

Software Tools Subsystem  
Version 7 to Version 7.1 Conversion Guide

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## Introduction

Version 7.1 of the Software Tools Subsystem contains corrections to many problems found in Version 7, as well as a several enhancements and new features. Version 7.1 is almost completely compatible with Version 7; it does not require the recompilation or relinking of any object programs. Other than the addition of new commands, there are few user-visible changes.

If you require total compatibility, you will find that most Version 7 commands will run unchanged under the Version 7.1 Subsystem. You may thus replace offending Version 7.1 commands with their Version 7 counterparts by simply copying the old version into =bin= or =lbin=.

## New Command Directory

The directory =ebin= (nominally //extra/bin) has been added to contain object files that are executed from shell programs in =bin=. Programs now residing in this directory include the compiler, loader, and batch interludes, and some programs used by the bug reporting mechanism. Ratfor source for the programs residing in =ebin= is kept in =src=/ext.r; the source for shell programs in =ebin= resides in =src=/ext.sh.

## Line Editor Library

The subroutine 'edit' in the library 'vedtlb' invokes the Subsystem line editor on a file specified in the call. This routine is useful for interactive programs that allow significant changes to internal text files.

## Compiler Interludes

A number of Primos compilers and assemblers (F77, FTN, PASCAL, PL1G, and PMA) can be invoked from the Subsystem. We have attempted to provide a consistent interface to each compiler through the use of table-driven interlude that can be adapted to the requirements of each compiler. In the future, we expect to provide interfaces to Prime's other compilers.

## Execution from Segment Directories

The Subsystem will now load and execute programs directly from SEG-compatible segment directories. Segment directories can be created with 'ld' or directly by the user. Since 'cp' and 'del' treat segment directories as files, the use of segment directories as program files should be transparent.

## Shell Statistics

The shell will now record all commands it executes if the template "`=statistics=`" is set to "`yes`". Analysis of the shell statistics files can give a good deal of insight into how a user community actually uses the Subsystem.

## Status of Version 7 Commands

This section summarizes the user-visible changes that have been made to Subsystem commands for Version 7.1. It is divided into several subsections: obsolete commands, superseded commands, modified commands, enhanced commands, and unchanged commands. The final subsection is a summary of commands that are new for the Version 7.1 release.

### Obsolete Commands

The commands in this subsection were part of the Version 7 Subsystem, but are not included in the Version 7.1 release. Most of them were used only by certain shell programs and have outlived their usefulness. In the other cases, the commands were relics of past Subsystems, and either were no longer useful, or no longer worked.

#### `who2`

Was originally part of '`who`'. Since '`who`' was rewritten, it has no further use.

### Superseded Commands

The commands in this section are not part of the Version 7.1 Subsystem; their functionality has been subsumed by other commands. Each entry describes the command and options you can use to get the same results.

#### `f1`

Use `fcl`.

#### `pllc`

Use "`plgc`".

#### `pllcl`

Use "`plgcl`".

#### `pc`

Use "`p4c`".

#### `pcl`

Use "`p4cl`".

**save**  
Use "vars -s".

### Modified Commands

The commands listed in this section have been modified for the Version 7.1 release and are no longer completely compatible with their Version 7 counterparts. Each entry gives a brief description of the changes, but before using any of these commands, please check the corresponding Reference Manual entry to be sure of the command's exact behavior.

**crypt**  
The encryption algorithm has been changed to produce only printable characters. The encryption key can now be typed without printing it on the terminal.

**fc**  
The option syntax has been radically changed. All Primos compiler interludes now have consistent option syntax.

**find**  
The "-n" option is now "-l". File names can be read from standard input. Order of flag options is no longer important.

**mail**  
Displays letters using the "page" subroutine.

**moot**  
Has been made significantly more useable.

**news**  
Displays news articles using the "page" subroutine.

**pg**  
Uses the 'page' subroutine.

### Enhanced Commands

Commands in this section have been functionally enhanced for Version 7.1, but remain compatible with their Version 7 counterparts.

