



## **DataKeeper for Linux**

**v7.5**

**Release Notes**

**January 2012**

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To maintain the quality of our publications, we welcome your comments on the accuracy, clarity, organization, and value of this document.

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# SteelEye DataKeeper for Linux Release Notes

## Version 7.5

### ***Important!!***

***Read This Document Before Attempting To Install Or Use This Product!  
This document contains last minute information that must be considered before, during and after installation.***

## Introduction

These release notes are written for the person who installs, configures and/or administers the SteelEye DataKeeper for Linux product. The document contains important information such as package versions, last-minute changes to instructions and procedures, product restrictions and troubleshooting hints and tips that were discovered through final product testing. It is important that you review this document before installing and configuring your SteelEye DataKeeper software.

## Product Description

The SteelEye DataKeeper product:

- Provides volume-based synchronous and asynchronous data replication.
- Integrates into the LifeKeeper Graphical User Interface for administration and monitoring.
- Automatically resynchronizes data between source and target servers at system recovery.
- Monitors the health of underlying system components and performs local recovery in the event of failure.
- Allows manual resource switchovers and failovers of mirrored volumes.
- Can be easily upgraded to provide high availability clustering and automatic failover and recovery using a license key to enable new functionality.

## LifeKeeper Core

LifeKeeper for Linux is bundled and runs on 32-bit and 64-bit systems (x86, AMD64, and EM64T systems). The LifeKeeper Core Package Cluster includes the following installable packages:

Package	Package Name	Description
LifeKeeper	steeleye-lk-7.5.0-3640.i386.rpm	The LifeKeeper package provides recovery software for failures associated with core system components such as memory, CPUs, the operating system, the SCSI disk subsystem and file systems.
LifeKeeper GUI	steeleye-lkGUI-7.5.0-3640.i386.rpm	The LifeKeeper GUI package provides a graphical user interface for LifeKeeper administration and status monitoring.
LifeKeeper Man Pages	steeleye-lkMAN-7.5.0-3640.noarch.rpm	The LifeKeeper Man Page package provides reference manual pages for the LifeKeeper product.
SteelEye DataKeeper	steeleye-lkDR-7.5.0-3640.noarch.rpm	Data Replication (synchronous or asynchronous mirrors, with intent logging)

## LifeKeeper Product Requirements

LifeKeeper for Linux is currently targeted for any Linux platform that satisfies the minimum requirements included in the Linux Configuration table.

The SteelEye DataKeeper package requires the following disk space: Approximately 1800 (1024-byte) disk blocks in /opt.

## Client Platforms and Browsers

The LifeKeeper web client can run on any platform that provides support for Java Runtime Environment J2RE 1.4 or later. The currently supported configurations are Firefox 1.5, 2 or 3 and Internet Explorer 6, 7 or 8 on Linux, Windows 2000, Windows Server 2003, Windows 2008 R2, Windows XP, Windows 7 or Windows Vista with J2RE 1.4, JRE 5 or JRE 6. Other recent platforms and browsers will likely work with the LifeKeeper web client, but they have not been tested by SIOS Technology Corp.

You should specify all the hostnames and addresses in your cluster in the client machine's local hosts file (usually */etc/hosts* or *C:\windows\system32\drivers\etc\hosts*). This minimizes the client connection time and allows the client to connect even in the event of a Domain Name Server (DNS) failure.

## Installation and Configuration

See the Installation/Configuration section of SteelEye DataKeeper Technical Documentation for installation and configuration instructions.

## Upgrades

LifeKeeper can be upgraded while preserving existing resource hierarchies. See *Upgrading LifeKeeper* for instructions on upgrading from a previous LifeKeeper version and also for information about upgrading your Linux operating system.

## Before Starting Your Upgrade

If you are already running LifeKeeper v4.3.0 or later and are upgrading to a later version, use the `/opt/LifeKeeper/bin/lkbackup` command to create a backup copy of your LifeKeeper configuration files.

