

JUNE 1990  
VOLUME 11, NUMBER 6

SCD

COMPUTING

NEWS

National Center for  
Atmospheric Research

JUL 23 2008

ML LIBRARY

*Special Issue*

# USER DOCUMENTATION CATALOG

Includes  
UNICOS  
Documentation



SCIENTIFIC COMPUTING DIVISION  
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH

## **PUBLISHED BY:**

---

National Center for Atmospheric Research  
Scientific Computing Division  
P.O. Box 3000  
Boulder, CO 80307-3000

Copyright © 1990 by University Corporation for Atmospheric Research  
(UCAR). All Rights Reserved.

The National Center for Atmospheric Research is operated by the  
University Corporation for Atmospheric Research and is sponsored by the  
National Science Foundation. Any opinions, findings, and conclusions or  
recommendations expressed in this publication are those of the author  
and do not necessarily reflect the views of the National Science  
Foundation.

# CONTENTS

---

OVERVIEW OF THIS CATALOG.....	1
How to Order Documentation.....	1
SCD Documentation Available Online.....	1
How to Obtain Computing Information.....	2
DOCUMENTATION CATEGORIES.....	2
INTRODUCTORY.....	3
CRAY COMPUTERS.....	4
Documentation Distributed by SCD.....	4
COS Documents Distributed by Cray.....	6
UNICOS Documents Distributed by Cray.....	8
IBM COMPUTERS.....	10
Documentation Distributed by SCD.....	10
VM/SP Documents Distributed by IBM.....	11
INPUT/OUTPUT.....	11
MASS STORAGE SYSTEM (MSS).....	11
APPLICATIONS SOFTWARE.....	13
GRAPHICS.....	18
UNIX.....	23
NETWORKING AND DATA COMMUNICATIONS.....	23
Terminal Emulators for IBM-compatible PCs.....	27
Terminal Emulators for Apple Macintosh Computers.....	29
ADDITIONAL TOPICS.....	30
SCD ONLINE DOCUMENTS.....	32
Anonymous FTP.....	32
Man Pages and Online Documentation on shavano.....	33
ACRONYMS AND TERMS.....	34
SCD DOCUMENTATION ORDER FORM.....	35

# TRADEMARKS

---

IBM® is a registered trademark of International Business Machines Corporation.

SEGLDR™ and CRAY X-MP™ are trademarks, and SSD® is a registered trademark of Cray Research, Inc.

UNIX™ is a trademark of AT&T Bell Laboratories.

SAS® is a registered trademark of SAS Institute, Inc.

# OVERVIEW OF THIS CATALOG

---

This catalog describes the documentation that the Scientific Computing Division (SCD) distributes to National Center for Atmospheric Research (NCAR) computer users. The catalog also recommends the documentation that users may want to order directly from vendors. This catalog is available both in hardcopy and online.

## How to Order Documentation

To order documentation distributed by SCD (except NCAR Graphics manuals), use a copy of the order form at the end of this catalog. You can also order SCD documentation by referring to "SCD UserDocs, Manuals/Output Mailing" in the Services Directory on the back cover of this newsletter. To order NCAR Graphics, Version 3.00 manuals, see the instructions on page 19 of this catalog. To order vendor documentation, see the information provided in the catalog descriptions.

## SCD Documentation Available Online

Documents available online are indicated in this catalog with the phrase "Available online from anonymous ftp." This catalog has the filename `userdoc.catalog`. To obtain copies of these documents from your local computer connected to the Internet, type:

```
ftp windom.ucar.edu <return>
```

When prompted for a login name, type:

```
anonymous <return>
```

Enter your last name at the password prompt, wait for the `ftp>` prompt, then change to the `docs` subdirectory and list the filenames of the available documents by typing:

```
cd docs <return>
```

```
ls <return>
```

(The `README` file matches the filename with the full title of the document.) To transfer a file to your present working directory on your local computer, type:

```
get filename <return>
```

where *filename* is the name of the file you want to transfer. If your local computer already has a file with a name identical to the one you want to transfer, your existing file will be replaced with the new file. To give a file a new name on your local computer, type:

```
get filename newfilename <return>
```

To terminate the anonymous FTP session, type:

```
quit <return>
```

## How to Obtain Computing Information

Copies of the documentation described in this catalog are available in the SCD Consulting Office, Room 17 of the Mesa Lab. If you need more information about the documentation contents, please contact an SCD consultant using one of the methods shown on the back cover of this newsletter.

# DOCUMENTATION CATEGORIES

---

The documentation listed in this catalog is grouped into the following nine categories:

- Introductory
- Cray Computers
- IBM Computers
- Input/Output
- Mass Storage System (MSS)
- Applications Software
- Graphics
- UNIX
- Networking and Data Communications
- Additional Topics

Within each category, the catalog provides a brief description of each document. If the information is available, the catalog also provides the version or publication and revision number, publication date, number of pages, and price of vendor documentation. Acronyms and terms used in the descriptions are defined after the document listings.



# INTRODUCTORY

**New User Orientation Student Guide**, Version 4.0, September 1989, 182 pages

Contains the information provided in SCD's New User Orientation Course. The guide is divided into five sections that contain introductory information about using the IBM 4381 (IO) front-end computer; running basic Cray jobs using COS (CRAY Operating System); accessing the Mass Storage System; processing graphics files; and using the Cray software libraries. The guide is designed to be used in conjunction with *The Primer* and contains much of the same information, but in an abbreviated form. It is cross-referenced with *The Primer*, so that users can easily find additional information. The guide contains many examples and hands-on practice sessions.

**The Primer**, Version 2.2, October 1988, 186 pages

Introduces the COS computing equipment and peripheral resources available at NCAR and informs you how to access and use them. After reading this guide, you will know how to access the computing facility, create a Cray job, and process a job on the Cray computer using COS. Appendixes contain a handy list of IBM commands and EXECs and Cray Job Control Language (JCL) statements.

**UNICOS Primer**, Draft Version 1.1, June 1990, 237 pages

Introduces the UNICOS computing environment at NCAR and provides sufficient information, examples, and practice for most new users to become comfortable. Each chapter begins with a synopsis of commands introduced in that chapter, continues with a one- or two-page discussion of key concepts, and concludes with a step-by-step practice session designed to exercise the user's new skills. This tutorial manual helps new users grasp the basic principles of UNIX and UNICOS, the vi screen editor, UNICOS programming control language, and UNICOS tools. It also provides recommendations for using the UNICOS system as well as instructions for running jobs, viewing job output, processing graphics metafiles, and using software libraries.

# CRAY COMPUTERS

**Note:** NCAR has two Cray computers, a CRAY X-MP/48 running COS, and a CRAY Y-MP 8/864 running UNICOS.

*COS documentation will not be available after October 1990 and will be replaced by UNICOS documentation.*

## Documentation Distributed by SCD

**Cray Job Control Language with NCAR Site-specific Parameters,** Version 3.0, February 1990, 36 pages

Introduces Cray COS Job Control Language (JCL) and provides a current list of parameters that are specific to the NCAR computing environment. This document includes a list of Fortran-callable JCL that allows you to obtain, archive, and copy datasets while your Fortran program is in execution. Appendixes provide TEXT parameters for NCAR-specific equipment, Cray JCL commands available at NCAR, and a list of relevant reference documents available from SCD and Cray Research, Inc. Version 3.0 contains significant changes and new material.

**COS-UNICOS Conversion Guide,** Draft Version 1.1, January 1990, 103 pages

Is designed to help users with the process of converting and moving codes developed on the COS Cray computer to the new UNICOS Cray computer. The document discusses conversion considerations, gives examples of common COS jobs and their corresponding UNICOS job scripts, describes useful UNICOS tools and commands, and offers pointers for using scripts to submit jobs via the UNICOS batch job submission utility, NQS.

**EDITOR,** Version 1.0, July 1988, 15 pages

Explains how to invoke EDITOR, a portable editor that can be used on the Cray COS computer at NCAR, and describes various commands. In addition, the document also shows how to use string and token replacement, explains how to use multifile datasets, and describes the format of the listing dataset.



**gettingstarted**

Available online on shavano.  
Type: **hints gettingstarted**

This document contains pointers to information on using several UNICOS commands and on obtaining online help on shavano, the CRAY Y-MP8/864. As new information develops, it will be documented in *gettingstarted*.

**How to Recover and Restart Your Cray Job**, Version 1.0, November 1987, 10 pages

Describes how to insert restart logic in your code to ensure that your Cray COS job begins at some point within your job, rather than at the beginning, if the system crashes. The document also contains a detailed example of Fortran code that implements restart capability.

**ICJOB on the CRAY X-MP: A Subset of VMSTA**, Version 1.0, July 1985, 30 pages

Covers the basic capabilities of the ICJOB interface to the COS computer and provides techniques for using ICJOB to perform regular tasks. ICJOB is a utility that provides IBM 4381 (IO) front-end computer users with interactive access to the Cray computer. ICJOB provides a program development environment and aids in debugging large codes.

