A key problem for researchers in computational mantle dynamics is resolving, with appropriate physical parameterization, the earth's rigid outer skin, the lithosphere. To address this problem, scientists at Los Alamos have developed a parallel message-passing version of the 3-D spherical finite element code TERRA. The image shown here is a snapshot in time of a strongly time-dependent, incompressible convection solution within the earth’s mantle. The mesh used in this calculation has more than 1.3 million nodes. This is one of the largest mantle dynamics calculations ever performed and is feasible only on machines such as the Cray T3D, a massively parallel computing system at the Advanced Computing Laboratory. This research is being conducted by Hans-Peter Bunge of the Institute of Geophysics and Planetary Physics and John Baumgardner of T-3.
Integrated Computing Network (ICN)
Consulting
Centralized scientific and engineering computing ........................................... 7-5745
Lab-wide administrative and business systems ................................................. 7-9444
Passwords (required for access to ICN) ............................................................ 5-1805
Systems documentation (local and vendor supplied) ....................................... 7-6992

Central Computing Facility (CCF) .................................................................... 7-4584

Advanced Computing Laboratory (ACL) .......................................................... 5-4530

Local Area Network (LAN) system administration services ............................ 5-2220

Desktop Support Center (DSC) ......................................................................... 7-4357 (7-HELP)
(PC Help for IBM and Macintosh personal computers)
For questions about PC software: PCSW-help@lanl.gov
For questions about PC hardware: PCHW-help@lanl.gov
For questions about Mac software: MacSW-help@lanl.gov
For questions about Mac hardware: MacHW-help@lanl.gov

Telephone Services Center .................................................................................. 7-3400
(includes voice mail)

Computer training
Lab-wide systems support training ................................................................. 7-9444
Computer/workstation training ......................................................................... 7-9399
Personal computer training ............................................................................... 7-9071
Microcomputer support facility seminars ......................................................... 7-4357
(Macintosh/IBM software, lending library)

List of Forms and Schedules
ACL Machine Availability .................................................................................. 18
Course Registration Form for CIC Computing Classes ..................................... 19
CCF Machine Availability and Downtime ......................................................... 43
DSC Software Order Form ............................................................................... 45
Accessing Computing Machines through the INC ........................................... 46
Accessing the ICN through Dialup Modem ..................................................... 46
ICN Validation Request Form ........................................................................... 47
Reader Feedback Form ..................................................................................... 49
As part of its effort to improve the sharing of information and the effective use of emerging technologies, the Information Architecture (IA) project is sponsoring a study of data warehousing. Data warehousing is a method of making historical data more easily accessible to the Laboratory-wide community. As its name indicates, a data warehouse is a repository for storing information. Figure 1 illustrates how the data warehouse takes information from a variety of sources and stores it for access by a variety of users.

The purpose of a data warehouse is to assist decision makers by making information easily accessible in a useful way. The data warehouse is a decision-making tool, rather than a day-to-day operations tool.

The concept of data warehousing has recently been successfully implemented by a number of businesses to assist with decision making problems faced by managers. A special challenge for the Laboratory IA teams is to extend this corporate data warehouse model for use by all Laboratory employees, including scientists, engineers, and administrators. Several key elements concerning a data warehouse are described below.

**One-Way Only Information Flow**

The information flows from its source to the data warehouse, but the data warehouse never updates its sources. Similarly, users can access the information in the data warehouse, but they cannot update it. Consequences of the one-way flow include the following:

- Users can manipulate data at their desktop without affecting the source data, providing enhanced assurance of source data integrity.

- Data can be optimized for query and otherwise transformed for ease and speed of use.

- Data must include a time element in order to remain meaningful for future use.
As new ways of storing data emerge, they too can be accommodated. This flexibility will help the data warehouse take full advantage of both existing and emerging technologies.

Data Transformation and Optimization

The data stored in the warehouse will rarely be identical in form to the data in its source. If, for example, the source of the data is a real-time transaction system, then the requirements of the real-time system will be different from the requirements of the data warehouse.

Real-time transaction or “operations” systems contain the current state of information, and are designed for rapid, accurate updates with multiple assurances of data integrity. By contrast, a data warehouse allows easy ad hoc access to information with a time content, providing meaningful information long after the current state of the data has changed.

For example, a data warehouse might be used to track funding proposals made by Laboratory employees. Information collected from other systems could include types of proposals made, proposals accepted, skills needed to perform the work, resulting publications, etc. The data warehouse would then provide a picture (showing change over time) of the types of proposals that are successful, changes in needed skills at the Laboratory, and the types and number of publications that we produce. This kind of information should be useful not only to senior management, but to all employees involved in preparation of proposals.

Flexible Data Formats

As envisioned by the IA data warehouse standards development team, there is no reason to restrict the types of data that can be stored in the warehouse. Because the warehouse stands independent from its sources and clients, it can accommodate new formats without affecting existing systems. Some of the many types of data that have been identified by the team are

- Standard alphanumeric data
- Images in varying formats
- Sound and multimedia
- PR and training movies
- Geographical images
- Hypertext-capable documents

As new ways of storing data emerge, they too can be accommodated. This flexibility will help the data warehouse take full advantage of both existing and emerging technologies.
Figure 2 depicts a simple model of transforming data from a real-time transaction system to the data warehouse. Some information is deleted, some is combined, and some is added.

The transformation can also occur in different ways. A document with illustrations, for example, might be translated from the particular format it was created under to a read-only, compressed format such as Adobe's portable document format (PDF).

Whatever the particular changes, the transformation allows the historical data to be tuned for ease of ad hoc access, speed of access, consistency, and meaningfulness.

Process Overview
The data warehouse team will begin by constructing a logical model, as shown in Figure 3, which will lead to the physical model.

The logical model is a theoretical description of what the data warehouse should do, while the physical model is a practical description of how the data warehouse will be implemented.

As a theoretical description, the logical model can focus on an ideal state, unencumbered by the limitations of current-state technology or financing. It begins as a more detailed expression of the IA principles that were adopted by the Laboratory Leadership Council in May, especially the following:

- Shared information is the foundation of a unified Laboratory.
- Access to information is the rule, not the exception.
- Laboratory information and data are corporate assets and are managed accordingly.

In cooperation with the IA metrics team, the data warehouse team will analyze specific customer needs from the Laboratory-wide community. These, when combined with surveys of how external laboratories and companies are using data warehouses, will form the basis of the logical model.

After the team has completed its description of the ideal state, it will turn its attention to how the logical model can actually be implemented. This work will include analysis of the current state of both technology and the Laboratory, which will serve as a reality-check when constructing the physical model.

The data warehouse team anticipates that the physical model will initially be expressed through a pilot project. This project will be used to validate the practical benefits of the data warehouse. Additional news about the pilot project can be anticipated at a later date.

![Figure 3. Data Warehouse Development Process](image)
IA Team Leaders Stress Importance of Laboratory-Wide Input

A lunch time conversation with two of the team leaders from the IA effort shows that both feel the promise of the IA project lies in its attention to Laboratory-wide customer input and consensus building.

“In general,” says Steve Blair (NIS-3) leader of the IA data warehouse team, “the role of the information architecture is to identify problems in how we use information tools, recognize that we can fix the problems, and then get the right people together so we can solve them.”

Karl-Heinz Winkler, DDCIC, co-leader of the overall IA project, agrees. He adds, “The institution is looking to us to come up with a plan, recognizing the realities of life at the Laboratory.”

Both point to the diverse membership of the IA data warehouse team, which currently includes representatives from eight Laboratory divisions.

Winkler continues, “We are an empowered, self-directed team that makes decisions through consensus. We don’t make a decision unless there is really an issue, and we work together to reach resolution in a mutually acceptable, mutually beneficial way.”

Blair stresses that the team composition and operating principles free the team to effectively approach problems.

He says, “Because we are not ‘owned’ by any single division, we can invite people to step beyond their parochial concerns. We can elevate the discussion, get people to apply the same openness of mind they use in scientific problems, challenge people, and make it fun again.”

The novelty of data warehousing offers further benefits to the process. “Because it is new,” Winkler says, “you don’t already have set ways of doing things. You aren’t encumbered by current practices, and you are better able to get the right people together to develop the organizing structure to address the systemic issues.”

“This leads to two key points,” Blair adds. “First, we must ask whether we are tackling important problems for the Laboratory and whether we are applying the right technology. In the case of the data warehouse, we are addressing significant problems and there is as of yet no better alternative approach.

“And second,” he concludes, “we need to extend the data warehouse model and make it useful to scientists and engineers—in addition to administrators—because the Laboratory’s business is in fact science and technology.”

For further information about the IA data warehouse project, look on-line via Gopher/Mosaic under “Computing at LANL/ Information Architecture Project.” or contact Steve Blair (NIS-3) 665-5895 or sgblair@lanl.gov.

Tad Lane, tad@lanl.gov, (505) 667-0886
Communications Arts and Services
(CIC-1)
Drastic Reduction!

in Supercomputing Recharge Rates

High performance supercomputing at LANL suddenly costs a lot less. As a result of decreasing overhead costs, CIC Division has significantly reduced cpu and memory recharge rates for FY'95. For the small memory YMPs (Rho, Delta, Epsilon, and Zeta) rates have been reduced by as much as 43% and on the large memory machine (Gamma) by as much as 48%. Here are some examples. The interactive cpu rate on the small memory YMPs was reduced from $195/cpu hour to $131/cpu hour—a 32% reduction. The batch cpu rate on the small YMPs was reduced from $135/cpu hour to $93/cpu hour—a 31% reduction. Memory rates have been reduced even more. The

Interactive memory rate on the small YMPs is down 43%, from $10/megaword hour to $5.70/megaword hour. This means an interactive process that uses 128 megabytes (16 megawords) of memory and 1 cpu that runs for 1 hour will now cost $222.20 instead of $355—a 37% reduction. The reduction for the large memory machine is even more dramatic. For instance, a process that ran for 1 hour interactively and used 1 cpu and 8 gigabytes of memory would now cost $372 instead of $695—a 47% reduction. A summary of the FY'94 and FY'95 rates is provided below.

<table>
<thead>
<tr>
<th>Type</th>
<th>Units</th>
<th>FY'94 Rate</th>
<th>FY'95 Rate</th>
<th>Reduction</th>
<th>Machines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batchcpu</td>
<td>cphrs</td>
<td>$135</td>
<td>$93</td>
<td>31%</td>
<td>Rho, Delta, Epsilon, Zeta</td>
</tr>
<tr>
<td>Batchmem</td>
<td>memwhrs</td>
<td>$7</td>
<td>$4.50</td>
<td>35%</td>
<td>Rho, Delta, Epsilon, Zeta</td>
</tr>
<tr>
<td>Intercpu</td>
<td>cphrs</td>
<td>$195</td>
<td>$131</td>
<td>32%</td>
<td>Rho, Delta, Epsilon, Zeta</td>
</tr>
<tr>
<td>Internmem</td>
<td>memwhrs</td>
<td>$10</td>
<td>$5.70</td>
<td>43%</td>
<td>Rho, Delta, Epsilon, Zeta</td>
</tr>
<tr>
<td>BatchM98cpu</td>
<td>cphrs</td>
<td>$135</td>
<td>$80</td>
<td>40%</td>
<td>Gamma</td>
</tr>
<tr>
<td>BatchM98mem</td>
<td>memwhrs</td>
<td>$0.35</td>
<td>$0.21</td>
<td>40%</td>
<td>Gamma</td>
</tr>
<tr>
<td>InterM98cpu</td>
<td>cphrs</td>
<td>$195</td>
<td>$112</td>
<td>42%</td>
<td>Gamma</td>
</tr>
<tr>
<td>InterM98mem</td>
<td>memwhrs</td>
<td>$0.50</td>
<td>$0.26</td>
<td>48%</td>
<td>Gamma</td>
</tr>
</tbody>
</table>

Ray Miller, rdm@lanl.gov, 665-3222
Computing Group (CIC-7)
A smartcard is a credit-card sized computer with one mission in life: to generate passwords, or in smartcard parlance—passcodes. Like a desktop computer, it has a keyboard (the set of keys at the bottom of the card), a screen (the small display window at the top), and a microprocessor, which is one reason why it’s called a “smartcard.”

To use a smartcard, you first select and register a personal identification number (PIN), much as you would with any bankcard. Then, each time you key this PIN number into your smartcard, it generates a new, unpredictable passcode that’s valid for one minute. You use this one-time passcode to log onto the ICN. Software within the ICN authenticates the passcode based on an algorithm made up of your smartcard serial number, your PIN, and the time.

A few users began testing smartcards in a pilot project which began in March of this year. During this developmental phase while the product was being tested and capabilities added, smartcards were not publicized. Through word-of-mouth advertising by the smartcard users, however, demand has continued to grow. Today there are nearly 1000 smartcard users.

Since using a smartcard adds an extra (albeit small) step to accessing the ICN, why would almost 1000 users voluntarily choose to use it? Now we get to the real reasons why smartcards are smart.

- Economy: You can access administrative systems from an open network or MICOM port, which means you don’t have to pay $42 per month for an administrative port.

- Convenience: If you have an open desktop system, you can access Lab-Wide systems from a window; no need to shutdown, switch plugs, or go to a different machine. You can also access Lab-wide systems off-site (e.g., while on travel or from home).

What’s So Smart about a Smartcard?

- Efficiency: Smartcards are good for three years, which eliminates the hassle of learning a new password or filling in paperwork. As DOE requires more passwords (a separate one is now needed for secure unclassified processing) and more frequent renewals (the new classified order requires semianual renewals), smartcards look increasingly attractive. And, of course, what’s efficient for you is also efficient for the Password Office, which translates into Lab-wide cost control.

- Finally, the big one—security: Capturing passwords, either as they travel through the network or reside in a system file, is an overriding concern in computer security. With the Internet, this risk has grown enormously. Earlier this year, several hundred ICN users had to change their passwords when hackers successfully captured a large number of passwords going over the Internet. The best defense to this threat is a one-time, disposable password—no more password file to hack and no more permanent password to “sniff.” The little smartcard represents a giant step toward greater computer security.

If you would like to take advantage of this new technology, contact the ICN Password Office at (505) 665-1805 or send e-mail to validate@lanl.gov. The charge is $148 for a smartcard that lasts three years.
ACCESS TO USENET NEWS GROUPS IS CHANGING

At the beginning of the year, general access to Usenet news groups will no longer be available through www/gopher interfaces accessible on www.lanl.gov and gopher.lanl.gov.