## Upgrading to LifeKeeper v7

It is recommended that LifeKeeper customers follow the upgrade instructions included in the Upgrading LifeKeeper topic. This includes switching all applications away from the server to be upgraded before running the setup script on the LifeKeeper Installation Support CD and/or updating your LifeKeeper packages.

## Technical Notes

We strongly recommend that you read the following technical notes concerning configuration and operational issues related to your LifeKeeper environment.

## LifeKeeper Features

Item	Description
<b>Licensing</b>	LifeKeeper requires unique runtime license keys for each server. This applies to both physical and virtual servers. A license key is required for the LifeKeeper core software as well as for each separately packaged LifeKeeper recovery kit. The installation support script installs a Licensing Utilities package that obtains and displays the Host ID of your server. The Host IDs, along with the Activation ID(s) provided with your software, are used to obtain license keys from the SIOS Technology Corp. website.
<b>Internationalization and Localization</b>	LifeKeeper for Linux supports wide/multi-byte characters in resource and tag names but does not include native language message support. The LifeKeeper GUI can be localized by creating locale-specific versions of the Java property files. However, many of the messages displayed by the GUI come from the LifeKeeper core, so localization of the GUI will provide only a partial solution for users until the core software is fully localized.
<b>LifeKeeper MIB File</b>	LifeKeeper can be configured to issue SNMP traps describing the events that are occurring within the LifeKeeper cluster. See the <code>lk_configsnpmp(8)</code> man page for more information about configuring this capability. The MIB file describing the LifeKeeper traps can be found at <code>/opt/LifeKeeper/include/LifeKeeper-MIB.txt</code> .

## LifeKeeper Operations

Item	Description
<b>Coexistence with Linux Firewalls</b>	LifeKeeper uses specific ports for communication paths, GUI, IP and data replication. When using the Linux firewall feature, the specific ports that LifeKeeper is using need to be opened. Refer to the Running LifeKeeper with a Firewall topic for details.

## Server Configuration

Item	Description
<b>BIOS Updates</b>	The latest available BIOS should always be installed on all LifeKeeper servers.

