



**LifeKeeper® for Windows v6
Release Notes**

March 2007

***Read This Document Before Attempting To Install
Or Use This Product!***

This document contains information about factors that must be considered before, during, and after installation.

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LifeKeeper® for Windows v6

Introduction

This document is intended for the person who installs, configures and/or administers the LifeKeeper for Windows product. The document contains important information not detailed in the formal LifeKeeper documentation set, such as version requirements, last-minute changes to instructions and procedures, product restrictions, and known issues. It is important that you review this document before installing and configuring your LifeKeeper software.

LifeKeeper Product Description

LifeKeeper for Windows v6 continues SteelEye Technology's tradition of providing world-class reliability for mission critical applications. LifeKeeper for Windows leverages over a decade of experience with high availability platforms in providing customers the ability to configure multiple servers to monitor and backup their applications. All servers are active and productive until a failure is detected, or a planned switchover is performed. In the event of a failure, LifeKeeper recovers all network interfaces, data, and applications. Recovery occurs automatically and is transparent to clients, thus minimizing any downtime or productivity interruption.

LifeKeeper for Windows enables continuous operations during planned downtime for maintenance or upgrades as well as in the event of a system failure or if an application ceases to respond. With LifeKeeper, the amount of downtime required for common maintenance tasks and upgrades is significantly reduced or eliminated.

Features of LifeKeeper for Windows v6

Feature	Description
IBM DB2 v9 Support	LifeKeeper DB2 Recovery Kit has been updated to support IBM DB2 Workgroup Server Edition and IBM DB2 Enterprise Server Edition (single partition) version 9 or later.
VMware VirtualCenter Server 2.0.1 support	LifeKeeper VMware VirtualCenter Management Server Recovery Kit provides fault resilience for VMware VirtualCenter Server 2.0.1 in a LifeKeeper environment. The LifeKeeper VMware VirtualCenter Recovery Kit is compatible with VirtualCenter Server using Microsoft SQL Server and Oracle.
IBM Director v5.20 Support	LifeKeeper IBM Director Recovery Kit has been updated to support IBM Director v5.20.
Microsoft SQL 2005 Certification	LifeKeeper Microsoft SQL Server Recovery Kit has been certified on 64-bit versions of Windows 2003 and Microsoft SQL 2005.
Oracle 10g R2 Certification	LifeKeeper Oracle Recovery Kit has been certified on 64-bit versions of Windows 2003 and Oracle 10g R2.
64-bit Platform Support	LifeKeeper Core has been updated to support Windows 64-bit. LifeKeeper v6 provides a single product that can work on either 32-bit or 64-bit platforms.
IXS Platform Support	LifeKeeper Core has been certified on the IXS (Integrated xSeries Server) processor card in IBM® System i™ (iSeries™) servers.

Product Requirements

Operating System

Products	Requirements
Operating System	<p>Microsoft Windows 2000 Server (Professional, Advanced or Data Center editions)</p> <p>Microsoft Windows 2003 Server (Standard, Enterprise, Data Center or Web editions)</p> <p>Microsoft Windows 2003 Server R2 Editions</p> <p>Both 32-bit and 64-bit platforms are supported</p> <p>Note: Certification on Itanium platforms has not been performed. Contact SteelEye Support for additional information regarding LifeKeeper support on Itanium hardware.</p>
Operating System Patches	<p>Windows 2000 Service Pack 4 or later</p> <p>Windows 2003 Service Pack 1 or later</p>
Virtual Environments	<p>Microsoft Virtual Server is a virtualization application that runs on top of Windows Server 2003. LifeKeeper supports VM's running inside of a Microsoft Virtual Server 2005 R2 (same as physical machines).</p>

LifeKeeper Requirements

The following table shows requirements applicable to the LifeKeeper core and recovery kits.

Core	Requirement(s)
LifeKeeper License	One license is required for every server on which LifeKeeper runs. This applies to both physical and virtual servers.
Recovery Kit License	One license is required for every server for each separately packaged LifeKeeper recovery kit on which LifeKeeper runs. This applies to both physical and virtual servers.
LAN Manager Recovery Kit	Requires the "File and Print Sharing for Microsoft Networks" component (lanmanserver) to be installed on the Windows server. NetBIOS must also be enabled. Otherwise the LAN Manager resource will not come in service.
Memory Requirements	The minimum recommended memory for a system supporting LifeKeeper for Windows is 256 MB. Additional memory will be required to run user applications in addition to that required for LifeKeeper.

