

Veritas™ Cluster Server Release Notes

Solaris

5.0



Veritas Cluster Server Release Notes

Copyright © 2006 Symantec Corporation. All rights reserved.

Veritas Cluster Server 5.0

Symantec, the Symantec logo, and Veritas are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

The product described in this document is distributed under licenses restricting its use, copying, distribution, and decompilation/reverse engineering. No part of this document may be reproduced in any form by any means without prior written authorization of Symantec Corporation and its licensors, if any.

THIS DOCUMENTATION IS PROVIDED “AS IS” AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID, SYMANTEC CORPORATION SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE FURNISHING PERFORMANCE, OR USE OF THIS DOCUMENTATION. THE INFORMATION CONTAINED IN THIS DOCUMENTATION IS SUBJECT TO CHANGE WITHOUT NOTICE.

The Licensed Software and Documentation are deemed to be “commercial computer software” and “commercial computer software documentation” as defined in FAR Sections 12.212 and DFARS Section 227.7202.

Symantec Corporation
20330 Stevens Creek Blvd.
Cupertino, CA 95014
www.symantec.com

Third-party legal notices

Third-party software may be recommended, distributed, embedded, or bundled with this Symantec product. Such third-party software is licensed separately by its copyright holder. All third-party copyrights associated with this product are listed in this document.

AIX is a registered trademark of IBM Corporation.
HP-UX is a registered trademark of Hewlett-Packard Development Company, L.P.
Linux is a registered trademark of Linus Torvalds.
Solaris is a trademark of Sun Microsystems, Inc.
Windows is a registered trademark of Microsoft Corporation.
Oracle is a registered trademark of Oracle Corporation.

Licensing and registration

Veritas Cluster Server is a licensed product. See the *Veritas Cluster Server Installation Guide* for license installation instructions.

Technical support

For technical assistance, visit <http://support.veritas.com> and select phone or email support. Use the Knowledge Base search feature to access resources such as TechNotes, product alerts, software downloads, hardware compatibility lists, and our customer email notification service.

Veritas Cluster Server Release Notes

- [Introduction](#)
- [New features](#)
- [Veritas agents](#)
- [System requirements](#)
- [No longer supported](#)
- [Installation notes](#)
- [Fixed issues](#)
- [Known issues](#)
- [Software limitations](#)
- [Documentation](#)

Introduction

This document provides important information regarding Veritas Cluster Server (VCS) version 5.0 for Solaris. Please review this entire document before installing VCS.

For the latest information on updates, patches, and software issues regarding this release, see the following TechNote on the Veritas Technical Support website:

<http://support.veritas.com/docs/281987>

New features

We offer the following new features in this release of Veritas Cluster Server. See *Veritas Cluster Server User's Guide* for details.

Cluster Management Console

The new Cluster Management Console replaces Cluster Manager (Web Console) and CommandCentral Availability.

Cluster Management Console enables administration and analysis for VCS clusters in your enterprise from a single console. You can install Cluster Management Console on a standalone system to manage multiple clusters or you can install the console on cluster nodes to manage a local cluster. When installed to manage a local cluster, the console is configured as part of the ClusterService group and the AppName attribute is set to `cmc`.

Cluster Monitor is now called Cluster Connector

CommandCentral Availability installed a component called Cluster Monitor on cluster nodes. The updated component is called Cluster Connector.

Support for Storage Foundation Volume Server

VCS 5.0 supports configuring volumes in a SAN environment managed using Storage Foundation Volume Server.

See the *Veritas Cluster Server Bundled Agents Reference Guide* and the *Veritas Cluster Server Installation Guide* for information about the new SANVolume agent and how to use VCS with Storage Foundation Volume Server.

Storage Foundation Volume Server (SF Volume Server) is a separately licensed feature of Veritas Storage Foundation by Symantec. An SF Volume Server license is currently available only through the Symantec customer access program. For information about participating in the access program and obtaining an SF Volume Server license, visit the following Symantec website:

<http://cap.symantec.com>

VCS privileges for operating system user groups

VCS 5.0 lets you assign VCS privileges to native users at an operating system (OS) user group level in secure clusters.

Assigning a VCS role to a user group assigns the same VCS privileges to all members of the user group, unless you specifically exclude individual users from those privileges.

See the *Veritas Cluster Server User's Guide* for more information.

Five levels of service group dependencies

VCS now supports configuring up to five levels of service group dependencies. The exception is the online local hard dependency, for which only two levels are supported.

New RemoteGroup agent to monitor service groups in remote clusters

The new RemoteGroup agent monitors and manages service groups in a remote cluster. See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information about the agent.

Enhancements to the hastop command

You can customize the behavior of the hastop command by configuring the new EngineShutdown attribute for the cluster.

EngineShutdown Value	Description
Enable	Process all hastop commands. This is the default behavior.
Disable	Reject all hastop commands.
DisableClusStop	Do not process the hastop -all command; process all other hastop commands.
PromptClusStop	Prompt for user confirmation before running the hastop -all command; process all other hastop commands.
PromptLocal	Prompt for user confirmation before running the hastop -local command; reject all other hastop commands.
PromptAlways	Prompt for user confirmation before running any hastop command.

Simulator supports deleting simulated clusters

VCS Simulator now supports deleting simulated clusters.

Symantec recommends using the same tool (command line or Java Console) to create and delete a cluster. For example, if you created the cluster from the Java Console, delete the cluster from the Java Console.

Fencing updates: DMP support

Dynamic multi-pathing (DMP) allows coordinator disks to take advantage of the path failover and the dynamic adding and removal capabilities of DMP. You can configure coordinator disks to use Veritas Volume Manager DMP feature.

You can set the coordinator disks to use either raw or DMP as the hardware path to a drive. See the *Veritas Cluster Server Installation Guide* for more information.

Minimal downtime upgrade

See the *Veritas Cluster Server Installation Guide* for a strategy on upgrading to VCS 5.0 while ensuring a minimal downtime for your applications.

Backup of VCS configuration files

VCS backs up all configuration files (<config>.cf) including main.cf and types.cf to <config>.cf.autobackup. The configuration is backed up only if the BackupInterval is set and the configuration is writable.

When you save a configuration, VCS saves the running configuration to the actual configuration file (i.e. <config>.cf) and removes all autobackup files. This does away with the VCS behavior of creating .stale files

If you do not configure the BackupInterval attribute, VCS does not save the running configuration automatically.

See the *Veritas Cluster Server User's Guide* for more information.

Separate logger thread for HAD

The VCS engine, HAD, runs as a high-priority process to send heartbeats to kernel components and to respond quickly to failures. In VCS 5.0, HAD runs logging activities in a separate thread to reduce the performance impact on the engine due to logging.

Enhanced NFS lock failover

The new NFSRestart agent provides high availability to NFS locks. Use the agent in conjunction with the NFS agent. See the *Veritas Cluster Server Bundled Agents Reference Guide* for more information. The NFSRestart agent replaces the NFSLock agent.

Support for VLAN interfaces

The NIC, MultiNIC, MultiNICA, and MultiNICB agents now support VLAN interfaces. The agents do not configure the NICs, but can monitor them.

See the OS vendor's documentation on how to configure VLAN on your host, and ensure that the switch or router connected to such an interface is compatible with your configuration. Both server-side and switch-side VLAN configurations are supported.

Virtual fire drill

VCS supports a virtual fire drill capability that lets you test whether a resource can fail over to another node in the cluster. Virtual fire drills detect discrepancies between the VCS configuration and the underlying infrastructure on a node; discrepancies that might prevent a service group from going online on a specific node. See the *Veritas Cluster Server User's Guide* for more information on running virtual fire drills.

New term: Daemon Down Node Alive (DDNA)

Daemon Down Node Alive (DDNA) is a condition in which the VCS high availability daemon (HAD) on a node fails, but the node is running. When HAD fails, the hashadow process tries to bring HAD up again. If the hashadow process succeeds in bringing HAD up, the system leaves the DDNA membership and joins the regular membership. See the *Veritas Cluster Server User's Guide* for more information.

Change in behavior: Use comma or semicolon as delimiter

VCS 5.0 does not support using spaces as delimiters to separate vector, association, or keylist values. You must use a comma or a semicolon as a delimiter.

Change in behavior: New format for engine version

The new EngineVersion attribute replaces the MajorVersion and MinorVersion attributes. VCS stores version information in the following format:

```
<major>.<minor>.<maintenance_patch_num>.<point_patch_num>
```

Change in behavior for the resfault trigger

VCS now provides finer control over the resfault trigger. The resfault trigger is now invoked if the TriggerResFault attribute is set to 1.

Change in behavior: New location for enterprise agents

VCS enterprise agents are now installed in the /opt/VRTSagents/ha/bin directory.

The <agent>Types.cf files are now located at /etc/VRTSagents/ha/conf/<agent>.

Change in behavior: New location of message catalogs and attribute pools

VCS stores binary message catalogs (BMCs) at the following location:

`/opt/VRTS/messages/language/module_name`

The variable *language* represents a two-letter abbreviation.

The attribute pools also move from `/var` to `/opt`.

Change in behavior: New option for the `hastart` and `had` commands

Use the `-v` option to retrieve concise information about the VCS version. Use the `-version` option to get verbose information.

Changes to bundled agents

VCS introduces the following new agents:

- **NFSRestart**—Provides high availability for NFS record locks. The agent replaces the NFSLock agent.
- **RemoteGroup**—Monitors and manages a service group on another system.
- **SANVolume**—Monitors volumes in a SAN environment managed using Storage Foundation Volume Server.
- **Apache** (now bundled on all platforms)—Provides high availability to an Apache Web server.

See “[No longer supported](#)” on page 22.

Changes to licensing for VCS

VCS now follows the licensing scheme described below:

License	What's included
VCS	<ul style="list-style-type: none">■ VCS■ Cluster Management Console■ Database agents■ Application agents■ Virtual fire drill support
VCS HA/DR	<ul style="list-style-type: none">■ VCS■ Cluster Management Console■ Database agents■ Application agents■ Replication agents■ Global clustering■ Fire Drill support

Note: Database agents are included on the VCS 5.0 disc. The replication and application agents are available via the Veritas Cluster Agent Pack.

New attributes

VCS 5.0 introduces the following new attributes. See the *Veritas Cluster Server User's Guide* for more information.

Resource type attributes

- **AgentFile**—Complete name and path of the binary for an agent. Use when the agent binaries are not installed at their default locations.
- **AgentDirectory**—Complete path of the directory in which the agent binary and scripts are located. Use when the agent binaries are not installed at their default locations.

Cluster attributes

- **EngineShutDown**—Provides finer control over the `hastop` command.
- **BackupInterval**—Time period in minutes after which VCS backs up configuration files.
- **OperatorGroups**—List of operating system user account groups that have Operator privileges on the cluster.
- **AdministratorGroups**—List of operating system user account groups that have administrative privileges on the cluster.
- **Guests**—List of users that have Guest privileges on the cluster.

System attributes

- **EngineVersion**—Specifies the major, minor, maintenance-patch, and point-patch version of VCS.

Service group attributes

- **TriggerResFault**—Defines whether VCS invokes the resfault trigger when a resource faults.
- **AdministratorGroups**—List of operating system user account groups that have administrative privileges on the service group.
- **OperatorGroups**—List of operating system user account groups that have Operator privileges on the service group.
- **Guests**—List of users that have Guest privileges on the service group.

Removed attributes

- **DiskHbStatus**—Deprecated. This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- **MajorVersion**—The **EngineVersion** attribute provides information about the VCS version.
- **MinorVersion**—The **EngineVersion** attribute provides information about the VCS version.

Updates to the DB2 agent

The Veritas High Availability Agent for DB2 introduces the following changes:

- The attributes **StartUpOpt** and **ShutDownOpt** provide new start up and shut down options. Using the **StartUpOpt** attribute, you can start the instance or partition, activate database commands after processes start, or create customized start up sequences. Using the **ShutDownOpt** attribute, you can perform a normal stop or customize your shut down sequence.
- In previous releases when you enabled in-depth monitoring (**IndepthMonitor=1**), it executed a default SQL query. The in-depth monitor now allows you to classify actions for DB2 errors according to their severity. You can associate predefined actions with each error code with a monitoring script that you can customize. You can find a sample of in-depth monitoring script in the following directory:
`/etc/VRTSagents/ha/conf/Db2udb/sample_db2udb.`
You must install the custom script in the `/opt/VRTSagents/ha/bin/Db2udb` directory to enable indepth monitoring.
- You can enable the **AgentDebug** attribute to get more debugging information from the agent and the database.