# Linux Configuration

<b>Operating System</b>	The default operating system must be installed to ensure that all required packages are installed. The minimal operating system install does not contain all of the required packages, and therefore, cannot be used with DataKeeper.																	
<b>Kernel updates</b>	In order to provide the highest level of availability for a LifeKeeper cluster, the kernel version used on a system is very important. The table below lists each supported distribution and version with the kernel that has passed LifeKeeper certification testing.																	
	<table border="1"> <thead> <tr> <th data-bbox="375 506 901 558">Distribution/Version</th> <th data-bbox="901 506 1312 558">Supported kernels</th> </tr> </thead> <tbody> <tr> <td data-bbox="375 558 901 871">Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 5 Advanced Platform for x86 and AMD64/EM64T</td> <td data-bbox="901 558 1312 871">           2.6.18-8.el5            2.6.18-8.1.1.el5 (default kernel)            2.6.18-53.el5 (Update 1)            2.6.18-92.el5 (Update 2)            2.6.18-128.el5 (Update 3)            2.6.18-164.el5 (Update 4)            2.6.18-194.el5 (Update 5)            2.6.18-238.el5 (Update 6)            2.6.18-274.el5 (Update 7)         </td> </tr> <tr> <td data-bbox="375 871 901 993">Red Hat Enterprise Linux 6 for x86 and AMD64/EM64T</td> <td data-bbox="901 871 1312 993">           2.6.32-71.el6            2.6.32-131.17.1.el6 (Update 1)            2.6.32-220.el6 (Update 2)         </td> </tr> <tr> <td data-bbox="375 993 901 1220">SUSE SLES 10 for x86 and x86_64</td> <td data-bbox="901 993 1312 1220">           2.6.16.21-0.8 (default kernel)            2.6.16.46-0.12 (SP1)            2.6.16.60-0.21 (SP2)            2.6.16.60-0.23            2.6.16.60-0.54 (SP3)            2.6.16.60-0.85.1 (SP4)         </td> </tr> <tr> <td data-bbox="375 1220 901 1304">SUSE SLES 11 for x86 and x86_64</td> <td data-bbox="901 1220 1312 1304">           2.6.27.19-5            2.6.32.12-0.7 (SP1)         </td> </tr> <tr> <td data-bbox="375 1304 901 1493">Oracle Enterprise Linux 5 for x86 and x86_64</td> <td data-bbox="901 1304 1312 1493">           2.6.18-8.el5            2.6.18-53.0.0.0.1.el5 (Update 1)            2.6.18-92.0.0.0.1.el5 (Update 2)            2.6.18-128.0.0.0.1.el5 (Update 3)            2.6.18-164.0.0.0.1.el5 (Update 4)         </td> </tr> <tr> <td data-bbox="375 1493 901 1780">The Community ENTERprise Operating System (CentOS) 5.0 for x86 and x86_64</td> <td data-bbox="901 1493 1312 1780">           2.6.18-8.el5            2.6.18-53.el5 (Update 1)            2.6.18-92.1.10.el5 (Update 2)            2.6.18-128.el5 (Update 3)            2.6.18-164.2.1.el5 (Update 4)            2.6.18-194.el5 (Update 5)            2.6.18-238.el5 (Update 6)            2.6.18-274.3.1.el5 (Update 7)         </td> </tr> <tr> <td data-bbox="375 1780 901 1873">The Community ENTERprise Operating System (CentOS) 6.0 for x86 and x86_64</td> <td data-bbox="901 1780 1312 1873">2.6.32-71.el6</td> </tr> </tbody> </table>	Distribution/Version	Supported kernels	Red Hat Enterprise Linux 5 and Red Hat Enterprise Linux 5 Advanced Platform for x86 and AMD64/EM64T	2.6.18-8.el5 2.6.18-8.1.1.el5 (default kernel) 2.6.18-53.el5 (Update 1) 2.6.18-92.el5 (Update 2) 2.6.18-128.el5 (Update 3) 2.6.18-164.el5 (Update 4) 2.6.18-194.el5 (Update 5) 2.6.18-238.el5 (Update 6) 2.6.18-274.el5 (Update 7)	Red Hat Enterprise Linux 6 for x86 and AMD64/EM64T	2.6.32-71.el6 2.6.32-131.17.1.el6 (Update 1) 2.6.32-220.el6 (Update 2)	SUSE SLES 10 for x86 and x86_64	2.6.16.21-0.8 (default kernel) 2.6.16.46-0.12 (SP1) 2.6.16.60-0.21 (SP2) 2.6.16.60-0.23 2.6.16.60-0.54 (SP3) 2.6.16.60-0.85.1 (SP4)	SUSE SLES 11 for x86 and x86_64	2.6.27.19-5 2.6.32.12-0.7 (SP1)	Oracle Enterprise Linux 5 for x86 and x86_64	2.6.18-8.el5 2.6.18-53.0.0.0.1.el5 (Update 1) 2.6.18-92.0.0.0.1.el5 (Update 2) 2.6.18-128.0.0.0.1.el5 (Update 3) 2.6.18-164.0.0.0.1.el5 (Update 4)	The Community ENTERprise Operating System (CentOS) 5.0 for x86 and x86_64	2.6.18-8.el5 2.6.18-53.el5 (Update 1) 2.6.18-92.1.10.el5 (Update 2) 2.6.18-128.el5 (Update 3) 2.6.18-164.2.1.el5 (Update 4) 2.6.18-194.el5 (Update 5) 2.6.18-238.el5 (Update 6) 2.6.18-274.3.1.el5 (Update 7)	The Community ENTERprise Operating System (CentOS) 6.0 for x86 and x86_64	2.6.32-71.el6	
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	<p><b>Note:</b> This list of supported distributions and kernels is for LifeKeeper only. You should also determine and adhere to the supported distributions and kernels for your server and storage hardware, as specified by the manufacturer.</p>
<b>Dynamic device addition</b>	<p>Prior to LifeKeeper startup, Linux must configure all devices. If a LifeKeeper protected device is configured after LifeKeeper is started, LifeKeeper must be stopped on each server that shares the device and then be restarted. This will enable the device detection and validation to confirm the configuration and enable LifeKeeper to access the device.</p>
<b>LUN support</b>	<p>The Linux SCSI driver has several parameters that control which devices will be probed for Logical Units (LUNs):</p> <ul style="list-style-type: none"> <li>• List of devices that <b>do not</b> support LUNs – this list of devices are known to NOT support LUNs, so the SCSI driver will not allow the probing of these devices for LUNs.</li> <li>• List of devices that <b>do</b> support LUNs – this list of devices is known to support LUNs well, so always probe for LUNs.</li> <li>• Probe all LUNs on each SCSI device – if a device is not found on either list, whether to probe or not. This parameter is configured by make config in the SCSI module section.</li> </ul> <p>While most distributions (including SUSE) have the Probe all LUNs setting enabled by default, Red Hat has the setting disabled by default. External RAID controllers that are typically used in LifeKeeper configurations to protect data are frequently configured with multiple LUNs (Logical Units). To enable LUN support, this field must be selected and the kernel remade.</p> <p>To enable Probe all LUNs without rebuilding the kernel or modules, set the variable <code>max_scsi_luns</code> to 255 (which will cause the scan for up to 255 LUNs). To set the <code>max_scsi_luns</code> on a kernel where the scsi driver is a module (e.g. Red Hat), add the following entry to <code>/etc/modules.conf</code>, rebuild the initial ramdisk and reboot loading that ramdisk:</p> <pre>options scsi_mod max_scsi_luns=255</pre> <p>To set the <code>max_scsi_luns</code> on a kernel where the scsi driver is compiled into the kernel (e.g. SUSE), add the following entry to <code>/etc/lilo.conf</code>:</p> <pre>append="max_scsi_luns=255"</pre> <p><b>Note:</b> For some devices, scanning for 255 LUNs can have an adverse effect on boot performance (in particular devices with the <code>BLIST_SPARSELUN</code> defined). The Dell PV650F is an array where this has been experienced. To avoid this performance problem, set the <code>max_scsi_luns</code> to the maximum number of LUNs you have configured on your arrays such as 16 or 32. For example,</p> <pre>append="max_scsi_luns=16"</pre>
<b>libstdc++ library</b>	<p>While running the LifeKeeper Installation Support CD setup script, you may encounter a message regarding a failed dependency requirement for a libstdc++</p>

