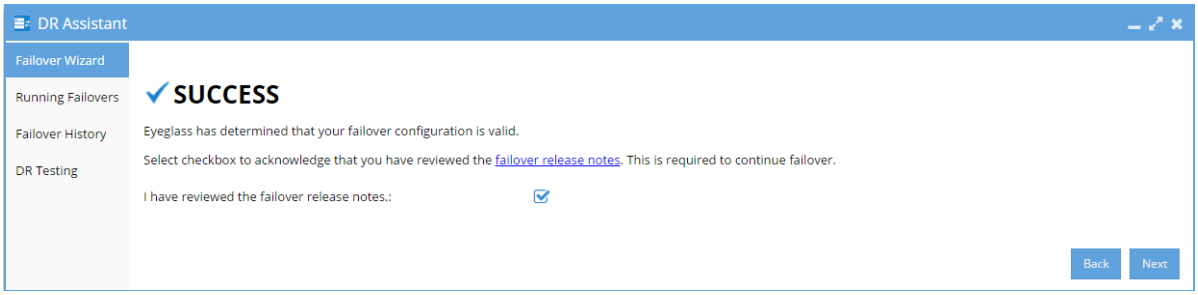
3. **Set the schedule for the EyeglassRunbookRobot DFS policy on the source cluster to manual.** As the policy won't be able to run anyway if the source cluster has been destroyed. **Do not proceed until this step is done.**

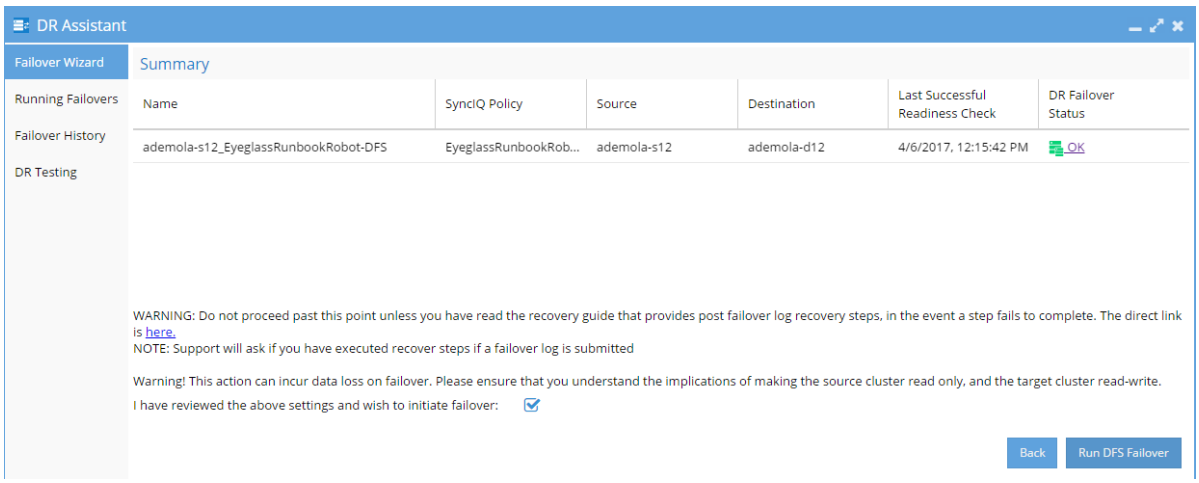
1. Perform DFS ***uncontrolled failover*** for EyeglassRunbookRobot Test DFS mode SyncIQ policy from Cluster1 to Cluster2 using Superna Eyeglass. (see documentation for more details)

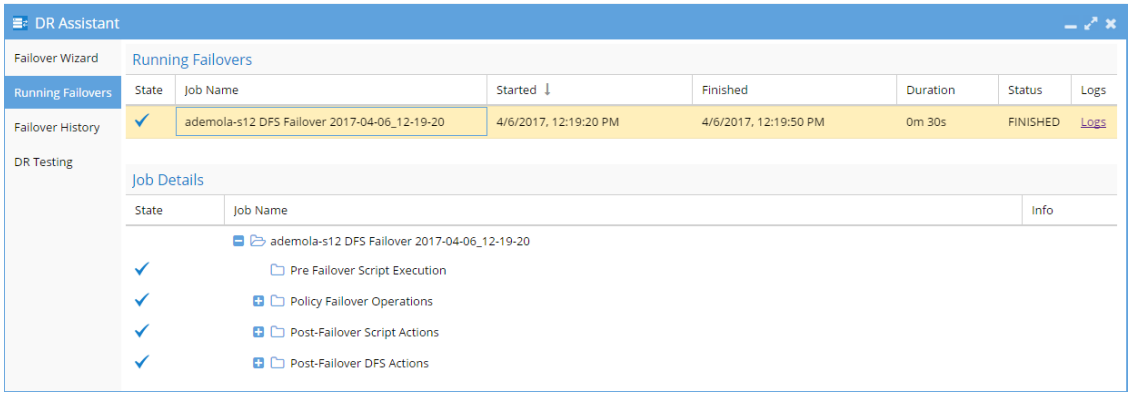

DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Failover Wizard
The Failover Wizard will guide you through the process of failing over your data and configurations from a source to a target cluster.
Select your failover type, source cluster, and failover settings to begin.
Select Failover Type
SyncIQ Policy
Access Zone
Microsoft DFS
Select Source Cluster
Source Cluster:
ademola-s12
Select Failover Options
Controlled failover
Data sync
Config sync
SyncIQ Resync Prep
Disable SyncIQ Jobs on Failover Target
Back
Next


DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Best Practices
Run domain mark manually in advance to ensure a fast failover. See this url for details.
Failback operations are executed on the clusters (resync Prep), this runs 4 steps, two on the source and two on the target cluster that can take time to complete (see domain mark optimization). To increase performance and reduce the time taken to process the resync prep steps, it is recommended to increase the SyncIQ worker threads from the default to 10 or more.
Back
Next

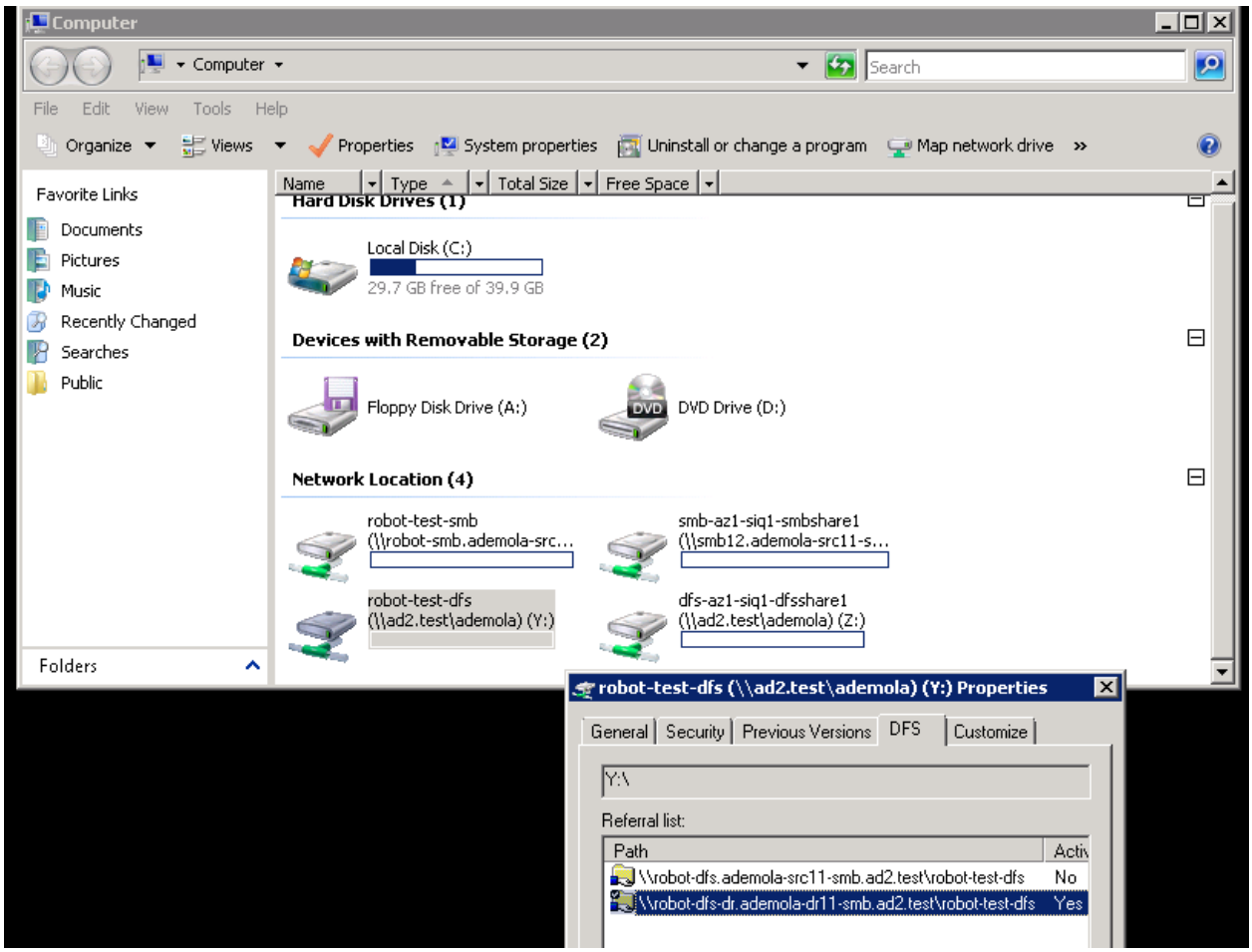

DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Name
SyncIQ Policy
Source
Destination
Last Successful Readiness Check
DR Failover Status
ademola-s12_EyeglassRunbookRobot-DFS
EyeglassRunbookRobot-DFS
ademola-s12
ademola-d12
4/6/2017, 12:15:42 PM
OK
ademola-s12_test-dfs-siq
test-dfs-siq
ademola-s12
ademola-d12
4/6/2017, 12:15:42 PM
FAILED_OVER
ademola-s12_dfs-az1-siq1
dfs-az1-siq1
ademola-s12
ademola-d12
4/6/2017, 12:15:42 PM
FAILED_OVER
Back
Next


DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
SUCCESS
Eyeglass has determined that your failover configuration is valid.
Select checkbox to acknowledge that you have reviewed the failover release notes. This is required to continue failover.
I have reviewed the failover release notes.:
Back
Next





2. Wait until the uncontrolled failover completes.
3. Write data to share protected by EyeglassRunbookRobot Test DFS SyncIQ Policy from the DFS mount (confirm that Cluster2 share path is the active target) on Windows Client after uncontrolled failover.



4. Uncontrolled DFS Failover is complete.

Post Simulated Disaster – Cluster1 (prod cluster) Recovery Steps for DFS

These steps are executed to restore the uncontrolled policies to a working state. The production data is currently failed over to Cluster 2 using controlled failover. Some customers may choose to stay on Cluster 2 as production for some period of time before planning a failback. The test policies can be recovered by following the steps below:

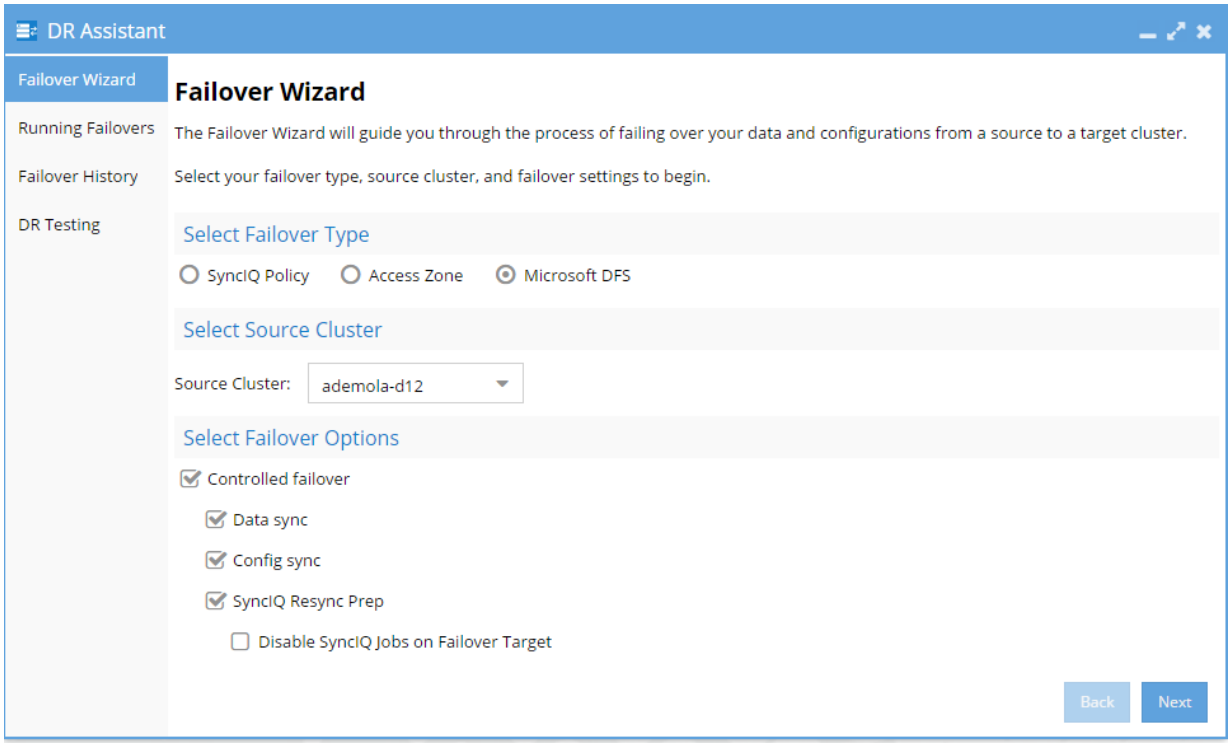
1. **Simulate Cluster 1 returning to Service** :

