MODULE 5 DATA MOBILITY

PARTICIPANT GUIDE

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Local LUN Move

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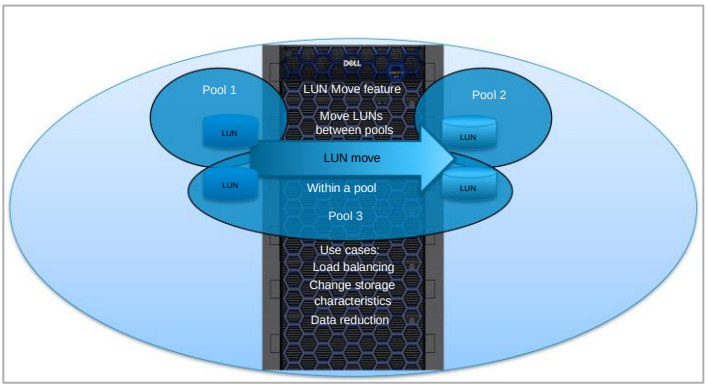
Local LUN Move overview

The local LUN Move is a native feature of Unity XT to move LUNs within a single physical or virtual Unity XT system. It moves LUNs between different pools within the system. Or it can be used to move LUNs within the same pool of a system. The move operation is transparent to the host and has minimal performance impact on data access.

There are several use cases for the feature. It provides load balancing between pools. For example, if one pool is reaching capacity, the feature can be used to move LUNs to a pool that has more capacity. It can also be used to change the storage characteristics for a LUN. For example, a LUN could be moved between pools composed of different disk types and RAID schemes. The feature can also be used to convert a thin LUN to a thick LUN, or a thick LUN to a thin LUN.

Another use of the feature is for data reduction of an existing thin LUN. For example, an existing thin LUN without Data Reduction enabled can be moved to an All-Flash pool where data reduction can be enabled. The data reduction process is invoked during the move operation resulting in data reduction savings on the existing LUN data.



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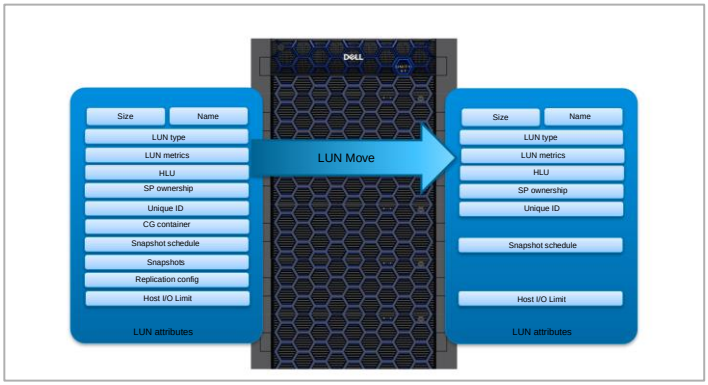
What Gets Moved

When a LUN is moved, the moved LUN retains its LUN attributes and some extra LUN feature configurations. For example, if a LUN is moved that is configured with snapshots, its existing Snapshot schedule is moved. But any existing snapshots are not moved. The system deletes any existing snapshots of the LUN after the move completes.

Also, if Replication is configured on the LUN, the system prevents the LUN move operation. The LUN replication must be deleted before the LUN move operation is permitted. After the LUN move operation completes, a reconfiguration of the LUN replication is permitted. The graphic details the LUN attributes that are and are not imported.