Updates to the Sybase agent

The Veritas High Availability Agent for Sybase agent supports Sybase 12.5.x and 15 on AIX, HP-UX, Linux, and Solaris.

The agent for Sybase is zone-aware and can monitor Sybase instances running in non-global zones.

Updates to the Oracle agent

- New monitoring option—The basic monitoring option of the Oracle agent now allows health check monitoring in addition to the process check monitoring. You can choose the health check monitoring option for Oracle 10g and later.
- Support for virtual fire drills—VCS requires you to keep the configurations in sync with the underlying infrastructure on a cluster node. Virtual fire drills detect such discrepancies that prevent a service group from going online on a specific system. Refer to the *Veritas Cluster Server User's Guide* for more information.
The agent uses the Action entry point to support the virtual fire drill functionality.

Veritas agents

Bundled agents

Bundled agents are included with VCS. For information on any of the bundled agents listed below, refer to the *Veritas Cluster Server Bundled Agents Reference Guide*.

Apache	Application	DiskGroup
DNS	ElifNone	FileNone
FileOnOff	FileOnOnly	IP
IPMultiNIC	IPMultiNICB	Mount
MultiNICA	MultiNICB	NFS
NFSRestart	NIC	NotifierMngr
Phantom	Process	ProcessOnOnly
Proxy	RemoteGroup	SANVolume
Share	Volume	VRTSWebApp
Zone		

Enterprise agents

Enterprise agents monitor enterprise applications. In addition to the agents provided in this release, other agents are available through an independent Symantec offering called the Veritas Cluster Server Agent Pack. The agent pack includes the currently shipping agents and is re-released regularly to add new agents that are now under development. Contact your Symantec sales representative for information about agents included in the agent pack, agents under development, and agents available through Symantec consulting services.

Note: Before configuring an enterprise agent with VCS, verify that you have the latest version of the agent.

Veritas agents support a specified application version on Solaris 10 if the application vendor supports that version on Solaris 10.

Agent	Agent version	VCS version			Application	OS			
		4.0	4.1	5.0		8	9	10	
DB2	5.0	p	p	s	DB2 Enterprise Server Edition	8.1, 8.2, 9.1	s	s	s
Oracle	5.0	p	p	s	Oracle	9i, 10g R1, 10g R2	s	s	s
Sybase	5.0	p	p	s	Sybase Adaptive Server	12.5.x, 15	s	s	s

s – supported configuration p – supported by previous version of the agent

Custom agents

Custom agents developed in C++ must be compiled using Forte Developer 6 compilers. The following is the layout of `libvcsagfw.so` in

```
usr/lib:
```

```
/usr/lib/libvcsagfw.so --> . /libvcsagfw.so.2
```

If you use custom agents compiled on older compilers, the agents may not work with VCS 5.0.

If your custom agents use scripts, continue linking to `ScriptAgent`. Use `Script50Agent` for agents written for VCS 5.0.

System requirements

System requirements for VCS are as follows.

Supported hardware

The compatibility list contains information about supported hardware and is updated regularly. For the latest information on supported hardware visit the following URL:

<http://support.veritas.com/docs/283161>

Before installing or upgrading Veritas Cluster Server, review the current compatibility list to confirm the compatibility of your hardware and software.

Supported software for VCS cluster nodes

- Solaris 8, 9, and 10 (32-bit and 64-bit) SPARC platforms
For each platform, we recommend applying the latest Solaris operating system patches available from Sun. See the following site:
<http://sunsolve.sun.com>
- Veritas Volume Manager (VxVM) 4.0, 4.1, 5.0
- Veritas File System (VxFS) 4.0, 4.1, 5.0

Required patches

The following patches are required for this release of Veritas Cluster Server.

- If you are running the MultiNICB agent on Solaris 9, you must have the following patch from Sun: 116670-04.
- If you are running the MultiNICB agent on Solaris 8, you must be at a minimum level of Solaris 8 update 2.
- Cluster Manager requires Java 2 standard edition (J2SE) patches.
- Symantec recommends Solaris 10 Update 1 when using VCS with non-global zones.

Supported software for Cluster Management Console

You can install Cluster Management Console on a standalone system to manage multiple clusters or you can install the console on cluster nodes to manage a local cluster.

When you set up a management server to manage multiple clusters, you can connect to the clusters directly or install the cluster connector on cluster nodes to enable connection across firewalls.

Install Mode

Multi-cluster mode. To manage multiple clusters. Installed on a standalone system designated the *management server*.

Single cluster mode. To manage a single cluster. Installed on cluster nodes.

Supported software

- Solaris 8, 9, and 10, with patches indicated by Sun.
- Windows 2000 Server, Advanced Server, and Datacenter, with SP4 or patches as indicated by Microsoft.
- Windows Server 2003 Standard Edition, Datacenter Edition, Enterprise Edition, and Web Edition, with patches as indicated by Microsoft.

Note: Windows Management Instrumentation (WMI) must be installed on Windows 2003 systems prior to installing Cluster Management Console.

You can install Cluster Management Console in this mode only with VCS 5.0 in a fresh install or upgrade scenario. See [“Supported software for VCS cluster nodes”](#) on page 18.

Install Mode

Cluster Connector.

Installed on cluster nodes to enable a management server to manage a cluster across a firewall

Supported software

AIX

- VCS versions: 4.0, 4.0 MP1, 4.0 MP2, 4.0 MP3, and 5.0
- OS versions: AIX 5.2 ML6 (legacy) or later; AIX 5.3 TL4 with SP 3

Note: Cluster connector installs are not supported on clusters running on AIX 5.1 systems. Use direct connection to manage clusters running on AIX 5.1 systems.

HP-UX

- VCS versions: 4.1 and 5.0
- OS versions: HP-UX 11i v2

Linux

- VCS versions: 4.0, 4.0 MP1, 4.0 MP2, 4.1, 4.1 MP1, 4.1 MP2, and 5.0
- OS versions: RHEL 4 Update 3, SLES 9.

Note: Cluster connector installs are not supported on clusters running on RHEL 3.0 systems. Use direct connection to manage clusters running on RHEL 3.0 systems.

Solaris

- VCS versions: 4.0, 4.0 MP1, 4.0 MP2, 4.1, 4.1 MP1, and 5.0
- OS versions: Solaris 8, 9, and 10

Note: Cluster connector installs are not supported on clusters running on Solaris 7 systems. Use direct connection to manage clusters running on Solaris 7 systems.

Windows

- VCS versions: 4.1, 4.2, 4.2 RP1, 4.2 RP2, 4.3, 4.3 MP1
- OS versions: Windows 2000 Server, Advanced Server, and Datacenter, with SP4 or patches as indicated by Microsoft. Windows Server 2003* Standard Edition, Datacenter Edition, Enterprise Edition, and Web Edition, with patches as indicated by Microsoft

* Windows Management Instrumentation (WMI) must be installed on Windows 2003 systems prior to installing Cluster Management Console.

Supported browsers

Veritas Cluster Management Console is supported on the following browsers:

- Microsoft Internet Explorer 6.0 with SP2 or newer
- Firefox 1.5 or newer

Veritas Cluster Management requires the Macromedia Flash Plugin v8.0.

Requirements for accessing Cluster Manager (Java Console)

Cluster Manager (Java Console)

The VCS Java Console requires a minimum of 256MB RAM and 1280x1024 display resolution. The color depth of the monitor must be at least 8-bit (256 colors), although 24-bit is recommended.

The minimum requirements for Windows clients are Pentium II, 300MHz, 256MB RAM, and 800x600 display resolution. (Symantec recommends a minimum of Pentium III, 400MHz, and 512MB RAM.) The color depth of the monitor must be at least 8-bit (256 colors), and the graphics card must be able to render 2D images.

Cluster Manager requires Java 2 standard edition (J2SE) patches

Cluster Manager (Web Console and Java Console) requires patches from Sun for Java 2 Standard Edition (J2SE). Apply the patches for J2SE that are appropriate for your Solaris operating system. The patches are available from Sun web site.

No longer supported

Support is no longer provided for:

- DiskReservation agent
- Disk agent
- CampusCluster agent
- NFSLock agent. Use the NFSRestart agent to provide high availability to NFS lock records.
- nfs_restart trigger. Use the NFSRestart agent to provide high availability to NFS lock records. (Solaris)
- ServiceGroupHB agent. This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- Disk heartbeats (GABDisk). This release does not support disk heartbeats. Symantec recommends using I/O fencing.
- The updated Oracle agent does not support Oracle 8.0.x and Oracle 8.1.x.
- The updated DB2 Agent does not support DB2 7.2

Installation notes

Refer to the *Veritas Cluster Server Installation Guide* for instructions on how to install VCS 5.0 and how to upgrade to VCS 5.0 from earlier versions of VCS. The Installation Guide is in the cluster_server/docs directory of the software disc.

The following information includes guidelines, tips, and other considerations for installing the product.

Upgrading from VCS 4.1 requires system reboot (620952)

You must reboot your systems if the upgrade is from VCS 4.1 on Solaris 10, or if GAB or LLT cannot be stopped or unloaded successfully during the VCS 5.0 upgrade. Refer to the *Veritas Cluster Service Installation Guide* for instructions.

Error messages after upgrading to VCS 5.0 (592006)

The upgrade from a previous version of Storage Foundation to 5.0 Storage Foundation HA can result with the 5.0 VCS packages installed on your systems. In this situation, you may receive VCS error messages after you reboot your systems. These error messages are due to missing VCS configuration files.

Workaround: Uninstall the VCS packages or configure VCS on your systems.

Follow the procedures for uninstalling or configuring VCS as documented in the *Veritas Cluster Server Installation Guide*.

The LLT driver remains loaded after successful uninstallation of VCS 5.0 (620954)

The uninstallation of VCS 5.0 leaves the LLT driver loaded.

Workaround: Use `modunload` or system reboot to unload the driver.

Permissions on the /etc directory change during product installation

Because of a Solaris bug in the `pkgadd` command, the permissions on the `/etc` directory may change during the installation of Symantec product packages. Check after an installation procedure to see if this occurred. Use the `chmod` command to reset the permissions.

Change default password after installing VCS

When you install and configure VCS, if you do not choose the secure mode, the `installvcs` program creates a user *admin* with the password *password*. The user has administrative privileges to the cluster.

Symantec recommends you change the password of the user after installing and configuring VCS.

If you used the AllowNativeCliUsers attribute

If you used the `AllowNativeCliUsers` attribute, see the *Veritas Cluster Server Installation Guide* for information on how to use the `halogin` utility after upgrading to VCS 5.0.

Fixed issues

Concurrency violation with online firm dependencies

The concurrency violation trigger could not offline a service group if the group had a parent online on the system with local firm dependency. The concurrency violation continued until the parent was manually taken offline.

Web server configuration page offers two locale options

The configuration page for the Symantec Web server (VRTSWeb) offered two Japanese locale options. Both options had UTF-8 encoding, and there were no functional difference between the two.

Oracle agent uses pfile for initialization

The agent for Oracle obtained its initialization parameters from the pfile. VCS could not monitor Oracle instances created from the spfile.

Cluster Manager installation on Windows XP

When installing Cluster Manager on a Windows XP system, the following error appeared: "The installer has insufficient privileges to access this directory: C:\Config.Msi."

Other fixed issues

The following issues were fixed in this release.

- 246238 Information required when had is restarted either by hashadow or gab.
- 247698 Need to move logging activities out of single-threaded HAD.
- 248069 Commands do not close socket after successful termination.
- 620378 Complex group dependencies and timing issues leads to different failovers.
- 252347 Behavior of parent group is incorrect when groups are linked with online global firm and child group faults.
- 308607 The Monitor process for the MultiNICB agent sometimes returns status 111 (HAPING_TIMED_OUT).
- 515644 hacf does not handle MAXARG values of vector/associative attributes in the main.cf.
- 584243 hares options do not filter correctly.
- 254947 GAB and LLT device files have open permissions.
- 426932 Indeterministic service thread cancellation.
- 520034 Issues supporting multiple instances of MultiNICA agent.
- 418971 Cannot configure multiple Sybase servers with VCS.
- 271167 Provide finer control over the hastop -all command.
- 297779 Support multiple MultiNICB instances.
- 393849 Performance issues with the Mount agent.

Known issues

The following issues are open for VCS version 5.0.

DBMS security issue

The Symantec Shared DBMS feature creates the following configuration files:

```
/etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases.conf  
/etc/vxdbms/VERITAS_DBMS3_hostname/conf/databases1.conf  
/etc/vxdbms/VERITAS_DBMS3_hostname/conf/registration.dat
```

These configuration files are created or modified by `vxdbms_start_db.pl`, `vxdbms_start-server.pl`, and `vxdbms_register.pl` respectively.

