Benefits of using multiple LUN groups

ONTAP FlexArray

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Benefits of using multiple LUN groups

You can use multiple LUN groups in your storage configuration for additional capacity and for improving the system performance by spreading the workload across more target ports.

A *LUN group* is set of logical devices on the storage array that an ONTAP system accesses over the same paths. The storage array administrator configures a set of logical devices as a group to define which host WWPNs can access them. ONTAP refers to this set of devices as a *LUN group*.

Benefits of using multiple LUN groups are as follows:

- There are limits on the number of LUNs that a given FC initiator port pair can support.

  For large storage arrays in particular, the required capacity might exceed what a single LUN group can provide. Therefore, using multiple LUN groups can be beneficial.

- You can partition the load of array LUNs over the FC initiator port pairs.

> Using multiple LUN groups is not supported for all storage arrays. See the *Interoperability Matrix* to determine whether a configuration using multiple LUN groups is supported for your storage array.

Related information

NetApp Interoperability Matrix Tool

Implementation requirements for a multiple LUN group configuration

You can improve the system performance by implementing a multiple LUN group configuration in your storage environment. Certain setup tasks must be performed on the ONTAP systems and the storage arrays for implementing this configuration.

A multiple LUN group configuration is supported for most storage arrays. See the *Interoperability Matrix* to confirm that this configuration is supported with your particular storage array.

You must work with the storage array administrator to set up the following on the *storage array* for a multiple LUN group configuration:

- Use as many ports as possible, to provide access to the array LUNs allocated for the ONTAP system.
- Use host groups (or your vendor's equivalent) to define which array LUN groups are presented to each FC initiator port on an ONTAP system.

You can set up the following on the ONTAP system to implement a multiple LUN group configuration:

- Use one FC initiator port pair for each array LUN group.

  Each FC initiator port pair accesses a different LUN group on the storage array through redundant paths.

- Create a large aggregate in the ONTAP configuration, and add array LUNs from multiple RAID groups

(parity groups) to the aggregate.

By doing so, the I/O is spread across more disks. The combination of spreading I/O across the RAID groups and creating one large aggregate results in a significant performance boost.

You must set up the following on the *switch* to implement a multiple LUN group configuration:

- Configure switch zoning to define which target ports the FC initiator ports on the ONTAP system should use to access each array LUN group.

Related information

NetApp Interoperability Matrix Tool

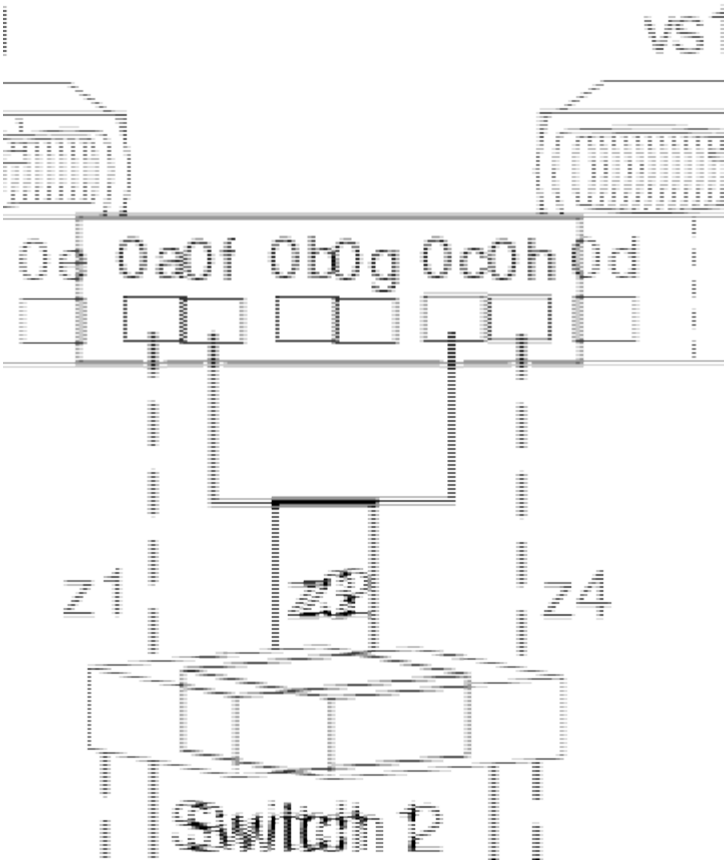
Example of a configuration with multiple LUN groups

You can use a multiple LUN group configuration to improve system performance by spreading the workload over multiple target ports.

A multiple LUN group configuration is supported for most storage arrays. See the *Interoperability Matrix* to confirm this configuration is supported with your storage array.

The following illustration shows how one FC initiator port pair (0c and 0f) on an ONTAP system accesses one LUN group over one storage array port pair, and a second FC initiator port pair (0a and 0h) accesses a second LUN group on the same storage array over a different storage array port pair.

This configuration is referred to as *stand-alone with two 2-port array LUN groups*. A multiple LUN group configuration could have an HA pair instead of a stand-alone system.



This multiple LUN group configuration enables you to spread the I/O across the RAID groups (parity groups) on the storage array. You set up your configuration so that different FC initiator port pairs access different groups of LUNs on the storage array. The ONTAP system sees any given array LUN over only two paths, because a given LDEV (logical device) is mapped to only two redundant ports on the storage array. Each LUN group is accessed through a different target port pair.

Each LDEV is identified externally by a LUN ID. The LDEV must be mapped to the same LUN ID on all storage array ports over which it will be visible to ONTAP systems.

> The same LUN ID cannot refer to two different LDEVs, even if the LUNs using the same ID are in different host groups on a target port. Although LUN ID reuse is not supported on the same target port, LUN ID reuse is supported on a storage array if the LUNs are mapped to different storage array ports.

The following table summarizes the zoning for this example. Single-initiator zoning is the recommended zoning strategy.

Zone	FC initiator port on the ONTAP system	Storage array
Switch 1		
z1	Port 0a	Controller 1 Port B
z2	Port 0c	Controller 1 Port A

Zone	FC initiator port on the ONTAP system	Storage array
Switch 2		
z3	Port 0f	Controller 2 Port A
z4	Port 0h	Controller 2 Port B

Related information

NetApp Interoperability Matrix Tool

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