

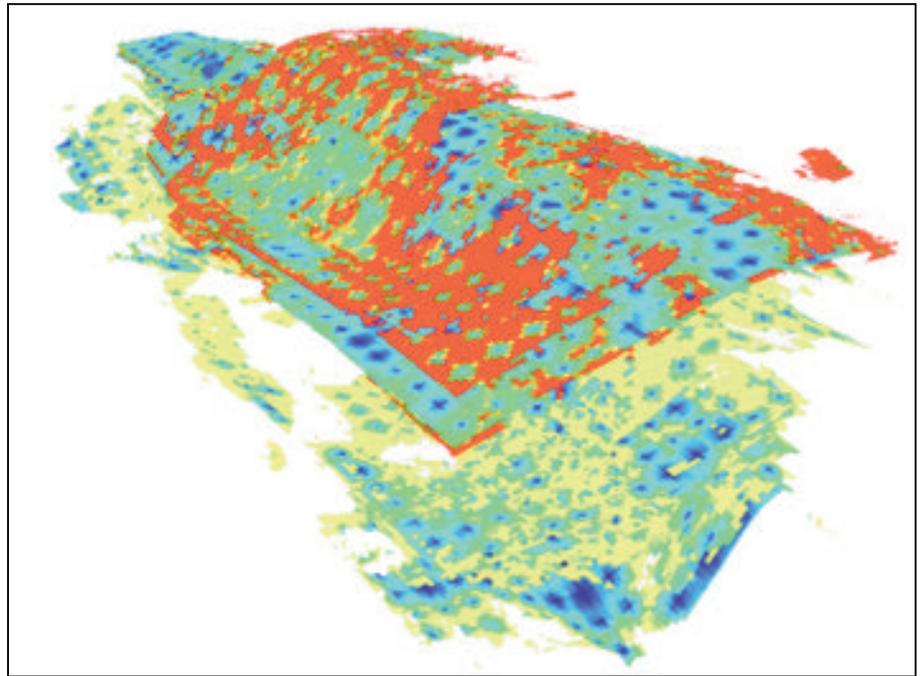
BITS

computing & communications news

September 1997

COMPUTING, INFORMATION, AND COMMUNICATIONS (CIC) DIVISION • LOS ALAMOS NATIONAL LABORATORY

This image was developed through the Falcon project, a Cooperative Research and Development Agreement (CRADA) between Amoco, Los Alamos, and Cray Research Inc. to develop the next-generation parallel oil reservoir simulation code. The Falcon simulation pictured here contains 2.3 million grid cells and shows oil saturation of a 100-square-mile reservoir field after 25 years of operation. Areas of high saturation are pictured in dark gray; areas of low saturation in light gray. Falcon allows modeling of large, economically important oil fields in their entirety. Los Alamos participants in the Falcon project are members of CIC-19's Parallel Architectures team: Michael DeLong, Allyson Gajraj, Wayne Joubert, Ken Koch (formerly of CIC-19), Olaf Lubeck, and James Sanderson.



Inside this issue

Feature Articles

Amoco/LANL/CRI High-Performance
Oil Reservoir Simulation Project 1

Keeping the Employee Information
System Current 2

PageMart Offers Expanded Paging Capabilities 5

More GNU Utilities Available in /usr/lanl 6

WWW at LANL

The Coming of Age of HTML Frames 7

Microcomputing News

MacTips: Mac OS 8.0 10

UNICOS Program Development

New Version of CFT77 Compiler
Temporarily Available 11

Fortran 90, Programming Environments,
and Policy 12

Using Programming Environment Modules 14

The Removal of Fortran 90 1.0 Version 16

In the Classroom

Research Library Training 17

Labwide Systems Training 18

Advanced Technical Computing Training 20

Index 27

Customer Service Center(505) 665-4444 or cichelp@lanl.gov

Because of the wide variety of CIC computing services, numerous facilities are available to address your questions. If you are uncertain whom to call, you can always call the Customer Service Center (CSC). CSC consultants are trained to either answer your question or locate someone who can. To reach the appropriate consultant, dial 665-4444 and make your selection from the following choices:

Option 1: New user topics including e-mail, passwords, registration, and World Wide Web.

Option 2: Labwide Systems such as Travel, Time and Effort, and Purchase Cards.

Option 3: Scientific computing, storage systems, and networking.

Option 4: Classroom instruction and training.

Option 5: Desktop Consulting for PC and Macintosh software and network configurations.

Consulting Via E-Mail

Customer Service Center.....	cichelp@lanl.gov
Scientific and engineering computing.....	consult@lanl.gov
Administrative and business computing.....	labwide@lanl.gov
Passwords and registration.....	validate@lanl.gov
Macintosh computing.....	Mac-help@lanl.gov
PC computing.....	PC-help@lanl.gov
UNIX computing.....	UNIX-help@lanl.gov

Other Useful Numbers

Advanced Computing Laboratory.....	665-4530
Central Computing Facility.....	667-4584
Network Operations Center.....	noc@lanl.gov or 667-7423
Telephone Services Center.....	667-3400

Amoco/LANL/CRI High-Performance Oil Reservoir Simulation

The Parallel Architectures Team in the Scientific Computing Group of Los Alamos National Laboratory (LANL) has joined Amoco Production Company and Cray Research Inc. in a Cooperative Research and Development Agreement (CRADA) to develop a commercial-quality 3-D oil reservoir simulation package for the CRAY T3D/T3E and other massively parallel computers. This partnership began in 1994 as part of the High Performance Parallel Processing Program (H4P), a collection of CRADAs to unite LANL and industrial partners in high-performance computing research and development. The Parallel Architectures Team at LANL has built an international reputation for its work in computer performance analysis over the last 10 years and has vast experience with traditional vector supercomputers, various massively parallel processors (MPPs), and scientific workstations. Our expertise can be applied to problems of direct interest to industry through partnerships such as this.

The major focus of this partnership is to develop Falcon, which is a high performance, state-of-the-art, 3-D oil reservoir simulation code that runs efficiently on the CRAY T3D/T3E parallel systems, yet is portable enough to run on other MPPs, traditional vector supercomputers, and even high-performance workstations and workstation clusters.

Falcon: Next-Generation Reservoir Simulation Software

The Falcon project is driven by oil industry needs for more accurate modeling and simulation of subsurface oil flows. The worldwide oil industry produces 70 million barrels of oil daily. Over half of this oil is produced by large oil fields, which cannot be modeled accurately in their entirety because of their massive size and the limitations of conventional computer technologies. Computer simulations, widely used by the oil industry to predict oil and gas production and to plan recovery strategies, are limited to either the modeling of small portions of these fields or reliance on coarse grid models, which do not predict oil flow accurately. The result is lost oil recovery opportunities.

Falcon is the first commercial-quality reservoir simulator to harness the power of high-performance massively parallel computing technologies to address these problems. The Falcon software makes it possible to model large, economically important oil fields in their entirety. This capability allows oil and gas companies to perform best- and worst-case analyses of drilling schedules and to calculate "what if" operational scenarios for reservoirs. Both processes are crucial to developing economical recovery strategies. Falcon's speed also enables multiple large-scale runs on statistically varying reservoir information when estimating production.

High-Performance Computing

LANL's Parallel Architectures Team has played a key role in the development of the Falcon code. The team has a history of involvement both with leading-edge high-performance computing technologies and with high-end simulation codes for high-performance computers. This expertise has been applied directly to the Falcon project in areas such as parallelization, software engineering, code optimization, and high-end performance modeling.

Parallel Linear Solver Technologies

The critical computing bottleneck of the reservoir simulation process is the solution of the large sparse systems of linear equations arising from the physical modeling process. Unfortunately, the best linear solver algorithms for conventional computers generally do not perform well on parallel computers. However, in the course of this project we developed a new implementation of the popular incomplete LU preconditioner for solving linear equations. Our technique provides essentially full parallelism on large-scale problems of interest to the oil industry and thus removes one of the major bottlenecks for the efficient use of parallel computers for such modeling problems. We also expect the linear solver work of this project to result in a spinoff technology that is applicable to other types of parallel simulations.

Falcon at work

Amoco has used the Falcon code to perform a major field study involving a 2.3 million grid cell simulation for 25 years, using 50 separate runs on geostatistically generated data sets. This study, believed to be the largest of its kind ever performed, made it possible to estimate production rates as well as uncertainties for a large-scale field.

R&D 100 Award

The Falcon Project was recently awarded a 1997 R&D 100 Award for its technical innovation. For more information on the Falcon project, see the project Web site at <http://www.c3.lanl.gov/~wdj/amoco.html>.

Wayne Joubert, wdj@lanl.gov, (505) 665-7374

*Parallel Architectures Team
Scientific Computing Group (CIC-19)*

Olaf Lubeck, oml@lanl.gov, (505) 667-6017

*Parallel Architectures Team Leader
Scientific Computing Group (CIC-19)*

Keeping the Employee Information System Current

The Employee Information System (EIS) is the repository for current information about all Laboratory and contract employees. It contains a variety of information such as name, phone number, e-mail address, work address, home address, organization code, and Z number. Many other databases at the Laboratory use data downloaded from EIS. For example, employees cannot receive an ICN password or an e-mail account unless they are listed in EIS. Consequently, keeping EIS up to date is an important task that requires awareness and effort from everyone.

The contents of EIS can be divided into two broad categories: personal information and location information. Personal information includes name, Z number, effective employment dates, ethnic code, citizen code, and organization code. Location information includes mail stop, phone number, fax number, pager number, delivery drop point, tech area, building, and room. This article provides instructions for updating existing information as well as making new entries.

Making New Entries in EIS

The procedure used to enter personal information for Laboratory employees is different from the procedure used to enter contract employees. Personal information for Laboratory employees is entered and changed by the Payroll Office in response to a Personnel Action form. Contract and other non-Lab employee personal information is entered on the UNL screen within EIS.

As of August 4, 1997, visitor numbers (aka, "V" numbers) will no longer be generated in EIS. Instead, Z numbers will be system generated in EIS as needed. A small group of people from select organizations will be responsible for entering the necessary data into EIS. Contact the appropriate organization to have non-Lab employees entered into EIS as shown in Table 1.

Making Changes to Existing Personal Information on the UNL Screen

If you are a group secretary or other person authorized to update personal information for contract or other non-Lab employees, the tips listed below may assist you in using the UNL screen.

- If you are making changes to the "Employee type" field, be sure to

change the "Termination date" field so that the old employee type is terminated before the new employee type begins. In Figure 1, for example, the termination date for Basel Rathbone is 03/10/1999. If Basel's employee type changed from Visitor to Contractor on 06/15/1997, you would enter 06/14/1997 as the visitor termination date. This would void the old employee type before the new employee type took effect. If you fail to change the termination date, you will receive an error message indicating that the employee types cannot overlap.

- When entering a name to the "Company short name" field, you should first press the F4 key to verify that the name is included in the list of approved contract companies. If it is not, you will have to use the UCO screen to add it. You can access this screen by entering UCO in the menu option field.
- Do not allow a contractor's termination date to accidentally expire. Although an expired termination date will not terminate the contractor's employment, it will terminate her ICN password, e-mail account, signature authorities, and training plans.
- If you discover more than one entry for a contractor or Laboratory employee, call Labwide System Support to report it (665-4444 option 2).

