Charon-SSP 5.6.4
Release Notes

Contents

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Relevant Products

This document is applicable to the following Charon-SSP software products:

Version 5.6.4 of the following Charon-SSP product variants:
- Charon-SSP for Linux (including the versions for Sentinel HASP and VE licensing)
- Charon-SSP Baremetal
- Charon-SSP running in a cloud instance launched from an Automatic Licensing (AL) or Virtual Environment (VE) marketplace image on Azure, AWS, OCI, Google, or IBM Cloud (not every platform may offer both images).

This document also contains information about older versions. However, please always also refer to the Release Notes of your specific software version for the most relevant information.

Please note:
- This release notes document does not show the changes made in version 5.4.x because 5.4.x and 5.6.x (and its prerelease version 5.5.x) are based on Charon-SSP 5.3.12 and were then developed in parallel. Please refer to the release notes for 5.4.x for information about this release.
- In previous versions, the VE license server information was included in this document. There is now a separate Release Notes document for the license server. Please also refer to this document if you use a VE license server.

Host System Requirements and Supported Virtual Hardware

Please refer to the user's guide and the SPD of your respective Charon-SSP product for details.

New Features in Version 5.6

New features for the Charon-SSP SPARC emulators:

- Charon-SSP/4V:
  - Increased number of emulated CPUs to 128 emulated CPUs (*version 5.5.4*)
  - Support for 1024 GB of emulated memory when running Solaris 11 (*version 5.6.1*)
- General product changes:
  - Charon-SSP emulator support for RHEL/Rocky Linux version 9 (*version 5.5.4*). Update for Linux 9.2 in version 5.6.3.
  - Charon Manager and Director support for Windows 11 (*version 5.6.1*)
  - New packaging (self-extracting archives) including updated end-user license agreement (EULA).
- Licensing:
  - Starting with SSP version 5.5.5: support for user configurable certificates for SSL communication between VE license server and SSP license client (starting with VE license server 2.1.3).
    Please note the changed certificate names (old: *ssp.crt* and *ssp.key*; new: *charon.crt* and *charon.key*) starting with Charon-SSP version 5.6.2 and VE license server 2.2.2.

Known Caveats

Charon-SSP version 5.6.4 has the following known caveats:

- **Graphics emulation restrictions:**
  - CGSIX graphics emulation is **not supported** for SunOS 4.x guest systems.
  - Linux or Windows systems used to display emulated **remote graphics devices should not run under a hypervisor / inside a virtual machine**. Such configurations currently have problems with mapping the mouse position in the emulated window correctly. If such a configuration is to be used, thorough testing is required to check if the mapping works in the specific customer configuration.
- **Charon-SSP Manager restriction for Wayland**:
  The Charon-SSP Manager is not supported on Linux hosts using Wayland when they run in a VMware instance with 3D-graphics. The Manager will show erratic behavior in such cases.
- **Solaris kernel zones are not supported**:
  The Charon-SSP emulator does not support Solaris kernel zones that were introduced in Solaris 11.2.
- **Charon-SSP Baremetal GUI settings**:
  If a Charon-SSP Baremetal system is upgraded using the Baremetal ISO image, the systemwide region and display settings as well as any other customer-specific configuration changes to the system may not be preserved but are reset to default values.
- **HASP-related *udev* error messages in *journalctl***:
  On CentOS, RHEL, and Oracle Linux 7.x, journalctl shows errors in the file */etc/udev/rules.d/80-hasp.rules*. The messages report that the key *PHYSDEVBUS* and the group *plugdev* are unknown. The affected entries exist for backward compatibility with older Linux versions. The messages can be ignored.
- **OCI instance based on Charon-SSP VE marketplace image shows *oracle-cloud-agent.service* startup errors:** when the instance is configured for IMDSv2 (Instance Metadata Service version 2), a deficiency in the underlying CentOS host operating system prevents the start of the *oracle-cloud-agent.service*. These messages do not affect the correct operation of the product.
- **XFS filesystems *not created* by the Charon Manager**: when a ZFS vdisk is copied onto an empty XFS filesystem, there are problems with mounting the XFS filesystem afterwards. This is caused by limitations of the Linux operating system. For XFS filesystems created manually, one of the following workarounds can be used:
  - Explicitly specify the type when mounting the XFS filesystem (**mount -t xfs**), or
  - Copy a small file (min. 1MB) to the XFS filesystem **before** copying the ZFS vdisk.
- If FIPS (Federal Information Processing Standard) is enabled on the Linux host system, the installation of the Charon Manager, Charon Agent, and aksusbd packages may fail with a *no digest* package verification error.
  Reason: the packages were built without SHA256 digest support.
  Workaround: use the command **rpm -i --nodigest –nofiledigest** *package-name* to install the packages.
  If the rpm command fails due to missing dependencies, use yum or dnf to install the dependencies first.
- When connecting from an older Linux or Windows system to a RHEL 9 (or Oracle/Rocky Linux 9) via SSH, the connection may fail because SHA1 has been deprecated in RHEL 9. As a workaround, the SHA1 can be allowed again using the command **# update-crypto-policies --set DEFAULT:SHA1** on the RHEL9 system.
- Independent of the Charon-SSP version: at the time of writing AWS EBS volumes of type io1, io2, gp2, gp3, and sc1 did not support the SCSI inquiry command. This command is currently required by the emulator to access physical SCSI devices. Trying to add such a device to the Charon-SSP emulator configuration as a physical disk will result in the error message: *Failed to execute SCSI command 0x12 because: Inappropriate ioctl for device.*
- Charon-SSP Agent (this and older versions): the RPM for the Charon Agent installation is missing the **udisks2** package in the dependency list. After a manual installation in cloud environments, if this package has not yet been installed on the system, the Charon Agent startup may fail with the message *ERROR STORAGE udisksctl does not exist.* **Workaround**: manually install the udisks2 package from your Linux repository.

