

SOFTWARE PRODUCT DESCRIPTION

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

Product version 4.7

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DESCRIPTION

CHARON-AXP/DS/ES/GS are members of the CHARON cross-platform hardware virtualization product family. CHARON-AXP/DS/ES/GS for Linux 64 bit are designed to replace the following AlphaServer computer systems:

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 Alpha-hardware is virtualized by CHARON-AXP. IT runs the original Alpha binary code, including operating systems OpenVMS and Tru64 UNIX, the layered products, and applications, which remaining working as always. Very few changes might be 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 DEC 21x4x and Intel 8255x families, ensuring support of any AlphaServer installation. Any protocol that ran over a physical Alpha Ethernet link (DECnet, TCP/IP, and LAT) will run over a virtualized CHARON link. The CHARON 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. The network performance also depends on design limitations of the guest VMS/Tru64 OS.

STORAGE

CHARON-AXP provides support for Alpha disk, tape, and CD/DVD storage devices via virtual KZPBA SCSI and KGPSA FC adapters. CHARON-AXP allows mapping virtual and physical Alpha storage devices directly to logical disks or tapes which appear as container files in the host operating system.

PCI PASSTHROUGH

Emulex FC adapters compatible with original AlphaServer hardware (FC KGPSA) and FDDI DEPFA adapter can be used by CHARON-AXP to provide direct access to SAN infrastructure and FDDI network, equivalent to physical Alpha access. Using PCI Passthrough method allows gaining up to 50% performance improvement on the disk I/O compared to using virtual storage controllers. It is recommended for high performance configurations with access to SAN infrastructure.

HOSTING SERVER HARDWARE RECOMMENDATIONS

Intel Xeon v3 E5 and E7 CPUs are recommended, however CHARON runs on any modern Intel / AMD based host with sufficient hardware resources. For every emulated AXP CPU, CHARON must have exclusive access to at least 2 CPU cores on the host system.

PERFORMANCE

SPEC2000 test running on Tru64 5.1B on CHARON-AXP delivers 633 SPEC2000 INT and 520 SPEC2000 FP (per CPU) on an HP Proliant DL380 G9 server equipped with Intel Xeon v3 E5-2643 3.4 GHz CPU.

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

The following measurements are provided for the reference. Full SPEC2000 data can be accessed online at <https://www.spec.org/cpu2000/>

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

CHARON PRODUCT LICENSING

CHARON-AXP/DS/ES/GS base license includes half of the maximum (available for a particular model) quantity of virtual Alpha CPUs (please refer to the second page for details). Additional CPU options can be purchased separately. The amount of emulated RAM is set to the maximum supported by the AlphaServer model.

LICENSE PROTECTION

A valid license should be permanently available to CHARON. It can be represented by a local or network attached USB HASP license key, or a Software License. It preserves the customer specific license parameters, allows remote electronic updates and enables rapid change of host systems as the CHARON executable itself can be installed on multiple systems. License technically allows combining multiple instances of CHARON-VAX and CHARON-AXP on a single multi-core host system.

DISTRIBUTION KITS

CHARON Installation kits, Release notes, User manuals, Software Product Descriptions, Patches are available for download through partner's login page on Stromasys web site

CHARON UTILITIES

- **CHARON Linux toolkit** simplifies CHARON operational management (start/stop/upgrade tasks) as well as license update and monitoring tasks.
- **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.

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.



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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); Emulated KGPSA Fibre Channel adapters; up to 120 storage units (disks, tapes, and CD/DVD) supported simultaneously; Emulated Acer Labs 1543C IDE/ATAPI controller (1 preloaded; only physical 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) / Floppy not supported					
Network support	Emulated PCI DEC 21x4x adapters: DE435, DE450, DE500AA, and DE500BA (2 DEC 21143 controllers preloaded for DS10, DS15; 1 preloaded for DS25); Emulated PCI Intel 82558 10/100 Mbps adapters: DE602 and DE602AA					
Fiber Channel / FDDI	Direct connection to SAN with PCI Pass Through physical KGPSA or compatible EMULEX HBA (up to 8 Gbps) / No FDDI support					
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	Linux Red Hat Enterprise 7.0 and 7.1, 64bit, Linux Fedora Core 20, 21, and 22, 64bit on top of a physical host or on VMware ESXi 5.x or 6.0
Host CPU/RAM	Amount of host system CPU cores $\geq 2 \times$ (amount of emulated AXP CPU cores); Host RAM ≥ 4 GB + (amount of emulated AXP RAM)
Recommended Hardware	HP Proliant G9 servers; Intel Xeon v3 E5 and E7 CPUs; frequency minimum 3 GHz

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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