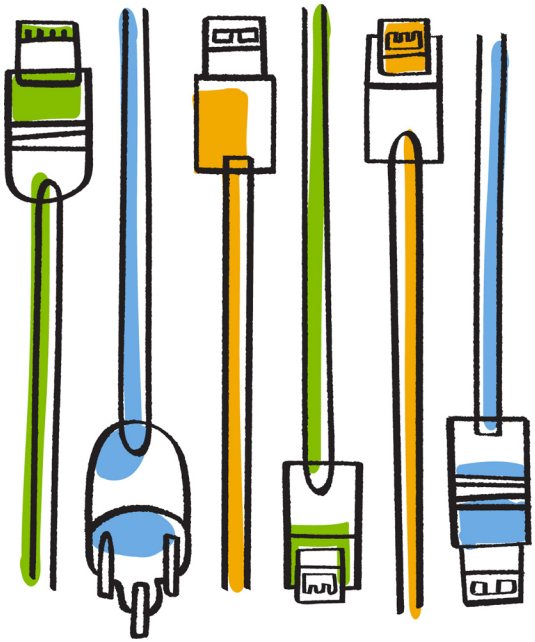
NetApp®

# V-Series Systems

## Implementation Guide for NetApp® E-Series Storage



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# Understanding V-Series and E-Series storage implementation

Data ONTAP supports V-Series systems deployed with E-Series storage arrays. The E-Series storage array has back-end configuration requirements and limits on the configurations supported.

## Information about Data ONTAP support for E-Series storage arrays

Not all Data ONTAP releases support the same features, configurations, storage array models, and V-Series models. During your deployment planning, you need to check Data ONTAP support information to ensure that the deployment conforms to Data ONTAP hardware and software requirements for all systems in the deployment.

Support information for deployments with E-Series storage arrays is included in the following documents:

| Documents | Topics covered |
|---|---|
| Interoperability Matrix at *support.netapp.com* | Data ONTAP working with back-end devices, including the following:<br>• Supported storage arrays and storage array firmware<br>• Supported switches and switch firmware<br>• Whether your storage array supports nondisruptive (live) upgrade of the storage array firmware |
| *Hardware Universe* at *hwu.netapp.com*<br>**Note:** Limits for V-Series systems were previously provided in the *V-Series Limits Reference for Third-Party Storage* and V-Series Support Matrix. | Data ONTAP limits for releases and platforms, including the following:<br>• Minimum and maximum array LUN sizes including the minimum array LUN size for the root volume and spare array LUNs<br>• Minimum aggregate size for aggregates with array LUNs<br>• Minimum and maximum capacity<br>• Neighborhood limits |

| Documents | Topics covered |
| --- | --- |
| *V-Series Installation Requirements and Reference Guide* | Planning tasks for a V-Series implementation, including:<br>• Planning the implementation<br>• Connecting the V-Series system and the array<br>• Verifying the installation |
| E-Series documentation | Information you may need when setting up the E-Series storage array could include the following:<br>• Site preparation requirements<br>• Cabling instructions<br>• SANtricity software installation and configuration instructions |

### Related documentation

The following documentation can be found at *support.netapp.com*.

- *Hardware Universe* (formerly the *System Configuration Guide*)
- *V-Series Installation Requirements and Reference Guide*
- Interoperability Matrix at *support.netapp.com*
- *E-Series Storage Systems Site Preparation Guide*
- *E-Series Storage Systems Hardware Cabling Guide*
- *SANtricity ES Storage Manager documentation*

# Requirements for configuring E-Series storage arrays

There are system parameters that you must set and considerations to keep in mind when configuring a storage array to work with a V-Series system.

## Required host type for E-Series storage arrays

The host type parameter must be set in order for the storage array to communicate with the V-Series system.

The required host type setting, based on the storage array firmware version that you have installed, is shown in the following table:

| If your firmware version is... | Then set the host type to... |
|---|---|
| 07.86.29.00 and below | AIX |
| 07.86.34.00 and above | ONTAP |

# Supported configurations for E-Series storage arrays

Only certain configurations of E-Series storage arrays deployed with V-Series system are supported.

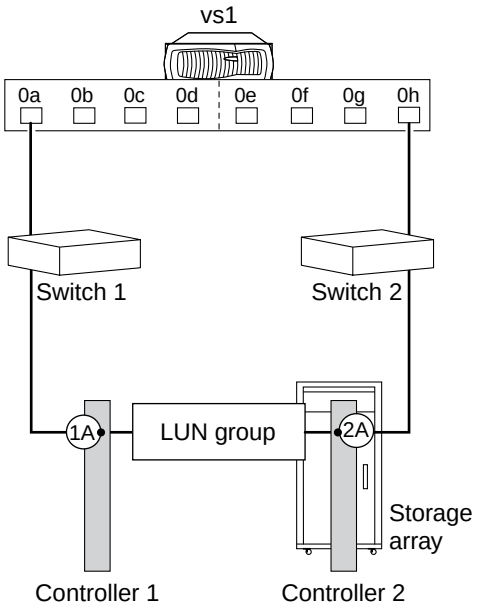
For additional information about specific array model configurations, see the Interoperability Matrix at *support.netapp.com*.

