CHARON™-11 for Windows®

CHARON

Version 2.5

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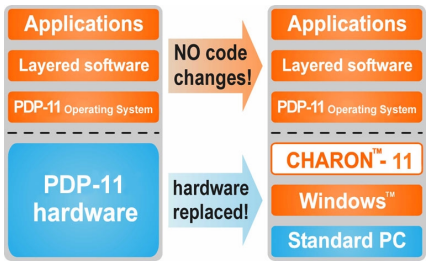
CHARON-11 for Windows 2003 / XP is a software application designed to replace PDP-11 system hardware without having to replace or modify any software running on the PDP-11. This is achieved by providing a 'Hardware Abstraction Layer' or HAL, a complete and configurable software model of a PDP-11, which executes PDP-11 instructions in the same way as the original hardware.



CHARON-11 provides the full functionality of the PDP-11 CPU, the disk and tape controllers and drives, serial lines and Ethernet adapters. These HAL functions are implemented by mapping their functionality on the Windows operating system services, thus creating a virtual PDP-11 system on a PC platform.

Since CHARON-11 executes binary PDP-11 instructions like the original hardware, the PDP-11 operating system and application binaries can be directly transferred; the behavior and the user interface of the applications is fully preserved.

Features

- The PDP-11 operating system and the applications are transferred once; system operation and application maintenance can continue unchanged. Application source code is not required for the transfer. CHARON-11 has been tested to work with the following PDP-11 operating systems: RSX-11M+ with DECnet-11M+, RSX-11M, IAS, RT-11 and UNIX 7.
- Every PDP-11 configuration is represented by a configuration file that can be edited by the user and can start a PDP-11 system in a few seconds. CHARON-11 allows an unlimited number of PDP-11 configurations to be used.
- CHARON-11 for Windows uses a standard Windows environment without requiring custom hardware. CHARON-11 for Windows is a Windows application that can co-exist with other applications on the same system.
- SCSI PDP-11 disks can be used directly on the PC. All PDP-11 disks can be represented as disk images on the Windows system, permitting high speed backup, copying and management of complete virtual PDP-11 systems.
- The CHARON-11 performance scales with the host CPU performance for extreme improvements.
- The PDP-11 serial lines can use the PC COM ports but also telnet connections to other PCs, terminal emulators etc, in a way that is totally transparent to the PDP-11 Operating system.

Host system requirements

A Windows XP or 2003 Server Standard Edition system with a CPU clock frequency of at least 500 Mhz and 128 MB main memory.

10 Mbytes disk space for the CHARON-11 run-time system and utilities (not including the PDP-11 disk and tape images). A free USB port for the license key

Optional host components

Extra asynchronous ports for the connection of terminals and printers, up to 32 per configuration.

An Ethernet adapter for CHARON-11 DECnet or TCP/IP connections.

Any number of SCSI tape and disk drives in addition to the disk/tape images.

Connect existing hardware

Third party PCI to Qbus and PCI to UNIbus adapters are available to connect existing peripherals to CHARON-11. This is fully transparent to the PDP-11 operating system, that sees both simulated and physical peripherals in one unified system.

Provided tools

Disk image generator
Tape to image converter
Network setup utility
PDP-11 dump reconstructor

Product contents

User manual
Distribution CD
USB License key

License key

The CHARON hardware license key is permanently connected to the host system running CHARON-11. 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.

The MTBF of the key is more than 100 years. For mission critical applications a backup key containing 720 hours execution time can be ordered to meet any disaster recovery plan that requires replacement hardware.

Warranty

Standard warranty for this product is limited to the readability of the distribution media for this product.

Typical applications

- To move legacy applications from PDP-11 systems to desktop office systems or servers running CHARON-11.
- To preserve investments in mission critical software by providing a reliable modern platform for proven applications.
- To reduce IT spending by avoiding expensive platform conversion projects.
- To replace PDP-11 based industrial control systems with PC based servers without rewriting the applications.
- To move PDP-11 applications to a new platform when no application source code is available.

Virtual PDP-11 Components

- The PDP-11 CPU models designed by Digital Equipment Corporation.
- Many disk controllers including MSCP devices. The MKDISK utility allows the generation of new disks on the host system. The MKIMAGE utility is a tool to copy physical PDP-11 disks to disk images.
- Tape controllers including full support for TMSCP tape controllers, each handling multiple tape images and multi-volume tapes as required. The MTD utility converts physical tapes to CHARON-11 tape images.
- Unibus and Qbus; 16-bit, 18-bit and 22-bit addressing, separate I/D space, Unibus mapping.
- KW11-L, KW11-P, KWV11-A, KWV11-C and TOY clocks.
- Many of the PDP-11 serial line cards including the DL11 family and the popular DHV11 8-line serial multiplexers. On a single CPU host system, CHARON-11 supports a maximum of 32 serial lines.
- The LP11 line printer interface
- The DEQNA, DELQA and DESQA Ethernet adapters. The DECnet protocol used by the virtual PDP-11 can co-exist with the TCP/IP communication of the host platform.

Performance examples

A modern PC executes code much faster than PDP-11 hardware. Depending on the Windows PC system, CHARON-11 can provide the benefit of this higher performance while still keeping the PDP-11 system clock and real time functions executing at the correct speed:

- On a 2.8 GHz Windows host system your PDP-11 environment might run 50 times faster than an on a PDP-11/93.
- Disk I/O processing is much faster. An RSX11-M build procedure that takes 20 hours on an 11/44 might take as little as 20 minutes on CHARON-11.

CHARON-11 product, services and pricing information is available via our authorized resellers, a list of which can be found at

http://www.softresint.com/charon-11/partners.htm