**Locally Developed Cray COS Utilities**, Version 2.0, September 1989, 21 pages

Contains updated information for the eight COS utilities it documents: AQLPMS, AUDPRJ, DROPJQ, GETDOC, GETSRC, LOCATE, MAQR, and REMOVE. Additionally, UserDoc references for all of the locally developed utilities and a listing of the various ways to access the job queue status display are new.

**PERFMON: The Cray Performance Monitor Utility**, Version 2.0, March 1989, 16 pages

Describes the Performance Monitor utility (PERFMON), which monitors certain hardware-related events during the execution of a program on the CRAY X-MP COS computers. PERFMON helps you optimize your applications code by providing information that can be used to analyze program performance. This document contains basic instructions for using PERFMON and has several examples of input and output.

**sed**, May 1990

Available online from anonymous FTP

Gives information on the conversion of EDITOR commands using the UNIX **sed** tool.

**SEGLDR: The CRAY X-MP Segment Loader**, Version 1.1, November 1986, 4 pages

Serves as an introduction to running the COS segment loader for two main audiences: users who want to take advantage of SEGLDR's segmentation capabilities and users who want to use SEGLDR to duplicate the functionality of LDR (the older Cray loader product). SEGLDR is the loading mechanism for code generated by various language processors on the Cray computers and will completely replace LDR in the future.

**SPY: A Timing Information Utility**, Version 2.0, May 1989, 7 pages

Describes how to use the SPY utility on the COS computer. SPY provides detailed timing information about program execution within program modules.

**Using the Cray Solid-state Storage Device at NCAR**, Version 2.1, August 1988, 7 pages

Explains how to use the CRAY X-MP/48 Solid-state Storage Device (SSD), an external storage device capable of extremely fast data transfer to main memory. Proper use of the SSD can significantly reduce the cost and turnaround time of jobs that require large amounts of I/O. The document also explains how to access the SSD and introduces how Cray I/O is performed.

## COS Documents Distributed by Cray

**Note:** The following list contains a subset of the documentation provided by Cray Research, Inc., that is generally needed by most users of the CRAY X-MP/48 computer at NCAR. Many more manuals and technical notes are available from Cray Research, and a complete list is printed in Cray's *User Publications Catalog*, CP-0099, Revision F. Ordering instructions for all Cray documents appear at the end of this section.

**COS Version 1 Reference Manual**, SR-0011, Revision O, \$38.00

Describes the external features of COS, the Cray Operating System. The manual is a reference document for all users of COS. It includes information on job processing, job control statements, and control statement structures.

**COS Message Manual,**  
SR-0039, Revision E, \$23.90

Describes all user log file, system log file, and program output listing messages issued by Cray Operating System (COS) software.

**CRAY X-MP Multitasking  
Programmer's Manual,**  
SR-0222, Revision F, \$31.80

Describes multitasking features and concepts, including macrotasking and microtasking. The manual explains how to partition an executable program among multiple processors on the CRAY X-MP/48 computer running COS.

**Programmer's Library  
Reference Manual, SR-0113,**  
Revision B, \$34.15

Describes library routines available on the CRAY X-MP/48 computer system running under COS. These subprograms can be called from user applications written in Cray-supported high-level languages such as Fortran, Pascal, and C.

**Segment Loader (SEGLDR) and  
ld Reference Manual, SR-0066,**  
Revision F, \$17.00

Describes the operation of the Cray loader that loads program segments without explicit calls to an overlay manager. SEGLDR loads code produced by language processors such as CAL (Cray Assembly Language), Fortran, Pascal, and C. SEGLDR runs under COS on the CRAY X-MP/48 computer.

**UPDATE Reference Manual,**  
SR-0013, Revision H, \$24.15

Describes UPDATE, a Cray utility that provides tools for modifying, editing, and updating source language programs running under COS. It also describes AUDPL, which provides information about program libraries written by UPDATE, and MODECKS, a utility that creates modification files (mods). UPDATE executes under COS on the CRAY X-MP/48 computer.

## UNICOS Documents Distributed by Cray

**Note:** The following list contains a subset of the documentation provided by Cray Research, Inc., that is generally needed by most users of the CRAY Y-MP8/864 computer at NCAR. Many more manuals and technical notes are available from Cray Research, and a complete list is printed in Cray's *User Publications Catalog*, CP-0099, Revision F. Ordering instructions for all Cray documents appear at the end of this section.

**CFT77 Reference Manual,**  
SR-0018, Revision C, \$40.35

Describes the CFT77 compiler, which translates FORTRAN 77 programs into machine-language programs for all Cray computer systems running COS. The manual describes the standard language, CFT77 extensions, use of the compiler, and provisions for enhancing performance on CRAY X-MP computer systems.

**FORTRAN (CFT) Reference Manual,** SR-0009, Revision L, \$24.85, plus change packet  
Revision L-01, \$8.00

Describes the CFT (Cray Fortran) compiler. The manual describes the standard language, CFT extensions and differences, use of the compiler, and provisions for enhancing performance on Cray computers.

**TCP/IP Networks User's Guide,**  
SG-2009, Revision D, \$13.85

Introduces the network communications capabilities of TCP/IP on UNICOS.

**UNICOS Autotasking User's Guide,** SN-2088, Revision 3.1, \$28.40

Explains how to use "automatic" multitasking.

**UNICOS CDBX Symbolic Debugger Reference Manual,** SR-2091, Revision 5.1, \$32.15

Describes the interactive debugger, CDBX.

**"UNICOS CFT77 Reference Card,"** SQ-0138 B, \$1.50

Summarizes manual SR-0018, including the CFT77 options and directives; a very useful card.

- UNICOS Fortran Library Reference Manual, SR-2079, Revision 5.0, \$36.40** Describes Fortran subprograms and functions available under UNICOS.
- UNICOS Overview for Users, SG-2052, Revision A, \$14.00** Provides an introduction to UNICOS.
- UNICOS Performance Utilities Reference Manual, SR-2040 B, \$14.50** Describes various utilities for analyzing the performance of your program, including: **ftref**, **flowtrace**, **prof**, **hpm**, **perftrace**, and **procstat**.
- UNICOS Primer, SG-2010 C, \$23.40** Covers the UNICOS basics, shells, and the batch facility. It is designed to be used as a tutorial for the user new to UNICOS.
- "UNICOS Shell and Variable Ready Reference," SQ-2060, \$7.60** Provides a quick reference to the shell and to writing shell scripts (both Bourne and C shell).
- UNICOS Source Code Control System (SCCS) User's Guide, SG-2017 B, \$10.90** Explains how to use SCCS to maintain different versions of source code.
- UNICOS Support Tools Guide, SG-2016 C, \$28.20** Covers commands such as **make** and **awk**.
- "UNICOS User Commands Ready Reference," SQ-2056, Revision 5.0, \$8.25** Summarizes manual SR-2011; a very useful card.
- UNICOS User Commands Reference Manual, SR-2011, Revision 5.0, \$54.55** Describes UNICOS commands and application programs and is a reference manual for UNICOS programmers. It is an alphabetical collection of all the UNICOS command *man* pages. It assumes that the reader has a working knowledge of UNICOS or UNIX.

"UNICOS vi Reference Card,"  
SQ-2054, \$1.00

Summarizes the vi editor.

*To order Cray documentation or a copy of their complete User Publications Catalog, call (612) 681-5907 or write*

*Order Desk*

*Cray Research, Inc.*

*2360 Pilot Knob Rd.*

*Mendota Heights, MN 55120*

*If you order documentation by telephone, please state that you are affiliated with NCAR and provide a billing and a shipping address.*

---

## IBM COMPUTERS

---

### Documentation Distributed by SCD

**The NCAR IBM 4341 Gateway Computers**, February 1986,  
256 pages

Explains how to use the IBM 4341 (IO) front-end computers as a gateway tool for accessing NCAR's Cray COS computer. Although the IBM 4341 (IO) computers have been replaced by the IBM 4381 (IO) front-end computer, the information in this manual is still valid for the IBM 4381. The manual also discusses editing and manipulating files, submitting jobs to the Cray computer and tracking their execution, basic IBM operating system concepts, and the utilities and libraries available on the IBM 4381 (IO) computer. An appendix describes how to use these IBM facilities and includes terminal keyboard templates for several commonly used terminals.

**Writing and Debugging Fortran Programs on the IBM 4381 Computer**, Version 1.0, March 1987, 19 pages

A guide to writing, running, and debugging Fortran programs on the IBM 4381 (IO) front-end computer. This document includes basic information about the IBM FORTVS compiler, the loader, and the debugger. It describes how to use input/output devices such as magnetic tapes.

## VM/SP Documents Distributed by IBM

**IBM VM/SP: System Product Editor User's Guide**, SC24-5220, \$8.40

Designed to give you a working knowledge of XEDIT, the System Product editor. It discusses both full-screen and line-mode editing and uses "before and after" examples to illustrate the text.