<b>requirement</b>	<p>library. This library is provided in one of several compat-libstdc++ rpm packages, depending on the hardware platform and Linux distribution you are running. Even on 64-bit systems, LifeKeeper requires the use of the 32-bit architecture package rather than the 64-bit version (x86_64) and will fail to start due to a missing required library if the 64-bit architecture version is installed.</p> <p>To avoid (or resolve) this problem, install the 32-bit architecture version of the compat-libstdc++ package found on the OS installation media and run (or re-run) the I/S CD setup script. Note that some distributions also carry more than one 32-bit version of this package (e.g. compat-libstdc++-296-2.96-132.7.2 and compat-libstdc++-33-3.2.3-47.3). In this situation, simply install both versions to ensure that the required library is installed.</p>
<b>libXp and libXt library requirements</b>	<p>Similar to the item above, you may also encounter installation messages regarding failed dependency requirements for the libXp and libXt libraries. LifeKeeper requires the 32-bit versions of these libraries, even on 64-bit platforms.</p>
<b>Running yum update after LifeKeeper is installed</b>	<p>When running yum update, you may encounter an error:</p> <p style="text-align: center;">ksh conflicts with pdksh</p> <p>For LifeKeeper to function correctly, the ksh package must not be installed or updated. If the package is installed or updated, you must rerun the LifeKeeper Installation Support setup script which will remove the conflicting ksh package and re-install the required pdksh package.</p>