**alarm**  
Accepts initial substring abbreviation for time units.

**as11**  
Significantly faster.

**cd**  
Now prints the full pathname (including pack name) when called with "-p".

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- ld**  
Can also produce a SEG-compatible segment directory. The output file does not have to be in the current directory. The "-a" option loads the Pascal library.
- lps**  
Now has a "-q" option to suppress most gratuitous output.
- os**  
Significantly faster.
- pause**  
Accepts initial substring abbreviation for time units.
- phist**  
A new option allows an arbitrary history file to be input. New option allows selection on author. New option allows suppression of text.
- publish**  
A file formatted with 'fmt' can be published with no modifications.
- rp**  
Can now pass a line directly into the output without modification. No longer generates a redundant STOP after a CALL SWT.
- se**  
Supports Heathkit H19 and Netronics terminals. Requests confirmation for the destruction of a file with the "w" command.
- sep**  
Files containing 'rp' and 'fc' options will now be included in the compilations.
- sh**  
Command statistics recording is now controlled by a template. Can directly execute SEG-compatible segment directories.
- stats**  
Now sorts and saves data points only when necessary for statistics requested.
- tail**  
A negative integer argument passes all but the first 'n' lines.
- to**  
The date and time are included in the message heading line.

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### vars

The variables file can be saved and restored on arbitrary files.

### who

'Who' has been rewritten to be of use on systems other than Georgia Tech.

### xref

Prints more intelligible diagnostics; collates upper and lower case letters together.

## Unchanged Commands

This section lists the commands that have no user-visible changes made for Version 7.1.

ar	arg	args
argsto	as6800	as8080
banner	basys	batch
bye	case	cat
change	chat	chown
clear	clock	cmp
cn	col	common
como	copy	copyout
cp	ctime	cto
date	day	declare
declared	del	datab
diff	dmach	dnum
dprint	drop	dumpls
dumpsv	e	echo
ed	ek	else
entab	error	esac
eval	exit	fc
fdmp	fi	field
file	files	fmt
focld	forget	fos
goto	guide	hd
help	history	hp
if	imi	include
index	installation	intel
iota	join	kill
kwic	lam	length
lex	lf	lib
line	lk	locate
log	login_name	macro
mail	memo	mkdir
mklib	mktree	mkusr
mon	mot	mt
mv	nargs	opt6800
opt8080	out	passwd
ph	phone	pr
print	profile	pwd
pword	quote	rcl
rf	rfl	rmusr



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<b>rnd</b>	<b>rot</b>	<b>rsa</b>
<b>rtime</b>	<b>scroll</b>	<b>sema</b>
<b>set</b>	<b>shtrace</b>	<b>size</b>
<b>slice</b>	<b>sort</b>	<b>source</b>
<b>sp</b>	<b>speling</b>	<b>sspl</b>
<b>ssr</b>	<b>st_profile</b>	<b>stacc</b>
<b>stop</b>	<b>subscribe</b>	<b>substr</b>
<b>symbols</b>	<b>systat</b>	<b>tail</b>
<b>take</b>	<b>tc</b>	<b>tee</b>
<b>term</b>	<b>term_type</b>	<b>then</b>
<b>time</b>	<b>tlit</b>	<b>to</b>
<b>translang</b>	<b>ts</b>	<b>uniq</b>
<b>unoct</b>	<b>unrot</b>	<b>us</b>
<b>usage</b>	<b>when</b>	<b>whereis</b>
<b>whois</b>	<b>x</b>	

### New Commands

This section list commands that are new for Version 7.1.

#### **block**

Prints one-inch block letters for banners.

#### **bs**

When placed in a user's search rule, it helps correct typing errors.

#### **bug**

Creates and collects software bug reports.

#### **cal**

Generates a calendar for any month or year in this century.

#### **define**

Expands **define** statements in Ratfor programs.

#### **fcl**

Calls the Primos FTN compiler and the loader.

#### **f77c**

Calls the Primos F77 compiler.

#### **f77cl**

Calls the Primos F77 compiler and the loader.

#### **fsize**

Calculates the disk space used by a file or directory structure.

#### **guess**

When called by 'bs', it "guesses" the name of the command you meant to type.

**link**  
Creates a **linkage** declaration for a Ratfor program.

**mkclist**  
Makes a list of commands for use with 'guess' and 'bs'.

**pc**  
Calls the Primos PASCAL compiler.

**pcl**  
Calls the Primos PASCAL compiler and the loader.

**plgc**  
Calls the Primos PL1G compiler.

**plgcl**  
Calls the Primos PL1G compiler and the loader.

**pmac**  
Calls the Primos PMA assembler.

**pmac1**  
Calls the Primos PMA assembler and the loader.

**retract**  
"Unpublishes" a news article.

**show**  
Displays a file with a printable representation for unprintable characters.

**template**  
Modifies, displays, and expands templates.

### Status of Version 7 Subroutines

This section summarizes the user-visible changes to the Sub-system library routines. It is divided into several subsections: obsolete routines, superseded routines, modified routines, enhanced routines, and unchanged routines. The final subsection is a summary of routines that are new for the Version 7.1 release.