The files are writable by everyone if the file mode creation mask is insufficiently restrictive. Symantec strongly recommends that you restrict the default file mode creation permissions (using the `umask` command) for root and administrator accounts to avoid a potential security issue. Specifically, change the `group|world` write and execute permissions in the default `umask`. At its least restrictive, the default `umask` for root should be `022`. Symantec recommends setting to `077`.

Security configuration may not work if you use encrypted files

If you choose to configure security using the encrypted file during VCS installation, Authentication Service may not be configured successfully.

Workaround: To configure the cluster in secure mode using the encrypted files option, do the following:

- 1 Configure the cluster.
- 2 Enable security using `installvcs -security option`

See the *Veritas Cluster User's Guide* for more information.

Saving large configuration results in very large file size for main.cf (616818)

If your service groups have a large number resources or resource dependencies, and if the `PrintTree` attribute is set to `1`, saving the configuration may cause the configuration file to become excessively large in size and may impact performance.

Workaround: Disable printing of resource trees in regenerated configuration files by setting the `PrintTree` attribute to `0`.

Root broker name cannot use fully qualified domain name (617616)

When configuring security, VCS does not support specifying the fully qualified domain name (FQDN) for the root broker. You must ensure that the root broker can be looked up by its unqualified domain name. Make sure that your name resolution mechanism can resolve the host names of the Root Broker and all cluster nodes in either local (mysys) or fully-qualified (mysys.example.com) form.

AutoStart may violate limits and prerequisites load policy

The load failover policy of Service Group Workload Management may be violated during AutoStart when all of the following conditions are met:

- More than one autostart group uses the same Prerequisites.
- One group, G2, is already online on a node outside of VCS control, and the other group, G1, is offline when VCS is started on the node.
- The offline group is probed before the online group is probed.

In this scenario, VCS may choose the node where group G2 is online as the AutoStart node for group G1 even though the Prerequisites load policy for group G1 is not satisfied on that node.

Workaround: Persistently freeze all groups that share the same Prerequisites before using `hastop -force` to stop the cluster or node where any such group is online. This workaround is not required if the cluster or node is stopped without the force option.

Trigger not invoked in REMOTE_BUILD state

In some situations, VCS does not invoke the injeopardy trigger if the system is a REMOTE_BUILD state. VCS fires the trigger when the system goes to the RUNNING state.

The hagetcf script reports an error

Running the hagetcf script to gather information about the VCS cluster generates the following error:

```
tar: cannot stat ./var/VRTSvcs/log/*.A.log. Not dumped.
```

Workaround: This message may be safely ignored.

Node cannot join cluster because port v is not ready for configuration

This behavior is observed when a node leaves a cluster and another node tries to join the cluster at the same time. If the GAB thread is stuck in another process, the new node cannot join the cluster and GAB logs the following warning:

```
GAB WARNING V-15-1-20126 Port v not ready for reconfiguration, will
retry.
```

The haclus -wait command hangs when cluster name is not specified (612587)

If you do not specify the cluster name when running the `haclus -wait` command, the `haclus -wait` command may hang.

Using the coordinator attribute

This release contains an attribute for disk groups called `coordinator`, which configures disks as coordinator disks by the I/O fencing driver. Setting the attribute prevents the coordinator disks from being reassigned to other disk groups. See the Veritas Volume Manager documentation for additional information about the coordinator attribute.

The attribute requires that the disk group contain an odd number of disks. Symantec recommends that you use only three coordinator disks. Using more (five or seven) disks may result in different subclusters.

License package not completely removed from local zones

Some files from the licensing package (`VRTSvlic`) may not be removed from a local zone that was created after `VRTSvlic` was originally installed. An error message is displayed if all files are not removed.

Workaround: After the package removal process ends, run the following command from the global zone to remove any remaining `VRTSvlic` files:

```
# rm -rf zonepath/root/var/sadm/pkg/VRTSvlic
```

If you are upgrading a product and local zones are configured, instead of using the installer upgrade procedure (or running the script from the command line), perform the upgrade in steps: Uninstall the product, and then reinstall the product.

Some alert messages do not display correctly (612268)

The following alert messages do not display correctly:

- 51030 Unable to find a suitable remote failover target for global group %s. administrative action is require
- 51031 Unable to automatically fail over global group %s remotely because local cluster does not have Authority for the group.
- 50913 Unable to automatically fail over global group %s remotely because clusters are disconnected and ClusterFailOverPolicy is set to %s. Administrative action is required.
- 50914 Global group %s is unable to failover within cluster %s and ClusterFailOverPolicy is set to %s. Administrative action is required.
- 50916 Unable to automatically failover global group %s remotely due to inability to communicate with remote clusters. Please check WAN connection and state of wide area connector.
- 50761 Unable to automatically fail over global group %s remotely because ClusterList values for the group differ between the clusters. Administrative action is required.
- 50836 Remote cluster %s has faulted. Administrative action is required.
- 51032 Parallel global group %s faulted on system %s and is unable to failover within cluster %s. However, group is still online/partial on one or more systems in the cluster
- 51033 Global group %s is unable to failover within cluster %s and AutoFailOver is %s. Administrative action is required.

Issues related to the VCS engine

Engine may hang in LEAVING state

When the command `hares -online` is issued for a parent resource when a child resource faults, and the `hares -online` command is followed by the command `hastop -local` on the same node, then the engine transitions to the LEAVING state and hangs.

Workaround: Issue the command `hastop -local -force`.

Timing issues with AutoStart policy

Consider a case where the service group is offline and engine is not running on node 1. If you restart the engine on node 1 after HAD is killed on node 2 *and* before the engine is restarted on node 2, then VCS does not initiate the autostart policy of the group.

Issues running the `hastart` command twice consecutively (619219)

Running the `hastart` command twice may cause an assertion to be displayed.

Issues related to fencing

Preexisting split brain after rebooting nodes (609407)

The fencing driver in 5.0 uses Veritas DMP to handle SCSI commands to the disk driver if fencing is configured in *dmp* mode. This allows fencing to use Veritas DMP for access to the coordinator disks. With certain disk arrays, when paths are failed over due to a path failure, the SCSI-3 persistent reservation keys for the previously active paths are not removed. If the nodes in a cluster are all rebooted at the same time, then the cluster will not start due to a "Preexisting split brain" message.

Workaround: Use the `vxfcntlclearpre` script to remove the keys from the coordinator disks as well as from the data disks.

Stopping `vxfen` when the fencing module is being configured

Trying to stop the `vxfen` driver when the fencing module is being configured results in the following error.

```
VCS FEN vxfenconfig ERROR V-11-2-1013 Unable to unconfigure vxfen
VCS FEN vxfenconfig ERROR V-11-2-1022 Active cluster is currently
fencing.
```

Workaround: This message may be safely ignored.

Fencing configuration fails if fencing module is running on another node

The `vxfenconfig -c` command fails if any of the following commands are running on other nodes in the cluster:

```
vxfenconfig -U  
vxfenconfig -c
```

Some vxfenadm options do not work with DMP paths

Some options of the `vxfenadm` utility do not work well with DMP paths such as `/dev/vx/rdmp/sdt3`.

Workaround: Use the `-a` option to register keys instead of `-m` option for DMP paths.

Issues related to global service groups

Switch across clusters may cause concurrency violation

If you try to switch a global group across clusters while the group is in the process of switching across systems within the local cluster, then the group may go online on both the local and remote clusters. This issue affects only global groups. Local groups do not experience this behavior.

Workaround: Ensure that the group is not switching locally before attempting to switch the group remotely.

Global service group does not go online on AutoStart node

At cluster startup, if the last system where the global group is probed is not part of the group's `AutoStartList`, then the group does not AutoStart in the cluster. This issue affects only global groups. Local groups do not display this behavior.

Workaround: Ensure that the last system to join the cluster is a system in the group's `AutoStartList`.

Declare cluster dialog may not display highest priority cluster as failover target

When a global cluster fault occurs, the Declare Cluster dialog enables you to fail groups over to the local cluster. However, the local cluster may not be the cluster assigned highest priority in the cluster list.

Workaround: To bring a global group online on a remote cluster, do one of the following:

Known issues

- From the Java Console, right-click the global group in the Cluster Explorer tree or Service Group View, and use the Remote Online operation to bring the group online on a remote cluster.
- From the Web Console, use the Operations links available on the Service Groups page to bring the global group online on a remote cluster.

Issues related to VCS bundled agents

RemoteGroup agent cannot authenticate on a remote host (616964)

In a secure environment, the RemoteGroup agent cannot authenticate on a remote host for the first time.

Workaround: Authenticate the remote host manually.

- 1 Remove the certificates from the node.
- 2 Restart VCS on all nodes.
- 3 Verify the state of the RemoteGroup resource.
The resource goes to the UNKNOWN state
- 4 Manually authenticate the remote machine.

```
vssat authenticate --domain domaintype:domainname \  
--prplname principal --password password \  
--broker brokerdomain:port
```

- 5 After the authentication succeeds, probe the RemoteGroup resource.

Problem in failing over the IP resource

When a system panics, the IP address remains plumbed to the system for a while. In such a case, VCS may not succeed in failing over the IP resource to another system. This can be observed when a system panics during I/O Fencing.

Workaround: Increase the value of the OnlineRetryLimit attribute for the IP resource type.

Volume agent may hang

Under extreme conditions, the volume agent may hang. This behavior has been observed under the following circumstances:

- Failover for the JNI Fibre Channel driver (JNIfcaPCI) was set to 0. Note this is *not* failover for VCS. The JNI driver has a variable called “failover” that defines the number of seconds after the target is declared offline and before it is declared failed. When target is declared failed, all pending commands are flushed back to the application. This failover value is set in the file `/kernel/drv/fca-pci.conf`. Setting failover to 0 means that the target is never declared failed. With failover for the JNI driver set to 30 seconds, the agent behavior was normal.
- Fibre cable was disconnected from the switch (to simulate failure of the Fibre drives).

In general, an agent can hang when it attempts to cancel a service thread executing a C++ entry point that has timed out if that entry point has issued a blocking call that is not a valid cancellation point.

Notifier agent becomes unstable if multiple entries are used for Smtprcipients (617965)

If you set multiple recipients using the Smtprcipients, the Notifier agent may become unstable.

NFS cannot handle minor number greater than 255 (143897)

NFS cannot handle minor numbers greater than 255.

Workaround: Ensure that minor number of the VxVM diskgroup is not greater than 255.

RefreshInfo for Mount agent generates erroneous messages (615582)

When you invoke the RefreshInfo action for the Mount agent, an erroneous message is logged to the engine log:

```
2006/05/25 13:18:17 VCS INFO V-16-2-13001 (thor179)
Resource(mnt_res): Output of the completed operation (info)
/opt/VRTSvcs/bin/Mount/info: use: not found
```

The following error message appears on the command line:

```
Msg      /opt/VRTSvcs/bin/Mount/info: use: not found
```

Info entry point for DiskGroup agent does not show FreeSize value (615588)

The Info entry point for the DiskGroup agent does not display a value for the FreeSize attribute.

Agent for Sybase may not detect Sybase resource is online (427962)

On Solaris, the agent for Sybase cannot successfully verify that the Sybase database is started if the process name of the running Sybase database exceeds 80 characters. When the agent is unable to detect the dataserver name, it faults the resource.

Workaround: Use a soft link to the \$SYBASE directory to avoid potential issues with long path names. See the *Veritas High Availability Agent for Sybase Installation and Configuration Guide* for instructions.

Issues related to the DB2 agent

All partitions fault even if there are errors on only one partition with the IndepthMonitor database (568887)

This issue occurs in an MPP environment when multiple partitions use the same database. If the Databasename is changed to an incorrect value, all partitions using the database fault.

Missing section in template file for DB2 UDB MPP (608926)

The template file for the DB2 agent does not contain the complete information for building a DB2 MPP configuration. The template does not include a service group required in the configuration.

Db2udb resource faults when IndepthMonitor is configured with a Japanese database (590010)

For locales other than English, you need to add the following lines to the \$INSTHOME/sql/lib/userprofile file.

The following example adds Japanese language support on Solaris:

```
LANG=ja  
export LANG
```

Issues related to the Oracle agent

NOFAILOVER action specified for certain Oracle errors

The Veritas High Availability agent for Oracle provides enhanced handling of Oracle errors encountered during detailed monitoring. The agent uses the reference file `oraerror.dat`, which consists of a list of Oracle errors and the actions to be taken. Refer to the *Veritas High Availability Agent for Oracle Installation and Configuration Guide* for a description of the actions.

