Hardware Orchestration Recovery Processes

Provides a guide to common recovery processes when using Hardware Orchestration aspects of Ops Center Protector.

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Hardware Orchestration Potential Issues

The following are possible scenarios which could happen in a block-based protection environment, and how to recover from them.

How to Recover from Replication Metadata Mismatch with Array State

Protector saves metadata for replication records, based on what it believes the state should be after its most recent activity. This includes a number of elements of state, which get updated when Protector performs an operation. On a correctly functioning system, will represent the state of a replication as soon as Protector has performed an operation.

This differs from the status shown by the statistics systems, which monitor the pairs, LDEVs and other objects on the array. The statistic system polls the replication periodically, so may not always have the latest status. However, there are instances where the replication state is actually incorrect and the replication statistics shown in the replication pair screen (insert picture here) actually has the correct status. This can happen if a replication has been modified outside of Protector and/or some other exceptional circumstances.

Protector has various safeguards, and may not permit an operation based on the state information in its metadata. This section will describe what mitigation steps can be performed to fix replication record state mismatches.

The columns labelled "Remedies" contain a set of possible fixes for the described symptoms and states. **Each remedy is a self-contained remedy. Each list is ordered such that the most preferable solution is the first. If a remedy succeeds, do not proceed to later remedies.**

Health Check Tool Problem Code (see here for more info)	**Symptoms**	**Protector State**	**Array State**	**Remedies to make Protector State match Array State**	**Remedies to make Array State match Protector State**
`RCC_PAUSED_ACTIVE_RECORD_IN_PAIR`	No specific symptoms - mismatch in displayed state	Replication State: Static	PAIR/PAIR	Remedy A 1. Resume the replication (see here for more info) Remedy B 1. Delete the record state file (see here for more info) 2. Resume the replication (see here for more info) Remedy C 1. Dissociate the replication and readopt the replication (see here for more info)	Remedy A 1. Manually split the pairs outside of Protector

`RCC_ACTIVE_RECORD_IN_PSUS_SSUS`	No specific symptoms - mismatch in displayed state	Replication State: Active Dataflow Mover: Continuous	PSUS/SSUS	Remedy A 1. Pause the replication (see here for more info) Remedy B 1. Dissociate the replication and readopt the replication (see here for more info)	Remedy A 1. Trigger the replication (see here for more info) Remedy B 1. Manually resync the pairs outside of Protector
N/A	No specific symptoms - mismatch in displayed state	Replication State: Active Dataflow Mover: Batch	PAIR/PAIR	Remedy A 1. Dissociate the replication and readopt the replication (see here for more info)	Remedy A 1. Trigger the replication (see here for more info) Remedy B 1. Manually split the pairs outside of Protector

`RCC_RECORD_IS_BUSY`	• When trying to perform an operation on a replication, the job fails.
	  • Example: an attempted pause operation fails with the following error: "Pause Block Replication failed. Error: A replication that is pausing may not be paused."
	  • (include log ids)
		Replication State: Ends with "-ing" examples include: pausing, resuming, mounting, un-mounting, reverting, swapping...	Any	Remedy A
				
				1. Check for existing jobs for that record (see here for more info)
				2. Wait for them to complete
				
				Remedy B
				
				1. Delete the record state file (see here for more info)
				
				Remedy C
				
				1. Restart the services on the destination storage proxy (se e here for more info)
					N/A

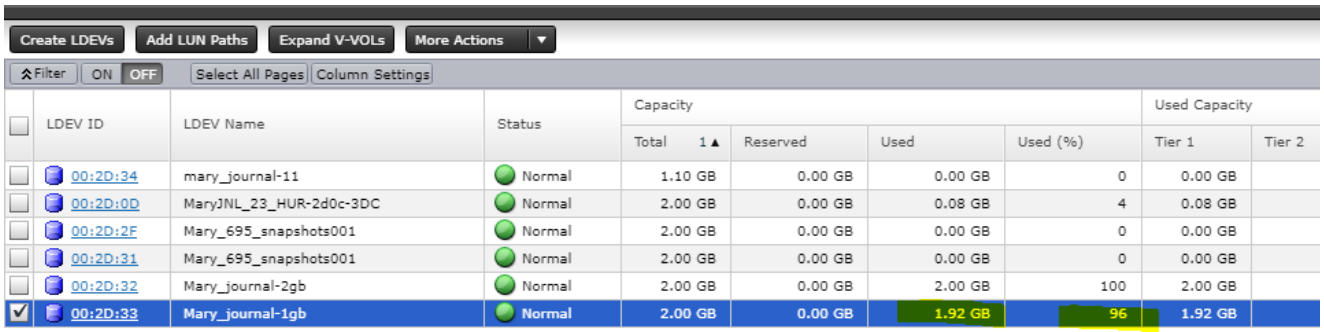
N/A	• When trying to perform an operation on a replication, the job fails.
	  • Example: an attempted pause operation fails with the following error: "Pause Block Replication failed. Error: A replication that is incomplete may not be paused."
	  • (include log ids)
		Replication Type: Active /Refreshed Incomplete Copy	PAIR/PAIR COPY /COPY SMPL/SMPL	Remedy A
				
