

PRODUCT OVERVIEW

COVUE



CONVEX

CONVEX COMPUTER CORPORATION

"In our environment, COVUEedt and COVUEbinary are invaluable; we couldn't live without them. We use COVUEshell as 'waterwings' for staff members who are new to the CONVEX operating system."

Alan Aronoff
Norden Systems
Norwalk, Connecticut

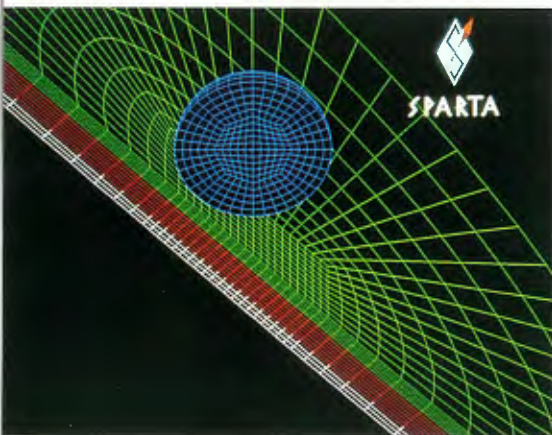
The COVUE Solution

In industries ranging from heavy manufacturing to pharmaceuticals, aerospace to petroleum, access to the power of supercomputing is the key to success. Incremental technological advances are no longer enough to keep firms ahead of their competitors: it takes breakthroughs—and speed. As product development moves faster, demands for quality and innovation grow stronger.

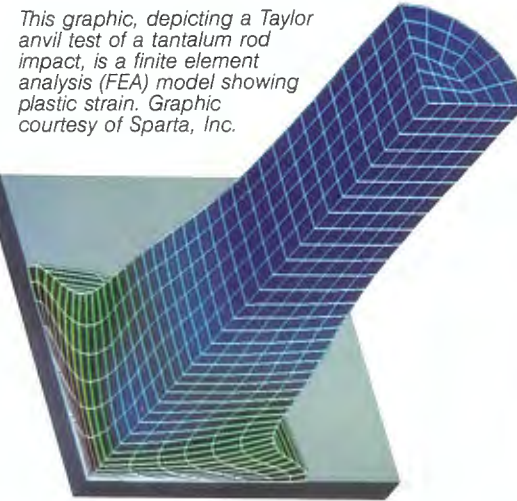
Companies must get better products to market faster. The CONVEX solution: the COVUE™ (CONVEX-to-VAX™ User Environment) family of products combined with CONVEX supercomputing. COVUE products ease the transition from the VMS™ environment to the CONVEX supercomputing environment.

Using CONVEX supercomputers, scientists and engineers tackle problems too large or complex to run on the VAX architecture. They make breakthroughs never before possible—in a shorter product development cycle. Problems that took hours to run on a VAX-class machine complete in minutes on CONVEX systems. Plus, users tap this extraordinary power without leaving the familiar VAX/VMS environment.

Faster Performance



This plot, representing the impact of a steel ball on layers of kevlar/urethane, is typical of the mechanical computer-aided engineering done with CONVEX systems. Graphic courtesy of Sparta, Inc.



This graphic, depicting a Taylor anvil test of a tantalum rod impact, is a finite element analysis (FEA) model showing plastic strain. Graphic courtesy of Sparta, Inc.

Some minicomputer users have had to settle for less-than-precise results for complex problems: greater precision would mean unwieldy problems and excessive turnaround time. The fast performance of CONVEX systems reduces these constraints, allowing simulations to be run at the degree of precision required. The higher performance of CONVEX systems also means users can undertake approximation applications requiring more iterations to achieve greater precision, simulations that are not feasible on superminicomputers. Once scientists and engineers begin to enjoy the advantages of supercomputing, they invariably undertake more complex simulations and demand increasing precision. That's why those experienced in supercomputing often advise newcomers that their largest computing job today will be their smallest tomorrow!

"The COVUEshell environment allowed us to move to a UNIX®-based operating system and still provide the GCG Sequence Analysis software package to NIH molecular biologists."

