
Recommended Host Settings for Linux Host Utilities

You should use certain values for host parameters when you run the Linux Host Utilities. These recommendations are based on research, working with Linux providers such as Red Hat and SUSE, and internal testing. The recommended values may differ depending on your system environment and the version of the operating system that you are using.

Before you set up the Linux Host Utilities, it is a good practice to check the following information: The recommended values might differ based on:

- The *Linux Host Utilities Release Notes* to see if there are any changes to these recommendations.
- The Interoperability Matrix to verify that the Host Utilities support your system setup.
- The *Linux Host Utilities Installation and Administration Guide* for information about setting up and using the Host Utilities.

For detailed information on the DM-Multipath parameters, see the Red Hat documentation on the [multipath.conf file](#). This information on the multipath.conf parameters applies to both Red Hat Enterprise Linux and SUSE Linux.

Examples of multipath.conf files are included in the *Linux Host Utilities Installation and Setup Guide*.

Red Hat Enterprise Linux: Recommended default settings for DM-Multipath

The table that follows lists the recommended settings for the default section of the DM-Multipath multipath.conf file on hosts running Red Hat Enterprise Linux. In most cases, the Red Hat settings also apply to Oracle Linux.

Note

Keep in mind that the parameters and values you supply for the multipath.conf default parameters override the values that you supply for the device parameters.

Red Hat Enterprise Linux DM-Multipath recommended default parameters		
Parameter	Value	Recommendation
flush_on_last_del Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 update 3 and later ◆ RHEL 4 update 7 and later 	yes	Set this value to <i>yes</i> . The default value is <i>no</i> .
max_fds Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5.2 and later ◆ RHEL 4 update 7 and later 	max	Set this value to <i>max</i> .
pg_prio_calc Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 5 update 6 and later 	avg	Set this value to <i>avg</i> . Note _____ This parameter is not supported with Red Hat Enterprise Linux 6 series or 4 series. _____
queue_without_daemon Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 update 3 and later 	no	Set this value to <i>no</i> . The default value is <i>yes</i> . Note _____ This parameter is not supported with Red Hat Enterprise Linux 4 series. _____

Red Hat Enterprise Linux DM-Multipath recommended default parameters

Parameter	Value	Recommendation
<p>user_friendly_names</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	no	<p>Set this value to no.</p> <p>Entering no forces both the host and the target to use the WWID for naming the DM-Multipath devices, which ensures that the host and the target use a consistent attribute that persists across reboots and does not require a separate mpath bindings file for naming purposes.</p> <p>In addition, by setting this value to no, you avoid some of the problems that have been seen when user_friendly_names is set to yes. There have been several Red Hat bugzilla reports about these issues.</p> <p>Note_____</p> <p>Red Hat Enterprise Virtualization Hypervisor nodes require that you set this value to no.</p>
<p>dev_loss_tmo</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 update 1 and later 	<p>RHEL 6.1: 2147483647</p> <p>RHEL 6.2 and later: infinity</p>	<p>This parameter is turned on by default and specifies the number of seconds before a link is marked lost. The value you supply depends on your version of Red Hat Enterprise Linux.</p> <p>Red Hat Enterprise Linux 6.1: Set this value to 2147483647 seconds.</p> <p>Red Hat Enterprise Linux 6.2 and later: Set this value to infinity, so that the link is never lost.</p>
<p>fast_io_fail_tmo</p> <p>Supported Red Hat versions: RHEL 6 update 1 and later</p>	5	<p>Set this value to 5.</p> <p>Related parameters: This value works with the value for dev_loss_tmo.</p>

Red Hat Enterprise Linux: Recommended device settings for DM-Multipath

The table that follows lists the recommended settings for the devices section of the DM-Multipath multipath.conf file when you are running Red Hat Enterprise Linux. In most cases, the Red Hat settings also apply to Oracle Linux.