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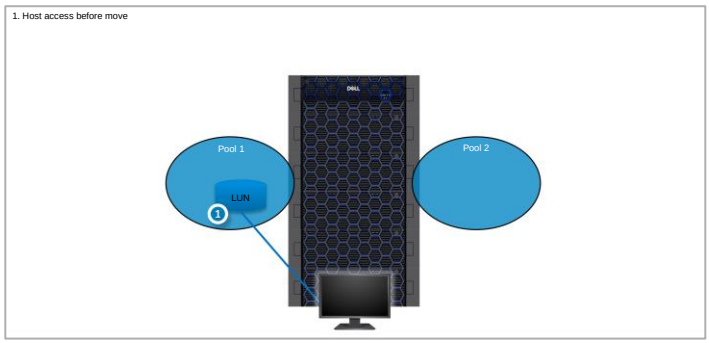
Local LUN Move Process

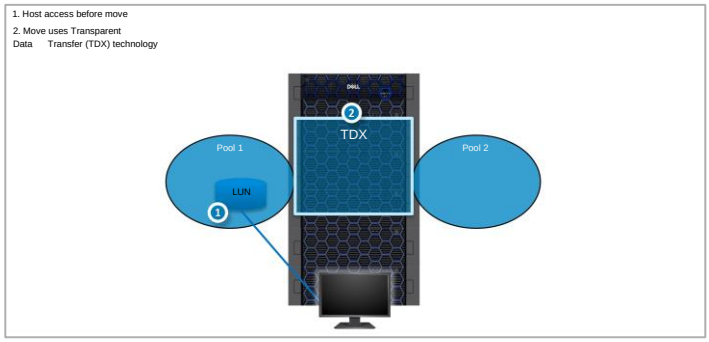
Host Access Before

Before using the local LUN Move feature, a host has access the LUN created from a specific pool in a normal fashion. The following series of slides illustrates the process of the local LUN Move operation.



Move Uses TDX

The local LUN Move feature uses Transparent Data Transfer (TDX) technology. It is a transparent data copy engine that is multithreaded and supports online data transfers. The data transfer is designed so its impact to host access performance is minimal. TDX makes the LUN move operation transparent to a host.



Start LUN Move

When a move operation is initiated on a LUN, the move operation uses TDX and the move begins.

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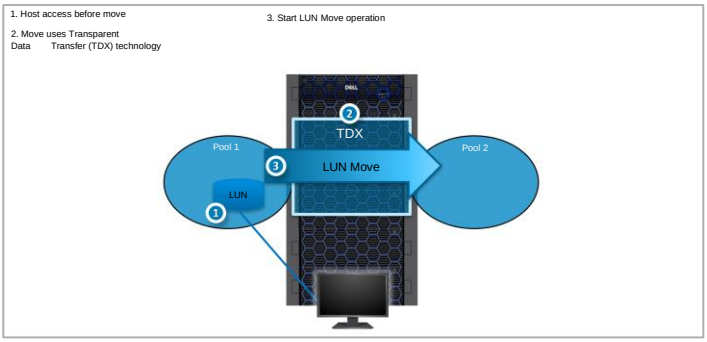
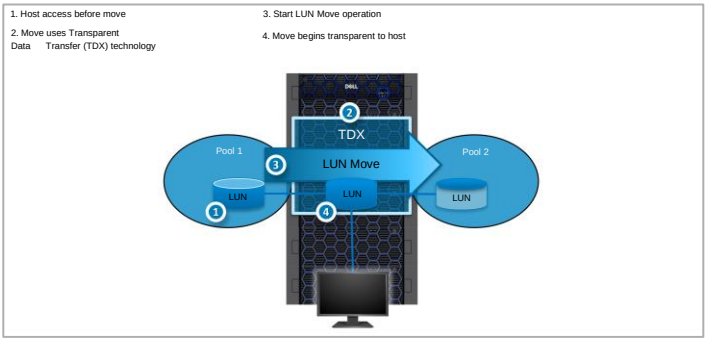


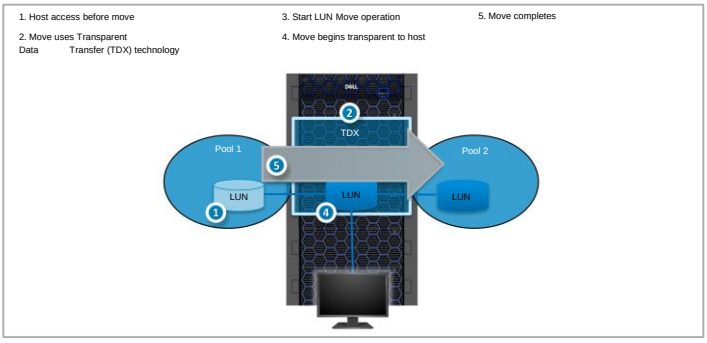
Move Begins

As TDX transfers the data to move the LUN, the move operation is transparent to the host. Even though TDX is transferring data to move the LUN, the host still has access to the whole LUN as a single entity.



