

CHARON-AXP/4100 for Linux 64 bit

Product version 4.7

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DESCRIPTION

CHARON-AXP/4100 is a member of the CHARON cross-platform hardware virtualization product family. It is designed to replace the AlphaServer 400, 800, 1000, 1000A, 1200, 2000, 2100, 4000, and 4100 computer systems by its virtual equivalent running on a Linux host platform.

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) can be used by CHARON-AXP to provide direct access to SAN infrastructure, 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

The CHARON-AXP/4100 base license includes 1 virtual Alpha CPU for AlphaServer 400; 800, 1000, 1000A, 1200, 2000, and 4000; and 1 or 2 virtual Alpha CPUs for AlphaServer 2100 and 4100. An additional CPU option can be purchased separately. Amount of emulated RAM is set to maximum supported by 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.
- **mkdiskcmd** 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.



VIRTUALIZED HARDWARE

Emulated hardware model	AlphaServer 400	AlphaServer 800	AlphaServer 1000/1000A	AlphaServer 1200	AlphaServer 2000	AlphaServer 2100	AlphaServer 4000	AlphaServer 4100
Alpha CPUs (base/maximum)	1/1	1/1	1/1	1/2	1/2	1 or 2 / 4	1/2	1 or 2 / 4
Emulated RAM	Up to 1GB	Up to 8 GB	Up to 1 GB	Up to 32 GB	Up to 2 GB	Up to 2 GB	Up to 32 GB	Up to 32 GB
Available virtual PCI slots	3	4	3/7	6	3	3	16	8
Storage adapter support	Emulated PCI SCSI KZPBA adapters (1 preloaded); emulated PCI FC KGPSA adapters; up to 120 storage units (disks, tapes, and CD/DVD) supported simultaneously							
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 a local and remote Linux file system (.iso container files); physical CD/DVD drives (/dev/cdrom, /dev/srN devices) / Floppy not supported							
Ethernet Network support	Emulated PCI DEC 21x4x adapters: DE435, DE450, DE500AA, and DE500BA (1 preloaded DEC TULIP 21040 for AS2x00); Emulated PCI Intel 82558 10/100 Mbps adapters: DE602 and DE602AA							
Fiber Channel / FDDI support	Direct connection to SAN with physical KGPSA or compatible EMULEX HBA adapters (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 6.2-1H3 – OpenVMS 8.4, Digital UNIX 3.2 – 4.0E; Tru64 UNIX 4.0F – 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 $\geq 2 * (\text{amount of emulated AXP CPU cores})$; Host RAM $\geq 4 \text{ GB} + (\text{amount of emulated AXP RAM})$
Recommended Hardware	HP Proliant G9 servers; Intel Xeon v3 E5 and E7 CPUs; frequency minimum 3 GHz

Ordering information

Unlimited license	CHAXP-806IP-LI
Annual license	CHAXP-806IY-LI
Annual GOLD Support	CHAXP-806IU-LI
Annual PLATINUM Support	CHAXP-806IT-LI
Backup license	CHAXP-806IK-LI
Additional CPU	CHAXP-CPUIP-LI

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