

ONTAP 9.2 Maximum Configurations Guide										Primary Platforms										Mobile Platforms (cannot mix with FAS2502 or FAS2554 platforms)									
Category	Description	Scope	Code Enforced	Scales by Scope	Platform Agnostic	Cluster Maximum	FAS2552		FAS2554		FAS8020		FAS8040		FAS8060		FAS8080		FAS 8200 / AFF A300										
							Memory 16GB/node Platform Maximum	Memory 16GB/node Platform Maximum	Memory 16GB/node Platform Maximum	Memory 16GB/node Platform Maximum	Memory 24GB/node Platform Maximum	Memory 24GB/node Platform Maximum	Memory 32GB/node Platform Maximum	Memory 32GB/node Platform Maximum	Memory 64GB/node Platform Maximum	Memory 64GB/node Platform Maximum	Memory 128GB/node Platform Maximum	Memory 128GB/node Platform Maximum											
1	Core	Maximum number of nodes - NAS	HA Pair	N/A	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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	HA Pair	N/A	N/A	1,024	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
3	Core	Maximum number of LIFs - NAS	HA Pair	N/A	N/A	2,048	256	256	512	512	512	512	512	512	512	512	512	512	512	512	512								
4	Core	Maximum number of connections - NAS	HA Pair	N/A	N/A	N/A	10,000	10,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000								
5	Core	Maximum number of flexible volumes - NAS	HA Pair	N/A	N/A	8,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
5	Core	Maximum number of FlexGroups - NAS	HA Pair	N/A	N/A	40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
6	Core	Maximum number of lock manager locked objects (CIFS and NFS combined)	HA Pair	N/A	N/A	4,096,000	600,000	600,000	900,000	1,200,000	2,400,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000								
7	NFS	Maximum number of export policies	HA Pair	N/A	N/A	12,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
8	NFS	Maximum number of export rules	HA Pair	N/A	N/A	70,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000								
9	NFS	Maximum NFSv4 access control entries	HA Pair	N/A	N/A	N/A	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024								
10	NFS	Maximum number of client objects	HA Pair	N/A	N/A	N/A	10,000	10,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000								
11	NFS	Maximum number of pNFS objects	HA Pair	N/A	N/A	4,096,000	524,288	524,288	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000	1,024,000								
12	WAFLE	Maximum size of a 64-bit aggregate	HA Pair	N/A	N/A	N/A	120TB	120TB	324TB	324TB	400TB	400TB	400TB	400TB	400TB	400TB	400TB	400TB	400TB	400TB	400TB								
13	WAFLE	Maximum size of a 64-bit volume	HA Pair	N/A	N/A	N/A	60TB	60TB	70TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB	100TB								
14	WAFLE	Maximum file size in a 64-bit volume	HA Pair	N/A	N/A	N/A	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB	1TB								
15	WAFLE	Maximum number of volume Snapshot™ copies	HA Pair	N/A	N/A	N/A	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255								
16	WAFLE	Maximum character length for Snapshot copy names	HA Pair	N/A	N/A	N/A	255	255	255	255	255	255	255	255	255	255	255	255	255	255	255								
17	WAFLE	Maximum number of hard links	HA Pair	N/A	N/A	N/A	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000								
18	WAFLE	Maximum number of inodes/files	HA Pair	N/A	N/A	N/A	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000	2,000,000,000								
19	WAFLE	Maximum number of dfiles	HA Pair	N/A	N/A	800,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000								
20	WAFLE	Maximum number of concurrent Dataflock™ for Volumes (vol move) operations	HA Pair	N/A	N/A	N/A	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16								
21	Quality of Service	Maximum number of policy groups	HA Pair	N/A	N/A	12,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
22	Quality of Service	Maximum number of QoS user workloads	HA Pair	N/A	N/A	12,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
23	Quality of Service	Maximum number of nodes participating in QoS	HA Pair	N/A	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
24	Quality of Service	Maximum number of QoS autovolume workloads	HA Pair	N/A	N/A	12,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
25	Quality of Service	Maximum number of QoS system workloads	HA Pair	N/A	N/A	5,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
26	SAN	Maximum number of nodes - SAN	HA Pair	N/A	N/A	8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
27	SAN	Maximum number of storage virtual machines (SVMs) - SAN	HA Pair	N/A	N/A	1,000	256	256	256	256	256	256	256	256	256	256	256	256	256	256	256								
28	SAN	Maximum number of flexible volumes - SAN	HA Pair	N/A	N/A	8,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
29	SAN	Maximum number of LUNs	HA Pair	N/A	N/A	98,304	512	512	512	512	512	512	512	512	512	512	512	512	512	512	512								
30	SAN	Maximum number of LUN mappings	HA Pair	N/A	N/A	98,304	2,048	2,048	8,192	8,192	12,288	12,288	12,288	12,288	12,288	12,288	12,288	12,288	12,288	12,288	12,288								
31	SAN	Maximum LUN size	HA Pair	N/A	N/A	N/A	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB	16TB								
32	SAN	Maximum FC queue depth available	HA Pair	N/A	N/A	N/A	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048	2,048								
33	SAN	Maximum ITNs	HA Pair	N/A	N/A	65,536	512	512	512	512	512	512	512	512	512	512	512	512	512	512	512								
34	SAN	Maximum number of LIFs - iSCSI	HA Pair	N/A	N/A	2,048	256	256	512	512	512	512	512	512	512	512	512	512	512	512	512								
35	SAN	Maximum number of LIFs - FCP	HA Pair	N/A	N/A	4,096	512	512	512	512	512	512	512	512	512	512	512	512	512	512	512								
36	SAN	Maximum number of igroups	HA Pair	N/A	N/A	32,768	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024								
37	SAN	Maximum number of initiators	HA Pair	N/A	N/A	32,768	256	256	256	256	256	256	256	256	256	256	256	256	256	256	256								
38	SAN	Maximum number of portsets	HA Pair	N/A	N/A	32,768	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024	1,024								
39	SAN	Maximum number of iSCSI sessions	HA Pair	N/A	N/A	65,536	2,048	2,048	4,096	4,096	8,192	8,192	8,192	8,192	8,192	8,192	8,192	8,192	8,192	8,192	8,192								
40	CIFS	Maximum number of connected shares	HA Pair	N/A	N/A	N/A	400,000	400,000	600,000	800,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000								
41	CIFS	Maximum number of regular shares (does not apply to dynamic shares created using the home directory feature)	HA Pair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
42	CIFS	Maximum number of open files	HA Pair	N/A	N/A	N/A	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536	65,536								
43	CIFS	Maximum number of local users	HA Pair	N/A	N/A	N/A	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
44	CIFS	Maximum number of local groups	HA Pair	N/A	N/A	N/A	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
45	CIFS	Maximum number of local group members	HA Pair	N/A	N/A	N/A	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000								
46	Data Protection	Maximum number of NDMP sessions	HA Pair	N/A	N/A	N/A	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20								
47	Data Protection	Maximum number of data protection (DP) mirrors and/or SnapVault® relationships	HA Pair	N/A	N/A	CDOT 9.0 - 6,000	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
48	Data Protection	Maximum number of local shading (LS) mirrors	HA Pair	N/A	N/A	2 for each NAS SVM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
49	Data Protection	Maximum number of concurrent SnapMirror® or SnapVault transfers (additional transfers can be scheduled but will be queued)	HA Pair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
50	Data Protection	Maximum fan-out from source for DP mirror	HA Pair	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
51	Data Protection	Maximum fan-out from source for LS mirror	HA Pair	N/A	N/A	2 for each NAS SVM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								
52	Data Protection	Maximum number of clusters that can be peered	HA Pair	N/A	N/A	255	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A								