Dr. John Dickson
Head of Laboratory Systems Unit
Division of Computer Research
and Technology
National Institutes of Health
Bethesda, Maryland

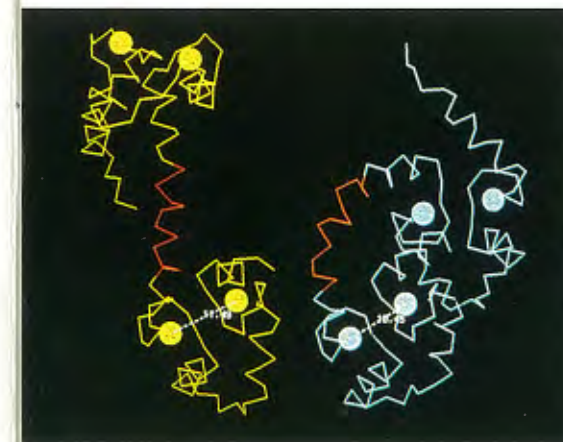
Familiar and Compatible

COVUE makes the performance, large memory, and multiuser environment of CONVEX supercomputers even more attractive to VAX users because they can keep a familiar interface. COVUE software products ease the transition from the VMS environment to the ConvexOS™ environment. Users retain the familiarity of the VMS environment while boosting their productivity with the power of CONVEX supercomputing. The COVUE family includes:

- COVUEshell for VMS DCL command language compatibility,
- COVUenet for DECnet™ compatibility and networking,
- COVUEedt for VMS EDT text editing,
- COVUEbatch for using a CONVEX system as a computational server,
- COVUElib for VMS run-time library (RTL) routines in the ConvexOS environment, and
- COVUEbinary for reading and writing VAX FORTRAN™ binary data files.

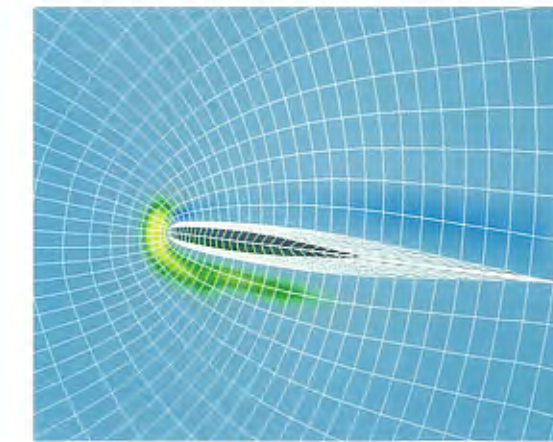
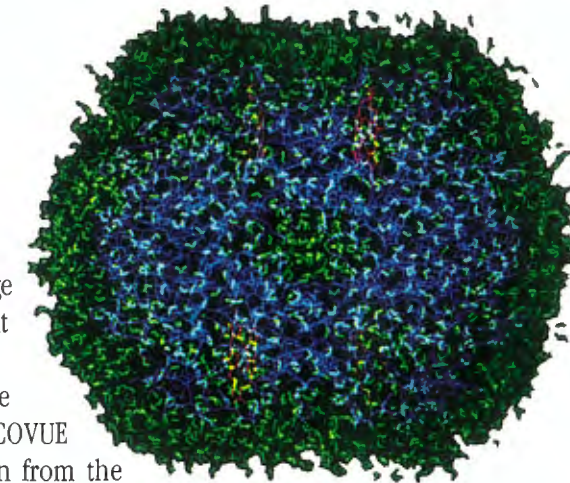
Integrated into ConvexOS

COVUE products provide a consistent, complete, VMS-like user environment for supercomputing. The COVUEshell, which performs in harmony with the ConvexOS utilities and vectorizing, parallelizing compilers, is the cornerstone of this environment. COVUEshell handles symbols, logical names, and command procedures as VMS equivalents. Select COVUEshell at login and you'll never know you're using a ConvexOS-based machine. You can access ConvexOS commands from COVUEshell with a single command. All COVUE products are executable from the CONVEX operating system. For example, you can access the COVUEedt editor, DECnet, and COVUEshell from ConvexOS with a command. You can then use COVUEshell interactively or submit a VMS-style command procedure. You can even customize the interface between COVUE and the CONVEX operating system.



This image is a carbon-alpha ribbon representation of calmodulin, a substance in calcium binding. The ribbon-like crystal structure of the module is at left; the right shows the same structure in aqueous solution. Graphic courtesy of Mt. Sinai Medical Center.

Scientists involved in drug research are modeling structures like the full hemoglobin tetramer shown here. The image represents a system of about 13,000 atoms. Graphic courtesy of BIOSYM Technologies, Inc.



This graphic depicts a model of airflow over an airfoil, an analysis performed on a CONVEX system. Graphic courtesy of Sparta, Inc.