Important Bug Fixes and Other Changes in Version 5.6.x and Version 5.5.x

Version 5.6.4

Bugs fixed:

- The HASP license information in the Charon-SSP log file shows zero instead of the correct values for allowed concurrent instances, maximum virtual CPUs, and other parameters. The bug does not affect the running of the emulator.

Version 5.6.3

Bugs fixed:

- With USB devices enabled, stopping Charon-SSP/4V may generate a core dump.

Other changes and enhancements:

- The Stromasys end-user license agreement (EULA) was updated. Charon-SSP is now distributed as a set of self-extracting archives. The EULA must be accepted as part of unpacking the archive. Please note: the new packaging was also introduced in a rebuild of version 5.6.1.
- Charon-SSP kernel modules are now updated to RHEL/Rocky Linux version 9.2.
- Better error logging when connection to VE license server fails.
- Several improvements in the remote graphics emulation handling.

Version 5.6.2

Bugs fixed:

- The **ssp-remote-display** command (part of the Charon Manager RPM) did not support password authentication (ID#1183). The command has the new parameter **-passwd** *<ssp-management-password>*. The management password is the same password that is being used for the Charon Manager login.
- The count-down hours on a HASP backup license were decremented incorrectly if there were several 4U(+) or 4V(+) product sections on the license (ID#891). Due to the error, the number of count-down hours was not decremented once per hour if several emulator instances were active at the same time, but decremented for each active emulator.
- Charon SSP used to select the first matching license it found (ID#990). Now it identifies the license best fitting to the emulator characteristics (product, number of CPUs, and memory) that has a free license slot for the emulator to run.
- Charon-SSP/4V: if a non-installation ISO without a VTOC was configured as a VDS device in the emulator, Solaris could not mount this ISO (#1182). Support for such ISOs has been added to the emulator.

Other changes and enhancements:

- The SSL certificate names changed when using non-default certificates in the communication with the VE license server (old: *ssp.crt* and *ssp.key*; new: *charon.crt* and *charon.key*). The matching change was made in the VE license server version 2.2.2.
- Charon-SSP will log an error message if the MTU in Solaris is larger than the MTU on the corresponding Linux interface. Such a configuration will cause a failure when Solaris tries to send packets larger than the Linux interface MTU.

Version 5.6.1

Bugs fixed:

- The Charon Agent and the Charon Director could crash if hit by messages generated by a UDP port scanner.
- Charon Manager: if starting first instance A and then instance B via the Charon Manager, instance B would disappear from the Manager if instance A was terminated abnormally.

Other changes and enhancements:

- The Charon-SSP log of instances created based on a Charon-SSP AL marketplace image will now show the cloud instance type, the instance ID, the instance creation time, and the region.
- The Charon Manager for Windows now requires as a minimum .NET framework 3.5 SP1 (instead of version 3.5). .NET core is not supported.
- Additional code improvements to satisfy Fortify requirements.
- Improved SSP log messages for SSL certificates.
- Improvements of the remote graphics window run by the Charon Manager for Microsoft Windows.
- The Charon Agent would unnecessarily display the message *No such connection profile* under certain conditions.

Version 5.5.5

Bugs fixed:

- Adapt installation procedure to handle changed libdit library name for SSP 4U/4V Server JIT mode (changed in 5.5.4).

Other changes and enhancements:

- Support for user configurable certificates for SSL communication between VE license server and SSP license client (starting with VE license server 2.1.3).
- Code improvements to satisfy Fortify requirements.
- Improvements of EL9 SSP emulator installation packages; additional installation dependencies added to emulator packages.

Version 5.5.4

Bugs fixed:

- Charon-SSP/4V: 128-bit TSB entry is now loaded atomically.
- Charon-SSP/4V: under some circumstances, the emulator could crash after issuing the **halt** command on Solaris due to a double free problem.
- Charon-SSP/4U/4V: the alignment check for the STD (store double) instruction was changed from a 4 to an 8-byte boundary.
- Charon-SSP failed to get a certificate on GCP Cloud after upgrading OpenSSL and libcurl.

Other changes and enhancements:

- Minor improvements in the Charon-SSP Manager.
- Rebuild dune.ko of SSP/4U+/ 4V+ for Linux 7.3, 7.5 – 7.9, 8.2 – 8.6, 9.0.
- Charon-SSP/4V: increase supported number of emulated CPUs to 128 CPUs.
- Charon-SSP/4V+/4U+: improved ASLR compatibility.

Version 5.5.3

Other changes and enhancements:

- The kernel modules for PCI passthrough (GPIB and Digi Board) and DUNE (SSP/4U+/4V+) for RHEL and Rocky Linux 8.6 were added to the installation kit.
- Added network management support for RHEL and Rocky Linux version 9.
- AWS and GCP marketplace images: the **binutils** package was missing and has now been added.
- Missing installation dependencies added to SSP packages.

Version 5.5.2

Bugs fixed:
- A VE license server restart sometimes caused SSP to log the message *Invalid license section ID*.
- Charon-SSP/4M/4U: boot problem when using the STOP-A feature.
- Attaching and detaching USB storage to/from a Charon-SSP instance did not work reliably (bug ID#1173).

Other changes and enhancements:
- Improvements in NetworkManager CPU usage on RHEL 8 and Rocky Linux 8 when many TAP interfaces are configured.
- VE countdown license security improvement.
- Charon Manager Network Settings: a physical NIC will be displayed in gray if the physical NIC is down.
- OpenSSL library upgraded to 1.1.1o (SSH key type of Ed25519 is now supported).
- Log rotation: the default number of retained copies of the log file was changed from 5 to 10.
- Several log message improvements.

