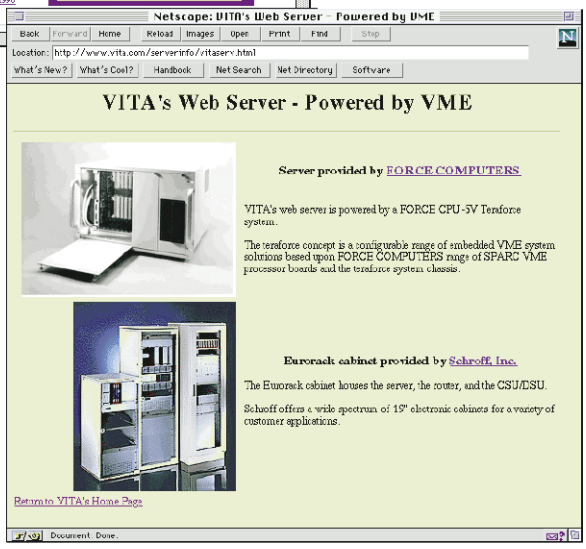
The VITA Web Site- Driven By VME Technology

Val King, Group Product Marketing Manager, Force Computers

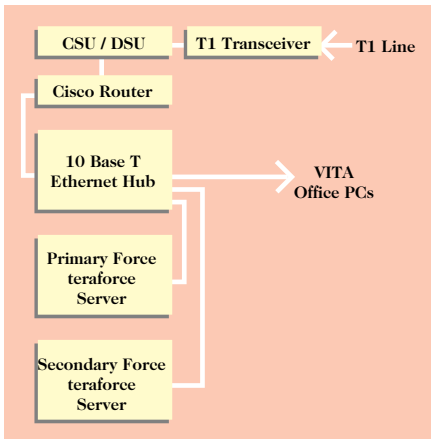
One of the advantages of VITA being such a vital trade association is, when you need to implement a technical solution on the association's own behalf, our members aren't shy about weighing in with technology and expertise. A case in point is the current VITA Web site. Spearheaded and managed by VITA Technical Director, John Rynearson, and underpinned by VME-based equipment donated by members Force Computers and Schroff, Inc., our association's site is clearly *not* a case of the shoemaker's children going barefoot.

Although the VME architecture was standardized long before Web serving was ever dreamt of, VITA's site server implementation stands as an excellent example of VME's robustness and flexibility -- handling more than a million hits a year, with no unplanned downtime. But many of us can remember when it wasn't always this way.

As a non-profit international trade association, VITA's primary purpose is to disseminate information to members worldwide. In the past, information was distributed through the hard copy VITA directory, through paper drafts of technical specifications and so on. Obviously, the Web provides a much less costly and much more efficient medium; thus, the first VITA site went up in 1995, hosted by an outside service and running on a Sun platform. Yet it didn't take long before the membership had overwhelmed its resources and the decision was made to bring it all in-house.



An in-house Web site provided an excellent venue for VME to strut its stuff. Even though VME was not designed with Web serving in mind, the 24x7 nature of the Internet requires many of the attributes that VME brings to the embedded applications it is designed to support. "If VITA has a point to prove, it is that VME means high reliability and high performance in a standardized architecture," says VITA's Executive Director, Ray Alderman. "We represent VME, so why not use our own technology to promote itself on our Web site?"



Block Diagram of VITA web site.

The next decision was to continue with the Solaris platform. "Solaris is known for its stability and reliability, and if we are showcasing VME's reliability and performance-under-pressure, we want every aspect of the system to be equally reliable," claims Alderman. "Plus, there is excellent hardware/software integration between SPARC chips and the Solaris OS, and we wanted our site to benefit from that."

At this point, in May 1996, Michael Thompson of Schroff, a leading manufacturer of 19-inch racks, donated the system's rugged 19" VME Eurorack chassis, along with providing his invaluable expertise in UNIX®, Solaris® and SPARC® technologies. At the same time, Force donated the Web server itself -- a SPARC-based Force teraforce 5V system, built around the VME bus and running Solaris 2.5. Thompson then downloaded Apache Web server software off the Internet at no cost, and the site's infrastructure was rounded out with a dedicated line and routing equipment.

In selecting which server hardware to donate, Max del Hierro, technical marketing manager at Force, and Wayne Fischer, Force's director of strategic programs worked closely with Rynearson. Together they selected the teraforce 5V because it is, in del Hierro's words, "an easy to install, highly reliable workhorse that is more robust than a desktop system because it is built for embedded applications."

According to Fischer, "As a senior member of VITA, we wanted to make sure to donate a proven system that is flexible enough for a multitude of applications. Because the teraforce 5V system is 100 percent Solaris compatible, the SPARC-based teraforce system makes a beautiful Web server."

The teraforce system concept defines a configurable range of embedded VME system solutions based on Force's range of SPARC VME boards and teraforce system chassis. Hard disks and peripherals are installed via TMM modules that plugged directly into the VME backplane. The engine of the teraforce 5V is Force's SPARC CPU-5V board with a fast microSPARC-II processor -- perfect for a wide range of UNIX applications.

According to Rynearson, "All our original Web materials were generated and based on Solaris. The teraforce system essentially emulates a Sun workstation, so we didn't have to do anything differently to get our existing pages up and running."