Move Completes

Eventually TDX transfers all of the data, and the LUN move completes.



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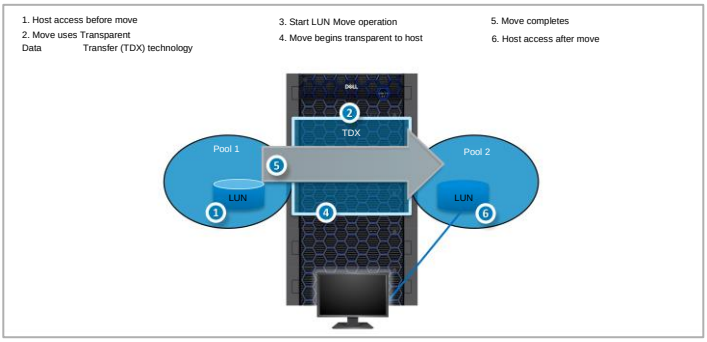
Host Access After

The original LUN will no longer exist, and the host has access the moved LUN in its normal fashion.



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Local LUN Move Requirements

There are requirements for the local LUN Move feature.

- Storage resources
  - Standalone LUNs
  - LUNs within a Consistency Group
  - VMware VMFS datastore LUNs
  - Not thin clones or have derived thin clones
- To successfully move a LUN, it cannot be:
  - In a replication session
  - Expanding/shrinking
  - Restoring from snapshot
  - Being imported from VNX
  - Offline/requiring recovery
- System cannot be upgraded during a LUN move session

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Local LUN Move Capabilities

The local LUN Move feature capabilities are the same for all physical Dell Unity XT models and the Dell UnityVSA systems.

- All Dell Unity XT systems support 100 move sessions.
  - 16 active sessions at a time
- Move sessions have the Priority settings defined when the session is created. The possible priority settings are:
  - Idle, Low, Below Normal, Normal, Above Normal, High
- Multithreaded TDX resources are used in move operations.
  - Multiplexes 16 active sessions into 10 concurrent sessions based on a session priority

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Local LUN Move Session Configuration

The local LUN Move feature has a “Set and Forget” configuration. There is nothing to preconfigure to perform a LUN Move operation. To initiate the move, select **LUNs (1),** select the storage resource to move **(2),** and then select **More Actions -> Move (3).** Next, select a Session Priority from the drop-down **(4)**. The priority defines how the move session is treated in priority compared to production data access, thus affecting the time to complete the move session. With an **Idle** priority selection, the move runs during production I/O idle time. A **High** selection runs the move session as fast as possible. The next session configuration selection is the Pool. It defines where the storage resource is moved to. Its drop-down list is populated with pools available on the system. Another configuration for the move session is the Thin check box option. It is checked by default and can be cleared to make the moved resource thick provisioned. The Data Reduction option is exposed if the selected pool is an All-Flash pool. The data moved is processed through the Data Reduction algorithms.

After the move is started, the operation runs automatically. The operation then continues to completion and cannot be paused or resumed. When a session is in progress it can be canceled.

The move is transparent to the host. There are no actions or tasks needed on the host for the move. After the move is completed, the session is automatically cutover and the host data access to the LUN continues normally.