Version 5.5.1

Bugs fixed:
- Charon-SSP/4V with Solaris 11: the **tar** command reported a tape I/O error (bug ID#1171).
- Charon-SSP CLI: change of the default port for connecting to the VE license server via SSP CLI doesn't work properly.
- If a VE license server served the license on a port different from the default port (8083), Charon-SSP could not connect to the license server.
- In some environments, the PuTTY window would not be closed after SSP had been stopped.

Other changes and enhancements:
- *Charon-Manager*: enabling the hyper-threading option in the CPU configuration section no longer automatically changes the power option to "Power save". The previously active option is retained. It is recommended to verify that it is suitable for a hyper-threading environment.
- On Charon-4V with Solaris 10, the interface statistics of a BGE interface would always be zero. This improvement implements an emulation of the statistics register of the BGE device.
- After booting the Baremetal installation ISO in UEFI mode, before starting the installation, users can now switch to the text console and format the system disk manually (the problem did not apply to BIOS mode).

Important Bug Fixes and Other Changes in Version 5.3.x

Version 5.3.12

Bugs fixed:
- Disks named **/dev/sd**X were not displayed correctly by the Storage Manager of the Charon Manager in the AWS cloud.
- **Baremetal distribution**: the Storage Manager of the Charon Manager could not display NVMe disks correctly.
- When the output of **lsblk –l** was empty or too large, the Charon Manager would produce Gtk-CRITICAL messages.
- The Charon Manager on Windows had problems with mounting/unmounting disks.

Other changes and enhancements:
- Log some of the commands entered via the Charon-SSP CLI.
- Support Automatic Licensing (AL) on GCP.

Version 5.3.11

Bugs fixed:
- When SSP was configured with an external console, PuTTY failed to start because the **server:fixed** font was missing on some Linux distributions such as RHEL/CentOS 8.
- Full screen mode for the graphics remote display did not work properly.
- Local terminal would become unusable after SSP exited if the type of the serial line TTYA had been set to *terminal*.

Other changes and enhancements:
- Remote graphics display is supported again for the Charon Manager on Microsoft Windows.
- Charon-SSP Baremetal is now based on Rocky Linux 8.5.
- Unix Domain Socket (UDS) interface for SSP CLI (equivalent to the emulator interactive mode commands). This interface provides access to testing and debugging commands to be used by Stromasys or if advised to do so by Stromasys. It also includes commands that allow end-users to modify certain aspects of a running emulator. Please refer to the user's guide for additional information.

Version 5.3.10

Bugs fixed:
- Local graphics emulation program (ssp-local-display) caused segmentation fault messages in *dmesg*.
- If the remote graphics emulation window (ssp-remote-display) was closed, it could not be restarted without restarting the emulator.
- Increase SSH session timeout in Charon Manager from 10 seconds to 30 seconds to accommodate long response times from remote Charon host system.
- Other changes and enhancements:
- The libssh2 library was updated and additional debug options were implemented.
- Kernel modules for RHEL/CentOS 8.5 added.

Version 5.3.9

Bugs fixed:
- Improved stability of Charon-SSP-4U+/4V+ on RHEL and CentOS 8.x.
- Charon-SSP will now terminate if it cannot create a required real-time thread.
- VisualWorks failed on Solaris 8 due to DIT instruction emulation problem.
- On some Microsoft Windows systems, the Charon Manager sent incomplete packages to the Charon Agent when the SSH tunnel was enabled.

Other changes and enhancements:
- The mkdskcmd tool was upgraded to version 1.16.
- Charon-SSP/4U/4M: remote graphics emulation support has been reinstated (Linux clients).
- Linux CPU accounting is now disabled by default in Charon-SSP Baremetal and cloud marketplace images.
- Charon Manager improvements for AL/VE cloud images (core dump target for all AL and VE images is now /charon/storage; HASP tools menu is hidden for all AL and VE cloud images).
- Improvements to verify-config and import-config tools.

Version 5.3.8

Bugs fixed:
- Improved stability of Charon-SSP-4U+/4V+ on RHEL and CentOS 8.x.

Other changes and enhancements:
- Charon-SSP-4U+ and Charon-SSP 4V+ are now supported on RHEL/CentOS 7.9, 8.2, 8.3 and 8.4 installations (only with the original kernels provided by the distributions).
- Command-line configuration utilities: several bug fixes, and the names of the utilities were changed (the names now contain "-" instead of "_").
- CPU accounting is now disabled on Charon-SSP Baremetal and Charon-SSP cloud-specific marketplace images.

Version 5.3.7

Bugs fixed:
- Possible SSP/4M (AL) crash on GCP.
- Buffer size was too small for some jumbo frame headers.
- Connection to license server was blocked too long if address was incorrect.

Other changes and enhancements:
- Support for Rocky Linux 8.4.

Version 5.3.6

Bugs fixed:
- Charon-SSP/4V: Solaris 11 with FIPS enabled would crash during boot.
- A high traffic load on TTYA triggered a memory leak in binary protection code.
- Charon-SSP did not try to connect to AutoVE server after the connection failed.

Other changes and enhancements:
- **hasp_srm_view** now checks the content of a created fingerprint. If it is not correct (e.g., SL-AdminMode section missing), an informational message about the problem and the possible cause (e.g., aksusbd not running) will be logged.
- Charon Agent: additional tools to create, import, and check an emulator configuration from the command-line.
- AutoVE license support added for Azure, GCP, and OCI.
- Charon-SSP/4V: proper support for suspend command.

Version 5.3.5

Other changes and enhancements:
- Charon-SSP/4U/4V: improved IRQ handling.

