

Small Sized Clusters (4 nodes)

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HOW TO READ THE MAXIMUM VALUES TABLE

Clustered Data ONTAP 8.2, 8.2.1 Maximum Configurations Guide

Small-Sized Clusters (4 nodes)

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	Supported Data ONTAP® Versions >>>					
Core	Maximum number of nodes - NAS	N/A	N/A	N/A	N/A	N/A	4	8.2, 8.2.1	8.2, 8.2.1	8.2, 8.2.1	8.2, 8.2.1	8.2, 8.2.1	8.2, 8.2.1
		Node	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
		HA Pair	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
		Cluster	No	N/A	No	Yes		N/A	N/A	N/A	N/A	N/A	N/A
								FAS2220	FAS2240	FAS3160	FAS3170	FAS3210	FAS3240
								Platform Maximum	Platform Maximum	Platform Maximum	Platform Maximum	Platform Maximum	Platform Maximum

The feature or functional area of clustered Data ONTAP related to the maximum value

The level of scope in which the maximum value applies within the cluster

Applies to HA pair and cluster scope and indicates "yes" if the node maximum value doubles in failover (HA pair scope) or if the node limits scales by the maximum number of nodes in the cluster

Indicates which clustered Data ONTAP versions support the platform and maximum values indicated for the column

Platform maximum values listed by platform model

A generic description of the maximum value that, combined with each level of "scope," provides a complete context to the maximum value

Indicates if the maximum value is code enforced by clustered Data ONTAP

Indicates whether an equivalent or related maximum value is present in 7-Mode that should be considered when planning a transition to clustered Data ONTAP

The cluster maximum value for the indicated size of the cluster for this document (small - 4 nodes, medium - 8 nodes, or large - 24 nodes) that applies to both homogenous and heterogeneous clusters

Platform-specific maximum values as they relate to the scope column

HOW SCOPE APPLIES TO CLUSTER AND PLATFORM MAXIMUM VALUES

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	FAS6080
								Platform Maximum
								Supported Data ONTAP® Versions >>> 8.2.8.2.1
WAFL	Maximum number of FlexCache® volumes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Node	Yes	N/A	Yes	Yes	2,400	100
		HA Pair	Yes	Yes	Yes	Yes	200	200
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	N/A	N/A	N/A	N/A	N/A	25	25
		Node	No	N/A	Yes	Yes	25	25
		HA Pair	No	No	Yes	Yes	25	25
		Cluster	No	No	No	Yes	25	25

The HA pair, node, and any subnode row of scope, along with the code enforced, scales by scope, 7-Mode, and platform-agnostic columns in the same row, apply to the various platform maximum value column entries located to the right of the cluster column

The cluster row of scope, along with the code enforced, scales by scope, 7-Mode, and platform-agnostic columns in the same row, only apply to the cluster maximum column

"N/A" in the cluster maximum column indicates that the maximum value is not a cluster resource, whereas any number that is specified in this field indicates that the maxims/objects are tracked as a cluster resource

UNDERSTANDING SCALES BY SCOPE FOR AN HA PAIR

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	FAS6080
								Platform Maximum
								Supported Data ONTAP® Versions >>> 8.2.8.2.1
WAFL	Maximum number of FlexCache® volumes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Node	Yes	N/A	Yes	Yes	2,400	100
		HA Pair	Yes	Yes	Yes	Yes	200	200
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	N/A	N/A	N/A	N/A	N/A	25	25
		Node	No	N/A	Yes	Yes	25	25
		HA Pair	No	No	Yes	Yes	25	25
		Cluster	No	No	No	Yes	25	25

YES: If the HA pair row Scales by Scope column is "yes," the platform maximum value entry for the HA pair row is double that of the node row, indicating that the node maximum value is doubled in failover

NO: If the HA pair row Scales by Scope column is "no," the platform maximum value entry for the HA pair row is the same as that of the node row, indicating that the node maximum value is not doubled in failover

UNDERSTANDING SCALES BY SCOPE FOR A CLUSTER

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	FAS6080
								Platform Maximum
								Supported Data ONTAP® Versions >>> 8.2.8.2.1
WAFL	Maximum number of FlexCache® volumes	N/A	N/A	N/A	N/A	N/A	2,400	N/A
		Node	Yes	N/A	Yes	Yes	100	100
		HA Pair	Yes	Yes	Yes	Yes	200	200
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	N/A	N/A	N/A	N/A	N/A	25	25
		Node	No	N/A	Yes	Yes	25	25
		HA Pair	No	No	Yes	Yes	25	25
		Cluster	No	No	No	Yes	25	25

YES: If the cluster row Scales by Scope column is "yes," the cluster maximum value entry scales in relation to the maximum number of nodes supported for the cluster

NO: If the cluster row Scales by Scope column is "no," the cluster maximum value entry does not scale based on the maximum number of nodes supported for the cluster

NOTES AND CAVEATS

Maximum values in this document represent the maximum value supported by NetApp in any configuration.

Consult additional technical documentation (technical reports and more) for operational guidance, best practices, and recommendations for specific application or performance-sensitive environments.

The primary resource affected by maximum values is system memory. As a result, all sizing and design considerations around maximum values must consider overall impact to available system memory.

Special attention must be paid to maximum values that are not code enforced, because in many cases there is no warning that a maximum value will be or has been exceeded.

Special consideration must be given to maximum values that have related or equivalent maximum values in 7-Mode, because the context of how the maximum values apply may have changed, or the maximum values may be lower (or higher) than it was in 7-Mode. For example, 7-Mode uses qtree policies, whereas clustered Data ONTAP uses both qtree policies and rules; although they are named the same in both ONTAP versions, the specific implementation is different.

For node maximum values that do not scale across HA failover (HA pair and node maximum values are the same), NetApp recommends operating at half of the defined maximum value (not required) on a per-node basis to make sure that maximum values are not exceeded in failover. It is possible to operate at any distribution between the two nodes in the HA pair, so long as in failover the remaining node does not exceed the defined maximum value.

Clustered Data ONTAP platform mixing rules (link below) take precedence in all cases. Each sized cluster now includes "primary platforms" and "mixable platforms" entries that define which platforms are able to be mixed together based on the defined platform mixing rules. When mixing platforms across different-sized clusters, the cluster maximum values for the specific size of cluster apply, while the individual subnode, node, and HA pair maximum values continue to apply based on the platform model being used.

[Clustered Data ONTAP Platform Mixing Rules](#)

<https://fieldportal.netapp.com/Core/DownloadDoc.aspx?documentID=93126&contentID=125939>

The maximum values listed in this document are valid only through the expiration date that is listed to the right of the main title bar. After expiration, visit the NetApp Field Portal to obtain the latest version of the maximum configurations document.

Future releases of this document will expand clustered Data ONTAP maximum values information into additional feature and functional areas. Additionally, existing maximum values will be revised and expanded.

