CHARON-VAX/XK PLUS, /XL, and /XL PLUS for Linux
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DESCRIPTION

CHARON-VAX/XK PLUS, CHARON-VAX/XL and CHARON-VAX/XL PLUS are members of CHARON-VAX cross-platform hardware virtualization family of products by Stromasys. They are designed to replace VAX 4000-108, VAX 3100-98, VAX 3600, VAX 3900, VAX 400-700, VAX 4000-705 and VAX 6310 systems by its virtual equivalent with 256 MB or 512 MB emulated VAX RAM running on a standard computer system. CHARON-VAX creates the virtual replica of the original VAX hardware, allowing the VAX/VMS operating system and all software that is running in that environment to remain working as always in their existing, binary form. No changes to the original software (operating system, layered products or applications), its procedures or handling have to be applied.

NETWORK

CHARON-VAX virtualizes the Ethernet controllers present in the original VAX hardware. Any protocol that ran on these controllers (DECnet, TCP/IP, LAT) will run over virtualized link.

STORAGE

CHARON-VAX/XK/XL (PLUS) provides support for the following VAX storage device types: (T)MSCP, DSSI and SCSI. CHARON translates all these VAX types to any modern technology (SCSI, SATA, SAS) by means of logical files in a file system directory or physical LUNs attached locally or remotely by iSCSI, SAN, or NAS.

HOST SYSTEM REQUIREMENTS

A physical system or virtual appliance with a dual core CPU of at least 3 GHz, one dedicated Ethernet adapter, an optional USB port for the license key, and enough disk space for the VAX disks. CHARON-VAX/XK PLUS, /XL, and /XL PLUS require a minimum of 3 GB host memory. Intel Xeon v3 E3, E5, and E7 CPUs with a clock frequency of 3GHz and higher are recommended

OPERATING SYSTEM REQUIREMENTS

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

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.

PERFORMANCE

CHARON-VAX is available in a standard and a PLUS version. The PLUS version includes Advanced CPU Emulation (ACE) providing 4 – 6 times better CPU performance compared to the Standard product. On an Intel Core i7 965 (3.2 GHz) based system, the CHARON-VAX PLUS virtual CPU delivers approximately 125 VUPS. The standard CHARON-VAX CPU (without Plus) emulator provides about one quarter of it. For the reference, the original hardware VAX CPU provided 1 VUP (MicroVAX II) up to 38 VUPS (VAX3100-96), therefore VAX virtualization will deliver a major performance increase.

DISTRIBUTION

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

CHARON UTILITIES

- **CHARON Linux toolkit** simplifies CHARON operational management (start/stop/upgrade tasks) as well as license update and monitoring tasks.
- **mkdskcmd** creates empty VAX 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.
- **hasp_srm_view** displays content of CHARON-VAX license and allows transfer of software licenses from one host to another host.
- ncu ("Network Control Utility") is used to dedicate a host interface to CHARON-VAX, to release it back to the host and to manage CHARON virtual interfaces (TAPs).

USER ENVIRONMENT

After installation the system will behave like the VAX it replaces and should be treated like that VAX. 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

	VAX 4000-108	VAX 3100-98	VAX 3600/3900	VAX 4700/4705	VAX 6310
Virtualized VAX CPU	KA54-A	KA56-A	KA650-A/B / KA655-A/B	KA692-A/KA694-A	KA-62B
Earliest VMS version	5.5-2 (5.5-2H4 if second SCSI adapter is used)		4.5	5.5-2	5.5-2
Max. virtual VAX memory	XK PLUS: 256 MB; XL and XL PLUS: 512 MB				
XMI and BI subsystems	No			No	Yes (KDB50)
QBUS subsystem	Yes [1]	No	Yes [1]	Yes [1]	No
UNIBUS subsystem	No				Yes (TUK50)
DSSI subsystem	Yes (HSD50)	No	No	YES (two built-in PAA/PAB and two optional PAC/PAD DSSI adapters, HSD50 storage controller)	No
SCSI subsystem	2 controllers, each support 7 SCSI IDs. Each SCSI ID could be used with up to 8 LUNs	No	No	No	No
Emulated VAX disks:	Container files; Local, iSCSI and SAN partitions; physical SCSI disks	Container files; Local, iSCSI and SAN partitions	Container files; Local disk drives, iSCSI and SAN partitions	Container files; Local, iSCSI and SAN partitions	
Emulated VAX tapes:	Container files, physical SCSI tape drives				
Network	Up to 5 Ethernet controllers in total including a built-in SGEC and QBUS controllers: DEQNA, DELQA, DESQA	1 build-in Ethernet controller SGEC	Up to 4 QBUS Ethernet controllers: DEQNA, DELQA DESQA	Up to 5 Ethernet controllers in total including a built-in SGEC and QBUS controllers: DEQNA, DELQA, DESQA	Multiple BI DEBNI Ethernet controllers (limited by number of available virtual bus slots)
Network performance	Standard version supports 10 Mbps connections; PLUS version supports 100 Mbps connections. PLUS version could be used with 1 Gbps connections provided it is tested in advance.				
VAX/VMS clustering	NI or Shared Disk Cluster with emulated MSCP or DSSI controllers	NI Cluster	NI cluster or Shared Disk Cluster with emulated MSCP controllers	NI or Shared Disk Cluster with emulated MSCP or DSSI controllers	NI Cluster
Asynchronous Serial Lines	QUART (4 lines), CXA16, CXB16, CXY08, DHQ11, DHV11, DHW42-AA, -BA, -CA	QUART (4 lines), DHW42-AA, -BA, -CA	UART, CXA16, CXB16, CXY08, DHQ11, DHV11	CXA16, CXB16, CXY08, DHQ11, DHV11	UART
Graphics subsystem	No	No	Dummy VCB_02 can be loaded in order to force VMS to accept D type licenses [2]	No	No

[1]   Configurable QBUS components are the MSCP disk controller RQDX3, the TMSCP tape controller TQK50, the serial line controllers as above and the Ethernet controllers DEQNA, DELQA and DESQA. MSCP disk emulation is the preferred storage device emulation in case of heavy disk I/O.

[2]   An X-Windows emulator on MS Windows system can be used to display graphics provided by an X Client running on CHARON

Each virtual VAX model follows the characteristics of its VAX hardware equivalent, requiring the corresponding level of license units and supports the peripherals particular to that VAX model. The virtual VAX does not include diagnostic and maintenance modes or delays to simulate mechanical device behavior.

Ordering information	CHARON-VAX/XK PLUS	CHARON-VAX/XL	CHARON-VAX/XL PLUS
Unlimited runtime license	CHVX-221-PE-LI	CHVX-021-PF-LI	CHVX-221-PF-LI
One year license	CHVX-221-YE-LI	CHVX-021-YF-LI	CHVX-221-YF-LI
Backup license (720 hours)	CHVX-221-KE-LI	CHVX-021-KF-LI	CHVX-221-KF-LI
GOLD support (9x5)	CHVX-221-UE-LI	CHVX-021-UF-LI	CHVX-221-UF-LI
PLATINUM support (24x7)	CHVX-221-TE-LI	CHVX-021-TF-LI	CHVX-221-TF-LI

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