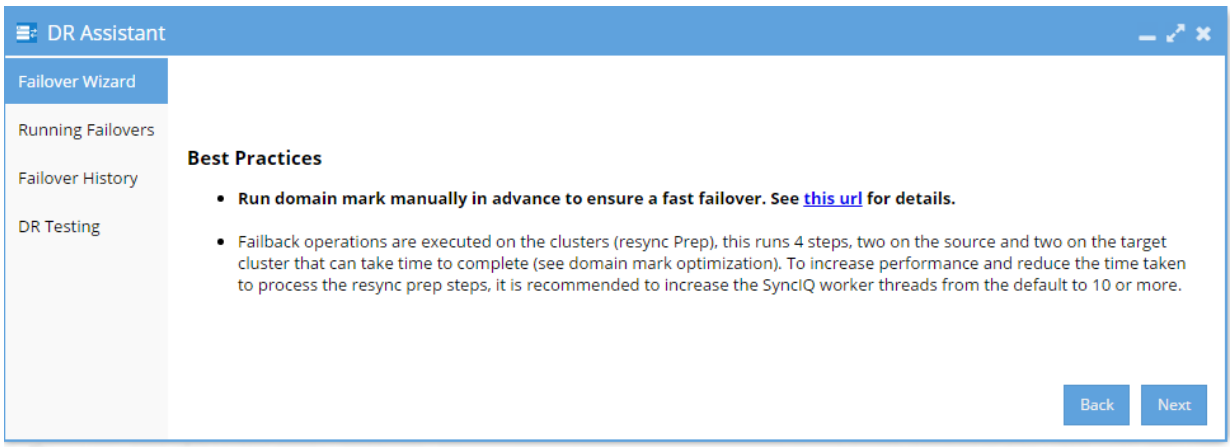
1. On Cluster1 OneFS UI, rename shares within Test SyncIQ policy path to have igls-dfs-<sharename> format (this step should happen after "**uncontrolled failover**" step)
2. On Cluster1 OneFS UI, reconnect previously removed node interfaces back to IP pool used for DFS client access to test data on EyeglassRunbookRobot-DFSzone Access Zone.
2. On Cluster1 OneFS UI, run resync-prep on EyeglassRunbookRobot-DFS Test SyncIQ policy (consult EMC Documentation).
3. Verify that resync-prep process was completed without error before proceeding to next steps.
1. Check on OneFS SyncIQ reports tab to make all steps pass successfully.
4. Check the job state in Eyeglass
1. From Eyeglass, verify both policies on Cluster 1 and Cluster 2 and re-enable the Eyeglass job for the EyeglassRunbookRobot-DFS Test Policy on Cluster 1 and the mirror policy on Cluster 2 in the Jobs icon.
2. Allow Eyeglass Configuration Data Replication to run at least once.
3. From Eyeglass Jobs-->“Running Jobs” window, verify that Eyeglass Configuration Data Replication in step 4b above has completed without errors.

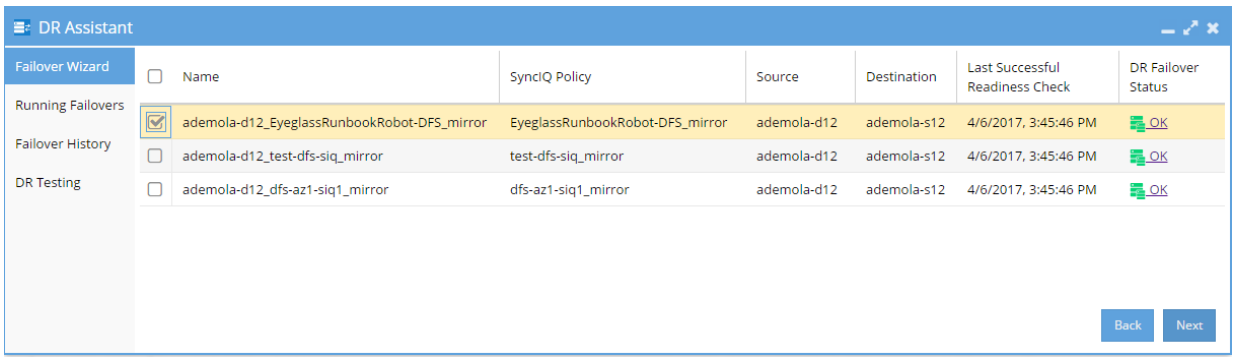
Note: As stated in step 4b above, Eyeglass Configuration Data Replication task must complete before continuing with steps below.

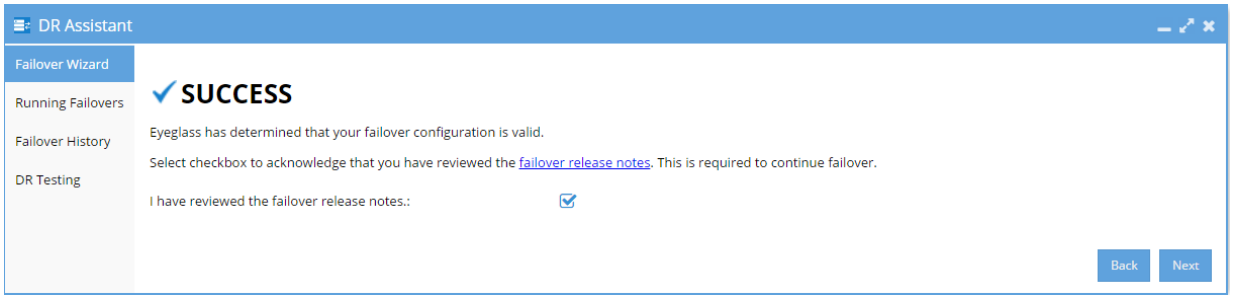
4. Verify Eyeglass jobs show policy state correctly with **Cluster 1 policy** showing policy **Disabled** and **Cluster 2** showing **Enabled** and OK (green).
5. Wait for Config sync to correctly show the above state.
6. Do not continue until the above validations are done.

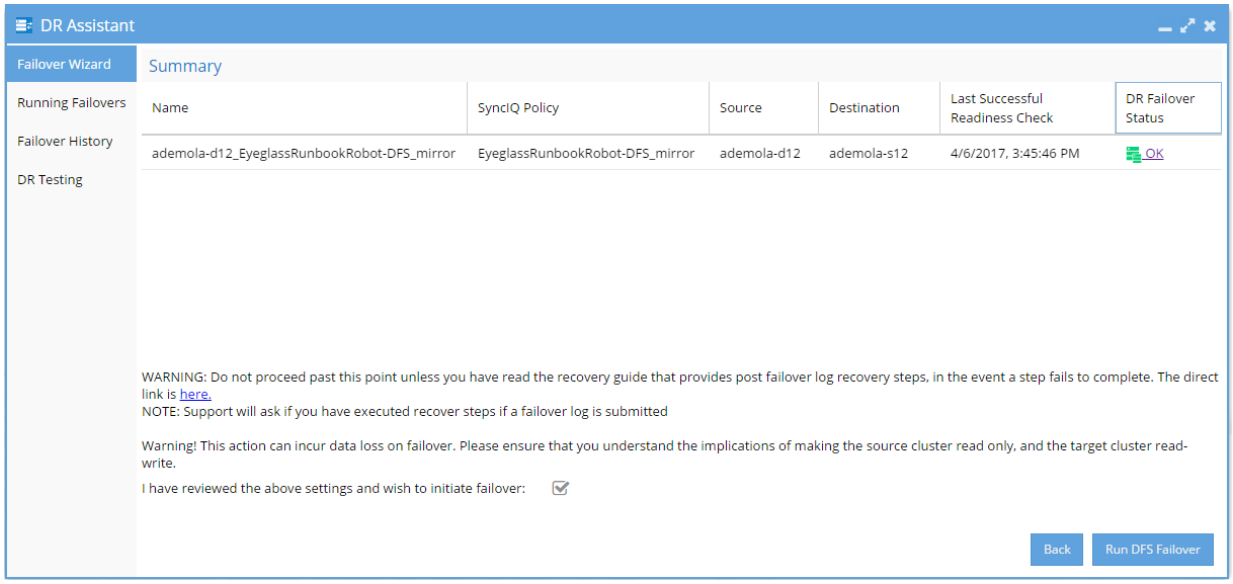
5. Perform Microsoft DFS-type ***controlled failback*** from Cluster 2 to Cluster 1 for EyeglassRunbookRobot DFS Test SyncIQ mirror-policy using Superna Eyeglass DR Assistant.

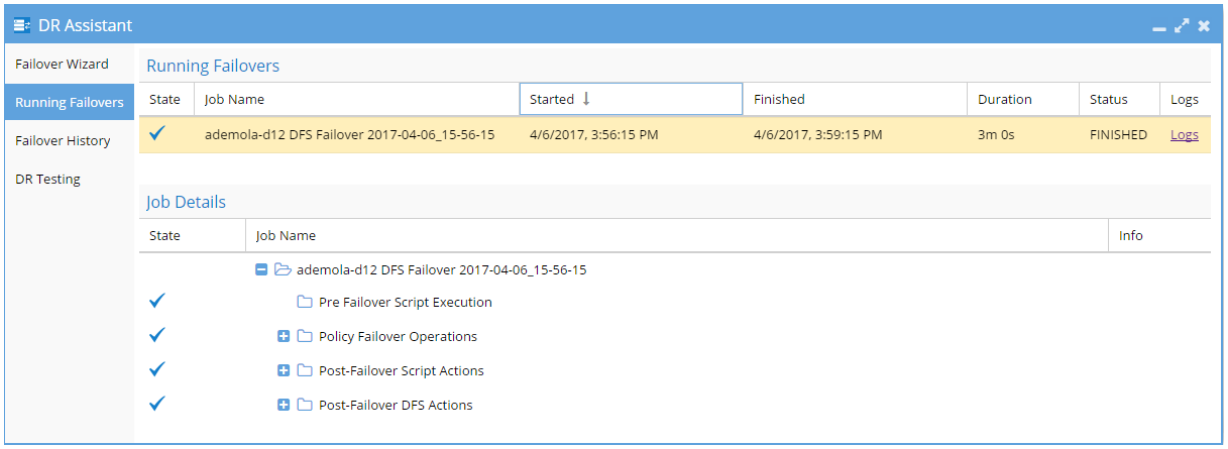






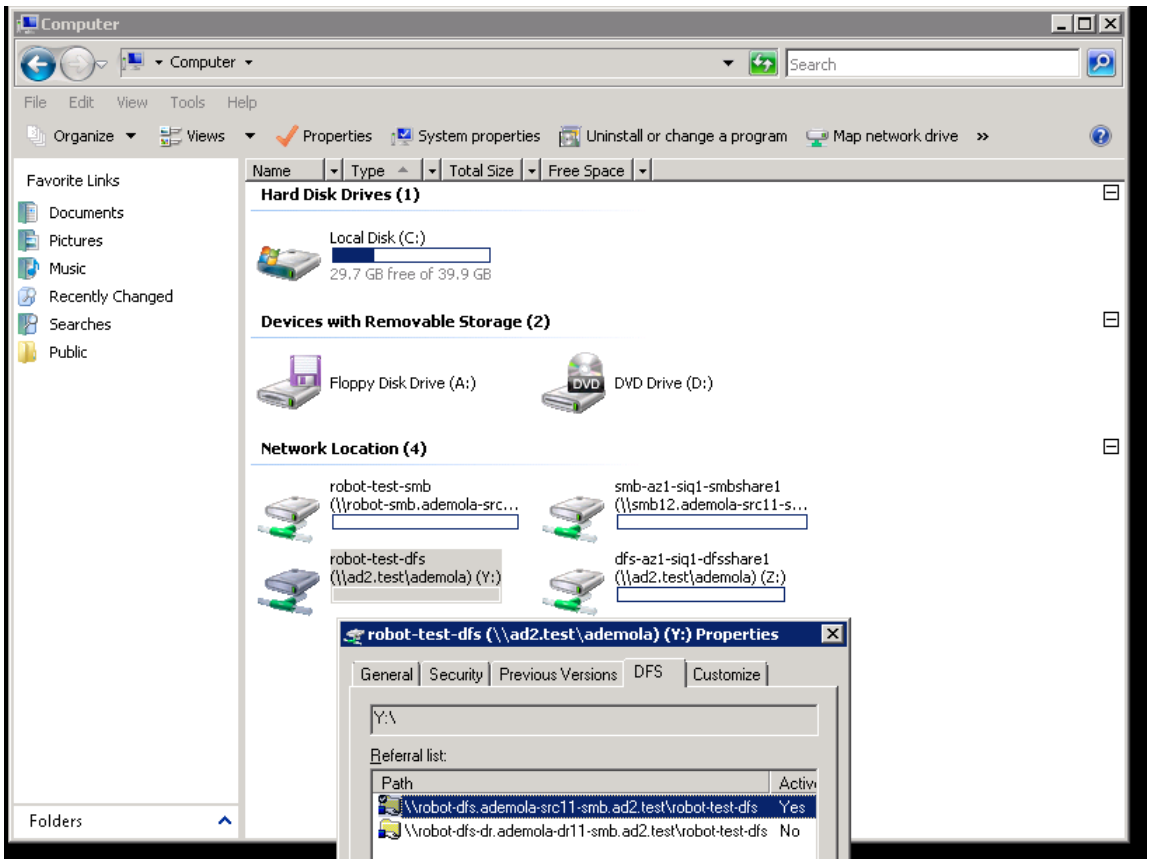






6. Wait for Failover to complete,

7. Write data to the share protected by EyeglassRunbookRobot DFS Test SyncIQ Policy from a DFS mount (confirm that Cluster1 share path is the active target) on Windows Client after **controlled** failback.



8. Perform Microsoft-DFS-type ***controlled failback*** of all Production SyncIQ mirror-policies from Cluster 2 to Cluster 1 using Superna Eyeglass.
9. Write data to share protected by Production SyncIQ Policy from DFS mount (confirm that Cluster1 share path is the active target) on Windows Client after controlled failback.