## Stand-alone basic configuration

The stand-alone basic V-Series system configuration is a simple fabric-attached configuration with a single FC initiator port pair accessing a single LUN group.

This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

The following illustration shows this configuration:

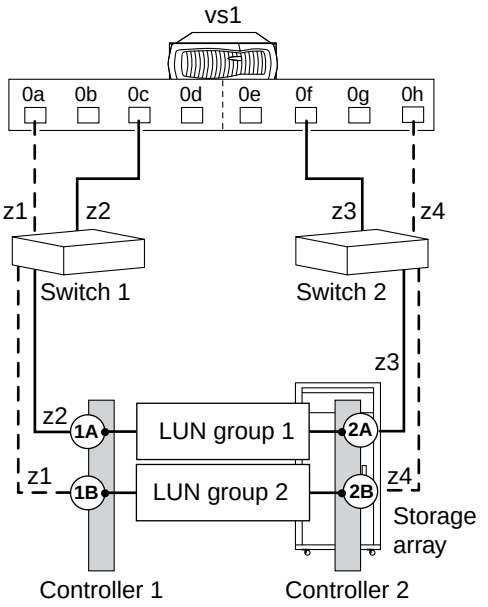


## Stand-alone with two 2-port array LUN groups

This is a stand-alone V-Series system in a fabric-attached simple configuration. In this configuration, each FC initiator port pair accesses a separate array LUN group.

This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

The following illustration shows this configuration:

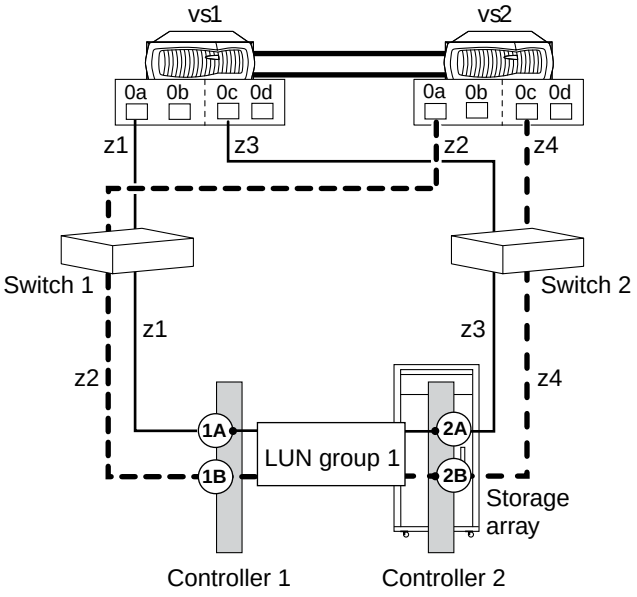



## Single 4-port array LUN group

This configuration contains a single 4-port LUN group with each target port accessed by a single V-Series FC initiator port from the HA pair. Zoning ensures that there are only two paths to a specific array LUN from each V-Series system.

This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

The following illustration shows this configuration:

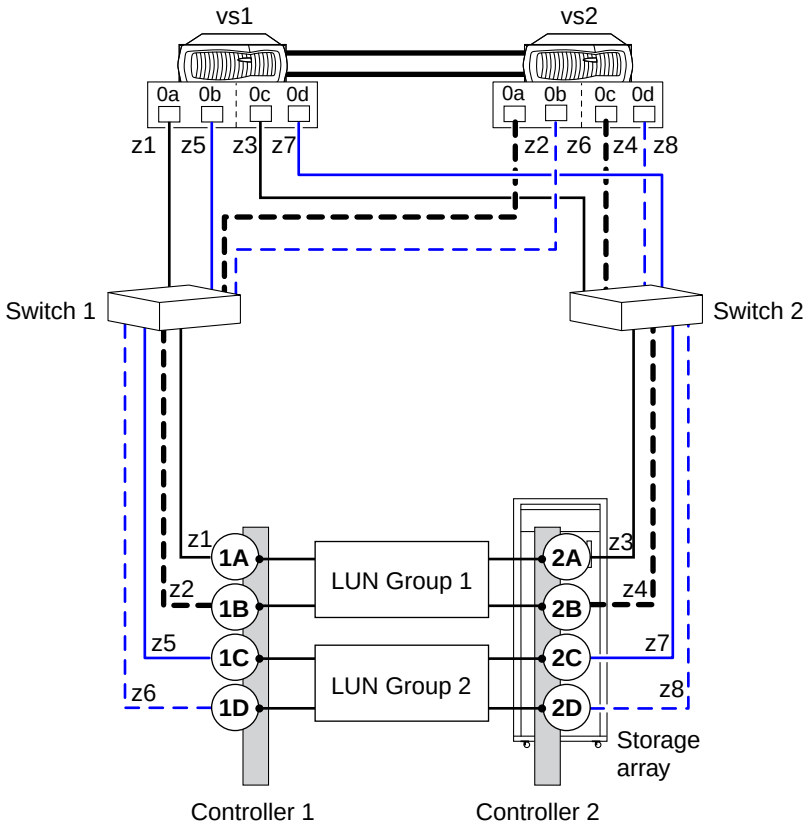



## Two 4-port array LUN groups

In this configuration, each V-Series port pair accesses a separate array LUN group. Zoning is single V-Series FC initiator to single array target port.

This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

The following illustration shows a block diagram of this configuration:




# Eight-port array LUN group configuration

Starting in Data ONTAP 8.2, an eight-port LUN group configuration is supported on clustered V-Series systems.

This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

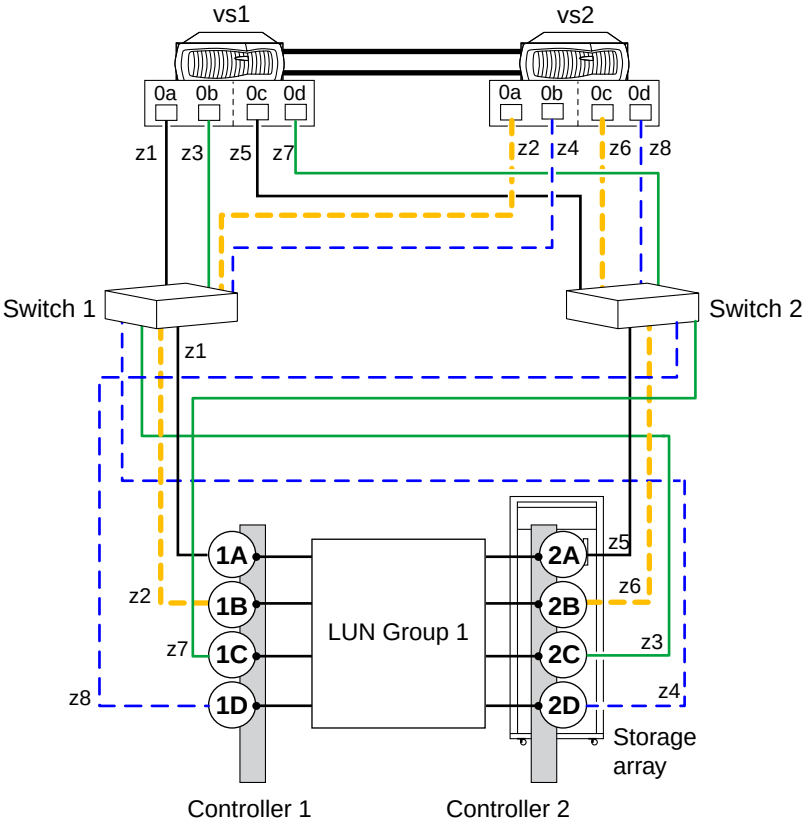
There are two ways of deploying this configuration, crossed and uncrossed back-end connections.

### Crossed back-end connections

In this configuration with the back-end connections crossed, the FC connections from the same storage array controller go to both fabric switches (redundant).

In this illustration of crossed back-end connections, note how the nodes are attached to the switches and to the storage array. Vs1 uses switch 1 when attaching to the storage array Controller 1 port 1A and Controller 2 port 2C, and uses switch 2 when attaching to storage array Controller 2 ports 2A and

Controller 1 port 1C. This optimizes the use of switch ports and array ports, which reduces the impact of a switch or storage array controller failure.