Red Hat Enterprise Linux DM-Multipath recommended device parameters		
Parameter	Value	Recommendation
failback Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	immediate	Set this value to <code>immediate</code> . Related parameters: <code>failback</code> also works with <code>path_grouping_policy</code> .
features Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	RHEL 6.1 and later, RHEL 5.7 and later: <code>"3 queue if no path pg_init_retries 50"</code> RHEL 6.0, 5.1-5.6 and 4 series: <code>"1 queue_if_no_path"</code>	Red Hat Enterprise Linux 6.1 and later, Red Hat Enterprise Linux 5.7 and later: Set this value to <code>"3 queue if no path pg_init_retries 50"</code> . Internal testing has shown that using this value reduces possible path failures that can occur if a delayed controller failover exceeds the default time of 60 seconds. Red Hat Enterprise Linux 6.0, Red Hat Enterprise Linux prior to 5.7: Set this value to <code>"1 queue_if_no_path"</code> . Related parameters: If you specify <code>path_no_retry</code> in the default section of the <code>multipath.conf</code> file, that value overrides the <code>features</code> value and could cause an operating system crash during a takeover/giveback procedure.

Red Hat Enterprise Linux DM-Multipath recommended device parameters

Parameter	Value	Recommendation
<p>getuid_callout</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	<p>RHEL 6 series:</p> <pre>"/lib/udev/scsi_id -g -u -d /dev/%n"</pre> <p>RHEL 5 and 4 series:</p> <pre>"/sbin/scsi_id -g -u -s /block/%n"</pre>	<p>Red Hat Enterprise Linux 6 series: Set this value to <code>"/lib/udev/scsi_id -g -u -d /dev/%n"</code>.</p> <p>Red Hat Enterprise Linux 5 series and 4 series: Set this value to <code>"/sbin/scsi_id -g -u -s /block/%n"</code>.</p>
<p>hardware_handler</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	<p>ALUA environments (RHEL 6 series and 5 series):</p> <pre>"1 alua"</pre> <p>Non-ALUA environments (RHEL 4 series):</p> <pre>"0"</pre>	<p>Red Hat Enterprise Linux 6 series and 5 series: Set this value to <code>"1 alua"</code>.</p> <p>Red Hat Enterprise Linux 4 series: Set this value to <code>"0"</code>.</p> <p>Related parameters: This value works with the value for <code>prio</code> or <code>prio_callout</code>.</p>

Red Hat Enterprise Linux DM-Multipath recommended device parameters

Parameter	Value	Recommendation
<p>path_checker</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5.1 and later ◆ RHEL 4.7 and later 	<p>RHEL 6.1 and later, RHEL 5.7 and later:</p> <p>tur</p> <p>RHEL 6.0, 5.1-5.6, RHEL 4.7 and later:</p> <p>directio</p>	<p>Red Hat Enterprise Linux 6.1 and later, Red Hat Enterprise Linux 5.8 and later: Set this value to tur. Internal testing has shown that using tur instead of directio improves performance. The tur parameter uses SG_input/output (I/O) requests that are inserted at the head of the request queue.</p> <p>The directio parameter uses FS block requests, which are added to the end of the request queue.</p> <p>As a result, on a busy device, the path_checker tur requests are serviced immediately while the path_checker directio must wait for the current I/O load to complete.</p> <p>Red Hat Enterprise Linux 6.0, 5.1-5.7 and 4.7 and later: Set this value to directio, which is the default.</p> <p>Related parameters: If you are using Red Hat Enterprise Linux 5 or 4.6 and earlier, the value for this parameter is readsector0.</p>
<p>path_checker</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 5 ◆ RHEL 4.6 and earlier 	<p>readsector0</p>	<p>Set this value to readsector0.</p> <p>Related parameters: If you are using Red Hat Enterprise Linux 6 series, 5.1 and later, or 4.7 and later, the value for this parameter is directio.</p>