**IBM VM/SP: CMS User's Guide**, SC19-6210, \$28.00

Intended for the general CMS user. It describes the interactive facilities of CMS and provides many examples. The topics include using the CMS file system, using the help facility, reading tapes, and writing EXECs.

*To order IBM documentation, call 1-800-426-2468 and ask for the Education and Software Department.*

## INPUT/OUTPUT

**Using the Xerox 4050 Laser Printers from the Cray and IBM 4381 Computers**, Version 1.0, September 1986, 11 pages

Intended for users who want to print text output on the Xerox 4050 laser printers. The document summarizes the keywords used to control print parameters from the Cray COS and IBM 4381 (IO) front-end computers. It includes job submission examples.

## MASS STORAGE SYSTEM (MSS)

**IBM Utilities for Accessing the Mass Storage System**, Version 1.0, April 1986, 12 pages

Discusses four utilities that perform MSS file maintenance via the IBM 4381 (IO) front-end computer. The four utilities are MSCHANGE, MSDELETE, MSINFO, and MSUPDATE. The document provides examples for each utility.

**Mass Storage System File Maintenance from the Cray Computers**, Version 2.0, December 1986, 17 pages

Describes four Cray utilities available under COS that perform MSS file maintenance on the CRAY X-MP/48. After summarizing MSCHANG, MSDELET, MSINFO, and MSUPDAT, the document provides examples of how to use them.

**The Mass Storage System,**  
Version 2.0, August 1986,  
16 pages

Enables you to use the MSS from the Cray computer under COS and from the IBM 4381 (IO) front-end computer. File-naming conventions, file-purging policies, and dataset-moving commands are discussed.

**MEXPORT and MIMPORT:  
Transferring Data Between the  
Mass Storage System and Tape,**  
Version 1.2, December 1989,  
22 pages.

An updated version of the draft document originally released in December 1988. MEXPORT and MIMPORT are locally written COS commands that you can use to transfer your data on tape reels or cartridges to or from the Mass Storage System (MSS). This document explains how to move your data to or from the MSS via the CRAY X-MP/48 computer using 1/2-inch magnetic tapes, IBM 3480 cartridges, or EXAbyte cartridges. It also discusses a new parameter (OPTIONS).

**PSTRANS: A Utility for  
Transferring Files from  
PSTORE Datasets,** Version 1.0,  
September 1986, 5 pages

Describes how to use PSTRANS, a utility on the Cray COS computer that allows up to 50 specified files from a PSTORE dataset on the MSS to be transferred to specified directories on the MSS. PSTORE datasets were created on the TBM (the previous mass storage system).

**TBM Utilities: EOFILT,  
TBMCONV, and PSTRANS,**  
Version 1.0, September 1988,  
10 pages

Documents the use of EOFILT, TBMCONV, and PSTRANS, three locally written utilities that are used with the Ampex TBM, NCAR's previous mass storage system. EOFILT filters end-of-file marks into and out of PSTORE datasets. PSTRANS transfers up to 50 files from a PSTORE dataset on the MSS to specified directories on the MSS. TBMCONV allows the COS computer to read TBM volumes originally written by the CDC 7600.



## APPLICATIONS SOFTWARE

**Note:** In this section, SCD and non-SCD documents are grouped together, so you can easily see when both SCD and non-SCD documents are available for an applications software package. The documents are listed alphabetically, according to the name of the package. Reference copies are available for use in the Consulting Office, Room 17 of the Mesa Lab. On-line information about the applications software described on the following pages can be accessed on the Cray computer running COS (CRAY,CX) with the GETDOC utility. For more information about the GETDOC utility, see the SCD document, "Locally Developed Cray Utilities," described on page 5 of this catalog.

**Collected Algorithms of the ACM 1975-1979 and 1980-1984,**  
Version 1.2, April 1987, 29 pages

Provides an overview of the Association for Computing Machinery (ACM) software collection that is available at NCAR. The document briefly describes over 130 mathematical software algorithms. The description of each algorithm includes the NCAR classification category for the algorithm (as used in the *NCAR Software Catalog*), as well as references to full descriptions and where to look for more information.

**Distributed Software Libraries,**  
Version 1.1, March 1990,  
12 pages

Describes how to use the Distributed Software Libraries (dsl) utility to access most of NCAR's public domain software libraries, search for subprograms to solve your mathematical problems, and return the appropriate software or documentation to your home computer anywhere on the Internet. This document gives instructions for accessing and using dsl; it includes examples and a list of available commands. This document is also available online under the dsl utility's help menu.

**ECMFFT: Multiple Fast Fourier Transform Routines, Version 1.2, August 1987, 19 pages**

Describes how to use the real and complex transform routines in NCAR's ECMFFT library and how to obtain the source code for the nonproprietary versions of these routines. The document includes examples of simple working programs. ECMFFT is a binary library of real and complex Fast Fourier Transforms (FFT's) optimized for the Cray computers.

**EISPACK Matrix Eigensystem Routines—EISPACK Guide, ISBN 0-387-07546-1, \$30**

Describes a library that is primarily dedicated to finding eigenvalues and eigenvectors of matrices and matrix systems. EISPACK usage is explained in Volumes 6 and 51 of the Lecture Notes in Computer Science, which are published by Springer-Verlag. To order either of the EISPACK documents listed here, call Springer-Verlag at 1-800-526-7254 or write

**Matrix Eigensystem Routines—EISPACK Guide Extension, ISBN 0-387-08254-9, \$27.50**

Springer-Verlag New York, Inc.  
Order Department  
44 Hartz Way  
Secaucus, NJ 07094

**FISHPAK: A Package of Fortran Subprograms for the Solution of Separable Elliptic Partial Differential Equations, Version 2.0, March 1990, 8 pages**

Describes FISHPAK, a software library intended for users who are solving separable elliptic partial differential equations by direct methods. Several of the Fortran subroutines treat the Helmholtz equation in Cartesian, polar, cylindrical, and spherical coordinate systems. The new version contains information on accessing the FISHPAK binary and source libraries on the UNICOS and COS Cray computers, including via the new Distributed Software Libraries (dsl) utility. This document is also available online via anonymous FTP to windom.ucar.edu in the docs subdirectory. The filename is fishpak.

Also available online from anonymous FTP as fishpak

**FITPACK: A Software Package for Curve and Surface Fitting Employing Splines Under Tension, Version 1.0, September 1987, 22 pages**

Contains a preface that briefly describes the software features and provides instructions for accessing and using the FITPACK source code and binary library on NCAR's Cray computer. The rest of the document describes the routines for curve and surface fitting that use splines under tension. This document does not include argument descriptions; if you want to use FITPACK, you need to obtain the FITPACK manual that is described below.

**FITPACK**, 1983, 351 pages, \$30

Describes a library of software for curve and surface fitting employing splines under tension. The software fits data that represent any of the following kinds of mappings: a real function of one variable, a curve in the plane, a curve in three-dimensional space, a real function of two variables, and a surface. In the case of surface fitting, the data are required to be defined on a rectangular grid. You can order a copy of the manual from the author by calling (512) 345-7645 or writing

Dr. Alan Cline  
Pleasant Valley Software  
8603 Altus Cove  
Austin, TX 78759

**GBYTES and SBYTES**,  
Version 1.1, September 1988,  
7 pages

Describes how to use the GYBYTES, GBYTE, SBYTES, and SBYTE utilities. These utilities allow you to unpack or pack selected data from a record, independent of what computer formatted the data and what computer is reading it. Graphics have been incorporated to clearly demonstrate the resulting bit manipulation.

**IFTRAN Preprocessor**,  
Draft Version 2.0,  
April 1989, 27 pages

Offers guidance in using the IFTRAN preprocessor at NCAR. IFTRAN is Fortran-based, highly portable, and easier to write and read than basic Fortran. The document includes IFTRAN commands, statement and input formats, and information about using IFTRAN on several mainframe computers.

**The IMSL Complete Libraries Group**, Edition 10, April 1987,  
softcover set, \$37  
(CGLD-USM-PERFCT)  
3-ring binder set, \$105  
(CGLD-USM-3 ring)

Contains about 800 user entries for the International Mathematical and Statistical Library (IMSL) in three major groups: applied mathematics, statistics, and special functions. To order the IMSL manuals, call (713) 782-6060 or write

IMSL, Inc.  
Customer Relations  
2500 ParkWest Tower One  
2500 CityWest Boulevard  
Houston, TX 77042-3020

**The IMSL Libraries Edition 10.0 Update Guide**, November 1987, 71 pages

Assists users with the transition from the International Mathematical and Statistical Library (IMSL) Edition 9.2 to Edition 10.0. Tables in the appendix show which Edition 10.0 routine replaces each Edition 9.2 routine and indicate how the new routines differ from the old ones. The guide does not contain usage instructions, such as argument lists; for this reason, you should purchase the IMSL manuals if you use IMSL software frequently.