4.5. Simulated Disaster Scenario - EyeglassRunbookRobot Access Zone Failover

Simulated Disaster Scenario - EyeglassRunbookRobot Access Zone Failover

Use this procedure to simulate an Access Zone failover using uncontrolled mode, to simulate a DR event. This assumes dual delegation has been implemented and the Runbook Robot Access Zone is fully functional.

Note: This test can be done with or without production data failover in the same maintenance window.

Note: *Before implementing the following simulated disaster scenario Access Zone failover steps, please make sure you have followed instructions/steps in the "Important Note" , "Initial Environment Setup", "Verify Environment Setup" and "Support Statement" sections.*

Pre Simulated Disaster - Cluster1 (prod) is available - Controlled Failover

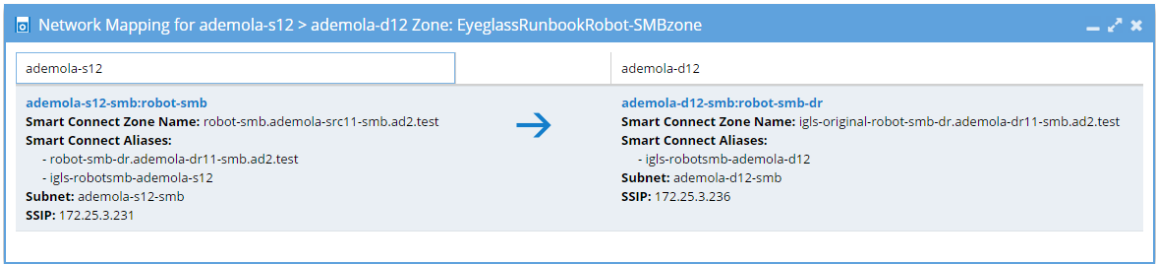
1. Review all steps in the "Failover Planning Guide and checklist" before beginning. This is required to maintain support for this procedure. **See support statement above on planning guide requirement.**
2. Using Eyeglass, perform ***controlled Failover*** of your **Production Access Zone(s)** from Cluster1 to Cluster2.
3. On Eyeglass, enable each Production SyncIQ mirror-policy jobs for your Production Access Zone if they are in USERDISABLED

state. Consult “Failover Planning Guide and checklist” to maintain support for this procedure.

4. Write data to share(s) protected by **Production** SyncIQ Policies from DFS mount (confirm that Cluster2 share path is the active target) on Windows Client after controlled failover of the Production Access Zone.
5. Do not proceed until above failover is validated as successful.
6. Do not fail over the EyeglassRunbookRobot-SMBzone Access Zone on Cluster1.
7. Procedure complete. Do not continue to next steps until successful **Controlled Failover** of your **Production Access Zone(s)** has completed successfully.

Simulated Disaster - Cluster 1 (prod) becomes unavailable: EyeglassRunbookRobot-SMBzone Access Zone

1. **Simulate Cluster 1 failure:** See below pool Cluster 1 to Cluster 2 IP pool mapping just pre-
   disaster:



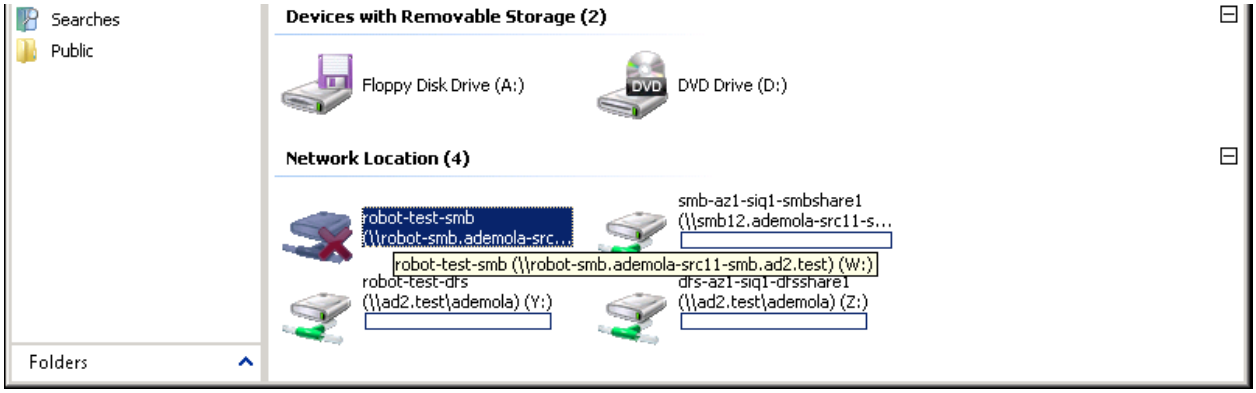
1. On Cluster1 OneFS UI, disconnect node interfaces from dedicated IP pool used for ***client access*** to test data on EyeglassRunbookRobot-SMBzone Access Zone (IP Pool assigned to the robot Access Zone). If SMB folder was properly set up, SMB folder target path from Cluster1 ***will fail*** when the node interfaces are removed from the pool. This is required to disconnect SMB session from clients to this pool and cause SMB mount failure.
2. Step 1a. above simulates DNS response failure to Cluster 1 as well without any IP’s in the pool, without actually impacting SSIP or normal DNS operations. At

this point in the process, name resolution is down, and NetBIOS sessions are disconnected from Cluster 1 EyeglassRunbookRobot-SMBzone Access Zone.

```
ademola-igls4:/home/admin # nslookup robot-smb.ademola-src11-smb.ad2.test
Server:         127.0.0.1
Address:        127.0.0.1#53

** server can't find robot-smb.ademola-src11-smb.ad2.test: SERVFAIL
```

Notice from the above screenshot, that name resolution to SmartConnect name is down as expected (SERVFAIL is returned). **At this point we have simulated a disaster** as Cluster1 EyeglassRunbookRobot-SMBzone Access Zone SmartConnect zone name resolution is failing, and no shares can be access on Cluster1 EyeglassRunbookRobot-SMBzone Access Zone.

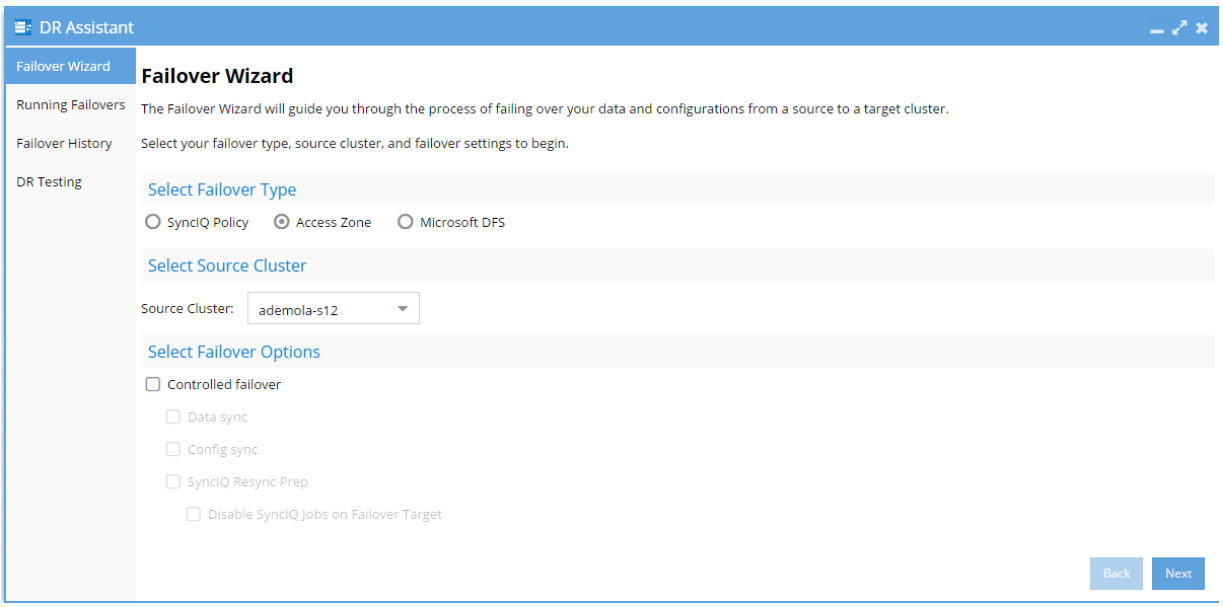


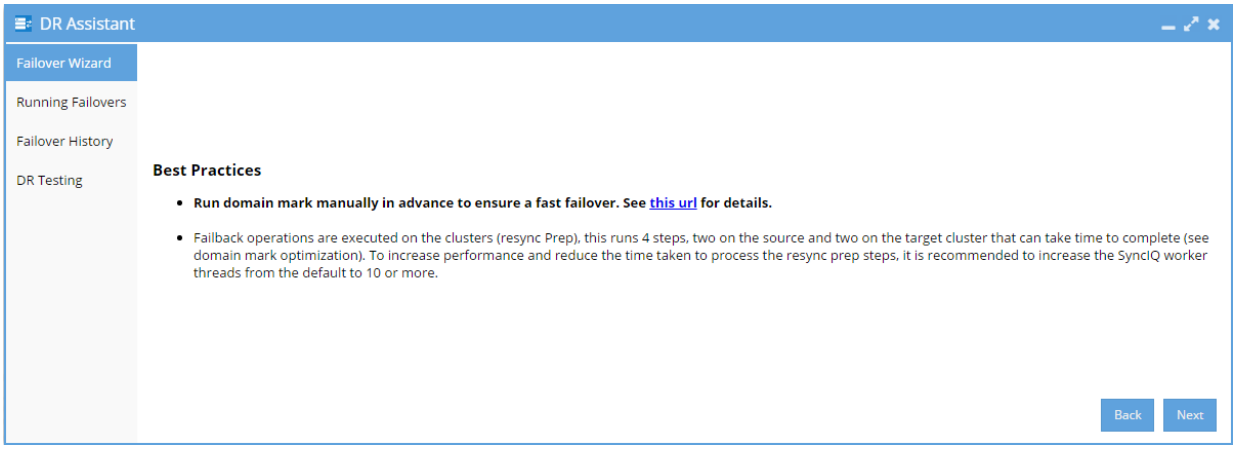
3. Also, **set the schedule for the EyeglassRunbookRobot-SMB Test policy on Cluster 1 to manual.** As a policy won't be able to run anyway if the source cluster has been destroyed. **Do not proceed until this step is done.**

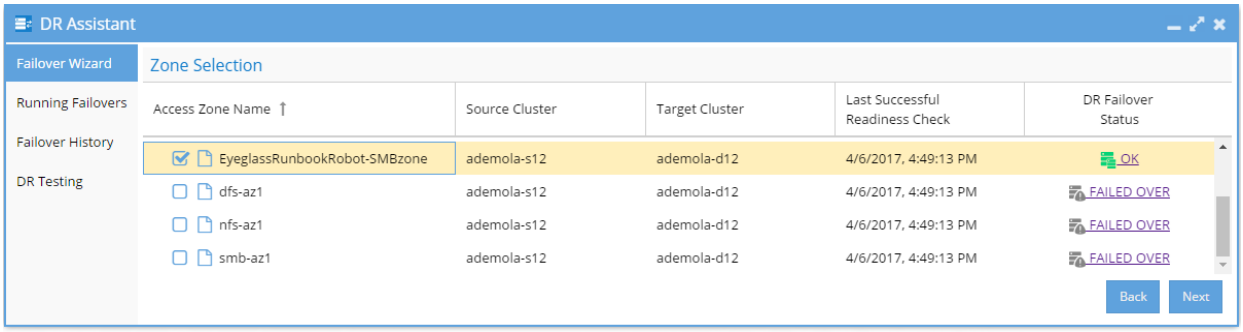
NOTE: in a real DR event, it is assumed the source cluster is unreachable on the network.

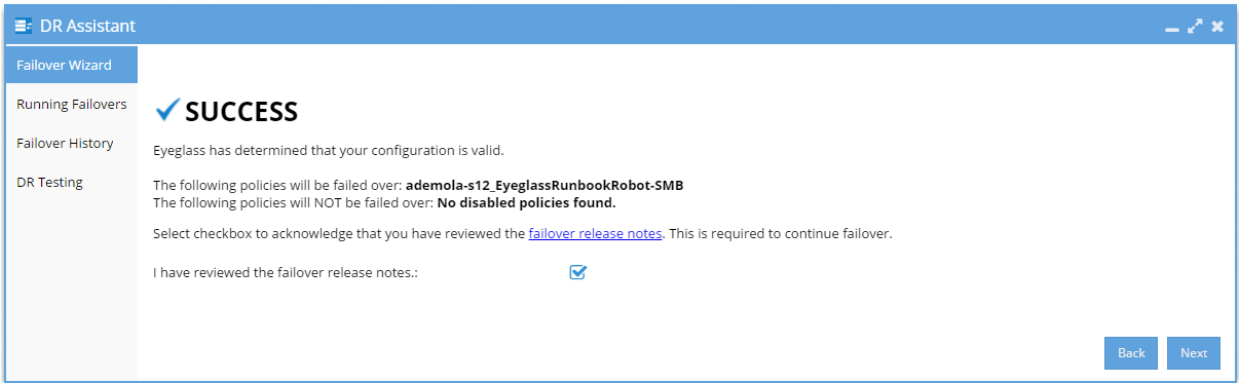
NOTE: Make note of the schedule, it will need to be reapplied at the end of this procedure.

