Hitachi storage arrays

ONTAP FlexArray

NetApp
February 11, 2024

This PDF was generated from https://docs.netapp.com/us-en/ontap-flexarray/implement-third-party/reference_required_parameters_for_hitachi_storage_arrays_with_ontap_systems.html on February 11, 2024. Always check docs.netapp.com for the latest.

Table of Contents

Hitachi storage arrays . . . 1
- Required parameters for Hitachi storage arrays with ONTAP systems . . . 1
- Workaround when LUNs are not visible with Hitachi storage arrays . . . 2
- Requirements for creating LUNs in dynamic pools . . . 4
- Requirements for formatting array LUNs . . . 4
- Requirements for using disks external to the storage array . . . 4
- Guidelines for configuring ports on Hitachi storage arrays . . . 5
- Hitachi storage array families . . . 5

Hitachi storage arrays

You must meet certain requirements when configuring Hitachi storage arrays to work with ONTAP systems that use array LUNs. These requirements include setting configuration parameters on storage arrays and deploying only supported configurations.

Required parameters for Hitachi storage arrays with ONTAP systems

Certain parameter settings are required on the storage array for the storage array to work successfully with ONTAP systems.

Required system parameters for AMS and HUS storage arrays

The parameters that must be set are listed in the following table:

Parameter	Setting
`Mapping mode`	Enabled
`Host group security`	Enabled
`Mode Setting > Common Setting`	Standard Mode
`Platform`	Not specified
`Middleware`	Not specified

Required system parameters for VSP and HUS VM storage arrays

The parameters that must be set are listed in the following table:

Parameter	Setting
`Host mode`	Standard or 00
`Port security`	Enabled

A host group that is separate from the default host groups should be created for each initiator-target port pair.

The storage array parameters should be set and LUNs should be mapped to the host groups before the switch is zoned to connect the ONTAP system to the Hitachi storage array.

If ONTAP FC initiator ports are zoned with Hitachi array target ports before the storage array parameters are

set and the LUNs are mapped to the host groups, you might not be able to see any LUNs presented to the ONTAP interface.

In this situation, ONTAP generates one of the following EMS messages:

```
[fci.device.login.reject:info] The PLOGI transmitted by port XX was
rejected by port_id 0xYYYY with reason code 0x9 'Invalid R_CTL Field',
explanation code 0x29 'Insufficient Resources to Support Login'
```

```
[fci.device.login.reject:info]: The PLOGI transmitted by port XX was
rejected by port_id 0xYYYY with reason code 0x3 'Nx_Port Not Available,
Temporary', explanation code 0x29 'Insufficient Resources to Support
Login'
```

Workaround

If zoning was configured prior to setting the parameters and mapping the LUNs to the host groups, you can resolve the problem of LUNs not being visible by performing a path re-initialization to force a rediscovery of the array LUNs that are mapped from the Hitachi storage array. See Workaround when LUNs are not visible with Hitachi storage arrays section for the workaround to this problem.

Workaround when LUNs are not visible with Hitachi storage arrays

Workaround when LUNs are not visible with Hitachi storage arrays

The storage array parameters specified in the Required parameters for Hitachi storage arrays with systems running ONTAP section should be set and LUNs should be mapped to the host groups before the switch is zoned to connect the ONTAP system that uses array LUNs to a Hitachi storage array.

Required parameters for Hitachi storage arrays with systems running ONTAP

If zoning was configured prior to setting the parameters and mapping the LUNs to the host groups, you can resolve the problem of LUNs not being visible by performing a path reinitialization. The path reinitialization forces a rediscovery of the array LUNs that are mapped from a Hitachi storage array.

The procedure you use depends on whether aggregates with Hitachi array LUNs have already been configured on the ONTAP system. (In the following procedures, assume that Node-1 and Node-2 are the names of the ONTAP nodes.)

If aggregates with Hitachi array LUNs are already created on an ONTAP system that uses array LUNs

1. Run the following command to ensure that HA configuration is enabled on your ONTAP systems: **`cluster ha show`**

   The following output is displayed:

```
High Availability Configured: true
```

2. Run the following command to ensure that storage failover is configured on your ONTAP system: **storage failover show**

   The following output is displayed:

```
          Takeover
Node           Partner        Possible State Description
-------------- -------------- --------
-------------------------------------
Node-1    Node-2    true     Connected to Node-2
Node-2    Node-1    true     Connected to Node-1
2 entries were displayed.
```

3. Run the following command to perform a takeover operation on Node-1: **storage failover takeover -ofnode Node-1**
4. Run the following command again to verify that Node-2 is ready for a giveback operation: **storage failover show**

   The following output is displayed:

```
          Takeover
Node           Partner        Possible State Description
-------------- -------------- --------
-------------------------------------
Node-2    Node-1    false    In takeover, Auto giveback will be
                                      initiated in 348 seconds
Node-1    Node-2    -        Waiting for giveback (HA mailboxes)
2 entries were displayed.
```

5. Run the following command to perform a giveback operation on Node-1: **storage failover giveback -ofnode Node-1 -require-partner-waiting true**
6. From other nodes in the cluster, repeat Step 3 through Step 5.

