



### DESCRIPTION

Charon-SSP is a member of Charon cross-platform hardware virtualization product family that creates a virtual replica of sun4m, sun4u or sun4v SPARC family members on a standard x86-64 computer system running Linux on top of physical hardware, or a Hypervisor. Charon-SSP lets users of end-of-life SPARC servers/stations continue to use their applications without any changes while lowering operational costs and energy consumption. Multiple instances can run on a single x86-64 standard host or existing virtualization infrastructure providing the benefits of consolidation as well as easy management and maintenance of these legacy systems.

Charon-SSP provides the following virtualized SPARC models:

- *Charon-SSP/4M* based on SPARC-V8 32-Bit processor specification, MBUS for processor/memory interconnection and SBUS for IO peripherals.
- *Charon-SSP/4U* based on SPARC-V9 64-bit processor specification, UPA bus for processor/memory interconnection and PCI bus for IO peripherals.
- *Charon-SSP/4U+* same as /4U, uses Intel VT-x / EPT to offload SPARC MMU operations to hardware. Must run on a bare-metal Intel host.
- *Charon-SSP/4V* based on SPARC-V9 64-bit processor specification and sun4v hypervisor architecture. Each instance supports one LDom.
- *Charon-SSP/4V+* same as /4V, uses Intel VT-x / EPT to offload SPARC MMU operations to hardware. Must run on a bare-metal Intel host.

### NETWORK

Charon-SSP maps one host physical Ethernet adapter for each emulated NIC. Alternatively, it can bridge a physical Ethernet adapter with a number of tap devices to allow communication between Charon-SSP instances and the Linux host while multiplexing traffic across the physical Ethernet adapter for external communication. All Solaris network protocols are supported transparently as well as Solaris IP multipathing and Solaris VNICs. Network booting and JumpStart installation are supported for Solaris 2.4 to Solaris 10.

### GRAPHIC ENVIRONMENT

Solaris CDE, OpenWindow desktop and Java Desktop graphics environment are supported on Charon-SSP using a nested X11 server running on the host. Native graphics (Charon-SSP/4M/4U(+)) only are implemented via emulated CGTHREE, CGSIX and RageXL framebuffer with resolutions ranging from 800x600 to 1600x1280 pixels. Dual monitor configurations are supported on these framebuffers for larger virtual desktops. Remote graphics client supported on Linux.

### AUDIO

DBRI2 + CS4215 mmcodec virtualized components provide 8-bit/16-bit mono/stereo sound in u-Law, a-Law, linear formats. Remote audio supported on Linux / PulseAudio server. Available on Charon-SSP/4M/4U(+)) only.

### STORAGE

Charon-SSP provides virtualization for SCSI controllers and peripherals as follows:

- Virtual disks and tapes as container files residing on host file systems
- Raw partitions
- Physical disks / tapes.
- iSCSI targets

### POWER SAVING

Charon-SSP provides a feature to reduce CPU power consumption on the Intel host when the Solaris OS is idle. This feature can be enabled using the following options:

- *Balanced*: uses Intel power saving instructions to disable pipeline and reduce energy consumption.
- *Power save*: this option uses CPU thread suspension on Solaris IDLE condition to reduce host CPU usage.

### MANAGEMENT

Charon Manager for Charon-SSP is a graphical user interface for creating, configuring and starting instances of virtual SPARC systems. It also provides access to the virtual consoles and log files as well as, for example, the following tools:

- Create Virtual Disk/Tape/Floppy
- License viewer/update
- Host information
- Virtual network create/delete
- X11 server start/stop
- Console configuration



## PERFORMANCE

Charon-SSP 4.0 extends the 2-level dynamic instruction translation engine (Client JIT and Server JIT) from Charon-SSP/4U to /4V. Charon-SSP/4V(+) delivers the same level of performance as /4U(+). The table shows a virtual SPARC CPU test run under Solaris 10 on Charon-SSP/4U/4V(+) with Server JIT configuration, on a HP Proliant DL380 Gen 10 @3.0GHz Intel CPU.

		SSP/4U	SSP/4U+	SSP/4V	SSP/4V+
<b>CPU2000</b>	INT	1012	1491		
	FP	1238	1951		
<b>CPU2006</b>	INT			191	265
	FP			160	217

## DISTRIBUTION

Charon-SSP is distributed as:

- Baremetal: installation ISO image that contains the host operating system, Charon-SSP, and additional packages plus the Baremetal GUI. There is no user access to the host OS.
- Barebone version that contains a customized Linux version and the Charon-SSP software.
- RPM packages for Oracle Linux, Red Hat, CentOS that are available upon request.