The explosive growth of news services use has placed a significant load on news server resources. The interface through the www/gopher gateway is very inefficient. (One user on the www interface can create the load of ten users coming through a conventional network connection.) Because of the way these services are implemented, not much can be done to improve the interfaces.

Fortunately there are many other ways to access Usenet news groups that are user friendly and more efficient. News reading clients include such applications as netscape (a commercial mosaic type client), readnews, rn, trn, tin, xrn, NewsWatcher, VersaTerm Link, and InterNews. Various news reading clients are available as free ware on the Internet. Some news reading clients are available as commercial products. All clients are typically platform specific; consequently, it may be difficult to find anyone who is familiar with more than a few of these clients.

If you have trouble finding a news reader for your platform, the CIC Consulting Office may be able to help you locate one. Currently we do not have in-house consulting for these clients but learning to use them should not be too difficult. For more information contact the CIC Consulting Office at consult@lanl.gov or 667-5745.

You must be connected to the network to read the news services. Your node (i.e., workstation or desktop system) must be registered as a known node on the LANL Integrated Computer Network (ICN). This is accomplished by having your network manager register your node with the LANL hostmaster.

If you do not have a network connection and cannot obtain one, you may register for computing service on a CIC resource like machine beta. Several on-line news readers are available on this machine.

We are anxious to see LANL users obtain network connectivity so they can take advantage of the many information services that are available. Our goal is to make these services as valuable and efficient as possible for our network users.

Douglas Gatchell, dgg@lanl.gov, (505) 667-5119
CIC-5/Network Computer Engineering

ALL-IN-1 ASSUME ALIAS OPTION BEING RETIRED

The ALL-IN-1 system on OFVAX is being moved to a different hardware platform which will require us to remove the Assume Alias (AA) option. AA is a local customization to ALL-IN-1 that allows a user to read/answer another user’s e-mail. ALL-IN-1 now supports the same functionality which was provided by AA.

If you are using the AA option to access someone else’s e-mail or you have designated someone to use this option to access your e-mail, please read the notice posted in ALL-IN-1 Update in the OFVAX Bulletin Board (BB AU) for more information. Barring any pitfalls, the hardware changes and retirement of AA will happen January 1, 1995.

Mary Gentry, mgentry@lanl.gov, (505) 667-7038
Network Group (CIC-5)
Need Help with Computer Security?

The I&E has come and gone, but rumors of another audit continue. Are you ready for the next audit? Is your security house in order? The Desktop Group (CIC-2) can help you develop a computer protection plan that will definitely put your house in order.

The CIC-2 Computer Security Team has expertise on the following platforms: Macintosh, IBM, and UNIX. Each team member is trained in computer security and can provide assistance with computer security requirements. Our services include the following:

- Advise and assist with the development of protection plans and guidelines for computer security compliance,
- Evaluate new security software and hardware,
- Establish security awareness among Laboratory employees, and
- Provide proactive resources for security tools, templates, and virus protection software.

We can also create a customized security cookbook to address your specific security reporting needs. The cookbook could include:

- Description of your network’s purpose,
- Listing of installed software security utilities on your LAN,
- Detailed schematic of your LAN (i.e., diagram of network and hosts), and
- Node registration information from an updated version of the hostmaster database.

On UNIX platforms, we can provide assistance for installing security relevant software—on a single workstation or an entire network. The following security software is now available: TCP wrappers, patches (i.e., sendmail updates, etc.), Security Profile Inspector (DOE mandatory package used for analyzing the security of UNIX platforms), and an encryption package of e-mail for organizations based on PGP (pretty good privacy) tools.

For further information on various service packages and their costs, please call Frances Martinez at 665-3329 or Ed Rodriguez at 665-1364.

Ed Rodriguez
Desktop Group (CIC-2)
What Mother Never Told You: UNICOS Programs and Scripts

This article provides a list with brief descriptions of a number of UNICOS programs and scripts that I have had occasion to develop to aid in my consulting work. Note that these are not supported programs, they have no corresponding man pages, and they are not subject to CIC Change Control procedures. Help is available with most of these commands by inputting the command with the -h option.

These programs all reside in sub-directory bin of my home directory on the UNICOS machines. This home directory is /u0/jhw on the open machines rho and gamma and the NS compartment of machine zeta; it is /u1/jhw on delta, epsilon, and the secure compartment of machine zeta. If you run CSH as your login shell, access to these programs (which have read-execute access for all users) is most simply accomplished via the shell’s alias mechanism. Thus, if you include the line below in your .cshrc file, executing command fone will run the script jhw/bin/fone.

```
alias fone ~jhw/bin/fone
```

(1) CFS (FCL script)
Same as the standard cfs (/usr/local/bin/cfs) except that CFS removes the necessity for escaping quotation (" ) marks on one-liners that contain the info, ninfo, oid, or noid keywords, as in

```
CFS save info="descriptive information" afile
```

(2) PROD (FCL script)
Same as the standard prod (/usr/local/bin/prod) except that PROD removes the necessity for escaping quotation (" ) marks on one-liners that contain the description keyword, as in

```
PROD submit prodscript des="run to the store for milk"
```

(3) akkount (FCL script)
Checks 4-character cost centers and program codes for validity.

(4) area (CSH script)
Given a telephone area code or state name, returns area code, state name, time zone, and cities. Useful, if not profound. (Use an underscore (_) in specifying two-word statenames; case is ignored, as in Virginia=virginia or new_mexico=New_Mexico.) Usage according to

```
area 703
```

```
703 Virginia Eastern
703 Arlington and Roanoke, (Northern and Western) Virginia
```

```
area west_virginia
```

```
304 West_Virginia Eastern
304 All parts of West_Virginia
```

(5) buster (FCL script)
Runs ROUTE to delete all files and remove all subdirectories under given CFS root node names, and then removes the root nodes. Can be dangerous to use—there is no way to undo the effects of buster.

(6) c2u (FCL script)
Effectively wildcards the ctou (/usr/local/ubin/ctou) command which converts CTSS text files to UNIX/UNICOS text files.
(7) carbon (FCL script)

Backs up a single CFS file. Usage according to

```
carbon /root/subdir/.../afile
```

which results in a copy of a file with a CFS pathname `/root/subdir/.../afile$`. This file is placed in the “other” CFS group and is declared archival. If a CFS password is required, use the form

```
carbon /root/subdir/.../afile pw[=password]
```

If just `pw` is present, `carbon` will prompt for `password`. Alternatively, the password may be supplied by using the `pw=password` form.

(8) cfsar (CSH script)

Copies a CFS directory tree, including all lower-lying subdirectories and files, to another CFS directory tree.

(9) cpcfs (CSH script)

Copies a CFS directory tree into a UNIX file structure on the machine from which `cpcfs` is being run. The head of the UNIX tree is placed at the current working directory.

(10) d2h, d2o, h2d, h2o, o2d, o2h (SH scripts)

Converts numbers from one base to another. The `d` means decimal, `h` means hexadecimal, and `o` means octal. All input is supplied on the command line.

Thus, when the command `quota` on machine rho reports my `/usr/tmp` quota as 1288656 blocks, precisely how many bytes is that? Since a block on UNICOS is 512 words and since a word is 8 bytes, a block is 4096 (decimal), or 10000 (octal), bytes. By converting 1288656 to octal and then converting the octal number (multiply by 10000) back to decimal, we arrive at 5,278,334,976 bytes as shown below.

```
<table>
<thead>
<tr>
<th>File blocks</th>
<th>Inodes</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Quota:</td>
<td>1288656* ( 0.3%) Unlimited*</td>
</tr>
<tr>
<td>Warning:</td>
<td>1159790* ( 0.4%) None</td>
</tr>
<tr>
<td>Usage:</td>
<td>4266</td>
</tr>
<tr>
<td>d2o 1288656</td>
<td>o2d 47247200000</td>
</tr>
<tr>
<td>1288656 =&gt; 4724720</td>
<td>47247200000 =&gt; 5278334976</td>
</tr>
</tbody>
</table>
```
Old habits die hard. The fone command is a C-shell script that runs \texttt{finger whatever@lanl.gov}. Usage is pretty much that of the old command \texttt{fone}; if no command line arguments are supplied, \texttt{fone} goes into an interactive mode of operation. One difference between \texttt{fone} and the “naked” \texttt{finger} is in the treatment of integer input. The \texttt{finger 75745@lanl.gov} command looks for phone number 7-5745 whereas \texttt{fone 75745} looks for user number (Z-number) 075475, as did the old \texttt{fone}.

The usage form is

\texttt{front program.f}

where \texttt{program.f} is a Fortran source file. The \texttt{front} prepends the CSH script file \texttt{~jhw/bin/frontend} onto \texttt{program.f} and does \texttt{chmod 700 program.f}. Then, by simply entering

\begin{verbatim}
front program.f
\end{verbatim}

the Fortran compiler CFT77, Fortran lister CFLIST, and loader SEGLDR are run; finally, the subsequent executable is EXECEd. While currently set up for a Fortran source, the file \texttt{frontend} can be easily modified to handle C source programs.

The philosophy of this approach is akin to that of XEQ—that is, to have all necessary compiling, loading, and execution information for a program contained in the (single) program source file.

Translates LTSS text files to UNIX/UNICOS text files. Runs \texttt{IOSCONV (/usr/local/bin/iosconv)} to accomplish this.

\begin{verbatim}
mod filename
\end{verbatim}

Usage form is

The \texttt{mod} command writes to standard out the octal form of the file’s permission bits. Thus, if \texttt{ls -l filename} were to report

\begin{verbatim}
-rwxr-xr--
\end{verbatim}

for the permissions, \texttt{mod filename} will return 754. The \texttt{mod} command is mainly of value in scripts in which the permissions of a file get changed and in scripts in which one wishes to restore the original permissions.

Effectively wild-cards the \texttt{ntext} and \texttt{stext} commands. Input files can be saved or over-written by the output files.

\begin{verbatim}
runarf (FCL script)
\end{verbatim}

Runs an executable file that is contained in an archive (AR) file. Reminiscent of the EXE command of CTSS.

A “binary” scanner for files constructed on a machine with 60-bit words. The CDC 6600 (NOS) and CDC 7600 (LTSS) were such machines. The \texttt{scanlx} command can display file contents in a number of different modes: LTSS text, NOS Display Code, and NOS full ASCII. The command syntax of \texttt{scanlx} is modeled after the CTSS EDIT and the UNICOS FEDIT utilities.

\begin{verbatim}
transn (Fortran and C) and nosconv (FCL script)
\end{verbatim}

Translates NOS text files to UNIX/UNICOS text files. Both Display Code and full NOS ASCII options are available.

\begin{verbatim}
trim (SH script)
\end{verbatim}

Runs SED to trim trailing blanks from text files. Caution: At present, trim ASSUMES, but does not verify, that the input files are text files.

\begin{verbatim}
u2c (FCL script)
\end{verbatim}

Effectively wildcards the \texttt{utoc (/usr/local/ubin/utoc)} command which converts UNIX/UNICOS text files to CTSS text files. Demand for this facility is decreasing.
AUTOSUM and COST DATAFILES

AUTOSUM

Because of the ICN split into two disjoint networks, the accounting data files, which serve as input to AUTOSUM, will be stored in two differently named CFS roots. Data in the red network will be found, as before, under the red root /autolog. Data in the green network will be found under the green root /autogreen.

Generally, starting with the accounting files for November 1994, files under /autolog will contain accounting data generated in the red network, while files under /autogreen will contain accounting data generated in the green network. An exception to this will be the monthly file schgr in the green CFS. (This file has the typical path /autogreen/cy94/nov/schgr for November 1994). This file will contain the accounting data generated in the red network, with the fields containing machine of origin and login security levels blanked out. The monthly file schg in the green CFS (typically /autogreen/cy94/nov/schg) will contain only the accounting data generated in the green network. Both schgr and schg will be Los Alamos standard text files which must be ntexted before use with AUTOSUM. (The data under the green node /autogreen starts with the October 1994 entries; for October 1994 only, there is no file schgr—file schg contains both the red and the green accounting data. For data prior to October 1994, see the section on COST in this article.)

An AUTOSUM run made in the green network (from machine RHO or GAMMA) with the ntexted version of either schg or schgr as input will then return only charges from the relevant network. Thus, to determine all charges, one must either make two AUTOSUM runs or concatenate the ntexted versions of schg and schgr into a single input file for AUTOSUM.

The same will not be true in the red network. There will be no file schgg under /autolog. The file /autolog/cynn/mo/schag will, for data generated after October 31, 1994, contain only accounting data generated in the red network.

COST

COST arranges to pick up its own accounting input files so the user of COST should see no change in operation. “Old” (prior to October 1994) COST input files will continue to be available from the green network. These files, which are shown below, are usable by AUTOSUM as well as by COST. Although stored with different names, the files are equivalent to the old schg files that contain the data from both the red and green. An AUTOSUM user should employ the user command acfs (instead of cfs) to retrieve these files, inasmuch as the files up through December 1992 are Huffman-compressed CTSS text files, while those from January 1993 to the present are shrink-compressed UNIX text files. The acfs command will take care of all the necessary translations. Filenames are of the form dec93schg for December 1993 data.

CFS locations /userpool/ctss/chargefiles/oct85schg through /userpool/ctss/chargefiles/dec92schg

CFS locations /userpool/unicos/chargefiles/jan93schg through /userpool/unicos/chargefiles/sep94schg

J H Wood, consult@lanl.gov
(505) 667-5745
CIC-6/ICN Consulting Office
PVM 3.3 and XPVM
Installed and Supported on the Open Cluster

Workstation clusters can be configured into parallel machines using various message passing software packages. Parallel Virtual Machine (PVM) is one such popular package, and it is now installed and supported on the IBM Open Cluster (also known as the Open Network Compute Server). This article will focus on the following PVM-related topics: (1) where to find the necessary PVM libraries and executables; (2) performance issues about using PVM within a homogeneous system; (3) overview of XPVM, which is a new visualization tool used with PVM; (4) where to find an example code, which begins at the most basic level and progresses to a slightly sophisticated application; and (5) how and where to get more information concerning LANL clusters, PVM, and parallel computing.

