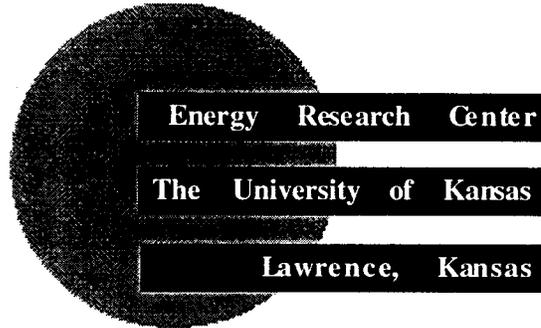


The Internet Explored for the Petroleum Professional



PETROLEUM TECHNOLOGY TRANSFER COUNCIL

<http://www.kgs.ukans.edu/ERC/pttcHome.html>

&

<http://www.pttc.org/hq/index.html>

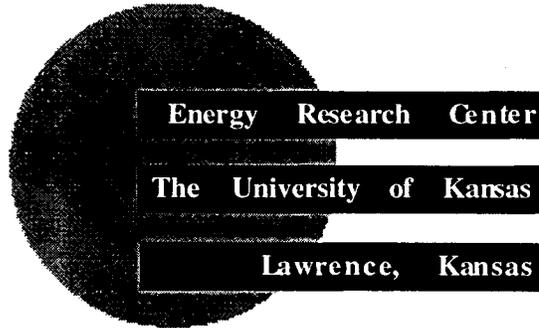
Sponsored by the
KU Energy Research Center
As part of
Petroleum Technology Transfer Council
with funds from the
US Department of Energy

Kansas Geological Survey
Open-file Report

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The Internet Explored for the Petroleum Professional



PETROLEUM TECHNOLOGY TRANSFER COUNCIL

October 16, 1996
8:30 AM - 5:00 PM

at the

WSU Downtown Center
127 N Market
Wichita, Kansas

Sponsored by the
KU Energy Research Center
As part of
Petroleum Technology Transfer Council
with funds from the
US Department of Energy

Internet Explored for the Petroleum Professional Course Outline

8:30 - 9:00	Carr	Introduction
9:00 - 9:30	Adkins-Heljeson	What is the Net
9:30 - 9:45	Adkins-Heljeson	Introduction to the Web Browser
9:45 - 10:15	Staff	Hands-on Use of the Browser
10:15 - 10:45	Break	
10:45 - 11:15	Mettille	Introduction to Remote Access
11:15 - 12:00	Mettille	File Transfer
12:00 - 1:00	Lunch	
1:00 - 1:45	Sorensen	Introduction to Internet Library Resources
1:45 - 2:15	Carr	Newsgroups, Bulletin Boards and Web Search Engines
2:15 - 2:30	Carr	Introduction to Internet Petroleum Resources
2:30 - 3:00	Break	
3:00 - 4:30	Staff	Hands-on Surfin the Petroleum Net

Instructors

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The WSU Downtown Center has been extremely helpful in support of this workshop.

Introduction

"All knowledge is contained on the Internet"

- From November/December 94 Cursor

"Finding something on the Internet is like trying to find the bathroom in a house with 250,000 unmarked doors"

- S. R. Heller, C&EN, November 95

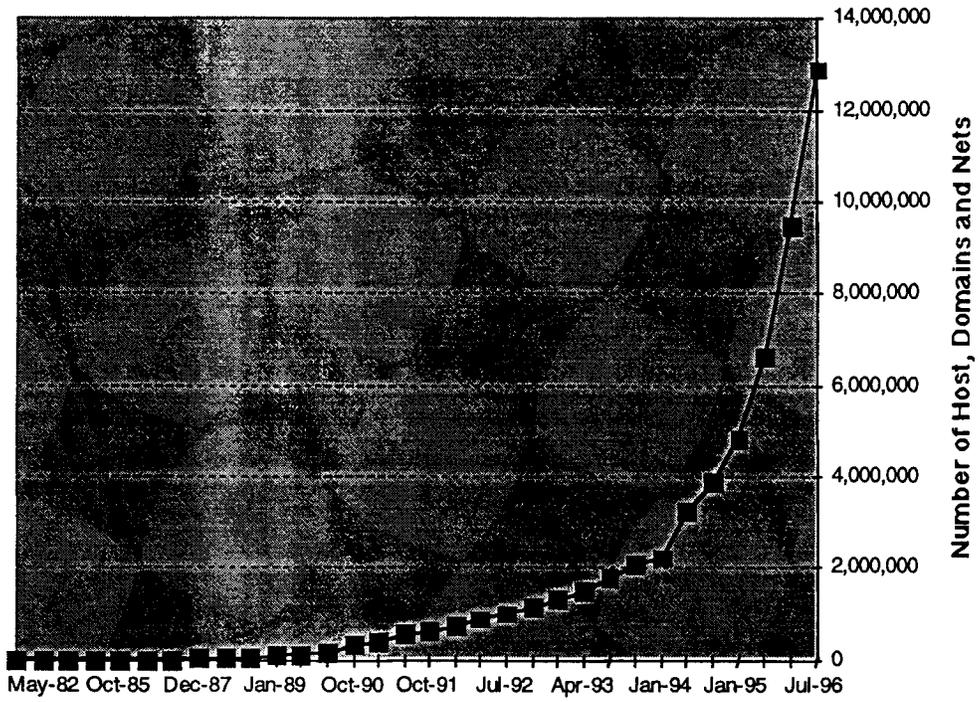
Is Internet over hyped or is it the tool of the future for communication and data access in the petroleum industry? Growth on the net has been explosive. New domain names are requested at a rate of 1.2 per minute, and it has been estimated with tongue-in-cheek that if present growth rates continue the estimated time at which everyone on earth will be on the Internet is 2004 (The Internet Index, Number 9 & 10 by Win Treese; <http://www.openmarket.com/diversions/internet-index/>). As measured by the number of hosts (servers providing some type of data) the Internet is doubling every 10 months. As of July, 1995 there were over 6.5 million hosts (attached figure).

The Internet is a maze of obscure protocols, servers, browsers, arcane acronyms, and concepts. This course will attempt to provide hands-on exposure to several major aspects of the Internet that link computers across the state, the nation and the world. In addition you will learn to locate and to access existing and future Internet servers that are sources of petroleum information. You will also learn about and access information servers dedicated to Kansas petroleum resources. In addition, we are looking for your ideas as to the future directions for providing petroleum information in Kansas and at the national level.

We hope that at the end of the day you will be comfortable with "surfing" the net and have the basis for evaluating the Internet as a tool for your business.

In addition we should have some fun along the way, and learn such important facts as the number of daily newspapers in Iran with web sites (answer 2 from The Internet Index, Number 11 by Win Treese; <http://www.openmarket.com/diversions/internet-index/>).

INTERNET DOMAINS



Data Source: Network Wizards <www.nw.com>

1. NET INTRODUCTION

Introduction to the Internet

1.1 Computers and networks

Computer networks started as way to allow remote access to mainframe computing from sites other than at a main computer center. These networks were centered around the mainframes, and allowed simple video terminals and printers to communicate with the larger computer. No computing was done by the terminals, which were designed to work only with a specific mainframe. Examples include access by travel agents of airplane ticketing systems and distributed computing labs on university campuses. Sometimes dedicated wiring was needed, but very slow connections over phone lines were also used because so little information was sent to the text-based terminals and printers.

The advent of micro and personal computers changed all of this. Small networks were designed to allow sharing of printers and backup devices by personal computers. Users at different companies and universities needed to exchange data bases and reports. The remote users had computing power of their own, and much more information than terminal control characters needed to be transmitted. The growth of electronic mail (e-mail) required more network capacity. More importantly, the computer systems thus connected needed to speak a common language not proprietary to any one computer system.

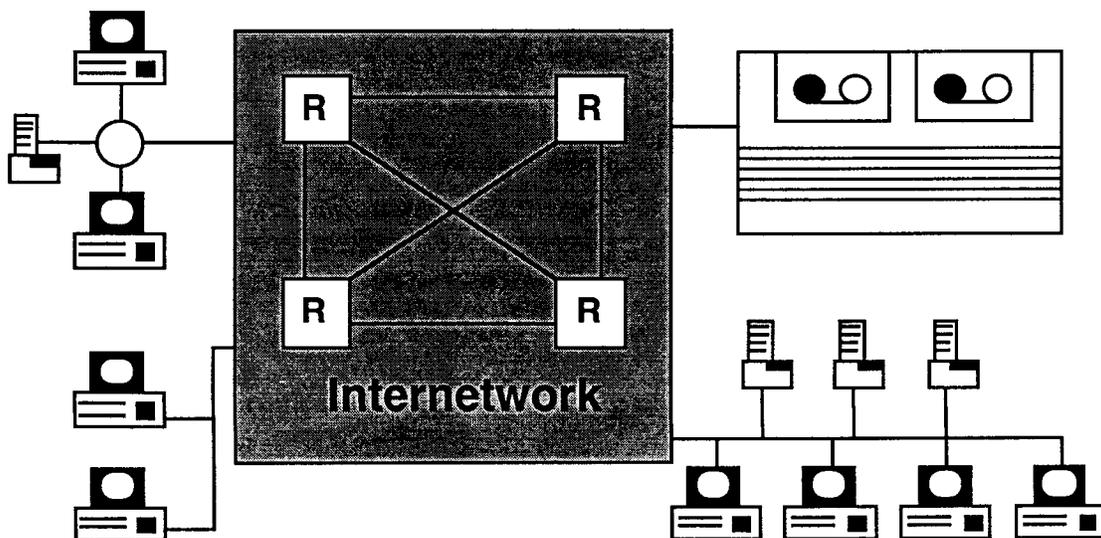


Figure 1-1—An example internet. The system is made of personal computers, printers, routers (R, similar to switches), and a mainframe.

1.2 What is the Internet?

To understand what **the** Internet is, it is important to understand that **an** internet in a general sense is any communication system that connects two or more computer networks together. Figure 1-1 shows a small network connecting several small workgroups and a mainframe. The smaller groups are in a sense independent, and can share files with each other locally and print to locally connected printers. However, the addition of the internetwork allows collaboration from state to state or around the world with much the same ease.

Agreed-upon standards dictate what kinds of wire would be used in computer networks, what kinds of characters could be sent across the wires, and how each computer on the network could be addressed uniquely. This allowed computers of all kinds to communicate through file transfers and e-mail. Most local networks will be made of one kind of computer and operating system to enable more sophisticated printing features and file sharing. However, the underlying standards are always present.

If an internet is designed and constructed correctly, the various users who are connected to it will not have to know the details of how information travels from one computer to another. In other words, the internet hides the underlying communications details from the users.

This brings us to the Internet as it exists today. Every computer connected has the ability to talk to every other computer connected in a way that is independent of the kinds of computers involved. Knowing how a particular computer is attached to the network is not necessary. All that is needed is an exchange of passwords.

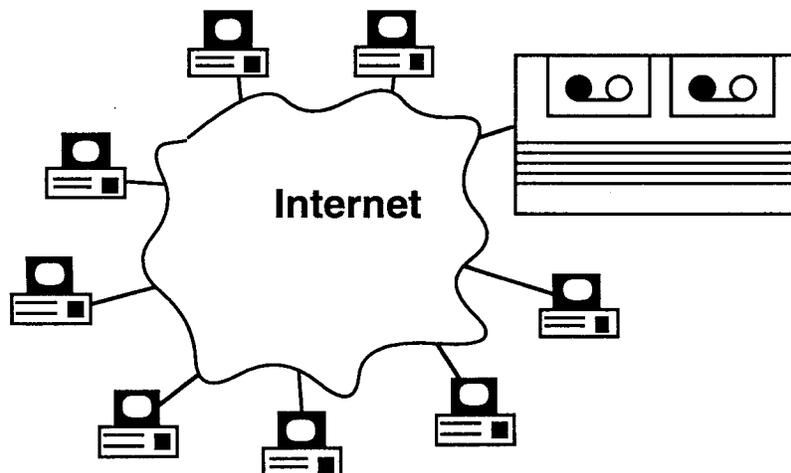


Figure 1-2. Logical view of the Internet.

1.3 Internet history

The Internet had its beginnings back in the late 1960's and early 1970's when the U.S. Government began initiating research and development in the area of remote computer communications. During the 1970's, the first internet was connected by the Advanced Research Projects Agency (ARPA) and was called ARPANET. The initial ARPANET connected four supercomputer sites together in California and Utah. The ARPANET expanded rapidly as more and more sites around the U.S. began connecting to these initial sites. As the network grew, the weakness in the initial communications protocol (rules of communications between computers across a network) became more of a bottleneck. A new protocol was needed.

In the late 1970's and early 1980's, a new protocol was developed and implemented on the Internet. This protocol, still used today, is called Transmission Control Protocol/Internet Protocol or TCP/IP. There are two parts to this system, TCP and IP, but the two are generally discussed together. TCP/IP is the method by which one computer can find another computer on the network and how two computers can exchange small packets of information.

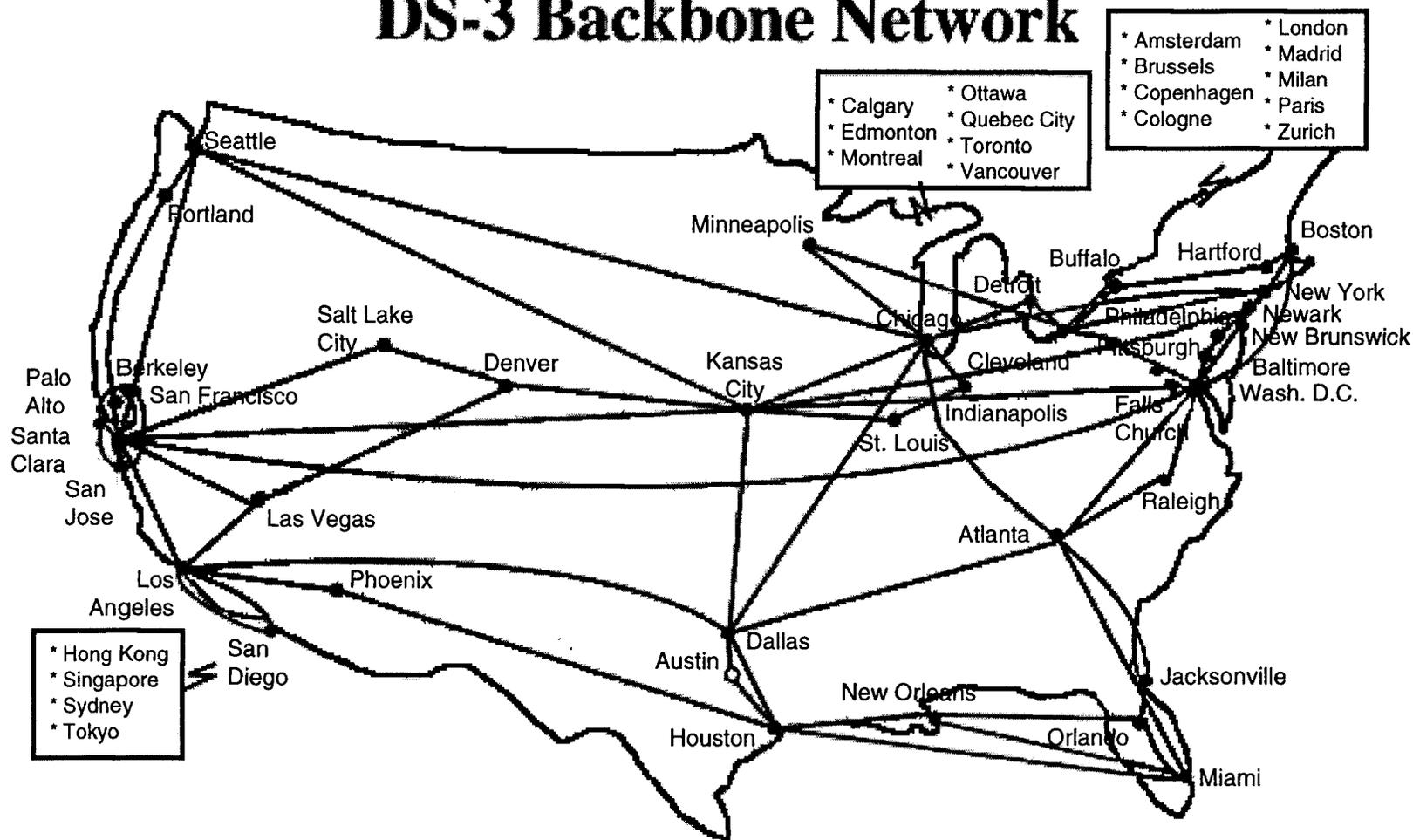
Now the Internet is made of many networks, including the National Science Foundation Network (NSFNET), the Australian Academic and Research Network (AARNet), the NASA Science Internet (NSI), the Swiss Academic and Research Network (SWITCH), and about 10,000 other large and small, commercial and research networks.

The Internet is merely the wires and protocols for communication between computers. Several services are run on the Internet, including Archie, Gopher, FTP, and, of course, the World Wide Web. More on these later.

1.4 Computer address

The Internet Protocol (IP) system defines how each computer on the Internet must be assigned a unique name. If computer addresses were not unique, then messages meant for one computer could be received by other computers. In addition to being unique, the system must be dynamic. It would be impossible for any one computer, no matter how large, to keep track of the addresses of all other computers on the Internet. Thus all computers must know how to find another computer on the Internet, even if they've not communicated before.

DS-3 Backbone Network



The IP system involves a four-part number in this format:

xxx₁.xxx₂.xxx₃.xxx₄

The dots are part of the address. The numbers (represented by xxx_n) can range from 0 to 255. Each group, from left to right, is used to identify a more specific address. Thus there are 256 possible first numbers. These can be considered similar to a country code of a telephone number. They are split between educational, government, military, and foreign use, but you can see that 256 groups is not very many for the world's supply of computers. Some organizations received a single xxx₁ for their own use. These are called Class A addresses. Most organizations are Class B, and have received a specific xxx₁.xxx₂ from which they can assign numbers. For example, KU has received 129.237.xxx₃.xxx₄, whereas KSU has 129.130. The organizations can use the third and fourth IP sections to subdivide their network. By the time the complete four-section number is full, a specific computer has been given a specific address, unique in the entire world.

These numbers (an organization's xxx₁.xxx₂, not the xxx₃.xxx₄ for specific computers) are assigned by national organizations under the direction of an international standards committee. As with much of the Internet, the system grew out of a collaborative process and is often being revised. At the moment, a new version (IPng for "Next Generation") is being finalized because the current system is running out of numbers. Just as the U.S. telephone system had to add area codes with numbers other than 0 and 1 in the second place, the IP system is straining under the growth in the Internet.

1.5 Domain Name system (DNS)

Thankfully, human users of computers never have to remember the IP number. A secondary system of Domain Names translates the IP number of a computer into a more easily remembered name. System administrators at computer centers create these names as aliases for the officially sanctioned IP address. Often they will assign more than one name to a specific computer for convenience. Example names would be

ibm.com nic.ddn.mil gaea.kgs.ukans.edu

Just as with IP numbers, there are dots separating items of interest. In this case, the items are names and not numbers. On the far right is a word that indicates the general domain of the address. Some are descriptive:

.edu for universities	.com for commercial
.mil for military	.gov for government
.org for organization	

Some addresses, especially those that are newer, will end in a country designation:

.US for United States	.CA for Canada
.NZ for New Zealand	.ES for Spain

and so on. Generally, if you do not see a country code, the country is probably the U.S. A complete address generally has four parts, although it can have more or fewer sections.

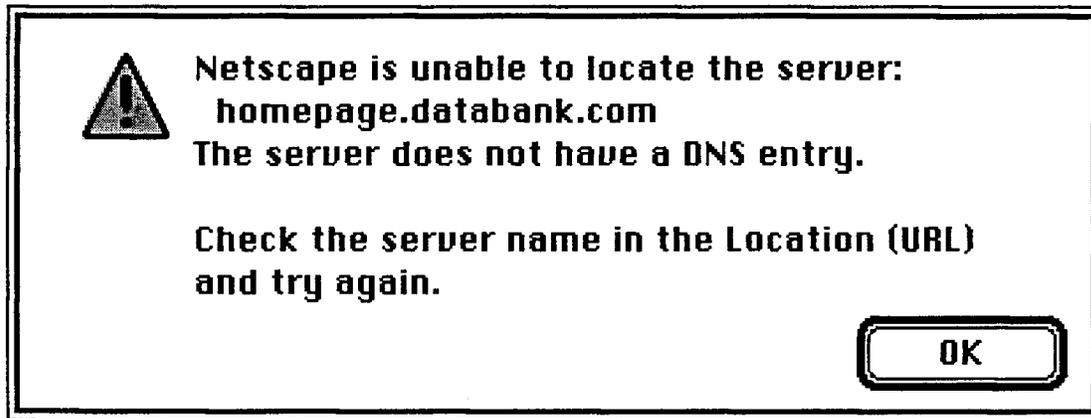
gaea	.kgs	.ukans	.edu
specific	sub	main	country
machine	organization	organization	or domain

One point of confusion is that IP addresses are arranged so that the most general part of the address starts at the left (129.239.xxx.yyy), whereas the Domain Name system has the most general part of the address at the right (yyy.xxx.ukans.edu). While you should not need to deal with IP addresses, you will often come across them as you work on the Internet. Sometimes a computer will send you a message using its IP address instead of its name, and sometimes a computer you are communicating with will refer to your computer with an IP address.

Finally, just as with IP addresses, there are national organizations that arbitrate what user owns a particular name. Several forward-thinking individuals reserved names they imagined a large (but Internet-naive) company might want in the future. The individuals hoped that if a certain company later really wanted "mcdonalds.com" they would be willing to pay for it. Few of these plans paid out. Recently several companies "reserved" large numbers of domain names for all of their products (salad dressings, cleaning supplies, and so on). If they ever need to start a World Wide Web site for a particular product, they will already have the name available.

As you are viewing web pages with Netscape or some other web browser, you will sometimes receive messages saying "The Domain Name Service is down" or "Cannot resolve Domain Name." That means another computer you are connecting through cannot figure out what actual computer address is connected to a Domain Name.

If you receive a message like this, the first thing to do is to check the name you have typed, since that may be the most common way to generate this message. However, at times computers that are needed to complete a network connection will go down, and you will need to try another site.



1.6 Services over the Internet

From the beginning, e-mail was a primary reason that people worked so hard to create efficient links between computers. Instant communication was possible with e-mail, and information could be sent worldwide without worrying about time zones or border crossings. Systems were created to send the same mail to several people. These Listservers are giant conferences, where all mail to a certain address is distributed to interested parties all around the world. A similar process is the Newsgroup, where dialogs take place between people of similar interests.

While actual real-time communication (audio and video) is possible, most Internet services are of a "store-and-forward" variety. For example, mail sent to Austria from the KGS in Lawrence will first go to KU, then from KU to KSU. Ultimately it will reach one of a few universities that have direct connections to Europe. It is a cooperative process: all members promise to send out mail they receive as quickly as possible, and to store mail if a link is temporarily down. Universities and other organizations store large newsgroup files locally for users to read. Some sites specialize in storing archives of software or newsgroup discussions.

Another major use of the Internet is FTP (File Transfer Protocol). FTP allows a user to log in to a remote computer, move through directories, and retrieve files. (Generally the log on is through Anonymous FTP, and the remote computer restricts the kinds of documents shown.) A service called Archie creates a data base of files found on FTP servers. If the user knows the name of the file desired, Archie can search its data base and show where the file can be found.

As the Internet grew, connection and retrieval clearly were no longer problems, but finding out what was available and where it was located grew to be a huge problem. Gopher, created at the University of Minnesota, is a way of accessing data bases at other sites. The user can access data all over the Internet through a series of menus. Veronica is an extension to Gopher, and a Veronica data base searches all files on all of the world's Gopher servers. In November 1994, over 15 million files were indexed. But the tool that most created explosive interest in the Internet was the World Wide Web (WWW).

1.7 World Wide Web

The WWW was created in 1989 at CERN, the European high-energy physics center, by Tim Berners-Lee. The WWW is a product of

1. Web servers that will send information to anonymous users
2. Web documents that contain text, graphics, and links to other Web documents
3. Web browsers that can display the information and understand the hypertext links.

The WWW was created for more efficient distribution of both text and graphical information, a serious need in the high-energy physics community. The pages distributed over the Web are very easy to create (if you don't have a great deal of data to present), and the extremely graphics-heavy format and ease of connection is very user friendly.

Web servers are the software that store information and send it out upon receiving a request from a user. The server software is available for many kinds of computers, but most servers are Unix workstations because of their processing power, strong networking, and multi-user operating system. While the server responds to requests from anonymous users, security is not too much of a problem because Web servers heavily restrict the kinds of information transmitted and close off other parts of a computer system.

Web pages are created in HTML, or Hypertext Markup Language. All text is sent as ASCII, with special codes added (also in ASCII) to help the browser in formatting the document. Graphics are placed directly in the document, and formats are used that are readable by virtually all kinds of computers. In addition to the heavy use of graphics, Web pages succeed because the hypertext links to other pages are easy to create and easy for the user to follow. Just by clicking on a word, the user can go to another page on another computer.

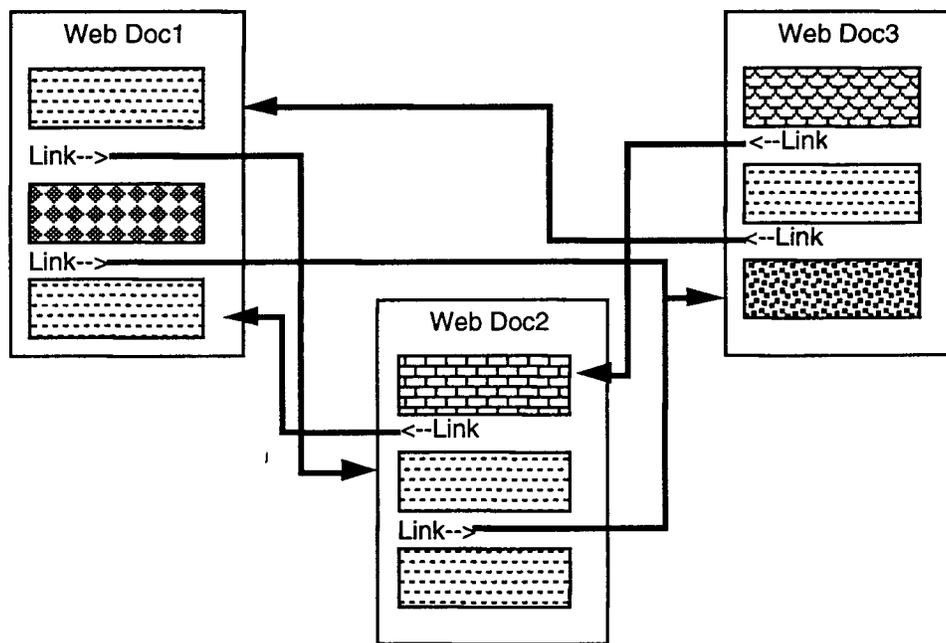


Figure 1-3. Web documents contain text and graphics, and contain links to related information.

Figure 1.3 shows a sample set of Web pages. Links are added to other pages by the authors themselves, often without the knowledge of the original pages's author. Links create efficient means of transmitting information. At the KGS, for example, we gave up trying to keep track of universities on the Web; we just added a link to a site that specializes in that.

Web browsers bring the servers, documents, and links together in an extremely friendly package. Browsers can display graphics and text, act as an FTP program for downloading files, serve as Newsgroup readers, and can send and read mail. Generally a browser uses other applications on a user's computer to assist in working with files the browser cannot itself read. These helper applications can play movies and sound, un-compress files, even start up spreadsheets, all based on the kind of datafile received by the browser.

The first browser, called Mosaic, was created at the National Center for Supercomputer Applications in Illinois. With its combination of text, graphics, links, and free price, Mosaic was a revolutionary application, and perhaps for the first time showed how the Internet could really be used. Mosaic is still available for all kinds of computers and has spawned several for-profit companies that have created more efficient or more powerful browsers. The most famous of these is Netscape, a company also known for creating servers that were secure enough to allow credit-card transactions

over the Web to be carried out. Microsoft has released Internet Explorer (first for sale, now available free), a web browser primarily for Windows 95.

Text-based browsers (like Lynx) are still available. No graphics are transmitted, but communication is fast and links are followed by typing a number. These are available mostly for mainframe and UNIX computers. Most commercial on-line services (like CompuServe or America Online) have responded to customer requests and have added Web browsers to their standard on-line software. While Web access through the commercial services is sometimes slower than a direct connection, their combination of private online services, easy-to-use software, and the Web itself is a strong package.

1.8 URLs

The Uniform Resource Locator (URL) is the method by which a page is located on the Web. The URL gives the address of a graphic to be displayed, the next page in a series of pages, or the name of a page on another computer that may have other items of interest.

The URL most resembles a Domain Name, with a few additions. Just as with a Domain Name, the URL is mostly alphabetical (not numeric), and it describes the address of a computer in the same way. Here is an example:

```
http://www.kgs.ukans.edu/ERC/PTTC/data.html
```

On the left is a string that describes what kind of action is required. HTTP means the document is on a Web server, whereas FTP:// means the file is available for downloading, NEWS:// refers to a newsgroup, and TELNET:// opens a terminal program for talking to a computer in a command-line mode (used for communicating more directly with a mainframe or larger UNIX server).

After the double slashes is what looks to be a Domain Name for a computer, and that pretty much is what it is. Just as with a DNS, the name can be broken into a computer (www), a sub-organization (.kgs), an organization (.ukans) and a domain (.edu). After that comes a series of names and slashes that will give the path of a file. In this case, the file is named data.html and it is located in a directory called PTTC, which is in a directory called PTTC on the WWW machine at the KGS.

Sometimes the address will look like this:

```
http://uts.cc.utexas.edu:80/~churchh/htmlcheck.html
```

In this case there is a Port Number (:80) in addition to the computer name. That means they want requests for WWW pages to come into their computer through a certain connection (possibly for security reasons). They may also be running more than one server and allow use only by local computers on one of the servers. After the port number is a ~churchh. The ~ is not a typo, but means to look in a certain user's home directory for the file. Universities will often add the account name to a Web address, as will commercial Internet providers who have many clients.

Sometimes no file name is listed, only a computer name:

`http://www.kgs.ukans.edu/`

If the server is set up correctly, that address leads to a default welcome page and is perfectly legal.

By the way, you should be somewhat careful of upper and lower case. Usually machine names can be spelled in either upper or lower case and the Domain Name system will figure out what you mean, but the file and directory names should be typed as you find them. If you receive a page saying "Error 404--Page not found," you should check the spelling and letter case of a name. On most servers, the files "PRSHOME.HTML" and "prsHome.html" and PRShome.html" will be seen as different files.

In general, you don't often have to type in an address because you are usually following links by clicking on existing pages. However, if you see an address in a newspaper, magazine, or on television, care taken in typing will usually call up the correct page.

1.9 Finding information on the WWW

Just as Archie is used to index FTP sites and Veronica is used to index Gopher servers, the WWW has several tools to assist in finding information. Perhaps the most useful site is Yahoo. Yahoo may return fewer sites than some indexes if you perform a simple search, but it has organized all of its sites in an easy-to-use set of topics. Just a few clicks takes you to a list of sites covering a single topic, and fewer mistaken hits based on a simple keyword search occur.

For depth of coverage, no site can match Lycos. The searching dialog is easy to use, and it will return sites based on all, any, or just some of the keywords you type in. Similar to Lycos, the Webcrawler site also covers the Internet with an exhaustive keyword data base. Webcrawler has a ranking

URLs found in Popular Magazines

A URL was still an unusual item for most people even a year ago. Now, ads in Time, Newsweek, and other popular magazines often list a URL along with an 800 number.

America's Pharmaceutical Research Companies	www.phrma.org
American Express Financial Advisors	www.americanexpress.com/advisors
AT&T	www.att.com
Apple Computer	www.apple.com
Bristol-Myers Squibb Co. their new cholesterol-lowering drug	www.bms.com www.pravachol.com
Chrysler	www.chryslercars.com
Fidelity Investments	www.fid-inv.com
GE Corporation	www.ge.com
General Motors	www.gm.com
Buick	www.buick.com
Chevrolet	www.chevrolet.com
Saturn Corporation	www.saturncars.com
GTE Corporation	www.gte.com
IBM	www.ibm.com
Jolly Time Popcorn	www.jollytime.com
Microsoft Windows '95	www.windows.microsoft.com
MFS Investment Management	www.mfs.com
Lands' End	www.landsend.com/catalog-ma
LG Semicon	www.lg.co.kr/
Novell, Inc.	www.novell.com
Silicon Graphics	www.sgi.com
Stolichnaya Vodka	www.stoli.com
Tide	www.clothesline.com
TIAA-CREF	www.tiaa-cref.org
3M	www.mmm.com
3M Imation	www.imation.com
Time	time.com
Time and CNN on politics	AllPolitics.com
Time Warner's Internet Service	pathfinder.com
Toyota Motor Sales of America	www.toyota.com
Universal Pictures	www.mca.com

system to tell the user how relevant the sites returned are to the searches requested.

Main Search and Index Sites

Lycos--www.lycos.com

Webcrawler--www.webcrawler.com

Yahoo--www.yahoo.com

AltaVista--www.altavista.digital.com/

Excite--www.excite.com/

Open Text--search.opentext.com/

Most keyword searches will return several wrong hits for any search. If, for example, you wish to find sites with information on the Civil War photographer Alexander Gardner, you will receive many sites that mention "Alexander Gardner" (some of whom may be the specific person you are interested in). But with Lycos, Webcrawler, and other keyword-based searches, you will also get any site that mentions "Susan Alexander Smith" and "Frank Gardner," for example. Thus you should be as specific as you can on a search and only broaden your search if you are not getting any responses.

1.10 The growth of the WWW

The explosive growth of the WWW has taxed heavily the infrastructure of the Internet. Figure 1-4 shows the growth in the number of WWW domains (named WWW sites) created over just the past few years. Figure 1-5 shows the increase in the total number of Internet hosts (specific computers tied to the Internet).

One reason for the growth in the Internet has been the friendly face WWW browsers have put on the search for information. The heavy use of graphics, the addition of movies and sound, and the low price for the software (free for most users) has allowed the WWW to swamp the Internet with people publishing their own works of art, record lists, movie reviews, and other information.

Having a page on the WWW is like publishing your own magazine. The Internet is a leveling medium, and a small page created by a single person interested in model planes is as easily reached as a large, expensive site designed by Lockheed-Martin or Boeing. Many people have placed whole

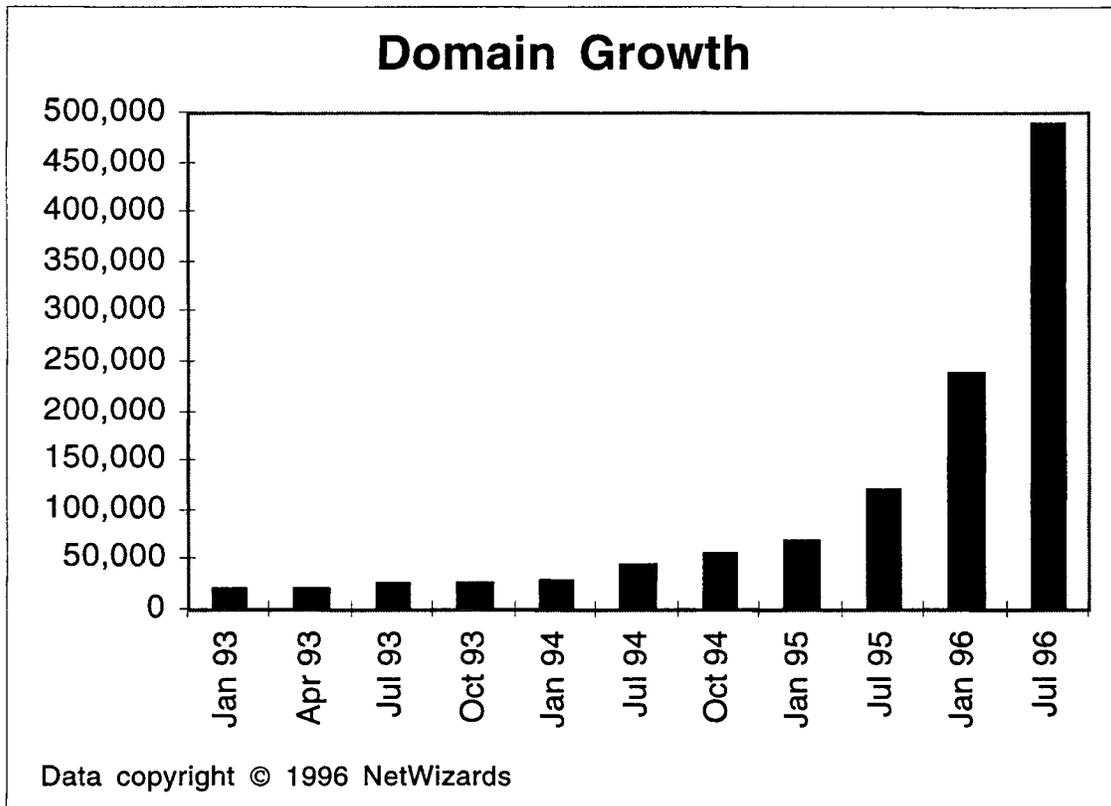


Figure 1.4--Total number of domains as measured by Mark Lotter's Domain Survey (<http://www.nw.com>).

books online, and often the information in those pages is more useful than any number of books actually published.

Because so many WWW users are students or faculty at universities, their access is free; certainly they have taken advantage of it. Small businesses also have found a place on the Internet. A store can open up online and compete for clients just as a much larger store. However, the growth in online commerce has been slower than many have predicted. Probably worries over security and the generally free-wheeling and academic slant to the WWW has slowed acceptance.

The ease of creating WWW documents has also aided in the growth of the Web. Given an account on a computer hooked to the Internet, a user can look up online guides to making pages, type in the information needed, and add the simple formatting needed in four hours or less. Subsequent pages can be added very quickly, and placing graphics online is very easy for anyone with standard Windows or Macintosh software. A cursory glance at the WWW shows a huge number of people have added their page to the

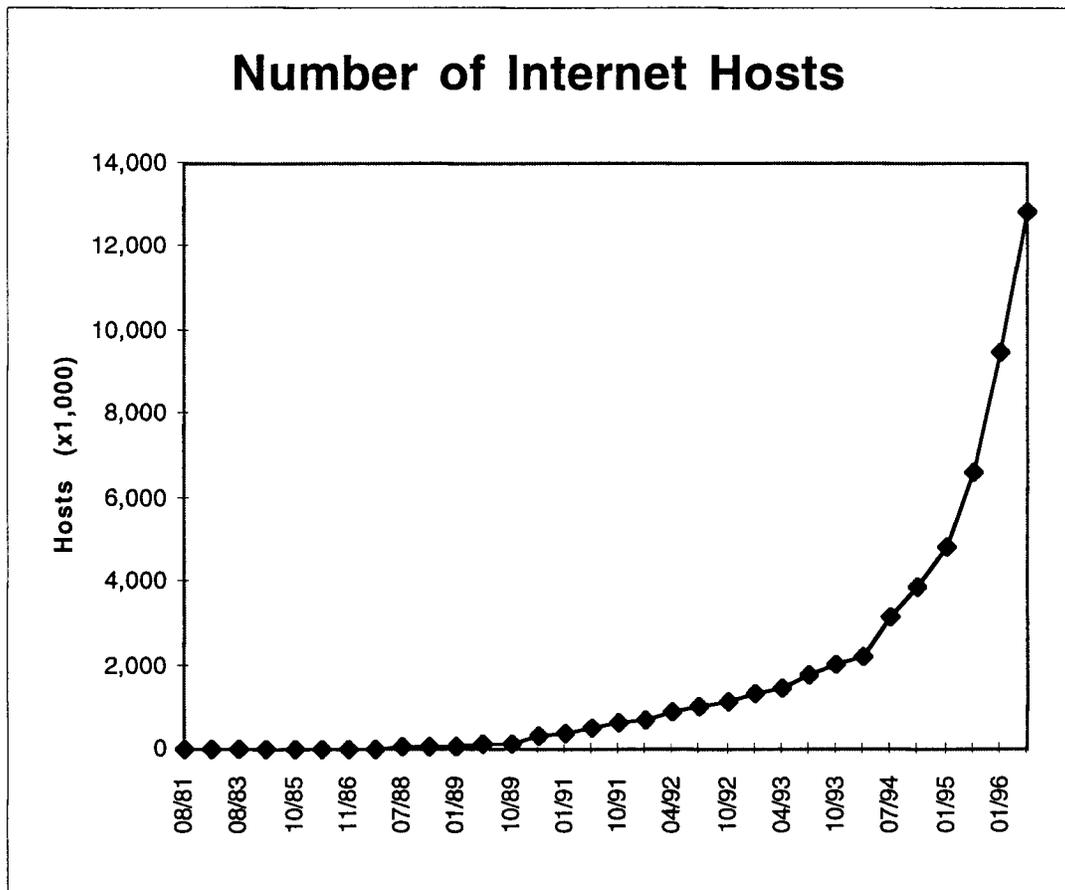


Figure 1.5--Total number of Internet hosts (individual computers) found on the Internet.

exploding number of sites. Many are just short pages showing their interests, hobbies, and pets. Other are exhaustive (and exhausting) lists of record collections.

A good place to start learning to make pages is "A Beginner's Guide to HTML" at <http://www.ncsa.uiuc.edu/demoweb/html-primer.html>. Reading these sites will give you as much a start as any number of books found at the local store. Also, any browser will allow you to save the HTML code for a page you have found (all of it is ASCII text). Find a page on the Web that you like, save the page to your disk (use the "Save as Source" option), and examine the HTML code. Use the "Open local file..." command to see the file you have on your own disk. Change it a little and see what the new version looks like.

One rule to remember is that the creator of a page can only present the information. Different browsers with different users can change the colors you design, change the fonts you select, and hide the graphics you work hard

to perfect. Focus on content, not formatting, and your page will be a greater success.

1.11 References

Archie—<http://www.sura.net/archie/Archie-Usage.html>
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Gopher—<http://www.eff.org/papers/bdgtti/eegtti.html>
Internet growth—<http://www.tic.com/mids/growth.html>
Internet organization—<http://www.isoc.org/>
HTML—<http://www.ncsa.uiuc.edu/demoweb/html-primer.html>
Internet Explorer for Windows 95—
<http://www.windows.microsoft.com/windows/ie/ie.htm>
Lynx—http://www.cc.ukans.edu/lynx_help/Lynx_users_guide.html
Mosaic for Macintosh—
<http://www.ncsa.uiuc.edu/SDG/Software/MacMosaic/>
Mosaic for Windows—
<http://www.ncsa.uiuc.edu/SDG/Software/WinMosaic/>
Mosaic for X Windows—
<http://www.ncsa.uiuc.edu/SDG/Software/XMosaic/>
Netscape—<http://www.netscape.com/>
Protocols—<http://www.ietf.cnri.reston.va.us/home.html>
Spyglass Mosaic—<http://www.spyglass.com/three/index.html>
Veronica—<gopher://gopher.scs.unr.edu/00/veronica/veronica-faq>
Yahoo—<http://www.yahoo.com>
or <http://www.yahoo.com/text/>

2. BROWSER INTRODUCTION

Introduction to Netscape and web browsers

Most web browsers follow the same style. Learning one browser should help you with any new browser you come across.

Main window

General navigation and file buttons.

To Netscape Home

These go to pages from Netscape (help and web info)

Some graphics are links (look for color outline)

Text that is in color and underlined is a link.
Blue = Not Visited,
Purple = Visited.

This key shows security level.
Broken key means server you are visiting is not encrypting all communications

Look in this area for info on where you can go and the status of the page. If you place your cursor over a link, it will show you where you will go if you click there. A color bar will show you how long the download will take.

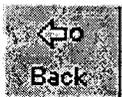
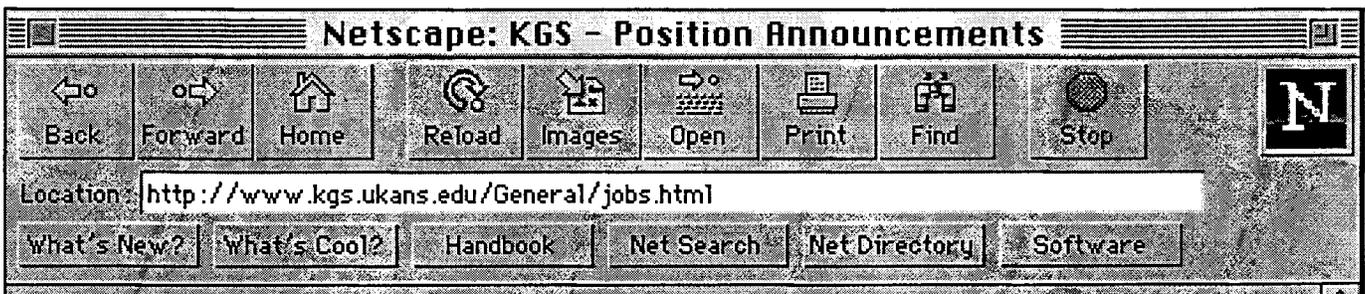
Buttons can be removed from your window if you prefer to use menus or menu "hot keys." Buttons can be shown with graphics or as text only.

File Edit View Go Bookmarks Options Directory Window

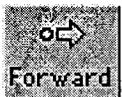
Everything you can do with buttons can be done with menu commands. Removing buttons gives you more space for web pages. However, the buttons are very convenient.

Main buttons, top of window

Window title tells you where you are. The title will show up in your "Back" menu and, if you bookmark the page, on your "Bookmark" list.



Sends you to the page you were previously viewing.



If you have used the "Back" command, this button will be available and will move you to the next page.



Sends you to your home or starter page. By default, Netscape goes to the Netscape Company's computers. You can set this to any web page or to blank.

Go

Back	⌘[
Forward	⌘]
Home	
Stop Loading	⌘.
<hr/>	
✓ Dakota Aquifer Program Home Page	⌘0
KGS Pub. Inf. Circ. 4--Part 2 of 4	⌘1
KGS Pub. Inf. Circ. 4--Part 1 of 4	⌘2
KGS--Geology Resources	⌘3
Kansas Geological Survey	⌘4
Dana's home page	⌘5

Don't forget your "Go" menu. In addition to having the same "Back," "Forward," and "Home" buttons that are found on the window, the "Go" menu shows you titles from the recent pages you have visited.

Using the "Back" command resets this "Go" menu, so you may not see ALL the pages you've visited.

Viewing and loading

You can choose to have pictures loaded as soon as you visit a page, or you can wait and choose to load them later. The "View" menu and some of the main window buttons help with this.



This button causes your browser to ask the remote computer to re-send the page to your computer. Sometimes this is needed to update a picture (such as a map of weather radar) that changes from time to time.



If you have set your browser to NOT load graphics automatically, this button will cause the remote computer to send the figures to your browser.

View

Reload	⌘R
Reload Frame	
Load Images	⌘I

Document Source
Document Info

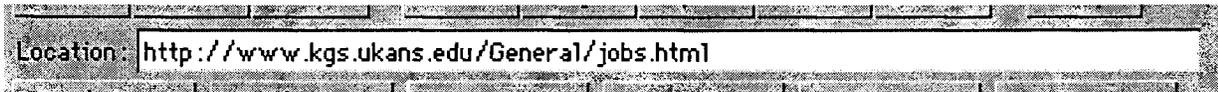
The "View" menu has commands to reload a page or show images (just like the two buttons mentioned above). There are also commands to see the raw HTML code that is used to create the page (useful if you are trying to write your own web pages) and to learn more about the web page itself.

Opening pages

There are three ways to type in a URL for a page you want to visit.



Use large "Open" button in main toolbar.



Type in the URL in the "Location" area and hit the "Return" key. Normally the "Location" area shows the page you are currently viewing, but it can be used to go to a new page as well.

File

New Web Browser	⌘N
New Mail Message	⌘M
Mail Document...	
Open Location...	⌘L
Open File...	⌘O
<hr/>	
Close	⌘W
Save as...	
Upload File	

"Open Location" lets you type in a URL for a page you want to visit.

"Open File" lets you open a file on your own hard disk (good for testing pages you've written).

Bookmarks

While the "Go" menu allows you to re-visit pages you've seen in your current web session, the "Bookmark" menu is where you can save the addresses of your favorite pages.

Bookmarks	
Add Bookmark	⌘D
Kansas Geological Survey	
DPA	
Searching	▶
Other	▶
KGS	▶
Java and HTML	▶
Purdue Weather Processor	
U.S. Doppler Radar	
Index of /DPA/Schaben/CrossSect/ WWW Webster Dictionary	
KGS--OFR 96-36--Part 1	
Netscape Server Selector	
Tech Support	

Use the "Add Bookmark" command to save the address of the page you are currently viewing to a bookmark list.

Selecting the item from the menu will take you to that page.

Window	
Netscape Mail	
Netscape News	
Address Book	
Bookmarks	⌘B
History	⌘H
Digital Petroleum Atlas Home	
Dakota Aquifer Program Home Page	

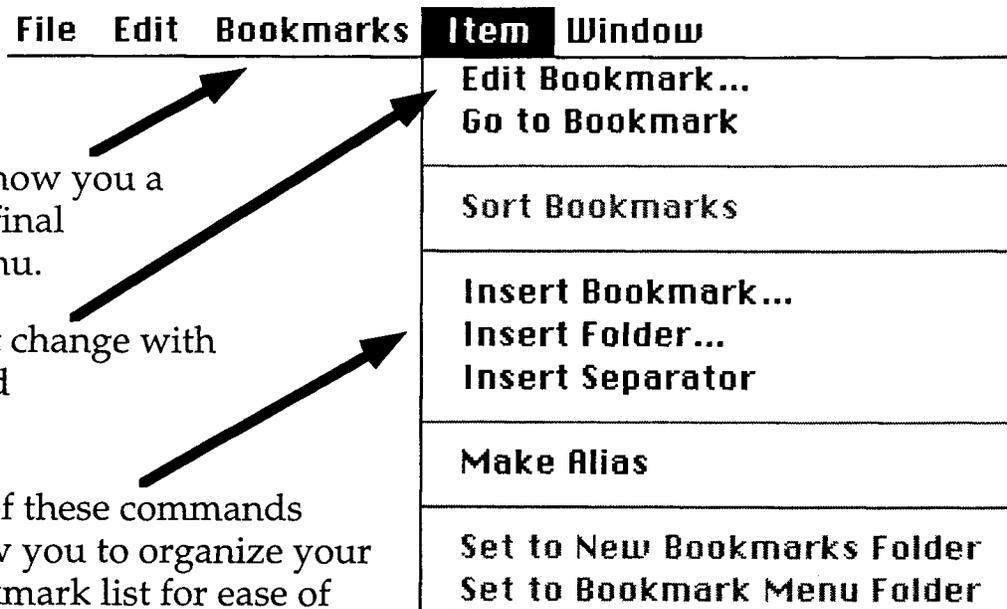
If your Internet provider gives you access to Mail or Newsgroups, the "Window" menu is where you can view these items.

Bookmarks can be grouped, added to pull-out menus, and deleted using the "Bookmarks" command in the "Windows" menu.

Each of the windows you open will be listed in this lower section.

More on Bookmarks

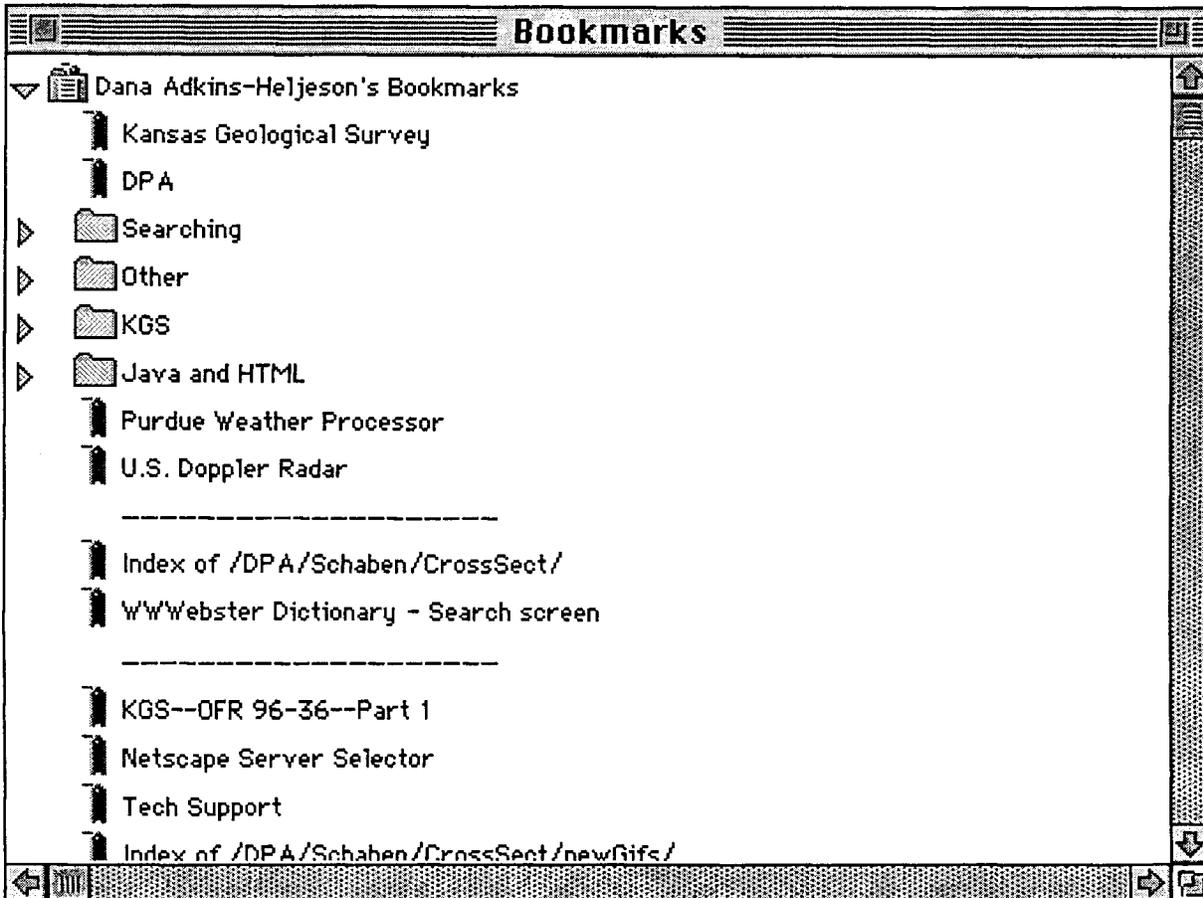
If you select the "Bookmarks" item from the "Windows" menu, you will get a different menu set designed for editing bookmarks.



This menu will show you a preview of your final "Bookmarks" menu.

Fix URLs that change with this command

All of these commands allow you to organize your bookmark list for ease of use.



Other main buttons



You can print any page you are viewing, graphics and text. This command is also available on the "File" menu.



This button does NOT find pages all over the web. It will search for text in the web page you are currently viewing.



If a page is taking too long to load or you have seen all you want, clicking on the "Stop" button will halt page loading.

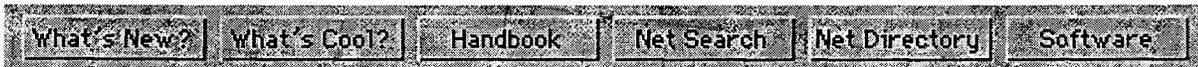
Directory

Netscape's Home
What's New?
What's Cool?

Netscape Galleria
Internet Directory
Internet Search
Internet White Pages
About the Internet

The "Directory" menu duplicates the items on the smaller toolbar (usually called "Directory Buttons"). You can use the buttons or the menu items to go to pages that give help on using Netscape, help you find items on the Web, and learn what's new on the Web.

Use the "Options" menu to hide the "Directory Buttons" if you want more screen area for web pages.



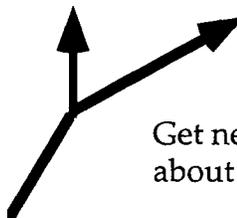
Several locations (Yahoo, Lycos, Netscape, etc.) have judges that can tell you what is cool.



If you need help with Netscape, click here.



These pages list search pages run by various companies. After you learn which ones you like to use, add them to your bookmark list.

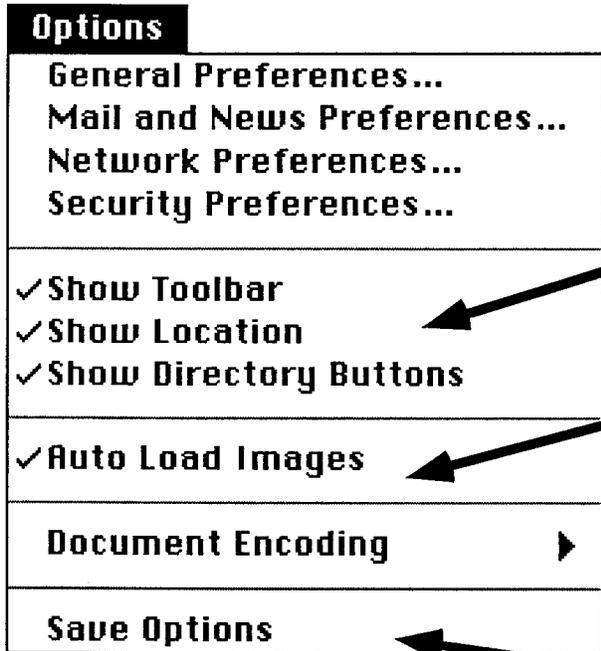


Get new versions of Netscape here, or learn about helper applications.



Changes weekly. Page writers submit their own new pages to Netscape and the other web search companies.

Preferences



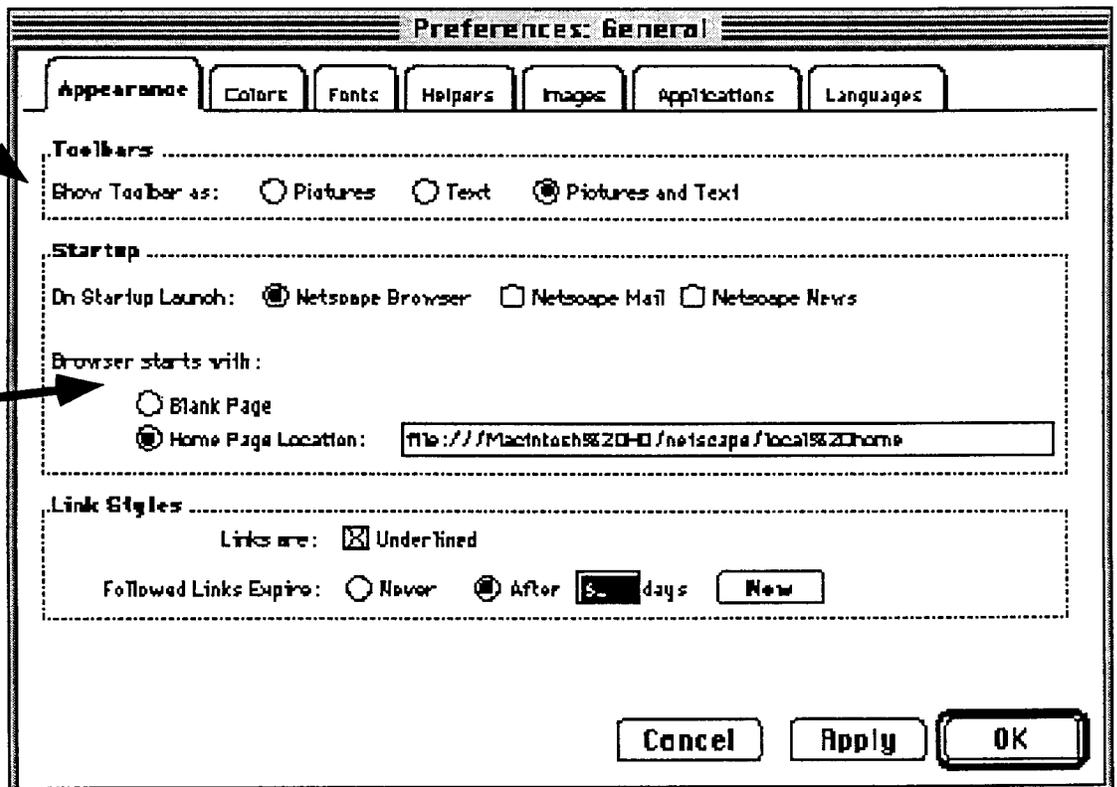
The top four commands bring up separate windows with more detailed preferences options. They should not be needed often.

Turn on or off the window toolbars to show more of the web page you are viewing.

If you are using a modem, you might want to load images after the text of the page is loaded and you are sure you want to take the time to view them.

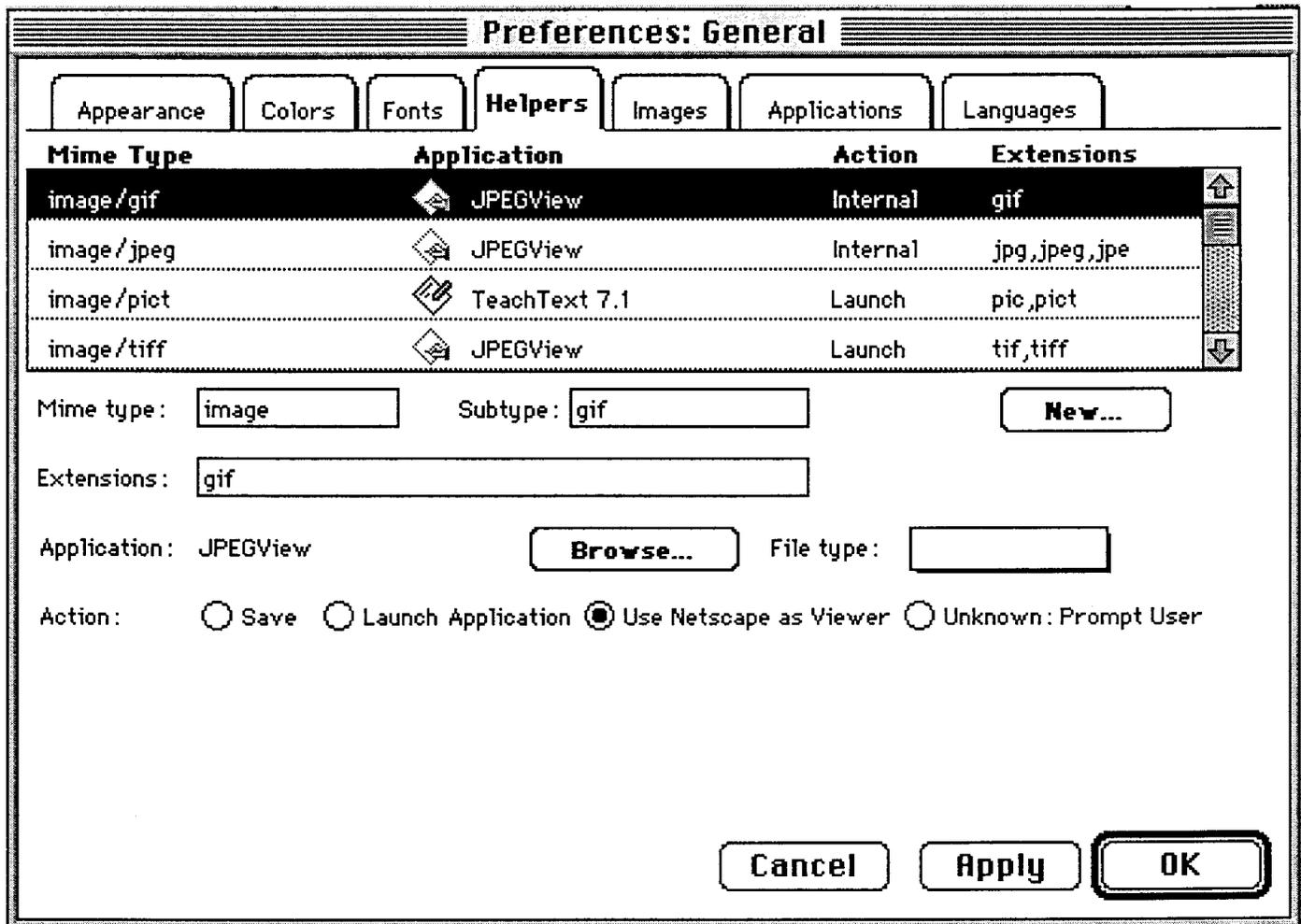
If you don't save the changes you make, the options will be reset next time you start the software.

