



Host support for multipathing

ONTAP 9

NetApp
August 18, 2023

Table of Contents

- Host support for multipathing 1
 - Host support for multipathing overview 1
 - When host multipathing software is required 1
 - Recommended number of paths from host to nodes in cluster 1

Host support for multipathing

Host support for multipathing overview

ONTAP always uses Asymmetric Logical Unit Access (ALUA) for both FC and iSCSI paths. Be sure to use host configurations that support ALUA for FC and iSCSI protocols.

Beginning with ONTAP 9.5 multipath HA pair failover/giveback is supported for NVMe configurations using Asynchronous Namespace Access (ANA). In ONTAP 9.4, NVMe only supports one path from host to target. The application host needs to manage path failover to its high availability (HA) partner.

For information about which specific host configurations support ALUA or ANA, see the [NetApp Interoperability Matrix Tool](#) and [ONTAP SAN Host Configuration](#) for your host operating system.

When host multipathing software is required

If there is more than one path from the storage virtual machine (SVM) logical interfaces (LIFs) to the fabric, multipathing software is required. Multipathing software is required on the host any time the host can access a LUN through more than one path.

The multipathing software presents a single disk to the operating system for all paths to a LUN. Without multipathing software, the operating system could treat each path as a separate disk, which can lead to data corruption.

Your solution is considered to have multiple paths if you have any of the following:

- A single initiator port in the host attaching to multiple SAN LIFs in the SVM
- Multiple initiator ports attaching to a single SAN LIF in the SVM
- Multiple initiator ports attaching to multiple SAN LIFs in the SVM

In single-fabric single-node configurations, multipathing software is not required if you only have a single path from the host to the node.

Multipathing software is recommended in HA configurations. In addition to Selective LUN Map, using FC switch zoning or portsets to limit the paths used to access LUNs is recommended.

Multipathing software is also known as MPIO (multipath I/O) software.

Recommended number of paths from host to nodes in cluster

You should not exceed more than eight paths from your host to each node in your cluster, paying attention to the total number of paths that can be supported for the host OS and the multipathing used on the host.

You should have a minimum of two paths per LUN connecting to each reporting node through Selective LUN Map (SLM) being used by the storage virtual machine (SVM) in your cluster. This eliminates single points of failure and enables the system to survive component failures.

If you have four or more nodes in your cluster or more than four target ports being used by the SVMs in any of your nodes, you can use the following methods to limit the number of paths that can be used to access LUNs on your nodes so that you do not exceed the recommended maximum of eight paths.

- SLM

SLM reduces the number of paths from the host to LUN to only paths on the node owning the LUN and the owning node's HA partner. SLM is enabled by default.

- Portsets for iSCSI
- FC igroup mappings from your host
- FC switch zoning

Related information

[SAN administration](#)

Copyright information

Copyright © 2023 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.