



VMS Software

V9.2-3 Update V1.0 ECO Kit for VSI OpenVMS x86-64

Release Notes

Publication Date: April 2025

Operating System: VSI OpenVMS x86-64 V9.2-3

Kit Name: VMS923X_UPDATE-V0100

Table of Contents

1. Kit Name	6
2. Kit Description	6
2.1. Installation Rating	6
2.2. Reboot Requirement	6
2.3. Version(s) of VSI OpenVMS to Which This Kit May Be Applied	6
2.4. Target Disk Requirements	6
3. Kits Superseded by This Kit	7
4. Kit Dependencies	7
5. Problems Addressed in This Kit	7
5.1. LAN EIX Device Name Corrections	8
5.1.1. Problem Description	8
5.1.2. Images and/or Files Affected	8
5.1.3. VSI Case Identifier	8
5.1.4. Release Version of VSI OpenVMS That Will Contain This Change	8
5.1.5. Workaround	8
5.2. Statistical and Startup Corrections for virtio and VMXNET 3 Devices	8
5.2.1. Problem Description	8
5.2.2. Images and/or Files Affected	9
5.2.3. VSI Case Identifier	9
5.2.4. Release Version of VSI OpenVMS That Will Contain This Change	9
5.3. LAN Failover Set Management Interface Usability Improvements	9
5.3.1. Problem Description	9
5.3.2. Images and/or Files Affected	9
5.3.3. VSI Case Identifier	10
5.3.4. Release Version of VSI OpenVMS That Will Contain This Change	10
5.4. VLAN Configuration Command Fails Silently on a virtio Device	10
5.4.1. Problem Description	10
5.4.2. Images and/or Files Affected	10
5.4.3. VSI Case Identifier	10
5.4.4. Release Version of VSI OpenVMS That Will Contain This Change	10
5.5. Periodic MOP Messages Display Incorrect SystemID Name	10
5.5.1. Problem Description	10
5.5.2. Images and/or Files Affected	11
5.5.3. VSI Case Identifier	11
5.5.4. Release Version of VSI OpenVMS That Will Contain This Change	11
5.6. Miscellaneous Minor LANCP and LANACP Corrections and Modifications	11
5.6.1. Problem Description	11
5.6.2. Images and/or Files Affected	11
5.6.3. VSI Case Identifier	12
5.6.4. Release Version of VSI OpenVMS That Will Contain This Change	12
5.7. Using Jumbo Frames Could Consume Excessive Non-Paged Pool	12
5.7.1. Problem Description	12
5.7.2. Images and/or Files Affected	12
5.7.3. VSI Case Identifier	12
5.7.4. Release Version of VSI OpenVMS That Will Contain This Change	12
5.8. Miscellaneous LAN Driver Changes	12
5.8.1. Problem Description	12
5.8.2. Images and/or Files Affected	12
5.8.3. VSI Case Identifier	13
5.8.4. Release Version of VSI OpenVMS That Will Contain This Change	13

5.9. Corrections to SCACP SHOW xxx/SDA Commands	13
5.9.1. Problem Description	13
5.9.2. Images and/or Files Affected	13
5.9.3. VSI Case Identifier	13
5.9.4. Release Version of VSI OpenVMS That Will Contain This Change	13
5.10. Jumbo Frames Do Not Work With the VMXNET 3 LAN Driver	13
5.10.1. Problem Description	13
5.10.2. Images and/or Files Affected	14
5.10.3. VSI Case Identifier	14
5.10.4. Release Version of VSI OpenVMS That Will Contain This Change	14
5.11. Potential Cluster Communications Performance Limitation	14
5.11.1. Problem Description	14
5.11.2. Images and/or Files Affected	14
5.11.3. VSI Case Identifier	14
5.11.4. Release Version of VSI OpenVMS That Will Contain This Change	14
5.11.5. Workaround	14
5.12. Certain Jumbo Receive Packets on KVM VMs Have Incorrect Buffer Length	15
5.12.1. Problem Description	15
5.12.2. Images and/or Files Affected	15
5.12.3. VSI Case Identifier	15
5.12.4. Release Version of VSI OpenVMS That Will Contain This Change	15
5.13. VLAN Received Bytes Counters May Be Incorrect for Jumbo Packets	15
5.13.1. Problem Description	15
5.13.2. Images and/or Files Affected	15
5.13.3. VSI Case Identifier	16
5.13.4. Release Version of VSI OpenVMS That Will Contain This Change	16
5.14. File Locks Owned by Process in RWMBX Resource Wait May Cause Hang	16
5.14.1. Problem Description	16
5.14.2. Images and/or Files Affected	16
5.14.3. VSI Case Identifier	16
5.14.4. Release Version of VSI OpenVMS That Will Contain This Change	16
5.15. Spurious RMS-E-RLK Errors	17
5.15.1. Problem Description	17
5.15.2. Images and/or Files Affected	17
5.15.3. VSI Case Identifier	17
5.15.4. Release Version of VSI OpenVMS That Will Contain This Change	17
5.16. Performance Enhancements for PROBE Functionality	17
5.16.1. Problem Description	17
5.16.2. Images and/or Files Affected	18
5.16.3. VSI Case Identifier	18
5.16.4. Release Version of VSI OpenVMS That Will Contain This Change	18
5.17. MONITOR Displays Inaccurate Data for Processor Modes and CPU Usage	19
5.17.1. Problem Description	19
5.17.2. Images and/or Files Affected	19
5.17.3. VSI Case Identifier	19
5.17.4. Release Version of VSI OpenVMS That Will Contain This Change	19
5.18. Dump Kernel Failure on Some Configurations if DEVICE_NAMING is Enabled	19
5.18.1. Problem Description	19
5.18.2. Images and/or Files Affected	20
5.18.3. VSI Case Identifier	20
5.18.4. Release Version of VSI OpenVMS That Will Contain This Change	20
5.19. System May Crash With DELCONPFN Bugcheck During Process Deletion	20

5.19.1. Problem Description	20
5.19.2. Images and/or Files Affected	20
5.19.3. VSI Case Identifier	20
5.19.4. Release Version of VSI OpenVMS That Will Contain This Change	20
5.20. DCL Lexical F\$GETDVI(<i>device</i> , "MOUNTCNT_CLUSTER") Always Returns 0	20
5.20.1. Problem Description	20
5.20.2. Images and/or Files Affected	21
5.20.3. VSI Case Identifier	21
5.20.4. Release Version of VSI OpenVMS That Will Contain This Change	21
5.21. Install the Linker and C++ Run-Time Libraries as Known Images	21
5.21.1. Problem Description	21
5.21.2. Images and/or Files Affected	22
5.21.3. VSI Case Identifier	22
5.21.4. Release Version of VSI OpenVMS That Will Contain This Change	22
5.22. BASIC Programs Terminate With %BAS-F-NOTIMP Error	22
5.22.1. Problem Description	22
5.22.2. Images and/or Files Affected	22
5.22.3. VSI Case Identifier	22
5.22.4. Release Version of VSI OpenVMS That Will Contain This Change	22
5.23. PASCAL RTL Does Not Close All Local Files on Routine Completion	22
5.23.1. Problem Description	22
5.23.2. Images and/or Files Affected	23
5.23.3. VSI Case Identifier	23
5.23.4. Release Version of VSI OpenVMS That Will Contain This Change	23
5.24. Various Corrections to OpenVMS Debugger Behavior	23
5.24.1. Problem Description	23
5.24.2. Images and/or Files Affected	23
5.24.3. VSI Case Identifier	24
5.24.4. Release Version of VSI OpenVMS That Will Contain This Change	24
5.25. Update for the VMS ACME Agent	24
5.25.1. Problem Description	24
5.25.2. Images and/or Files Affected	24
5.25.3. VSI Case Identifier	24
5.25.4. Release Version of VSI OpenVMS That Will Contain This Change	24
5.26. Enhanced Debug Tracing for the ACME Server	25
5.26.1. Problem Description	25
5.26.2. Images and/or Files Affected	25
5.26.3. VSI Case Identifier	25
5.26.4. Release Version of VSI OpenVMS That Will Contain This Change	25
5.27. Cannot Capture SET PASSWORD/GENERATE Output From Command Procedure	25
5.27.1. Problem Description	25
5.27.2. Images and/or Files Affected	25
5.27.3. VSI Case Identifier	25
5.27.4. Release Version of VSI OpenVMS That Will Contain This Change	25
5.28. ACME LDAP Agent Documentation Update	26
5.28.1. Problem Description	26
5.28.2. Images and/or Files Affected	26
5.28.3. VSI Case Identifier	26
5.28.4. Release Version of VSI OpenVMS That Will Contain This Change	26
5.29. Potential Cluster Node Security Server Failures	26
5.29.1. Problem Description	26
5.29.2. Images and/or Files Affected	26