**An Introduction to Using SAS on NCAR's IBM 4381 Computer**, Version 2.1, January 1989, 29 pages

Describes how to use the Statistical Analysis System (SAS), a statistical analysis and data reporting package, on the IBM 4381 (IO) front-end computer under the Conversational Monitor System (CMS) Operating System. The document also contains reviews of selected SAS manuals, ordering information for manuals, and a sample SAS program.

**LINPACK Users' Guide**, 1979, \$30

Describes a library that analyzes and solves various systems of simultaneous linear algebraic systems. To order the guide, call the Society for Industrial and Applied Mathematics (SIAM) at 1-800-447-7426 or write

SIAM  
Customer Services  
1400 Architects Building  
117 South 17th Street  
Philadelphia, PA 19103-5052

**MUDPACK: Multigrid Software for Linear Elliptic Partial Differential Equations**, Version 2.0, February 1990, 18 pages

Explains how to use MUDPACK, a collection of Fortran subprograms that solve linear elliptic partial differential equations (PDEs) using multigrid iteration. This powerful technique solves two- and three-dimensional problems more efficiently than traditional methods. Changes from the previous version include the addition of a subroutine argument, the addition of new fourth-order solvers (allowing equivalencing to save storage when no error control is used), improved documentation, new names for the complex solvers, availability of all solvers in relocatable binary form, and numerous examples.

**NAG Fortran Library Manual,**  
Mark 12, March 1987,  
\$40 (microfiche)  
\$195 (hardcopy)

Contains over 1,000 Numerical Algorithms Group (NAG) library subroutines and functions. To order a microfiche or hardcopy of the manual, call (312) 971-2337 or write

NAG, Inc.  
Technical Sales  
1101 31st Street, Suite 100  
Downers Grove, IL 60515

**NCAR Software Catalog,**  
March 1986, 345 pages

Assists SCD computer users in locating specific Cray COS software routines. The catalog provides short descriptions of the applications that are contained in each software library available on the Cray computers. For detailed information about the routines, use the GETDOC utility to view the online documentation.

**ODEPACK Reprints, Version**  
1.0, March 1989, 18 pages

Contains two papers about ODEPACK by Dr. Alan C. Hindmarsh; ODEPACK is a collection of Fortran subprograms that solves the initial value problem for ordinary differential equation (ODE) systems.

**SSDLIN: A Collection of Out-**  
**of-core Linear Algebra**  
**Software, Version 2.0, May**  
1988, 22 pages

Contains information about using SSDLIN, a collection of out-of-core linear algebra routines, on NCAR's Cray COS computer. The routines are designed to take advantage of the extremely fast data transfer capabilities of the Solid-state Storage Device (SSD). The document includes both matrix subroutines and auxiliary I/O routines that facilitate the storage and retrieval of matrices.

**User's Guide to STARPAC:**  
**The Standard Time Series and**  
**Regression Package (STARPAC**  
Version 2.07), October 1987,  
300 pages

Explains how to use STARPAC, a library of Fortran subroutines for statistical data analysis developed by the Statistical Engineering Division of the National Institute for Standards and Technology (formerly the National Bureau of Standards), Boulder, Colorado. Available on NCAR's CRAY COS computer.

**Using POLISH on the NCAR**  
**Cray Computers, Version 1.0,**  
September 1986, 39 pages

Explains how to use POLISH, which is designed to enhance the readability of existing programs written in FORTRAN 77, on NCAR's Cray computers. The document covers formatting features and error diagnostics.

## GRAPHICS

**CONBND: A Routine to Shade Contour Plots**, Version 1.0, September 1983, 10 pages

Discusses CONBND, a pre-Graphical Kernel System (GKS) routine used to shade contour plots. This document describes the routine, its usage, arguments, history, and algorithm and gives examples of how to use CONBND, which is used in conjunction with FILL.

**Converting Pre-GKS NCAR Graphics to NCAR Graphics Version 3.00**, Version 1.1, April 1990, 43 pages

Provides a guide for converting program units that use the FORTRAN 66 NCAR System Plot Package (NSPP) and the FORTRAN 66 higher-level utilities to program units that use the Graphical Kernel System (GKS) and the FORTRAN 77 higher-level utilities in the Version 3.00 release of NCAR Graphics. This revised version of the document includes a new section on addressing systems, a list of common problems user have encountered during conversion, and an index.

**ctrans: NCAR View CGM Translator**, August 1989, 24 pages

Describes usage of the ctrans Computer Graphics Metafile (CGM) translator available with Version 3.00 of NCAR Graphics. The document is intended for users familiar with the C programming language and the UNIX operating system.

**FILL: A Set of Routines to Fill Polygonal Areas**, Version 1.0, May 1982, 11 pages

Summarizes FILL, a set of graphics subroutines used to fill polygonal portions of a plotter frame with parallel lines. The document discusses the use, required access method, and steps involved in resetting various parameters to determine how the filling is done. A set of example programs is included.

**GFLASH—A Graphics Instruction Manipulation Package**, Version 1.0, March 1989, 9 pages

Discusses a new package of Fortran subroutines that provide a limited picture segmentation capability. GFLASH captures a set of graphics instructions in a dataset and can be used to insert these instructions into any subsequent picture, making it unnecessary to regenerate the instructions. A classic use of this capability is in making movies. GFLASH routines (with one exception) can be used with any Graphical Kernel System package that is level 2A or higher.

**A Guide to the Production of Computer-generated Films at NCAR, Version 2.0, July 1988, 14 pages**

Explains all aspects of scientific film production at NCAR. Although the software and hardware described are those available at NCAR, the film-making procedures addressed in the guide may closely parallel those at sites with different configurations. This guide is intended for use with the "old" NCAR Graphics package, which is the pre-Graphical Kernel System version on NCAR's Cray COS computer.

**NCAR Computer Graphics Metafile Format Reference Guide, Version 1.0, April 1990, 5 pages**

Describes the NCAR implementation of the Computer Graphics Metafile (CGM) standard. The NCAR CGM is a private encoding of the Binary Encoding described in the CGM standard defined by the American National Standards Institute (ANSI) and the International Standards Organization (ISO). This reference guide briefly describes record formatting and NCAR datatypes, then provides a list of the CGM standard elements that can be both generated by the NCAR GKS packages and interpreted by the NCAR CGM translator.

**NCAR Graphics Guide to New Utilities, Version 3.00, October 1989 (508 pages)**

Describes seven new utilities in NCAR Graphics Version 3.00. Includes new information on using color, a color chart for use with NCAR's Dicomed film recorder, samples of recent scientific applications of the new utilities, and examples of individual utilities. Users may also need the *NCAR Graphics User's Guide, Version 2.00* and *AUTOGRAPH: A Graphing Utility, Version 2.00*, described below.

*For information about ordering the GKS NCAR Graphics software package and the associated four documents, call (303) 497-1201 or write*

*NCAR  
SCD/Graphics Distribution  
P.O. Box 3000  
Boulder, CO 80307-3000*

**The NCAR Graphics System (pre-GKS),** May 1983, 650 pages

Describes the SCD Graphics System. The set of six documents consists of *An Introduction to the SCD Graphics System*, an overview of the system; *The System Plot Package*, a complete description of basic plotting routines and their associated calls and parameters. This graphics system is a pre-Graphical Kernel System (GKS) version.

**NCAR Graphics User's Guide, Version 2.00,** August 1987, 650 pages

Includes steps for converting code from the NCAR System Plot Package to NCAR Graphics, instructions on using the NCAR System Plot Package Simulator (SPPS), and details of using 28 graphics utilities, some of which are superseded by new utilities documented in *NCAR Graphics Guide to New Utilities, Version 3.00*. The Version 2.00 manual features 230 pages of examples.

**AUTOGRAPH: A Graphing Utility, Version 2.00,** August 1987, 213 pages

Describes the utility that enables users to draw graphs with a labeled background and one or more curves.

**NCAR Metafile Utilities: MFEDIT, MFMERGE, MFSPLIT, and PLTCONV,** Version 1.0, November 1988, 10 pages

Provides various methods of editing NCAR-generated metafiles (datasets of encoded graphics instructions) on the Cray computer. Details the usage of these manipulation utilities for metafiles produced by both the NCAR GKS (Graphical Kernel System) and the NCAR pre-GKS Graphics Package.

**Note:** The manufacturer of SCD's online film recorders has changed the recommended form of its name to Dicomed. Some of these document titles still show the previously recommended form that uses all uppercase letters.

**NCAR Raster Interchange Format and TAGS Raster Reference Manual, Draft** Version 1.1, April 1990, 34 pages

Describes the native and encapsulated NRIF formats and some of the ways they can be used to produce raster output at NCAR. This document also explains the various ways you can define color in NRIF files and tells how NRIF files are mapped on the Dicomed film recorders attached to the Text and Graphics System.



**NCAR View—A CGM Translation and Manipulation Package (NCAR View Version 3.00)**, December 1989, 13 pages

Describes NCAR View Version 3.00. NCAR View facilitates the viewing of graphical objects created with NCAR Graphics on UNIX workstations. Includes a list of key concepts, a description of the required workstation environment, examples for interactive and non-interactive use, and instructions for printing output.

