

ONTAP Select 9.3 Maximum Configurations Guide										
4 Node Cluster (Single Node Cluster Use Node Scope)										
Category	Description	Scope	Code Enforced	Scales by Scope	Platform Agnostic	Cluster Maximum	Primary Platforms			
							ONTAP Select Memory 16GB/node Platform Maximum	ONTAP Select Premium Memory 16GB/node Platform Maximum	ONTAP Select Premium Memory 4GB/node Platform Maximum	
					Supported Outlined Data ONTAP 9.3 Versions					
1	Core	Maximum number of nodes - NAS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Core	Maximum number of storage virtual machines (SVMs) - NAS	N/A	N/A	N/A	512	N/A	N/A	N/A	N/A
3	Core	Maximum number of LIFs - NAS	N/A	Yes	N/A	512	256	256	256	512
4	Core	Maximum number of connections - NAS	N/A	Yes	N/A	N/A	10,000	10,000	100,000	100,000
5	Core	Maximum number of flexible volumes - NAS	N/A	Yes	N/A	2,000	800	500	500	500
6	Core	Maximum number of FlexGroups - NAS	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A
7	Core	Maximum number of lock manager locked objects (CFS and NFS combined)	N/A	Yes	N/A	1,048,576	524,288	524,288	1,200,000	2,200,000
8	NFS	Maximum number of export policies	N/A	No	Yes	4,000	1,000	1,000	1,000	1,000
9	NFS	Maximum number of export rules	N/A	No	Yes	70,000	2,000	2,000	2,000	2,000
10	NFS	Maximum NFSv4 access control entries	N/A	Yes	N/A	N/A	1,024	1,024	1,024	1,024
11	NFS	Maximum number of client objects	N/A	Yes	N/A	24,456	N/A	N/A	N/A	N/A
12	NFS	Maximum number of pNFS objects	N/A	Yes	N/A	1,048,576	12,228	12,228	100,000	100,000
13	WAFLB	Maximum size of a 64-bit aggregate	Aggregate	Yes	N/A	N/A	100TB	100TB	100TB	100TB
14	WAFL	Maximum size of a 64-bit volume	Volume	Yes	N/A	N/A	60TB	60TB	60TB	60TB
15	WAFL	Maximum file size in a 64-bit volume	File	Yes	N/A	N/A	16TB	16TB	16TB	16TB
16	WAFL	Maximum number of volume Snapshot™ copies	Volume	Yes	N/A	N/A	255	255	255	255
17	WAFL	Maximum character length for Snapshot copy names	Snapshot	Yes	N/A	N/A	90,000	90,000	90,000	90,000
18	WAFL	Maximum number of hard links	File	Yes	N/A	N/A	100,000	100,000	100,000	100,000
19	WAFL	Maximum number of inodes/files	Volume	Yes	N/A	N/A	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000
20	WAFL	Maximum number of gtree	Node	No	N/A	400,000	50,000,000,000	50,000,000,000	50,000,000,000	50,000,000,000
21	WAFL	Maximum number of concurrent DataLock™ for Volumes (vol move) operations	Node	Yes	N/A	N/A	4,995	4,995	4,995	4,995
22	Quality of Service	Maximum number of policy groups	N/A	Yes	N/A	12,000	100,000	100,000	100,000	100,000
23	Quality of Service	Maximum number of QoS user workloads	N/A	Yes	N/A	12,000	200,000	200,000	200,000	200,000
24	Quality of Service	Maximum number of nodes participating in QoS	N/A	N/A	N/A	4	8	8	8	8
25	Quality of Service	Maximum number of QoS autovolume workloads	N/A	Yes	N/A	12,000	16	16	16	16
26	Quality of Service	Maximum number of QoS system workloads	N/A	Yes	N/A	5,000	N/A	N/A	N/A	N/A
27	SAN	Maximum number of nodes - SAN	N/A	N/A	N/A	4	3,500	3,500	3,500	3,500
28	SAN	Maximum number of storage virtual machines (SVMs) - SAN	N/A	N/A	N/A	500	3,500	3,500	3,500	3,500
29	SAN	Maximum number of flexible volumes - SAN	N/A	Yes	N/A	2,000	10,000	10,000	10,000	10,000
30	SAN	Maximum number of LUNs	N/A	Yes	N/A	8,192	10,000	10,000	10,000	10,000
31	SAN	Maximum LUN size	LUN	No	N/A	N/A	5,000	5,000	5,000	5,000
32	SAN	Maximum FC queue depth available	Port	No	N/A	N/A	5,000	5,000	5,000	5,000
33	SAN	Maximum ITNs	Node	No	N/A	8,192	N/A	N/A	N/A	N/A
34	SAN	Maximum number of LIFs - iSCSI	N/A	Yes	N/A	1,024	N/A	N/A	N/A	N/A
35	SAN	Maximum number of LIFs - FC	N/A	Yes	N/A	N/A	32	32	32	32
36	SAN	Maximum number of groups	N/A	No	N/A	4,096	32	32	32	32
37	SAN	Maximum number of initiators	N/A	No	N/A	4,096	256	256	512	512
38	SAN	Maximum number of portists	N/A	No	N/A	4,096	512	512	1,024	1,024
39	SAN	Maximum number of iSCSI sessions	N/A	Yes	N/A	8,192	N/A	N/A	N/A	N/A
40	CIFS	Maximum number of connected shares	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
41	CIFS	Maximum number of regular shares (does not apply to dynamic shares created using the home directory feature)	N/A	No	N/A	40,000	450,000	450,000	1,000,000	1,000,000
42	CIFS	Maximum number of open files	N/A	Yes	N/A	N/A	400,000	400,000	400,000	400,000
43	CIFS	Maximum number of local users	N/A	Yes	N/A	1,000	65,536	65,536	2,200,000	2,200,000
44	CIFS	Maximum number of local groups	N/A	Yes	N/A	1,000	300,000	300,000	1,200,000	1,200,000
45	CIFS	Maximum number of local group members	N/A	Yes	N/A	20,000	15,000	15,000	500,000	500,000
46	Data Protection	Maximum number of NDMP sessions	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
47	Data Protection	Maximum number of data protection (DP) mirrors and SnapVault® relationships	N/A	No	N/A	3,000	1	1	1	1
48	Data Protection	Maximum number of data protection (DP) mirrors and/or SnapVault® relationships for Fabric Pool	N/A	No	N/A	N/A	500	500	500	500
49	Data Protection	Maximum number of load sharing (LS) mirrors	N/A	No	N/A	N/A	1,000	1,000	1,000	1,000
50	Data Protection	Maximum number of concurrent SnapMirror® or SnapVault® transfers (additional transfers can be scheduled but will be queued)	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A
51	Data Protection	Maximum fan-out from source for DP mirror	N/A	Yes	N/A	N/A	2	2	2	2
52	Data Protection	Maximum fan-out from source for LS mirror	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A
53	Data Protection	Maximum number of clusters that can be peered	N/A	No	N/A	255	N/A	N/A	N/A	N/A