Currently, the reference file specifies the NOFAILOVER action when the following Oracle errors are encountered:

```
ORA-00061, ORA-02726, ORA-6108, ORA-06114
```

The NOFAILOVER action means that the agent sets the resource's state to OFFLINE and freezes the service group. You may stop the agent, edit the `oraerror.dat` file, and change the NOFAILOVER action to another action that is appropriate for your environment. The changes go into effect when you restart the agent.

Health check may not work (589934)

If you set MonitorOption to 1, health check monitoring may not function when the following message is displayed:

Warning message - Output after executing Oracle Health Check is:
GIM-00105: Shared memory region is corrupted.

Workaround: Set MonitorOption to 0 to continue monitoring the resource.

Issues related to Cluster Manager (Java Console)

The template for the NFS service has an incorrect definition for the NIC resource (616652)

The template for the NFS service group specifies the NetworkType as "". The correct value for the attribute should be `ether`.

Exception when selecting preferences (585532)

On Windows systems, selecting the Java (Metal) look and feel of the Java Console may cause a Java exception.

Workaround: After customizing the look and feel, close restart the Java Console.

Java Console errors in a localized environment (585532)

When connected to cluster systems using locales other than English, the Java Console does not allow importing resource types or loading templates from localized directories.

Workaround: The workaround is to copy the types files or templates to directories with english names and then perform the operation.

Printing to file from the VCS Java Console throws exception

VCS Java Console and Help throw an exception while printing to a file from a system that does not have a printer configured. Also, the content is not written to the file.

Workaround: Before printing, make sure at least one printer is configured on the system where the VCS Java Console is launched.

Common system names in a global cluster setup

If both local and remote systems have a common system name in a global cluster setup, group operations cannot be performed on those systems using the Java console.

Workaround: Use command-line interface to perform group operations.

Issues related to VCS Simulator

Importing resource types fails on Simulator on Windows systems (616580)

When you try to import a resource type, the following error is displayed:
This application has failed to start because MFC70U.DLL was not found. Re-installing the application may fix this problem.

Workaround: Do not use the file browser to select the .cf file. Enter the fully qualified path of the file in the File Name field.

Simulator does not stop in some situations (598476)

If you have a service group with the name ClusterService online on the last running node on the cluster, then the `hasim -stop` command appears to hang.

Workaround: Take the ClusterService group offline before running the `hasim -stop` command.

Issues related to Cluster Management Console

Default SMTP and SNMP addresses in notification policies for Cluster Management Console

When you configure notification settings, the Edit SMTP Settings task asks you to provide default email or default SNMP console addresses. The policy configuration wizard uses these addresses only to populate the recipient lists during policy configuration. The wizard does not automatically configure policies with these addresses.

When you launch the Notification Policy Configuration wizard, the default email address you specified appears in the Notification Recipients dialog box.

If you add email addresses to this list, the wizard adds them to the policy along with the default address. However, if you delete all the addresses from the Email Recipients list, including the default email address, the wizard configures no email addresses in the policy.

Leave default email addresses in the recipients list to configure them into the policy.

The same behavior applies to specifying default SNMP addresses.

Cluster Management Console controls not immediately active (603415)

In some versions of Internet Explorer, you may need to click GUI controls (buttons, drop-down menus, radio buttons, and so on) once before the control becomes active. Controls that require this activating click show the following message when you roll over them with your mouse pointer:

```
Press SpaceBar or Click to activate this Control
```

Login screen may not display after inactivity timeout

If your Cluster Management Console is inactive and the session times out, your next action in the console should return you to the login screen. However, if your next action is to request a sort or a new page, the console will not sort the data or load the page.

Workaround: Use the browser refresh feature and the login screen will display.

Very large clusters may not load into Cluster Management Console (493844)

Very large clusters may not load into Cluster Management Console.

Workaround: To accommodate very large clusters, increase the value of the `loadClusterQueryTimeout` property in the management server configuration file, `/opt/VRTScmc/conf/ManagementServer.conf`. The management server generates this file upon startup.

- 1 Stop the Cluster Management Server web console:

```
/opt/VRTSweb/bin/stopApp cmc
```

- 2 Add the following line to the file `/opt/VRTScmc/conf/ManagementServer.conf`:

```
loadClusterQueryTimeout=60000
```

Adjust the value as needed to allow complete initial load of your cluster information.

- 3 Start the Cluster Management Server web console:

```
/opt/VRTSweb/bin/startApp cmc ../VERITAS
```

Web Console does not display icons properly (595305)

In Internet Explorer, some HTML pages in the Web Console may not display icons properly when connected to a remote Web server.

Workaround: Right click the missing icon symbol and select Show Picture from the drop down menu.

Log entries in the Management Server:Logs view (610333)

The Management Server:Logs view might contain log entries for the management server and for the cluster. Management server log entries have the value `site` in the Object Type `cguiol` column. Cluster log entries have the value `cluster` in the Object Type column.

Cluster Management Console does not display localized logs (620529)

If you install language packs on the management server and on VCS 5.0 cluster nodes, Cluster Management Console does not initially show localized logs.

To resolve this issue

- 1 On each on each node of the cluster, create the following symbolic links:
 - From `/opt/VRTS/messages/ja` to `/opt/VRTSvcs/messages/ja`
 - From `/opt/VRTSvcs/messages/ja` to `/opt/VRTS/messages/ja`.
- 2 If the cluster is connected to the management server, disconnect and then reconnect the cluster.

Cannot install if VxAT 4.3 is installed (617861)

If you have installed Symantec Product Authentication Services on a system using the 4.3 client/server installer, install of Cluster Management Console will not succeed because the path to the AT binaries is not in the path. Since this path is not present, the custom action DLL in our MSI will not be able to run certain AT-related commands.

Workaround: Add the path for the AT binaries before attempting a Cluster Management Console install.

Uninstall of Cluster Connector in a secure cluster leaves the VxSS service group frozen (619106)

On UNIX, when you remove the cluster connector from a secure cluster, the VxSS service group is frozen.

Workaround: Manually unfreeze the VxSS group. Run the following commands.

```
haconf -makerw
hagrps -unfreeze VxSS -persistent
haconf -dump -makero
```

Windows management server uninstall using Add or Remove Programs leaves folder

After using Add or Remove Programs to remove (uninstall) the Windows management server, an empty Cluster Management Console folder remains:

The default path is C:\Program Files\VERITAS.

Workaround: Delete the empty folder after the uninstall.

Windows cluster monitor uninstall leaves folder

After a Windows cluster monitor uninstall, an empty folder remains:

The default path is C:\Program Files\VERITAS.

Workaround: Delete the empty folder after the uninstall.

Uninstalling Cluster Connector does not remove entry from Add\Remove Programs on Windows (599424)

After you uninstall cluster connector on Windows cluster nodes, the Add or Remove Programs control panel continues to show an entry for cluster connector. This persistent entry prevents any reinstallation of cluster connector.

Workaround: Remove the Veritas Cluster Management Console entry from the list using Windows Installer Cleanup Utility. Run the utility to remove the entry on each node. If you do not have the utility, you may download it from the Microsoft support site.

Windows install over Terminal Services needs Service Pack 4

Per Microsoft, Windows 2000 without at least Service Pack 4 has problems installing multiple MSI files that alter the same registry key over Terminal Services.

Workaround: If you want to install to a Windows 2000 host using Terminal Services, first ensure that the system has Windows 2000 Service Pack 4 installed.

Errors when running ga commands on Windows (620628)

Upon attempting to run any ga- command on Windows platforms, the management server generates the following error messages:

```
System.load(C:\ProgramFiles\Veritas\Security\Authentication\bin\AtWrapper.dll) failed
CMC (cli.unsatisfiedLinkError): The JVM could not link with a necessary DLL to run the command.
Error: no AtWrapper in java.library.path
```

The cause of this error is that the path to the Symantec Product Authentication Service authentication broker is not specified in the system Path variable.

Workaround:

- 1 In the registry location
HKEY_LOCAL_MACHINE\SOFTWARE\VERITAS\Security\Authentication,
check the value of the InstallDir key to find the installation directory of the Symantec Product Authentication Service authentication broker.
- 2 Append the directory path to the value of the system Path variable.

Documentation errata

Documentation does not mention VFD support for the Oracle agent (617554)

The User's Guide and the online Help does not list the Oracle agent in the list of agents that support virtual fire drills.

Incorrect configuration in the Bundled Agents Reference Guide

Ignore Sample Configuration on page 53 of the *Veritas Cluster Server Bundled Agents Reference Guide*. This configuration is not for the NIC agent.

VCS in Japanese locales

The following issues apply to VCS 5.0 in a Japanese locale.

Installer does not create user account and password

The product installer does not ask for a VCS user account and password in a Japanese locale. Only the English installer provides this function.

Workaround: Use the `hauser` command to create VCS user accounts after installation is complete.

The `getcomms` command does not create diagnostic file

The `getcomms` command does not successfully create a `.tar` diagnostic file in a Japanese locale. [311349]

Workaround: Change the system environment to `LANG=C` before running the `getcomms` command.

Fire drill wizards do not display Japanese messages

The configuration wizard for Fire Drill (`fdsetup`) cannot display Japanese messages. [298862, 299039]

Some messages and dialogs of VCS Java Console do not display correctly [355710, 494575]

A small number of messages and dialogs do not display correctly in the VCS Java Console. For example, the Oracle output from `SqlTest.pl` that is included in the VCS message V-16-20002-211 does not display correctly.

Symantec Web Server (VRTSWeb) requires restart after installing language packs [588560]

Cluster Management Console does not list Japanese as a language option after installing the language pack.

Workaround: Restart Symantec Web Server.

Error running CmdServer in Japanese eujcp locale (533291)

The command servers displays an unsupported encoding error when you run the Java Console in the Japanese eucjp locale. The error does not appear when you run the console in the Japanese UTF-8 locale.

Software limitations

The following limitations apply to this release.

Cluster address for global cluster requires resolved virtual IP

The virtual IP address must have a DNS entry if virtual IP is used for heartbeat agents.

System names in VCS

Systems specified in the VCS configuration file, `main.cf`, and in the files `/etc/nodename` and `/etc/llthosts`, must be consistent. The names cannot include periods and thus must not be in the fully qualified form. If you create the file `/etc/VRTSvcs/conf/sysname` to contain system names used by `main.cf`, VCS uses the file to verify the names.

Systems in a cluster must have same system locale setting

VCS does not support clustering of systems with different system locales. All systems in a cluster must be set to the same locale.

GAB panics the systems while VCS gets diagnostic data

On receiving a SIGABRT signal from GAB, VCS engine forks off `vcs_diag` script. When VCS engine fails to heartbeat with GAB, often due to heavy load on the system, the `vcs_diag` script does a `sys req` to dump the stack trace of all processes in the system to collect diagnostic information. The dump of stack trace is intended to give useful information for finding out which processes puts heavy load. However, the dumping puts extra load on the system that causes GAB to panic the system in such heavy loads. See *VERITAS Cluster Server User's Guide* for more information.

Workaround: Disable the `vcs_diag` script. To disable, rename the file `/opt/VRTSvcs/bin/vcs_diag` to `/opt/VRTSvcs/bin/vcs_diag.backup`.

Using agents in NIS

Programs using networked services (for example, NIS, NFS, RPC, or a TCP socket connection to a remote host) can hang if the host is disconnected from the network. If such a program is used as an agent entry point, a network disconnect can cause the entry point to hang and possibly time out. For example, if the host is configured to use NIS maps as a client, basic commands such as `ps -ef` can hang if there is network disconnect. Symantec recommends creating users locally and configuring `/etc/nsswitch.conf` to reflect local users.

Fire drill does not support volume sets

The fire drill feature for testing fault readiness of a VCS configuration supports only regular Volume Manager volumes. Volume sets are not supported in this release.

Manually removing VRTSat package erases user credentials

Symantec recommends saving user credentials before manually removing the VRTSat package. If you need the credentials again, you can restore them to their original locations.

To save user credentials

- 1 Run the `vssat showbackuplist` command. The command displays the data files and backs them up into the SnapShot directory `/var/VRTSatSnapShot`. Output resembles the following:

```
# vssat showbackuplist
B| /var/VRTSat/.VRTSat/profile/VRTSatlocal.conf
B| /var/VRTSat/.VRTSat/profile/certstore
B| /var/VRTSat/RBAuthSource
B| /var/VRTSat/ABAuthSource
B| /etc/vx/vss/VRTSat.conf
Quiescing ...
Snapshot Directory :/var/VRTSatSnapShot
```

- 2 Move the credentials to a safe location. Preserving the directory structure makes restoring the files easier.