5.29.3. VSI Case Identifier	26
5.29.4. Release Version of VSI OpenVMS That Will Contain This Change	27
5.30. Security Server Could Become Non-Responsive and Require a Reboot	27
5.30.1. Problem Description	27
5.30.2. Images and/or Files Affected	27
5.30.3. VSI Case Identifier	27
5.30.4. Release Version of VSI OpenVMS That Will Contain This Change	27
5.31. Changes to the SEARCH/STATISTICS Command	27
5.31.1. Problem Description	27
5.31.2. Images and/or Files Affected	28
5.31.3. VSI Case Identifier	28
5.31.4. Release Version of VSI OpenVMS That Will Contain This Change	28
5.32. Updates to the MACRO Compiler	28
5.32.1. Problem Description	28
5.32.2. Images and/or Files Affected	29
5.32.3. VSI Case Identifier	29
5.32.4. Release Version of VSI OpenVMS That Will Contain This Change	29
5.33. The Linker May Issue ILink-W-DRELOSYM Messages	29
5.33.1. Problem Description	29
5.33.2. Images and/or Files Affected	29
5.33.3. VSI Case Identifier	29
5.33.4. Release Version of VSI OpenVMS That Will Contain This Change	30
5.34. SDA Command CLUE XQP/LOCK Does Not Show Entire RSB Address	30
5.34.1. Problem Description	30
5.34.2. Images and/or Files Affected	30
5.34.3. VSI Case Identifier	30
5.34.4. Release Version of VSI OpenVMS That Will Contain This Change	30
6. Problems Addressed From Previous Kits	30
7. Images or Files Replaced	30
8. Installation Instructions	41
8.1. Compressed File	41
8.2. Installation Command	42
8.3. Special Installation Instructions	42
9. Copyright	43
10. Disclaimer of Warranty and Limitation of Liability	43
11. Patch ID	43
Appendix A. User-Selectable Control Options and Scripting Considerations	44
A.1. Controlling Kit Behavior for Introductory Questions	44
A.2. Standard Behavior for YES/NO Questions Asked During Kit Installation	45
A.3. Installing a Kit From a Batch Job	45
A.4. Deprecated Logical Names From HPE ECO Kits	46

1. Kit Name

VMS923X_UPDATE-V0100

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 mandated as part of installing this kit, performed automatically following the kit installation.

VSI OpenVMS for the x86 architecture uses a memory disk image, stored on the system disk, when booting the system. The content of the memory disk must remain consistent with the system disk content.

This kit updates the memory disk image and invokes a system reboot sequence (shutdown with reboot) directly as part of the kit installation. You must be prepared to allow the system reboot when installing the kit. After all other kit actions are complete, the system will automatically shutdown and reboot.

If you allow the reboot, you will have the choice of whether to invoke the site-specific shutdown procedure, SYS\$MANAGER:SYSHUTDOWN.COM during the shutdown portion of the reboot.

By default, after installation completes, the minutes until shutdown is zero. If you wish to leave additional time before the shutdown begins, define the system logical name SHUTDOWN\$MINIMUM_MINUTES as the integer value of the wait time in minutes. For example:

```
$ DEFINE/SYSTEM SHUTDOWN$MINIMUM_MINUTES 10
```

No other options for the shutdown may be specified.

The shutdown will commence directly after the memory disk update as the final portion of the kit installation.

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

VSI OpenVMS x86-64 V9.2-3

2.4. Target Disk Requirements

This kit will create a new memory disk image file during **PRODUCT INSTALL** or **PRODUCT UNDO PATCH** operations. This file is required for x86 systems bootstrap. If this file cannot be correctly created, the target disk will not be bootable and you will need to restore from backup.

During **PRODUCT INSTALL**, the kit will check for sufficient space on the target disk. The minimum free space is 600,000 blocks to ensure that the memory disk image file and kit files can safely fit on the disk.

Additionally, a check is made to determine if the disk is too fragmented to correctly create the memory disk file. If either check fails, the installation will be aborted before making any changes. After you take any necessary corrective actions to free up disk space or defragment the volume, the **PRODUCT INSTALL** can be re-attempted.

These same checks are not automatically handled by the kit before a **PRODUCT UNDO PATCH** operation. This is not a frequent operation for customer systems. Should you need to remove this kit, you should ensure sufficient disk space before you start. The same 600,000 block minimum applies. To check fragmentation requirements, you can use the following commands:

```
$ ANALYZE/DISK/EXTENTS/REQUIRED=200000/NOOUTPUT disk
$ SHOW SYMBOL ANALYZE$REQUIRED_EXTENTS
```

If the symbol value is 25 or more, the disk is too fragmented and you should defragment it before using **PRODUCT UNDO PATCH**. You can accomplish this using a defragmentation tool or by restoring an image backup.

3. Kits Superseded by This Kit

None.

4. Kit Dependencies

VMS923X_PCSI-V0100

Important

The VMS923X_PCSI-V0100 kit must be installed prior to installing this kit, using a separate **PRODUCT INSTALL** command. The kits may not be jointly installed with a single **PRODUCT INSTALL** operation.

5. Problems Addressed in This Kit

The problems addressed in this kit are grouped into the following sections:

- [LAN Changes](#) (Sections 5.1 to 5.13)
- [RMS Changes](#) (Sections 5.14 to 5.15)
- [SYS Changes](#) (Sections 5.6 to 5.20)
- [RTL Changes](#) (Sections 5.21 to 5.23)
- [DEBUG Changes](#) (Section 5.24)
- [ACME Changes](#) (Sections 5.25 to 5.28)
- [Security Server Changes](#) (Sections 5.29 to 5.30)
- [Miscellaneous Changes](#) (Sections 5.31 to 5.34)

LAN Changes

5.1. LAN Elx Device Name Corrections

5.1.1. Problem Description

The DCL command **SHOW DEVICE Elx/FULL** and the SDA command **SHOW LAN** both displayed non-specific or confusing device names for Elx devices.

Device names for the E1000 and E1000e devices were always set to 82540, the name of the base Intel 82540 chip. In addition to the base 82540 device, the SYS\$EI1000X driver supports several variants: the 82543, 82545, and 82574 devices. This update identifies the variant type, if present.

When a VM has been configured with multiple types of E1000 and E1000e devices, this change makes it easier to differentiate them.

The virtio and VMXNET 3 devices have also been corrected to display the names EI_VIRTIO and EI_VMXNET3. Previously, they used the prefix EV instead of EI.

5.1.2. Images and/or Files Affected

[SYS\$LDR]IO_ROUTINES.EXE
[SYS\$LDR]IO_ROUTINES.STB
[SYS\$LDR]IO_ROUTINES_MON.EXE
[SYS\$LDR]IO_ROUTINES_MON.STB
[SYS\$LDR]SYS\$EVDRIIVER.EXE
[SYS\$LDR]SYS\$VMXNET3.EXE
[SYSEXEC]SDA.EXE
[SYSLIB]LAN\$SDA.EXE
[SYSLIB]SDA\$SHARE.EXE

5.1.3. VSI Case Identifier

Jiras DRIV-464, DRIV-501

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.1.5. Workaround

The suggested workaround for this issue is to use the LANCP command **SHOW DEVICE/INTERNAL_COUNTERS device_name** to see the actual device name and description.