**Sending Graphics Metacode Files to the Xerox 4050 Laser Printers**, Version 1.1, July 1988, 11 pages

Intended for users who want to print graphical output on the Xerox 4050 laser printers. This document describes how to send graphics metacode files to be processed and printed on the Xerox laser printers from the Cray COS, IBM 4381 (IO), and SCD UNIX front-end computers. It includes descriptions of the available options and provides examples.

**Text and Graphics System Reference Manual**, Version 1.4, April 1990, 47 pages

Describes the Text and Graphics System, a combination of hardware and software that replaces both DOOS and SUDOOS. This reference manual replaces the alpha and beta test draft versions. This manual explains all TAGS parameters, including ways to customize your output format, and describes special considerations for film output. Appendixes provide hints on using color and instructions for customizing the placement of images in film frames.

**Transferring Binary Metafiles to VAX/VMS Systems**, Version 1.0, November 1988, 5 pages

Also available online from anonymous FTP as [vax.binary.conv](ftp://vax.binary.conv)

Discusses how to transfer binary metafiles to VAX/VMS systems for users of both pre-Computer Graphics Metafile (CGM) NCAR metafiles and NCAR CGM metafiles. Because of operating system differences, metafiles may have to be reformatted after they reach the VAX/VMS system. This document contains instructions on how to obtain executable code through an "anonymous FTP (File Transfer Protocol)" to perform these and other file transformations.

**The Use of X/Y Coordinates in NCAR Graphics**, Version 1.0, April 1990, 24 pages

Provides detailed information about the coordinate systems used in NCAR Graphics. It includes diagrams to explain the window and viewport concepts and contains an example that shows mirror imaging and log scaling. The document describes the routine SET in detail and lists the SET calls done by each utility.

**User's Guide for NCAR  
GKS-0A Graphics, Draft  
Version 1.0, June 1990,  
40 pages**

Describes the Fortran subroutines for a subset of the NCAR Graphical Kernel System (GKS) 0A routines that are most commonly used in conjunction with the NCAR Graphics package utilities. Functions discussed include opening and closing GKS, setting coordinate systems, designating types of graphic and text output, and selecting color representations. Some NCAR Graphics System Plot Package Simulator calls that provide additional functions not found in GKS are also discussed, as well as numerous examples and hints for avoiding common pitfalls.

**Using NCAR Graphics in a  
UNIX Environment (NCAR  
Graphics—UNIX Version 3.00),  
December 1989, 11 pages**

Provides a basic explanation and examples of the steps involved in programming with NCAR Graphics in a UNIX environment: compiling, linking, and running programs that use NCAR Graphics; and viewing the resulting graphics on terminals, workstations, and printers. This document is pertinent to the UNIX Version of NCAR Graphics only.

**Using the Text and Graphics  
System from the COS Cray  
Computer, Version 1.3, April  
1990, 29 pages**

Describes TAGS access from your job running on the COS Cray computer and how to process graphics files and ASCII text on black-and-white film, color film, and fiche. This document replaces the alpha and beta test draft versions; it provides examples and explains the most commonly used parameters.

**Using the Text and Graphics  
System from UNIX and  
UNICOS Computers, Version  
1.4, April 1990, 35 pages**

Describes TAGS access from UNIX and UNICOS computers and how to process graphics files and ASCII text on black-and-white film, color film, and fiche. This document replaces the alpha and beta test draft versions; it provides examples and explains the most commonly used parameters.

**Using the Text and Graphics  
System via the  
MASnet/Internet Gateway  
Server, Version 1.3, April 1990,  
33 pages**

Describes TAGS access via MIGS and how to process graphics files and ASCII text on black-and-white film, color film, and fiche. This document replaces the alpha and beta text draft versions; it provides examples and explains the most commonly used parameters.

## UNIX

**Elementary UNIX, Draft**  
Version 1.1, January 1990,  
19 pages

Explains the fundamentals of UNIX and provides a description of the most important UNIX commands that users of the CRAY Y-MP at NCAR will need to get started computing with UNICOS.

---

## NETWORKING AND DATA COMMUNICATIONS

---

**Asynchronous Communi-  
cations Packages for PC Users,**  
Version 1.0, May 1989, 4 pages

Discusses SCD-supported data communications packages for personal computer (PC) users who use asynchronous communications to access NCAR computing facilities.

**FAL User's Guide, Version 1.0,**  
July 1989, 35 pages

Also available online  
from anonymous FTP  
as `FAL.userguide`

Describes the IBM 5798-FAL TCP/IP for VM product that allows communication between IBM and non-IBM computers. The user's guide explains how to use the Transmission Control Protocol/Internet Protocol (TCP/IP) services of FAL. These services include logging onto a remote computer (TELNET) and transferring files between computers (FTP). An appendix contains information about sending mail. The document provides instructions for IBM VM/CMS users to communicate with non-IBM systems, explains how non-IBM system users can communicate with VM/CMS, and describes how users can communicate between IBM VM/CMS systems using FAL.

**Glossary of Networking Terms  
and Acronyms, Version 1.0,**  
August 1989, 16 pages

Also available online  
from anonymous FTP  
as `network.terms`

Provides informal definitions and other useful information about networking terms and acronyms that are common in the NCAR computing environment. This document is also available online from the anonymous FTP account on the computer named `windom.ucar.edu`.

**KNET TCP/VM User's Guide**,  
January 1988, 160 pages

KNET TCP/VM allows an IBM VM/SP operating system to communicate with IBM and non-IBM computers. The user's guide explains how to use the Transmission Control Protocol/Internet Protocol (TCP/IP) services of KNET. These services include logging onto a remote computer (TELNET), transferring files between computers (FTP and TFTP), and sending or receiving mail (SMTP). The document provides instructions for IBM VM/CMS users to communicate with non-IBM systems, explains how non-IBM system users can communicate with VM/CMS, and describes how users can communicate between IBM VM/CMS systems using KNET. (This manual was written by Spartacus, Inc. and distributed by SCD.)

**MICROCOM AX/9624c User Documentation**, Version 1.0,  
March 1989, 3 pages

Provides instructions for connecting to the 9600 bps modems that are installed on rotary phone lines at NCAR and documents the correct switch configurations and software settings necessary for communications. Purchasing information for NCAR-compatible 9600 bps modems is also given.

**MIGS: MASnet/Internet Gateway Server Reference Manual**, Version 2.0, March 1990, 78 pages

Describes MIGS, a combination of hardware and software that allows access to the NCAR Mainframe and Server Network (MASnet) from computers attached to the Internet. MIGS provides an easy way to access the Cray computers, the Text and Graphics System, and the Mass Storage System, as well as other components of the NCAR computing environment. This reference manual describes how to use MIGS from both your local system and from MASnet systems; it documents all parameters and provides examples. Version 2.0 contains significant changes and new material.

**MIGS: MASnet/Internet Gateway Server Remote System Administrator's Guide**, Draft  
Version 1.1, August 1988,  
25 pages

Describes how to install MIGS at your local site. This document contains information on how to establish security and how to modify the MIGS defaults to meet your local site needs. Special sections cover UNIX and VMS implementation. This document is for use by local MIGS systems administrators, not users. It is a supplement to "MIGS: MASnet/Internet Gateway Server User's Guide."

**MIGS: MASnet/Internet Gateway Server User Guide**, Version 1.1, May 1990, 26 pages

Contains an introduction to MIGS, instructions for accessing MIGS from the Internet, a table of MIGS verbs and their parameters, and descriptions and examples for each MIGS verb. Also includes the "**MIGS Quick Reference**."

**RSCS: The Remote Spooling Communications Subsystem**, Version 1.0, May 1988, 31 pages

Describes RSCS, a single-purpose operating system for a virtual machine on the IBM 4381 (IO) front-end computer. RSCS is used for remote batch job entry to the Cray computers at NCAR and file routing to remote printers.

**Telenet Logon Procedure for IBM 4381 Users**, Version 1.0, December 1989, 12 pages

Describes how to access the IBM 4381 (IO) front-end computer or other divisional computers using Telenet. Telenet is a public, nationwide, packet-switching network available in most cities.

**UNIX Mail Hints**, Version 1.0, May 1988, 7 pages

Includes information on saving and replying to messages, forwarding mail, using aliases, editing and sending files, and using set commands to alter your mail environment. The document also contains a quick reference guide of mail commands.

**Using FTP for File Transfer at NCAR**, Version 1.0, April 1989, 17 pages

Covers basic FTP concepts, tells how to establish an Internet connection via FTP, and discusses subcommands for file transfer. This document also shows how to use "anonymous FTP" to make information needed by a widespread audience readily available.

**Using the NCAR E-mail System**, Version 1.0, March 1989, 22 pages

Discusses sending e-mail from and to NCAR via SPAN (Space Physics Analysis Network), BITNET (Because It's Time Network), UUCP (UNIX-to-UNIX Copy), CSNET (Computer and Science Network), and Telemail/Omnet. This document covers basic address syntax and describes how to use the query/change software to look up addresses.