If you like using the main window toolbar (Open, Back, Forward, reload, etc.) but don't like losing window space, just turn off the button graphics.



This is the page that will show up when you start Netscape. Don't leave it set to the Netscape company computer or you will waste a lot of time waiting for it to load.

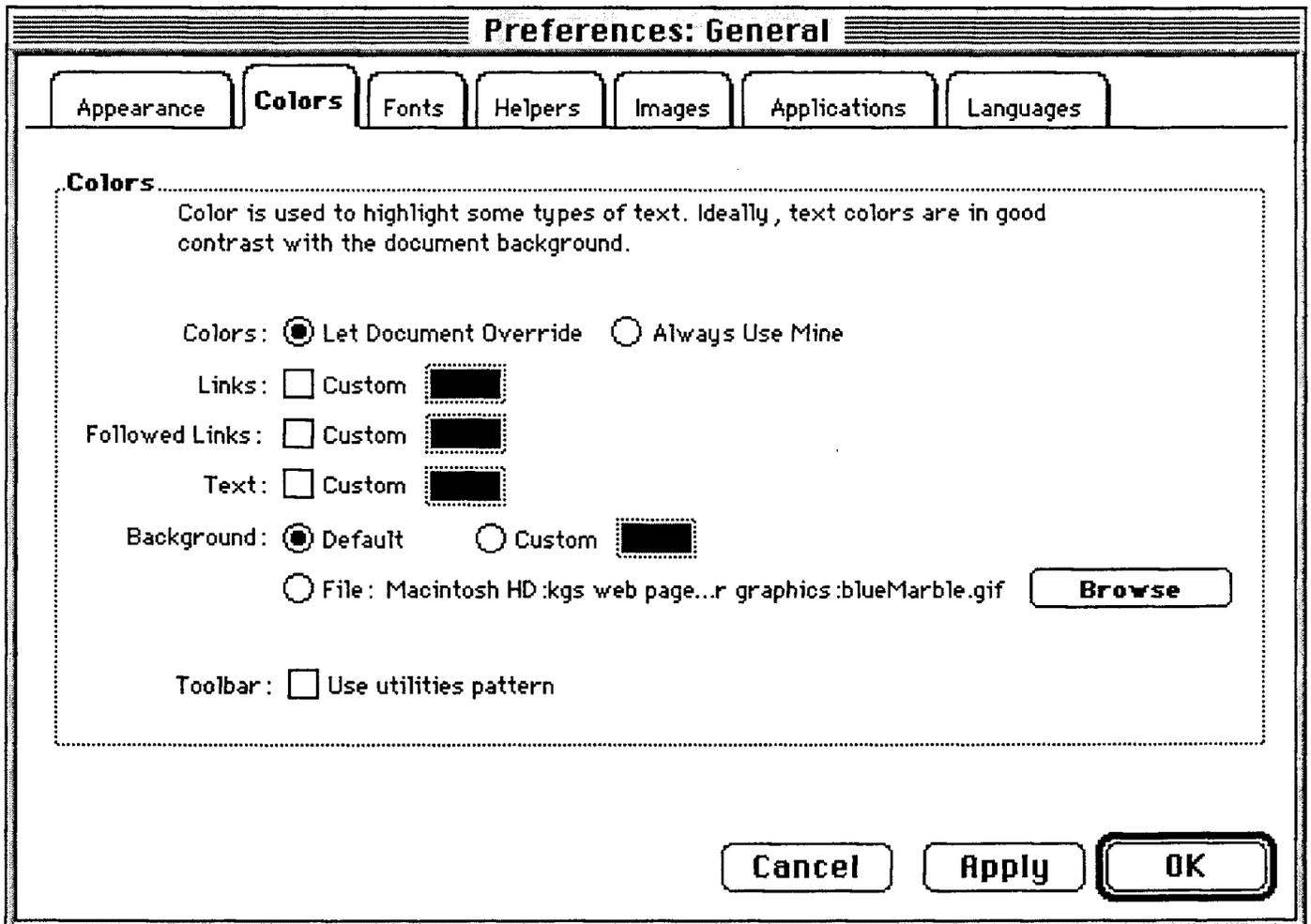
More on Preferences



Use this Preferences option to set up which applications are used with certain files. For example, if you download a .ZIP file, you may want to use PKUNZIP or WINZIP to automatically extract the files from the archive. This dialog is where you can make those associations.

The reason for this dialog is that web browsers were supposed to be small applications that were good for viewing text and simple graphics, and also for navigating from one page to another. The user could add other applications for viewing unusual graphic formats, movies, etc. Now, with growing competition between browser companies, web surfing software is getting larger and more powerful. Helper applications are not needed as much as they used to be.

More on Preferences



If you begin to build web pages keep this Preferences Panel (and the one on fonts) in mind. The user can ALWAYS override the colors you choose for text and backgrounds. Users can decide what kinds of fonts are used and what sizes are used.

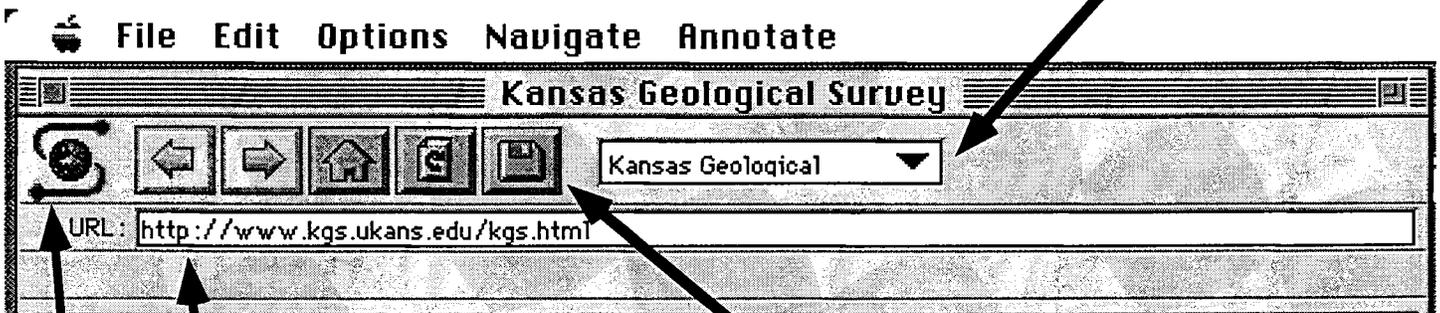
Make sure you focus on CONTENT when you work on your own web pages. Do not spend too much time worrying about what size font is being seen, how the paragraphs match the graphics you make, and so on. Different browsers, different computers, and different users will affect how your web page looks. Web content will always be more important than anything else!

Mosaic

Mosaic, from the National Center for Supercomputing Applications, was the first browser. Several commercial companies have licensed Mosaic and have released it commercially (Spyglass, Quarterdeck), but these have been less successful than Netscape or Microsoft.

Instead of a "Bookmarks" menu there is a "Hotlist" available in the "Navigate" menu.

There is no "Go" menu. Use this pop-up instead.



Buttons for going back, forward, and home are similar to those of Netscape, as are the "Reload" and "Save" buttons. The "Save" button lets you save web pages as Source Files (HTML) or as Text Files (just the information, no formatting).

Enter URLs here for pages you want to visit. Unlike with Netscape, you should probably include the "http://" part of the URL for most versions of Mosaic.

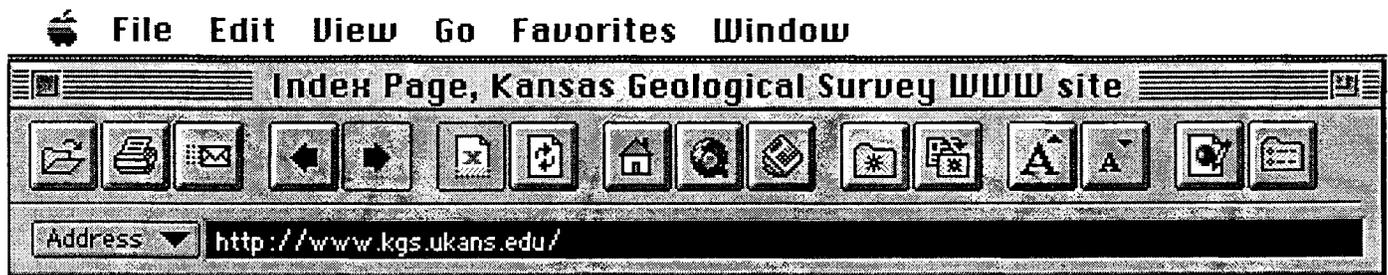
Click here to stop loading. It is Animated when data is being downloaded.

Microsoft Internet Explorer 2

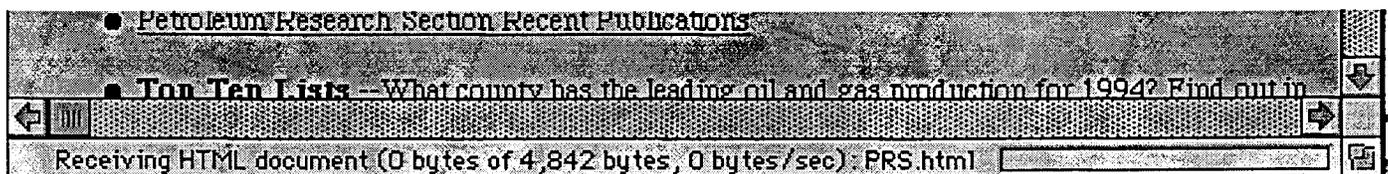
Internet Explorer 3 is available for Windows, but not Mac or UNIX.
IE 2 is available for Mac, UNIX, and Windows, and is a good browser.

Main window

The general look of Internet Explorer is similar to all the other browsers. The "View" menu allows you to hide the "Address" line and the tool bar buttons. The "Favorites" menu of IE is similar to the "Bookmarks" menu of Netscape.



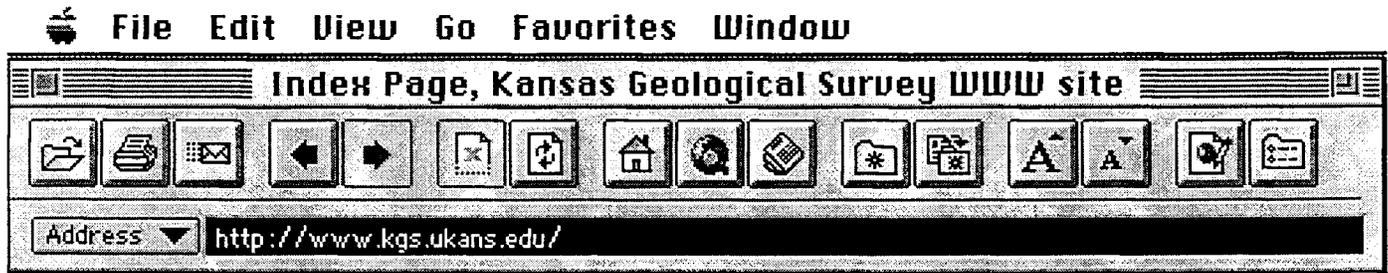
Type the URL of the page you would like to visit in this area. It will also show you the address of the page you are viewing.



If a page is being loaded to your machine, its progress will be shown here. Later, as you view a page, place your cursor over a link, and the address of the new link will be shown here.

This progress indicator will fill with color as the page is loaded. The color bar disappears after the page is loaded.

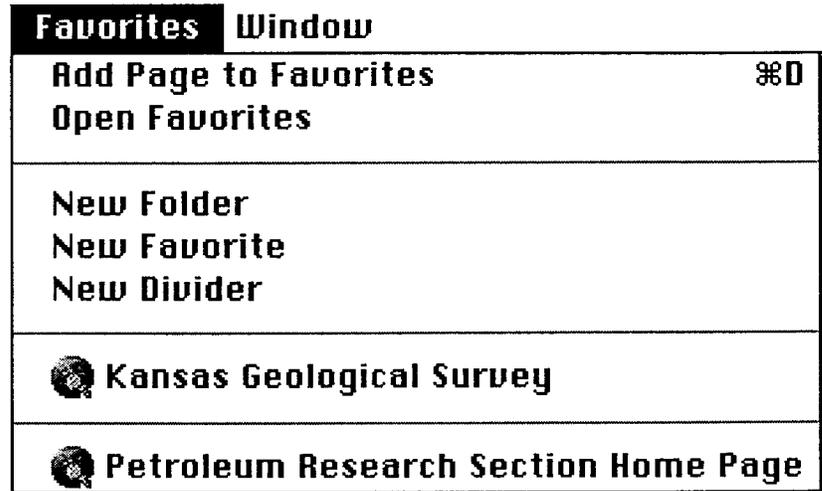
Microsoft Internet Explorer 2



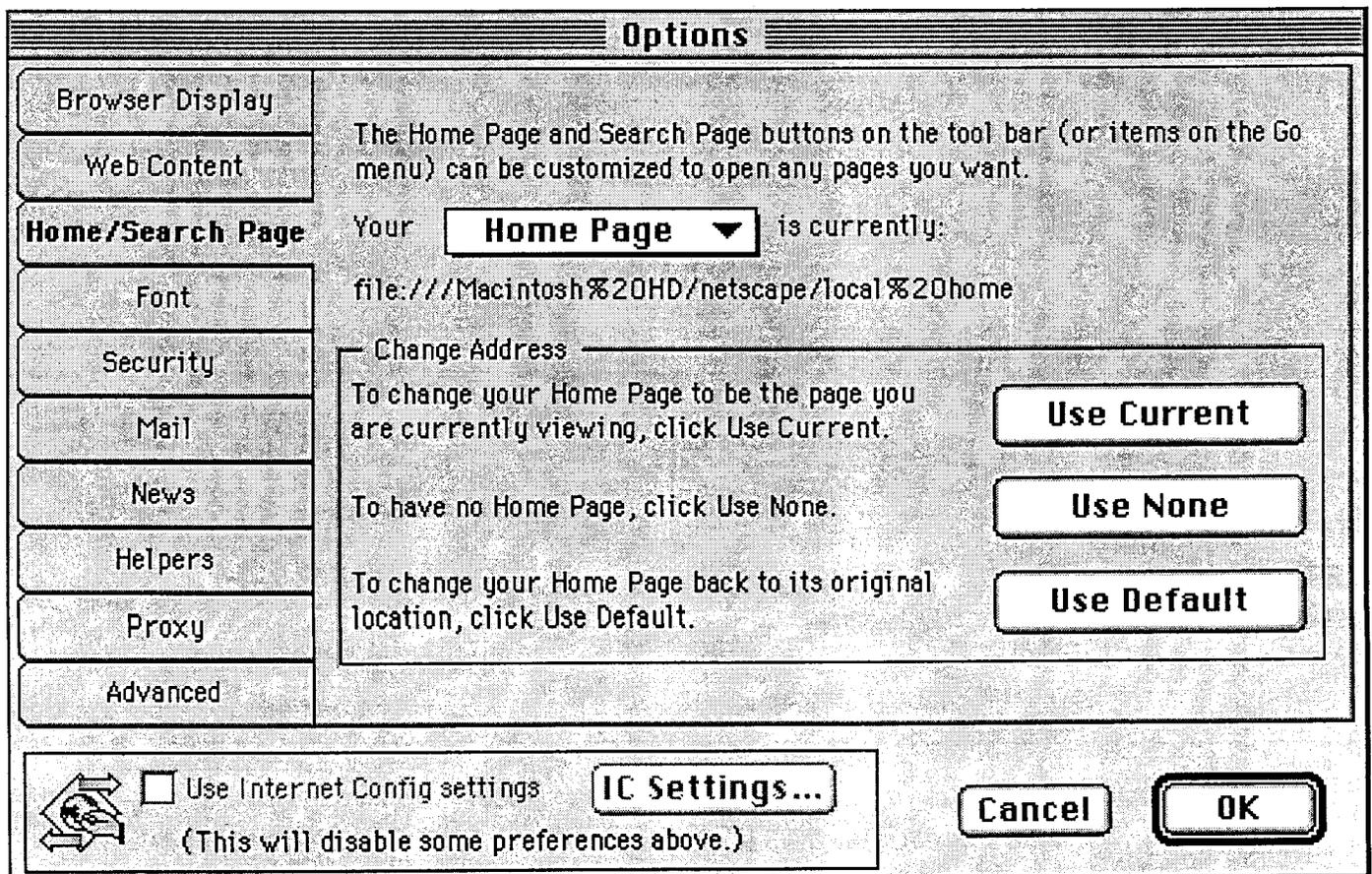
-  Open a location or a file.
-  Print the current page. If the page is made of Frames, only the current Frame will be printed.
-  Access E-mail system.
-  Go to the last page viewed.
-  Move forward to the next page (only available if you have previously used the Back command or the Go menu to move back through the pages you have visited).
-  Stop the page from downloading.
-  Reload the current page. Useful if the load was interrupted for some reason, or if the graphics on a page need to be updated (weather radar pages, etc.).
-  Show the Favorites window.
-  Add the current page to the Favorites list.
-  Make the fonts on the web pages you view larger.
-  Make the fonts on the web pages you view smaller.
-  Display the HTML source for the page you are viewing. Good if you are trying to write your own web pages.
-  Change the IE Options.

Microsoft Internet Explorer 2

The "Favorites" menu of IE combines many of the functions Netscape places in a separate configuration menu. Also, icons show what kind of page the link points to (globes are web sites, small page icons are local HTML files).

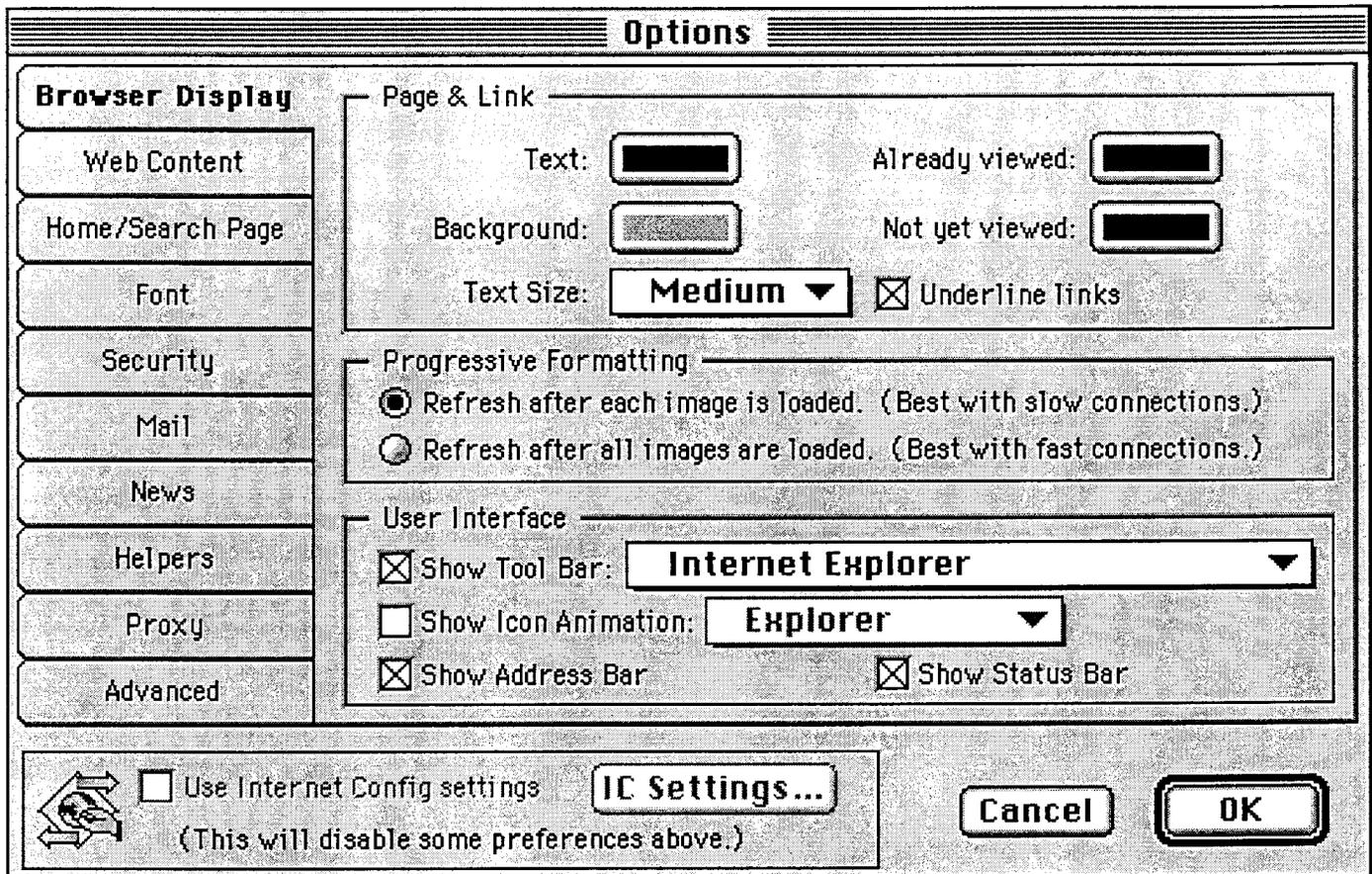


You can use this page to set the location of your home page. The default home page for IE is Microsoft, but you can specify any other web page or to have no page show up when you start IE.



Microsoft Internet Explorer 2

The user can alter the text size, text color, background color, and link colors (visited and new links).



3. REMOTE ACCESS

Introduction to Remote Access

What is Remote Access?

What's the difference?

Phone lines vs dedicated lines

Types of dedicated lines and their associated costs

Cost of Remote Access

What are the limitations?

Types of Remote Access connections

Typical Remote Access costs

What about America Online?

Which one is best for me?

What can I do with a Remote Access connection?

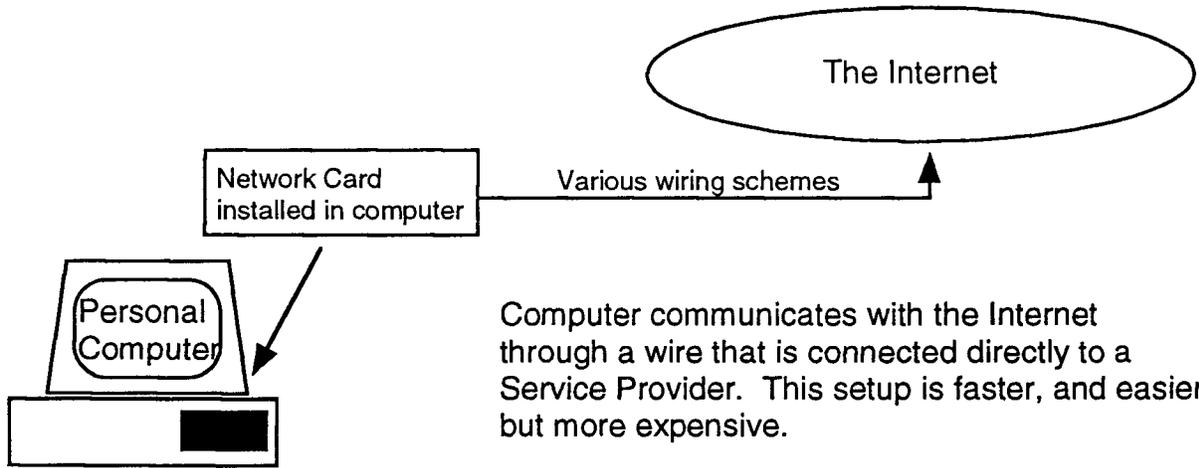
What can't I do?

Potential Remote Access problems

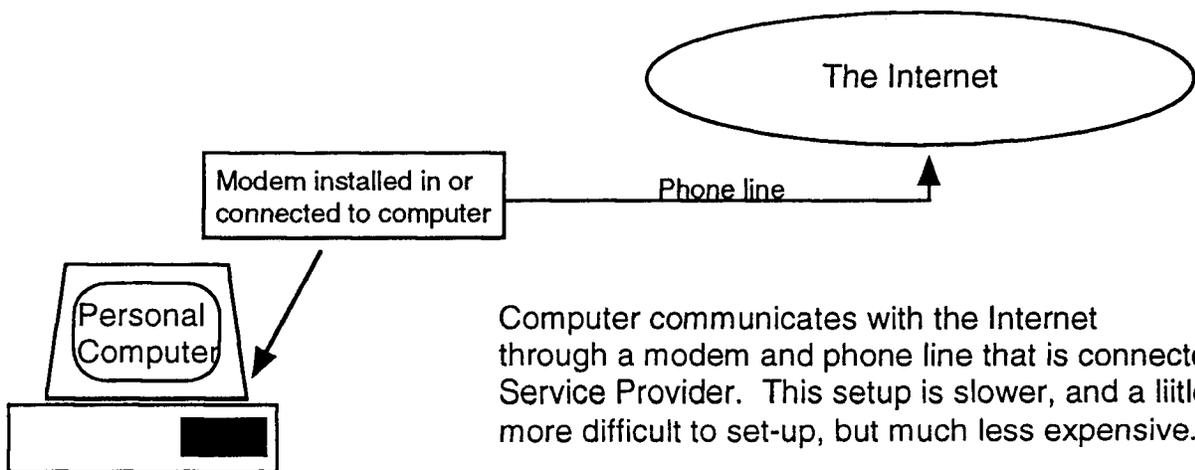
Tying it all together

Hard-wired vs Dial-up: The differences

Hard-wired connection



Dial-up connection



Local Service Providers

SouthWind Internet Access, Inc

Contact: Jeff Stehman
Phone: (316) 263-7963
Fax: (316) 267-3943
Email: staff@southwind.net
Area codes: 316
Fees: \$22/month, \$225/year (flat rate)

Tyrell Corp

Contact: Kerri McCoy
Phone: (800) TYRELL-1
Fax: (816) 741-5315
Email: support@tyrell.net
Modem: (816) 454-6788 (login "info")
Area Codes: 816, 913, 504, 316
Fees: \$10/month, \$90/year (30 hrs/month)

SkyNET Corp

Contact: Mike Johnson
Phone: (816) 483-0002
Fax: (816) 483-8852
Email: info@sky.net
Area Codes: 816, 913
Fees: \$17.95-\$79.95/month

More service provider info can be obtained at:
<http://www.primus.com/staff/peggy/provider.html>

Modem Purchase Guidelines

Speed: 28,800 Baud (28.8K BPS)
(Faster is better. 28.8 modems aren't that expensive anymore, and are much more reliable than 14.4 modems)
You get what you pay for--Stick with US Robotics, Hayes, Supra. Don't buy Zoom.
Get internal on PC compatible.
Talk to provider about modem conflicts.
Don't get discouraged! Setting up a modem can be difficult at first, but once it's done, there's not much to it.

Getting on the Internet

The longest journey begins with a single step. On the Internet, that step is finding a connection. Here's how to go about it.

by Andrew Kantor

Possibly the most frequently asked question about the Internet is simply, "How do I get on?" If you have a computer and a modem, it's easy. You start by deciding what you want to do on the Internet. For example, do you want to participate in newsgroups and access data remotely, or simply exchange e-mail messages?

Unless your organization has a direct Internet connection, you'll need a modem. For about \$100 you can get a 9600bps or 14400bps unit on sale. Although most modems come bundled with simple communications packages like BitCom or ProComm, an investment in a full-featured program such as ProComm Plus or Crosstalk for Windows is well worth the \$60 to \$150 you'll spend. Whatever package you buy, make sure it supports VT100 terminal emulation, and ZModem and Kermit file transfers.

Once you have the hardware, you have to decide where you'll connect. By far the most popular use of the Internet is electronic mail (e-mail), and if all you're looking for is an Internet e-mail address, start close by: in the office.

Many corporations are already part of the Internet but choose not to make their connections available to every employee. If you use an internal e-mail system on the job, there's a good chance a connection to the Internet is only a phone call away, especially if your company has divisions or branches in other cities. Speak to your system administrator; the person in charge of keeping your office computers up and running. He or she may be able to set you up with an Internet e-mail address, or even more. If the administrator starts mumbling about "TCP/IP stacks" and "IP addresses," you're on the right track, even if you don't know what those mean.

If you can't connect at work, an electronic mail address is easy to get elsewhere. First, check out a local bulletin-board system (BBS). Run by anyone from professional computer consultants to college students, local BBSs often have e-mail connections to the Internet. Because they're small, accounts can range in price from free to \$20 to \$30 per month. And because they're local, you never have to worry about toll or long-distance calls.

There are a few ways to find a local BBS in your area. First, ask around; a computer whiz you know can probably point you in the right direction. If

not, pick up an issue of Computer Shopper, which prints a list of local BBSs every month by area code. When you find one near you, dial in with your modem or by voice and ask what kind of Internet access it provides. Also find out whether you can sign on for a few weeks for free to test-drive the service.

An alternative is to sign up for one of the nationwide commercial online services, such as America Online [(800) 827-6364], CompuServe [(800) 848-8199], GENie [(800) 638-9636], and Prodigy [(800) PRODIGY]. Besides a wealth of discussion areas and file libraries, each of these systems allows you to send and receive mail to and from the Internet. You pay a monthly fee, anywhere from \$5 to \$10, which includes several hours of online time. After that, you may pay a few dollars per hour for time online.

Be careful, though: Some services charge to send e-mail, some charge you to receive e-mail from the Internet, and some limit the size of the files you can send or receive. Check before you sign up.

Another choice is MCI Mail [(800) 456-MAIL], a nationwide e-mail-only service that will provide you with an Internet address and an 800-number to dial. There are no hourly charges, but you pay a yearly fee (about \$30), plus at least 50¢ per message. There is no charge to receive mail. MCI Mail is a good option if you only need to send occasional messages.

Services with a Smile

But the Internet is more than just e-mail; there are 5,000-plus Usenet newsgroups to follow, Gopher servers to browse through, ftp sites to plunder, and WAIS databases to search. Although you can do some of it with e-mail, it can be a chore (see "E-Mail Tricks," May, Internet World). If you're looking to get more than messaging from the Internet; if you want so-called "full access"; start by looking for a public-access dial-up provider in your area.

There are two easy ways to find a dial-up provider near you. If you know someone with at least e-mail access to the Internet, you can get the PDIAL list, which lists Internet access and service providers by area code. By sending an e-mail message to info-deli-server@netcom.com with the phrase "Send PDIAL" as the subject, you'll receive the latest list. You can also call the Internet Network Information Center (InterNIC) at (800) 444-4345 and work your way through its menus with a touch-tone phone.

Another option is Delphi [(800) 695-4005], a nationwide Internet provider and online service. It offers full access to Internet tools with a menued interface, and probably has a local phone number you can use for access. (America Online, although more expensive than Delphi, offers access to some

Internet services; see News section.)

Public-access providers vary widely in the services and prices they offer. Following is what you should ask a potential provider:

- * Do you provide telnet, ftp, and disk space?

With at least telnet available, you can access all the Internet's other tools:archie, Gopher, IRC (Internet Relay Chat), WAIS, and others. You'll want ftp to download files from remote computers, and you'll need some disk space to store those files before you download them to your PC.

- * Do you charge a flat monthly (or quarterly) fee, an hourly rate, or some combination of the two?

Unless you will be using your connection only occasionally, it's best to find a provider that will let you pay a flat monthly rate, but it shouldn't be more than about \$20 to \$25 for full access. Timed access shouldn't cost more than \$3 or \$4 per hour. (For comparison, CompuServe, one of the more expensive commercial services, charges \$4.80 per hour for high-speed access.)

- * What modem speeds do you support?

If it doesn't support at least 9600bps access, look elsewhere. You may only own a 2400bps modem now, but 28800bps is quickly becoming the standard, and high-speed modems are available for less than \$100.

- * How many modems do you have? How many active users?

If the ratio of users to modems is greater than about ten to one, you may find yourself with a lot of busy signals.

- * What kind of interface do you have?

If you aren't comfortable with the Unix dollar-sign prompt, look for a menu interface or even a graphical one.

- * What tools do you have available locally?

Sure, you can telnet for just about any tool, but better systems will havearchie, Gopher, and WWW clients locally, to save you the trouble.

- * What newsgroups do you subscribe to?

There are more than 5,000 Usenet newsgroups, and the system you choose

should get most of them, especially the alt.hierarchy.

* What kind of support can I get?

Better services will have both online and voice support, and some even have a full-time staff to help you with the problems you're bound to encounter.

* After you choose a provider and sign up, what do you get for your money?

With New York's Panix, for instance, you pay a one-time \$40 sign-up fee, plus an optional one-time \$15 fee for high-speed access. Then there's a \$57 charge for three months of full Internet access. Panix; like most dial-up providers; has all the tools you'll want: archie, ftp, Gopher, WWW browsers, plus your choice of several mail programs, at least four Usenet newsreaders, and use of disk space on their Sun SPARCStations. Most other providers offer a similar mix of services and features.

SLIP Sliding Away

Another; and in many ways better; method for connecting to the Internet is by reaching another computer through a SLIP or PPP connection. SLIP (Serial Link Internetworking Protocol) and PPP (Point-to-Point Protocol) are two types of connections that make your computer not just a window to the Internet but a part of it. And they do it over a standard telephone line.

When you have a SLIP or PPP connection, you can't use standard communications software to dial your provider. Rather, you use a version of Internet software; Gopher, WWW, a newsreader, or mail; designed for your home computer. (Mosaic or WinGopher for Windows, and Eudora for the Mac are a few examples.) Your provider (which you find through the PDIAL list or the InterNIC) still does a lot of the dirty work: maintaining a Usenet news server, receiving and passing along your mail, and the like.

What are the advantages and disadvantages of a SLIP or PPP connection? First, you have more control over how you access the Internet. You choose the software, and you can take advantage of your computer's power; the graphical interface, for instance. But you also have to find the software; and pay for it.

A SLIP or PPP connection allows you to do more than one thing at a time in the foreground. In one window on your screen you can be reading mail; in another you can be downloading a file from Sweden. You're only limited by the processing power of your computer.

If you do a lot of file transfers from remote computers via ftp, you save a

step with a SLIP or PPP connection. Instead of transferring a file from, say, Japan to your provider's machine and then downloading it to your PC, you copy it directly to your home computer. (Remember, with SLIP or PPP, your computer is part of the Internet.)

There are some other nifty advantages. By leaving the connection open, and with the right software, you can be your own ftp server. And if your provider is willing, you can even choose your own domain name: steven.com or jennifer.org. But there's a price for all this: Many providers charge anywhere from \$30 and up per month to provide a SLIP line. But for heavy-duty users of the net, it's worth the price.

However, before you go running off to acquire a SLIP or PPP connection, be aware that there are additional difficulties. With a dialup connection, you only need to set your modem speed and terminal type. For a SLIP connection, there's a lot more to wrestle with, such as IP addresses, domain servers, postmasters, and what is likely to be a configuration nightmare, even with a half-dozen README files. Be prepared to spend an afternoon setting up a SLIP connection, and several days in asking and getting answers to your questions.

There are, of course, other ways to connect to the Internet. You can get an account at a local college that is part of the net. You may have to take a course or pay a fee, but generally it means full, untimed access . . . at least until the end of the semester. And many colleges also provide dial-in lines for students who commute. If you have the means, you can buy a server, router, and software and lease a high-speed T-1 or T-3 line for a full-speed connection; that's the way many corporations connect.

There are intermediate options as well. Organizations like Performance Systems International (PSI) in Reston, VA [(800) 827-7482] will lease you all or some of the equipment you need, including the hardware and connections, and even maintain it for you.

The beauty of it is that no matter how you connect, you still have access to the same conversations, information, and resources of the worldwide computer network. So get connected, and we'll see you on the Net . . .

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4. FILE TRANSFER

File Transfers

by

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Abstract

This short paper is written to provide an overview of making file transfers on the Internet. The book "The Whole Internet" by Ed Krol was relied on heavily as well as the expertise of our colleagues to generate these descriptions. Examples were provided with assistance of DASC employees.

The paper presents background to the file transfer protocol (**ftp**) to introduce the reader to the subject. The sections include:

- (1) Introduction to file transfer
- (2) Listing the file system,
- (3) Navigating through the file system,
- (4) Transfer modes,
- (5) File transfer commands,
- (6) File structures and data compression,
- (7) Access ftp through an Internet browser,
- (8) Examples.

Introduction to File Transfer

The ftp "File Transfer Protocol" moves files from one computer to another. It does not matter where the computer is located, or how they are connected, or whether or not they use the same operating system. What is needed is that the computers can "talk" the FTP protocol and are connected to the Internet. Basic command structure is the same from machine to machine. It is the common "language" for sharing data. File transfer can be accomplished in three different manners:

- (1) *World Wide Web (WWW)* using one of the WWW browsers such as Mosaic or Netscape with graphic user interface (GUI) (least painful)
- (2) *Hybrid software* such as Windsock FTP (WSFTP) and WINQVT that provide utilities and help to make FTP easier to use
- (3) *Command mode* where file transfer tasks are negotiated at the prompt (most painful).

The internet provider may supply you with file transfer routines or they may not. Netscape and Mosaic have file transfer protocol built-in so the user generally points and clicks the mouse to find, display, and download or send files. These Internet browsers have utilities to make successful downloads of most kinds of information including ASCII text, graphics, and binary files in either compressed or uncompressed format. If the right software is not available, the newer versions of these browsers are smart enough to suggest what you need. In any event, even if you have a browser, we believe that a little background is worth having in order to appreciate what is going on and allow you to better troubleshoot the situation if there are problems. Furthermore, file exchange may occur in different ways among your correspondents. It is good to know what type of files there are and how they are handled in order to solve the problems so that you can go on communicating electronically.

The ftp protocol is a complex program because of the different ways to manipulate files and file structures. Files can also be stored in different ways including ASCII or binary, compressed or uncompressed, to name a few. The use of the GUI on the WWW makes most of these operations transparent to the user.

To get access to files you need an account to be able to log into an ftp daemon (defined as system jobs, such as the ftp protocol, that run in the background all of the time) on a remote "host" machine. An Internet browser can get you there fast. If you need to log in as is common on FTP sites, you will nevertheless need a login name and a password. Another option is anonymous or guest FTP which is a special service that lets you access public databases with a shared public account. Some sites have partial implementation of FTP and these facilities may not be available to you.

Browsing on the Remote Machine

Listing a Directory's File Contents

The commands **dir** and **ls** list directory information on the remote computer. The **ls** command gives a simplified listing of file names with no additional information. The **ls** command is also a UNIX command which accepts UNIX switches. To display a more descriptive listing of files, type **ls -l**. The **dir** command also produces a more complete listing, much like the **ls -l** command. Below are some examples of listing files on the remote computer.

```
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for file list.
huc_bnd
rwd
soils
rtk_haz
landcovr
gps
admn_bnd
226 Transfer complete.
55 bytes received in 0.11 seconds (0.50 Kbytes/sec)
ftp> dir
200 PORT command successful.
150 Opening ASCII mode data connection for /bin/ls.
total 7
drwxr-xr-x 3 12402 staff 512 Aug 31 1994 admn_bnd
drwxr-xr-x 2 12402 staff 512 Jul 16 21:42 gps
drwxr-xr-x 2 12402 staff 512 Sep 6 1994 huc_bnd
drwxr-xr-x 2 12402 staff 512 Jul 17 15:27 landcovr
drwxr-xr-x 2 12402 staff 512 Sep 6 1994 rtk_haz
drwxr-xr-x 4 12402 staff 512 Sep 2 1994 rwd
drwxr-xr-x 4 12402 staff 512 Sep 2 1994 soils
226 Transfer complete.
442 bytes received in 0.38 seconds (1.16 Kbytes/sec)
ftp> cd gps
250 CWD command successful.
ftp> ls -l
200 PORT command successful.
150 Opening ASCII mode data connection for /bin/ls.
total 15280
-rw-r--r-- 1 12402 686364 Jun 5 23:37 r149_153.exe
-rw-r--r-- 1 12402 869294 Jun 10 00:50 r156_160.exe
-rw-r--r-- 1 12402 883824 Jun 16 23:02 r163_167.exe
-rw-r--r-- 1 12402 920273 Jun 23 23:53 r170_174.exe
-rw-r--r-- 1 12402 944754 Jul 7 13:08 r177_181.exe
-rw-r--r-- 1 12402 772120 Jul 12 02:11 r184_188.exe
-rw-r--r-- 1 12402 997745 Jul 16 21:45 r191_195.exe
226 Transfer complete.
898 bytes received in 0.33 seconds (2.72 Kbytes/sec)
ftp>
```

Some ftp utilities will allow you to list files on the local computer. This is done through the **lls** command. This is not available on most typical ftp software. The command usage is identical to the **ls** command.

Navigating the File System

The directory structure on the remote computer can be negotiated with the **cd** command. The command's usage is: `ftp> cd directory_name`

When you ftp to a remote computer you are in the same directory as if you had logged into that machine directly. The usage rules are the similar to UNIX and MSDOS change directory command. They include:

1. cd alone prompts the user for a remote directory
2. if directory is .., it moves you up one level from the directory at which you are currently positioned
3. to move through several directories at once type each directory name separated by a forward slash on a UNIX system (/) or a backward slash on a DOS system (\)
4. access is determined by the file and directory access permissions of the log in name
5. most ftp daemons restrict access to one portion of the file system when logged in as anonymous or guest, so you may not be able to move into certain directories
6. when logged in as anonymous, typing "**cd /**" will return you to the default log in directory
7. many ftp servers are case sensitive, so upper and lower case do make a difference

The negotiation of the local directory system is accomplished by the **lcd** command. The specifications of **lcd** are about the same as **cd**. One nice feature of the lcd command is that if you type lcd with no directory name the command will return you to the default working directory on the local computer. To display the current working directory type the print working directory command; **pwd**. Some examples are listed below.

```
ftp> pwd
257 "/" is current directory.
ftp> cd pub
250 CWD command successful.
ftp> ls
200 PORT command successful.
150 Opening ASCII mode data connection for file list.
unix
win
incoming
226 Transfer complete.
21 bytes received in 0.05 seconds (0.42 Kbytes/sec)
ftp> cd unix
250 CWD command successful.
ftp> cd ../..
250 CWD command successful.
ftp> pwd
257 "/" is current directory.
ftp> lcd d:\public
Local directory now D:\PUBLIC
ftp> lcd
Local directory now C:\WINDOWS
ftp>
```

ASCII and Binary File Transfer Modes

Binary transfers preserve the bit sequence of the file so that the original and the copy are bit-by-bit identical, even if a file containing that bit sequence is meaningless on the destination file.

ASCII is really "text" mode. In ASCII mode transfers are treated as sets of characters; the client and server try to ensure that the characters they transfer have the same meaning on the target computer as they did on the source computer. In other words, the ftp automatically translates the file from one flavor text file, e.g., Mac, to another text file, e.g., IBM VM file. Thus, the file would be readable by both machines.

The mode which files are transferred is determined by two commands **ascii** and **bin**. Simply typing one or the other command toggles the mode which you are transferring. Most ftp software allows the user to select a default mode of transfer. Common file types and modes include:

Table 1. Common File Types and Modes

<u>FILE</u>	<u>MODE</u>
DXF	ASCII, possibly binary
text file	ASCII, by definition
spreadsheet	probably binary
database file	probably binary, possibly ASCII
word processor file	probably binary, possibly ASCII
program source code	ASCII
electronic mail messages	ASCII
UNIX "shell archives"	ASCII
UNIX "tar file"	binary
backup file	binary
"compressed file"	binary
"uuencoded" file	ASCII
executable file	binary
"postscript" (laser printer) file	ASCII
RTF, "rich text format"	binary
Images of picture, TIFF, GIF, BMB	binary

If you are transferring files between identical machines, you still should use the proper mode of transfer, ASCII or binary. FTP does not know the machines are identical. If you attempt to transfer a binary file in ASCII the translation will occur, as ASCII normally does, but this may damage the data making the file unusable. All the bits are important in a binary transfer. This is not the case with ASCII file transfer. Beware.

For those files listed in Table 1 that are probably binary types, try transferring them in binary first and see if they work correctly. Elaborate word processing packages usually create binary output files. Most word processing packages also have an option to store the files as ASCII or text files. If you write an ASCII file, you can transfer it as an ASCII file. However, some of the formatting is usually lost in the text file. Another option in transferring word processing packages is to convert the file to a "rich text format" (RTF). RTF files can be read by most word processing packages and maintain all or most of the formatting. This type of file would transfer in binary mode. Executable files are generally binary files, but with exceptions. Compiled and executed programs are always binary. "Scripts," lists of commands provided to the operating system, are always text files, e.g., autoexec.bat or *.bat files in MS-DOS and scripting languages in UNIX.

Getting started with FTP

At prompt type ftp and remote machine name:

```
>ftp gisdasc.kgs.ukans.edu
```

```
FTP
File Edit State Window Help
www.kgs.ukans.edu
ftp> open www.kgs.ukans.edu
Connected to gisdasc.kgs.ukans.edu.
220-Hello, mettille it is Wed Jul 19 09:47:43 1995 at gisdasc
220-
220 gisdasc FTP server (Version wu-2.4(1) Tue Feb 21 11:04:09 CST 1995) re
User (gisdasc.kgs.ukans.edu:(none)): anonymous
331 Guest login ok, send your complete e-mail address as password.
Password:
230 Guest login ok, access restrictions apply.
ftp> help
Commands may be abbreviated. Commands are:
?          debug          ls             put           status
append     dir            mdelete       pwd           trace
ascii      disconnect     mkdir          quit          type
bell       get            mget          quote         user
binary     glob           mkdir          recv          verbose
bye        hash           mls           remotehelp
cd         help           mput          rename
close     lcd            open          rmdir
delete    literal       prompt        send
ftp>
```

Microsoft's WFW ftp example

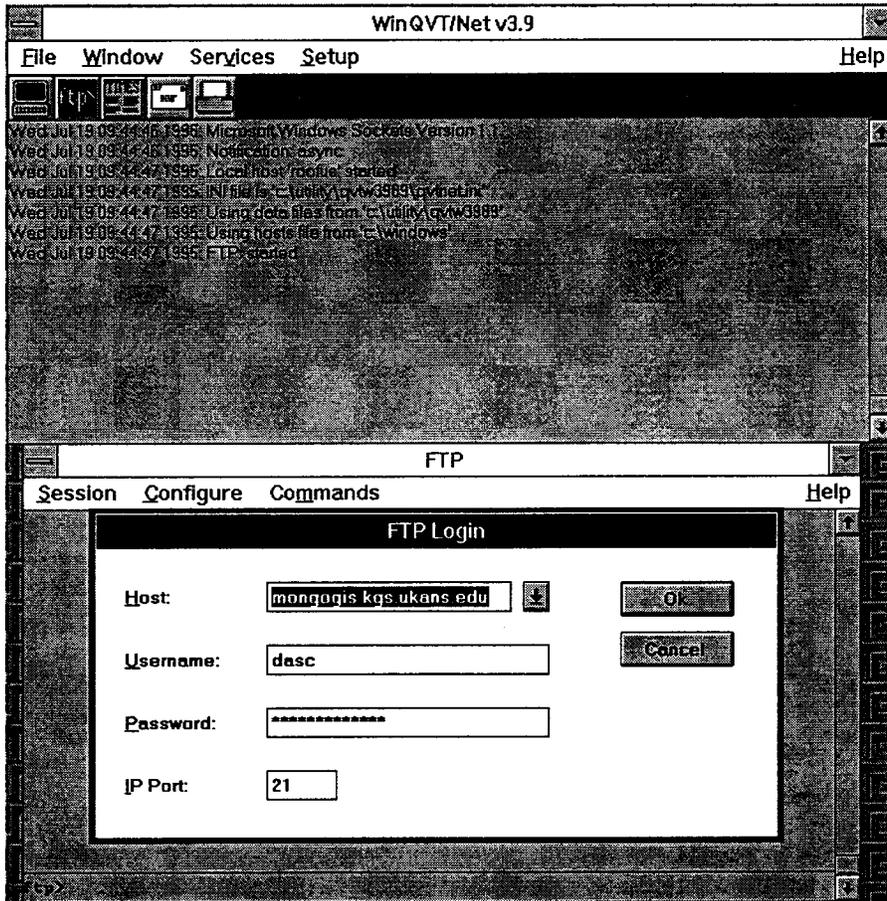
This will make a connection with the remote computer. Then what is called an ftp daemon will prompt you for identification with log in name and password.

Once you are logged in, you are ready to start transferring files. You can retrieve a file from the remote machine using the command **get** and place it on the local machine. You can use the command **put** to take a file from the local machine (the one initiating the transfer) and put it on the remote computer as long as the remote system allows you this level of access. The command structure is:

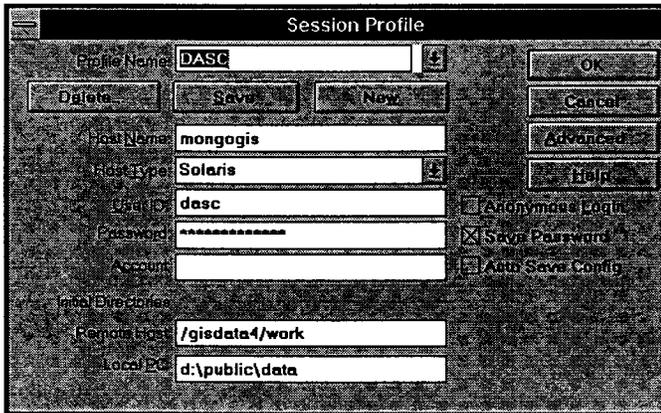
```
ftp> get source-file destination-file
```

The destination file is the name of the newly created copy and is optional. Remember that most systems are case sensitive, so watch the upper and lower case combinations. If you are transferring from a system which allows long filenames and does not conform to the ISO naming standard of 8.3 you should specify the destination filename, otherwise the ftp software will truncate the filename. This could cause some problems when several files have similar names. The file will be sent to the current directory that you are logged into on either the local or remote computer, depending on the type of file transfer performed (**get** or **put**). Once a command is initiated successfully, this will be acknowledged with a message of this success, type of data, amount of data, and average transfer rate, time taken to transfer the data.

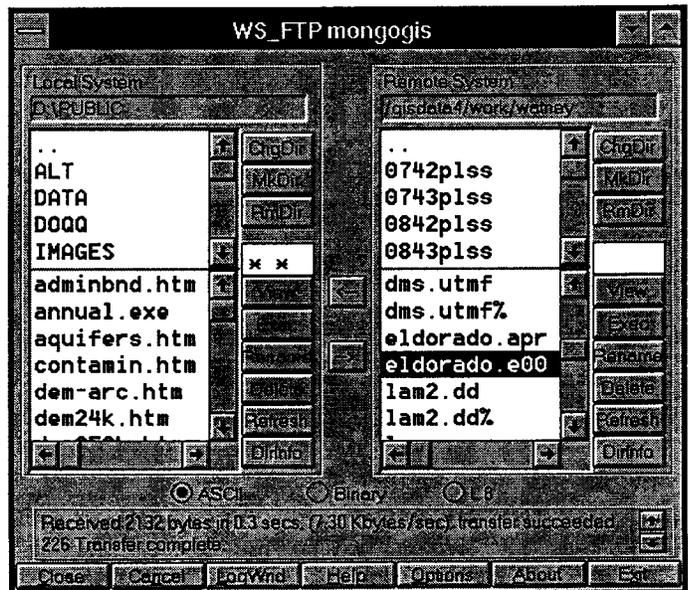
You may have an FTP mouse-based or graphic-user interface (GUI) in which you can select files by clicking on the files with your mouse and download/upload files by pushing a button. Examples of some FTP GUI interfaces are on the following page. These systems help automate much of the process of logging in, navigating through the file system, and listing directory contents.



Example of WinQVTNet interface for ftp and other network utilities



Example of WinSock ftp interface



Transferring Multiple Files

Multiple files can be transferred in groups at a time using **mput** and **mget**. The **mput** command takes the files following the command and moves them to the remote computer. The **mget** command moves files from the remote to the local computer:

```
ftp> mput source-file1 source-file2 source-filei...
```

Wildcards and partial names can be used for files to be included, e.g., asterisk (*) will match zero or more characters and question mark (?) will match one character.

A simple session might include:

```
ftp> cd test    change working directory of the remote machine
```

```
ftp> ls b*     list files in remote directory that begin with the letter "b"
```

```
ftp> mget br*  retrieve all files starting with the letters "br"
```

You will be prompted if you want to get all of the files that are available. You will answer yes or no after each prompt. If you prefer to transfer all files without the prompt, type **prompt** to turn off the prompt before you get the files. By retyping **prompt** you can toggle the prompting to reactive.

To view the progress of a file being downloaded you can turn a hash display on. Typing **hash on** causes the ftp system to display a pound (#) character as packets are recieved or sent. This command also toggles on or off when you enter the hash command.

If you desire to change the remote or local directory when making file transfers, use **cd** for changing the remote directory and **lcd** for changing the local directory. Do not attempt to define a new directory to write to in the **mget** or **mput** command line (the directories where you receive or get files from must already exist on the file systems). Also you cannot download a directory using **mget** or **mput**.

Table 2. FTP Command Summary

ascii	Enters ASCII mode, for transferring text files
binary	Enters binary mode, for transferring binary files
cd <i>remote-directory</i>	Changes the working directory on the remote machine
close	Ends ftp session to a particular machine, but leaves command line to open connection to new system
delete <i>filename</i>	Deletes the named file on the remote system
dir <i>file destination</i>	Give the full directory listing on the remote machine. <i>File</i> and <i>destination</i> are both optional. <i>File</i> can either be a single file or a wildcard construction with asterisk (*) or in UNIX a question mark (?). If file is omitted, the listing will show all the files in the current remote directory. The <i>destination</i> is where the output should be put, e.g., file on the local machine. If no file is given listing appears on the terminal.
hash	Tells ftp to print a pound sign (#) every time a block of data is transferred by a get or put command.
help <i>command</i>	Prints short bit of documentation about command.
lcd <i>directory</i>	Changes the default directory on your local machine to named directory.
ls <i>file destination</i>	Give short directory listing on remote machine.
mget <i>file-list</i>	Gets multiple files from the remote machine. List of files or use of wildcard.
mput <i>file-list</i>	Puts multiple files onto remote machine.
open <i>ftp-address</i>	Connects to the named machine. Need to close old connection first.
prompt	Used with mget or mput to tell ftp to prompt you for confirmation before transferring each file. This is usually the default option. The prompt can prevent overwriting existing files.
pwd	Prints the name of the current remote directory.
quit	Closes any connections that are currently open, and exits ftp .
user <i>user-name</i>	Send user name to remote machine to log in. If you type name in wrong once, use user to retry.

Anonymous FTP

Anonymous FTP allows users who do not have a log in name or password to access certain files on a computer. There are restrictions in accessing the anonymous directory system of the host computer. For example, anonymous users can normally only **get** files. Unless permission is given, new files cannot be **put** into an anonymous directory nor can files be modified that already exist. Only certain files can be transferred.

Once into **ftp** the log in name, *anonymous*, gains inquirer access to the computer hosting this directory. Any string of characters can serve as the password. It is good form to include your e-mail address as password to help system manager track users and where the data is being distributed. Many systems limit the number of anonymous logins, so if access is denied the sever has probably reached the mixium number of anonymous logins. After signing in as *anonymous* you are allowed to **get** those files which are permitted.

You can move to subdirectories by giving the **cd** command and the name of the subdirectory, or move back to the "parent" by using **cd ..** argument. Typically when you log in anonymously users are allowed access to several directories. Most systems have a **pub** directory where all the public data and programs are located for general distribution. Within that directory there are sub-directories which break the programs into classification types (i.e. different platforms: UNIX DOS, WIN, MAC or types of software: utilities, games, images). Some servers will display available files when you enter a subdirectory or have a README or INDEX file. If you are allowed to write or "put" files as an anonymous user there commonly is a directory called **incoming**. Within this directory all users can transfer (put) files to the server. System administrators monitor this directory on a regular basis and either delete the files or move them to the pub archives. There are large number and many varieties of **anonymous ftp** servers out there to be accessed!

Handling Large Files and Groups of Files

Large files can take a long time to transfer. This costs time and money. In some situations, large file transfers can also slow down or limit access for others. File compression can be used to reduce a large file and to archive a large number of individual files, large or small. These compressed aggregate files are much cleaner and faster to move across the Internet. Furthermore, most of the **anonymous ftp** servers store files in compressed archives. These files must be "unpacked" once you have transferred them to your system.

Files can usually be compressed from 30% to 80% or more depending on the file type and the compression utilities. Some of the popular utilities include:

Table 3. Compression Utilities

<u>Compression Program</u>	<u>Decompression Program</u>	<u>File Suffix</u>	<u>Typical Filename</u>
compress	uncompress	.Z	rfc1118.txt.z
pack	unpack	.z	textfile.z
Stuffit	unsit	.sit	program.sit
Packit	unpit	.pit	report.pit
PKZIP	unzip41	.ZIP	package.ZIP
zoo210	zoo210	.zoo	picture.zoo

The file name extensions give a hint as to how a file has been compressed and what utility to use to uncompress the file. UNIX boxes use **compress** and **uncompress** utilities (.Z file extension). MS-DOS boxes often use PKZIP (.zip) and Mac users often use Stuffit (.Sit).

Whole programs with many files can be transferred in over the Internet using a some compression/archival programs. PKZIP and Stuffit allow multiple files to be compressed and then archived into one single file. Other programs compress only one file at a time and do not archive the data in a single file. UNIX programs and data many times are archived using a utility called **tar**. A file.**tar** can be created to contain all data to be distributed. This tar file is then usually compressed with UNIX compress command leaving the file to be retrieved with a ".tar.Z" extension.

Popular FTP Sites

<u>Owner</u>	<u>URL</u>	<u>Type of Information Available</u>
Computer Oriented Geologist Society	ftp://ftp.csn.org/COGS/	Public domain software
USGS/EROS ftp site	ftp://edcftp.cr.usgs.gov/	Digital map data
Kansas Geological Survey	ftp://gisdasc.kgs.ukans.edu/	GIS databases
Xerox Webster Research Center	ftp://spectrum.xerox.com/	GIS databases
Indiana University	ftp://winftp.cica.indiana.edu/	Windows public domain soft.
Microsoft	ftp://ftp.microsoft.com/	Microsoft release updates
Digital Corporate Research	ftp://gatekeeper.dec.com/	Variety of public domain soft.

Tricks and Tips

1. You can log in to a remote machine using TELNET and FTP from that machine to a second remote computer in order to pass files between two remote machines.

2. The file command in UNIX at the ftp prompt will return information on the type of file:

```
(UNIX ONLY)
% file file-name
file-name: ascii text
```

3. You can use the get command in UNIX to display an ascii file to your terminal by specifying the output filename as the default terminal.