PVM Libraries and Executables
Users can access the PVM libraries and executables, as well as the XPVM executable, by adding /usr/lanl/pvm/lib to their path. (We hope to have a similar setup for the secure cluster soon.) This setup will always point to the most up-to-date version of PVM, which is currently version 3.3, patch level 5. Experienced PVM users should note that this setup eliminates the need for you to set the environment variables PVM_ROOT and PVM_ARCH. (However, if you do set these variables, PVM will make use of them.) For details on accessing previous versions in a similar manner, see last month’s BITS article titled “Distributed Computing Team Supports PVM Software and Initiates Parallel Tools Users’ Group.”

Our setup for accessing the PVM libraries and executables strongly suggests that PVM users employ hostfiles for configuring their parallel machine. An example of that configuration follows:

ep=/home/rbarrett/GRID
ibm-01
ibm-02
ibm-03
ibm-04

From the command line of one of the participating machines you would then enter

% pvm hostfile

This command forms a parallel machine consisting of workstations ibm-01, ibm-02, ibm-03, and ibm-04 (i.e., it starts up the PVM daemon on each of the machines). It also tells PVM to look for the user executable in directory /home/rbarrett/GRID (when and if a task is spawned to a participating machine) and then gives the PVM console prompt.
PVM Performance Issues

PVM is ultimately designed for a heterogeneous computing environment (i.e., participating machines are of different types such as IBM RS6000 and Sparc IPX). Consequently this environment forces various requirements on message handling. But because the cluster is a homogeneous computing environment, some of the added work can be avoided, resulting in increased performance. For example, there is no need to have PVM convert the data before sending a message. Therefore, when initializing a send buffer, use either the PvmDataRaw or PvmDataInPlace options. The latter option copies the data directly from user space to system space, eliminating a data copy step. However, PvmDataInPlace requires (for current versions) that the data be contiguous, so in some cases you may want to use PvmDataRaw, which does not have this requirement.

PVM also has a routine, pvm_setopt, designed to (among other options) set up direct socket connections between tasks. This allows messages to bypass the PVM daemon, which can significantly reduce communication time. All tasks attempting to make direct connections with other tasks must make the following call (the parent task should make this call before spawning child tasks):

CALL PVMFSETOPT( PVMROUTE, PVMROUTEDIRECT, OLDVAL ).

PVM will then “attempt” to make such a connection. However, due to the limited resources on any given machine, there is no guarantee of a successful connection. If refused, your program application will continue routing messages through the PVM daemon.

Also note that the latest version of PVM adds two new routines, pvm_psend and pvm_precv, which combine the data packing step with the send and receive steps. While these routines don’t necessarily reduce latencies significantly when your configuration involves workstations, they do give added flexibility to receiving a message, and of course, reduce coding requirements. Also, if you port your code to an MPP, it is possible to obtain latency benefits.

Finally, the recent upgrade in computing power and memory capacity makes the IBM Open Cluster a much more powerful parallel computing resource. With a 250 MFLOP peak speed chip operating on 512 MBytes of data (per machine), this cluster has become a strong competitor against even the most powerful MPPs.

XPVM

XPVM is a graphical console and monitor for user code based on PVM (versions 3.3.1 and above). It is a trace-based tool that lets the user view execution in a paragraph-like environment (real time and playback), which is useful in debugging as well as performance tuning. XPVM features include the following:

- Space-Time Diagram: This view displays the status of individual tasks such as computation, PVM overhead, and waiting for messages (i.e., time lost to synchronization). The status of these tasks are represented by different colors on a horizontal bar. Also, when a message is being sent from task x to task y, a diagonal line from x to y is drawn (once the message is received).

- Utilization Bar Graph: This view displays the speedup gained through parallelization, illustrating the computational efficiency of your algorithm.

- Call Trace: This view displays the current or most recent PVM system call, including parameters or results. This can be a useful debugging tool. For example, call trace can point to task hangs resulting from a posted receive that is not satisfied.

- Task Output. This view displays any output your tasks may produce, including PVM generated messages (stdio and stderr).

- Graphical Interface to the PVM Console: Although you may use the console in conjunction with XPVM, resetting tasks from the console will kill the PVM group server, causing your program to lose contact with XPVM. And since XPVM provides point-and-click capabilities for performing this task, as well as other console features, the graphical interface can be very useful.

- Trace Replay: By default, the trace file is stored in /tmp/xpvm.trace.username (you may change this and probably should as /tmp is usually small). This file may be replayed through XPVM using VCR type control, allowing, among other things, step by step progress (in terms of PVM calls) through your program execution. To access this tool, from a command line, enter

  % xpvm hostfile

This command will configure your parallel virtual machine as described in the hostfile and then start up the XPVM interface. Do not make this a background task! Also, make sure you set your display variable to your local workstation and set xhost to the remote machine. There are many ways to generate trace data for display through this tool. The simplest is to have each task call the function joinxpvm, which is found in /usr/lanl/pvm. The comments included therein should provide all the information you need.
Some on-line help for XPVM is available, but for more details (including possible trace interpretations and common errors), see the technical report “Using PVM at LANL,” which is referenced at the end of this article. (Unfortunately, there isn’t an official XPVM manual).

The current version of XPVM utilizes the TCL language for much of its graphics. This added layer slows down viewing significantly. The next XPVM version, expected by the first of the year, will incorporate the specific TCL functionality used by XPVM directly into C.

**PVM Example Code**

The PVM folks have provided some simple examples as an introduction to PVM. These examples are described in the PVM Users Guide (/usr/lanl/pvm/doc/ug.ps) and are found in /usr/lanl/pvm/examples. For a more involved example, we’ve put together a 2-dimensional diffusion program. The algorithm is fairly simple, yet provides an introduction to some of the more sophisticated PVM routines and capabilities, such as the use of multiple message buffers, buffer packing options, and some group operations. This code also provides a nice illustration of using and interpreting XPVM traces. A README file is included in the tar file containing the example, /usr/lanl/pvm/examples/grid2d.tar.Z. (This example should soon include a visualization of the diffusion process.)

An example trace file, /usr/lanl/pvm/examples/xpvm.trace.diffusion (the result of the 2-dimensional diffusion example), provides a quick introduction to the capabilities of XPVM. Simply load this trace file into XPVM via the replay option and press play. (This will also verify that you are properly accessing XPVM.)

**Additional Information About PVM**

In order to accommodate experienced users of PVM, as well as leverage off the PVM Users Guide, we have maintained (and perhaps augmented) the PVM conventions. An example is the subdirectory structure. Therefore, PVM man pages are located in /usr/lanl/pvm/man. (Note that the man pages are defined using the C version convention. For example, pvm_intro, pvm_spawn, and pvm_send.) Also, the include files (pvm3.h, fpvm3.h, etc.) are located in /usr/lanl/pvm/include.

A Mosaic page concerning the clusters at LANL can be accessed from the “LANL Home Page” through “Computing at LANL” and then “Workstation Cluster Information” (URL http://ibm-08.lanl.gov). Included are user experiences, benchmarking reports, and access to the PVM page. The PVM page includes a technical report, “Using PVM at LANL.” This report details the use of PVM specific to Lab-wide installation and includes common user experiences and problems.
Apple is in the process of rewriting its Macintosh operating system from the ground up. Ultimately, the new MacOS will have preemptive multitasking, will offer 100% native PowerPC support, will run on third-party Macintosh clones, and will have a user interface that fundamentally upgrades the current 10 year old Finder. These changes will come in two stages. The first will be System 8, code-named Copland, which will come out in late 1995 to early 1996, followed by the Gershwin operating system sometime later.

The first step in this major undertaking is the development of the Open Transport Communications Architecture—a total rewriting of the Mac’s networking and communication software. Open Transport will offer the ability to easily plug in and use different networking protocols, will use native code for Power Macs, and will eventually include totally new “human interface components,” which will replace the current Chooser. Open Transport 1.0 is slated to be first released in late March 1995, and will provide numerous new features and ease-of-use improvements.

Pick a Protocol, any Protocol
Many current networking problems stem from the proliferation of different networking protocols, such as TCP/IP, AppleTalk, Netware IPX, etc. Currently it is not always easy to support multiple protocols. Open Transport (previously called Transport Independent Interfaces) is designed for a multiprotocol world and allows for protocol “plug-ins.” These plug-ins will all conform to a set of published APIs (Application Programmers Interface), making it easy for developers to add support for different protocols. Also included are serial and remote dial-up networking in one consistent framework. Open Transport will include a direct port of the UNIX STREAMS environment, making porting a protocol from UNIX very easy to accomplish.
The first version of Open Transport will include support for serial, TCP/IP, and AppleTalk protocols. This first release will also include support for IP Multicast, which will allow Macs to send and receive MBone audio and video data across the Internet. The second release of Open Transport will include Novell IPX and PPP (Point to Point) protocols as well. Future versions of AppleTalk Remote Access will be based on Open Transport and will use the PPP protocol.

Open Transport will also support multi-homing, allowing different protocols to run simultaneously. You will not need to switch between EtherTalk and LocalTalk protocols, for instance, because both can run at the same time.

Multiple configurations will also be supported. This will allow a PowerBook user to select from a set of saved configurations for use at different locations. It will also allow administrators to save a standard configuration to a preferences file and distribute that file to all the Macs on a network, making for easier network set-up. You also will not need to reboot between configuration changes.

**Improved Human Interfaces**
The current different networking human interfaces (such as the MacTCP control panel) will all be streamlined, simplified, and made to have a common “look and feel.” Users can choose between Basic, Advanced, and Administrator configuration screens. The Administrator level will be password protected and allow locking of any (or all) of the configuration options.

In the Basic AppleTalk configuration menu, for instance, users will have two selections: (1) a choice of “Connect Via:” (such as Ethernet Built-in) and (2) a choice of the AppleTalk zone to use, if they have zones. In general, the new interfaces are aimed at making networking as easy as possible for new users to use, which many users of MacTCP will appreciate.

The Advanced and Administrator configuration menus are basically the same, but the Administrator selection is Password protected and allows for the locking of selections.

With version 1.1 of Open Transport, the current Chooser will be replaced by a much easier-to-use human interface, specific details of which have not yet been released.

**Other Features of Open Transport**
TCP/IP will support multiple routers, allowing for a backup if the first router is down. An explicit domain search list will also be incorporated, allowing a search path for resolving domain names. An example search path might be: CIC-2.lanl.gov, CIC-6.lanl.gov, lanl.gov.

Open Transport will be backwards compatible with old network drivers and network cards. It will run on 680x0 Macs at about the same speed as the current networking software, but will run much faster on PowerPC Macs because of native code support. There will be no changes to the packets sent out on the network.

**Summary**
Apple’s Open Transport Communications Architecture proposes to let users navigate network resources without knowledge of the protocols involved and with an easier-to-use interface. Application developers will appreciate Open Transport because of how easy it will be to support multiple protocols in applications. For users and network managers, Open Transport will provide freedom of networking protocol choice. This ability is also called transport transparency.

Open Transport will require System 7.0 or greater, a 68020 processor or better, and at least 4MB of RAM. When the Open Transport software is released, it should be covered through the Lab’s System 7.5 site license.

*John Layne, jpl@lanl.gov  
(505) 667-5884  
Desktop Group (CIC-2)*
When first founded, the Advanced Computing Laboratory (ACL) was intended to provide an applications-driven environment for developing leading edge computing technologies, primarily in the areas of parallel and distributed computing, scientific visualization, and high-speed networking.

In December 1991, Los Alamos National Laboratory was named as one of two national HPCRC (High-Performance Computing Research Center) sites by the Department of Energy’s HPCC (high-performance computing and communications) program. The ACL is the foundation upon which this center is being built. The mission of the ACL is to facilitate solution of tomorrow’s complex, interdisciplinary problems in science, industry, and defense. This will be accomplished by focusing on a few Grand Challenge-scale applications, providing a unique simulation environment and advanced computational resources, having a world-class staff, and forging links with other centers of excellence.

The resources of the ACL are available to LANL employees with a demonstrated need for the unique resources that the ACL provides. In addition, industrial collaborators may seek access through a partnership with the Laboratory, which can be arranged through the Computational Testbed for Industry (CTI). Under the auspices of the DOE Grand Challenge program, other external researchers involved in the LANL-based Grand Challenge projects may also seek access. An ACL account application form is available by sending e-mail to proposal@acl.lanl.gov. The only payment the ACL requests for use of its resources is a copy of any paper or other publication with ACL acknowledgment in the publication.

### ACL Machine Availability

<table>
<thead>
<tr>
<th>Machine Type</th>
<th>Operating System</th>
<th>Security Partition</th>
<th>Machine Name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FPS350X (Stardent GS2000)</td>
<td>STELLIX</td>
<td>Open</td>
<td>stella</td>
</tr>
<tr>
<td>FPS500</td>
<td>FPX</td>
<td>Open</td>
<td>blanche</td>
</tr>
<tr>
<td>ibm930</td>
<td>AIX</td>
<td>Open</td>
<td>ibm930</td>
</tr>
<tr>
<td>Intel iWARP</td>
<td>SunOS</td>
<td>Open</td>
<td>iwrap</td>
</tr>
<tr>
<td>Motorola Monsoon</td>
<td>SVR2</td>
<td>Open</td>
<td>monsoon</td>
</tr>
<tr>
<td>SGI ONYX</td>
<td>SVR3</td>
<td>Open</td>
<td>black</td>
</tr>
<tr>
<td>SGI 380VGX</td>
<td>SVR3</td>
<td>Open</td>
<td>panda</td>
</tr>
<tr>
<td>IBM 550</td>
<td>AIX</td>
<td>Open</td>
<td>noid</td>
</tr>
<tr>
<td>Thinking Machines Corp. Connection Machine CM-5*</td>
<td>SunOS</td>
<td>Open</td>
<td>cm5-1 to cm5-8</td>
</tr>
<tr>
<td>CRI T3D*</td>
<td>UNICOS 80</td>
<td>Open</td>
<td>T3D</td>
</tr>
<tr>
<td>Sun 4/670</td>
<td>SunOS</td>
<td>Open</td>
<td>koala</td>
</tr>
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<td>SunOS</td>
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<td>cocker</td>
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<tr>
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<tr>
<td>Sun 4/670</td>
<td>SunOS</td>
<td>Open</td>
<td>pooh</td>
</tr>
</tbody>
</table>

* Special access rules apply.
CIC offers a variety of computing courses for the professional development of Laboratory employees. The courses listed in Table 1 will meet at the time and the date shown. Time and date for the courses in Table 2 are not known at this time. Courses in Table 3 run continuously from month to month.