Core	Requirement(s)
Minimum Page File Size	<p>LifeKeeper requires sufficient memory resources, including swap space, to start and run properly. To determine an adequate paging file size, perform the following steps:</p> <ol style="list-style-type: none"> 1. Start up all applications and services on the server that will normally be running, including LifeKeeper. 2. From the Windows Performance tool, add a Counter with Performance Object=Process and Counter=Page File Bytes. 3. Observe the page file usage under normal operating conditions (average). 4. Add the server's RAM value to the value noted in step 3 to obtain the minimum paging file size. 5. In your system's Virtual Memory dialog, adjust the initial paging file size to match the value obtained in step 4.
Disk	220 MB free space should be available on the volume. This could grow as additional resources are defined and as log files grow.
GUI	<p>Ports: LifeKeeper uses port 82 for Remote Method Invocation (RMI) communication between the GUI server and client.</p> <p>The LifeKeeper GUI uses port 81 for its administration web server, which should be different from any public web server. This is used by the GUI when run as a Java applet on a remote client.</p> <p>In the event of conflict with an existing application, these ports can be changed by editing the RMI_PORT or WEB_PORT entries in the STEELEYE\LIFEKEEPER\JAVAGUI\SERVER registry key.</p>

Optional Recovery Kits *	Versions/Requirements
DB2 Recovery Kit v6 (6.0.3)	IBM DB2 Workgroup Server Edition or IBM DB2 Enterprise Server Edition (single partition) version 9 or later.
Microsoft Exchange Server Recovery Kit v5.3	Microsoft Exchange 2000 Server software with Exchange 2000 Service Pack 3 or Microsoft Exchange Server 2003 with Exchange 2003 Service Pack 2. LifeKeeper supports both the standard edition of Exchange Server and Exchange Enterprise Server.
Microsoft SQL Server Recovery Kit v5.2	Microsoft SQL 2000 (8.0) or Microsoft SQL 2005 (9.0) TCP/IP is strongly recommended by Microsoft for use in a clustered environment, rather than LAN Manager, although LifeKeeper does support LAN Manager.
Microsoft Exchange 5.5 Recovery Kit v5.0	Microsoft Exchange Server 5.5
Oracle Recovery Kit v5.3	Oracle versions 9i Release 2 and Oracle 10g R2.
SAP Recovery Kit v5.3	SAP Web Application Server version 6.40
VMware VirtualCenter Recovery Kit v6 (6.0.3)	VMware VirtualCenter Server 2.0.1.
IBM Director Recovery Kit v6 (6.0) ♦	IBM Director versions 5.10 and 5.20. ♦ This recovery kit does not require a separate recovery kit license key.

***All separately packaged LifeKeeper recovery kits require a software license key in order to function with LifeKeeper v4.3 and higher.**

GUI Requirements, Platforms and Browsers

The LifeKeeper GUI server requires that the Java Software Development Kit (JDK) or Java Runtime Environment (JRE) be installed on each server. The JRE 1.5.0_06 for Windows 2000/2003 is installed with the LifeKeeper Core software. JRE 1.5.0_06 has been fully tested with the LifeKeeper GUI Server. We do not anticipate problems with future versions of the JRE, but server management best practice is to not accept any software updates without thoroughly testing them. As a result, we do not recommend updating your production server to a newer version of the JRE until it has been fully tested and certified by SteelEye, or until you have fully tested it with the LifeKeeper GUI Server on a machine other than your production server. The update feature for Java can be disabled by opening the Java Control Panel or by right clicking on the Java icon located at the bottom right of the screen and choosing **Properties** then the **Update** tab. Uncheck the “Check for Updates Automatically” option.

LifeKeeper can be administered from a system outside the LifeKeeper cluster by running the LifeKeeper web client. Included in the following table is a list of the supported platforms and browsers for the LifeKeeper web client. As in the case of the server, we have tested with JRE 1.5.0_06, but we expect that the client will work equally well with future JRE updates. Updating the client JRE only affects that machine, so it is not as critical to test for safety as when you are updating the server JRE. We do recommend that you test updates before committing to them, and that you prepare to roll them back if there’s a problem.