5.2. Statistical and Startup Corrections for virtio and VMXNET 3 Devices

5.2.1. Problem Description

Several issues existed with the virtio and VMXNET 3 NIC drivers.

For virtio, the driver did not tally the number of resets properly as other network device drivers do.

For VMXNET 3, the driver did not tally link state change interrupts correctly. Also for VMXNET 3, when the driver was first started, there would be a spurious link bounce.

These issues have been corrected with this update.

5.2.2. Images and/or Files Affected

[SYS\$LDR]SYS\$EVDRIVER.EXE

[SYS\$LDR]SYS\$VMXNET3.EXE

5.2.3. VSI Case Identifier

None.

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.3. LAN Failover Set Management Interface Usability Improvements

5.3.1. Problem Description

Using LANCP commands to manage a LAN Failover Set was potentially confusing in some areas. There were no issues with LAN Failover operational behavior, just with the management for setup and configuration.

The management usability improvements include:

- Clarification of error and status messages when modifying a LAN Failover set.
- Modification of status messages to not include a MAC address if the MAC address is not yet known. Previously, the MAC address appeared as either 00-00-00-00-00-00 or FF-FF-FF-FF-FF-FF.
- Addition of a 'device removed' message when appropriate.
- Removal of extraneous LAN Failover Event message text.

Another improvement was to allow more flexibility in adding and removing devices from a LAN Failover Set. This reduced the need to disable the failover set before making changes.

The **LANCP SET DEVICE/SWITCH** command was modified to round-robin through the members of the failover set rather than selecting the first available started device. This allows you to cycle through all failover set members if there are more than two members.

5.3.2. Images and/or Files Affected

[SYS\$LDR]SYS\$LLDRIVER.EXE

[SYSEXE]LANCP.EXE

[SYSEXE]LANACP.EXE

[SYSHLP]LANCP\$HELP.HLB

5.3.3. VSI Case Identifier

Jiras DRIV 478-486, DRIV-507

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.4. VLAN Configuration Command Fails Silently on a virtio Device

5.4.1. Problem Description

VLANs on virtio devices were created by associating the VLAN tag with the assigned network. This meant that the virtio driver SYS\$EVDRIVER would be assigned to the VLAN network directly and never actually see VLAN tags itself. Rather than creating a VLAN device, a virtio device (EIF, for example) would embody the VLAN tag by virtue of the assigned network.

An attempt to create a VLAN device on a virtio device is not supported and should return an error status.

The VLAN driver and LANCP were updated to address this issue.

LANCP now rejects attempts to create a VLAN device on a NIC that does not support VLANs, such as the virtio device. Rather than failing silently, the following error message is now issued:

```
Requested VLAN host device not VLAN-capable, VLAN device VLA0
```

5.4.2. Images and/or Files Affected

```
[SYS$LDR]SYS$VLANDRIVER.EXE  
[SYSEXE]LANCP.EXE  
[SYSEXE]LANACP.EXE  
[SYSHLP]LANCP$HELP.HLB
```

5.4.3. VSI Case Identifier

Jira DRIV-463

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.5. Periodic MOP Messages Display Incorrect SystemID Name

5.5.1. Problem Description

The MOP messages transmitted every 8-12 minutes include several operating system specific fields. One such field is the O/S name.

This field was displayed as AVMS, a remnant from OpenVMS Alpha.

The MOP messages now correctly display this field as XVMS for VSI OpenVMS x86-64 systems.

5.5.2. Images and/or Files Affected

[SYS\$LDR]SYS\$LAN.EXE

[SYS\$LDR]SYS\$LAN_CSMACD.EXE

5.5.3. VSI Case Identifier

Jira DRIV-495

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.6. Miscellaneous Minor LANCP and LANACP Corrections and Modifications

5.6.1. Problem Description

The following changes have been made to LANCP and LANACP:

- Ensured consistent error message behavior and display characteristics.
- Removed VLAN and LAN Failover devices from the LANCP **SHOW BANDWIDTH** command.
- Changed the LANCP command **SHOW DEVICE/REVISION** to **SHOW DEVICE/VERSION**, which is a more accurate description of the values displayed.
- Added the **/ZERO** qualifier to the LANCP **SHOW DEVICE/COUNTERS** command. For OpenVMS, some of the counters are always zero and merely clutter the output when displayed. Those fields are now not displayed by default. You can specify the **/ZERO** qualifier to get the entire set of values displayed as before. This qualifier behavior is the same for LANCP **SHOW DEVICE/INTERNAL_COUNTERS**.
- Simplified applying permanent device database settings to the volatile device database (i.e. the actual LAN devices in use). You may now use the LANCP **DEFINE DEVICE** command to update the permanent device database settings, then use the LANCP **SET DEVICE/PERMANENT** command to apply the settings to the existing devices. For more detail, see the information from LANCP **HELP SET DEVICE**.
- Updated LANCP **HELP** for accuracy and completeness.
- Corrected a bug where issuing multiple commands in LANCP could exhaust the process BYTLM quota.

5.6.2. Images and/or Files Affected

[SYSEXEC]LANCP.EXE

[SYSEXE]LANACP.EXE
[SYSHLP]LANCP\$HELP.HLB

5.6.3. VSI Case Identifier

Jiras DRIV-460, DRIV-461, DRIV-465-467, DRIV-469-475, DRIV-512

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.7. Using Jumbo Frames Could Consume Excessive Non-Paged Pool

5.7.1. Problem Description

The LAN drivers did not account for jumbo receive buffers properly, resulting in excessive non-paged pool consumption.

This issue has been corrected with this update.

5.7.2. Images and/or Files Affected

[SYSEXE]LANCP.EXE
[SYSEXE]LANACP.EXE
[SYS\$LDR]SYS\$LAN.EXE
[SYS\$LDR]SYS\$LAN_CSMACD.EXE

5.7.3. VSI Case Identifier

Jiras DRIV-487, DRIV-505

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.8. Miscellaneous LAN Driver Changes

5.8.1. Problem Description

Treatment of transmit timeout conditions in the SYS\$EI1000X driver has been improved.

Treatment of the periodic reset function used in driver qualification has been standardized across the three LAN drivers.

5.8.2. Images and/or Files Affected

[SYS\$LDR]SYS\$EI1000X.EXE

[SYS\$LDR]SYS\$EVDRIVER.EXE
[SYS\$LDR]SYS\$VMXNET3.EXE

5.8.3. VSI Case Identifier

Jiras DRIV-493, DRIV-494

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.9. Corrections to SCACP SHOW xxx/SDA Commands

5.9.1. Problem Description

SCACP would exit with an error when the SCACP **SHOW LAN/SDA**, **SHOW VC/SDA**, or **SHOW CHANNEL/SDA** commands were issued.

The **/SDA** qualifier is intended to produce displays similar to the equivalent SDA> **PE** commands.

This behavior has been corrected with this update. Some other SCACP output display spacing has also been corrected.

5.9.2. Images and/or Files Affected

[SYSEXEC]SCACP.EXE

5.9.3. VSI Case Identifier

Jira BO-1924

Netsuite NS7746

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.10. Jumbo Frames Do Not Work With the VMXNET 3 LAN Driver

5.10.1. Problem Description

This affected VMware OpenVMS VMs that had selected the VMXNET 3 as the NIC type.

Jumbo transmits worked, but no jumbo frames were received.

This issue has been corrected in the SYS\$VMXNET3 driver.

Corresponding changes were made to the LAN SDA extension that supports the VMXNET 3 driver.

5.10.2. Images and/or Files Affected

[SYS\$LDR]SYSS\$VMXNET3.EXE
[SYSLIB]LAN\$SDA.EXE

5.10.3. VSI Case Identifier

Jira DRIV-487

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.11. Potential Cluster Communications Performance Limitation

5.11.1. Problem Description

Using a LAN Failover device for cluster communications may have limited cluster communication performance.

The default receive size was set to 8 for LAN Failover devices, when it should have been set to 128. Depending on the load, this may have limited performance.