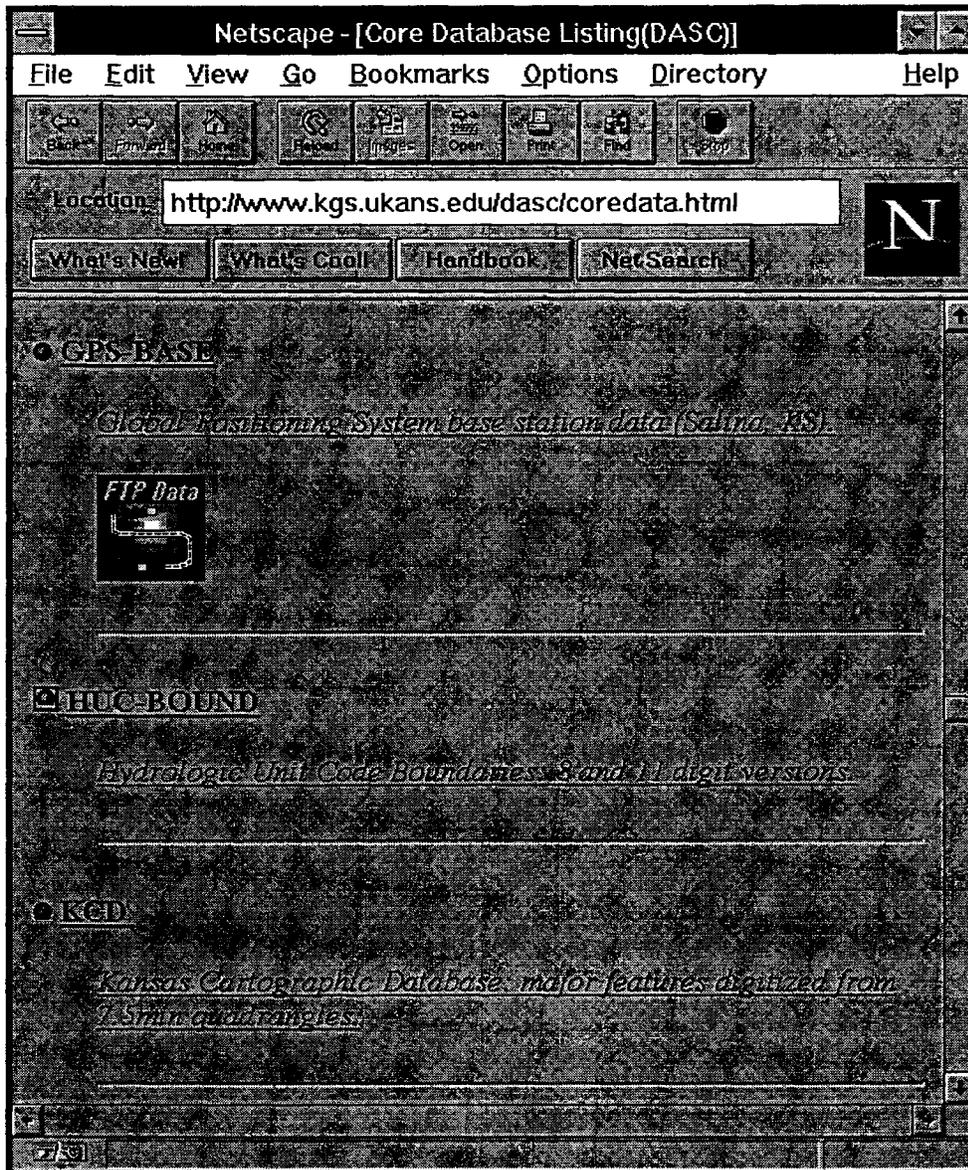
```
(UNIX ONLY)
ftp>get filename /dev/tty
This will get the file requested and scroll the output to your command window.
```

Accessing FTP site via Internet Browser

Internet browsers such as Mosaic or Netscape also handle file transfers with anonymous ftp systems. Once a ftp connection has been established, usually handled by a hyper-text link to a ftp server, users can access and download files. In the example below, there is an ftp icon which users click to access the ftp server. The user can also click on the brief descriptions to retrieve more detailed metadata (data about data) information. This example illustrates how

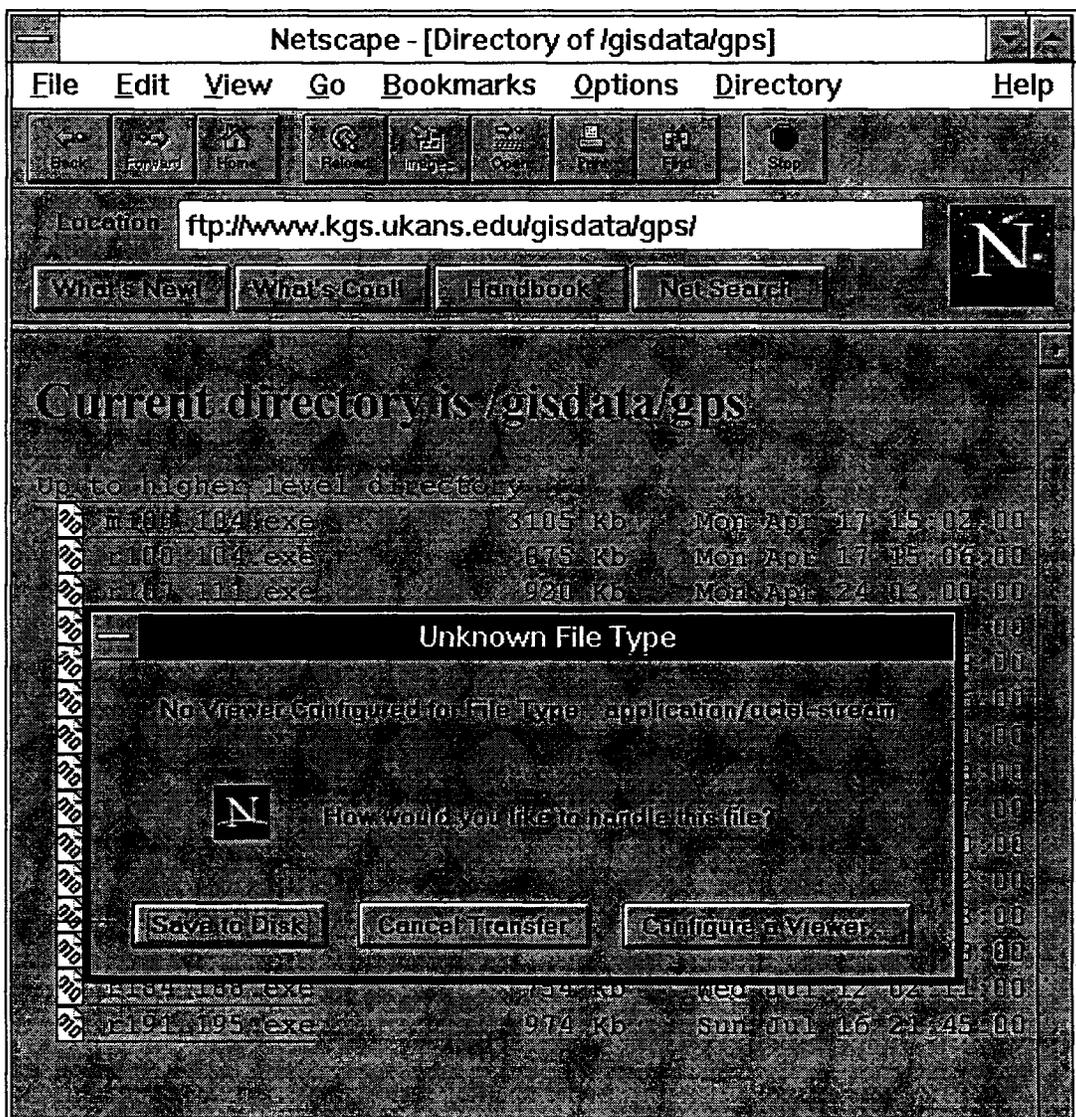
on-line catalogs can be developed utilizing the WWW.

Once you click on the ftp icon or hyper-text link the display will change to something that looks similar to file manager in Windows. At the top of the page your current directory on the ftp server is displayed. Users can retrieve files by clicking on the filenames that are listed. The example on the next page shows what happens when you click on a filename.

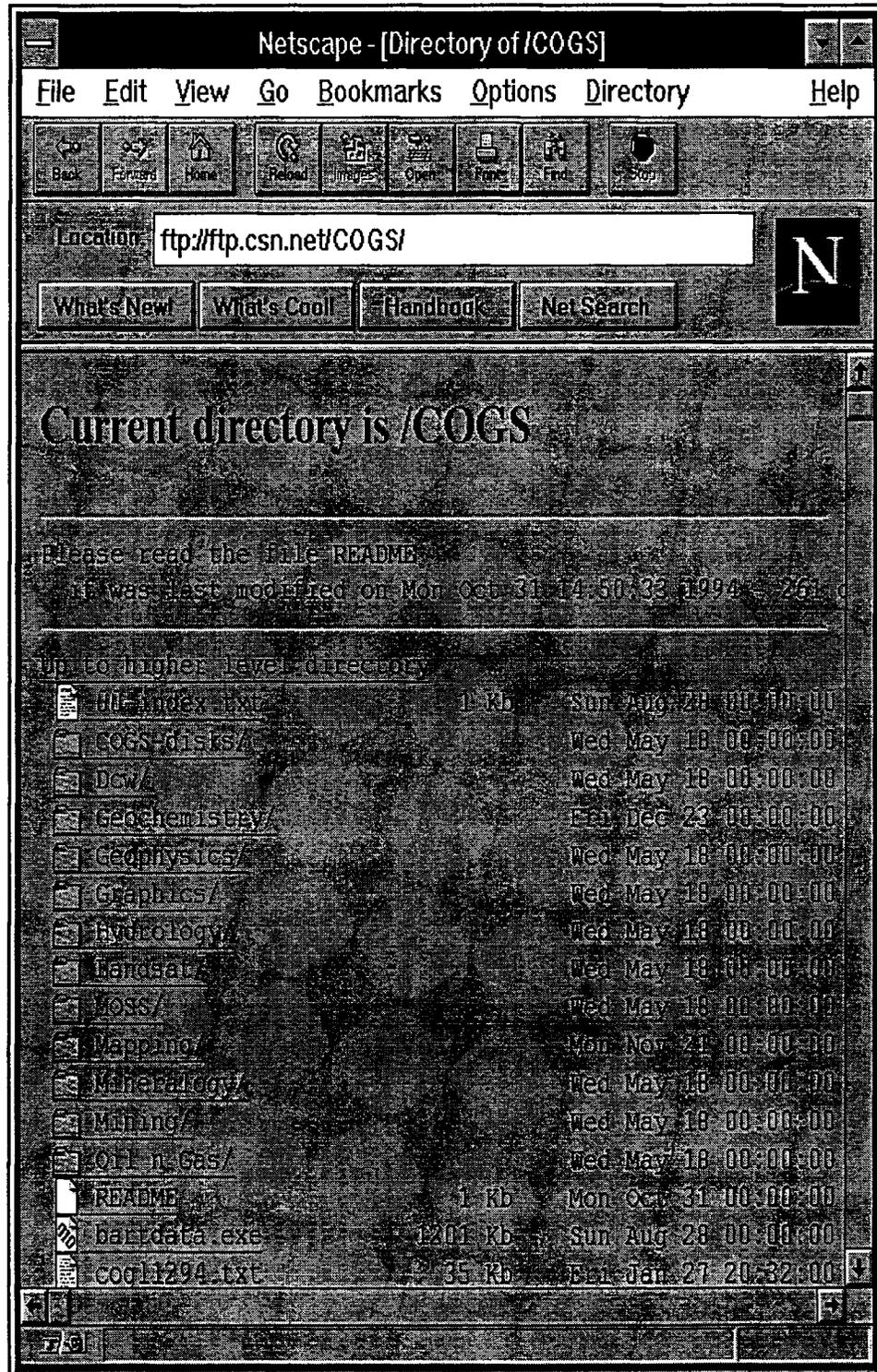


Since Netscape is not configured to handle this type of file, the user is prompted to choose an action. Either configure a viewer that will display the results within Netscape, cancel the current operation, or save the file to the local hard disk. If you select save to disk, you will be prompted to select a local drive, directory, and filename to save the file. Once the file has been successfully transferred you will be returned to the file listing display.

To navigate through the file system users simply click on the directory names that are listed. Note: directories and files have different shaped icons in front of their names. Refer to the



example below on the differences between files and directories. One nice feature is that when you click on an ascii file the contents of the file are displayed in the Netscape view window. In the example below, if you selected the README or 00-index.txt files the text is displayed so you can read about the contents of this directory and decide what files you will download. This feature is not readily available on most command line modes of ftp software.



Common File Types and Transfer Modes

File Type	Transfer Mode	Typical File Extension(s)
Text, ASCII	ASCII	TXT, RTF, READ.ME
AutoCAD Exchange File	ASCII, possible BIN	DXF, DXB
Database File	BIN, possible ASCII	DBF, DB, MDB
Spreadsheets	BIN	XLS, QP1, WK, WQ
Source Code	ASCII	F, F77, FOR, C, PAS, CPP, H
Compressed Files	BIN	ZIP, GZ, Z, ARC, ZOO, Sit
Images and Pictures	BIN	GIF, BMP, TIFF, JPG, RS
Postscript	ASCII	PS, ILL
Wordprocessor	BIN	DOC, WPD
Mail Messages, FAQs	ASCII	TXT
Spatial Data	ASCII	DLG, DEM, E00, GEN, LGO
Encoded data	ASCII	UUE
Tape Archive (TAR)	BIN	TAR
Executable	BIN	EXE, COM

Downloading Files from An FTP Server Using Netscape

Retrieving winzip56.exe and decline.zip
from the Kansas Geological Survey/DASC WWW site

1. Navigate to location which contains the FTP files that can be downloaded.

URL:ftp://gisdasc.kgs.ukans.edu/pub/win/

This file will take you to the FTP server directly.

The FTP server can be also accessed through the http URL:

http://gisdasc.kgs.ukans.edu/

Note that you can move *<Up to higher level directory>* by clicking the mouse on this text. It is possible to quickly navigate through the directories.

2. Proceed by clicking on the file that you want to download.

The file name's extension (i.e., zip, xls, dbf) determines how Netscape will handle the file. If no helper applications are available to read or display the file, you will be prompted as to how to handle the file.

When Netscape recognizes that a helper application is available it proceeds to run that application. This may be a viewer for a graphic or in the case of compressed files an application program like **WinZip** to view the compressed file archive and to extract the files.

3. Proceed to save the file to disk.

You will be prompted with standard menu as to where you want to save the file.

WinZip will show the files in a *.zip file like decline.zip before the files are actually extracted. You can make a decision as to what you want -- extract the information or discard it. Note: The zip file is served as a temporary file on your local disk and after extracting or exiting WinZip, the temporary file is deleted.

or

4. If you are using an application like WinZip, follow the prompts and menus.

Installation of WinZip, a Windows Client, from a self-extracting compressed file

What is WinZip:

WinZip is a Windows Client that can run alone or under Netscape as a Helper Application. Once installed this software will expedite viewing contents, opening text files of a compressed file before extraction is performed, and directing extracted files to a specific directory.

Installation procedure:

1. Activate the **Program Manager**
2. Select **Run** from the File Menu
3. **Type the full name** of the file including path followed by **\\WINZIP56.EXE**. This file should be in its own temporary directory.
4. Press the **Enter Key**. This will extract the files necessary to install WinZip and should execute the setup program. If not, run setup by hand after the files are extracted.
5. **Follow the prompts**
6. When the SETUP program is completed, you can delete the WinZip installation files in your temporary directory.

Note: Utility files of pkzip that are accessed by WinZip need to be included in the same directory or identified in the WinZip preferences in order for all of the features of WinZip to work.

WinZip56.exe is available on <ftp://gisdasc.kgs.ukans.edu/pub/win/>

Setting Preferences for File Retrieval for Netscape

Netscape automatically initiates necessary actions to provide access to contents transmitted in numerous formats including many of those encountered in FTP transfers. On Windows and Macintosh, the mapping of MIME (Multipurpose Internet Mail Extensions) types is handled by the Helper Applications panel. If you have software that will handle these known files they can be identified here as Helper Applications. When a file with the same extension is encountered by Netscape, the appropriate application will be launched.

Modifications might include:

- a. Launch an application that examines and directs the disposition of compressed file that is about to be transferred.
- b. Run an improved viewing software, e.g., Lview31, or open an imaging software package, e.g., Corel Photo-Paint, when appropriate image files are loaded by Netscape.

An example of a modification might be to change the manner in which *zip compressed files are handled. WinZip is a Window's Client that can list files, view text files, and help direct destination of extracted files before the actual extraction. If the WinZip.exe file (an executable file for this application) is placed as the launch application file for the *zip files that are loaded, this application will run to assist with the process.

Making Modifications to Netscape's Helper Applications:

1. Go to **Options** Menu and open **Preferences**.
2. Pull down list of options in **Set Preferences On** box and select **Helper Applications**.

This menu permits modification of default options of files that are encountered by Netscape. A Type file matches the file format (on the left) with the identifying filename suffix (on the right). The suffixes are usually unique for different file types. You can run through the list and see the different files recognized by Netscape. The button **New Type** can be used to add additional file types.

An action box at the bottom indicates how Netscape is going to handle the file type (what local application to run). The browser will load and view the text directly. The **Ask User** prompt will appear when files are unknown.

3. Highlight *File Type: Application, subtype: x-zip-compressed, extension: zip*

This is a type of compressed file commonly found on in many FTP servers.

4. Go the Action Box. Current selection is Unknown: prompt user. If you have WinZip.exe on the computer, use the **Browse** button to find this file and enter it in the text line of the Action Box. The action should now be launch application.
5. Press OK! WinZip will now be launched when a *.zip file is loaded by Netscape.

Decompressing (Extracting) and Running Decline.exe

Option 1.

1. Unzip the compressed file **decline.zip**.

a. Navigate to the directory containing **decline.zip** using **File Manager**.

Decline.zip and utility program called **pkunzip.exe** must be in the same directory.

b. Perform the extraction (decompression) of the archived files from decline.zip

(1) Go the **File menu**

(2) Go to **Run** option in file menu

(3) Type in the run box the full path name including **pkunzip decline**.

Files will be extracted into same directory.

Option 2.

1. Use the Windows Client called **WinZip** to perform the extraction of decline.zip.

a. Go to **File Manager** and navigate to and highlight **decline.zip** file.

b. Choose **WinZip** found in menu in File Manger and select **Open Archive** while decline.zip is highlighted.

c. Follow instructions to extract this file. You can direct the extracted files to any directory.

Next step, running decline.exe...

2. Go to **File Manager** and navigate to the **decline.exe** file.

3. **Double click** on decline.exe with the mouse.

or choose **Run** from the File menu and type in full path and file name decline.exe.

4. The program runs under DOS and the screen will change accordingly. Please follow the menu in order to run the program.

Hint: Two examples are provided in the program. Use tab key to select different examples or build your own data file.

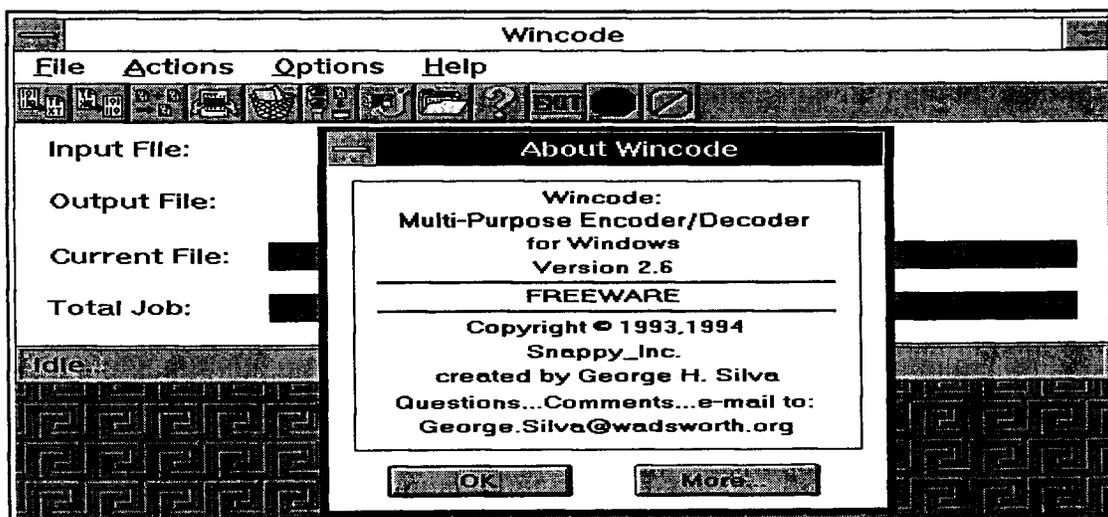
Transferring Binary Data via E-mail

by: Thomas D. Mettill

Most electronic mail systems are designed to transfer text mail files to and from network sites. However, these ASCII-based communication systems do not safely send binary files. In order to safely send binary files across the mail network, users must convert 8-bit binary files to 7-bit ASCII-text files. This process is referred to as bit-shifting or encoding. Users on the receiving end decode the text file converting it back to an 8-bit binary file. There are several standards for bit-shifting which utilize slightly different algorithms. The most common methods are uu/xx and base 64 (MIME - Multipurpose Internet Mail Extensions). These methods allow users to transmit binary files through the E-mail system.

For example, say you have a program or image which you want to share with a colleague. Your colleague does not have ftp software or you do not have an ftp server on which to post the data. You need him/her to review it quickly so you decide to E-mail the file. Typically before binary files are encoded they are compressed to reduce their size. Mail systems have limitations on the size of mail messages that can be sent. A good rule of thumb is to not let your E-mail message exceed 60 Kbytes (984 lines). This limitation may require a binary file to be divided into several parts when encoding. Encoders like Wincode (see below) will divide encoded files into several messages, so they can be mailed out as separate files. After the file is encoded, shifting the 8-bit binary to a 7-bit binary ASCII text, the enclosed file is inserted into the body of the mail file and sent to its destination. On the receiving end the user saves the E-mail message on their local hard drive. Some decoders will require the user to remove extraneous header lines added to the file message by the mail system. More sophisticated decoders like Wincode will ignore these lines and also combine concatenated files. After the user has decoded the file the data can be decompressed then utilized.

This sounds like a complicated process but in reality it is very simple, especially when using a Windows based encoder/decoder. This process is commonplace among newsgroup users and the E-mail community. After you have encoded and decoded a few files you will find this to be a fast and economical means to transfer data across the Internet.



Some Internet Resources for Geology

It's a brave new virtual world out there on the Internet. Curious where to jump off? This a short list of some places to look for geological information. The easiest and most consistent way to access all these places is with a World Wide Web browser, such as *NCSA Mosaic* or *Netscape Navigator*. The sites listed below are a mix of Internet services. If you have a favorite site or service that you would care to share with other people, we would love to include it in future issues See the sidebar, A Short Guide to Common Internet Terms, for definitions for some of the terms in this list.

World Wide Web and Internet Starting Points

Yahoo - A Guide to WWW	http://akebono.stanford.edu/yahoo/
The World-Wide Web Virtual Library: Subject Catalogue	http://info.cern.ch./hypertext/DataSources/bySubject/Overview.html
WWW FAQ (Frequently Asked Questions)	http://sunsite.unc.edu/boutell/faq/www_faq.html
Starting Point for Internet Exploration	http://www.ncsa.uiuc.edu/SDG/Software/Mosaic/StartingPoints/NetworkStartingPoints.html
HTML language primer	http://www.ncsa.uiuc.edu/General/Internet/WWW/HTMLPrimer.html

Collections of Internet Resources

ERIN List of Geology Servers	http://kaos.erin.gov.au/other_servers/category/Geology.html
Galaxy Petroleum Engineering Page	http://galaxy.einet.net/galaxy/Engineering-and-Technology/Civil-and-Construction-Engineering/Petroleum-Engineering.html
Geology Resources	gopher://path.net:8001/11/.subject/Geology
Geowissenschaften / Geosciences	http://www.potsdam.ifag.de/server/geo.html
GO-TECH Petroleum Industry Electronic Information System	http://baervan.nmt.edu
On-line Resources for Earth Scientists	http://www.gly.bris.ac.uk/Depts/Geol/gig/ores/ores.html
Rice University's RiceInfo on Geology	gopher://riceinfo.rice.edu:70/11/Subject/Geology
Sci.geo.petroleum list of earth science resources	http://baervan.nmt.edu/sci.geo.petroleum/home.html
Structural Geology Resources on the Web	http://hercules.geology.uiuc.edu/~schimmri/geology/structure.html
UT at Austin Petroleum Engineering	http://altona.pe.utexas.edu/petroleum.html
UT at El Paso GeoGopher	gopher://dillon.geo.ep.utexas.edu:70/11/EarthScienceRes
WWW Virtual Library: Earth Sciences	http://www.geo.ucalgary.ca/VL-EarthSciences.html
WWW Virtual Library: Geophysics	http://www-crewes.geo.ucalgary.ca/VL-Geophysics.html
Yahoo Geology and Geophysics Page	http://akebono.stanford.edu/yahoo/Science/Geology_and_Geophysics
Zilker Internet Park Geoscience Page	http://www.zilker.net/~hal/geoscience

Professional Societies and Consortia

Active Tectonics	http://www.muohio.edu/tectonics/activetectonics.html
American Association of Petroleum Geologists (AAPG)	http://www.neosoft.com/aapg
American Geological Institute (AGI)	http://agi.umd.edu/agi/agi.html
American Geophysical Union (AGU)	http://earth.agu.org/kosmos/homepage.html
American Rock Mechanics Association (ARMA)	http://sair019.energylan.sandia.gov:70/0/RockNet/rocknet.html
Association for Women Geoscientists (AWG)	gopher://flint.mines.colorado.edu:4501/1
British Geological Survey (BGS)	http://192.171.148.40/bgs/w3/wm/home.html
Canadian Society of Petroleum Geologists (CSPG)	http://www.cadvision.com/oil/cspg/cspg.html
Computer-Oriented Geological Society (COGS)	ftp://ftp.csn.net/COGS/
Geological Society of America (GSA)	http://www.aescon.com/geosociety/index.htm
Geoscience and Remote Sensing Society (GRSS)	http://outside.gsfc.nasa.gov:80/GRSS/
Geoscience Information Group (GIG)	http://www.bris.ac.uk/Depts/Geol/gig/gig.html
Global Change (NASA)	http://gcmd.gsfc.nasa.gov/
Institute of Geophysics and Planetary Physics (IGPP)	http://igpp.ucsd.edu/
International Association of Mathematical Geologists (IAMG)	ftp://iamg.org/pub/
International Organization for Standardization (ISO)	http://www.iso.ch/welcome.html
International Electrotechnical Commission (IEC)	http://www.hike.te.chiba-u.ac.jp/ikedai/IEC/home.html
Jet Propulsion Laboratory (JPL) Home Page	http://www.jpl.nasa.gov/
National Petroleum Council (NPC)	http://www.npc.org/npc/
National Science Foundation (NSF) Geosciences	http://www.nsf.gov/geo/start.htm
National Science Foundation (NSF) NSF Research Awards	http://www.nsf.gov/nsf/awards.htm
Society for Applied Spectroscopy (SAS)	http://esther.la.asu.edu/sas/
Society of Petroleum Engineers (SPE)	http://pumpjack.tamu.edu/SPE-JPT.html
U.S. Geological Survey (USGS) Home Page	http://info.er.usgs.gov/
U.S. Geological Survey (USGS) Earthquake Information	http://info.er.usgs.gov/research/environment/hazards/earthquake/earthquake-education.html

Data, Images, Maps and Books

Australian Maps	http://garnet.bmr.gov.au/map/index.html
Canada Centre for Mapping	http://ccm-10.ccm.emr.ca/
DeLorme Maps	http://www.delorme.com/
Earth Images Catalog	http://galaxy.einet.net/hytnet/FUL024.html
GEODAS Underway Geophysical Data Management System	http://www.ngdc.noaa.gov/mgg/geodas/geodas.html
Geomatics Canada	http://www-nais.ccm.emr.ca/wwwnais/wwwnais.html
Mineral Resources Data System (MRDS)	http://info.er.usgs.gov/bio/USGS/Geology/OMR/fact-sheets/MRDS_Broch.html
Geology Facts on File	gopher://infx.infor.com:4600/11/browse/GEOLOGY
ImageNet	http://www.coresw.com/
National Digital Geoscience Data Library	gopher://agcgopher.bio.ns.ca

Continued from page 8

Nevada Bureau of Mines and Geology, Digital Cartographic Data Directory	gopher://nbg.unr.edu/
NOAA	http://www.noaa.gov/
Ohio State University Center for Mapping	http://www.cfm.ohio-state.edu/
Thomas Bros. Maps	http://www.thomas.com/
University of Michigan Comprehensive Oil and Gas Information System (COGIS)	gopher://una.hh.lib.umich.edu:70/11/ebb/energy/
University of Texas Map Collection	http://rowan.lib.utexas.edu/Libs/PCL/Map_collection/Map_collection.html
U.S. Earth Resources Observation Systems	http://sun1.cr.usgs.gov/eros-home.html
U.S. Federal Geographic Data Products	http://info.er.usgs.gov/fgdc-catalog/table_of_contents.html
U.S. Geological Survey Data Locators	http://info.er.usgs.gov/data/locators.html
U.S. Global Land Information System (telnet)	telnet://glis.cr.usgs.gov:23/
U.S. Global Land Information System (WWW)	http://sun1.cr.usgs.gov/glis/glis.html
U.S. National Trade Data Bank—Outlook for Petroleum and Natural Gas	gopher://sunny.stat-usa.gov:70/11/STAT-USA/NTDB/Petrol
U.S. National Trade Data Bank—World Energy Consumption	gopher://sunny.stat-usa.gov:70/11/STAT-USA/NTDB/Energy
World of Maps	http://www.magi.com/~maps/
World Map	http://www.lib.stat.cmu.edu/maps
World Petroleum Engineering Data	ftp://r4.pete.lsu.edu/pub/well_data/well.html
Xerox Map Data Archive	ftp://spectrum.xerox.com/pub/map/
Xerox Map Viewer	http://pubweb.parc.xerox.com/map

Frequently Asked Question (FAQ) Files

All FAQs	http://www.cis.ohio-state.edu:80/hypertext/faq/usenet/
comp.infosystems.gis	ftp://rtfm.mit.edu/pub/usenet/comp.infosystems.gis/Geographic_Information_Systems_FAQ
sci.data.formats	ftp://rtfm.mit.edu/pub/usenet/sci.data.formats/
sci.geo.geology	ftp://rtfm.mit.edu/pub/usenet/sci.geo.geology/
sci.geo.petroleum	ftp://rtfm.mit.edu/pub/usenet/sci.geo.petroleum/sci.geo.petroleum_FAQ-Internet_Resources
geo-computer-models	gopher://nisp.ncl.ac.uk/11/lists/geo-computer-models
geo-gig	gopher://nisp.ncl.ac.uk/11/lists/geo-gig
geo-metamorphism	gopher://nisp.ncl.ac.uk/11/lists/geo-metamorphism
geo-mineralisation	gopher://nisp.ncl.ac.uk/11/lists/geo-mineralisation

E-Mail Distribution List Information and Archives

All Listserv Lists	http://www.lib.ncsu.edu/reference-acadlists.html
All Mailbase Lists	gopher://nisp.ncl.ac.uk:70/11/
Search the Listserv Archives	gopher://www.lib.ncsu.edu:80/hGET%20/staff/morgan/listwebber.html

Libraries, Journals, and Book Catalogs

American Geological Institute GeoRef Database CDROM	http://www.silverplatter.com/catalog/gref.html
BIBSYS	http://www.bibsys.no/search/pube.html
Cambridge Scientific Abstracts	http://www.csa.com/
CRC Press	http://www.crc.com/
Dictionary of Geophysics	http://minerva.ori.u-tokyo.ac.jp/gd
Elsevier—Geophysics Internet Journal and Book Catalogue	http://www.elsevier.nl/catalogue/ESS/03700/Menu.html
Elsevier—Earth Science Catalogue Gopher	gopher://gopher.elsevier.nl/11/catalogue/ESE
Internet Public Library	gopher://gopher.nstn.ca/11/Cybrary
Journal of Glacial Geology and Geomorphology	http://boris.qub.ac.uk/stephen/Ejournal/ejtitle.html
Journal of Petroleum Technology (JPT)	http://petroinfo.tamu.edu/
Library Resources	http://www.library.nwu.edu/.nul/libresources.html
Library and Information Science Resources	http://www.ub2.lu.se/lisres.html
Macmillan Information SuperLibrary	http://www.mcp.com
Public Library Servers	http://sjcpl.lib.in.us/homepage/PublicLibraries/PublicLibraryServers.html
Springer—Journals Preview Service	http://www.springer.de/
Wiley—International Journal For Numerical Methods In Engineering	http://www.ep.cs.nott.ac.uk/wiley/numeng.html
WWW Library Servers	http://www.lib.washington.edu/~tdowling/libweb.html

Miscellany

Archives of Graphics Software and Databases Around the World	http://www.gdb.org/Dan/softsearch/graph-links.html
Edwards Aquifer Research and Data Center	http://eardc.swt.edu/Edwards-info.html
Dilbert Cartoons	http://www.unitedmedia.com/comics/dilbert/
Info-Mine Web	http://www.info-mine.com/
International Petroleum Exchange (IPE)	http://www.quote.com/info/exchanges/ipe.html
Internet Connectivity by Country	gopher://rain.psg.com:70/11/networks/connect/countries
Los Angeles seismicity last 72 hours (map)	ftp://garlock.wr.usgs.gov/pub/CURRENT/los_angeles.html
Mining Channel	http://www.wimsey.com/Magnet/mc/index.html
Over The Coffee (coffee resources)	http://www.infonet.net:80/showcase/coffee/
Scientific Visualization and Graphics	http://web.msi.umn.edu/WWW/SciVis/umnscivis.html
Scott King's Earth Science Site of the Week	http://agcwww.bio.ns.ca/misc/geores/sotw/sotw.html
Seismic Software	ftp://hilbert.mines.colorado.edu/pub/
Software Support Laboratory for Space and Earth Scientists	http://sslabor.colorado.edu:2222/ssl_homepage.html
University of California Museum of Paleontology	http://ucmp1.berkeley.edu/
U.S. Defense Department Declassified Satellite Photographs	http://edcwww.cr.usgs.gov/dclass/dclass.html
U.S. White House	http://www.whitehouse.gov/White_House/html/White_House_Home.html

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**1995 GSA Sedimentary Geology Division
field trip (#4):**

**Holocene and Wisconsinan sedimentation,
soil formation, and evolution of the
Mississippi River floodplain, southern
Lower Mississippi Valley.**

Dates:

Friday, November 3 through Sunday, November 5, 1995.

Field Trip Leaders:

Andres Aslan, Dept. of Geological Sciences, U. of Colorado,
Boulder, CO 80309, (303) 492-6313, aslan@ucsu.colorado.edu
Whitney J. Autin, Inst. for Environmental Studies, Louisiana
State University, Baton Rouge, LA 70803, (504) 388-3420
Torbjorn E. Tornqvist, Dept. of Physical Geography, U.
Utrecht, The Netherlands

Maximum attendees: 40.

Cost:

\$190 (0B, 2L, 0D, 2ON, bus).

We will leave New Orleans, LA late Friday afternoon (Nov. 3)
and return late Sunday afternoon (Nov. 5).

Description:

This trip will examine the sedimentologic and pedologic
characteristics of "classic" Mississippi River floodplain
depositional environments. Comparisons between Holocene
and Wisconsinan Mississippi R. floodplain deposits will also
be used to discuss relative sea level and climatic influences on
floodplain evolution in the southern Lower Mississippi Valley.

Continued from page 10

Netnews Groups

Geology groups

sci.geo.eos geological fluid dynamics
sci.geo.fluids geological fluid dynamics
sci.geo.geology geology
sci.geo.hydrology hydrology
sci.geo.meteorology meteorology
sci.geo.petroleum oil and gas industry issues
sci.geo.satellite-nav satellite navigation

other Netnews groups

comp.graphics.visualization .. visualization
comp.infosystems.gis geographic information systems
sci.answers answers to general science questions
sci.chem chemistry
sci.data.formats scientific data formats (e.g., netCDF)
sci.energy energy
sci.engr.civil civil engineering
sci.engr.mech mechanical engineering
sci.environment environmental science
sci.image.processing image processing
sci.materials material science
sci.math math
sci.math.num-analysis numerical analysis
sci.math.stat mathematical statistics
sci.mech.fluids fluid mechanics
sci.research scientific research methods
soc.history.science history of science
alt.books.technical technical books information
alt.folklore.urban urban legends
alt.food.coffee discuss all thing caffeinated ■

1996 IGC Travel Grant Program

30th International Geological Congress, Beijing, China,
August 4-14, 1996

A Travel Grant Program for young (birthdate after August
31, 1956) residents or citizens of the United States, including
students, is being administered by the Geological Society of

America. Travel grants will consist of economy airfare to
China. Applicants must have an abstract included in the
program of the 30th IGC. Deadline for applications and letters
of support is September 15, 1995. Contact Grants Administra-
tor, GSA, P.O. Box 9140, Boulder, CO 80301, Tel: (303) 447-2020;
ext. 137; Fax: 303-447-1133.

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5. LIBRARY RESOURCES

LIBRARY RESOURCES

Library on-line card catalogs are commonly accessible via the WWW. The library systems referenced in this section should prove helpful to researchers working in Kansas. Information on U.S. government offices, professional societies, and commercial publishers has been included as well for the same purpose. Library card catalogs, for the most part, are accessed via telnet connections. The option to set your computer to automatic telnet session is recommended; however, operators such as WinQvt can be used.

Bibliography of Kansas Geology: <http://macweb.kgs.ukans.edu/fmprocgi/bibintro.html>

University of Kansas: <http://www.ukans.edu/kufacts.early.html>

University of Kansas Libraries: <http://www.ukans.edu.kufacts.library/index.html>

Wichita State University Libraries: <http://twsuvm.uc.twsu.edu>

Kansas Library Catalog: <http://lawlib.wuacc.edu/washlaw/list/klc.htm>

Kansas State University Library: <http://www/lib.ksu.edu/>

Linda Hall Library: <http://www.lhl.lib.mo.us/tas/leonard.htm>

U.S. Government Printing Office (GPO): http://www.access.gpo.gov/su_docs/

American Geological Institute: <http://agi.umd.edu/agi/gaphome.html>

U.S. Department of Energy: <http://www.eia.doe.gov/bookshelf.html>

American Association of Petroleum Geologists: <http://www.geobyte.com/index.html>

Society of Petroleum Engineers: <http://www.spe.org/spehome.html>

Pennwell Publication Company: <http://www.pennwell.com/>

Bibliography of Kansas Geology 1823-1995

Welcome to the Internet version of the *Bibliography of Kansas Geology*. To date, nearly 14,000 references from all areas of the geological sciences are included in the bibliographic data files. Updates to the files will be done quarterly. Included in the database are references on areal geology, petroleum, water, paleontology, mineral resources, geochemistry, soil science, and environmental geology. In addition to references appearing in published sources, the titles of many unpublished manuscripts, such as open-file reports, theses, and dissertations, are included.

The bibliography is comprehensive and includes references from 1823 to present. Among the earliest scientific exploration of Kansas, and subsequent recording of data, was Major Stephen H. Long's expedition in 1819 and 1820. Although earlier expeditions to the unexplored West by Captains Meriwether Lewis and William Clark (1804-06), and Lieutenant Zebulon Pike (1806-07), included visiting parts of present-day Kansas, Long's investigation and reports of the "Great Desert" were more comprehensive. Major Long's findings and those of his companions Thomas Say, an entomologist, and Edwin James, a biologist, were published in 1823, in two volumes entitled, *Account of an Expedition from Pittsburgh to the Rocky Mountains*. That reference marks the earliest entry in the bibliography.

The Kansas Geological Survey, recognizing the importance of collecting bibliographic information on geologic research conducted in Kansas, began disseminating information through published bibliographies. Bulletin 221, *Bibliography of Kansas Geology, 1823-1984*, includes 9500 references. The second published bibliography, Bulletin 234, *Bibliography of Kansas Geology, 1984-1989*, includes over 2400 references. At present, a third published bibliography covering the years 1990-1994 is in preparation and should be available in 1996.

In 1993, the Survey released its first CD-ROM, "Database Sample CD-ROM," that contains nine databases. The searchable on-line version of the bibliography, supported by commercial software is included on the sampler. The retrieval software allows for the choice of specific field searches (i.e. author, county), or global searches and the ability to combine searches using Boolean logic. Information about purchasing the CD-ROM and published bibliographies is available from the Survey's Catalogue of Publications.

Using the Bibliography on the Internet

The menu allows the user to chose from the following fields to conduct a search: author, date, index terms, counties, rock units, publisher, and ID number. Most users with interest in a particular geographic area or stratigraphic interval should start their search with the county or rock-unit indexes. Names of oil fields, reservoirs and lakes, and rivers and streams should be searched on the title or index term field. The rock-unit field contains rock-stratigraphic geologic names as they have been used in references. Therefore, formal and informal terms, provincial names, and outdated terms have been listed as they appear in references. It should be noted that the more demanding the search (i.e. combination of fields), the longer the search time. At present, you are permitted to view up to 50 citations at a time. The ID number should be noted, if you want to track a specific reference.

Availability

Most published references listed are available from libraries or the publisher. However, the Survey's data

files include location sources for most articles and reports. If the report or article is difficult to locate, contact the Survey's librarian, Janice Sorensen, for assistance (telephone 913/864-3965 or e-mail Jsorensen@pcmail.kgs.ukans.edu). Reports published by the federal government are often available for purchase from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, WWW site address: <http://www.fedworld.gov/ntis/ntishome.html>. Available NTIS report numbers have been included with the bibliographic citation. Reports, maps, and open-file materials published by the U.S. Geological Survey are only available from the Branch of Distribution, U.S. Geological Survey, P.O. Box 25286, Denver, CO 80225, WWW site address: <http://www.usgs.gov>. Theses and dissertations are available for inspection at the institution granting the degree or through the interlibrary-loan services of participating libraries. In addition, the Survey's library maintains a set of about 150 theses and dissertations as part of the Survey's open-file collection. Unbound photocopies of such reports may be purchased from the Survey. Microform and paper copies of dissertations completed after 1955 also are available for purchase from University Microfilms International, 300 North Zeeb Road, Ann Arbor, MI 48106-1346, WWW site address, <http://www.umi.com>.

Corrections

Whenever possible, articles and papers listed in the bibliography were examined to verify citation information and to assist with indexing. To maintain the quality of the data, we have recorded titles as they appear in the original source. In spite of considerable attempts at accuracy and completeness, this listing undoubtedly contains errors and omissions. Please submit any corrections or additions to the Survey's librarian.

[Back to the Bibliography home page .](#)

[Search the database .](#)

Search the Bibliography of Kansas Geology Database

Author:
Date(Year):
Index Terms:
Counties:
Rock Units:
Publisher:
ID No:

Fill in one or more fields (only one for the fastest search).
Max records to return:(Smaller numbers yield faster results.)

Click here (netman@kgs.ukans.edu) to leave a comment, question, note, or other feedback.



UNIVERSITY OF KANSAS LIBRARIES

OCAT (On-line Catalog)

Telnet: telnet ukanmvsvt.cc.ukans.edu

Access to on-line card catalog (OCAT).

CD-ROM Citation/Abstracting Databases

Telnet:

Access to commercial bibliographical databases that include **GEOREF** (American Geological Institute's database that includes geology and geophysics); **SCI** - Science Citation Index (Institute for Scientific Information, ISI) and **Dissertation Abstracts** (University Microfilms International, UMI) via a telnet connection.

KUFACTS under **Reference Shelf** will find gopher listings for libraries world-wide.

KUfacts: The University of Kansas



Online Information System

KUfacts and the Web

Info about KUfacts, the World Wide Web, and Web publishing.

About the University of Kansas, Lawrence campus, the KU Medical Center in Kansas City, and the Regents Center.

Information about the campus, policies, admissions, and more.

Events, activities, and announcements

Happenings at and around KU and Lawrence.

Courses

Timetable of classes and catalog of course descriptions.

Departments, service units, and university governance

Info about academic departments, service units, and university governance at KU.

Campus organizations

Groups of students, faculty, and staff recognized by KU.

→ Reference shelf

Reference materials, phonebooks, and worldwide resources.

Search KUfacts

This experimental search engine searches all documents linked into KUfacts that reside on computers at KU.

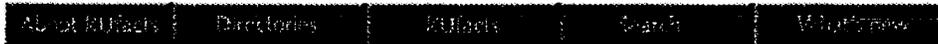


KU Libraries

Links to educational, governmental, and other sites beyond KU

Museums at KU

Other academic resources at KU



| [About KUfacts](#) | [Directories](#) | [KU home page](#) | [Search](#) | [What's new](#) |

The current URL is <http://www.cc.ukans.edu/kufacts/library/index.shtml>

This file was modified Sunday, 15-Sep-96 12:57:23 CDT

If you have comments or questions about KUfacts, please contact [Martha Bryant, Academic Computing Services](#)



[Library WWW pages and Online Catalogs](#)

[E-mail Reference Service](#)

[Guides to Using the Library](#)

[Workshops](#)

KU Libraries' and Library Units' WWW Pages

- [KU East Asian Library](#)
- [KU Government Documents Library](#)
- [KU Law Library](#)
- [KU Thomas R. Smith Map Collection](#)
- [KU Libraries' Slavic Department](#)
- [KU Med Center Library](#)
- [KU Regents Center Library](#)

Library Catalogs

- [KU's Library Catalog](#)
- [KU Med Center's Library Catalog](#)
- [Kansas State's Library Catalog](#)
- [Washburn University's Library Catalog](#)
- [Wichita State University's Library Catalog](#)
- [The Library of Congress' Catalog \(and other databases\)](#)

Miscellaneous Library Resources

- [Guides to using Library collections and services](#)
- [Selected Gopher and Web Servers](#)

University of Kansas

telnet UKANMVSVT.CC.UKANS.EDU

At the Server(?)> prompt press ENTER

At the "CICS-MVS" screen, Clear the screen using Control-C,
type OCAT and press ENTER

To exit:

Type LOGOFF and press ENTER

Type CSSF LOGOFF and press ENTER

At the VTAM screen escape to the Server(?)> prompt using Control-W

Type a d and press ENTER to disconnect and return to KUfacts

Confirm that you want to exit by typing y and pressing ENTER

CONTACT: Nicholas Eshelman neshelma@ukanvm.cc.ukans.edu

This writeup is being updated. It may contain some inaccuracies.

Please contact us if you experience any problems or if you have any questions. Thank you.

- User Services Consulting 913/864-0410
- Monday through Friday from 8 a.m. to 5 p.m. or
- send e-mail to: docuhelp@www.cc.ukans.edu

University of Kansas, Academic Computing Services

Miscellaneous Writeup

Remote Access to KU's Online Catalog

CONTENTS

- Introduction and Sources of Assistance
- Hours of Availability
- Communication Parameters
- The Packet Switch Network
- Basic Logon Procedure (common to all routes)
- The Internet

A. Introduction

The University of Kansas (KU) online catalog is available on over 175 dedicated public and staff terminals located throughout the KU library system, both in Lawrence and at the Regents Center in Kansas City. Everyone is welcome to visit any of the libraries and to use the catalog on the public terminals provided there.

In addition, by virtue of the online catalog being connected to the KU Packet Switch Network (KUPSN) and connections between that network and others, it is possible for users outside of the libraries to gain access to and to use the catalog in the four following ways:

- 1) via terminals or microcomputers directly connected to the KUPSN
- 2) via dialup
- 3) via the Kansas Regents Network (KARENET)
- 4) via DELPHI/Kansas City

Access via Ethernet is also discussed.

Details on the first four paths into the catalog appear, in order, in section D. The final logon procedure that is common to all five routes appears in section E. Ether-net access is addressed in section F.

B. Hours of Availability

The online catalog is generally available during the following hours:

Monday-Friday	8 a.m. to 3 a.m.
Saturday	9 a.m. to 3 a.m.
Sunday	noon to 3 a.m.

Circulation status and detailed serial holdings information are generally not available on the catalog between midnight and 3 a.m.

C. Communications Parameters

For best results, dial-in access should be performed with terminal or micro-computer communications software set to the following unless dialing directly to DELPHI/Kansas City:

duplex:	full
parity:	even
data bits:	7
stop bits:	1
emulation:	VT100 is best, but others are available (see section E for details)

If dialing through DELPHI/Kansas City, set parity to none and data bits to 8.

D. The Packet Switch Network

This section deals with how to access the packet switch network. Section E discusses getting to the online catalog from the KUPSN network prompt. Four different access methods are discussed.

1) Terminals or microcomputers directly connected to the KUPSN

There are KUPSN connections in many faculty and departmental offices and in the following computer lab sites across campus: (call 864-3506 for hours)

Computer Center, room 202
Fraser Hall, room 112
Regents Center, room 116

To connect to the catalog using a terminal connected to the Packet Switch Network, do the following. If the network prompt, *, already appears on the screen (as it should on all dumb terminals), enter "c .lc" and press the RETURN key. A "COM" message and the "ENTER TERMINAL TYPE" prompt should appear. At that point, follow the general logon instructions in section E. below.

If, instead, you are at a microcomputer you may first have to load and execute MS-KERMIT (on a DOS machine) or MacKermit (on a Macintosh). On a DOS machine, move to the KERMIT subdirectory, enter the command "MSKERMIT", then the command "do ibm", and finally the command "c". You should then see the network prompt, *, where you can proceed as above. On many micros in the labs you can also simply enter the command "ocat" which executes a batch file that will automatically log you onto the online catalog. Try entering "ocat" first before attempting to use the MS-KERMIT software directly.

On a Macintosh, double-click on the "CICS Settings" icon in the MacKermit

"Settings" folder. This should also bring you to the network prompt, *, where you can proceed as above. You may need to hit the RETURN key a few times to make the * appear.

To disconnect: entering "logoff" anywhere in the catalog will clear your session and return you to the network prompt.

For more generic information on using microcomputers and KERMIT to access systems on the campus network, pick up copies of "Using MS-Kermit at the University of Kansas", "Using MacKermit at the University of Kansas", "Microcomputer Communication with the KU Packet Switch Network", and "Using the Zenith Lab at the Computer Center". All are available at the consulting window in the Computer Center.

2) Dialup

Using a modem and either a microcomputer with communications software or a terminal, dial one of the following telephone numbers:

Lawrence:	300/1200 baud	(913) 864-5300	
	2400 baud	(913) 864-5350	
	9600 baud	(913) 864-5370	
	300/1200 baud (vadic modems)	(913) 864-3621	
Kansas City:	300/1200 baud	(913) 341-3689	

Once connected, hit the RETURN key once or twice until the network prompt, *, appears. Then enter "c .lc" and press the RETURN key. A "COM" message and the "ENTER TERMINAL TYPE" prompt should appear. At that point, follow the general logon instructions found below in Section E.

To disconnect: entering "logoff" anywhere in the catalog will clear your session and return you to the network prompt. At that point, hang-up or do whatever your modem and software require you to do to break the connection.

3) Kansas Regents Network (KARENET)

Connect to the KARENET ISN network by whatever means are available on your location. Contact your library or computer center for information. When the network prompts you for an address, reply "KUNET". Once connected to the KUPSN, you will see an astrisk, *, which is the network prompt. Type "c .lc" and press the RETURN key. A "COM" message and the "ENTER TERMINAL TYPE:" prompt should appear. At that point, follow the general logon instructions found below in section E.

To disconnect: entering "logoff" anywhere in the catalog will clear your session and return you to the network prompt. At that point enter two BREAK signals (ALT-F7 in ProComm, CTRL-Break in most other programs). You should then be returned to your local KARENET node.

4) DELPHI/Kansas City.

DELPHI/Kansas City is an online information service providing a variety of databases and interactive online services to Kansas City area residents. Subscribers to DELPHI will find the KU online catalog on their Education menu. Online help is provided to assist you in logging on.

Contact DELPHI at (816) 842-8227 for information on subscribing.

E. Basic Logon Procedures

Unless you are using the Internet, you will always reach the same "ENTER TERMINAL TYPE: prompt. From that point on, the procedure is the same regardless of the route. Start with the instructions in section D for the method you are using, then complete logging on as follows:

At the "ENTER TERMINAL TYPE" prompt, enter "VT100K" if you are emulating a VT100 - otherwise hit the RETURN or ENTER key and you will be presented with the emulations recognized by the KUPSN.

You next go through a sequence of two screens. Occasionally, the system will skip the first screen, taking you directly to the second screen.

The first screen has only two lines as follows:

```
UNIVERSITY OF KANSAS (LAWRENCE) VTAM NETWORK  
TYPE SYSTEM ID AND PRESS ENTER, OR PRESS ENTER FOR OPTIONS
```

Type "ocat" and press the RETURN or ENTER key - this takes you to the second screen. The second and last screen includes a large "CICS-MVS" banner across the middle of the screen. The top line says

```
TO SIGN ON - CLEAR SCREEN TYPE OCAT OR CSSN AND PRESS ENTER
```

Clear the screen then type "ocat" and press the RETURN or ENTER key and you will go to the main catalog menu.

F. Internet Access

The Internet is a collection of communications resources which allows high-speed access to the online catalog from specially connected machines on campus and around the world. To use these resources you will need a microcomputer with Ethernet hardware, a connection to the Internet, and Telnet or TN3270 software. The KU Campus Ethernet Backbone is connected to the Internet, so users connected to the backbone have access to the online catalog using the following method.

Telnet is the standard communications software used for Ethernet communications. TN3270 is a special type of Telnet software which emulates an IBM 3270 terminal. Use TN3270 to connect to the KU IBM3081 mainframe; PC and Macintosh users may obtain current versions of the software and writeups explaining how to use it at the Computer Center's Customer Assistance window.

The Internet address you need to connect to is "UKANVM.CC.UKANS.EDU"; the IP number for this system is 129.237.1.40.. When the connection to the IBM has been established a VM logon screen will be displayed. Press tab twice to place the cursor on the COMMAND line at the bottom of the screen. Type "dial vtam" and press RETURN.

Accessing VTAM will cause two lines of information to be displayed. The information will be similar to the following:

```
UNIVERSITY OF KANSAS (LAWRENCE) VTAM NETWORK
```

TYPE SYSTEM ID AND PRESS ENTER, OR PRESS ENTER FOR OPTIONS

Type "ocat" and press the RETURN or ENTER key - this takes you to a second screen

The next includes a large CICS-MVS banner across the middle of the screen. The top line says

TO SIGN ON - CLEAR SCREEN TYPE OCAT OR CSSN AND PRESS ENTER

Clear the screen . If you are using Kermit you probably need to hit the ESC key twice; Telnet users ordinarily will use CNTRL-Z. The key combination used to clear your screen will depend on the hardware and software you are using to connect to the online catalog. After you have cleared the screen, type "ocat" and press the RETURN or ENTER key .

To disconnect enter "logoff" anywhere in the catalog. This will clear your session and return you to CICS-MVS. Return to VTAM by typing "disc" and pressing ENTER or RETURN. Return to the VM signon screen by entering "undial". This will clear the VTAM session and close the connection.

For telephone assistance in using the KUPSN (hardware and software settings, telephone numbers, etc.) or Internet, call the Academic Computer Services consulting desk at (913) 864-0410. For assistance in searching the online catalog, call the Watson Library reference desk at (913)864-3347 or the Anschutz Science Library reference desk at (913) 864-4164. For other problems, contact John Miller at (913)864-5530.

John S. Miller
Automation Librarian

John S. Miller
Charles Rezac
April 24, 1992

Electronic copies of ACS writeups can be found through the following URL:

<http://www.cc.ukans.edu/cwis/writeups/>

[Return to beginning of document](#)

[Return to ACS Writeups Index](#)

[Return to KUfacts Main Menu](#)

TO SIGN ON - CLEAR SCREEN, TYPE OCAT OR CESN AND PRESS ENTER
TO SIGN OFF - CLEAR SCREEN TYPE CSSF LOGO AND PRESS ENTER

(AKULBRY1)
11:07:57

```
   CCC   IIII   CCC   SSS           MMM   MMM   VVV   VVV   SSS
  CCCCC  II    CCCCC SSSSS        MMMM  MMMM  VV   VV   SSSSS
CC  CC   II    CC  CC  SS  SS      MM  MMMM  MM   VV   VV   SS  SS
CC       II    CC           SS      ***  MM  MM  MM   VV   VV   SS
CC       II    CC           SS      ***  MM       MM   VV  VV   SS
CC  CC   II    CC  CC  SS  SS      MM       MM   VV  VV   SS  SS
  CCCCC  II    CCCCC SSSSS        MM       MM   VVV  SSSSS
   CCC   IIII   CCC   SSS           MMMM  MMMM   V   SSS
```

September 30th 1996

2:42 p.m.

The University of Kansas
Online Catalog and Information System

If you are an experienced searcher, you can enter your search directly on the command line of this screen.

Or, choose one of the following options by typing its number on the command line and pressing the SEND or ENTER key.

- 1 - How to use the online catalog (books and serial holdings)
- 2 - Search Expanded Academic Index (journal articles)
- 3 - Library announcements, hours, and other information
- 4 - Suggest a book the library should buy
- 5 - Make a comment or suggestion

=====

Please type a search or type a number and press the SEND or ENTER key.

- Enter 'logoff' on any display to exit the online catalog.
- Enter 'q' or 'quit' on any display to return to this menu.

Command==>

Telnet Access to the University of Kansas Libraries' CD-ROM Databases: Macintosh Instructions

Introduction

This document contains instructions for accessing the University of Kansas Libraries' CD-ROM databases from a Macintosh. The document itself is a freestanding application, requiring no specific wordprocessing program to read and/or print. You may print all chapters or any one chapter of this manual. Go to the **File Menu** when this document is open and select **Print**. Follow the dialog boxes to print all or any one chapter of this manual.

Although you may be anxious to connect to and use the CD-ROM databases, please read **all** of this manual before doing so.

This document uses one convention to indicate which keys you should press during your remote session. For example, if you need to press the escape key, this is represented by **<esc>**. If you need to press the **f** key, this is represented by **<f>** and so on.

Who You Gonna Call?

If you have any questions concerning using your telnet software, contact Consulting of Academic Computing at 864-0410.

If you have questions about using the databases themselves, contact the Watson Library Reference Desk at 864-3347 or the Anschutz Library Reference Desk at 864-4930. The Anschutz Library staff can be of greater assistance with questions related to the Science Databases.

If your telnet software repeatedly says "unable to open connection," contact Chet Durnal at 864-5530 (p.m.).

Note: Remote connection has been set to a limit of 4 simultaneous users. You may receive the message "unable to open connection" because of this limit.

Software Requirements:

First, you must have MacTCP loaded and properly configured for your Macintosh. If you do not have MacTCP, contact Consulting in the Computer Center at 864-0410.

Next, You will need telnet software to connect to the remote computer which manages access to the CD-ROM databases. You may use **NCSA Telnet** or commercial products such as **Versaterm**.

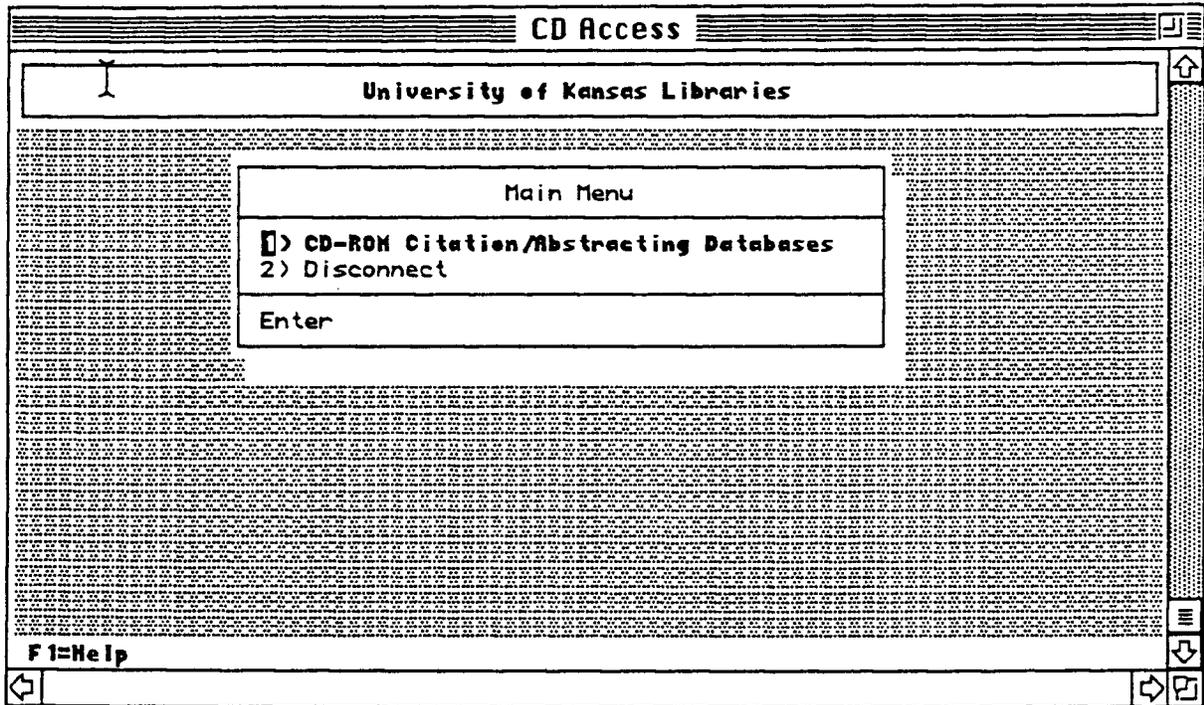


If you do not have telnet software, log in to the KU Library server (`ans_lib_423`) as "guest." To log in to the Library Server first go to the Apple Menu icon. Then select "chooser." Highlight "Appleshare." Select the zone called "Anschutz." When prompted for a password, click on the "guest" button and then click "ok." Open the Public folder. In that folder is a folder called **MAC Applications**. In that folder is a folder called **NCSA Telnet 2.25 and TN3270**. Copy the telnet folder to an appropriate place on your Macintosh. The telnet folder contains an icon labeled **CD Access**. This icon contains NCSA telnet session configurations which have been optimized for Macintosh access to the databases. **NCSA Telnet** can be used at no charge. Log out of `ans_lib_423` by dragging the icon to the trash icon.

You may also get the Telnet software by logging in to the Computer Center Lab as guest. The CD access icon is also there. If you cannot get to these resources, use your telnet software and choose **open a connection**. Type `cdrom.lib.ukans.edu` as the connection name.

The NCSA Telnet folder contains complete documentation for using the software. Please become familiar with using your telnet software before connecting to the Libraries' CD-ROM databases.

Connecting to the Remote PC



Using NCSA Telnet

If you copied the NCSA Telnet folder from the Anschutz File Server, open that folder. The following icon should be in the folder:



Library CD Access

Double click on that icon. NCSA Telnet will be loaded and attempt to connect to the remote access PC. If the connection is successful, the above Main Menu will display. If the connection is not successful, the limit to the number of simultaneous users has been reached. Wait about 15 minutes and try again.

Using Other Telnet Software

Most commercial software allows one to open a telnet session by first going to the File Menu. At the File Menu choose "open connection." You will be asked to enter the "Host Name" or IP address. Type (without spaces) the following: **cdrom.lib.ukans.edu** Click on the "ok" button.

Disconnecting

Notice item **2** in the above Main Menu. Use this option to disconnect **gracefully** from the remote PC. Press **<2>** and your connection will be broken and the remote software will reset itself for another user. You may also press the down arrow key on your Macintosh and then press **<return>** to select option 2. However, once the connection is broken, you will still be running your telnet software. Choose "quit" from the **file** menu of your software to exit.

If the remote software does not respond, you may break the connection by using your telnet software. Go to the file menu and select "close connection."

Note: If the remote software does not receive keyboard input from your Macintosh within **10 minutes**, the software will break the connection.

Keep in mind as you read further that you will be connecting to a **DOS** machine which will be running **DOS** software. The implications of this will become clearer as you read further in this manual.



Sending Keyboard Commands to the Remote PC

Above is a picture of a standard IBM PC keyboard. The DOS software you will be controlling remotely uses `<esc>`, `<F1>` through `<F10>` (function keys) very frequently. However, some of the equivalent keys on your Macintosh will not work with this software. Following is a list of the Macintosh keys which *will* work.

all alpha/numeric keys (including shifted keys)
spacebar
delete
all arrow keys
return

Since the remaining keys will not work as normal, and the IBM PC has some keys that are not on a Macintosh, there are special keyboard combinations you must use to get the database search software to respond. For example, if you need to press the function key `<F1>`, you must press `<esc>` `<f>` `<1>`. You must press these keys in that order. To complicate matters more, if you need to send simply `<esc>`, you must press `<esc>` `<e>`. The common denominator in these keyboard combinations is the `<esc>` key. All of them require pressing `<esc>` and then one or more additional keys. On the next page is a table listing of all keyboard combinations you can use and how the remote PC translates or responds to each combination.

Keyboard Combination	Remote Equivalent
<esc> <e>	<esc>
<esc> <f> <1>	<f1>
<esc> <f> <2>	<f2>
<esc> <f> <3>	<f3>
<esc> <f> <4>	<f4>
<esc> <f> <5>	<f5>
<esc> <f> <6>	<f6>
<esc> <f> <7>	<f7>
<esc> <f> <8>	<f8>
<esc> <f> <9>	<f9>
<esc> <f> <0>	<f10>
<esc> <u>	<PgUp>
<esc> <d>	<PgDn>
<esc> <a> <esc> <f> <1>	<Alt> <f1>

Controlling the Screen Appearance

Not all of the databases use the same search software. Each uses different color combinations and graphic lines. Thus, menu items will not clearly display the item currently selected unless you adjust how the image is sent to your MAC. **None** of the colors of the remote software will display through your telnet software. However, choosing one color mode or another from those listed below will improve what is displayed on your Mac.

You can adjust the image displayed on your Mac by using keyboard combinations similar to those used in the chart above. Below is a list of the keyboard commands you can send to change the color and/or graphics mode of your remote session.