Red Hat Enterprise Linux DM-Multipath recommended device parameters

Parameter	Value	Recommendation
path_grouping_policy Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	group_by_prio	FC only: Set this value to group_by_prio. Related parameters: This value works with failback. If you are using the iSCSI protocol, see the next row for information on the value you should use.
path_grouping_policy Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5.4 and later ◆ RHEL 4.8 and later ◆ RHEL 5.3 and earlier ◆ RHEL 4.7 and earlier 	RHEL 6 series, 5.4 and later, and 4.8 and later: group_by_prio RHEL 5.3 and earlier and 4.7 and earlier: multibus	iSCSI only with Red Hat Enterprise Linux 6 series, 5.4 and later, and 4.8 and later: Set this value to group_by_prio. iSCSI only with Red Hat Enterprise Linux 5.3 and earlier and 4.7 and earlier: Set this value to multibus. Related parameters: This value works with failback. If you are using the FC protocol, see the previous row for information on the value you should use.
path_selector Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	RHEL 6 series, 5 series, and 4 series: "round-robin 0" RHEL 6 series also supports: "queue-length 0" "service-time 0"	Set this value to "round-robin 0". This is the recommended value for all versions of Red Hat Enterprise Linux that the Host Utilities support.

Red Hat Enterprise Linux DM-Multipath recommended device parameters		
Parameter	Value	Recommendation
<p>prio</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series 	<p>ALUA environments:</p> <p>"alua"</p> <p>Non-ALUA environments:</p> <p>"ontap"</p>	<p>The recommended value is "alua", which is the value required when you are using ALUA.</p> <p>Related parameters: This value works with <code>hardware_handler</code>. If you are using Red Hat Enterprise Linux 5 series or 4 series, see the next row.</p>
<p>prio_callout</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 5.1 and later ◆ RHEL 5 series ◆ RHEL 4 series 	<p>ALUA environments:</p> <p><code>"/sbin/mpath_prio_alua /dev/%n"</code></p> <p>Non-ALUA environments:</p> <p><code>"/sbin/mpath_prio_ontap /dev/%n"</code></p>	<p>Red Hat Enterprise Linux 5.1 and later: When ALUA is enabled, set this value to <code>"/sbin/mpath_prio_alua /dev/%n"</code>.</p> <p>Red Hat Enterprise Linux 5 series and 4 series: When ALUA is not enabled, set this value to <code>"/sbin/mpath_prio_ontap /dev/%n"</code>.</p> <p>Related parameters: This value works with <code>hardware_handler</code>. If you are using Red Hat Enterprise Linux 6 series, see the information about <code>prio</code>.</p>
<p>product</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ All 	<p>"LUN"</p>	<p>Set this value to "LUN".</p>
<p>rr_min_io</p> <p>Supported Red Hat versions:</p> <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	<p>128</p>	<p>Set this value to 128.</p> <p>Note _____</p> <p>If you are using Red Hat Enterprise Linux 4 update 7 or earlier, place <code>rr_min_io</code> in the default section of the <code>multipath.conf</code> file.</p> <p>_____</p>

Red Hat Enterprise Linux DM-Multipath recommended device parameters		
Parameter	Value	Recommendation
rr_weight Supported Red Hat versions: <ul style="list-style-type: none"> ◆ RHEL 6 series ◆ RHEL 5 series ◆ RHEL 4 series 	uniform	Set this value to uniform.
vendor Supported Red Hat versions: <ul style="list-style-type: none"> ◆ All 	"IBM"	This is required for the Host Utilities product.

SUSE Linux Enterprise Server: Recommended default settings for DM-Multipath

The table that follows lists the recommended settings for the default section of the DM-Multipath multipath.conf file on hosts running SUSE Linux Enterprise Server.

Note

Keep in mind that the parameters and values you supply for the multipath.conf default parameters override the values that you supply for the device parameters.

SUSE Linux Enterprise Server DM-Multipath recommended default parameters		
Parameter	Value	Recommendation
flush_on_last_del Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 SP1 and later 	yes	Set this value to yes. The default value is no.
max_fds Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 SP1 and later ◆ SLES 10 SP4 	max	SUSE Linux Enterprise Server 11 SP1 and later and 10 SP4: Set this value to max. Related parameters: If you are using SUSE Linux Enterprise Server 11 or 10 SP3 and earlier, see the next row.

