



Host Settings Affected by Solaris Host Utilities

The Solaris Host Utilities sometimes recommend that settings on the host be modified. These recommendations are based on research and internal testing done at NetApp. Testers use different settings before arriving at the recommendations.

The values listed here apply to the 6.0 version of the Host Utilities.

The recommended values can differ based on:

- Whether you are using a clustered storage system or a single, stand-alone storage system. With clustered systems, the values can vary depending on your cluster failover mode (cfmode).
- Whether you are running the current version of the Host Utilities or an earlier version of the Attach Kit.
- Which environment you are using. The Solaris Host Utilities support Veritas Dynamic Multipathing (DMP) environments with Sun native drivers and Solaris native environments using MPxIO.

Note: To make it immediately clear which environment is being referred to, this document sometimes specifies “DMP” for the Veritas DMP environment and “MPxIO” for the Solaris native environment. In some cases, the commands that you use vary depending on which drivers you are using. In those cases, both the environment and driver types are specified.

When you are using a Veritas DMP environment, NetApp recommends that in most cases you use the default values except for the restore daemon settings.

Recommended settings for Oracle Solaris Native Fibre Channel Drivers with Veritas DMP

The `host_config` command makes the following changes for the Fibre Channel and SCSI drivers in either the `/kernel/drv/ssd.conf` file (SPARC systems) or `/kernel/drv/sd.conf` (x86 systems).

Parameters changed:		
Parameter	Value	Description
<code>busy_retries</code>	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
<code>not_ready_retries</code>	300	Setting this value to 300 gives the Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.
<code>reset_retries</code>	30	Setting this value to 30 assists the host in surviving during a storage controller failover.

throttle_max	8	This setting prevents the issues seen with queue full conditions.
throttle_min	2	This is set to 8, by default. For the "Mixed Stack" the minimum value is set to 2. Therefore, the minimum value must be lowered.

Recommended settings for Oracle Solaris Native Fibre Channel Drivers with MPxIO

The `host_config` command makes the following changes to parameters in either `/kernel/drv/ssd.conf` file (SPARC systems) or `/kernel/drv/sd.conf` (x86 systems).

Parameters changed:		
Parameter	Value	Description
busy_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
not_ready_retries	300	Setting this value to 300 allow Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.
reset_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
throttle_max	64	This is the value recommended by Oracle Microsystems for SAN Foundation Suite Tunables.
throttle_min	8	This is the default for this value for Solaris 10 Update 3. NetApp recommends keeping it at 8 to maintain backward compatibility with Solaris 10 Update 2.

Recommended settings for iSCSI Software Initiator with MPxIO

The `host_config` configures the ALUA settings used by MPxIO and the SCSI drivers in either the `/kernel/drv/ssd.conf` file (SPARC systems) or `/kernel/drv/sd.conf` (x86 systems).

Prior to Data ONTAP 8.1.1 operating in Cluster-Mode and for all Data ONTAP operating in 7-Mode configurations, iSCSI does not support ALUA.

The location of the file updated by `host_config` varies depending on your configuration.

Configuration	File updated by host_config
SPARC	ssd.conf
x86	sd.conf
Non-ALUA Solaris 10	scsi_vhci.conf

Parameters changed:		
Parameter	Value	Description
busy_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
not_ready_retries	300	Setting this value to 300 gives the Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.
reset_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
throttle_max	64	This is the value recommended by Oracle Microsystems for SAN Foundation Suite Tunables.
throttle_min	8	This setting is 8 by default. Documentation stipulates that only Solaris 10 Update 3 has this set as a default.

Recommended settings for iSCSI Software Initiator with DMP

The `host_config` command configures the ALUA settings used by MPxIO and SCSI drivers in `/kernel/drv/sd.conf` file.

Parameters changed:		
Parameter	Value	Description
busy_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
not_ready_retries	300	Setting this value to 300 gives the Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.

reset_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
throttle_max	8	This setting prevents the issues seen with queue full conditions.
throttle_min	2	This is set to 8, by default. For the "Mixed Stack" the minimum value is set to 2. Therefore, the minimum value must be lowered.

