



SystemFlow
API and Development Libraries

SwiftNet one-time sample configuration setup for the Model 4292 C6203 DSP Processor VME board.

SwiftNet supports workstation to VMEbus interfaces:

- Ethernet
- Bus Adapters
- Embedded CPUs
- Embedded DSPs
- Integral card cages

Platforms supported by SwiftNet:

- SUN SPARC workstations running Solaris
- VxWorks CPU processor boards (68k, SPARC, PowerPC)
- Pentium computers running Windows 98/NT/2000/XP or Linux

Ordering Information

Model 4945 SwiftNet Host Software is bundled with major software packages for host-to-target links not utilizing Ethernet. Two popular Ethernet versions of SwiftNet, which include Model 4945, are also offered:

Model 4940 is EPROM-based firmware that turns almost any popular CPU board into a SwiftNet compatible, Ethernet-to-VMEbus adapter.

Model 4941 is the VxWorks Developer's SwiftNet API for 68030, 68040 and PowerPC boards. This collection of C-library functions allows VxWorks applications to utilize SwiftNet communication function calls.

Communication between hosts and DSP targets in a development system is one of the most prevailing and difficult issues for a system designer. It becomes even more complex as additional host platforms, development tools and DSP board designs are developed.

To help link these tools and platforms and to allow multiple users to communicate freely, Pentek developed **SwiftNet**.

SwiftNet Connectivity

SwiftNet is a powerful networking protocol that links your workstation and software development tools to your DSP processors. SwiftNet treats DSP processors as network devices and supports all possible combinations of platforms, tools and boards, thereby improving the overall development environment.

SwiftNet is based on an applications programming interface (API). The SwiftNet API is a collection of C-language library functions that allow you to utilize the powerful communication protocols of SwiftNet within custom programs, giving you the interoperability that is needed in multiplatform systems.

SwiftNet is the ultimate host-to-target link for DSP code development because it adapts easily to any system configuration from simple single-processor boards to extensive multiprocessor systems in remote locations. Since it is based on the TCP/IP protocol, it even makes DSP development over the internet or intranets practical.

Workgroups with several workstations linked by Ethernet can also use SwiftNet to access the same card cage.

SwiftNet even allows each developer to access different DSP chips on the same

multiprocessor board. Basically, DSP access can be shared with as many users as needed wherever they are located.

One-Time Configuration Setup

SwiftNet is extremely easy to configure because you only have to do it once. It utilizes a configuration file on the host which stores a directory and access path for all target DSPs in extended multiprocessor systems. A SwiftNet configuration manager program assists you in assigning user defined alphanumeric device names to each DSP target in the distributed system. This file maintains access paths for the card cage, the address of the processor boards, interrupt levels, configuration of any mezzanine boards, addressing mode and other system information.

When the system hardware changes due to new requirements, only the configuration file needs to be modified in order to maintain connectivity within the system.

SwiftNet also provides a communications protocol for bidirectional data and message passing between any two processors equipped with SwiftNet. Based on a client-server model, each processor initiates messages to any other processor simply by referencing the destination processor's SwiftNet name as defined in the configuration file. Access information automatically retrieved from the configuration file is used by the SwiftNet drivers to direct the message to the desired target.

Downloading and Debugging

SwiftNet resolves all addressing for each target, eliminating the difficulty often encountered in establishing the necessary link for downloading and debugging code.

Pentek program loaders utilize the SwiftNet protocol to direct executable code files from the host file system into the appropriate memory space of any DSP target board. This software product's ability to handle multiple targets greatly simplifies loading of multiprocessor boards and systems.

SwiftNet also has a C-Standard I/O Server (SNIO) bundled with it that allows programs on the DSP to read and write files as well as console I/O to the host system.

In addition, since SwiftNet operates on an interrupt basis, it incurs zero overhead while the DSP program is executing, which is vital for real-time applications. SwiftNet interrupt service routines are compact and efficient and can be easily embedded in virtually all applications.