To restore user credentials

- 1 Navigate to the SnapShot directory or the safe location where you previously saved credentials:

```
cd /var/VRTSatSnapShot/profile
```

- 2 Restore the files:

```
cp ABAuthSource /var/VRTSat/
cp RBAuthSource /var/VRTSat/
```

```
cp VRTSat.conf /etc/vx/vss  
cd /var/VRTSatSnapShot/  
cp -r profile /var/VRTSat/.VRTSat
```

Bundled agent limitations

Volume agent clean may forcibly stop volume resources

When the attribute `FaultOnMonitorTimeouts` calls the Volume agent `clean` entry point after a monitor time-out, the `vxvol -f stop` command is also issued. This command forcibly stops all volumes, even if they are still mounted.

NFS failover

If the NFS share is exported to the world (*) and the NFS server fails over, NFS client displays “Permission denied” error. To avoid this error, export NFS shares explicitly using FQDN hostnames.

False concurrency violation when using PidFiles to monitor application resources

The PID files created by an application contain the PIDs for the processes that are monitored by Application agent. These files continue to exist even after a node running the application crashes. On restarting the node, the operating system may assign the PIDs listed in the PID files to other processes running on the node.

Thus, if the Application agent monitors the resource using the `PidFiles` attribute *only*, the agent may discover the processes running and report a false concurrency violation. This could result in some processes being killed that are not under VCS control.

Networking agents do not support IPv6 protocol

The bundled IP, NIC, IPMultiNIC, MultiNICA, IPMultiNICB, and MultiNICB agents for VCS 5.0 do not support the IPv6 enhanced IP protocol.

VCS does not provide a bundled agent for volume sets

VCS 5.0 does not provide a bundled agent to detect Volume Manager volume sets. Problems with volumes and volume sets can only be detected at the `DiskGroup` and `Mount` resource levels.

Workaround: Set `StartVolumes` and `StopVolumes` attributes of the `DiskGroup` resource that contains volume set to 1. If a file system is created on the volume set, use a `Mount` resource to mount the volume set.

Cluster Management Console limitations

Cluster connector not supported on some OS versions

Cluster Management Console does not support cluster connector on AIX 5.1, Solaris 7, and RHEL 3.0. If your cluster runs on any of these platforms, you must use direct connection to manage the cluster from a management server.

Limited peer management server support

Peer management server support is limited to a configuration of two management servers in an enterprise. An enterprise of three or more management servers is not supported in this release.

Management server cannot coexist with GCM 3.5 Master

The Cluster Management Console management server should not be installed on the same system with a GCM 3.5 Master. These two products will conflict with each other and are not supported running on the same system.

Agent info files needed for Agent Inventory report

By design, the Agent Inventory report requires agent info files that supply the information reported on individual agents. These files are shipped with agents in VCS.

Global clusters must be CMC-managed clusters

All clusters forming a global cluster (using the VCS 4.0 Global Cluster Option) must be managed clusters in order for Veritas Cluster Management Console views to display correct and consistent information. Managed clusters are running the cluster connector or have a direct connection with the management server.

Windows Active Directory installation requires NetBIOS

If you install Cluster Management Console management server in a Windows Active Directory domain, NetBIOS must be turned on. A native (non-NetBIOS) Active Directory environment is not supported in this release.

Remote root broker not supported on Windows

If you set up a management server on a Windows system, you must configure a root broker on the management server system. This release does not support specifying a remote root broker during management server install. The root

broker can be changed after install using the `configureRemoteRoot.exe` installed in `C:\Program Files\VERITAS\Cluster Management Console\bin` (default install directory).

Cluster Manager (Java console) limitations

Use the VCS 5.0 Java Console to manage clusters

Cluster Manager (Java Console) from previous VCS versions cannot be used to manage VCS 5.0 clusters. Symantec recommends using the latest version of Cluster Manager. See the *Veritas Cluster Server 5.0 Installation Guide* for instructions on upgrading Cluster Manager.

Run Java Console on a non-cluster system

Symantec recommends not running Cluster Manager (Java Console) for an extended period on a system in the cluster. The Solaris version of the Java Virtual Machine has a memory leak that can gradually consume the host system's swap space. This leak does not occur on Windows systems.

Cluster Manager and wizards do not work if the hosts file contains IPv6 entries

VCS Cluster Manager and Wizards fail to connect to the VCS engine if the `/etc/hosts` file contains IPv6 entries.

Workaround: Remove IPv6 entries from the `/etc/hosts` file.

VCS Simulator does not support I/O fencing

When running the Simulator, be sure the `UseFence` attribute is set to the default, "None."

Undocumented commands, command options, and libraries

VCS contains undocumented commands and command options intended for development use only. Undocumented commands are not supported.

Documentation

Product guides are available on the documentation disc in PDF and HTML formats. We recommend copying pertinent information, such as installation guides and release notes, from the disc to your system directory `/opt/VRTS/docs` for reference.

VCS 5.0 documentation set

VCS 5.0 includes the following documents.

Title	File Name
<i>Veritas Cluster Server Installation Guide</i>	vcs_install.pdf
<i>Veritas Cluster Server Release Notes</i>	vcs_notes.pdf
<i>Veritas Cluster Server User's Guide</i>	vcs_users.pdf
<i>Veritas Cluster Server Bundled Agents Reference Guide</i>	vcs_bundled_agents.pdf
<i>Veritas Cluster Server Agent Developer's Guide</i>	vcs_agent_dev.pdf
<i>Veritas Cluster Server Centralized Management Guide</i>	vcs_central_mg.pdf
<i>Veritas Cluster Server Application Note: F12/F15K Dynamic Reconfiguration</i>	vcs_appnote_f12k.pdf
<i>Veritas Cluster Server Application Note: S6800 Dynamic Reconfiguration</i>	vcs_appnote_s6800.pdf
<i>Veritas Cluster Server Application Note: E10K Dynamic Reconfiguration</i>	vcs_appnote_e10k.pdf
<i>Veritas High Availability Agent for DB2 Installation and Configuration Guide</i>	vcs_db2_install.pdf
<i>Veritas High Availability Agent for Oracle Installation and Configuration Guide</i>	vcs_oracle_install.pdf
<i>Veritas High Availability Agent for Sybase Installation and Configuration Guide</i>	vcs_sybase_install.pdf

The manual pages for the `VRTS11t`, `VRTSgab`, and `VRTSvcS` are installed in `/opt/VRTS/man`. Set the `MANPATH` environment variable so the `man(1)` command can point to the VCS manual pages.

For Bourne or Korn shell (`sh` or `ksh`), type:

```
# MANPATH=$MANPATH:/opt/VRTS/man
# export MANPATH
```

For C shell (`csh` or `tcsh`), type:

```
# setenv MANPATH ${MANPATH}:/opt/VRTS/man
```

For more information, refer to the `man(1)` manual page.

Documentation feedback

Your feedback on product documentation is important to us. Send suggestions for improvements and reports on errors or omissions to clustering_docs@symantec.com.

Include the title and part number of the document (located in the lower left corner of the title page), and chapter and section titles of the text on which you are reporting.

Third-party Legal Notices

Certain third-party software may be distributed, embedded, or bundled with this Symantec product, or recommended for use in conjunction with Symantec product installation and operation. Such third-party software is separately licensed by its copyright holder. This appendix contains the license agreements that govern the use of third-party software and its copyright holder's proprietary notices. Use of the third-party software must be in accordance with its license terms. Symantec makes no representation or warranty of any kind regarding such third-party software. Symantec offers no support for such third-party software and shall have no liability associated with its use.

ACE (The Adaptive Communication Environment)

Douglas C. Schmidt and his research group at Washington University and University of California, Irvine and Vanderbilt University.

ACE™ is copyrighted by Douglas C. Schmidt and his research group at Washington University, University of California, Irvine, and Vanderbilt University Copyright (c) 1993-2003, all rights reserved.

Copyright and Licensing Information for ACE™, TAO™, CIAO™, and CoSMIC™.

ACE™, TAO™, CIAO™, and CoSMIC™ (henceforth referred to as "DOC software") are copyrighted by Douglas C. Schmidt and his research group at Washington University, University of California, Irvine, and Vanderbilt University, Copyright (c) 1993-2005, all rights reserved. Since DOC software is open-source, free software, you are free to use, modify, copy, and distribute--perpetually and irrevocably--the DOC software source code and object code produced from the source, as well as copy and distribute modified versions of this software. You must, however, include this copyright statement along with code built using DOC software.

You can use DOC software in proprietary software and are under no obligation to redistribute any of your source code that is built using DOC software. Note, however, that you may not do anything to the DOC software code, such as copyrighting it yourself or claiming authorship of the DOC software code, that will prevent DOC software from being distributed freely using an open-source development model. You needn't inform anyone that you're using DOC software in your software, though we encourage you to let us know so we can promote your project in the DOC software success stories.

DOC software is provided as is with no warranties of any kind, including the warranties of design, merchantability, and fitness for a particular purpose, noninfringement, or arising from a course of dealing, usage or trade practice. Moreover, DOC software is provided with no support and without any obligation on the part of Washington University, UC Irvine, Vanderbilt University, their employees, or students to assist in its use, correction, modification, or enhancement. A number of companies around the world provide commercial support for DOC software, however. DOC software is Y2K-compliant, as long as the underlying OS platform is Y2K-compliant.

Washington University, UC Irvine, Vanderbilt University, their employees, and students shall have no liability with respect to the infringement of copyrights, trade secrets or any patents by DOC software or any part thereof. Moreover, in no event will Washington University, UC Irvine, or Vanderbilt University, their employees, or students be liable for any lost revenue or profits or other special, indirect and consequential damages.

The ACE, TAO, CIAO, and CoSMIC web sites are maintained by the DOC Group at the Institute for Software Integrated Systems (ISIS) and the Center for Distributed Object Computing of Washington University, St. Louis for the development of open-source software as part of the open-source software

community. By submitting comments, suggestions, code, code snippets, techniques (including that of usage), and algorithms, submitters acknowledge that they have the right to do so, that any such submissions are given freely and unreservedly, and that they waive any claims to copyright or ownership. In addition, submitters acknowledge that any such submission might become part of the copyright maintained on the overall body of code, which comprises the DOC software. By making a submission, submitter agree to these terms. Furthermore, submitters acknowledge that the incorporation or modification of such submissions is entirely at the discretion of the moderators of the open-source DOC software projects or their designees.

The names ACE™, TAO™, CIAO™, and CoSMIC™, Washington University, UC Irvine, and Vanderbilt University, may not be used to endorse or promote products or services derived from this source without express written permission from Washington University, UC Irvine, or Vanderbilt University. Further, products or services derived from this source may not be called ACE™, TAO™, CIAO™, and CoSMIC™ nor may the name Washington University, UC Irvine, or Vanderbilt University appear in their names, without express written permission from Washington University, UC Irvine, and Vanderbilt University.

If you have any suggestions, additions, comments, or questions, please let me know.

Douglas C. Schmidt

Apache Commons-Collections

Apache Commons-dbc

Apache Common Logging

Apache Jakarta Commons

Apache Lucene

Apache Snmp4j - The Object Oriented SNMP API for Java

Apache Spring Framework

Apache Struts

Apache Tomcat

Apache Software Foundation

Portions of this program contain components from the Apache Software Foundation. These components are made available under the Apache License 2.0, a copy of which is provided herein.

Apache License, Version 2.0, January 2004 <http://www.apache.org/licenses>

TERMS AND CONDITIONS FOR USE, REPRODUCTION, AND DISTRIBUTION

1. Definitions.

“License” shall mean the terms and conditions for use, reproduction, and distribution as defined by Sections 1 through 9 of this document.

“Licensor” shall mean the copyright owner or entity authorized by the copyright owner that is granting the License.

“Legal Entity” shall mean the union of the acting entity and all other entities that control, are controlled by, or are under common control with that entity. For the purposes of this definition,

“control” means (i) the power, direct or indirect, to cause the direction or management of such entity, whether by contract or otherwise, or (ii) ownership of fifty percent (50%) or more of the outstanding shares, or (iii) beneficial ownership of such entity.

“You” (or “Your”) shall mean an individual or Legal Entity exercising permissions granted by this License.

“Source” form shall mean the preferred form for making modifications, including but not limited to software source code, documentation source, and configuration files.

“Object” form shall mean any form resulting from mechanical transformation or translation of a Source form, including but not limited to compiled object code, generated documentation, and conversions to other media types.

“Work” shall mean the work of authorship, whether in Source or Object form, made available under the License, as indicated by a copyright notice that is included in or attached to the work (an example is provided in the Appendix below).

