SOFTWARE PRODUCT DESCRIPTION

CHARON-PDP for Windows

Product version 4.8

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DESCRIPTION

Stromasys **CHARON-PDP** is a member of CHARON cross-platform hardware virtualization product family. It is designed to replace **DEC PDP-11/93 and PDP-11/94 systems** by its virtual equivalent running on a x86-64 compatible standard computer system. CHARON-PDP creates the virtual replica of the original PDP-11 hardware, allowing the RT-11, RSX-11, RSTS, and other operating systems and all software from original environment to remain working as always in their existing, binary form. No or minimal configuration changes to the original software (operating system, layered products, and applications), operational procedures, and management are required.

NETWORK

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

STORAGE

CHARON-PDP provides support for (T)MSCP storage devices. CHARON translates PDP11 storage to any modern technology (SCSI, SATA, SAS) by means of virtual disk images on a Windows filesystem or physical LUNs attached locally or remotely by iSCSI, SAN, or NAS.

HOST SYSTEM REQUIREMENTS

A physical system or virtual VMware appliance with a dual CPU of at least 2 GHz, one dedicated Ethernet adapter, an optional USB port for the license key and enough disk space to keep the PDP data. CHARON-PDP requires a minimum of 2 GB host memory.

The CHARON-PDP device drivers for external PCI to QBUS adapter, FPGA Cesys board, and some serial line interfaces require Windows 7 32 bit and cannot be used on other versions. Those devices also cannot be used on hypervisors like VMware.

OPERATING SYSTEM REQUIREMENTS

Microsoft Windows Server 2008 R2 and 2012 R2 Standard and Enterprise (SP1) Editions 64 bit, Microsoft Windows 7, 8.1, and 10 Professional and Enterprise Editions 32 bit and 64 bit on top of a physical host, VMware ESXi 5.5 or 6.x, and Microsoft Hyper-V.

PERFORMANCE

CHARON-PDP provides options to fine tune the virtual PDP performance by setting the emulated PDP-11 CPU frequency and defining individual PDP CPU instructions timings. Please refer to the user manual for details.

CHARON APPLICATION PROGRAM INTERFACE (CHAPI)

CHAPI is an open API to emulated QBUS bus, thus available for QBUS based emulators. It allows creation of emulated QBUS devices, and connects emulated peripherals which are designed as external C++ modules to the emulator kernel. CHAPI library functions provide standard device elements like registers, interrupt logic, etc.

SYSTEM MAINTENANCE

Once installed and configured, CHARON system will behave like the original PDP11 system, and can be treated like PDP11. Guest OS and applications operating procedures will remain the same, and it's advised not to treat the system as a Windows box, despite the fact it runs on a Windows kernel. Hosting OS does not require maintenance or patching; it can be cut off the network completely.

LICENSE PROTECTION

A valid license should be permanently available to CHARON. It can be represented by a local or network attached USB HASP license dongle, or a Software License. The license preserves customer specific parameters and allows remote electronic updates. USB dongle enables rapid change of host systems as the CHARON executable itself can be installed on multiple systems for disaster recovery purposes. License flexibility allows 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-VAX on Windows is delivered with the **CHARON Virtual Machines Manager**, a single window application which consolidates all CHARON management tasks: creating and configuring CHARON instances, managing CHARON license, configuring hosting hardware resources for CHARON needs, etc. The following functional applications are invoked from the CHARON VM manager:

- **HASP License Details** for viewing CHARON license(s)
- **License Update Tool** for updating CHARON license
- **Sentinel Admin Control Center** for license management
- **Network Control Center** for managing CHARON network drivers and settings
- **Device Check** for providing configuration assistance for directly connected host devices
- **Virtual Disk Tool** for creating empty disk image files (.vdisk)

The following command line utilities are also available:

- **Virtual Disk Tool** for creating empty disk image files (.vdisk)
- **MTD** for transferring data between physical tapes and CHARON tape container files
- **HOSTprint** for redirecting an emulated QBUS LPV11 device (parallel port) output to a Windows local or network printer

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VIRTUALIZED HARDWARE

	PDP-11/93	PDP-11/94
Virtualized PDP CPU	J11	
Virtual PDP memory	2MB or 4MB	
Operating systems	RSX-11M, RT11, RSTS	RSX-11M, RT11, RSTS
Internal bus	QBUS [1)]	UNIBUS [2)]
Emulated disks	Container files; Local, iSCSI and SAN partitions; physical SCSI disks	
Emulated tapes	Container files, Windows tape drives, physical SCSI tape drives	
Network	1 QBUS Ethernet controller	1 UNIBUS Ethernet controller
Network performance	10 Mbps	
Asynchronous Serial Lines	UART (console), DHV11, DLV11(-J)	UART (console), DHU11, DL11
KW11 line clock	50, 60 and 70 Hz	
Connection to physical peripherals	Physical QBUS (additional hardware is required) [3)]	-

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.

2) Configurable UNIBUS components are: the MSCP disk controller UDA50, the TMSCP tape controller TUK50, the serial line controllers as above and the Ethernet controllers DEUNA and DELUA.

3) QBUS basket hardware (original VAX QBUS basket or custom 3rd party custom QBUS basket) and PCI to QBUS hardware and software interface are required. Please contact Stromasys for details

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

Ordering information

Item	Part Number
Perpetual runtime license	CHVX-011-PX
Annual license	CHVX-011-YX
720 hour backup license	CHVX-011-KX
Annual GOLD support (9*5)	CHVX-011-UX
Annual PLATINUM support (24*7)	CHVX-011-TX

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