SUSE Linux Enterprise Server DM-Multipath recommended default parameters		
Parameter	Value	Recommendation
max_fds Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 ◆ SLES 10 SP3 and earlier 	8192	SUSE Linux Enterprise Server 11 and 10 SP3 and earlier: Set this value to 8192. Related parameters: If you are using SUSE Linux Enterprise Server 11 SP1 or 10 SP4, see the previous row.
user_friendly_names Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	no	Setting this value to no. This is the default.

SUSE Linux Enterprise Server: Recommended device settings for DM-Multipath

The table that follows lists the recommended SUSE Linux Enterprise Server settings for the devices section of the DM-Multipath multipath.conf file.

SUSE Linux Enterprise Server DM-Multipath recommended device parameters		
Parameter	Value	Recommendation
failback Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	immediate	Set this value to immediate. Related parameters: The value works with Path Group priorities.

SUSE Linux Enterprise Server DM-Multipath recommended device parameters

Parameter	Value	Recommendation
<p>features</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	<p>SUSE Linux Enterprise Server 11 SP2:</p> <pre>"3 queue_if_no_path pg_init_retries 50"</pre> <p>SUSE Linux Enterprise Server 10 - 11 SP1:</p> <pre>"1 queue_if_no_path"</pre>	<p>SUSE Linux Enterprise Server 11 SP2: Set this value to "3 queue_if_no_path pg_init_retries 50".</p> <p>SUSE Linux Enterprise Server 10-11 SP1: Set this value to "1 queue_if_no_path".</p> <p>Related parameters: If you specify path_no_retry in the default section of the multipath.conf file, that value overrides the features value and could cause an operating system crash during a takeover/giveback procedure.</p>
<p>getuid_callout</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	<p>SLES 11 series:</p> <pre>"/lib/udev/scsi_id -g -u -d /dev/%n"</pre> <p>SLES 10 series:</p> <pre>"/sbin/scsi_id -g -u -s /block/%n"</pre>	<p>SUSE Linux Enterprise Server 11 series: Set this value to "/lib/udev/scsi_id -g -u -d /dev/%n".</p> <p>SUSE Linux Enterprise Server 10 series: Set this value to "/sbin/scsi_id -g -u -s /block/%n".</p>
<p>hardware_handler</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 with SP4 and later 	<p>ALUA environments:</p> <pre>"1 alua"</pre> <p>Non-ALUA environments:</p> <pre>"0"</pre>	<p>ALUA environments: If you use ALUA, set this value to "1 alua".</p> <p>Non-ALUA environments: If you are not using ALUA, set this value to "0".</p> <p>Related parameters: This value works with prio or prio_callout.</p>
<p>path_checker</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 SP2 and later 	<pre>tur</pre>	<p>Set this value to tur.</p>

SUSE Linux Enterprise Server DM-Multipath recommended device parameters

Parameter	Value	Recommendation
path_grouping_policy Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	group_by_prio	FC only: Set this value to group_by_prio. Related parameters: This value works with failback. If you are using the iSCSI protocol, see the next row for information on the value you should use.
path_grouping_policy Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 SP3 and later ◆ SLES 10 SP2 and earlier 	SLES 11 series, 10 SP3 and later: group_by_prio SLES 10 SP2 and earlier: multibus	iSCSI only with SUSE Linux Enterprise Server 11 series and 10 SP3 and later: Set this value to group_by_prio. iSCSI only with SUSE Linux Enterprise Server 10 SP2 and earlier: Set this value to multibus. Related parameters: This value works with failback. If you are using the FC protocol, see the previous row for information on the value you should use.
path_selector Supported SUSE versions: <ul style="list-style-type: none"> ◆ SLES 11 SP1 and later 	SUSE 11 and 10 series: "round-robin 0" SLES 11 SP1 and later also supports: "least-pending" "length-load-balancing" "service-time"	Set this value to "round-robin 0". This is the recommended value for all versions of SUSE Linux Enterprise Linux Server that the Host Utilities support.