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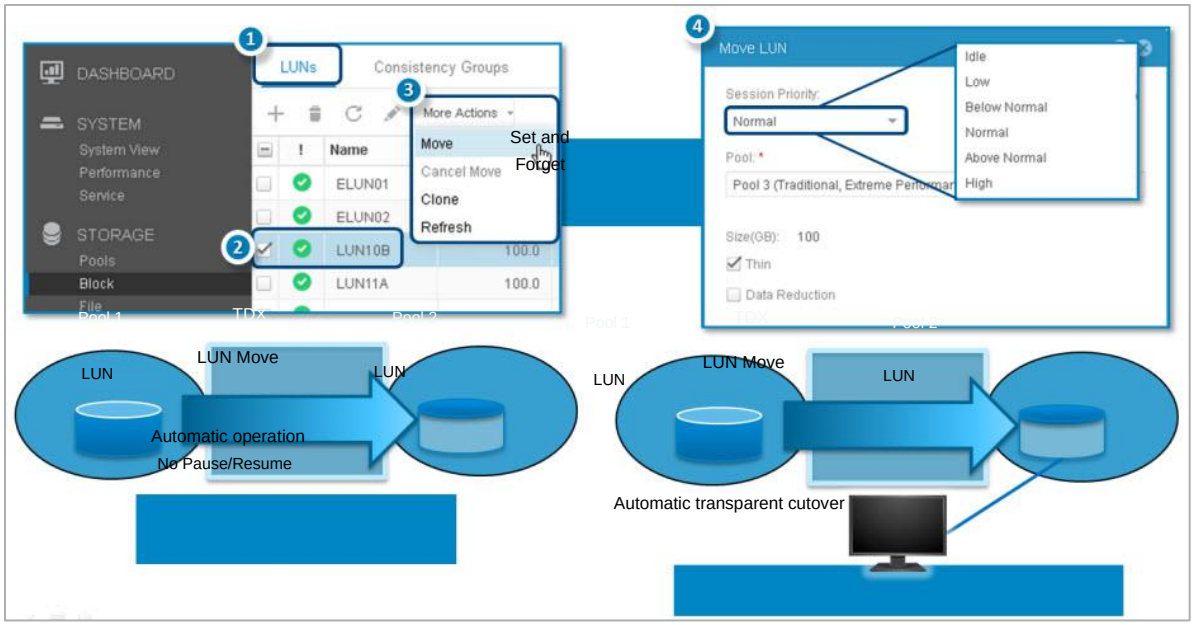
Local LUN Move



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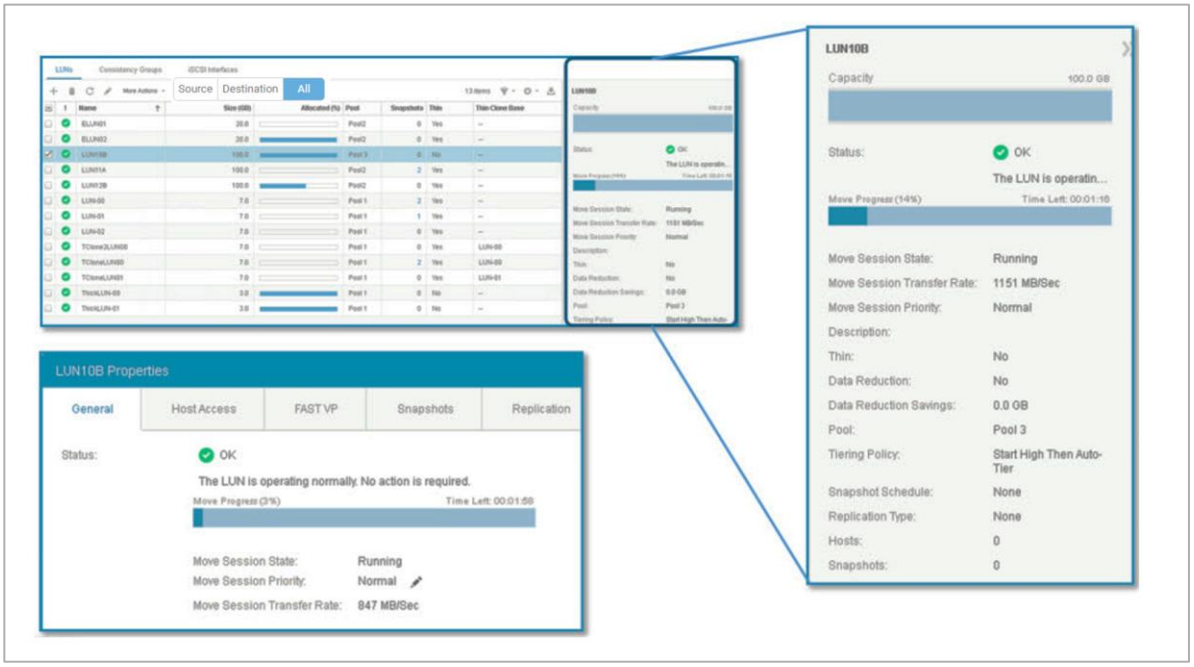
Monitoring Move Session

