VME Momentum

Introduction

VME technology continues to be a favorable choice as an industrial embedded computing architecture. Many current users have taken advantage of the long life cycle of VME products and have refreshed their product lines with the vast selection of VME products on the market. New projects are leveraging the advancements in VME technology with an eye on performance and the life cycle advantages of VME.

The VME technology family of specifications has grown significantly since its inception. VMEbus has expanded from the original family of a core VME32 parallel bus specification, a VME Subsystem bus, and a VME serial interconnect to today's broad family of complementary state-of-the art specifications.

The core specification has continued to evolve in performance and capability from the original 32-bit bus to a 64-bit bus and from 40MBytes/s maximum to 320+MBytes/s with more bandwidth performance on the near horizon. As the serial switch fabric solutions that include Gigabit Ethernet, PCI Express, RapidIO, StarFabric, Infiniband and other alternatives gain popularity and additional usage to form critical mass in the industry, specific purpose parallel and serial subsystem buses will start sharing market space by solving different problems within tomorrow's embedded systems. VME will evolve to incorporate the appropriate alternatives.

Several system management specifications have also been ratified that make the development of VME systems easier with more robust system management. Proposals continue to be submitted and considered for addition to the VME Technology family to improve VME's utilization in complex systems.

The VME Standards Organization (VSO) and ANSI have ratified nearly thirty supporting standards over the past 10 years, with several more in working group status at this time. These standards support the continued evolution of the core VMEbus technology to ensure a solid foundation for the future.

VME Technology Roadmap

Increased market demand for VME, combined with waves of new technological advancements, led to the update of the VME Technology roadmap. This roadmap will help direct users through the various VME related options and encourage user participation in future specification development.

The roadmap is symbolized by the major specifications surrounding the core of VME technology, the foundation upon which solutions may be built. New emerging standards will build on the legacy of VME technology compatibility.

Each of these standards adds progressively more capability and performance to the VMEbus technology core. New products, from many suppliers, emerge that leverage the evolutionary changes in technology.

VME32: The original VMEbus specification with support for 32-bit data transfers. The maximum theoretical bandwidth is 40MB/s.

VME64: Added 64-bit data capability that boosts bandwidth to 80MB /s maximum plus other improvements to the original specification. A new 5-row backplane connector was introduced that added data and I/O capability to the original specification while still preserving backwards compatibility.

VME2eSST: Extends performance by adding a two edge, source synchronizing data transfer capability that allows sustained data transfers in excess of 300MB/s. Concepts exist that could take that to over 500MB/s. VITA 31 Ethernet on P0, as well as several other serial schemes, all work with the VME32, VME64 and VME2eSST configurations.

VXS: VME Switched Serial (**VXS**) combines the event-driven parallel VMEbus with enhancements to support switch fabrics over a new P0 connection. VXS maintains backward compatibility with existing backplanes that do not have a conflicting P0 scheme. Several fabric protocols are mapped out for VXS including, 10 Gigabit Ethernet, PCI Express, Serial RapidIO and Infiniband. VME's parallel bus architecture provides bus control and maintenance data, handling everything from single byte transactions to 300+MB/s block data transfers. Combining this in various ways with the emerging switch fabric technologies for multi-point, high-speed data transfers creates choices for embedded computing designs of all types.

V.46: VME PCI Serial Switched Fabrics, breaks out from the traditional connector scheme of VMEbus to merge the latest in connector technology with the latest in bus technology. V.46 combines best-in-class technologies to assure a very long technology cycle similar to that of the original VMEbus solutions. Traditional parallel VMEbus will continue to be supported by V.46 through bridging schemes that assure a solid migration pathway.

The original specification remains a foundation upon which evolutionary changes are made. The foundation continues to be a valid base that is compatible with new VMEbus technology. Products based on earlier generations of the VMEbus technology family remain valid and continue to be interoperable with the new developments.

VME is a versatile, mainstream, evolutionary solution to your computing needs. Be sure to visit the VME International Trade Associations (VITA) website at www.vita.com for the latest developments in VME Technology.

VMEbus Technology:

Building on a Legacy of Compatibility