“Derivative Works” shall mean any work, whether in Source or Object form, that is based on (or derived from) the Work and for which the editorial revisions, annotations, elaborations, or other modifications represent, as a whole, an original work of authorship. For the purposes of this License, Derivative Works shall not include works that remain separable from, or merely link (or bind by name) to the interfaces of, the Work and Derivative Works thereof.

“Contribution” shall mean any work of authorship, including the original version of the Work and any modifications or additions to that Work or Derivative Works thereof, that is intentionally submitted to Licensor for inclusion in the Work by the copyright owner or by an individual or Legal Entity authorized to submit on behalf of the copyright owner. For the purposes of this definition, “submitted” means any form of electronic, verbal, or written communication sent to the Licensor or its representatives, including but not limited to communication on electronic mailing lists, source code control systems, and issue tracking systems that are managed by, or on behalf of, the Licensor for the purpose of discussing and improving the Work, but excluding communication that is conspicuously marked or otherwise designated in writing by the copyright owner as “Not a Contribution.”

“Contributor” shall mean Licensor and any individual or Legal Entity on behalf of whom a Contribution has been received by Licensor and subsequently incorporated within the Work.

2. Grant of Copyright License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable copyright license to reproduce, prepare Derivative Works of, publicly display, publicly perform, sublicense, and distribute the Work and such Derivative Works in Source or Object form.

3. Grant of Patent License. Subject to the terms and conditions of this License, each Contributor hereby grants to You a perpetual, worldwide, non-exclusive, no-charge, royalty-free, irrevocable (except as stated in this section) patent license to make, have made, use, sell, offer to sell, import, and otherwise transfer the Work, where such license applies only to those patent claims licensable by such Contributor that are necessarily infringed by their Contribution(s) alone or by combination of their Contribution(s) with the Work to which such Contribution(s) was submitted. If You institute patent litigation against any entity (including a cross-claim or counterclaim in a lawsuit) alleging that the Work or a Contribution incorporated within the Work constitutes direct or contributory patent infringement, then any patent licenses granted to You under this License for that Work shall terminate as of the date such litigation is filed.

4. Redistribution. You may reproduce and distribute copies of the Work or Derivative Works thereof in any medium, with or without modifications, and in Source or Object form, provided that You meet the following conditions:

a. You must give any other recipients of the Work or Derivative Works a copy of this License; and

b. You must cause any modified files to carry prominent notices stating that You changed the files; and

c. You must retain, in the Source form of any Derivative Works that You distribute, all copyright, patent, trademark, and attribution notices from the Source form of the Work, excluding those notices that do not pertain to any part of the Derivative Works; and

d. If the Work includes a “NOTICE” text file as part of its distribution, then any Derivative Works that You distribute must include a readable copy of the attribution notices contained within such NOTICE file, excluding those notices that do not pertain to any part of the Derivative Works, in at least one of the following places: within a NOTICE text file distributed as part of the Derivative Works; within the Source form or documentation, if provided along with the Derivative Works; or, within a display generated by the Derivative Works, if and wherever such third-party notices normally appear. The contents of the NOTICE file are for informational purposes only and do not modify the License. You may add Your own attribution notices within Derivative Works that You distribute, alongside or as an addendum to the NOTICE text from the Work, provided that such additional attribution notices cannot be construed as modifying the License.

You may add Your own copyright statement to Your modifications and may provide additional or different license terms and conditions for use, reproduction, or distribution of Your modifications, or for any such Derivative Works as a whole, provided Your use, reproduction, and distribution of the Work otherwise complies with the conditions stated in this License.

5. Submission of Contributions. Unless You explicitly state otherwise, any Contribution intentionally submitted for inclusion in the Work by You to the Licensor shall be under the terms and conditions of this License, without any additional terms or conditions. Notwithstanding the above, nothing herein shall supersede or modify the terms of any separate license agreement you may have executed with Licensor regarding such Contributions.

6. Trademarks. This License does not grant permission to use the trade names, trademarks, service marks, or product names of the Licensor, except as required for reasonable and customary use in describing the origin of the Work and reproducing the content of the NOTICE file.

7. Disclaimer of Warranty. Unless required by applicable law or agreed to in writing, Licensor provides the Work (and each Contributor provides its Contributions) on an “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied, including, without limitation, any warranties or conditions of TITLE, NON-INFRINGEMENT, MERCHANTABILITY, or FITNESS FOR A PARTICULAR PURPOSE. You are solely responsible for determining the appropriateness of using or redistributing the Work and assume any risks associated with Your exercise of permissions under this License.

8. Limitation of Liability. In no event and under no legal theory, whether in tort (including negligence), contract, or otherwise, unless required by applicable law (such as deliberate and grossly negligent acts) or agreed to in writing, shall any Contributor be liable to You for damages, including any direct, indirect, special, incidental, or consequential damages of any character arising as a result of this License or out of the use or inability to use the Work (including but not limited to damages for loss of goodwill, work stoppage, computer failure or malfunction, or any and all other commercial damages or losses), even if such Contributor has been advised of the possibility of such damages.

9. Accepting Warranty or Additional Liability. While redistributing the Work or Derivative Works thereof, You may choose to offer, and charge a fee for, acceptance of support, warranty, indemnity, or other liability obligations and/or rights consistent with this License. However, in accepting such obligations, You may act only on Your own behalf and on Your sole responsibility, not on behalf of any other Contributor, and only if You agree to indemnify, defend, and hold each Contributor harmless for any liability incurred by, or claims asserted against, such Contributor by reason of your accepting any such warranty or additional liability.

END OF TERMS AND CONDITIONS

APPENDIX: How to apply the Apache License to your work

To apply the Apache License to your work, attach the following boilerplate notice, with the fields enclosed by brackets “[]” replaced with your own identifying information. (Don't include the brackets!) The text should be enclosed in the appropriate comment syntax for the file format. We also recommend that a file or class name and description of purpose be included on the same “printed page” as the copyright notice for easier identification within third-party archives.

Copyright [yyyy] [name of copyright owner]

Licensed under the Apache License, Version 2.0 (the “License”); you may not use this file except in compliance with the License. You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an “AS IS” BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Digital Encryption Standard (DES) - MIT

MIT and Dennis Ferguson

Copyright (c) 1990 Dennis Ferguson. All rights reserved.

Commercial use is permitted only if products which are derived from or include this software are made available for purchase and/or use in Canada. Otherwise, redistribution and use in source and binary forms are permitted.

Copyright 1985, 1986, 1987, 1988, 1990 by the Massachusetts Institute of Technology.

All Rights Reserved.

Export of this software from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of M.I.T. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. M.I.T. makes no representations about the suitability of this software for any purpose. It is provided “as is” without express or implied warranty.

DomAPI Library

Nebiru Software Inc. (dba DomAPI)

Copyright Nebiru Software, 2001-2005

DomAPI is distributed under click-wrap terms. Please note the specific restrictions implemented by Management regarding modifications to DomAPI.

DOMAPI DHTML LIBRARY

LICENSE AGREEMENT

rev. 04092002-0503 - Architect Edition

DEFINITIONS

“Library” refers to the complete source code of the DomAPI distribution. Any included graphics or binary executables are excluded from this license agreement.

“Company” refers to Nebiru Software Inc. DBA DomAPI, as distributors of the Library.

“User” refers to yourself or any individuals in your employ who make use of the Library.

“Work that uses the Library” is any plug-in, extension or component to the Library that is developed by a third party. Plug-ins, extensions and components developed by the Company become part of the Library and fall under its definition. Plug-ins, extensions and components developed by third parties remain the intellectual property of that party.

Third parties may elect to allow their work to be included in the official DomAPI distribution. When this occurs, the work remains the property of the original third party and is used by the Company under permission. Such permission exists for the lifetime of the Library and cannot be repealed. At no time whatsoever can an included third party's license override any portion the DomAPI DHTML Library License Agreement. DomAPI reserves the right to remove third party works from itself at will.

“Product that uses the Library” is any product that makes use of the Library by linking to it, but is itself not a plug-in, extension or component to the Library.

“Purpose” of the Library covered under this license is to function as a DHTML Application Layer to HTML, XHTML and XML based applications.

The intent of this license agreement is to grant the User the maximum rights available when using the Library, while at the same time maintaining control over the distribution and evolution of the Library. Company seeks in no way to limit your rights when using the Library, but only to maintain control over its direction.

TERMS AND CONDITIONS

1. You may freely copy and distribute verbatim copies of the Library's complete source code as you receive it, to any system within your private or public network providing you keep intact all the notices that refer to this License and to the absence of any warranty; and distribute a copy of this License along with the Library. The terms of distribution are as follows:

a) You may freely make use of the Library on your websites or on a distributed medium (such as a CD-ROM) to be used solely for Purpose as defined above.

b) ALL copyright notices within the libraries source files MUST BE LEFT INTACT.

2. You may freely modify your copy of the Library or any portion of it. YOU MAY NOT REDISTRIBUTE your modified version of the Library, NOR MAKE IT AVAILABLE FOR DOWNLOAD except for use in your pages and/or application.

3. YOU MAY NOT PRODUCE SPIN-OFFS or a public work based on the Libraries source code. Company is to maintain full rights of the core Library. This constraint does not extend to “work that uses the Library”, of which you are free to develop and distribute as your own work.

4. While you may freely create and distribute a “work that uses the Library”, you may not under any circumstances include any portion of the Library with this work. Users of your “work that uses the Library” must always get the official distribution of the DomAPI library from Company.

This is done to satisfy sections 1 and 2. This does apply to a “product that uses the Library”, the distribution of which is covered in section 5.

5. A program that contains no derivative of any portion of the Library, but is designed to work with the Library by being linked with it, is called a “work that uses the Library”. Such a work, in isolation, is called a “product that uses the Library”. You may distribute the Library with a “product that uses the Library” so long as you include a copy of this license in your electronic materials along with the appropriate copyright notices. Please note that section 2 still applies to this distribution.

It is not the intent of section 4 and section 5 to contest your rights to work written entirely by you; rather, the intent is solely to exercise the right to control the point of distribution of the Library.

You are not required to give notice in your applications that the Library is used in it.

6. You may not copy, modify, sublicense, link with, or distribute the Library except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense, link with, or distribute the Library is void,

and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

7. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Library or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Library (or any work based on the Library), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Library or works based on it.

NO WARRANTY

8. BECAUSE THE LIBRARY IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE LIBRARY, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE LIBRARY “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE LIBRARY IS WITH YOU. SHOULD THE LIBRARY PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.

9. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE LIBRARY AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE LIBRARY (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE LIBRARY TO OPERATE WITH ANY OTHER SOFTWARE), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

END OF TERMS AND CONDITIONS

Expat XML Parsing Library

Author: James Clark.

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

ICU

IBM

Copyright (c) 1995-2003 International Business Machines Corporation and others. All rights reserved.

ICU License - ICU 1.8.1 and later

COPYRIGHT AND PERMISSION NOTICE

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OF THIRD PARTY RIGHTS. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR HOLDERS INCLUDED IN THIS NOTICE BE LIABLE FOR ANY CLAIM, OR ANY SPECIAL INDIRECT OR CONSEQUENTIAL DAMAGES, OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

Except as contained in this notice, the name of a copyright holder shall not be used in advertising or otherwise to promote the sale, use or other dealings in this Software without prior written authorization of the copyright holder.

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

Java 2 Runtime Environment

Java Access Bridge

Java 2 Runtime Environment © 2005 Sun Microsystems, Inc. All rights reserved

Java Access Bridge Copyright (c) 2004 Sun Microsystems, Inc. All rights reserved

Sun Microsystems, Inc. Binary Code License Agreement

SUN MICROSYSTEMS, INC. ("SUN") IS WILLING TO LICENSE THE SOFTWARE IDENTIFIED BELOW TO YOU ONLY UPON THE CONDITION THAT YOU ACCEPT ALL OF THE TERMS CONTAINED IN THIS BINARY CODE LICENSE AGREEMENT AND SUPPLEMENTAL LICENSE TERMS (COLLECTIVELY "AGREEMENT"). PLEASE READ THE AGREEMENT CAREFULLY. BY DOWNLOADING OR INSTALLING THIS SOFTWARE, YOU ACCEPT THE TERMS OF THE AGREEMENT. INDICATE ACCEPTANCE BY SELECTING THE "ACCEPT" BUTTON AT THE BOTTOM OF THE AGREEMENT. IF YOU ARE NOT WILLING TO BE BOUND BY ALL THE TERMS, SELECT THE "DECLINE" BUTTON AT THE BOTTOM OF THE AGREEMENT AND THE DOWNLOAD OR INSTALL PROCESS WILL NOT CONTINUE.