**Using the NCAR Internet Remote Job Entry System,**  
Version 3.0, June 1990,  
48 pages

Also available online from  
anonymous FTP as `irje`

Explains how university users can use IRJE to submit jobs directly from their local host computers to the Cray computers, the Mass Storage System (MSS), the Text and Graphics System (TAGS), and the laser printers at NCAR. The documentation for access to the MSS, TAGS, and the laser printers is new in this version. Also includes the "IRJE Quick Reference."

**Using TN3270 at NCAR,**  
Version 1.0, September 1989,  
4 pages

Provides information about using the TN3270 program to provide 3270 emulation for connection to NCAR's IBM 4381 (IO) front-end computer. For users connecting to FAL (the IBM 4381's new TCP/IP communications package), TN3270 or an equivalent package is required. Systems that support TN3270 include computers running Berkeley UNIX, IBM PCs or clones running DOS, Macintosh computers, and VAX/VMS systems using Wollongong TCP/IP software.

**Using vttool and vtem,**  
Version 1.1, April 1990, 9 pages

Describes how `vttool` can be used in conjunction with `vtem` to provide vt100 terminal emulation from within the SunView window environment. `Vtem` is a vt100 terminal emulator based on the entry in the termcap database (`/etc/termcap`). `Vttool` maps mouse-driven function keys to ASCII sequences to be used by `vtem`. `Vttool`'s most valuable purpose is for those who want to communicate via non-Ethernet media, such as modems or PACX lines to the IBM 4381 (IO) front-end computer or other NCAR systems.

**The X Window System at NCAR, Draft Version 1.0,**  
December 1989, 49 pages

Introduces the X Window system (Version 11, Release 3), including the default NCAR X11 environment, the `xterm` terminal emulator, and the `twm` window manager. It also discusses basic terminology and usage on Sun workstations. A few guidelines for tailoring your X11 environment are also included.

## Terminal Emulators for IBM-compatible PCs

**EM4010/Kermit V3.54-2.56:  
Direct Connection with the  
IBM 4381 Computer, Version  
1.0, May 1989, 20 pages**

Describes the parameters that need to be set for direct connection access to the IBM 4381 (IO) front-end computer using EM4010. Explains how to log on to the IBM 4381 (IO) computer to initiate an interactive session. The document also contains a description of how to use the Kermit file transfer protocol with EM4010 and provides information on the graphics mode of EM4010.

**EM4010/Kermit V3.54-2.56:  
Remote Access to the IBM 4381  
Computer, Version 1.0, May  
1989, 20 pages**

Describes the parameters that need to be set for Telenet access to the IBM 4381 (IO) front-end computer using EM4010. Describes how to use the file transfer protocol Kermit with EM4010. This document also provides information on the graphics mode of EM4010. To log on from a remote site, you need to read the document, "Telenet Logon Procedure" in conjunction with this document.

**EM4105/Kermit V3.53-1.65:  
Direct Connection with the  
IBM 4381 Computer, Version  
1.0, June 1989, 20 pages**

Describes the parameters that need to be set for direct connection access to the IBM 4381 (IO) front-end computer using EM4010. Explains how to log on to the IBM 4381 (IO) computer to initiate an interactive session. The document also contains a description of how to use the Kermit file transfer protocol with EM4010 and provides information on the graphics mode of EM4010.

**EM4105/Kermit V3.53-1.65:  
Remote Access to the IBM 4381  
Computer, Version 1.0, June  
1989, 20 pages**

Describes the parameters that need to be set for Telenet access to the IBM 4381 (IO) front-end computer using EM4010. Describes how to use the file transfer protocol Kermit with EM4010. This document also provides information on the graphics mode of EM4010. To log on from a remote site, you need to read the document, "Telenet Logon Procedure" in conjunction with this document.

**MS-DOS Kermit V2.32: Direct Connection with the IBM 4381 Computer**, Version 1.0, May 1989, 7 pages

Describes the parameters you need for direct connection access to the IBM 4381 (IO) front-end computer using MS-DOS Kermit V2.32. Also describes how to use the Kermit file transfer protocol between MS-DOS Kermit V2.32 and CMS Kermit. This document also provides information on the graphics mode of Kermit.

**MS-DOS Kermit V2.32: Remote Access to the IBM 4381 Computer**, Version 1.0, May 1989, 7 pages

Explains the parameters that need to be set for Telenet access to the IBM 4381 (IO) front-end computer when using MS-DOS Kermit V2.32. Describes how to use the Kermit file transfer protocol between MS-DOS Kermit V2.32 and CMS Kermit. In order to log on from a remote site, you also need to read the document, "Telenet Logon Procedure" in conjunction with this document. This document also provides information on the graphics mode of Kermit.

**Procomm V2.4.3: Direct Connection with the IBM 4381 Computer**, Version 1.0, July 1989, 13 pages

Explains parameter settings for direct connection access to the IBM 4381 (IO) front-end computer using Procomm V2.4.3. This document also describes how to use the Kermit file transfer protocol using Procomm V2.4.3.

**Procomm V2.4.3: Remote Access to the IBM 4381 Computer**, Version 1.0, July 1989, 13 pages

Explains parameter settings for Telenet access to the IBM 4381 (IO) front-end computer using Procomm V2.4.3. Describes how to use the Kermit file transfer protocol using Procomm V2.4.3. The document, "Telenet Logon Procedure," should be used in conjunction with this document to log on from a remote site.

**PROCOMM PLUS V1.1B: Direct Connection with the IBM 4381 Computer**, Version 1.0, August 1989, 21 pages

Explains parameter settings for direct connection access to the IBM 4381 (IO) front-end computer using PROCOMM PLUS V1.1B. This document also describes how to use the Kermit file transfer protocol using PROCOMM PLUS V1.1B.



**PROCOMM PLUS V1.1B: Remote Access to the IBM 4381 Computer**, Version 1.0, August 1989, 21 pages

Explains parameter settings for Telenet access to the IBM 4381 (IO) front-end computer using PROCOMM PLUS V1.1B. Describes how to use the Kermit file transfer protocol using PROCOMM PLUS V1.1B. The document "Telenet Logon Procedure" should be used in conjunction with this document to log on from a remote site.

**Yterm: Direct Connection with the IBM 4381 Computer**, November 1989

Describes the parameters that need to be set for direct connection access to the IBM 4381 (IO) front-end computer using Yterm. This document also explains how to log on to the IBM 4381 (IO) computer, how to use the PCTTRANS file transfer protocol, and how to use the TPRINT printing functions.

**Yterm: Remote Access to the IBM 4381 Computer**, November 1989

Explains how to set the parameters for Telenet access to the IBM 4381 (IO) front-end computer using Yterm. Provides information on how to log on to the IBM 4381 (IO) computer, how to use the PCTTRANS file transfer protocol, and how to use the TPRINT printing functions. This document should be used in conjunction with the document "Telenet Logon Procedure" to log on from a remote site.

**YTERM 1.3 User's Guide**, Version 1.3, May 1985, 31 pages

Provides information on YTERM, a package of system services and terminal emulation software for the IBM Personal Computer family. The guide describes the general use of YTERM as well as the hardware and software needed to use the package. In addition, it discusses keyboard tables, file transfers, session logging, and monitoring of terminal traffic. (This document was written by Yale Computer Center.)

## Terminal Emulators for Apple Macintosh Computers

**VersaTerm V3.20: Direct Connection with the IBM 4381 Computer**, Version 1.0, November 1989, 4 pages

Describes how to use the VersaTerm terminal emulator access to the IBM 4381 (IO) front-end computer at NCAR. Explains how to enter and exit VersaTerm, parameter settings for VersaTerm, use of the Kermit file transfer protocol, and using VersaTerm V3.20 for graphics emulation.

**VersaTerm V3.20: Remote Access to the IBM 4381 Computer**, Version 1.0, November 1989, 4 pages

Describes the parameters that need to be set for Telenet access to the IBM 4381 (IO) front-end computer using VersaTerm. Also explains how to enter and exit VersaTerm, parameter settings for VersaTerm, use of the Kermit file transfer protocol, and using VersaTerm V3.20 for graphics emulation.

## **ADDITIONAL TOPICS**

---

**Acronyms and Terms Frequently Used in the SCD Computing Environment**, Version 1.0, November 1988, 12 pages

Contains the most frequently used acronyms and terms in use in the SCD computing environment. Entries are listed alphabetically. An appendix that discusses abbreviations for commonly used computing units is included.

Also available online from anonymous FTP as **acronyms**

**Charges for SCD Computing Resources**, Version 6.0, June 1990, 18 pages

Provides the charging formulas that are used to compute General Accounting Unit (GAU) charges for using the computing resources in SCD. The document contains the charging formulas for using the Cray computers and the IBM 4381 (IO) front-end computer, Mass Storage System and Text and Graphics System use, and Xerox 4050 laser printer output. (Cray Y-MP charging information available late June 1990.)

