Bus Architectures Seek Openness

'Association of Associations' and the first meeting included representatives of groups supporting Multibus, VMEbus, Nubus, SCSI bus, and Futurebus. IBA will not limit participation solely to associations, and attendance at the first meeting included representatives of several leading open architecture vendors.

Ray notes that Japan uses a triangle of support concept, where industry, education, and government work together for the promotion of their general well being in a number of industries.

The proposal for IBA suggests several potential areas of involvement and activity.

In the engineering and technical arena, ideas include:

■ Reporting to the user and manufacturing community on the status of open bus architectures in IEEE working groups.
■ Developing performance and comparison charts of open bus architectures based on sound engineering parameters.
■ Creating a master list of general issues common to all buses.
■ Identifying the software issues that are specific and common to open buses.

In the sales and marketing area, proposals include:
■ Assisting with export marketing by developing lists of potential overseas distribution/sales agents. Similarly, developing an international open bus directory to help improve overseas marketing contact.
■ Expanding the domestic market by developing a master list of qualified agents, VARs, and distributors of open bus architecture products.
■ Serving as an industry clear-

ing-house for sales data, much like the Semiconductor Industry Association (SIA) does for components, and publishing composite industry data.
■ Providing associated financial and accounting data. For example, developing information on the industry average financial ratios for interest to the manufacturing community (average days accounts receivable, sales per employee, cost of design for a board for each bus, etc.). Similarly, providing a capitalization analysis of companies in the open bus business and creating channels of communication between companies that need capital and those who have it.
■ Providing government procurement agencies with presentations and information designed to serve as a baseline in bus architecture procurement.
■ Providing the user community with business and technical information on open bus

architectures.
■ Working with the academic community to ensure that curricula include useful information on bus architecture and board-level developments. Serving as a clearing-house to keep manufacturers aware of the specific needs of the educational community.

At the Buscon meeting, Ray was named acting chairman of IBA and a steering committee has been formed to help 'get the ball rolling.' The next meeting, which will work on the name and charter for IBA, will take place at Buscon West.

In the interim, Ray asks any *CTR* reader who is interested in IBA or has ideas or comments for the charter of such a group to contact him at 919-833-2000. Similarly, *CTR* readers can fax their comments to Ray at 919-833-2550.

For more information circle $21 on reader inquiry card.
Bob Hanson *is chief engineer at Intel Corp.*

Intelligent Power System Protects Process Time

by George Wheelock

In the purchase of power protection devices, monitoring and conditioning capabilities, backup, shutdown, and switching time constitute the traditional areas of concern among computer users, sellers, and resellers. No one wants to lose data.

The loss of processing time, however, is a different story. Unattended process-intensive applications, such as database maintenance, posting operations, number crunching, logging, and process control are vulnerable to power outages. While the original data may be saved, hours or even days of processing are normally lost, leaving operators no choice but to start over. In cases of factory automation or environmental control, records of ongoing data collection may be permanently lost. Yet this loss of processing time is a burden that users of heavy duty processing applications were previously told they had no choice but to accept.

Now however, the evolution of intelligence in power protection has made it possible for an uninterruptible power supply to communicate with low-level software to restart applications after power failures. Some power protection manufacturers even provide protection for manual data entry applications, using keystroke memory systems capable of reproducing as many as 20,000 keystrokes for re-inputting to restarted applications.

Such a combination of microcomputer technology and advanced power protection equipment is achieved in the UniSaver 100, developed for personal computers by Universal Vectors Corp. Created for protecting unattended processes, the UniSaver 100 'hibernates' a process in operation at the time of a power outage—stores it away in non-volatile memory—and then retrieves it and continues when power resumes.

The technology here is that the

new approach of 'hibernation' is a unique integration of TTL technology into both the power backup circuitry and a proprietary memory and control circuit board residing on the computer bus. When ac power fails, UniSaver 100's batteries take over as in most conventional power backup systems. But that's where the similarity ends. UniSaver's hardware-resident software takes command, halting the running process, transferring the entire contents of the computer's system state to its own 1-Mbyte non-volatile RAM board, and shutting the system down.

