VMS Software

RMS V3.1 ECO Patch Kit for VSI OpenVMS IA-64

Release Notes

Publication Date: March 2025

Operating Systems: VSI OpenVMS for Integrity Servers V8.4-1H1
VSI OpenVMS for Integrity Servers V8.4-2

Kit Name: VMS842I_RMS-V0301

Table of Contents

1. Kit Name

VMS842I_RMS-V0301

2. Kit Description

2.1. Installation Rating

INSTALL_1: To be installed by all customers.

This installation rating serves as a guide to which customers should apply this remedial kit.

Reference the Disclaimer of Warranty and Limitation of Liability Statement.

2.2. Reboot Requirement

A reboot is required after installing this kit.

VMS Software, Inc. strongly recommends that a reboot be performed immediately after kit installation to avoid system instability.

If you are installing this kit in a VMScluster, any systems that share the same system disk with the installing system must also be rebooted in order to make use of the new images.

2.3. Version(s) of VSI OpenVMS to Which This Kit May Be Applied

● VSI OpenVMS for Integrity Servers V8.4-1H1

● VSI OpenVMS for Integrity Servers V8.4-2

The images and files in this kit apply to any of these VSI OpenVMS versions. Because patch kits are removed by PCSI during upgrades to newer OpenVMS versions, the kit will need to be reinstalled if an upgrade is done from an older listed version to any newer listed version.

3. Kits Superseded by This Kit

VMS841H1I_RMS-V0300
VMS841H1I_RMS-V0100

VMS842I_RMS-V0300
VMS842I_RMS-V0200
VMS842I_RMS-V0100

Note

There was no RMS V2.0 patch kit for VSI OpenVMS for Integrity Servers V8.4-1H1.

4. Kit Dependencies

VMS841H1I_NOTARY-V0200 (if installing on V8.4-1H1)
VMS842I_NOTARY-V0200 (if installing on V8.4-2)

All VSI OpenVMS patch kits now require the Notary V2.0 patch kit for their respective version of VSI OpenVMS. This is to ensure correct validation regardless of the manifest version in use.

The Notary V2.0 kit named above which matches the version of VSI OpenVMS being patched is required for this kit to install.

5. Problems Addressed in This Kit

5.1. File Locks Owned by Process in RWMBX Resource Wait May Cause Hang

5.1.1. Problem Description

If a process owns a lock on a file system resource and another process attempts to acquire an incompatible lock on the same resource, then a blocking AST is delivered to the owning process so it may lower the lock mode to allow the new process to continue.

Under normal circumstances, this happens automatically and the processes will make progress with the locks and file access as needed.

A process in RWMBX resource wait state could own file system locks on files while it is trying to read or write to a mailbox. Should a new process request a lock in this case, the owning process was unable to drop its lock mode since the process could not continue until the resource wait state was satisfied.

To prevent a potential hang, the blocking AST routine has been modified to directly lower the lock mode rather than wait until the RWMBX state clears.

This behavior was discovered by a customer using **PIPE** to invoke the AUTHORIZE utility as a step in its piped commands. Since each step in the pipe creates a new sub-process and uses mailboxes for communication, it was possible for the **PIPE** command to cause the process to block against itself. As this entailed a file lock on the system authorization file (SYSUAF), eventually it would cause a system hang for new processes or any other processes trying to access the file.

This behavior is corrected with this patch kit.

5.1.2. Images and/or Files Affected

[SYS$LDR]RMS.EXE
[SYS$LDR]RMS.STB

5.1.3. VSI Case Identifier

Jira CLUS-38, BO-1900
Netsuite NS7556

5.1.4. Release Version of VSI OpenVMS That Will Contain This Change

Next VSI OpenVMS for Integrity Servers release after V8.4-2L3.

6. Problems Addressed From Previous Kits

6.1. Fix RMS Bugchecks When Using RMS Global Buffers

6.1.1. Problem Description

A customer site experienced periodic RMS bugchecks with RMS Global Buffers enabled on RIGHTSLIST.DAT and SYSUAF.DAT. This would result in the process that incurred the exception being deleted with the following message:

```
%RMS-F-BUG, fatal RMS condition (FFFFFFC0), process deleted
```

The corresponds to the error `BADGBH, Bad Global Buffer Header found` when the RMS Global Buffer is used for opening a file.