				1. Trigger the replication (see here for more info)
				
				Remedy B
				
				1. Dissociate the replication and readopt the replication (see here for more info)
					N/A

RCC_RECORD_DIRECTION_INCORRECT	No specific symptoms - mismatch in displayed state	Replication Direction: Swapped	PAIR/PAIR (direction matches dataflow)	Remedy A 1. Dissociate the replication (see here for more info) 2. Redraw the dataflow to match current direction (see here for more info) 3. Readopt the replication (see here for more info)	Remedy A 1. Manually swap the pairs outside of Protector
RCC_RECORD_DIRECTION_INCORRECT	No specific symptoms - mismatch in displayed state	Replication Direction: Original	PAIR/PAIR (direction does not match dataflow)	Remedy A 1. Dissociate the replication (see here for more info) 2. Redraw the dataflow to match current direction (see here for more info) 3. Readopt the replication (see here for more info)	Remedy A 1. Manually swap the pairs outside of Protector

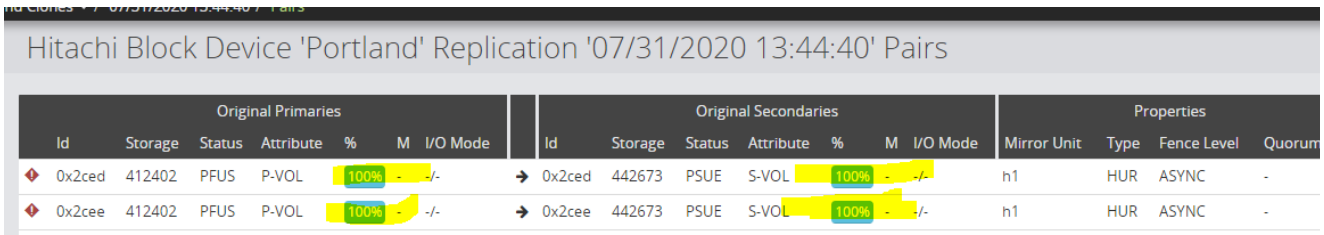
How to Recover from a Journal Full Event

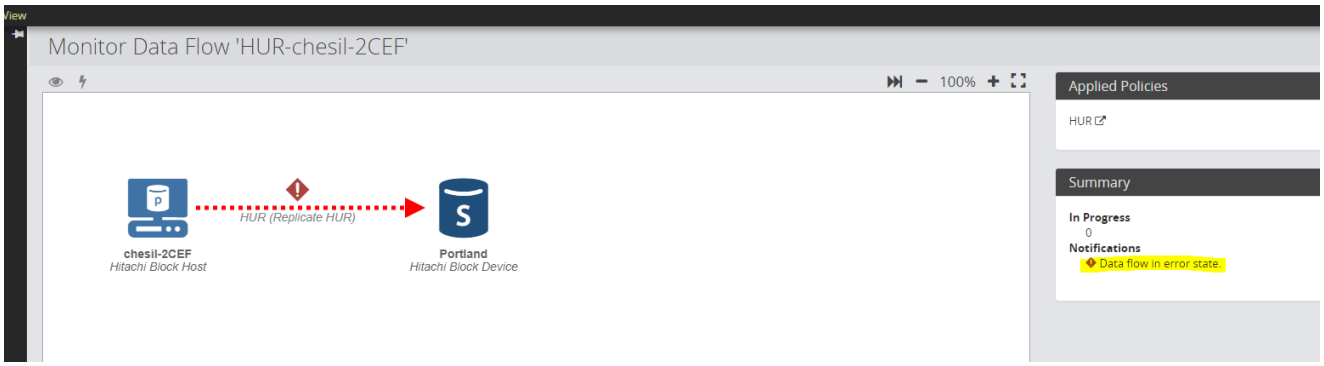
Look at journal report and determine why journal filled up (connection issues, sizing issues, MP usage), resolve the journal issue outside of HDID. Once the journal issue is resolved either of the following methods should recover the state of the replication within HDID:

