



# Hot add a SAS disk shelf to a stack of SAS disk shelves

ONTAP MetroCluster

NetApp  
December 22, 2022

This PDF was generated from [https://docs.netapp.com/us-en/ontap-metrocluster/maintain/task\\_fb\\_hot\\_add\\_shelf\\_prepare\\_7500n.html](https://docs.netapp.com/us-en/ontap-metrocluster/maintain/task_fb_hot_add_shelf_prepare_7500n.html) on December 22, 2022. Always check docs.netapp.com for the latest.

# Table of Contents

- Hot add a SAS disk shelf to a stack of SAS disk shelves ..... 1
  - Preparing to hot-add SAS disk shelves ..... 1
  - Hot-adding a disk shelf ..... 2

# Hot add a SAS disk shelf to a stack of SAS disk shelves

## Preparing to hot-add SAS disk shelves

Preparing to hot-add a SAS disk shelf involves downloading documents as well as the disk drive and disk shelf firmware.

- Your system must be a supported configuration and must be running a supported version of ONTAP.
- All disk drives and disk shelves in the system must be running the latest firmware version.

You might want to update the disk and shelf firmware throughout the MetroCluster configuration prior to adding shelves.

[Upgrade, revert, or downgrade](#)



A mix of IOM12 modules and IOM6 modules is supported within the same stack if your system is running a supported version of ONTAP. To establish whether your version of ONTAP supports shelf mixing, refer to the Interoperability Matrix Tool (IMT). <https://mysupport.netapp.com/NOW/products/interoperability>[NetApp Interoperability] If your version of ONTAP is not supported and you cannot upgrade or downgrade the IOM modules on the existing stack or the new shelf that is to be added to a supported combination of IOM modules, you need to do one of the following:

- Start a new stack on a new SAS port (if supported by the bridge-pair).
- Start a new stack on an additional bridge-pair.

### Steps

1. Download or view the following documents from the NetApp Support Site:
  - [NetApp Interoperability Matrix Tool](#)
  - The *Installation Guide* for your disk shelf model.
2. Verify that the disk shelf you are hot-adding is supported.

[NetApp Interoperability Matrix Tool](#)

3. Download the latest disk and disk shelf firmware:



In this step, you are only completing the download portion of the instructions provided in the links. You need to follow the steps found in the [Hot-adding a disk shelf](#) section for installing the disk shelf.

- a. Download the disk firmware and make a copy of the disk firmware instructions for reference later.

[NetApp Downloads: Disk Drive Firmware](#)

- b. Download the disk shelf firmware and make a copy of the disk shelf firmware instructions for reference later.

## Hot-adding a disk shelf

You can hot-add a disk shelf when you want to increase storage without any reduction in performance.

- The system must meet all of the requirements in [Preparing to hot-add SAS disk shelves](#).
- Your environment must meet one of the following scenarios to hot-add a shelf:
  - You have two FibreBridge 7500N bridges connected to a stack of SAS disk shelves.
  - You have one FibreBridge 7500N bridge and one FibreBridge 6500N bridge connected to a stack of SAS disk shelves.
  - You have two FibreBridge 6500N bridges connected to a stack of SAS disk shelves.
- This procedure is for hot-adding a disk shelf to the last disk shelf in a stack.

This procedure is written with the assumption that the last disk shelf in a stack is connected from IOM A to bridge A and from IOM B to bridge B.

- This is a nondisruptive procedure.
- You should hot-add an equal number of disk shelves at each site.
- If you are hot-adding more than one disk shelf, you must hot-add one disk shelf at a time.



Each pair of FibreBridge 7500N or 7600N bridges can support up to four stacks.



Hot-adding a disk shelf requires you to update the disk drive firmware on the hot-added disk shelf by running the `storage disk firmware update` command in advanced mode. Running this command can be disruptive if the firmware on existing disk drives in your system is an older version.



If you insert a SAS cable into the wrong port, when you remove the cable from a SAS port, you must wait at least 120 seconds before plugging the cable into a different SAS port. If you fail to do so, the system will not recognize that the cable has been moved to another port.