HOW TO READ THE MAXIMUM VALUES TABLE

Clustered Data ONTAP 8.2, 8.2.1 Maximum Configurations Guide
Small-Sized Clusters (4 nodes)

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

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	Platform Maximum
Core	Maximum number of nodes - NAS	N/A	N/A	N/A	N/A	N/A	4	Platform Maximum
		Node	N/A	N/A	N/A	N/A		Platform Maximum
		HA Pair	N/A	N/A	N/A	N/A		Platform Maximum
		Cluster	No	No	No	Yes		Platform Maximum

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

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

Category	Description	Scope	Code Enforced	Scales by Scope	7-Mode	Platform Agnostic	Cluster Maximum	Platform Maximum
WAFL	Maximum number of FlexCache® volumes	N/A	N/A	N/A	N/A	N/A	25	Platform Maximum
		Node	Yes	Yes	Yes	Yes		Platform Maximum
		HA Pair	Yes	Yes	Yes	Yes		Platform Maximum
		Cluster	Yes	Yes	No	Yes		Platform Maximum
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	N/A	N/A	N/A	N/A	N/A	25	Platform Maximum
		Node	No	No	Yes	Yes		Platform Maximum
		HA Pair	No	No	Yes	Yes		Platform Maximum
		Cluster	No	No	No	Yes		Platform Maximum

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 maximums/objects are tracked as a cluster resource

UNDERSTANDING SCALES BY SCOPE FOR AN HA PAIR

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

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

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

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

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

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=931268&contentId=125939)

<https://fieldportal.netapp.com/Core/DownloadDoc.aspx?documentId=931268&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.



Clustered Data ONTAP 8.3.x Maximum Configurations: Release 3.0

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