if the journal is full, storage array: the journal used very high, nearly 100%



pair status will be changed to PSUE in HDID pair status, and percent: 100%



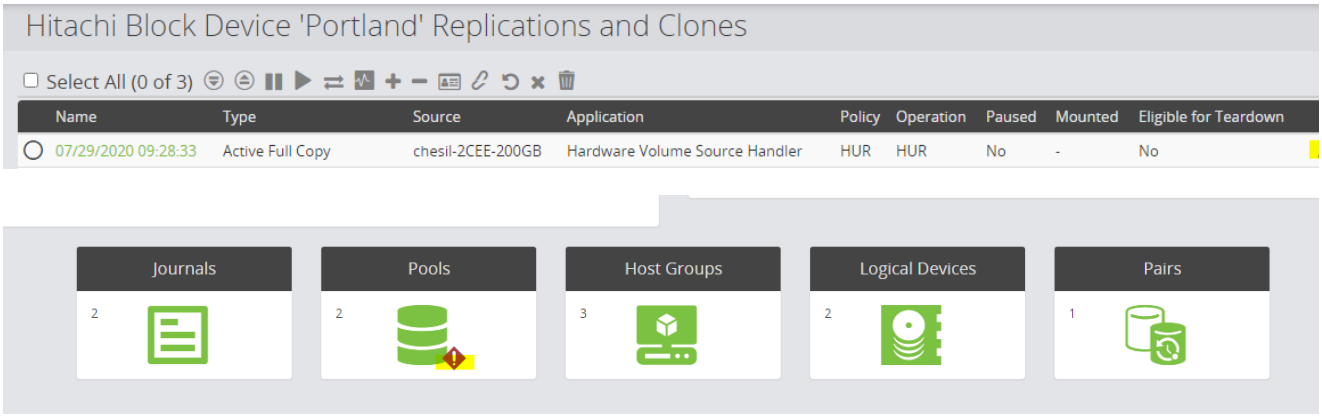


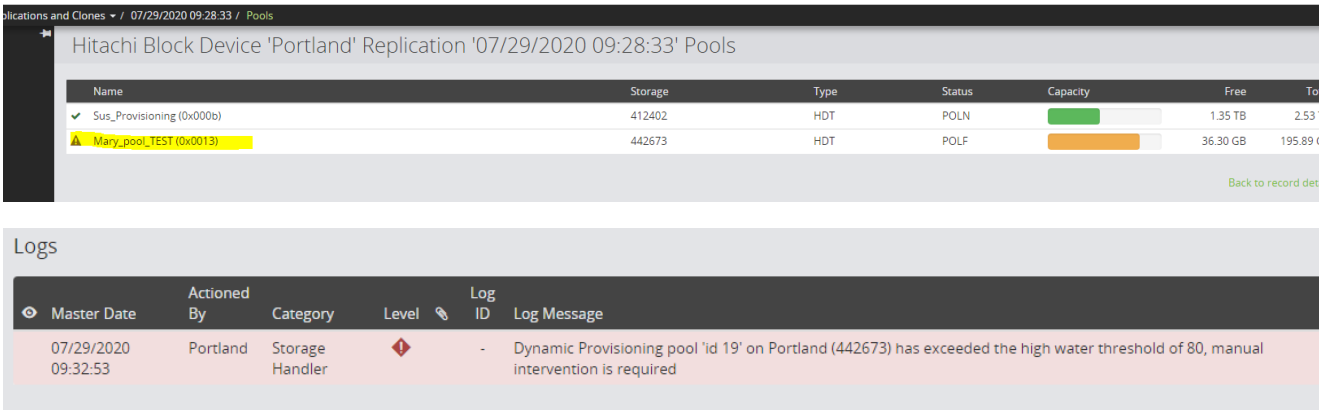
then you have to fix this full journal first, then resync in the storage array to save status from PFUF/PSUE to COPY

- Trigger the replication (see here for more info)
- Re-activate the dataflow (see here for more info)

How to Recover from a Pool Full Event

Look at pool report and determine why pool filled up (connection issues, sizing issues, MP usage), free space within the pool or increase pool. Note snapshots probably invalid/unrecoverable. Once the pool issue is resolved either of the following methods should recover the state of the replication within HDID