PEDRIVER uses this default receive size as the transmit window size, which determines how many transmits PEDRIVER can issue.

The default size has been corrected to 128 with this update.

5.11.2. Images and/or Files Affected

[SYS\$LDR]SYSS\$LLDRIVER.EXE

5.11.3. VSI Case Identifier

Jiras BO-1944, DRIV-522

Netsuite NS7748

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.11.5. Workaround

The suggested workaround for this issue is to override the receive window size for cluster communications by issuing the following command for Virtual Circuits (VCs) that have the default window size of 8:

```
$ MCR SCACP SET VC vcname /WINDOW=TRANSMIT=128
```

However, this command must be repeated when a VC is created (for example, after a system boots).

5.12. Certain Jumbo Receive Packets on KVM VMs Have Incorrect Buffer Length

5.12.1. Problem Description

KVM VMs using the e1000e NIC (82574) have corrupted jumbo frames if the size is 2049-2053, 4097-4101, 6145-6149, or 8193-8197 bytes. The buffer length reported is 4 bytes shorter than actual.

The problem is due to a KVM hypervisor bug with the 82574 device.

The issue can be corrected by checking for the condition and adjusting the length of the last two buffer segments.

The SYS\$EI1000X driver now does this for any e1000 or e1000e (82540, 82545, or 82574) device, although the condition only happens with the 82574 device.

The condition is counted in the LANCP **SHOW DEVICE/INTERNAL** counters as "CRC workarounds applied".

5.12.2. Images and/or Files Affected

[SYS\$LDR]SYS\$LAN.EXE

5.12.3. VSI Case Identifier

Jira DRIV-517

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.13. VLAN Received Bytes Counters May Be Incorrect for Jumbo Packets

5.13.1. Problem Description

For a VLAN device, the "receive bytes" and "multicast receive bytes" counters were counted incorrectly for jumbo packets larger than 2048 bytes.

This issue has been corrected with this update.

5.13.2. Images and/or Files Affected

[SYS\$LDR]SYS\$EI1000X.EXE

5.13.3. VSI Case Identifier

None.

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

The next VSI OpenVMS x86-64 release after V9.2-3.

RMS Changes

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

5.14.1. 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 was 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 has been corrected with this update.

5.14.2. Images and/or Files Affected

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

5.14.3. VSI Case Identifier

Jiras CLUS-38, BO-1900

Netsuite NS7556

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.15. Spurious RMS-E-RLK Errors

5.15.1. Problem Description

The RMS V5 ECO kits (VMS842L3I_RMS-V0500 for IA-64 and VMS842L2A_RMS-V0500 for Alpha systems) contained a comprehensive internal status code reorganization to avoid returning a truncated error status on some RMS operations during heavy load.

The equivalent code was updated in VSI OpenVMS x86-64 V9.2.

One particular set of status code condition tests was accidentally missed during that update. In trying to determine whether there was a record locked condition during an RMS \$DELETE operation, the missed condition test could in some cases mistakenly signal the following error:

```
%RMS-E-RLK, target record currently locked by another stream
```

This issue has been corrected with this update.

5.15.2. Images and/or Files Affected

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

5.15.3. VSI Case Identifier

Jira BO-1945

Netsuite NS7669, NS7935

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

The next VSI OpenVMS x86-64 release after V9.2-3.

SYS Changes

5.16. Performance Enhancements for PROBE Functionality

5.16.1. Problem Description

The PROBE mechanism is a central piece of the ring protection system that OpenVMS uses for hierarchical access to system memory. PROBE checks the accessibility of a starting and ending address based on the caller's mode and the protection mask for read or write access for kernel, executive, supervisor, or user modes.

In VAX, Alpha, and IA-64 architectures, a PROBE instruction is part of the hardware instruction set, providing an efficient mechanism for these tests. In the x86-64 system architecture there is no similar instruction, so the behavior is emulated by system software. This is inherently more expensive overhead for the required functionality.

The original PROBE emulation in VSI OpenVMS x86-64 has been enhanced for better system performance. This consists of improvements in two areas:

- Optimization of the emulated PROBE instruction behavior itself.
 - If the starting address is accessible, skip checking the ending address if they both reside on the same page.
 - For multiple page address ranges, only traverse the kernel mode page table pages to find the relevant protection data.
 - Optimizations to the flow and memory usage of the PROBE function routine implementation.
- Reduction of redundant or unnecessary PROBE operations from the various callers where possible.
 - Some system services that use IOSB structures to return information to the caller were probing the IOSB structure at both the start of the service and at the end when returning the status to the caller.
 - If the first probe was successful, there is no need to repeat the probe later as the protection cannot change during the system service call.
 - However, if the first probe of the IOSB fails, the IOSB cannot be used at service completion since it is not valid. In this case, simply clear the saved IOSB address after the first probe failure, which will prevent the IOSB from being accessed while the error code is returned by the common system service rundown.

5.16.2. Images and/or Files Affected

[SYS\$LDR]IO_ROUTINES.EXE
[SYS\$LDR]IO_ROUTINES.STB
[SYS\$LDR]IO_ROUTINES_MON.EXE
[SYS\$LDR]IO_ROUTINES_MON.STB
[SYS\$LDR]PROCESS_MANAGEMENT.EXE
[SYS\$LDR]PROCESS_MANAGEMENT.STB
[SYS\$LDR]PROCESS_MANAGEMENT_MON.EXE
[SYS\$LDR]PROCESS_MANAGEMENT_MON.STB
[SYS\$LDR]SYS\$VM.EXE
[SYS\$LDR]SYS\$VM.STB
[SYS\$LDR]SYS\$VM_MON.EXE
[SYS\$LDR]SYS\$VM_MON.STB
[SYS\$LDR]SYSGETSYI.EXE
[SYS\$LDR]SYSGETSYI.STB
[SYS\$LDR]SYSTEM_PRIMITIVES.EXE
[SYS\$LDR]SYSTEM_PRIMITIVES.STB
[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.EXE
[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.STB
[SYSEXEC]SYSBOOT.EXE

5.16.3. VSI Case Identifier

Jiras BO-1873, BO-1912, BO-1940, QTV-1168

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.17. MONITOR Displays Inaccurate Data for Processor Modes and CPU Usage

5.17.1. Problem Description

On VSI OpenVMS x86-64 virtual machine systems, the MONITOR utility displayed inaccurate data on screens that showed processor mode or CPU usage. Other utilities that gather similar statistics were also affected.

This issue stemmed from the hard tick rate used by the system for accounting purposes. This is a sampling frequency used to collect the relevant data. VM environments were using a 10 msec rate, which is too coarse to differentiate multiple events that can occur during that interval.

The hard tick rate for VMs has been lowered from 10 msec to 1 msec, which is the hard tick rate used on physical machines.

Additionally, some hard tick events for x86-64 systems were being incorrectly counted or discarded. This behavior has been corrected with this update.

For VMs, the MONITOR utility and other utilities that display or gather processor mode or CPU usage now have the same behavior for output as traditional OpenVMS hardware system environments.

5.17.2. Images and/or Files Affected

[SYS\$LDR]SYSTEM_PRIMITIVES.EXE
[SYS\$LDR]SYSTEM_PRIMITIVES.STB
[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.EXE
[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.STB

5.17.3. VSI Case Identifier

Jira BO-1800

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.18. Dump Kernel Failure on Some Configurations if DEVICE_NAMING is Enabled

5.18.1. Problem Description

On systems with at least one virtio-scsi adapter configured, if DEVICE_NAMING was enabled, the dump kernel would trigger an access violation and the dump kernel would then crash during reboot. After reboot, the system would be unable to write a crash dump in case of a system crash.

This was due to an IOGEN routine being called from executive mode during AUTOCONFIGURE when it must be called from kernel mode.

This issue has been corrected with this update.

5.18.2. Images and/or Files Affected

[SYSLIB]IOGEN\$VIRTIO_CONFIG.EXE

5.18.3. VSI Case Identifier

Jira KT-207

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.19. System May Crash With DELCONPFN Bugcheck During Process Deletion

5.19.1. Problem Description

When a process is adding address space and the process page tables are being updated, the wrong page table entry could be used when setting the window bit for pages that are doubly mapped.

