DESCRIPTION

Stromasys Charon-AXP provides cross-platform hardware virtualization.
The product family is designed to replace the following DEC AlphaServer computer systems:

- AlphaServer 400, 1000, 1000A
- AlphaServer 800, 1200, 2000, 4000
- AlphaServer 2100, 4100
- AlphaServer DS10, DS15, DS20, DS25
- AlphaServer ES40, ES45, ES47
- AlphaServer GS80, GS60, ES80, GS140, GS160, GS320, GS1280

Charon-AXP emulates most of the original Alpha-specific hardware. It runs the original Alpha binary code, including the operating systems OpenVMS and Tru64 UNIX, the layered products, and applications, which all continue to work as before. A small number of changes to the original software (operating system, layered products, or applications) may be required. The Tru64 kernel may have to be rebuilt.

NETWORK

Charon-AXP virtualizes the 10/100 Mbps Ethernet controllers of the DEC 21x4x and Intel 8255x families, ensuring support of any AlphaServer installation. Any protocol supported on a physical Alpha Ethernet link (DECnet, TCP/IP, and LAT) will work on a virtualized Charon link. The Charon network adapter is recognized by the operating system as a 10/100 Mbps link, but since the adapter is virtualized, it may exceed that speed when connected to a 1 Gbps / 10 Gbps adapter in the host system. The network performance also depends on design limitations of the guest OS (VMS or Tru64).

STORAGE

Charon-AXP provides support for Alpha disk, tape, and CD/DVD storage devices via virtual KZPBA SCSI and KGPSA FC adapters, translating them into any modern technology (SCSI, SATA, SAS) by means of virtual disk images on a Linux filesystem or physical LUNs attached locally or remotely by iSCSI, SAN, or NAS.

PERFORMANCE

SPEC2000 tests running on Tru64 5.1B on Charon-AXP emulating an AlphaServer ES45 deliver about **SINT2000 867** and **SFP2000 678** on a system with Intel Xeon Gold 6137 3.9GHz CPUs. 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. Full SPEC2000 data for all physical Alpha systems can be accessed online at https://www.spec.org/cpu2000/.

SYSTEM MAINTENANCE

Once installed and configured, the Charon system behaves like the original Alpha system, and can be treated as an Alpha. Guest OS and applications operating procedures remain the same. The host operating system does not require a network connection and regular patching after the installation. See user's guide for requirements regarding any updates to the host OS.

.

LICENSE PROTECTION

A valid license should be permanently available to Charon in the form of a local or network attached USB HASP license dongle, or a Software License. The license contains customer specific parameters and allows remote electronic updates. USB dongles enable a rapid switch-over to another host system as the Charon executable itself can be installed on multiple systems for disaster recovery purposes. Flexible licensing options allow combining multiple instances of different Charon products on a single host system.

DISTRIBUTION

Charon Release notes, User manuals and Software Product Descriptions are available for download from the Stromasys Product Documentation and Knowledge Base web pages. Downloading installation kits and patches requires a partner account or credentials provided by Stromasys on an individual basis.

CHARON UTILITIES

Charon-AXP on Linux is delivered with the **Charon Linux Toolkit** which consolidates all Charon management tasks: creating and configuring Charon instances, monitoring and managing Charon licenses and logs, configuring host hardware resources for Charon needs, synchronized host and guest OS shutdown, etc. The following applications are invoked from the Charon Linux Toolkit:

- **menu** is a text based interactive menu system for setting up / configuring / monitoring / managing Charon instances
- **hasp_srm_view** displays the content of Charon-AXP licenses
- **ncu** ("Network Control Utility") is used to dedicate a host network interface to Charon-AXP, to release it back to the host, and to manage Charon virtual interfaces (TAPs)

The following command line utilities are also available:
- **mkdskcmd** is used to create empty disk images and extend existing disk images
- **mtd** for transferring data between physical tapes and Charon tape container files

Stromasys Charon Guest Utilities for OpenVMS version 6.1 and above are supplied on a disk image to provide the following functionality:
- **Tape Utilities Package** for manipulating virtual tape images and managing a virtual SCSI tape changer
- **VMS bypass driver** for emulating DU/DR/DG/DQ/DI disk devices
- **Power consumption optimization (IDLE)** VMS utility for implementing energy saving mode when a virtual AXP CPU is idle

HOST SYSTEM REQUIREMENTS

Host operating system (on-premises or on AWS, Azure, OCI, and GCP clouds)	Red Hat Enterprise Linux (RHEL) and Oracle Linux 7.x to 9.x, CentOS 7.x, Rocky Linux 8.x and 9.x
Hypervisor	VMware ESXi 5.5 – 8.0; Microsoft Hyper-V on Windows Server 2012 R2, 2016 and 2019; KVM
Host CPU / RAM	Number of host system CPU cores ≥ 2 * (number of emulated AXP CPU cores); host RAM = (2 GB + AXP RAM) per emulated AXP instance
Recommended hardware	HP ProLiant G10 servers or their equivalent; Intel Xeon Gold or Platinum CPUs; Intel Core 8th generation CPUs; with frequency 3 GHz and above