Operating System	Internet Explorer 5.5+, 6.0	Internet Explorer 7.0	Netscape Navigator 6.1+, 7.x	Netscape Navigator 8.0, 8.1	Mozilla Firefox 1.5, 2
Windows 98	√		√	√	√
Windows NT	√		√	√	√
Windows 2000	√		√	√	√
Windows 2003	√	√	√	√	√
Windows XP	√	√	√	√	√
Linux	N/A	N/A	√	N/A	√

Note: Other recent platforms and browsers will likely work with the LifeKeeper web client, but they have not been tested by SteelEye Technology, Inc.

Remote GUI Client Requirements

Included in the table below are the minimum system requirements for a LifeKeeper GUI client running Windows or Linux.

Windows	Linux
Windows 95/98, Windows NT 4.0 SP5, Windows ME, Windows XP, Windows 2000, Windows 2003	Any Linux distribution that meets the requirements below.
Java Plug-in 1.5.0-6	Java Plug-in 1.5.0
16-Bit Color Mode	16-Bit Color Mode
Pentium 90 MHz or faster processor	Pentium 90 MHz or faster processor
45 MB free hard disk space (additional 125 MB required for separate documentation download)	45 MB free hard disk space (additional 125 MB required for separate documentation download)

Installing and Removing LifeKeeper for Windows

LifeKeeper for Windows uses InstallShield to provide a standard installation interface with choices for Typical, Compact or Custom installation. See the *LifeKeeper for Windows Planning and Installation Guide* for details about installing, removing or upgrading your LifeKeeper software.

IMPORTANT

- If running SteelEye Data Replication for Windows v6, you should also be running LifeKeeper for Windows to v6.
- Recovery Kit license keys for optional application recovery kits are required for LifeKeeper for Windows v6. Note: Existing recovery kit license keys will continue to work with LifeKeeper for Windows v6.
- Customizations made to LifeKeeper scripts must be reapplied after upgrading to LifeKeeper for Windows v6.

Technical Notes

Running CHKDSK.EXE on LifeKeeper Protected Volume

Microsoft recommends running the utility **chkdsk.exe** to check and correct file system or disk errors on volumes that have not been cleanly shutdown. However, depending on the extent of errors, the utility may take a very long time to complete. It may take several hours or even days for **chkdsk** to completely check the volume or it may hang while checking the volume. Due to these reasons, LifeKeeper does not run the **chkdsk** utility on protected volumes. LifeKeeper does run the Microsoft utility **chkntfs.exe** to check whether volume is dirty or not before bringing the volume in-service. If a protected volume is found dirty, LifeKeeper will log an error to the event log.

It is recommended that administrators periodically run **chkdsk** on LifeKeeper protected volumes on the server where the volume resources are in-service. Administrators should bring all the applications using the volume resource(s) out-of-service prior to running **chkdsk**.

Communications Paths Over Fibre Channel

When building a LifeKeeper cluster using shared storage, it is important to maintain working communication paths between the nodes in the cluster. Communication paths can be created using TCP or TTY communication protocols. Normally, TCP communication paths are built on Ethernet network devices. LifeKeeper, however, can use any type of connection that the TCP protocol can run on. If a shared storage cluster is being created using a Fibre Channel SAN, it is possible (and desirable) to use the Fibre Channel SAN as a LifeKeeper Communication Path.

QLogic provides a miniport driver and an IP driver for Windows that will allow a QLogic Fibre Channel storage adapter to also run the TCP/IP protocol. This, in effect, allows the QLogic Fibre Channel adapter to function both as a storage adapter and as a network adapter. Once this driver is in place, the QLogic card can be configured, as any network card would, using standard network configuration techniques.

Driver can be downloaded from the following QLogics web site:

www.QLogic.com/support/drivers_software.asp.

Remote Administration of LifeKeeper via Terminal Services

A number of LifeKeeper's internal commands, such as `lkstop`, require you to run them from the console of the LifeKeeper system and can not be executed in a normal Terminal Services session. To fully support running these commands remotely via a Terminal Services session, the Terminal Server client should be started with the `"/console"` switch.

Note: This option is only available when connecting to a Windows 2003 Server only.