### Course Registration

To register: (1) check the box beside the appropriate course, (2) complete the Enrollment Information section located on the back of this form, and (3) follow the mailing instructions also on the back of this form. Submittal of a Course Registration form does not guarantee participation in an advertised class, but it is the only way to get into the queue for notification of upcoming classes. Classes are conducted in a secure area unless noted; uncleared participants require escorts. Call the Training Coordinator at 667-9399 for more information.

---

### Table 1 Courses with confirmed time and date

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>INSTRUCTOR</th>
<th>COST</th>
<th>DATES/TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCE Applications Programming</td>
<td>TBA</td>
<td>$1000-$1500</td>
<td>1/2-6/95</td>
</tr>
<tr>
<td>Solaris 1.1.1 (SunOS 4.1.X) System Admin. (Beginning)</td>
<td>Sun Microsystems, Inc. Expert</td>
<td>$1500-$1800</td>
<td>1/9-13/95</td>
</tr>
</tbody>
</table>

### Table 2 Courses with time and date to be arranged (TBA)

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>INSTRUCTOR</th>
<th>COST</th>
<th>DATES/TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>C Programming (Beginning)</td>
<td>Marilyn Nelson</td>
<td>$1000-$1400</td>
<td>TBA</td>
</tr>
<tr>
<td>C Programming (Advanced)</td>
<td>Michael Chase</td>
<td>$1000-$1400</td>
<td>TBA</td>
</tr>
<tr>
<td>Installing Compilers on a Sun System</td>
<td>TBA</td>
<td>$100-$200</td>
<td>TBA</td>
</tr>
<tr>
<td>Solaris 2.1 Network Admin. (Advanced)</td>
<td>Sun Microsystems, Inc. Expert</td>
<td>$1500-$1800</td>
<td>TBA (5 days)</td>
</tr>
<tr>
<td>StP/OMT</td>
<td>Ching Chiang Van, IDE</td>
<td>$800-$1000</td>
<td>TBA (2 days)</td>
</tr>
</tbody>
</table>

### Table 3 Courses that run continuously

<table>
<thead>
<tr>
<th>COURSE TITLE</th>
<th>INSTRUCTOR</th>
<th>COST</th>
<th>DATES/TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNIX (Beginning)</td>
<td>Ted Spitzmiller &amp; Jeffrey Johnson</td>
<td>$810</td>
<td>12/12-16/94</td>
</tr>
</tbody>
</table>

Note: Detailed course descriptions are provided on the following pages.
<table>
<thead>
<tr>
<th>Name</th>
<th>Phone</th>
<th>Z-Number</th>
<th>Group</th>
<th>Mail Stop</th>
<th>Program Code*</th>
<th>Cost Code*</th>
<th>Group Leader Signature</th>
</tr>
</thead>
</table>

* Enter program code and cost code for all courses. If you need to withdraw from a class fewer than 5 working days before the class is scheduled to begin, your group will still be charged. Substitutes may be sent, but please let the CIC Division Training, Development, and Coordination Office (667-9399) know who your substitute will be.
C Programming (Beginning)

Prerequisite: Proficiency with another high-level programming language.

Enrollment: Minimum 12/Maximum 18

Topics: Introduction and Fundamentals; Basic Semantic Constructs; Base Level I/O with C; The Preprocess-Compilation Environment; Operators, Data Types, and Storage Classes; Control Flow Constructs; Conditional Constructs; Higher Level Data Constructs in C; File I/O; UNIX Software Tools; and POSIX System Calls.

C Programming (Advanced)

Prerequisite: Beginning C Programming or equivalent experience.

Enrollment: Minimum 12/Maximum 18

Topics: Data Structures, Algorithms, and OOP; Advanced Clinic for C Programmers; ANSI C Recommendation X3.159; C and ANSI C War Stories; Data Structure and Assessment of Algorithms; Arrays; Structures; Unions; Stacks; Queues; Linked-Lists; Recursive Functions; Binary Trees; Hashing; File Organizations Using the C Runtime Library; Standard Interprocess Communication Mechanisms; Introduction and Overview of AT&T’s C++ 3.0; and References for Periodicals, Journals, and Texts.

Distributed Computing Environment (DCE) Applications Programming

Prerequisite: C programming skills and knowledge of DCE component services and their functions.

Location: TA-3/SM-200/Rm 210

Enrollment: Minimum 12/Maximum 16

Topics: An Overview of DCE Application Development; The Interface Definition Language (IDL); Writing a Server; Writing a Client; Error Handling; Using Threads; Using DCE Distributed Time Service; Using Security; Using Objects; and Using the DCE Director Service.

Installing Compilers on a Sun System

Prerequisite: Understanding of system administration functions within a Solaris 2.3 operating system environment.

Location: CIC-6 Classroom (TA-3, SM-200, Room 210)

Enrollment: Minimum 6/Maximum 9

Topics: How to Obtain, Debug, Update, and Maintain Current Compiler Licenses; Using FlexLM (License Manager-Highland) to Install Current Compilers of a Document on a Master Page; and Creating Custom Documents.
Solaris 1.1.1 System Administration (Beginning)

Prerequisite: Useful UNIX skills, familiarity with Sun OpenWindows, vi or Text Editor skills, and Sun mouse/keyboard skills.

Enrollment: Minimum 10/Maximum 16

Topics: Sun Machine Terminology/Types; Format Utility for Partitioning; Installing Solaris 1.X Operating System with SunInstall; System Start Up and Shut Down; Customizing a Kernel; Adding Users; Ethernet Hardware/Networking Commands; Configure NFS Server; Add/Remove Diskless Clients; Backup and Restore Files; Repair Bad Blocks; and Manage Defects List.

Solaris 2.X Network Administration (Advanced)

Prerequisite: Solaris 2.X System Administration II or equivalent skill.

Enrollment: Minimum 10/Maximum 12

Location: CIC-Division Secure Classroom (TA-3, SM-200, Room 210)

Topics: Analyzing and Tuning Your Network Configuration for Optimal Performance; Installing an Internet Network Router and Enabling Subnetting; Identifying and Using Network Troubleshooting Tools; Installing UUCP between Existing Solaris 2.X Networks; Configuring Sendmail and Using Advanced Name Service Features; and Using Network Application Tools for System Installation and Configuration.

StP/OMT (Software through Pictures for Object Modeling Techniques)

Prerequisite: Experience or knowledge in systems/software analysis, design, or development.

Enrollment: Minimum 10/Maximum 16

Topics: Introduction to Object-Oriented Methodology and OMT; Object Modeling Concepts and Notation; Links and Associations; Getting Started with StP/OMT; Diagram and Table Editors of StP/OMT; Object Modeling; Dynamic Modeling; Dynamic Modeling Using StP/OMT; Functional Modeling; Functional Modeling Using StP/OMT; and the Modeling Process.

UNIX (Beginning)

Prerequisite: None.

Enrollment: 9 maximum

Topics: Getting Started; The UNIX File System; Manipulating Files; Customizing Your Environment; The C-Shell; Editing and Writing with vi; and Using the Network.

Beginning UNIX—This course has been restructured to address generic UNIX information. There is no longer a focus on Sun operating systems and tools. Additional topics are being added. This course will be presented the third week of each month, so long as a demand continues.
Lab-Wide Systems Training

The Customer Service Group (CIC-6) offers training for users of Laboratory information systems. The CIC-6 courses offer training for a variety of personnel including property administrators, group secretaries, training coordinators, budget analysts, group leaders, or anyone needing to access training records, property records, costs, employee information, travel, chemical inventories, etc. Refer to the table on pages 24 and 25 for specific information about courses currently offered.

Course Registration
You must have a valid “A” or “U” level ICN password before taking any of the courses shown in the table. To register for a course, call CIC-6 Training, Development, and Coordination section at 667-9444. You will be sent a registration form to be completed and returned.
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Date</th>
<th>Time</th>
<th>Cost</th>
<th>Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL-IN-ONE Electronic Mail System</td>
<td>12/9/94</td>
<td>8:15 - 12:00</td>
<td>$410</td>
<td>Course #6882</td>
</tr>
<tr>
<td>Participants receive hands-on instruction to create, read, and print electronic mail. Participants also learn how to edit mail, create distribution lists, send mail to a FAX machine, and grant mail access to others. Prerequisite: an ICN password and an account on the OFVAX.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Automated Chemical Inventory System (ACIS):</td>
<td>Scheduled Upon Request</td>
<td>$410</td>
<td>Course #7480</td>
<td></td>
</tr>
<tr>
<td>Participants receive hands-on instruction to update the status (end-user, location, quantity) of chemical containers. Participants will also learn to generate chemical inventory reports by chemical name, end-user, location, and organization.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Budget Computing System (BUCS):</td>
<td>12/6/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #3527</td>
</tr>
<tr>
<td>This training is an introduction to the Budget Computing System (BUCS). Students practice generating “quick reports” and reports requiring parameter files. An introduction and demonstration of (no “hands-on”) allocating and forecasting procedures are given during the three-hour session.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directory Information System (DIS):</td>
<td>Scheduled Upon Request</td>
<td>$410</td>
<td>Course #7072</td>
<td></td>
</tr>
<tr>
<td>Lab-wide customers responsible for maintaining the Laboratory directory in the Employee Information System will receive hands-on instruction to update Laboratory employees, update and add non-Laboratory employees, retrieve location and address information for any employee, and print reports.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee Development System - Basic Training (EDS I):</td>
<td>12/7/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #5289</td>
</tr>
<tr>
<td>The course provides hands-on instruction to request course enrollment, use the on-line course catalog, retrieve training transcripts, and assign EDS authorities. The student will learn to create courses, add students to the courses, and generate several training reports.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee Development System - Training Plans (EDS II):</td>
<td>12/21/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #7155</td>
</tr>
<tr>
<td>Participants receive hands-on instruction to create and maintain training plans, assign assignment codes, and generate training plan reports. Attendees must have prior training in the Employee Development System (course #5289).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities Project Information/Work Orders (FPI/WO):</td>
<td>12/13/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #6996</td>
</tr>
<tr>
<td>Lab-wide users with a need to view the status of work orders and tickets in their organizations will receive hands-on instruction to request, print, and review work order, ticket and project summary information reports.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Financial Management Information System (FMIS):</td>
<td>12/22/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #8338</td>
</tr>
<tr>
<td>Participants receive hands-on instruction to “explode” and “transfer” through the costs, allocations, and outstanding commitments screens. In addition, participants will create/review reports, access the Information Manager Utility for printing reports, and learn how to assign authorities in the system.</td>
<td></td>
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</tr>
<tr>
<td>Hazardous Materials Transfer Tracking System for Non-Radioactive Material (HMTTS/NRAM):</td>
<td>Scheduled upon request</td>
<td>$410</td>
<td>Course #7907</td>
<td></td>
</tr>
<tr>
<td>Participants receive hands-on instruction to create, update, and print the non-RAM Hazardous Materials Transfer Form (HMTF). Attendees must have completed “Completing the HMTF for Non-RAM,” course #7512, sponsored by HS-8.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Title</td>
<td>Date</td>
<td>Time</td>
<td>Cost</td>
<td>Course Number</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>---------------</td>
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<td>---------------</td>
</tr>
<tr>
<td>Hazardous Materials Transfer Tracking System for Radioactive Material (HMTTS/RAM):</td>
<td>Scheduled Upon Request</td>
<td>$410</td>
<td></td>
<td>Course #7993</td>
</tr>
<tr>
<td>Participants receive hands-on instruction to create, update, and print the Radioactive Materials Transfer Form (RMTF). Information about the non-RAM Hazardous Materials Transfer Form (HMTF) is included. This course is appropriate for people who fill out both RAM and Non-RAM forms. Attendees must have completed “Completing the RMTF,” course #7517, sponsored by HS-8.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Information Access System (IAS):</td>
<td>Scheduled upon request</td>
<td>$410</td>
<td></td>
<td>Course #5223</td>
</tr>
<tr>
<td>Students receive hands-on instruction to search, retrieve, and print information in the Financial Management Handbook, material safety data sheets (MSDS’s), and Department of Energy (DOE) orders. As time permits, other options in the Information Access System (IAS), such as Update News, meetings, visitors, colloquia, and PC Help are demonstrated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introduction to Lab-Wide Systems:</td>
<td>12/20/94</td>
<td>1:30 - 3:30</td>
<td>No Fee</td>
<td>Course #2900</td>
</tr>
<tr>
<td>This introductory class is an overview of Lab-wide information systems. During the 90 minute session, students learn how to become Lab-wide system users and access those systems. Several Lab-wide systems are demonstrated and their functions are discussed. Optional hands-on exercises are offered at the end of class.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Property Accounting, Inventory, &amp; Reporting (PAIRS):</td>
<td>12/20/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #7411</td>
</tr>
<tr>
<td>This course is for Property Administrators (PA’s) and Lab-wide customers with a need to view property record information. PA’s receive hands-on instruction to update property element and location information. All participants will receive hands-on instruction to generate and print a variety of property reports. The MAT-2 Property Administrators course is recommended before PA’s attend this course.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Secretarial/Contract Services (SE):</td>
<td>Scheduled Upon Request</td>
<td>$410</td>
<td></td>
<td>Course #7481</td>
</tr>
<tr>
<td>Students receive hands-on instruction for requesting temporary secretarial services and for entering VOLT attendance on-line. Students will also learn to review notifications and use the Information Manager utility for printing reports. A training database will be used for the class.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature Authority System (SAS):</td>
<td>12/1/94</td>
<td>8:30 - 12:00</td>
<td>$410</td>
<td>Course #7582</td>
</tr>
<tr>
<td>Managers or their designees receive instruction to assign, view, and change signature authorities (purchase request, chemical purchase, and handling hazardous material). Participants will also learn how to generate and print authority reports for their organizations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STORES:</td>
<td>Scheduled upon request</td>
<td>$410</td>
<td></td>
<td>Course #3529</td>
</tr>
<tr>
<td>Participants receive hands-on instruction to search for an item in the on-line catalog by key word, part number, or exact name. Participants learn how to select items from the catalog, and place, change and cancel an order. Several methods for reviewing orders are also taught including reviewing an order in detail, scanning all orders, and reviewing back-orders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Reporting Information Planning System (TRIPS):</td>
<td>12/21/94</td>
<td>1:30 - 4:30</td>
<td>$410</td>
<td>Course #4369</td>
</tr>
<tr>
<td>Class participants receive hands-on instruction to prepare travel requests (TRs) on-line and learn the print, revise, and cancel options. The participants also learn how to use the on-line approval function. The various reports available in TRIPS-II are reviewed.</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
The LANL Research Library provides training for its users, free of charge, for the specialized databases owned by the library. Please call the Research Desk at 7-5809 or e-mail ref@lanl.gov for reservations, for a special session or tour, or for more information. Space is limited to 8 per class. Sessions begin at times and dates indicated below. Each session is 30 minutes, except the Gopher class which is 2 hours.