After this error occurred, they could no longer log in and a reboot was required to clear the issue.

This fix addresses a small timing window between instructions if a regular file close (or image rundown) is interrupted by a last chance abort rundown.

6.1.2. Images and/or Files Affected

[SYS$LDR]RMS.EXE
[SYS$LDR]RMS.STB

6.1.3. VSI Case Identifier

VSI Bugzilla 212
QXCM1001459710

6.1.4. Release Version of VSI OpenVMS That Will Contain This Change

VSI OpenVMS for Integrity Servers V8.4-2L1.

6.2. Remove RMS Executive Mode Alignment Faults

6.2.1. Problem Description

A structure used during RMS name processing is built dynamically on the stack. The base structure definition assumed this would always be quadword aligned, however the stack may only be longword aligned. By enforcing only longword alignment for this structure, the proper instructions are generated to access it without alignment faults, and with no additional instruction overhead.

The routines using this structure are accessed repeatedly during RMS Recovery Unit Journal processing. Other RMS operations may also incur these alignment faults depending on your workload.

This patch kit removes these RMS alignment faults, yielding much improved system performance for these operations.

6.2.2. Images and/or Files Affected

[SYS$LDR]RMS.EXE

[SYS$LDR]RMS.STB

6.2.3. VSI Case Identifier

VSI Bugzilla 192
VSI Internal Bugzilla 350
PTR 75-74-440

6.2.4. Release Version of VSI OpenVMS That Will Contain This Change

VSI OpenVMS for Integrity Servers V8.4-2L1.

6.3. RMS Directory Cache of a Process May Be Stale in Rare Circumstances

6.3.1. Problem Description

On very rare occasions, when multiple processes are performing directory deletion or renaming operations on the same volume simultaneously, a process may not update the RMS directory cache regularly. This can lead to unexpected behavior, as in this example:

```
$ RENAME/LOG  DATA1:[TEMP.DIR2]B.DIR  A.DIR
%RENAME-I-RENAMED, DATA1:[TEMP.DIR2]B.DIR;1 renamed to DATA1:[TEMP.DIR2]A.DIR;1
$ CREATE/DIRECTORY/LOG  DATA1:[TEMP.DIR2.B]
%CREATE-I-EXISTS, DATA1:[TEMP.DIR2.B] already exists
```

In this example, the **CREATE** command incorrectly reports that directory B already exists, even though that directory was successfully renamed to A in the preceding command.

This patch kit fixes this issue.

6.3.2. Images and/or Files Affected

[SYS$LDR]RMS.EXE
[SYS$LDR]RMS.STB

6.3.3. VSI Case Identifier

QXCM1001463273

6.3.4. Release Version of VSI OpenVMS That Will Contain This Change

VSI OpenVMS for Integrity Servers V8.4-2L3.

6.4. Wildcard Search Issues With File Names Containing the % Character

6.4.1. Problem Description

Under certain conditions, wildcard file searches may stop short if file names contain the % character.

In an environment where extended file names are in use, certain wildcard searches may fail as follows:

- The search is performed using DCL's F$SEARCH function and the DCL V1.0 patch update is not installed, or the search is performed using RMS's $SEARCH function with the NAM$V_SVCTX flag set to zero.

- If the directory contains files whose names include the % character, and the search string also contains % characters (intended as wildcards), the search may not return all the expected files or may simply stop short.

This issue was due to internal file name conversions required during the search which did not correctly interpret the wildcard character in all cases.

This patch kit fixes this issue.

6.4.2. Images and/or Files Affected

[SYS$LDR]RMS.EXE
[SYS$LDR]RMS.STB

6.4.3. VSI Case Identifier

QXCM1001487902
VSI Bugzilla 253
VSI Internal Bugzilla 742

6.4.4. Release Version of VSI OpenVMS That Will Contain This Change

VSI OpenVMS for Integrity Servers V8.4-2L3.