When a move session is started, its progress can be monitored from a few locations.

From the LUNs page, with the LUN selected that is being moved, the right side pane displays move session information. The move Status and Progress are displayed. The Move Session State, its Transfer Rate, and Priority are also shown.

From the General tab of the LUN **Properties** page, the same information is displayed. The page does provide the added ability to edit the session Priority setting.



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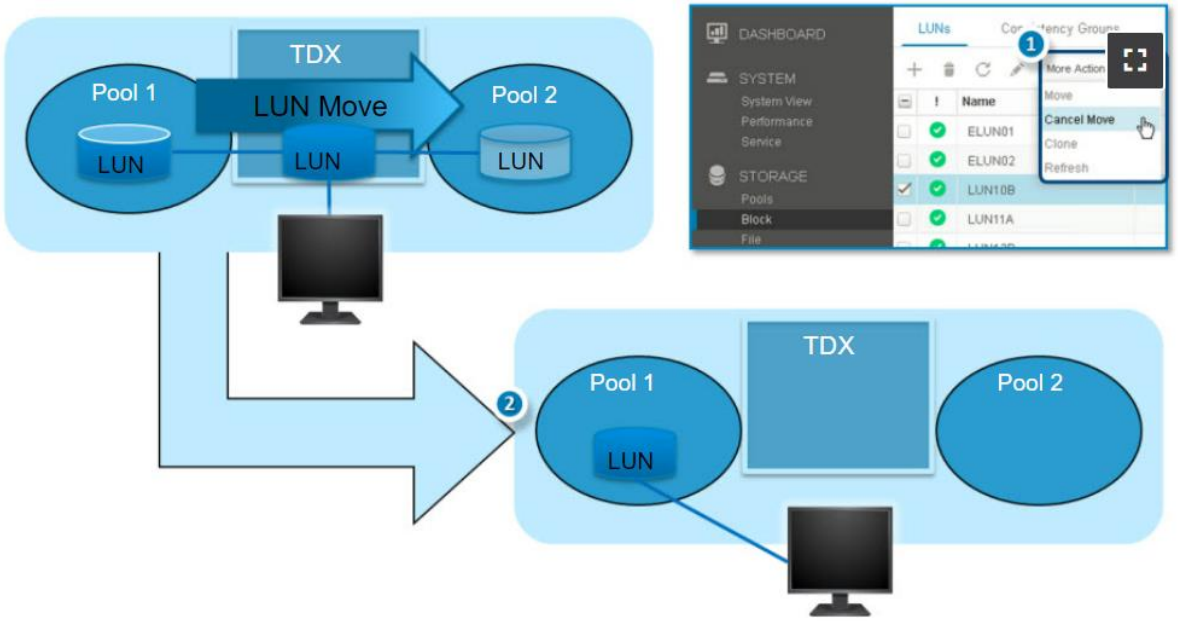
LUN Cancel Move Operation

A LUN **Cancel Move** operation cancels a move session. The operation is only available if a move session is ongoing. The operation cancels the move. Select **More Actions -> Cancel Move (1).** The operation then returns any moved data to the original location **(2),** where you can access it normally from its pool.