1. DEFINITIONS. "Software" means the identified above in binary form, any other machine readable materials (including, but not limited to, libraries, source files, header files, and data files), any updates or error corrections provided by Sun, and any user manuals, programming guides and other documentation provided to you by Sun under this Agreement. "Programs" mean Java applets and applications intended to run on the Java 2 Platform Standard Edition (J2SE platform) platform on Java-enabled general purpose desktop computers and servers.

2. LICENSE TO USE. Subject to the terms and conditions of this Agreement, including, but not limited to the Java Technology Restrictions of the Supplemental License Terms, Sun grants you a non-exclusive, non-transferable, limited license without license fees to reproduce and use internally Software

complete and unmodified for the sole purpose of running Programs. Additional licenses for developers and/or publishers are granted in the Supplemental License Terms.

3. **RESTRICTIONS.** Software is confidential and copyrighted. Title to Software and all associated intellectual property rights is retained by Sun and/or its licensors. Unless enforcement is prohibited by applicable law, you may not modify, decompile, or reverse engineer Software. You acknowledge that Licensed Software is not designed or intended for use in the design, construction, operation or maintenance of any nuclear facility. Sun Microsystems, Inc. disclaims any express or implied warranty of fitness for such uses. No right, title or interest in or to any trademark, service mark, logo or trade name of Sun or its licensors is granted under this Agreement. Additional restrictions for developers and/or publishers licenses are set forth in the Supplemental License Terms.

4. **LIMITED WARRANTY.** Sun warrants to you that for a period of ninety (90) days from the date of purchase, as evidenced by a copy of the receipt, the media on which Software is furnished (if any) will be free of defects in materials and workmanship under normal use. Except for the foregoing, Software is provided "AS IS". Your exclusive remedy and Sun's entire liability under this limited warranty will be at Sun's option to replace Software media or refund the fee paid for Software. Any implied warranties on the Software are limited to 90 days. Some states do not allow limitations on duration of an implied warranty, so the above may not apply to you. This limited warranty gives you specific legal rights. You may have others, which vary from state to state.

5. **DISCLAIMER OF WARRANTY.** **DISCLAIMER OF WARRANTY. UNLESS SPECIFIED IN THIS AGREEMENT, ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT THESE DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.**

6. **LIMITATION OF LIABILITY.** **TO THE EXTENT NOT PROHIBITED BY LAW, IN NO EVENT WILL SUN OR ITS LICENSORS BE LIABLE FOR ANY LOST REVENUE, PROFIT OR DATA, OR FOR SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWEVER CAUSED REGARDLESS OF THE THEORY OF LIABILITY, ARISING OUT OF OR RELATED TO THE USE OF OR INABILITY TO USE SOFTWARE, EVEN IF SUN HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.** In no event will Sun's liability to you, whether in contract, tort (including negligence), or otherwise, exceed the amount paid by you for Software under this Agreement. The foregoing limitations will apply even if the above stated warranty fails of its essential purpose. Some states do not allow the exclusion of incidental or consequential damages, so some of the terms above may not be applicable to you.

7. **TERMINATION.** This Agreement is effective until terminated. You may terminate this Agreement at any time by destroying all copies of Software. This Agreement will terminate immediately without notice from Sun if you fail to comply with any provision of this Agreement. Either party may terminate this Agreement immediately should any Software become, or in either party's opinion be likely to become, the subject of a claim of infringement of any intellectual property right. Upon Termination, you must destroy all copies of Software.

8. **EXPORT REGULATIONS.** All Software and technical data delivered under this Agreement are subject to US export control laws and may be subject to export or import regulations in other countries. You agree to comply strictly with all such laws and regulations and acknowledge that you have the responsibility to obtain such licenses to export, re-export, or import as may be required after delivery to you.

9. **TRADEMARKS AND LOGOS.** You acknowledge and agree as between you and Sun that Sun owns the SUN, SOLARIS, JAVA, JINI, FORTE, and iPLANET trademarks and all SUN, SOLARIS, JAVA, JINI, FORTE, and iPLANET-related trademarks, service marks, logos and other brand designations ("Sun Marks"), and you agree to comply with the Sun Trademark and Logo Usage Requirements currently located at <http://www.sun.com/policies/trademarks>. Any use you make of the Sun Marks inures to Sun's benefit.

10. **U.S. GOVERNMENT RESTRICTED RIGHTS.** If Software is being acquired by or on behalf of the U.S. Government or by a U.S. Government prime contractor or subcontractor (at any tier), then the Government's rights in Software and accompanying documentation will be only as set forth in this Agreement; this is in accordance with 48 CFR 227.7201 through 227.7202-4 (for Department of Defense (DOD) acquisitions) and with 48 CFR 2.101 and 12.212 (for non-DOD acquisitions).

11. **GOVERNING LAW.** Any action related to this Agreement will be governed by California law and controlling U.S. federal law. No choice of law rules of any jurisdiction will apply.

12. **SEVERABILITY.** If any provision of this Agreement is held to be unenforceable, this Agreement will remain in effect with the provision omitted, unless omission would frustrate the intent of the parties, in which case this Agreement will immediately terminate.

13. **INTEGRATION.** This Agreement is the entire agreement between you and Sun relating to its subject matter. It supersedes all prior or contemporaneous oral or written communications, proposals, representations and warranties and prevails over any conflicting or additional terms of any quote, order, acknowledgment, or other communication between the parties relating to its subject matter during the term of this Agreement. No modification of this Agreement will be binding, unless in writing and signed by an authorized representative of each party.

SUPPLEMENTAL LICENSE TERMS

These Supplemental License Terms add to or modify the terms of the Binary Code License Agreement. Capitalized terms not defined in these Supplemental Terms shall have the same meanings ascribed to them in the Binary Code License Agreement. These Supplemental Terms shall supersede any inconsistent or conflicting terms in the Binary Code License Agreement, or in any license contained within the Software.

A. Software Internal Use and Development License Grant. Subject to the terms and conditions of this Agreement and restrictions and exceptions set forth in the Software "README" file, including, but not limited to the Java Technology Restrictions of these Supplemental Terms, Sun grants you a non-exclusive, non-transferable, limited license without fees to reproduce internally and use internally the Software complete and unmodified for the purpose of designing, developing, and testing your Programs.

B. License to Distribute Software. Subject to the terms and conditions of this Agreement and restrictions and exceptions set forth in the Software README file, including, but not limited to the Java Technology Restrictions of these Supplemental Terms, Sun grants you a non-exclusive, non-transferable, limited license without fees to reproduce and distribute the Software, provided that (i) you distribute the Software complete and unmodified and only bundled as part of, and for the sole purpose of running, your Programs, (ii) the Programs add significant and primary functionality to the Software, (iii) you do not distribute additional software intended to replace any component(s) of the Software, (iv) you do not remove or alter any proprietary legends or notices contained in the Software, (v) you only distribute the Software subject to a license agreement that protects Sun's interests consistent with the terms contained in this Agreement, and (vi) you agree to defend and indemnify Sun and its licensors from and against any damages, costs, liabilities, settlement amounts and/or expenses (including attorneys' fees) incurred in connection with any claim, lawsuit or action by any third party that arises or results from the use or distribution of any and all Programs and/or Software.

C. Java Technology Restrictions. You may not create, modify, or change the behavior of, or authorize your licensees to create, modify, or change the behavior of, classes, interfaces, or subpackages that are in any way identified as "java", "javax", "sun" or similar convention as specified by Sun in any naming convention designation.

D. Source Code. Software may contain source code that, unless expressly licensed for other purposes, is provided solely for reference purposes pursuant to the terms of this Agreement. Source code may not be redistributed unless expressly provided for in this Agreement.

E. Third Party Code. Additional copyright notices and license terms applicable to portions of the Software are set forth in the THIRDPARTYLICENSEREADME.txt file. In addition to any terms and conditions of any third party open-source/freeware license identified in the THIRDPARTYLICENSEREADME.txt file, the disclaimer of warranty and limitation of liability provisions in paragraphs 5 and 6 of the Binary Code License Agreement shall apply to all Software in this distribution.

For inquiries please contact: Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. (LFI#141623/Form ID#011801)

Kerberos

Massachusetts Institute of Technology.

Copyright © 1985 - 2002 by the Massachusetts Institute of Technology.

Copyright, OpenVision Technologies, Inc., 1996, All Rights Reserved.

Copyright 2000 by Zero-Knowledge Systems, Inc.

Copyright (c) 2001, Dr. Brian Gladman <brg@gladman.uk.net>, Worcester, UK. All rights reserved.

Copyright © 1983 Regents of the University of California. All rights reserved.

Copyright © 1985-2002 by the Massachusetts Institute of Technology.

Export of software employing encryption from the United States of America may require a specific license from the United States Government. It is the responsibility of any person or organization contemplating export to obtain such a license before exporting.

WITHIN THAT CONSTRAINT, permission to use, copy, modify, and distribute this software and its documentation for any purpose and without fee is hereby granted, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of M.I.T. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. Furthermore if you modify this software you must label your software as modified software and not distribute it in such a fashion that it might be confused with the original MIT software. M.I.T. makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

The following copyright and permission notice applies to the OpenVision Kerberos Administration system located in kadmin/create, kadmin/dbutil, kadmin/passwd, kadmin/server, lib/kadm5, and portions of lib/rpc:

Copyright, OpenVision Technologies, Inc., 1996, All Rights Reserved

WARNING: Retrieving the OpenVision Kerberos Administration system source code, as described below, indicates your acceptance of the following terms. If you do not agree to the following terms, do not retrieve the OpenVision Kerberos administration system.

You may freely use and distribute the Source Code and Object Code compiled from it, with or without modification, but this Source Code is provided to you "AS IS" EXCLUSIVE OF ANY WARRANTY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED. IN NO EVENT WILL OPENVISION HAVE ANY LIABILITY FOR ANY LOST PROFITS, LOSS OF DATA OR COSTS OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES, OR FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THIS AGREEMENT, INCLUDING, WITHOUT LIMITATION, THOSE RESULTING FROM THE USE OF THE SOURCE CODE, OR THE FAILURE OF THE SOURCE CODE TO PERFORM, OR FOR ANY OTHER REASON.

OpenVision retains all copyrights in the donated Source Code. OpenVision also retains copyright to derivative works of the Source Code, whether created by OpenVision or by a third party. The OpenVision copyright notice must be preserved if derivative works are made based on the donated Source Code.

OpenVision Technologies, Inc. has donated this Kerberos Administration system to MIT for inclusion in the standard Kerberos 5 distribution. This donation underscores our commitment to continuing Kerberos technology development and our gratitude for the valuable work which has been performed by MIT and the Kerberos community.

The implementation of the Yarrow pseudo-random number generator in `src/lib/crypto/yarrow` has the following copyright:

Copyright 2000 by Zero-Knowledge Systems, Inc.

Permission to use, copy, modify, distribute, and sell this software and its documentation for any purpose is hereby granted without fee, provided that the above copyright notice appear in all copies and that both that copyright notice and this permission notice appear in supporting documentation, and that the name of Zero-Knowledge Systems, Inc. not be used in advertising or publicity pertaining to distribution of the software without specific, written prior permission. Zero-Knowledge Systems, Inc. makes no representations about the suitability of this software for any purpose. It is provided "as is" without express or implied warranty.

ZERO-KNOWLEDGE SYSTEMS, INC. DISCLAIMS ALL WARRANTIES WITH REGARD TO THIS SOFTWARE, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, IN NO EVENT SHALL ZERO-KNOWLEDGE SYSTEMS, INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTUOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.

The implementation of the AES encryption algorithm in `src/lib/crypto/aes` has the following copyright: Copyright (c) 2001, Dr. Brian Gladman <brg@gladman.uk.net>, Worcester, UK. All rights reserved.

LICENSE TERMS

The free distribution and use of this software in both source and binary form is allowed (with or without changes) provided that:

1. distributions of this source code include the above copyright notice, this list of conditions and the following disclaimer;
2. distributions in binary form include the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other associated materials;
3. the copyright holder's name is not used to endorse products built using this software without specific written permission.

DISCLAIMER

This software is provided "as is" with no explicit or implied warranties in respect of any properties, including, but not limited to, correctness and fitness for purpose.

Kerberos V5 includes documentation and software developed at the University of California at Berkeley, which includes this copyright notice:

Copyright © 1983 Regents of the University of California.

All rights reserved.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

This product includes software developed by the University of California, Berkeley and its contributors.

4. Neither the name of the University nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

Permission is granted to make and distribute verbatim copies of this manual provided the copyright notices and this permission notice are preserved on all copies.

Permission is granted to copy and distribute modified versions of this manual under the conditions for verbatim copying, provided also that the entire resulting derived work is distributed under the terms of a permission notice identical to this one.