7. Images or Files Replaced

If installing on V8.4-1H1

[SYS$LDR]RMS.EXE

Image name:	"RMS"
Image file identification:	"X-5"
Image build identification:	"XE30-B4N-000164"
Link identification:	"Linker I02-37"
Link Date/Time:	22-FEB-2025 02:08:52.67
Image Checksum (MD5):	71BE8D1DC7A6FCF5526E8644B0CA9540

[SYS$LDR]RMS.STB

File creation date and time:	22-FEB-2025 02:08:52.88
Checksum (MD5):	5271FF2C147B3EF31A2FEFB9A8EC11A1

If installing on V8.4-2

[SYS$LDR]RMS.EXE

Image name:	"RMS"

Image file identification:	"X-5"
Image build identification:	"XE3F-M5D-000164"
Link identification:	"Linker I02-37"
Link Date/Time:	22-FEB-2025 03:50:25.02
Image Checksum (MD5):	5C59F35CFF6EE001B170377942410760

[SYS$LDR]RMS.STB

File creation date and time:	22-FEB-2025 03:50:25.12
Checksum (MD5):	58F7A0CB703A60D1EEA0ECD498681643

Note

VMS Software, Inc. will only distribute kits in signed form. There is no need for most customers to compare file checksums for security or kit integrity reasons.

However, some sites may require such checking even when using signed kits. The image or file checksums are supplied (in MD5 format) to provide comparisons to the extracted final kit files. To find a file checksum, use:

```
$ CHECKSUM/ALGORITHM=MD5 filename
$ SHOW SYMBOL CHECKSUM$CHECKSUM
```

Note

Because a file or image may be replaced by multiple patch kits over time, a PCSI generation number is used to ensure that the latest version of the file or image is preserved on your system during **PRODUCT INSTALL** of a patch kit. Should a particular kit installation discover a newer version of a file or image in place on the system disk, the following message will be displayed:

```
%PCSI-I-RETAIN, file filename will not be replaced because file from kit
 has lower generation number
```

This is a normal occurrence depending on the order of kit installation. The correct version of the file or image will remain on the system after the current kit installation. The `%PCSI-I-RETAIN` message is informational only and does not indicate a problem.

8. Installation Instructions

8.1. Compressed File

This kit is provided for download within a ZIP archive container file.

The kit files may be extracted on any system with UNZIP and copied to your OpenVMS system, or extracted on your OpenVMS system directly.

Assuming you have created an UNZIP symbol to invoke the UNZIP image, you can invoke UNZIP to unpack the kit on OpenVMS using the command:

```
$ UNZIP VMS842I_RMS-V0301
```

This will extract the installable PCSI product kit file and its associated signed manifest (_VNC file), used for kit validation during **PRODUCT** commands.

VSI strongly recommends always using the manifest to validate the kit content during any **PRODUCT** commands. This will occur automatically if the files are both contained in the same directory.

UNZIP Tool Availability

Most customers likely have already installed a set of ZIP and UNZIP tools on their VSI OpenVMS systems. Should you need these tools, a set of the Info-ZIP freeware ZIP and UNZIP tools for VSI OpenVMS is available for download on the web at this address: https://vmssoftware.com/products/zip-tools/.

8.2. Installation Command

Install this kit with the POLYCENTER Software Installation Utility by logging into the SYSTEM account, and typing the following at the DCL prompt:

```
$ PRODUCT INSTALL VMS842I_RMS [/SOURCE=location_of_kit]
```

The kit location may be a tape drive, CD/DVD, or a disk directory that contains the kit. The **/SOURCE** qualifier is not needed if the **PRODUCT INSTALL** command is executed from the same directory as the kit location.

This kit requires the use of **/RECOVERY_MODE** and **/SAVE_RECOVERY_DATA** and will automatically set them; they do not need to be present on the command line.

The release notes for any kit may be extracted prior to kit installation using the **PRODUCT EXTRACT RELEASE_NOTES** command.

User-selectable options for installation behavior and scripting are available in this kit, refer to *Appendix A, "User-Selectable Control Options and Scripting Considerations"* for further details.

Additional help on installing PCSI kits can be found by typing **HELP PRODUCT INSTALL** at the system prompt.

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11. Patch ID

I64VMS-VMS842I_RMS-V0301--4

A. User-Selectable Control Options and Scripting Considerations

A.1. Controlling Kit Behavior for Introductory Questions

This kit provides user-selectable control options for kit dialogue interaction and automated scripting capability as described here in this appendix.

The general form of a VSI ECO patch kit, when using **PRODUCT INSTALL**, consists of three initial questions regarding these topics:

1. System disk backup: A reminder that VSI recommends backing up the system disk before installing patches, followed by a `Do you want to continue?` yes/no question, default is `YES`.