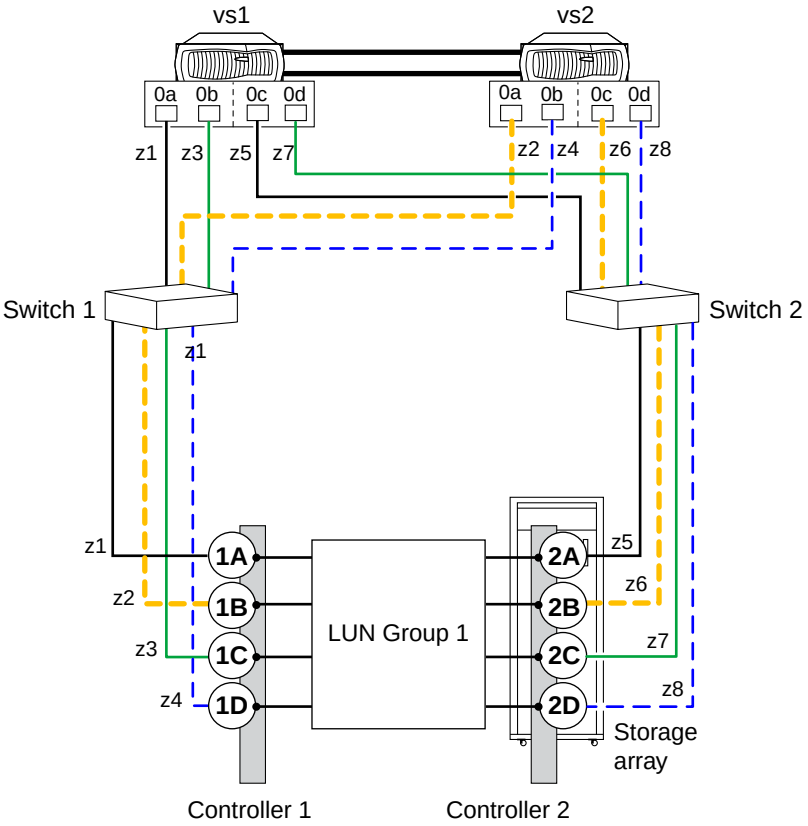



**Note:** The following problem can occur with Active-Passive storage arrays in crossed back-end connections: If one of the fabric switches is taken offline or goes down and a path failure from both Data ONTAP systems occurs, the Data ONTAP systems panic even though the alternate path from each system is still online. For example, if switch 2 is down and the “0b” paths on both vs1 and vs2 go down, vs1 and vs2 panic even though the “0a” paths are still online.

### Back-end connections are not crossed

In this configuration in which the back-end connections are not crossed, the FC connections from the same storage array controller go to only one fabric switch.

The following illustration shows this configuration when the back-end connections are not crossed.




# V-Series FC initiator port attaching to multiple targets ports

Starting in Data ONTAP 8.2, a V-Series FC initiator port can be attached to multiple target ports on separate storage arrays within the same family. The *V-Series Installation Requirements and Reference Guide* contains the rules for setting up this configuration. This configuration is not supported with MetroCluster configurations.

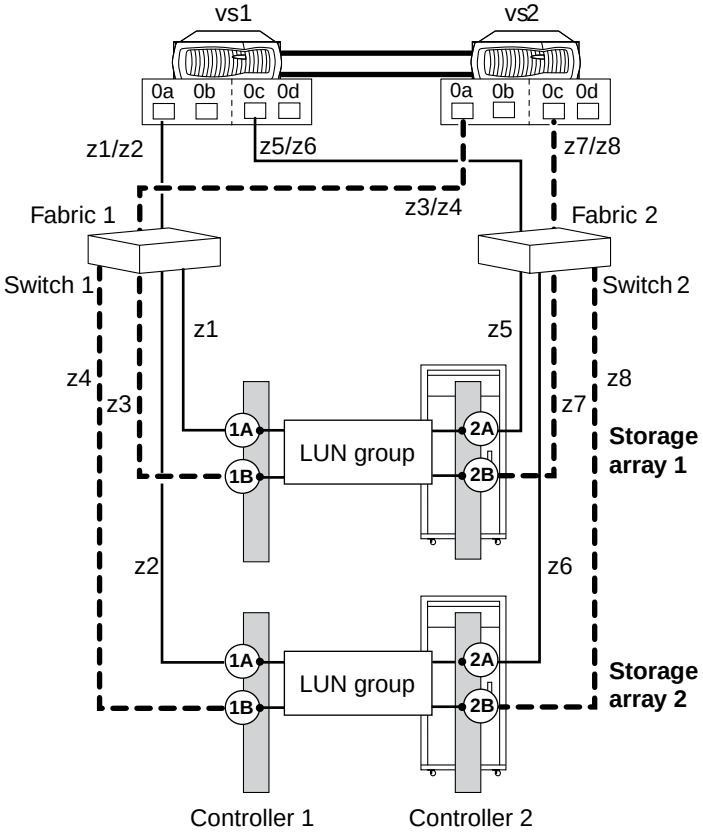
This configuration is supported for use with all storage arrays listed in the *Interoperability Matrix* as supported for the release and mode of Data ONTAP running on your system.

The following illustration shows a shared V-Series FC initiator port configuration with an HA pair. However, sharing an FC initiator port with multiple target ports is supported with both stand-alone systems and HA pairs.

For details about zoning, see the information in the *V-Series Installation Requirements and Reference Guide* about sharing an FC initiator port with multiple target ports.

### One V-Series FC initiator port connecting to target ports on *separate* storage arrays

The following example shows an HA pair in which a single FC initiator port connects to multiple target ports on different storage arrays:



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