

SOFTWARE PRODUCT DESCRIPTION

CHARON-AXP/DS/ES/GS for Linux 64 bit

Product version 4.6

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DESCRIPTION

CHARON-AXP/DS/ES/GS are members of the CHARON cross-platform hardware virtualization product family. CHARON-AXP creates the virtual replica of the original AlphaServer hardware inside a standard 64 bit x86 compatible computer system. It will run the original Alpha binary code, including operating systems like OpenVMS and Tru64 UNIX, their layered products, and applications.

CHARON-AXP/DS/ES/GS for Linux 64 bit is designed to replace the following AlphaServer computer systems by its virtual equivalent running on a Linux host platform:

CHARON-AXP product	Hardware to replace
CHARON-AXP/DS10	AlphaServer DS10, DS15
CHARON-AXP/DS20	AlphaServer DS20, DS25
CHARON-AXP/ES40	AlphaServer ES40, ES45, ES47
CHARON-AXP/GS80	AlphaServer GS80, GS60, ES80
CHARON-AXP/GS160	AlphaServer GS140, GS160
CHARON-AXP/GS320	AlphaServer GS320, GS1280

Most of the original AlphaServer hardware is virtualized, allowing the **OpenVMS** or **Tru64** operating system and all software that is running in that environment to remain working as always. Very few changes are required to the original software (operating system, layered products, or applications). The Tru64 kernel might require a rebuild.

NETWORK

CHARON-AXP virtualizes the 10/100 Mbps Ethernet controllers from the DEC 21x4x and Intel 82558 families, ensuring support of any AlphaServer installation. Any protocol that ran over a physical Ethernet link (DECnet, TCP/IP, and LAT) will run over a virtualized link. The virtual network adapter is recognized by the operating system which assumes it will run at 10/100Mbps, but since it's virtualized it may exceed that speed when connected to a 1/10Gbps adapter in the host system. However the network performance also depends on design limitations of the guest VMS/Tru64 OS.

STORAGE

CHARON-AXP provides support for AlphaServer storage devices: disk, and tape drives via virtual KZPBA SCSI and virtual KGPSA FC adapters and CD/DVD drives via virtual DQA0 IDE adapter. CHARON-AXP allows connecting Alpha SCSI devices to logical disks or tapes which appear as container files in the host operating system; as well as connected physical SCSI devices.

PASS THROUGH

Emulex FC adapters compatible with original AlphaServer hardware (FC KGPSA) could be used by CHARON-AXP to provide direct access to SAN.

HOSTING SERVER HARDWARE RECOMMENDATIONS

HP Proliant 3x0 G9 with Intel Haswell (Xeon E5 v3 series CPUs, at least 3.2GHz frequency are recommended. For 1 or 2 emulated AXP CPUs, desktop Intel Core i7 4xxx CPUs are recommended. However CHARON runs on any Intel / AMD powered host with sufficient hardware resources. For every emulated AXP CPU, CHARON must have exclusive access to at least 2 CPU cores on the host server.

PERFORMANCE

CHARON-AXP running Tru64 5.1B delivers 388 SPEC2000 INT and 371 SPEC2000 FP (per CPU) on an Intel Core i7 965 (3.2 GHz) host system.

CHARON-AXP benefits from the newer, faster hardware, offering owners of most AlphaServer systems equal or better performance. The constant improvements Stomasys makes to the CHARON products, together with rapidly developing faster hardware, will further shift the balance to favor cross-platform virtualization.

As a reference, the table below shows performance measurements of the original AlphaServer hardware using the standard SPEC2000 benchmark. Those numbers are available online from official SPEC2000 web page.

Single CPU benchmark	SPEC2000 INT	SPEC2000 FP
AlphaServer 4100 5/533	176	176
AlphaServer DS10 6/500	300	383
AlphaServer DS20 6/677	425	455
AlphaServer ES40 6/500	299	382
AlphaServer GS80 6/731	352	405
AlphaServer GS160 68/1000	561	581

PRODUCT LICENSE KEY

CHARON supports a range of licensing options, including local and network HASP keys, and software license keys. License preserves customer specific license parameters, allowing remote electronic updates and enabling rapid change of host systems as the CHARON executable can be installed on multiple systems.

COMMERCIAL LICENSING

The CHARON-AXP/DS/ES/GS base license includes half of the maximum (available for a particular model) quantity of virtual Alpha CPUs. Additional CPU options can be purchased separately. The amount of emulated RAM is set to the maximum supported by the AlphaServer model. CHARON-AXP licensing allows combining multiple instances of CHARON-AXP, emulating various Alpha models, on a single multi-core host system.

CHARON DISTRIBUTION

CHARON Installation kits, Release notes, User manuals, Software Product Descriptions, and Patches are available for download through partner or direct customer login from Stomasys ftp.