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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	FA S2220	FA S2240	FA S3160
Supported Data ONTAP® Versions >>>								8.2, 8.2.1	8.2, 8.2.1	8.2, 8.2.1
Core	Maximum number of nodes - NAS	N/A	N/A	N/A	N/A	N/A	4	N/A	N/A	N/A
		Node	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
		Cluster	No	N/A	No	Yes		N/A	N/A	N/A

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	FA S6080
Supported Data ONTAP® Versions >>>								Platform Maximum
		N/A	N/A	N/A	N/A	N/A	8.2, 8.2.1	N/A
WAFL	Maximum number of FlexCache® volumes	Node	Yes	N/A	Yes	Yes	100	N/A
		HA Pair	Yes	Yes	Yes	Yes	200	N/A
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	Node	No	N/A	Yes	Yes	25	N/A
		HA Pair	No	No	Yes	Yes	25	N/A
		Cluster	No	No	No	Yes	25	N/A

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 maximums/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	FA S6080
Supported Data ONTAP® Versions >>>								Platform Maximum
		N/A	N/A	N/A	N/A	N/A	8.2, 8.2.1	N/A
WAFL	Maximum number of FlexCache® volumes	Node	Yes	N/A	Yes	Yes	100	N/A
		HA Pair	Yes	Yes	Yes	Yes	200	N/A
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	Node	No	N/A	Yes	Yes	25	N/A
		HA Pair	No	No	Yes	Yes	25	N/A
		Cluster	No	No	No	Yes	25	N/A

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	FA S6080
Supported Data ONTAP® Versions >>>								Platform Maximum
		N/A	N/A	N/A	N/A	N/A	8.2, 8.2.1	N/A
WAFL	Maximum number of FlexCache® volumes	Node	Yes	N/A	Yes	Yes	100	N/A
		HA Pair	Yes	Yes	Yes	Yes	200	N/A
		Cluster	Yes	Yes	No	Yes	N/A	N/A
WAFL	Maximum number of concurrent DataMotion™ for Volumes (vol move) operations	Node	No	N/A	Yes	Yes	25	N/A
		HA Pair	No	No	Yes	Yes	25	N/A
		Cluster	No	No	No	Yes	25	N/A

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 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.

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.

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.

ONTAP Platform Mixing Rules
https://library.netapp.com/ecm/ecm_get_file/ECMP1644424

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 ONTAP maximum values information into additional feature and functional areas. Additionally, existing maximum values will be revised and expanded.