Table 1. Contact Information for Entering Contract and Non-Lab Employees

Personnel Categories	Responsible Organization
Consultants	BUS-5 (665-1588)
Guest scientists, official visitors, foreign nationals, university professors, Science and Technology Base program participants	HR-5, Affiliates (665-0760)
JCI Employees	JCI (667-4266)
PTLA Employees	PTLA (665-6360)
Employees of BI Literary, Butler, General Physics, Comforce, TAD, Technadyne, Tech. Com Serv., or Weirich	HR-5, Staffing Alternatives (665-3235)
Bechtel employees	CIC-10 (667-1440)

```

*...<Q>query...<U>update...<A>add...<N>ext
.FEI803A...Los Alamos National Laboratory Employee Information...05/16/97
.Level 1...UNL : Update Non-lab Personal Information...15:56:52
...**Must Query Employee before Updating**
.Z no...113024...Name...RATHBONE BASIL M
Last name...RATHBONE...First name...BASIL
.Middle name...M...Name title...
.Z no...113024...SSN...575-63-7000...Birth date...04/20/1964...Sex...M
.Ethnic code...10...HISPANIC...Citizen code...US...UNITED STATES OF
.Org code...8HD600...CIC-6...Cost center...8HD600...CIC-6
.Org cfg reas why...Employee type...CON...CONTRACTOR
.Company short name...RAY RASHKI...Address seq no 002...RAY RASHKIN ASSOCIAT
.Start date...03/10/1997...Termination date...03/10/1999
Disability flag (Y/N)...N
TO UPDATE SECRETARIAL CONTRACTORS 7-7929; TECHNICAL CONTRACTORS 7-2299
.FKey __ Menu option ____ Command ===>
.F1=Help F4=Prompt F5=Refresh F6=Menu F9=Bottom
    
```

Figure 1. UNL Screen

Instructions for Updating the UNL Screen

1. Log on to the IB machine.
2. Type EIUNL in the Menu Option field.
3. Press Enter (or Return if using a Macintosh).
4. Tab to the “Zno” field or “Name” field, and enter the Z number or last name followed by the first name (see Figure 1).
5. Press Enter (or Return if using a Macintosh).
6. Type a U in the upper left-hand corner of the screen.
7. Tab to the fields that need to be changed, and enter the necessary changes. If the cursor does not stop at the field you want to update, call the number listed at the bottom of the screen. The Staffing Alternative Team (667-4536) is authorized to update this person.
8. Press Enter (or Return if using a Macintosh).
9. Type Y in reply to the question “Are you sure?”
10. Press Enter (or Return if using a Macintosh).

11. Look for the message, “Update function complete” to ensure that your changes were properly entered.

Updating Location Information in EIS

All Laboratory and contract employees are authorized to change their own location information such as tech area, building, room, mail stop, phone number, and fax number. Changes to this information are done through the UDI screen within EIS (see Figure 2). If any of your location information needs updating, follow the instructions listed below, or ask your group secretary or other person in your organization who has the EIDIR authority to update the information for you.

Before updating location information on EIS, consider the following conditions:

- **Updating Your Pager Number.** You must use the second screen of UDI to update the pager field. To access screen 2, type an N in the upper left-hand corner of the screen, and then press Enter.
- **Updating Your Phone Number.** The Laboratory’s Phone database uses EIS to keep phone numbers current. However, it usually takes a couple of days for changes to migrate from EIS to the Phone database.

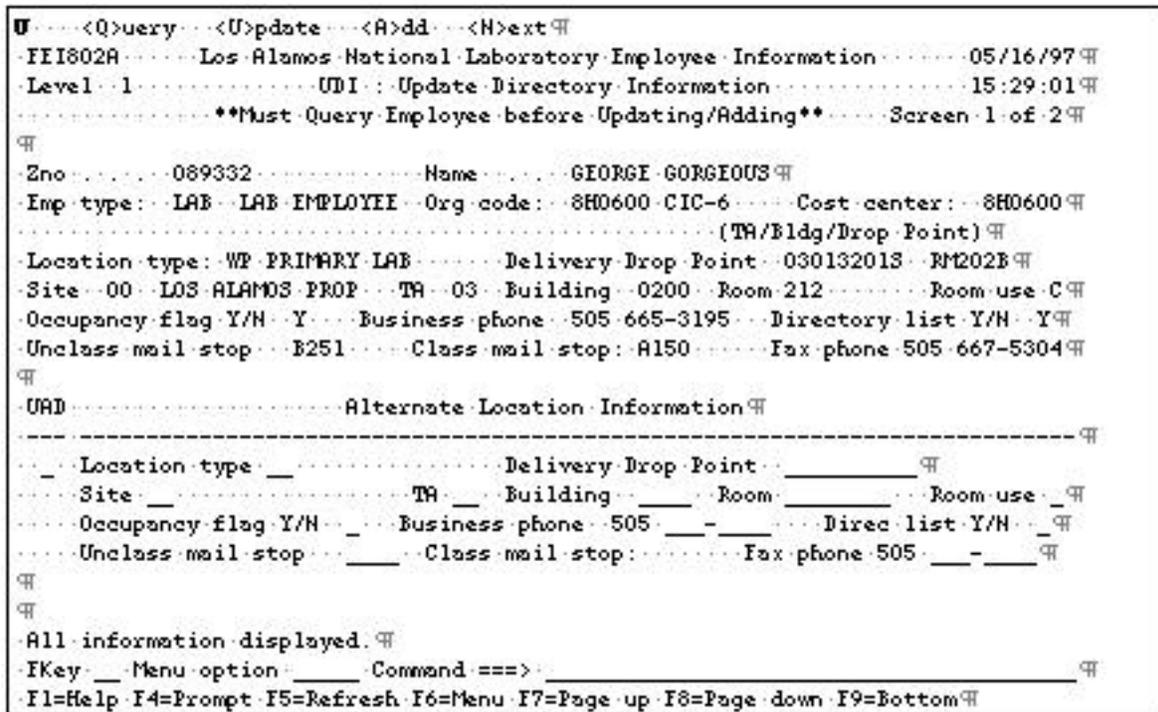


Figure 2. UDI Screen

• Updating Your E-mail Address. Although your e-mail address will be displayed on screen 2 of UDI, you cannot update your e-mail address within this screen. Instead, you must log on to the Register machine to change your e-mail address. If you need help using Register, contact the Customer Service Center at cihelp@lanl.gov or 665-4444.

Instructions for Updating the UDI Screen

1. Log on to the IB machine.
2. Type EIUDI in the Menu Option field.
3. Press Enter (or Return if using a Macintosh).
4. Tab to the "Zno" field or "Name" field, and enter your Z number or last name followed by your first name (see Figure 2).
5. Press Enter (or Return if using a Macintosh).
6. Type a U in the upper left-hand corner of the screen.

7. Tab to the fields that need to be changed and enter the necessary changes.
8. Press Enter (or Return if using a Macintosh).
9. Type Y in reply to the question "Are you sure?"
10. Press Enter (or Return if using a Macintosh).
11. Look for the message, "Update function complete" to ensure that your changes were properly entered.

Mary Billen, mbillen@lanl.gov, (505) 665-3195
Customer Service Group (CIC-6)

Beverly Faulkner, faulkner_beverly_a@lanl.gov,
(505) 665-0996
Customer Service Group (CIC-6)

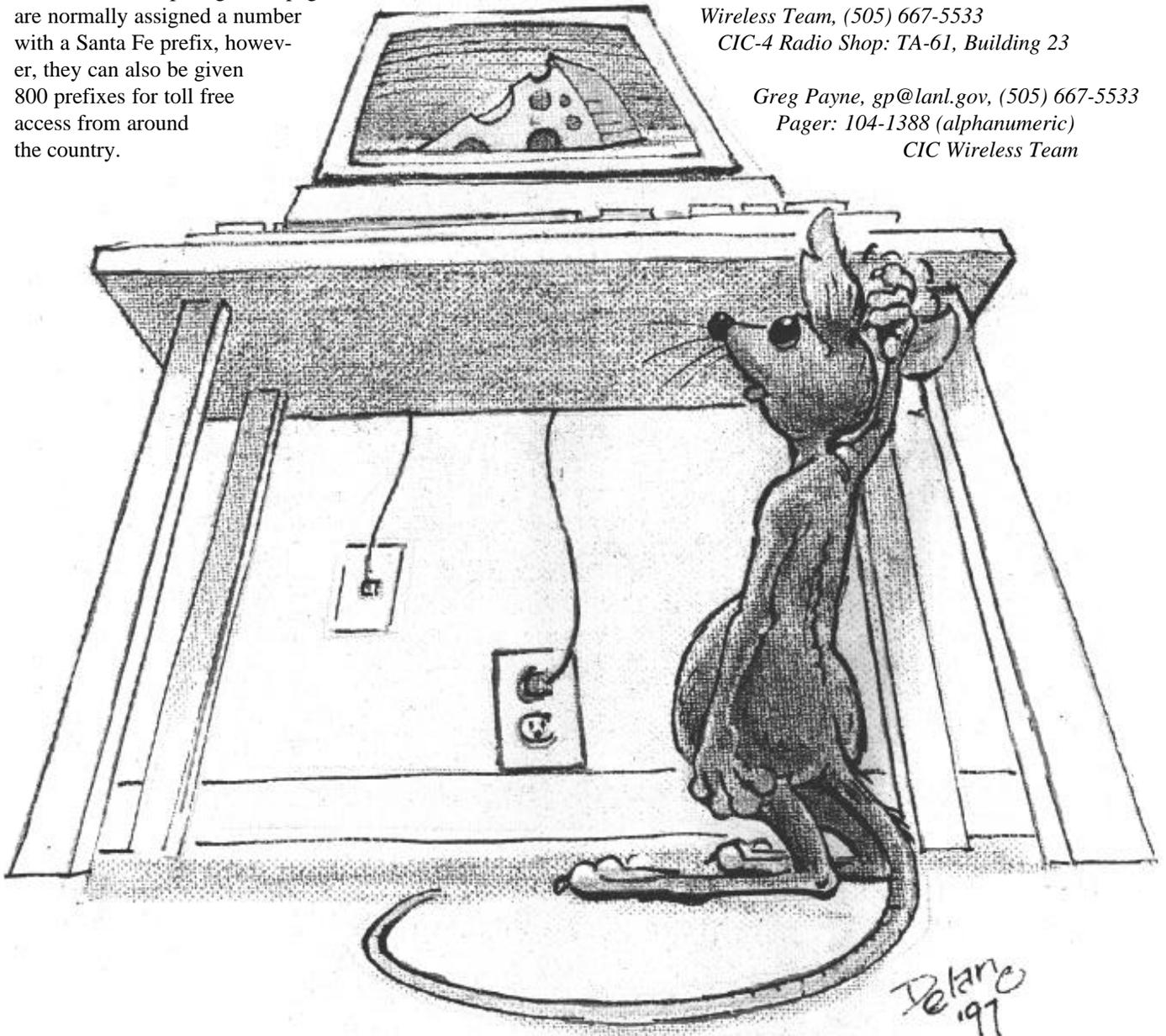
PageMart Offers Expanded Paging Capabilities

The Laboratory is now one year into its contract with PageMart as our outside paging source. PageMart pagers are capable of nationwide coverage within metropolitan areas. (As yet no company provides total coverage. Contact the Wireless Team for specifics.) PageMart has recently added the option of extended nationwide coverage. This will allow users to receive pages in Canada, Puerto Rico, the Virgin Islands, Hawaii, and in the future even Mexico and South America. Coverage can be changed by simply calling the CIC-4 Radio Shop. PageMart pagers are normally assigned a number with a Santa Fe prefix, however, they can also be given 800 prefixes for toll free access from around the country.