Version 5.3.4

Bugs fixed:
- Invalid VDS disk-id range could cause Charon-SSP/4V crash.
- Floating-point register-state dirty-bit handling was corrected in Charon-SSP/4U/4V.

Other changes and enhancements:
- Charon-SSP/4V: EFI boot from SCSI disk is now supported.
- Correct interaction with AutoVE license server.
- Charon-SSP/4U: support for emulated BGE adapter.
- Charon-SSP/4V: support four additional Ethernet adapters.
- Charon-SSP/4V: support EFI boot from SCSI.
- Improvements for **mtd** tool.

Version 5.3.3

Bugs fixed:
- Charon-SSP/4U server JIT tick count emulation was not working correctly which caused Solaris commands to terminate with a segmentation fault.
- SSP log output was confusing when there was a protocol version mismatch between VE license client and license server.

Other changes and enhancements:
- AWS RSA public certificates were updated for the us-gov-east-1 and us-gov-west-1 regions.
- Configuration file templates were updated.
- Improved warning log for changed license check interval.
- Initial AutoVE license support on AWS.

Version 5.3.2

Other changes and enhancements:
- Charon-SSP/4V: write-through option added for VDS devices.
- Small improvements in all product components.

Version 5.3.1

Other changes and enhancements:

- Floppy disk support on Charon-SSP/4U.
- Improved floppy emulation on Charon-SSP/4M.

Appendix: Information about Older Versions

New Features in Version 5.2.x

New features for the Charon-SSP SPARC emulators:

- Charon-SSP/4V:
    - Support for Solaris 11.4 guest systems
    - Configurable chassis identification
    - Support for VDS storage devices
    - Serial number support for physical LDom disk
- Charon-SSP/4U:
    - Support of BGE network adapter added (version 5.2.5)
- Charon Manager:
    - Improved HASP license management features
- Charon Agent:
    - New command-line utilities to create emulator configurations, import them into the Charon Agent management environment, and check them for correctness: **create-config import-config**, and **verify-config** in */opt/charon-agent/ssp-agent/bin* (introduced in version 5.2.6, renamed in version 5.2.7).
- The **mtd** utility can now convert between Unix files and vtape container files (starting with version 5.x).
- Support for new grace period parameter introduced for VE license server version 1.1.12 and higher (version 5.2.5)

New Features in Version 4.2

- The Virtual Environment (VE) licensing feature supports customer-owned and customer-operated license servers in the customer's cloud environment with license characteristics adapted to the specific requirements of a cloud environment. The implementation consists of a license server package and matching emulator packages. At time of first release, the Charon-SSP VE License Server will be supported in AWS, OCI, GCP, and Azure cloud environments. A backup license server can be used to provide service continuity (starting from version 4.1.20).
- Azure marketplace support.
- Google marketplace support.
- Support for version 8 of RHEL, CentOS, and Oracle Linux (for exact version support, please refer to the user's guide and the SPD).
- Merge of the previous Barebone and Baremetal versions to a new Baremetal version (starting from version 4.1.21). There is no longer a separate Barebone distribution ISO, but existing Barebone installations can be upgraded using RPM packages.
- Charon Manager and Director for Microsoft Windows are available again.
- Charon Manager and Director support for Ubuntu.
- Configuration option in Charon Manager to set a start-up delay for automatic Charon-SSP start at host system boot (starting from version 4.1.9).

New Features in Versions from 3.0.x to 4.0.5

- Cloud-specific product variants for AWS and OCI with cloud license server
- Sun-4v support with increased main memory support (Solaris 10: 1TB, Solaris 11: 512GB)
- USB removable device support for 4U/4V (non-cloud versions)
- Charon Manager integrated SSH tunnel between Manager and Agent
- Charon Manager automatic update via GUI
- Automatic initial management password change and command-line option to change management password
- Suspending and resuming a Charon emulator instance
- Improved SSH VPN bridge creation support in Charon Manager
- The automatic start of Charon instances with host system boot is now integrated into the Charon Agent operation if it is configured via the Charon Manager.

Important Bug Fixes and Other Changes in Version 5.2.x

Version 5.2.8

Bugs fixed:
- Problem to start an emulated system via the Charon Manager if the Charon Manager is connected to the Charon host via an SSH tunnel. This problem was introduced in version 5.2.7.

Version 5.2.7

Bugs fixed:
- Improved stability of Charon-SSP-4U+/4V+ on RHEL and CentOS 8.x.
- Charon-SSP will now terminate if it cannot create a required real-time thread.
- VisualWorks failed on Solaris 8 due to DIT instruction emulation problem.
- On some Microsoft Windows systems, the Charon Manager sent incomplete packages to the Charon Agent when the SSH tunnel was enabled.

Other changes and enhancements:
- Charon-SSP-4U+ and Charon-SSP 4V+ are now supported on RHEL/CentOS 7.9, 8.2, 8.3 and 8.4 installations (only with the original kernels provided by the distributions).
- Command-line configuration utilities: several bug fixes, and the names of the utilities were changed (the names now contain "-" instead of "_").
- CPU accounting is now disabled on Charon-SSP Baremetal and Charon-SSP cloud-specific marketplace images.

Version 5.2.6

Bugs fixed:
- Possible SSP/4M (AL) crash on GCP.
- Buffer size was too small for some jumbo frame headers.

Other changes and enhancements:
- **hasp_srm_view** now checks the content of a created fingerprint. If it is not correct (e.g., SL-AdminMode section missing), an informational message about the problem and the possible cause (e.g., aksusbd not running) will be logged.
- Charon Agent: additional tools to create, import, and check an emulator configuration from the command-line.

Version 5.2.5

Bugs fixed:
- Charon-SSP/4V: Solaris 11 with FIPS enabled would crash during boot.
- A high traffic load on TTYA triggered a memory leak in binary protection code.