## DataKeeper Configuration

Item	Description																																			
<b>SDR Feature/ Distribution Matrix</b>	<p>SDR supports Linux kernel versions 2.6 and higher. Several SDR features have additional minimum kernel requirements.</p> <p>The table below lists each SDR feature with an “X” indicating which Linux distributions the feature is supported on.</p> <table border="1" data-bbox="565 541 1373 961"> <thead> <tr> <th data-bbox="565 541 932 674" rowspan="2">SDR Feature</th> <th colspan="3" data-bbox="932 541 1203 590">Red Hat</th> <th colspan="2" data-bbox="1203 541 1373 590">SUSE</th> </tr> <tr> <th data-bbox="932 590 1024 674">RHEL 4</th> <th data-bbox="1024 590 1117 674">RHEL 5</th> <th data-bbox="1117 590 1203 674">RHEL 6</th> <th data-bbox="1203 590 1295 674">SLES 10</th> <th data-bbox="1295 590 1373 674">SLES 11</th> </tr> </thead> <tbody> <tr> <td data-bbox="565 674 932 751"><b>Multiple Target Support (kernel 2.6.7+)</b></td> <td data-bbox="932 674 1024 751">X</td> <td data-bbox="1024 674 1117 751">X</td> <td data-bbox="1117 674 1203 751">X</td> <td data-bbox="1203 674 1295 751">X</td> <td data-bbox="1295 674 1373 751">X</td> </tr> <tr> <td data-bbox="565 751 932 829"><b>Bitmap Intent Logging (kernel 2.6.16+)</b></td> <td data-bbox="932 751 1024 829"></td> <td data-bbox="1024 751 1117 829">X</td> <td data-bbox="1117 751 1203 829">X</td> <td data-bbox="1203 751 1295 829">X</td> <td data-bbox="1295 751 1373 829">X</td> </tr> <tr> <td data-bbox="565 829 932 907"><b>Asynchronous (WAN) Replication (kernel 2.6.16+)</b></td> <td data-bbox="932 829 1024 907"></td> <td data-bbox="1024 829 1117 907">X</td> <td data-bbox="1117 829 1203 907">X</td> <td data-bbox="1203 829 1295 907">X</td> <td data-bbox="1295 829 1373 907">X</td> </tr> <tr> <td data-bbox="565 907 932 961"><b>Bitmap Merging (2.6.27+)</b></td> <td data-bbox="932 907 1024 961"></td> <td data-bbox="1024 907 1117 961">X*</td> <td data-bbox="1117 907 1203 961">X</td> <td data-bbox="1203 907 1295 961"></td> <td data-bbox="1295 907 1373 961">X</td> </tr> </tbody> </table> <p data-bbox="565 961 1373 1041">*Applies to RHEL 5.4 only. Bitmap merging code was backported into the Red Hat EL5 Update 4 kernel by Red Hat.</p>	SDR Feature	Red Hat			SUSE		RHEL 4	RHEL 5	RHEL 6	SLES 10	SLES 11	<b>Multiple Target Support (kernel 2.6.7+)</b>	X	X	X	X	X	<b>Bitmap Intent Logging (kernel 2.6.16+)</b>		X	X	X	X	<b>Asynchronous (WAN) Replication (kernel 2.6.16+)</b>		X	X	X	X	<b>Bitmap Merging (2.6.27+)</b>		X*	X		X
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<b>DataKeeper documentation</b>	SteelEye DataKeeper for Linux Technical Documentation.																																			

