



# **Controller-to-stack cabling worksheet template for quad-pathed connectivity - shelves with IOM12 modules**

**ONTAP Systems**

Lisa LaRocca, Martin Houser  
October 14, 2021

This PDF was generated from <https://docs.netapp.com/us-en/ontap-systems/sas3/install-cabling-worksheet-template-quadpath.html> on October 26, 2021. Always check docs.netapp.com for the latest.

# Table of Contents

Controller-to-stack cabling worksheet template for quad-pathed connectivity - shelves with IOM12 modules . . 1

# Controller-to-stack cabling worksheet template for quad-pathed connectivity - shelves with IOM12 modules

By completing the worksheet template, you can define the controller SAS port pairs you can use to cable controllers to stacks of disk shelves with IOM12 modules to achieve quad-pathed connectivity in an HA pair or single-controller configuration. You can also use the completed worksheet to walk yourself through cabling the quad-pathed connections for your configuration.

## About this task

- This procedure and worksheet template is applicable to cabling quad-pathed connectivity for a quad-path HA or quad-path configuration with one or more stacks.

Examples of completed worksheets are provided for quad-path HA and quad-path configurations.

A configuration with two quad-port SAS HBAs and two stacks of disk shelves with IOM12 modules is used for the worksheet examples.

- The worksheet template allows for up to two stacks; you need to add more columns if needed.
- Quad-pathed connectivity for controller-to-stack connections consists of two sets of multipathed cabling: the first set of cabling is referred to as “multipathed”; the second set of cabling is referred to as “quad-pathed”.

The second set of cabling is referred to as “quad-pathed” because completing this set of cabling gives you the quad-pathed connectivity from a controller to a stack in an HA pair or single-controller configuration.

- Disk shelf IOM ports 1 and 3 are always used for multipathed cabling and IOM ports 2 and 4 are always used for quad-pathed cabling, as designated by the worksheet column headings.
- In the worksheet examples, port pairs are designated for multipathed cabling or quad-pathed cabling to the applicable stack.

Each port pair designated for multipathed cabling is encircled by an oval that is the color associated with the stack it is cabled to. Each port pair designated for quad-pathed cabling is encircled by a rectangle that is the color associated with the stack it is cabled to. Stack 1 is associated with the color blue; stack 2 is associated with the color orange.

- If needed, you can refer to [SAS cabling rules](#) for information about the controller slot numbering convention, shelf-to-shelf connectivity, and controller-to-shelf connectivity (including the use of port pairs).
- If needed, after you complete the worksheet, you can refer to [How to read a worksheet to cable controller-to-stack connections for quad-pathed connectivity](#).

Controller-to-Stack Cabling Worksheet for Quad-Pathed Connectivity									
Controller SAS ports	Controllers	Cable to disk shelf IOMs				Stacks			
		Shelf	IOM	Port		1	2		
				Multipathed	Quad-pathed	Port pairs			
A and C	1	First	A	1	2				
	2	First	B	1	2				
B and D									
	1	Last	B	3	4				
	2	Last	A	3	4				

### Steps

1. In the boxes above the gray boxes, list all SAS A ports on your system, and then all SAS C ports on your system in sequence of slots (0,1, 2, 3, and so on).

For example: 1a, 2a, 1c, 2c

2. In the gray boxes, list all SAS B ports on your system, and then all SAS D ports on your system in sequence of slots (0,1, 2, 3 and so on).

For example: 1b, 2b, 1d, 2d

3. In the boxes below the gray boxes, rewrite the D and B port list so that the first port in the list is moved to the end of the list.

For example: 2b, 1d, 2d, 1b

4. Identify the two sets of port pairs to connect to stack 1 by drawing an oval around the first set of port pairs and a rectangle around the second set of port pairs.

Both sets of cabling are needed to achieve quad-pathed connectivity from each controller to stack 1 in your HA pair or single-controller configuration.

The following example uses port pair 1a/2b for the multipathed cabling and port pair 2a/1d for the quad-pathed cabling to stack 1.

Controller-to-Stack Cabling Worksheet for Quad-Pathed Connectivity									
Controller SAS ports	Controllers	Cable to disk shelf IOMs				Stacks			
		Shelf	IOM	Port		1	2		
				Multipathed	Quad-pathed	Port pairs			
A and C	1	First	A	1	2	1a	2a	1c	2c
	2	First	B	1	2				
B and D						1b	2b	1d	2d
	1	Last	B	3	4	2b	1d	2d	1b
	2	Last	A	3	4				

5. Identify the two sets of port pairs to connect to stack 2 by drawing an oval around the first set of port pairs and a rectangle around the second set of port pairs.

Both sets of cabling are needed to achieve quad-pathed connectivity from each controller to stack 1 in your HA pair or single-controller configuration.

The following example uses port pair 1c/2d for the multipathed cabling and port pair 2c/1b for the quad-pathed cabling to stack 2.

Controller-to-Stack Cabling Worksheet for Quad-Pathed Connectivity									
Controller SAS ports	Controllers	Cable to disk shelf IOMs				Stacks			
		Shelf	IOM	Port		1	2		
				Multipathed	Quad-pathed	Port pairs			
A and C	1	First	A	1	2	1a	2a	1c	2c
	2	First	B	1	2				
B and D						1b	2b	1d	2d
	1	Last	B	3	4	2b	1d	2d	1b
	2	Last	A	3	4				

6. If you have a quad-path (single-controller) configuration, cross out the information for controller 2; you only need controller 1 information to cable the controller-to-stack connections.

The following example shows that the information for controller 2 is crossed out.

Controller-to-Stack Cabling Worksheet for Quad-Pathed Connectivity									
Controller SAS ports	Controllers	Cable to disk shelf IOMs				Stacks			
		Shelf	IOM	Port		1	2		
				Multipathed	Quad-pathed	Port pairs			
A and C	1	First	A	1	2	1a	2a	1c	2c
	<del>2</del>	<del>First</del>	<del>B</del>	<del>1</del>	<del>2</del>				
B and D						1b	2b	1d	2d
	1	Last	B	3	4	2b	1d	2d	1b
	<del>2</del>	<del>Last</del>	<del>A</del>	<del>3</del>	<del>4</del>				

## Copyright Information

Copyright © 2021 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.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

## 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.