The standard PageMart pager is capable of receiving only numeric pages, but alphanumeric pagers are available at an additional cost. You can send a text message to an alphanumeric pager either through the World Wide Web or e-mail. PageMart pagers use the very latest paging protocol, Motorola's Flex at 6400 baud, for optimal system throughput. On the horizon are some exciting new features, including guaranteed message delivery and even two-way paging. Stay tuned!

*Wireless Team, (505) 667-5533
CIC-4 Radio Shop: TA-61, Building 23*

*Greg Payne, gp@lanl.gov, (505) 667-5533
Pager: 104-1388 (alphanumeric)
CIC Wireless Team*



More GNU utilities available in /usr/lanl

Throughout this year the GNU utilities have been updated and new packages added. And as of August 1997, the secure version of /usr/lanl, which resides on the machine stash, has also received the GNU utilities.

GNU utilities are compiled and ready for use in /usr/lanl for these systems:

- Sun4: SunOS-4.1.4 Solaris-2.5
- SGI: IRIX-5.3 IRIX-6.2
- DEC Alpha: OSF1-3.2 OSF1-4.0
- HP-700's: HP-UXA-9.05 HP-UXB-10.20
- IBM-RS6000: AIX-4.1
- CRAY: UNICOS-8 UNICOS-9

On both the open and secure /usr/lanl repositories, the GNU utilities can be found in /usr/lanl/gnu/bin. If you already have /usr/lanl mounted, you only have to add "/usr/lanl/gnu/bin" to your search path and "/usr/lanl/gnu/man" to your man path.

If you do not have /usr/lanl mounted, contact your system administrator and, depending on what OS you are running, have that person mount one of the following mount points:

- SunOS-4.1.4: kufssa:/disks/lanl/sun4/4.1.4
- Solaris-2.5: kufssa:/disks/lanl/sun4/5.5
- IRIX-5.3: kufssa:/disks/lanl/sgi/5.3

- IRIX-6.2: kufssa:/disks/lanl/sgi/6.2
- OSF1-3.2: kufssa:/disks/lanl/alpha/OSF1V3.2
- OSF1-4.0: kufssa:/disks/lanl/alpha/OSF1V4.0
- HP-UXA-9.05: kufssa:/disks/lanl/hp/HP-UXA.09.05
- HP-UXB-10.20: kufssa:/disks/lanl/hp/HP-UXB.10.20
- AIX-4.1: kufssa:/disks/lanl/ibm-rs6000/AIX4.1
- Crays: Repositories are already mounted. Just add
"/usr/local/apps/gnu/bin" to your search
path and "/usr/local/apps/gnu/man" to your
man path.
- Secure: If you are using secure machines, contact
"nfs@lanl.gov" to receive mounting
information.

If you have any questions, please contact the ICN Consulting Office (consult@lanl.gov or 665-4444, option 3).

For more information about the repository, see the GNU repository home page at www.lanl.gov/Internal/divisions/cic/ComputingAtLANL/software/usr_lanl.html.

*Jesse Olson, olsonj@lanl.gov, (505) 665-4331
Distributed Computing Group (CIC-8)*

The Coming of Age of HTML Frames

In their first regular season (1960), the Dallas Cowboys won zero games, lost eleven, and tied once. It took until 1965 for them to make it to a .500 record, and until 1971 before they won their first of five Super Bowls.

Friedrich Kekule spent well over a decade laboring in chemistry labs before a dream about snakes led to the theory of the benzene ring.

Mae West was 39 (or so) before her first movie.

Some things take time.

By the time this article is published, it will have been a full two years since Netscape first introduced HTML frames with the first beta release of Navigator 2.0. Like any major advance, frames came with some growing pains: pushing the browser's back button would have unpredictable results; older browsers couldn't see the content; different vendors introduced different bells and whistles (e.g., Microsoft's "floating frames").

Although it is still too early to claim that all of the problems with frames have been resolved, the technology has stabilized to the point that the World Wide Web Consortium (W3C) has included frames in its HTML 4.0 Working Draft (released July 1997). And that inclusion, combined with support from multiple browsers, has brought frames within the scope of the Information Architecture's IA-5815: Laboratory Standard HTML.

Frames, for those who are not yet familiar with them, provide a means to present multiple panes of information on-line. One part of the screen display can scroll while other parts remain static; new content can be loaded into one part of the screen while other parts stay the same. When implemented well, this can provide on-line users with useful navigation tools; when implemented poorly, however, frames can just as easily confuse and irritate.

This article will offer a few basic tips and tricks with frames, including approaches to dealing with some of the remaining problems. As usual, I won't attempt any sort of comprehensive explanation of how to construct frames, since there is a lot of good information on that subject already on-line.

The Basics

Frames are constructed by inserting one or more `<FRAMESET>`s between the `<HEAD>` and `<BODY>` sections of the primary document. `<FRAMESET>`s specify the layout of the `<FRAME>`s that are arranged within them, and the content of

each `<FRAME>` is specified by a URL to a standard HTML document. For example, the following markup separates the screen into two columns of equal width, with the left side of the screen containing "document-1.html" and the right side containing "document-2.html":

```
<FRAMESET COLS="50%,50%">
  <FRAME SRC="document-1.html">
  <FRAME SRC="document-2.html">
</FRAMESET>
```

Note that `<FRAMESET>` has an ending tag but `<FRAME>` does not. Also note that the indenting of lines within `<FRAMESET>`s is a convention to make them easier to read, not a requirement.

`<FRAMESET>`s are embedded by using them to further define the content of a particular frame. For example, the following markup separates the screen first into two rows. The first row is a narrow row at the top of the screen that contains "document-1.html" (typically an overall navigation bar). The second row is further divided into two columns, a narrow column on the left that contains "document-2.html" (typically a table of contents) and a wider column on the right that contains "document-3.html" (typically the main document itself).

```
<FRAMESET ROWS="10%,90%">
  <FRAME SRC="document-1.html">
  <FRAMESET COLS="20%,80%">
    <FRAME SRC="document-2.html">
    <FRAME SRC="document-3.html">
  </FRAMESET>
</FRAMESET>
```

Additional markup is available for controlling borders, scrolling, resizing of frames, and more, but the above example covers the basics.

Supporting Non-Frames Browsers

As noted above, all of the frames markup is placed between the `<HEAD>` and `<BODY>` sections. Browsers that support frames will read the `<HEAD>` and the `<FRAMESET>` sections, but will ignore the `<BODY>`. Browsers that do not support frames, by contrast, will read the `<HEAD>` and the `<BODY>` but not the `<FRAMESET>` (because all of the content is markup contained within `<` and `>` brackets). Furthermore, because all of the documents that are loaded into the frames are standard HTML documents, non-frames browsers can read the documents themselves, though only one at a time.

This makes it easy to write markup that accommodates both frames and non-frames browsers. For example, the following markup will show a two-column display for browsers that support frames, with “index.html” to the left and “document.html” to the right. For browsers that don’t support frames, it will show a link directly to “index.html”.

```
<HTML>
<HEAD>
<TITLE>Example Markup</TITLE>
</HEAD>
<FRAMESET COLS=“30%,70%”>
  <FRAME SRC=“index.html”>
  <FRAME SRC=“document.html”>
</FRAMESET>
<BODY>
Go to <A HREF=“index.html”>Non-Frames Version</A>
</BODY>
</HTML>
```

Note that it is also possible to save non-frames users a click by duplicating the contents of “index.html” within the <BODY> section. The drawbacks to this duplication, however, are that frames-capable browsers will have to load the extra content even though they don’t read it (slowing down the page loading) and that the Web author will have to maintain two copies of the “index.html” content instead of just one.

Further refinement is available through the <NOFRAMES> tag. This allows us to put markup into a document that non-frames browsers will display but frames browsers will not. For example, the following markup would cause an additional message to be displayed for non-frames browsers (which will view the page as a single window) but not for frames browsers (which will view the page as a pane within a <FRAMESET>):

```
<BODY>
<NOFRAMES>
This is the additional message for non-frames browsers.
</NOFRAMES>
```

This is the content that both types of browsers see.

```
</BODY>
```

Note that <NOFRAMES> is used within the documents that are loaded into the frames (such as “index.html” from the previous example), not within the document that defines the

frames (where it isn’t needed because the frames-capable browsers don’t read the <BODY> section anyway).

URLs, Links, and Bookmarks

The fact that frames feature multiple documents being loaded into a single document causes addressing of the framed documents to be problematic. Even though each of the documents has a separate URL, for example, current browsers consider them all to be part of the main document that they are loaded into (i.e., the same URL remains in the Location bar even as new documents are loaded into the frames).

For on-line navigation, a link “target” is used to specify which frame a document should be loaded into. The first step in doing this is to assign a NAME to each frame, as follows:

```
<FRAMESET COLS=“30%,70%”>
  <FRAME SRC=“index.html” NAME=“index”>
  <FRAME SRC=“document.html” NAME=“mainbody”>
</FRAMESET>
```

Links within loaded documents can then target the desired frame as follows:

```
<A HREF=“newdocument.html” TARGET=“mainbody”>
```

This would cause “newdocument.html” to load into the larger frame on the right side of the window.

If no target is specified, the default is to load the document into the same frame that the link itself is in. This default can however be changed in the <HEAD> section of a loaded document through the <BASE> element:

```
<HEAD>
<BASE TARGET=“mainbody”>
</HEAD>
```

Note that this is defined in the document that is loaded into a frame (such as “index.html” in the example), not in the main document that defines the frames. This enables different documents to have different default targets.

Target names can be whatever you choose, except for the following which have special reserved meanings:

- `_blank` loads the document into a new window.
- `_self` loads the document into the same frame as the link (the default when no <BASE TARGET=???> has been set).

- `_parent` loads the document into the `<FRAMESET>` parent (for embedded `<FRAMESET>`s).
- `_top` loads the document into the full window, eliminating the frames.

As a courtesy, whenever linking to documents from other Web authors, consider using `TARGET="_top"`. This allows the external documents to be viewed in their own context (as opposed to squeezing their layout into a confined frame) and gives users the chance to bookmark the external documents if they choose to.

As a user, if you would like to bookmark a document that has been loaded into a frame, try this:

1. Go back to a document that has a link to the document you want bookmarked.
2. Point at the link and click the right mouse button (varies under Macintosh and UNIX).
3. Open the link in a new window.

This will cause the document to fill the entire new window. Its URL will be displayed on the Location line (instead of the URL for the main document defining the frames), and it can then be bookmarked. The new window can then be closed to return to the frames.

