DG/UX OPERATING SYSTEM

F E A T U R E S

- Fourth Berkeley Software Distribution (4BSD)
- 32-bit ECLIPSE® MV/Family computer systems and Data General Distributed Systems Family workstations
- Choice of user interfaces
  —Berkeley C shell (csh)
  —Bourne shell
- Berkeley 4.2 file system performance enhancements
- Virtual memory management
- Networking support via TCP/IP
- Standard UNIX™ communications support
- AT&T System V compatibility
- C, FORTRAN 77, and Macroassembler languages
- GKS graphics support
- Compatible with MV/UX™, Data General's hosted UNIX environment integrated with AOS/VS
- Comprehensive support, training, documentation

Data General's DG/UX™ is a UNIX operating system based on the 4.1 Berkeley Software Distribution (BSD) and AT&T System V Release 2 UNIX versions. It is a standalone, native mode operating system for Data General's 32-bit ECLIPSE MV/Family computer systems and Data General Distributed Systems Family workstations.

UNIX operating systems have been widely accepted in the industry for minicomputers. DG/UX is a complete multi-user and multiprogramming UNIX implementation. DG/UX takes the added functionality provided by the Berkeley releases which includes improved performance, a user interface, and networking, and combines it with the standard AT&T System V version for a complete UNIX product.

DG/UX offers the user a 512-megabyte address space, through the use of demand paging, and a choice of user interfaces, either the Berkeley C shell (csh) or the AT&T Bourne shell. DG/UX provides the UNIX hierarchical file system and has incorporated improvements from the Berkeley 4.2 version for file system performance.

Standard UNIX communications and neworking facilities exist in DG/UX for transferring information between UNIX systems running on Data General or non-Data General hardware. The uucp facility provides UNIX to UNIX communications across asynchronous dial-up or hardwired lines. Using the TCP/IP protocols, DG/UX may be networked to UNIX or other systems using a LAN connection.

A UNIX operating system has many unique features and is well known for its "tools." All AT&T System V UNIX calls, utilities and libraries are available from DG/UX. This provides the software portability sought by users: software application programs and programmers are transportable across UNIX systems.

THE SHELL

The shell is the user interface to the DG/UX Operating System. The shell acts as both a command language interpreter for processing user requests and commands, and as a programming language.

Groups of commands can be stored in files which are called shell scripts. The shell can accept its input for execution from these shell scripts. Shell control structures may be included within the script which simplifies repetitive tasks. These control structures provide simple "if" statements for conditional branching, "while/until" and "for" statements for looping procedures, and "case" statements for multiple branching.

DG/UX supports the "piping" feature of the shell. This feature provides flexibility for redirecting I/O for several programs by allowing the output of one program to be directed to the input of another program.

The C shell (csh) from the Berkeley Software Distribution and the Bourne shell are available with DG/UX. Both shells operate as a user interface for DG/UX; however, the C shell has added some extensions such as: an alias mechanism for defining new commands and changing the names of existing commands and a history mechanism for maintaining, editing and reexecuting a list of previous commands.

PERFORMANCE

The DG/UX Operating System implements demand paging to make full use of the virtual memory capability of the 32-bit ECLIPSE architecture. DG/UX moves memory pages into physical memory when needed and out of physical memory when not needed. The demand paging procedure is invisible to the user. For each process, DG/UX keeps only a working set of pages in physical memory. Non-active pages are kept on disc, ready to be moved into memory when required. Demand paging results in greater programming productivity because programmers do not need to be concerned with overlay techniques.

DG/UX implements the improved file system techniques from the Berkeley 4.2 UNIX version to provide faster file system performance. Improvements have been made to disc throughput by increasing block size and to overall file system performance by placing file system and user data onto the disc in an optimal manner.

C LANGUAGE

The DG/UX "C" compiler is included with DG/UX. It conforms to the standard C language and UNIX System V extensions to preserve the software transportability feature for which it was intended. DG/UX C performs global optimization to increase runtime efficiency and also provides extensive error checking and runtime diagnostics.

C is a machine-independent, high-level programming language that has been designed to minimize the need for the use of assembly language programming. It is a language which allows programmers to transport programs across systems, yet it takes advantage of the 32-bit ECLIPSE MV/Family and Data General Distributed Systems Family architectures.

MV/UX COMPATIBILITY

MV/UX is a hosted UNIX environment on Data General's AOS/VS Operating System. A cross-development facility is provided from MV/UX to DG/UX.

MV/UX provides access to ADE™ Ada® Development Environment software and CEO® Comprehensive Electronic Office software from a standard UNIX environment. MV/UX also offers full access to all Data General utilities and application software.

The combination of MV/UX and DG/UX offers significant flexibility for the developer and user of UNIX systems. The uucp facility is available from either system for asynchronous file transfers. Standard UNIX networking and communications facilities may be used to connect MV/UX systems to DG/UX or other vendor UNIX systems.

LIBRARIES

DG/UX supports all the System V and unique Berkeley 4.1 libraries, including the entire input/output library, the math library and termcap.

COMPATIBILITY

DG/UX running on the MV/Family hardware is compatible with MV/UX and other UNIX systems.

