Understand cluster monitoring

Active IQ Unified Manager

NetApp
September 26, 2026

This PDF was generated from https://docs.netapp.com/us-en/active-iq-unified-manager/health-checker/concept_understand_cluster_monitoring.html on September 26, 2026. Always check docs.netapp.com for the latest.

Table of Contents

Understand cluster monitoring . . . 1
Understand cluster monitoring in Active IQ Unified Manager . . . 1
Understand node root volumes in Active IQ Unified Manager . . . 1
Understand events and thresholds for node root aggregates in Active IQ Unified Manager . . . 1
Understand quorum and epsilon in ONTAP clusters in Active IQ Unified Manager . . . 1

Understand cluster monitoring

Understand cluster monitoring in Active IQ Unified Manager

You can add clusters to the Unified Manager database to monitor clusters for availability, capacity, and other details, such as CPU usage, interface statistics, free disk space, qtree usage, and chassis environmental.

Events are generated if the status is abnormal or when a predefined threshold is breached. If configured to do so, Unified Manager sends a notification to a specified recipient when an event triggers an alert.

Understand node root volumes in Active IQ Unified Manager

You can monitor the node root volume using Unified Manager. The best practice is that the node root volume should have sufficient capacity to prevent the node from going down.

When the used capacity of the node root volume exceeds 80 percent of the total node root volume capacity, the Node Root Volume Space Nearly Full event is generated. You can configure an alert for the event to get a notification. You can take appropriate actions to prevent the node from going down by using either ONTAP System Manager or the ONTAP CLI.

The functionality of monitoring node root volumes is not available, if clusters run ONTAP 9.14.1 version or later.

Understand events and thresholds for node root aggregates in Active IQ Unified Manager

You can monitor the node root aggregate by using Unified Manager. The best practice is to thickly provision the root volume in the root aggregate to prevent the node from halting.

By default, capacity and performance events are not generated for root aggregates. Also, the threshold values used by Unified Manager are not applicable to the node root aggregates. Only a technical support representative can modify the settings for these events to be generated. When the settings are modified by the technical support representative, the capacity threshold values are applied to the node root aggregate.

You can take appropriate actions to prevent the node from halting by using either ONTAP System Manager or the ONTAP CLI.

The functionality of monitoring node root aggregates is not available, if clusters run ONTAP 9.14.1 version or later.

Understand quorum and epsilon in ONTAP clusters in Active IQ Unified Manager

Quorum and epsilon are important measures of cluster health and function that together indicate how clusters address potential communications and connectivity challenges.

Quorum is a precondition for a fully functioning cluster. When a cluster is in quorum, a simple majority of nodes are healthy and can communicate with each other. When quorum is lost, the cluster loses the ability to accomplish normal cluster operations. Only one collection of nodes can have quorum at any one time because all of the nodes collectively share a single view of the data. Therefore, if two non-communicating nodes are permitted to modify the data in divergent ways, it is no longer possible to reconcile the data into a single data view.

Each node in the cluster participates in a voting protocol that elects one node master; each remaining node is a secondary. The master node is responsible for synchronizing information across the cluster. When quorum is formed, it is maintained by continual voting. If the master node goes offline and the cluster is still in quorum, a new master is elected by the nodes that remain online.

Because there is the possibility of a tie in a cluster that has an even number of nodes, one node has an extra fractional voting weight called epsilon. If the connectivity between two equal portions of a large cluster fails, the group of nodes containing epsilon maintains quorum, assuming that all of the nodes are healthy. For example, the following illustration shows a four-node cluster in which two of the nodes have failed. However, because one of the surviving nodes holds epsilon, the cluster remains in quorum even though there is not a simple majority of healthy nodes.

Epsilon is automatically assigned to the first node when the cluster is created. If the node that holds epsilon becomes unhealthy, takes over its high-availability partner, or is taken over by its high-availability partner, then epsilon is automatically reassigned to a healthy node in a different HA pair.

Taking a node offline can affect the ability of the cluster to remain in quorum. Therefore, ONTAP issues a warning message if you attempt an operation that will either take the cluster out of quorum or else put it one outage away from a loss of quorum. You can disable the quorum warning messages by using the cluster quorum-service options modify command at the advanced privilege level.

In general, assuming reliable connectivity among the nodes of the cluster, a larger cluster is more stable than a smaller cluster. The quorum requirement of a simple majority of half the nodes plus epsilon is easier to maintain in a cluster of 24 nodes than in a cluster of two nodes.

A two-node cluster presents some unique challenges for maintaining quorum. Two-node clusters use cluster HA, in which neither node holds epsilon; instead, both nodes are continuously polled to ensure that if one node fails, the other has full read-write access to data, as well as access to logical interfaces and management functions.

Copyright information

Copyright © 2026 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.