Note also that the same types of issues that cause problems for bookmarking can also cause browsers' histories to behave unpredictably. This becomes apparent, for example, in the different ways that different browsers will respond to a page reload: sometimes only a single frame will reload, sometimes the whole set will reload, and sometimes when the whole set reloads it will revert to the content that was originally loaded, not necessarily what we were viewing prior to the reload.

Printing Considerations

Currently, the only widely supported way to print the contents of a frame is to click on the frame you want and then print. Only the document in that frame will print, and there is no direct way that I know of that an author or user can get around this.

The W3Cs Cascading Style Sheets (CSS-1) holds promise for a better way of approaching this, since different styles can be specified for on-line display and printing (as well as for braille, voice, and other alternative outputs). This will be a significant advance if it becomes widely implemented, but until then it's not much help.

If as an author you think it might be important that users be able to conveniently print out the full contents of information that is wrapped in frames, then consider providing the same content in an alternative format. For example, you might combine all of the documents into a single non-frames HTML document or PDF file.

For Additional Information

As promised at the start of this article, all of the above only covers a fraction of what can be done with frames (and the problems that can be encountered). Additional information is available from the Information Architecture's General Internet/WWW Activity Area page (<http://www.lanl.gov/projects/ia-lanl/area/web/>, Laboratory IP addresses only), or by performing a search for "+frames +html +authoring" from InfoSeek (<http://www.infoseek.com>) or AltaVista (<http://altavista.digital.com>).

For additional information about the Information Architecture Project in general, please see our home page at <http://www.lanl.gov/projects/ia/>. If you would like printed or e-mail copies of any of our materials, please contact me at the address below.



*Tad Lane, tad@lanl.gov, (505) 667-0886
Information Architecture Standards Editor
Communications Arts and Services (CIC-1)*

MacTips: Mac OS 8.0

Those of us in the CIC-6 Desktop Support Team have set up a Web page to provide information about how to deal with problems and conflicts associated with Apple's new Mac OS 8.0. This Web page, which will be updated on a regular basis, can be accessed from the LANL home page under "What's New." The information below is current as of the date of this writing. Refer to the Web page for ongoing updates.

Precautionary Measures

So far 8.0 appears to be fairly stable, although we have run into some problems and have received reports of additional problems. Consequently, if you plan to install 8.0 onto your system, we suggest you take the following precautions:

1. Take time to clean out old and unused files from your machine.
2. Update your applications to current versions (many of these are available via ESD which is also accessible on the "What's New" page).
3. Back up your machine.
4. Perform a clean install of the new Mac OS 8.0 software. If you do not feel comfortable doing the install, seek the help of your system administrator or more experienced Mac user.
5. Take time to read the on-line documentation provided by Apple.
6. If you hear of a way to resolve of a conflict, please report it to us at desktop@lanl.gov so that we can inform other users via the OS 8.0 Web page mentioned above.

Remember that this is the first release of Mac OS 8, and that it is not unusual for minor updates to be released in the short period of time after the initial release. Expect to see a Mac OS 8.0.1 in the next few months. Therefore, be conservative. For example, you probably do not want to install the first release on a mission-critical machine.

Known Conflicts

Listed below are several known conflicts between Mac OS 8.0 and other software products. Many of the products listed below are LANL IA standards. However, we have also included non-IA approved software because of their general

use within the LANL computing environment. (Other undated lists of Mac OS 8.0 conflicts and bugs can be found at <http://www.macintouch.com/m8compat.html> and <http://www.macfixit.com>.)

1. There is a conflict between Aladdin's Stuffit Deluxe (Commercial Version 4.0) and Mac OS 8.0 that prevents parts of the Magic Menu from opening correctly. Aladdin expects an update within the next 60 days.
2. There is a reported conflict between Eudora 3.1 and Mac OS 8.0 that causes Eudora to quit with a type 2 error.
3. There is a confirmed conflict with Symantec's SAM Virus Protection and Microsoft's Word and Excel running concurrently under Mac OS 8.0 that causes the machine to crash. Symantec is aware of the problems and is working on a SAM update.
4. After Dark will not go to sleep under Mac OS 8.0. Berkeley Systems are aware of the problem and plan a new release shortly (version 4.0.3).
5. Casedy and Greene have an update for Conflict Catcher.
6. Now Utilities reported a conflict but an update is available.
7. There is an update available to fix the Zoom problem for QuicKeys.
8. There are updates planned for Speed Doubler and Ram Doubler because Mac OS 8.0 turns on virtual memory by default and Ram Doubler requires that virtual memory be turned off.
9. There have been reports of printing problems with WordPerfect and Mac OS 8.0.

*Dale H. Leschnitzer, desktop@lanl.gov, (505) 665-4444
Customer Service Group (CIC-6)*

New Version of CFT77 Compiler Temporarily Available

Approximately two months ago an X Division code team reported that one of their QA tests was randomly generating one or more incorrect results when run on machine zeta. When these problems occurred, there was no pattern; that is, the sets of incorrect results were not reproducible. Because this QA test used only one processor, parallel synchronization errors could be discounted.

After extensive analysis and testing, the incorrect results were isolated in a single subroutine. The routine of interest has two major DO-loops, each preceded by a Cray IVDEP (ignore vector dependencies) compiler directive. If the second of the two directives was removed, no incorrect results were generated.

In other tests, the routine was compiled with the CF90 compiler, both with and without the IVDEP directives. Again no errors resulted. Finally, we obtained the last released version of the cft77 compiler from SGI/Cray, recompiled the one routine and tested. Again no errors. After further assembly-code analysis, it was determined that LANL's currently licensed cft77 compiler was generating code unsafe for bi-directional memory access on machine zeta with the IVDEP directive in this particular type code block.

Back in early 1996 when Cray Research announced Programming Environment 2.0, they also announced the termination of support for the cf77 compiling system, including cft77. Because the f90 compiler, which is part of CF90, is designed to compile code written in FORTRAN 77 (plus all Cray extension), SGI/Cray's position has been to concentrate their compiler efforts on the CF90 product. Cray had informed all cf77 sites of their decision in a series of letters and announcements. At LANL, the user community was informed of the situation in a series of BITS articles in early

1996. Also, many informal discussions were held with various users over the past 18 months.

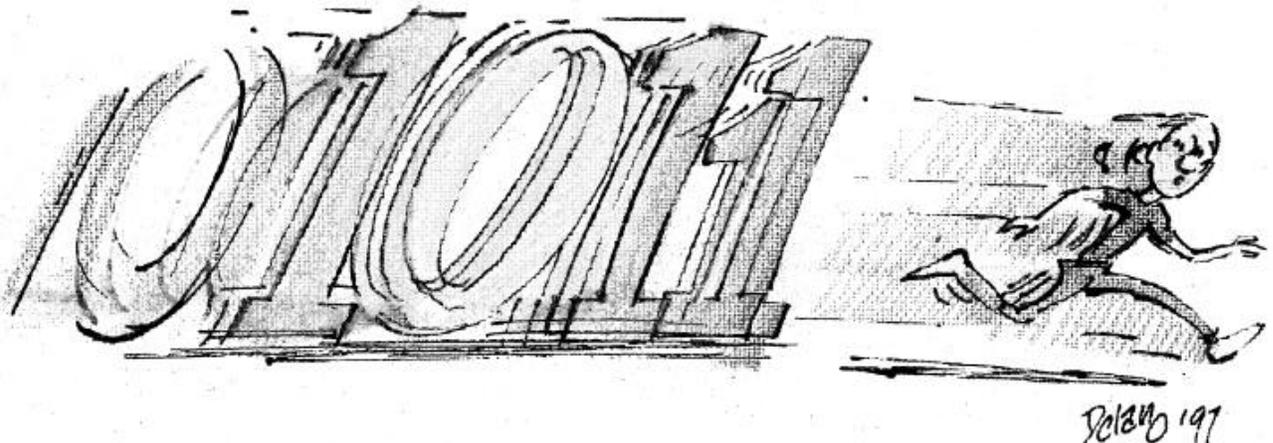
To resolve the above problem, LANL worked with SGI/Cray and obtained a three month license (expiring on October 31, 1997) for the last version of CFT77, 6.0.5.2. This version has been installed on secure machines sigma and zeta, where it is available as a programming environment module by issuing the following command:

```
module load modules cf77
```

More detailed information about modules is provided in a related article in this issue entitled "Using Programming Environment Modules." Currently there are no plans to install CFT77 6.0.5.2 in the open network because the problem reported above has not occurred with the regularly licensed version of CFT77 on the Cray YMPs.

We emphasize that the 6.0.5.2 version of CFT77 is only available through October 31, 1997 as a bridge to the Fortran 90 compiler. Further, support for CFT77 ended on March 1, 1996. LANL users are encouraged to use CF90 to compile their existing applications and execute their quality assurance tests. You do not have to port your code to the Fortran 90 standard. The Fortran 90 compiler is supposed to handle FORTRAN 77 codes with CRI extensions. This claim needs to be challenged and verified.

Any problems that arise should be reported to the ICN Consultants via e-mail at consult@lanl.gov or telephone at 505-665-4444, option 3. The ICN Consultants will work with users and SGI/Cray personnel to determine the cause of the problem and to obtain a solution. There may be cases where



the problem code will have to be modified in order to compile or execute successfully.

We know of a few potential problems in using CF90. For example, users should note that the handling of NAMELIST by the two compilers is different. NAMELIST was not part of the FORTRAN 77 standard but is defined in the Fortran 90 standard. Cray, like many compiler vendors, incorporated NAMELIST as an extension in CFT77. Unfortunately, as with many other vendors, Cray's extension is slightly different from what the Fortran committee eventually adopted. There are a number of outmoded features in CF90. The one likely to cause headaches for a number of code teams is the use of Hollerith. With the advent of FORTRAN 77, the use of Hollerith was discouraged. That was in 1978 and the advice still stands.

The Fortran 90 compiler is only available through the modules utility. You will find basic information about how to use mod-

ules in the article entitled "Using Programming Environment Modules." Please see a related article entitled "Fortran 90, Programming Environments, and Policy" for more information about using Fortran 90 for your FORTRAN 77 codes. Also of interest is CIC's policy concerning programming environments, which is available through the modules utility.

*Bob Boland, wrb@lanl.gov, (505) 667-5746
Customer Service Group (CIC-6)*

*Randy Bremer, robd@lanl.gov, (505) 667-2155
Computing Group (CIC-7)*

*Rob Derrick, rrb@lanl.gov, (505) 667-5820
SGI/Cray*

*Bill Spangenberg, whs@lanl.gov, (505) 667-4278
Computing Group (CIC-7)*

Fortran 90, Programming Environments, and Policy

SGI/Cray support of FORTRAN 77 (CF77) compilers expired March 1, 1996. The replacement for CF77 is the Fortran 90 compiler. We strongly encourage you to use the Fortran 90 compiler as your Fortran compiler. However, if you have FORTRAN 77 source code, you do not have to port your code to the Fortran 90 standard. The Fortran 90 compiler is supposed to handle FORTRAN 77 codes with CRI extensions. This claim needs to be challenged and verified. The ICN consultants are aware of a few subtle differences and they will make this information available to you. If you encounter problems using the Fortran 90 compiler on your FORTRAN 77 codes, the ICN consultants need to hear from you so that SGI/Cray can be informed and the problem fixed.