Also available online from anonymous FTP as **charges.gau**

**Data Availability at NCAR**, June 1989, 45 pages

Summarizes the datasets available from the SCD Data Support Section. Data can be copied on tape at cost, or they can be used online at NCAR by those who have an NCAR computing project number. Datasets include daily analyses, geophysical data, cloud data, climatologies, paleoclimate data, and many other types of data for use in numerical experiments in the atmospheric and oceanic sciences. Additional references are cited.

**Data Sets for Meteorological Research**, July 1975, 194 pages

Contains information about various datasets that are available for meteorological and oceanographic research and gives basic information about the data or types of data. A list of addresses and a bibliography in the back of the manual provide sources of additional information.

**index**

Index of *SCD Computing News* articles from the past 12 months.

Available online from anonymous FTP

**README**

List of SCD documentation files contained in **docs** subdirectory which appear online.

Available online from anonymous FTP

**scdug.mon**

Minutes of the SCD User's Group meeting for the indicated month, where "mon" is replaced by the month (for example, *scdug.jan*).

Available online from anonymous FTP

**userdoc.catalog**, June 1990

User Documentation Catalog

Available online from anonymous FTP

# SCD ONLINE DOCUMENTS

---

## Anonymous FTP

Below is a list of documents available on anonymous FTP from the computer called windom.ncar.ucar.edu. For instructions on obtaining these files, see page 1.

### Cray Computers

`sed`—Conversion of EDITOR commands using `sed`, May 1990

### Applications Software

`fishpak`—FISHPAK: A Package of Fortran Subprograms for the Solution of Separable Elliptic Partial Differential Equations, Version 2.0, March 1990

### Graphics

`vax.binary.conv`—Transferring Binary Metafiles to VAX/VMS Systems, Version 1.0, November 1988

### Networking and Data Communications

`FAL.userguide`—FAL User's Guide, Version 1.0, July 1989

`network.terms`—Glossary of Networking Terms and Acronyms, Version 1.0, August 1989

`irje`—Using the NCAR Internet Remote Job Entry System, Version 3.0, June 1990

### Additional Topics

`README`—List of SCD documentation files contained in docs subdirectory which appear online.

`acronyms`—Acronyms and Terms Frequently Used in the SCD Computing Environment, Version 1.0, November 1988

`charges.gau`—Charges for SCD Computing Resources, Version 6.0, June 1990

`index`—Index of *SCD Computing News* articles from the past 12 months.

`scdug.mon`—Minutes of the SCD User's Group meeting for the indicated month, where "mon" is replaced by the month (for example, `scdug.jan`)

`userdoc.catalog`—User Documentation Catalog, June 1990

## Man Pages and Online Documentation on shavano

All user commands, system calls, libraries, and special files on the CRAY Y-MP8/864 running UNICOS (shavano) are available as online manual pages. In addition, SCD has installed numerous local online documents on shavano to give you conversion hints, recent updates, and information about local features. A local **hints** command has been installed for accessing these documents. To obtain a list of available locally written online documents on shavano, at the prompt type:

```
% hints gettingstarted
```

You may also use the **hints** command to search for keywords if you are unsure of the filename but have a specific topic in mind. You use the **-k** option (similar to the **-k** option for **man** pages) as follows:

```
% hints -k search_topic
```

Consult the **man** page for further instructions.

# ACRONYMS AND TERMS

---

## Computing

ASCII—American Standard Code for Information Interchange  
COS—Cray Operating System  
CRAY,CX—CRAY X-MP/48 computer at NCAR  
Dicomed—Online graphic recorder used at NCAR for producing graphical output  
on various sizes of film  
FFT—Fast Fourier Transform  
GKS—Graphical Kernel System  
EXEC—Executable program on the IBM 4381 (IO) front-end computer  
IMSL—International Mathematical and Statistical Library  
IRJE—Internet Remote Job Entry  
JCL—Job Control Language  
MASnet—Mainframe And Server Network  
MIGS—MASnet/Internet Gateway Server  
MSS—Mass Storage System at NCAR  
NAG—Numerical Algorithms Group  
PACX—Private Automatic Computer Exchange  
PERFMON—Performance Monitor utility  
RSCS—Remote Spooling Communications Subsystem  
SAS—Statistical Analysis System  
SLATEC—Software library developed by Sandia National Laboratory, Los  
Alamos National Laboratory, and the Air Force Weapons Laboratory  
Technical Exchange Committee  
SMTP—Simple Mail Transfer Protocol  
SPPS—System Plot Package Simulator, part of NCAR Graphics  
SSD—Cray Solid-state Storage Device on the CRAY X-MP computer  
TAGS—Text and Graphics System  
TBM—TeraBit Memory, the previous mass storage system at NCAR  
UNICOS—UNIX-based Cray Operating System  
VM/CMS—Virtual Machine/Conversational Monitor System  
VM/SP—Virtual Machine/System Product

## Organizations

ACM—Association for Computing Machinery  
ECMWF—European Centre for Medium-range Weather Forecasts  
EPA—Environmental Protection Agency  
NCAR—National Center for Atmospheric Research  
SCD—NCAR Scientific Computing Division  
SIAM—Society for Industrial and Applied Mathematics  
UCAR—University Corporation for Atmospheric Research

# SCD DOCUMENTATION ORDER FORM

---

The Scientific Computing Division (SCD) provides the following documents for NCAR/SCD computer users free of charge. To order documents, check the titles you want, then provide your name and shipping address in the space at the end of this form. If you have questions about the content of a document, please call the SCD Consulting Office at (303) 497-1278. Documents are listed alphabetically.

## Introductory

- New User Orientation Student Guide, Version 4.0, September 1989
- The Primer, Version 2.2, October 1988
- The UNICOS Primer, Draft Version 1.1, June 1990
- User Documentation Catalog, April 1990

## Cray Computers

- Cray Job Control Language with NCAR Site-specific Parameters, Version 3.0, February 1990
- COS-UNICOS Conversion Guide, Draft Version 1.1, January 1990
- EDITOR, Version 1.0, July 1988
- How to Recover and Restart Your Cray Job, Version 1.0, November 1987
- ICJOB on the CRAY X-MP: A Subset of VMSTA, Version 1.0, July 1985
- Locally Developed Cray COS Utilities, Version 2.0, September 1989
- PERFMON: The Cray Performance Monitor Utility, Version 2.0, March 1989
- SEGLDR: The CRAY X-MP Segment Loader, Version 1.1, November 1986
- SPY: A Timing Information Utility, Version 2.0, May 1989
- Using the Cray Solid-state Storage Device at NCAR, Version 2.1, August 1988

## IBM Computers

- The NCAR IBM 4341 Gateway Computers, February 1986
- Writing and Debugging Fortran Programs on the IBM 4381 Computer, Version 1.0, March 1987

## Input/Output

- Using the Xerox 4050 Laser Printers from the Cray and IBM 4381 Computers, Version 1.0, September 1986

## Mass Storage System

- IBM Utilities for Accessing the Mass Storage System, Version 1.0, April 1986
- Mass Storage System File Maintenance from the Cray Computers, Version 2.0, December 1986
- The Mass Storage System, Version 2.0, August 1986
- MEXPORT and MIMPORT: Transferring Data Between the Mass Storage System and Tape, Version 1.2, December 1989

- PSTRANS: A Utility for Transferring Files from PSTORE Datasets, Version 1.0, September 1986
- TBM Utilities: EOFILT, TBMCONV, and PSTRANS, Version 1.0, September 1988

## Applications Software

- Collected Algorithms of the ACM 1975-1979 and 1980-1984, Version 1.2, April 1987
- Distributed Software Libraries, Version 1.1, March 1990
- ECMFFT: Multiple Fast Fourier Transform Routines, Version 1.2, August 1987
- FISHPAK: A Package of Fortran Subprograms for the Solution of Separable Elliptic Partial Differential Equations, Version 2.0, March 1990
- FITPACK: A Software Package for Curve and Surface Fitting Employing Splines Under Tension, Version 1.0, September 1987
- GBYTES and SBYTES, Version 1.1, September 1988
- IFTRAN Preprocessor, Draft Version 2.0, April 1989
- The IMSL Libraries Edition 10.0 Update Guide, November 1987
- An Introduction to Using SAS on NCAR's IBM 4381 Computer, Version 2.1, January 1989
- MUDPACK: Multigrid Software for Linear Elliptic Partial Differential Equations, Version 2.0, February 1990
- NCAR Software Catalog, March 1986
- ODEPACK Reprints, Version 1.0, March 1989
- SSDLIN: A Collection of Out-of-core Linear Algebra Software, Version 2.0, May 1988
- User's Guide to STARPAC: The Standard Time Series and Regression Package (STARPAC Version 2.07), October 1987
- Using POLISH on the NCAR Cray Computers, Version 1.0, September 1986