If aggregates with Hitachi array LUNs have not been created on an ONTAP system that uses array LUNs

1. Run the following command to list all the ONTAP FC initiator ports that are connected to the Hitachi storage array: **system node run -node <node name> -command "sysconfig -v"**

   For example: **system node run -node Node-1 -command "sysconfig -v"**

2. Run the following command to take all the listed ports offline: **system node run -node <node name> -command "priv set advanced;fcadmin offline <adapter>"**

For example: **system node run -node Node-1 -command "priv set advanced;fcadmin offline 0a"**

3. Run the following command to bring all the listed ports online: **system node run -node <node name> -command "priv set advanced;fcadmin online <adapter>"**

   For example: **system node run -node Node-1 -command "priv set advanced;fcadmin online 0a"**

Requirements for creating LUNs in dynamic pools

When creating LUNs in the dynamic pools, do not over-provision the pool capacity.

Requirements for formatting array LUNs

You can perform different types of array LUN formatting. Each type has an impact on the availability of LUNs or the entire storage array.

If you must present a new LUN to the ONTAP system immediately, you should use quick formatting. If you plan to present LUNs to the ONTAP system in the future, quick formatting is recommended but Online formatting is acceptable.

Quick formatting is recommended because both Online and Offline formatting delay disk discovery until after the LUN formatting is complete, as described in the following list:

- Online formatting takes the array LUN that is being formatted completely offline, and the array LUN does not respond to any SCSI commands.

  Formatting is performed on one array LUN at a time until all array LUNs are formatted.

- Offline formatting takes the entire storage array offline and the storage array does not respond to any SCSI commands.

  The array LUNs are formatted six at a time per controller until the formatting is complete.

  The storage array does not respond until all formatting is complete.

- If you are creating array LUNs (for any host) after initial setup of the ONTAP system and you are using Offline formatting, the system panics.

  Any array LUNs that are mapped to the ONTAP system, including array LUNs in the root volume, become unavailable until formatting is complete.

- Online and quick formatting of LUNs for other hosts do not impact the ONTAP system.

Requirements for using disks external to the storage array

ONTAP supports using the same disks behind the storage arrays that the vendor supports (that is, disks external to the storage array). When you are deploying storage arrays that use external disks, ONTAP accepts the configuration between the storage array and the external disks.

The following are restrictions and best practice recommendations for deploying storage arrays that use external disks:

- Root volumes and spare core LUNs are supported on external disks.
- Array LUNs from external and internal disks should not be in the same ONTAP aggregate.
- Array LUNs from SATA drives and array LUNs from FC drives should not be in the same aggregate.
- Rules for the number of paths to array LUNs on external disks are the same as for array LUNs on disks on the storage array.

  In the case of external disks, the paths go from the ONTAP system through the storage array to the external disks.

- Only block checksum is supported for array LUNs on external disks.

Related information

FlexArray virtualization installation requirements and reference

Guidelines for configuring ports on Hitachi storage arrays

You should follow certain guidelines when configuring ports on Hitachi storage arrays.

The guidelines for configuring ports on Hitachi storage arrays are as follows:

- You should add only one host group per port.
- You should ensure that a host group includes all the FC initiator ports of the V-Series systems in an array LUN neighborhood.

Hitachi storage array families

ONTAP does not support mixing some types of storage in aggregates. To help you determine the array LUNs that can be mixed in an aggregate, the storage arrays from each vendor are grouped into families. When you create aggregates, you cannot mix array LUNs from different vendors and from different storage array families in the same aggregate.

Storage arrays in the same family share the same performance and failover characteristics. For example, members of the same family all perform active-active failover, or they all perform active-passive failover. More than one factor might be used to determine storage array families. For example, storage arrays with different architectures would be in different families even though other characteristics might be the same.

The following list shows the Hitachi storage array families supported with ONTAP systems:

- Family 1: VSP
- Family 2: VSP Gx00
- Family 3: AMS 2x00
- Family 4: HUS
- Family 5: HUS VM

The Interoperability Matrix is the final authority for information about the storage arrays supported for each vendor.

Related information

NetApp Interoperability Matrix Tool

Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP “AS IS” AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at http://www.netapp.com/TM are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.