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Local NAS Server Mobility

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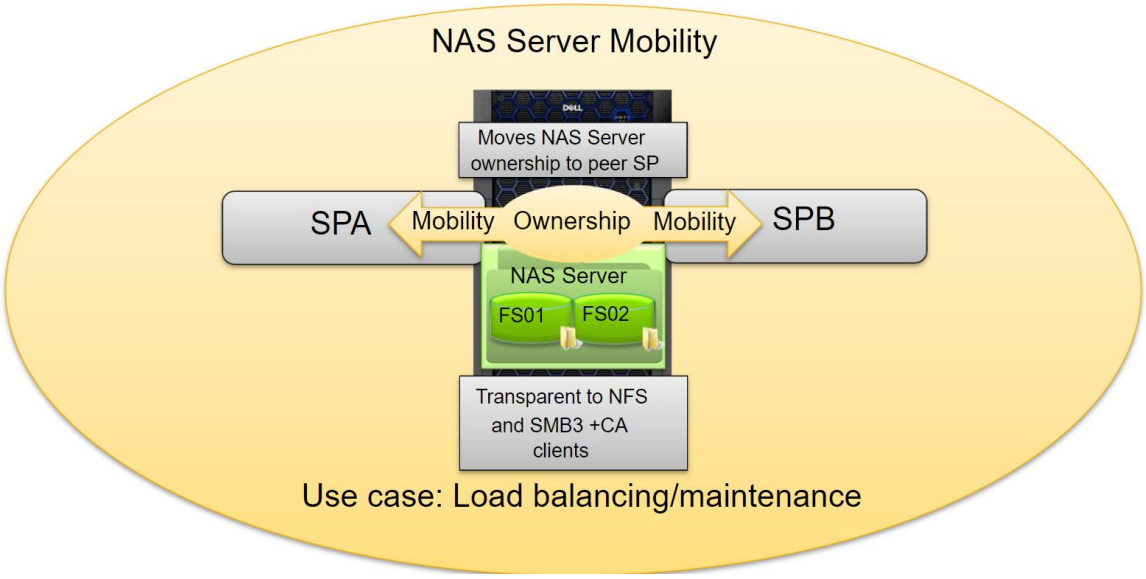
Local NAS Server Mobility Overview

The local NAS Server mobility feature moves a NAS Server between the Dell Unity XT Storage Processors. The move effectively changes the ownership of the NAS Server to the peer Storage Processor. The entire configuration, file systems, services, and features of the NAS Server remain the same, it is only the Storage Processor ownership that is changed.

The move is transparent to NFS clients and the SMB3 clients configured with Continuous Availability. Clients running either SMB2, or SMB3 without CA are disrupted due to their protocols' stateful nature. However, most current client operating systems will automatically retry the connection and reconnect to the NAS Server after the move is complete.

The NAS Server mobility feature can be used for balancing the load across the Dell Unity XT system Storage Processors. It can also be used to provide data access during maintenance events. For example, during network connectivity maintenance for a Storage Processor, the NAS Server could be moved to the peer SP allowing continued client access to data.



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Local NAS Server Mobility Capabilities

The local NAS Server mobility feature supports moving a single NAS Server at a time. Multiple simultaneous moves of NAS Servers are not supported.

Only move a NAS Server that is in a healthy OK state. The system prevents moving any NAS Server when its state would cause a problem being moved, such as faulted or not accessible states.

A NAS Server that is a destination of a File Import session cannot be moved. The NAS Server can only be moved after the File Import session completes.

When a NAS Server is moved that is in a replication session, the replication session is transferred with the NAS Server. However, to move the NAS Server, the active replication session must be manually paused. During the NAS Server move, replication commands are rejected. After the NAS Server move has completed, the replication session needs to be manually restarted.