Using iSCSI Storage with LifeKeeper

iSCSI storage can be used as shared storage which can be protected by LifeKeeper. For shared storage environments, the iSCSI target device must be configured so that all server initiators have access to the disk. The vendor of the iSCSI storage device provides the interface and commands needed to configure the iSCSI device. A dependency on the Microsoft iSCSI Initiator service (MSiSCSI) should be added to the LifeKeeper service. This will ensure that the shared volume is available before LifeKeeper attempts to access the volume.

To create a dependency on MSiSCSI for the LifeKeeper service, use the registry editor "regedt32.exe" and select the subkey representing the LifeKeeper service under HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services key. The service key has a value name "DependOnService" with one value "EISM". Double click the value name "DependOnService" to open for editing. When the dialog box appears add the service name "MSiSCSI" for Microsoft iSCSI Initiator service on a new line and click OK.

To verify that the dependency was created, open *Administrative Tools* -> *Services* MMC snap-in. Go to LifeKeeper service and double click to bring up the "Properties" dialog. When the dialog box appears, go to "Dependencies" page and verify that "Microsoft iSCSI Initiator" service is listed along with "LifeKeeper External Interface" in the "depends on" field.

IXS (Integrated xSeries Server) Processor Card in an IBM® System i™ (iSeries™) Server

LifeKeeper for Windows Core is certified to run on a IXS card on IBM System i servers with SteelEye Data Replication for Windows. There is no support for shared storage configurations at this time. See IBM's website for more information on the IXS card configurations:

http://www-03.ibm.com/systems/i/bladecenter/ixs/system_config.html

System Load Considerations for Quickcheck and Deepchecks

LifeKeeper launches a separate thread to monitor each protected resource in the system. These threads operate independently of one another. Most of the time system load from Quickcheck and Deepcheck script execution will be randomly distributed. LifeKeeper also works to distribute resource monitoring load by skipping a Quickcheck execution whenever a Deepcheck for the same resource is scheduled to run at the same time. However, because the check load is randomly distributed, there will occasionally be peaks in system load from resource monitoring. The more protected resources in the system, the larger these peaks will be and the more often they may occur. The largest peak will occur when LifeKeeper is started and Deepcheck scripts for each active resource are first launched. If the server can handle this first load peak in a satisfactory way, then there should not be a performance problem later.

Restrictions and Known Issues

Restrictions

FAT File System Support

LifeKeeper does not support protection for volumes using the FAT or FAT32 file systems.

Compatibility Limitation

LifeKeeper is not compatible with Windows fault tolerant disk sets.

File Share Recovery Kit

- The File Share Recovery Kit is supported only in an Active Domain environment, not in a Workgroup environment. File share permissions granted to local machine accounts, either in a workgroup environment or a domain environment will not be preserved during failover because local User IDs are valid only on the local system where they originated; other systems will not recognize them. Even if two local User IDs are spelled the same way on two different machines, they will be treated as two different accounts and valid only on the system where they originated. Domain accounts, on the other hand, are identifiable and usable on any system in the domain.
- The File Share Recovery Kit will not work if more than 9999 file shares are defined on the system. Any attempt to protect eligible file shares under LifeKeeper will fail if the total number of user-defined shares exceeds 9999. This restriction also applies to editing file share resources. You will not be able to alter the list of protected shares if more than 9999 shares are defined on the system.

LAN Manager Recovery Kit

Microsoft supports LAN Manager functions only over the first IP address per network interface card (Microsoft bug SRX#9704116-48). This prohibits using LAN Manager functions over LifeKeeper-protected IP addresses. Therefore, the only way to switchover an alias computer name using the TCP/IP protocol is to allow dynamic IP#-to-LAN Manager name mapping for your clients. The recommended solution is to use a WINS server. You will need to make the LifeKeeper servers (and all computers accessing the protected LAN Manager name) WINS clients of the same WINS server.

Hierarchy Creation

During any hierarchy creation with a volume resource, if any application has files open on the volume, LifeKeeper displays an error message indicating its inability to *chkdsk* the file system. The message box provides “Abort,” “Ignore,” and “Retry” buttons. If the “Ignore” or “Abort” option is chosen, the hierarchy will be created in the out-of-service, failed (OSF) state. To bring the hierarchy in service, you must first close any application that would be accessing the file system, then bring the hierarchy in service via the Edit menu. Refer to the *LifeKeeper for Windows Online Product Manual* for more information.

