## AN-027 Using CHARON-VAX on single CPU Windows systems

In CHARON-VAX for Windows each major emulated VAX component runs its own thread. Since the emulated VAX CPU is constantly sollicited by its operating system, CHARON-VAX requires a dual CPU host system to provide balanced performance of all its components.

A single CPU host system limits the throughput of its emulated peripheral components. This can be noticable by a loss of system time, incoming Ethernet packets or reduced disk I/O. CHARON-VAX/XM/XL is specially designed to compensate for occasional overload by recovery of interrupts and buffering of incoming packets, but corrections are limited.

Ethernet traffic is the most critical element in the use of single CPU host systems. Incoming traffic cannot be slowed down without network errors. With a fast host system, the effective Ethernet adapter emulation and the packet buffering in CHARON-VAX moved the throughput bottleneck from the emulator to packet processing in the VAX operating system.

Although not formally supported by Software Resources International for production use, CHARON-VAX/XM/XL+ on a single CPU Windows host (with a CPU > 2GHz (or AMD XP2000+) usually handles an incoming 10 MBps Ethernet link correctly at full load.

The table below shows the network transfer with VAX/VMS 6.2 and CHARON-VAX/XL+ for both a single CPU AMD XP2400+ host and a dual CPU PIII 1 GHz host (both running Windows 2000 professional) with various network protocols and file sizes. The measurements are made using a dedicated 10 MBps Ethernet circuit to/from an Alpha/OpenVMS server:

| Network tests | Dual PIII 1 GHz | Single AMD 2400 |
|---|---|---|
| DECnet copy 5 Mb from CHARON-VAX/XL+ | 921.38 (KB/sec) | 326.87 (KB/sec) |
| DECnet copy 10 Mb from CHARON-VAX/XL+ | 945.48 (KB/sec) | 335.87 (KB/sec) |
| DECnet copy 25 Mb from CHARON-VAX/XL+ | 972.13 (KB/sec) | 321.93 (KB/sec) |
| DECnet copy 5 Mb to CHARON-VAX/XL+ | 961.54 (KB/sec) | 801.71 (KB/sec) |
| DECnet copy 10 Mb to CHARON-VAX/XL+ | 1016.26 (KB/sec) | 784.31 (KB/sec) |
| DECnet copy 25 Mb to CHARON-VAX/XL+ | 1037.34 (KB/sec) | 828.00 (KB/sec) |
| | | |
| TCPIP copy 5 Mb from CHARON-VAX/XL+ | 591.02 (KB/sec) | 130.01 (KB/sec) |
| TCPIP copy 10 Mb from CHARON-VAX/XL+ | 632.24 (KB/sec) | 131.06 (KB/sec) |
| TCPIP copy 25 Mb from CHARON-VAX/XL+ | 643.56 (KB/sec) | 131.94 (KB/sec) |
| TCPIP copy 5 Mb to CHARON-VAX/XL+ | 816.99 (KB/sec) | 253.98 (KB/sec) |
| TCPIP copy 10 Mb to CHARON-VAX/XL+ | 901.17 (KB/sec) | 258.89 (KB/sec) |
| TCPIP copy 25 Mb to CHARON-VAX/XL+ | 962.90 (KB/sec) | 262.58 (KB/sec) |

The 1MB/sec signifies near saturation of the 10 Mbps Ethernet link, and a faster dual host system will not provide much more throughput. 100 Mbps Ethernet links are not supported.

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