



# High Availability

## ONTAP 9

aherbin, netapp-jsnyder  
May 07, 2021

# Table of Contents

High Availability ..... 1

# High Availability

Cluster nodes are configured in high-availability (HA) pairs for fault tolerance and nondisruptive operations. If a node fails or if you need to bring a node down for routine maintenance, its partner can take over its storage and continue to serve data from it. The partner gives back storage when the node is brought back on line.

The HA pair controller configuration consists of a pair of matching FAS/AFF storage controllers (local node and partner node). Each of these nodes is connected to the other's disk shelves. When one node in an HA pair encounters an error and stops processing data, its partner detects the failed status of the partner and takes over all data processing from that controller.

*Takeover* is the process in which a node assumes control of its partner's storage.

*Giveback* is the process in which the storage is returned to the partner.

By default, takeovers occur automatically in any of the following situations:

- A software or system failure occurs on a node that leads to a panic. The HA pair controllers automatically fail over to their partner node. After the partner has recovered from the panic and booted up, the node automatically performs a giveback, returning the partner to normal operation.
- A system failure occurs on a node, and the node cannot reboot. For example, when a node fails because of a power loss, HA pair controllers automatically fail over to their partner node and serve data from the surviving storage controller.



If the storage for a node also loses power at the same time, a standard takeover is not possible.

- Heartbeat messages are not received from the node's partner. This could happen if the partner experienced a hardware or software failure (for example, an interconnect failure) that did not result in a panic but still prevented it from functioning correctly.
- You halt one of the nodes without using the `-f` or `-inhibit-takeover true` parameter.



In a two-node cluster with cluster HA enabled, halting or rebooting a node using the `-inhibit-takeover true` parameter causes both nodes to stop serving data unless you first disable cluster HA and then assign epsilon to the node that you want to remain online.

- You reboot one of the nodes without using the `-inhibit-takeover true` parameter. (The `-onboot` parameter of the `storage failover` command is enabled by default.)
- The remote management device (Service Processor) detects failure of the partner node. This is not applicable if you disable hardware-assisted takeover.

You can also manually initiate takeovers with the `storage failover takeover` command.

## 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.