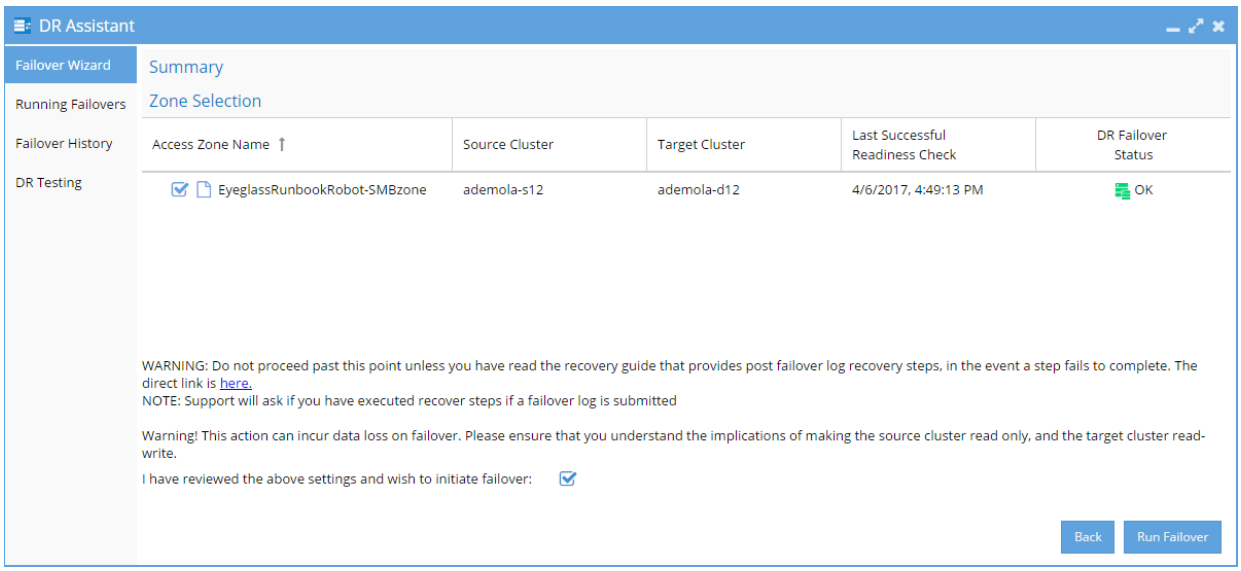
2. **Perform Failover:** Using Eyeglass, perform ***uncontrolled failover*** for EyeglassRunbookRobot-SMBzone Access Zone from Cluster1 to Cluster2.

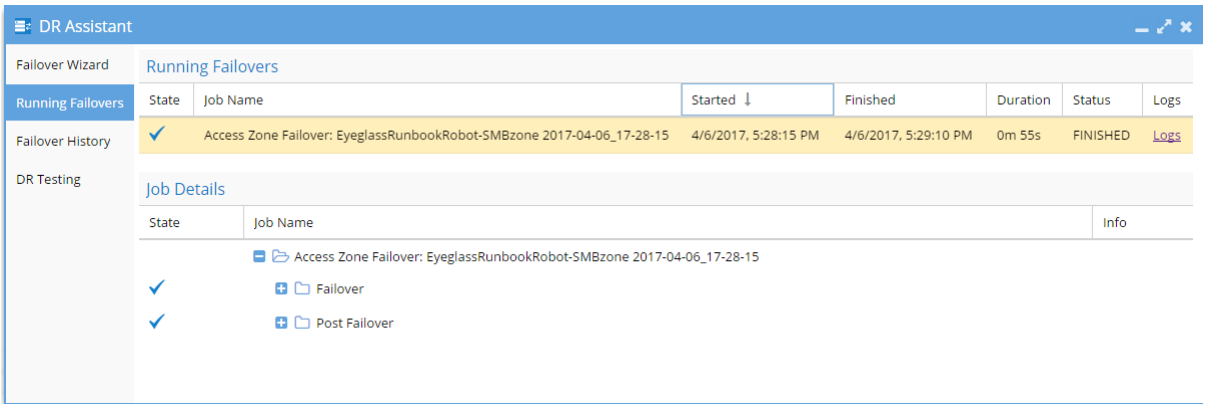

DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Failover Wizard
The Failover Wizard will guide you through the process of failing over your data and configurations from a source to a target cluster.
Select your failover type, source cluster, and failover settings to begin.
Select Failover Type
SyncIQ Policy
Access Zone
Microsoft DFS
Select Source Cluster
Source Cluster:
ademola-s12
Select Failover Options
Controlled failover
Data sync
Config sync
SyncIQ Resync Prep
Disable SyncIQ Jobs on Failover Target
Back
Next


DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Best Practices
Run domain mark manually in advance to ensure a fast failover. See this url for details.
Failback operations are executed on the clusters (resync Prep), this runs 4 steps, two on the source and two on the target cluster that can take time to complete (see domain mark optimization). To increase performance and reduce the time taken to process the resync prep steps, it is recommended to increase the SyncIQ worker threads from the default to 10 or more.
Back
Next


DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
Zone Selection
Access Zone Name
Source Cluster
Target Cluster
Last Successful Readiness Check
DR Failover Status
EyeglassRunbookRobot-SMBzone
ademola-s12
ademola-d12
4/6/2017, 4:49:13 PM
OK
dfs-az1
ademola-s12
ademola-d12
4/6/2017, 4:49:13 PM
FAILED OVER
nfs-az1
ademola-s12
ademola-d12
4/6/2017, 4:49:13 PM
FAILED OVER
smb-az1
ademola-s12
ademola-d12
4/6/2017, 4:49:13 PM
FAILED OVER
Back
Next


DR Assistant
Failover Wizard
Running Failovers
Failover History
DR Testing
SUCCESS
Eyeglass has determined that your configuration is valid.
The following policies will be failed over: ademola-s12_EyeglassRunbookRobot-SMB
The following policies will NOT be failed over: No disabled policies found.
Select checkbox to acknowledge that you have reviewed the failover release notes. This is required to continue failover.
I have reviewed the failover release notes.:
Back
Next





3. Wait until uncontrolled failover completes.

1. Check SPN's are failed over in AD correctly using ADSI Edit.
2. **Validation:** Test using nslookup to make sure DNS now resolves to Cluster 2.
3. Correct or debug resolution of SmartConnect name before continuing.
4. Test Client Access: **This step requires unmount and remount of the share to get new IP address.**

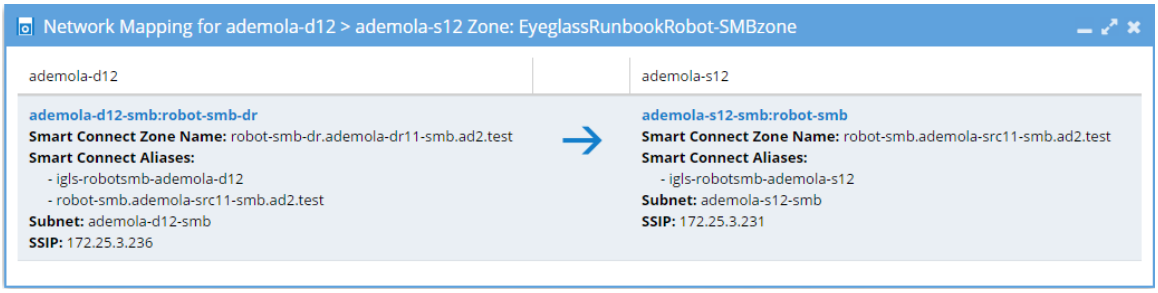
1. Reboot the client machine that was used to validate the share pre-disaster to guarantee that the Netbios session to Cluster1 has not been preserved.
2. Mount the share.

3. Write data to share protected by EyeglassRunbookRobot-SMB Test SyncIQ Policy from SMB mount on Windows Client after the uncontrolled failover.

5. Uncontrolled Access Failover complete.

Post Simulated Disaster – Cluster1 (prod) becomes available: EyeglassRunbookRobot-SMBzone Access Zone

1. **Simulate Cluster 1 availability**: See below Cluster 2 to Cluster 1 EyeglassRunbookRobot-SMBzone Access Zone IP pool mapping just after Cluster1 is available. *Note that previously removed node interface have not been re-connected at this point:*



1. One Cluster1 OneFS UI, edit source cluster EyeglassRunbookRobot-SMBzone Access Zone IP pool SmartConnect name and apply igls-original prefix to existing SmartConnect name. This is required step before re-connecting the previously removed Cluster1 node interface.

2. On Cluster1 OneFS UI, reconnect previously removed node interfaces back to IP pool used for client access to test data on EyeglassRunbookRobot-SMBzone Access Zone.

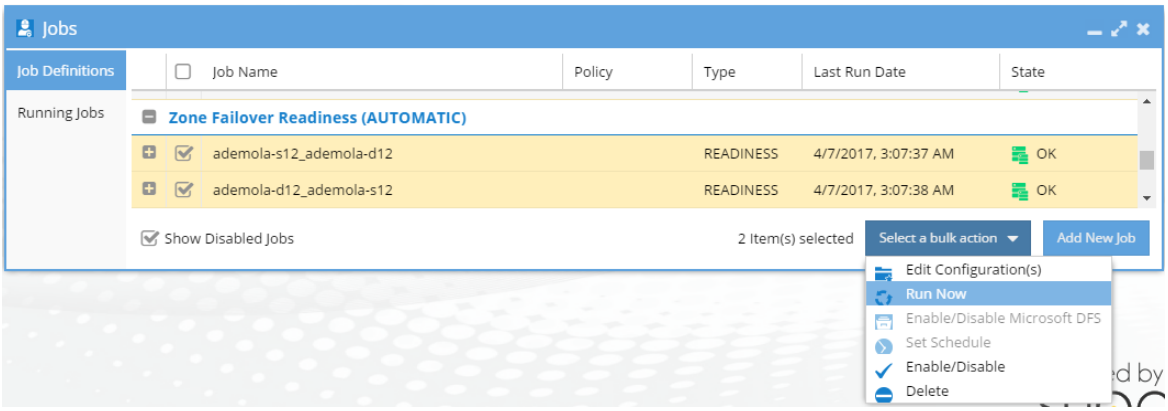
2. On Cluster1 OneFS UI, run resync-prep on EyeglassRunbookRobot-SMB Test SyncIQ policy. Consult EMC Documentation.

3. Verify that resync-prep process was completed without error before proceeding to next steps.

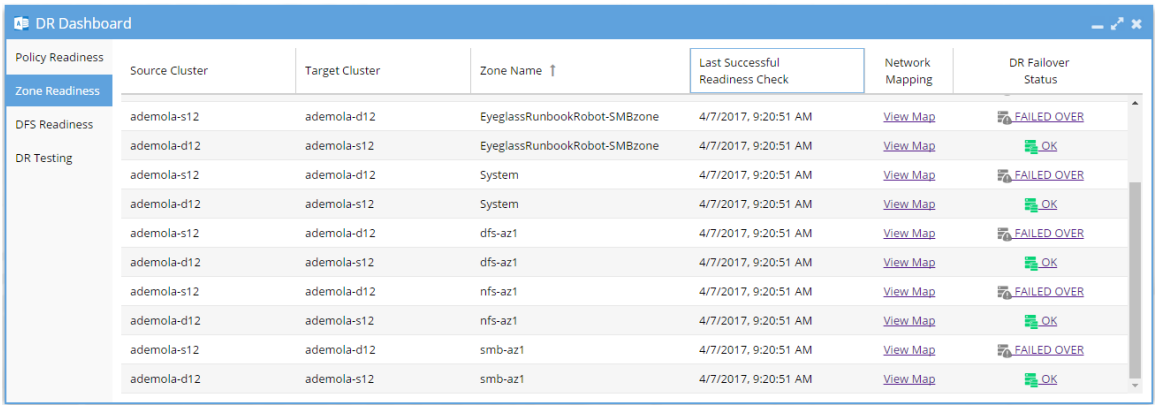
1. Resolve any errors before continuing. Resync prep must have run successfully before you attempt to complete remaining steps. Check the cluster reports show no errors before continuing.

4. Check Eyeglass job state

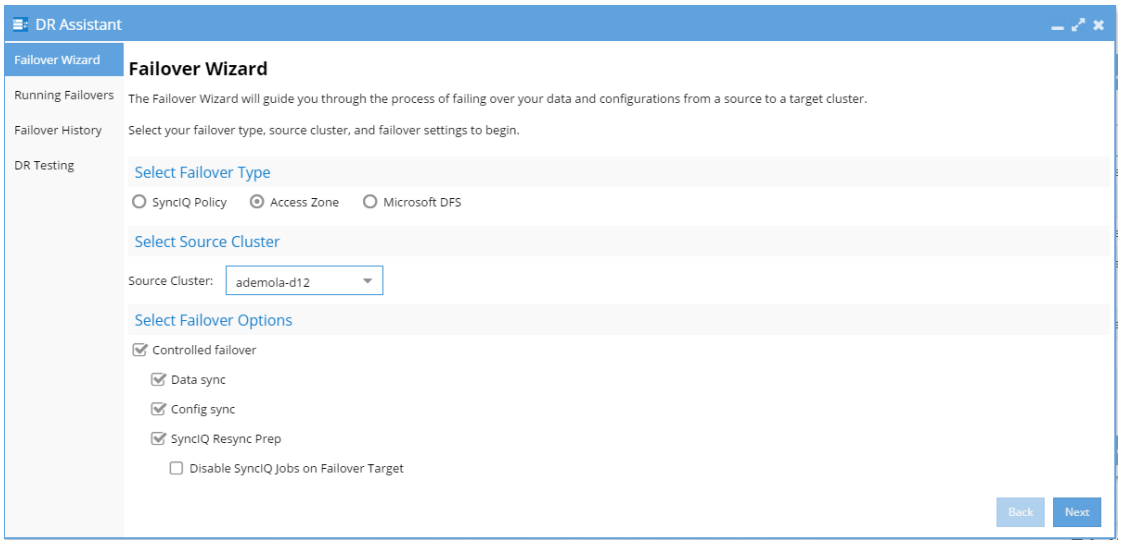
1. From Eyeglass, verify EyeglassRunbookRobot-SMB Test Policy, and the mirror policy are in the correct state. **Mirror policy** should be **Enabled** and the **Cluster 1 policy** should be **Disabled** state.
2. Allow Eyeglass Configuration Data Replication to run at least once.
3. Note: Configuration Data Replication task must complete before continuing with steps below. Verify a config sync task has been run from running jobs window without errors.
4. Verify Eyeglass jobs show policy state correctly with **Cluster 1 policy** showing policy **Disabled** and **Cluster 2 mirror policy** showing **Enabled** and OK (green).
5. Wait for Config sync to correctly show the above state.
6. Do not continue until the above validations are done.
5. From the Eyeglass Jobs window, select Run Now from the Select a Bulk Action menu and run the Zone Failover Readiness jobs. This allows a new Access Zone Failover Readiness Audit to be computed.