VIRTUALIZED HARDWARE AND SUPPORTED GUEST OPERATING SYSTEMS

Per model characteristics

Charon product	Emulated AlphaServer model	Alpha CPUs (base / maximum)	Emulated RAM	Available virtual PCI slots	Supported guest operating systems
Charon-AXP/400 [1]	AlphaServer 400	1/1	Up to 1 GB	3	OpenVMS 6.2-1H3 to OpenVMS 8.4; Digital UNIX 3.2 to 4.0E; Tru64 UNIX 4.0F to 5.1B (also known as Compaq or HP Tru64 UNIX)
Charon-AXP/400 [1]	AlphaServer 1000 / 1000A	1/1	Up to 1 GB	3 / 7	
Charon-AXP/2000 [2]	AlphaServer 800	1/1	Up to 8 GB	4	
Charon-AXP/2000 [2]	AlphaServer 1200	1/2	Up to 8 GB	6	
Charon-AXP/2000 [2]	AlphaServer 2000	1/2	Up to 2 GB	3	
Charon-AXP/2000 [2]	AlphaServer 4000	1/2	Up to 2 GB	16	
Charon-AXP/4100	AlphaServer 2100	1 or 2 / 4	Up to 32 GB	3	
Charon-AXP/4100	AlphaServer 2100	1 or 2 / 4	Up to 32 GB	8	
Charon-AXP/DS10	DS10, DS15	1 / 1	Up to 32 GB	4	OpenVMS 7.1-2 to OpenVMS 8.4; Tru64 UNIX 4.0F – 5.1B (also known as Compaq or HP Tru64 UNIX)
Charon-AXP/DS20	DS20, DS25	1 / 2	Up to 32 GB	6	
Charon-AXP/ES40	ES40, ES45, ES47	1 / 4	Up to 32 GB	10	
Charon-AXP/GS80	GS60, GS80, ES80	1 / 8	Up to 64 GB	27	OpenVMS 7.2-1H1 to OpenVMS 8.4, Tru64 UNIX 4.0G – 5.1B (also known as Compaq or HP Tru64 UNIX)
Charon-AXP/GS160	GS140, GS160	1 / 16	Up to 128 GB	27	
Charon-AXP/GS320	GS320, GS1280	1 / 32	Up to 256 GB	27	

1) Virtual CPU performance level 50%
2) Charon-AXP/2000 includes Charon-AXP/400 models; Charon-AXP/4100 includes Charon-AXP/400 and Charon-AXP/2000 models

Common emulated hardware characteristics

Storage adapter support	Emulated PCI SCSI KZPBA adapters; emulated PCI FC KGPSA adapters; up to 120 storage units (disks, tapes, and CD/DVD) supported simultaneously; emulated Acer Labs 1543C IDE/ATAPI controller (only virtual IDE CD/DVD devices; only AS400/2000/4000)
Disk storage support	**Virtual** disk images on a local and remote Linux file system (.vdisk container files); **Logical and Physical** SCSI disks (/dev/sdN) and partitions (/dev/sdNL); iSCSI disks; SAN attached storage volumes identified by WWID (/dev/id)
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; emulated PCI Intel 82558 10/100 Mbps adapters: DE602 and DE602AA
Fibre Channel / FDDI support	Direct connection to SAN with physical KGPSA or compatible FC EMULEX HBA adapters (up to 8 Gbps) in Passthrough mode; direct connection to SAN with Linux supported FC HBA adapters in Presentation mode / No FDDI physical DEFPA adapter support
Console / Serial lines	OPA0 console attached to a Windows terminal emulator, a physical serial port (COMxx: device), or a TCP/IP socket / PCI Pass Through serial line controller PBXDA (8 serial lines)
Console / Graphics	Emulated DEC ZLXp-E2 graphics adapter (PBXGA) with virtual display 1280x1024 resolution

stromasys
legacy server emulation

Ordering information [1]

License Name	Product Code	Description	Applicable models
5-year AXP Base license	P1-AXP-BASE-5y	1 emulated AXP CPU (5-year license term)	All AXP models
Tier 2 AXP upgrade (base license required)	P1-AXP-TIE2-5y	Max. 2 emulated CPUs (5-year license term)	Charon-AXP-4100, Charon-AXP/DS20, Charon-AXP/ES40, Charon-AXP/GS80, Charon-AXP/GS160, Charon-AXP/GS320
Tier 3 AXP upgrade (previous tier required)	P1-AXP-TIE3-5y	Max. 4 emulated CPUs (5-year license term)	Charon-AXP-4100, Charon-AXP/ES40, Charon-AXP/GS80, Charon-AXP/GS160, Charon-AXP/GS320
Tier 4 AXP upgrade (previous tier required)	P1-AXP-TIE4-5y	Max. 8 emulated CPUs (5-year license term)	Charon-AXP/GS80, Charon-AXP/GS160, Charon-AXP/GS320
Tier 5 AXP upgrade (previous tier required)	P1-AXP-TIE5-5y	Max. 16 emulated CPUs (5-year license term)	Charon-AXP/GS160, Charon-AXP/GS320
Tier 6 AXP upgrade (previous tier required)	P1-AXP-TIE6-5y	Max. 32 emulated CPUs (5-year license term)	Charon-AXP/GS320
Gold support annual subscription [2]	For base license: P1-AXP-GSBA-1y; for tier 2: P1-AXP-GST2-1y; for tier 3 and above: P1-AXP-GSTX-1y		
Platinum support annual subscription [2]	For base license: P1-AXP-PSBA-1y; for tier 2: P1-AXP-PST2-1y; for tier 3 and above: P1-AXP-PSTX-1y		
[1] Please contact the Stromasys Sales team for Charon licensing details and commercial discussions. [2] Please refer to the Charon Service Descriptions for GOLD and PLATINUM terms, conditions, and SLAs			

stromasys
legacy server emulation