The system state includes the contents of RAM memory (up to 16 Mbytes), the microprocessor and controller registers, and video RAM. This complete transfer enables the UniSaver 100 to lock away ('hibernate') any application in mid-operation.

When power returns (up to a week later) UniSaver 100 uses its on-board memory and control circuitry and software to return the computer process to the exact state it was at when halted, and processing continues.

Operators who spend a lot of time inputting data—such as programmers, CAD/CAM users and desktop publishers—also benefit from this processing protection safety net. Unlike keystroke memory systems, which require the operator to develop macros for each application, the UniSaver is totally automatic and software-transparent.

Future applications for processing and power control systems are virtually endless; the industry can expect to see these systems develop especially in the areas of networking and government security.
For more information circle 534 on reader inquiry card.
George Wheelock, *director of marketing/sales for Universal Vectors Corp. (Handon, VA), holds a BFA from the Univ. North Carolina and an MBA*

UDFS Brings Workgroups Together

by Eric W. Waalolek

Universal distributed file system (UDFS) technology represents the next large and conceivably final step in the evolution of distributed file sharing. UDFS technology also proposes a method that addresses the real need of integrating the large number of installed workgroups that run dissimilar DFS

protocols, from the bottom up, as opposed to OSI's top-down approach.

The market today is saturated with a small number of popular DFS: Sun's NFS, IBM's SMB (MS/NET and LAN Manager), Apple's AppleShare, DEC's DECnet, and the forthcoming ISO FTAM. Each of these de facto DFS is sufficient for file

sharing within its respective workgroup—NFS is popular among engineers, for example, and SMB among office workers. Although most DFS are inherently heterogeneous (NFS and SMB are available under DOS, UNIX, and VMS), none addresses the ultimate requirement of file sharing between DFS workgroups.

Consider the following organizational problem. The engineering department decides to put the latest greatest chip on a board. However, this chip is more expensive than the previous chip, so accounting and marketing need to know about the effect on cost and pricing. Moreover, manufacturing will need to know about the new fab in order to build the boards to the new specification.

Further, consider that engineering, often Sun users, communicate via NFS while accounting and marketing, beloved DOS applications users, are connected via MS/NET and LAN Manager (SMB), and manufacturing simply logs directly into a VAX/VMS system with VT100 terminals. Now, even if all three departments are connected to a central VAX, and even if the VAX is both an NFS server and an SMB server, the three departments can't share information transparently. The UNIX text file that describes the plan to incorporate the new chip that engineering has stored on the VMS system through NFS is inaccessible to
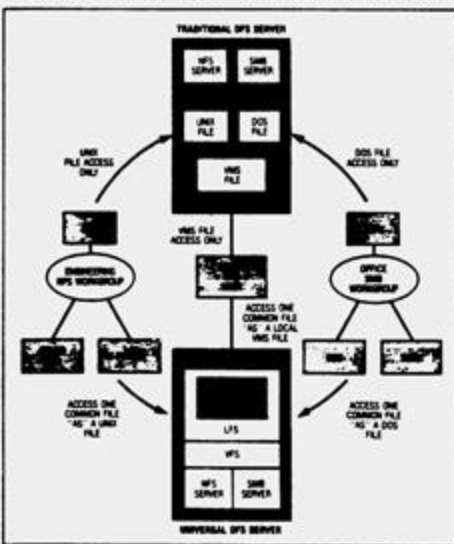

Fig Within a universal distributed file server (UDFS), a user may store and access via UNIX the same file that another user stores and accesses via DOS or OS/2. This file may further be stored and accessed via a local operating system by a user directly connected to the system where the file actually resides, such

UPS Surge In Minis, Micros

Anyone who has lost hours of data input due to brownouts, blackouts, transient voltages, or other power anomalies has learned the importance of an uninterruptible power supply (UPS). It is therefore no surprise that the UPS market was estimated at $625 million dollars for 1988. This estimate, made in a Frost & Sullivan study, looks to a $1.9 billion industry by 1993.