<http://classic.technology>

"In our integrated CONVEX and VAX environment, we use the VAX for timesharing and submit all computationally intensive jobs via COVUEbatch and COVUEnet to the CONVEX machines to run under CXbatch or through task-to-task communication. In this way, we use both systems to their full capacity and enjoy the best of both worlds."

Dr. J. H. Noordik
CAOS/CAMM Center
University of Nijmegen
The Netherlands

COVUEshell

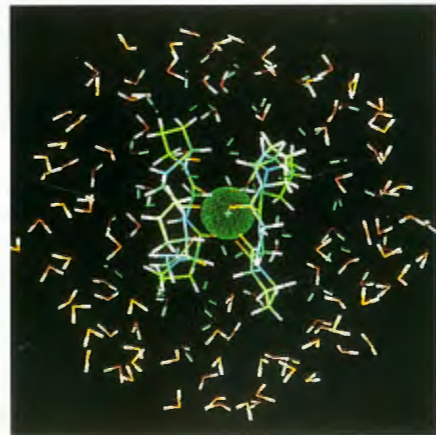
The COVUEshell emulates the VAX/VMS command structure and maintains a command format familiar to VMS users. The command environment supports user-level DCL features such as lexical-function support, tree-structured help facility, spawned processes, compound expression analysis, status monitoring, command-argument prompting, logical/lexical name iteration, and VMS command history function. The COVUEshell command procedure functions are:

- command syntax checking,
- iterative DCL command file support,
- nested DCL command file support with local symbol support (16 levels),
- recognition of comment lines,
- argument passing to command procedures, and
- exception handling.

COVUEnet

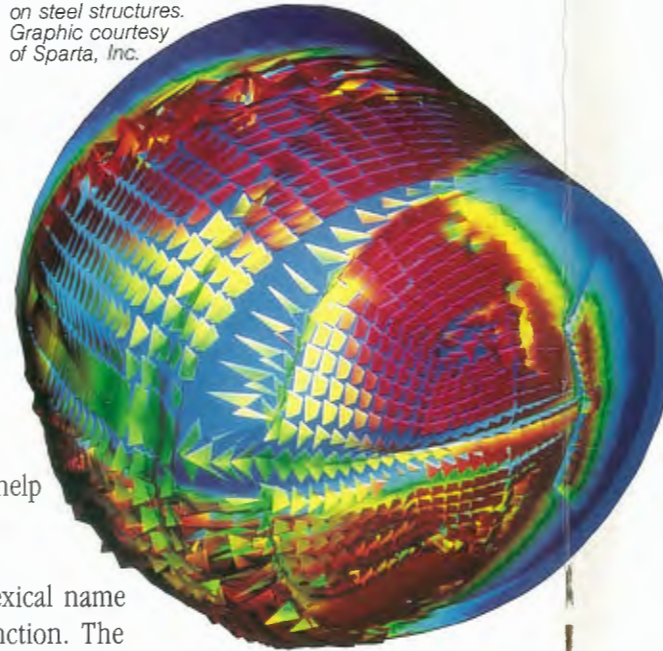
The COVUEnet software integrates CONVEX systems with DECnet networks to share DECnet functionality. A CONVEX system can be a nonrouting node in a DECnet Phase IV network with:

- Task-to-task communications—cooperating processes exchanging data over a logical link.
- Remote file sharing and access—using Data Access Protocols (DAP).
- Network management facility—using *ncp* (network control program), implementing a subset of DECnet capabilities.
- Virtual terminal support—accessing system utilities from a remote node using COVUEnet or DECnet.
- Mail gateway—sending mail to and from CONVEX systems and systems running DECnet.



Molecular biologists using CONVEX systems produce images like this snapshot from a dynamics simulation of a calcium ion in a peptide cage. Graphic courtesy of Mt. Sinai Medical Center.

CONVEX systems supply the power to plot the results of finite element analysis (FEA) on steel structures. Graphic courtesy of Sparta, Inc.



"CONVEX's line of COVUE products has allowed us to enter the age of supercomputing without making our existing equipment obsolete."