The teraforce 5V went into the Schroff Eurorack cabinet, along with a Cisco router and an Astrocom CSU/DSU. Thompson says that the site ran with this configuration for about a year, and then came the addition of the ESOFTA domain. (ESOFTA, the Embedded Software Association, has its genesis in the VITA Standards Organization's Embedded Systems Software Environment effort. ed) Solaris and Apache were reconfigured for this second domain without much difficulty, and the standard UNIX email program, Sendmail, was reconfigured to receive email for both vita.com and esofta.com. Around the same time, Force donated a second CPU-5V and disk drive for spare parts.

Says Thompson (whom Rynearson describes as an 'equipment packrat'), "We couldn't stand to see the second CPU just sitting there, so Schroff donated a second cabinet and I donated a keyboard, mouse, CDROM and monitor from my home collection." The result is a second complete server acting as a backup Web and email server that is also a hot standby in case of problems.

This second server is also used for testing software so there is no danger of interrupting the site's operations.

So far, there have been no significant problems with the site. "The Force and Schroff combination has proven to be a great decision, along with the decision to combine VMEbus, Solaris and SPARC," claims Alderman. "We've had no hardware failures in the year and a half we've worked with this system, only a couple of power failures and one outage caused by a cut T-1 line; we easily recovered from that. In an ideal world, every system would work this well and if Force hadn't donated our Web servers, I would certainly buy them now."

This reliability is in the face of approximately 100,000 hits per month, over 1 million hits per year, with users accessing the entire VITA product catalog along with draft standards of up to 100 pages in length. Visitors run the gamut of VME usage, from industrial to telecommunications to military. One typical VITA Web site visitor is Jerry Braun of the Naval Surface Warfare Center. Branch manager of the Center's Commercial Technology Support Branch in Crane, Indiana, Braun is a source point for military system program offices who look to

Open System Buses Meet Increased Flexibility Requirements In Communication Board Design

Todd Wynia, Communications Business Manager, Artesyn Communication Products, Inc.

A highly competitive environment and changing market demands in the telecommunications industry is resulting in a need for smaller, more scalable components and systems. To meet these demands and provide lower cost and faster time-to-market solutions, equipment manufacturers are shifting from proprietary technologies to more open platforms.

Open system buses like VME, PMC (PCI Mezzanine Card) and CompactPCI provide a variety of technical design benefits and competitive advantages, including enhanced functionality and application flexibility. Designers can build modular, scaleable systems that can be easily upgraded by replacing the old board with a newer design without changing the basic system architecture. In addition, adding mezzanine capability to communication boards provides an even greater level of flexibility for designers beyond the system bus.

VME- The Industry Leader

Driven by a broad base of products and a rugged, scaleable nature, VME is the most dominant and stable open bus standard available today, providing a good deal of flexibility both in terms of variety of components and choice of suppliers. Hundreds of VME vendors offer thousands of products to choose from, including a variety of supporting products, like operating systems and backplanes. When time-to-market is a critical issue, the ability to buy off-the-shelf VME components and put together systems very quickly is a major advantage.

Competition in the VME marketplace is driving the development of new technologies capable of keeping pace with the increased demand for faster data transfer speeds. When the VMEbus was first introduced in the early 80s, the backplane data transfer limit was 40 MBps. VME64 is now twice that (80 MBps.) and the recently announced 4xVME technology (VME320) could increase the bandwidth to 320 MBps., dramatically increasing VME's capabilities for use in applications requiring higher bandwidth.

From a technical standpoint, VME is also extremely scaleable, housing anywhere from 1 to 21 CPU or I/O boards. VMEís ability to carry up to 21 boards on a single backplane is extremely important in the telecommunications and data communications markets which both require high density and high performance.

The flexibility of VME— including the optional use of mezzanine cards— allows designers to leverage the strengths of the backplane by incorporating additional buses or interfaces in a complementary manner. For example, some designers are using VME as the control bus and ATM on a PMC module as a mechanism to transfer real-time data such as voice or video within a system or to other systems. Others are using VME as the system bus and a PMC T1 or E1 module is acting as the data network.

VME is already being used heavily in several components of the Intelligent Network, including Signal Transfer Points (STP), Service Switching Points (SSP), Mobile Telephone Switching Offices (MTSO), Intelligent Peripherals (IP), Base Station Controllers (BSC) and Broadband Transceiver Stations (BTS). The functionality of PMC, the flexibility of off the shelf modules and the standardization of subsystem buses like TDM (Time Division Multiplexing), will continue to propel VME even further into telecommunications applications where reliability and time to market are essential.

The Emergence Of PMC

The PMC architecture is an open IEEE standard (P1386 and 1386.1) which has been rapidly adopted by many board-level designers, both on open buses like VME as well as on proprietary bus boards. The use of PMC in proprietary environments allows designers to bring elements of openness to a closed system to increase functionality and get to market quicker. PMC is electrically identical to PCI (Peripheral Component Interconnect), the high speed local bus being used in most new PCs today. However, while the PCI specification defines a 10.7cm x

from previous page

him for product and vendor recommendations. He personally averages three or four visits a week to the VITA site and his branch utilizes it as an essential tool for the support of their customers. "We can access product information in real time, without having to visit each vendor's site," says Braun. "It really puts all the information in one area where it's easy to find as we compare and identify product availability. Once we find what we want, we can automatically link to a specific company's web site."

Says Rynearson, "VITA deals with information, and the Web is the best way we now have to get that information out into the world. It's a terrific bonus that we can use our own standard, VME, as the heart of our information system."

Force Computers is on the web at: www.forcecomputers.com. Schroff Inc. is on the web at: www.schroffus.com