Permission is granted to copy and distribute translations of this manual into another language, under the above conditions for modified versions.

OpenLDAP

The OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City, California, USA. All Rights Reserved.

“The OpenLDAP Public License Version 2.8, 17 August 2003

Redistribution and use of this software and associated documentation (“Software”), with or without modification, are permitted provided that the following conditions are met:

1. Redistributions in source form must retain copyright statements and notices,
2. Redistributions in binary form must reproduce applicable copyright statements and notices, this list of conditions, and the following disclaimer in the documentation and/or other materials provided with the distribution, and
3. Redistributions must contain a verbatim copy of this document.

The OpenLDAP Foundation may revise this license from time to time. Each revision is distinguished by a version number. You may use this Software under terms of this license revision or under the terms of any subsequent revision of the license.

THIS SOFTWARE IS PROVIDED BY THE OPENLDAP FOUNDATION AND ITS CONTRIBUTORS “AS IS” AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OPENLDAP FOUNDATION, ITS CONTRIBUTORS, OR THE AUTHOR(S) OR OWNER(S) OF THE SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The names of the authors and copyright holders must not be used in advertising or otherwise to promote the sale, use or other dealing in this Software without specific, written prior permission. Title to copyright in this Software shall at all times remain with copyright holders.

OpenLDAP is a registered trademark of the OpenLDAP Foundation.

Copyright 1999-2003 The OpenLDAP Foundation, Redwood City, California, USA. All Rights Reserved.

Permission to copy and distribute verbatim copies of this document is granted.

OpenSSL

The OpenSSL Project

Copyright (c) 1998-2003 The OpenSSL Project. All rights reserved.

This is a copy of the current LICENSE file inside the CVS repository.

The OpenSSL toolkit stays under a dual license, i.e. both the conditions of the OpenSSL License and the original SSLeay license apply to the toolkit.

See below for the actual license texts. Actually both licenses are BSD-style Open Source licenses. In case of any license issues related to OpenSSL please contact openssl-core@openssl.org.

OpenSSL License

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgment:

“This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)”

4. The names “OpenSSL Toolkit” and “OpenSSL Project” must not be used to endorse or promote products derived from this software without prior written permission. For written permission, please contact openssl-core@openssl.org.

5. Products derived from this software may not be called “OpenSSL” nor may “OpenSSL” appear in their names without prior written permission of the OpenSSL Project.

6. Redistributions of any form whatsoever must retain the following acknowledgment:

“This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>)”

THIS SOFTWARE IS PROVIDED BY THE OpenSSL PROJECT ``AS IS'' AND ANY EXPRESSED OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE OpenSSL PROJECT OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Original SSLeay License

Copyright (C) 1995-1998 Eric Young (eay@cryptsoft.com) All rights reserved.

This package is an SSL implementation written by Eric Young (eay@cryptsoft.com).

The implementation was written so as to conform with Netscapes SSL.

This library is free for commercial and non-commercial use as long as the following conditions are adhered to. The following conditions apply to all code found in this distribution, be it the RC4, RSA, lhash, DES, etc., code; not just the SSL code. The SSL documentation included with this distribution is covered by the same copyright terms except that the holder is Tim Hudson (tjh@cryptsoft.com).

Copyright remains Eric Young's, and as such any Copyright notices in the code are not to be removed. If this package is used in a product, Eric Young should be given attribution as the author of the parts of the library used. This can be in the form of a textual message at program startup or in documentation (online or textual) provided with the package.

Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

“This product includes cryptographic software written by Eric Young (eay@cryptsoft.com)”

The word 'cryptographic' can be left out if the routines from the library being used are not cryptographic related:-)

4. If you include any Windows specific code (or a derivative thereof) from the apps directory (application code) you must include an acknowledgement:

“This product includes software written by Tim Hudson (tjh@cryptsoft.com)”

THIS SOFTWARE IS PROVIDED BY ERIC YOUNG ``AS IS'' AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE AUTHOR OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

The license and distribution terms for any publicly available version or derivative of this code cannot be changed, i.e. this code cannot simply be copied and put under another distribution license [including the GNU Public License.]

Perl

Algorithm-Diff-1.1901

Archive-Tar-1.24

Compress-Zlib-1.41

Crypt-CBC-2.17

File-Spec-0.90

IO-String-1.06

IO-Tty-1.02

libnet-1.19

List-Compare-0.31

Log dispatch perl module

Logfile rotate perl module

Module-Build-0.2611

MIME-Base64-3.07

HTML-Tagset-3.10

HTML-Parser-3.50

Net-DNS-0.49

Net-DNS-SEC-0.12

Net-Netmask-1.9011

Net-Telnet-3.03

Params validate perl module

Proc-Background-1.08

Test-Plan-0.02

Test-Simple-0.60

Time-Date-1.16

Time zone info

URI-1.35

XML-Parser-2.34

Perl Copyright (c) 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, by Larry Wall and others. All rights reserved.

Algorithm-Diff-1.1901 Copyright 1998 M-J.Dominus. (mjd-perl-diff@plover.com).

Archive-Tar-1.24 Copyright © 2002 Jos Boumans <kane@cpan.prg>. All rights reserved

Compress-Zlib-1.41 Copyright © 1995-2005 Paul Marquess. All rights reserved.

Crypt-CBC-2.17

File-Spec-0.90 Copyright © 1998 Kenneth Albanowski. All rights reserved. Copyright © 1999, 2000 Barrie Slaymaker. All rights reserved. Copyright © 2003 Ken Williams. All rights reserved
 HTML-Parser-3.50 Copyright © 1995-2006 Gisle Aas. All rights reserved. Copyright © 1999-2000 Michael A. Chase. All rights reserved.
 HTML-Tagset-3.10 Copyright 1999, 2000 Sean M. Burke <sburke@cpan.org>; Copyright 1995-2000 Gisle Aas; all rights reserved.
 IO-String-1.06 Copyright 1998-2003 Gisle Aas. <gisle@as.no>
 IO-Tty-1.02 Copyright graham Barr; Copyright Nick Ing-Simmons; Copyright Roland Giersig; Copyright Tatu Ylonen, Markus Friedl, and Todd C. Miller.
 libnet-1.19 © 1996-2004 Graham Barr. All rights reserved.
 List-Compare-0.31 Copyright © 2002-04 James E. Keenan. United States. All rights reserved.
 Log dispatch perl module Copyright (c) Dave Rolsky, autarch@urth.org.
 Logfile rotate perl module Copyright (c) 1997-99 Paul Gampe. All rights reserved.
 Module-Build-0.2611
 MIME-Base64-3.07 Copyright 1995-1999, 2001-04 Gisle Aas <gisle@ActiveState.com>
 Net-DNS-0.49 Copyright © 1997-2002 Michael Fuhr. Portions Copyright © 2002-2004 Chris Reinhardt. Portion Copyright © 2005 Olaf Kolkman (RIPE NCC) All rights reserved.
 Net-DNS-SEC-0.12 Copyright © 2001, 2002, 2003, 2004 RIPE NCC. Author Olaf M. Kolkman <net-dns-sec@ripe.net> All Rights Reserved
 Net-Netmask-1.9011 Copyright © 1998-2003 David Muir Sharnoff.
 Net-Telnet-3.03 Copyright © 1997, 2000, 2002 Jay Rogers. All rights reserved.
 Params validate perl module Copyright (c) 2000-2004 Dave Rolsky All rights reserved.
 Proc-Background-1.08 Copyright © 1998-2002 Blair Zajac. All rights reserved.
 Test-Plan-0.02 Copyright © 2005, Geoffrey Young All rights reserved.
 Test-Simple-0.60
 Time-Date-1.16 Copyright 1996-2000 Graham Barr. All rights reserved.
 Time zone info Copyright (c) 2002 Scott Penrose <scott@dd.com.au> - <http://linux.dd.com.au/>
 URI-1.35 Copyright 1998-2003 Gisle Aas. Copyright 1998 Graham Barr
 XML-Parser-2.34 Copyright © 1998-2000 Larry Wall and Clark Cooper. All rights reserved.

Above listed modules are governed by the same license terms set forth below:

This library is free software; you can redistribute it and/or modify it under the same terms as Perl itself.
 The Artistic License
 August 15, 1997

Preamble

The intent of this document is to state the conditions under which a Package may be copied, such that the Copyright Holder maintains some semblance of artistic control over the development of the package, while giving the users of the package the right to use and distribute the Package in a more-or-less customary fashion, plus the right to make reasonable modifications.

Definitions:

“Package” refers to the collection of files distributed by the Copyright Holder, and derivatives of that collection of files created through textual modification.

“Standard Version” refers to such a Package if it has not been modified, or has been modified in accordance with the wishes of the Copyright Holder as specified below.

“Copyright Holder” is whoever is named in the copyright or copyrights for the package.

“You” is you, if you're thinking about copying or distributing this Package.

“Reasonable copying fee” is whatever you can justify on the basis of media cost, duplication charges, time of people involved, and so on. (You will not be required to justify it to the Copyright Holder, but only to the computing community at large as a market that must bear the fee.)

“Freely Available” means that no fee is charged for the item itself, though there may be fees involved in handling the item. It also means that recipients of the item may redistribute it under the same conditions they received it.

1. You may make and give away verbatim copies of the source form of the Standard Version of this Package without restriction, provided that you

duplicate all of the original copyright notices and associated disclaimers.

2. You may apply bug fixes, portability fixes and other modifications derived from the Public Domain or from the Copyright Holder. A Package modified in such a way shall still be considered the Standard Version.

3. You may otherwise modify your copy of this Package in any way, provided that you insert a prominent notice in each changed file stating how and when you changed that file, and provided that you do at least ONE of the following:
- a) place your modifications in the Public Domain or otherwise make them Freely Available, such as by posting said modifications to Usenet or an equivalent medium, or placing the modifications on a major archive site such as uunet.uu.net, or by allowing the Copyright Holder to include your modifications in the Standard Version of the Package.
 - b) use the modified Package only within your corporation or organization.
 - c) rename any non-standard executables so the names do not conflict with standard executables, which must also be provided, and provide a separate manual page for each non-standard executable that clearly documents how it differs from the Standard Version.
 - d) make other distribution arrangements with the Copyright Holder.
4. You may distribute the programs of this Package in object code or executable form, provided that you do at least ONE of the following:
- a) distribute a Standard Version of the executables and library files, together with instructions (in the manual page or equivalent) on where to get the Standard Version.
 - b) accompany the distribution with the machine-readable source of the Package with your modifications.
 - c) give non-standard executables non-standard names, and clearly document the differences in manual pages (or equivalent), together with instructions on where to get the Standard Version.
 - d) make other distribution arrangements with the Copyright Holder.
5. You may charge a reasonable copying fee for any distribution of this Package. You may charge any fee you choose for support of this Package. You may not charge a fee for this Package itself. However, you may distribute this Package in aggregate with other (possibly commercial) programs as part of a larger (possibly commercial) software distribution provided that you do not advertise this Package as a product of your own. You may embed this Package's interpreter within an executable of yours (by linking); this shall be construed as a mere form of aggregation, provided that the complete Standard Version of the interpreter is so embedded.
6. The scripts and library files supplied as input to or produced as output from the programs of this Package do not automatically fall under the copyright of this Package, but belong to whoever generated them, and may be sold commercially, and may be aggregated with this Package. If such scripts or library files are aggregated with this Package via the so-called "undump" or "unexec" methods of producing a binary executable image, then distribution of such an image shall neither be construed as a distribution of this Package nor shall it fall under the restrictions of Paragraphs 3 and 4, provided that you do not represent such an executable image as a Standard Version of this Package.
7. C subroutines (or comparably compiled subroutines in other languages) supplied by you and linked into this Package in order to emulate subroutines and variables of the language defined by this Package shall not be considered part of this Package, but are the equivalent of input as in Paragraph 6, provided these subroutines do not change the language in any way that would cause it to fail the regression tests for the language.
8. Aggregation of this Package with a commercial distribution is always permitted provided that the use of this Package is embedded; that is, when no overt attempt is made to make this Package's interfaces visible to the end user of the commercial distribution. Such use shall not be construed as a distribution of this Package.
9. The name of the Copyright Holder may not be used to endorse or promote products derived from this software without specific prior written permission.
10. THIS PACKAGE IS PROVIDED "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
- The End.

Sockets++ library

University of Texas

Copyright 1992, 1993, 1994 Gnanasekaran Swaminathan Permission is granted to use at your own risk and distribute this software in source and binary forms provided the above copyright notice and this paragraph are preserved on all copies. This software is provided "as is" with no express or implied warranty.