SUSE Linux Enterprise Server DM-Multipath recommended device parameters

Parameter	Value	Recommendation
<p>prio</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 SP2 and later 	<p>ALUA environments:</p> <p>"alua"</p> <p>Non-ALUA environments:</p> <p>"ontap"</p>	<p>ALUA environments: If you use ALUA, set this value to "alua".</p> <p>Non-ALUA environments: If you are not using ALUA, set this value to "ontap".</p> <p>Related parameters: This value works with <code>hardware_handler</code>. If you are using SUSE Linux Enterprise Server 10 SP1 and earlier, see the next row.</p>
<p>prio_callout</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 10 SP1 and earlier 	<p>Non-ALUA environments:</p> <p>"sbin/mpath_prio_ontap /dev/%n"</p>	<p>Non-ALUA environments: If you do not use ALUA, set this value to "sbin/mpath_prio_ontap /dev/%n".</p> <p>Related parameters: This value works with <code>hardware_handler</code>. If you are using SUSE Linux Enterprise Server 11 series or 10 SP2 and later, see the previous row.</p>
<p>product</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ All 	<p>"LUN"</p>	<p>Set this value to "LUN".</p>
<p>rr_min_io</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	<p>128</p>	<p>Set this value to 128.</p>
<p>rr_weight</p> <p>Supported SUSE versions:</p> <ul style="list-style-type: none"> ◆ SLES 11 series ◆ SLES 10 series 	<p>uniform</p>	<p>Set this value to uniform.</p>

SUSE Linux Enterprise Server DM-Multipath recommended device parameters		
Parameter	Value	Recommendation
vendor Supported SUSE versions: ◆ All	"IBM"	This is required for the Host Utilities product.

Time-out values when using DM-Multipath

FC only: If you are using the Fibre Channel protocol, use the default values.

iSCSI only: If you are using iSCSI, you must set the following time-out value in the iSCSI configuration file in order to use DM-Multipath.

```
node.session.timeo.replacement_timeout = 5
```

Red Hat Enterprise Linux 4: For systems running Red Hat Enterprise Linux 4, you must modify the /etc/iscsi.conf to uncomment ConnFailTimeoutof and give it a value of 5.

Recommendations for Veritas Storage Foundation settings

Recommendations for Veritas values

When you run the Host Utilities with Veritas Volume Manager (VxVM) and Dynamic Multipathing (VxDMP), in most cases, you should use the values provided in the Veritas Release Notes. The exceptions are listed below.

Note

Check the Interoperability Matrix to see which versions of Veritas Storage Foundation the Host Utilities support.

Based on testing done when the version of the Host Utilities was developed, you should set the following values when using Veritas Storage Foundation. Details on how to set these values are in the *Linux Host Utilities Installation and Administration Guide*.

Veritas Storage Foundation recommended settings	
Setting	Description
<code>dmp_restore_interval=60</code>	<p>The Veritas DMP restore daemon interval is a tunable that specifies the number of seconds the restore daemon waits before checking the paths between the host and the storage system.</p> <p>The recommended value is 60 seconds. Testing has shown that you get a faster recovery by making the restore daemon poll more often. However, systems set to a longer polling interval take longer to detect path recoveries, which can impact storage system performance during a failover operation.</p>
<code>dmp_restore_policy=disabled</code>	<p>The restore daemon policy tunable specifies which paths the restore daemon checks when it polls the system.</p> <p>You should set the value to <code>disabled</code>, which tells the daemon to check only the disabled paths.</p>

Veritas Storage Foundation recommended settings	
Setting	Description
dmp_lun_retry_timeout=300	<p>Set the VxDMP tunable <code>dmp_lun_retry_timeout</code> to 300.</p> <p>The tunable <code>dmp_lun_retry_timeout</code> tells VxDMP to continue retrying I/O requests to a LUN when all the paths to the disk have failed. When you set this tunable to 300, the VxDMP continues to retry paths to the LUN until either the I/O succeeds or 300 seconds have elapsed.</p> <p>Setting this value to 300 provides for faster recovery from temporary path failures.</p>
<p>Veritas Storage Foundation 5.1 SP1 and later:</p> <p>dmp_path_age=120</p>	<p>If you are using Veritas Storage Foundation 5.1 SP1, you must set the tunable <code>dmp_path_age</code> to 120.</p> <p>This setting helps minimize the path restoration window and maximize high availability of IBM N series storage.</p>
Timeout values for VxDMP	<p>FC only: If you are using the Fibre Channel protocol, use the default timeout values.</p> <p>iSCSI only: If you are using iSCSI, you must set the following time-out value in the iSCSI configuration file in order to use VxDMP.</p> <pre>node.session.timeo.replacement_timeout = 120</pre>