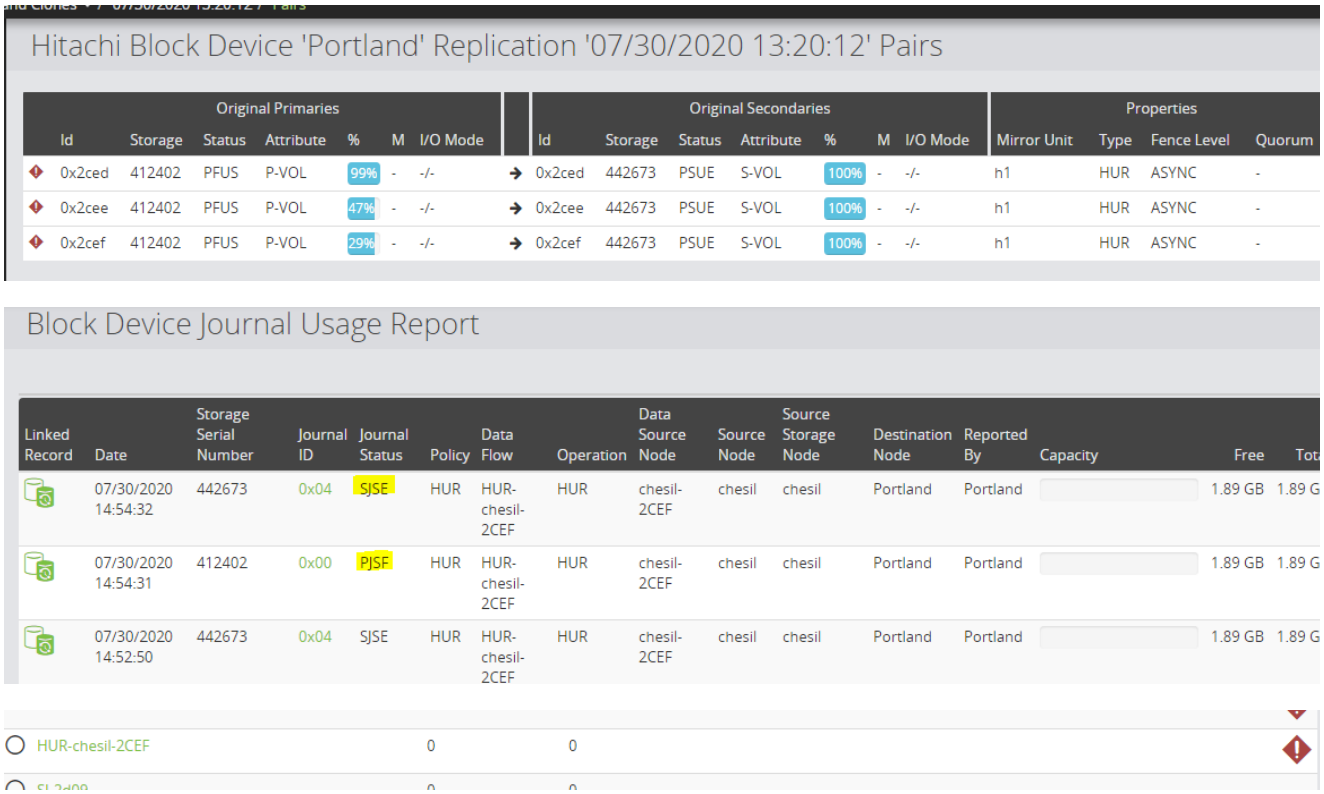


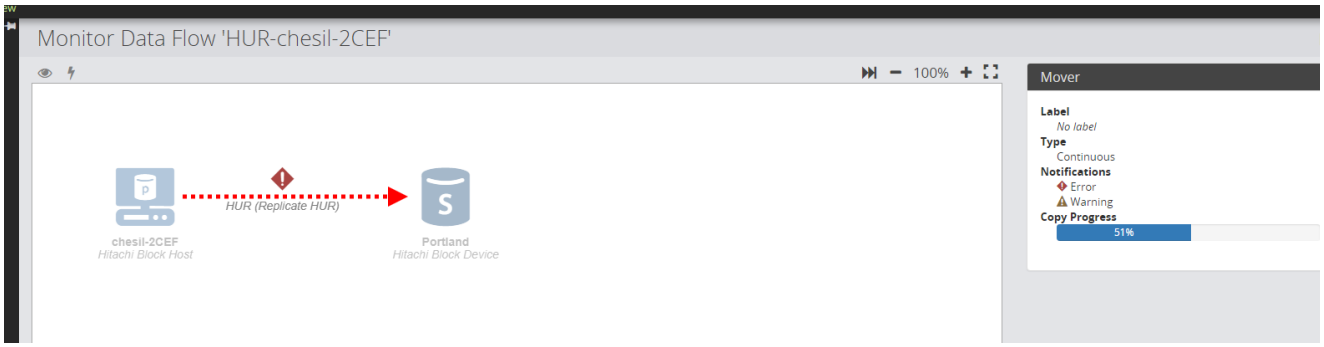


- Trigger the replication (see here for more info)
- Re-activate the dataflow (see here for more info)

How to Recover from a PSUE Event

Look at replication outside of HDID to determine what caused the replication to go in to PSUE and resolve the issue. Once the replication issue is resolved either of the following methods should recover the state of the replication within HDID





- Trigger the replication (see here for more info)
- Re-activate the dataflow (see here for more info)