Programming Modules

Compilers, including CF90, C, and C++, are being released within programming environment (PE) packages called modules. A PE module consists of compatible compilers, code development tools, debuggers, and libraries. These programming environments are made available through modules utilities. To use the CF90 compiler (f90), you will need to learn to use modules. Basic instructions are provided in a related article entitled "Using Programming Environment Modules."

Advantages of Modules

- Specific integrated compatible programming environment. A module specifies the compilers, libraries, and programming tools (debuggers, profilers, etc.) that are a compatible set.

- Easy to switch environments. This comes in handy for different applications, confidence testing, software quality assurance procedures, etc.

Disadvantages

- FCL. The modules release provides support for a set of UNIX shells. Unfortunately FCL is not one of them. There are work-arounds available which are straightforward and cause minimal inconvenience. If your UNICOS login shell is FCL, and you are actively developing programs (compiling, loading, debugging, etc.), then this will affect you. However, if you just execute applications on UNICOS, then you are not directly impacted by the modules programming environment.

Anticipated Problems

- .cshrc. This is probably the most difficult problem. Using modules will most likely require some modification to your .cshrc file in order to prevent problems in subshells (c-shells invoked from your login shell). These changes are not difficult, but will need to be addressed individually. The ICN consultants will be able to assist you.

- Debuggers. At this time, LDB does not work properly with binaries produced by the CF90 compiling system. The only debugger that will work is totalview. Although there are no plans to update LDB to support the full Fortran 90 coding standard, it may be updated to support FORTRAN 77 codes compiled with the f90 compiler. That decision is

still pending, primarily based on the demand for LDB and the adequacy of recent releases of totalview.

- **Hard-coded paths.** Hard-coded paths to compilers and libraries in make files corrupt the integrity of the modules programming environment. Side effects can be subtle, and hence difficult to diagnose. Therefore, code developers should carefully inspect make files and any associated configurations files supporting “automatic” make file generation for such path specifications before loading a module. Experience with modules release beta testing on the T3D indicate this is time well spent.

Module Policy

Released programming environments are assigned a number by SGI/Cray, such as PE 2.0.0.1. LANL convention will be to assign a “PrgEnv” prefix, followed by the appropriate SGI/Cray release designation number.

Our policy will provide three environment categories: current, latest, and previous. Symbolic names of PrgEnv and PrgEnv.latest will be assigned to the current and latest categories, respectively.

- **PrgEnv.** Designates the “current” programming environment. This PE contains compilers deemed tested and stable. To determine the numeric designation assigned to PrgEnv, use the command:

```
module help PrgEnv
```

- **PrgEnv.latest.** Contains the latest SGI/Cray programming environment release that we have reason to install. The latest programming environment usually becomes the current (PrgEnv) after a maximum of 3 months. However, there is no guarantee that PrgEnv.latest will ever become current. It may be replaced before the transition to current if problems are found. It is possible that PrgEnv.latest and PrgEnv will be the same. We intend to make the latest SGI/Cray software developments, such as important new compiler language features or new tool features, available to the broadest user community via this mechanism.

- **Previous.** PrgEnv programming environments that are retired will be moved into the previous category. Previous PEs will be available for a minimum of 2 years from the date of retirement, unless other conditions render them inoperative. Access to these environments will be through their specific names, i.e., PrgEnv.{numeric designator}. No symbolic

name will be assigned. A list of previous programming environments will be published on the ICNN Web server, with associated expiration dates.

Example:

```
PrgEnv.latest == PE 3.0.0.1.
Prgenv == PE 2.0.3.1
Previous environments:
  PrgEnv.2.0.0.1    expires 32-Jan-1842
  PrgEnv.2.0.1.2    expires 30-Feb-1845
```

On 11-Aug-1845, PrgEnv.latest transitions to the current PE:

```
PrgEnv.latest == PE 3.0.0.1
PrgEnv == PE 3.0.0.1
Previous environments:
  PrgEnv.2.0.3.1    expires 11-Aug-1847
  PrgEnv.2.0.0.1    expires 32-Jan-1847
  PrgEnv.2.0.1.2    expires 30-Feb-1844
```

Compilers Available without Using Modules

If you do not use modules, the default compilers available on UNICOS will forever be:

```
cf77 6.0.4
cc 4.0.3
F90 1.0.2 until COB September 30, when it will be removed.
Libraries from /lib and /usr/lib.
```

Local Libraries

Local libraries, such as CFTLIB, will continue to be available at their current individual support levels when using programming environments.

*Bob Boland, wrb@lanl.gov, (505) 667-5746
Customer Service Group (CIC-6)*

*Randy Bremer, robd@lanl.gov, (505) 667-2155
Computing Group (CIC-7)*

*Rob Derrick, rrb@lanl.gov, (505) 667-5820
SGI/Cray*

*Bill Spangenberg, whs@lanl.gov, (505) 667-4278
Computing Group (CIC-7)*

Using Programming Environment Modules

Compilers, including CF90, C, and C++, are being released within programming environment (PE) packages called modules. A PE module consists of compatible compilers, code development tools, debuggers, and libraries. These programming environments are made available through modules utilities. The modules concept modifies your environment with variables that are interpreted by the compilers, loaders, etc.

The most basic command of the module system is

```
module load {modulefile}
```

This retrieves the information stored in the file {modulefile} and makes it a part of your environment.

The module command should be accessible in your basic environment through its initialization in the system-wide /etc/cshrc or /etc/profile startup files.

To see a list of available module commands type

```
module help
```

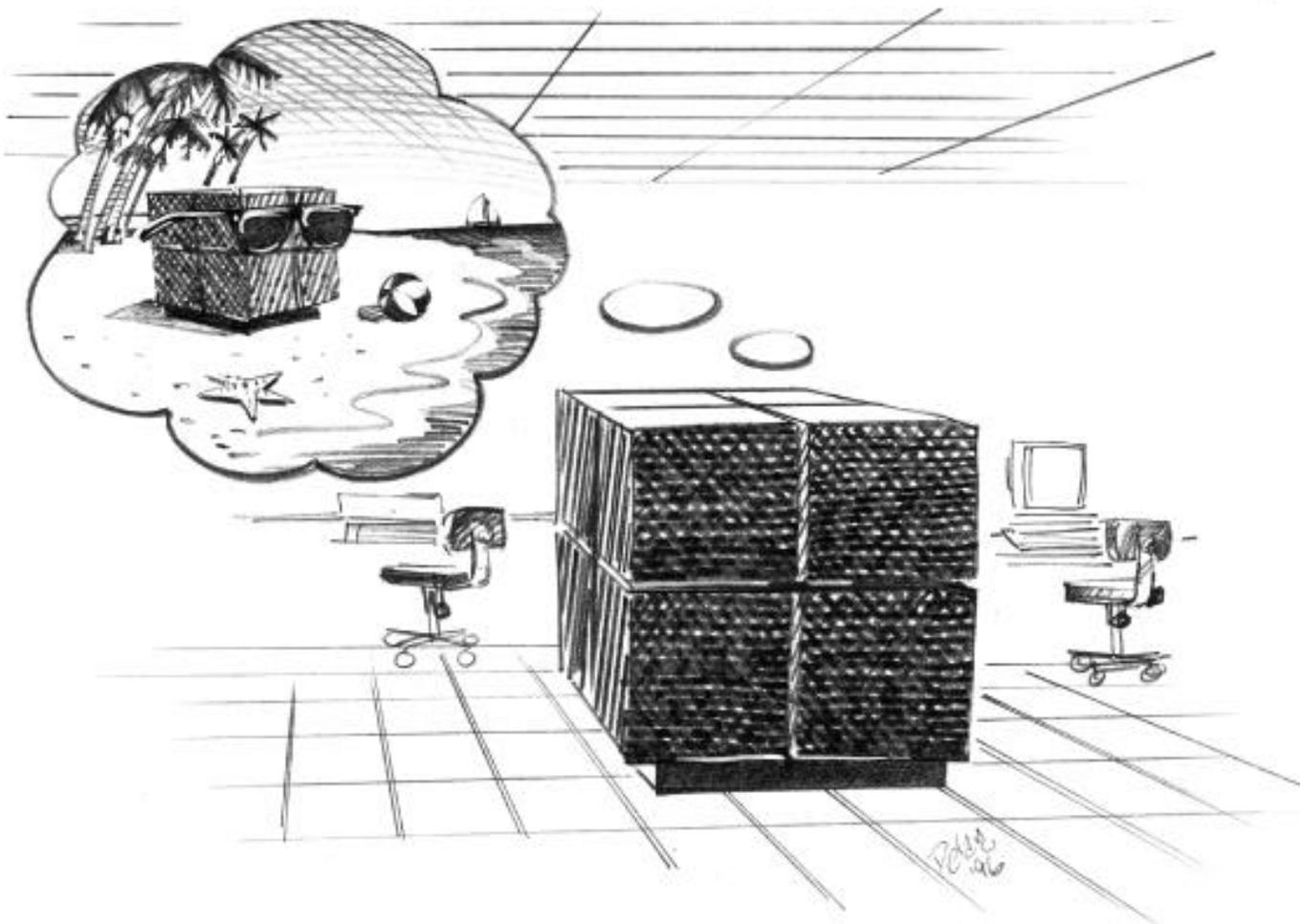
Now type

```
module load modules
```

The {modulefile} in this example is "modules." This loads the most basic module, the one that appends to your MAN-PATH the location of the module man pages.

To find out what the modulefile "modules" do, enter the following command:

```
module display modules
```



This command will yield the following:

```
/opt/modules/modules/modulefiles/modules:
```

```
Setenv MODULESHOME to /opt/modules/modules
Append /opt/modules/modules/man to MANPATH
```

The module command “display” shows you what a particular modulefile will add to your environment before you load it.

For a complete detailed description of how to use the module commands enter

```
man module
```

This loads the most basic module, the one that appends to your MANPATH the location of the module man pages.

For a complete detailed description of how to use the module commands enter

```
man module
```

As a typical user, you will probably want to simply add the line

```
module load modules PrgEnv
```

to your .cshrc (or .profile) file after all other path setting code.

You will now be using the current standard compilers, tools, etc., and for almost all purposes, you need do nothing else. Remember that it is now important that you use no hard-coded full paths to access a compiler, but simply invoke it by name only.

The above load command specifies two modulefiles. Because this is probably your first module command of a session, make sure that you load the file “modules” as well as the “PrgEnv”. You can load modules one at a time or several at a time.

If you wish to access the latest compilers as they are installed on the machine, use the line

```
module load modules PrgEnv.latest
```

Keep in mind that at any given point in time the following applies:

- PrgEnv and PrgEnv.latest may be identical, and
- When they are not identical, you will be one of the people pretesting it in anticipation of its becoming PrgEnv.

Other useful module commands are as follows:

- module list—shows currently loaded modules.
- module avail—shows modules that are available to be loaded (in general, you should only load PrgEnv* modules).
- module switch {modulefile1} {modulefile2}—unloads {modulefile1}, and then loads {modulefile2}.
- module help {modulefile}—describes the products “contained” in {modulefile}.
- module display {modulefile}—shows the changes that {modulefile} will make to your environment when you load it.