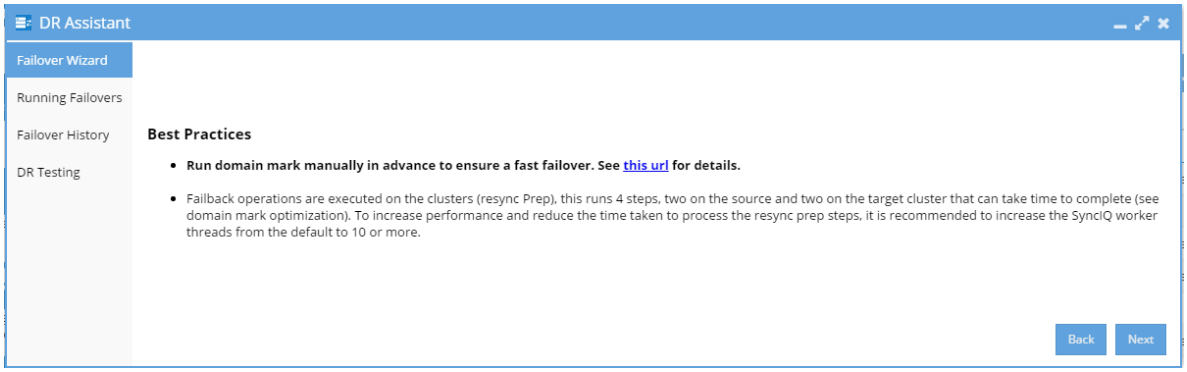


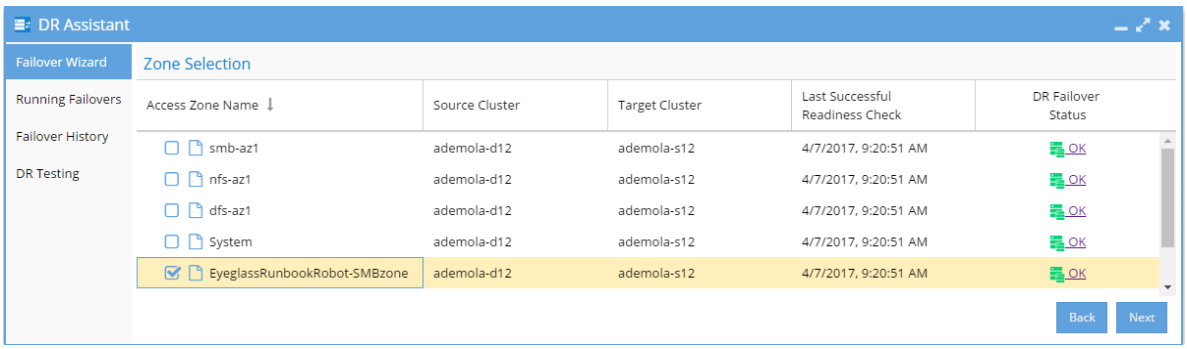
6. On Eyeglass DR Dashboard, confirm that zone readiness looks good for the EyeglassRunbookRobot-SMBzone Access Zone.

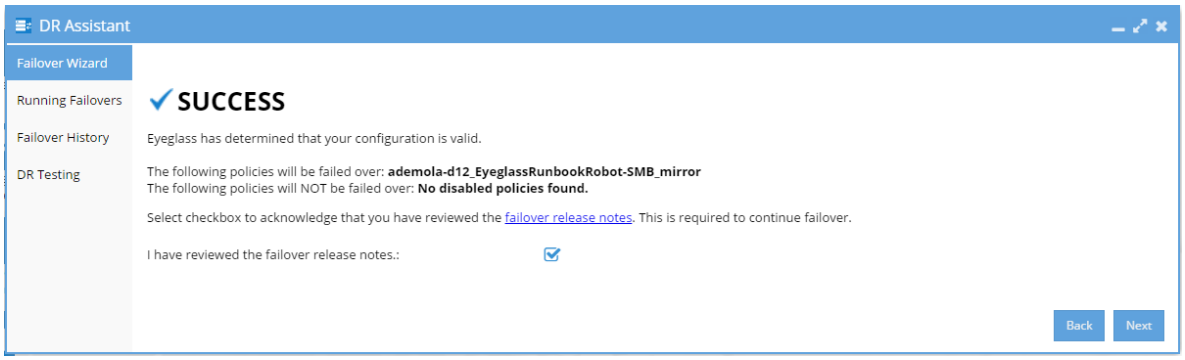


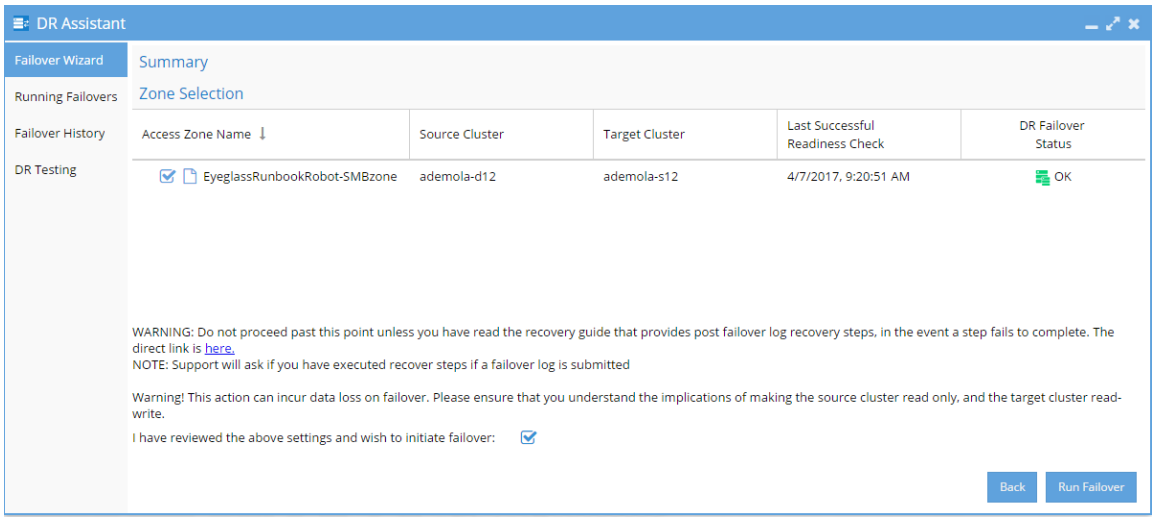
7. **Perform Controlled Failback**: Using Eyeglass, perform **controlled** failback of EyeglassRunbookRobot-SMBzone Access Zone from Cluster 2 to Cluster 1.

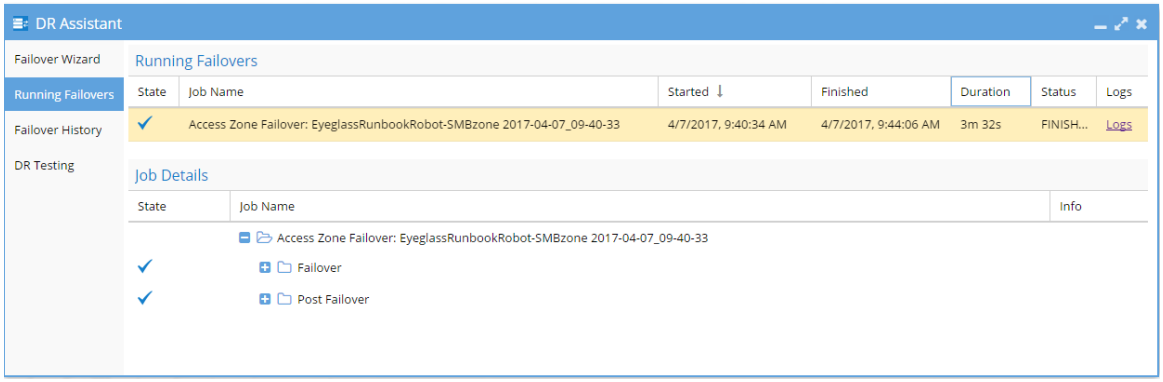












8. Wait until controlled failover completes.

4. Check SPNs are failed over in AD correctly using ADSI Edit.

5. Validation: Test using nslookup to make sure DNS now resolves to Cluster 1.
6. Correct or debug resolution of SmartConnect name before continuing.
9. Test Client Access: This step requires unmount and remount of the share to get new IP address.
1. Reboot the client machine that was used to validate the share pre-disaster to guarantee that the Netbios session to Cluster2 has not been preserved.
2. Mount the share.
3. Write data to share protected by EyeglassRunbookRobot-SMB Test SyncIQ Policy from SMB mount on Windows Client after uncontrolled failover.
10. Controlled procedure complete.
11. If performing failback of Production data follow planning guide process to maintain support.

5. Appliance Operational Procedures

Home Top

Overview

This guide covers common operational questions and procedures for Eyeglass and ECA clusters.

Eyeglass Common Procedures

1. Shutting down the appliance
    a. Login as admin using ssh
    b. sudo -s (enter admin password)
    c. systemctl stop sca
    d. shutdown

1. Reboot the appliance
    a. NOTE: This should not be used as a trouble shooting step. This is not required for any operational steps. If a reboot is required for an operating system patch follow these steps. For all other cases open a case with support and do not reboot the appliance unless directed by support
    b. login as admin
    c. sudo -s (enter admin password)
    d. systemctl stop sca
    e. reboot

2. IP address change

a. login as admin
b. sudo -s (enter admin password)
c. yast
d. use arrow keys to select networking and edit interface ip settings, including, DNS and default gateway

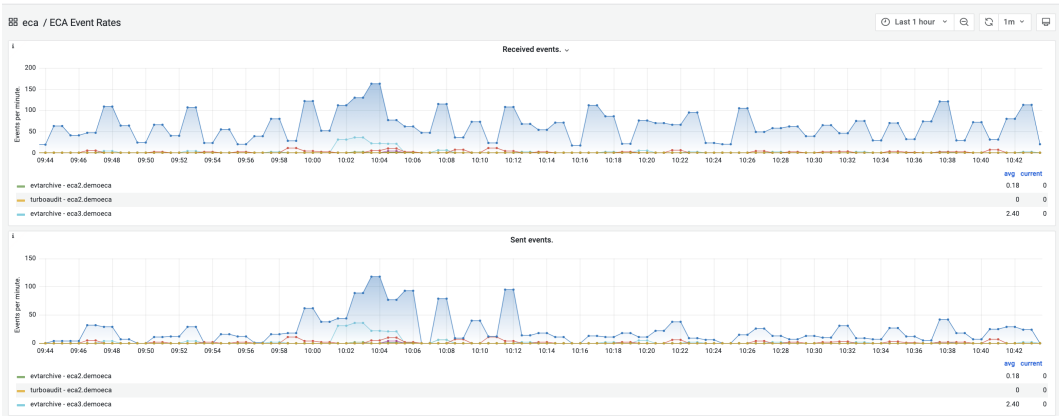
3. vmotion to new ESX host
    a. Eyeglass can be moved between hosts without shutdown
    b. PowerScale code upgrade see guide

4. Password Change
    a. Login as the admin user over ssh (also applies to other builtin user accounts for other products, rwdefend, auditor)
    b. type the command below:
        i. passwd
    c. Enter new password, retype new password
    d. done

ECA cluster Common Operations (Ransomware Defender, Easy Auditor, Performance Auditor, Search & Recover and Golden Copy)

All of the above products share common operating procedures.

1. For additional scenarios on ECA based product admin guide see the guide.
2. Health Monitor - Audit Data Ingestion and Audit Data Save to Database
    a. **NOTE: These graphs should be checked every time you have errors or issues with Ransomware Defender, Easy Auditor or Performance Auditor. Each product depends on audit data ingestion. The graph should never be a flat line for received or sent audit records.**
        i. **The most common cause is network issues between the ECA VM' s and the cluster.**
    b. Login to Eyeglass GUI (Requires 2.5.8 or later)
    c. Click the Managed Services Icon
    d. Click the ECA monitor button. This will launch a new browser tab to display received audit data per ECA node rate of events per minute per node and sent audit data per ECA node to the Isilon / Powerscale HDFS database. **The graphs should never be flat lines for any extended period of time. The graph shows events per minute per ECA node.**

e. 

f. Turbo Audit received is audit data ingestion
g. evtarchive sent is audit data saving to HDFS (Easy Auditor Only)

3. Restart the cluster

a. login to node 1 as ecaadmin over ssh
b. ecactl cluster down
c. then
d. ecactl cluster up
e. NOTE: can take 5-7 minutes to startup and shutdown all nodes in the cluster

4. Reboot a single node

a. login to the node over ssh as ecaadmin
b. sudo -s (enter admin password)
c. reboot
d. Now login to node 1 as ecaadmin
e. ecactl cluster up (this will ensure all services are started on all nodes, even if the cluster is already running)

5. ECA cluster ip address change
    a. Review the eca admin guide
6. ECA password change
    a. Login as the ecaadmin user over ssh
    b. type the command below:
    c. passwd
    d. Enter new password, retype new password
    e. done
7. ECA cluster shutdown
    a. Use this procedure to stop the cluster software
    b. login to eca node 1 as ecaadmin
    c. type
        i. ecactl cluster down
8. Power Loss to VM or Recovery from a Reboot without graceful shutdown
    a. login to node 1 as ecaadmin over ssh
    b. ecactl cluster down
    c. then
    d. ecactl cluster up

6. All Products Hardening Guide

Home Top

How to use this Guide

This guide provides additional security hardening steps that are optionally applied to one or more products as indicated below. Not all sections apply to each product. OS Customizations are provided as is without support under the support contract. All OS customizations are not backed up and will not be migrated to a new appliance.