CHARON UTILITIES

- **mkdskcmd** creates empty AXP disk images. Also used to transfer disk images of one type to a disk image of another type.
- **mtd** is used to create a CHARON tape image from a physical tape and to write a tape image to a physical tape.
- **ncu** manages CHARON physical and virtual network connections.
- **hasp_srm_view** displays content of CHARON-AXP license. Also used to transfer licenses from one host to another host.
- **CHARON Linux toolkit** simplifies CHARON operational management (start/stop/upgrade tasks) as well as license update and monitoring tasks.



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USER ENVIRONMENT

After installation the system will behave like the AXP it replaces and should be treated like that AXP. Operating procedures will be the same and we advise not to treat it as a Linux system, despite the fact it runs on a Linux kernel. The Linux kernel can be disconnected from the network after installation.

VIRTUALIZED HARDWARE

Emulated hardware model	AlphaServer DS10	AlphaServer DS20	AlphaServer ES40	AlphaServer GS80	AlphaServer GS160	AlphaServer GS320
Alpha CPUs (base/maximum)	1/1	1/2	2/4	4/8	8/16	16/32
Emulated RAM	Up to 32 GB	Up to 32 GB	Up to 32 GB	Up to 64 GB	Up to 128 GB	Up to 256 GB
Available virtual PCI slots	4	6	10	27	27	27
Storage adapter support	Emulated PCI SCSI KZPBA adapters (2 preloaded for DS20; 1 preloaded for GS series); up to 120 storage units (disks, tapes, and CD/DVD) supported simultaneously; Emulated Acer Labs 1543C IDE/ATAPI controller (1 preloaded; only virtual IDE CD/DVD devices supported)					
Disk storage support	Virtual disk images on a local and remote Linux file system (.vdisk container files); physical SCSI disks (/dev/sdN) and partitions (/dev/sdNL); iSCSI disks; SAN attached storage volumes					
Tape storage support	Virtual tape images on a local and remote Linux file system (.vtape container files); physical SCSI tape drives (/dev/sgN devices);					
CDROM/Floppy disk support	Virtual CD/DVDs images on a local and remote Linux file system (.iso container files); physical CD/DVD drives (/dev/cdrom, /dev/srN devices) / -					
Network support	Emulated PCI DEC 21x4x adapter family: DE435, DE450, DE500AA, DE500BA (2 DEC 21143 controllers preloaded for DS10); Emulated Intel 82558 adapter family DE602					
Fiber Channel	Emulated KGPSA Fibre Channel adapter; Direct connection to SAN with PCI Pass Through physical KGPSA or compatible EMULEX HBA					
Console/Serial lines	OPA0 console attached to a Linux terminal, a physical serial port(/dev/ttySN device), or a TCP/IP socket					
Supported operating systems	OpenVMS 7.1-2 – OpenVMS 8.4, Tru64 UNIX 4.0F – 5.1B (also known as: Compaq or HP Tru64 UNIX)			OpenVMS 7.2-1H1 – OpenVMS 8.4, Tru64 UNIX 4.0G – 5.1B (also known as: Compaq or HP Tru64 UNIX)		

Host system requirements

Host operating system	Red Hat Enterprise 6.5 and 7 (with some restrictions) 64-bit and Fedora 20 64-bit on top of a physical host or on VMware ESXi 4.1 update 1 or ESXi 5.x
Host CPU/RAM	Amount of host system CPU cores $\geq 2 \times$ (amount of emulated AXP CPU cores); Host RAM ≥ 2 GB + (amount of emulated AXP RAM)
Recommended Hardware	HP Proliant 3x0 G9 servers with Intel Xeon E5 v3 CPU family, frequency at least 3.2 GHz; or desktop Intel Core i7 4xxx

Ordering information

Unlimited license	CHAXP-801IP-LI	CHAXP-802IP-LI	CHAXP-804IP-LI	CHAXP-808IP-LI	CHAXP-809IP-LI	CHAXP-909IP-LI
Annual license	CHAXP-801IY-LI	CHAXP-802IY-LI	CHAXP-804IY-LI	CHAXP-808IY-LI	CHAXP-809IY-LI	CHAXP-909IY-LI
Annual GOLD Support	CHAXP-801IU-LI	CHAXP-802IU-LI	CHAXP-804IU-LI	CHAXP-808IU-LI	CHAXP-809IU-LI	CHAXP-909IU-LI
Annual PLATINUM Support	CHAXP-801IT-LI	CHAXP-802IT-LI	CHAXP-804IT-LI	CHAXP-808IT-LI	CHAXP-809IT-LI	CHAXP-909IT-LI
Backup license	CHAXP-801IK-LI	CHAXP-802IK-LI	CHAXP-804IK-LI	CHAXP-808IK-LI	CHAXP-809IK-LI	CHAXP-909IK-LI
Additional CPU	CHAXP-CPUIP-LI	CHAXP-CPUIP-LI	CHAXP-CPUIP-LI	CHAXP-CPUIP-LI	CHAXP-CPUIP-LI	CHAXP-CPUIP-LI

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