<esc> <g>: provides full graphics display; repeating the key strokes turns this on or off; the default is on

<esc> <0>: turns off all color support

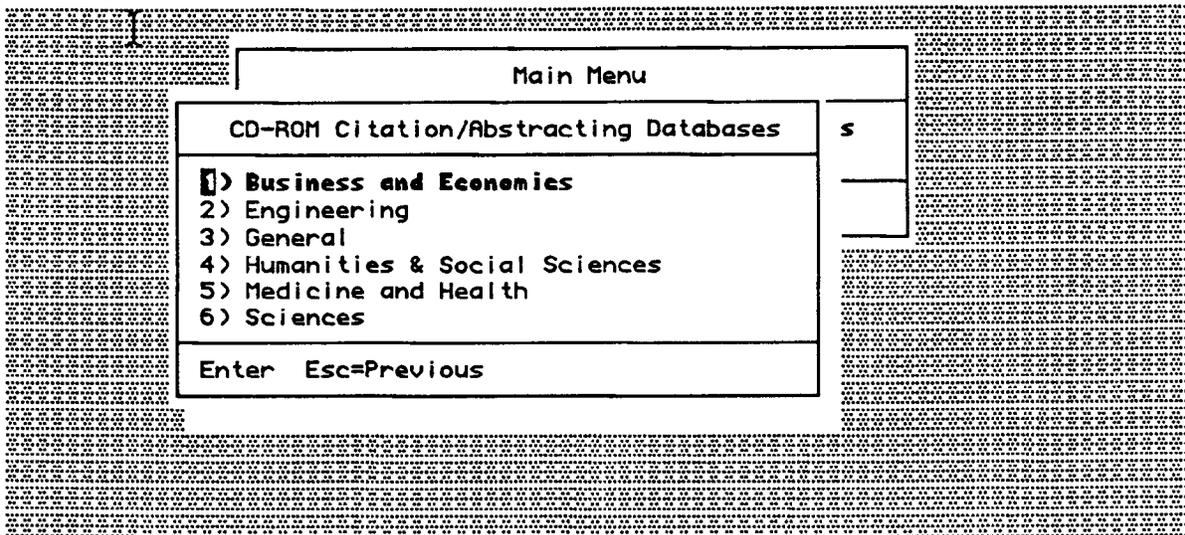
<esc> <1>: monochrome display

<esc> <2>: high contrast mode

<esc> <3>: full color support

NOTE:

sometimes your telnet software will not keep up with screen changes sent from the remote PC. Thus, "garbage" may appear on your screen. To refresh or redraw the screen, press <esc> <r> at any time.

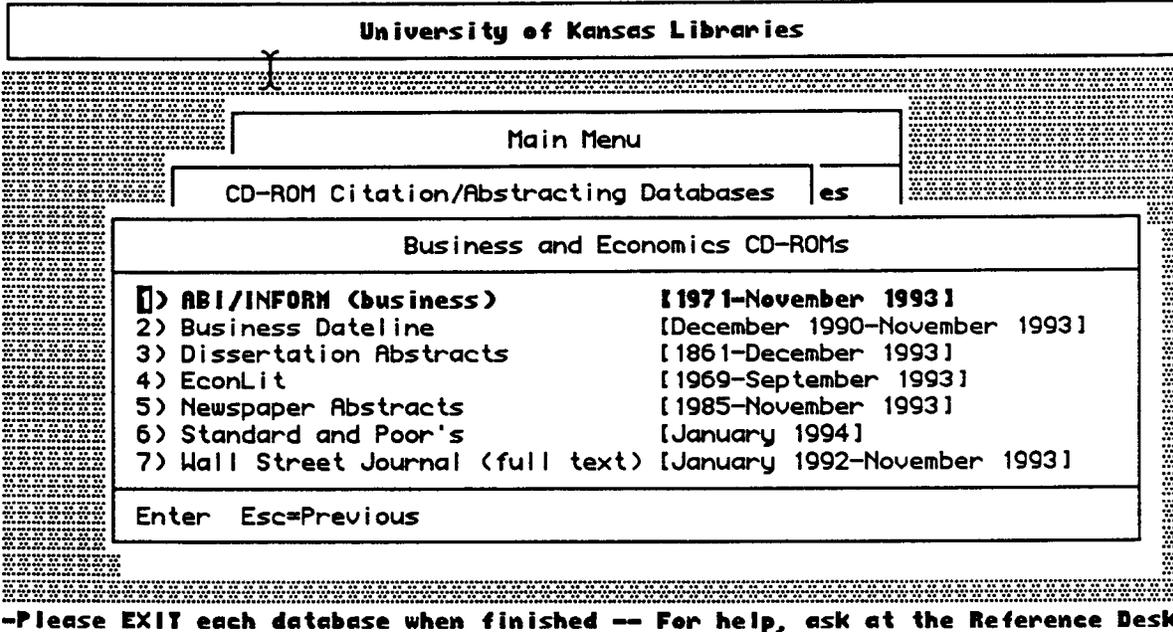


-Please EXIT each database when finished -- For help, ask at the Reference Desk

Using the Databases

When you select option 1 from the Main menu, the above menu displays. This menu shows the database categories available. Notice that the first option, **Business and Economics**, is in bold. This indicates that this is the currently selected option. You may return to the **Main Menu** by pressing `<esc> <e>` or by pressing the `<left arrow>` key.

There are two ways to choose a category. The first is to press the number of the category you wish. For example, if you wish to access the **Engineering** databases, press 2. Do not press the `<return>` key after pressing a number. The second way to choose a category is to use the **up** and **down** arrow keys on your **MAC** and then press `<return>`. When you choose a category, a submenu appears. For example, if you choose **Business and Economics**, the menu shown on the next page appears.



Each database category has its own menu, similar to the one above. Notice that **ABI/INFORM (business)** is in bold, indicating it is the currently selected database. The menu also displays the years covered by each database. The years and/or months covered change as the libraries' holdings are updated. Again, if you wish to return to the previous menu, press the <left arrow> key or press <esc> <e>.

To select the database you want to search, press the corresponding number or use the arrow keys. The search software will begin to load into the memory of the remote PC.

NOTE:

Please be patient! As you search the databases, you will not experience the same response speed you are use to with Macintosh applications. When you select a database, it will take from 30 to 45 seconds for the search software to load on the remote PC and transmit that screen to your Macintosh. In addition, when you send <esc> key commands, give the remote system time to respond (sometimes 10 or 15 seconds).

Finally, when you exit a database, returning to the CD menu may also take up to 30 seconds.

KU Libraries' CD-ROM network. Current listing of searchable databases.

Business and Economics CD-ROMs

- | | |
|------------------------------------|------------------------------|
| 1) ABI/INFORM (business) | [1971-June 1996] |
| 2) Business Dateline | [January 1993-November 1994] |
| 3) Dissertation Abstracts | [1861-March 1996] |
| 4) EconLit | [1969-May 1996] |
| 5) Newspaper Abstracts | [1985-July 1996] |
| 6) Standard and Poor's | [July 1996] |
| 7) Wall Street Journal (full text) | [January 1992-June 1996] |

Enter Esc=Previous

Engineering CD-ROMs

- | | |
|---|-----------------------|
| 1) Dissertation Abstracts | [1861-March 1996] |
| 2) Engineering Index (COMPENDEX) | [1987-June 1996] |
| 3) Environment Abstracts | [1975-February 1996] |
| 4) GeoRef (geology and geophysics) | [1785-June 1996] |
| 5) INSPEC (physics, elec. & comp. engin.) | [1989-1995] |
| 6) MathSci | [1940-June 1996] |
| 7) NTIS (technical reports) | [1980-September 1996] |
| 8) SCI - Science Citation Index | [1990-June 1996] |

Enter Esc=Previous

General CD-ROMs

- | | |
|-----------------------------|-----------------------|
| 1) Books in Print | [June 1996] |
| 2) Dissertation Abstracts | [1861-March 1996] |
| 3) Environment Abstracts | [1975-February 1996] |
| 4) Newspaper Abstracts | [1985-July 1996] |
| 5) NTIS (technical reports) | [1980-September 1996] |

Enter Esc=Previous

Humanities & Social Sciences CD-ROMs

- | | |
|-----------------------------|-------------------|
| 1) America:History and Life | [1982-1996] |
| 2) Dissertation Abstracts | [1861-March 1996] |
| 3) ERIC (education) | [1966-June 1996] |
| 4) Ethnic Newswatch | [1990-June 1996] |
| 5) Historical Abstracts | [1982-1995] |
| 6) MLA Bibliography | [1963-May 1996] |
| 7) PsycLIT (psychology) | [1974-June 1996] |
| 8) SPORT Discus | [1975-June 1996] |
| 9) Social Work Abstracts | [1977-March 1996] |

Enter Esc=Previous

Science CD-ROMs

- | | |
|---|----------------------|
| 1) Environment Abstracts | [1975-February 1996] |
| 2) Biological Abstracts (BIOSIS) | [1990-June 1996] |
| 3) Computer Select | [September 1996] |
| 4) GeoRef (geology and geophysics) | [1785-June 1996] |
| 5) INSPEC (physics, elec. & comp. engin.) | [1989-1995] |
| 6) MathSci | [1940-June 1996] |
| 7) SCI - Science Citation Index | [1990-June 1996] |
| 8) Zoological Record | [1978-June 1996] |
| A) Medicine and Health | |
| B) Chemistry and Pharmaceuticals | |

Enter Esc=Previous

Medicine and Health

- | | |
|--------------------|----------------------|
| 1) HealthPlan-CD | [1975-December 1995] |
| 2) Medline Express | [1966-August 1996] |

Enter Esc=Previous

Printing Search Results

Strictly speaking, during a remote session you cannot print search results *directly* to your Macintosh printer. Although you will tell the search software to "print" results, you will actually receive the results as a file called "CD Search Results." The file(s) can then be printed after your remote session is closed. Use **Teachtext** to print the file(s).

Below is a list of the steps to take in saving searches locally. This list is followed by a detailed discussion of each step. I recommend you practice these steps several times.

1. Turn on Remote Printing: <esc> <p> <3>
2. Conduct a search
3. Follow all but the *last* search software step to begin remote printing
4. Turn on "capture session to file" within your telnet software
5. Issue the last search software command to begin "printing"
6. Turn off "capture session to file"
7. Redraw the screen image: <esc> <r>
8. Switch to the finder
9. Give the file "CD Search Results" a different name such as "Search 1"
10. Switch back to your telnet software
11. Repeat steps 2 through 10 for each search you wish to save

1. Turn On Remote Printing:

Press <esc> <p> <3> any time *prior* to issuing your *first* print commands to the search software. Once remote printing is turned on, it remains on throughout your remote session and does not effect any other aspects of the session. In fact, you may press <esc> <p> <3> when you begin a remote session and before you have selected a database to search and forget about it.

2. Conduct a search

A "search" is telling the software to find articles for one set of search criteria. For example, one search could be to find all articles which have the word "wheat" in them. When the results are displayed, you may "mark" selected articles for printing, print just the displayed article, or print all of the articles from the search.

3. Follow all but the *last* search software step to begin remote printing

The commands you issue the remote software to reach the print menus vary. Often, the last step is either press **<return>** or press a letter such as **p**. However, do not issue the last step until you have placed your telnet software in its "capture" mode. This is described in the next step.

4. Turn On "Capture Session to File" within your telnet software

From the menu bar at the top of the MAC screen, select **session**. Highlight "capture session to file." From this point, *whatever* is displayed on the screen is stored in a file until capture is turned off. Later, when you open the file there will be some "garbage" characters as well as the search results. This garbage can be removed prior to actually printing the results.

5. Issue the last search software command to begin "printing"

When you issue the last command or key stroke, the article or articles will scroll across your screen as they are stored on disk. What scrolls across the screen may include some garbage but the file will be fairly "clean." When "printing" is finished, a message such as "output to printer complete" will display. Do not respond to that message until the next step is completed.

6. Turn off "capture session to file"

When remote "printing" is completed, a message will display. Return to the **session** option at the top of the MAC screen. Notice that "capture session to file" has a check mark next to it. This indicates that capture is currently on. To turn off "capture session to file," highlight it again.

7. Redraw the Screen Image

Once printing is finished, your screen will be cluttered with various characters. Press **<esc> <r>**. This redraws or "refreshes" what is displayed. In fact, this command can be issued at any time if garbage characters appear on you screen.

8. Switch to Finder

Switching to finder is only needed if you plan to capture other articles to files. You must switch to finder to rename the capture file. If the capture file is not renamed, the next results captured will *replace* the current contents of the file.

9. Give the file "CD Search Results" a different name such as "Search 1"

If you are using the "Library CD Access" icon stored on the Anschutz file server, the default name of the capture file is "CD Search Results." You will see that file somewhere in the window of your telnet software. Rename it something descriptive such as "Search 1." This insures that the next article or articles captured will not replace your most recent search.

10. Switch back to your telnet software



From the "switcher" icon, highlight "NCSA Telnet." The screen will redisplay the message that printing is completed. Press <return>. The database screen will redisplay. At this point, you may conduct a different search or exit the current database.

If you wish to capture additional search results, you must repeat steps 2 through 10.

Terminal Server Access

Terminal server access to the Libraries' cds requires an account on the terminal server. These accounts are only available to faculty, staff, and students. To get an account, go to the Computer Center Customer Service window. You will be required to show a current KU ID. While at the Computer Center, get the write up on Macintosh use of the terminal server.

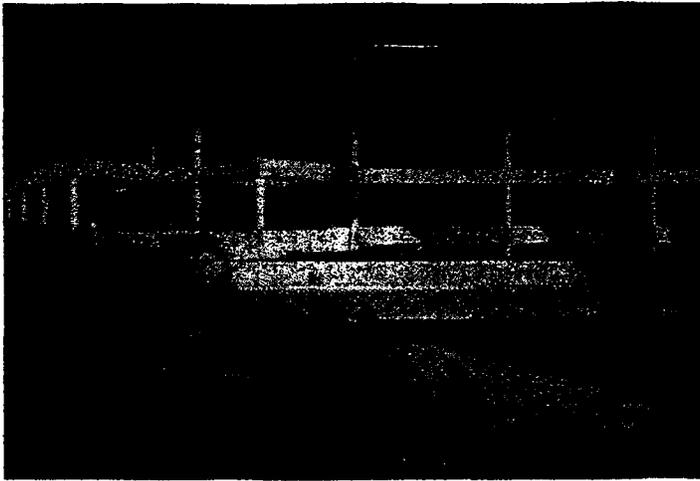
When you dial into the terminal server, you will be asked to enter the user id and password you established at the Computer Center. Once you logged into the terminal server, the following prompt will display: **KU>**. At the prompt, type **telnet cdrom.lib.ukans.edu**. You can then follow the instructions described in this document for using the databases.

WICHITA STATE UNIVERSITY LIBRARY

Location: <http://twsuvm.uc.twsu.edu/>

Telnet: tn3270 tswuvm.uc.twsu.edu

Access to on-line card catalog (LUIS). **MDAS** (Multiple Database Access System), due to licensing restrictions, is only available to WSU student's, faculty or staff. Library holdings are available via **Kansas Library Catalog** (see Pittsburg State University).



WICHITA STATE UNIVERSITY LIBRARIES



[LUIS](#)



[Computer Resources](#)

GENERAL INFORMATION

- [Hours](#)
- [Library Directory](#)
- [Finding Information](#)
- [Branch Libraries: Chemistry Library and Music Library](#)
- [Library Departments and Services](#)
- [Interlibrary Loan](#)

GENERAL INTERNET RESOURCES

- [Virtual Reference Desk](#)
- [Search the Internet](#)
- [Other WSU Home Pages](#)
- [Other College and University Resources](#)
- [Wichita Resources](#)
- [Kansas Resources](#)

RESOURCES BY SUBJECT

- [General Information: Jobs, Schools, Financial Aid](#)
- [Government Documents](#)
- [Business](#)
- [Aviation and Engineering](#)
- [Fine Arts](#)
- [Health Sciences](#)
- [Humanities](#)
- [Library Science](#)

- [Sciences](#)
- [Social Sciences](#)

[Wichita State University Home Page](#)

Last modified 30/07/96 8:22 by awh

LUIS/MDAS

LUIS is the library's computer catalog. It lists what books, journals, and government documents the library owns.

MDAS is the library's Multiple Database Access System. It lets you search for magazine and journal articles in five different databases: Art Index, General Science Index, Humanities Index, Reader's Guide, and Social Science Index.

In order to access LUIS/MDAS, you must have a TN3270 client program installed, and your browser must be configured to use it.

If you are using Netscape, simply go under the menubar and select Options. Select the menu General Preferences, and within that dialog box, select the Apps tab (it's at the top). Click on the browse button for the TN3270 application and specify the path for your TN3270 program. For instance, if you download the above program and unzip it, your path might read C:\netscape\qws3270x.exe.

Because of licensing restrictions, you must be a currently enrolled student, or faculty or staff at Wichita State to access MDAS.

TO ACCESS LUIS/MDAS:

At the WSU logo: tab to command line
type D LIB (for dial library) and press enter.

You are now at the LUIS/MDAS selection menus. Type in the four letter code of your choice and press enter. Type HELP and press enter for online help.

You may use small or capital letters, the system is case insensitive.

TO EXIT THE SYSTEM, TYPE STOP AND PRESS ENTER.



TN3270 to LUIS/MDAS



home

WSU library holdings available on:

KANSAS LIBRARY CATALOG

<http://lawlib.wuacc.edu/washlaw/list/klc.htm>

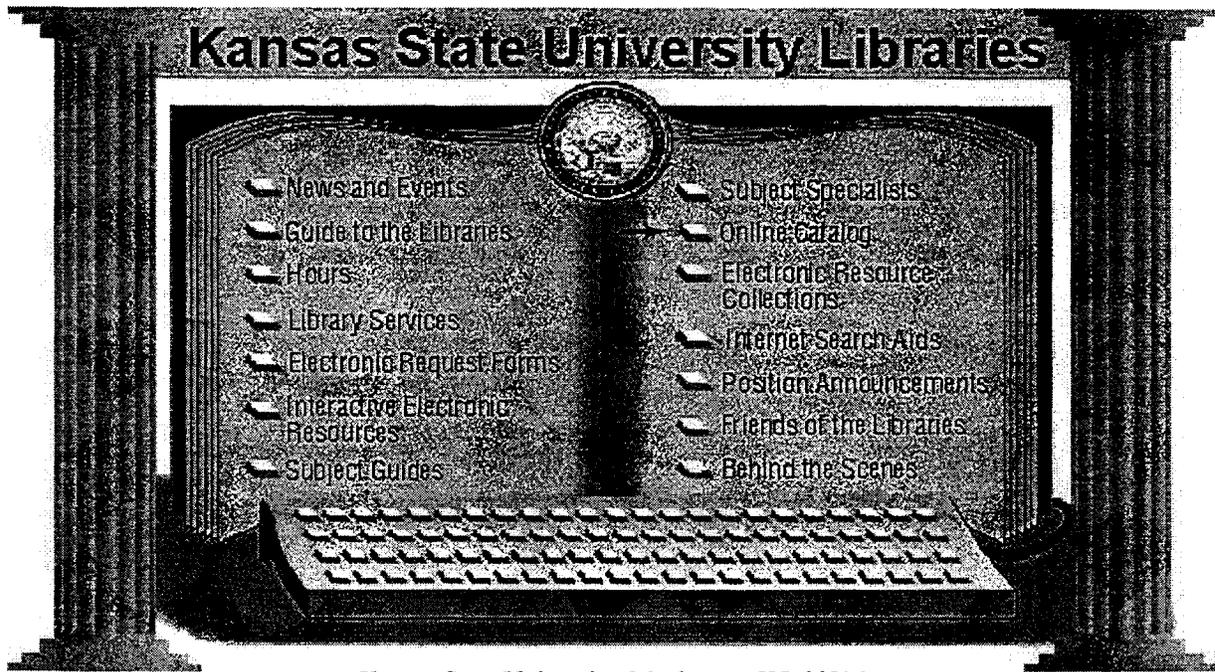
last updated 9/23/96 awh

KANSAS STATE UNIVERSITY

Location: <http://www/lib.ksu.edu/>

Telnet: telnet telnet.ksu.edu or 129.130.1.10

Access to on-line card catalog (LYNX) and KSU branch libraries.



Kansas State University, Manhattan, KS 66506

Phone: (913) 532-6516

FAX: (913) 532-6144

E-mail: library@ksu.edu

Supporting K-State's Missions....

Instruction, Research, Extension, International Programs and Service

Text Version

You are visitor number **2228** since September 3, 1996.

Designed and Maintained by Ruth Nellis, rnellis@ksu.edu,
Cindy Von Elling, cavonell@ksu.edu, and Tim McCune, trm@ksu.edu
Graphic designed by Justin Stahlman and Jason Becker.

Last updated September 3, 1996

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K-State*Kansas State University Libraries*

Online Catalog

ANNOUNCING: REMOTE ACCESS TO NEW LIBRARY SYSTEM

(Available beginning March 25, 1996)

KSU Libraries is pleased to announce that it now supports remote access to its new online catalog via the campus network.

HOW TO DO IT:

To access the new library catalog connect to the campus Unix system; you do not need a unix account to do this.

(From off campus telnet to unix.ksu.edu) Then respond to the system prompts as follows:

(At system prompt /you type:)

- LOGIN: ksulib
- PASSWORD: guest
- TERMINAL TYPE: vt100 (or whatever you normally use here)

The text-based interface to the new library online catalog will then appear and you can follow the instructions and the helps on the screen to search the catalog.

If you encounter problems with your screen display (words overwrite each other, you can't erase or correct words, the format of the screen seems messed up, etc), you may need to check the terminal emulation options in the telnet software you are using. You should have no screen display problems with the following commonly used telnet software packages:

- EWAN terminal emulator, version 1.05 or later (available in current CNS tool kit)
- TCP 3270 for Windows (McGill University), version 3.00 (in next CNS tool kit release)
- Microsoft Windows Telnet
- NCSA Telnet for Macintosh, version 2.6 (available in current CNS tool kit).

WWW INTERFACE COMING SOON:

At present, a text-based display (similar to the Libraries' LYNX system) is the only interface available for remote users of the new system. However a world wide web interface which supports a graphic display is being implemented and may possibly be available by the end of spring semester. Stay tuned for more information about this.

WHY SO MANY INTERFACES?

The Libraries' new system is based on what is called client/server computing architecture in which the work load is shared between a client computer (where you input your search request) and a server (where the library database resides). When the server has completed your search, it returns the results set to be formatted and displayed by your client computer. Many clients can access the same server simultaneously.

Because it is client/server, the Libraries' new system has several different interfaces, or types of displays, depending on the computing platform you're working from. In Hale (Farrell) and the branch libraries, you may be using a graphic Windows client at a PC work station or a text-based client at an IBM terminal. If you're working from your office or dorm room you would use a text-based client (see instructions above) or, soon, a WWW-based client.

Author: Dave Allen, _____
Chair of Library Network Services

Maintained by:
Pam Sexton, _____

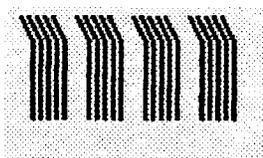
Last Updated: 5/1/96



PITTSBURG STATE UNIVERSITY

Kansas Library Catalog: <http://lawlib.wuacc.edu/washlaw/list/klc.htm>

Holdings are not always up-to-date, but it does include Wichita State's card catalog. This is helpful when you are looking for geology theses. Example search in the write up.



LEONARD H. AXE LIBRARY

Access to the Axe Library catalog

[PSU Home](#)[Home](#)[HELP !!](#)[Search](#)[Hours](#)

**In-house users should close Netscape and load our catalog from the Library main menu
Other users may access our catalog *via telnet***

NOTE: your browser must be configured to launch a telnet session

→ Our holdings also appear in the KLC, the Kansas Library Catalog.

The majority of Library materials may be checked out through our Circulation Department, or on Interlibrary Loan. Some materials, such as Special Collections, or Reference items generally do not circulate. Contact these departments directly if you need further information.

Axe Library consortium partners

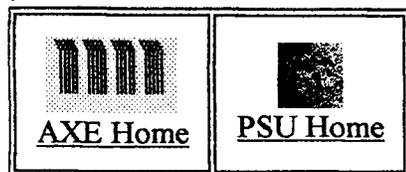
The Library catalog shows holdings for the PSU "IRC" library (Curriculum and Instruction Department) the Fort Scott Community College and Pittsburg USD #250. Future plans call for the addition of holdings from the Pittsburg Public Library. These materials are not currently available on Interlibrary Loan.

IRC

Items marked "IRC" are held in the PSU Instructional Resource Center, located in room B-6, Hughes Hall (ext. 4507). PSU patrons may contact them directly for material.

FSCC

Items marked "FSCC" are held by the Fort Scott Community College Library. Circulation policies are still in development. Please consult a Reference librarian for ideas on suitable material that may be available in our Library.



catpage 960105

KANSAS LIBRARY CATALOG

Information: This catalog is produced by the Kansas State Library in Topeka and is a computer-compiled listing of over two million books in 230 libraries across Kansas. This CD catalog is available at the Kansas State Library, the Topeka & Shawnee County Public Library and Mabee Library at Washburn University. Those with access to the Information Network of Kansas (INK) can access the catalog online. The catalog enables the staff to quickly and efficiently locate specific titles which can be borrowed through the statewide interlibrary loan system.

[Return to Libraries Index](#)



"kansas geology" -- Combined Headings

[[<= Prior Page](#) | [Next Page =>](#)]

[[New Search](#) | [Main Menu](#) | [Exit PAC](#) | [Help](#)]

Kansas geology <Title> [[1 Title](#)]

Kansas--Geology. <Subject> [[43 Titles](#)]

Kansas. Geology. 1954. <Title> [[1 Title](#)]

Kansas geology : an introduction to landscapes, rocks, minerals, and fossils / <Title> [[4 Titles](#)]

Kansas--Geology--Congresses. <Subject> [[1 Title](#)]

Kansas--Geology--Data processing. <Subject> [[1 Title](#)]

Kansas--Geology--Guidebooks. <Subject> [[1 Title](#)]

Kansas--Geology--Hugoton Embayment. <Subject> [_____]

Kansas--Geology--Maps. <Subject> [[1 Title](#)]

Kansas--Geology--Publications. <Subject> [[1 Title](#)]

Kansas--Geology--Tuttle Creek Reservoir region. <Subject> [[1 Title](#)]

Kansas GeoMaps / <Title> [[3 Titles](#)]

KANSAS -- GHOST TOWNS. <Subject> [[1 Title](#)]

Kansas. Girls' Industrial School, Beloit. <Author> [[1 Title](#)]

Kansas GIS initiative. <Title> [[1 Title](#)]

The Kansas globe. <Title> [[2 Titles](#)]

Kansas goals for adult learning. <Title> [[1 Title](#)]

Kansas gold / <Title> [[1 Title](#)]

The Kansas gold mines. <Title> [[1 Title](#)]

Kansas--Gold mines and mining. <Subject> [[1 Title](#)]

[[<= Prior Page](#) | [Next Page =>](#)]



Impact/ONLINE WebPAC^(tm) Main Menu -- Kansas Main Catalog

Patron Access Catalog -- Choose one of the following options:

- _____ uses author name, title, or subject terms to browse catalog items in alphabetic order.
 - Search by Keyword uses one or more words to find items with matching words. You can search for items by author, title, subject, or notes.
 - Search by Number uses an ISBN or other number to locate a specific item.
-

[[Exit PAC](#) | [Help](#) | [About](#)]

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"Kansas--Geology--Hugoton Embayment." <Subject> -- Title 1 of 2

[<= First Title | <= Prior Title | Next Title => | Last Title =>]
[Card Format | Labeled Format | MARC Format | Holdings]
[Title List | Cross-References | Term List | Prior Search | New Search | Main Menu | Exit PAC |
Help]

Card Format

The Morrowan and Chesteran rocks of Southwestern Kansas, by Hugh W. Gill, Jr. 1961.
56 leaves incl. diags. (part fold., part in pocket) 29 cm.

Thesis (M.S.)--Wichita State University, Dept. of Geology, 1961.
Bibliography: leaves 53-56.

1. Geology, Stratigraphic--Pennsylvanian--Maps. 2. Geology, Stratigraphic--Mississippian--Maps. 3.
Kansas--Geology--Hugoton Embayment. I. Wichita State University. Theses.

Holdings

WSU: (Wichita) -

[<= First Title | <= Prior Title | Next Title => | Last Title =>]
[Top of Page | Main Menu | Exit PAC | Help]

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OTHER LIBRARIES

LINDA HALL LIBRARY

Leonardo: <http://www.lhl.lib.mo.us/tas/leonard.htm>

Excellent science and technology collection, however, Leonardo can be difficult to access.

LIBRARY OF CONGRESS

Location: <http://www.loc.gov/>

Telnet: 140.147.254.3

Access to on-line card catalog and congressional information.

MIT (MASSACHUSETTS INSTITUTE OF TECHNOLOGY)

Location: <http://web.mit.edu/>

Telnet: telnet library.mit.edu

DENVER PUBLIC LIBRARY

Location: <http://www.denver.lib.co.us/dpl/cartltint.html>

Telnet: carl.org

UnCover document delivery service available through CARL library network. You may also access UnCover via Kansas Geological Survey's PTTC homepage.

Linda Hall Library

Leonardo

Holdings

The LEONARDO online catalog contains the monograph and serial records for the Linda Hall Library and for the Spencer Art Reference Library of the Nelson-Atkins Museum of Art. Records for the recently acquired collection of the Engineering Societies Library will be added to the database by the end of 1996. Other collections to be added in the future include serials acquired after 1989, technical reports, government documents, maps, and engineering standards and specifications.

Access

Currently, LEONARDO is accessible through on-site public client workstations, direct telnet connections to opac.lhl.lib.mo.us (login: leonardo, password: lhl), or the telnet link below. A Z39.50 web interface is forthcoming in 1996. Also in the future, local modem dial-up ports will allow SLIP and PPP connections to LEONARDO. Access times for LEONARDO are 24 hours per day, except Tuesday evenings.



[Telnet to LEONARDO](#) (Login as "leonardo" with password "lhl").

If desired items are not found in LEONARDO, verify availability in the Linda Hall Library collection by contacting the [Reference Services](#) department at 1-800-662-1545 ext. 701, or at reference@lhl.lib.mo.us.

Hardware and Software

The LEONARDO database resides on a Sun SPARCserver 1000 with 30 Gbytes of storage and 128 Mbytes of memory. LEONARDO uses [Ameritech Library Services' Horizon](#) library information management system. Based on client/server architecture, the Horizon server is a Sybase SQL database running on a Solaris 2.3 Unix operating system. Linda Hall uses both DOS/Windows and Macintosh public access clients, as well as OS/2 staff clients for accessing LEONARDO. Other Ameritech Library Services products used at Linda Hall include [Infoshare](#) and [WinPac](#).

Sponsors

The LEONARDO project is funded by an endowment established for automation at the Linda Hall and Spencer Art Reference Libraries. Contributors to date to the LEONARDO endowment include:

- The Linda Hall Library Board of Trustees
- Black & Veatch
- Boatmen's First National Bank of Kansas City (Speas and Cowden Trusts)

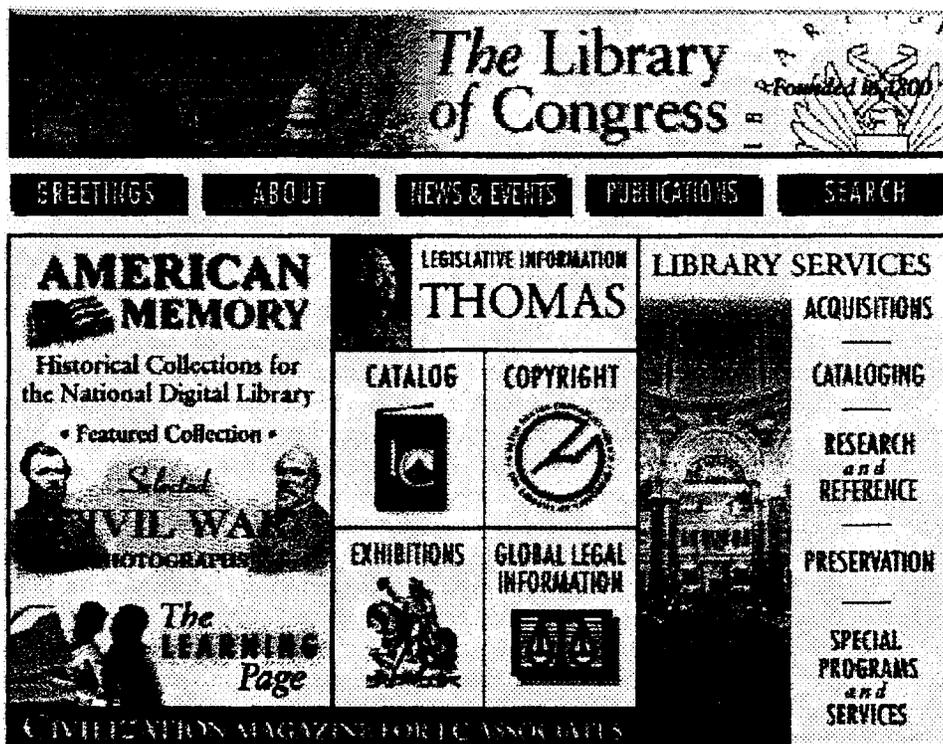
- Burns & McDonnell
- The Hall Family Foundation
- The Kemper Foundation
- The Sosland Foundation
- Yellow Freight System, Inc.
- Western Resources



[Home](#)

Technical questions about LEONARDO? Contact [James Huesmann](#).

[text-only]



Preview Selections:

George Washington and Theodore Roosevelt Papers

MORE Databases and Resources

→ **Library of Congress Information System (LOCIS)**
Vietnam War Era POW/MIA Database | LC MARVEL (Gopher)
Access to Catalogs at Other Libraries | Public FTP Site

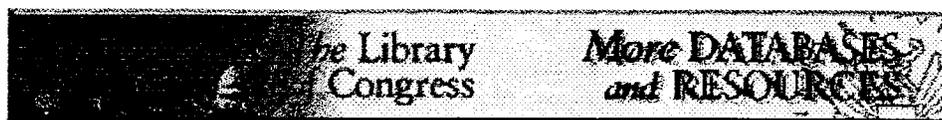
The National Digital Library Competition

Information for Publishers | Standards

Explore the Internet

Library of Congress

Comments: lcweb@loc.gov (07/16/96)



The Library of Congress (LC) offers a wide variety of online databases and Internet resources to the public. In addition, we provide an easy-to-use gateway for searching other institutions' online catalogs.

Go to: [LOCIS](#) | [LC MARVEL](#) | [Gateway to Online Catalogs](#) | [Vietnam POW/MIA Databases](#) | [LC Mailing Lists](#) | [Public FTP Site](#)

Databases on LOCIS (Library of Congress Information System)

- Federal Legislation:** Information about legislation since 1973. Records for the current Congress are up-to-date within 48 hours.
- Copyright:** Records for materials registered for copyright and copyright legal transactions since January 1978.
- Braille and Audio:** Records for materials designed for persons unable to read standard print.
- Guides:** Records for guides and resources in science and technology topics.
- Organizations:** Records describing more than 13,000 research organizations (primarily in science, technology, and social sciences) that answer questions and supply information to the public.
- Foreign Law:** Records that abstract and cite laws and regulations of some foreign countries as well as journal articles on legal topics.

Connecting to LOCIS requires the use of Telnet or TN3270 software. Telnet and TN3270 are TCP/IP programs that allow you to connect to and use computers that are connected to the Internet; many online catalogs are only available through this connection method. Check with your Internet Service Provider to see if you can use Telnet or TN3270 software.

- [About LOCIS](#)
- [How to Search LOCIS: Quick Search Guides](#)
- [Connect to LOCIS using Telnet](#)
- [Connect to LOCIS using Telnet 3270](#)
- [More About Using TELNET and TN3270 from Web Browsers](#)
(*America Online and Prodigy users please read.*)

HOURS OF SERVICE (All times USA Eastern)

Monday-Friday: 24 hours a day (Files may be unavailable for short periods of time overnight for maintenance.)

Saturday and Sunday: Most files are available until 5:00 p.m.

(Note: LOCIS also provides access to catalog records for books, microforms, serials, cartographic items, music, visual materials (films, filmstrips, posters, prints, photographs), computer files, manuscripts, thesauri of names and subject terms used in cataloging records, catalog records from some other research libraries, and records for some bibliographies.)

Library of Congress MARVEL (LC MARVEL)

LC MARVEL is the Library's Gopher-based Campus-Wide Information System (CWIS). It includes information about the Library and its services as well as subject and topic-based access to Internet sites worldwide. LC MARVEL is available to the general public 24 hours a day, 7 days a week.

- [About LC MARVEL](#)
 - [Connect to LC MARVEL's Main Menu](#)
-

Access to Online Catalogs at Other Institutions

The online catalogs of over 100 institutions are now accessible using Z39.50, an international standard for search and retrieval. Just select an institution and fill in the easy-to-use form. Fill-in forms are also available for the [Books and Name Authorities files of the Library of Congress' online catalog](#).

- [About Z39.50 Gateway](#)
 - [Search Online Catalogs](#)
-

Vietnam Era Prisoner of War/Missing in Action and Task Force Russia Databases

These databases have been established to assist researchers interested in investigating the U.S. Government documents pertaining to U.S. military personnel killed, missing, or imprisoned in Southeast Asia during or after the conclusion of American involvement in the Vietnam Conflict. The full title of this collection is "Correlated and Uncorrelated Information Relating to Missing Americans in Southeast Asia." Task Force Russia documents are used to attempt to locate Americans thought to have been held in the former Soviet Union. These searchable databases of information are available 24 hours a day, 7 days a week.

- [Connect to the POW/MIA and Task Force Russia Databases](#)
-

Library of Congress Public LISTSERVs

The Library hosts a wide variety of Internet mailing lists that are available to the public, including: the Library of Congress Cataloging Newslines (LCCN), and Federal Librarians (FEDLIB). For a complete listing of the Library's public mailing lists send an email message to listserv@loc.gov; the complete text of the mail message should be the word -- **lists**. Subscription requests should be sent to listserv@loc.gov.

- [The Library's guide to using *Discussion Groups: Mailing Lists*](#)

Library of Congress Public FTP Site

The Library of Congress offers FTP access to a number of informational files and documents. The FTP site ([ftp.loc.gov](ftp://ftp.loc.gov)) is available 24 hours a day, 7 days a week.



The Library of Congress Home Page

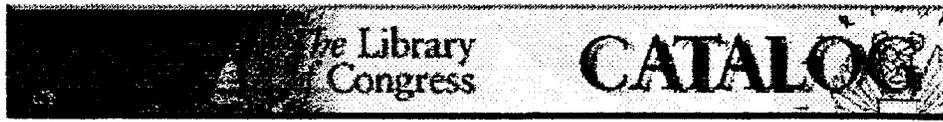
Library of Congress

Comments: lcweb@loc.gov (08/08/96)

L O C I S : LIBRARY OF CONGRESS INFORMATION SYSTEM

To make a choice: type a number, then press ENTER

- | | | | |
|----|---|---|-------------------|
| 1 | Library of Congress Catalog | 4 | Braille and Audio |
| 2 | Federal Legislation | 5 | Organizations |
| 3 | Copyright Information | 6 | Foreign Law |
| * | * | * | * |
| 7 | Searching Hours and Basic Search Commands | | |
| 8 | Documentation and Classes | | |
| 9 | Library of Congress General Information | | |
| 10 | Library of Congress Fast Facts | | |
| 11 | * * Announcements * * | | |
| 12 | Comments and Logoff | | |
- Choice:



The Library of Congress provides public access to its catalog records in a variety of ways. Each way has its own search features, combination of files, download options, and connection method. Currently the Library provides access to its catalog two ways using the Internet and one way using CD-ROM discs.

Go to: [LC Catalog on LOCIS \(via Telnet\)](#) | [Web Gateway for Searching LC Books and Name Authorities](#)

LC Catalog on LOCIS (Library of Congress Information System)

LOCIS offers access to catalog records for books, microforms, serials, cartographic items, music, visual materials (films, filmstrips, posters, prints, photographs), computer files, manuscripts, thesauri of names and subject terms used in cataloging records, catalog records from some other research libraries, and records for some bibliographies.

LOCIS provides browsable indexes, keyword searching, Boolean combinations, various display options, set creation, and advanced features for limiting sets.

Connecting to LOCIS requires the use of Telnet or TN3270 software. Telnet and TN3270 are TCP/IP programs that allow you to connect to and use computers that are connected to the Internet; many online catalogs are only available through this connection method. Check with your Internet Service Provider to see if you can use Telnet or TN3270 software.

- [About LOCIS](#)
- [How to Search LOCIS: Quick Search Guides](#)
- [Connect to LOCIS using Telnet](#)
- [Connect to LOCIS using Telnet 3270](#)
- [More About Using TELNET and TN3270 from Web Browsers](#)
(*America Online and Prodigy users please read.*)

HOURS OF SERVICE (All times USA Eastern)

Monday-Friday: 24 hours a day (not all files are available after 9:30 p.m.)

Saturday: Until 5:00 p.m.

Sunday: After 11:00 a.m. (files may be unavailable from 5 p.m. to 8 p.m. for maintenance)

(Note: LOCIS also provides access to U.S. federal legislation, copyright registrations, citations for Braille and audio materials, abstracts of selected foreign laws and regulations, citations to organizations, and selected science bibliographies.)

Web Gateway for Searching LC Books and Name Authorities

The Library of Congress offers a Web gateway for searching the books and name thesaurus files of the LC Catalog on LOCIS. The simple search option provides keyword, phrase, or standard number access by personal name or title. The advanced search option allows Boolean searching of multiple terms. Word(s) or a phrase may be searched in various parts of the catalog record. This gateway uses the Z39.50 protocol.

- [Simple Search \(title or personal name\)](#)
- [Advanced Search \(multiple terms using Boolean operators\)](#)
 - [Tips for Using the Advanced Search](#)

HOURS OF SERVICE (All times USA Eastern)

Monday-Friday: 6:30 a.m. - 9:30 p.m.

Saturday and Sunday: 8:00 a.m. - 5:00 p.m.

CDMARC Bibliographic

CDMARC Bibliographic is a set of six compact discs, which you or an institution can purchase, that contain over 5 million USMARC records for books, serials, maps, music, visual materials, and computer files. CDMARC Bibliographic allows you to use 19 search and browse indexes to access the Library of Congress USMARC bibliographic database from your personal computer.

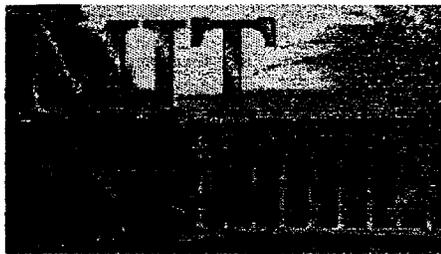
- [More information about CDMARC Bibliographic](#)
-



[The Library of Congress Home Page](#)

Library of Congress

Comments: lcweb@loc.gov (09/06/96)



Massachusetts Institute of Technology

MIT is an independent, coeducational university located in Cambridge, Massachusetts. For more informal information, see the MIT Student Information Processing Board's [SIPB WWW Server](#). Our first campus information system was [TechInfo](#).

Spotlight on MIT pages: [5ESS Upgrade Will Affect Phone Service to MIT on Oct. 12, 1996](#).

General Information

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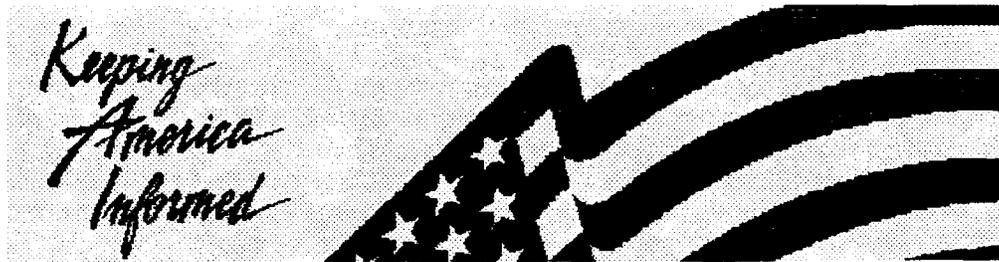
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Congressional actions related to the geosciences, including testimony. Information on AGI publications and columns from *Geotimes*.

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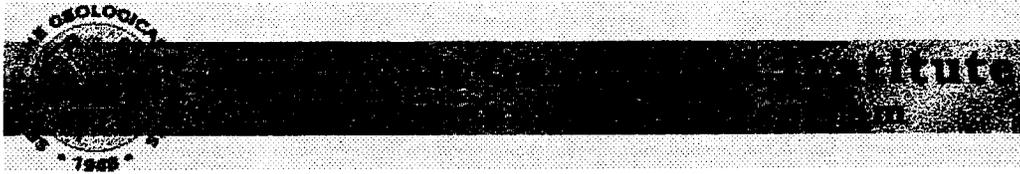
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American Geological Institute

Government Affairs Program

AGI Testimony: House Interior Appropriations Subcommittee

Statement by Dr. Marcus E. Milling of the American Geological Institute to the Subcommittee on Interior and Related Agencies, Committee on Appropriations, U.S. House of Representatives in support of Fiscal Year 1997 Appropriations for the U.S. Geological Survey and the Department of Energy Fossil Energy R&D Program

March 7, 1996

Mr. Chairman and Members of the Subcommittee:

Good afternoon. I am Dr. Marcus E. Milling, executive director of the American Geological Institute (AGI). I appreciate this opportunity to present AGI's testimony in support of fiscal year 1997 appropriations for the U.S. Geological Survey and the Department of Energy's Fossil Energy Research and Development Program. AGI also supports funding for geoscience research in other Interior agencies, particularly the Minerals Management Service.

AGI is a nonprofit federation of 29 geoscientific and professional associations that represent more than 80,000 geologists, geophysicists, and other earth scientists. In addition, 115 colleges and universities are AGI Academic Associates, and 30 private companies are AGI Corporate Members. Founded in 1948, AGI provides information services to geoscientists, serves as a voice for shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in mankind's use of resources and interaction with the environment.

Last year, geoscience agencies under this subcommittee's jurisdiction faced the most serious budgetary challenge in their history. This challenge came even as the United States began to recognize its increasing vulnerability to earthquakes, floods, droughts, water pollution, volcanic eruptions, global environmental change, contamination from waste disposal, and reliance on unstable sources of foreign oil and minerals. None of these problems can be confronted without continuing geoscientific input, as this subcommittee and Congress ultimately determined. Federal investments in the geosciences continue to pay back large dividends, and the rationale for continuing federal support remains strong. The national need for a federal role in the geosciences is based on a number of factors, most notably:

The demand and competition for Earth's land, water, energy, and materials is continually increasing. Furthermore, the impact of natural hazards such as floods and earthquakes will increase as our population grows fastest in those areas most prone to such catastrophic events.

Providing critical long-term data on natural resources and geologic hazards requires an integrated national effort. This information represents a fundamental public good required by the private sector and

by government agencies at all levels as the basis for exploration, planning, environmental policy, and land-use decisions. The collection of this data must be coordinated and assessed at a national level to ensure that crucial needs are being met.

U.S. Geological Survey

The central mission of the Geological Survey (USGS) is to provide reliable, objective earth science data and analysis of hazards, resources, and the environment from a national perspective. Virtually every American citizen and virtually every federal, state, and local agency benefits either directly or indirectly from USGS products and services. The USGS is widely recognized for providing unbiased data used by others to better manage the nation's resources. It is to be commended for focusing on the needs of its customers and for developing partnerships to leverage federal dollars. As Chairman Regula wrote in the current issue of *Geotimes*, the Survey's "willingness and ability to respond to the changing needs of society may have been the single most significant factor in helping it survive in the current budget climate." AGI also supports the Survey's emphasis on conducting strategic science, identifying specific projects that have broad applicability to national problems.

The major earthquake that devastated Kobe, Japan in 1995 is a powerful reminder of the need for reducing the impact of geologic hazards. In order to be successful, the federal government's increased mitigation efforts must include a strong component of research into these hazards. The societal benefits and returns on investment of geoscience R&D on earthquakes and other geologic hazards extend to such areas as housing, transportation, commerce, agriculture, communications, and human health and safety.

The past year has seen a large number of severe floods -- in the Pacific Northwest, the Northeast, and the Gulf Coast. The USGS provides streamflow information that is the basis for flood forecasts by the National Weather Service and emergency response planning by federal, state, and local agencies. This information is collected through the USGS Federal-State Cooperative Program, a partnership with over 1100 state and local agencies that cost-share the data collection which the USGS then makes available to all potential users. This program should receive funding adequate to maintain historical levels of service and support modernization.

The health of the nation's water resources is another prominent national concern. Depletion of surface-water and ground-water supplies has reached significant proportions in some regions, and contamination is a problem in many communities. As the primary source of data on the nation's water resources, the USGS monitors ground- and surface-water contamination and other threats to our water supplies, contributing to the remarkable levels of public health enjoyed by all Americans.

Geologic maps are a fundamental data source for all of the USGS missions, and AGI hopes that the current efforts in Congress to reauthorize the National Cooperative Geologic Mapping Act will be successful. AGI urges this subcommittee to fund this program and particularly the external StateMap and EdMap components that are matched by state and university dollars. Although AGI is generally supportive of the use of contracting for map production and other services where the private sector can do a better job, we are concerned that cost and quality be considered in any calls for an increase in contracting of the mapping functions in the USGS and other Interior agencies.

During the current fiscal year, the USGS is assuming new responsibilities formerly housed in the National Biological Service (NBS) and U.S. Bureau of Mines (USBM). If carefully managed, these new responsibilities can significantly enhance the core responsibilities of the USGS. The USBM mineral information function provides valuable information on national and world mineral resources that must not

information function provides valuable information on national and world mineral resources that must not be lost. The integration of the NBS functions provide a number of opportunities for focused interdisciplinary research in areas such as South Florida and San Francisco Bay. The highly successful National Water Quality Assessment (NAWQA) program already collects both hydrologic and biologic data for our nation's watersheds. In order to address the merger issue, AGI convened a workshop of key scientific and professional societies in the geosciences and life sciences that are affected by the merger of NBS and USGS. We hope to issue a consensus report in mid-April that will be helpful to both the Department of the Interior and to Congress in implementing this merger.

The USGS needs the resources and flexibility to address an evolving mission and adapt to changing national priorities. AGI believes that the \$730.5 million provided for the USGS by Congress in Conference Report 104-402 for fiscal year 1996 represents the minimum amount necessary to keep the Survey's operations viable. This is a modest investment in the future of our nation and our planet. If we do not successfully maintain our federal investment in the USGS, we run the risk of more costly tragedies that will increase the federal deficit.

DOE Fossil Energy Research and Development

In 1994, domestic oil production declined to its lowest level since 1946. For the second consecutive year, the United States has imported more than 50 percent of its total oil demand. Imported oil accounted for about 31 percent of the merchandise trade deficit in 1994. Further decreases in domestic production will exacerbate the trade deficit problem and increase foreign dependence on a resource that is vital to the economic strength and national security of the nation. While research on renewable resources and energy efficiency is critical to America's future, continued research on fossil energy is no less important. The societal benefits of fossil energy R&D extend to such areas as economic and national security, job creation, capital investment, and reduction of the trade deficit.

DOE's Fossil Energy R&D program is making a significant contribution to development of new technologies required for cost-effective, efficient development of U.S. oil and gas resources. Reductions in the program would adversely affect the domestic oil and gas industry, particularly small independent producers, and would not be in the best interests of the nation. The federal money spent on these programs goes to support laboratories and improve information dissemination. This money does not go into corporate coffers, but it will help American businesses stay in business by giving them a technological edge over their foreign competitors.

AGI supports the integration of the oil and gas programs as has long been done in industry. Combining these programs will result in improved efficiency and better reflects the way that the researchers work. AGI requests that the DOE Fossil Energy programs be funded at a level no lower than the \$417.2 million provided for in Conference Report 104-402 for fiscal year 1996. These funds are a small fraction of DOE's total budget, but they represent an important investment in America's future. We particularly urge that funding should be maintained for the following key components:

Computational Technology Forum. This program provides a strong link for joint development of advanced technology among the private sector, national laboratories, and universities to enhance the competitiveness of the domestic natural gas and oil industry and by doing so address the nation's oil and gas supply needs. Funds for this program go exclusively to our national labs and universities, and they are leveraged by matching funds from industry.

Geoscience Data Repository System. Domestic geological and geophysical data are critical to the

energy security and economic prosperity of the United States. A consequence of the ongoing downsizing of the U.S. oil and gas industry is that billions of dollars worth of domestic geological and geophysical data are in jeopardy of being irrevocably lost or destroyed. According to many independent oil producers, a national geoscience data repository system would enable them to expand their search for and development of domestic oil and gas resources. AGI is working with DOE and the private sector to leverage federal dollars with industry contributions in order to establish a national geoscience data repository system for the use of industry, government, and the scientific research community.

Technology Transfer. The historic symbiotic relationship between major oil companies and independent producers has largely disappeared, and independent producers do not have access to existing and emerging advanced exploration, reservoir management, and production technologies. AGI supports DOE's efforts to accelerate the dissemination of these technologies through the Petroleum Technology Transfer Council and other mechanisms so that more domestic petroleum can be produced, and fewer producing fields are abandoned.

Functions from the U.S. Bureau of Mines. Several of the functions of the former U.S. Bureau of Mines (USBM) were transferred to the DOE fossil energy budget in fiscal year 1996, specifically health and safety research and the materials partnership program. If those functions are to remain with DOE, it is important that they receive adequate support. The health and safety research of the USBM has been very effective in improving quality of life for thousands of American miners and its activities must be continued in the future. These functions should receive no less than the \$40 million provided in Conference Report 104-402.

AGI appreciates this opportunity to present our views to the subcommittee. We would be pleased to answer any questions or to provide additional information for the record.

Please send any comments or requests for information to **AGI Government Affairs Program**
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Last updated March 11, 1996



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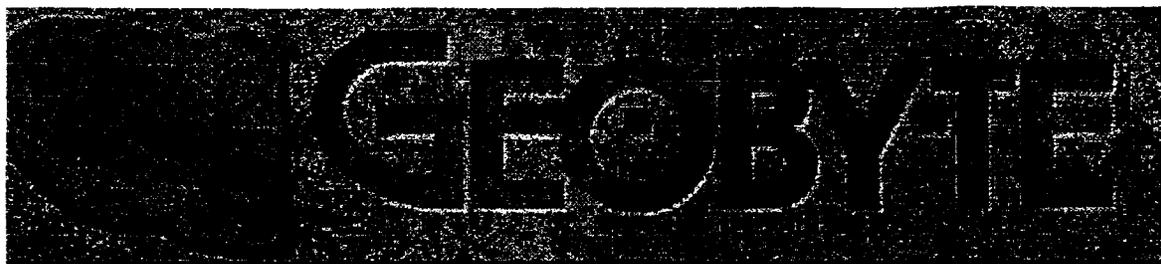
Location: <http://www.geobyte.com/index.html>

Includes table of contents for *AAPG Exploration* and the *Bulletin* meeting dates and society news.

SOCIETY OF PETROLEUM ENGINEERS

Location: <http://www.spe.org/spehome.html>

Society news, information on publications, and table of contents for the *Journal of Petroleum Technology*.



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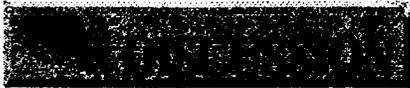
Current listings of AAPG activities, member services, leadership, and other news items of interest to the exploration geology community.

AAPG DATA SYSTEMS

Science-related information, including: monthly AAPG Bulletin in Adobe Acrobat™ format searchable Meeting Paper Abstracts, and a searchable AAPG Membership Directory.

GATEWAYS

Other related earth science WWW sites

		<p>1997 AAPG/SVG 1997 Annual Meeting Call for Papers Deadline April 6-9 Dallas, Texas</p> 
<p>Post announcements, questions, answers and requests in the new <u>AAPG Forum</u>.</p>	<p>October 1996 Explorers online.</p>	

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AAPG Bulletin and Explorer

March 1996

There are seven Bulletin papers and an Explorer file available.

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Users can purchase the full Acrobat Exchange software from their local software dealer, and obtain full features of the application.

File Names (March):

MOWERS.PDF [500kb]

Quantification of Porosity and Permeability Reduction Due to Calcite Cementation Using Computer-Assisted Petrographic Image Analysis Techniques, by Theodore T. Mowers and David A. Budd.

PLUMMER.PDF [600kb]

Origin of Beach-Stranded Tars from Source Rocks Indigenous to Seychelles, by Phillip S. Plummer.

LEE.PDF [2.4mb]

Bryant Canyon Fan System: An Unconfined, Large River-Sourced System in the Northwestern Gulf of Mexico, by Gwang H. Lee, Joel S. Watkins, and William R. Bryant.

ZAPATA.PDF [1.7mb]

Thrust-Front Zone of the Precordillera, Argentina: A Thick-Skinned Triangle Zone, by Tomas R. Zapata and Richard W. Allmendinger.

SOREGHAN.PDF [1mb]

Textural and Compositional Variability Across Littoral Segments of Lake Tanganyika: The Effect of Asymmetric Basin Structure on Sedimentation in Large Rift Lakes, by Michael J. Soreghan and Andrew S. Cohen.

ADAMS.PDF [3.2mb]

Precambrian Basement Geology of the Permian Basin Region of West Texas and Eastern New Mexico: A Geophysical Perspective, by Donald C. Adams and G. Randy Keller.

KERR.PDF [1mb]

Application of an Inverse Method for Calculating Three-Dimensional Fault Geometries and Slip Vectors, Nun River Field, Nigeria, by Hugh G. Kerr and Nicky White.

EXPL MAR.PDF [5.8mb]

AAPG Explorer for the month of March 1996.

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1996 EUROPEC

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The primary mission of the Society of Petroleum Engineers is to collect, disseminate, and exchange technical information pertaining to the development of oil and gas resources. Information is provided on the SPE Board of Directors, SPE Foundation, SPE Bylaws, honors and awards, and Committees.

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Society membership is available to qualified individuals employed in the petroleum industry. More than 50,000 managers, engineers, operating personnel, scientists, and educators involved in the drilling, exploration, and production sectors of the oil and gas industry are members of SPE. SPE members reside in 104 countries.

→ Publications

SPE journals, proceedings of SPE-sponsored meetings, individual technical papers, SPE-published books, and books from other publishers are available from the Society.

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Conferences, exhibitions, Forums, and short courses are major vehicles used by the Society of Petroleum Engineers to disseminate technical information to the petroleum industry. Wherever petroleum professionals work, they are not far from access to SPE events and the opportunity for interchange of ideas and experiences. The Society adheres to rigid standards to ensure the technical quality of meeting and exhibition programs.

Sections and Student Chapters

SPE currently has 141 sections in 52 countries and 80 student chapters in 29 countries. Listings of the Sections and Student Chapters are provided.

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Connections

Many societies and groups supply information pertinent to oil and gas exploration and production. Provided are links to societies and sources of additional information.



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SAVE: An Alliance for Reservoir Simulation Software Integration *Hans Haringa*, Shell Intl. E&P; *Todd Little*, Western Atlas Software; *Andy Austin*, BP Exploration; and *Robert Aydelotte*, Petrotechnical Open Software Corp.

Using the Spreadsheet Table Command To Solve Complex Engineering Problems *D.R. Boone*, Dwights Energydata Inc.

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Securing the Future: In Partnership With the Environment *A.L. Smith*, McDermott Marine Construction Ltd.

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Testing of Horizontal Wells With Overlying Gas Cap *C.H. Fleming, J.R. Gilman, and Hossein Kozemi*, Marathon Oil Co.

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pb	publication name field	pb=jpt
and	boolean	au=russell and pb=jpt
or	boolean	au=russell or au=smith
not	boolean	au=russell not au=jones
(...)	parentheses for grouping	au=(russell not jones) and pb=jpt
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<	numeric less than	py<1986
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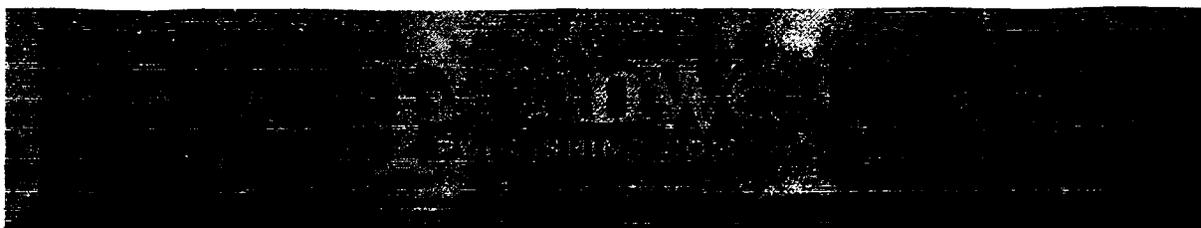
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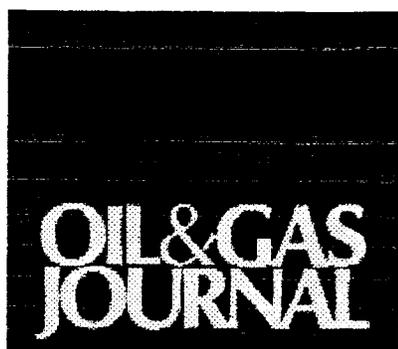
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- First Troll gas delivered to Germany
- WATCHING GOVERNMENT: Good and bad from the 104th
- INDUSTRY BRIEFS

DRILLING/PRODUCTION

- California extended-reach project approved
- Shell commissions new drilling spar design
- ARCO group to develop North Slope oil field

OGJ Newsletter

Technology**PIPELINE**

- Metering, other equipment head for Colombian gas pipeline
Equipment for a 217-mile gas pipeline in Colombia was ordered, fabricated, and shipped within a tight 8-month delivery schedule.

DRILLING

- Shear rate has greater influence on cement slurry properties than total mixing energy
Paul Padgett

New research reveals that the shear rate from a mixing system has a much greater influence on cement slurry properties than total mixing energy.

REFINING

- Nelson-Farrar Cost Indexes
- New equations predict boiling point from viscosity, gravity
José Vicente Gomez

A programmable calculation routine predicts the boiling points of petroleum fractions better than the API nomograph, and without requiring a distillation curve.

- NELSON-FARRAR QUARTERLY COSTIMATING: Equipment costs rise moderately
Gary Farrar

PROCESSING

- Integrated process plant management systems proliferating

TRANSPORTATION

- Record fine levied in Puerto Rico spill

EXPLORATION

- Deepwater acreage up for bid off Trinidad
- BP secures Mozambique exploration deal
- Gulf Sale 161 deemed another major success
- Tanzania wildcats to evaluate Jurassic Mandawa salt basin

Production Report

New floating production system designs and sophisticated subsea and well completion equipment will enable the industry to continue development in ever deeper water. Also, U.S. producers need to control power costs before electric utility deregulation further complicates power purchases. One opportunity is to apply newer sucker-rod pump design methods to improve pumping efficiency.