Recommended settings when using Veritas VxVM and DMP

You can run the Host Utilities with Veritas Volume Manager (VxVM) and Dynamic Multipathing (DMP). The following values are recommended.

- The restore daemon settings. The values for the DMP restore daemon's policy and interval tunables determine how frequently the daemon checks paths between the host and the storage system and which paths it checks. You need to supply values for the following two settings:
 - The restore daemon interval. Specify the number of seconds between polls.
If you are using a version of the Veritas Storage Foundation prior to 5.0 (and Host Utilities 4.2), you get a faster recovery by making the restore daemon poll more often. Systems set to a longer polling interval take longer to detect path recoveries, which can impact storage system performance during a failover operation.
 - The restore daemon policy. Specify which paths the restore daemon should check during polls.
If you set the value to `check_disabled`, the daemon only checks the disabled paths. If you set this to `check_all`, it checks all the paths between the storage system and the host.
With Veritas Storage Foundation 5.0, `check_disabled` provides better performance. If you have a version of the Veritas Storage Foundation prior to 5.0, `check_all` results in faster recovery times during failovers and failbacks.

Note: The values recommended for the restore daemon are based on testing done at the time the Host Utilities was created.

Restore daemon settings (Veritas 5.0 MP3 and greater / 5.0 MP1 RP4):

For Veritas 5.0 MP3 and higher and 5.0 MP1 RP4, the following values are recommended for the restore daemon:

- restore daemon interval: 60
- restore daemon policy: `check_disabled`

Restore daemon settings (Host Utilities 4.2 and greater):

Veritas 4.2 and higher of the FC Solaris Host Utilities for Veritas use Veritas Storage Foundation 5.0, which fixes an issue that occurred in earlier Storage Foundation versions. For Host Utilities using Storage Foundation 5.0, the following values are recommended for the restore daemon:

- restore daemon interval: 60
- restore daemon policy: `check_disabled`

Probe Idle LUN settings (Veritas 5.0 MP3 and greater):

Veritas requires that the `dmp_probe_idle_lun` settings be disabled.

- `dmp_probe_idle_lun`: off

DMP path age settings (Veritas 5.1 SP1 and greater):

Veritas recommends that users reduce the default path age setting from 300 seconds to 120 seconds. This allows for quicker path recovery in the event that the path is marked as suspect as a result of the LUN path changing too quickly.

- dmp_path_age: 120

Recommended settings for Veritas DMP with Solaris native drivers

If you are using Veritas DMP with Solaris native drivers, the Host Utilities require that you use single-image cfmode.

The host_config command makes the following changes to parameters in the /kernel/drv/ssd.conf file.

The location of the file updated by host_config varies depending on your configuration.

Configuration	File updated by host_config
SPARC	ssd.conf
x86	sd.conf
Non-ALUA Solaris 10	scsi_vhci.conf

Parameters changed:		
Parameter	Value	Description
busy_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
not_ready_retries	300	Setting this value to 300 gives the Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.
reset_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
throttle_max	8	Setting this value to 8 prevents issues with queue full conditions.
throttle_min	2	This value needs to be lower than the throttle_max value. Since the throttle_max value must be set to 8, this value was lowered to 2. The default for this value is 8.

Recommended Host Utilities settings for MPxIO environment

If you are using MPxIO, the Host Utilities require that you use single-image cfmode. The `basic_config` command makes the following changes to parameters in either `/kernel/drv/ssd.conf` file (SPARC processors) or `/kernel/drv/sd` (x86/64 processors) depending on the options you use with it.

Parameters changed:		
Parameter	Value	Description
busy_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
not_ready_retries	300	Setting this value to 300 gives the Sun Cluster 3.1 adequate time for a storage controller transition. During the HU 4.0/4.1 qualification, Sun Cluster hosts were unable to survive a storage controller failover without increasing this value.
reset_retries	30	Setting this value to 30 assists the host in surviving during a storage controller failover.
throttle_max	64	This is the value recommended by Sun Microsystems for SAN Foundation Suite tunables.
throttle_min	8	This is the default for this value for Solaris 10 Update 3. NetApp recommends keeping the value at 8 to maintain backward compatibility with Solaris 10 Update 2.