Other changes and enhancements:
- BGE Ethernet adapter support for Charon-SSP/4U.
- New command line tool (**import_vm**) for importing emulator configurations into the Charon Agent management environment.
- Support for the VE license grace period introduced in VE license server 1.1.12.
- Improved mtd tool with more consistent help output and better handling of data that is not aligned on a 512-byte boundary (data is no longer truncated when it is converted to a vtape).

Version 5.2.4

Bugs fixed:
- Invalid VDS disk-id range could cause Charon-SSP/4V crash.
- Floating-point register-state dirty-bit handling was corrected in Charon-SSP/4U/4V.

Other changes and enhancements:
- Charon-SSP/4V: EFI boot from SCSI disk is now supported.

Version 5.2.3

Bugs fixed:
- Floating-point status emulation problem in SSP/4V Client JIT.

Version 5.2.2

Bugs fixed:
- Charon-SSP/4U server JIT tick count emulation was not working correctly which caused Solaris commands to terminate with a segmentation fault.
- SSP log output was confusing when there was a protocol version mismatch between VE license client and license server.

Other changes and enhancements:
- AWS RSA public certificates were updated for the us-gov-east-1 and us-gov-west-1 regions.
- Configuration file templates were updated.

Version 5.2.1

Bugs fixed:
- Possible Solaris crash when unplugging a USB disk while files are copied to/from the device.

Important Bug Fixes and Other Changes in Version 4.3.x and 5.1.1

Please note: this release notes document for 5.2.x do not show the changes made in version 5.0.x because version 5.2.x is not a continuation of version 5.0.x but a parallel release.

Version 5.1.1

Bugs fixed:
- Charon-SSP/4M: if TTYA was configured for type *terminal*, the console OBP prompt did not appear and the console was unusable.
- Charon-SSP segmentation fault when a large file was written to a virtual tape via the **cat** command.
- Possible Solaris crash when attaching or detaching a USB device.

Other changes and enhancements:
- Improvements to the **mtd** tool (see new features).

Version 4.3.7

Bugs fixed:
- Charon-SSP sometimes encountered a segmentation fault on exit.

Other changes and enhancements:
- There is a new RPM package (charon-ssp-oss-license) that contains the open-source software license agreements in text form.
- The remote graphic display of the graphic card emulation has been temporarily removed.
- General improvements regarding the host system library dependencies of Charon-SSP.

Version 4.3.6

Bugs fixed:

- The ZFS root pool name was restricted to **rpool**. Other names caused a boot failure. This restriction was removed.
- Addressing problem for vdisk files with sizes of 1TB or larger.
- Charon-SSP/4V crash if no network card is configured in non-global zone.
- Resources were not properly released when Charon-SSP exited from the OK prompt.

Other changes and enhancements:

- Name change: LDOM storage devices are now called VDS storage devices.
- Charon Manager: improved layout of the license and chassis settings.
- Charon Manager: improved HASP license handling.
- The mtd tool was updated to support the conversion between tar files and vtape files.
- When a ZFS vdisk is copied onto an empty XFS filesystem, there are problems with mounting the XFS filesystem afterwards. Depending on the command used, no mountable file system is detected, or more than one filesystem type is detected. This is caused by limitations of the Linux operating system. **For XFS filesystems created by the Charon Manager, this problem has been fixed**.
  For XFS filesystems created manually, one of the following workarounds can be used:
    - Explicitly specify the type when mounting the XFS filesystem (**mount -t xfs**), or
    - Copy a small file (min. 1MB) to the XFS filesystem **before** copying the ZFS vdisk.
- VE license server: the *licensed* service is now stopped cleanly before exiting when an exception is detected. This avoids repeated restarts.

Version 4.3.5

Bugs fixed:

- Without continuous network activity on the host NIC assigned to an emulated BGE vNIC in SSP, the BGE emulation could get into a state where it would block all guest system traffic until Charon-SSP restart. This problem affected mostly cloud environments because in on-premises LAN environments there is usually enough multicast and broadcast traffic visible to the NIC to prevent this problem. Emulated HME and QFE vNICs are not affected.

Version 4.3.4

Bugs fixed:

- After updating an existing VE license with a license of a newer creation date, Charon-SSP tracked the wrong vClock value due to a communication problem between client and server. This caused a license failure before the defined expiration date. The complete solution of the problem requires an upgrade to Charon-SSP VE 4.3.4 and VE License Server version 1.1.4.
- Charon-SSP sometimes chose the wrong product section if one VE license contained several product sections.
- After launching a new Charon-SSP AWS instance based on an AWS marketplace image—if the instance was configured for Metadata version 2 only—it took about 8 minutes until the user could connect to the instance. This problem was due to a mismatch of the configured metadata version and the installed AWS cloud tools.

Other changes and enhancements:

- Improved Charon-SSP license-specific log messages.
- VE license server web page shows which product section the emulator selected.
- Charon-SSP/4V: LDOM storage device can now be identified by serial number

Version 4.3.3

Bugs fixed:
- Several fixes to fully support Solaris 11. 4..
- In cloud environments, Charon-SSP could not obtain the correct disk path when the disk path was configured with the disk serial number.

Other changes and enhancements:
- Improved HASP license logging for Charon-SSP.
- Emulated LDOM disks can now be identified by their serial number.

Version 4.3.2

Bugs fixed:
- Correct display in Host Information window of Charon Manager even if *lspci* is not installed.
- Default gateway and DNS server can now be cleared via the Charon Manager in RHEL/CentOS 8.x.

Other changes and enhancements:
- Upgrade supported Instance Metadata Service (IMDS) from version 1 to version 2 on Oracle cloud for Charon-SSP VE marketplace image.
- VE license server: enable different passphrases for different product sections on one license.
- Initial support for Solaris 11.4 guest system.
- Initial support for LDOM disks (for disks > 2 TB only EFI is supported).
- Support added for configurable chassis information.