- New technology, concepts aim at lower costs
Guntis Moritis
- Remote actuation system speeds deepwater well completions
Terry Bussear
- Cutting power costs starts with basic analyses
Mike Paik
- Improved designs reduce sucker-rod pumping costs
Gabor Takacs



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VIRTUAL EARTH PAGE

http://atlas.es.mq.edu.au/users/pingram/v_earth.html

An introduction to the World Wide Web for Earth Scientists. It is not intended to be a resource listing, but to illustrate the potential of the Web as an information retrieval system. (Australia)

ONLINE RESOURCES FOR EARTH SCIENTISTS (ORES)

<http://www.sni.net/~bthoen/ores/index.html>

An annotated listing of online earth sciences resources.

COLLECTIONS OF PETROLEUM RELATED INTERNET RESOURCES

<http://www.kgs.ukans.edu/PRS/URLs/EnergyLists.html>

An annotated collection of links to servers that maintain list of petroleum related internet resources.

sci.geo.petroleum

<http://www.slb.com/petr.dir/.guthery.html>

A listing with links to petroleum related internet resources. Good listing of Newsgroups and university earth science departments. Maintained by Scott Guthery <guthery@slb.com>.

ON-LINE EARTH SCIENCE JOURNALS

http://www.epcc.ed.ac.uk/geo/petroleum/journals_FAQ.html

A listing with links to online earth science journals (United Kingdom)

Kansas Related Internet Sources

Kansas College and University Home Pages

Baker University , Baldwin City
<http://www.bakeru.edu/>
Bethel College , North Newton
<http://www.bethelks.edu/>
Emporia State University , Emporia
<http://www.emporia.edu/index.html>
Fort Hays State University , Hays
<http://fhsuvm.fhsu.edu/>
Kansas State University , Manhattan
<http://www.ksu.edu/>
MidAmerica Nazarene College , Olathe
<http://www.manc.edu/>
Pittsburg State University , Pittsburg
<http://www.pittstate.edu/>
University of Kansas , Lawrence
<http://kuhttp.cc.ukans.edu/>
Washburn University , Topeka
<http://www.wuacc.edu/>
Wichita State University, Wichita
<http://www.twsu.edu>

Weather

Kansas
Kansas State University
<http://www.ksu.edu/unicorn/wtmenu.weather>
University of Kansas
<http://chinook.phsx.ukans.edu/>
US and Global Weather Maps, Forecasts and Other Resources
<gopher://wx.atmos.uiuc.edu:70/11/>
Annotated List of Weather Resources
<http://www.zilker.net/%7Ehal/geoscience/weather.html>

Political

Federal

Senator Nancy Kassebaum
<http://www.senate.gov/senator/kassebaum.html>
Congressman Sam Brownback, 2nd District
<http://www.house.gov/brownback/welcome.html>
Congressman Todd Tiahrt, 4th District
<http://www.house.gov/tiahrt/welcome.html>
Other Kansas Members of the U.S. House of Representatives
http://www.house.gov/mbr_dir/membr_state_KS.html

State

Governor Bill Graves

<http://www.kspress.com/governor/Index.html>

State Representative Robin Jennison (R-117th), Healy

<http://www.databank.com/~jennison/>

State Representative: Jim Morrison (R-121st), Colby

<http://exodus.databank.com/~morrison/mypage.html>

Other

Sights of Kansas

<http://falcon.cc.ukans.edu/~nsween/europa.html>

List of Kansas Related Pages maintained by the Governors office

<http://www.kspress.com/governor/ksother.html>

Online newspapers from the Kansas Press Association

<http://www.kspress.com/KPA/abclist.html>

Other Internet Resources of Interest

Business and News

Links to Daily Oil and Gas Price Reports

<http://www.kgs.ukans.edu/ERC/PTTC/ksToday.html>

Stock Quotes from the Security APL Quote Server

<http://www.secapl.com/cgi-bin/qs>

Recent stock market information, including previous day's closing prices and one-year graphs of historical prices for approximately 400 major companies. Also includes mutual funds and other information.

<http://www.stockmaster.com>

A list of Internet Financial Resources from the University of Texas

<http://riskweb.bus.utexas.edu/finweb.htm>

Wall Street Journal -- The Money & Investing Update

(Need to be Registered User) \$\$\$\$

<http://update.wsj.com/update/edit/front.html>

Listing of Internet News Resources from Yahoo

<http://www.yahoo.com/News/>

General Political Internet Resources

White House

<http://www.whitehouse.gov/>

Cabinet Departments

http://www.whitehouse.gov/White_House/Cabinet/html/cabinet_links.html

Independent Federal Agencies and Commissions

http://www.whitehouse.gov/White_House/Independent_Agencies/html/independent_links.html

U.S. House of Representatives - Searchable web site with information on bills, committees and members

<http://www.house.gov/>

US Senate

<http://www.senate.gov>

Thomas , The Library of Congress Server - Legislative information available on the web from both houses

<http://thomas.loc.gov/>

Listing of International, National, Regional & Local Governmental and Government-Related Servers on the Internet

<http://www.eff.org:80/govt.html>

Listing of US Government Servers

http://www.nttc.edu/gov_res.html

Petroleum Current Events Etc.

Discovery Place

<http://www.worldweb.com:80/DiscoveryPlace/>

Concentrates on the oil and gas industry in Alberta. List of companies and consultants, oil or gas properties on the market, surplus equipment, employment positions.

Oil Industry News

<http://www.oilonline.com>

An online source of news and information. List of companies and consultants, oil or gas properties on the market, surplus equipment, employment positions.

US Department of Energy

<http://www.doe.gov/>

Internet source for energy information produced by the Federal Government.

Newsgroups:

sci.geo.petroleum

news:sci.geo.petroleum

Petroleum Geology Newsgroup that is worth checking out on a weekly or biweekly basis.

Other Newsgroups

sci.geo.geology, sci.geo.hydrology, sci.geo.oceanography

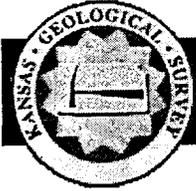


Kansas Geological Survey | DASC (Data Access and Support Center) | North Midcontinent Petroleum Technology Transfer Council

Web server maintained by Kansas Geological Survey. Funds provided by the Petroleum Technology Transfer Council.

Updated Sept. 20, 1995

Send comments and/or suggestions to webadmin@crude2.kgs.ukans.edu



Kansas Geological Survey

Welcome to the Kansas Geological Survey

University of Kansas, 1930 Constant Ave., Lawrence, KS 66047-3726
phone 913-864-3965, fax 913-864-5317, Lawrence Core Library 913-864-4909
Lee Gerhard, Director and State Geologist

Staff, Jobs,  NEWS	Kansas 	Oil and Gas 	Water 	Kansas 
News, Events	Geology	Information	Resources	Today
Educational 	Library & 	Software 	On-Line 	Section 
Resources	Info Services	Available	Publications	Home Pages

If you wish, a [text-only version of our web page](#) is available.

The Kansas Geological Survey continues to study the state's resources and prepare publications on its findings. Providing research and service to Kansas since 1889, the Survey publishes information on Kansas geology in books and maps, both technical and educational. The topics of these publications include computer science, engineering geology, geochemistry, geohydrology, paleontology, mineral economics, and stratigraphy. The Survey also produces computer programs and data bases derived from geologic investigations.

Progressively, the Survey has increased its research programs and facilities. The [main office in Lawrence](#) employs over 80 researchers and support-staff members and 70 student assistants. A second publications sales office and the [Well Sample Library](#), storing over 122,000 rotary-cutting samples from Kansas wells, are located in west Wichita.

Other Web Resources

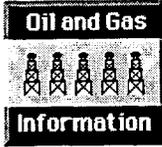
[KU Home](#) || [Other Kansas Universities](#) || [Kansas Government](#)
[Kansas Academy of Sciences](#) || [Other State Surveys](#)

You can check our server's [usage over the past few months](#), including a list of our most popular pages.

Updated Aug. 28, 1996.

Send comments and/or suggestions to webadmin@crude2.kgs.ukans.edu

The URL for this page is [HTTP://crude2.kgs.ukans.edu/kgs.html](http://crude2.kgs.ukans.edu/kgs.html)



Kansas Geological Survey

In addition to these resources, check out the home pages of the

- [KGS Petroleum Research Section](#), the
- [KGS Geoscience Data Library](#), the
- [North Midcontinent Petroleum Technology Transfer Council](#), and the
- [KIOGA--Kansas Independent Oil and Gas Association](#)

for other Kansas and national oil and gas information.

Oil and Gas Production

- [County production](#)--Interactive map of Kansas
- [Search for oil and gas fields by name](#)
- [Alphabetical list of fields](#)
- [Search for plugged wells](#) ^{NEW}

Analysis

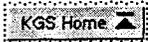
Digital Petroleum Atlas

The Digital Petroleum Atlas is a prototype allowing the KGS to display detailed geologic, well, geophysical, and regional information for chosen fields in Kansas.

Maps

Digital versions of oil and gas maps

DXF versions of maps released by the Kansas Geological Survey. Each of the 2-degree sheets (comparable to KGS M-34 and M-35) is split into three sheets--Fields, labels, and producing horizons. UPDATE--Now includes county, township, and range lines.



Updated August 26, 1996

Please send comments to webadmin@crude2.kgs.ukans.edu

The URL for this page is [HTTP://crude2.kgs.ukans.edu/PRS/petroIndex.html](http://crude2.kgs.ukans.edu/PRS/petroIndex.html)

Welcome to our WWW site!

- [Introduction](#)
 - [Personnel](#)
 - [Calendar of events](#)
-

Data and publications available online

- [Kansas Oil and Gas Production Data](#) --An interactive map of Kansas displays 1994 oil and gas production for each county in Kansas.
 - [KGS Bibliography of Geology Online](#)--This online version of the KGS bibliography allows the user to search by author, date, index terms, and several other fields to find the references desired.
 - [Publications available in an online, WWW-compatible form](#)
 - [Petroleum Research Section Recent Publications](#)
 - **Top Ten Lists** --What county has the leading oil and gas production for 1994? Find out in the [Top Ten Oil Production](#) and [Top Ten Gas Production](#) pages.
 - [Oil fields of Kansas](#) --Alphabetical listing of oil fields in Kansas showing historical production levels and producing horizons. Not all fields are available online--counties west of a line from Smith to Barber counties are completed, as are several in southern Kansas. Annual oil and gas production reports and cumulative oil-field production histories are also available from the Publication Sales office at the Kansas Geological Survey.
 - [Search for fields by name](#)--As an alternative to the alphabetical list, this form allows you to enter the name of the field you are interested in and receive a list of the pages we have on that field.
 - [Kansas Corporation Commission](#) oil and gas rules, regulations, and downloadable forms
 - [Digital Petroleum Atlas project](#) --Under Development **Prototype**
 - [Digital versions of oil and gas maps](#)--DXF versions of maps released by the Kansas Geological Survey. Each of the 2-degree sheets (comparable to KGS M-34 and M-35) is split into three sheets--Fields, labels, and producing horizons.
 - [Search for plugged wells](#) ^{NEW} --This version uses a 1994 version of the database, and has been placed online for test purposes. Please [let us know](#) if you find this service useful.
-

Links to other energy-related organizations

While we will try to keep these lists up to date, you may also want to look at our [list of collections](#).

Kansas Organizations

[KU Energy Research Center Home Page](#)
[North Midcontinent Petroleum Technology Transfer Council](#)
[KIOGA--Kansas Independent Oil and Gas Association](#)
[Kansas Academy of Sciences](#)

Educational sites

[Universities](#)

Government sites

[Kansas Government Departments](#)
[State Geological Surveys](#)
[U.S. Federal Government Departments](#)
[Foreign Government Organizations](#)

National and international organizations

[National Petroleum Technology Transfer Council](#)
[Professional Organizations](#)
[Industrial Organizations](#)

About this server

This HTTP server is owned by Petroleum Research Section at Kansas Geological Survey.



PRS Home Page

Petroleum Research Section, Kansas Geological Survey

Welcome to our WWW site.

- [Introduction](#)
 - [Personnel](#)
 - [Calendar of events](#) ^{NEW} (Sept. 11)
 - [What's New!](#) ^{NEW}
-

Data and publications available online

- [Kansas Oil and Gas Production Data](#) --An interactive map of Kansas displays 1994 oil and gas production for each county in Kansas.
 - [KGS Bibliography of Geology Online](#)--This online version of the KGS bibliography allows the user to search by author, date, index terms, and several other fields to find the references desired.
 - [Publications available in an online, WWW-compatible form](#)
 - [Petroleum Research Section Recent Publications](#)
 - [Top Ten Lists](#) --What county has the leading oil and gas production for 1994? Find out in the [Top Ten Oil Production](#) and [Top Ten Gas Production](#) pages.
 - [Oil fields of Kansas](#) ~~200000~~ (Oct. 9) --Alphabetical listing of oil fields in Kansas showing historical production levels and producing horizons. Not all fields are available online--counties west of a line from Smith to Barber counties are completed, as are several in southern Kansas. Annual oil and gas production reports and cumulative oil-field production histories are also available from the Publication Sales office at the Kansas Geological Survey.
 - [Kansas Corporation Commission](#) oil and gas rules, regulations, and downloadable forms ^{NEW} (Nov. 13)
-

Links to other energy-related organizations

While we will try to keep these lists up to date, you may also want to look at our [list of collections](#). These sites do a good job of keeping track of petroleum information in the Internet.

[KU Energy Research Center Home Page](#)
[North Midcontinent Petroleum Technology Transfer Council](#)
[Kansas Government Departments](#)
[National Petroleum Technology Transfer Council](#)
[U.S. Federal Government Departments](#)
[State Geological Surveys](#) ~~200000~~ (Oct. 27)
[Foreign Government Organizations](#)
[Universities](#)
[Professional Organizations](#)
[Industrial Organizations](#)

About this server

This HTTP server is owned by Petroleum Research Section at Kansas Geological Survey. You can check our [current usage](#) or the usage over the [past few months](#).

Send comments and/or suggestions to webadmin@crude2.kgs.ukans.edu

Last Update 8/22/95



Collections of Petroleum Related Internet Resources

Earth/Geoscience Information on the WWW

A extensive list that covers a broad range of earth science. Strong on university earth science departments, geologic surveys and links to the earth sciences by subject. Maintained by Russell J. Jacobson of the Illinois State Geological Survey.

ERIN List of Geology Servers

Limited listing of earth science Internet resources. However, check out the ERIN homepage. This is the Earth Resources Information Network from the Australian government.

Galaxy Petroleum Engineering Page

Limited but nicely constructed listing of petroleum engineering firms and organizations.

GO-TECH Petroleum Industry Electronic Information System

Joint project of the Petroleum Recovery Research Center, a division of New Mexico Tech, and Los Alamos National Laboratory. Electronic information from diverse organizations of interest to the petroleum community.

Internet Resources for Earth Sciences

Bill Thoen's write-up is a good introduction to the net for the earth scientist and has an extensive list of anonymous ftp sites with public data, images, and software.

Neopolis Oil Patch

Listing and links to geophysical resources accessible from the World Wide Web.

Online Resources for Earth Scientists (ORES)

Excellent and extensive listing of Internet resources. Sources are annotated. Check out the online publications. The geology section was compiled by Ted Smith .

Petroleum Business Directory

Extensive national and international listings of petroleum related businesses available by location in alphabetical order and business classification. Check out the directory of other web sources.

Petroleum and Geosystems Engineering Sources

A listing of diverse sites with concentration on the petroleum industry. Excellent list of foreign Internet resources. Maintained by Mary Pettengill. for The University of Texas at Austin, Department of Petroleum & Geosystems Engineering.

Rice University's RiceInfo on Geology

Extensive gopher directory containing links to resources organized by subject matter. Maintained by Prentiss Riddle .

sci.geo.petroleum

A listing with links to several hundred Internet resources. Good listing of News Groups and university earth science departments. Maintained by Scott Guthery .

The SOFT EARTH: Software and Software Sites

A resource listing and links for Geoscience software available on the Internet. Maintained by Phillip Ingram .

The Virtual Earth: A Tour of the World Wide Web for Earth Scientists

The page is a worthwhile introduction to the World Wide Web for Earth Scientists. It is not intended to be a resource listing, but does provide lists and illustrates the potential of the Web as an information retrieval system. Maintained by Phillip Ingram .

UT at El Paso GeoGopher

A gopher directory set up to be used as a Subject Catalog of information available on the Internet concerning the earth sciences. Maintained by Don Roberts . Last recorded update is 1/95.

USGS Earth and Environmental Science

The U.S. Geological Survey maintains a registry of Earth and Environmental Science Internet resources by subject.

WWW Virtual Library: Earth Sciences

A large and poorly organized listing of geological organizations and information about software. Maintained by volunteers at the University of Calgary.

WWW Virtual Library: Geophysics

Strong listing of geophysical organizations and information about geophysical software. Maintained by volunteers at the University of Calgary.

Yahoo Geology and Geophysics Page

The giant list server in the sky. Searchable and incomprehensible. The place to look for the site by name or subject.

Zilker Internet Park Geoscience Page

An Internet provider from Austin, Texas, providing a wide range of services, Zilker maintains an interesting annotated list of geoscience-related Internet resources. Excellent source of weather resources. Created and maintained by Hal Mueller .

Current Events Etc.

Discovery Place

Concentrates on the oil and gas industry in Alberta. List of companies and consultants, oil or gas properties on the market, surplus equipment, employment positions.

Oil Industry News

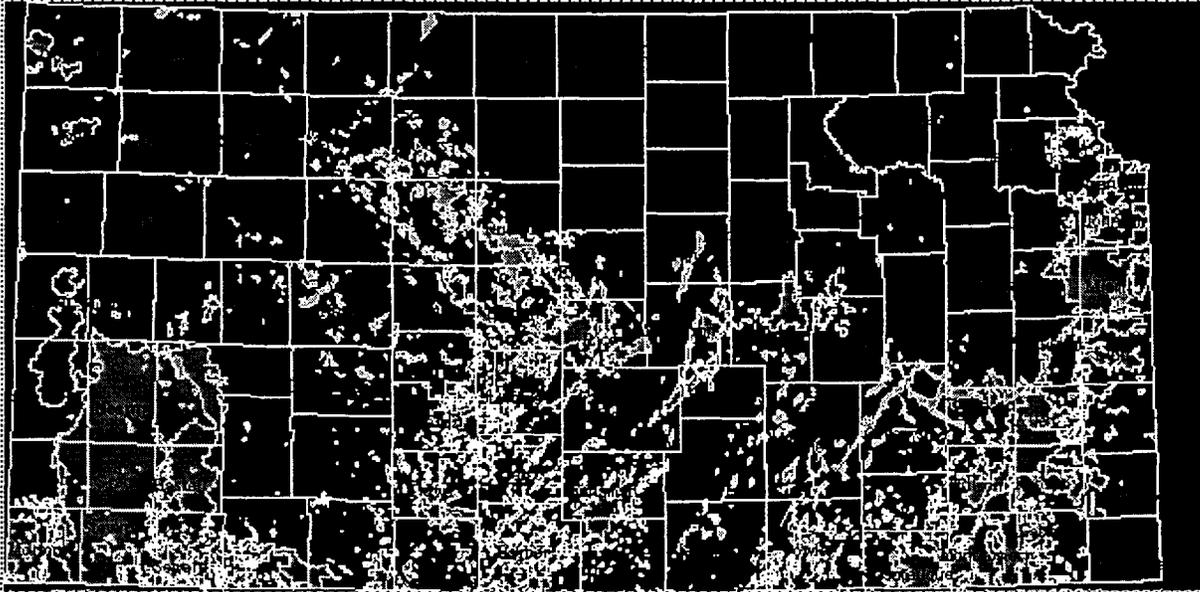
(An online source) Stories available mainly from Reuters.

STAT-USA

Internet source for business and economic information produced by the Federal Government. STAT-USA gathers the most crucial, timely business and economic information from over 50 Federal agencies and distributes from a central source. Requires subscription.

1994 Total Oil and Gas Production in Kansas

Click on the County You Wish to Examine.



Total Oil Production:

Total Producing Area = 1,424,970 acres
During 1994 = 47,332,848 BBL
Through 1994 = 5,758,578,154 BBL
Wells Producing = 40,961
Wells Abandoned = 1,280

Total Gas Production:

Total Producing Area = 6,568,360 acres
During 1994 = 689,029,117 M Cu. Ft.
Through 1994 = 31,243,655,821 M Cu. Ft.
Producing Wells = 14,515

[PRS Home](#)

[ERC Home](#)

[ETTC Home](#)

Douglas L. Beene
Kansas Geological Survey
University of Kansas
Lawrence, KS 66047

Finney County

OIL

Producing Area: 19,560 acres

Production:

During 1994 : 2,820,800 barrels

Through 1994: 47,077,777 barrels

Wells Producing in 1994: 446

Wells Abandoned in 1994: 4

GAS

Producing Area: 663,300 acres

Production:

During 1994: 44,178,245 M cu. ft.

Through 1994: 1,952,130,319 M cu. ft.

Producing Wells: 1,084



FIELDS

Amazon Ditch

Amazon Ditch East

Amazon Ditch Northeast

Amazon Ditch

County Location(s): Finney
Field discovery year: 1961
Field discovery location: 20 22S 34W

Horizons

Producing Formation	Form Depth	Form Thick	Oil Grav	Prod Type
SHAWNEE	3764		0	0
LANS.-K.C.	3800	6	0	0
MARMATON	4286		0	0
MISSISSIPPIAN	4674	6	31	0

Oil field information

Finney County field status: Active
Cumulative production from discovery = 2548600

Gas field information

Finney County field status: Active
Cumulative production from discovery = 51899.

Oil production

Finney County

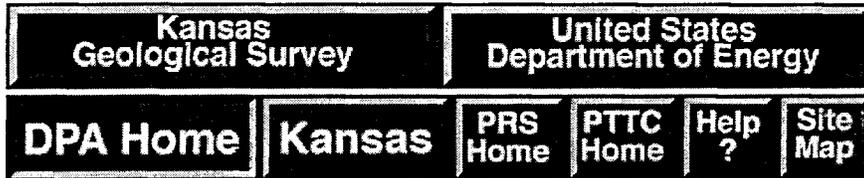
Year	Oil Production	Prod. Wells	Prod. Acres	Aband Wells
1966	42828	0	0	0
1967	39213	6	720	0
1968	36761	6	720	0
1969	34643	6	720	0
1970	46736	6	720	0
1971	54630	7	280	0
1972	46273	7	280	0
1973	40711	7	280	0
1974	36323	7	280	0
1975	33157	7	280	0
1976	36071	8	320	0
1977	89012	11	440	0
1978	86843	11	440	0
1979	86557	11	440	1
1980	78862	10	400	0
1981	77611	10	400	0
1982	69439	10	400	0
1983	72820	11	440	0
1984	93541	11	440	0
1985	132193	16	640	0
1986	49133	6	240	0
1987	113175	16	640	0
1988	132109	16	640	0
1989	135370	16	640	0
1990	140057	16	640	0
1991	134171	16	640	0
1992	129164	16	640	0
1993	210260	16	640	0

Cumulative gas production

Finney County

Year	Gas Production	Prod. Wells	Prod. Acres
1966	0.	0	0
1967	0.	0	0
1968	0.	0	0
1969	0.	0	0
1970	0.	0	0
1971	0.	0	0
1972	0.	0	0
1973	0.	0	0
1974	0.	0	0
1975	0.	0	0
1976	1153.	1	160
1977	2143.	1	160
1978	3729.	1	160
1979	3729.	0	0
1980	3729.	0	0
1981	16716.	2	320
1982	30404.	2	320
1983	37898.	1	160
1984	43191.	1	160
1985	46904.	1	160
1986	47995.	1	160
1987	47995.	0	0
1988	49514.	1	40
1989	50074.	1	40
1990	50409.	1	40
1991	50514.	2	80
1992	50695.	1	40
1993	51899.	1	40

Send comments or suggestions to: webadmin@crude1.kgs.ukans.edu



Digital Petroleum Atlas--Home Page

Data available online

[Map of Regions and Geologic Provinces of the United States](#)

[List of Regions, Geologic Provinces, and Plays](#)

[Kansas Digital Petroleum Atlas](#)

Project Description

The Digital Petroleum Atlas is being produced by the [Kansas Geological Survey](#) with funding from the [U.S. Dept. of Energy \(Bartlesville Project Office\)](#) under agreement [DE-FG22-95BC14817](#).

[Executive Summary](#)

[Introduction, Purpose, Scope](#)

[Methodology](#)

[Site map of entire DPA project](#)

[Credits](#)

[Quarterly Project Reports](#)

[Jan. 1, 1996](#)

[April 1, 1996](#)

[July 1, 1996](#)

[Topical Reports](#)

Kansas Geological Survey, Digital Petroleum Atlas

Send comments and/or suggestions to webadmin@crude2.kgs.ukans.edu

Updated Sept. 11, 1996

URL = <http://crude2.kgs.ukans.edu/DPA/dpaHome.html>



Search Fields by Parameters

Please enter the information about the Fields and the select the **Submit Query**
 The option **ALL** stands for "no constraints to that parameter".

Field Name:	<input type="text"/>	Cum. Oil (Barrels):	<input type="text" value="1000000"/>
Cum. Gas (MCF):	<input type="text"/>	Total Active Well:	<input type="text"/>
Trap Type:	<input type="text" value="ALL"/>	Field Acres:	<input type="text"/>
Recorded Total Depth (RTD):	<input type="text"/>	Discovery Date(19xx):	StartDate: <input type="text" value="1985"/> EndDate: <input type="text"/>
Township:	<input type="text"/>	Range:	<input type="text"/>
Reservoir Name:	<input type="text" value="ALL"/> UNKNOWN Admire Arbuckle Atokan Bandera quarry Bartlesville Basal Penn Bevier coal Burgess	Lithology:	<input type="text" value="ALL"/>
Geology Age:	<input type="text" value="ALL"/>	State:	<input type="text" value="KANSAS"/>
County:	<input type="text" value="ALL"/> ALLEN ANDERSON ATCHISON BARBER BARTON BOURBON BROWN BUTLER CHASE		

Field(s) Found

Your request has been processed:

8 hits have(has) been found!

[Start a New Search](#)

Field[1]:ARAPAHOEKAN

- Cum. Oil:1352547 Cum. Gas:10101 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1987
 - Township: (1)15S
 - Range: (1)43W
 - Reservoir: (1)MORROW(2)PENNSYLVANIAN
 - Lithology: (1)UNKNOWN(2)SANDSTONE
 - Geology Age: (1)PENNSYLVANIAN
 - County: (1)WALLACE
-

Field[2] BIG BOW

- Cum. Oil:3754008 Cum. Gas:11171 Total Active Well:11
 - Trap Type:UNKNOWN Field Acres:440
 - RTD:11 Disc. Date:1989
 - Township: (1)29S
 - Range: (1)38W(2)39W
 - Reservoir: (1)ST LOUIS
 - Lithology: (1)CARBONATE
 - Geology Age: (1)MISSISSIPPIAN
 - County: (1)GRANT(2)STANTON
-

Field[3]:BOX RANCH

- Cum. Oil:1029325 Cum. Gas:2723951 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1988
 - Township: (1)34S(2)35S
 - Range: (1)20W
 - Reservoir: (1)MISSISSIPPIAN(2)VIOLA
 - Lithology: (1)CARBONATE
 - Geology Age: (1)MISSISSIPPIAN(2)ORDOVICIAN
 - County: (1)COMANCHE
-

Field[4]:HEINITZ

- Cum. Oil:1207790 Cum. Gas:0 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1988
 - Township: (1)22S(2)23S
 - Range: (1)37W
 - Reservoir: (1)MORROW
 - Lithology: (1)SANDSTONE
 - Geology Age: (1)PENNSYLVANIAN
 - County: (1)KEARNY
-

Field[5]:KINSLER EAST

- Cum. Oil:1313304 Cum. Gas:15512741 Total Active Well:17
- Trap Type:UNKNOWN Field Acres:1120
- RTD:17 Disc. Date:1988
- Township: (1)31S(2)32S
- Range: (1)39W
- Reservoir: (1)CHASE(2)KEYES(3)MORROW
- Lithology: (1)CARBONATE(2)SANDSTONE
- Geology Age: (1)PENNSYLVANIAN(2)PERMIAN

- County: (1)MORTON(2)STEVENS
-

*Field[6]:***LAHEY**

- Cum. Oil:1461190 Cum. Gas:723087 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1989
 - Township: (1)31S
 - Range: (1)35W
 - Reservoir: (1)CHESTER(2)MISSISSIPPIAN(3)MORROW
 - Lithology: (1)UNKNOWN(2)CARBONATE(3)SANDSTONE
 - Geology Age: (1)MISSISSIPPIAN(2)PENNSYLVANIAN
 - County: (1)STEVENS
-

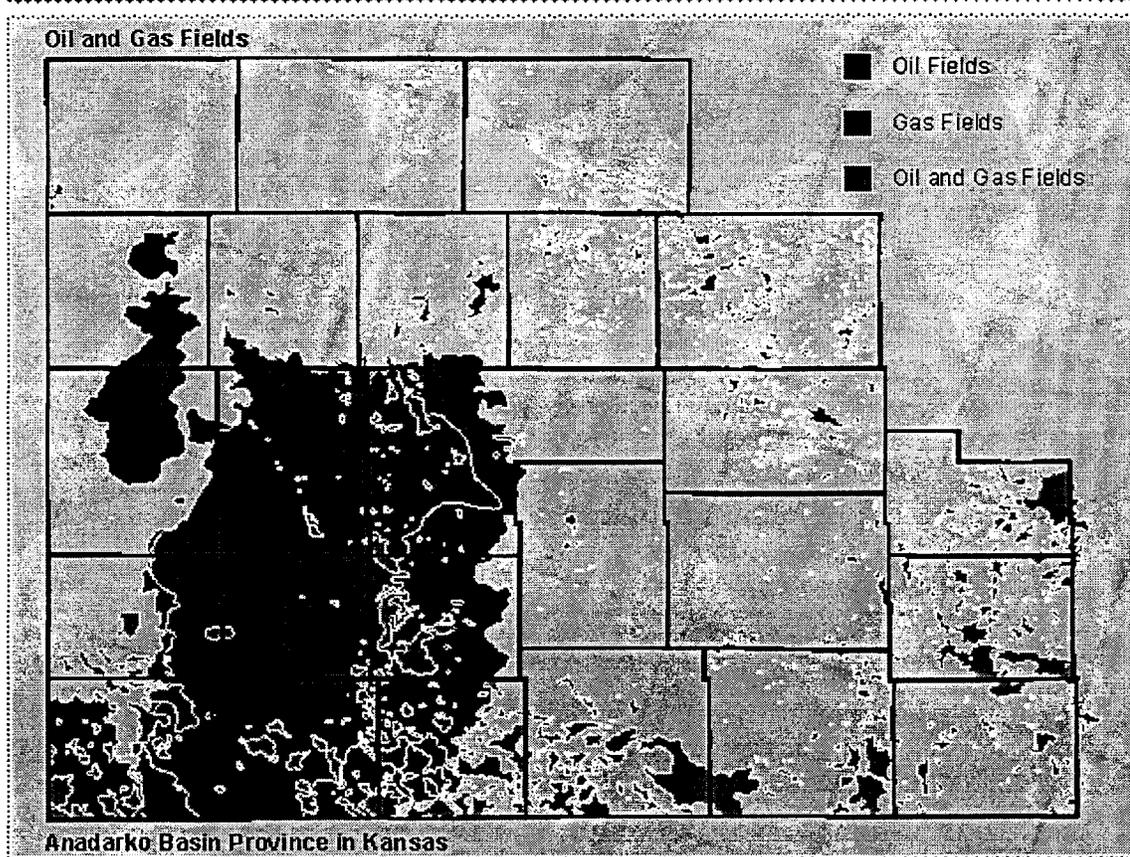
*Field[7]:***MOORE-JOHNSON**

- Cum. Oil:1076060 Cum. Gas:0 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1990
 - Township: (1)18S
 - Range: (1)43W
 - Reservoir: (1)MORROW
 - Lithology: (1)SANDSTONE
 - Geology Age: (1)PENNSYLVANIAN
 - County: (1)GREELEY
-

*Field[8]:***TERRY**

- Cum. Oil:2315542 Cum. Gas:0 Total Active Well:UNKNOWN
 - Trap Type:UNKNOWN Field Acres:UNKNOWN
 - RTD:UNKNOWN Disc. Date:1991
 - Township: (1)22S(2)23S
 - Range: (1)34W
 - Reservoir: (1)KANSAS CITY(2)LANSING(3)MARMATON(4)MORROW(5)ST LOUIS
 - Lithology: (1)CARBONATE(2)SANDSTONE
 - Geology Age: (1)MISSISSIPPIAN(2)PENNSYLVANIAN
 - County: (1)FINNEY
-

Digital Petroleum Atlas--Geologic Provinces in Kansas--Anadarko Basin



Exploration Histories

- [Changes in Pre-Permian fields over time](#)
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- [QuickTime movie of Permian changes](#)

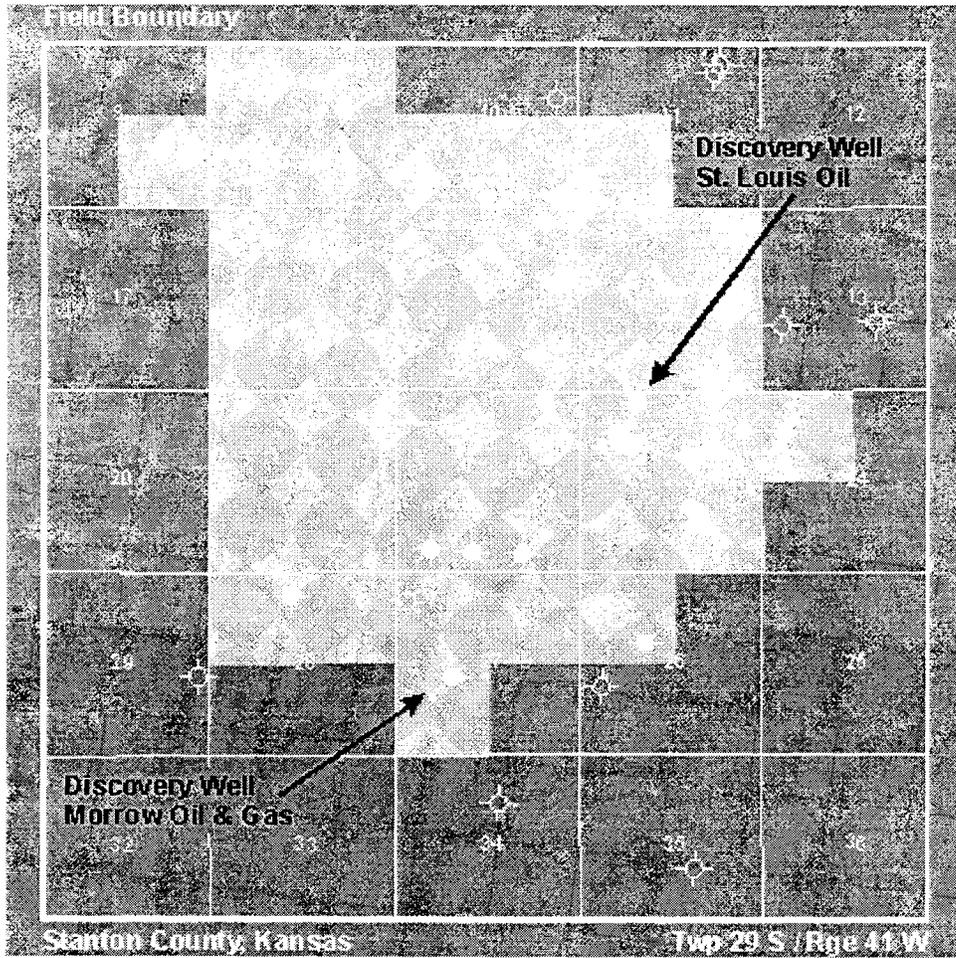
Regional and Midcontinent Information

Anadarko Basin Plays

- [Arbuckle Oil and Gas](#)
- [Simpson Oil and Gas](#)
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KGS-Digital Petroleum Atlas

Arroyo Field--Title Page



Discovery Well

J.M. Huber, #27-1 Pro Farms
20'S NW NE SW, 27-T29S-R41W
04/12/90, Morrow Oil & Gas, 5900' RTD

J. M. Huber, #23-1 Kendrick
30'E NW NE NW, 23-T29S-R41W
06/23/92, St. Louis Oil, 5650' RTD

Field Size: 6,240 acres
Productive Wells: 24
Abandoned Wells: None

Cumulative Oil: 651,409 bbls as of 7/1/95
Cumulative Gas: 21,072,705 mcf as 7/1/95

Annual Field Production Data

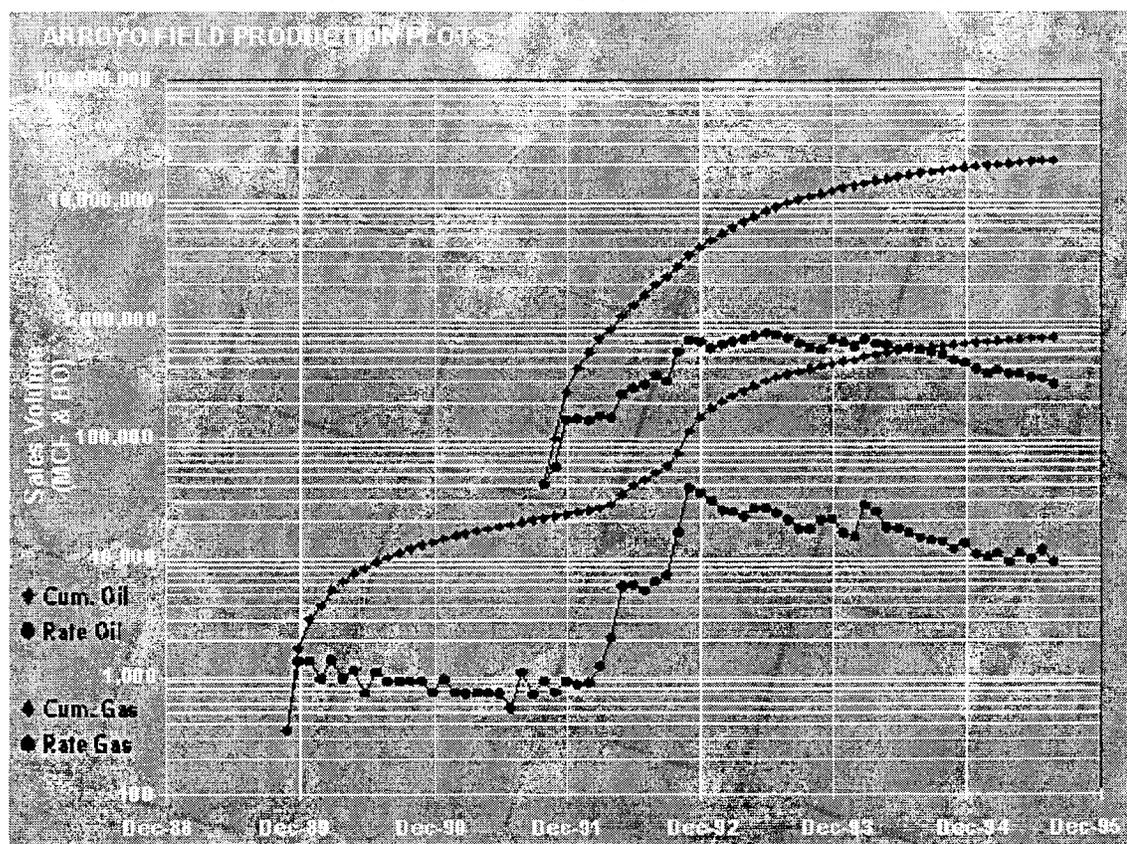


Arroyo

County Location(s): Stanton
 Field discovery year: 1990
 Field discovery location: 27 29S 41W

Horizons

Producing Formation	Form Depth	Form Thick	Oil Grav	Prod Type
MORROWAN	0		0	OG
MISSISSIPPIAN	0		0	O



Oil field information

Stanton County field status: Active
 Cumulative production from discovery = 542,385 bbl

Gas field information

Stanton County field status: Active
 Cumulative production from discovery = 15,198,008 m cu. ft.

Oil production

Stanton County

Year	Oil Production	Prod. Wells	Prod. Acres	Aband Wells
1990	0	0	0	0
1991	170	1	40	0
1992	115626	9	360	0
1993	203679	10	400	0
1994	167244	17	680	0

Cumulative gas production

Stanton County

Year	Gas Production	Prod. Wells	Prod. Acres
1990	0.	0	0
1991	243149.	3	120
1992	417894.	2	80
1993	8221789.	16	640
1994	15198008.	21	840

Send comments or suggestions to: webadmin@crude2.kgs.ukans.edu

Stanton County--Arroyo Field--Well Selection--15-187-20671R

API Number: 15-187-20671R
 Operator: J. M. Huber
 Lease Name: Kendrick 23-2
 Location: SE NW NW, Sec. 23, Twp. 29S, Rge. 41W

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ACO-1 Well History. Archive is 117k.



Digital Well History.

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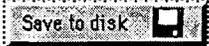


Production History

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Electric Log Data (LAS v 2.0)



Reservoir Data--PfeFFER Petrophysical Analyses

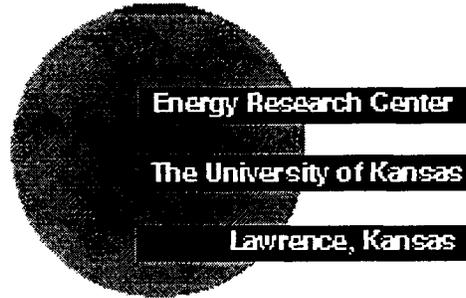
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Pickett Plots

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Energy Research Center

The University of Kansas Energy Research Center (ERC) was reorganized in 1991 to serve the University of Kansas by facilitating interdisciplinary energy-related research. The ERC acts as broad umbrella to bring different units together, promote and expand the range of research related to energy, and increase communication among units within the university and between the public sector and the private sector. State funds for the ERC support the Center's 1.5 staff positions and operations. External funding is derived from its own contracts and return of overhead funding from external grants submitted through the ERC support additional activities.

The ERC provides an umbrella for research and technology transfer activities at The University of Kansas. It provides assistance to transfer technology, develop proposal opportunities, and generate interest. The ERC has been particularly active in technology transfer programs to the petroleum industry. Grants submitted through the ERC have totaled \$6.4 million in the past three years. The ERC is also a source of seed funds to stimulate promising energy related research programs.

- [ERC Organization](#)
- [Ongoing Projects](#)
- [Technology Transfer](#)
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- [ERC Publications](#)

Links to other energy-related organizations

[Kansas Geological Survey Petroleum Research Section](#)
[North Midcontinent Petroleum Technology Transfer Council](#)
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PTTTC

Petroleum Technology Transfer Council

North Midcontinent Region

Providing technology and information for the oil and gas industry
 Kansas University Energy Research Center,
 193D Constant Ave., Lawrence, KS 66047-3728

The Petroleum Technology Transfer Council (PTTTC) was formed by the U.S. oil and gas exploration and production (E&P) industry to improve technology transfer to producers, primarily independents. Its mission is: (1) to identify priority technical problems of producers and communicate them to the R&D community; and (2) to transfer upstream E&P technologies to help domestic producers reduce costs, improve operating efficiency, increase ultimate recovery, enhance environmental compliance, and add new oil and gas reserves. The PTTTC serves as an integrated clearing house for E&P technology information and as a national umbrella organization for technology and R&D providers. It does not perform or fund R&D.



The Regional Lead Organization is the Kansas University Energy Research Center.
 Larry Schoelling
 (913) 864-7398
schoelling@kuhub.cc.ukans.edu



The Producer Advisory Group is led by
 James Devlin
 Viking Resources, Inc.
 Ph: (316) 262-2502, Fax: (316) 262-2540



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Timely Sources of Information



These sites keep current information on oil and gas prices, weather, etc. The Kansas Geological Survey provides these links as a convenience to users, and these listings should not be taken as endorsements or advertisements for these companies.

Please let us know if you have problems reaching these sites, which are provided on other computers by other companies and organizations.

Oil and Gas Prices

Kansas City Board of Trade
Daily Gas Price, Volume, and Open Interest Summary for Western Natural Gas Contract
Data from OilWorld
Oil and gas prices, including historical data
Bloomberg Energy News Online
Oil and gas prices (delayed)
New York Mercantile Exchange (NYMEX)
Near-real-time commodities prices including oil and gas

Rig Counts

Baker-Hughes and Smith International Rig Counts
Current and historic North America and International rig counts.
Similar page at Baker-Huges main web site

General oil and gas industry information

Oil OnLine
Oil OnLine provides continually updated oil & gas technology, industry news, and marketing information.
Lasser, Inc., Production Data
Data on production from several states, other links of interest
Bloomberg Energy News Online
Web site with various energy information

Electric Utility News

News from the Electric Power Research Institute

Kansas Geological Survey

This page from the KGS lists other web sites featuring timely information.

Updated June 1996

URL = <http://www.kgs.ukans.edu/ERC/PTTC/ksToday.html>

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Tapis	24.45	-0.70
Minas	22.78	0.25
Natural Gas		
Henry Hub	2.22	0.08
N.Y. City Gate	2.34	0.09
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Electricity		
Calif.-Ore. Border	18.75	-1.00
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Library Services

Links to online bibliographic services helpful to the petroleum industry.

Kansas

KGS Bibliography of Geology Online--This online version of the KGS bibliography allows the user to search by author, date, index terms, and several other fields to find the references desired.

Kansas Geological Survey 1995-96 Catalog of Publications

National organizations

AAPG Publications

Search AAPG articles published from 1917 through 1994 by title, author, and other keys.

SPE Publications

Search SPE archives of petroleum engineering literature published from 1951 through 1994.

General online bibliographies

UnCover

An online searchable article delivery service, a table of contents database, and a keyword index to nearly 17,000 periodicals. Includes UnCover Reveal, a current-awareness service that enables the user to receive table-of-contents updates from up to 50 journals and to create and store up to 25 keyword and author searches.

University of Kansas Library Catalog

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Kansas State University Library Catalog

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Library of Congress Information System

Also known as LOCIS, this method uses telnet to connect directly to "TELNET LOCIS.LOC.GOV". Be sure to take note of the escape characters when reading the directions.

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JT World oil.
 DA NOV 01 1995 v 216 n 11
 PG 35
 AU Walker, T.
 AU Hopmann, M.
 TI Underbalanced completions improve well safety and productivity.
 SU New techniques and tools for isolating the payzone continue to prevent harmful fluid invasion after drilling with light-weight fluids.
 SI 0043-8790(19951101)216:11L.35:UCIW;1-
 >> Profile No.: 9258000 UnCover Article No.: 251,056,245,058

JT World oil.
 DA NOV 01 1995 v 216 n 11
 PG 43
 AU Christian, J.
 AU Lea, J.F.
 AU Bishop, B.
 TI Plunger lift comes of age.
 SU Amoco's experience in West Texas shows how selected wells that could not economically support beam pumping were converted to plunger lift.
 SI 0043-8790(19951101)216:11L.43:PLCA;1-
 >> Profile No.: 9258000 UnCover Article No.: 251,056,245,068

JT World oil.
 DA NOV 01 1995 v 216 n 11
 PG 49
 AU Snyder, R.
 TI What's new in production technology.
 SI 0043-8790(19951101)216:11L.49:WNPT;1-
 >> Profile No.: 9258000 UnCover Article No.: 251,056,245,071

JT World oil.
 DA NOV 01 1995 v 216 n 11
 PG 61
 AU Verret, A.



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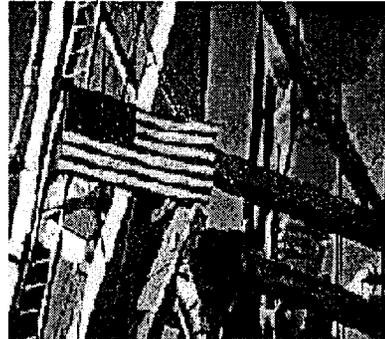
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The PTTC has received partial start-up funds from the U.S. Department of Energy's oil and natural gas programs. Additional funding is provided by several state governments, industry, universities, state geological survey, and other sources.

Working Together to Identify Problems, Search for Solutions

Every day more US oil and gas producers enter the World Wide Web searching for information that will help their business. As many "web surfers" soon learn, the wealth of information available is useless unless it can be easily found and applied. The Petroleum Technology Transfer Council believes the future of the Web rests with those who know their users best. In our case it's the people seeking technology and the companies that provide it. Guiding this non-profit national clearinghouse is the PTTC board of directors.

A growing number of service and supply companies have joined us in our mission, and the recent PTTC report, "Technology and Related Needs of US Oil and Natural Gas Producers," remains a recommended publication for anyone in the industry.

In addition, state and regional associations and professional societies support PTTC efforts, and we work closely with the Independent Petroleum Association of America. PTTC also works with state and federal agencies, university researchers, and national labs. Our outreach now includes hundreds of volunteer producers nationwide, and a network of 10 Regional Lead Organizations created to identify and address producers' technology needs. We encourage frequent communication via e-mail -- and offer qualified website visitors a free subscription to our quarterly newsletter.

Our latest home page design emphasizes easy access to important subject categories -- each only one "click" away. Whether you are looking for the latest industry workshops on a new drilling technology or 3-D seismic, technology news, or state geological surveys, they are all organized here. That's just the beginning. As the PTTC website evolves, your input will make a big difference. Please let us know what you think -- and stop by frequently, because there will always be something new and useful.

- Bruce Wells,
PTTC communications manager



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PTTC NETWORK NEWS

1st Quarter 1995 ■ Issue #1

PETROLEUM TECHNOLOGY TRANSFER COUNCIL
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Reservoir Mgt. Demos Being Implemented
BDM Issues Program R&D Announcement
New Procurement Targets Independents

Spotlight on GRI Technology

PAGE 7

Tech Transfer & Industry Events

With this issue, the Petroleum Technology Transfer Council (PTTC) inaugurates its official newsletter to serve the U.S. petroleum exploration and production (E&P) industry.

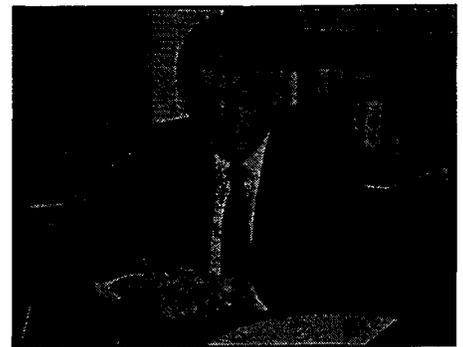
PTTC Network News will communicate the activities of the PTTC and its regions to the E&P industry, the R&D community, government, media, and other interested parties. Each issue will include reports from the PTTC regions, features about technology innovations and applications, and news about technology transfer activities and information that are available to America's oil and gas producers.

The PTTC Network News will be published quarterly in March, June, September, and December of each year. It will be mailed to all members of the PTTC's Board, Producer Advisory Groups, Regional Lead Organizations, industry associations, interested E&P companies, the PTTC's funding organizations, and other subscribers. Beginning with the next issue, annual subscriptions will be available at a nominal cost that will be determined to cover the costs of administering, preparing, printing, and mailing. *To be added to the PTTC mailing list, or for further information, contact the PTTC at 202-785-2225.*

BOARD ACTIVITIES

Russell Steps Down as Founding PTTC Chairman

At the annual Board meeting on February 23, 1995, James E. Russell formally resigned as Chairman of the PTTC. He will forever be known as the organization's Founding Chairman because it was his vision, perseverance, and stature in the industry that led to the formation of the new national association. Russell was the Chairman of the original Improved Oil and Natural Gas Recovery Task Force ini-



James E. Russell, former PTTC Chairman

ated by the Independent Petroleum Association of America (IPAA) in mid-1991. The IPAA Task Force was the forerunner of the PTTC.

Russell is a consulting petroleum engineer and operator who owns several companies in Texas and Kansas. He has served in countless leadership positions in the industry, including Chairman of the Texas Independent Producers and Royalty Owners Association (TIPRO), and as the first Chairman of IPAA's Crude Oil Committee. He has been a member of the Board and Executive Committee of the Texas Mid-Continent Oil and Gas Association, and is also on Industry Advisory Boards at the Univ. of Kansas, and the Oil Recovery Partnership of Los Alamos and Sandia national labs.

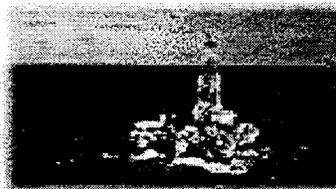
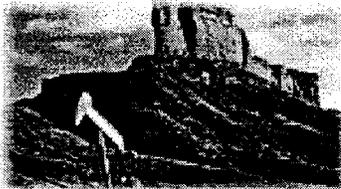
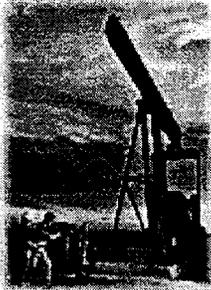
Russell proved himself to be a pioneer in enhanced oil recovery as early as 1954 when he founded the West Central Texas Waterflood Association. His long and distinguished career has included many awards, including being honored by the Texas House of Representatives for his outstanding achievements in the oil and gas industry. He has testified before Congressional committees on behalf of the industry, and spoken frequently before various groups.

The U.S. petroleum industry owes Russell a debt of gratitude for his tireless efforts in establishing a nationally coordinated program for effectively disseminating technology to producers throughout the country. Russell was succeeded as PTTC chairman by J.C. "Chris" Hall.

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or	boolean	au=russell or au=smith
not	boolean	au=russell not au=jones
(...)	parentheses for grouping	au=(russell not jones) and pb=jpt
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<	numeric less than	py<1986
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SPE 28249

New PC Based Software for Multiphase Flow Calculations

Khalid Aziz and Nicholas Petalas

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ABSTRACT

A new multiphase flow analysis and design system for DOS-based personal computers is described. Examples are also presented and analyzed using different multiphase flow techniques. These techniques are investigated using flow map and three-dimensional pressure surface comparisons and a new mechanistic model is discussed which attempts to overcome many of the problems associated with existing multiphase flow analysis methods.

INTRODUCTION

The simultaneous flow of oil, gas and water in pipes is a common problem for the oil and gas industry. Multiphase flow often exists in wells and gathering systems for both on-shore and off-shore reservoirs producing oil, gas or condensates.

Complexity of the production system, changing oil and gas properties with pressure and temperature, and availability of a multitude of correlations for fluid properties and pressure drop calculations, all combine to make the design of multiphase systems a difficult problem for the production engineer.

Since the early seventies, computer programs have been

References and illustrations at end of paper

commercially available for performing fluid property, well, and pipeline calculations involving both single phase and multiphase flow. With the arrival of personal computers (PCs) in the early eighties, many of these programs have been ported over to this platform without extensive reprogramming to take advantage of the special features of the PC. Now, a new generation of design and analysis programs is appearing that eases the design task by making the process interactive through the use of on-line multilevel help and graphics. One such suite of programs which has recently been introduced is the multiphase flow analysis system by ASA Systems¹. All of the results presented here are generated with this suite of programs.

PROGRAM DESCRIPTION

The complete software package includes a program for analyzing flow in pipes (*ASAPIPE*), another for wells (*ASAWELL*) and a program for calculating fluid properties (*ASAPROP*). A recent addition to these is the program, *ASAMAP*, which is extremely helpful in providing an understanding of how the various correlations for predicting flow patterns, pressure drop and holdup differ from each other. Flow pattern maps can be generated that show the flow pattern transitions using a common set of coordinates so that direct comparisons between methods are easily made. Furthermore, all significant quantities (frictional, hydrostatic, and total pressure drop, liquid holdup, liquid height for stratified flow, film thickness for annular flow, etc.) can be plotted in a variety of formats. One of the most useful formats involves a three-dimensional plot where the quantity being investigated is

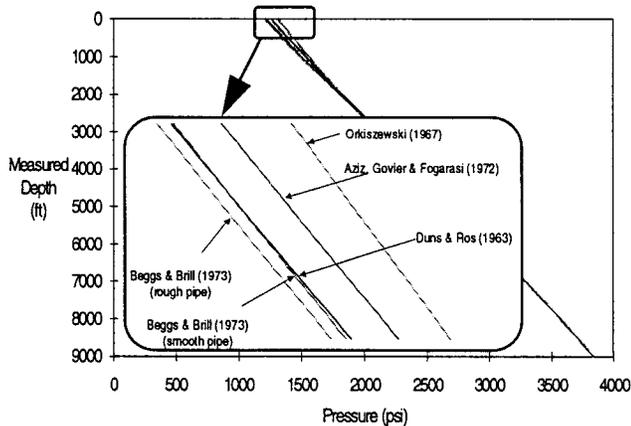


Figure 2 - Pressure Profile for GOR=750 scf/STB

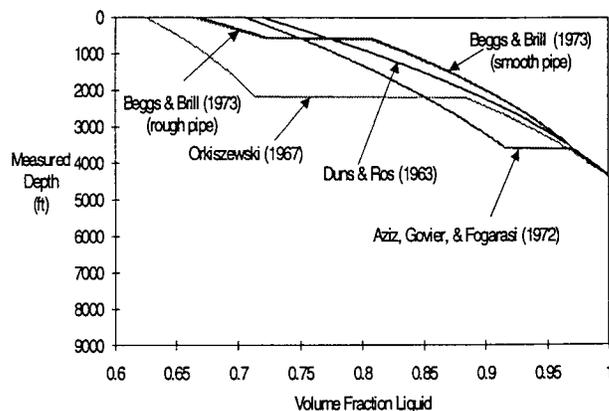


Figure 5 - Volume Fraction Liquid Profile for GOR=750 scf/STB

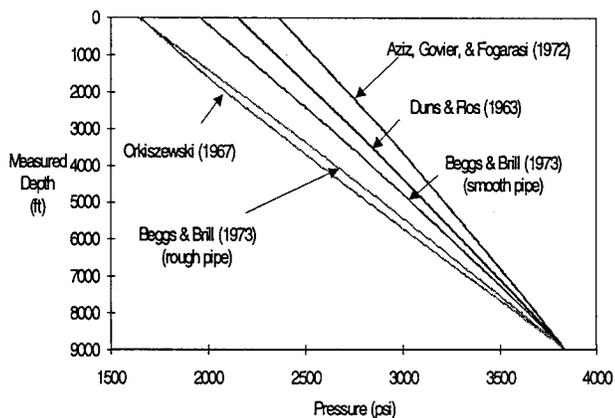


Figure 3 - Pressure Profile for GOR=5,000 scf/STB

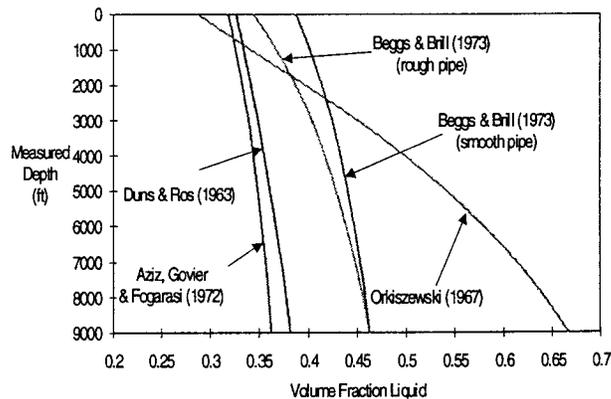


Figure 6 - Volume Fraction Liquid Profile for GOR=5,000 scf/STB

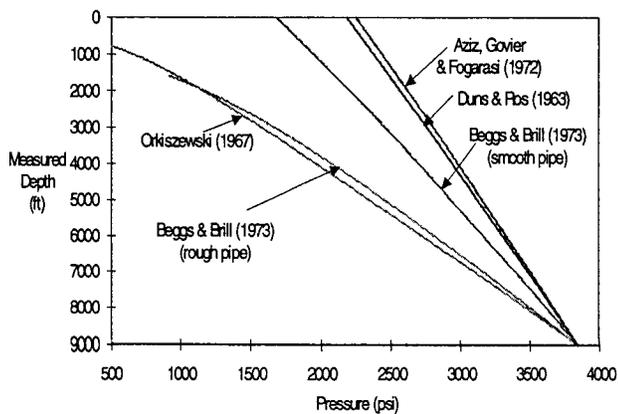


Figure 4 - Pressure Profile for GOR=10,000 scf/STB

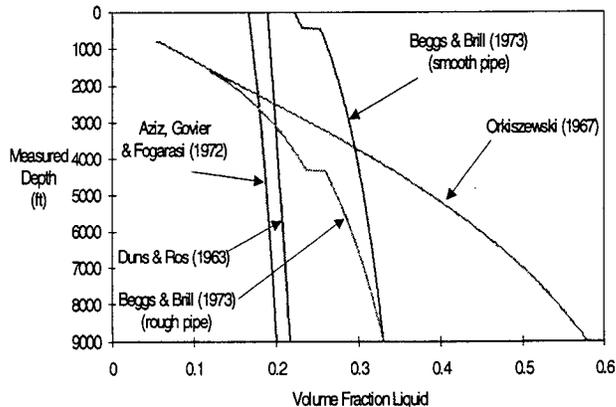
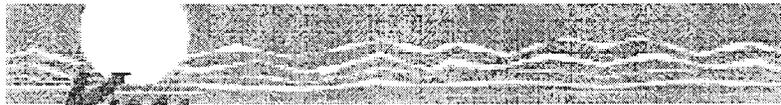


Figure 7 - Volume Fraction Liquid Profile for GOR=10,000 scf/STB

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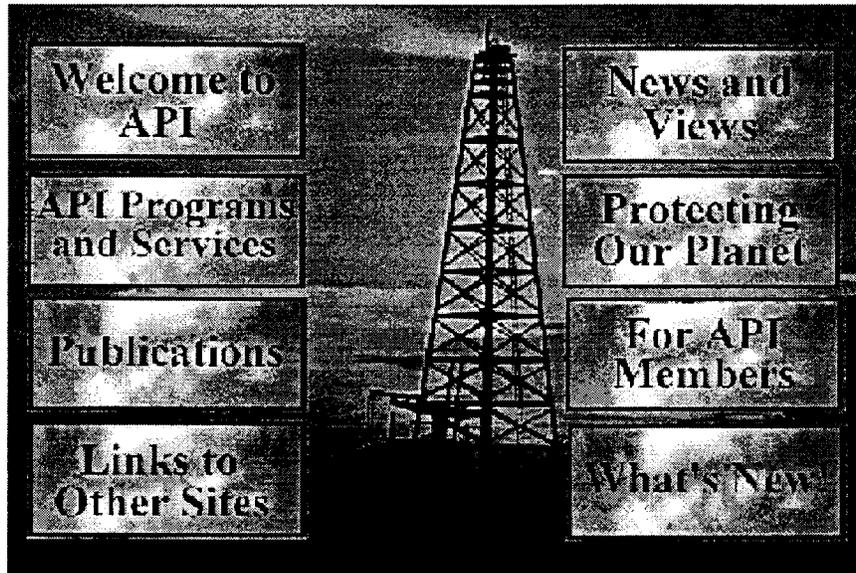
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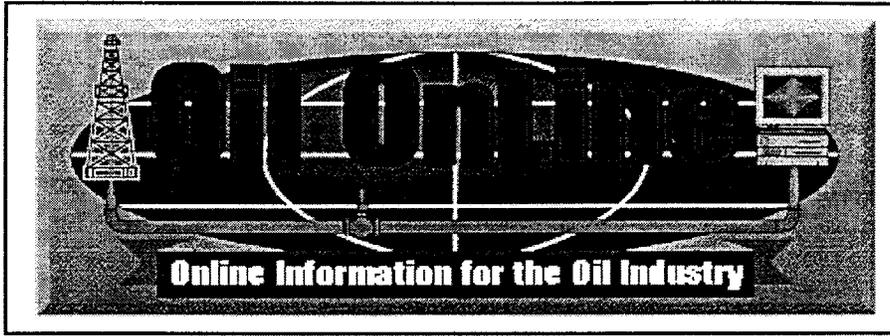
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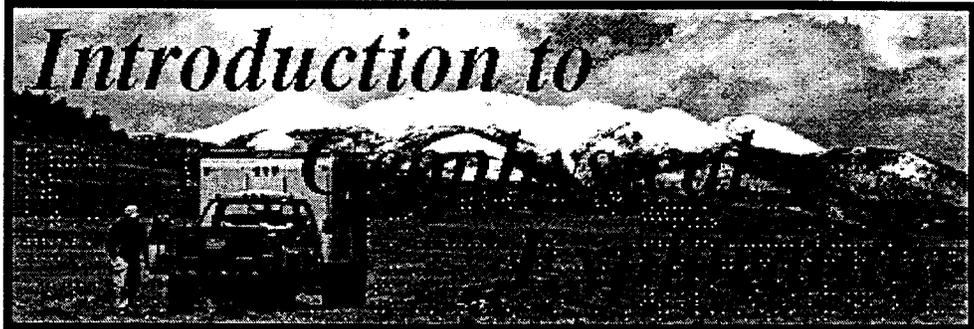
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Motivation	Requirements	Logistics	Procedures
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New Features!!