Securing Eyeglass, ECA, Search & Recover and Golden Copy by Applying OS Patches

1. **Before scanning the appliance with security tools the following steps must be taken:**
    a. Upgrade to the latest OVA operating system using backup and restore to get web server configured with default hardening. Upgrade guide. Follow the backup and restore

steps. **NOTE: Os patching is not covered by the support contract and is customer responsibility.**

b. Patch the operating system (**Requires internet access to the appliance to reach OS internet repositories**)
    i. login to eyeglass as admin user
    ii. sudo -s (enter admin password)
    iii. zypper refresh (updates repositories)
    iv. zypper update (applies patches)
    v. Review any messages that indicate a reboot is required to have the update take effect

c. Use Eyeglass service account and review all information to make sure permissions are up to date
    i. Reference: PowerScale Cluster User Minimum Privileges for Eyeglass

d. Subscribe to OS updates and change patching to use https see this link.

How to Subscribe Eyeglass OS Security updates

1. Note: The appliance defaults to weekly automatic critical patches and security updates if Internet connection is allowed to the appliance. Security patches are customer responsibility to apply and manage and not covered under the support contract.
2. If customers would like email notification of OS updates follow this link and register. http://lists.suse.com/mailman/listinfo/sle-security-updates

How to change patch downloads to use HTTPS

1. To change the repository links to use https follow these steps
    a. login to the appliance as admin
    b. sudo -s (enter the admin password)
    c. cd /etc/zypp/repos.d/
    d. nano <name of file with .repo extension)
    e. edit the url to be https
    f. control+x key
    g. answer yes to save the file
    h. repeat on each .repo file
    i. test the url access with this command
        i. zypper ref
        ii. if https repo is reachable it will return up to date message
    j. done

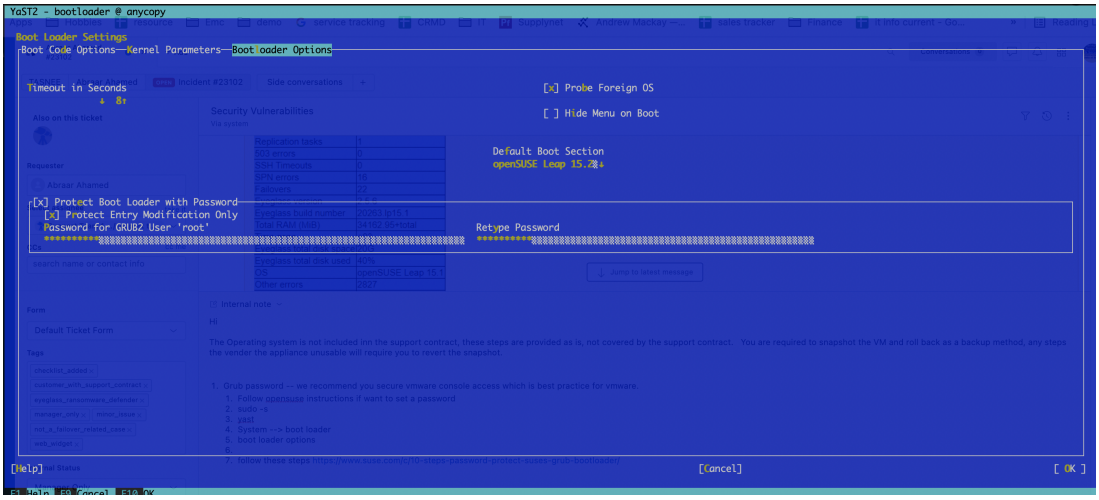
How to whitelist patch repository URL's

1. The repository download process will return IP addresses nearest to your physical location for faster downloads. This means that IP whitelist or firewall allow list will not work. It is required to use URL whitelist.
2. These URL's apply to the 15.2 OS

a. http://download.opensuse.org/distribution/leap/15.2/repo/oss/

b. http://download.opensuse.org/update/leap/15.2/oss/

General Purpose OS Advanced Hardening (All products)

1. **Grub password** -- It is recommended to secure VM console access.
   a. Follow opensuse instructions if want to set a password
   b. sudo -s
   c. yast
   d. System --> boot loader --> boot loader options tab (use arrow keys to select)
   e. enter a password
   f. NOTE: This will require password to make any changes to the boot loader it will not require a password to boot the OS.
   g. To enable boot password uncheck the option below "Protect Entry Modifications Only"
   h. 

2. **Disable ICMP Redirects**
   a. sudo -s
   b. nano */etc/sysctl.conf*

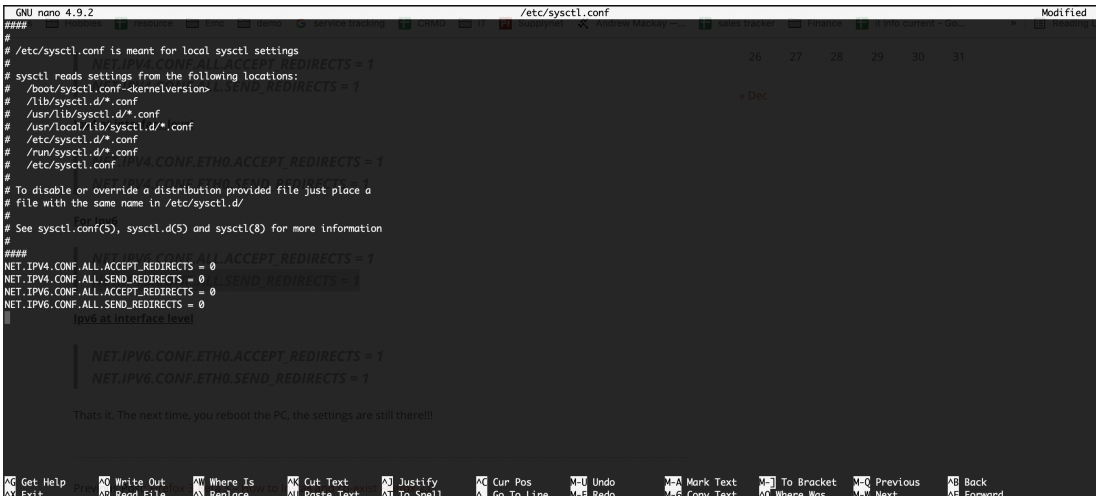
c. add these entries to the file and save the file, then control+x to save. Then reboot the OS with **reboot** command.

d. NET.IPV4.CONF.ALL.ACCEPT_REDIRECTS = 0

e. NET.IPV4.CONF.ALL.SEND_REDIRECTS = 0

f. NET.IPV6.CONF.ALL.ACCEPT_REDIRECTS = 0

g. NET.IPV6.CONF.ALL.SEND_REDIRECTS = 0

h. 

3. **User home directory Hardening**

a. sudo -s

b. cd /home

c. chmod 750 admin ecaadmin screenshots

How to add a Signed Certificate to the WebUI's (Eyeglass, ECA Cluster, Golden Copy, Search & Recover)

1. Eyeglass VM Steps

   a. Follow the TLS cert steps in the admin guide here.

2. For ECA, Golden Copy, Search & Recover follow these steps.

a. Access the WebUI from node 1 and create a DNS entry for node to create a FQDN to create a signed cert. The objective is to install the signed cert for nginx ECA Node-1
b. Create A record in DNS name for ECA Node-1 and verify with nslookup. Example eca1.domain.com
c. SSH to ECA Node-1 as ecaadmin
    i. cd /opt/superna/eca/conf/nginx
    ii. Verify that the nginx.key is there with ls -la
d. Create csr with that key file
    i. Command: openssl req -key nginx.key -new -out nginx.csr
    ii. SCP the nginx.csr file for signing
    iii. Or type cat nginx.csr and copy and paste the text to submit for signing.
    iv. When it is asked about the Common Name: provide the fqdn of ECA Node-1 (the name registered in DNS e.g. search.domain.com)
e. With that CSR certificate submit the request to Certificate Authority at your enterprise
f. NOTE: These steps are CA specific, consult with your security team
g. Once received the signed certificate encoded in PEM format
h. scp (use WinSCP for Windows) and copy this file to ECA-1 under /opt/superna/eca/conf/nginx with name nginx.crt
i. **NOTE: if not in PEM format, convert to PEM format or ask your Security team for pem format**

j. Replace existing nginx.crt certificate with this new signed CA certificate.

k. mv nginx.crt nginx.crt.bak (backup old file)

l. cp /pathtonewfile/nginx.crt to /opt/superna/eca/conf/nginx/nginx.crt

m. Restart nginx

n. Bring down and up the ECA cluster to push the config to all the other ECA nodes

   i. ecactl cluster down

   ii. ecactl cluster up

o. Verify the certificate when accessing the UI (e.g. https://FQDN)

Web Server HTTP Hardening Directives for Eyeglass and Search & Recover and Golden Copy

1. This section has specific web server directives that address specific hardening http header responses and setting the Search & Recover TLS protocol requirements. **NOTE: Not required for Eyeglass 2.5.7 or later as these are set by default.**

2. Eyeglass WebUI

   a. For Eyeglass lighttpd https and http HEADER fix

   b. login as admin

   c. sudo -s (enter admin password)

d. nano /etc/lighttpd/lighttpd.conf

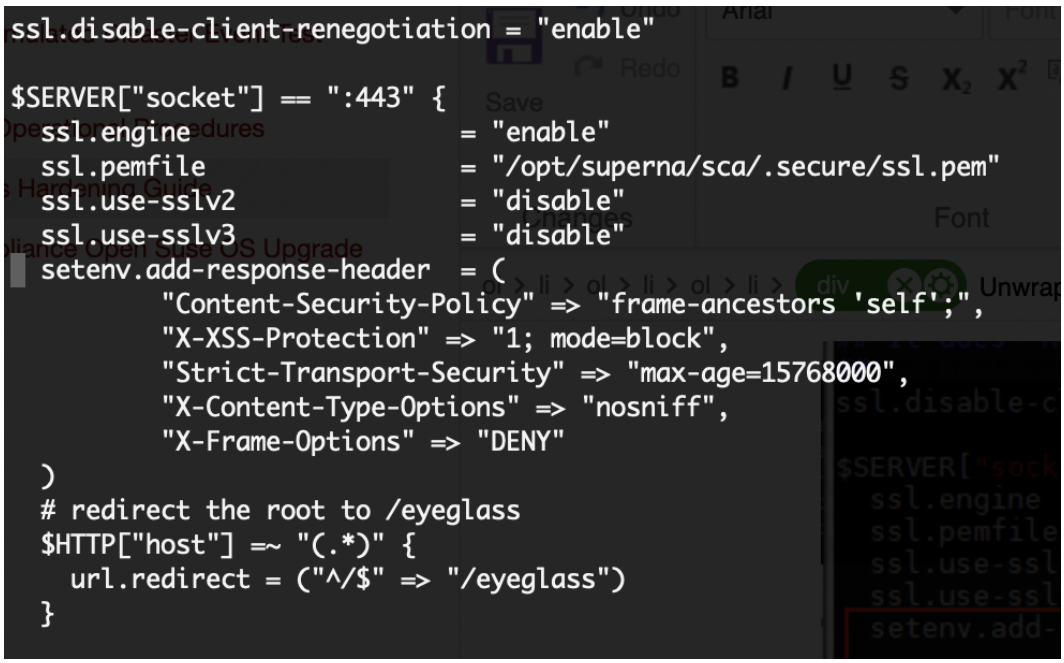
e. Add the following inside SERVER 443 block

f. control+w and type **":443" [enter key]**

g. Add the text below and replace the previous section for this between the ( ) for this section **setenv.add-response-header**

```
setenv.add-response-header = (
        "Strict-Transport-Security" => "max-age=15768000",
         "Content-Security-Policy" => "frame-ancestors 'self';",
         "X-Content-Type-Options" => "nosniff",
          "X-Frame-Options" => "DENY",
          "X-XSS-Protection" => "1; mode=block"
    )
```

1. See example

a. 

2. Now locate the section for http (only used to redirect to 443 port)

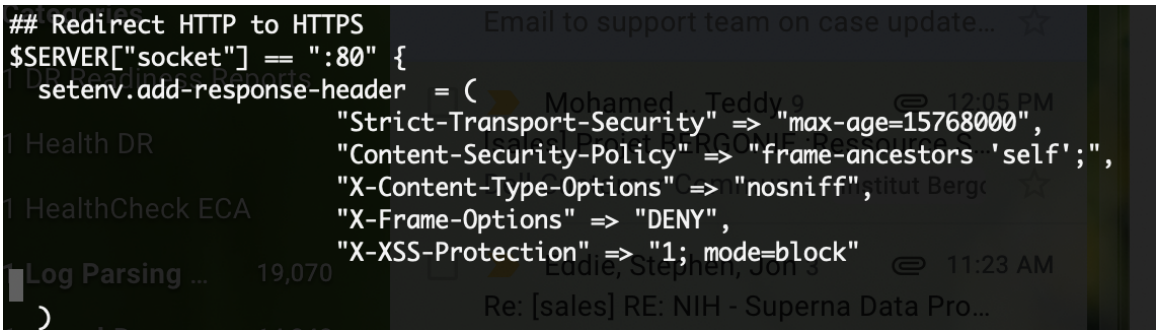
a. control+w and type **":80" [enter key]**

b. Add the text below and replace the previous section for this between the ( ) **setenv.add-response-header**

c. setenv.add-response-header = (

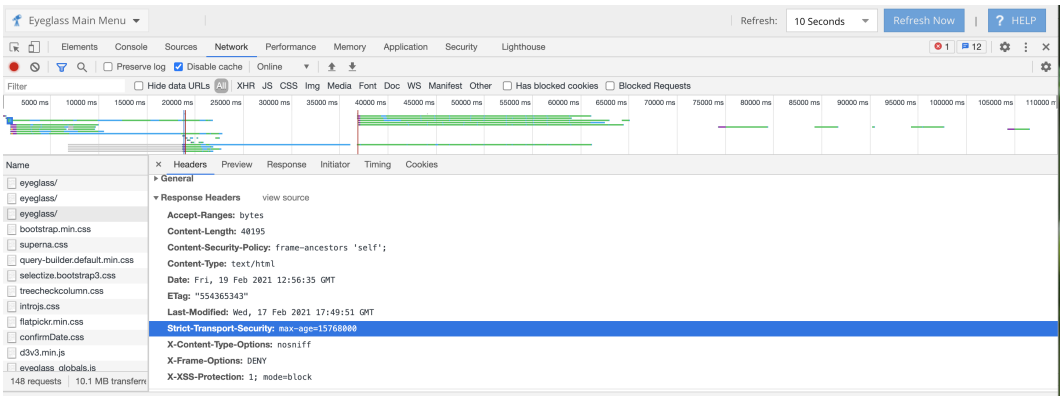
"Strict-Transport-Security" => "max-age=15768000",
"Content-Security-Policy" => "frame-ancestors 'self';",
"X-Content-Type-Options" => "nosniff",
"X-Frame-Options" => "DENY",
"X-XSS-Protection" => "1; mode=block"

)

1. 