2. Reboot requirement: A summary of whether the kit being installed requires a system reboot, followed by a `Do you want to continue?` yes/no question, default `YES`.

3. Archival of updated files: A description of saving an "_OLD" copy of each image or file updated by the kit, followed by a `Do you want to save "_OLD" copies of replaced files?` yes/no question, default is `NO`.

Other questions may be asked later, depending on the target disk or system environment or other kit-specific requirements.

Note

An initial `Do you want to continue?` question may be asked directly by the PCSI utility during any **PRODUCT** command - this has nothing to do with the kit being used. To avoid that question, you must supply sufficient detail to uniquely identify the product you wish to use and specify **/OPTIONS=NOCONFIRM** on the **PRODUCT** command.

Control options are available to customize the dialogue for the initial three kit questions. The controls are logical names, which may be defined in the process logical name table with a value of YES or NO.

To modify the behavior of the VSI ECO patch kit regarding the initial questions, define one or more of the following logical names before issuing the **PRODUCT INSTALL** command.

● To skip one or more of the questions, define the corresponding logical name shown here to YES:

SKIP$BACKUP	Skips system backup awareness question.
SKIP$REBOOT	Skips system reboot awareness question.

SKIP$ARCHIVE_OLD	Skips question about saving "_OLD" files. This will take the default, which is NO.
SKIP$INTRO	Skips all three of the above questions.

● To specifically override the default for saving "_OLD" files, define this logical name to YES or NO:

VSIKIT$ARCHIVE_OLD	Sets an answer for saving "_OLD" files behavior. This will skip the archive "_OLD" files question regardless of the above SKIP$* logical names.

● Two additional logical names may be defined as YES to modify the amount of explanatory text displayed for each question:

VSIKIT$VERBOSE	Shows all explanatory text for questions.
VSIKIT$BRIEF	Skips some general details in the explanations.

The default if neither name is defined is VERBOSE. If both names are defined to YES, VERBOSE overrides BRIEF. The BRIEF form is displayed for any questions that are skipped.

For example, to skip all three questions but save an archive "_OLD" copy of each replaced file:

```
$ DEFINE VSIKIT$ARCHIVE_OLD YES
$ DEFINE SKIP$INTRO YES
$ PRODUCT INSTALL kitname
```

A.2. Standard Behavior for YES/NO Questions Asked During Kit Installation

Any YES/NO questions asked during kit installation now follow these rules:

1. **Ctrl/Y** issued while a question is being asked will force the current **PRODUCT** operation to terminate. This is completely safe to do while the initial three questions are being asked during **PRODUCT INSTALL** as no changes have yet been made to the target disk.

2. Some questions may ignore **Ctrl/Y** and ask for a specific answer, if aborting the current operation may have side effects. PCSI may trap **Ctrl/Y** directly for some **PRODUCT** operations. **Ctrl/Y** may be disabled during some sensitive kit processing.

3. The default YES/NO answer is automatically chosen if a kit is installed from a batch job, unless explicitly overridden by a logical name which provides the particular value, such as VSIKIT$ARCHIVE_OLD.

A.3. Installing a Kit From a Batch Job

To install a kit from a batch job, you will need to fully qualify the kit name so PCSI will have enough information to select the kit without asking for confirmation. For example, to install this kit:

```
$ PRODUCT INSTALL VMS842I_RMS/VERSION=V3.1/OPTIONS=NOCONFIRM
```

If the kit is located in a directory other than the current default directory, you will also need to add the qualifier:

```
/SOURCE=location_of_the_kit
```

For a batch job, any YES/NO question will automatically select the default answer. Use the control logical names explained above to modify the behavior if necessary. For the system disk backup and reboot questions, the batch behavior is identical to the default. For the save "_OLD" files question, define the VSIKIT$ARCHIVE_OLD logical name to YES if you want to save copies of the files, since the batch default is NO.

A.4. Deprecated Logical Names From HPE Patch Kits

The three names listed below were used by older VSI OpenVMS patch kits for compatibility with HPE patch kit behavior. These old names continue to function, but VSI encourages you to modify any scripts you may have to use the new names shown instead:

Old Name	New Name
NO_ASK$BACKUP	SKIP$BACKUP
NO_ASK$REBOOT	SKIP$REBOOT
ARCHIVE_OLD	VSIKIT$ARCHIVE_OLD