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This home page introduces a prototype of a new educational program being developed with the support of the Society of Exploration Geophysicists. It is currently under development and will be changing almost daily.

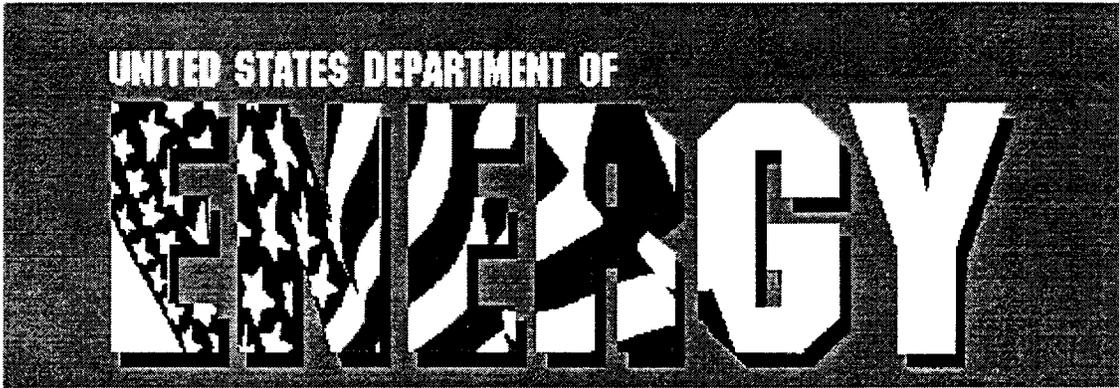
The SEG welcomes feedback on the educational concept and the effectiveness of these prototype modules. It especially encourages earth-science educators to use this program as a means of becoming involved in the broader issue of providing conceptual, cross-disciplinary learning that will enable people from all disciplines to be more-effective members of earth-science teams. Feel free to contact any of the following members of the project team:

Tom Boyd (project leader) tboyd@mines.edu tel:303-273-3522 fax: 303-273-3478

Phil Romig promig@mines.edu tel:303-273-3478 fax: 303-273-3478

Bob Graebner graebnerr@begv.beg.utexas.edu tel: 214-357-3038 fax: 214-343-9563

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● [Short-Term Energy Outlook Fourth Quarter, 1996](#) a forecast of energy supply, demand and price for the next six quarters. (9/30/96)

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● [Fall 1996 Heating Fuel Assessment, 1996 National Association Of State Energy Officials](#) (9/17/96)

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● [Latest Information on Crude Oil and Heating Oil Stocks](#) describes the current stock situation. (9/6/96)

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As a new service, the Energy Information Administration will release the key energy projections and findings from its upcoming Annual Energy Outlook 1997 on its Home Page during the week of November 25, 1996, including all the appendix tables for the reference case.

This release will be followed by the Annual Energy Outlook 1997 document with its complete analysis approximately four to six weeks later. Regional-level projections and other more detailed results not typically published in the Annual Energy Outlook 1997 will also be available to download through the EIA FTP Server following the release of the Annual Energy Outlook 1997.

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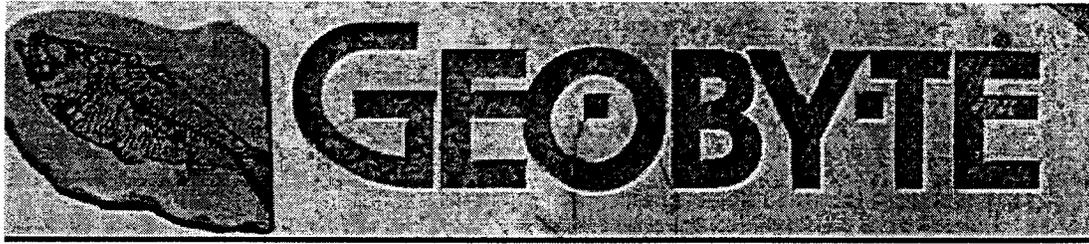
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- **How Does Your Firm Track E&D Budgets? - rutat@cadvision.com** (16)
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- **Microbes that eat oil and are safe for the environment - Earth Smart** (21)
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 - **Tom Persing** (26)
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- **Satellite Imagery FAQ - Pointer - Nick Kew** (60)
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 - **Ryen Caenn** (32)
- **A SUMMER JOB WANTED FOR 1996. - Murat Cil** (16)
- **Re: Difference between seismic and well velocities - Neil McNaughton** (40)
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 - **Jeff Emanuel** (22)
 - **hugh winkler** (28)
- **IGOCC Marine scripting standards - John Conner** (2)
- **Accuracy of Directional Surveys**
 - **Jerry Yunker** (18)
 - **Adam Craig** (33)
- **Looking for planimentering software - trbates@delphi.com** (5)
 - **seubert** (9)
 - **Jerry Yunker** (15)
- **ERUG hosts Java Talk - Will Morse** (24)
- **Re: Petroleum Industry Event Calendar (New WWW page) - Andrew J Wilson** (40)
- **A SUMMER JOB DESIRED FOR 1996 - Murat Cil** (37)
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- **Re: Accuracy of Directional Surveys - Neil McNaughton** (23)
- **E-mail address for World Oil (Gulf publ.)? - Ulf Nordlund** (6)
- **Re: Need Well and Production Data for N&S Dakota and Montana - Robert C. White Jr.** (21)

Netscape: Re: Log Data : LIS to LISTIF Conversion

To: News | To: Mail | Re: Mail | Re: News | Re: Both | Forward | Previous | Next | Thread | Group | Print | Stop

News Ser...	Unread	T...	Subject	Sender	Date
▶ m...k			Re: Log Data : LIS to LISTIF Conversion	John Adams	9/28/96 3:37 PM
▼ n...]			Re: Log Data : LIS to LISTIF Conversion	Ken Edwards	9/24/96 6:20 AM
...	0	205	Re: Looking for natural gas price/demand forecasts	Eugene M. Kim	9/24/96 3:32 AM
			▼ MAKE BIG OIL RESERVES FAST!!!!	Dave Doyle	Wed 2:09 PM
			Re: MAKE BIG OIL RESERVES FAST!!!!	John Cooper	Sat 5:06 PM
			Managing Risks & Strategic Decisions in Petroleum Exp...	Jim Proud	Tue 5:20 PM
			▼ Manufactured gas (town gas) composition and BTU value?	Mike LeMoine	Sat 2:44 PM
			Re: Manufactured gas (town gas) composition and BT...	AmBrin	4:09 AM
			Re: Manufactured gas (town gas) composition and BT...	John Ruby	3:13 PM
			Re: Model to illustrate plate tectonics	Berend C. Scheff...	9/25/96 9:00 AM
			Re: Money\$\$\$\$\$!!!!	Tyler Groo	9/24/96 12:50 AM
			mystery geoscience ad revealed	Richard Ottolini	9/30/96 7:35 PM
			▼ Need O&G research models	Michael Cabigon	9/24/96 3:03 PM
			Re: Need O&G research models	Joe Bridwell	9/24/96 9:52 AM

Subject: Re: Log Data : LIS to LISTIF Conversion
Date: 24 Sep 1996 00:20:05 -0600
From: edwards@thor.xon.cuug.ab.ca (Ken Edwards)
Newsgroups: sci.geo.petroleum
References: 1

Sandy Rattray <sandy@emoco.com> writes:

>Does anyone know of a method to convert a LIS format
>tape to an LIS TIF (Tape Image File) ?

I use this method, although I must warn you that I just extracted this from a much larger package, so it may suffer some withdrawal symptoms I have not seen.

(*
also the notable lack of error checking here since normally the input is called from other parts of the programme and has mostly been checked already, you know, silly things like "Is there a tape drive?", "Is there a tape in the drive?", "Is it an LIS tape?", "Is the tape block size set to 0?", "Is there any room on the disk?", etc. etc. etc. With all that checking done elsewhere, it is now up to the user to insure that these requirements are met.
*)

It did produce acceptable results once in a row, so it might work again. In any case, as you can see, it is not difficult, and this should give you at least a template to work on.

Anyway, compiles and runs on my Linux box, but YMMV, and if it fills your hard drive with random data or washes your cat, don't blame me

/*

Current directory is /COGS

ftp://ftp.csn.net/COGS/

Please read the file README

it was last modified on Mon Oct 31 14:50:33 1994 - 274 days ago

Up to higher level directory

	<u>00-index.txt</u>	1 Kb	Sun Aug 28 00:00:00 1994	Plain text
	<u>COGS-disks/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Dcw/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Geochemistry/</u>		Fri Dec 23 00:00:00 1994	Directory
	<u>Geophysics/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Graphics/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Hydrology/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Landsat/</u>		Wed May 18 00:00:00 1994	Directory
	<u>MOSS/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Mapping/</u>		Mon Nov 21 00:00:00 1994	Directory
	<u>Mineralogy/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Mining/</u>		Wed May 18 00:00:00 1994	Directory
	<u>Oil n Gas/</u>		Wed May 18 00:00:00 1994	Directory
	<u>README</u>	1 Kb	Mon Oct 31 00:00:00 1994	
	<u>bartdata.exe</u>	1201 Kb	Sun Aug 28 00:00:00 1994	Binary executable
	<u>cog11294.txt</u>	35 Kb	Fri Jan 27 00:00:00 1995	Plain text
	<u>cogsappl.txt</u>	3 Kb	Sat Feb 12 00:00:00 1994	Plain text
	<u>cogsdsk.txt</u>	13 Kb	Sat Feb 12 00:00:00 1994	Plain text
	<u>cogsinfo.txt</u>	16 Kb	Sat Feb 12 00:00:00 1994	Plain text
	<u>cogslist.txt</u>	13 Kb	Wed Apr 20 00:00:00 1988	Plain text
	<u>cogsnet.files</u>	99 Kb	Sat Feb 12 00:00:00 1994	
	<u>cogspub.txt</u>	6 Kb	Wed Apr 20 00:00:00 1988	Plain text
	<u>fabric30.exe</u>	112 Kb	Mon Jun 20 00:00:00 1994	Binary executable
	<u>fabric30.txt</u>	839 bytes	Mon Jun 20 00:00:00 1994	Plain text
	<u>in.coming/</u>		Sun Jul 16 23:45:00 1995	Directory
	<u>internet.resources...</u>	169 bytes	Sat Jun 11 00:00:00 1994	
	<u>news1294.txt</u>	35 Kb	Sun Feb 19 20:24:00 1995	Plain text
	<u>ores.txt</u>	108 Kb	Wed Jun 15 00:00:00 1994	Plain text
	<u>ps2txt.zip</u>	8 Kb	Wed Jun 16 00:00:00 1993	

Current directory is /COGS/Oil_n_Gas

Up to higher level directory

	<u>00-index.txt</u>	1 Kb	Mon Mar 2 00:00:00 1992	Plain text
	<u>calc.bas</u>	6 Kb	Tue Jan 1 00:00:00 1980	
	<u>chance.bas</u>	8 Kb	Tue Jan 1 00:00:00 1980	
	<u>declcurv.sit</u>	53 Kb	Mon Feb 24 00:00:00 1992	macintosh archive
	<u>decline.zip</u>	70 Kb	Mon Mar 2 00:00:00 1992	
	<u>drawdown.bas</u>	7 Kb	Tue Jan 1 00:00:00 1980	
	<u>energy.doc</u>	5 Kb	Thu Jun 21 00:00:00 1990	
	<u>h2osatsp.zip</u>	763 bytes	Mon Mar 2 00:00:00 1992	
	<u>kick.bas</u>	8 Kb	Tue Jan 1 00:00:00 1980	
	<u>log.zip</u>	67 Kb	Mon Mar 2 00:00:00 1992	
	<u>logger.wk1</u>	11 Kb	Thu Jun 21 00:00:00 1990	
	<u>logger2.wk1</u>	13 Kb	Thu Sep 6 00:00:00 1990	
	<u>logref.zip</u>	204 Kb	Mon Mar 2 00:00:00 1992	
	<u>monocalc.bas</u>	7 Kb	Tue Jan 1 00:00:00 1980	
	<u>nswe.bas</u>	9 Kb	Thu Sep 13 00:00:00 1990	
	<u>ogecon.zip</u>	5 Kb	Mon Mar 2 00:00:00 1992	
	<u>oil-econ.zip</u>	15 Kb	Mon Mar 2 00:00:00 1992	
	<u>oil123.zip</u>	6 Kb	Mon Mar 2 00:00:00 1992	
	<u>oilrecov.bas</u>	11 Kb	Tue Jan 1 00:00:00 1980	
	<u>oilsc4.zip</u>	7 Kb	Mon Mar 2 00:00:00 1992	
	<u>oldgrn.bas</u>	7 Kb	Tue Jan 1 00:00:00 1980	
	<u>pepak1.zip</u>	71 Kb	Mon Mar 2 00:00:00 1992	
	<u>pipedata.zip</u>	26 Kb	Mon Mar 2 00:00:00 1992	
	<u>quiklook.zip</u>	18 Kb	Mon Mar 2 00:00:00 1992	
	<u>risk.zip</u>	11 Kb	Mon Mar 2 00:00:00 1992	
	<u>scat.zip</u>	21 Kb	Mon Mar 2 00:00:00 1992	
	<u>wellpres.zip</u>	42 Kb	Mon Mar 2 00:00:00 1992	
	<u>wellsym.bas</u>	6 Kb	Tue Jan 1 00:00:00 1980	
	<u>zfactor.zip</u>	16 Kb	Mon Mar 2 00:00:00 1992	



BILL GRAVES



Governor

Contents:

Main Office

First Family

Kansas Info

Main Office

Office of the Governor

-  [How to Contact Your State Government](#)
-  [Visit the Governor's Picture Archive](#)
-  [Search/Read the Governor's Press Releases](#)
-  [The Governor's Weekly Column](#)
-  [Search/Read the State of the State for 1996](#)
-  [Legislation Signed by the Governor in 1996](#)
-  [Search/Read the State of the State for 1995](#)
-  [Legislation Signed by the Governor in 1995](#)

First Family

The Governor and First Lady

- [Biographical Information for Governor Graves](#)
- [Biographical Information for First Lady Linda Graves](#)
- [Image of Governor Graves](#)
- [Image of the Governor and First Lady](#)

Kansas Info

Other Web Sites

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- [KGS Interactive Kansas Map](#)
- [KGS Topo Map of Kansas](#)



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 \$ Change : 0.1250 % Change : 0.56

 Volume : 1586700 # of Trades : 142
 Day Low : 22.5000 Day High : 22.6250
 52 Week Low : 18.0000 52 Week High: 24.3750

[WWW hyperlinks](#) for the symbol OXY are available including those from the [EDGAR Dissemination Project](#).

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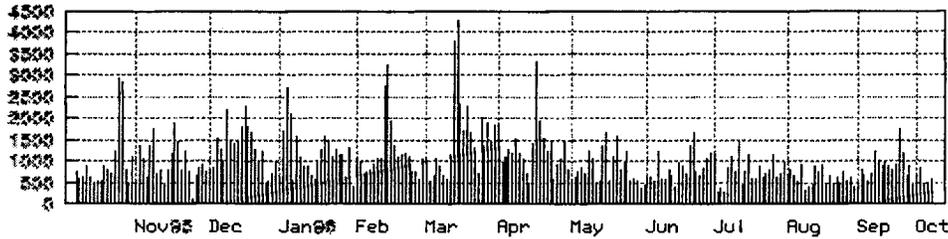
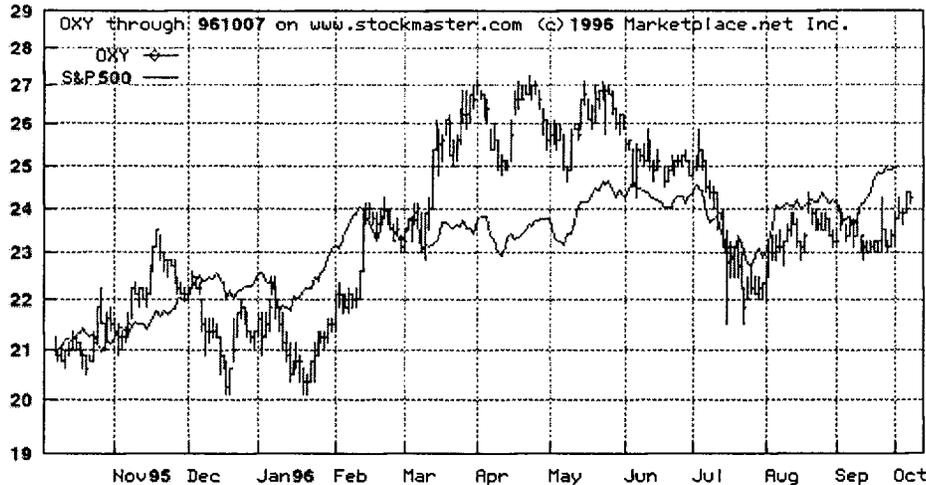
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Change + 1/4 ↑ 1.03%	YearHigh 27.25	YearLow 20.12	P/E 13	Yield 4.10%	Exchange NYSE

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APPENDIX A -- ONLINE RESOURCES

On-line Resources for Earth Scientists (ORES)

By Bill Thoen

June 15, 1994

This is a list of on-line resources available through the Internet and other networks that may be useful to those who have an interest in the earth sciences. These resources consist of digital documents, news sources, software, data sets and other on-line services that are available to the public.

Changes (since the June 2, 1994 release)

- * Section 2.6.4 Changed domain name for CLIMLIST
- * Section 2.6.27 Added Quaternay FTP site
- * Section 3.11.34 Deleted (file has been removed)
- * Section 3.15.5 Combined with 3.15.6, and section 3.15.6 was consolidated.
- * Renumbered Topics 3.11 and 3.15

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1.1. Copyright Notice

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The information in this article is provided as-is, with no warranties or assurances as to its accuracy or suitability. If you find errors or omissions, please send a message to Bill Thoen at bthoen@gisnet.com.

1.2. Introduction

The rapid growth and expansion of the on-line web of information is really challenging our best efforts to manage it. Various new software tools have appeared such as World Wide Web's Mosaic and Lynx browsers, Gopher, and WAIS, in addition to e-mail and FTP and telnet. There are new services appearing that serve mainly as gateways to other resources, and explosion of FAQ (Frequently Asked Questions) documents, resource documents (like this one) and books on navigating the Internet. Efforts like the Interpedia project are attempting to index the entire matrix, and diversions like the monthly Internet Hunt explore the ways people can find obscure information from the matrix, and to test its limits. New experiments in developing network "scavengers" such as automatic news filters and "knowbots" are becoming more common.

This is a guide for earth scientists who would like to get to know this cyberspace world better. The first section covers methods and resources that you can use to explore on your own, and the last part is a fairly exhaustive list of known resources that are related to the earth sciences.

There are many different services that can be used to retrieve electronic documents from the Internet. Each service is designed to serve different needs and is usually accessed through different software or methods. The resources section of this article is organized by subject, and so you will often see several methods listed that can be used to access resources on a subject. In this article we use the proposed Universal Resource Locator (URL) convention so that each resource can be presented in a standard way.

For more information about the URL, see Tim Brenner-Lee's article, "Uniform Resource Locators" at:

URL: <http://info.cern.ch/hypertext/WWW/Addressing/URL/Overview.html>

If you don't have a clue what this address means, you can find references to this document by using gopher, and searching for "Brenner-Lee".

1.3. URL Examples

So that you aren't left totally in the dark, the following is a simplified explanation of how to interpret URLs.

1.3.1. FTP

`ftp://ftp.uu.net/usenet/news.answers/ftp-list/ftp.Z`

This is a URL for an FTP resource. To get this using FTP, enter the following:

```
ftp ftp.uu.net
```

When you connect to this site, you will be asked to enter a username; enter 'anonymous' (without the quotes, of course). Next you will be asked for a password. Enter your e-mail address and press the Enter or Return key. After you are logged in, and you see the ftp prompt, change to the desired directory. In this case, you enter:

```
cd usenet/news.answers/ftp-list
```

Since the file we want here is in UNIX compressed format, it is a binary file (as opposed to plain text, or ASCII). To successfully transfer binary files,

you must set the transfer mode to binary. To do this, enter:

```
binary
```

To actually transfer the file to your system, enter the get command, like so:

```
get ftp.Z
```

The file will now start downloading to your system. When it's finished, and you are done transferring files, enter the 'bye' command to leave FTP. Now that you have this file, run 'uncompress' on it, and read it for more of the fine details on how to use FTP and Archie.

1.3.2. Telnet

```
telnet://strongmo:nceer@duke.ldgo.columbia.edu:23/8
```

The above example is a fairly complete URL for a the telnet site to access the NCEER service that reports strong seismic activity. The host name is 'duke.ldgo.columbia.edu', the port is 23; the type is 8; the username is 'strongmo'; and the password is 'nceer'. Some telnet URL's may omit everything except the host name, which means there is no special port or login procedure.

To access a telnet site (using the above as an example) enter

```
telnet duke.ldgo.columbia.edu 23
```

At the username prompt, enter 'strongmo' (without the quotes), and when asked for a password, enter 'nceer'. then simply follow the menus from there on.

1.3.3. Gopher

```
gopher://una.hh.lib.umich.edu:70/11/inetdirs
```

This is a typical gopher URL. To access this site, you must have a gopher client set up on your system or be able to connect to one. In this case the host name is 'una.hh.lib.umich.edu', the port is 70, the type is 1, and the selector path is 1/inetdirs. If you use gopher interactively, all you'll need to worry about is the host name and port (if it is present). Note that if there is a port specified, you may not get access if you don't include it after the host name.

In this case, enter the command:

```
gopher una.hh.lib.umich.edu 70
```

To access the gopher menu for the "Clearinghouse for Subject-Oriented Internet Resource Guides"

1.3.4. World Wide Web

```
http://info.er.usgs.gov/fgdc-catalog/title.html
```

The http stands for "hypertext transfer protocol", and this indicates that you need to use a World Wide Web (WWW) client to access this site or, in this case, the main USGS hypertext "home page". See the WWW FAQ file or the documentation for your WWW client software (e.g. Mosaic, Cello or Lynx, etc.) for more information on how to set up these resources.

1.3.5. E-Mail

```
mailto:geoinfo@geovax.edinburgh.ac.uk
```

Some resources require that you send an e-mail message and simply ask for them. In the above example, send an e-mail message to geoinfo@geovax.edinburgh.ac.uk and ask for (in this case) information on the "Catalogue of Digital Elevation Data".

1.4. Information on Internet Services

It is beyond the scope of this document to teach you how to use all the Internet services, but there are several very good books out on the market right now, so check your local bookstore. A good one (but rapidly getting out of date) is Ed Krol's "the Whole Internet". The ISBN number is 1-56592-025-2. Everything you need can also be found on-line (but you have to learn to dig around). The following section contains pointers to these files.

1.4.1. File Transfer Protocol (FTP)

URL: <ftp://ftp.uu.net/usenet/news.answers/ftp-list/ftp.Z>

1.4.2. Gopher

URL: <ftp://rtfm.mit.edu/pub/usenet/news.answers/gopher-faq>

1.4.3. Wide Area Information Servers (WAIS)

URL: <ftp://rtfm.mit.edu/pub/usenet-by-group/news.answers/wais-faq/getting-started>

1.4.4. World Wide Web (WWW)

URL: <ftp://rtfm.mit.edu/pub/usenet/news.answers/www/faq>

2. Resource References, Indexes and Pointers

As the volume of online information increases, it becomes more and more difficult to locate exactly what you want. To solve this problem, new tools are appearing to make it easier for both the beginner and the experienced internaut to navigate the vast web of knowledge known as the Internet.

Information organization and retrieval in a dynamic and decentralized environment like the Internet is proving to be a formidable challenge even for those who have studied the problem for years. Still, the difficulty of cataloging information hasn't stopped people from making the attempt. Services such as Gopher and World Wide Web (WWW) are becoming very popular as organizing tools. Resource catalogs (like this one) and Frequently Asked Questions (FAQ) files are also common.

However, a "list of resources" is out of date almost as soon as it is published or distributed. It would be incomplete if it did not also provide the reader with methods for extending his or her knowledge as the Matrix evolves. The following section provides a list of resources that are themselves continually updated pointers to resources.

2.1. Online Documents

These are files that are relatively static. They are updated occasionally, but generally they are designed to be a summary of the current state of things in the area they attempt to cover.

2.1.1. Online Resources for Earth Scientists (ORES)

This is what you are reading now. It is updated only as I get time (about every two years it seems). An appropriate reference would be:

Thoen, Bill (1994), "Online Resources for Earth Scientists", digital text file, June 1994 version. Available via ftp from <ftp.csn.org> in the COGS directory, 114K

URL: <ftp://ftp.csn.org/COGS/ores.txt>

Contact: bthoen@gisnet.com (Bill Thoen)

2.1.2. List of Mailing Lists

This list describes many mailing lists; not just those related to earth sciences.

URL: ftp://rtfm.mit.edu/pub/usenet/news.answers/mail/ mailing-lists

2.1.3. The Clearinghouse for Subject-Oriented Internet Resource Guides (UMich)

The Clearinghouse for Subject-Oriented Internet Resource Guides is a joint effort of the University of Michigan's University Library and the School of Information and Library Studies (SILS). Its goal is to collect and make widely available guides to Internet resources which are subject-oriented. These guides are produced by members of the Internet community, and by SILS students who participate in the Internet Resource Discovery project..

URL: ftp://una.hh.lib.umich.edu/inetdirs

URL: gopher://una.hh.lib.umich.edu:70/11/inetdirs

Contact: Lou Rosenfeld (lou@umich.edu)

2.1.4. Manual of Federal Geographic Data Products

The Federal Geographic Data Committee (FGDC) has compiled the Manual of Federal Geographic Data Products to promote the coordinated development, use, sharing, and dissemination of surveying, mapping, and related spatial data. The manual describes Federal geographic data products that are national in scope and commonly distributed to the public. Geographic data products include maps, digital data, aerial photography and multispectral imagery, earth science, and other geographically-referenced data sets. Federal agencies were encouraged to list only those geographic data products that are supported by an office to which the public could make inquiries and place orders. Data products are described in a standard format and grouped by producing agency. A cross-reference matrix is provided to help readers find products by data type.

Federal Geographic Data Committee Secretariat

U.S. Geological Survey

590 National Center

Reston, VA 22092

Tel 703-648-4533

Fax 703-648-5755

However, the supply of printed copies of the "Manual of Federal Geographic Data Products" has been exhausted. The following options are available to obtain the information from the manual:

(1) black-and-white reproductions of the manual are being sold by the NTIS. Paper copies are sold for \$44.50; microfiche for \$17.50. In addition, there is a \$3 fee for handling (US/Canada/Mexico). Telephone orders can be paid for by VISA, MasterCard, American Express, or NTIS Deposit Account. Be sure to mention stock number PB 93236503 in correspondence with NTIS.

National Technical Information Service

5285 Port Royal Road

Springfield, Virginia 22161

Attention: Order Desk

Tel 703-487-4650

The FGDC manual is also available via the World Wide Web Service on the Internet. The text of the manual, and some of the illustrations, are available from:

URL: <http://info.er.usgs.gov/fgdc-catalog/title.html>

2.1.5. GPS Information Sources

Langley, Richard B., 1994, "GPS Information Sources", digital text file, updated periodically, Apr 1994 version, 20747 bytes

URL: ftp://unbmvs1.csd.unb.ca/PUB.CANSPACE.GPS.INFO.SOURCES

2.1.6. World Wide Elevation Data Sources

Gittings, Bruce (1994) "Catalogue of Digital Elevation Data", Usenet comp.infosystems.gis; periodic posting

URL: <mailto:geoinfo@geovax.edinburgh.ac.uk>
Contact: bruce@geovax.ed.ac.uk (Bruce Gittings)

2.2. Frequently Asked Questions (FAQ) Files

These are files that are created to provide answers to the most often asked questions in their particular area of interest. If you have any questions about a particular subject, you should first see if there is a "FAQ" on it, and read it first if there is.

2.2.1. Data Standards

Lutz, Dale (1994), "SAIF Frequently Asked Questions", Usenet comp.infosystems.gis, digital text file.

Contact: infosafe@safe.com (Dale Lutz)

2.2.2. GIS

Nyman, Lisa and Virgil Sealy, (1994) "Frequently Asked Questions with Answers about Geographic Information Systems", Usenet comp.infosystems.gis, updated monthly, 117K.

URL: <ftp://abraxas.adelphi.edu/pub/gis/FAQ>
URL: <ftp://ftp.census.gov/pub/geo/gis-faq.txt>
Contact: panda@syrix.umd.edu (Lisa Nyman)

2.2.2.1. IDRISI

Morgan, Jay, 1994, "IDRISI-L Frequently Asked Questions (FAQ) List (Version 1.3)", digital text file, 27K.

URL: <ftp://midget.towson.edu/>
Contact: E7G4MOR@TOE.TOWSON.EDU (Jay Morgan)

2.2.2.2. MapInfo

McCombs, John (1994), "MapInfo Frequently Asked Questions", Windows Help file, updated monthly, 139K.

URL: ftp://ftp.csn.org/mapinfo/mi_faq.zip
Contact: john@inmap.co.nz (John McCombs)

2.2.3. Geology

Ramshaw, R. Spencer (1994) "FAQ sci.geo.geology", Usenet sci.geo.geology, digital text file. updated monthly

Contact: rsr@amthyst.dweomer.org (R. Spencer Ramshaw)

2.2.4. Biology

Smith, Una R. (1993), "A Biologist's Guide to Internet Resources", Usenet sci.answers. Available via gopher, anonymous FTP and e-mail from various archives. For a free copy via e-mail, send the text "send pub/usenet/sci.answers/biology/guide/*" to the e-mail address mail-server@rtfm.mit.edu. ~45 pages.

Contact: smith-una@yale.edu (Una Smith)

2.2.5. Meteorology

Stern, Illana (1994), "Sources of Meteorological Data Frequently Asked Questions (FAQ)". Usenet news.answers (bi-monthly). digital text file, 68K

To receive this document via e-mail, send a message to mail-server@rtfm.mit.edu with the line:

send /pub/usenet/news.answers/weather/data/part1

in the body. Other sources are listed below.

URL: ftp://rtfm.mit.edu/pub/usenet/news/answers/weather/data/part1
URL: ftp://vmd.cso.uiuc.edu/wx/sources.doc
URL: http://www.cis.ohio-state.edu/hypertext/faq/usenet/weather/top.html
Contact: ilana@ncar.ucar.edu (Ilana Stern)

2.3. Online Catalogs and Resource Pointers

As the Internet grows we are beginning to see an explosion of growth in "pointer to resources" like WWW pages and gopher sites. These are great to find out the latest resources, but they tend to be overly-redundant, and some are not organized as long lists of pointers without much help on where to find anything specific.

2.3.1. Information Sources: the Internet and Computer-Mediated Communication

URL: file://ftp.rpi.edu/pub/communications/internet-cmc.html
This points to just about every Internet reference guide around!

2.3.2. Michael McDermott's GIS Resources Pointers

URL: ftp://gis.queensu.ca/pub/gis/docs/gissites.txt
URL: ftp://gis.queensu.ca/pub/gis/docs/gissites.html
IP: 130.15.94.1
Contact: mcdermom@gisdog.gis.queensu.ca (Michael J. McDermott)

2.3.3. Roland Stahl's GIS Resource Pointers

URL: http://www.laum.uni-hannover.de/gis/gisnet/gisnet.html

2.3.4. A GIS User Guide to Tools

Murnion, Shane and George Munroe (1994?) "A GIS User Guide to Tools", Html text file.

This guide provides a good overview of some of the software tools that can be used to find GIS information on the Internet.

URL: file://jupiter.qub.ac.uk/pub/GIS/GIS.html

2.3.5. United States Geological Survey Home Page

This is the main starting point for on-line information about the USGS, its programs and missions. It also contains an extensive list of other pointers to Earth Science and GIS resources not specifically managed by the USGS.

URL: http://info.er.usgs.gov/

2.3.6. CERN - WWW Virtual Library on the subject of Geography

URL:
http://info.cern.ch/hypertext/DataSources/bySubject/Geography/Overview.html

2.3.7. Annotated Scientific Visualization URL Bibliography

This is a collection of pointers to weblets on the subject of scientific visualisaztion. It looks well-maintained.

URL: http://www.nas.nasa.gov/RNR/Visualization/annotatedURLs.html

2.3.8. EINet Galaxy's Pointers to Geosciences Resources

Large list of pointers to earth science resources.

URL: http://galaxy.einet.net/galaxy/Science/Geosciences.html

2.3.9. Software Support Laboratory for Space and Earth Scientists
Software tools for Space and Earth Scientists

URL: http://sslab.colorado.edu:2222/ssl_homepage.html

2.3.10. National Geophysical Data Center
This is the main starting point for information on NGDC programs and activities.

URL: <gopher://gopher.ngdc.noaa.gov>
URL: <http://www.ngdc.noaa.gov/ngdc.html>

2.3.11. MIT Earth Resources Laboratory - Home Page

URL: <http://www-erl.mit.edu/>

2.3.12. CIESIN - Information Gateway

The Consortium for International Earth Science Information Network(CIESIN) is cataloging metadata on the human dimensions of global environmental change, also in the Directory Interchange Format(DIF).

URL: <telnet://gopher@gopher.ciesin.org>
Contact: MDUSO@NSSDCA.GSFC.NASA.GOV

2.3.13. ERIN - Environment Environmental Resources Information Network
Environmental Resources Information Network (ERIN) has been established in Australia to draw together and distribute any information on the environment.

URL: <http://kaos.erin.gov.au:80/erin.html>
URL: <gopher://kaos.erin.gov.au>

2.3.14. GCMD - The Global Change Master Directory

The Global Change Master Directory (GCMD) is a multidisciplinary on-line information system containing descriptions of Earth and space science data holdings available to the science community. These include data from NASA, NOAA, NCAR, USGS, DOE (CDIAC), EPA, NSF and other U.S. agencies, universities, research centers as well as international agencies.

URL: <telnet://NSSDC@128.183.36.23>: (U.S.A.)
URL: <telnet://GCNET@132.156.47.218> : (Canada)
URL: <telnet://ESAPID@192.106.252.160>: (Europe)
URL: <telnet://NASDADIR@133.56.72.1> : (Japan)
Contact: mduso@nssdca.gsfc.nasa.gov

2.3.15. GLIS - Global Land Information System

This is a Telnet hypertext system about land information databases. You can order data through here as well as download some of it directly to your PC. Most of the data sets available through government agencies are referenced here.

URL: <telnet://glis.cr.usgs.gov>
IP: 152.62.192.54 (unofficial)

2.3.16. NASA Information by Subject

URL: http://hypatia.gsfc.nasa.gov/nasa_subjects/nasa_subjectpage.html

2.3.17. NASA Master Directory of Earth Science Data Sets

To find high-level information about any science data from earth satellites or planetary missions, including land observations, ocean data, meteorology, astronomy, earth/sun science, etc., use the NASA Master Directory. Also available are data/observations made from earth or of earth. Navigate the menus and you'll find out where to get the information you want on any satellite or instrument on a satellite.

Once you locate interesting data sets through the MD, it's often possible to link to the specific system that holds the data and order it online. From

NSI/DECNet, SET HOST NSSDCA.

URL: ftp://nssdca.gsfc.nasa.gov
Contact: mduso@nssdca.gsfc.nasa.gov

2.3.18. NSSDC- National Space Science Data Center On-Line Data
The National Space Science Data Center (NSSDC) On-Line Data and Information Service (NODIS) is a menu-driven interactive system which provides information on services and data supported by NSSDC. Includes *NASA Master Directory* -- an online search system providing brief overview information about NASA and many important non-NASA space and earth science data, and data information systems. In some cases, the directory offers automatic network connections to catalogs or other systems. Some topics: Nimbus-7 GRID TOMS Data, Geophysical Models, Standards and Technology Information System.

URL: telnet://NSSDC@nssdca.gsfc.nasa.gov
IP: 128.183.36.23

2.3.19. Naval Observatory Automated Data Service
URL: telnet://ads@tycho.usno.navy.mil
IP: 192.5.41.239

2.3.20. NCAR - National Center for Atmospheric Research data support archive
URL: ftp://ncardata.ucar.edu
IP: 128.117.8.111

2.3.21. STIS - Science & Technology Information Service
Science & technology Information Service STIS is maintained by the National Science Foundation.

URL: telnet://public@stis.nsf.gov
IP: 128.150.195.40

2.3.22. NCSU Library - Earth and Geography gophers
URL: gopher://dewey.lib.ncsu.edu:70/11/library/disciplines/earth
URL: gopher://dewey.lib.ncsu.edu:70/11/library/disciplines/geography/gis

2.3.23. UCSC- University of California - Santa Cruz Earth and Marine Science Gopher
URL: gopher://scilibx.ucsc.edu:70/11/The Researcher/Science and Engineering/Earth and Marine Sciences

2.3.24. Rice University
URL: gopher://chico.rice.edu:70/11/Subject/Geology

2.3.25. UTEP - University of Texas at El Paso GeoGopher
This is one of the better subject-oriented lists of resource pointers for Geology interests.

URL: gopher://dillon.geo.ep.utexas.edu:70/11/EarthScienceRes

2.3.26. Oklahoma Geological Survey gopher
URL: gopher://wealaka.okgeosurvey1.gov

2.3.27. UCSB - University of California - Santa Barbara Geological Sciences Gopher
URL: gopher://gopher.geol.ucsb.edu

2.3.28. Northwestern University, Dept. of Geological Sciences gopher
URL: gopher://gopher.earth.nwu.edu

2.4. Newsletters

2.4.1. Electronic Atlas Newsletter

This is a hard copy newsletter "dedicated to information about 'real-life' and professional applications of Geographic Information Systems (GIS)". To receive a free sample copy of the newsletter contact:

Brian J. Matuschak
c/o Electronic Atlas Newsletter
1414 N Northgate #101
Seattle, WA 98133
Tel: 206-525-7155
Contact: bjm@hebron.connected.com (Brian Matuschak)

2.4.2. HOTLINE Climate Change Newsletter

HOTLINE is an occasional newsletter from the US Climate Action Network dedicated to updates and information on climate change science and policy. HOTLINE will include information on climate change science, as well as updates on current events: from local initiatives in the United States, to international treaty negotiations. HOTLINE is intended to inform scientists, local activists and organizations about the science surrounding the potential threat of climate change, and current policy efforts to avoid this threat.

URL: ftp://igc.apc.org/pub/ECIX/hotlineMMYY (MMYY = month/year, e.g. 0194=Jan 94)
IP: 192.82.108.1
Contact: uscan@igc.org
US Climate Action Network
1350 New York Ave.
NW Suite 300
Washington, D.C. 20005

2.4.3. GPS Digest

The GPS Digest is a forum for the discussion of topics related to the USAF Global Positioning System (GPS) and other satellite navigation positioning systems. The GPS Digest is moderated and is not presently available via USENET newsgroup. Submissions should be made to gps@tws4.si.com. Administrative requests should be made to gps-request@tws4.si.com.

Past issues of the GPS Digest can be found in the file archives of the Canadian Space Geodesy Forum are at:

URL: ftp://unbmvs1.csd.unb.ca/PUB.CANSPACE.GPS.DIGEST.V1
URL: ftp://unbmvs1.csd.unb.ca/PUB.CANSPACE.GPS.DIGEST.V2
IP: 131.202.1.2
Contact: lang@unb.ca (Richard Langley)

2.5. Usenet Newsgroups

Usenet newsgroups are one of the biggest firehoses you can drink from on the Internet. These are public mailing lists where people from all over the world post their comments, opinions, wisdom, flames, and insanities. It can often be a challenge to separate the signal from the noise in these channels, but most of this document originally developed from message on these lists.

There are thousands of these topically oriented lists ranging from hard science to sexual fantasy interests, to gaming, to lawn care, to you-name-it-it's here.

Unfortunately, these are not available to everybody. Ask your system administrator if you have access to Usenet. If you don't have access, ask why not. You are missing a big part of the experience.

2.5.1. comp.infosystems.gis

Discussion of Geographic Information Systems (GIS) topics. This is the main GIS newsgroup.

2.5.2. sci.geo.fluids

Discussion of geophysical fluid dynamics.

2.5.3. sci.geo.geology

Discussion of general interest geological topics. This is the main newsgroup for geology.

2.5.4. sci.geo.meteorology

Discussion of general interest meteorological topics. This is the main newsgroup for meteorology.

2.5.5. sci.techniques.spectroscopy

The main aim of sci.techniques.spectroscopy is to provide an open forum for the discussion of spectroscopy and related fields on the Internet and to provide a catalyst for improved dissemination of information between those working with spectroscopy.

2.5.6. sci.geo.hydrology

The objective of this newsgroup is to provide a forum for discussion on issues pertaining to surface and groundwater hydrology, their relation to climate, water quality issues and water resource management and policy issues.

2.6. Mailing Lists

Mailing lists, or mailing reflectors, are e-mail services set up to send messages to a group of subscribers automatically. Once you subscribe, you receive a copy of every e-mail message sent to the list. There are two addresses associated with every list, and it is important to understand how each address differs. First, there is the server address. This is the address you send requests to in order to subscribe or unsubscribe, receive files, get help, etc. Second, there is the list address itself, which is the address you send public messages related to the list's topic. Never, EVER send a subscribe or unsubscribe command to the list--these messages must only go to the server! You'll only look stupid and annoy everybody else if you send "subscribe" messages to the list.

There are several types of list server software, but most common is the 'listserv' software. To subscribe to any of the following lists send a message to the SERVER address that contains the line:

```
subscribe list-name FirstName LastName
```

Replace 'list-name' with the actual list name, and 'FirstName LastName' with your name, or the name you want to be known as on this list. For example, if your name is 'Gerhardus Mercator' and you wished to subscribe to GIS-L, the Geographic Information Systems mailing list, you would send a message to listserv@ubvm.cc.buffalo.edu, and put on the first line:

```
subscribe GIS-L Gerhardus Mercator
```

Then, within a day or so, you will receive an e-mail message from the server confirming your subscription, and providing you with additional information and instructions about using the GIS-L list. Save this 'welcome' message! It contains important information that you will want to have later.

Messages posted to the list would start to appear automatically in your mailbox. You can get quite a lot of mail this way (GIS-L generates over 50 messages a day), so be prepared to clean out your mailbox regularly.

Note that not all mailing lists use the listserv software. In the following descriptions, exceptions to the listserv convention are mentioned if they apply. If subscription information is not specifically described, then you can assume that the listserv example mentioned above is what you use.

2.6.1. ACDGIS-L GIS Discussions for German-speaking Countries
Topics include GIS, Cartography, Remote Sensing and Image Processing as related to GIS, Geo-Statistics. This list aims at improving local/regional communication and is viewed as complementary to GIS-L.

Server: listserv@awiimcl2.bitnet
List: ACDGIS-L@awiimcl2.bitnet
Contact: wigeoarn@awiwuw11.bitnet (Zoltan Daroczy)

2.6.2. AQUIFER Pollution and Groundwater Recharge

Server: listserv@ibacsata.bitnet
List: AQUIFER@ibacsata.bitnet

2.6.3. CANSPLACE Canadian Space Geodesy Forum

Any topic related to the space geodetic techniques of GPS, Transit, VLBI, SLR, satellite altimetry, etc., may be discussed. Information concerning satellite launches and orbital elements may be posted. Questions are particularly encouraged. GPS Constellation daily status reports and ionospheric disturbance warnings are posted.

Server: listserv@unbvml.bitnet
List: CANSPLACE@unbvml.bitnet
Contact: lang@unb.ca (Richard B. Langley)

2.6.4. CLIMLIST Climatology Information and News

Server: listserv@psuvm.psu.edu
List: CLIMLIST@psuvm.psu.edu

2.6.5. COASTGIS Coastal GIS Mailing List

This is set up to discuss issues relating to Coastal Applications of GIS.

Server: listserv@irlearn.ucd.ie
List: COASTGIS@irlearn.bitnet
Contact: STGG8004@iruccvax.ucc.ie (Darius Bartlett)

2.6.6. COASTNET Coastal Management and Resources

This discussion list covers topics related to Coastal Management and Resources.

Server: Listserv@uriacc.uri.edu or listserv@uriacc.bitnet
List: COASTNET@uriacc.uri.edu or COASTNET@uriacc.bitnet
Contact: rpuf4584@uriacc.uri.edu or puf4584@uriacc.bitnet (Robert H. Puffer)

2.6.7. CONSGIS Conservation Biology And GIS

Server: listserv@uriacc.bitnet
List: CONSGIS@uriacc.bitnet

2.6.8. ENERGY-L Energy Discussion List

Server: listserv@taunivm.bitnet
List: ENERGY-L@taunivm.bitnet

2.6.9. ESRI-L Arc/Info Support List

The purpose of this list is to provide users of ESRI software with a forum to ask questions of each other and exchange technical information and expertise. It is not seen as a competitor to our CompuServe forum which serves a different clientele and is primarily to support ESRI's PC based products.

Server: listserv@esri.com
List: ESRI-L@esri.com
Contact: esri-l-human@esri.com

2.6.10. GEOCAL Geography, Geology, Town and Regional Planning, Meteorology

The CTI Centre for Geography has established a discussion list on Computer Assisted Learning at the University of Leicester. This moderated list will discuss all aspects of CAL/CBT/CAI/CML within the Centre's 'community' of

Geography, Geology, Town and Regional Planning and Meteorology.

To subscribe, send e-mail to the list server, and put

```
JOIN GEOCAL FirstName LastName
```

as the first line of the message. An example would be:

```
join geocal Chris Columbus
```

from outside UK:

```
Server: mailbase@mailbase.ac.uk  
List:   GEOCAL@mailbase.ac.uk
```

Within UK:

```
Server: mailbase@uk.ac.mailbase  
List:   GEOCAL@uk.ac.mailbase  
Contact: cti@uk.ac.leicester (John Castleford)
```

2.6.11. GEOGRAPH Geography discussion list
GEOGRAPHY is an experimental BULLETIN BOARD and DISCUSSION FORUM for academic geography - faculty, students and other persons having interests in the field of modern geographic research.

```
Server: listserv@searn.sunset.se  
List:   GEOGRAPH@searn.sunset.se
```

2.6.12. GEOLOGY Geology discussion list
Discussion of Geology topics

```
Server: listserv@ptearn.bitnet  
List:   GEOLOGY@ptearn.bitnet  
Contact: AMORIM@PTEARN.bitnet (Pedro Amorim)
```

2.6.13. GEONET-L Geoscience Librarians & Information Specialists
Server: listserv@iubvm.bitnet
List: GEONET-L@iubvm.bitnet

2.6.14. GIS-L Geographic Information Systems Topics
This discussion group focuses on all aspects of GIS and digital cartography and analysis. This is generally considered to be the main list for GIS. It is also available as a Usenet newsgroup as comp.infosystems.gis.

```
Server: listserv@ubvm.cc.buffalo.edu or listserv@ubvm.bitnet  
List:   GIS-L@ubvm.cc.buffalo.edu or GIS-L@ubvm.bitnet  
Contact: GIS-L-Request@ubvm.cc.buffalo.edu
```

2.6.15. GIST-L GIS Transport Discussion Group
Server: listserv@ukacrl.bitnet
List: GIST-L@ukacrl.bitnet

2.6.16. GPS-L Globally Positioned Satellite Topics
Server: gps-request@tws4.si.com
List: GPS-L@tws4.si.com

2.6.17. GRASS lists
Sending mail to either server address with "SUB Your Name" in the subject line or in the text (left-justified, no quotes) will sign you up for the list and you will begin receiving mail from others. To quit, just replace SUB above with UNSUB.

GRASS Users' list

Server: grassu-request@moon.cecer.army.mil
List: grassu-list@moon.cecer.army.mil

GRASS Programmers List

Server: grassp-request@moon.cecer.army.mil
List: grassp-list@moon.cecer.army.mil
Contact: grass-lists-owner@moon.cecer.army.mil

2.6.18. HYDROLOGY Hydrology Topics
Monash University in Australia has a Hydrology Mailing List set up for general open discussion on all matters concerning hydrology.

Server: listserv@eng.monash.edu.au
List: HYDROLOGY@eng.monash.edu.au

2.6.19. IDRISI-L Idrisi Support List
IDRISI-L is an Internet and Bitnet discussion group for users of the IDRISI software package developed by the Graduate School of Geography at Clark University. The purposes of IDRISI-L are: 1) to foster communication among the community of IDRISI users; 2) to encourage the application of IDRISI to real world problems; and 3) to provide user feedback regarding IDRISI to the Graduate School of Geography at Clark University. IDRISI-L is supported by the Department of Geography and Environmental Planning at Towson State University.

Server: mailserv@towsonvx.bitnet or mailserv@toe.towson.edu
List: IDRISI-L@towsonvx.bitnet or IDRISI-L@toe.towson.edu
Contact: e7g4mor@toe.towson.edu (Dr. John M. Morgan, III).

2.6.20. IMGRS-L Digital Image Processing of Remotely Sensed Data

Server: listserv@csearn.bitnet
List: IMAGRS-L@csearn.bitnet or IMAGRS-L@csearn.earn

2.6.21. MAPHIST Historical Maps Topics
MAPHIST-L is a discussion group whose primary focus is historical maps, atlases, globes and other cartographic formats. This listserv is open to all persons interested in the history of cartography and discussion is encouraged on all aspects of this broad subject.

The primary purpose of MAPHIST-L is to encourage individuals to communicate current research; evaluate methods and tools of analysis; announce important acquisitions and news; announce position vacancies; announce new publications (direct advertising, however, is discouraged); investigate library holdings; and to share information between conferences and the appearance of relevant journals.

Server: listserv@harvarda.harvard.edu
List: MAPHIST@harvarda.harvard.edu
Contact: cobb@widener1.mhs.harvard.edu (David Cobb)

2.6.22. MAPINFO-L MapInfo Discussion Group

The purpose of the MAPINFO-L mailing list is to provide a world-wide E-mail forum for discussing issues of interest to users, dealers, and developers of MapInfo software, applications and data sets. Topics can range from narrow technical details of using MapInfo to broad issues about GIS and Mapping.

To join, send e-mail to the server, and put

SUBSCRIBE MAPINFO-L

On the first line of the message. You will receive a confirmation message with additional information once you are successfully signed up. Note that this list does not use 'listserv' software, so do not put your name on the subscribe line!. Also the word 'subscribe' must be spelled out completely,

but it can be in either upper or lower case text.

Server: majordomo@csn.org
List: MAPINFO-L@csn.org
Contact: MAPINFO-L-Owner@gisnet.com (Bill Thoen)

2.6.23. MAPS-L Maps and Air Photos Systems Forum

This list is strongly oriented towards issues involved in map librarianship; such as storing, cataloging, preserving, classification, etc. of maps and air photos. Also good source for information on ancient sites and maps, and hard-to-answer geography questions.

Server: listserv@uga.bitnet
List: MAPS-L@uga.bitnet or MAPS-L@uga.cc.uga.edu
Contact: jsutherl@uga.cc.uga.edu (Johnnie D. Sutherland)

2.6.24. MDGIS-L Discussion list for Maryland GIS users

Server: mailserv@towsonvx.bitnet or mailserv@toe.towson.edu
List: MDGIS-L@towsonvx.bitnet or MDGIS-L@toe.towson.edu

2.6.25. NSDI-L US National Spatial Data Infrastructure

The purpose of this list is to discuss issues in the US National Spatial Data Infrastructure (NSDI). The National Research Council definition of NSDI is given as: The National Spatial Data Infrastructure is the means to assemble geographic information that describes the arrangement and attributes of features and phenomena on the Earth. The infrastructure includes the materials, technology, and people necessary to acquire, process, store, and distribute such information to meet a wide variety of needs.

Server: listproc@grouse.umesve.maine.edu
List: NSDI-L@grouse.umesve.maine.edu
Contact: stevef@grouse.umesve.maine.edu (Steven Frank)

2.6.26. QUAKE-L General Earthquake Discussion

The focus of this mailing list is on the ways various national and international computer networks can help in the event of an earthquake. One of the basic problems discussed might be network reconfigurations which would be temporarily required; others might be in actually putting various groups in electronic contact with each other.

Public notebooks for the list will be available from the server (send the command "information database" to the server for details), and are available via anonymous FTP.

URL: ftp://vml.nodak.edu/LISTARCH/QUAKE-L.*
IP: 134.129.111.1
Server: listserv@vml.nodak.edu or listserv@ndsuvml.bitnet
List: QUAKE-L@vml.nodak.edu or QUAKE-L@ndsuvml.bitnet
Contact: nu021172@vml.nodak.edu
Contact: nu021172@ndsuvml.bitnet (Marty Hoag)

2.6.27. QUATERNARY List

This mailing list is for all interested in research in the Quaternary geological period, including geologists, geomorphologists, soil scientists, palaeoenvironmentalists, archaeologists, palaeontologists, geochronologists, palynologists, and others. An FTP site is also available.

Server: listserv@morgan.uccs.mun.ca
List: QUATERNARY@morgan.uccs.mun.ca
URL: ftp://zeppo.geosurv.gov.nf.ca
Contact: dgl@zeppo.geosurv.gov.nf.ca (Dave Liverman)

2.6.28. RAILROAD List

To subscribe to the railroad list, send a message to listserv@cunyvm.cuny.edu with the line "subscribe railroad" in the body.

2.6.29. SEISM-L Seismological Data Distribution
Seismological data for general distribution

Server: listserv@bingvmb or listserv@bingvmb.cc.binghamton.edu
List: SEISM-L@bingvmb or SEISM-L@bingvmb.cc.binghamton.edu
Contact: fwu@bingvmb.bitnet (Francis Wu)

2.6.30. SEISMD-L Seismological Discussion
Seismological topics of general interest

Server: listserv@bingvmb or listserv@bingvmb.cc.binghamton.edu
List: SEISMD-L@bingvmb.bitnet or SEISMD-L@bingvmb.cc.binghamton.edu
Contact: fwu@bingvmb.bitnet (Francis Wu)

2.6.31. SOILS-L Soil Science

A forum for the discussion of all subjects dealing with soil science. Soil physics, chemistry, genesis, classification, mineralogy, fertility, conservation, etc. may be discussed within this unmoderated group. The formation of this group has been sanctioned by The American Society of Agronomy and the Soil Science Society of America.

Server: listserv@unl.edu
List: SOILS-L@unl.edu
Contact: jp@unl.edu (Jerome Pier)

2.6.32. STAT-GEO Quantitative Methods In Geosciences
Forum of quantitative methods in geosciences.

Server: listserv@ufrj.bitnet or listserv@ufrj.bitnet@vtbit.cc.vt.edu
List: STAT-GEO@ufrj.bitnet or STAT-GEO@ufrj.bitnet@cunyvms.cuny.edu
Contact: igg02001@ufrj.bitnet (Hugo Richard)

2.6.33. TGIS-L Temporal Topics in GIS Mailing List

TGIS-L is a listserver set up to facilitate discussion of all issues regarding temporal topics in GIS (Geographic Information Systems). TGIS-L has been established by joint effort of the ICA Interest Group on Temporal Topics in GIS and the US National Center for Geographic Information and Analysis. The ICA Interest group is chaired by Gail Langran (langran@u.washington.edu). The NCGIA's research initiative #10, on "Spatio-Temporal Reasoning and GIS", is co-lead by Max Egenhofer (max@mecanl.maine.edu) and Reg Golledge (golledge@ncgia.ucsb.edu).

Postings to this list should focus on research, commentary, and business concerning spatiotemporal subjects. These include, but are not limited to: time in GIS; spatio-temporal reasoning; representing time on maps; dynamic cartography; temporal aspects of spatial cognition.

Server: listserv@ubvm.cc.buffalo.edu or listserv@ubvm.bitnet
List: TGIS-L@ubvm.cc.buffalo.edu or TGIS-L@ubvm.bitnet
Contact: geodmm@ubvms.cc.buffalo.edu (David Mark)

2.6.34. TRANSIT List

Send a message to listserv@gitvml.bitnet with the message "subscribe transit" in the body, to subscribe to the transit list.

2.6.35. TRANSP-L Transportation Planning

Send a message to listproc@gmu.edu with the message "subscribe transp-l" in the body, to subscribe to the transportation planning list.

2.6.36. UIGIS-L GIS User Interface issues

The central theme of this discussion group is the issues about the user interface for GIS software.

Server: listserv@ubvm.bitnet

List: UIGIS-L@ubvm.bitnet

2.6.37. URBAN-L Urban Planning

Send a message to listserv@trearn.bitnet with the message "subscribe urban-l" in the body, to subscribe to the urban planning list.

Server: listserv@trearn.bitnet

List: URBAN-L@trearn.bitnet

2.6.38. VIGIS-L Virtual World Interfaces for GIS

VIGIS-L is a mailing list for those specifically interested in Virtual World Interfaces and their application to Geographic Information Systems.

Its purpose is to provide a forum for issues specifically surrounding the use of Virtual Worlds (Virtual Reality) Interfaces for Geographic Information Systems as well as any and all spatial information/decision support systems. The broad goal is to generate constructive discussions about how Virtual Worlds will be used in GIS, as well as approach the fundamental issue of why implement VR at all.

Server: listserv@uwavm.bitnet

List: VIGIS-L@uwavm.bitnet

2.6.39. VOLCANO Volcano Discussion list

It carries some discussions about volcano-related issues, as well as the monthly Global Volcanism Network reports. The latter are published by a group of geologists at the Smithsonian; we receive the reports a few weeks before they come out in print. I also maintain a list of volcanologists called VLIST FILE. VLIST contains names, e-mail addresses, research interests, job titles, and fax numbers for a hundred or so volcanologists and assorted fans.

If you would like to join volcano listserv, send a brief note to Jon Fink at AIJHF@ASUACAD.BITNET.

List: VOLCANO@asuacad.bitnet

Contact: aijhf@asuacad.bitnet (Jon Fink)

2.7. Bibliographies

2.7.1. NCGIA Publications

NCGIA publications, Initiatives, annual reports, and tech reports.

URL: ftp://ncgia.ucsb.edu/pub/biblio

IP: 128.111.254.105

Contact: postmaster@ncgia.ucsb.edu or raj@ncgia.ucsb.edu (Richard A. Johnson)

The NCGIA Bibliographies can also be found at U Maine.

URL: ftp://grouse.umesve.maine.edu/pub/NCGIA/Biblio

Contact: stevef@grouse.umesve.maine.edu

2.7.2. Bibliography from the Tectonics and Topography Conference

This directory includes the bibliography from the Tectonics and Topography conference held on Aug 31 to Sept 4, 1992. The bibliography is in several formats: text, text for procite import, and macintosh endnote. The macintosh version is compressed, and binhexed.

URL: ftp://magic.ucsb.edu/pub/chapman

Contact: dwv@magic.ucsb.edu (David Valentine)

2.7.3. EPA National Library

EPA National Library on-line database can be accessed for bibliographic searches.

URL: telnet://epaibm.rtpnc.epa.gov

IP: 134.67.180.1

2.7.4. Multidiscipline Bibliographic Database

This contains a lot in geology but is not near as good as commercial databases like GeoRef.

URL: telnet://database.carl.org

3. Resources by Subject

3.1. Bulletin Board Systems (BBS)

BBS systems are often the best sources of good up-to-date and organized information. Because they are run by individuals who try to reach an audience every day with news and fresh perspectives, you get the benefit of an active site of information. Ask a question of the Sysop (the system operator of the BBS), and you'll get an answer within a day at least. They also tend to specialize in a particular field, so if you want to know something about that field, chances are the BBS is the place to check first, even before you go searching the Internet. Most BBS operators are often well aware of what's out there on the net already.

For example, GISnet BBS specializes in GIS resources, and even though it is not as big as the whole Internet, if you log in there you can usually find just the pointer you need to the multi-megabyte database you've been looking for. Even things that don't get saved on the Internet (like interesting message threads) are often archived here.

To reach BBSes, you need to use a modem and dial out over regular telephone lines.

3.1.1. The GeoInfo Network

GeoInfo Network is an association of BBS systems throughout North America that specialize in earth science or GIS interests.

CDMG Online	916-327-1208	Sacramento, CA
COGSnet	303-526-1617	Golden, CO
Computer Plumber	319-337-6723	Iowa City, IA
Computer Solutions	504-542-9600	Hammond, LA
Dark Matter	604-534-7667	Langley, BC
GeoFuel	416-829-0858	Oakville, ONT
GeoNet	316-265-6457	Witchita, KS
Geotechnica	303-933-0712	Littleton, CO
GISnet	303-447-0927	Boulder, CO
NASA MLP	206-871-3965	Port Orchard, WA
PSN (Memphis)	901-360-0302	Memphis, TN
PSN (Pasadena)	818-797-0536	Pasadena, CA
PSN (San Jose)	408-226-0675	San Jose, CA
RMAG BBS	303-473-0048	Boulder, CO
SurveyNet	207-549-3213	Whitefield, ME

3.2. Jobs in Earth Sciences

3.2.1. GIS Jobs Clearinghouse

Intended to be a simple listing of jobs related to GIS and other similar fields (image processing, GPS etc...). The archive will be accessible via gopher and WWW. This is NOT a new mailing list, rather an archive of submissions from those advertising positions. Please, only send announcements if you're the originator of the announcement. To post a send mail to: jobs@torpedo.forestry.umn.edu and please include the following on the subject line: job title, location (state, country, zip code) and a closing date.