This incorrect status was ignored until the process address space was torn down during process deletion, either from logging out or being terminated with the \$DELPRC system service. When the discrepancy was found during process deletion, the system crashed with a DELCONPFN bugcheck.

This issue has been corrected with this update.

5.19.2. Images and/or Files Affected

[SYS\$LDR]SYS\$VM.EXE
[SYS\$LDR]SYS\$VM.STB
[SYS\$LDR]SYS\$VM_MON.EXE
[SYS\$LDR]SYS\$VM_MON.STB

5.19.3. VSI Case Identifier

Jira SPS-1273

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.20. DCL Lexical F\$GETDVI(*device*, "MOUNTCNT_CLUSTER") Always Returns 0

5.20.1. Problem Description

This problem was due to an incorrect buffer length used internally by the \$GETDVI system service to retrieve the lock value block that contains the device mount count data. The MOUNTCNT_CLUSTER item returned zero instead of the correct device mount count.

This issue only occurred on x86-64 systems.

This would also affect calls to the \$GETDVI system service or LIB\$GETDVI from any programs, in addition to the DCL lexical that was reported by a customer.

This issue has been corrected with this update.

5.20.2. Images and/or Files Affected

[SYS\$LDR]IO_ROUTINES.EXE
[SYS\$LDR]IO_ROUTINES.STB
[SYS\$LDR]IO_ROUTINES_MON.EXE
[SYS\$LDR]IO_ROUTINES_MON.STB

5.20.3. VSI Case Identifier

Jira BO-1921

Netsuite NS7715

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

The next VSI OpenVMS x86-64 release after V9.2-3.

RTL Changes

5.21. Install the Linker and C++ Run-Time Libraries as Known Images

5.21.1. Problem Description

The system startup did not install the Linker (SYS\$SYSTEM:LINK.EXE) or the C++ Run-Time Libraries (SYS\$SHARE:LIBCXX.EXE and SYS\$SHARE:LIBCXXABI.EXE) as known images.

Installing the images can help improve performance of the Linker and C++ applications.

This change adds the relevant entries to the master list used to determine which files to install as known images during system boot.

You will need to use AUTOGEN to update the system to actually install the images at boot. The boot time list is generated during the GENPARAMS phase of AUTOGEN.

If you wish to install these as known images before the next AUTOGEN and system reboot, you may manually add them yourself for the current incarnation of the system using the following commands:

```
$ INSTALL ADD SYS$SHARE:LIBCXXABI /OPEN /HEADER /SHARED=ADDRESS_DATA  
$ INSTALL ADD SYS$SHARE:LIBCXX    /OPEN /HEADER /SHARED=ADDRESS_DATA  
$ INSTALL ADD SYS$SYSTEM:LINK      /OPEN /HEADER /SHARED=ADDRESS_DATA
```

Note

The installation order of the two C++ libraries is important.

5.21.2. Images and/or Files Affected

[SYSMGR]VMS\$IMAGES_MASTER.DAT

5.21.3. VSI Case Identifier

Jira BO-1898, BO-1899

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.22. BASIC Programs Terminate With %BAS-F-NOTIMP Error

5.22.1. Problem Description

The NUM and NUM1 functions in the BASIC language convert a number to a text representation. If these functions were called with a quadword integer value to convert, they would signal the following error:

```
%BAS-F-NOTIMP, Not implemented
```

For most programs, this would terminate the image.

The port from IA-64 to x86-64 for the conversion routine had not yet been completed.

The issue has been addressed with this ECO kit.

5.22.2. Images and/or Files Affected

[SYSLIB]DEC\$BASRTL.EXE

5.22.3. VSI Case Identifier

Jira RTLS-509

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.23. PASCAL RTL Does Not Close All Local Files on Routine Completion

5.23.1. Problem Description

For a program written in Pascal, when an open file allocated in a routine is not explicitly closed, the Pascal Run-Time Library routine PAS\$CLOSE_LOCAL is called to close those files automatically at the end of the routine, or during an unwind or non-local GOTO operation.

The `PASS$CLOSE_LOCAL` routine needs platform-specific knowledge about the stack layout to find file variables. This code had not been completely ported from IA-64 to x86-64.

The issue has been corrected with this update.

5.23.2. Images and/or Files Affected

[SYSLIB]PASS\$RTL.EXE

5.23.3. VSI Case Identifier

Jira RTLS-516

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

The next VSI OpenVMS x86-64 release after V9.2-3.

DEBUG Changes

5.24. Various Corrections to OpenVMS Debugger Behavior

5.24.1. Problem Description

The following corrections and improvements have been made to the Debugger with this ECO kit:

- The Heap Analyzer has been ported to VSI OpenVMS x86-64.
- The **STEP/RETURN** command no longer causes an access violation.
- Corrected the source line to PC correlation for C++ programs.
- The routine prologue end address is now correctly recorded.
- The file name is now displayed during debug line tracing when a file switch is made.
- Corrected an issue where the Debugger would encounter an access violation when starting up.
- The **SHOW SYMBOL/TYPE** command for variant records no longer displays size values, which have no meaning in that context.
- Dynamic strings where the string length is in the variable are now correctly displayed.
- Set the default lower bound for array elements depending on the language used. For example, FORTRAN arrays now start at 1, not 0.
- Class members where the class has multiple inheritances are now displayed correctly.

5.24.2. Images and/or Files Affected

[SYSLIB]DBG\$HA_KERNEL.EXE

[SYSLIB]DBG\$HA_MAIN.EXE

[SYSLIB]DEBUG.EXE
[SYSLIB]DEBUGSHR.EXE
[SYSLIB]DEBUGUISHR.EXE

5.24.3. VSI Case Identifier

Jira DEV-2492, DEV-2631, DEV-2674, DEV-2737, DEV-2752, DEV-2828, DEV-2837, DEV-2846, DEV-2856, DEV-2876, DEV-2881

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

The next VSI OpenVMS x86-64 release after V9.2-3.

ACME Changes

5.25. Update for the VMS ACME Agent

5.25.1. Problem Description

Various bug fixes have been made to the VMS ACME agent for ACME logins. The following problems have been corrected:

- Access violation when connecting via TELNET when a system password is enabled.
- Spurious error when changing an expired password after entering a password contained in the history database.
- NULLNETUSER handling for non-interactive network processes like EVL.
- Login failures due to using wrong username string for reading UAF records when explicit mapping is used.
- Login failures due to missing trailing space character padding for username key string.
- The **SET PASSWORD/GENERATE** command sometimes refuses to accept an element from the generated list.
- The **SET PASSWORD/GENERATE** command may suggest passwords of insufficient minimum length.

5.25.2. Images and/or Files Affected

[SYSLIB]VMS\$VMS_ACMESHR.EXE

5.25.3. VSI Case Identifier

Jira BO-1849, BO-1856, BO-1859, BO-1901, BO-1907, BO-1920

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.26. Enhanced Debug Tracing for the ACME Server

5.26.1. Problem Description

For debugging purposes, the ACME server has tracing code that can be enabled when needed. This tracing has been modified to set the trace flag for the following control mode phases:

```
AGENT_INITIALIZE  
AGENT_STARTUP  
AGENT_SHUTDOWN  
AGENT_STANDBY
```

5.26.2. Images and/or Files Affected

[SYSEXEC]ACME_SERVER.EXE

5.26.3. VSI Case Identifier

Jira BO-1737

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.27. Cannot Capture SET PASSWORD/GENERATE Output From Command Procedure

5.27.1. Problem Description

When using ACME login on VSI OpenVMS x86-64, attempting to capture the output of a **SET PASSWORD/GENERATE** command within a DCL command procedure fails with the following error:

```
%STR-F-ILLSTRCLA, illegal string class
```

This issue has been corrected with this update.