One new technology advance in the UPS industry is claimed by RTE Deltec (San Diego, CA) for medium to high power on-line systems. Their Model 8000, designed for the 10–25-kVA power range, offers a proprietary configuration that eliminates ac/dc/ac conversion problems common to many UPS systems in the same power range. Company president Ray Meyer states, "The design minimizes the conversion between ac and dc voltages such that even if the batteries were exhausted, the output would be completely isolated and the load protected from most typi-

cal power problems short of a power failure."

The 8000's bidirectional converter eliminates the need for the separate rectifier/charger common in older models. The converter both charges and inverts, providing total conditioning by adjusting the pulse widths and phase angles. A 'make before break' manual bypass switch allows maintenance on the system without interruption or phase shift. This contrasts with older systems that utilize 'break before make' switches that can lose data due to phase shifts and subcycle outages.

In about the same power range, Topaz (San Diego, CA) offers a three-phase UPS featuring four embedded microprocessors that allow the system to adapt itself to specific ac power requirements. Microcomputer-controlled ac and dc feedback loops provide fast response to sudden load changes. This system, designated Powermaker, also features a waveform synthesizer that generates a sinusoidal waveform that outputs for linear and nonlinear loads. This prevents distortion that interferes with current input during low voltage conditions.

At least two vendors have developed system-specific on-line UPS for the new IBM AS/400 series of midrange minicomputers. Emerson Computer Power (Santa Ana, CA) recently announced its new Accupower 400 series, preconfigured as a 'total system package' for ease of installation. The Emerson package directly interfaces with the IBM supporting software for the UPS. Six models are in the series, with power ranges from 1.3–50 kVA.

The major advance from Emerson, according to senior product manager Gary Milton, is a unique power management system. Like other Emerson products, the system will alert a user for a quick power down. But in the AP/400, the signal is far more accurate, because it is tied to the amount of main memory in the system. As a user adds memory, the advance signal can be adjusted on site without power down. Additionally, Emerson offers a distribution panel with a receptacle for each rack plug in the system. Individual power protection is provided for each rack.

Controlled Power Company (Troy, MI) has also come to market with a series of power

systems for the AS/400. The ·Series 1000 Model UP/400D offers a power range of 2–24 kVA in 14 separate models. The system is designed to be expandable as the user upgrades, and features full monitoring capability, power distribution and lower audible noise.

UPS for PCs growing

UPS for personal computers are gaining popularity, and are expected to account for $29 billion in revenue by 1990, according to Frost & Sullivan's newest report. As business migrates to smaller computers, power protection for these machines is an important feature.

Unisys Corp. (Blue Bell, PA), noting that most power protection for PCs is standby backup

power, has introduced a continuously on-line UPS for PCs. In making the introduction, Unisys vice president Clinton B. Teegardin observed, "The uninterruptible power supply is a crucial, yet frequently overlooked element in data-critical personal computing applications. Most PC users purchase a standby power supply after they have had a power loss, but such standby power sources do not regulate power line conditions continuously."

The unit, named the UP1000, offers battery backup and front-panel control as well as continuous monitoring and conditioning of incoming power. Five minutes (minimum) of battery power is provided at

Universal File Sharing Links Departments

marketing and accounting, who need to review it through the VAX SMB server, which only stores and retrieves DOS files. Moreover, engineering's file can't be accessed or read by manufacturing, who are local VAX users, because VMS can't access or read a UNIX file.

This scenario illustrates the problem of a segregated DFS. Since different workgroups' DFS access and store files via different methods and representations, even if DFS are co-resident, they can not share data. UDFS were designed precisely to solve the segregated workgroup problem (see Fig).