If a NAS Server is moved that is actively running an NDMP job, the move stops the job. After the NAS Server move completes, the NDMP job must be manually restarted.

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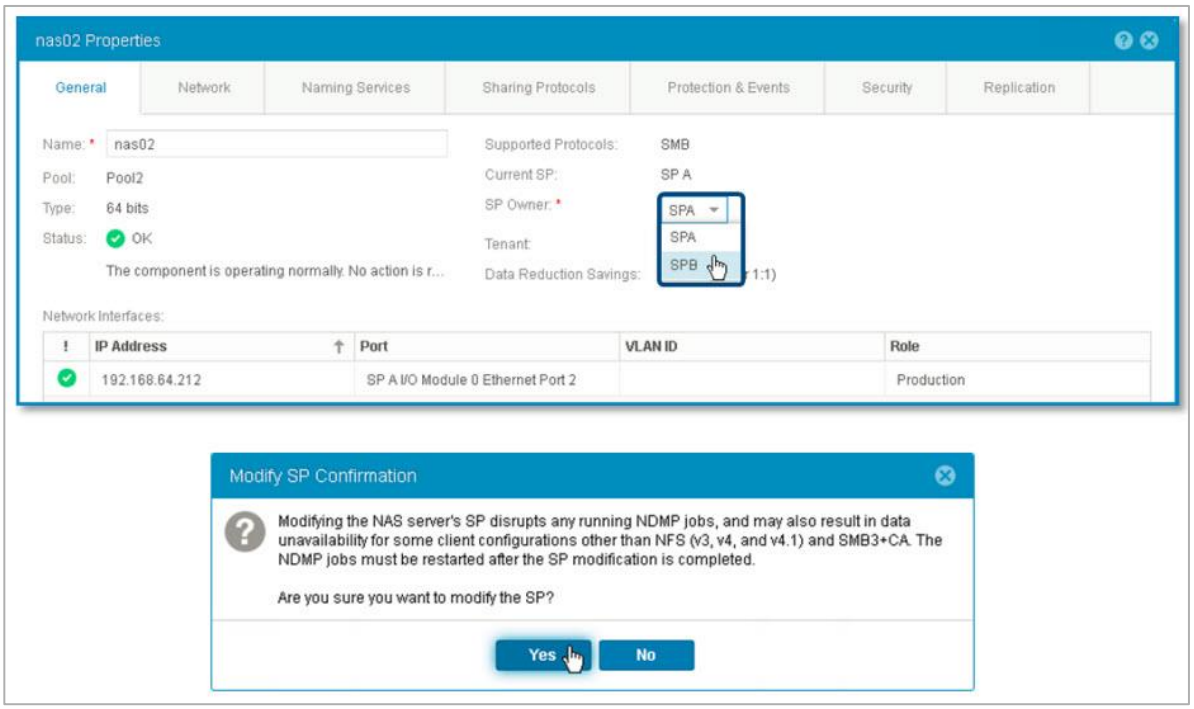
Moving a NAS Server to Peer SP

To perform a NAS Server move operation, there is no configuration needed. First, from the NAS Server Properties page, verify that the NAS Server is in a healthy state. Then verify that it is not a destination NAS Server to a File Import session. Finally verify it is not involved in an active replication session.

Then, from the properties page, select the peer SP for ownership. A confirmation window is displayed stating the move disrupts running NDMP jobs. The message also states the operation disrupts data access to clients other than NFS and SMB3 CA configured clients. After the confirmation is accepted and the NAS Server configuration change is applied, the move operation runs in a “set and forget” fashion. It has no pause, resume or cancel functions.