Version 4.3.1

Bugs fixed:
- When serial console is configured as type terminal, it no longer listens to port 20000.

Other changes and enhancements:
- Initial support for passphrase authentication between license client and server.

Important Bug Fixes and Other Changes in Versions 4.2.x and 4.1.x

Version 4.2.6

Bugs fixed:
- Without continuous network activity on the host NIC assigned to an emulated BGE vNIC in SSP, the BGE emulation could get into a state where it would block all guest system traffic until Charon-SSP restart. This problem affected mostly cloud environments because in on-premises LAN environments there is usually enough multicast and broadcast network activity visible to the NIC to prevent this problem. Emulated HME and QFE vNICs are not affected.

Version 4.2.5

Bugs fixed:
- After updating an existing VE license with a license of a newer creation date, Charon-SSP tracked the wrong vClock value due to a communication problem between client and server. This caused a license failure before the defined expiration date. The complete solution of the problem requires an upgrade to Charon-SSP VE 4.2.5 and VE License Server version 1.0.35.
- Charon-SSP sometimes chose the wrong product section if one VE license contained several product sections.
- After launching a new Charon-SSP AWS instance based on an AWS marketplace image—if the instance was configured for Metadata version 2 only—it took about 8 minutes until the user could connect to the instance. This problem was due to a mismatch of the configured metadata version and the installed AWS cloud tools.

Other changes and enhancements:
- Improved Charon-SSP license-specific log messages.
- VE license server web page shows which product section the emulator selected.
- Sentinel runtime version 7.103 (package aksusbd-7.103) is now certified for all Linux versions supported by Charon-SSP 4.2.5. Hence the Sentinel runtime version 7.63 (aksusbd-7.63) has been removed from the Charon-SSP distribution.
- The emulator packages for RHEL/CentOS 7 were renamed to make the naming consistent with the naming of the packages for RHEL/CentOS 8.

Version 4.2.4

Bugs fixed:
- In cloud environments, Charon-SSP could not obtain the correct disk path when the disk path was configured with the disk serial number.

Version 4.2.3

Bugs fixed:
- VE License Server version 1.0.34: the **v2c** command now correctly accepts the long version of the command-line options.
- Improved network gateway setup in Charon Manager on both RHEL/CentOS 7 and 8.

Version 4.2.2

Bugs fixed:
- Correct display in Host Information window of Charon Manager even if *lspci* is not installed.
- Default gateway and DNS server can now be cleared via the Charon Manager in RHEL/CentOS 8.x.

Other changes and enhancements:
- Upgrade supported Instance Metadata Service (IMDS) from version 1 to version 2 on Oracle cloud for Charon-SSP VE marketplace image, associated Charon-SSP VE versions and VE license Server 1.0.33.

Version 4.2.1

Bugs fixed:
- Some typos were corrected in Charon Manager.
- VE License Server version 1.0.32: improved handling when the check of the required IAM role action (*ListUsers*) returns an empty list.

Other changes and enhancements:
- Configuration templates updated with new SCSI device path configuration syntax.
- Improved cloud server response code checking.

Version 4.1.32

Bugs fixed:
- Solaris failed to boot in rare cases if installed in a ZFS filesystem on a disk that previously contained a UFS filesystem.
- The cause of the Charon-SSP Baremetal error "Not connected to the PulseAudio server" has been repaired.

Other changes and enhancements:
- The Charon Agent now releases disk space correctly if the creation of a vdisk via the Charon Manager is aborted.
- Offload parameter settings (related to GRO) for an Ethernet interface that were made on the Linux level were not correctly interpreted when the virtio_net driver was used – causing a significant impact on network performance (in particular for GCP and OCI cloud instances). This enhancement solves the problem.
- VE License Server version 1.0.29: preparation for future IBM cloud support.

Version 4.1.31

Bugs fixed:
- Corrected USB attachment problems that occurred when deleting/removing emulator instances via the Charon Manager.
- Charon-SSP serial console freeze on GCP instances if serial port type was set to *terminal*.
- The VE License Server version 1.0.28:
    - Adapted to the different public certificates introduced by Amazon for different regions on AWS Cloud.
    - IAM API checking problem on AWS Cloud fixed.

Other changes and enhancements:
- VE License Server (version 1.0.28) now logs client connections.

Version 4.1.30

Bugs fixed:
- Cause of "Error: -- - no such connection profile" messages in journalctl.
- USB attach problem.
- Set the default log output destination to "File" for Charon-SSP/4V(+) when instance is created via the Charon Manager.
- External PuTTY console window did not open after Charon-SSP/4M was recovered from snapshot.

Other changes and enhancements:
- A valid $DISPLAY variable is now correctly detected when starting an external PuTTY window.
- Use different public certificates for different regions on AWS Cloud.

Version 4.1.29

Bugs fixed:
- On CentOS/RHEL 8, the emulator did not turn off GRO on Ethernet interface which impacted network performance.
- SSP 4U(+)/4V(+) now correctly translate the SUBCCC instruction.

Other changes and enhancements:
- Improved clean termination of external PuTTY window.
- Cosmetic punctuation improvement of Charon-SSP output.
- Output of the charon-password script now shows all users for which the password is changed.
- VNC menu now hidden for Barebone (relevant if a Barebone system is upgraded to this version using RPM packages).
- Root partition size for new Baremetal increased to a maximum of 15 GiB.
- Removed duplicate Charon Agent messages in journalctl when starting emulator via the Charon Manager.

Version 4.1.28

Bugs fixed:
- Charon-SSP/4V translation of LDDA instruction corrected.