5.27.2. Images and/or Files Affected

[SYSEXEC]SETP0_ACME.EXE

5.27.3. VSI Case Identifier

Jira UT-314

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.28. ACME LDAP Agent Documentation Update

5.28.1. Problem Description

The installation requirements for the ACME LDAP Agent are different on VSI OpenVMS x86-64 from previous VSI OpenVMS platforms.

The ACME LDAP configuration and installation document has been updated to include additional details for x86-64, as well as a general cleanup of content, images, and formatting.

The PDF and TXT versions of the document are placed in SYS\$HELP.

5.28.2. Images and/or Files Affected

[SYSHLP]ACMELDAP_STD_CONFIG_INSTALL.TXT
[SYSHLP]ACMELDAP_STD_CONFIG_INSTALL.PDF

5.28.3. VSI Case Identifier

Jira BO-1874

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

The next VSI OpenVMS x86-64 release after V9.2-3.

Security Server Changes

5.29. Potential Cluster Node Security Server Failures

5.29.1. Problem Description

The VSI OpenVMS x86-64 security server could generate improperly formatted suspect records for certain DECnet connections and insert them into the intrusion database.

Should this occur in a VMScluster, Alpha or IA-64 cluster members could then experience security server failures triggered by the improper records.

The security server now correctly formats these suspect records.

In addition, the security server now includes a self-healing check that removes any improper records from the intrusion database.

5.29.2. Images and/or Files Affected

[SYSEXEC]SECURITY_SERVER.EXE

5.29.3. VSI Case Identifier

Jira BO-1908

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.30. Security Server Could Become Non-Responsive and Require a Reboot

5.30.1. Problem Description

The security server includes an exception handler to determine what actions to take if an unexpected error or exception occurs. Usually, this will lead to the handler restarting the server.

In some cases, the exception handler could terminate before completing the restart process. This would leave the server in a non-responsive "zombie" state that required a system reboot to clear.

The security server has been modified to reorder recovery steps and limit the use of certain services during exception handling to avoid cascading exception failures. This ensures completion of the restart process and proper image cleanup.

5.30.2. Images and/or Files Affected

[SYSEXE]SECURITY_SERVER.EXE

5.30.3. VSI Case Identifier

Jira BO-1998

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

The next VSI OpenVMS x86-64 release after V9.2-3.

Miscellaneous Changes

5.31. Changes to the SEARCH/STATISTICS Command

5.31.1. Problem Description

Several items displayed by the **SEARCH/STATISTICS** command were tallied in longword (32-bit) counters. The fields would overflow and restart at zero if there were more than 4,294,967,295 records or characters in the file or files being searched, which is easily possible for very large files. Should the field overflow, the output display was incorrect.

The following fields are now tallied in quadword (64-bit) counters to prevent overflow:

Records searched
Characters searched
Records matched
Lines printed

To accommodate displaying potentially large values for these items, the output format of the statistics summary has changed, with wider field sizes where needed. The same items are displayed in the same order. The displays for Elapsed Time and CPU Time now include the leading digits for the number of days, should the search take that long to complete.

Here is an example showing the new format for the output display:

Files searched:	9123	Buffered I/O count:	34060
Records searched:	63172133	Direct I/O count:	62142
Characters searched:	2819025795	Page faults:	17
Records matched:	2524	Elapsed CPU time:	0 00:02:56.10
Lines printed:	4180	Elapsed time:	0 00:07:58.89

By default, **SEARCH/STATISTICS** also creates DCL symbols for some of the metrics calculated. These are defined in the local symbol table as character strings, so they will not overflow for large numeric values. Since DCL only supports 32-bit arithmetic, large values cannot be directly converted to integers for additional processing, but would need to use a program or utility that does provide 64-bit arithmetic. However, DCL procedures may use the character symbols for reporting purposes or to create a comma separated list for input to a spreadsheet program, for example.

New symbols are now created for the Elapsed Time and CPU Time values, so this information may also be captured by DCL command procedures without the need to parse the command display output. The two new time symbols are created in DCL Delta Time format, so they may be used directly for DCL time calculations.

Here are the DCL symbols generated by the example **SEARCH/STATISTICS** display output above:

```
SEARCH$CHARACTERS_SEARCHED = "2819025795"
SEARCH$CPU_TIME = "0-00:02:56.10"
SEARCH$ELAPSED_TIME = "0-00:07:58.89"
SEARCH$FILES_SEARCHED = "9123"
SEARCH$LINES_PRINTED = "4180"
SEARCH$RECORDS_MATCHED = "2524"
SEARCH$RECORDS_SEARCHED = "63172133"
```

5.31.2. Images and/or Files Affected

[SYSEXE]SEARCH.EXE
[SYSMSG]CLIUTLMSG.EXE

5.31.3. VSI Case Identifier

Jiras UT-319, UT-326

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.32. Updates to the MACRO Compiler

5.32.1. Problem Description

The following changes were made to the MACRO compiler:

- Updated the MACRO compiler to use a newer version of LLVM.
- Fixed ACCVIO when using **/DEBUG** qualifier.
- Improved debug information for static data declarations.
- The compiler now correctly creates ELF NOBIT sections for PSECTs declared with OVR.
- Fixed a regression with 3-operand EVAX builtins using the wrong register.

The version of the compiler can be shown using the **MACRO/VERSION** command:

```
$ MACRO/VERSION
XMAC V6.0-117 (GEM 50Y4T) on OpenVMS x86_64 V9.2-3
```

5.32.2. Images and/or Files Affected

[SYSEXEC]MACRO.EXE

5.32.3. VSI Case Identifier

Jiras DEV-2688, DEV-2703, DEV-2624, DEV-2788

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.33. The Linker May Issue ILINK-W-DRELOSYM Messages

5.33.1. Problem Description

On VSI OpenVMS V9.2-3, the Linker sometimes reports the following warning:

```
%ILINK-W-DRELOSYM, debug relocation for undefined symbol
```

When linking an image with code in P2 space (the default) and using the **/DEBUG** qualifier, the Linker would sometimes fail to find a symbol referenced in the debug information. The above warning message would be displayed along with some additional information.

The generated image was not affected in the sense that it can be run and works as expected. If run with the Debugger, the Debugger may report or display messages if it attempts to access the particular symbol referenced in the DRELOSYM message.

This issue has been corrected with this update.

5.33.2. Images and/or Files Affected

[SYSEXEC]LINK.EXE

5.33.3. VSI Case Identifier

Jira BO-1895

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

The next VSI OpenVMS x86-64 release after V9.2-3.

5.34. SDA Command CLUE XQP/LOCK Does Not Show Entire RSB Address

5.34.1. Problem Description

The SDA command **CLUE XQP/LOCK=lockbasis** displays lock and resource information, but previously would only display the lower 32 bits of the RSB address.

The command now correctly displays the entire 64 bit RSB address.

5.34.2. Images and/or Files Affected

[SYSLIB]CLUE\$SDA.EXE

5.34.3. VSI Case Identifier

Jira UT-308

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

The next VSI OpenVMS x86-64 release after V9.2-3.

6. Problems Addressed From Previous Kits

None.