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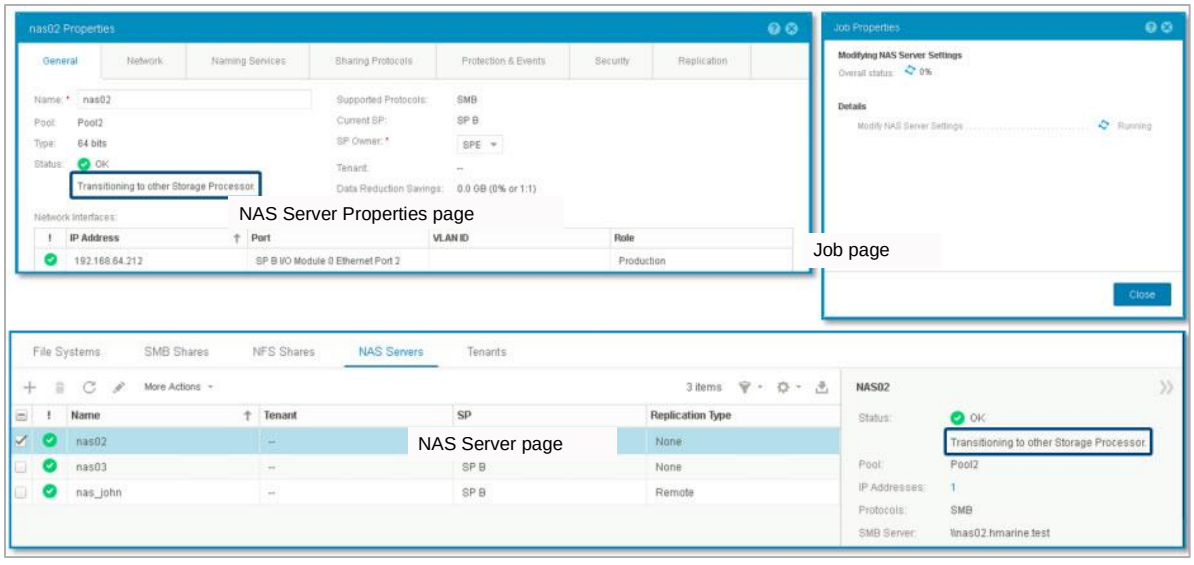
Monitoring a NAS Server Move

The status of the NAS Server move operation is displayed in several locations within Unisphere.

- From the NAS Server Properties page, a status of Transitioning to other Storage Processor is displayed when the move is in progress.
- A similar status is displayed from the NAS Server page when the specific NAS Server is selected.
- If the Job Properties page is displayed, it shows a Modify NAS Server Settings job running when the move is in progress.

As previously mentioned, the move operation has no pause, resume or cancel function. The move just runs to completion. When the move completes, the NAS Server displays a status of: The component is operating normally. No action is required.



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Demonstration: Local NAS Server Move

This demo covers the local NAS Server mobility feature. A NAS Server is moved to the peer Storage Processor.

Movie:

The web version of this content contains a movie.

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Data Mobility Key Points

1. **Local LUN Move**
   a. The local LUN Move is a native feature of Dell Unity to move LUNs within a single physical or virtual Dell Unity system.
      - The feature moves LUNs between different pools within the system, or within the same pool.
      - The move operation is transparent to the host and has minimal performance impact on data access.
   b. The moved LUN retains its LUN attributes and some extra LUN feature configurations, such as snapshot schedules.
   c. The local LUN Move can be used to move LUNs to a pool that has more capacity, or to change the storage characteristics for a LUN.
2. **Local NAS Server Mobility**
   a. The local NAS Server mobility feature moves a NAS Server between the Dell Unity Storage Processors.
      - The operation effectively changes the ownership of the NAS Server to the peer Storage Processor.
      - The move is transparent to NFS clients and the SMB3 clients configured with Continuous Availability.
   b. The NAS Server mobility feature can be used for balancing the load across the Dell Unity system Storage Processors.
   c. The local NAS Server mobility feature supports moving only a single NAS Server at a time. The NAS server must be in a healthy OK state.

For more information, see the **Dell EMC Unity Family Configuring and managing LUNs**, and **Dell EMC Unity: NAS Capabilities** on the Dell EMC Unity Family Technical Documentation portal at Dell Technologies site.

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