## Graphics

- CONBND: A Routine to Shade Contour Plots, Version 1.0, September 1983
- Converting Pre-GKS NCAR Graphics to NCAR Graphics Version 3.00, Version 1.1, April 1990
- ctrans: NCAR View CGM Translator, August 1989
- FILL: A Set of Routines to Fill Polygonal Areas, Version 1.0, May 1982
- GFLASH—A Graphics Instruction Manipulation Package, Version 1.0, March 1989
- A Guide to the Production of Computer-generated Films at NCAR, Version 2.0, July 1988
- NCAR Computer Graphics Metafile Format Reference Guide, Version 1.0, April 1990
- The NCAR Graphics System (pre-GKS), May 1983
- NCAR Metafile Utilities: MFEDIT, MFMERGE, MFSPLIT, and PLTCONV, Version 1.0, November 1988
- NCAR Raster Interchange Format and TAGS Raster Reference Manual, Draft Version 1.1, April 1990
- NCAR View—A CGM Translation and Manipulation Package (NCAR View Version 3.00), December 1989



- Sending Graphics Metacode Files to the Xerox 4050 Laser Printers, Version 1.1, July 1988
- Text and Graphics System Reference Manual, Version 1.4, April 1990
- Transferring Binary Metafiles to VAX/VMS Systems, Version 1.0, November 1988
- The Use of X/Y Coordinates in NCAR Graphics, Version 1.0, April 1990
- User's Guide for NCAR GKS-0A Graphics, Draft Version 1.0, June 1990
- Using NCAR Graphics in a UNIX Environment (NCAR Graphics—UNIX Version 3.00), December 1989
- Using the Text and Graphics System from the COS Cray Computer, Version 1.3, April 1990
- Using the Text and Graphics System from UNIX and UNICOS Computers, Version 1.4, April 1990
- Using the Text and Graphics System via the MASnet/Internet Gateway Server, Version 1.3, April 1990

## **UNIX**

- Elementary UNIX, Draft Version 1.1, January 1990

## **Networking and Data Communications**

- Asynchronous Communications Packages for PC Users, Version 1.0, May 1989
- FAL User's Guide, Version 1.0, July 1989
- Glossary of Networking Terms and Acronyms, Version 1.0, August 1989
- "IRJE Quick Reference"
- KNET TCP/VM User's Guide, January 1988
- MICROCOM AX/9624c User Documentation, Version 1.0, March 1989
- MIGS: MASnet/Internet Gateway Server Reference Manual, Version 2.0, March 1990
- MIGS: MASnet/Internet Gateway Server Remote System Administrator's Guide, Draft Version 1.1, August 1988
- MIGS: MASnet/Internet Gateway Server User Guide, Version 1.1, May 1990
- "MIGS Quick Reference"
- RSCS: The Remote Spooling Communications Subsystem, Version 1.0, May 1988
- Telenet Logon Procedure for IBM 4381 Users, Version 1.0, December 1989
- UNIX Mail Hints, Version 1.0, May 1988
- Using FTP for File Transfer at NCAR, Version 1.0, April 1989
- Using the NCAR E-mail System, Version 1.0, March 1989
- Using the NCAR Internet Remote Job Entry System, Version 3.0, June 1990
- Using TN3270 at NCAR, Version 1.0, September 1989
- Using vttool and vtem, Version 1.1, April 1990
- The X Window System at NCAR, Draft Version 1.0, December 1989

## **Terminal Emulators for IBM-compatible PCs**

- EM4010/Kermit V3.54-2.56: Direct Connection with the IBM 4381 Computer, Version 1.0, May 1989
- EM4010/Kermit V3.54-2.56: Remote Access to the IBM 4381 Computer, Version 1.0, May 1989

- EM4105/Kermit V3.53-1.65: Direct Connection with the IBM 4381 Computer, Version 1.0, June 1989
- EM4105/Kermit V3.53-1.65: Remote Access to the IBM 4381 Computer, Version 1.0, June 1989
- MS-DOS Kermit V2.32: Direct Connection with the IBM 4381 Computer, Version 1.0, May 1989
- MS-DOS Kermit V2.32: Remote Access to the IBM 4381 Computer, Version 1.0, May 1989
- Procomm V2.4.3: Direct Connection with the IBM 4381 Computer, Version 1.0, July 1989
- Procomm V2.4.3: Remote Access to the IBM 4381 Computer, Version 1.0, July 1989
- PROCOMM PLUS V1.1B: Direct Connection with the IBM 4381 Computer, Version 1.0, August 1989
- PROCOMM PLUS V1.1B: Remote Access to the IBM 4381 Computer, Version 1.0, August 1989
- Yterm: Direct Connection with the IBM 4381 Computer, November 1989
- Yterm: Remote Access to the IBM 4381 Computer, November 1989
- Yterm 1.3 User's Guide, Version 1.3, May 1985

#### **Terminal Emulators for Apple Macintosh Computers**

- VersaTerm V3.20: Direct Connection with the IBM 4381 Computer, Version 1.0, November 1989
- VersaTerm V3.20: Remote Access to the IBM 4381 Computer, Version 1.0, November 1989

#### **Additional Topics**

- Acronyms and Terms Frequently Used in the SCD Computing Environment, Version 1.0, November 1988
- Charges for SCD Computing Resources, Version 6.0, June 1990
- Data Availability at NCAR, June 1989
- Data Sets for Meteorological Research, July 1975

## MAIL TO:

---

NCAR  
SCD/Documentation Distribution  
P.O. Box 3000  
Boulder, CO 80307-3000

Small documents are sent first class, and larger documents are shipped UPS. (UPS will not deliver to a P.O. Box.) Documents will be shipped promptly.

### SHIPPING ADDRESS (Please print or type):

User Number: \_\_\_\_\_  
Name: \_\_\_\_\_  
Department: \_\_\_\_\_  
University/  
Institution: \_\_\_\_\_  
Street: \_\_\_\_\_  
City: \_\_\_\_\_  
State: \_\_\_\_\_  
Zip: \_\_\_\_\_  
Phone: (      ) \_\_\_\_\_

Check here if this is a new address.

6/90



# ACKNOWLEDGMENTS

---

## Contributing Authors

Lynne Andrade  
Ken Case

Barbara Horner-Miller  
Richard Valent

## Technical Writer/Editors

Diane Huntrods, Brian Bevirt,  
and Juli Rew

## Technical Information and Review

Britt Bassett  
Linda Bath  
Phylecia Brandley  
Mary Buck  
Chris Burghart  
Ginger Caldwell  
Paul Ciesielski  
James Curry  
Nancy Dawson  
Mary Downton  
Cassandra Fesen  
Frieda Garcia  
Sally Haerer

Basil Irwin  
Dave Kitts  
Bob Lackman  
Adrienne Middleton-Link  
Marla Meehl  
Peter Morreale  
Don Morris  
Bernie O'Lear  
Tom Parker  
Mike Pernice  
Dick Sato  
Gene Schumacher  
Vic Tisone

Thanks to Elizabeth Heflick for data entry and design work  
and to Christine Guzy and Jacque Marshall for revisions.

# SCD SERVICES DIRECTORY

	CONTACT	PHONE (303)	E-MAIL
<b>General Information</b> SCD Consulting Office SCD Visitor/User Information SCD Course Enrollment Graphics Software Purchase Information Data Communications/Networking Project & User Number Assignment Computing Resource Applications SCD Computing News Editor NCAR Switchboard	Consultant on Duty  Marla Meehl Rosemary Mitchell JoAn Knudson Nancy Dawson	497-1278 497-1225 497-1225 497-1201 497-1301 497-1235 497-1207 497-1291 497-1000	consult1 scdinfo scdinfo scdinfo marla rosemary knudson nad
<b>Operations Information</b> Computer Operations Machine Room Graphics Operations Tape Librarian SCD UserDocs, Manuals/Output Mailing	Bob Niffenegger Oper. Supervisor Andy Robertson Sue Jensen Mary Buck	497-1240 497-1200 497-1241/42 497-1245 497-1232	niff op1 andy sue maryb

**SENDING ELECTRONIC MAIL TO NCAR STAFF:** Using the address names listed in the e-mail column above, please consult the appropriate information given below based on the network you are using:

- Internet address: *name@ncar.ucar.edu* (IP node 128.117.64.4)  
 Examples:  
 SCD IBM 4381 (CMS): note consult1 at ncar.ucar.edu  
 UNIX: mail consult1@ncar.ucar.edu
- BITNET users: To send e-mail to NCAR staff, use the Internet address given above. Please consult your system administrator for the exact syntax.
- SPAN address: NSFGW::"*name@ncar.ucar.edu*" (DECNET node 9580 or 9.364)
- Telemail/OMNET address: *name@ncar.ucar.edu* (for the Internet address)

For further information on e-mail, please see the UserDoc, "Using the NCAR E-mail System."

## SCD COMPUTING NEWS

Scientific Computing Division  
 National Center for Atmospheric Research  
 P. O. Box 3000, Boulder, CO 80307-3000

Non-Profit Organization U.S. POSTAGE PAID Boulder / Colorado Permit No. 558
--

RON RUTH  
 ATD  
 JEFFCO AIRPORT  
 NCAR  
 MAIL ROOM