7. Images or Files Replaced

[SYS\$LDR]IO_ROUTINES.EXE

Image Name:	"IO_ROUTINES"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:08.45
Image Checksum (MD5):	A62C061D93C436D8A5A2CA0E071BFD37

[SYS\$LDR]IO_ROUTINES.STB

File Creation Date and Time:	22-APR-2025 01:19:09.07
------------------------------	-------------------------

Checksum (MD5):	BD435EAE3C437AC61AC6FA5E99A9A8AF
-----------------	----------------------------------

[SYS\$LDR]IO_ROUTINES_MON.EXE

Image Name:	"IO_ROUTINES_MON"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:09.83
Image Checksum (MD5):	B802689C8FE069EC7658E1F389F9EB54

[SYS\$LDR]IO_ROUTINES_MON.STB

File Creation Date and Time:	22-APR-2025 01:19:10.17
Checksum (MD5):	6022135460CA219C431462CFC1895A8E

[SYS\$LDR]PROCESS_MANAGEMENT.EXE

Image Name:	"PROCESS_MANAGEMENT"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:13.85
Image Checksum (MD5):	6FF8903C49F18B1D171BB02C41E23199

[SYS\$LDR]PROCESS_MANAGEMENT.STB

File Creation Date and Time:	22-APR-2025 01:19:14.18
Checksum (MD5):	444A69D1E07ABEB963F816527C72FFBD

[SYS\$LDR]PROCESS_MANAGEMENT_MON.EXE

Image Name:	"PROCESS_MANAGEMENT_MON"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:14.59
Image Checksum (MD5):	D1E7FB1F6BEEF3E51443E9E31213BE82

[SYS\$LDR]PROCESS_MANAGEMENT_MON.STB

File Creation Date and Time:	22-APR-2025 01:19:15.25
------------------------------	-------------------------

Checksum (MD5):	0BAD41388A7A588B72F3BCFE2DB6FD35
-----------------	----------------------------------

[SYS\$LDR]RMS.EXE

Image Name:	"RMS"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:45.30
Image Checksum (MD5):	37AA72230AD327E6233E73FD55A2FD89

[SYS\$LDR]RMS.STB

File Creation Date and Time:	28-MAR-2025 22:42:45.45
Checksum (MD5):	F6AFECB9B54377216C0626DBACE970DD

[SYS\$LDR]SYS\$EI1000X.EXE

Image Name:	"SYS\$EI1000XDIVER"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:39.85
Image Checksum (MD5):	46DE0F01675FA8C6CA9459FB001C6926

[SYS\$LDR]SYS\$EVDIVER.EXE

Image Name:	"SYS\$VIRTIDIVER"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:40.80
Image Checksum (MD5):	D6946EC0B0728CBC9CFD9073144B0CC0

[SYS\$LDR]SYS\$LAN.EXE

Image Name:	"SYS\$LAN"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:45.37

Image Checksum (MD5):	D44131CF34EB9E92F70A60D5B5682D5A
-----------------------	----------------------------------

[SYS\$LDR]SYS\$LAN_CSMACD.EXE

Image Name:	"SYS\$LAN_CSMACD"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:45.51
Image Checksum (MD5):	D5DE1BFEC0E9AE7DF4E61B393EC72D2A

[SYS\$LDR]SYS\$LLDRIVER.EXE

Image Name:	"SYS\$LLDRIVER"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:42.20
Image Checksum (MD5):	DED3A3972C001E6097A7E7864C76DD15

[SYS\$LDR]SYS\$VLANDRIVER.EXE

Image Name:	"SYS\$VLANDRIVER"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:41.89
Image Checksum (MD5):	D0A448BAA5569DFAFD16859F423ED937

[SYS\$LDR]SYS\$VM.EXE

Image Name:	"SYS\$VM"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:17.32
Image Checksum (MD5):	9D6AAAE988CEA41B4BB6D91238E1C58

[SYS\$LDR]SYS\$VM.STB

File Creation Date and Time:	22-APR-2025 01:19:18.40
------------------------------	-------------------------

Checksum (MD5):	834289D1E11AF6D41BC304A97C40F21D
-----------------	----------------------------------

[SYS\$LDR]SYS\$VM_MON.EXE

Image Name:	"SYS\$VM_MO"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:18.62
Image Checksum (MD5):	9A4A6D9BA737E7ECFA1FDCF093E0FAB6

[SYS\$LDR]SYS\$VM_MON.STB

File Creation Date and Time:	22-APR-2025 01:19:18.86
Checksum (MD5):	2D85F7D6C151840823F7660709D250F1

[SYS\$LDR]SYS\$VMXNET3.EXE

Image Name:	"SYS\$VMXNET3DRIVER"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:41.50
Image Checksum (MD5):	2A48E3997B4F1B9D0A2E40AC4CDFB53D

[SYS\$LDR]SYSGETSYI.EXE

Image Name:	"SYSGETSYI"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:19.78
Image Checksum (MD5):	281EFD62885E0DEE2556E12370419FDD

[SYS\$LDR]SYSGETSYI.STB

File Creation Date and Time:	22-APR-2025 01:19:19.93
Checksum (MD5):	74C01F04F06F94D51F5270C766B6311F

[SYS\$LDR]SYSTEM_PRIMITIVES.EXE

Image Name:	"SYSTEM_PRIMITIVES"
-------------	---------------------

Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:23.02
Image Checksum (MD5):	DAB3F6E28A39FB0EDEB6B35024951EB7

[SYS\$LDR]SYSTEM_PRIMITIVES.STB

File Creation Date and Time:	22-APR-2025 01:19:23.77
Checksum (MD5):	3C68B68039ABB32716E95F98A1BAAA24

[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.EXE

Image Name:	"SYSTEM_PRIMITIVES_MIN"
Image File Identification:	"X-16"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:25.69
Image Checksum (MD5):	15131F7CCB3A60EB122BA95BD9C6F6E8

[SYS\$LDR]SYSTEM_PRIMITIVES_MIN.STB

File Creation Date and Time:	22-APR-2025 01:19:26.07
Checksum (MD5):	F27A6E2153CFEE9081B10430A8862F50

[SYSEXEC]ACME_SERVER.EXE

Image Name:	"ACME_SERVER"
Image File Identification:	"X-46"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:39.44
Image Checksum (MD5):	ED3964DB8BE6FA8B739E7D88A4F3274C

[SYSEXEC]LANACP.EXE

Image Name:	"LANACP"
Image File Identification:	"X-40"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:43.12

Image Checksum (MD5):	E41519147030D5C03F01ABF8AA13DAD1
-----------------------	----------------------------------

[SYSEXE]LANCP.EXE

Image Name:	"LANCP"
Image File Identification:	"X-126"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:42.69
Image Checksum (MD5):	DE4600CDF609EA5B4AAC0249E0E078D4

[SYSEXE]LINK.EXE

Image Name:	"LINK"
Image File Identification:	"I02-99"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:39.17
Image Checksum (MD5):	940FFE52CBF1E78B9130FF4EE8345ADC

[SYSEXE]MACRO.EXE

Image Name:	"MACRO"
Image File Identification:	"60-117-50F9M"
Image Build Identification:	""
Link Identification:	"Linker I02-98"
Link Date/Time:	31-MAR-2025 11:50:01.13
Image Checksum (MD5):	AF54D00566913B748E1CE995B163C117

[SYSEXE]SCACP.EXE

Image Name:	"SCACP"
Image File Identification:	"X-36"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:41.68
Image Checksum (MD5):	ADD64E471796CC717B2ADFDCF32776AC

[SYSEXE]SDA.EXE

Image Name:	"SDA"
-------------	-------

Image File Identification:	"X-6"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:59:10.62
Image Checksum (MD5):	FDA7CE1FF169434AC1042848A86A8C96

[SYSEXE]SEARCH.EXE

Image Name:	"SEARCH"
Image File Identification:	"X02-08"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:45.22
Image Checksum (MD5):	29D52F63291002ECC8E1824CF3612F11

[SYSEXE]SECURITY_SERVER.EXE

Image Name:	"SECURITY_SERVER"
Image File Identification:	"X-4"
Image Build Identification:	""
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:43.96
Image Checksum (MD5):	612DA1331C099C6438990A347D2EB4AA

[SYSEXE]SETP0_ACME.EXE

Image Name:	"SETP0_ACME"
Image File Identification:	"LOGIN_ACME"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:43:27.53
Image Checksum (MD5):	54634BDE486DB784364B04E486D428D4

[SYSEXE]SYSBOOT.EXE

Image Name:	"SYSBOOT"
Image File Identification:	"X-3"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	22-APR-2025 01:19:20.39

Image Checksum (MD5):	3E8C565B9F724A95E8A8CA54DECB150C
-----------------------	----------------------------------

[SYSHLP]ACMELDAP_STD_CONFIG_INSTALL.TXT

File Creation Date and Time:	23-JAN-2025 09:26:58.68
Checksum (MD5):	AADC5FC7665427D39443932C36DEAA7A

[SYSHLP]ACMELDAP_STD_CONFIG_INSTALL.PDF

File Creation Date and Time:	28-MAR-2025 22:18:38.86
Checksum (MD5):	74E4BB873FBBB2BD668A3A67610D6FC1