Low Virtual Memory Degrades System State

LifeKeeper depends on memory being available when it is needed. If your system is reporting that it is low on virtual memory, that need must be resolved immediately.

A virtual memory shortage serious enough to degrade or delay communications and other internal system functions will very likely cause LifeKeeper to malfunction. For instance, *deepcheck* of TCP/IP communication resources may be impacted enough to cause a false failure, and thus a failover of the resource to the backup server.

If LifeKeeper communication with other servers in the cluster is degraded, it could cause a manually initiated switchover to fail. However, this will not affect LifeKeeper's ability to failover protected resources when a server completely fails.

GUI interoperability

The LifeKeeper GUI may only be used to administer LifeKeeper on Windows servers. The LifeKeeper for Windows GUI will not interoperate with LifeKeeper on an NT, Solaris or MP-RAS server environment.

Note that you can *connect to* and *monitor* a LifeKeeper for Linux cluster. However, performing administrative tasks such as creating resources, editing properties, bringing servers in and out of service, is **not** supported at this time.

Internet Explorer GUI

When using the LifeKeeper GUI from Internet Explorer, clicking in some areas of the GUI when it is partially covered by another window does not make it visible.

Note: This problem does not occur on Linux or when using Netscape on Windows.

Known Issues

Issue:

If a LifeKeeper client tries to communicate with a server that is in the process of shutdown, the server may abort the validation process by refusing to allow the client to log on. In that case, the client will pop up a message stating "Access Denied: unknown user name or bad password. Only members of the LifeKeeper-authorized security groups can use LifeKeeper. Would you like to re-enter the authentication data?".

Suggested Action:

Click "Yes" to input new credentials, and then click either "Cancel" or re-enter the credentials and click "OK". Note: If you click "No" initially, the LifeKeeper GUI will disconnect from that server, and will not reconnect automatically.

Issue:

The LifeKeeper web client may lock up when used from a server machine if the "-" (reduce resource height) or "+" (increase resource height) accelerator keys are hit during the initial paint of LifeKeeper resources for that server.

Suggested Action:

To recover, open Windows Task Manager and select "End Task" for the "LifeKeeper - <web browser, e.g., Microsoft Internet Explorer>" application. It may take up to one minute for the processes to end. Restart the LifeKeeper web client from the Start->All Programs->SteelEye shortcut and wait for initial screen paint to complete before using accelerator keys.

Issue:

The LifeKeeper web client may lock up when used from the server machine if multiple changes are made to an existing hierarchy (i.e. create/delete dependencies), closing and reopening the LifeKeeper client between changes.

Suggested Action:

To recover, open Windows Task Manager and select "End Task" for the "LifeKeeper - <web browser, e.g., Microsoft Internet Explorer>" application. It may take up to one minute for the processes to end. For hierarchy administration on the server, use the LifeKeeper GUI (Admin Only) application. Shortcut is Start->All Programs->SteelEye->LifeKeeper->LifeKeeper (Admin Only).

Issue:

If a recovery kit is removed while there are resource hierarchies of that kit in service, the Remove hangs.

To avoid this situation, it is standard recommended practice to always take a recovery kit's resource hierarchies Out of Service and delete them before removing the recovery kit software.

Suggested Action:

If you encounter this situation, you will most likely need to re-boot your system since there are many related processes that hang, and clearing them all can be difficult.

Issue:

In a two-server cluster, when the primary server fails or is shut down, which causes the hierarchies to failover to the backup server, and the backup server also fails or is shut down before the hierarchies are entirely failed over to the backup server, the following behavior has been detected:

When both servers are rebooted some of the resources in the hierarchies will be in-service on one server and some will be in-service on the other server. Some of the higher-level parent resources may not be in-service on either server.

Suggested Action:

After both servers have been restarted and have completed LifeKeeper initialization, select the parent resource in a hierarchy that did not come in-service from the Hierarchy Administration interface and bring it in-service manually.

Repeat this task until all hierarchies are in-service.

Frequently Asked Questions

Can I upgrade my existing LifeKeeper hierarchies from a previous version of LifeKeeper for Windows to v6?

You may upgrade your existing LifeKeeper for Windows software while preserving your resource hierarchies. Please refer to the *Planning and Installation Guide* for the correct upgrade procedure.

