STROMASYS
VIRTUALIZATION TECHNOLOGIES

CHARON
AXP

SOFTWARE PRODUCT DESCRIPTION

CHARON-AXP/4100 for Linux 64 bit

Product version: 4.5; Build 155-04

Description

CHARON-AXP/4100 is a member of the CHARON cross-platform hardware virtualization product family. CHARON-AXP creates the virtual replica of the original AlphaServer hardware inside a standard 64bit 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/4100 for Linux 64bit 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 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 family, 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, tape and CD/DVD drives via virtual KZPBA SCSI 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 connecting to 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.

Performance

CHARON-AXP running Tru64 5.1B delivers (per CPU) 388 SPEC2000 INT and 371 SPEC2000 FP 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 Stromasys makes to CHARON products, together with rapidly developing faster hardware, will further shift the balance to favor cross-platform virtualization.

As a reference, the following table 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 wide array of license key solutions, including a hardware HASP key, network licensing, and a software license key. All license key solutions preserve the 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.

Licensing

The CHARON-AXP/4100 base license includes 1 virtual Alpha CPU for AlphaServer 400; 800, 1000, 1000A, 1200, 2000, and 4000; and 2 virtual Alpha CPUs for AlphaServer 2100 and 4100. An additional CPU option 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 of different Alpha models on a single multi-core host system.

CHARON-AXP Product	CHARON-AXP/4100 for Linux 64 bit version 4.4 build 147-01							
Virtualized Alpha hardware details								
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); 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) / -							
Ethernet Network support	Emulated PCI DEC 21x4x adapter family: DE435, DE450, DE500AA, DE500BA (1 preloaded DEC TULIP 21040 controller for models AS2000 and AS2100)							
Fiber Channel/FDDI support	Direct connection to SAN with physical KGPSA or compatible EMULEX HBA adapters							
Console/Serial lines	OPA0 console attached to a Linux terminal, a physical serial port(/dev/ttySN device), or a TCP/IP socket							
Supported VMS versions	OpenVMS 6.2-1H3 – OpenVMS 8.4							
Supported Tru64 versions	Tru64 UNIX 5.1B (also known as: Compaq or HP Tru64 UNIX)							
Additional CHARON utilities	IDLE (supported on OpenVMS); hasp_view; mkdisk							
Host system requirements								
Host operating system	Red Hat Enterprise 6.2 – 6.4 (64 bit) and Fedora 16 - 19 (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 ≥ 2 * (amount of emulated AXP CPU cores); Host RAM ≥ 2 GB + (amount of emulated AXP RAM)							
Recommended Hardware	HP Proliant servers; Intel Xeon E7, E5, 5600 CPU family, or Intel Core i7 G2 and G3 CPU family, frequency at least 3.0 GHz							
Ordering information								
Unlimited/annual license	CHAXP-806IP-LI / CHAXP-806IY-LI							
Annual GOLD/PLATINUM Support	CHAXP-806IU-LI / CHAXP-806IT-LI							
Backup license / Add a CPU	CHAXP-806IK-LI / CHAXP-CPUIP-LI							