After initializing modules, you can find more information about the Modules program with “man module” and “man modulefile”.

The following on-line documents are also available:

- Accessing Programming Environment Software: ASCII file /opt/ctl/doc/README
- Accessing Programming Environment Software: postscript file /opt/ctl/doc/README.ps
- Modules: Providing a Flexible User Environment: postscript file /opt/modules/modules/doc/Modules-Paper.ps (This is the original design paper by John L. Furlani, 1991.)

*Bob Boland, wrb@lanl.gov, (505) 667-5746
Customer Service Group (CIC-6)*

*Randy Bremer, robd@lanl.gov, (505) 667-2155
Computing Group (CIC-7)*

*Rob Derrick, rrb@lanl.gov, (505) 667-5820
SGI/Cray*

*Bill Spangenberg, whs@lanl.gov, (505) 667-4278
Computing Group (CIC-7)*

The Removal of Fortran 90 1.0 Version

The 1.0 version of Cray's Fortran 90 compiler will be removed from all UNICOS platforms on September 30, 1997. The 1.0 version of Fortran 90 is very inferior to the 2.0 CF90 compiler releases. The 2.0 Fortran 90 compiler and all future releases are supplied and supported through programming environments that are available using the module utility.

Please refer to the following related articles in this issue for more information: "Fortran 90, Programming Environments, and Policy" and "Using Programming Environment Modules." For additional information, please contact the ICN Consulting Office at consult@lanl.gov or (505) 665-4444, option 3.

*Bob Boland, wrb@lanl.gov, (505) 667-1729
Customer Service Group (CIC-6)*

Research Library Training

The LANL Research Library provides training for using its specialized databases. Training sessions begin and end at times indicated below. Classes are free but you must preregister by calling the Research Desk at 7-5809 or sending e-mail to library@lanl.gov. Special classes and orientations can also be arranged.

Date	Time	Subject Matter
9/2/97	1:00 - 1:30 p.m.	Grants and Funding Information
9/4/97	1:00 - 1:30 p.m.	SciSearch at LANL—At your desktop!
9/9/97	1:00 - 1:30 p.m.	Environmental Resources on the WWW
9/10/97	1:00 - 1:30 p.m.	Finding Addresses and Phone Numbers on the WWW
9/11/97	2:00 - 4:00 p.m.	InfoSurfing: Basic Web Searching Strategies
9/16/97	1:00 - 1:30 p.m.	SciSearch Alerting Service
9/17/97	11:00 - 11:30 p.m.	MELVYL (U of CA specialized databases)
9/18/97	1:00 - 1:30 p.m.	Federal Regulations on the Internet
9/23/97	1:00 - 1:30 p.m.	Search Engines, Advanced Web Searching
9/24/97	1:00 - 1:30 p.m.	Finding Addresses and Phone Numbers on the WWW
9/25/97	2:00 - 4:00 p.m.	InfoSurfing: Basic Web Searching Strategies
9/30/97	1:00 - 1:30 p.m.	What the Report Collection Can Do for You
10/2/97	1:00 - 1:30 p.m.	Research Library Catalog via the WWW
10/7/97	1:00 - 1:30 p.m.	Introduction to Library Electronic Resources
10/8/97	11:00 - 11:30 p.m.	MELVYL (U of CA specialized databases)
10/9/97	1:00 - 1:30 p.m.	Environmental Resources on the WWW

Labwide 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 below for specific information about courses currently offered.

You must have a valid ICN password before taking any of the courses shown in the table. To register for a course, call the CIC-6 Training, Development, and Coordination section at 667-9559 or access our Web page. From the LANL home page, look under "Services/Computing at LANL/Training" or enter the URL: <http://www.lanl.gov:8010/computer-information/cic6/teampage.html>.

Course Title	Date	Time	Cost	Course Number
Employee Development System - Basic Training (EDS I)	9/10/97 & 10/8/97	8:30–12:00	\$350	Course #5289
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.				
Employee Development System - Training Plans (EDS II)	9/24/97 & 10/22/97	8:30–12:00	\$350	Course #7155
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.				
Eudora Electronic Mail	TBA	1:30–3:30	\$175	Course #9762
This class is a hands-on class that teaches the participant how to use Eudora software to create, send, receive, and edit electronic mail messages. In addition to these procedures, the participant will learn what related settings mean and how to configure the system to meet his or her individual needs.				
Data Warehouse Basics	9/11/97 & 10/21/97	8:30–10:30	\$175	Course #11961
Students will receive hands-on training to generate standard reports and make quick queries from information in the data warehouse, a real-time collection of data tables from Laboratory financial, time-reporting, and personnel systems.				
Data Warehouse/ Financial Reporting	9/11/97 & 10/21/97	8:30–12:00	\$350	Course #11960
Students will receive hands-on training to generate standard financial reports and make on-line queries from information in the "data warehouse," a collection of data from Laboratory budgeting, accounting, and time-keeping systems.				
HTML Basics	9/9/97 & 10/7/97	8:30–12:00	\$350	Course #11605
Students will gain a basic understanding of HTML (Hypertext Markup Language), the language for the World Wide Web. Topics covered will be commands and standards, creating and editing documents, and authoring programs.				
HTML Tables	9/23/97 & 10/17/97	8:30–12:00	\$350	Course #11959
Students gain basic understanding of how to create various tables in HTML and new tags in HTML 3.0. Netscape-specific tags are also identified for clarity. Prerequisite: HTML Basics or permission of the instructor.				

Course Title	Date	Time	Cost	Course Number
Lotus Notes 4.5	9/25/97 & 10/30/97	8:30-12:00	\$350	Course #9917
	Participants receive hands-on computer instruction to learn to create and send Notes e-mail memos, fax documents, search on one or multiple databases, use views and folders, create nicknames and distribution lists, set defaults, create doclinks, send attachments, and replicate databases.			
Meeting Maker	9/9/97 & 10/7/97	8:30-10:30	\$175	Course #12395
	Students learn how to create an address book, create personal groups, utilize the Auto-Pick feature, utilize e-mail integration with non-Meeting Maker users, and customize various Meeting Maker features.			
Reporting with Infomaker	10/27/97 & 10/28/97	8:30-5:00	\$650	Course #11054
	Hands-on training to query data and develop ad hoc, or non-standard, reports from the LANL data warehouse using Infomaker software.			
Time and Effort System (GUI)	9/3/97 & 10/29/97	8:30-10:30	\$175	Course #11018
	The student will learn how to enter attendance, amend attendance, approve attendance, and submit exception and approval reports. Time codes and associated policies will be discussed. The student will also learn how to use the Information Manager utility to view and print reports.			
Travel	9/16/97	8:30-12:00	\$350	Course #12091
	Hands-on training to submit and approve travel requests and expenses in the new Travel System which replaces the TRIPS on-line system and the post-travel expense worksheets.			

Advanced Technical Computer Training

The Customer Service Group (CIC-6) supports advanced technical training in computing areas such as programming languages, system administration, networking, and World Wide Web development tools. The support provided by CIC-6 can be as limited as providing the appropriate facilities for a specific group or as extensive as coordinating training functions such as system administration, vendor acquisition, EDS administration, and class facilitation. The table below lists classes that are either currently being offered or are available on request. An expanded list of classes that are potentially available can be viewed on the Internet at <http://www.lanl.gov:8010/computer-information/ComputerTraining/Vendor.html>. To request registration in any course or for general assistance, please contact the CIC-Division Advanced Technical Computer Training Coordinator at (505) 667-9399 or send e-mail to cic6-train@lanl.gov. *Cost per student will vary depending on the total number of students enrolled in the class.

Course Title	Date	Time	Cost	Course Number
C Programming (Beginning)	12/1-5/97		\$1600-\$2000*	3996
Prerequisite(s): Knowledge of another high-level Programming Language. Topics Include: Fundamentals; History and Uses of C; Current State of Standard; Elements of C; Concepts and Terminology; Basic Structure of Program; Good and Bad Aspects of C; Data Types, Arrays, Structures, Pointers, Unions, and Bitfields; Operators and Expressions; Storage Classes; Library Functions; File I/O; Math, String, Database Operations; Modular Programming; Preprocessors, Macros, Conditional Inclusions/Expressions, Types, and Prototype; Additional Tools; Control Flow Constructs; Debuggers; and Additional Libraries.				
C++ for Experienced C Programmers	Available on Request (5 days)		\$1600 - \$2000*	9050
Prerequisite(s): Excellent C Language programming skills. Topics Include: Major Differences and Additions to ANSI C; Building C++ Classes; Introduction to Text I/O with C++; Function Overloading; Single Inheritance; Virtual Functions; Multiple Inheritance; Operator Overloading; Creating, Initializing and Assigning Objects; Passing and Returning Objects; Templates, Parameterized Functions and Classes; C++Stream I/O with the File System; and C++ Course Summary.				
FrameMaker (Basic)	Available on Request (3 days)		\$1000-\$1300*	8962
Prerequisite(s): Familiarity with use of a mouse. Topics Include: Editing and Formatting Text; Applying, Modifying, and Creating Paragraph and Character Formats; Searching for and Changing Text and Formats; Using the Thesaurus and Spelling Checker; Creating and Editing Graphics Using Drawing Tools; Using Text Run-Around; Applying Side Heads, Run-In Heads, and Straddles; Using FrameMaker Templates and Clip Art Files; Using Tables and Basic Table Formatting; Adding Illustrations to a Document (Anchored Frames); Using and Formatting Footnotes in Text and Tables; Changing the Basic Layout of a Document (on Master Pages); and reference Pages and Referenced Art.				
FrameMaker (Advanced)	Available on Request (2 days)		\$700-\$1000*	8964
Prerequisite(s): FrameMaker Basic course or equivalent knowledge and experience. Topics Include: Complex Auto-Numbering; Table Formats, Row Formats, and Table Variables; Formatting Text in Table Cells; Customizing Table Formats; Designing Custom Pages; Creating Templates for Documents, TOCs, and Indexes; Multiple Flows, Multiple Columns, and Connecting columns; Using Hypertext; Generating a Table of Contents and an Index; Creating a Book with Multiple Files; Using Cross-References and Text Insets; Creating Documents that Contain Conditional Text and Graphics; and Using Color.				