Look under "Remote Sensing and GIS Information" on either server.

URL: gopher://walleye.forestry.umn.edu:70/11/gopher
URL: http://walleye.forestry.umn.edu/0/www/main.html
Contact: sdlime@soils.umn.edu (Steve Lime)

3.2.2. Federal Government Jobs

This site has a sub section of jobs listed by the Federal government. This includes many different offers, not just those related to earth sciences.

URL: telnet://fedworld.gov

3.2.3. The GeoInfo Network BBSes -- Job conferences

The GeoInfo BBS network maintains a conference of jobs available in the earth sciences. Most of these are originally advertised over the Internet, but if you aren't following all the relevant Internet conferences, you can catch up here. See the listing of BBSes above to find the one nearest to you.

3.2.4. Jobs listed by keyword/geographic search

Current job announcements in many, many fields. The gopher index is searchable by geographic area, keyword (like gis), etc.

URL: gopher://nero.aa.msen.com

3.3. Programming - Algorithms Source Code and Data Formats

3.3.1. Computers & Geoscience Source Code

The IAMG will establish an ftp site effective June 1st, 1994. This service will provide Internet users access to programs and test data that have been published in the journals, Computers and Geosciences and Mathematical Geology. The service is intended to assist members in obtaining programs/data which have been previously difficult or time consuming to obtain.

Programs will be stored in both tar (UNIX) and zip (PKZIP-DOS) forms. Code access will be by Journal, Volume and Number. Thus, for Computers & Geosciences, the file v20-5-10.zip will contain programs published in Volume 20, Number 5, Paper/Note #10. The files are in the directory: /pub/CG.

For the Journal Mathematical Geology, program code from Volume 25, No. 5, Paper/Article #1 will be in file v25-5-1 in directory /pub/MG.

URL: ftp://imag.org
Contact: rsr@amthyst.dweomer.org (Spencer Ramshaw)

3.3.2. Point In Polygon

Fastest Point in Polygon Test, Eric Haines, in Ray Tracing News, vol. 5, no. 3, September, 1992; ftp://princeton.edu/pub/Graphics/RTNews/RTNv5n3.Z

3.3.3. Voronoi Tessellation source code

Source code from the article Spatial Data And The Voronoi Tessellation, Dr. Dobbs Journal, Dec 1992

URL: ftp://ftp.mv.com/pub/ddj/dec94

3.3.4. Viewshed Algorithms

skatz@DSC.BLM.GOV (Sol Katz 303-236-0101) writes:

"Look at yalemap (original and 2 prettified versions). It has a viewshed program written in f77. You can see how it works using cogsmap or skmap in the same directory. (skmap has better graphics)."

URL: ftp://dsc.blm.gov/pub/gis/yalemap.zip
Contact: skatz@DSC.BLM.GOV (Sol Katz 303-236-0101)

3.3.5. TIN "Linear Time Algorithm" Software

An article is published in IJGIS, 1993, Vol. 7, No. 6, pp. 501-524 describes a "linear-time algorithm". The associated DOS-executable program developed

by the author is available.

URL: <ftp://shelf.ersc.wisc.edu/pub/CHIDTVD.ZIP>

3.3.6. Thiessen / Voronoi Polygons & Delauney Triangle Algorithms
C source code for calculating vectors for Thiessen Polygons:

URL: <ftp://netlib.att.com:netlib/voronoi/sweep2.Z>

The GRASS module, s.voroni.

URL: <ftp://pasture.ecn.purdue.edu/pub/mccauley/grass/s.voroni>

The NCSA 'MinMaxer' is a triangulation system that does, amongst others, Delaunay triangulation, which is the dual to Voronoi or Thiessen polygons.

URL: <ftp://ftp.ncsa.uiuc.edu/SGI/MinMaxer>

3.3.7. AML code for ARC/INFO 5.0, 6.11

URL: <ftp://dis2qvarsa.er.usgs.gov/amls>

3.3.8. AML code for GIRAS data

URL: <ftp://dis2qvarsa.er.usgs.gov/data/giras>

3.3.9. AML ftp site

There is a very small ftp site of AMLs at:

URL: <ftp://wigeo.wu-wien.ac.at/pub/acdgis-1/aml>

URL: <ftp://wigeo.wu-wien.ac.at/pub/acdgis-1/sml>: PC Arc/Information

3.3.10. Coordinate Conversion Software

USGS General Cartographic Transformation package converted to C

URL: [edcftp.cr.usgs.gov/software/gctpc](ftp://edcftp.cr.usgs.gov/software/gctpc)

3.3.11. Topographic Analysis source code (FORTRAN)

URL: <ftp://edcftp.cr.usgs.gov/software/topo>

3.3.12. DCW to DXF conversion:

URL: <ftp://dsc.blm.gov/pub/gis/dcw2dxf.zip>

3.3.13. UNIX version of VPFView 1.1 (to view DCW data) is available from:

URL: <ftp://jupiter.drev.dnd.ca>

URL: <ftp://cc.drev.dnd.ca>

IP: 131.132.32.2

Contact: parento@cc.drev.dnd.ca (Marc Parenteau)

3.3.14. LAS (Land Analysis System) Documentation

URL: <ftp://edcftp.cr.usgs.gov/software/las/doc>

3.4. Digital Data

3.4.1. ARC/INFO Coverages

380 ARC/INFO coverages online

URL: <ftp://gsb.igsb.uiowa.edu>

Contact: jgiglierano@gsbth-po.igsb.uiowa.edu (Jim Giglierano)

3.4.2. Counties

3.4.2.1. ARC/INFO Export Coverage of selected U.S. States

URL: ftp://csdokokl.cr.usgs.gov/pub/gis_data

IP: 136.177.176.4

Contact: ahrea@csdokokl.cr.usgs.gov (Alan Rea, Hydrologist, USGS)

3.4.2.2. ARC/INFO export files of US statewide county coverages

The maps were derived from the Census TIGER files. As such, the data in metro areas may be the old, crude DIME data, but the rest of the boundaries are derived from USGS 1:100K DLGs.

URL: <ftp://dis2qvarsa.er.usgs.gov/state100>

3.4.2.3. County outlines as Versatec plot file

URL: <ftp://ftp.uu.net/graphics/maps/USmap.Z>
IP: 192.48.96.9

3.4.3. Micro World Databank II

URL: <ftp://ftp.uu.net/graphics/maps/wdb-ii.Z>
IP: 192.48.96.9

3.4.4. Census County Boundaries

URL: Part 1 of the 1980 Census boundaries
URL: <ftp://ftp.uu.net/graphics/maps/Census.Part1.Z>
IP: 192.48.96.9

3.4.5. US Census Bureau Data

This is the main Bureau of the Census FTP site, and looks like it will be a rich source of population, business, health and other demographic data.

URL: <ftp://ftp.census.gov>

3.4.6. US Hydrologic Units Data

This directory contains all the 1:100,000-scale and 1:250,000-scale data files of Hydrologic Units for the United States.

URL: <ftp://dis2qvarsa.er.usgs.gov/data/giras/hu>

3.4.7. GIRAS Land Use Data

This directory contains all the 1:100,000-scale and 1:250,000-scale data files of land use and land cover maps for the United States. These files were obtained from the National Mapping Division in GIRAS format and were compressed using the UNIX compress command.

URL: <ftp://dis2qvarsa.er.usgs.gov/data/giras/lu>

3.4.8. Digital Data on India

Digital data for India includes nationwide district-level data from the 1961, 1971, and 1981 censuses and from annual agricultural production statistics.

URL: <ftp://cwmills.umd.edu/pub/india>

3.4.9. Timezone Boundary Data

Arthur David Olson has created a public domain time zone database, but it does not include latitude/longitude boundaries.

URL: <ftp://elsie.nci.nih.gov/pub/tzcode94d.tar.gz>: code

URL: <ftp://elsie.nci.nih.gov/pub/tzdata94d.tar.gz>: data

3.4.10. EROS Data Center

The EROS site contains all the 1:100,000 and 1:2,000,000 scale Digital Line Graph (DLG), Land Use/Land Cover and 1:250,000 scale Digital Elevation Model (DEM) data for the United States. This site also contains numerous Arc/Info coverages and AMLs. Source code for manipulating these data can also be found here.

URL: <edcftp.cr.usgs.gov>

3.4.13. Digital Elevation Models (DEMs)

3.4.13.1. Software

3.4.13.1.1. MicroDEM - DEM Software

Microdem is a set of pascal programs with source code which do all kinds of things with DEM data, and includes one data set. The program is shareware and available from the author:

Dr. Peter Guth
PETMAR TRILOBITE BREEDING RANCH
252 Lower Magothy Beach Road
Severna Park, MD 21146

URL: <ftp://ftp.blm.gov/gis/microdem.zip>

3.4.13.1.2. GRIDPAK - 3D Gridding Software

URL: <ftp://ahab.rutgers.edu/pub/gridpak>

3.4.13.1.3. SPLAT - Contouring Software

SPLAT is a contouring package.

The file to download is called SPLATSFX.EXE which is a self extracting (PK) archive of the program SPLAT.EXE and a short manual in windows write format.

URL: <ftp://ftp.cica.indiana.edu/pub/pc/win3>

URL: <ftp://nic.funet.fi/pub/msdos>

3.4.13.2. Data

3.4.13.2.1. Mars DEMs

Mars DEM data (Valles Marineris region) sampled at a variety of spatial resolutions.

URL: <ftp://stardent.arc.nasa.gov/pub/>

IP: 128.102.21.44

3.4.13.2.2. US 3-Arc-second DEMs

3 arc-second DEM data in 1 degree square segments for most of the U.S.

URL: <ftp://resdgs1.er.usgs.gov/dems>

IP: 130.11.52.55

3.4.13.2.3. DEMs of USA 1:250,000 scale

URL: <edcftp.cr.usgs.gov/data/DEM/250/>

3.4.13.2.4. ETOPO5 World Topographic Dataset

These files contain worldwide bathymetric and elevation data in meters with a 5 minute by 5 minute latitude/longitude data density.

URL: <ftp://walrus.wr.usgs.gov/pub/data/etopo5.northern.bat.Z> (8.3 Mb)

URL: <ftp://walrus.wr.usgs.gov/pub/data/etopo5.southern.bat.Z> (7.9 Mb)

IP: 130.118.7.254

Contact: norman@OCTOPUS.WR.USGS.GOV (Norman Maher)

URL: <ftp://ahab.rutgers.edu/pub/gridpak/etopo5>

3.4.13.2.5. Map Datasets -- DLG, DEM, TIGER USGS DLG

This is a gold mine of a site for mapping data. It is a DEM, DTM, TIGER Data exchange site for all kinds of public domain map data.

URL: <ftp://spectrum.xerox.com/pub/map/>

IP: 192.70.225.78

Contact: Moore.Wbst128@Xerox.Com (Lee Moore)

3.4.13.2.6. DEMs of the San Francisco Area

The data have a horizontal resolution of 3.0 X 3.0 seconds of lat/long degrees and have a vertical resolution of 1.0 meters.

sf24.dem 38.0 37.0 -123.0 -122.0 SAN FRANCISCO, CA
sj13.dem 38.0 37.0 -122.0 -121.0 SAN JOSE, CA
sx24.dem 37.0 36.0 -123.0 -122.0 SANTA CRUZ, CA
zp13.dem 37.0 36.0 -122.0 -121.0 MONTEREY, CA

URL: ftp://walrus.wr.usgs.gov/pub/data/dem/
IP: 130.118.7.254
Contact: norman@OCTOPUS.WR.USGS.GOV (Norman Maher)

3.4.13.2.7. DEMs of Haiti and Madagascar
These are 30 arc-second DEMs created by EROS from the elevation contours from the Digital Chart of the World CD-ROM dataset.

URL: ftp://edcftp.cr.usgs.gov/data/30ASDCWDEM/

3.4.14. CIA World Map database

The CIA World map database is a set of coastlines, rivers, political boundaries developed by the CIA years ago, and released via the Freedom of Information Act. The data was captured at a scale of 1:5,000,000 I believe. It's got a few errors as some counties have changed boundaries since its release, but it's not bad for world maps. The data are not topologically structured, so all you can get is lines, no polygons. Pity, that. This is all over the place too. A few sites that have it now are:

URL: ftp://gis.queensu.ca/pub/gis/cia/
URL: ftp://ftp.cs.toronto.edu/doc/geography/
URL: ftp://ftp.uu.net/graphics/maps/WorldMap.tar.Z-split

3.4.15. City Locations

3.4.15.1. World Cities

Coarse lat/long file for cities around the world.

URL: ftp://gis.queensu.ca/pub/gis/city/

3.4.15.2. World & US Cities

URL: ftp://ftp.cs.toronto.edu/doc/geography/

3.5. Environmental

3.5.1. GERMINAL project (GIS for Environmental Management and Planning)
Document follows developments on the GERMINAL project (GIS for Environmental Management and Planning). Subject headings are "Geographic Information Systems" and "Environment".

URL: http://dgrwww.epfl.ch/GERMINAL/Germinal.html

3.5.2. ANU - Australian National University - Bioinformatics

URL: http://life.anu.edu.au:80/

3.5.3. ANU - Landscape Ecology Services

URL: http://life.anu.edu.au/landscape_ecology/landscape.html

3.5.4. ERIN - Australian Environmental Resources Information Network

ERIN is experimenting with providing metadata through database queries, automatic generation of species distribution maps, biological modelling, many and varied documents, and actual geographic information bits and bytes. They also have links to all sorts of other interesting environmental and GIS servers and resources.

ERIN's purpose is to make environmental information available to the Commonwealth of Australia Department of Environment and associated agencies.

URL: http://kaos.erin.gov.au/erin.html

Contact: davidc@ERIN.GOV.AU (David Crossley)

3.5.5. HOLIT - Israel Ecological & Environmental Information System

URL: http://vms.huji.ac.il/www_teva/db000.html

3.5.6. Environmental Science Gopher at UC Santa Cruz

URL: [gopher://scilibx.ucsc.edu:70/11/The Researcher/Science and Engineering/Environmental Science](gopher://scilibx.ucsc.edu:70/11/The_Researcher/Science_and_Engineering/Environmental_Science)

3.5.7. EnviroGopher at Carnegie Mellon University

URL: <gopher://envirolink.hss.cmu.edu:70/1>

3.6. Forestry

3.6.1. Forest Management DSS software

HSG (Harvest Schedule Generator) is a spatially referenced forest inventory projection tool developed by Tom Moore and Cary Lockwood of the Petawawa National Forestry Institute. This tool is designed to assist forest managers and others in the design and evaluation of forest management strategies.

URL: <ftp://pi19.pnfi.forestry.ca/pub/hsglite>

3.6.2. Oregon State Univ, Forestry Sciences Laboratory

This gopher is maintained by the Forest Science Laboratory of Oregon State University, Corvallis, Oregon. The primary purpose is to allow users to find GIS (Geographic Information System) files among our rather extensive collection of geographic data.

The gopher operates solely as an index. This means that you will not be able to retrieve GIS files directly through the gopher system.

If you are interested in obtaining GIS data, we recommend that you first use the gopher to identify the particular files that you want. Once you have identified the files, please fill out the request form (if you do not have accounts on fsl machines) and email it to:

GIS-request@fsl.orst.edu

When the available data are ready for transfer, you will receive a confirmation of the name of your file and the date it can be accessed in an anonymous ftp area for downloading. Data is made available within 1 - 2 working days of your request, although priority may be given to financial benefactors.

URL: <gopher://gopher.fsl.orst.edu:70/1>

3.7. Geography

3.7.1. Geographic Name Server

Zipcode, population, lat/long other stats from 1980 census for US cities. Enter name of city at the (non-existent) prompt and press Enter. Include state (as in Ipswich, MA) or you'll get that city's information in every state it is found. Type 'quit' to exit.

Tom Liebert (author of the GNS) reports: GNS covers only USA now, but I just received global city data from CIA RWDB2. I'll incorporate that fairly soon.

URL: <telnet://martini.eecs.umich.edu:3000>

IP: 141.212.99.9, 141.212.100.9

Contact: libert@eecs.umich.edu (Tom Libert, GNS author)

3.7.2. Japan Geography

URL: <http://www.ntt.jp/japan/index.html>

3.7.3. Project GeoSim - Geography education software

URL: <http://geosim.cs.vt.edu/index.html>

3.7.4. Gazetter for the U.S.

URL: <http://wings.buffalo.edu/geogw>

3.7.5. Geography Datasets -- US Census Data

The file Census.part1.Z contains part 1 of the 1980 US Census county boundaries. The other parts do not seem to be available. This site also contains a copy of the CIA World Databank II and a shell archive file to

create two C programs to compress and/or map the WDB data (wdb-ii.Z) Note: This site is extremely fussy about the password you use. You must use your actual, full email address, or you won't be granted access.

URL: <ftp://ftp.uu.net/pub/Census>

IP: 192.48.96.9

3.7.6. CIA World Fact Book

The CIA World Factbook contains summary information about the countries of the world including size and population,, commercial, military, and political data.

There are many places where this data set can be found on the Internet. The best way to find the latest versions is to use Veronica and search for "world factbook". Also note that this is updated each year.

URL: <ftp://ftp.cs.toronto.edu/doc/geography>

3.8. Geology & Geophysics

3.8.1. Mineralogy

3.8.1.1. Minerals Database

This is a database containing the names and chemical formulas of all currently accepted mineral species, 3507 or so of them. It is now available in a plain ASCII version which is easily importable in your favorite database program, and in a Microsoft RTF format.

URL: <ftp://c.scs.uiuc.edu>

Contact: mcdonald@aries.scs.uiuc.edu (Doug McDonald)

3.8.1.2. Mineral ID database

Mineral ID for the Macintosh computer is an interactive database of minerals, crystallographic systems, and mineralogy terms for both educational and reference purposes. For more information, e-mail me, and I will send you a full information sheet.

Contact: liquori@lamar.ColoState.EDU (Michael Liquori)

3.8.1.3. Rock forming mineral compositional database; PROBE software

URL: <ftp://perry.berkeley.edu/outgoing/donovan/>

3.8.1.4. Crystallography for the Macintosh

URL: <ftp://mac.archive.umich.edu/Crystal>

URL: <ftp://mac.archive.umich.edu/CrystalView>

Contact: thomas.h.kosel.1@nd.edu (Tom Kosel)

3.8.2. Earthquakes

3.8.2.1. NCEER Strong Motion Data Facility

URL: <telnet://strongmo:nceer@duke.ldgo.columbia.edu:23/8>

3.8.2.2. Center for Earthquake Research and Information
(CERI Memphis St U)

URL: gopher://141.225.56.24:70/1
URL: gopher://41.225.56.24:70

3.8.2.3. USGS Branch of Global Seismology and Geomagnetism
URL: telnet://QED@neis.cr.usgs.gov

3.8.2.4. Oklahoma Earthquake Catalog
URL: gopher://wealaka.okgeosurvey1.gov:70/11/okeqcat

3.8.2.5. Earthquake Information
The Usenet newsgroup ca.earthquakes is a good source of earthquake information and news.

Northern California

URL: finger:quake@andreas.wr.usgs.gov
Other sources

URL: finger:quake@eqinfo.seis.utah.edu
URL: finger:quake@geophys.washington.edu
Official office of emergency services bulletin site

URL: telnet://oes1.oes.ca.gov:5501

3.8.2.6. Geologic Faults Map Data
Digitized database of geologic faults (primarily for different parts of the U.S.) and California earthquake locations.

URL: ftp://alum.wr.usgs.gov/pub/map: Faults data
URL: ftp://alum.wr.usgs.gov/pub/summary: Earthquake locations
Contact: oppen@alum.wr.usgs.gov (David Oppenheimer)

3.8.2.7. Earthquake Maps & Charts of the Northridge earthquake
This site contains data, graphs, and maps relating to the Northridge Quake. They have been collected from sci.geo.geology and ca.earthquakes, and ftped from caltech. There are postscript (ps), GIF (gif), and text (txt) files.

URL: ftp://laplace.stat.ucla.edu/pub/data/various/quake/

3.8.2.8. World Earthquake Data via "Finger"
URL: finger://quake@geophys.washington.edu

3.8.3. USGS Digital Map Open-File Reports
The Geologic Division of the USGS (Central Region) has a server that functions as a repository for on-line publications. You can find the following digital map Open-file Reports:

ofr-92-0328: The digital geologic map of the Roswell Resource Area, New Mexico, in ARC/INFO export format.

ofr-92-0507: The digital geologic map of Colorado in ARC/INFO export format.

ofr-90-0676: Interactive Macintosh display of petroleum exploration through time across the continental United States.

URL: ftp://greenwood.cr.usgs.gov/pub/open-file-reports/
IP: 136.177.48.5
Contact: gellis@ctr-dms1.cr.usgs.gov (Eugene Ellis)

3.8.4. Geologic finite-element software
Three finite-element programs for modeling plate deformation are now available by anonymous FTP. They can be used to model deformation of the lithosphere, formulate tectonic hypotheses, fit geodetic data, estimate long-term seismic hazard, study the rheology of the plates, or teach students.

Each program is accompanied by explanatory text files, sample input and output files, and accessory programs for help in preparing the input and plotting graphics from the output.

Source code (FORTRAN77) is available.

URL: ftp://pong.igpp.ucla.edu/pub/pbird/read_me
Contact: Peter Bird <pbird@ess.ucla.edu>

3.8.5. StereoNet for Windows

StereoNet for Windows is a program for plotting on stereonet and performing 3D analysis and recalculations. If you are working on any of the above named subjects a lot of time can be saved by letting your PC do this work. The plots are ready for publication when they come out of your printer.

Some features:

- Schmidt or Wulff nets.
- Plotting planar data, as great circles.
- Plotting points, with a number of different symbols
- Plotting density contours.
- Plotting rose diagrams.
- Plotting statistics (mean, girdle, pole to girdle)
- Plotting slip linear plots
- Color support, the user can define any color.

URL: <ftp://torsken.nfh.uit.no/STEREO/>
IP: 129.242.211.254
Contact: perivar@ibg.uit.no (Per Ivar Steinsund)

3.8.6. USGS - United States Geological Survey

URL: <http://sun1.cr.usgs.gov>

3.8.7. Arizona Geologic Survey (AzGS)

URL:
<gopher://dillon.geo.ep.utexas.edu:70/11/EarthScienceRes/Publications/AZ.GeolSurv>

3.8.8. El Paso Geological Society Publication list

URL:
<gopher://dillon.geo.ep.utexas.edu:70/00/EarthScienceRes/Publications/ElPasoGS>

3.8.9. Computer Oriented Geological Society (COGS)

Archives Contains COGS diskettes and other software collected from COGSnet BBS including geologic, GIS, mapping, earth science software for the PC and Macintosh. Includes several mapping data sets of use to all, or pointers to where they can be found. GSMAP and MOSS can be found here.

URL: <ftp://ftp.csn.org/COGS/>
IP: 128.138.213.21
Contact: bthoen@gisnet.com (Bill Thoen)

3.8.10. Geological Symbol Font

Font in Adobe Type 1 and True Type formats (both for the PC) contains geological symbols. It has also been converted to a CorelDRAW "wfn" file so it may be installed as a symbol for CorelDRAW 3.x and 4.x.

Also CorelDRAW "pat" files containing geological patterns.

URL: <ftp://opal.geology.utoronto.ca/pub/geology/corel/symbols/> Fonts
URL: <ftp://opal.geology.utoronto.ca/pub/geology/corel/patterns/> Patterns
Contact: charters@madhaus.uucp (Jim Charters)

3.8.11. CIA World Databank-II Map Data

This is a data file of coastlines, countries, rivers, islands and lakes of the world compiled by the CIA and now de-classified into the public domain. It's a large database; over 12 megabytes, compressed! This file is broken up into 5 pieces, so you have to get them all separately and 'cat' them together. The file is tightly packed in a binary format, and to read it you will need to use the C program contained in the archive, 'domap.c'. The national boundary data is out-of-date as there have been many changes in the world since the late 80's. However it seems to be the best source for free world map data.

URL: ftp://sepftp.stanford.edu/

3.8.12. Sunrise/sunset Calculations

Calculate sunrise and sunset for anyplace not 'close' to the poles. The source includes both 'print to screen' and 'print to printer' versions. Executable versions are here too.

URL: ftp://ftpnssl.nssl.uoknor.edu/pub/skaggs/sunrise.bas
IP: 129.15.66.34

3.8.13. World Paleomagnetic Database

Databases, programs and information related to paleomagnetism.

URL: ftp://earth.eps.pitt.edu/pub
IP: 130.49.3.1

3.8.14. Magnetic Field Computing programs

URL: ftp://ftp.ngdc.noaa.gov
Contact: npeddie@isdres.er.usgs.edu

3.8.15. Geochemistry -- NewPet Software

This is an ftp site for NewPet, a geochem/igneous petrology data handling program. Includes ternary plots. MS-DOS compatible shareware (\$25 voluntary).

URL: ftp://sparky2.esd.mun.ca
IP: 134.153.11.101

3.8.16. Geological Hypercard Stacks

Macintosh Hypercard stacks pertaining to geology: bedforms An application for geometric simulation of sedimentary structures produced by migrating bedforms over time. Companion to the book "Bedforms, Cross-Bedding, and Sedimentary Structures" by David M. Rubin, published by SEPM. QuickTime animations of selected figures from the book. Best viewed on a screen 640x480 pixels or larger, set to 256 *grays* (not colors). Each of these files is a HyperCard stack with instructions and a pattern for making a three-dimensional model of one or more interesting landforms:

- earthquake_effects
- effects_of_ice
- island_coral_reefs
- loma_prieta
- seven_faults
- volcano map projections:

Hypertext files on USGS map projections usa-exploration:

USA Exploration -- USGS OFR 90-676. This application illustrates the history of oil and gas exploration in the United States from 1900 to 1986.

URL: ftp://ftp.walrus.wr.usgs.gov/pub/mac
IP: 130.118.7.254
Contact: dr@octopus.wr.usgs.gov

3.8.17. University of Minnesota Soil Science Gopher

URL: gopher://gopher.soils.umn.edu:70/11

3.8.18. Time Dependent Topography Through the Glacial Cycle

This site contains data sets of topography and ice coverage during the last glacial maximum. The topography data set contains elevation at 1 Kyr intervals, with elevations in meters. The second data set contains ice-cover data at 1 Kyr intervals. Area of coverage is the entire globe in a 1 x 1 degree grid, with a temporal range of 21KBP to the present.

URL: <ftp://rainbow.physics.utoronto.ca/pub/iceA/README>

IP: 128.100.75.19 (unofficial)

3.8.19. Water Quality Data Directory

URL: <gopher://scilibx.ucsc.edu:70/7/waissrc:/.WAIS/water-quality.src>

3.8.20. IGWR - Institute for Ground Water Research

URL: <gopher://igwmc.mines.colorado.edu/3851/1>

3.9. Geographic Information Systems (GIS)

3.9.1. Tallahassee Freenet (Internet GIS BBS)

Select SCIENCE AND TECHNOLOGY CENTRE from their main menu.

URL: <telnet://freenet.fsu.edu>

3.9.2. USGS beginners tutorial on GIS

URL: <http://waisqvarsa.er.usgs.gov/wais/home.html>

3.9.3. GeoSim module (MigModel)

Project GeoSim is a multidisciplinary effort by members of Virginia Tech's Departments of Geography and Computer Science, and College of Education, to develop computer-aided education software for introductory geography at the college and high school levels. Supported by NSF and FIPSE (US Dept. of Education), GeoSim's goal is to produce major changes in undergraduate geography education by applying the immense capabilities of Geographic Information Systems (GIS) and simulation.

Project GeoSim's primary activity is the creation of a series of computerized laboratory modules applicable to virtually all introductory geography courses. The first module, Intlpop/Humpop is meant to teach the basics of demographics and population modeling.

Intlpop is an interactive simulation and Humpop is a multimedia tutorial on population issues. The version presently available runs under MS-DOS (Intlpop alone) or MS Windows (both Humpop and Intlpop together). Versions running under the X Window System and the Macintosh operating system should be available sometime during Spring 1994.

MigModel, a program for studying modeling of migration patterns between counties of the US, is now available in preliminary form. This program allows students to select several variables from a larger list that the student hypothesizes affect migration patterns. The patterns that would result if the hypothesis were true are compared against the actual migration patterns to determine the level of correlation.

URL: <http://geosim.cs.vt.edu/index.html>

URL: <ftp://geosim.cs.vt.edu>

IP: 128.173.40.85

URL: <gopher://geosim.cs.vt.edu>

IP: 128.173.40.85

Contact: shaffer@vtopus.cs.vt.edu (Cliff Shaffer)

Contact: carstens@vtvml.cc.vt.edu (Bill Carstensen)

3.9.4. CERL/GRASS welcome file

URL: <http://baldrick.cecer.army.mil:80/welcome.html>

3.9.5. OzGIS Mapping System

OzGIS is a software system for displaying geographically referenced data, such as Census data or environment data, as maps and diagrams on screens, printers and plotters on an IBM PC compatible. The system can be used to analyze socio-economic data produced by censuses and surveys and to support management decisions associated with for example Government planning, marketing, sales, site and personnel location, advertising. Digitized map data (e.g. Census boundaries, GIS) and attribute data (e.g. sales, environmental) are accepted as Ascii files and preprocessed (e.g. amalgamation, line thinning, polygon construction, subsetting) before display. Maps of polygons, lines and points can be displayed according to one or two attributes along with various overlays. About 130 menus provide extensive options for interactively designing the layout and appearance of the map, and for attribute handling, classification, interrogation and saving maps. Maps can be output on plotters, printers and various file types. Applications such as territory definition and retail site catchment analysis are supported.

URL: ftp://oak.oakland.edu
IP: 141.210.10.117
URL: ftp://wuarchive.wustl.edu
IP: 128.252.135.4
URL: ftp://archive.orst.edu
IP: 128.193.2.13
URL: ftp://ftp.uu.net
IP: 137.39.1.9
URL: ftp://nic.funet.fi
IP: 128.214.6.100
URL: ftp://src.doc.ic.ac.uk
IP: 146.169.3.7
URL: ftp://nic.switch.ch
IP: 130.59.1.40
URL: ftp://archie.au
IP: 139.130.4.6
URL: ftp://nctuccca.edu.tw
IP: 140.111.3.21
Contact: lws@ITDO.DSTO.GOV.AU (Lloyd Simons)

3.9.6. GRASS/Linux Support Group

The old address (st00@siuemus) is no longer valid. For information or technical support on GRASS/Linux, please send a message to the following new address.

Contact: CCAO@SIUEMUS.BITNET
Contact: ahrensl@daisy.siue.edu
XIS Solutions
Box 1459, SIUE
Edwardsville, IL 62026
Tel: 618-692-2090

3.9.7. GRASS GIS Source Code

In addition to the GRASS GIS source code, there is an extensive database for the Spearfish (South Dakota) area to be used with GRASS. Although intended for GRASS, some of the data could easily be used for other purposes. For example, Arc/Information can display GRASS raster data. The README in /grass says that it is open 24 hours a day, 7 days a week.)

URL: ftp://moon.cecer.army.mil/grass
IP: 129.229.1.16

3.9.8. Idrisi Files FTP site

This is the ftp site for Idrisi support files.

URL: ftp://midget.towson.edu/pub/gis
The Idrisi FAQ file:

URL: ftp://midget.towson.edu/IDRISI/OTHER

3.9.9. Miscellaneous GIS source code

This site has been known to briefly contain some interesting-looking files on the subjects of GIS, MOSS, mapping and other code fragments and subroutines along the same lines.

URL: ftp://ftp.blm.gov/pub/gis/
IP: 158.68.32.62
Contact: skatz@dsc.blm.gov

3.9.10. Hydrology

USGS Streamflow Data sets 1874-1988 This site contains data on USGS streamflow statistics from 1874 to 1988 (that's no typo... it's 1874).

The USGS Open-File Report 92-129, "Hydro-Climatic Data Network (HCDN): A U.S. Geological Survey streamflow data set for the United States for the study of climate variations, 1874-1988", by J.R. Slack and Jurate Maciunas Landwehr is available here also, and serves as documentation for the data set. See the 1ST_READ.ME file for details.

URL: ftp://srvlrvares.er.usgs.gov/hcdn92
IP: 130.11.51.209

3.10. GPS & Geodesy

GPS satellite current constellation status.

URL: finger:gps@geomac.se.unb.ca

3.10.1. GPS & Loran Information Center, U.S. Coast Guard

This service is actually a Bulletin Board System (BBS) linked up to the Internet. From this site you can reach many other government sites and resources.

URL: telnet://fedworld.gov

3.10.2. GPStech Mailing List

Mailing list for the discussion of GPS technical issues. The intended audience is earth scientists and geodesists interested in high-precision GPS geodesy.

The mailing list is accessible by sending a message to the server

Server: gpstech-request@cotopaxi.stanford.edu
Contact: Jeff Freymueller at Stanford

3.10.3. CANSPLACE - Canadian Space Geodesy Forum

This site is one of the best for GPS and Geodesy information

URL: gopher://unbmvs1.csd.unb.ca:1570/1EXEC%3aCANSPLACE

3.10.4. Earth Disc image

This is a 2500x2499 pixel full-disc 11.5um (infrared) image of the earth taken by the METEOSAT 4 satellite on 16 September 1993.

Rick Kohrs (rickk@ssec.wisc.edu) colored the image as follows. He used a threshold temperature to determine which pixels in the image corresponded to clouds. He then removed the cloud pixels from consideration. Since the temperatures over land and sea overlap, he used a base map to separate the remaining pixels into sea and land groups. At this point he had three partial images: (a) clouds, (b) unclouded sea, and (c) unclouded land. Based on temperatures he colored each of these separately using an appropriate

fraction of the total number of cells available in an 8-bit color map. The combined image you see here uses the whole set of 256 colors.

URL: ftp://ssec.wisc.edu/pub/dws/em930916.jpg: JPEG version
URL: ftp://ssec.wisc.edu/pub/dws/em930916.gif: GIF version
IP: 144.92.108.61

3.11. Mapping

3.11.1. GeoVu - Windows Mapping software
URL: ftp://ftp.ngdc.noaa.gov/Acess_Tools
Contact: amh@ngdc.noaa.gov (Allen Hittelman)

3.11.2. JHU/APL Digital relief maps of U.S.
URL: http://ageninfo.tamu.edu/apl-us/

3.11.3. WWW map for Japan
URL: http://www.ntt.jp/japan/map

3.11.4. VPFVIEW (DCW) program for UNIX (Sun workstations)
Program for UNIX systems to view maps from the DMA's Digital Chart of the World CD-ROM data set.

URL: ftp://jupiter.drev.dnd.ca/pub/gis/vpfview
IP: 131.132.32.2

3.11.5. EPI-MAP GIS source and data
Thematic mapping system developed by the Center for Disease Control and Prevention in Atlanta, GA. (USA). Includes many data sets of various country political boundaries down to the state/province (2nd order) level. US counties are also included.

URL: ftp://oak.oakland.edu/pub/msdos/mapping/epi-map*
IP: 141.210.10.117

3.11.6. GMT - Generic Mapping Tools software source
URL: ftp://kiawe.soest.hawaii.edu/pub/gmt
IP: 128.171.151.16

3.11.7. GRASS GIS source for LINUX
URL: ftp://topquark.cecer.army.mil/pub/grass
IP: 129.229.32.13

3.11.8. KHOROS - Scientific Visualizaion Software
URL: pprg.eece.unm.edu/pub/khoros/release
IP: 129.24.24.10

3.11.9. MapInfo & MapBasic Files
MapBaisc applications, many with source code, data sets for MapInfo, and information files of tips and tricks for working with MapInfo. See also MAPINFO-L , the MapInfo mailing list.

URL: ftp://ftp.csn.org/pub/mapinfo/
IP: 128.138.213.21
Contact: bthoen@gisnet.com (Bill Thoen)

3.11.10. MOSS - PC GIS
PC MOSS executables and data.

URL: ftp://ftp.csn.org/COGS/MOSS/
IP: 128.138.213.21
Contact: skatz@dsc.blm.gov (Sol Katz)

3.11.11. Sample ETOPO5 data set relief images
Texas A&M University

URL: ftp://ageninfo.tamu.edu/11/apl-us
IP: 128.194.173.6

3.11.12. LINUX - UNIX on DOS platform

URL: ftp://sc.tamu.edu
IP: 128.194.167.3

3.11.13. MAPGEN/PLOTGEN Mapping Software

This is the primary source of the MAPGEN/PLOTGEN public-domain software. Other source code of general interest, including the USGS General Cartographic Transformation Package (GCTP-II), is also available here. A newer projection package, proj4.2 is available here.

URL: ftp://charon.er.usgs.gov/pub/
IP: 128.128.40.24
Contact: gie@charon.er.usgs.gov (G.I. Evenden)

3.11.14. USGS General Cartographic Transformation Package

Source code for the USGS General Cartographic Transformation Package (GCTP-II). This software can be used to calculate lat/long conversions between various projections used on USGS maps.

URL: ftp://isdres.er.usgs.gov/usgs/gctp/
IP: 130.11.48.2

3.11.15. Generic Mapping Tools (GMT) Software

Contains the Generic Mapping Tools (gmt) software by Paul Wessel for map projections, spatial interpolation, contouring, 3D perspective, raster processing (postscript). This is C code designed for UNIX workstations (Sun, DEC, SGI, and NeXT).

URL: http://www.soest.hawaii.edu/soest/about.ftp.html
URL: ftp://kiawe.soest.hawaii.edu/pub/gmt/
IP: 128.171.151.16
Contact: wessel@soest.hawaii.edu (Paul Wessel)

3.11.16. USGS Cartographic Software and Data Documentation

The National Mapping Division of the U. S. Geological Survey (NMD) provides a national series of base cartographic data. Computer software supporting these data is primarily in the FORTRAN language. The software programs are supported on a variety of mainframe, minicomputer, and workstation hardware platforms. This software was previously available to the general public only on 9-track magnetic tape or diskette through the Earth Sciences Information Center (ESIC) for a nominal reproduction and handling fee. Fifteen FORTRAN programs, sample data and job control language are now available on Internet using file transfer protocol (FTP). A limited amount of soft-copy computer program documentation is also available in both Word Perfect and ASCII.

URL: ftp://nmdpow9.er.usgs.gov/
IP: 130.11.52.92
Contact: mlinck@usgs.gov (Michael K. Linck, Jr.)

3.11.17. Oceanography Physical oceanography data

URL: ftp://shrimp.jpl.nasa.gov

3.11.18. Ocean Network Information Center

OCEANIC database -- data about ocean currents for climatic change, subduction zones and deep sea dumping, among other things. A list of information and oceanographers involved in the WOCE project is also available. Also contains descriptions of the following data sets:

NODC data sets

NCAR data sets
Hawaii Sea Level Center data sets
JPL DAAC (formerly NODS)
ECMWF data sets
NSIDC data sets
University of Miami data sets
University of Rhode Island data sets
CDIAC data sets

URL: telnet://oceanic@delocn.udel.edu
URL: gopher://diu.cms.udel.edu/
URL: http://diu.cms.udel.edu/
IP: 128.175.24.1

3.11.19. Marine and Aquatic Sciences Libraries (UC Santa Cruz)
URL: gopher://gopher.ucsc.edu:70/11/The Library/Other Libraries/Marine
and Aquatic Sciences Serials Lists

3.11.20. National Oceanographic Data Center (NODC, NOAA)
URL: gopher://gopher.nodc.noaa.gov:70/11/

3.11.21. Virginia Coast Reserve Information System (VCRIS)
URL: gopher://atlantic.evsc.virginia.edu:70/1

3.11.22. Geological Survey Atlantic Marine Geology
This is a good gateway to other resources, Marine geology, Bathymetry, Great
Lakes and more.

URL: gopher://bramble.er.usgs.gov:70/1

3.11.23. Bedford Institute of Oceanography (Canada) Gopher System
URL: gopher://biome.bio.dfo.ca:70/1

3.11.24. Ocean Network Information Center Software
Home of the World Ocean Circulation Experiment (WOCE) Data Information Unit
(DIU). Files include programs to do various oceanographic computations.

URL: ftp://delocn.udel.edu/FORTRAN
IP: 128.175.24.1
Contact: walt@delocn.udel.edu

3.11.25. East Coast Tidal Heights & Winds Database
From the file "README" at this site: "This account is intended to provide an
easily accessible data base of tidal heights and winds along the U.S. east
coast. This project of the FSU Sea Level Center is funded by C&GC, NOAA.
The data set is at present still being accumulated: In the directory
'pub/Tidedata' files labeled .hrly. are hourly data from standard NOAA tidal
stations; monthly data are labeled .mon. etc Thus, "fernand.mon.9791" is
monthly data, Fernandina, Fla, 1897-1991; the data are in standard NOAA
format: tides in hundredths of ** FEET** relative to the mean for 1960-1978
National Tidal Datum epoch. (missing data are 9999's) In the directory
pub/Opcplot is a set of files from Dr Murray Brown; a flexible set of
routines for plotting ocean data; see readme file. In the directory
pub/Tides: a Shareware program "Tides" computes tidal heights and currents;
in QuickBasic, for IBM PC-comps; In the directory pub/LiveAtlas is a set of
files of the oceanographic atlas of Luyten & Stommel. Please see the readme
file. In the directory 'pub' the single file "tsftdem.ftp" is a set of files
which constitute the "terribly slow Fourier transform" that recovers the low-
frequency spectrum of a gappy data set (under Matlab)"

URL: ftp://atlantic.ocean.fsu.edu/pub/Tidedata
IP: 128.186.3.39
Contact: sturges@atlantic.ocean.fsu.edu

3.11.26. Sea-surface temperature data (near real-time)

The data are AVHRR images within the radius of reception of the university's HRPT station, approximately 5S to 45N and 125W to 165E. Other tiles (windows) are available over California, Gulf of Mexico and West Atlantic as well.

URL: ftp://satftp.soest.hawaii.edu/pub/avhrr/images
IP: 128.171.154.29
Contact: sat_lab@soest.hawaii.edu

3.11.27. Digital relief images of USA

Topographic relief images created from the ETOPO5 data set by Ray Sterner.

URL: http://ageninfo.tamu.edu/apl-us/
URL: gopher://ageninfo.tamu.edu/11/apl-us.
Contact: hmueller@amethyst.tamu.edu (Hal Mueller)

3.11.28. Color Shaded Relief Map of the U.S.

A color shaded relief map of the US is available as 60 GIF images.

Individual GIF images cover a 5 deg by 5 deg area. These images are being made available on a trial basis on our ftp site. Please do not copy more than 1 or 2 images during working hours (8:30 to 7:00 pm Eastern Standard Time) or they may have to be removed.

The elevation data is from ETOPO5 which has a horizontal resolution of 1/2 arc minute for both East/West and North/South, and a vertical resolution of 20 feet. The vector data (coastlines, rivers, boundaries) are from the world vector data base. There are some areas where the two data bases have minor differences in positioning, most noticeable for some rivers. The errors are not constant over the map and no attempt has been made to correct for them in this version of the map.

URL: ftp://fermi.jhuapl.edu/pub/gifmap
IP: 128.244.147.18
Contact: sterner@tesla.jhuapl.edu (Ray Sterner)

3.11.29. Diamondhead Oahu 3D GIF Image

Images of a honolulu dem file converted to several .gif files.

URL: ftp://ftp.cerf.net/pub/inbound/KV_TMP

3.11.30. 3D DEM images of San Francisco

Images of USGS San Francisco topography created with VisionForm's Vdm; JPEG compressed.

URL: ftp://ftp.cerf.net/pub/inbound/KV_TMP/README_SANF
Contact: jsquires@nic.cerf.net (James A. Squires)

3.11.31. Digital relief maps of U.S.

Created from the ETOPO5 data set (5 arc-minute resolution)

URL: http://www.doc.ic.ac.uk/public/geology/maps/gifmaps/
URL: ftp://src.doc.ic.ac.uk/geology/maps/gifmaps
IP: 146.169.2.10

3.11.32. Mid-East Maps from 1000 BCE to Gulf War

This service is primarily dedicated to information about Israel politics, and other government information, but the "graphics" option contains GIF maps of Israel and the nearby Arab states. Maps depict the limits of the Kingdom of David and Solomon of 1000 BCE to missile strikes during the Gulf War.

URL: gopher://israel-info.gov.il

3.11.33. US GeoData indexes

These indexes are the same as the graphic indexes showing the availability of

the DEM 7.5' and 15' Units, DEM 1-Degree Units, DLG 7.5' and 15' Units, DLG 30' Units, LULC 30' Units, LULC 1-Degree Units, CD ROM Data, and also about 400 DOQ listings.

URL: <ftp://greenwood.cr.usgs.gov/pub/open-file-reports/>
IP: 136.177.48.5
Contact: gellis@ctr-dms1.cr.usgs.gov (Eugene Ellis)

3.11.35. Color Shaded Relief Map Images
GIF images are made with ER Mapper.

URL: <ftp://earth.eps.pitt.edu/pub/ermapper/>
IP: 130.49.3.1

3.12. Paleontology

3.12.1. University of California - Berkeley, Museum of Paleontology
URL: <gopher://ucmpl.berkeley.edu:70/1>

3.13. Remote Sensing

3.13.1. AVHRR Images - Western US
AVHRR (Advanced Very High Resolution Radiometer) images from 1989 through 7 Jan 1992 cover CO, WY, KS, NE, and NM, as well as parts of AZ, UT, OK, and TX. Since 7 Jan 1992, coverage includes these plus CA, OR, NV, WA, and MT, to 1000 km off Pacific coast. Total coverage of US for 1989-present will be available soon. West coast data from 1980-1985 will be available some time this year.

Images are 1024 lines x 1024 elements before 7 Jan 1992, 2560 lines x 1024 elements after. Images are 1 km resolution and 8-bit format.

Contact Tim Kelley by e-mail kelley@sanddunes.scd.ucar.edu or telephone 303/497-1221 for login, password, and manual. Service is free to Internet users and is funded by NASA.

URL: <telnet://sanddunes.scd.ucar.edu> (for login password, contact Tim Kelly)
Contact: kelley@sanddunes.scd.ucar.edu (Tim Kelly)

3.13.2. Satellite Images

URL: <http://web.nexor.co.uk/places/satellite.html>

3.13.3. SRSC - Space Remote Sensing Center satellite flood images (U.S./Europe)

URL: <http://ma.itd.com:8000/flood.html>

3.13.4. EROS Data Center, the USGS repository for Remote Sensing data

URL: <http://sun1.cr.usgs.gov/eros-home.html>

3.13.5. Institute for Photogrammetry - University of Stuttgart

URL: <http://hpux.bauingenieure.uni-stuttgart.de>

3.13.6. NASA - Images from the Voyager and Magellan missions

URL: <ftp://explorer.arc.nasa.gov/pub/SPACE/>
IP: 128.102.32.18

3.13.7. Images of Planets

Planetary images from Magelllean and Viking missions. News about other NASA missions.

URL: <ftp://ames.arc.nasa.gov/pub/SPACE/CDROM/>
URL: <ftp://ames.arc.nasa.gov/pub/SPACE/GIF/>

Famous image of Earth taken by one of the Apollo missions to the moon:

URL: <ftp://ames.arc.nasa.gov/pub/SPACE/GIF/earth.gif>
IP: 128.102.18.3

3.13.8. Snow Cover Satellite Images

US Map of snow cover for the US, derived from 12km reduction of GOES data. Also 1km resolution snow cover maps of California and Nevada, Snow Water Equivalent and other images. The National Operational Hydrologic Remote Sensing Center is now distributing satellite snow data derived from AVHRR and GOES for major portions of the U.S., southern Canada and Alaska. North America is split into 26 windows, each approx 1000x1000 pixels, at a resolution of 1.1 km/pixel. There are a number of types of GIF images in this directory: the Satellite Snow Cover Maps, weekly national and regional summaries and a special blow-up of the Upper Colorado basin.

URL: <ftp://snow.nohrsc.nws.gov/pub/snow>
IP: 192.46.108.1
Contact: tim@snow.nohrsc.nws.gov (Tim Szeliga)

3.13.9. Space Shuttle Earth Observation Project Photography Database

Space Shuttle Earth Observation Project photography database of the Flight Science Support Office (FSSO). Contains references to over 120,000 photographs of Earth from space during the last 3 decades. Also some digitized images. These are in band- sequential format with a 512-byte header, and 512 x 512 bytes of red, green, and blue data layers. The images are stored in .DAT files and are binary. There are two types of photos available: 1024 x 1024 and 512 x 512. Some are 3 channel, Some are 1 channel. Note: Get the file 'pho.list' to see descriptions of selected images, and which are color and which are grey-scale. The 1024x1024 are 1 channel and the 512x512 are 3 channel. Adobe Photoshop (Macintosh) reads these just fine.

URL: <ftp://sseop.jsc.nasa.gov>
IP: 146.154.11.34
Contact: pitts@sn.jsc.nasa.gov (Dr. David E. Pitts, Manager)

3.13.10. NOAA-11/12 Mosaic Images of North America

NOAA-11/12 mosaic GIF images of North America derived from HRPT (High Resolution Picture Transmission) data stream

URL: ftp://rainbow.physics.utoronto.ca/pub/sat_images
IP: 128.100.75.19 (unofficial)
Contact: moore@rainbow.physics.utoronto.ca (Professor G.W.K. Moore)

3.13.11. AVHRR sample images and viewers - U.S. Weather Service Hydrologic RS Center

URL: ftp://snow.nohrsc.nws.gov/AVHRR_sample
IP: 192.46.108.1

3.13.12. Satellite images

URL: <http://web.nexor.co.uk/places/satellite.html>

3.14. Space & Planetary Science

3.14.1. CASS - Center for Advanced Space Studies

The Center for Advanced Space Studies (previously Lunar/Planetary Institute, or LPI) provides resources on geology, geophysics, astronomy and astrophysics. Support services are provided for other departments, such as publications, and computer. Materials on these topics are available. Menu driven -- use VT100 emulation or equivalent.

URL: <telnet://cass:online@cass.jsc.nasa.gov>
URL: http://cass.jsc.nasa.gov/CASS_home.html

Contact: bigwood@cass.jsc.nasa.gov (David Bigwood)

3.14.2. SPAN - Space Physics Analysis Network
Space Physics Analysis Network (SPAN) Network Information Center (NIC),
managed by the National Space Science Data Center (NSSDC), an online facility
to provide a central source for information.

URL: telnet://span_nic@nssdca.gsfc.nasa.gov

3.14.3. NED - NASA/IPAC Extragalactic Database
NASA/IPAC Extragalactic Database

URL: telnet://ned@ipac.caltech.edu
IP: 131.215.139.35

3.14.4. Earth, space science data
URL: ftp://huntress.jpl.nasa.gov

3.14.5. JPL public information
URL: ftp://pubinfo.jpl.nasa.gov/

3.14.6. The NASA Home Page
URL: http://hypatia.gsfc.nasa.gov/NASA_homepage.html

3.15. Standards

3.15.1. Spatial Data Standards documents
Documentation on the Distributed Spatial Data Library (DSDL), 1992 ASTM
Spatial Data Standard, and policy statements.

URL: ftp://dis2qvarsa.er.usgs.gov/docs
(Mar 1993) Metadata Standard documents, FGDC definitions, minutes of ASTM,
GIS/LIS and URISA meetings

URL: ftp://dis2qvarsa.er.usgs.gov/metadata

3.15.2. European Mapping Standards & Reference systems
MEGRIN (Multipurpose European Ground-Related Information Network) is an
initiative of the Comité Européen des Responsables de la Cartographie
Officielle - C.E.R.C.O.

The concept of MEGRIN is to be a service open to all of those who want to use
in their own systems digital spatial data which are produced and
administrated in other systems. There you can find information about national
spatial information systems in Europe and the European Transfer Format (ETF)

(Note: this site may be closed after June 1, 1994)

URL: telnet://megrin:megrin@v2.ifag.de
IP: 141.74.240.1

3.15.3. Nova Scotia Land Information Standards Initiative
The Province of Nova Scotia, under the direction of the Department of
Municipal Affairs, has formed the Nova Scotia Land Information Standards
Committee. This committee has been established to address the issues
surrounding the development of land-related information standards within Nova
Scotia. The initiative is an open, consensus building one which has
representation from a variety of organization including: federal,
provincial, municipal and private sector. Efforts are now underway to
develop a communication strategy to disseminate information regarding the
activities of the committee and its associated task groups. If you or your
organization are interested in the Nova Scotia standards initiative and would
like additional information either on the process or how you might become
involved, please contact Ed Light, Land Information Analyst, Department of

Municipal Affairs, Land Information Management Services Division [phone]
(902) 424-3761; [fax] (902) 424-5872; or [e-mail] poirier@fox.nstn.ns.ca

Contact: poirier@FOX.NSTN.NS.CA (Mark Poirier)

3.15.4. FGDC metadata standard

The latest documents on the (US) Federal Geographic Data Committee's (FGDC) draft of the spatial metadata standard is available in WordPerfect (ver. 5.1), and postscript formats.

URL: <ftp://isdres.er.usgs.gov/GDC/>
IP: 130.11.48.2
URL: <ftp://waisqvarsa.er.usgs.gov/wais/docs/>
IP: 130.11.51.187
Contact: GDC@USGS.GOV
Contact: MDOMARAT@USGS.GOV (Michael A. Domaratz)

3.15.5. Spatial Data Transfer Standard

This seems to be the official site for informaiton and source code in support of the SDTS standard. This site contains files of all the text to the latest release of the Spatial Data Transfer Standard (SDTS). The standard is quite extensive and covers every type of spatial data that you are ever likely to encounter. A must-read for GIS data developers! You can also find sample SDTS data sets including DLG-3, TIGER, and digital orthophoto quarterquadrangle. A large collection of SDTS source code is available here too.

URL: <ftp://sdts.er.usgs.gov/pub/sdts>
IP: 130.11.52.170
Contact: sdts@usgs.gov

3.15.6. NMD Map Standards Documents (DLG, DOQ)

The National Mapping Division of the U.S. Geological Survey now offers certain of its computer software programs and associated documentation on Internet. The NMD provides a national series of base cartographic data. Computer software supporting these data is primarily in the FORTRAN language. The software programs are supported on a variety of mainframe, minicomputer, and workstation hardware platforms. This software was previously available to the general public only on 9-track magnetic tape or diskette through the Earth Sciences Information Center (ESIC) for a nominal reproduction and handling fee. Fifteen FORTRAN programs, sample data and job control language are now available on Internet using file transfer protocol (FTP). A limited amount of soft-copy computer program documentation is also available in both Word Perfect and ASCII. Additional documentation will be added. Any documentation not available via FTP can be obtained in hard copy from USGS's Earth Sciences Information Center for a nominal charge. Ordering information and price quotes may be obtained by calling 1-800-USA-MAPS.

URL: <ftp://nmdpow9.er.usgs.gov/public>
IP: 130.11.52.92
Contact: mclinck@usgs.gov (Michael K. Linck, Jr.)

3.15.7. Open Geodata Interoperability Specification (OGIS)

Draft specs (OGIS is sponsored by the Open GIS Foundation)

URL: <ftp://moon.cecer.army.mil/ogis/spec>

3.15.8. Metadata standards and minutes of GISLIS, ASTM, URISA meetings

URL: <ftp://dis2qvarsa.er.usgs.gov/metadata>

3.16. Transportation

3.16.1. Institute for Transportation Research and Education at the U. of North Carolina

URL: <http://itre.uncecs.edu>

3.17. Meteorology

Stern, Illana (1994), "Sources of Meteorological Data Frequently Asked Questions (FAQ)". Usenet news.answers (bi-monthly). digital text file, 68K

This is the best source for online meteorological resources. It is well-maintained, accurate, and pretty much the authoritative reference on the subject.

This document contains a good introduction to Internet use and resources, and specifically covers information on the following topics:

- 1) Current weather (satellite images)
 - a) North America
 - b) Europe
 - c) Pacific
 - d) Other
 - 2) Current weather and forecasts (maps, radar, soundings)
 - 3) Current weather and forecasts (text)
 - 4) Special event information (may be transient)
 - 5) Other images
 - 6) Map data
 - 7) Research data and metadata
 - 8) Software
 - 9) Pointers to other resources
- To receive this document via e-mail, send a message to mail-server@rtfm.mit.edu with the line:

```
send /pub/usenet/news.answers/weather/data/part1
```

in the body. Other sources are listed below.

URL: <ftp://rtfm.mit.edu/pub/usenet/news/answers/weather/data/part1>
URL: <ftp://vmd.cso.uiuc.edu/wx/sources.doc>
URL: <http://www.cis.ohio-state.edu/hypertext/faq/usenet/weather/top.html>
Contact: ilana@ncar.ucar.edu (Ilana Stern)

3.17.1. CDIAC - Climatic Data Sets Carbon Dioxide Information Analysis Center

Contains data sets of world-wide climatic data including Atmospheric CO2 content, tree-core/precip. correlations, historical air temp., pressure, precip. (some going back to the 1600's!) for world, global paleoclimate to 6000 B.P., historical weather station data back to 1800's, and more.

URL: <ftp://cdiac.esd.ornl.gov/pub>
URL: <ftp://suns01.esd.ornl.gov/pub>
IP: 128.219.24.36
Contact: OMNET: CDIAC
Contact: INTERNET: CDP@STC10.CTD.ORNL.GOV
Contact: BITNET: CDP@ORNLSTC

3.18. Wildlife

3.18.1. Fish and Wildlife Service (USFWS) WAIS Server
The following items can be found here:

1. A Catalog of Automated Information Systems (CAIS) of the FWS. This catalog of metadata (descriptive information) lists both active and proposed information systems. Contact points are included for each system.
2. The CAIS currently describes 87 information systems. A new version of

the CAIS will be available by the end of June. This version will serve updated metadata on 120 systems.

3. A description of the various servers (WAIS, World Wide Web, Gopher, File Transfer Protocol, etc.) maintained by the FWS.
4. State codes, County codes, and USGS Hydrologic Units, as defined in FIPS publications 5-2, 6-4 and 103.
5. The latest copy of the "Content Standards for Digital Spatial Metadata" produced by the Federal Geographic Data Committee.
6. The President's Executive Order implementing the National Spatial Data Infrastructure.
7. A list of State fish and wildlife agency contacts for fish and wildlife information systems produced by the Fish and Wildlife Information Exchange.
8. The WinWAIS client software produced by the U.S. Geological Survey for accessing WAIS servers.
9. The MOSAIC client software for accessing World Wide Web servers.

The easiest way to establish communications with this WAIS server is to access the Directory of Servers, search for "wildlife" (without the quotes), and download the address information.

URL: wais://

USFWS_Region_9_Info_Res_Mgt_Data_Admin:1028//data/wais/spxwais/irmindex/irmse
rv

IP: 164.159.126.3

Contact: fishera@mail.fws.gov (Dr. Alan R. Fisher)

3.18.2. USFWS Forensics Laboratory

URL: ftp://ash.lab.rl.fws.gov/

URL: http://ash.lab.rl.fws.gov/

Contact: mitchellStu@mail.fws.gov

3.18.3. USFWS National Wetlands Inventory

URL: ftp://192.189.43.33

Contact: herman@enterprise.nwi.fws.gov

3.18.4. USFWS Division of Information Resources Management Library Server

The library server is an automated mechanism for distributing information via Internet mail. The library server responds to requests for specific files. For more information, send an e-mail message to r9irmllib@mail.fws.gov with "send help" (without the quotes) as the subject.

URL: mailto:r9irmllib@mail.fws.gov

Contact: fishera@mail.fws.gov

3.18.5. USFWS Division of Refuges WWW Server

URL: http://bluegoose.arw.r9.fws.gov/

Contact: furnisss@mail.fws.gov

- eof -

APPENDIX B -- INTERNET NETWORKING GLOSSARY

Overview of the Internet and Glossary

Attached is a glossary from the Network Working Group. Additional information about the Internet can be found in several books and on-line. Check out "Understanding the Internet (<http://www.screen.com/understand/startingout.html>)" from COCHRAN INTERACTIVE INCORPORATED for a good selection of links that provide an survey of the Internet.

Internet Users' Glossary

Network Working Group
Request for Comments: 1392
FYI: 18

G. Malkin
Xylogics, Inc.
T. LaQuey Parker
UTexas
Editors
January 1993

Status of this Memo

This memo provides information for the Internet community. It does not specify an Internet standard. Distribution of this memo is unlimited.

Abstract

There are many networking glossaries in existence. This glossary concentrates on terms which are specific to the Internet. Naturally, there are entries for some basic terms and acronyms because other entries refer to them.

Acknowledgements

This document is the work of the User Glossary Working Group of the User Services Area of the Internet Engineering Task Force (IETF). Special thanks go to Jon Postel for his definitive definition of "datagram".

Glossary

10BaseT

A variant of Ethernet which allows stations to be attached via twisted pair cable. See also: Ethernet, twisted pair.

802.x

The set of IEEE standards for the definition of LAN protocols. See also: IEEE.

822

See: RFC 822

:-)

This odd symbol is one of the ways a person can portray "mood" in the very flat medium of computers--by using "smiley faces". This is "metacommunication", and there are literally hundreds of such symbols, from the obvious to the obscure. This particular example expresses "happiness". Don't see it? Tilt your head to the left 90 degrees. Smiles are also used to denote sarcasm. [Source: ZEN]

abstract syntax

A description of a data structure that is independent of machine-oriented structures and encodings. [Source: RFC1208]

Abstract Syntax Notation One (ASN.1)

The language used by the OSI protocols for describing abstract syntax. This language is also used to encode SNMP packets. ASN.1 is defined in ISO documents 8824.2 and 8825.2. See also: Basic Encoding Rules.

Acceptable Use Policy (AUP)

Many transit networks have policies which restrict the use to which the network may be put. A well known example is NSFNET's AUP which does not allow commercial use. Enforcement of AUPs varies with the network. See also: National Science Foundation.

Access Control List (ACL)

Most network security systems operate by allowing selective use of services. An Access Control List is the usual means by which access to, and denial of, services is controlled. It is simply a list of the services available, each with a list of the hosts permitted to use the service.

ACK

See: Acknowledgment

acknowledgment (ACK)

A type of message sent to indicate that a block of data arrived at its destination without error. See also: Negative Acknowledgement. [Source: NNSC]

ACL

See: Access Control List

AD

See: Administrative Domain

address

There are three types of addresses in common use within the Internet. They are email address; IP, internet or Internet address; and hardware or MAC address. See also: email address, IP address, internet address, MAC address.

address mask

A bit mask used to identify which bits in an IP address correspond to the network and subnet portions of the address. This mask is often referred to as the subnet mask because the network portion of the address can be determined by the encoding inherent in an IP address.

address resolution

Conversion of an internet address into the corresponding physical address.

Address Resolution Protocol (ARP)

Used to dynamically discover the low level physical network hardware address that corresponds to the high level IP address for a given host. ARP is limited to physical network systems that support broadcast packets that can be heard by all hosts on the network. It is defined in RFC 826. See also: proxy ARP.

Administrative Domain (AD)

A collection of hosts and routers, and the interconnecting network(s), managed by a single administrative authority.