Veritas Storage Foundation recommended settings	
Setting	Description
<p>Red Hat Enterprise Linux 6, 5 series:</p> <p>Create the file <code>/etc/udev/rules.d/40-rport.rules</code></p>	<p>If you are using Red Hat Enterprise Linux 6 series or 5 series, you must configure it to support Veritas Storage Foundation.</p> <p>At the time this document was prepared, you had to create the file <code>/etc/udev/rules.d/40-rport.rules</code> with the following content line:</p> <pre>KERNEL=="rport-*", SUBSYSTEM=="fc_remote_ports", ACTION=="add",RUN+="/bin/sh -c 'echo 20 > /sys/class/fc_remote_ports/%k/fast_io_fail_tmo; echo 864000 >/sys/class/fc_remote_ports/%k/dev_loss_tmo'"</pre> <p>For the latest information, check the Veritas Release Notes for SF5.1SP1PR2.</p>
<p>Red Hat Enterprise Linux 6 series:</p> <p>Set the <code>IOFENCE timeout</code> parameter to 30000.</p>	<p>The default value of the <code>IOFENCE timeout</code> parameter is 15,000 milliseconds or 15 seconds. This parameter specifies the amount of time in milliseconds that it takes clients to respond to an <code>IOFENCE</code> message before the system halts. When clients receive an <code>IOFENCE</code> message, they must unregister from the GAB driver within the number of milliseconds specified by the <code>IOFENCE timeout</code> parameter. If they do not unregister within that time, the system halts.</p> <p>To view the value of this parameter, enter the <code>gabconfig -l</code> command on the host.</p> <p>To set the value for this parameter, enter the <code>gabconfig -f 30000</code> command. This value does not persist across host reboots.</p>

Veritas Storage Foundation recommended settings

Setting	Description
<p>SUSE Linux Enterprise Server 11:</p> <p>Create the file <code>/etc/udev/rules.d/40-rport.rules</code></p>	<p>If you are using SUSE Linux Enterprise Server 11 series, you must configure it to support Veritas Storage Foundation.</p> <p>Before you do anything, you should check Symantec TechNote 124725.</p> <p>At the time this document was prepared, you had to create the file <code>/etc/udev/rules.d/40-rport.rules</code> with the following content line:</p> <pre>KERNEL=="rport-*", SUBSYSTEM=="fc_remote_ports", ACTION=="add",RUN+="/bin/sh -c 'echo 20 > /sys/class/fc_remote_ports/%k/fast_io_fail_tmo; echo 864000 >/sys/class/fc_remote_ports/%k/dev_loss_tmo'".</pre>

For all other settings, use the values recommended in the Veritas Storage Foundation Release Notes.

Websites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. The following web pages provide N series information:

- A listing of currently available N series products and features can be found at the following web page: www.ibm.com/storage/nas/
- The IBM System Storage N series support website requires users to register in order to obtain access to N series support content on the web. To understand how the N series support web content is organized and navigated, and to access the N series support website, refer to the following publicly accessible web page: www.ibm.com/storage/support/nseries/
This web page also provides links to AutoSupport information as well as other important N series product resources.
- IBM System Storage N series products attach to a variety of servers and operating systems. To determine the latest supported attachments, go to the IBM N series interoperability matrix at the following web page: www.ibm.com/systems/storage/network/interophome.html
- For the latest N series hardware product documentation, including planning, installation and setup, and hardware monitoring, service and diagnostics, see the IBM N series Information Center at the following web page: publib.boulder.ibm.com/infocenter/nasinfo/nseries/index.jsp

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