Dr. Alan G. Jones
Seismology & Electromagnetism
Continental Geoscience
Department of Energy, Mines,
and Resources
Geological Survey of Canada
Ottawa, Ontario, Canada

COVUEedt

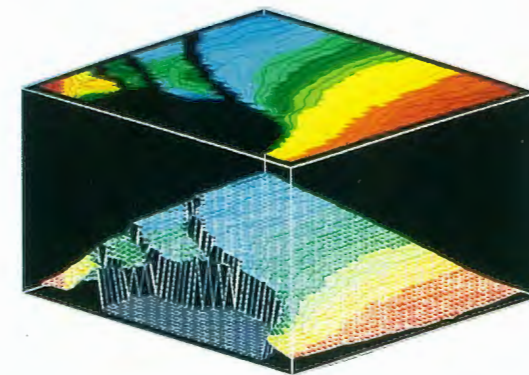
COVUEedt, a screen-oriented text editor, accurately emulates the VAX/VMS EDT keypad, line, and nokeypad modes. COVUEedt can be used in both COVUEshell and ConvexOS environments. Within COVUEshell, COVUEedt expects and creates VMS-style file names and uses all other COVUEshell features, for example, logical names and symbols. Within ConvexOS, COVUEedt reads standard ConvexOS file names and has access to all ConvexOS environment features. Users can migrate from VMS to ConvexOS and continue to use COVUEedt. Unlike *vi* and Emacs, COVUEedt uses the keypad of any VT100-like terminal for its commands, freeing the main keyboard to act as a typewriter. COVUEedt reads an initialization file on start-up, giving each user a customized editor. Key definitions and macros further expand its flexibility and use.

COVUEbatch

COVUEbatch gives VAX users an easy-to-use batch interface to CONVEX supercomputers. With COVUEbatch, batch command files are transmitted automatically to a CONVEX system across a DECnet network with COVUEnet software. Batch job output automatically returns to the user's VAX system. COVUEbatch automates the process of running jobs on a CONVEX for greater productivity. With CONVEX servers on a DECnet network, large batch processing workloads are handled quickly and easily, resulting in lower costs, higher productivity, and timelier, more accurate results. Because COVUEbatch is integrated with the COVUEshell command interpreter, batch command files use familiar DCL commands. Existing VMS batch command files process on a CONVEX using COVUEshell with little or no modification. Jobs submitted from a VAX use ConvexOS commands for maximum flexibility.



Geological Survey of Canada uses a CONVEX system and the COVUE environment to process geological data. Graphic courtesy of Geological Survey of Canada.



Petroleum explorationists use 3-D surface projections like the one shown here to characterize subsurface structures that could contain trapped oil or gas. Graphic courtesy of Halliburton Geophysical Services.

"With COVUEedt, our users have immediate access to the power and speed of the CONVEX in a familiar environment, without the loss in productivity from learning a new editor."

Johannes Pesch
Mathematical Technical
Assistant
BAYER AG Leverkusen
Leverkusen, Germany

This graphic depicts Von Mises stresses of pliers under a clamping load. The plot was produced on a CONVEX using ANSYS®, a mechanical computer-aided engineering application. Graphic courtesy of Swanson Analysis Systems, Inc.



COVUElib

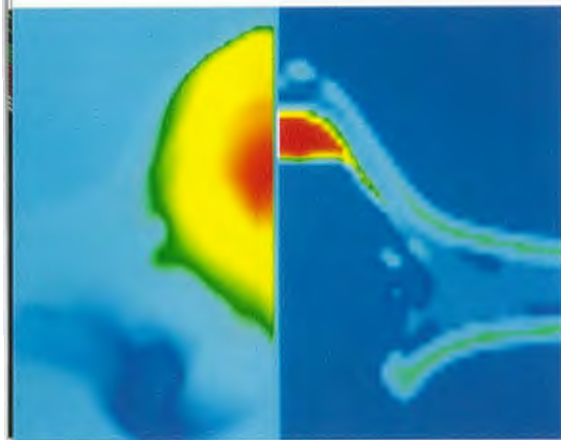
COVUElib is a run-time library that emulates more than 180 of the most frequently used VMS system services and run-time library routines. With COVUElib, VAX applications that use VMS SYS\$, STR\$, and LIB\$ routines access ConvexOS with little modification. COVUElib also allows ConvexOS programs to refer to files using VAX VMS file names. When run on a CONVEX supercomputer with COVUEshell, applications programs use VAX file names instead of ConvexOS names, resulting in even greater ease of use.

COVUEbinary

COVUEbinary allows VAX data files to be read and written by FORTRAN programs running on a CONVEX system. It reads a data file from a VMS or ConvexOS format and creates an equivalent file in the other (VMS or ConvexOS) format. COVUEbinary provides utilities on both systems and integrates features from CONVEX FORTRAN, ConvexOS, COVUEnet, COVUEshell, COVUElib, and VAX/VMS so files can be easily transferred from the ConvexOS or VMS environment. COVUEbinary serves as a bridge between VAX binary files and CONVEX FORTRAN, converting files from a format recognized by one system (VMS or ConvexOS) to a record system understood by the other system.