Below is a partial list of available system calls:

access	fork	msgrcr	signal
acct	fstat	msgsnd	sigsys*
alarm	getegid	nice	stat
brk,sbrk	getgid	open	sync
chdir	getgrp	pause	syscall*
chmod	getpid	pipe	time
chown	getppid	plock	times
chroot	geteuid	profil	ulimit
close	getuid	ptrace	umask
creat	ioctl	read	uname
dup	kill	reboot*	unlink
dup2*	killpg*	rmdir	ustat
exec, execl,	link	semctl	utime
execle,	listen*	semget	vfork*
execlp,	lockf	semop	vhangup*
execv,	lseek	setgrp	vread*
execve,	mkdir	shmctl	vwrite*
execvp	mkmod	shmget	wait
exit	msgetl	shmat	wait3*
fcntl	msgget	shmdt	write

*system calls from 4.1 BSD UNIX implementation

COMMANDS AND UTILITIES
A partial list of System V and Berkeley 4.1 commands and utilities implemented by DG/UX follows:

FILE MANIPULATION

basename	cp	ls	sum
cat	cpio	od	tail
chmod	dircmp	pr	tar
chown	find	rm	touch
			umask

TEXT MANIPULATION

awk	crypt	grep	sdiff
banner	csplit	hyphen	sort
bdiff	cut	join	split
bfs	dd	makekey	tr
cmp	diff	nl	tsort
col	diff3	pack	uniq
comm	diffmk	paste	vc
			wc

DOCUMENTATION PREPARATION AND EDITING

deroff	ex*	nroff	spell
ed	mm	ptx	tbl
edit*	mmchek	sed	vi*

PROGRAM DEVELOPMENT TOOLS

cb	f77	lint	regcmp
cc	ld	lorder	sdb
cflow	lex	make	yacc

SOURCE CODE CONTROL SYSTEM (SCCS)

admin	delta	prs	sccsdiff
cdc	get	rmdel	unget
comb	help	sact	val
			what

PROCESS CONTROL

csh*	kill	ps	stty
id	login	sh	tty
install	logname	sleep	wait
			who
			xargs

USER ENVIRONMENT

cd	env	pwd

SYSTEM MANAGEMENT AND QUEUING FACILITIES

chroot	fsck	machid	time
crash	init	mvdir	uname
date	killall	passwd	uuclean
filesave	login	profiler	uusub
format	lpr	shutdown	volcopy
		su	whodo

COMMUNICATIONS

uucp	uuname	uux
uulog	uustat	

MISCELLANEOUS COMMANDS

cal	getopt	news
calendar	line	tee
echo	mail	test
expr	man	true
factor	mesg	units

*commands from 4.1 BSD UNIX implementation

DG/UX CONFIGURATIONS
ECLIPSE MV/Family systems provide ideal hosts for the DG/UX Operating System. DG/UX configurations, which include an ECLIPSE MV/Family computer, memory and the DG/UX Operating System, are based on the number of DG/UX simultaneous users.

DG/UX supports Data General Distributed Systems workstations. They offer the single user an integrated workstation with 32-bit MV/4000 performance and high-resolution monochrome or color graphics. The under-the-desk workstation integrates an ECLIPSE MV/4000® processor, memory, graphics, all peripherals, an optional floating-point processor, and three async ports for a mouse, plotter, and printer. Professionals can share information via the integrated Ethernet™ IEEE 802.3 interface.

DOCUMENTATION AND TRAINING

Data General provides comprehensive documentation for DG/UX including the following manuals and product briefs:

—*Learning to Use Your DG/UX System.* A basic introduction for new users. (093-701010)

—*DG/UX System User's Manual.* Complete descriptions of each DG/UX command, system call, subroutine, and special file. (093-701007)

—*DG/UX System V Programmer's Manual.* (093-701009) A collection of articles detailing various UNIX utilities.

—*DG/UX System Operator and Administrator's Manual.* (093-701008)

—DG/UX C product brief (012-2335)

—MV/UX UNIX Environment product brief (012-2034-2)

—AOS/VS Operating System product brief (012-1029-2)

—AOS/VS C product brief (012-1757-1)

—Data General Distributed System DS/4000 Workstation product brief (012-2329)

—Data General Distributed System DS/4200 product brief (012-2330)

—SPSA product brief (012-1218)

—ADE Ada Development Environment Software product brief (012-2177)

FIELD AND CORPORATE SUPPORT

DG/UX installations are fully supported by Data General's corporate and field support organizations and programs.

The Software Products Services Agreement (SPSA) includes toll-free telephone and on-site consultation, Remote Access and Monitoring (RAM) to connect the user's system to Data General's Software Support Center for diagnosis and testing, and Software Trouble Reporting (STR) directly to the Corporate Software Development groups.

In addition, the Software Subscription Service (SSS) makes all regular enhancements, updates, and extensions to Data General software products readily available to users.

HOW TO ORDER LITERATURE. To order specific titles, contact your local DGC sales office. Or write to the Technical Information and Publication Service (TIPS) at Corporate Headquarters:

Educational Services
TIPS Administrator, MS F019
Data General Corporation
4400 Computer Drive
Westboro, MA 01580

To call TIPS, dial (617) 366-8911, ext. 4032.

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