[SYSHLP]LANCP\$HELP.HLB

File Creation Date and Time:	28-MAR-2025 22:38:16.45
Checksum (MD5):	52F2011A87243987324209472AF33E3D

[SYSLIB]CLUE\$SDA.EXE

Image Name:	"CLUE\$SDA"
Image File Identification:	"X-92"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:38.28
Image Checksum (MD5):	9B85E353728EE7CBC506DAC0D8E0E339

[SYSLIB]DBG\$HA_KERNEL.EXE

Image Name:	"DBG\$HA_KERNEL"
Image File Identification:	"V9.3-012"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:44.01
Image Checksum (MD5):	A0C216216CDDAE79021FDDFB3CBB2BAC

[SYSLIB]DBG\$HA_MAIN.EXE

Image Name:	"DBG\$HA_MAIN"
Image File Identification:	"V9.3-012"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:43.72

Image Checksum (MD5):	B9B3E6FB5435ACB45C1FEFFD5125EEAD
-----------------------	----------------------------------

[SYSLIB]DEBUG.EXE

Image Name:	"DEBUG"
Image File Identification:	"V9.3-012"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:40.01
Image Checksum (MD5):	5635FB75466D56E288259716D19F59D2

[SYSLIB]DEBUGSHR.EXE

Image Name:	"DEBUGSHR"
Image File Identification:	"V9.3-012"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:39.99
Image Checksum (MD5):	240D80399A5C42088ED7B8F384DE653C

[SYSLIB]DEBUGISHR.EXE

Image Name:	"DEBUGISHR"
Image File Identification:	"V9.3-012"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:42.23
Image Checksum (MD5):	E72BC95A8FE9A4F0EA7307D68457F682

[SYSLIB]DEC\$BASRTL.EXE

Image Name:	"DEC\$BASRTL"
Image File Identification:	"X01-039"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:26.81
Image Checksum (MD5):	B7709A89B20CD448AC880FF949141282

[SYSLIB]IOGEN\$VIRTIO_CONFIG.EXE

Image Name:	"IOGEN\$VIRTIO_CONFIG"
Image File Identification:	"X-6"

Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:12.60
Image Checksum (MD5):	D0EF5BB81DC8DC62FD4CB5D87C513A55

[SYSLIB]LAN\$SDA.EXE

Image Name:	"LAN\$SDA"
Image File Identification:	"X-92"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:44.91
Image Checksum (MD5):	455B0F1BC5505FBAEDACFEB888E97CC3

[SYSLIB]PAS\$RTL.EXE

Image Name:	"PAS\$RTL"
Image File Identification:	"PAS\$RTL V5.0-31"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:12.55
Image Checksum (MD5):	EB18E5124E8872A53A1FAA755B5A78E9

[SYSLIB]SDA\$SHARE.EXE

Image Name:	"SDA\$SHARE"
Image File Identification:	"X-2"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:59:10.37
Image Checksum (MD5):	29BCAA29195B0A7E415A0BDC4E72DFA7

[SYSLIB]VMS\$VMS_ACMESHR.EXE

Image Name:	"VMS\$VMS_ACMESHR"
Image File Identification:	"VMS_AGENT V2.0"
Image Build Identification:	""
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:37.70
Image Checksum (MD5):	9A6058C3B409A45468BB18783B0FDE84

[SYSMGR]VMS\$IMAGES_MASTER.DAT

File Creation Date and Time:	28-MAR-2025 22:18:51.46
Checksum (MD5):	A9D317C7D2E59192031A796BDA4CF90C

[SYSMMSG]CLIUTLMSG.EXE

Image Name:	"CLIUTLMSG"
Image File Identification:	"0"
Image Build Identification:	"XGRV-K6N-000021"
Link Identification:	"Linker I02-97"
Link Date/Time:	28-MAR-2025 22:42:43.90
Image Checksum (MD5):	ABA1B149CFDD5154C424C3A309006941

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

As a file or image may be replaced by multiple ECO 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 an ECO 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.

Info-ZIP's freeware ZIP and UNZIP tools are provided for use on this VSI OpenVMS version. Your site may have already set up symbols for these tools or other equivalent ZIP tools. If not, use the following command to define a symbol to run the UNZIP image:

```
$ UNZIP == "$SYS$SYSDEVICE:[VMS$COMMON.SYSHLP.UNSUPPORTED.UNZIP]UNZIP"
```

Then invoke UNZIP to unpack the kit using the command:

```
$ UNZIP VMS923X_UPDATE-V0100
```

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.

8.2. Installation Command

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

```
$ PRODUCT INSTALL VMS923X_UPDATE [/SOURCE=location_of_kit]
```

The kit location may be a 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.

8.3. Special Installation Instructions

Should you need to remove this kit via **PRODUCT UNDO PATCH**, the same mandated reboot requirement is in effect as the memory disk image is changed back to the prior system content.

The kit will update the memory disk image automatically as the final part of installation. There is currently no mechanism within the PCSI utility to cleanly invoke a system reboot for **PRODUCT UNDO PATCH**.

You will be instructed as the kit exits that you must perform this function manually in this case.

Note

When the SYS\$MD.COM procedure is executing to update the memory disk image, some errors may be reported similar to these:

```
%INSTALL-I-NONRESSHRADR, image installed ignoring '/RESIDENT' image_name  
-INSTALL-E-NOGHREG, insufficient memory in the code or data granularity hint region
```

or

```
%INIT-F-GHREGIONFULL, An allocation was attempted from GH region GH_RES_CODE_S2 but
                        there is not enough space in the region for the allocation.
```

These are due to having both old and new copies of some images that are still being used until the system is rebooted. Typically they may be ignored as they will clear up during the reboot. Should there still be similar messages during system startup after reboot, you may need to use AUTOGEN to adjust the related system parameters.

Note

During **PRODUCT INSTALL** or **PRODUCT UNDO PATCH**, the PCSI utility may issue the following message:

```
There is not enough space on the memory disk.
You must take these steps now to complete this installation:
```

- Run @SYS\$UPDATE:SYS\$MD
- Reboot the system

In both cases, the kit procedure will run SYS\$MD automatically. There is no need for you to execute SYS\$MD before the reboot.

For **PRODUCT INSTALL**, the reboot is also automatically handled by the kit procedure and you need not do a reboot yourself.

For **PRODUCT UNDO PATCH**, you must manually reboot the system after the operation completes. The kit dialogue will remind you of this requirement at the end of the operation. There is currently no mechanism in PCSI to automatically invoke the system shutdown and reboot for **UNDO PATCH** operations.

9. Copyright

VMS SOFTWARE, INC. CONFIDENTIAL. This software is confidential proprietary software licensed by VMS Software, Inc., and is not authorized to be used, duplicated, or disclosed to anyone without the prior written permission of VMS Software, Inc.

Copyright 2025 VMS Software, Inc.

10. Disclaimer of Warranty and Limitation of Liability

This patch is provided as is, without warranty of any kind. All express or implied conditions, representations, and warranties, including any implied warranty of merchantability, fitness for particular purpose, or non-infringement, are hereby excluded to the extent permitted by applicable law. In no event will VMS Software, Inc. be liable for any lost revenue or profit, or for special, indirect, consequential, incidental or punitive damages, however caused and regardless of the theory of liability, with respect to any patch made available here or to the use of such patch.

11. Patch ID

X86VMS-VMS923X_UPDATE-V0100--4

Note

The terms "ECO kit" and "patch kit" may be used interchangeably in this document. This also applies for other VSI OpenVMS documentation when describing PCSI kits that provide remedial updates to a particular product.

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 OpenVMS ECO 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 updates, 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 is 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 a VSI OpenVMS ECO 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 (for example, if aborting the current operation may have side effects for the system). Additionally, note the following:
 - 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 that 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 VMS923X_UPDATE/VERSION=V1.0/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 ECO Kits

The three names listed below were used by older VSI OpenVMS ECO kits for compatibility with HPE ECO 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