



# **Guidelines for upgrading controllers with ARL**

## **AFF and FAS Controller Upgrade**

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# Guidelines for upgrading controllers with ARL

To understand whether you can use aggregate relocation (ARL) to upgrade a pair of controllers running ONTAP 9.8 depends on the platform and the configuration of both the original and replacement controllers.

## Supported upgrades for ARL

You can upgrade a pair of nodes using ARL under the following circumstances:

- Both the original controllers and the replacement controllers must be running the same version of ONTAP 9.8 before the upgrade.
- The replacement controllers must have equal or higher capacity than the original controllers. Equal or higher capacity refers to attributes, such as the NVRAM size, volume, LUN, or aggregate count limits; it also refers to the maximum volume or aggregate sizes of the new nodes.
- You can upgrade the following type of systems:
  - A FAS system to a FAS system.
  - A FAS system to a V-Series system or a system with FlexArray Virtualization Software.
  - A V-Series system to a V-Series system or a system with FlexArray Virtualization Software.
  - A V-Series system or a system with FlexArray Virtualization Software to a FAS system, provided that the V-Series system or system with FlexArray Virtualization Software has no array LUNs.
  - An AFF system to an AFF system.
- For some ARL controller upgrades you can use temporary cluster ports on the replacement controller for the upgrade. For example, if you upgrade from an AFF A300 to an AFF A400 system, depending on the AFF A400 configuration, you can use any of the two mezzanine ports or add a four-port 10 GbE network interface card to provide temporary cluster ports. After you complete a controller upgrade using temporary cluster ports, you can nondisruptively migrate clusters to 100 GbE ports on the replacement controller.
- Controller upgrade using ARL is supported on systems configured with SnapLock Enterprise and SnapLock Compliance volumes.

You should verify whether the ARL can be performed on the original and replacement controllers. You should check the size of all defined aggregates and number of disks supported by the original system. Then compare them with the aggregate size and number of disks supported by the new system. To access this information, refer to [References](#) to link to the *Hardware Universe*. The aggregate size and the number of disks supported by the new system must be equal to or greater than the aggregate size and number of disks supported by the original system.

You should validate in the cluster mixing rules whether new nodes can become part of the cluster with the existing nodes when the original controller is replaced. For more information about cluster mixing rules, refer to [References](#) to link to the *Hardware Universe*.



Both systems are either high-availability (HA) or non-HA. Both nodes must either have the personality enabled or disabled; you cannot combine a node with the All Flash Optimized personality enabled with a node that does not have the personality enabled in the same HA pair. If the personalities are different, contact technical support.



If the new system has fewer slots than the original system, or if it has fewer or different ports, you might need to add an adapter to the new system. Refer to [References](#) to link to the *Hardware Universe* on the NetApp Support Site for details about specific platforms.

## Upgrades not supported for ARL

You cannot perform the following upgrades:

- To or from controllers that cannot run ONTAP 9.8 or later.
- To replacement controllers that do not support the disk shelves connected to the original controllers.

For disk-support information, refer to [References](#) to link to the *Hardware Universe*.

- From controllers with root aggregates or data aggregates on internal drives.

If you want to upgrade controllers with root aggregates or data aggregates on internal disk drives, refer to [References](#) to link to the *Controller Hardware Upgrade Express Guide* and go to the procedure *Upgrading a pair of nodes running clustered Data ONTAP by moving volumes*.



If you want to upgrade ONTAP on nodes in a cluster, refer to [References](#) to link to the *ONTAP 9 Upgrade and Revert/Downgrade Guide*.

## Assumptions and terminology

This document is written with the following assumptions:

- The replacement controller hardware is new and has not been used.



**Attention:** Because this procedure assumes that the replacement controller hardware is new and has not been used, the steps required to prepare used controllers with the `wipeconfig` command are not included in this procedure. You must contact technical support if the replacement controller hardware was previously used, especially if the controllers were running Data ONTAP in 7-Mode.

- You read and understand the guidelines for upgrading the pair of nodes.



**Attention:** Do not try to clear the NVRAM contents. If you need to clear the contents of NVRAM, contact NetApp technical support.

- You are performing the appropriate command before and after the `modify` commands and comparing the output of both `show` commands to verify that the `modify` command was successful.
- If you have a SAN configuration, you have local and partner LIFs for each storage virtual machine (SVM), on the HA pair. If you do not have local and partner LIFs for each SVM, you should add the SAN data LIF on the remote and local node for that SVM before beginning the upgrade.
- If you have port sets in a SAN configuration, you must have verified that each bound port set contains at least one LIF from each node in the HA pair.

This procedure uses the term *boot environment prompt* to refer to the prompt on a node from which you can perform certain tasks, such as rebooting the node and printing or setting environmental variables. The prompt

is sometimes referred to informally as the *boot loader prompt*.

The boot environment prompt is shown in the following example:

```
LOADER>
```

## Licensing in ONTAP 9.8 or Later

When you set up a cluster, the setup wizard prompts you to enter the cluster-base license key. However, some features require additional licenses, which are issued as *packages* that include one or more features. Each node in the cluster must have its own key for each feature to be used in the cluster.

If you do not have new license keys, currently licensed features in the cluster are available to the new controller and will continue to work. However, using unlicensed features on the controller might put you out of compliance with your license agreement, so you should install the new license key or keys for the new controller after the upgrade is complete.

All license keys are 28 uppercase alphabetic characters in length. Refer to [References](#) to link to the *NetApp Support Site* where you can obtain new 28-character license keys for ONTAP 9.8. or later. The keys are available in the *My Support* section under *Software licenses*. If the site does not have the license keys you need, contact your NetApp sales representative.

For detailed information about licensing, go to [References](#) to link to the *System Administration Reference*.

## Storage Encryption

The original nodes or the new nodes might be enabled for Storage Encryption. In that case, you need to take additional steps in this procedure to verify that Storage Encryption is set up properly.

If you want to use Storage Encryption, all the disk drives associated with the nodes must have self-encrypting disk drives.

## Two-node switchless clusters

If you are upgrading nodes in a two-node switchless cluster, you can leave the nodes in the switchless cluster while performing the upgrade. You do not need to convert them to a switched cluster

## Troubleshooting

This procedure includes troubleshooting suggestions.

If any problems occur while upgrading the controllers, you can refer to the [Troubleshoot](#) section at the end of the procedure for more information and possible solutions.

If you do not find a solution to the problem you encountered, you should contact technical support.

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