Course Title	Date	Time	Cost	Course Number
Java Programming	10/6-10/97		\$1800 - \$2100*	11687
<p>Prerequisite(s): Students must have the ability to create compiled programs using an advanced language (such as C or C++) and the knowledge to use basic Solaris commands and a World Wide Web browser (such as Mosaic or Netscape). Topics Include: Using the Java Programming Language to Create Java Applications and Applets; Defining and Describing Garbage Collection, Security, and the Java Virtual Machine; Describing and Using the Object-Oriented Features of the Java Language; Developing Graphical User Interfaces in Java, Taking Advantage of the Various Layout Managers Supported by Java; Describing and Using the Java 1.1 Delegation Event Model; Using Java Windowing Components, Including Mouse Input, Text, Window, and Menu Components; Using Java Exceptions to Control Program Execution and Define Custom Exceptions; Using the Advanced Object-Oriented Features of the Java Language, Including Method Overriding and Overloading, Abstract Classes, Interfaces, Final and Static, and Member and Field Access Control; Using Java to Perform File Input/Output; Using Java's Built-In Threading Model to Control the Behavior of Multiple Threads; and Using Java to Access Servers and Clients Through Sockets.</p>				
Perl Programming	11/18-21/97		\$1600-\$2000*	8095
<p>Prerequisite(s): Knowledge of Unix, the ability to edit text files (using vi or the OpenWindows Text Editor), and the ability to use basic programming constructs (variables, loops) to write simple programs in at least one programming language. Topics Include: Use Perl's Scalar Variables, Arrays, and Associative Arrays, Including Built-In Functions; Use Perl's Various Operators (Arithmetic, Conditional, String, Etc.); Use Regular Expression Metacharacters and Statement Modifiers; Open Files, Directories, and Input/Output Filters via Filehandlers; Use the Unix System Interface Functions; Create Subroutines and Use the Perl Standard Library; Use Packages for Encapsulation; Handle Signals and Errors; and Write Nawk-Like Reports.</p>				
SGI Network Administration	Available on Request (5 days)		\$1800-\$2300*	11690
<p>Prerequisite(s): Completion of Silicon Graphics System Administration (Beginning) course or equivalent knowledge and experience. Topics Include: Networking Fundamentals; Network Configuration; Network Troubleshooting; Resource Management with Network; Information Services; Domain Management with Domain Name System; Electronic Mail with Sendmail; Remote File Sharing with Network File System & Automounter; Network Performance Monitoring; and Network Security.</p>				
SGI Origin 2000 for ASCII/ACL Programmers	Available on Request (4 hours)		\$250	14059
<p>This course is for programmers who need training in the Silicon Graphics programmer environments on the Los Alamos ASCII Origin 2000 systems. Prerequisites: Experience writing and debugging programs in C, C++, or Fortran and experience using appropriate Irix, UNICOS, or UNIX commands. Topics Include: Using the Load Share Facility at Los Alamos; Silicon Graphics Fortran, C, and C++ Compiler Command-Line; Using the Build Manager Tools to Compile Programs; Using the Source View, File Browser, Silicon Graphics Help, and Graphical View; Using the Static Analyzer to Create Filesets and Databases, and to Make Queries; Setting Traps (Breakpoints) and Looking at Data Using the Debugger; Setting Fast Watchpoints; Using the Fix+Continue Feature to Debug and Prototype Changes; Utilizing the Authentication Process (Kerberos, Ssh, DCE/DFS); and Utilizing HPSS.</p>				
SGI System Administration (Beginning)	Available on Request (5 days)		\$1800-\$2300*	11688
<p>Prerequisite(s): Familiarity with using Silicon Graphics IRIS workstations and system administration procedures on other open system platforms. Topics Include: The Role of the System Administrator; Set Up and Configuration of an IRIS Workstation or Server; Supporting a Group of Silicon Graphics Users; System Security Maintenance; Backups and Recoveries; Configuration of Disk Drives; System Installation and Application Software; Attaching Terminals and Printers; Modifying the system Start Up and Shut Down Sequences; Automating Administrative Procedures; and Performing Basic System Troubleshooting.</p>				

Course Title	Date	Time	Cost	Course Number
SGI System Administration (Advanced)	Available on Request (5 days)		\$1800-\$2300*	11689
Prerequisite(s): Completion of Silicon Graphics System Administration (Beginning) course or equivalent knowledge and experience. Topics Include: System Error Monitoring; Kernel Reconfiguration and Debugging; System Monitoring Tools; Process Management; MultiProcessor CPU Management; Memory Management and Tuning; Swap Management and Tuning; Disk Management and Tuning; XPS Filesystem Management; and System Security Concepts.				
Solaris 2.X System Administration (Beginning)	Available on Request (5 days)		\$1600-\$2000*	7477
Prerequisite(s): Knowledge of Unix commands and an editor. Topics Include: Custom Install a Solaris 2.X Server; Use the Solaris 2.X Device Naming Conventions; Use the Format Utility to Display Partition Information; Change System Run Levels; Add Startup Files for Additional Services; Add and Remove Software Packages; Add Peripheral Devices, Configure Terminals and Modems; Administer Disks and File Systems; Configure NFS to Support the Client-Server Environment; Use the Automounter; Add and Remove Diskless Clients; Back Up and Restore File Systems; Perform Basic Recovery and Troubleshooting Procedures; and Use Scripts to Configure and Administer the NIS+ Environment.				
Solaris 2.X Network Administration	Available on Request (5 days)		\$1600-\$2000*	8107
Prerequisite(s): Completion of Solaris 2.X System Administration (Beginning) class or equivalent knowledge and experience. Topics Include: TCP/IP Networking Model's Major Protocols; Monitor Network Traffic; Monitor and Control the Address Resolution Protocol Cache; Set Up, Configure, and Manage a Sun Internet Router with Subnets; Identify the Differences Between TCP and UDP; Manage Client-Server Transport Layer Communications; Configure and Maintain RPC-Based Applications Support; Describe Common Applications, Systems, and Network Bottlenecks; Test and Monitor System, Disk, and Network Loads; Use Monitoring Commands to Find Performance Bottlenecks; Set Up and Maintain a Simple Domain Naming Service (DNS) Environment; Set Up a Jumpstart Automated Network Installation Server; Identify Sendmail Functionality and Configuration; Install a Mail Server; and Install UUCP Between Existing Solaris 2.X Systems.				
Solaris 2.X Server Administration	Available on Request (4 days)		\$1600-\$2000*	
Prerequisite(s): Solaris 2.X Beginning System Administration class and six months of experience OR two years of Solaris 2.X system administration experience. Topics Include: Install and Use Solstice Backup; Install and Use Solstice DiskSuite; Configure a Sun X-Terminal; List the Different Accounting Types and Set Up Accounting; List the Different License Configurations and Install a License Server Using FLEXlm; and List Reasons to Distribute Data and Use rdist for Data Distribution.				
UNIX (Basic)	10/14-17/97	8:15-12:00	\$400	5267
Prerequisites: Basic computer literacy (knowledge of the keyboard and mouse) are helpful. Topics: Getting Started; UNIX File System; Editing with VI; Manipulating Files; Using C-Shell Features; Customizing Your Environment; Navigating the Network; Job Control; Generic UNIX E-mail; and Electronic Mail Registration (EMR).				
UNIX (Advanced)	10/21-24/97	8:15-12:00	\$400	12972
Prerequisites: The Basic Unix class or equivalent knowledge. Topics: File Manipulation; File Reorganization; Network File System Concepts; Introduction to C-Shell Scripts; Conditional Execution; Shell Programming; The Korn Shell; Korn Shell Script Features; and SED Filtering Tool.				

INTEGRATED COMPUTING NETWORK (ICN) VALIDATION REQUEST

Instructions:

- (1) Complete all parts of this form that apply to you. Please take note of the "Special Requirements" section and complete any applicable parts.
- (2) Manager (Group Leader or above) authorization and signature are required for all validation requests.
- (3) Before submitting this request, ensure that your Employee Information System (EIS) information is current.
- (4) Once completed, either mail this request to the Password Office at MS-B251, fax it to (505) 667-9617, or, if you are cleared, handcarry it to TA-3, SM-200, Room 257.

If you have **questions** call (505) 665-1805 or send e-mail to validate@lanl.gov

Owner Information

Z-Number (if you have one)		Name (last, first, middle initial)	
LANL Group	Phone Number	LANL Mail Stop	Citizenship (Foreign National see "Special Requirements-Foreign National")

<p>Check LANL affiliation:</p> <p><input type="checkbox"/> LANL employee</p> <p><input type="checkbox"/> Contractor _____ (specify contract company)</p> <p><input type="checkbox"/> External user _____ (specify employer)</p> <p><input type="checkbox"/> Other (specify) _____</p>	<p>Send password / smartcard to:</p> <p><input type="checkbox"/> Mail Stop or <input type="checkbox"/> Mail to address indicated below</p> <p>Name / Organization _____</p> <p>Address _____</p> <p>City, State, Zip Code _____</p>
--	---

Access Check access method and needed partitions:

Access method:	<input type="checkbox"/> ICN Password	<input type="checkbox"/> Smartcard	<input type="checkbox"/> Both
<input type="checkbox"/> Open partition (e.g., open machines, or for dial up access)			
<input type="checkbox"/> Administrative partition (e.g., Travel, Data Warehouse, IA [BUCS, Stores], IB [EIS, FMIS, PAIRS]) If you are not a cleared LANL employee, see required steps in section "Special Requirements-Administrative Partition".			
<input type="checkbox"/> Secure partition (i.e., secure machines) A Q-clearance is required for secure access. After obtaining Manager signature for Secure access, handcarry this form to the Password Office to obtain your Secure account.		<div style="border: 1px solid black; padding: 5px;"> <p>I certify this person does require secure access:</p> <p>_____</p> <p>Manager Signature (Group Leader or above) Date</p> </div>	

Password Office Use Only

New <input type="checkbox"/>	Change <input type="checkbox"/>	Clearance Status	Processed	Lv	Smartcard Serial #
Comments:					

cut along dashed line

Special Requirements

Administrative Partition Lab-Wide Systems (e.g., Travel, Data Warehouse, IA [BUCS, Stores], IB [EIS, FMIS, PAIRS])	
<input type="checkbox"/> 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-Cleared") section below. You may not access the Secure Partition.
<input type="checkbox"/> Contractor or Non-Cleared	Phone (505) 665-4444 (option #2) to obtain Access Authorization packet. Phone (505) 667-9153 to schedule a security briefing. Bring all forms including this ICN Validation Request to the security briefing for approval.
CIC-6 Security Briefing Approval Signature	Date

<input type="checkbox"/> Foreign National	Attach a copy of Form 982 (REQUEST FOR UNCLASSIFIED VISIT OR ASSIGNMENT BY A FOREIGN NATIONAL) with all approval signatures. Be sure Box #11 of Form 982 is completed. If you are not a visitor/assignee under a LANL/DOE approved Visit / Assignment Request, attach written justification from your host Group Leader or 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 you must have a LANL contact and obtain the contact's signature in addition to the contact's manager's signature.			
LANL contact: Read the following and sign below.			
By signing this form I affirm that I understand and accept the following:			
a. I am a regular Laboratory employee.			
b. I am responsible for forwarding password reauthorizations and verifying annual account reauthorizations for this user.			
c. I am responsible for notifying the Password Office within 10 days of changes in my status.			
d. I am responsible for notifying the Password Office immediately of changes in this user's status (termination, end of contract, etc.).			
Print LANL Contact Name	Contact Z-Number	Phone Number	Group
LANL Contact Signature	Mail Stop	Date	

NOTE: All Laboratory computers, computing systems, and their associated communication systems are for official business only. By completing this validation request and signing for a password and/or smartcard, you agree not to misuse the ICN. The Laboratory has the responsibility and authority to periodically audit user files.

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.