## GUI Configuration

Item	Description
<b>GUI client and server communication</b>	The LifeKeeper GUI client and server use Java Remote Method Invocation (RMI) to communicate. For RMI to work correctly, the client and server must use resolvable hostnames or IP addresses. If DNS is not implemented (or names are not resolvable using other name lookup mechanisms), edit the <i>/etc/hosts</i> file on each client and server to include the names and addresses of all other LifeKeeper servers.
<b>GUI Server Java platform</b>	<p>The LifeKeeper GUI server requires that the Java Runtime Environment (JRE) - Java virtual machine, the Java platform core classes and supporting files - be installed. The JRE 5.0 for Linux is available on the LifeKeeper Installation Support CD or it can be downloaded directly from <a href="http://java.sun.com/javase/downloads/index_jdk5.jsp">http://java.sun.com/javase/downloads/index_jdk5.jsp</a>.</p> <p><b>Note:</b> By default, the LifeKeeper GUI server expects the JRE on each server to be installed in the directory <i>/usr/java/j2re1.5.0_07</i>. If this is not found, it will look in the directory <i>/usr/java/j2sdk1.5.0_07</i> for a Java Software Development Kit (JDK). If you want to use a JRE or JDK in another directory location, you must edit the PATH in the LifeKeeper default file <i>/etc/default/LifeKeeper</i> to include the directory containing the java interpreter, <i>java.exe</i>. If LifeKeeper is running when you edit this file, you should stop and restart the LifeKeeper GUI server to recognize the change. Otherwise, the LifeKeeper GUI will not be able to find the Java command.</p>
<b>Java remote object registry server port</b>	The LifeKeeper GUI server uses Port 82 for the Java remote object registry on each LifeKeeper server. This should allow servers to support RMI calls from clients behind typical firewalls.
<b>LifeKeeper administration web server</b>	The LifeKeeper GUI server requires an administration web server for client browser communication. Currently, the LifeKeeper GUI server is using a public domain web server, <i>mhttpd</i> , for its administration web server. The installation of the LifeKeeper GUI installs and configures this web server, using Port 81, which should be different from any public web server.
<b>GUI client network access</b>	LifeKeeper GUI clients require network access to all hosts in the LifeKeeper cluster. When running the LifeKeeper GUI client in a browser, you will have to lower the security level to allow network access for applets. Be careful not to visit other sites with security set to low values (e.g., change the security settings only for intranet or trusted sites).

## GUI Limitations

Item	Description
<b>GUI interoperability restriction</b>	The LifeKeeper for Linux client may only be used to administer LifeKeeper on Linux servers. The LifeKeeper for Linux GUI will <i>not</i> interoperate with LifeKeeper for Windows.

## Restrictions or Known Issues

See the Troubleshooting section of SteelEye DataKeeper for Linux Technical Documentation.

## Product Documentation

Documentation providing instructions for installing, configuring, administering and troubleshooting SteelEye DataKeeper is available in our SteelEye DataKeeper for Linux Technical Documentation. The following sections cover every aspect of SteelEye DataKeeper for Linux:

Section	Description
Introduction	Gives an overview of mirroring with SteelEye DataKeeper and describes how replication works.
Installation/Configuration	Contains detailed information and instructions for installing and configuring the SDR software on each server in your cluster.
Administration	Provides information to help in understanding and managing SDR operations and issues after DataKeeper resources are created.
Multi-Site Cluster	Discusses the use of a LifeKeeper shared storage configuration between two or more servers with the additional ability to replicate the shared disk(s) to one or more target servers using SteelEye DataKeeper.
Troubleshooting	Describes possible problems, their symptoms and suggested actions.
Glossary	Contains a list of commonly used terms within SteelEye DataKeeper.

### SteelEye LifeKeeper for Linux:

- SteelEye LifeKeeper for Linux Release Notes
- SteelEye LifeKeeper for Linux Technical Documentation

## Training

LifeKeeper training is available through SIOS Technology Corp. or through your LifeKeeper provider. Contact your sales representative for more information.

## Technical Support

As a SIOS Technology Corp. customer with a valid Support contract, you are entitled to access the new SIOS Technology Corp. Support Self-Service Portal.

The SIOS Technology Corp. Support Self-Service Portal offers you the following capabilities:

- Search our Solution Knowledge Base to find solutions to problems and answers to questions
- Always on 24/7 service with the SIOS Technology Corp. Support team to:
- **Log a Case** to report new incidents
- **View Cases** to see all of your open and closed incidents
- **Review Top Solutions** which provides information on the most popular problem resolutions being viewed by our customers.

Contact SIOS Technology Corp. Support at [support@us.sios.com](mailto:support@us.sios.com) to set up and activate your Self-Service Portal account.

You can also contact SIOS Technology Corp. Support at:

1-877-457-5113 (Toll Free)

1-803-808-4270 (International)

Email: [support@us.sios.com](mailto:support@us.sios.com)