Required number of paths to an array LUN

ONTAP FlexArray

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Required number of paths to an array LUN

ONTAP supports either four or two paths to array LUNs.

ONTAP expects and requires that a storage array provide access to a specific array LUN on at least two redundant storage array ports; that is, through a minimum two redundant paths.

Be sure that the ports on the storage array that you select to access a given LUN are from different components, so as to avoid a single point of failure, for example, from alternate controllers, clusters, or enclosures. The reason is that you do not want all access to an array LUN to be lost if one component fails.

Advantages of four paths to an array LUN

When planning the number of paths to an array LUN for ONTAP, you need to consider whether you want to set up two or four paths.

The advantages of setting up four paths to an array LUN include the following:

- If a switch fails, both storage array controllers are still available.
- If a storage array controller fails, both switches are still available.
- Performance can be improved because load balancing is over four paths instead of two.

Multiple paths to an array LUN can be used to distribute load

I/O requests for a given LUN can be distributed over all the available optimized paths to the LUN. This is unlike in previous releases, where in spite of multiple paths being available, I/O requests for a given LUN were sent over a single active optimized path only.

Distribution of I/O requests for a given LUN over multiple paths results in the following benefits:

- Improved efficiency due to maximum utilization of all available and optimized paths
- Improved performance due to load balancing over multiple paths

For example, on an active-active array, I/O requests for a given LUN can be distributed over all the four target ports available for that LUN. For an asymmetric active-active array LUN, I/O requests can be distributed over all the optimized paths for a given LUN.

Commands to view load balancing over multiple paths for a given LUN

You can run the following commands to view the distribution of load for a given LUN across multiple paths:

- `storage disk show -disk <LUN name>` displays the distribution of I/O load across the available paths for a given array LUN.
- `storage path show-by-initiator -array-name <array name>` displays the distribution of I/O load across all the initiator ports on the ONTAP system that is connected to a given storage array.
- `storage path show -by-target -array-name <array name>` displays the distribution of I/O load

across all the target ports on a given storage array.

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