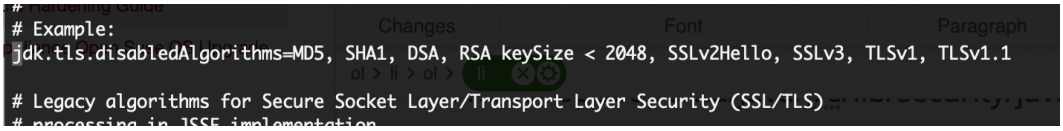
2. save the file with **control+x** answer yes to save and exit
3. Restart the web server
    a. systemctl restart lighttpd.service
4. Verify with Google Chrome Developer tools (Press F12).
    a. Login to eyeglass, select Network tab, select eyeglass web page on left side, click headers tab , expand response headers, verify "content-security-policy" and "strict

transport security" Use the screen shot as per below.

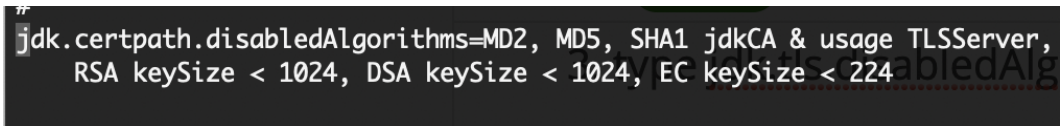


HTTPS Security Algorithm Hardening Eyeglass DR < 2.5.7

1. **Update Java HTTPS algorithms and certificate settings**
2. nano /opt/superna/java/jre/lib/security/java.security
3. press control+w
4. type jdk.tls.disabledAlgorithms and the press enter
5. remove the # comment from this line see image below

   a. 

6. Then press control+W
7. type jdk.certpath.disabledAlgorithms [enter]
8. repeat control+w [enter] 3 times until you locate the line with the # comment on the lines below
9. remove the # from **both** lines , refer to the image below.

a. 

10. press control+x
11. answer yes to save the file and exit
12. For changes to take effect restart the sca
13. **systemctl restart sca**
14. done

HTTPS Security Algorithm Hardening Eyeglass DR 2.5.7 >

1. ssh as admin to eyeglass
2. backup existing file
    a. mv /opt/superna/java/jre/lib/security/java.security /opt/superna/java/jre/lib/security/java.security.bak
3. Copy enhanced security file
    a. cp /opt/superna/java/java.security.enhanced /opt/superna/java/jre/lib/security/java.security
    b. sudo chown sca:users java.security
4. systemctl restart sca
5. done

Overview: Port 80 is only used to redirect to to port 443, it is not used for anything else. To block port 80 follow these steps

1. Login to Eyeglass appliance as admin user. Elevate to root using command: sudo su -
2. Create Eyeglass port 80 firewall script:
    a. nano /opt/superna/bin/firewall-rules.sh
3. Type 'i' to enter insert mode. Copy and paste the following to the file:
    a. #!/bin/bash
    b. iptables -I IN_public_deny -p tcp --dport 80 -j REJECT --reject-with icmp-port-unreachable
4. Type ESC and :wq! to exit when file contents match above.
5. Change ownership and modify the file:
    a. chown sca:users /opt/superna/bin/firewall-rules.sh ; if ["$?" == 0]; then echo Success; fi
    b. chmod u+x /opt/superna/bin/firewall-rules.sh ; if ["$?" == 0]; then echo Success; fi
6. Create a service file to be run at boot after Network service is registered as RUNNING:
    a. nano /etc/systemd/system/boot-firewall-rules.service
    b. [Unit]
    c. After=network.target
    d. [Service]
    e. ExecStart=/opt/superna/bin/firewall-rules.sh
    f. [Install]
    g. WantedBy=default.target

7. Type ESC and :wq! to exit when file contents match above.
8. Run the following commands for the changes to take effect (note: NO Reboot required. No impact):
    9. systemctl daemon-reload ; if ["$?" == 0]; then echo Success; fi
    10. systemctl enable boot-firewall-rules.service
    11. systemctl start boot-firewall-rules.service ; if ["$?" == 0]; then echo Success; fi
    12. systemctl status boot-firewall-rules.service
13. done

HTTPs Web Server Hardening (Search & Recover and Golden Copy)

1. Login to Search & Recover over ssh as ecaadmin
    a. nano /opt/superna/eca/conf/nginx/eca.conf.template
2. Login to Golden Copy
    a. nano /opt/superna/eca/conf/nginx/eca.conf.simpletemplate
3. Add the following inside server 443 block
    a. add_header Strict-Transport-Security "max-age=15768000";

       add_header Content-Security-Policy "frame-ancestors 'self';";

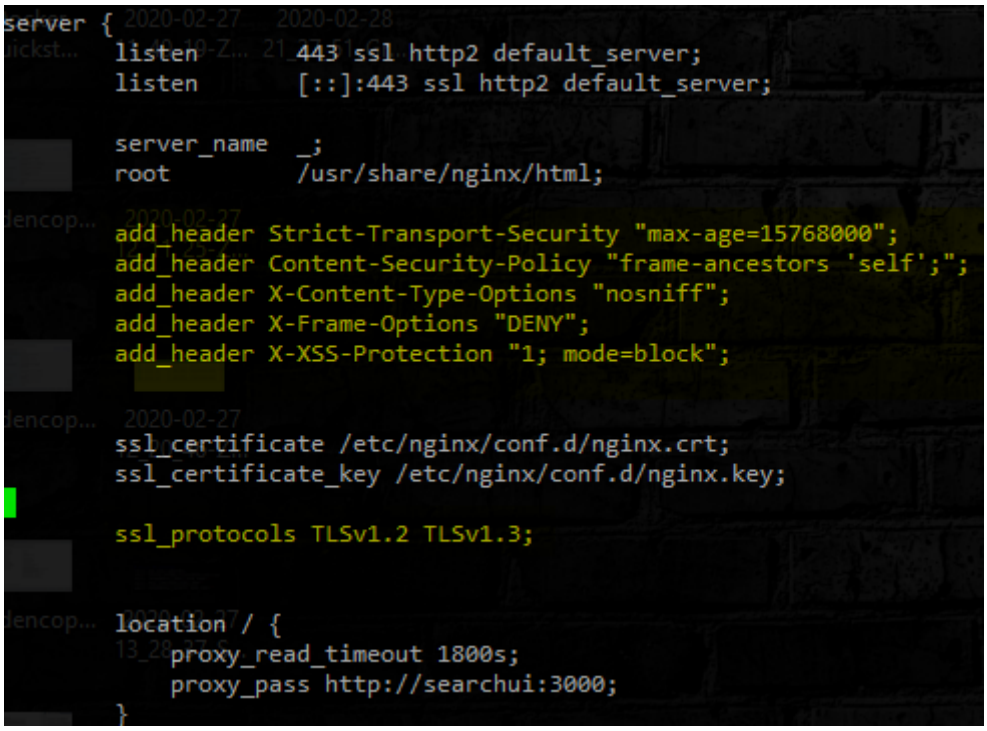
       add_header X-Content-Type-Options "nosniff";

add_header X-Frame-Options "DENY";

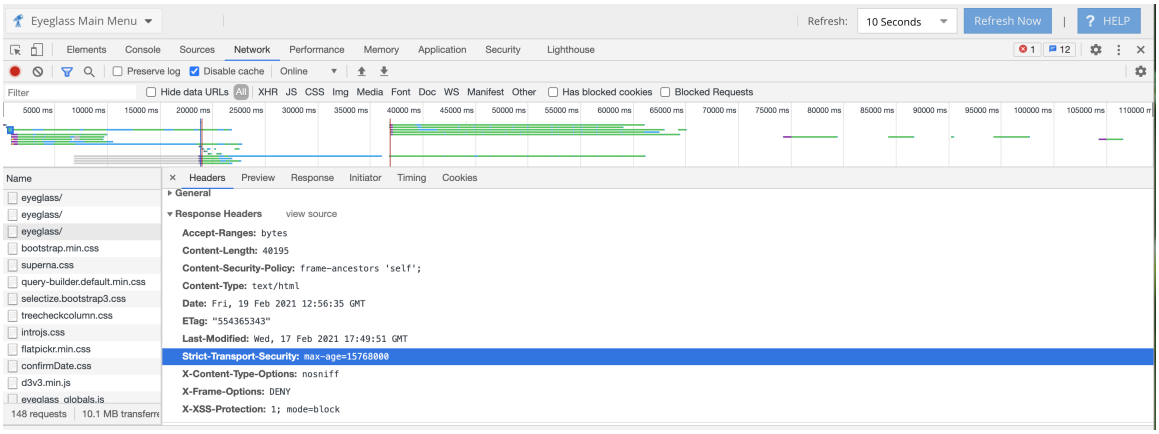
add_header X-XSS-Protection "1; mode=block";

ssl_protocols TLSv1.2 TLSv1.3;

b.



4. Push the config to all nodes
    a. ecactl cluster push-config
5. Restart containers to read the new configuration
    a. ecactl cluster exec "ecactl containers restart nginx"
6. Verify with Google Chrome developer tools

7. 

8. Done

How to turn off bash history (Eyeglass, Golden Copy, ECA, Search & Recover)

1. Bash history can contain access key commands. Disabling bash history disables command history.
2. Login as ecaadmin (Golden copy) or admin (eyeglass)
3. history -c (cleans current history)
4. echo 'set +o history' >> ~/.bashrc
5. logout
6. done

Hardening Password Complexity (All products)

Follow these steps to enable local password complexity of the builtin users admin, auditor and rwdefend. NOTE: These settings only apply to the local OS users, if using RBAC proxy login to PowerScale or AD

use the password features of the PowerScale or AD to setup password complexity.

To set these password rules the - (minus number) means MUST have in the password. Use the definitions below to customize the example provided.

- Minimum password length should be x characters
    - value minlen
- Password should have one UPPERCASE Character
    - value ucredit
- Password should have one LOWERCASE Character
    - value lcredit
- Password should have one Numeric Character
    - value dcredit
- Password should have Special characters
    - value ocredit
- Minimum Passwords to Remember or Password History
    - value pwhistory-remember
- Accounts should be lockout after bad login attempts, see next section that blocks the source ip of the machine after failed local logins using fail 2 ban and firewall rules.

1. **Verify pam modules are installed (may not be required on all appliances depending on OS version, it may return no module found on 15.1 or later OS version which can be ignored and continue the steps)**

2. login as admin
3. sudo -s
4. enter admin password
5. zypper install pam-modules (this requires internet access to install additional pam modules)
6. Answer yes to install new modules
7. cd /etc/pam.d/
8. cp common-password common-password.bak (backup old password file rules)
9. **pam-config -a --cracklib --cracklib-minlen=6 --cracklib-lcredit=-1 --cracklib-ucredit=-1 --cracklib-dcredit=-1 --cracklib-ocredit=-1 --pwhistory --pwhistory-use_authtok --pwhistory-remember=3**
    a. See definitions above for each value to customize
    b. This will generate a new common-password file
    c. When users try to change passwords they will require a password that matches these rules. **NOTE the root user can set a password for a user account that does not match these rules.**

Banning local user accounts after repeated failed login attempts

The appliance has several local users admin, auditor, and rwdefend used for builtin roles for different products. **NOTE: the root user password is randomized and sudo access to root should be used and leave the password randomized.**

To ban users that attempt brute force login attempts the following appliance enhancement allows control of lockouts and timed locked outs. This will setup firewall rules to block the ip of the user. The blocked login will cover ssh access and https to the WebUI. NOTE: If proxy login is used to AD or PowerScale local users, using the RBAC features, these users will also be banned as well.