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Subject Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-1-94/10:00</td>
<td>Information Resources on the Internet via Gopher</td>
</tr>
<tr>
<td>12-1-94/1:00</td>
<td>Code of Federal Regulations (all titles)</td>
</tr>
<tr>
<td>12-6-94/1:00</td>
<td>Multidisciplinary Science Citation Index</td>
</tr>
<tr>
<td>12-7-94/11:00</td>
<td>Melvyl (University of California catalog &amp; associated databases)</td>
</tr>
<tr>
<td>12-8-94/10:00</td>
<td>Information Resources on the Internet via Gopher</td>
</tr>
<tr>
<td>12-8-94/1:00</td>
<td>Using Corporate Directories</td>
</tr>
<tr>
<td>12-13-94/1:00</td>
<td>Holiday special! Free Sources on LIBNET</td>
</tr>
<tr>
<td>12-14-94/11:00</td>
<td>Melvyl (University of California catalog &amp; associated databases)</td>
</tr>
<tr>
<td>12-15-94/10:00</td>
<td>Information Resources on the Internet via Gopher</td>
</tr>
<tr>
<td>12-15-94/1:00</td>
<td>Business/Technology Transfer Journals</td>
</tr>
<tr>
<td>12-20-94/1:00</td>
<td>Code of Federal Regulations (all titles)</td>
</tr>
<tr>
<td>12-21-94/11:00</td>
<td>Melvyl (University of California catalog &amp; associated databases)</td>
</tr>
<tr>
<td>12-22-94/10:00</td>
<td>Information Resources on the Internet via Gopher</td>
</tr>
<tr>
<td>12-22-94/1:00</td>
<td>Holiday special! Free Sources on LIBNET</td>
</tr>
</tbody>
</table>
## Change Control for December 1994

### ICN Services Information

<table>
<thead>
<tr>
<th>Deletions</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTHORIZ (Macintosh)</td>
</tr>
<tr>
<td>CFS (Macintosh)</td>
</tr>
<tr>
<td>CONNECT (Macintosh)</td>
</tr>
<tr>
<td>FOCUS (Macintosh)</td>
</tr>
<tr>
<td>ICNDOC (UNICOS)</td>
</tr>
<tr>
<td>MOVE (Macintosh)</td>
</tr>
<tr>
<td>Open XNETs</td>
</tr>
<tr>
<td>Secure XNETs</td>
</tr>
</tbody>
</table>

### Changes

<table>
<thead>
<tr>
<th>Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARI (UNICOS)</td>
</tr>
<tr>
<td>AUTOSUM (UNICOS)</td>
</tr>
<tr>
<td>CGS (CONVEX, HP, IBM-RS6000, SGI, SOLARIS, SUN, ULTRIX, UNICOS, VMS)</td>
</tr>
<tr>
<td>Change Control CFS Nodes</td>
</tr>
<tr>
<td>FCOPY (UNICOS)</td>
</tr>
<tr>
<td>FEDIT (UNICOS)</td>
</tr>
<tr>
<td>FTYPE (UNICOS)</td>
</tr>
<tr>
<td>INQUIRY (UNICOS)</td>
</tr>
<tr>
<td>MACH (UNICOS)</td>
</tr>
<tr>
<td>MACH (VMS)</td>
</tr>
<tr>
<td>PFILES (SUN, UNICOS)</td>
</tr>
<tr>
<td>PFILES (SUN)</td>
</tr>
<tr>
<td>PSCAN (CONVEX, HP, IBM-RS6000, SGI, SOLARIS, SUN, ULTRIX, UNICOS, VMS)</td>
</tr>
<tr>
<td>PXXLIB (SUN, UNICOS)</td>
</tr>
<tr>
<td>RCS (UNICOS)</td>
</tr>
<tr>
<td>WHATLIB (UNICOS)</td>
</tr>
</tbody>
</table>

### Network Services Information

- USENET

### System Information

- Machine Epsilon/E/S

### Documentation

### Information About Change Control

### Online Information

### CCF Machine Availability and Downtime

---

## Schedule for Change Control

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 6 (First Tuesday)</td>
<td>New or changed software is available in experimental (X) files on CFS for testing. This initial testing period is for uncovering problems in the software before the software is put into production. If you find a problem, please call the ICN Consulting Office at (505) 667-5745.</td>
</tr>
<tr>
<td>December 13 (Second Tuesday)</td>
<td>The changes become production version on,</td>
</tr>
<tr>
<td></td>
<td>- Machines <strong>rho, epsilon/e/s</strong> and <strong>zeta</strong> (UNICOS)</td>
</tr>
<tr>
<td></td>
<td>- Distributed processor <strong>beta</strong> (ULTRIX)</td>
</tr>
<tr>
<td></td>
<td>- Distributed processor <strong>ccvax</strong> (VMS)</td>
</tr>
<tr>
<td>December 20 (Third Tuesday)</td>
<td>If no problems are reported to the ICN Consulting Office (505) 667-5745, changes are installed on</td>
</tr>
<tr>
<td></td>
<td>- Machines <strong>delta and gamma</strong> (UNICOS)</td>
</tr>
</tbody>
</table>

Note: A stop sign in front of a title is significant:

**STOP**: incompatible changes; please read!
This section lists utilities and services that are targeted for deletion or have already been removed from the systems listed. If removal of these files or services will cause you a problem, please contact Marj Johnston at (505) 667-5745 or send e-mail to mdj@lanl.gov immediately.

### Deletions

**AUTHORIZE (Macintosh)**

Function: Authenticates users to allow access to the Integrated Computing Network (ICN).

Change: The ICN authorize program for Macintosh has been removed. The SIMP protocol is being replaced by Kerberos.

**CFS (Macintosh)**

Function: Provides an interface to communicate with the Common File System for archival file storage.

Change: The cfs ICN utility for the Macintosh has been removed. It has been replaced by ftp to cfsgw.lanl.gov.

**CONNECT (Macintosh)**

Function: Creates a communication pathway between a distributed processor and a CTSS or UNICOS worker machine.

Change: The Macintosh implementation of connect has been removed.

Various Lab-Wide and ICN services will not be available on December 28, 1994, from 7 AM - 12:00 Noon. Work will be done to correct electrical deficiencies in the CCF during this time.

For more information please contact Jim Frybarger or Roy White at (505) 667-4584.
<table>
<thead>
<tr>
<th><strong>ICNchanges</strong></th>
</tr>
</thead>
</table>

### FOCUS (Macintosh)

**Function**
The FOCUS utility on your current machine remotely executes other utilities on the FOCUS machine.

**Change**
The ICN `focus` utility for the Macintosh was removed and was replaced by the `finger` and `ph` commands found within Eudora.

### ICNDoc (Unicos)

**Function**
A menu-driven program for retrieving local documentation from CFS and optionally printing it at PAGES.

**Change**
ICNDoc will be removed from the secure machines Delta, Epsilon, and Zeta. Now that CFS has split, ICNDoc cannot access the documents stored on CFS in the open partition. Also, the documents stored in the open partition have not been updated. Please use the gopher server instead.

### MOVE (Macintosh)

**Function**
Ships files between your local file space and other ICN worker machines.

**Change**
The ICN `move` utility for Macintosh has been removed.

### Open XNETs

On December 5, 1994 the XNET1 and XNET21 machines will be disconnected. If you think you are still dependent on a SIMP based utility (e.g. ICNAUTHORIZE, MASS, MAGIC, FONE...), please contact the NOC at noc@lanl.gov or (505) 665-6622 for help.

### Secure XNETs

On December 19, 1994 the XNET2 and XNET22 machines will be disconnected. If you think you are still dependent on a SIMP based utility (e.g. CFS, LINKTO, LHSP, MOVE, CONNECT...), please contact the NOC at noc@lanl.gov or (505) 665-6622 for help.

The secure domain name server is now at the IP address of 10.0.3.1.
ARIEL (UNICOS)

Function
Runs user command AR so that AR appears to be an interactive command. Emulates some features of CTSS LIB utility.

Change
ARI for UNICOS 8.0 has a slight modification necessitated by a slight change in the behavior of Version 8.0 of AR. The change is connected with producing a sensible message when the archive file supplied on the ARI command line does not exist; this requires the creation of a new (and empty) archive file. ARI for UNICOS Version 7.0 and 7c is modified to correct an error in processing the command line arguments. This error is also corrected for Version 8.0.

X File Access
On CFS as: /unicosx/bin7/arix for Machines Delta, Epsilon, and Rho.
On CFS as: /unicosx/bin7c/arix for Machine Gamma.
On CFS as: /cdsw/ccx/bin8/arix for Machine Zeta.

Online Documentation
For the built-in help package, enter ari -h
To display the man page (dated 5/94) enter: man ari

AUTOSUM (UNICOS)

Function
Retrieves accounting and utilization information from CCF accounting databases.

Change
AUTOSUM itself has not changed. However, the location and contents of the current database files has changed. See related article in this issue of BITS.

Online Documentation
To display the man page (dated 3/91), enter: man autosum

CFTLIB (UNICOS)

Function
Fortran run-time extension library providing capabilities not found in standard UNICOS libraries.

Change
The following changes have been installed:
• Subroutine FTYPE has been upgraded to handle UPDATE, HISTORN, PostScript, & PDF files.
• The following subroutines have been upgraded for UNICOS Version 8.0:
  DESTROY, FEMPTY, FTYPE, GETPART, IGETFFD, IOUNITS, RDISK, SETBUFF, SNAP, STDOUT, STDUNIT, WDISK
• Subroutine SIGHNDL has been upgraded to report invalid siginfo signals when either file system reports its limit as zero.
CFTLIB (Continued)

- The following routines have been deleted from the library:
  - GETPC, SAMPTLI

X File Access


Online Documentation

To display the man page (dated 2/94), enter: man cftlib

This overview man page includes a functional summary of all routines in the library.

To display the man pages for a specific routine, enter: man routine_name

Printed Documentation

The new CFTLIB on UNICOS Reference Manual is available in Standard Text format on CFS in /icndoc/ascii/scftlib.unicos. This 370-page document is designed to be printed through PAGES as follows:

cfs get /icndoc/ascii/scftlib.unicos
ntext scftlib.unicos cftlib.manual
ppages -ft txt cftlib.manual

CGS (CONVEX, HP, IBM-RS6000, SGI, SOLARIS, SUN, ULTRIX, UNICOS, VMS)

Function

An interactive 2-D graphics subroutine library providing device-independent graphics primitives for all CIC supported operating systems, workstations, and graphics devices. Devices supported include: X Window System, Silicon Graphics DGL, Sun Windows, Tektronix terminals and emulators, PostScript, CGS Metafiles, and user-written graphics device drivers.

Change

Version 11.8 of CGS is now available in all of the computing environments listed below in the “X File Access” section. This release incorporates all changes due to the ICN split, up to 32 characters in a filename or in a path and filename sequence, and full support for X Windows in Digital Vax and Alpha VMS environments.

You should obtain identical graphics output when running your program in each of these environments or when using any of the following graphics devices or formats. Note that changing graphics devices or formats in your application program typically requires changing only one subroutine call.

Example CGS programs are available on CFS in the directory /cgs/demos. These programs illustrate how to use CGS for interactive applications, how to view output in a window and also create PostScript or CGS Metafile output, how to generate movies, and how to view output on more than one window or workstation at the same time. Most are short (less than one page) Fortran programs that capture the essence of using CGS for particular purposes.

The following device-independent graphics support is available in all CGS supported computing environments:
CGS (Continued)

- X Window System windows,
- Tektronix terminals and emulators,
- PostScript files,
- CGS Metafiles, and
- user-written device drivers.

In addition, the following graphics support is available for selected computing environments:

- Silicon Graphics DGL (UNICOS and SGI workstations)
- Sun Windows (Sun SunOS workstations)

The following graphics support has been removed with this release:

- Tektronix SIMP-based parallel block interface support (UNICOS)

The following is an example com file for VMS systems showing how to link using this release of CGS:

With X Windows:

$ fortran cgsqa.for
$ link cgsqa,cgsfor/lib,sy$input/opt
sy$library:decw$dtwlibshr/share
sy$library:decw$xtwlibshr/share
$ set DISPLAY/CREATE/NODE=[workstation name]/transport=tcpip
$ exit

Without X Windows:

$ fortran cgsqa.for
$ define lnk$library sy$library:vaxcrtl
$ link cgsqa,cgsfor/lib
$ exit

X File Access

On CFS as: /unicosx/lib7/libcgs.a for Machine Rho.
On CFS as: /unicosx/lib7c/libcgs.a for Machine Gamma.
On CFS as: /ccxs/unicos/lib7/libcgs.a for Machines Delta and Epsilon.
On CFS as: /ccxs/unicos/lib8/libcgs.a for Machine Zeta.
On CFS as: /ccx/ultrix/cgsultrix.tar for VAX/ULTRIX.
On CFS as: /ccx/dec_risc/cgsysmsx.bak for DEC/RISC workstations.
On CFS as: /ccx/vax/cgsymsvx.bak for VAX/VMS systems.
On CFS as: /ccx/alpha_vms/cgsysvmsx.bak for Alpha/VMS systems.
On CFS as: /ccx/sun/cgsun.tar for Sun/Solaris workstations.
On CFS as: /ccx/solaris/cgsolaris.tar for Sun/Solaris workstations.
On CFS as: /ccx/sgi/cgsger.tar for SGI workstations.
On CFS as: /ccx/hp/cgshp.tar for HP workstations.
On CFS as: /ccx/ibm_rs6000/cgsaix.tar for IBM RS-6000 workstations.
On CFS as: /ccx/convex/cgsconvex.tar for Convex Unix systems.