VAX FORTRAN Compatibility

CONVEX FORTRAN is semantically and syntactically compatible with VAX FORTRAN and includes extended VAX functions. You can easily transport VAX FORTRAN source code to CONVEX systems. CONVEX FORTRAN supports VMS functions. A highly vectorized and parallelized run-time system, linked to a user program, controls program execution and interface with system services. Along with the ANSI-77 standard, CONVEX FORTRAN supports both the standard and extended data types of the VAX FORTRAN as well as I/O-related features. These features eliminate the need to modify VAX FORTRAN source code when transporting the code to a CONVEX system. This translates to instant productivity—you benefit from the power of supercomputing the instant the system is running, without spending days or weeks translating codes.

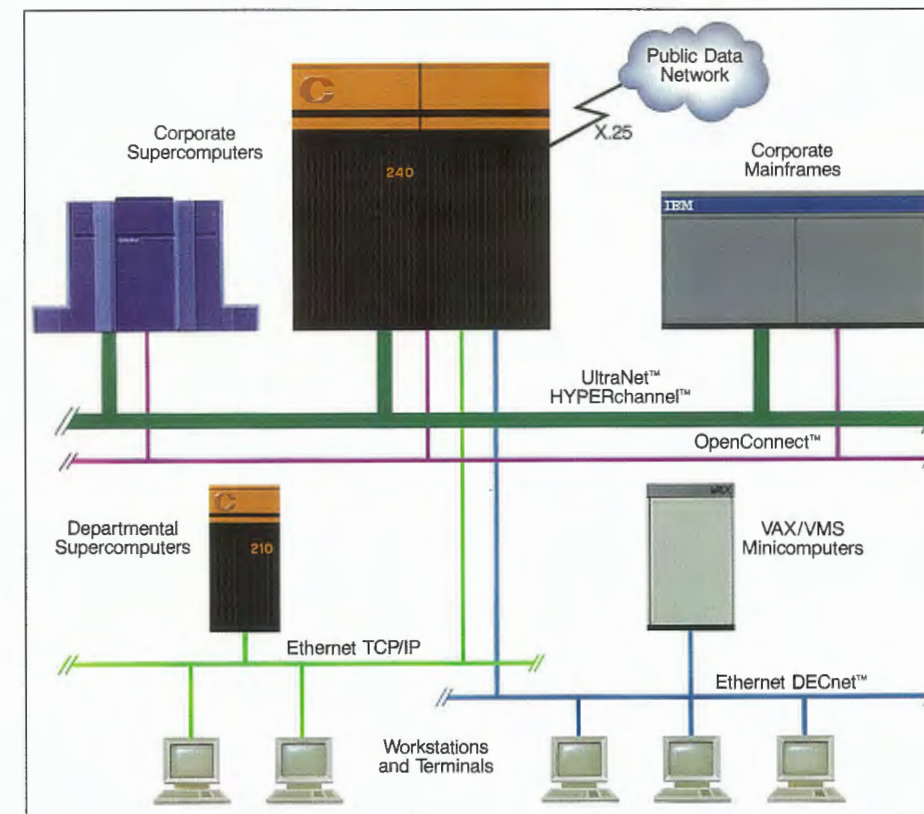


Engineers use CONVEX systems to process impact and stress analysis like the steel sandwich tantalum shown here. Graphic courtesy of Sparta, Inc.

CONVEX: The Versatile Answer

Scientific and engineering companies have varying requirements for computer resources. Some sites reserve supercomputer resources for particular applications, others timeshare, run applications, and develop software on the same system. With CONVEX, you have the choice—a stand-alone computing system, a computational server, or both at the same time. As a computational server, a CONVEX system uses COVUEbatch to submit jobs and transmit inter-system files. With COVUEnet, submit computationally intensive jobs to the CONVEX from the VAX and receive results on the VAX. You never have to leave the VMS environment to take advantage of CONVEX supercomputing power. As a stand-alone system, a CONVEX system running COVUEshell is a user interface with VMS-formatted commands. For large data transfer requirements, log directly into the CONVEX system; for lower data transfer requirements, submit jobs remotely. With COVUE providing ease of transition,

CONVEX FORTRAN providing the compatibility, and a library of more than 600 third-party applications, CONVEX offers the most well-rounded solution to today's demanding computational problems.



COVUEnet and other CONVEX networking products are part of the open supercomputing solution, bringing the power of supercomputing to the VAX environment.

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