## VIRTUALIZED HARDWARE

	Charon-SSP/4M (32 bit)	Charon-SSP/4U(+) (64 bit)	Charon-SSP/4V(+)
<b>Number of SPARC CPUs (Type, Min/Max)</b>	SPARC V8 1/4	SPARC V9 1/24	SPARC V9 1/64
<b>Emulated RAM</b>	64MB to 512MB	1GB to 128GB	1GB to 1024GB
<b>Bus type: Slots</b>	SBUS: 12 slots	PCI: 16 slots	PCI (slots n/a)
<b>SCSI controllers</b>	1	2	2
<b>Maximum SCSI devices</b>	7	30	30
<b>Disks supported</b>	physical/partition/vdisk	physical/partition/vdisk	physical/partition/vdisk
<b>CD/DVD support <sup>1)</sup></b>	physical/ISO image	physical/ISO image	physical/ISO image
<b>Tape support <sup>1)</sup></b>	physical/vtape	physical/vtape	physical/vtape
<b>Ethernet Controllers</b>	2	19	4
<b>Serial Ports <sup>1)</sup></b>	10	34	17 (incl. vconsole)
<b>Graphics Support</b>	CGTHREE, CGSIX, X11 nested server	RAGE XL, CGSIX, X11 nested server	-
<b>OS support</b>	SunOS 4.1.3/4.1.4 Solaris 2.3 to Solaris 9	Solaris 2.5.1 to Solaris 10	Solaris 10 to Solaris 11 <sup>2)</sup>
<b>Audio</b>	DBRIe+CS4215 codec	DBRIe+CS4215 codec	-
<b>PCI pass-through <sup>1)</sup></b>	-	NI IEEE488 GPIB Digi Serial Adapter	-
<b>USB ports <sup>1)</sup></b>	-	1	1

<sup>1)</sup> **Restrictions for AWS and OCI Marketplace images:** no physical CD-ROM, no physical tape, only 2 built-in serial ports, no PCI pass-through support, no USB support

<sup>2)</sup> Please refer to the Charon-SSP user's guide for more detail.

## HOST REQUIREMENTS

Host	Description
<b>Operating system</b>	Oracle Linux, RHEL 7.x; CentOS 7.x (for Charon-SSP BareMetal and Barebone distributions no preinstalled OS is required).
<b>Number of Cores</b>	At least 2 (3 for Server JIT) + number of emulated processors per virtual SPARC VM
<b>Memory size</b>	At least 4GB (8GB for Server JIT) + amount of emulated memory per virtual SPARC VM.
<b>Recommended Hardware</b>	Intel Server based on Haswell v3 processors or later, or Desktop Core I7 (CPU frequency at least 3.0GHz).
<b>Supported hypervisor</b>	VMware ESXi 5.x and 6.x, Xen, Microsoft Hyper-V, Linux KVM

## CHARON-SSP PRODUCTS AND PART NUMBERS

This section is not applicable to the AWS and OCI Marketplace images. They are licensed based on the selected shape / instance type.