Note: Do not use the X File on Machine Epsilon until after the conversion to UNICOS Version 7.0 on December 11, 1994.

Online Documentation

To display the man page (dated 4/94), enter: man cgs
### ICN Changes

**Change Control**

In January 1995 the unclassified CFS Change Control X-file nodes will be consolidated within `/ccx`. The secure X-file node will be `/ccxs`.

<table>
<thead>
<tr>
<th>Old</th>
<th>New Open</th>
<th>Secure</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>/unicosx</code></td>
<td><code>/ccx/unicos</code></td>
<td><code>/ccxs/unicos</code></td>
</tr>
<tr>
<td><code>/unix</code></td>
<td><code>/ccx/ultrix</code></td>
<td></td>
</tr>
<tr>
<td><code>/sunx</code></td>
<td><code>/ccx/sun</code></td>
<td></td>
</tr>
<tr>
<td><code>/vaxx</code></td>
<td><code>/ccx/vax</code></td>
<td></td>
</tr>
</tbody>
</table>

**FCOPY (UNICOS)**

**Function**
Partial or full copying of files with byte granularity.

**Change**
This utility has been recompiled and loaded with the latest `cftlib`.

**X File Access**
On CFS as: `/unicosx/bin7/fcopyx` for Machine Rho.

**Online Documentation**
To display the man page (dated 9/92), enter: `man fcopy`

**FEDIT (UNICOS)**

**Function**
Provides a binary editing capability for files.

**Change**
FEDIT command “?” now returns the name of the file currently open under FEDIT. (This command was formerly equivalent to the “:” command.) New command `quit`, as well as `end`, terminates FEDIT. Display of the built-in help package is now piped through MORE. This display is now invoked by supplying `-h` on the FEDIT command line (in place of a filename) as well as by the help command.

**X File Access**
On CFS as: `/unicosx/bin7c/feditx` for Machine Gamma.
On CFS as: `/cdsw/ccx/bin7/feditx` for Machines Delta, Epsilon, and Rho.
On CFS as: `/cdsw/ccx/bin8/feditx` for Machine Zeta.

**Online Documentation**
To display the man page (dated 12/94), enter: `man fedit`
<table>
<thead>
<tr>
<th>Command</th>
<th>Function</th>
<th>Change</th>
<th>X File Access</th>
<th>Online Documentation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FTYPE (UNICOS)</strong></td>
<td>Displays the type of a file and optionally other information about the file.</td>
<td>This utility was enhanced to handle UPDATE, HISTORN, PostScript, and PDF files. It was also upgraded for UNICOS Version 8.0.</td>
<td>On CFS as: /unicosx/bin7/ftypex for Machine Rho.</td>
<td>To display the man page (dated 9/92), enter: <strong>man ftype</strong></td>
</tr>
<tr>
<td><strong>INQUIRY (UNICOS)</strong></td>
<td>Displays the status and information about existing processes.</td>
<td>This utility has been recompiled and reloaded with the new cftlib.</td>
<td>On CFS as: /unicosx/bin7/inquiryx for Machine Rho.</td>
<td>To display the man page (dated 9/92), enter: <strong>man inquiry</strong> For usage help information, type: inquiry -h, or <strong>man inquiry</strong>. The help message summarizes the execute line options, whereas the man page gives more complete information and examples of use.</td>
</tr>
<tr>
<td><strong>MACH (UNICOS)</strong></td>
<td>Displays the hardware characteristics of the current machine.</td>
<td>This utility has been recompiled and loaded with the latest cftlib.</td>
<td>On CFS as: /unicosx/bin7/machx for Machine Rho.</td>
<td>To display the man page (dated 9/92), enter: <strong>man mach</strong></td>
</tr>
<tr>
<td><strong>PCOPY (SUN, UNICOS)</strong></td>
<td>Copies specified pictures from any number of CGS input metafiles to any number of output metafiles.</td>
<td>PCOPY now supports file names or path names to a maximum of 31 characters. The previous limit of 6 characters has been removed. Also, a bug has been fixed that caused problems when using pscan to look at pcopy-generated metafiles.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PCOPY (Continued)

X File Access
On CFS as: /ccx/sun/pcopy.tar for Sun workstations.
On CFS as: /unicosx/bin7/pcopyx for Machine Rho.
On CFS as: /unicosx/bin7c/pcopyx for Machine Gamma.
On CFS as: /cdsw/ccx/unicos/bin7/pcopyx for Machines Delta and Epsilon.
On CFS as: /cdsw/ccx/unicos/bin8/pcopyx for Machine Zeta.

Online Documentation
To display the man page (dated 12/90), enter: man pcopy

PPAGES (SUN, UNICOS)

Function
Submits jobs to the Print and Graphics Express Station (PAGES) for paper or film output.

Change
PPAGES now allows black and white raster files to be printed to the high speed printers. Corrections were made to the classification checking routines, and modifications to the header information fields.

X File Access
On CFS as: /ccx/sun/ppages.tar for Sun workstations.
On CFS as: /unicosx/bin7/ppagesx for Machine Rho.
On CFS as: /unicosx/bin7c/ppagesx for Machine Gamma.
On CFS as: /cdsw/ccx/unicos/bin7/ppagesx for Machines Delta and Epsilon.
On CFS as: /cdsw/ccx/unicos/bin8/ppagesx for Machine Zeta.

Online Documentation
To display the man page (dated 11/94), enter: man ppages

PPS (SUN, UNICOS)

Function
Translates graphics from a CGS metafile to PostScript format.

Change
Bugs in the -position, -landscape and -portrait options have been fixed both for UNICOS and for Sun workstations.

For Suns, pps now supports file names or path names to a maximum of 31 characters. The previous limit of 6 characters has been removed. (This change was announced for UNICOS in September.)

Also for Suns, the font specification in PostScript files produced by PPS has been changed from courier to Courier. The lower case was causing an error on some printers. Upper case works on all printers. (This also was announced for UNICOS in September.)

X File Access
On CFS as: /ccx/sun/pps.tar for Sun workstations.
On CFS as: /unicosx/bin7/pspx for Machine Rho.
On CFS as: /unicosx/bin7c/pspx for Machine Gamma.
On CFS as: /cdsw/ccx/unicos/bin7/pspx for Machines Delta and Epsilon.
On CFS as: /cdsw/ccx/unicos/bin8/pspx for Machine Zeta.

Online Documentation
To display the man page (dated 12/94), enter: man pps
ICN Changes

PSCAN (CONVEX, HP, IBM-RS6000, SGI, SOLARIS, SUN, ULTRIX, UNICOS, VMS)

<table>
<thead>
<tr>
<th>Function</th>
<th>PSCAN displays selected pages of a CGS Metafile on X Window Systems, Silicon Graphics DGL, Sun Windows, and Tektronix terminals and emulators. PSCAN can also write selected pages to a new CGS Metafile or PostScript file.</th>
</tr>
</thead>
</table>
| Change   | This version of PSCAN (11.8) is now available in all the computing environments listed below in the “X File Access” section. This release incorporates all changes due to the ICN split, up to 32 characters in a filename or in a path and filename sequence, and full support for X Windows in Digital Vax and Alpha VMS environments. You should obtain the identical graphics output when using PSCAN to view CGS Metafiles in any of these environments or when using any of the supported graphics devices or formats. The following device-independent graphics support is available in all these computing environments:  
  • X Window System windows,  
  • Tektronix terminals and emulators,  
  • PostScript files,  
  • CGS Metafiles, and  
  • user written device drivers.  
In addition, the following graphics support is available for selected computing environments:  
  • Silicon Graphics DGL (UNICOS and SGI workstations)  
  • Sun Windows (Sun SunOS workstations)  
The following graphics support has been removed with this release:  
  • Tektronix SIMP-based parallel block interface support (UNICOS)  
Type the following command before using PSCAN on VMS systems with the X Windows option (format=x11):  
  $ set DISPLAY/CREATE/NODE=[workstation name]/transport=tcpip |
On CFS as: /unicosx/bin7c/pscanx for Machine Gamma.  
On CFS as: /ccxs/unicos/bin7/pscanx for Machines Delta and Epsilon.  
On CFS as: /ccxs/unicos/bin8/pscanx for Machine Zeta.  
On CFS as: /ccx/ultrix/pscanultrix.tar for VAX/ULTRIX.  
On CFS as: /ccx/dec_risc/pscanvmsvx.bak for DEC/RISC workstations.  
On CFS as: /ccx/vax/pscanvmsvx.bak for VAX/VMS systems.  
On CFS as: /ccx/alpha_vms/pscanvmsax.bak for Alpha/VMS systems.  
On CFS as: /ccx/sun/pscansun.tar for Sun/SunOS workstations.  
On CFS as: /ccx/solaris/pscansolaris.tar for Sun/Solaris workstations.  
On CFS as: /ccx/sgi/pscansgi.tar for SGI workstations.  
On CFS as: /ccx/hp/pscanhp.tar for HP workstations. |
### PSCAN (Continued)

On CFS as: `/ccx/ibm_rs6000/pscanaix.tar` for IBM RS-6000 workstations.
On CFS as: `/ccx/convex/pscanconvex.tar` for Convex UNIX.

Note: Do not use the X File on Machine Epsilon until after the conversion to UNICOS Version 7.0 on December 11, 1994.

### Online Documentation

To display the man page (date 4/94), enter: `man pscan`

### PXXLIB (SUN, UNICOS)

**Function**

A library of Fortran 77 subroutines for reading and interpreting metafiles produced by the Common Graphics System (CGS).

**Change**

PXXLIB now supports file names or path names to a maximum of 31 characters. The previous limit of 6 characters has been removed.

**X File Access**

On CFS as: `/ccx/sun/pxxlib.tar` for Sun workstations.
On CFS as: `/unicosx/lib7c/pxxlib` for Machine Gamma.
On CFS as: `/cdsw/ccx/unicos/bin7/pxxlib` for Machines Delta and Epsilon.
On CFS as: `/cdsw/ccx/unicos/bin8/pxxlib` for Machine Zeta.

### RCS (UNICOS)

**Function**

RCS (Revision Control System) can store, retrieve, log, identify, and merge revisions. It is useful for files that are revised frequently.

**Change**

Upgrade to Version 5.6. For the difference details, see the README file in `/usr/local/xbin/rcs.5.6`.

The following commands will change:

```
ci       merge
co       rcs
gdiff    resdiff
gdiff3   rcsmmerge
ident    rlog
```

**X File Access**

On CFS as: `/unicosx/bin7/rcsx` for Machine Rho.
On CFS as: `/unicosx/bin7c/rcsx` for Machine Gamma.
On CFS as: `/cdsw/ccx/unicos/bin7/rcsx` for Machines Delta and Epsilon.
On CFS as: `/cdsw/ccx/unicos/bin8/rcsx` for Machine Zeta.

**Online Documentation**

To display the man page (dated 12/94), enter: `man rcs`

The Version 5.6 man page will be put in `/usr/local/xbin/rcs.5.6/man` until this version is migrated to `/usr/local/ubin`. 
WHATLIB (UNICOS)

**Function**

Searches a certain data file for the name(s) of libraries with which one or more entry point or common block names is associated.

**Change**

WHATLIB itself has not changed, but the data file it searches (/usr/local/data/nlibs) has been updated on machine Zeta to reflect the complement of libraries associated with UNICOS Version 8.0. WHATLIB on other machines was updated to ensure that latest versions of CFTLIB and CLAMS are referenced.

**X File Access**

No experimental (X) files.
New version available as per the Change Control Schedule.

**Online Documentation**

For the built-in help package, enter: `whatlib -h`
To display the man page (dated 12/94), enter: `man whatlib`

---

**Network Services Information**

This section provides information and a record of changes to the software and hardware that make up the ICN network and the services it provides. If you detect a problem, please call the Consulting Office at (505) 667-5745, or send electronic mail to consult@lanl.gov.

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**STOP USENET**

**Function**

Network news service.

**Change**


On January 1, 1995, general access to USENET newsgroups will no longer be available through the [www/gopher](http://www/gopher) interfaces accessible on [www.lanl.gov](http://www.lanl.gov) and [gopher.lanl.gov](http://gopher.lanl.gov). Only the LANL newsgroups will be present.

For more information see the article “Access to Usenet News Groups is Changing” in the Feature Articles section of this issue of BITS.
System Information

This section provides information and a record of changes to the ICN operating systems. When changes are announced here, they may already be included in the production versions of the indicated operating systems and machines. Most of the changes are strictly internal to the systems and should not affect users. However, if you detect a problem, please call the ICN Consulting Office at (505) 667-5745, or send electronic mail to consult@lanl.gov.

Machine Epsilon/E/S

The conversion of Machine Epsilon/E/S to UNICOS Version 7.0 is scheduled for Sunday, December 11, 1994. At this point, no SIMP services will be supported on any Cray hardware in either the Open or the Secure Partition.

Note: National Security and unclassified users will not be supported on Epsilon. Only DOE Q-Cleared users will be allowed access to Epsilon. Only classified logins will be allowed. All others should use Machine Zeta for their classified and unclassified computing. Machine S will cease to exist.

Please monitor news updates on all the Open and Secure machines as well as each new issue of the ICNchanges.

For more information, contact Ray Miller at (505) 665-3222 or e-mail at rdm@lanl.gov or contact the consultants at (505) 667-5745 or e-mail consult@lanl.gov.
New and Updated Man Pages

The following online information has been added or updated.

**UNICOS Man Pages**

To access a UNICOS man page, enter: `man command_name`, where `command_name` is the name of the command, library, routine, or utility whose man page you wish to view.