Version 4.1.27

Bugs fixed:
- Charon Manager terminated unexpectedly if last line in the emulator log was incomplete.

Other changes and enhancements:
- Improved network configuration support for CentOS/RHEL/Oracle Linux version 8.x.
- Added Charon-SSP/4U+ and Charon-SSP/4V+ support for CentOS/RHEL/Oracle Linux version 8.2.

Version 4.1.26

Bugs fixed:
- Log files on Charon-SSP/4U+/4V+ were not always fully written to file when the emulator instance was terminated.
- Using **cat** to display the content of a large file on the Charon-SSP console created garbled output.
- Charon Agent on Charon-SSP Baremetal could terminate unexpectedly due to unclosed pipes.

Other changes and enhancements:
- In addition to regular warnings about license expiration during normal operation, a warning message is now written to the log file when the emulator starts if the VE license is due to expire in 3 days or less.
- Charon Manager will now stop VNC reliably.

Version 4.1.25

Bugs fixed:
- Incorrect DIT translation of one particular instruction.

Other changes and enhancements:
- Screen Lock feature for Charon-SSP Baremetal.

Version 4.1.24

Bugs fixed:
- Boot failure when booting a Solaris guest system from a ZFS VDISK.

Other changes and enhancements:
- Charon-SSP Baremetal File Manager sets ownership of created files to user "charon".
- VE license server and license generation improvements.

Version 4.1.23

Bugs fixed:
- Charon Manager pop-up message was missing when console connection was disconnected by another session.
- Charon Agent terminated abnormally when clicking on the "Virtual Machine" menu in Charon Manager while a running emulator instance was selected.

Other changes and enhancements:
- The product name changed from BYOL license server and emulator to Virtual Environment (VE) license server and emulator for products supporting the new Stromasys product licensing.
- Improvements of Baremetal VNC, Network, and Desktop operation.
- Improved Google Cloud support.
- Optimization for Charon-SSP Server JIT to prevent performance degradation.
- VE license ID is now persistent after first license import.

Version 4.1.22

Other changes and enhancements:
- Google Cloud Platform support.
- New Charon-SSP Baremetal; merged with Charon-SSP Barebone; new user interface.

Version 4.1.21

Other changes and enhancements:
- Charon-SSP Baremetal: upgrade base image to CentOS 7.8.
- Charon-SSP Barebone and Baremetal merged into one new Baremetal version.
- Grace period for VE licenses changed from 24 hours to 2 hours.

Version 4.1.20

Bugs fixed:
- Charon Agent error messages during Agent start.

Other changes and enhancements:
- VE license specification adaption in License Server version 1.0.24.
- Charon-SSP Manager: dependency on libssh2 package removed.
- Charon Manager network management improvements for CentOS/RHEL/Oracle Linux 8.
- Improved support for primary and backup VE license server.

Version 4.1.19

Bugs fixed:
- Charon-SSP for AWS marketplace: problems with reading instance metadata.
- Keyboard configuration made during Barebone installation reset to US keyboard after login.

Other changes and enhancements:
- Charon Manager network management support for CentOS/RHEL/Oracle Linux 8.
- Support for switching between primary and backup VE license server.

Version 4.1.18

Bugs fixed:
- Charon-SSP AL for Azure marketplace: additional storage devices mounted via the Storage Manager were not automatically remounted when the cloud instance was stopped and restarted.

Other changes and enhancements:
- The cloud-specific versions of Charon-SSP can now run inside a docker container.
- Implementation of cloud VE backup license server.

Version 4.1.17

Bugs fixed:
- Failure when starting multiple Charon-SSP instances in Charon-SSP AL cloud hosts.

Other changes and enhancements:
- Improvements for cloud Automatic Licensing operation

Version 4.1.16

Bugs fixed:
- Charon Manager on Windows display problems
- License problem affecting cloud license operation

Version 4.1.15

Bugs fixed:
- Charon Manager could not manage newly attached disks in Charon-SSP AL for Azure.
- Charon Manager title bar correction for VE-capable images in Oracle cloud
- Charon Manager on Windows: display problems in case of network disconnects

Other changes and enhancements:
- Charon Manager Tools menu consistency improvements
- CentOS/RHEL 8.1 support prerequisites
- VE License Server enhancements for VMware ESXi/VCenter support
- VE emulator packages renamed to charon-ssp-*{architecture}*-*{version}*.cloud.byol-x86_64.rpm (this was changed again in 4.1.23 when the product name BYOL was changed to VE).

Version 4.1.14

RPM packages were renamed to better indicate their purpose, that is, whether they are intended for a regular installation, an installation on Red Hat/CentOS/Oracle Linux version 8, an installation on a cloud marketplace or for use with a VE (former BYOL) license server.

Version 4.1.13

Bugs fixed:
- Charon Manager display problems on Azure
- PuTTY connection problem in Charon Manager for Microsoft Windows

Other changes and enhancements:
- Charon Manager detects remote host disconnects faster and provides error message
- Charon Manager allows initial password configuration without SSH tunnel when connected to localhost (marketplace images)
- Support of AWS IDMS V2 (Instance Metadata Service) in marketplace image
- VE license server improvement
- RPM package installation of Charon-SSP Manager for Linux now checks if dependencies are installed