Charon-SSP product	Emulated CPU type	CPU / RAM limitations	Perpetual / Evaluation license <sup>2)</sup>	GOLD / PLATINUM annual support <sup>3)</sup>	GOLD / PLATINUM annual subscription <sup>2)</sup>	Backup / Spare license <sup>2)</sup>
<b>Charon-SSP/4M</b>	V8	4 / 512MB	CHSSP-4M-IP / CHSSP-4M-IV	CHSSP-4M-IU / CHSSP-4M-IT	CHSSP-4M-ICG / CHSSP-4M-ICP	CHSSP-4M-IK / CHSSP-4M-IS
<b>Charon-SSP/4U LL</b>	V9	1 / 1GB	CHSSP-4ULL-IP / CHSSP-4ULL-IV	CHSSP-4ULL-IU / CHSSP-4ULL-IT	CHSSP-4ULL-ICG / CHSSP-4ULL-ICP	CHSSP-4ULL-IK / CHSSP-4ULL-IS
<b>Charon-SSP/4U ML</b>	V9	12 / 64GB	CHSSP-4UML-IP / CHSSP-4UML-IV	CHSSP-4UML-IU / CHSSP-4UML-IT	CHSSP-4UML-ICG / CHSSP-4UML-ICP	CHSSP-4UML-IK / CHSSP-4UML-IS
<b>Charon-SSP/4U HL</b>	V9	24 / 128GB	CHSSP-4UHL-IP / CHSSP-4UHL-IV	CHSSP-4UHL-IU / CHSSP-4UHL-IT	CHSSP-4UHL-ICG / CHSSP-4UHL-ICP	CHSSP-4UHL-IK / CHSSP-4UHL-IS
<b>Charon-SSP/4U+ LL</b>	V9 (+) <sup>1)</sup>	1 / 1GB	CHSSP-4U+LL-IP / CHSSP-4U+LL-IV	CHSSP-4U+LL-IU / CHSSP-4U+LL-IT	CHSSP-4U+LL-ICG / CHSSP-4U+LL-ICP	CHSSP-4U+LL-IK / CHSSP-4U+LL-IS
<b>Charon-SSP/4U+ ML</b>	V9 (+) <sup>1)</sup>	12 / 64GB	CHSSP-4U+ML-IP / CHSSP-4U+ML-IV	CHSSP-4U+ML-IU / CHSSP-4U+ML-IT	CHSSP-4U+ML-ICG / CHSSP-4U+ML-ICP	CHSSP-4U+ML-IK / CHSSP-4U+ML-IS
<b>Charon-SSP/4U+ HL</b>	V9 (+) <sup>1)</sup>	24 / 128GB	CHSSP-4U+HL-IP / CHSSP-4U+HL-IV	CHSSP-4U+HL-IU / CHSSP-4U+HL-IT	CHSSP-4U+HL-ICG / CHSSP-4U+HL-ICP	CHSSP-4U+HL-IK / CHSSP-4U+HL-IS
<b>Charon-SSP/4V LL</b>	V9	4 / 128GB	CHSSP-4VLL-IP / CHSSP-4VLL-IV	CHSSP-4VLL-IU / CHSSP-4VLL-IT	CHSSP-4VLL-ICG / CHSSP-4VLL-ICP	CHSSP-4VLL-IK / CHSSP-4VLL-IS
<b>Charon-SSP/4V ML</b>	V9	32 / 1TB	CHSSP-4VML-IP / CHSSP-4VML-IV	CHSSP-4VML-IU / CHSSP-4VML-IT	CHSSP-4VML-ICG / CHSSP-4VML-ICP	CHSSP-4VML-IK / CHSSP-4VML-IS
<b>Charon-SSP/4V HL</b>	V9	64 / 1TB	CHSSP-4VHL-IP / CHSSP-4VHL-IV	CHSSP-4VHL-IU / CHSSP-4VHL-IT	CHSSP-4VHL-ICG / CHSSP-4VHL-ICP	CHSSP-4VHL-IK / CHSSP-4VHL-IS
<b>Charon-SSP/4V+ LL</b>	V9 (+) <sup>1)</sup>	4 / 128GB	CHSSP-4V+LL-IP / CHSSP-4V+LL-IV	CHSSP-4V+LL-IU / CHSSP-4V+LL-IT	CHSSP-4V+LL-ICG / CHSSP-4V+LL-ICP	CHSSP-4V+LL-IK / CHSSP-4V+LL-IS
<b>Charon-SSP/4V+ ML</b>	V9 (+) <sup>1)</sup>	32 / 1TB	CHSSP-4V+ML-IP / CHSSP-4V+ML-IV	CHSSP-4V+ML-IU / CHSSP-4V+ML-IT	CHSSP-4V+ML-ICG / CHSSP-4V+ML-ICP	CHSSP-4V+ML-IK / CHSSP-4V+ML-IS
<b>Charon-SSP/4V+ HL</b>	V9 (+) <sup>1)</sup>	64 / 1TB	CHSSP-4V+HL-IP / CHSSP-4V+HL-IV	CHSSP-4V+HL-IU / CHSSP-4V+HL-IT	CHSSP-4V+HL-ICG / CHSSP-4V+HL-ICP	CHSSP-4V+HL-IK / CHSSP-4V+HL-IS

<sup>1)</sup> Accelerated by offloading part of the emulated CPU workload onto hosting hardware  
<sup>2)</sup> Please contact Stromasys Sales team for Charon licensing details  
<sup>3)</sup> Please refer to Charon Service Descriptions for GOLD and PLATINUM terms, conditions, and SLAs