<table>
<thead>
<tr>
<th>Man Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>fedit</td>
<td>FEDIT allows you to interactively display the contents of a disk file and to change these contents word by word. Editing modes are decimal, hexadecimal, octal, and ASCII. In addition, you can change the file access and reference addresses, display and replace words, and search for patterns.</td>
</tr>
<tr>
<td>ppages</td>
<td>PPAGES executes without interaction. This utility accepts input parameters, then sends the file through the network to PAGES for processing. On ULTRIX and Sun UNIX systems, if no filename is given, or if the argument '-' is given, <code>ppages</code> reads from the standard input.</td>
</tr>
<tr>
<td>pps</td>
<td>PPS reads a CGS metafile, selects pictures from that file, and generates the PostScript code to render those pictures on a PostScript printer, such as the Apple LaserWriter.</td>
</tr>
</tbody>
</table>

To create ASCII files of the Cray man pages, use one of the following commands to remove the special characters for bold and underlining:

```
UNICOS 7.0 and 8.0: man command_name | col -bx > filename
```

Barbara Ritchie (bxr@lanl.gov), (505) 667-7275
Communication Arts and Services (CIC-1)
ICN Change Control is the set of procedures that coordinates changes in the ICN to ensure quality control and smooth operation and to avoid introducing additional problems. In an environment as dynamic as the ICN, control must be imposed on the scope and timing of changes that involve many components. Please report any problems as soon as they occur by calling the ICN Consulting Office at (505) 667-5745.

The following CFS nodes* are used for software that is maintained or announced through Change Control procedures. The files under /unicosx are deleted the last Friday of each month because these experimental versions become the production versions on all machines by the third Tuesday of the month. The other nodes keep the most recent versions of their respective software.

- `/unicosx/bin`: Executables for ymp CIC-Division supported software on UNICOS Version 6.
- `/unicosx/bin7c`: Executables for Machine Gamma, UNICOS Version 7c.
- `/unicosx/ubin`: Executables for user-supported software on UNICOS Version 6.
- `/unicosx/lib7c`: Libraries for Machine Gamma, UNICOS Version 7c.
- `/ccx/...`: Workstation directories of current versions of application in tar or backup save sets as applicable.
- `/ccx/alpha_osf`: Tar files for DEC Alpha OSF/1 machines.
- `/ccx/alpha_vms`: Backup save sets for DEC Alpha VMS machines.
- `/ccx/convex`: Tar files for Convex machines.
- `/ccx/dec_risc`: Tar files for DEC RISC workstations.
- `/ccx/dos`: Executables for PC/DOS machines.
- `/ccx/hp`: Tar files for Hewlett-Packard workstations.
- `/ccx/ibm_rs6000`: Tar files for IBM RS6000 workstations.
- `/ccx/mac`: Binhex (.hqx) or MacBinary (.mbin) files for Macintosh computers.
- `/ccx/next`: Tar files for NeXT workstations.
- `/ccx/solaris`: Tar files for Sun Solaris workstations.

If problems are discovered during the cycle, defective hardware or software is corrected, replaced, removed, or backed off.

*Also see the article “Change Control CFS Nodes” in the Changes section.
You can access complete online information about Change Control by using the Internet Gopher Server. For more information on how to connect to the Gopher Server, see the article “Internet Gopher Delivers Information” in the Feature Articles section of the September 1993 News. You may also contact the Customer Service Center at (505) 665-4444 or e-mail cichelp@lanl.gov.

After you connect to the Gopher Server you will see a menu of options. Select the following series of options from the gopher menu:

- Computing at LANL
  You will get a new menu.
- Computing News ICNchanges
  You will get a new menu. Select the next menu that reflects your needs.
  - Keyword Search of all ICNchanges (?)
  - Current (month year)
  - 1994 Archives
  - 1993 Archives
  - 1992 Archives
  - 1991 Archives
  - 1990 Archives
- Select “Current (month_year)”
  to get a list of the articles for the current month’s Change Control.

Barbara Ritchie (bxr@lanl.gov), (505) 667-7275
Communication Arts and Services (CIC-1)

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**FEBRUARY 1995 DEADLINE**

We do not publish a January issue of BITS. The deadline for articles for the February 1995 Change Control is 8:00 am. Monday, January 16, 1995. Please submit items to bulletin@lanl.gov.
### CCF Machine Availability and Downtime

<table>
<thead>
<tr>
<th>Machine Name(s)</th>
<th>Machine Type</th>
<th>Operating System</th>
<th>Security</th>
<th>System Availability (Oct. 1994)</th>
<th>Scheduled Downtime**</th>
</tr>
</thead>
<tbody>
<tr>
<td>delta*</td>
<td>CRAY Y-MP8/8-128</td>
<td>UNICOS 7.0</td>
<td>Secure</td>
<td>99.2%</td>
<td>December 13/1900-2300</td>
</tr>
<tr>
<td>epsilon*</td>
<td>CRAY Y-MP8/8-128</td>
<td>UNICOS 7.0</td>
<td>Secure</td>
<td>99.2%</td>
<td>December 6/1900-2300</td>
</tr>
<tr>
<td>rho</td>
<td>CRAY Y-MP8/8-64</td>
<td>UNICOS 7.0</td>
<td>Open</td>
<td>98.8%</td>
<td>None</td>
</tr>
<tr>
<td>zeta</td>
<td>CRAY Y-MP8/2-64</td>
<td>UNICOS 8.0</td>
<td>Secure</td>
<td>99.5%</td>
<td>December 7/1900-2300</td>
</tr>
<tr>
<td>gamma</td>
<td>CRAY Y-MP/M98-82048</td>
<td>UNICOS 7c</td>
<td>Open</td>
<td>99.0%</td>
<td>December 20/1900-2300</td>
</tr>
<tr>
<td>pi***</td>
<td>CRAY Y-MP EL92/1-256</td>
<td>UNICOS 8.0</td>
<td>Open</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>cluster</td>
<td>IBM Workstation Cluster</td>
<td>AIX</td>
<td>Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>beta</td>
<td>VAX 6320</td>
<td>ULTRIX</td>
<td>Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCVAX</td>
<td>VAX 6410</td>
<td>VMS</td>
<td>Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFVAX</td>
<td>VAX 6410</td>
<td>VMS</td>
<td>Open</td>
<td></td>
<td></td>
</tr>
<tr>
<td>canyon</td>
<td>Thinking Machines Corp. CM-200</td>
<td>SunOS</td>
<td>Secure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tres</td>
<td>Thinking Machines Corp. CM-200</td>
<td>SunOS</td>
<td>Secure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* In the IP networks, Cray machines are addressed by their Greek names.
** Additional downtime for the Cray machines may occur as a result of Network Dedicated Systems Time (NDST). The schedule for possible NDST is from 0600-0700, Monday through Friday. Should NDST become necessary, a message listing the scheduled downtime will be broadcast on the applicable machines before the actual downtime occurs. For additional information contact the shift supervisor at (505) 667-4584. All times listed are Mountain Time.
*** Access restricted.

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### Questions About Announced Changes?

Notice of all scheduled downtime will be broadcast on the machine before the downtime. For up-to-date machine status and scheduled downtime call: CCF Status Message (505) 667-5588.

### Publication Information

ICNchanges Editor/Publication Coordinator  
Barbara Ritchie (CIC-1)  
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Change Control Coordinator  
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Mail Stop B252  
Telephone (505) 667-7309
Computing History: Los Alamos and IBM

Los Alamos and IBM have been collaborating on the development of computers for over 40 years. During that time computing power and efficiency have grown exponentially. Listed below are some of the key developments that have contributed to the advancement of modern computing.

1949: IBM’s first Card Programmable Calculators (CPCs) are installed.

1953: Los Alamos gets Serial 2 of the IBM 701, the Defense Calculator, approximately equal to the MANIAC, which was developed at Los Alamos.

1954: Los Alamos gets a second IBM 701.

1956: MANIAC 2 is completed and features floating-point arithmetic. IBM introduces the 704, with about the same power as the MANIAC 2. Los Alamos installs Serial 1 and two others.

Late 50s: The nuclear weapons program needs more computing power. Los Alamos and IBM enter into a joint project to develop STRETCH, the most capable computer in existence.

1961: STRETCH is completed and is about 35 times as powerful as MANIAC 2 and the IBM 704. IBM uses this technology in its computers for many years afterward.

Early 60s: IBM continues its role as supplier of large computers to Los Alamos, and numerous machines are acquired.

1966: The first on-line terabit mass storage system, the IBM 1360 Photo Store, is installed.

1977: A Common File System (called CFS) is installed and provides storage resources for all central and remote computer systems. IBM mass storage components form CFS.

1987: IBM and Los Alamos enter another joint project to develop a very powerful computer. The collaboration includes research in computer design and parallel processing.

Ira Agins, iaa@lanl.gov, (505) 667-3196
Facility Management Group (CIC-18)

IBM Official: “Los Alamos scientists have worked closely with system developers within IBM to analyze and critique plans for various projects. Their input, because it represents the thinking of users who have long been associated with one of the leading supercomputer centers in the world, has had a significant impact on IBM’s directions in supercomputing.”
To order free software, fill in your name, group, and mail stop; check the software you would like to have and mail this form to

Free Software
Desktop Support Center (CIC-2) MS D445

Name____________________________________ Group______________
Mail Stop___________________ Z-Number_________________

Please send the correct number of replacement high-density diskettes with your request. This software can also be retrieved via FTP from ftp.lanl.gov. (The Macintosh software is in Mac Binary format.)

### Macintosh Software Order Form

#### FREWARE DISKETTE
(Free) Include 1 high-density disk.

This diskette contains the following software:
- **Alias Finder**: Quickly finds the original of an alias when the alias is dragged on top of the Alias Finder icon.
- **Color Cursor**: INIT turns arrow cursor into the Apple colors.
- **Disinfectant**: Virus protection for the Macintosh.
- **Disk Copy**: Creates copies of diskettes using one floppy drive.
- **Mode 32**: Allows Macintosh II, IIx, IICx, and SE/30 to access more than 8 Mbytes of memory with System 7.0 or later.
- **SCSI Probe**: Shows connected devices on the SCSI bus.
- **StuffIt Expander**: Unstuffs BinHex 4.0, StuffIt, and other types of compressed files.

Note: THE FOLLOWING TWO APPLICATIONS COME WITH SYSTEM 7.5:
- **Extensions Manager**: Allows selection of which INITs to load.
- **SuperClock**: Puts a clock in the upper right corner of your Macintosh.

#### INTERNET DISKETTE
(Free) Include 1 high-density disk.

This diskette contains the following software:
- **Fetch**: Easy-to-use for FTPing files from FTP archives.
- **NCSA Telnet**: Telnet application
- **TurboGopher**: Gopher client application for the Macintosh.
- **StuffIt Expander**: Unstuffs BinHex 4.0 and other types of compressed files.

#### HARDWARE SYSTEM UPDATE 3.0
(Update) Include 2 high-density disks.

Indicate number of systems on which this System 7.1 will be used:

Note: Manuals and diskette sets available at a small cost. CD-ROM version available for loan. Call 667-5884 for details.

#### MACINTOSH SYSTEM 7.5
(Include 9 high-density diskettes.)

Indicate number of systems on which this System 7.5 will be used:

Note: Manuals and diskette sets available at a small cost. CD-ROM version available for loan. Call 667-5884 for details.

#### SYSTEM 7.5 POWERTALK AND QUICKDRAW GX
(Include 4 high-density diskettes.)

Note: We recommend that you do not install these parts of System 7.5 unless you have a specific need to do so.

### IBM Software Order Form
(Include 1 high-density disk for each selection.)

#### DATA PHYSICIAN:
Virus detection programs.

#### GOPHER DISK:
PC Gopher III for DOS, HGopher for windows, and PKZip: File compression and decompression program.

#### INTERNET DISKETTE:
- **Iview31**: A gif/bmp/pic viewer.
- **tsyncl_8**: Set your pc clock via lanl ntp timeserver automatically.
- **WS_Ftp**: Super ftp client.
- **WS_Ping**: Super ping and nslookup.

#### LIST:
Searches for character strings within files.
- Includes **Machinist’s Assistant**: Calculates cut angles, etc., for machinist work.
### Accessing Computing Machines through the ICN

This table shows how to access open machines on the ICN through MICOM lines, TCP/IP hosts, and DECnet hosts. Additional machines outside the ICN are accessible through TCP/IP and DECnet. To access any of these machines, except for LIS, you must first establish an ICN account, which includes obtaining an ICN password and registering as an ICN user (contact the CIC Customer Service Center for details).

**Example:** Suppose you want to access the REGISTER machine from MICOM. By referring to the table, you can see that the appropriate command to enter is tig. Once you connect to the tig, enter your ICN usernumber and password as prompted. At the tig prompt (tig>) enter register and login to the register machine.

<table>
<thead>
<tr>
<th>TO Hosts reachable from MICOM Lines: (BETA, CCVAX, IOVAX, OFVAX, STORES, TYMNET, LIS)</th>
<th>FROM TCP/IP Hosts: (BETA, CCVAX, IBM Cluster IOVAX, OFVAX, REGISTER, UNICOS, ACL Hosts, etc.)</th>
<th>DECnet Hosts: (BETA, CCVAX, IOVAX, OFVAX, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICOM Lines</td>
<td>hostname</td>
<td>TIG TELNET hostname</td>
</tr>
<tr>
<td>TCP/IP Hosts (e.g., TIG)</td>
<td>TELNET MICOM hostname</td>
<td>TELNET TELNET DIG SET HOST hostname</td>
</tr>
<tr>
<td>DECnet Hosts</td>
<td>SET HOST DIG TELNET MICOM hostname</td>
<td>SET HOST DIG TELNET hostname</td>
</tr>
</tbody>
</table>

---

### Accessing the ICN through Dialup Modem

Dialup access to the ICN is available through the Terminal Internet Gateway (tig). The tig is a gateway to the internet and allows you to telnet to ICN machines as well as other machines. Configure your modem and terminal for 8 bit, no parity, one stop bit. Based on your modem, select the appropriate number listed in the table to dial into the tig. Then enter your ICN usernumber and password as prompted. At the tig prompt (tig>) enter a machine name or IP address.

Report problems to the Network Control Center at 667-7423 Monday through Friday, 6 am to 6 pm or at 667-4585 during non-business hours.

<table>
<thead>
<tr>
<th>Type of Access</th>
<th>Phone Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microcom Modems from 300</td>
<td>(505) 667-9020, 9021 to 28,000 b/s (Number of Lines 16)</td>
</tr>
<tr>
<td>Microcom Modems from 300</td>
<td>(505) 667-9022, 9023, 9024, and 9025 (Number of Lines 48) (800) 443-1461 (Number of Lines 10)</td>
</tr>
</tbody>
</table>

Note: Use the second phone number if the first does not answer properly.

Revised December 1994
INTEGRATED COMPUTING NETWORK (ICN) VALIDATION REQUEST

To access ICN Computing resources, please complete all parts of this form that apply to you, including "Special Requirements."