Versions 4.1.1 to 4.1.12

Bugs fixed:
- USB subsystem dependency caused problems in cloud environments and was removed
- Fingerprint problems in cloud environment
- Licensing improvement related to system time
- Restarting or stopping the Charon Agent no longer stops the running SSP emulators started via the Charon Manager or configured for automatic start via the Charon Manager
- Protocol compatibility improvements between VE license server and Charon-SSP emulator.
- VE license server incorrect log entry corrected
- VE license server problems related to timestamps and timing
- Log display problem in Charon-SSP Manager
- SSH connection problem with Charon Manager for Microsoft Windows
- Charon-SSP Manager for Linux permission problems related to virtual storage
- SFTP tool and Time & Date tool were not displayed on Oracle Cloud
- MD5 checksum error when installing Charon Manager on Microsoft Windows 7
- Other active SSP instances could be impacted when one SSP instance was terminated
- Cloud VE emulator image crash
- Network problems in 4U-JIT and 4U-PLUS-JIT when USB was enabled
- USB device which was attached to a now deleted VM cannot be attached to any other VM

Other changes and enhancements:
- Microsoft Azure support added
- Unnecessary library dependencies in HASP license tools removed
- Log messages in cloud environments improved
- Faster creation of large virtual disks using Charon Manager tools
- VE license tools improved; C2V can now be run after V2C has been installed
- SCSI timeout handling improved
- Automatic software update for Charon-SSP Manager on Microsoft Windows
- Improvements for Manager/Agent to support 100 instances running concurrently
- Charon Manager on Windows can connect to emulator console across SSH tunnel

Important Bug Fixes and Other Changes in Versions 4.0.x

Version 4.0.5

Bugs fixed:
- When running a regular (non-marketplace) Charon-SSP installation on a cloud instance, the Charon Agent would fail when a user tried to open the **Virtual Machine** menu in the Charon Manager while an active emulated system was selected, causing the Charon Manager to disconnect from the Agent. This was caused by a dependency on the USB subsystem which is not enabled on many Linux cloud images.
- The hasp_srm_view utility could fail due to missing libraries, and GUI license tools could not manage licenses. Reason: the hasp_srm_view command erroneously required unnecessary packages that were not included in the dependency checks of the charon-agent-ssp RPM package.
  Workaround for versions before 4.0.5: identify the package providing the missing library (e.g., **# yum provides libSDL-1.2***) and install the package (e.g., **# yum install SDL**).
- Instances created from the Charon-SSP AL for AWS image experienced intermittent license verification failures after instance restart. Existing customers with versions 4.0.x prior to 4.0.5 who encounter the problem must create a new instance with the new version and then transfer their Charon emulator data to the new instance (ideally, any container files, e.g., vdisks, used by the emulator should be stored on a separate storage volume that can be detached from the old instance and attached to the new one).

Other changes and enhancements:
- Version 7.7 of the 64-bit versions of RHEL, CentOS, and Oracle Linux is now also supported as Charon-SSP host operating system. For details, please refer to the user's guide of your product.

Version 4.0.4

Bugs fixed:
- In versions 4.0.x before version 4.0.4 stopping the Charon Agent service stops all active Charon instances that were started via the Charon Manager or configured via the Charon Manager for automatic start at host system boot. Workaround for older 4.0.x versions: add the line **KillMode=process** to the **[Service]** section of */etc/systemd/system/ssp-agentd.service*. Then run the command **systemctl daemon-reload**.
- The Charon Agent could start before the licensing system was ready. This caused the automatic startup of Charon instances to fail. Workaround for older 4.0.x versions: add the lines
  After=network.target aksusbd.service
  Wants=network.target
  to the **[Unit]** section of */etc/systemd/system/ssp-agentd.service.*

Other changes and enhancements:
- When using the Charon Manager to configure a Charon instance for startup at host system boot, you can now configure a delay between 0 and 300 seconds.

Version 4.0.3

Bugs fixed:
- Charon-SSP AMI security improvements

Version 4.0.2

Bugs fixed:
- Incorrect data in Manager/Agent vm.dat file
- Termination of one SSP instance may affect other active SSP instances

Other changes and enhancements:
- Support running a maximum of 100 Charon-SSP emulator instances on the same machine at the same time

Version 4.0.1

Bugs fixed:
- Network problem in 4U-JIT and 4U-PLUS-JIT when USB is enabled
- USB device which was attached to a now deleted VM cannot be attached to any other VM

Important Bug Fixes and Other Changes from Version 3.1.21 to Version 3.1.28

Bugs fixed:
- Solaris booting issue on SSP/4V-PLUS-JIT
- The installation of Solaris 11-2 fails with physical disk on SSP/4V
- There are error logs when installing Solaris 10 u6 on SSP/4V
- Network booting/installation fails with BGE adapter on SSP/4V
- "Time of Day clock error" will be printed by Solaris when recovering from snapshot
- "Restart"/"Shutdown" buttons of Baremetal display wrong status sometimes
- Removable devices cannot be attached/detached with Windows Manager
- Renaming a VM may crash Charon Manager
- Problem in charon-passwd tool
- SSP reports errors when restoring from snapshot
- ZFS boot bug
- Solaris boot problem with 128GB memory
- Improved SCSI shutdown procedure to avoid data loss during Solaris reboot or shutdown

Other changes and enhancements:
- Terminate SSP/4V if detecting configuration issue with TTYA-TTYP, Manager will also mark conflicting ports in red on summary page
- Changed the title of login window of Charon Manager
- Load GPIB driver automatically in Baremetal
- Solved path dependency issue in Charon-SSP executables
- Sign kernel module to support UEFI boot
- Added access control in Charon Manager for vconsole device in SSP/4V
- Speed up memory allocation for huge memory configuration in SPARC

Other Important Bug Fixes and Changes in Earlier 3.1.x Versions

Bugs fixed:
- Fixed crash problem when using port scanner to scan console port

Other changes:
- Increased license expiration time to 24 hours for cloud-specific products
- Barebone: disabled the service of NetworkManager
- Baremetal: changed the user role from charon/storage to charon/sshuser, 'charon' user can only be used to access SFTP sever and create SSH connection between Manager and Agent, 'sshuser' user can only be used to run simple command through SSH (e.g., ip and iptables).