Does LifeKeeper operate in a cluster with Microsoft Cluster Services?

No. LifeKeeper does not support any Cluster Server APIs. Instead, all MSCS nodes may be upgraded to LifeKeeper.

Can I mix Windows 2000 and 2003 servers in a LifeKeeper cluster?

Yes. LifeKeeper for Windows supports both Windows 2000 and 2003 servers. You must, however, ensure that any application that will move between servers in the cluster can run on all OS versions within the cluster.

Does LifeKeeper require that all servers in the cluster be identically configured?

No. As long as all IA32-based servers are powerful enough to run any application that may run on them as the result of a failover operation and meet all other LifeKeeper requirements, a cluster can be built.

Does LifeKeeper for Windows v6 support 64-bit environments?

Yes. LifeKeeper for Windows supports both 32-bit and 64-bit platforms.

How do I change permissions on LifeKeeper protected File Share resources?

The **EditFileShareResource** utility can be used to update a file share resource with all current file shares and permissions on the associated volume(s). This can be useful in environments where there are a large number of file shares, and file shares have been added or deleted since the resource was created or permissions have been modified. Using the utility can prevent the need to delete and re-create the file share resource. The **EditFileShareResource** utility is located under %LKROOT%\bin directory.

To invoke the utility, on the command line enter:

```
EditFileShareResource <Tag name>
```

where <Tag name> is the tag name of a file share resource that is currently in service.

The utility protects **all** eligible file shares defined on the volumes that are associated with the file share hierarchy. It deletes any previously protected shares that have been deleted from the system and adds newly defined shares (meeting the eligibility criteria) to the list. It will also update the file share permissions defined on the file share.

Documentation

The following documentation is available for LifeKeeper for Windows:

- *Getting Started with LifeKeeper/SteelEye Data Replication* - provides a high-level configuration task list with references to details in the following documents.
- *Planning and Installation Guide* provides useful information for planning and setting up your servers, storage devices, and network components. It also includes details for configuring the LifeKeeper GUI to run on a remote system. (PDF format)
- *Online Product Manual* is HTML-based and can be accessed from a web browser. It includes product feature information and instructions for LifeKeeper administration tasks. It includes documentation about the Core recovery kits (Volume, IP, DNS, LAN Manager, File Share, and Generic Application). The *Online Product Manual*'s "help" topics are accessible from the Table of Contents in the **Help** menu of the LifeKeeper GUI. In addition, context-sensitive help is accessible from "Help" buttons within the GUI dialog boxes. (HTML format)
- Administration Guides are available for the following recovery kits. Each guide provides information on configuring the application with LifeKeeper, along with procedures for creating and maintaining your LifeKeeper application resource hierarchies. (PDF format)
 - *Microsoft IIS Recovery Kit*
 - *Microsoft SQL Server Recovery Kit*
 - *Microsoft Exchange Server 5.5 Recovery Kit*
 - *Microsoft Exchange Server Recovery Kit*
 - *Oracle Recovery Kit*
 - *SAP Recovery Kit*
 - *IBM Director Recovery Kit*
- *SDRS Administration Guide* provides the information necessary to properly configure the SDRS components for a successful disaster recovery implementation.
- *LifeKeeper Extender* provides information for creating custom recovery kits to work with the LifeKeeper for Windows product.
- *LifeKeeper for Windows v5.0 Porting Guide* provides guidelines for porting custom Recovery Kits for compatibility with LifeKeeper for Windows v5 or later.

SteelEye Data Replication for Windows

- *Release Notes*
- *Administration Guide*
- *Disk to Disk Backup Administration Guide*
- In addition, the *SteelEye Data Replication Online Product Manual* is available from the Help menu in the Administration Window.

The LifeKeeper for Windows documentation is available on the SteelEye web site at:
<http://www.steeeye.com/support/documentation>.

Training

LifeKeeper training is available through SteelEye Technology, Inc. or through your LifeKeeper provider. Contact your sales representative for more information.

Technical Support

Support for LifeKeeper is provided by either SteelEye Technology, Inc. or your authorized LifeKeeper Reseller. You can contact SteelEye Support at:

1-877-457-5113 (Toll Free)

1-803-808-4270 (International)

Email: support@steeleye.com