Mail your completed application to:
ICN Password Office (PWO)
Mail Stop: B271
Los Alamos National Laboratory
Los Alamos, NM 87545

If you have questions:
Call: (505) 665-1805
E-mail: validate@lanl.gov

All Laboratory computers, computing systems, and their associated communication systems are for official business only. By completing this request, users agree not to misuse the ICN. The Laboratory has the responsibility and authority to periodically audit user files.

Owner Information

<table>
<thead>
<tr>
<th>2-Number (if you have one)</th>
<th>PWO Use Only</th>
<th>Name (last, first, middle initial)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LANL Group</th>
<th>LANS Mail Stop</th>
<th>Citizenship (Foreign National see &quot;Special Requirements for Foreign National&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

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<th>Phone Number</th>
<th>Other (specify)</th>
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</tbody>
</table>

Check LANL affiliation:
- [ ] LANL employee
- [ ] Contractor (specify contract company)
- [ ] Consultant, VSM, associate
- [ ] External user (specify employer)
- [ ] Other (specify)

Send password / smartcard to:
- [ ] Mail Stop
- [ ] Mail to address indicated below

Name/Organization:

Address:

City, State, Zip Code:

Access

Check access method and needed partitions.

<table>
<thead>
<tr>
<th>Access method:</th>
<th>[ ] ICN Password</th>
<th>[ ] Smartcard</th>
<th>[ ] Both</th>
</tr>
</thead>
</table>

- [ ] Open partition (e.g., email systems, open machines)
- [ ] Administrative partition (e.g., IA [BUCS, Stores, Travel], IB [EIS, FMS, PAIRS])
  If you are not a Q-cleared LANL employee, see required steps in section "Special Requirements-Administrative Partition."

- [ ] Secure partition (i.e., secure machines) indicate level(s) of data to be processed:
  - [ ] Unclassified
  - [ ] Secret

I certify this person does require secure access:

Manager Signature (Group Leader or above) ___________________________ Date __________

NOTE: A Q-clearance is required. All classified computing must be performed within the Secure environment.

PWO Use Only

<table>
<thead>
<tr>
<th>New</th>
<th>Change</th>
<th>Clearance Status</th>
<th>Processed</th>
<th>Lvl</th>
<th>Smartcard Serial #</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Comments:

Form 1645 (11/94) Supersedes previous version (rev. 11/04).
Special Requirements

Administrative Partition
(U.S. Citizens Only)

Lab-Wide Systems (e.g., IA [BUCS, Stores, Travel], IB [EIS, FMIS,Pairs])

☐ Under 18 years of age

If you need to access Administrative systems, your group leader must provide a memo accepting responsibility for your actions and justifying your need for access. This memo is to accompany all forms taken to the security briefing (see “Contractor or Non-Q-Cleared”) section below. You may not access the Secure Partition.

☐ Contractor or Non-Q-Cleared

Phone (505) 667-8444 to obtain Access Authorization packet.

Phone (505) 667-8153 to schedule a security briefing.

Bring all forms including this ICN Validation Request to the security briefing for approval.

Security Briefing Approval Signature Date

☐ Foreign National

Attach a copy of Form 382 (REQUEST FOR UNCLASSIFIED VISIT OR ASSIGNMENT BY A FOREIGN NATIONAL) with all approval signatures. Be sure Box #11 of Form 382 is completed. If you are not a visitor/assignee under a LANL/DOE approved Visit / Assignment Request, attach written justification from your host Division Director describing your need to access the ICN.

Authorization (required)

Print Manager Name (Group Leader or above) Manager Z-Number Group

Manager Signature (Group Leader or above) Mail Stop Date

If you are NOT a LANL employee, obtain your LANL contact's signature in addition to the contact's manager's signature.

NOTE: LANL contacts are regular Laboratory employees. Contacts are responsible for obtaining annual re-authorizations, forwarding renewals, and notifying the ICN Password Office of changes in user or contact status.

Print LANL Contact Name Contact Z-Number Phone Number Group

LANL Contact Signature Mail Stop Date
Reader Feedback

Feedback helps us to provide a document that responds to the changing needs of its readership. If you have comments or questions about this publication, please let us hear from you. We have reserved the back of this form for that purpose. We also accept articles for publication that are of interest to our readers. Contact the managing editor for more information. This form is also used for new subscriptions, deletions, or changes. Instructions are on the back. If you prefer to contact us by E-mail, send your comments and/or subscription request to finney@lanl.gov.
New Subscriptions, Deletions, and Changes

 BITS is published by Los Alamos National Laboratory. If you would like to be added to or deleted from our mailing list, please check the appropriate line, complete the form below, and mail us the form.

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
<td>Mail Stop</td>
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<td>Group</td>
<td>Organization</td>
</tr>
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<td>Number of copies</td>
</tr>
</tbody>
</table>

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——— Delete my name from the BITS mailing list.
——— Change my name/address as indicated below.
This index is organized according to keywords taken from the original titles of *BITS* articles. Keywords are listed in alphabetical order and the coverage of articles goes back one year from the date of the current issue.

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Title of BITS Article</th>
<th>Date/Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple PhotoFlash</td>
<td>Apple Introduces New Version of Apple PhotoFlash</td>
<td>Nov. ‘94/p. 14</td>
</tr>
<tr>
<td>Audience Analysis</td>
<td>Audience Analysis for Computing and Communications News</td>
<td>Mar. ‘94/p. 3</td>
</tr>
<tr>
<td>Binary File Transfers</td>
<td>Binary File Transfers between Workstation and Supercomputer</td>
<td>July ‘94/p. 8</td>
</tr>
<tr>
<td>Bit By A Byte [UNICOS]</td>
<td>Bit By A Byte</td>
<td>Apr. ‘94/p. 14</td>
</tr>
<tr>
<td>BITNET Connection</td>
<td>The Demise of BITNET Connection</td>
<td>Apr. ‘94/p. 2</td>
</tr>
<tr>
<td>C++</td>
<td>Using C++ For Scientific Computing Through Array Classes</td>
<td>Nov. ‘94/p. 6</td>
</tr>
<tr>
<td>CFS (Common File System)</td>
<td>Separation of CFS into Secure and Open Systems is Coming!</td>
<td>Dec. ‘93/p. 2</td>
</tr>
<tr>
<td></td>
<td>Reminder for Owners of Classified Files on CFS</td>
<td>Dec. ‘93/p. 14</td>
</tr>
<tr>
<td></td>
<td>CFS Transitions Tools Available to Aid the Network Separation</td>
<td>May ‘94/p. 2</td>
</tr>
<tr>
<td></td>
<td>TCP/IP Based Open CFS Gateway Now Available</td>
<td>Dec. ‘93/p. 1</td>
</tr>
<tr>
<td>CIC (Computing, Information, and Communications)</td>
<td>Organizational Structure of CIC Division</td>
<td>June ‘94/p. 1</td>
</tr>
<tr>
<td>CIC-8</td>
<td>Streamlined, Efficient, and Flexible—CIC-8</td>
<td>Sept. ‘94/p.6</td>
</tr>
<tr>
<td>CLAMS</td>
<td>CLAMS Now Available on the CIC ICN Tools</td>
<td>May ‘94/p. 1</td>
</tr>
<tr>
<td>ClariNews</td>
<td>ClariNews Now Available at LANL</td>
<td>July ‘94/p. 7</td>
</tr>
<tr>
<td>Cluster</td>
<td>Introducing Cluster Corner Articles</td>
<td>June ‘94/p. 10</td>
</tr>
<tr>
<td></td>
<td>IBM AIX XL Fortran (Version 3) Installed on CIC Cluster</td>
<td>July ‘94/p. 10</td>
</tr>
<tr>
<td></td>
<td>CIC Cluster Update</td>
<td>Oct. ‘94/p. 5</td>
</tr>
<tr>
<td></td>
<td>Code Portability: Supercomputers and Workstations</td>
<td>Aug. ‘94/p. 9</td>
</tr>
<tr>
<td>CPIO</td>
<td>CPIO—An Alternative to TAR</td>
<td>Dec. ‘93/p. 19</td>
</tr>
<tr>
<td>CF90</td>
<td>Cray CF90 Programming Environment Tools</td>
<td>July ‘94/p. 4</td>
</tr>
<tr>
<td></td>
<td>Cray CF90 Programming Environment</td>
<td>June ‘94/p. 6</td>
</tr>
<tr>
<td></td>
<td>CF90 Programming Environment Now Available on All Open Crays</td>
<td>Sept. ‘94/p.3</td>
</tr>
<tr>
<td></td>
<td>CF90 Does Not Support All CF77 Directives</td>
<td>Sept. ‘94/p. 10</td>
</tr>
<tr>
<td>CrayDoc</td>
<td>CrayDoc On-line Documentation</td>
<td>Sept. ‘94/p. 4</td>
</tr>
<tr>
<td>EIS (Employee Information System)</td>
<td>Keeping Your EIS Data Up-to-Date</td>
<td>Oct. ‘94/p. 4</td>
</tr>
<tr>
<td>E-mail</td>
<td>Distribution Lists for E-mail Users</td>
<td>June ‘94/p. 4</td>
</tr>
<tr>
<td></td>
<td>LANL E-mail to Print Gateway</td>
<td>June ‘94/p. 7</td>
</tr>
<tr>
<td></td>
<td>E-mail to DOE and Other Sites</td>
<td>Dec. ‘93/p. 6</td>
</tr>
<tr>
<td></td>
<td>New E-mail Server: POP+</td>
<td>Oct. ‘94/p. 2</td>
</tr>
<tr>
<td>Electronic Phone Book</td>
<td>Using the LANL Electronic Phone Book</td>
<td>Dec. ‘93/p. 8</td>
</tr>
<tr>
<td>Eudora</td>
<td>A Look at Eudora</td>
<td>July ‘94/p. 12</td>
</tr>
<tr>
<td></td>
<td>Another Look at Eudora</td>
<td>July ‘94/p. 11</td>
</tr>
<tr>
<td>Fone</td>
<td>Fone Tips</td>
<td>Mar. ‘94/p. 8</td>
</tr>
<tr>
<td>Keywords (Los Alamos Integrated Communications System)</td>
<td>Title of BITS Article</td>
<td>Date/Page</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>LAICS</td>
<td>LAICS Update</td>
<td>Mar. '94/p. 1</td>
</tr>
<tr>
<td>LAICS</td>
<td>LAICS implementation on the Horizon</td>
<td>Feb. '94/p. 4</td>
</tr>
<tr>
<td>LAICS</td>
<td>LAICS Update: Interesting Facts about Your Phone Service</td>
<td>Oct. '94/p. 3</td>
</tr>
<tr>
<td>ldb</td>
<td>ldb Being Phased Out</td>
<td>Mar. '94/p. 7</td>
</tr>
<tr>
<td>.LOGIN or .CSHRC [Shell Files]</td>
<td>PAPER or PLASTIC? .LOGIN or .CSHRC?</td>
<td>Nov. '94/p.11</td>
</tr>
<tr>
<td>Macintosh</td>
<td>The Power Macintosh</td>
<td>June '94/p. 12</td>
</tr>
<tr>
<td></td>
<td>A Look at the Macintosh System 7.5</td>
<td>Sept. '94/p. 13</td>
</tr>
<tr>
<td></td>
<td>Macintosh System 7.5 Follow-up</td>
<td>Oct. '94/p. 9</td>
</tr>
<tr>
<td>Network Licensed Software</td>
<td>The Coming of Network Licensed Software</td>
<td>Nov. '94/p. 13</td>
</tr>
<tr>
<td>Paging</td>
<td>New Access Number for Off-Site Paging</td>
<td>Nov. '94/p. 1</td>
</tr>
<tr>
<td>PC</td>
<td>New IBM PC Products Available</td>
<td>Oct. '94/p. 15</td>
</tr>
<tr>
<td>PC/TCP</td>
<td>Version 2.31 of PC/TCP</td>
<td>Apr. '94/p. 1</td>
</tr>
<tr>
<td>PCMCIA</td>
<td>An Introduction to PCMCIA</td>
<td>Feb. '94/p. 11</td>
</tr>
<tr>
<td>Photoplotting</td>
<td>Photoplotting Services No Longer Available</td>
<td>Feb. '94/p. 1</td>
</tr>
<tr>
<td>PVM (parallel virtual machine)</td>
<td>Distributed Computing Team Supports PVM Software and Initiates Parallel Tools Users’ Group</td>
<td>Nov. '94/p. 11</td>
</tr>
<tr>
<td>Runaway [UNICOS]</td>
<td>Stop that Runaway!</td>
<td>May '94/p. 8</td>
</tr>
<tr>
<td>Software Disposal</td>
<td>Software Disposal</td>
<td>Mar. '94/p. 11</td>
</tr>
<tr>
<td>Software Distribution</td>
<td>Mac and PC Software Distribution at LANL</td>
<td>Oct. '94/p. 12</td>
</tr>
<tr>
<td>Supercomputing ‘94</td>
<td>Supercomputing ‘94</td>
<td>Mar. '94/p. 2</td>
</tr>
<tr>
<td>Survey</td>
<td>Desktop Software Site License Survey</td>
<td>Oct. '94/p. 16</td>
</tr>
<tr>
<td>Telephone Service Charges</td>
<td>Telephone Service Charges</td>
<td>Apr. '94/p. 11</td>
</tr>
<tr>
<td>TELNET</td>
<td>Using TELNET and FTP to Sign onto Alpha and Gamma</td>
<td>Feb. '94/p. 8</td>
</tr>
<tr>
<td>UNICOS</td>
<td>UNICOS CFT77 Compiler Listing Files</td>
<td>Dec. '93/p. 18</td>
</tr>
<tr>
<td>Validated ... for LANL Computing</td>
<td>Getting Validated and Registered for LANL Computing</td>
<td>June '94/p. 7</td>
</tr>
<tr>
<td>X Windows</td>
<td>Securing X Windows on UNIX Workstations</td>
<td>Apr. '94/p. 8</td>
</tr>
<tr>
<td></td>
<td>Did You Leave Your X Window Open</td>
<td>Feb. '94/p. 2</td>
</tr>
</tbody>
</table>
Produced by the Computing, Information, and Communications (CIC) Division
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Blue sparks spill splitting like quartz into a million bits ****