Do Not Staple
Fold on This Line First



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 88 LOS ALAMOS NM

POSTAGE WILL BE PAID BY THE ADDRESSEE

MAIL STOP B251
ATTN: MIKE FINNEY, MANAGING EDITOR
CUSTOMER SERVICE GROUP (CIC-6)
LOS ALAMOS NATIONAL LABORATORY
PO BOX 1663
LOS ALAMOS NM 87544-9916



Do Not Staple, Seal with Tape
Fold Here

cut along dashed line

INDEX

Keywords	Title of BITS Article	Date	Page
<i>Apple</i>	<i>Apple's NeXT OS Plans</i>	<i>Feb. '97</i>	<i>17</i>
<i>ASCI</i>	<i>The Accelerated Strategic Computing Initiative (ASCI)</i>	<i>Feb. '97</i>	<i>1</i>
<i>Advanced Networking Projects</i>	<i>Advanced Networking Projects Support High-Performance Computing at Los Alamos</i>	<i>Nov. '96</i>	<i>2</i>
<i>Beta</i>	<i>The Phasing out of Beta and Its Alternatives</i>	<i>Nov. '96</i>	<i>8</i>
<i>CCVAX</i>	<i>CCVAX Machine to be Decommissioned</i>	<i>Aug. '97</i>	<i>1</i>
<i>Challenge</i>	<i>Challenge to Start Seventh Year</i>	<i>Sept. '96</i>	<i>4</i>
<i>CIC (Computing, Information, & Communications)</i>	<i>CIC Implements New Recharge Processing System</i>	<i>Sept. '96</i>	<i>1</i>
	<i>CIC Division Strategies and Tactical Goals</i>	<i>May '97</i>	<i>6</i>
<i>CIC-6</i>	<i>Desktop Consulting Moves to CIC-6</i>	<i>Feb. '97</i>	<i>6</i>
	<i>CIC-6 Provides Desktop Consulting</i>	<i>Mar. '97</i>	<i>1</i>
	<i>The CIC-6 Training, Development, and Coordination Team</i>	<i>May '97</i>	<i>1</i>
<i>Cluster</i>	<i>TeX on the Cluster</i>	<i>Nov. '96</i>	<i>13</i>
	<i>IBM XL High-Performance Fortran Now Available on the Open Cluster</i>	<i>Nov. '96</i>	<i>14</i>
<i>Database</i>	<i>DOE Energy Science & Technology Database Coverage Expanded</i>	<i>Feb. '97</i>	<i>7</i>
	<i>BIOSIS Database Now Available Via CIC-14</i>	<i>Feb. '97</i>	<i>7</i>
	<i>DOE Energy Database Now Available in a WWW Version</i>	<i>Apr. '97</i>	<i>3</i>
<i>Electronic Journals</i>	<i>Improved Access to Electronic Journals from Your Desktop</i>	<i>Apr. '97</i>	<i>2</i>
<i>E-mail</i>	<i>Don't Get too Attached to Your [E-mail] Attachments</i>	<i>Oct. '96</i>	<i>8</i>
	<i>Capturing E-mail as a Record at LANL</i>	<i>Nov. '96</i>	<i>5</i>
	<i>MacTips: Dealing with [E-mail] Attachments in Eudora Pro</i>	<i>Aug. '97</i>	<i>16</i>
<i>Enterprise Information Systems</i>	<i>Enterprise Information Systems</i>	<i>Oct. '96</i>	<i>6</i>
<i>Environmental Management</i>	<i>Workshop on the Role of Modeling and Simulation in Environmental Management</i>	<i>Aug. '97</i>	<i>2</i>
<i>External Computing Project</i>	<i>External Computing Project</i>	<i>Dec. '96</i>	<i>9</i>
<i>Gartner</i>	<i>Gartner Group Services Available on the Web</i>	<i>June '97</i>	<i>4</i>
	<i>GartnerWeb Update</i>	<i>Aug. '97</i>	<i>5</i>
<i>GNU Utilities</i>	<i>GNU Utilities Now Available Locally on /usr/lanl</i>	<i>Dec. '96</i>	<i>10</i>
<i>HPD (Heterogeneous Parallel Debugger)</i>	<i>HPD: Heterogeneous Parallel Debugger</i>	<i>Nov. '96</i>	<i>2</i>
<i>HTML (HyperText Markup Language)</i>	<i>The Current State of HTML</i>	<i>Dec. '96</i>	<i>11</i>
	<i>The Current State of HTML: Part II</i>	<i>Feb. '97</i>	<i>8</i>
<i>ICN (Integrated Computing Network)</i>	<i>ICN Password Office Provides FAQ Web Page</i>	<i>Oct. '96</i>	<i>7</i>
	<i>The ICN Consulting Office</i>	<i>Feb. '97</i>	<i>4</i>
	<i>The ICN Password Office</i>	<i>June '97</i>	<i>1</i>
<i>ICNN (Integrated Computing Network News)</i>	<i>The Integrated Computing Network News (ICNN) Web Site</i>	<i>May '97</i>	<i>3</i>
<i>JavaScript</i>	<i>JavaScript Observations and Tips: Part I</i>	<i>Mar. '97</i>	<i>10</i>
	<i>JavaScript Observations and Tips: Part II</i>	<i>May '97</i>	<i>11</i>
<i>Lab-Wide Systems</i>	<i>Consulting for Lab-Wide Systems</i>	<i>Dec. '96</i>	<i>1</i>
	<i>Lab-Wide Information Systems Descriptions</i>	<i>Dec. '96</i>	<i>3</i>
	<i>Authorities for Lab-Wide Systems</i>	<i>Dec. '96</i>	<i>6</i>
	<i>Common Validation Error Messages and Possible Solutions for Lab-Wide Systems</i>	<i>Feb. '97</i>	<i>11</i>
	<i>Accessing GUI Lab-Wide Systems on the Macintosh</i>	<i>Mar. '97</i>	<i>9</i>
	<i>Customer Feedback Guides Improvements to Labwide Systems</i>	<i>Aug. '97</i>	<i>4</i>
<i>Macintosh</i>	<i>Four Macintosh Shareware Programs That Will Make Scientists Happy</i>	<i>Sept. '96</i>	<i>9</i>
<i>Maple</i>	<i>Vendor Training Available for Maple Users</i>	<i>Dec. '96</i>	<i>17</i>
<i>Mathematica</i>	<i>Mathematica Tutorial Available on the Web</i>	<i>Feb. '97</i>	<i>12</i>
<i>Medicare</i>	<i>Computer Sleuths Hunt for Medicare Bandits</i>	<i>Sept. '96</i>	<i>2</i>

Keywords	Title of BITS Article	Date	Page
Mercury	<i>Mercury Open-Secure ICN File Transfer Service Now Available</i>	Oct. '96	4
	<i>Workout with Mercury—Step by Step File Transfer Using Mercury</i>	Dec. '96	14
Micoms	<i>The End of an Era: No More Micoms</i>	May '97	2
Microsoft	<i>Software Discounts Available through Microsoft SELECT</i>	Feb. '97	6
	<i>New Microsoft SELECT Program Lowers Software Costs</i>	Mar. '97	2
	<i>New Software-Purchasing Feature Brings Savings on Microsoft Upgrades</i>	June '97	9
	<i>Laboratory Stretches Software Dollars [Microsoft SELECT]</i>	Aug. '97	15
Modeling	<i>Modeling Ultra-Low Loss Accelerators</i>	Nov. '96	1
Modem	<i>New Dial-Up Modem Number for Accessing E-mail from Home or Travel</i>	Aug. '97	5
OAG (On-line Airline Guide)	<i>OAG Service Announcement</i>	Sept. '96	5
PAGES (Print And Graphics Express Station)	<i>PAGES Replaces ILFORD Printer with FUJI Printer</i>	Nov. '96	9
REDI	<i>The REDI Project</i>	Apr. '97	4
Research Library	<i>Research Library's WWW Online Catalog</i>	Mar. '97	4
	<i>Accessing On-line Computing Literature via the Research Library</i>	Aug. '97	6
RHO	<i>Machine RHO Soon to Retire</i>	Aug. '97	1
Screen Shots	<i>Capture that Image: Screen Shots on Multiple Platforms</i>	Aug. '97	11
SciSearch	<i>New Weekly Alerting Service via SciSearch at LANL</i>	Nov. '96	6
Secure Unclassified	<i>Good-Bye Secure Unclassified</i>	Oct. '96	5
Telnet	<i>Configuring Telnet as a Supporting Application under Netscape 3.X</i>	Mar. '97	7
TIG (Terminal Internet Gateway)	<i>Dial-Up TIG for the Administrative Network Now Available</i>	May '97	9
Universal Serial Bus (USB)	<i>The Universal Serial Bus Has Arrived</i>	Apr. '97	6
VersaTerm-PRO	<i>Configuring Your Macintosh Keyboard for VersaTerm-PRO</i>	May '97	10
Video Teleconference Center	<i>Video Teleconference Center Offers New Capabilities</i>	Apr. '97	1
World Wide Web (WWW or Web)	<i>Finding Phone Numbers and Addresses via the Web</i>	Sept. '96	5
	<i>Images on the Web: More Tips</i>	Sept. '96	6
	<i>Mariachis Weave Beethoven? More Tips and Tricks [on the Web]</i>	Oct. '96	1
	<i>Getting a Web Site Indexed</i>	Nov. '96	10
	<i>Tools for Developing Web Pages in the Windows Environment</i>	Dec. '96	18
	<i>Web Security in the Open Network Security Model</i>	Apr. '97	7
	<i>Using the Web to Track Funding Opportunities</i>	June '97	3
	<i>Web Cookies: Their Reason, Nature, and Security</i>	June '97	6
	<i>Active Content and Web Browser Security</i>	Aug. '97	8
Windows 95	<i>Keyboard Shortcuts for Windows 95</i>	Dec. '96	22
	<i>Windows 95 SLIP Support Installation</i>	Feb. '97	13

Correction: The credit for artwork that appeared in the cover caption of the August 1997 issue of BITS was incorrect. The original artwork was created by Jeffrey Wollman in support of the Mexico City Air Quality Research Initiative.

Produced by the Computing, Information, and Communications (CIC) Division

Managing Editor: Mike Finney (667-2241 or finney@lanl.gov)

Design: Gloria Sharp and Mike Finney

Illustration: Dave Delano

Printing: Media Group (CIC-17)

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the United States Department of Energy under contract W-7405-ENG-36.

All company names, logos, and products mentioned herein are trademarks of their respective companies. Reference to any specific company or product is not to be construed as an endorsement of said company or product by The Regents of the University of California, the United States Government, the U.S. Department of Energy, nor any of their employees. The Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; therefore, the Laboratory as an institution does not endorse the viewpoint of a publication or guarantee its technical correctness.

Los Alamos
NATIONAL LABORATORY

Los Alamos

NATIONAL LABORATORY

Los Alamos, New Mexico 87545

BITS is published monthly to highlight recent computing and communications activities within the Laboratory.

We welcome your suggestions and contributions.

BITS can be accessed electronically via Web browsers such as Mosaic and Netscape. Enter the following URL:

<http://www.lanl.gov/Internal/divisions/cic/publications.html>

LALP-97-8 (8-97)

Nonprofit
organization
US Postage

PAID

Los Alamos, NM
Permit No. 107