### Steps

1. Properly ground yourself.
2. Verify disk shelf connectivity from the system console of either controller:

```
sysconfig -v
```

The output is similar to the following:

- Each bridge on a separate line and under each FC port to which it is visible; for example, hot-adding a disk shelf to a set of FibreBridge 7500N bridges results in the following output:

FC-to-SAS Bridge:

```
cisco_A_1-1:9.126L0: ATTO  FibreBridge7500N 2.10  FB7500N100189
cisco_A_1-2:1.126L0: ATTO  FibreBridge7500N 2.10  FB7500N100162
```

- Each disk shelf on a separate line under each FC port to which it is visible:

```
Shelf    0: IOM6  Firmware rev. IOM6 A: 0173 IOM6 B: 0173
Shelf    1: IOM6  Firmware rev. IOM6 A: 0173 IOM6 B: 0173
```

- Each disk drive on a separate line under each FC port to which it is visible:

```
cisco_A_1-1:9.126L1    : NETAPP    X421_HCOBD450A10 NA01 418.0GB
(879097968 520B/sect)
cisco_A_1-1:9.126L2    : NETAPP    X421_HCOBD450A10 NA01 418.0GB
(879097968 520B/sect)
```

3. Check whether your system has disk autoassignment enabled from the console of either controller:

**storage disk option show**

The autoassignment policy is shown in the Auto Assign column.

Node	BKg. FW. Upd.	Auto Copy	Auto Assign	Auto Assign Policy
-----	-----	-----	-----	-----
node_A_1	on	on	on	default
node_A_2	on	on	on	default
2 entries were displayed.				

4. If your system does not have disk autoassignment enabled, or if disk drives in the same stack are owned by both controllers, assign disk drives to the appropriate pools.

### Disk and aggregate management



If you are splitting a single stack of disk shelves between two controllers, disk autoassignment must be disabled before you assign disk ownership; otherwise, when you assign any single disk drive, the remaining disk drives might be automatically assigned to the same controller and pool.

The `storage disk option modify -node node-name -autoassign off` command disables disk autoassignment.



Disk drives must not be added to aggregates or volumes until the disk drive and disk shelf firmware have been updated.

5. Update the disk shelf firmware to the most current version by using the instructions for the downloaded firmware.

You can run the commands in the procedure from the system console of either controller.

#### [NetApp Downloads: Disk Shelf Firmware](#)

6. Install and cable the disk shelf:

Note the following considerations:

- For FibreBridge 6500N bridges:

Wait at least 10 seconds before connecting the port. The SAS cable connectors are keyed; when oriented correctly into a SAS port, the connector clicks into place and the disk shelf SAS port LNK LED illuminates green. For disk shelves, you insert a SAS cable connector with the pull tab oriented down (on the underside of the connector).

- For FibreBridge 7500N bridges:

Do not force a connector into a port. The mini-SAS cables are keyed; when oriented correctly into a SAS port, the SAS cable clicks into place and the disk shelf SAS port LNK LED illuminates green. For disk shelves, you insert a SAS cable connector with the pull tab oriented up (on the topside of the connector).

- a. Install the disk shelf, power it on, and set the shelf ID.

The *Installation Guide* for your disk shelf model provides detailed information about installing disk shelves.



You must power-cycle the disk shelf and keep the shelf IDs unique for each SAS disk shelf within the entire storage system.

- b. Disconnect the SAS cable from the IOM B port of the last shelf in the stack, and then reconnect it to the same port in the new shelf.

The other end of this cable remains connected to bridge B.

- c. Daisy-chain the new disk shelf by cabling the new shelf IOM ports (of IOM A and IOM B) to the last shelf IOM ports (of IOM A and IOM B).

The *Installation Guide* for your disk shelf model provides detailed information about daisy-chaining disk shelves.

7. Update the disk drive firmware to the most current version from the system console.

#### [NetApp Downloads: Disk Drive Firmware](#)

- a. Change to the advanced privilege level:

**set -privilege advanced**

You need to respond with **y** when prompted to continue into advanced mode and see the advanced mode prompt (\*>).

- b. Update the disk drive firmware to the most current version from the system console:

**storage disk firmware update**

- c. Return to the admin privilege level:

**set -privilege admin**

- d. Repeat the previous substeps on the other controller.

- 8. Verify the operation of the MetroCluster configuration in ONTAP:

- a. Check whether the system is multipathed:

**node run -node node-name sysconfig -a**

- b. Check for any health alerts on both clusters:

**system health alert show**

- c. Confirm the MetroCluster configuration and that the operational mode is normal:

**metrocluster show**

- d. Perform a MetroCluster check:

**metrocluster check run**

- e. Display the results of the MetroCluster check:

**metrocluster check show**

- f. Check for any health alerts on the switches (if present):

**storage switch show**

- g. Run Config Advisor.

[NetApp Downloads: Config Advisor](#)

- h. After running Config Advisor, review the tool's output and follow the recommendations in the output to address any issues discovered.

- 9. If you are hot-adding more than one disk shelf, repeat the previous steps for each disk shelf that you are hot-adding..

## Copyright information

Copyright © 2022 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.