Advanced Research Projects Agency Network (ARPANET)

A pioneering longhaul network funded by ARPA (now DARPA). It served as the basis for early networking research, as well as a central backbone during the development of the Internet. The ARPANET consisted of individual packet switching computers interconnected by leased lines. See also: Defense Advanced Research Projects Agency. [Source: FYI4]

agent

In the client-server model, the part of the system that performs information preparation and exchange on behalf of a client or server application. [Source: RFC1208]

alias

A name, usually short and easy to remember, that is translated into another name, usually long and difficult to remember.

American National Standards Institute (ANSI)

This organization is responsible for approving U.S. standards in many areas, including computers and communications. Standards approved by this organization are often called ANSI standards (e.g., ANSI C is the version of the C language approved by ANSI). ANSI is a member of ISO. See also: International Organization for Standardization. [Source: NNSC]

American Standard Code for Information Interchange (ASCII)

A standard character-to-number encoding widely used in the computer industry. See also: EBCDIC.

anonymous FTP

Anonymous FTP allows a user to retrieve documents, files, programs, and other archived data from anywhere in the Internet without having to establish a userid and password. By using the special userid of "anonymous" the network user will bypass local security checks and will have access to publicly accessible files on the remote system. See also: archive site, File Transfer Protocol.

ANSI

See: American National Standards Institute

API

See: Application Program Interface

Appletalk

A networking protocol developed by Apple Computer for communication between Apple Computer products and other computers. This protocol is independent of the network layer on which it is run. Current implementations exist for Localtalk, a 235Kb/s local area network; and Ethertalk, a 10Mb/s local area network. [Source: NNSC]

application

A program that performs a function directly for a user. FTP, mail and Telnet clients are examples of network applications.

application layer

The top layer of the network protocol stack. The application layer is concerned with the semantics of work (e.g., formatting electronic mail messages). How to represent that data and how to reach the foreign node are issues for lower layers of the network. [Source: MALAMUD]

Application Program Interface (API)

A set of calling conventions which define how a service is invoked through a software package. [Source: RFC1208]

archie

A system to automatically gather, index and serve information on the Internet. The initial implementation of archie provided an indexed directory of filenames from all anonymous FTP archives on the Internet. Later versions provide other collections of information. See also: archive site, Gopher, Prospero, Wide Area Information Servers.

archive site

A machine that provides access to a collection of files across the Internet. An "anonymous FTP archive site", for example, provides access to this material via the FTP protocol. See also: anonymous FTP, archie, Gopher, Prospero, Wide Area Information Servers.

ARP

See: Address Resolution Protocol

ARPA

See: Defense Advanced Research Projects Agency

ARPANET

See: Advanced Research Projects Agency Network

AS

See: Autonomous System

ASCII

See: American Standard Code for Information Interchange

ASN.1

See: Abstract Syntax Notation One

assigned numbers

The RFC [STD2] which documents the currently assigned values from several series of numbers used in network protocol implementations. This RFC is updated periodically and, in any case, current information can be obtained from the Internet Assigned Numbers Authority (IANA). If you are developing a protocol or application that will require the use of a link, socket, port, protocol, etc., please contact the IANA to receive a number assignment. See also: Internet Assigned Numbers Authority, STD. [Source: STD2]

Asynchronous Transfer Mode (ATM)

A method for the dynamic allocation of bandwidth using a fixed-size packet (called a cell). ATM is also known as "fast packet".

ATM

See: Asynchronous Transfer Mode

AUP

See: Acceptable Use Policy

authentication

The verification of the identity of a person or process. [Source: MALAMUD]

Autonomous System (AS)

A collection of routers under a single administrative authority using a common Interior Gateway Protocol for routing packets.

backbone

The top level in a hierarchical network. Stub and transit networks which connect to the same backbone are guaranteed to be interconnected. See also: stub network, transit network.

bandwidth

Technically, the difference, in Hertz (Hz), between the highest and lowest frequencies of a transmission channel. However, as typically used, the amount of data that can be sent through a given communications circuit.

bang path

A series of machine names used to direct electronic mail from one user to another, typically by specifying an explicit UUCP path through which the mail is to be routed. See also: email address, mail path, UNIX-to-UNIX CoPy.

baseband

A transmission medium through which digital signals are sent without complicated frequency shifting. In general, only one communication channel is available at any given time. Ethernet is an example of a baseband network. See also: broadband, Ethernet. [Source: NNSC]

Basic Encoding Rules (BER)

Standard rules for encoding data units described in ASN.1. Sometimes incorrectly lumped under the term ASN.1, which properly refers only to the abstract syntax description language, not the encoding technique. See also: Abstract Syntax Notation One. [Source: NNSC]

BBS

See: Bulletin Board System

BCNU

Be Seein' You

BER

See: Basic Encoding Rules

Berkeley Internet Name Domain (BIND)

Implementation of a DNS server developed and distributed by the University of California at Berkeley. Many Internet hosts run BIND, and it is the ancestor of many commercial BIND implementations.

Berkeley Software Distribution (BSD)

Implementation of the UNIX operating system and its utilities developed and distributed by the University of California at Berkeley. "BSD" is usually preceded by the version number of the distribution, e.g., "4.3 BSD" is version 4.3 of the Berkeley UNIX distribution. Many Internet hosts run BSD software, and it is the ancestor of many commercial UNIX implementations. [Source: NNSC]

BGP

See: Border Gateway Protocol

big-endian

A format for storage or transmission of binary data in which the most significant bit (or byte) comes first. The term comes from "Gulliver's Travels" by Jonathan Swift. The Lilliputians, being very small, had correspondingly small political problems. The Big-Endian and Little-Endian parties debated over whether soft-boiled eggs should be opened at the big end or the little end. See also: little-endian. [Source: RFC1208]

binary

11001001

BIND

See: Berkeley Internet Name Domain

Birds Of a Feather (BOF)

A Birds Of a Feather (flocking together) is an informal discussion group. It is formed, often ad hoc, to consider a specific issue and, therefore, has a narrow focus.

Bitnet

An academic computer network that provides interactive electronic mail and file transfer services, using a store-and-forward protocol, based on IBM Network Job Entry protocols. Bitnet-II encapsulates the Bitnet protocol within IP packets and depends on the Internet to route them.

BOF

See: Birds Of a Feather

BOOTP

The Bootstrap Protocol, described in RFCs 951 and 1084, is used for booting diskless nodes. See also: Reverse Address Resolution Protocol.

Border Gateway Protocol (BGP)

The Border Gateway Protocol is an exterior gateway protocol defined in RFCs 1267 and 1268. It's design is based on experience gained with EGP, as defined in STD 18, RFC 904, and EGP usage in the NSFNET Backbone, as described in RFCs 1092 and 1093. See also: Exterior Gateway Protocol.

bounce

The return of a piece of mail because of an error in its delivery. [Source: ZEN]

bridge

A device which forwards traffic between network segments based on datalink layer information. These segments would have a common network layer address. See also: gateway, router.

broadband

A transmission medium capable of supporting a wide range of frequencies. It can carry multiple signals by dividing the total capacity of the medium into multiple, independent bandwidth channels, where each channel operates only on a specific range of frequencies. See also: baseband.

broadcast

A special type of multicast packet which all nodes on the network are always willing to receive.
See also: multicast.

broadcast storm

An incorrect packet broadcast onto a network that causes multiple hosts to respond all at once, typically with equally incorrect packets which causes the storm to grow exponentially in severity.

brouter

A device which bridges some packets (i.e., forwards based on datalink layer information) and routes other packets (i.e., forwards based on network layer information). The bridge/route decision is based on configuration information. See also: bridge, router.

BSD

See: Berkeley Software Distribution

BTW

By The Way

Bulletin Board System (BBS)

A computer, and associated software, which typically provides electronic messaging services, archives of files, and any other services or activities of interest to the bulletin board system's operator. Although BBS's have traditionally been the domain of hobbyists, an increasing number of BBS's are connected directly to the Internet, and many BBS's are currently operated by government, educational, and research institutions. See also: Electronic Mail, Internet, Usenet. [Source: NWNET]

Campus Wide Information System (CWIS)

interactive computing available via kiosks, interactive computing systems and campus networks. SA CWIS makes information and services publicly available on campus via kiosks, and makes services routinely include directory information, calendars, bulletinboards, databases.

CCIRN

See: Coordinating Committee for Intercontinental Research Networks

CCITT

See: Comite Consultatif International de Telegraphique et Telephonique

CERT

See: Computer Emergency Response Team

checksum

A computed value which is dependent upon the contents of a packet. This value is sent along with the packet when it is transmitted. The receiving system computes a new checksum based upon the received data and compares this value with the one sent with the packet. If the two values are the same, the receiver has a high degree of confidence that the data was received correctly. [Source: NNSC]

circuit switching

A communications paradigm in which a dedicated communication path is established between two hosts, and on which all packets travel. The telephone system is an example of a circuit switched network. See also: connection-oriented, connectionless, packet switching.

client

A computer system or process that requests a service of another computer system or process. A workstation requesting the contents of a file from a file server is a client of the file server. See also: client-server model, server. [Source: NNSC]

client-server model

A common way to describe the paradigm of many network protocols. Examples include the name-server/name-resolver relationship in DNS and the file-server/file-client relationship in NFS. See also: client, server, Domain Name System, Network File System.

CNI

See: Coalition for Networked Information

Coalition for Networked Information (CNI)

A consortium formed by American Research Libraries, CAUSE, and EDUCOM to promote the creation of, and access to, information resources in networked environments in order to enrich scholarship and enhance intellectual productivity.

Comite Consultatif International de Telegraphique et Telephonique (CCITT)

This organization is part of the United National International Telecommunications Union (ITU) and is responsible for making technical recommendations about telephone and data communications systems. Every four years CCITT holds plenary sessions where they adopt new standards; the most recent was in 1992. [Source: NNSC]

Computer Emergency Response Team (CERT)

The CERT was formed by DARPA in November 1988 in response to the needs exhibited during the Internet worm incident. The CERT charter is to work with the Internet community to facilitate its response to computer security events involving Internet hosts, to take proactive steps to raise the community's awareness of computer security issues, and to conduct research targeted at improving the security of existing systems. CERT products and services include 24-hour technical assistance for responding to computer security incidents, product vulnerability assistance, technical documents, and tutorials. In addition, the team maintains a number of mailing lists (including one for CERT Advisories), and provides an anonymous FTP server, at "cert.org", where security-related documents and tools are archived. The CERT may be reached by email at "cert@cert.org" and by telephone at +1-412-268-7090 (24-hour hotline). See also: Defense Advanced Research Projects Agency, worm.

congestion

Congestion occurs when the offered load exceeds the capacity of a data communication path.

connection-oriented

The data communication method in which communication proceeds through three well-defined phases: connection establishment, data transfer, connection release. TCP is a connection-oriented protocol. See also: circuit switching, connectionless, packet switching, Transmission Control Protocol.

connectionless

The data communication method in which communication occurs between hosts with no previous setup. Packets between two hosts may take different routes, as each is independent of the other. UDP is a connectionless protocol. See also: circuit switching, connection-oriented, packet switching, User Datagram Protocol.

Coordinating Committee for Intercontinental Research Networks (CCIRN)

A committee that includes the United States FNC and its counterparts in North America and Europe. Co-chaired by the executive directors of the FNC and the European Association of Research Networks (RARE), the CCIRN provides a forum for cooperative planning among the principal North American and European research networking bodies. See also: Federal Networking Council, RARE. [Source: MALAMUD]

core gateway

Historically, one of a set of gateways (routers) operated by the Internet Network Operations Center at Bolt, Beranek and Newman (BBN). The core gateway system formed a central part of Internet routing in that all groups must advertise paths to their networks from a core gateway. [Source: MALAMUD]

Corporation for Research and Educational Networking (CREN)

This organization was formed in October 1989, when Bitnet and CSNET (Computer + Science NETwork) were combined under one administrative authority. CSNET is no longer operational, but CREN still runs Bitnet. See also: Bitnet. [Source: NNSC]

cracker

A cracker is an individual who attempts to access computer systems without authorization. These individuals are often malicious, as opposed to hackers, and have many means at their disposal for breaking into a system. See also: hacker, Computer Emergency Response Team, Trojan Horse, virus, worm.

CRC

See: cyclic redundancy check

CREN

See: Corporation for Research and Educational Networking

CWIS

See: Campus Wide Information system

Cyberspace

A term coined by William Gibson in his fantasy novel Neuromancer to describe the "world" of computers, and the society that gathers around them. [Source: ZEN]

Cyclic Redundancy Check (CRC)

A number derived from a set of data that will be transmitted. By recalculating the CRC at the remote end and comparing it to the value originally transmitted, the receiving node can detect some types of transmission errors. [Source: MALAMUD]

DARPA

See: Defense Advanced Research Projects Agency

Data Encryption Key (DEK)

Used for the encryption of message text and for the computation of message integrity checks (signatures). See also: encryption.

Data Encryption Standard (DES)

A popular, standard encryption scheme. See also: encryption.

datagram

A self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination computer without reliance on earlier exchanges between this source and destination computer and the transporting network. See also: frame, packet. [Source: J. Postel]

DCA

See: Defense Information Systems Agency

DCE

Data Circuit-terminating Equipment

DCE

See: Distributed Computing Environment

DDN

See: Defense Data Network

DDN NIC

See: Defense Data Network Network Information Center

DECnet

A proprietary network protocol designed by Digital Equipment Corporation. The functionality of each Phase of the implementation, such as Phase IV and Phase V, is different.

default route

A routing table entry which is used to direct packets addressed to networks not explicitly listed in the routing table. [Source: MALAMUD]

Defense Advanced Research Projects Agency (DARPA)

An agency of the U.S. Department of Defense responsible for the development of new technology for use by the military. DARPA (formerly known as ARPA) was responsible for funding much of the development of the Internet we know today, including the Berkeley version of Unix and TCP/IP. [Source: NNSC]

Defense Data Network (DDN)

A global communications network serving the US Department of Defense composed of MILNET, other portions of the Internet, and classified networks which are not part of the Internet. The DDN is used to connect military installations and is managed by the Defense Information Systems Agency. See also: Defense Information Systems Agency.

Defense Data Network Network Information Center (DDN NIC)

Often called "The NIC", the DDN NIC's primary responsibility is the assignment of Internet network addresses and Autonomous System numbers, the administration of the root domain, and providing information and support services to the DDN. It is also a primary repository for RFCs. See also: Autonomous System, network address, Internet Registry, Network Information Center, Request For Comments.

Defense Information Systems Agency (DISA)

Formerly called the Defense Communications Agency (DCA), this is the government agency responsible for managing the DDN portion of the Internet, including the MILNET. Currently, DISA administers the DDN, and supports the user assistance services of the DDN NIC. See also: Defense Data Network.

DEK

See: Data Encryption Key

DES

See: Data Encryption Standard

dialup

A temporary, as opposed to dedicated, connection between machines established over a standard phone line.

Directory Access Protocol

X.500 protocol used for communication between a Directory User Agent and a Directory System Agent. [Source: MALAMUD]

Directory System Agent (DSA)

The software that provides the X.500 Directory Service for a portion of the directory information base. Generally, each DSA is responsible for the directory information for a single organization or organizational unit. [Source: RFC1208]

Directory User Agent (DUA)

The software that accesses the X.500 Directory Service on behalf of the directory user. The directory user may be a person or another software element. [Source: RFC1208]

DISA

See: Defense Information Systems Agency

Distributed Computing Environment (DCE)

An architecture of standard programming interfaces, conventions, and server functionalities (e.g., naming, distributed file system, remote procedure call) for distributing applications transparently across networks of heterogeneous computers. Promoted and controlled by the Open Software Foundation (OSF), a consortium led by Digital, IBM and Hewlett Packard. [Source: RFC1208]

distributed database

A collection of several different data repositories that looks like a single database to the user. A prime example in the Internet is the Domain Name System.

DIX Ethernet

See: Ethernet

DNS

See: Domain Name System

domain

"Domain" is a heavily overused term in the Internet. It can be used in the Administrative Domain context, or the Domain Name context. See also: Administrative Domain, Domain Name System.

Domain Name System (DNS)

The DNS is a general purpose distributed, replicated, data query service. The principal use is the lookup of host IP addresses based on host names. The style of host names now used in the Internet is called "domain name", because they are the style of names used to look up anything in the DNS. Some important domains are: .COM (commercial), .EDU (educational), .NET (network operations), .GOV (U.S. government), and .MIL (U.S. military). Most countries also have a domain. For example, .US (United States), .UK (United Kingdom), .AU (Australia). It is defined in STD 13, RFCs 1034 and 1035. See also: Fully Qualified Domain Name.

dot address (dotted decimal notation)

Dot address refers to the common notation for IP addresses of the form A.B.C.D; where each letter represents, in decimal, one byte of a four byte IP address. See also: IP address. [Source: FYI4]

DS1

A framing specification for T-1 synchronous lines. See also: T1

DS3

A framing specification for T-3 synchronous lines. See also: T3

DSA

See: Directory System Agent

DTE

Data Terminal Equipment

DUA

See: Directory User Agent

dynamic adaptive routing

Automatic rerouting of traffic based on a sensing and analysis of current actual network conditions. NOTE: this does not include cases of routing decisions taken on predefined information. [Source: J. Postel]

EARN

See: European Academic and Research Network

EBCDIC

See: Extended Binary Coded Decimal Interchange Code

Ebone

A pan-European backbone service.

EFF

See: Electronic Frontier Foundation

EFLA

See: Extended Four Letter Acronym

EGP

See: Exterior Gateway Protocol

Electronic Frontier Foundation (EFF)

A foundation established to address social and legal issues arising from the impact on society of the increasingly pervasive use of computers as a means of communication and information distribution.

Electronic Mail (email)

A system whereby a computer user can exchange messages with other computer users (or groups of users) via a communications network. Electronic mail is one of the most popular uses of the Internet. [Source: NNSC]

email

See: Electronic mail

email address

The domain-based or UUCP address that is used to send electronic mail to a specified destination. For example an editor's address is "gmalkin@xylogics.com". See also: bang path, mail path, UNIX- to-UNIX CoPy. [Source: ZEN]

encapsulation

The technique used by layered protocols in which a layer adds header information to the protocol data unit (PDU) from the layer above. As an example, in Internet terminology, a packet would contain a header from the physical layer, followed by a header from the network layer (IP), followed by a header from the transport layer (TCP), followed by the application protocol data. [Source: RFC1208]

encryption

Encryption is the manipulation of a packet's data in order to prevent any but the intended recipient from reading that data. There are many types of data encryption, and they are the basis of network security. See also: Data Encryption Standard.

Ethernet

A 10-Mb/s standard for LANs, initially developed by Xerox, and later refined by Digital, Intel and Xerox (DIX). All hosts are connected to a coaxial cable where they contend for network access using a Carrier Sense Multiple Access with Collision Detection (CSMA/CD) paradigm. See also: 802.x, Local Area Network, token ring.

Ethernet meltdown

An event that causes saturation, or near saturation, on an Ethernet. It usually results from illegal or misrouted packets and typically lasts only a short time. [Source: COMER]

European Academic and Research Network (EARN)

A network connecting European academic and research institutions with electronic mail and file transfer services using the Bitnet protocol. See also: Bitnet

Extended Binary Coded Decimal Interchange Code (EBCDIC)

A standard character-to-number encoding used primarily by IBM computer systems. See also: ASCII.

Extended Four Letter Acronym (EFLA)

A recognition of the fact that there are far too many TLAs. See also: Three Letter Acronym. [Source: K. Morgan]

Exterior Gateway Protocol (EGP)

A protocol which distributes routing information to the routers which connect autonomous systems. The term "gateway" is historical, as "router" is currently the preferred term. There is also a routing protocol called EGP defined in STD 18, RFC 904. See also: Autonomous System, Border Gateway Protocol, Interior Gateway Protocol.

eXternal Data Representation (XDR)

A standard for machine independent data structures developed by Sun Microsystems and defined in RFC 1014. It is similar to ASN.1. See also: Abstract Syntax Notation One. [Source: RFC1208]

FARNET

A non-profit corporation, established in 1987, whose mission is to advance the use of computer networks to improve research and education.

FAQ

Frequently Asked Question

FDDI

See: Fiber Distributed Data Interface

Federal Information Exchange (FIX)

One of the connection points between the American governmental internets and the Internet. [Source: SURA]

Federal Networking Council (FNC)

The coordinating group of representatives from those federal agencies involved in the development and use of federal networking, especially those networks using TCP/IP and the Internet. Current members include representatives from DOD, DOE, DARPA, NSF, NASA, and HHS. See also: Defense Advanced Research Projects Agency, National Science Foundation.

Fiber Distributed Data Interface (FDDI)

A high-speed (100Mb/s) LAN standard. The underlying medium is fiber optics, and the topology is a dual-attached, counter-rotating token ring. See also: Local Area Network, token ring. [Source: RFC1208]

file transfer

The copying of a file from one computer to another over a computer network. See also: File Transfer Protocol, Kermit.

File Transfer Protocol (FTP)

A protocol which allows a user on one host to access, and transfer files to and from, another host over a network. Also, FTP is usually the name of the program the user invokes to execute the protocol. It is defined in STD 9, RFC 959. See also: anonymous FTP.

finger

A program that displays information about a particular user, or all users, logged on the local system or on a remote system. It typically shows full name, last login time, idle time, terminal line, and terminal location (where applicable). It may also display plan and project files left by the user.

FIX

See: Federal Information Exchange

flame

A strong opinion and/or criticism of something, usually as a frank inflammatory statement, in an electronic mail message. It is common to precede a flame with an indication of pending fire (i.e., FLAME ON!). Flame Wars occur when people start flaming other people for flaming when they shouldn't have. See also: Electronic Mail

FNC

See: Federal Networking Council

For Your Information (FYI)

A subseries of RFCs that are not technical standards or descriptions of protocols. FYIs convey general information about topics related to TCP/IP or the Internet. See also: Request For Comments, STD.

FQDN

See: Fully Qualified Domain Name

fragment

A piece of a packet. When a router is forwarding an IP packet to a network that has a maximum packet size smaller than the packet size, it is forced to break up that packet into multiple fragments. These fragments will be reassembled by the IP layer at the destination host.

fragmentation

The IP process in which a packet is broken into smaller pieces to fit the requirements of a physical network over which the packet must pass. See also: reassembly.

frame

A frame is a datalink layer "packet" which contains the header and trailer information required by the physical medium. That is, network layer packets are encapsulated to become frames. See also: datagram, encapsulation, packet.

freenet

Community-based bulletin board system with email, information services, interactive communications, and conferencing. Freenets are funded and operated by individuals and volunteers -- in one sense, like public television. They are part of the National Public Telecomputing Network (NPTN), an organization based in Cleveland, Ohio, devoted to making computer telecommunication and networking services as freely available as public libraries.

[Source: LAQUEY]

FTP

See: File Transfer Protocol

Fully Qualified Domain Name (FQDN)

The FQDN is the full name of a system, rather than just its hostname. For example, "venera" is a hostname and "venera.isi.edu" is an FQDN. See also: hostname, Domain Name System.

FYI

See: For Your Information

gross

A dozen dozen (144).

gated

Gatedaemon. A program which supports multiple routing protocols and protocol families. It may be used for routing, and makes an effective platform for routing protocol research. The software is freely available by anonymous FTP from "gated.cornell.edu". Pronounced "gate-dee". See also: Exterior Gateway Protocol, Open Shortest Path First..., Routing Information Protocol, routed.

gateway

The term "router" is now used in place of the original definition of "gateway". Currently, a gateway is a communications device/program which passes data between networks having similar functions but dissimilar implementations. This should not be confused with a protocol converter. By this definition, a router is a layer 3 (network layer) gateway, and a mail gateway is a layer 7 (application layer) gateway. See also: mail gateway, router, protocol converter.

Gopher

A distributed information service that makes available hierarchical collections of information across the Internet. Gopher uses a simple protocol that allows a single Gopher client to access information from any accessible Gopher server, providing the user with a single "Gopher space" of information. Public domain versions of the client and server are available. See also: archie, archive site, Prospero, Wide Area Information Servers.

GOSIP

See: Government OSI Profile

Government OSI Profile

A subset of OSI standards specific to U.S. Government procurements, designed to maximize interoperability in areas where plain OSI standards are ambiguous or allow excessive options. [Source: BIG-LAN]

hacker

A person who delights in having an intimate understanding of the internal workings of a system, computers and computer networks in particular. The term is often misused in a pejorative context, where "cracker" would be the correct term. See also: cracker.

header

The portion of a packet, preceding the actual data, containing source and destination addresses, and error checking and other fields. A header is also the part of an electronic mail message that precedes the body of a message and contains, among other things, the message originator, date and time. See also: Electronic Mail, packet.

heterogeneous network

A network running multiple network layer protocols. See also: DECnet, IP, IPX, XNS.

hierarchical routing

The complex problem of routing on large networks can be simplified by reducing the size of the networks. This is accomplished by breaking a network into a hierarchy of networks, where each level is responsible for its own routing. The Internet has, basically, three levels: the backbones, the mid-levels, and the stub networks. The backbones know how to route between the mid-levels, the mid-levels know how to route between the sites, and each site (being an autonomous system) knows how to route internally. See also: Autonomous System, Exterior Gateway Protocol, Interior Gateway Protocol, stub network, transit network.

High Performance Computing and Communications (HPCC)

High performance computing encompasses advanced computing, communications, and information technologies, including scientific workstations, supercomputer systems, high speed networks, special purpose and experimental systems, the new generation of large scale parallel systems, and application and systems software with all components well integrated and linked over a high speed network. [Source: HPCC]

High Performance Parallel Interface (HIPPI)

An emerging ANSI standard which extends the computer bus over fairly short distances at speeds of 800 and 1600 Mb/s. HIPPI is often used in a computer room to connect a supercomputer to routers, frame buffers, mass-storage peripherals, and other computers. See also: American National Standards Institute [Source: MALAMUD]

HIPPI

See: High Performance Parallel Interface

hop

A term used in routing. A path to a destination on a network is a series of hops, through routers, away from the origin.

host

A computer that allows users to communicate with other host computers on a network. Individual users communicate by using application programs, such as electronic mail, Telnet and FTP. [Source: NNSC]

host address

See: internet address

hostname

The name given to a machine. See also: Fully Qualified Domain Name. [Source: ZEN]

host number

See: host address

HPCC

See: High Performance Computing and Communications

hub

A device connected to several other devices. In ARCnet, a hub is used to connect several computers together. In a message handling service, a hub is used for the transfer of messages across the network. [Source: MALAMUD]

I-D

See: Internet-Draft

IAB

See: Internet Architecture Board

IANA

See: Internet Assigned Numbers Authority

ICMP

See: Internet Control Message Protocol

IEEE

Institute of Electrical and Electronics Engineers

IEEE 802

See: 802.x

IEN

See: Internet Experiment Note

IESG

See: Internet Engineering Steering Group

IETF

See: Internet Engineering Task Force

IINREN

See: Interagency Interim National Research and Education Network

IGP

See: Interior Gateway Protocol

IMHO

In My Humble Opinion

IMR

See: Internet Monthly Report

Integrated Services Digital Network (ISDN)

An emerging technology which is beginning to be offered by the telephone carriers of the world. ISDN combines voice and digital network services in a single medium, making it possible to offer customers digital data services as well as voice connections through a single "wire". The standards that define ISDN are specified by CCITT. See also: CCITT. [Source: RFC1208]

Interagency Interim National Research and Education Network (IINREN)

An evolving operating network system. Near term (1992-1996) research and development activities will provide for the smooth evolution of this networking infrastructure into the future gigabit NREN. [Source: HPCC]

Interior Gateway Protocol (IGP)

A protocol which distributes routing information to the routers within an autonomous system. The term "gateway" is historical, as "router" is currently the preferred term. See also: Autonomous System, Exterior Gateway Protocol, Open Shortest Path First..., Routing Information Protocol.

Intermediate System (IS)

An OSI system which performs network layer forwarding. It is analogous to an IP router. See also: Open Systems Interconnection, router.

Intermediate System-Intermediate System (IS-IS)

The OSI IGP. See also: Open Systems Interconnection, Interior Gateway Protocol.

International Organization for Standardization (ISO)

A voluntary, nontreaty organization founded in 1946 which is responsible for creating international standards in many areas, including computers and communications. Its members are the national standards organizations of the 89 member countries, including ANSI for the U.S. See also: American National Standards Institute, Open Systems Interconnection. [Source: TAN]

internet

While an internet is a network, the term "internet" is usually used to refer to a collection of networks interconnected with routers. See also: network.

Internet

(note the capital "I") The Internet is the largest internet in the world. Is a three level hierarchy composed of backbone networks (e.g., NSFNET, MILNET), mid-level networks, and stub networks. The Internet is a multiprotocol internet. See also: backbone, mid-level network, stub network, transit network, Internet Protocol, Corporation for Research and Educational Networks, National Science Foundation.

internet address

A IP address that uniquely identifies a node on an internet. An Internet address (capital "I"), uniquely identifies a node on the Internet. See also: internet, Internet, IP address.

Internet Architecture Board (IAB)

The technical body that oversees the development of the Internet suite of protocols. It has two task forces: the IETF and the IRTF. "IAB" previously stood for Internet Activities Board. See also: Internet Engineering Task Force, Internet Research Task Force.

Internet Assigned Numbers Authority (IANA) The central registry for various Internet protocol parameters, such as port, protocol and enterprise numbers, and options, codes and types. The currently assigned values are listed in the "Assigned Numbers" document [STD2]. To request a number assignment, contact the IANA at "iana@isi.edu". See also: assigned numbers, STD.

Internet Control Message Protocol (ICMP)

ICMP is an extension to the Internet Protocol. It allows for the generation of error messages, test packets and informational messages related to IP. It is defined in STD 5, RFC 792. [Source: FY14]

Internet-Draft (I-D)

Internet-Drafts are working documents of the IETF, its Areas, and its Working Groups. As the name implies, Internet-Drafts are draft documents. They are valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. Very often, I-Ds are precursors to RFCs. See also: Internet Engineering Task Force, Request For Comments.

Internet Engineering Steering Group (IESG)

The IESG is composed of the IETF Area Directors and the IETF Chair. It provides the first technical review of Internet standards and is responsible for day-to-day "management" of the IETF. See also: Internet Engineering Task Force.

Internet Engineering Task Force (IETF)

The IETF is a large, open community of network designers, operators, vendors, and researchers whose purpose is to coordinate the operation, management and evolution of the Internet, and to resolve short-range and mid-range protocol and architectural issues. It is a major source of proposals for protocol standards which are submitted to the IAB for final approval. The IETF meets three times a year and extensive minutes are included in the IETF Proceedings. See also: Internet, Internet Architecture Board. [Source: FY14]

Internet Experiment Note (IEN)

A series of reports pertinent to the Internet. IENs were published in parallel to RFCs and are no longer active. See also: Internet-Draft, Request For Comments.

Internet Monthly Report (IMR)

Published monthly, the purpose of the Internet Monthly Reports is to communicate to the Internet Research Group the accomplishments, milestones reached, or problems discovered by the participating organizations.

internet number

See: internet address

Internet Protocol (IP)

The Internet Protocol, defined in STD 5, RFC 791, is the network layer for the TCP/IP Protocol Suite. It is a connectionless, best-effort packet switching protocol. See also: packet switching, Request For Comments, TCP/IP Protocol Suite.

Internet Registry (IR)

The IANA has the discretionary authority to delegate portions of its responsibility and, with respect to network address and Autonomous System identifiers, has lodged this responsibility with an IR. The IR function is performed by the DDN NIC. See also: Autonomous System, network address, Defense Data Network..., Internet Assigned Numbers Authority.

Internet Relay Chat (IRC)

A world-wide "party line" protocol that allows one to converse with others in real time. IRC is structured as a network of servers, each of which accepts connections from client programs, one per user. See also: talk. [Source: HACKER]

Internet Research Steering Group (IRSG)

The "governing body" of the IRTF. See also: Internet Research Task Force. [Source: MALAMUD]

Internet Research Task Force (IRTF)

The IRTF is chartered by the IAB to consider long-term Internet issues from a theoretical point of view. It has Research Groups, similar to IETF Working Groups, which are each tasked to discuss different research topics. Multi-cast audio/video conferencing and privacy enhanced mail are samples of IRTF output. See also: Internet Architecture Board, Internet Engineering Task Force, Privacy Enhanced Mail.

Internet Society (ISOC)

The Internet Society is a non-profit, professional membership organization which facilitates and supports the technical evolution of the Internet, stimulates interest in and educates the scientific and academic communities, industry and the public about the technology, uses and applications of the Internet, and promotes the development of new applications for the system. The Society provides a forum for discussion and collaboration in the operation and use of the global Internet infrastructure. The Internet Society publishes a quarterly newsletter, the Internet Society News, and holds an annual conference, INET. The development of Internet technical standards takes place under the auspices of the Internet Society with substantial support from the Corporation for National Research Initiatives under a cooperative agreement with the US Federal Government. [Source: V. Cerf]

Internetwork Packet eXchange (IPX)

Novell's protocol used by Netware. A router with IPX routing can interconnect LANs so that Novell Netware clients and servers can communicate. See also: Local Area Network.

interoperability

The ability of software and hardware on multiple machines from multiple vendors to communicate meaningfully.

IP

See: Internet Protocol

IP address

The 32-bit address defined by the Internet Protocol in STD 5, RFC 791. It is usually represented in dotted decimal notation. See also: dot address, internet address, Internet Protocol, network address, subnet address, host address.

IP datagram

See: datagram

IPX

See: Internetwork Packet eXchange

IR

See: Internet Registry

IRC

See: Internet Relay Chat

IRSG

See: Internet Research Steering Group

IRTF

See: Internet Research Task Force

IS

See: Intermediate System

IS-IS

See: Intermediate System-Intermediate System

ISDN

See: Integrated Services Digital Network

ISO

See: International Organization for Standardization

ISO Development Environment (ISODE)

Software that allows OSI services to use a TCP/IP network. Pronounced eye-so-dee-eee. See also: Open Systems Interconnection, TCP/IP Protocol Suite.

ISOC

See: Internet Society

ISODE

See: ISO Development Environment

JKREY

Joyce K. Reynolds

KA9Q

A popular implementation of TCP/IP and associated protocols for amateur packet radio systems. See also: TCP/IP Protocol Suite. [Source: RFC1208]

Kerberos

Kerberos is the security system of MIT's Project Athena. It is based on symmetric key cryptography. See also: encryption.

Kermit

A popular file transfer protocol developed by Columbia University. Because Kermit runs in most operating environments, it provides an easy method of file transfer. Kermit is NOT the same as FTP. See also: File Transfer Protocol [Source: MALAMUD]

Knowbot

An experimental directory service. See also: white pages, WHOIS, X.500.

LAN

See: Local Area Network

layer

Communication networks for computers may be organized as a set of more or less independent protocols, each in a different layer (also called level). The lowest layer governs direct host-to-host communication between the hardware at different hosts; the highest consists of user applications. Each layer builds on the layer beneath it. For each layer, programs at different hosts use protocols appropriate to the layer to communicate with each other. TCP/IP has five layers of protocols; OSI has seven. The advantages of different layers of protocols is that the methods of passing information from one layer to another are specified clearly as part of the protocol suite, and changes within a protocol layer are prevented from affecting the other layers. This greatly simplifies the task of designing and maintaining communication programs. See also: Open Systems Interconnection, TCP/IP Protocol Suite.

listserv

An automated mailing list distribution system originally designed for the Bitnet/EARN network. See also: Bitnet, European Academic Research Network, mailing list.

little-endian

A format for storage or transmission of binary data in which the least significant byte (bit) comes first. See also: big-endian. [Source: RFC1208]

LLC

See: Logical Link Control

Local Area Network (LAN)

A data network intended to serve an area of only a few square kilometers or less. Because the network is known to cover only a small area, optimizations can be made in the network signal protocols that permit data rates up to 100Mb/s. See also: Ethernet, Fiber Distributed Data Interface, token ring, Wide Area Network. [Source: NNSC]

Logical Link Control (LLC)

The upper portion of the datalink layer, as defined in IEEE 802.2. The LLC sublayer presents a uniform interface to the user of the datalink service, usually the network layer. Beneath the LLC sublayer is the MAC sublayer. See also: 802.x, layer, Media Access Control.

Lurking

No active participation on the part of a subscriber to an mailing list or USENET newsgroup. A person who is lurking is just listening to the discussion. Lurking is encouraged for beginners who need to get up to speed on the history of the group. See also: Electronic Mail, mailing list, Usenet. [Source: LAQUEY]

MAC

See: Media Access Control

MAC address

The hardware address of a device connected to a shared media. See also: Media Access Control, Ethernet, token ring. [Source: MALAMUD]

mail bridge

A mail gateway that forwards electronic mail between two or more networks while ensuring that the messages it forwards meet certain administrative criteria. A mail bridge is simply a specialized form of mail gateway that enforces an administrative policy with regard to what mail it forwards. See also: Electronic Mail, mail gateway. [Source: NNSC]

Mail Exchange Record (MX Record)

A DNS resource record type indicating which host can handle mail for a particular domain. See also: Domain Name System, Electronic Mail. [Source: MALAMUD]

mail exploder

Part of an electronic mail delivery system which allows a message to be delivered to a list of addresses. Mail exploders are used to implement mailing lists. Users send messages to a single address and the mail exploder takes care of delivery to the individual mailboxes in the list. See also: Electronic Mail, email address, mailing list. [Source: RFC1208]

mail gateway

A machine that connects two or more electronic mail systems (including dissimilar mail systems) and transfers messages between them. Sometimes the mapping and translation can be quite complex, and it generally requires a store-and-forward scheme whereby the message is received from one system completely before it is transmitted to the next system, after suitable translations. See also: Electronic Mail. [Source: RFC1208]

mail path

A series of machine names used to direct electronic mail from one user to another. This system of email addressing has been used primarily in UUCP networks which are trying to eliminate its use altogether. See also: bang path, email address, UNIX-to-UNIX CoPy.

mail server

A software program that distributes files or information in response to requests sent via email. Internet examples include Almanac and netlib. Mail servers have also been used in Bitnet to provide FTP-like services. See also: Bitnet, Electronic Mail, FTP. [Source: NWNEN]

mailing list

A list of email addresses, used by a mail exploder, to forward messages to groups of people. Generally, a mailing list is used to discuss certain set of topics, and different mailing lists discuss different topics. A mailing list may be moderated. This means that messages sent to the list are actually sent to a moderator who determines whether or not to send the messages on to everyone else. Requests to subscribe to, or leave, a mailing list should ALWAYS be sent to the list's "-request" address (e.g., ietf-request@cnri.reston.va.us for the IETF mailing list). See also: Electronic Mail, mail exploder.

MAN

See: Metropolitan Area Network

Management Information Base (MIB)

The set of parameters an SNMP management station can query or set in the SNMP agent of a network device (e.g., router). Standard, minimal MIBs have been defined, and vendors often have Private enterprise MIBs. In theory, any SNMP manager can talk to any SNMP agent with a properly defined MIB. See also: client-server model, Simple Network Management Protocol. [Source: BIG-LAN]

Martian

A humorous term applied to packets that turn up unexpectedly on the wrong network because of bogus routing entries. Also used as a name for a packet which has an altogether bogus (non-registered or ill-formed) internet address. [Source: RFC1208]

Maximum Transmission Unit (MTU)

The largest frame length which may be sent on a physical medium. See also: fragmentation, frame.

Media Access Control (MAC)

The lower portion of the datalink layer. The MAC differs for various physical media. See also: MAC Address, Ethernet, Logical Link Control, token ring.

message switching

See: packet switching

Metropolitan Area Network (MAN)

A data network intended to serve an area approximating that of a large city. Such networks are being implemented by innovative techniques, such as running fiber cables through subway tunnels. A popular example of a MAN is SMDS. See also: Local Area Network, Switched Multimegabit Data Service, Wide Area Network. [Source: NNSC]

MIB

See: Management Information Base

mid-level network

Mid-level networks (a.k.a. regionals) make up the second level of the Internet hierarchy. They are the transit networks which connect the stub networks to the backbone networks. See also: backbone, Internet, stub network, transit network.

MIME

See: Multipurpose Internet Mail Extensions

moderator

A person, or small group of people, who manage moderated mailing lists and newsgroups. Moderators are responsible for determining which email submissions are passed on to list. See also: Electronic Mail, mailing list, Usenet.

MTU

See: Maximum Transmission Unit

MUD

See: Multi-User Dungeon

multicast

A packet with a special destination address which multiple nodes on the network may be willing to receive. See also: broadcast.

multihomed host

A host which has more than one connection to a network. The host may send and receive data over any of the links but will not route traffic for other nodes. See also: host, router. [Source: MALAMUD]

Multipurpose Internet Mail Extensions (MIME)

An extension to Internet email which provides the ability to transfer non-textual data, such as graphics, audio and fax. It is defined in RFC 1341. See also: Electronic Mail

Multi-User Dungeon (MUD)

Adventure, role playing games, or simulations played on the Internet. Devotees call them "text-based virtual reality adventures". The games can feature fantasy combat, booby traps and magic. Players interact in real time and can change the "world" in the game as they play it. Most MUDs are based on the Telnet protocol. See also: Telnet. [Source: LAQUEY]

MX Record

See: Mail Exchange Record

NAK

See: Negative Acknowledgment

name resolution

The process of mapping a name into its corresponding address. See also: Domain Name System. [Source: RFC1208]

namespace

A commonly distributed set of names in which all names are unique. [Source: MALAMUD]

National Institute of Standards and Technology (NIST)

United States governmental body that provides assistance in developing standards. Formerly the National Bureau of Standards. [Source: MALAMUD]

National Research and Education Network (NREN)

The NREN is the realization of an interconnected gigabit computer network devoted to High Performance Computing and Communications. See also: HPPC, IINREN. [Source: HPCC]

National Science Foundation (NSF)

A U.S. government agency whose purpose is to promote the advancement of science. NSF funds science researchers, scientific projects, and infrastructure to improve the quality of scientific research. The NSFNET, funded by NSF, is an essential part of academic and research communications. It is a highspeed "network of networks" which is hierarchical in nature. At the highest level, it is a backbone network currently comprising 16 nodes connected to a 45Mb/s facility which spans the continental United States. Attached to that are mid-level networks and attached to the mid-levels are campus and local networks. NSFNET also has connections out of the U.S. to Canada, Mexico, Europe, and the Pacific Rim. The NSFNET is part of the Internet.

Negative Acknowledgment (NAK)

Response to receipt of a corrupted packet of information. See also: Acknowledgement.

netiquette

A pun on "etiquette" referring to proper behavior on a network.

Netnews

See: Usenet

network

A computer network is a data communications system which interconnects computer systems at various different sites. A network may be composed of any combination of LANs, MANs or WANs. See also: Local Area Network, Metropolitan Area Network, Wide Area Network, internet.

network address

The network portion of an IP address. For a class A network, the network address is the first byte of the IP address. For a class B network, the network address is the first two bytes of the IP address. For a class C network, the network address is the first three bytes of the IP address. In each case, the remainder is the host address. In the Internet, assigned network addresses are globally unique. See also: Internet, IP address, subnet address, host address, Internet Registry.

Network File System (NFS)

A protocol developed by Sun Microsystems, and defined in RFC 1094, which allows a computer system to access files over a network as if they were on its local disks. This protocol has been incorporated in products by more than two hundred companies, and is now a de facto Internet standard. [Source: NNSC]

Network Information Center (NIC)

A NIC provides information, assistance and services to network users. See also: Network Operations Center.

Network Information Services (NIS)

A set of services, generally provided by a NIC, to assist users in using the network. See also: Network Information Center.

Network News Transfer Protocol (NNTP)

A protocol, defined in RFC 977, for the distribution, inquiry, retrieval, and posting of news articles. See also: Usenet.

network number

See: network address

Network Operations Center (NOC)

A location from which the operation of a network or internet is monitored. Additionally, this center usually serves as a clearinghouse for connectivity problems and efforts to resolve those problems. See also: Network Information Center. [Source: NNSC]

Network Time Protocol (NTP)

A protocol that assures accurate local timekeeping with reference to radio and atomic clocks located on the Internet. This protocol is capable of synchronizing distributed clocks within milliseconds over long time periods. It is defined in STD 12, RFC 1119. See

also: Internet.

[Source: NNSC]

NFS

See: Network File System

NIC

See: Network Information Center

NIC.DDN.MIL

This is the domain name of the DDN NIC. See also: Defense Data Network..., Domain Name System, Network Information Center.

NIS

See: Network Information Services

NIST

See: National Institute of Standards and Technology

NNTP

See: Network News Transfer Protocol

NOC

See: Network Operations Center

Nodal Switching System (NSS)

Main routing nodes in the NSFnet backbone. See also: backbone, National Science Foundation. [Source: MALAMUD]

node

An addressable device attached to a computer network. See also: host, router.

NREN

See: National Research and Education Network

NSF

See: National Science Foundation

NSS

See: Nodal Switching System

NTP

See: Network Time Protocol

OCLC

See: Online Computer Library Catalog

octet

An octet is 8 bits. This term is used in networking, rather than byte, because some systems have bytes that are not 8 bits long.

Online Computer Library Catalog

OCLC is a nonprofit membership organization offering computer-based services to libraries, educational organizations, and their users. The OCLC library information network connects more than 10,000 libraries worldwide. Libraries use the OCLC System for cataloging, interlibrary loan, collection development, bibliographic verification, and reference searching. [Source: OCLC]

Open Shortest-Path First Interior Gateway Protocol (OSPF)

A link state, as opposed to distance vector, routing protocol. It is an Internet standard IGP defined in RFC 1247. See also: Interior Gateway Protocol, Routing Information Protocol.

Open Systems Interconnection (OSI)

A suite of protocols, designed by ISO committees, to be the international standard computer network architecture. See also: International Organization for Standardization.

OSI

See: Open Systems Interconnection

OSI Reference Model

A seven-layer structure designed to describe computer network architectures and the way that data passes through them. This model was developed by the ISO in 1978 to clearly define the interfaces in multivendor networks, and to provide users of those networks with conceptual guidelines in the construction of such networks. See also: International Organization for Standardization. [Source: NNSC]

OSPF

See: Open Shortest-Path First Interior Gateway Protocol

packet

The unit of data sent across a network. "Packet" a generic term used to describe unit of data at all levels of the protocol stack, but it is most correctly used to describe application data units. See also: datagram, frame.

Packet InterNet Groper (PING)

A program used to test reachability of destinations by sending them an ICMP echo request and waiting for a reply. The term is used as a verb: "Ping host X to see if it is up!" See also: Internet Control Message Protocol. [Source: RFC1208]

Packet Switch Node (PSN)

A dedicated computer whose purpose is to accept, route and forward packets in a packet switched network. See also: packet switching, router. [Source: NNSC]

packet switching

A communications paradigm in which packets (messages) are individually routed between hosts, with no previously established communication path. See also: circuit switching, connection-oriented, connectionless.

PD

Public Domain

PDU

See: Protocol Data Unit

PEM

See: Privacy Enhanced Mail

PING

See: Packet INternet Groper

Point Of Presence (P^OP)

A site where there exists a collection of telecommunications equipment, usually digital leased lines and multi-protocol routers.

Point-to-Point Protocol (PPP)

The Point-to-Point Protocol, defined in RFC 1171, provides a method for transmitting packets over serial point-to-point links. See also: Serial Line IP. [Source: FY14]

POP

See: Post Office Protocol and Point Of Presence

port

A port is a transport layer demultiplexing value. Each application has a unique port number associated with it. See also: Transmission Control Protocol, User Datagram Protocol.

Post Office Protocol (POP)

A protocol designed to allow single user hosts to read mail from a server. There are three versions: POP, POP2, and POP3. Latter versions are NOT compatible with earlier versions. See also: Electronic Mail.

Postal Telegraph and Telephone (PTT)

Outside the USA, PTT refers to a telephone service provider, which is usually a monopoly, in a particular country.

postmaster

The person responsible for taking care of electronic mail problems, answering queries about users, and other related work at a site. See also: Electronic Mail. [Source: ZEN]

PPP

See: Point-to-Point Protocol

Privacy Enhanced Mail (PEM)

Internet email which provides confidentiality, authentication and message integrity using various encryption methods. See also: Electronic Mail, encryption.

Prospero

A distributed filesystem which provides the user with the ability to create multiple views of a single collection of files distributed across the Internet. Prospero provides a file naming system, and file access is provided by existing access methods (e.g., anonymous FTP and NFS). The Prospero protocol is also used for communication between clients and servers in thearchie system. See also: anonymous FTP,archie,archive site,Gopher,Network File System,Wide Area Information Servers.

protocol

A formal description of message formats and the rules two computers must follow to exchange those messages. Protocols can describe low-level details of machine-to-machine interfaces (e.g., the order in which bits and bytes are sent across a wire) or high-level exchanges between allocation programs (e.g., the way in which two programs transfer a file across the Internet).

[Source: MALAMUD]

protocol converter

A device/program which translates between different protocols which serve similar functions (e.g., TCP and TP4).

Protocol Data Unit (PDU)

"PDU" is internationalstandardscommitteespeak for packet. See also: packet.

protocol stack

A layered set of protocols which work together to provide a set of network functions. See also: layer, protocol.

proxy ARP

The technique in which one machine, usually a router, answers ARP requests intended for another machine. By "faking" its identity, the router accepts responsibility for routing packets to the "real" destination. Proxy ARP allows a site to use a single IP address with two physical networks. Subnetting would normally be a better solution. See also: Address Resolution Protocol [Source: RFC1208]

PSN

See: Packet Switch Node.

PTT

See: Postal, Telegraph and Telephone

queue

A backup of packets awaiting processing.

RARE

See: Reseaux Associes pour la Recherche Europeenne

RARP

See: Reverse Address Resolution Protocol

RBOC

Regional Bell Operating Company

RCP

See: Remote copy program

Read the F*cking Manual (RTFM)

This acronym is often used when someone asks a simple or common question.

reassembly

The IP process in which a previously fragmented packet is reassembled before being passed to the transport layer. See also: fragmentation. recursive See: recursive

regional

See: mid-level network

remote login

Operating on a remote computer, using a protocol over a computer network, as though locally attached. See also: Telnet.

Remote Procedure Call (RPC)

An easy and popular paradigm for implementing the client-server model of distributed computing. In general, a request is sent to a remote system to execute a designated procedure, using arguments supplied, and the result returned to the caller. There are many variations and subtleties in various implementations, resulting in a variety of different (incompatible) RPC protocols. [Source: RFC1208]

repeater

A device which propagates electrical signals from one cable to another. See also: bridge, gateway, router.

Request For Comments (RFC)

The document series, begun in 1969, which describes the Internet suite of protocols and related experiments. Not all (in fact very few) RFCs describe Internet standards, but all Internet standards are written up as RFCs. The RFC series of documents is unusual in that the proposed protocols are forwarded by the Internet research and development community, acting on their own behalf, as opposed to the formally reviewed and standardized protocols that are promoted by organizations such as CCITT and ANSI. See also: For Your Information, STD.

Reseaux Associes pour la Recherche Europeenne (RARE)

European association of research networks. [Source: RFC1208]

Reseaux IP Europeenne (RIPE)

A collaboration between European networks which use the TCP/IP protocol suite.

Reverse Address Resolution Protocol (RARP)

A protocol, defined in RFC 903, which provides the reverse function of ARP. RARP maps a hardware (MAC) address to an internet address. It is used primarily by diskless nodes when they first initialize to find their internet address. See also: Address Resolution Protocol, BOOTP, internet address, MAC address.

RFC 822

The Internet standard format for electronic mail message headers. Mail experts often refer to "822 messages". The name comes from "RFC 822", which contains the specification (STD 11, RFC 822). 822 format was previously known as 733 format. See also: Electronic Mail. [Source: COMER]

RIP

See: Routing Information Protocol

RIPE

See: Reseaux IP Europeenne

Round-Trip Time (RTT)

A measure of the current delay on a network. [Source: MALAMUD]

route

The path that network traffic takes from its source to its destination. Also, a possible path from a given host to another host or destination.

routed

Route Daemon. A program which runs under 4.2BSD/4.3BSD UNIX systems (and derived operating systems) to propagate routes among machines on a local area network, using the RIP protocol. Pronounced "route-dee". See also: Routing Information Protocol, gated.

router

A device which forwards traffic between networks. The forwarding decision is based on network layer information and routing tables, often constructed by routing protocols. See also: bridge, gateway, Exterior Gateway Protocol, Interior Gateway Protocol.

routing

The process of selecting the correct interface and next hop for a packet being forwarded. See also: hop, router, Exterior Gateway Protocol, Interior Gateway Protocol.

routing domain

A set of routers exchanging routing information within an administrative domain. See also: Administrative Domain, router.

Routing Information Protocol (RIP)

A distance vector, as opposed to link state, routing protocol. It is an Internet standard IGP defined in STD 34, RFC 1058 (updated by RFC 1388). See also: Interior Gateway Protocol, Open Shortest Path First....

RPC

See: Remote Procedure Call

RTFM

See: Read the F*cking Manual

RTT

See: Round-Trip Time

Serial Line IP (SLIP)

A protocol used to run IP over serial lines, such as telephone circuits or RS-232 cables, interconnecting two systems. SLIP is defined in RFC 1055. See also: Point-to-Point Protocol.

server

A provider of resources (e.g., file servers and name servers). See also: client, Domain Name System, Network File System.

SIG

Special Interest Group

signature

The three or four line message at the bottom of a piece of email or a Usenet article which identifies the sender. Large signatures (over five lines) are generally frowned upon. See also: Electronic Mail, Usenet.

Simple Mail Transfer Protocol (SMTP)

A protocol, defined in STD 10, RFC 821, used to transfer electronic mail between computers. It is a server to server protocol, so other protocols are used to access the messages. See also: Electronic Mail, Post Office Protocol, RFC 822.

Simple Network Management Protocol (SNMP)

The Internet standard protocol, defined in STD 15, RFC 1157, developed to manage nodes on an IP network. It is currently possible to manage wiring hubs, toasters, jukeboxes, etc. See also: Management Information Base.

SLIP

See: Serial Line IP

SMDS

See: Switched Multimegabit Data Service

SMI

See: Structure of Management Information

SMTP

See: Simple Mail Transfer Protocol

SNA

See: Systems Network Architecture

snail mail

A pejorative term referring to the U.S. postal service.

SNMP

See: Simple Network Management Protocol

STD

A subseries of RFCs that specify Internet standards. The official list of Internet standards is in STD 1. See also: For Your Information, Request For Comments.

stream-oriented

A type of transport service that allows its client to send data in a continuous stream. The transport service will guarantee that all data will be delivered to the other end in the same order as sent and without duplicates. See also: Transmission Control Protocol. [Source: MALAMUD]

Structure of Management Information (SMI)

The rules used to define the objects that can be accessed via a network management protocol. This protocol is defined in STD 16, RFC 1155. See also: Management Information Base. [Source: RFC1208]

stub network

A stub network only carries packets to and from local hosts. Even if it has paths to more than one other network, it does not carry traffic for other networks. See also: backbone, transit network.

subnet

A portion of a network, which may be a physically independent network segment, which shares a network address with other portions of the network and is distinguished by a subnet number. A subnet is to a network what a network is to an internet. See also: internet, network. [Source: FYI4]

subnet address

The subnet portion of an IP address. In a subnetted network, the host portion of an IP address is split into a subnet portion and a host portion using an address (subnet) mask. See also: address mask, IP address, network address, host address.

subnet mask

See: address mask

subnet number

See: subnet address

Switched Multimegabit Data Service (SMDS)

An emerging high-speed datagram-based public data network service developed by Bellcore and expected to be widely used by telephone companies as the basis for their data networks. See also: Metropolitan Area Network. [Source: RFC1208]

Systems Network Architecture (SNA)

A proprietary networking architecture used by IBM and IBM-compatible mainframe computers. [Source: NNSC]

T1

An AT&T term for a digital carrier facility used to transmit a DS-1 formatted digital signal at 1.544 megabits per second.

T3

A term for a digital carrier facility used to transmit a DS-3 formatted digital signal at 44.746 megabits per second. [Source: FYI4]

TAC

See: Terminal Access Controller (TAC)

talk

A protocol which allows two people on remote computers to communicate in a real-time fashion. See also: Internet Relay Chat.

TCP

See: Transmission Control Protocol

TCP/IP Protocol Suite

Transmission Control Protocol over Internet Protocol. This is a common shorthand which refers to the suite of transport and application protocols which runs over IP. See also: IP, ICMP, TCP, UDP, FTP, Telnet, SMTP, SNMP.

TELENET

A public packet switched network using the CCITT X.25 protocols. It should not be confused with Telnet.

Telnet

Telnet is the Internet standard protocol for remote terminal connection service. It is defined in STD 8, RFC 854 and extended with options by many other RFCs.

Terminal Access Controller (TAC)

A device which connects terminals to the Internet, usually using dialup modem connections and the TACACS protocol.

terminal emulator

A program that allows a computer to emulate a terminal. The workstation thus appears as a terminal to the remote host. [Source: MALAMUD]

terminal server

A device which connects many terminals to a LAN through one network connection. A terminal server can also connect many network users to its asynchronous ports for dial-out capabilities and printer access. See also: Local Area Network.

Three Letter Acronym (TLA)

A tribute to the use of acronyms in the computer field. See also: Extended Four Letter Acronym.

Time to Live (TTL)

A field in the IP header which indicates how long this packet should be allowed to survive before being discarded. It is primarily used as a hop count. See also: Internet Protocol. [Source: MALAMUD]

TLA

See: Three Letter Acronym

TN3270

A variant of the Telnet program that allows one to attach to IBM mainframes and use the mainframe as if you had a 3270 or similar terminal. [Source: BIG-LAN]

token ring

A token ring is a type of LAN with nodes wired into a ring. Each node constantly passes a control message (token) on to the next; whichever node has the token can send a message. Often, "Token Ring" is used to refer to the IEEE 802.5 token ring standard, which is the most common type of token ring. See also: 802.x, Local Area Network.

topology

A network topology shows the computers and the links between them. A network layer must stay abreast of the current network topology to be able to route packets to their final destination. [Source: MALAMUD]

transceiver

Transmitter-receiver. The physical device that connects a host interface to a local area network, such as Ethernet. Ethernet transceivers contain electronics that apply signals to the cable and sense collisions. [Source: RFC1208]

transit network

A transit network passes traffic between networks in addition to carrying traffic for its own hosts. It must have paths to at least two other networks. See also: backbone, stub network.

Transmission Control Protocol (TCP)

An Internet Standard transport layer protocol defined in STD 7, RFC 793. It is connection-oriented and stream-oriented, as opposed to UDP. See also: connection-oriented, stream-oriented, User Datagram Protocol.

Trojan Horse

A computer program which carries within itself a means to allow the creator of the program access to the system using it. See also: virus, worm. See RFC 1135.

TTFN

Ta-Ta For Now

TTL

See: Time to Live

tunnelling

Tunnelling refers to encapsulation of protocol A within protocol B, such that A treats B as though it were a datalink layer. Tunnelling is used to get data between administrative domains which use a protocol that is not supported by the internet connecting those domains. See also: Administrative Domain.

twisted pair

A type of cable in which pairs of conductors are twisted together to produce certain electrical properties.

UDP

See: User Datagram Protocol

Universal Time Coordinated (UTC)

This is Greenwich Mean Time. [Source: MALAMUD]

UNIX-to-UNIX CoPy (UUCP)

This was initially a program run under the UNIX operating system that allowed one UNIX system to send files to another UNIX system via dial-up phone lines. Today, the term is more commonly used to describe the large international network which uses the UUCP protocol to pass news and electronic mail. See also: Electronic Mail, Usenet.

urban legend

A story, which may have started with a grain of truth, that has been embroidered and retold until it has passed into the realm of myth. It is an interesting phenomenon that these stories get spread so far, so fast and so often. Urban legends never die, they just end up on the Internet! Some legends that periodically make their rounds include "The Infamous Modem Tax," "Craig Shergold/Brain Tumor/Get Well Cards," and "The \$250 Cookie Recipe". [Source: LAQUEY]

Usenet

A collection of thousands of topically named newsgroups, the computers which run the protocols, and the people who read and submit Usenet news. Not all Internet hosts subscribe to Usenet and not all Usenet hosts are on the Internet. See also: Network News Transfer Protocol, UNIX-to-UNIX CoPy. [Source: NWNET]

User Datagram Protocol (UDP)

An Internet Standard transport layer protocol defined in STD 6, RFC 768. It is a connectionless protocol which adds a level of reliability and multiplexing to IP. See also: connectionless, Transmission Control Protocol.

UTC

See: Universal Time Coordinated

UUCP

See: UNIX-to-UNIX CoPy

virtual circuit

A network service which provides connection-oriented service regardless of the underlying network structure. See also: connection-oriented.

virus

A program which replicates itself on computer systems by incorporating itself into other programs which are shared among computer systems. See also: Trojan Horse, worm.

W3

See: World Wide Web

WAIS

See: Wide Area Information Servers

WAN

See: Wide area network

WG

Working Group

white pages

The Internet supports several databases that contain basic information about users, such as email addresses, telephone numbers, and postal addresses. These databases can be searched to get information about particular individuals. Because they serve a function akin to the telephone book, these databases are often referred to as "white pages. See also: Knowbot, WHOIS, X.500.

WHOIS

An Internet program which allows users to query a database of people and other Internet entities, such as domains, networks, and hosts, kept at the DDN NIC. The information for people shows a person's company name, address, phone number and email address. See also: Defense Data Network Network ..., white pages, Knowbot, X.500. [Source: FYI4]

Wide Area Information Servers (WAIS)

A distributed information service which offers simple natural language input, indexed searching for fast retrieval, and a "relevance feedback" mechanism which allows the results of initial searches to influence future searches. Public domain implementations are available. See also:archie, Gopher, Prospero.

Wide Area Network (WAN)

A network, usually constructed with serial lines, which covers a large geographic area. See also: Local Area Network, Metropolitan Area Network.

World Wide Web (WWW or W3)

A hypertext-based, distributed information system created by researchers at CERN in Switzerland. Users may create, edit or browse hypertext documents. The clients and servers are freely available.

worm

A computer program which replicates itself and is self-propagating. Worms, as opposed to viruses, are meant to spawn in network environments. Network worms were first defined by Shoch & Hupp of Xerox in ACM Communications (March 1982). The Internet worm of November 1988 is perhaps the most famous; it successfully propagated itself on over 6,000 systems across the Internet. See also: Trojan Horse, virus.

WRT

With Respect To

WWW

See: World Wide Web

WYSIWYG

What You See is What You Get

X

X is the name for TCP/IP based network-oriented window systems. Network window systems allow a program to use a display on a different computer. The most widely-implemented window system is X11 - a component of MIT's Project Athena.

X.25

A data communications interface specification developed to describe how data passes into and out of public data communications networks. The CCITT and ISO approved protocol suite defines protocol layers 1 through 3.

X.400

The CCITT and ISO standard for electronic mail. It is widely used in Europe and Canada.

X.500

The CCITT and ISO standard for electronic directory services. See also: white pages, Knowbot, WHOIS.

XDR

See: eXternal Data Representation

Xerox Network System (XNS)

A network developed by Xerox corporation. Implementations exist for both 4.3BSD derived systems, as well as the Xerox Star computers.

XNS

See: Xerox Network System

Yellow Pages (YP)

A service used by UNIX administrators to manage databases distributed across a network.

YP

See: Yellow Pages

zone

A logical group of network devices (AppleTalk).

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