1. Login as admin
2. sudo -s
3. enter admin password
4. zypper install fail2ban (requires Internet access to the appliance)
5. systemctl start fail2ban

Configuration Steps for Eyeglass

Highlevel:

- modified /etc/fail2ban/jail.conf [added 'eyeglass' section]
- enabled eyeglass filtering from /etc/fail2ban/jail.local
- added 'eyeglass' custom filter file in /etc/fail2ban/filter.d/ directory

1. nano /etc/fail2ban/filter.d/eyeglass.conf (add the contents below to the file and save the file with :wq)
    a. # Fail2ban filter for Superna Eyeglass

       #

       #

       [INCLUDES]

       before = common.conf

       [Definition]

       failregex = <HOST> \b\d{1,3}\.\d{1,3}\.\d{1,3}\.\d{1,3}\b - \[.* "POST /RestClient/login/login HTTP/1.1" 500

       datepattern = %%d/%%b/%%Y:%%H:%%M:%%S

       ignoreregex =
2. nano /etc/fail2ban/jail.local
    a. add The following to this file
        i. [DEFAULT]

           ignoreip = 127.0.0.1/8

           bantime = 300

           findtime = 300

           maxretry = 3

[sshd]

enabled = true

[eyeglass]

enabled = true

b. **Modify /etc/fail2ban/filter.d/sshd.conf file**
    i. **sed -e /'spam_unix/s/^/#/g' -i /etc/fail2ban/filter.d/sshd.conf**
c. **Modify /etc/fail2ban/jail.conf to add eyeglass jail rule**
    i. **sed -i "/HTTP servers/a[eyeglass]\n \nport = http,https\nlogpath = /var/log/lighttpd/access.log" /etc/fail2ban/jail.conf**
d. **restart the service**
    i. **systemctl restart fail2ban**
    ii. **check status**
    iii. **systemctl status fail2ban**
e. **Optional** - Find **bantime** and change default from 300 seconds to a value that meets your requirements
f. Optional - Find **findtime** and change default from 600 to a value that meets your requirements (A host is banned if it has generated "maxretry" during the last "findtime")

g. **Optional -** Find **maxretry** and change default from 3 to a value that meets your requirements

3. Save the file after changes control+x answer yes to save
4. done.

Configuration Steps for Golden Copy & Search & Recover

There is a fail2ban folder under /opt/superna/eca/conf/fail2ban in builds 1.1.4 > 20300. There is also a default jail.local, the following is its default content below. After modifying any conf under fail2ban folder the fail2ban container must be restarted to activate the new configuration.

How to edit the configuration defaults

1. ssh to the node as ecaadmin
2. nano /opt/superna/eca/conf/fail2ban/jail.local
3. edit the bold settings shown below to adjust ban time and retries for webui and ssh
4. control + x to save and exit
5. ecactl container restart fail2ban (for changes to take effect)

Default configuration:

1. banned logins will be 300 seconds or 5 minutes
2. 5 retries of the password will be allowed before banning from the webui login
3. 5 retries of the ssh password will be allowed before banning.

4. nano /opt/superna/eca/conf/fail2ban/jail.local

```
[nginx-http-auth]

enabled = true
filter = nginx-http-auth
port = http,https
logpath = /var/log/nginx/error.log
maxretry = 5
bantime = 300
chain = DOCKER-USER

[sshd]

enabled = true
backend = systemd
filter = sshd
maxretry = 5
bantime = 300

[searchmw]
enabled = true
filter = searchmw
port = http,https
logpath = /var/log/searchmw/loginError.log
maxretry = 5
bantime = 300
```

chain = DOCKER-USER

Eyeglass WebUI Security API Auditing

This feature is available in 2.5.7 or later releases. This allows a user GUI audit log of which UI functions are accessed by logged in users. Combined with the web server access log the user name and ip address can be located for any UI actions taken by any user including proxy login users.

How to monitor user UI actions and Authentication Login

1. The audit log can be monitored from an ssh session on the eyeglass appliance.
2. Login as admin over ssh
3. Run this command to monitor user interface login in real-time
4. tail -n 100 -f /opt/superna/sca/logs/apiaudit.log
5. You can also search through this log with grep example
6. grep "rsw" /opt/superna/sca/logs/apiaudit.log **(this will locate all the api calls sent to the Ransomware Defender application UI icon. Each application has a name in the log that can be used to look for set or get or view functions.)**
7. Example log output

a.

```
2020-12-18T11:21:02,856 API_AUDIT: [login]/[Login][POST] - No session
2020-12-18T11:21:13,838 API_AUDIT: [login]/[Login][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:13,841 API_AUDIT: [auth]/[Roles][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:13,892 API_AUDIT: [utils]/[Licenses][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:13,893 API_AUDIT: [eyeglass]/[AppGuideSetting][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:13,894 API_AUDIT: [utils]/[Licenses][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,066 API_AUDIT: [login]/[Login][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,068 API_AUDIT: [login]/[Login][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,080 API_AUDIT: [login]/[Login][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,106 API_AUDIT: [dr]/[RetrieveDRParams][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,179 API_AUDIT: [rsw]/[RSWEventFiles][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:14,476 API_AUDIT: [mail]/[EmailHandler][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:24,740 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:24,818 API_AUDIT: [services]/[Services][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:34,730 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:44,776 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:21:54,756 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:00,042 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,046 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,054 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,058 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,068 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,107 API_AUDIT: [sera]/[Heartbeat_Post][POST] - No session
2020-12-18T11:22:00,170 API_AUDIT: [sera]/[Healthcheck][GET] - No session
2020-12-18T11:22:04,721 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:04,799 API_AUDIT: [services]/[Services][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:14,603 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:24,588 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:34,748 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
2020-12-18T11:22:44,795 API_AUDIT: [refresh]/[RefreshController][GET] - Session: demo1@AD2.TEST / 4k2soc8knmq8l26h0j24j6edo6
```

8. How to view the web server access log to locate IP address information
    a. The web server access log can be used to locate the IP address of a logged user. This requires matching the time stamps in the api access log to the web server time stamps to find the source ip address of the user session.
    b. Using ssh to the eyeglass appliance as admin
    c. sudo -s (enter admin password to become root)
    d. cd /var/log/lighttpd
    e. ls (list the files and view the file with recent date stamp)
    f. Then use cat or grep or tail to view the log file
    g. Example log below

i. 

How to view the GUI API Log

1. Login as admin
2. sudo -s (enter admin password)
3. journalctl -u scagateway
    a. This command will return all client browser api calls

ECA VM Hardened Virtual Secured Network (Ransomware Defender, Easy Auditor, Performance Auditor)

1. The Eyeglass and ECA installation and admin guides list firewall ports and directions required including management PC access to UI's. This feature will automatically secure the communications between Eyeglass and the ECA vm's. No open ports will be returned from ECA vm's with the exception of SSH and HTTPS. This creates a virtual secure network between Eyeglass and the ECA vm's with no external access to any ports. This feature is automatically enabled and configured.

2. Requirements:
    a. 2.5.7 update 1
3. This release adds 2 new security features.
    a. **Automatic Firewall for Superna VM's**: The ECA VM's need to be accessed by eyeglass over various ports. The installation of the ECA and cluster up process will apply IP tables firewall rules to only allow access to ECA ports from Eyeglass VM and between ECA VM's. This provides a secure network between Superna VM's without requiring customer infrastructure. This will be applied automatically.
    b. **Authenticated Management UI's** - Various management UI's on ECA nodes will be accessed through a HTTPS proxy built into the ECA nodes that will require authentication. None of the ECA UI's will be directly accessible.

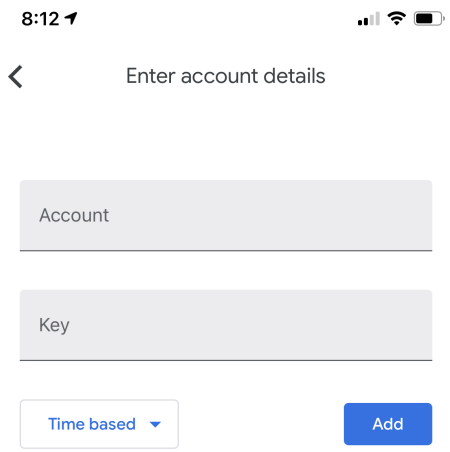
2 Factor SSH Authentication for Eyeglass, Golden copy, Search & Recover or ECA VM's

1. This procedure only secures SSH access to VMs.
2. Requirements:
    a. Google Authenticator application on a mobile phone
        i. IOS
        ii. Android

3. Installation
    a. ssh to the VM
    b. sudo -s (enter password)
    c. Install the pam module
    d. zypper in google-authenticator-libpam
    e. answer yes
    f. To run the initialization app
        i. google-authenticator
        ii. Do you want authentication tokens to be time-based (y/n) y
        iii. NOTE: Very important step to complete
            1. You will be presented with a secret key used in the step below and multiple scratch codes. We strongly suggest saving these emergency scratch codes in a safe place, like a password manager. These codes are the only way to regain access if you lose your phone or lose access to your authenticator application, and each one can only be used once, so they really are in case of emergency.
        iv. Activate Google Authenticator application with output from the step above that shows the secret key.
            1. Click the plus to add a new profile and select add setup key

2. _____

3. Now enter the name of this VM for account name example Eyeglass and the secret key number output to the console from the step above.



4. _____

5. Your client is now configured

v. Do you want me to update your "~/.google_authenticator" file (y/n) y

vi. **Do you want to disallow multiple uses of the same authentication**

token? This restricts you to one login about every 30s, but it

increases your chances to notice or even prevent

man-in-the-middle attacks (y/n) (This part is a time-based login. We suggest answering 'yes' (y) here since this will prevent a replay attack, allowing you 30

seconds from the point of getting the code on your mobile to typing in your login prompt)

vii. **By default, tokens are good for 30 seconds and in order to**

compensate for possible time-skew between the client and the server,

we allow an extra token before and after the current time. If you

experience problems with poor time synchronization, you can increase

the window from its default size of 1:30min to about 4min.

Do you want to do so (y/n) (Answer yes for more secure, answer No to allow 8 valid codes in a 4:00-minute rolling window)

viii. If the computer that you are logging into isn't hardened against

brute-force login attempts, you can enable rate-limiting for the

authentication module. By default, this limits attackers to no more

than 3 login attempts every 30s.

Do you want to enable rate-limiting (y/n) (yes is more secure)

g. Configuring OpenSSH

i. nano /etc/pam.d/sshd

ii. add this line to the file

1. auth required pam_google_authenticator.so

iii. control + x to save

iv. nano /etc/ssh/sshd_config

v. find this line and remove the comment at the front of the line

1. ChallengeResponseAuthentication yes

vi. control + x to save

h. Activate

i. systemctl restart sshd

i. Test login

j. ssh to the vm and enter the admin user password. You will now be prompted to enter a one time number called the verification code.

k. 

l. Use the Google Authenticator application and type in the code displayed in application. You have 30 seconds to enter the code to login successfully.

m. **NOTE: The settings above determine what happens if you enter a bad or out of sync verification code. You may get rate limited to login if you have failed login attempts**

n. done.

7. InPlace Appliance Open Suse OS Upgrade

Home Top

- Overview
- InPlace OS Upgrade steps from Open Suse 15.1 to 15.2

Overview

In place upgrade of the operating system should only be done if security patches are required for your deployment. Normally OVF upgrade option is best to upgrade the OS and appliance at the same time. **Only use this procedure if directed by support.**

NOTE: The operating system is customer responsibility and assisted upgrades of the OS are not provided under the support contract. The supported method is using new OVA deployment and restore the configuration for assisted upgrades to a new OS. **This procedure is provided "as is" with no support.**

NOTE: Mandatory to take a VM level snapshot before starting this procedure. The only recover option on a failed OS upgrade is reverting a snapshot. Support is unable to recover a failed OS upgrade and will request the snapshot is reverted and to schedule the OVA upgrade method.

NOTE: Only supported from 15.1 to 15.2

InPlace OS Upgrade steps from Open Suse 15.1 to 15.2

1. Eyeglass VM
    a. Create a Hypervisor snapshot to roll back in case there is an issue with the OS upgrade
    b. Create a support backup using About Eyeglass backup tab and download the backup file to a local PC.
    c. Create a Hypervisor snapshot to roll back in case there is an issue with the OS upgrade.Login to the OS as admin user]
2. ECA VM's
    a. **ecactl cluster down** - must be done before starting this procedure. This is executed as ecaadmin from node 1 of the cluster.
3. sudo -s (enter admin password)
4. check your OS version first cat /etc/os-release if your OS shows 42.3 click here.
5. server=http://download.opensuse.org
6. sudo zypper ar $server/distribution/leap/15.2/repo/oss/ Leap-15.2-OSS
7. sudo zypper ar $server/update/leap/15.2/oss/ Leap-15.2-Update
8. zypper rr openSUSE-Leap-15.1-1
9. zypper mr -d repo-non-oss repo-oss repo-update repo-update-non-oss

10. zypper -n ref
11. zypper -n patch --updatestack-only
12. cp -a /etc/sudoers /tmp (all products step)
13. Eyeglass Command
    a. zypper --no-gpg-checks dup --replacefiles (note this will download all packages and upgrade the OS which can take10 minutes or more)
    b. You will be prompted to select options for tomcat and option 1 should be selected to preserve existing version of tomcat apache, after selection option 1, another selection is needed from option 1 to 12; select option 1 again.
14. ECA or Search or Golden Copy Command
15. zypper --no-gpg-checks --non-interactive dup --replacefiles (note this will download all packages and upgrade the OS which can take10 minutes or more)
16. cp -a /tmp/sudoers /etc (all products step)
17. After the OS upgrade is completed.
    a. reboot
18. MANDATORY STEP:
    a. **Eyeglass VM**
        i. After reboot, rerun the latest Eyeglass 15.2 OS offline installer following the upgrade guide steps, download the upgrade installer following downloads steps here and select upgrade files from the menu and 15.2 OS.

ii. Download the installer to eyeglass

iii. ssh to the eyeglass vm as admin

iv. sudo -s (enter admin password)

v. **zypper in glibc-devel (adds require package)**

vi. chmod 777 <name of upgrade file>

vii. ./name of upgrade file

viii. Once completed

ix. Check Web UI access

x. Done

b. ECA VM's

i. **NOTE: Complete the OS upgrade on ALL ECA VM's before running the installer upgrade again. The step below can only be done after all ECA VM' OS's are upgraded to 15.2**

ii. After reboot, rerun the latest ECA 15.2 OS offline installer following the upgrade guide steps, download the upgrade installer following downloads steps here and select upgrade files from the menu and 15.2 OS.

iii. Download the installer to node 1

iv. run the installer

v. chmod 777 <installer file name>

vi. ./<installer file name>