Within a UDFS, a user within one DFS workgroup—say a UNIX user within an NFS workgroup—can store and access the same file that a DOS or OS/2 user of another workgroup stores and accesses as a DOS or OS/2 file. This file may further be stored and accessed as a local operating system file by a user directly connected to the system where the file actually resides, for example, a VAX/VMS user. The ability to store, access, and manipulate the same one file as different types of files is enabled by a UDFS invention called the virtual file system (VFS).

The VFS accepts different DFS requests to store, access, or manipulate a given file. The VFS then maps these requests to local file system (LFS) requests to ultimately store the file as an LFS file. Thereby, local users may access the file as a local file, and non-local users may access the same file according to the DFS protocol that their computer uses.

Since the VFS itself is porta-

ble to multiple operating systems, as are most popular DFS servers and clients, and can support multiple popular protocol servers (one VFS could simultaneously service Apple-Share, FTAM, NFS, SMB, and DECNET requests, for example), the potential for universal integrated file sharing should be apparent.

If one DFS workgroup on a common network supported one multiuser host computer with a UDFS (VFS in particular) that supported each of the DFS noted above, then every computer user on the network could share files transparently with every other computer user of every other workgroup. As a matter of practice, it might be better to have several UDFS, which don't necessarily all support the same DFS, located across the network, so one machine isn't overtaxed.

Moreover, UDFS recognize that certain DFS are appropriate for certain workgroups (e.g. a UNIX-like DFS such as NFS is appropriate for engineers, whereas a DOS-like DFS such as SMB is most comfortable to office workers). UDFS encourages a certain degree of DFS departmental variety and doesn't require users to forsake their favorite DFS simply to share files between workgroups, like in an FTAM approach.

Eric W. Wasiolek *is a product marketing manager at Excelan Corp. (San Jose, CA).*

For more information circle 537 on reader inquiry card.

Look for an in-depth technical article on this subject in an upcoming quarterly issue of COMPUTER TECHNOLOGY REVIEW.

DEC/ITC Link Unifies CASE

by Eugene L. Muller
and Geoffrey T. Roach

Use and acceptance of CASE tools in a large software development organization are optimized by the sharing of information across the development life cycle. This information must be shared among project team members and among the discrete tools that the team uses, requiring that the tools be integrated on a technical level and that they share a common user interface.

The CDD/Plus-Excelerator link

With this integration as a goal, Digital Equipment Corp. and Index Technology Corp. have developed a link between Digital's recently introduced Common Data Dictionary/Plus (CDD/Plus) (see Fig) and Index Technology's Excelerator analysis and design tool. This link, the first with CDD/Plus, is the basis for Digital's powerful CASE environment and an independent CASE product. This combination provides a unified environment in which systems builders can produce more maintainable, higher quality systems.

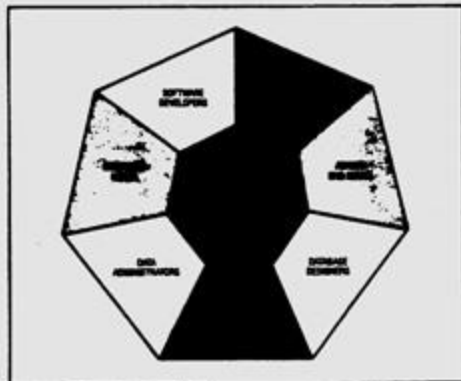Systems builders can merge and integrate data seamlessly

Fig Digital Equipment Corporation's Common Data Dictionary/Plus (CDD/Plus) is the first distributed, active data repository, built to be an open dictionary environment used for software development applications.

Plus, allowing immediate sharing of Excelerator data structures with the CDD/Plus repository that supports VAX-based languages, tools, and information management products. It includes a user interface with a windowing capability, allowing users simultaneously to view and manipulate data from a VAXstation anywhere on a Digital VMS network.

A user never needs to leave

data between the XLDictionary and CDD/Plus. The transfer is accomplished by simply using the capabilities of Excelerator and a few clicks on the mouse.

Because they can share information quickly between Excelerator and the corporate data dictionary residing in CDD/Plus, systems developers can reduce unnecessary data definition and rework in the analysis and design of new