#### Obsolete Routines

The routines listed here were only used by other library routines. Since their services are no longer required, they have been deleted.

No subroutines are obsolete at Version 7.1

### Superseded Routines

The following routines have been subsumed by other more powerful routines. Each entry names the Version 7.1 routine that performs the same function.

No subroutines are superseded at Version 7.1

### Modified Routines

The routines listed in this section have been modified so that they are no longer compatible with their Version 7 counterparts. Although each entry briefly describes the changes that have been made, you should examine the corresponding Reference Manual entries to determine the exact behavior of the routines.

No subroutines are modified at Version 7.1

### Enhanced Routines

The routines listed in this section have additional functionality in the Version 7.1 release, but remain compatible with their Version 7 counterparts.

#### **call\$\$**

Can now directly invoke a SEG-compatible segment directory.

#### **dopen\$**

Now takes an argument to determine number of retries on encountering a "file in use" situation.

#### **open**

Now takes a fourth argument to determine number of retries on encountering a "file in use" situation.

#### **parscl**

ARG\_TEXT for a string argument always contains a valid string, regardless of the presence or absence of its corresponding argument.

### Unchanged Routines

No user-visible changes have been made to the routines listed in this section.

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addset	amatch	atoc
c\$end	c\$incr	cant
catsub	chkarg	chkinp
close	cof\$	cpfil\$
cpseg\$	create	ctoa
ctoc	ctod	ctoi
ctol	ctomn	ctop
ctor	ctov	date
decode	delarg	delete
dgetl\$	dmark\$	dodash
dopen\$	dputl\$	dread\$
dsdbiu	dsdump	dseek\$
dsfree	dsget	dsinit
dtoc	dwrit\$	encode
enter	equal	error
esc	exec	execn
expand	fcopy	filcpy
filset	filtst	findf\$
finfo\$	flush\$	follow
gcd	gcdir\$	gctoi
gctol	getarg	getccl
getch	getkwd	getlin
getto	getvdn	gfnarg
gitoc	gklarg	gltoc
gvlarg	icomn\$	index
init	inloc\$	input
invmod	iofl\$	ioinit
isatty	itoc	itoc0
itoc8	jdate	length
locate	lookup	lopen\$
lsallo	lscmpk	lscomp
lscopy	lscut	lsdel
lsdrop	lsdump	lsextr
lsfree	lsgetc	lsgetf
lsinit	lsins	lsjoin
lslen	lsmake	lspos
lsputc	lsputf	lssubs
lstake	ltoc	lutemp
makpat	maksub	mapdn
mapfd	mapstr	mapsu
mapup	markf	match
mkdir\$	mkfd\$	mkpa\$
mktabl	mktemp	mktr\$
mntoc	move\$	omatch
open	parsdt	parstm
patsiz	prime	print
prot\$	ptoc	putch
putdec	putlin	putlit
pwrmod	readf	rebuild
remark	remove	rewind
rmfil\$	rmseg\$	rmtabl
rmtemp	rtoc	scopy
sctabl	sdrop	seekf
set_copy	set_create	set_delete
set_element	set_equal	set_init
set_insert	set_intersect	set_remove

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set_subset	set_subtract	set_union
seterr	st\$lu	stake
stclos	strbsr	strcmp
strim	strlsr	substr
swt	t\$clup	t\$entr
t\$exit	t\$time	t\$trac
tgetl\$	tmark\$	tputl\$
tquit\$	tread\$	trunc
tscan\$	tseek\$	twrit\$
type	upkfn\$	vfyusr
vt\$bc	vt\$cc	vt\$del
vt\$ld	vt\$ll	vt\$mv
vt\$out	vt\$pk	vt\$rc
vt\$upk	vtceol	vtceos
vtclr	vtenc	vtinit
vtins	vtmvdn	vtmvlf
vtmvert	vtmvup	vtoc
vtpos	vtputl	vtterm
vtupd	wind	wkday
writef		

### New Routines

The routines listed in this section are new for the Version 7.1 release.

#### chunk\$

Loads a chunk of a SEG-compatible segment directory.  
Used internally by 'ldseg\$'.

#### cmdf\$\$

Diverts command input to a Primos command file.

#### edit

Invokes the Subsystem line editor on a disk file.

#### gtemp

Parses a line of a template definition.

#### ldseg\$

Loads a SEG-compatible segment directory. Used internally by 'call\$\$'.

#### ldtmp\$

Loads the per-user templates.

#### page

Displays a file on the terminal one page at a time and allows the user to skip ahead or back up.

#### reonu\$

Subsystem-invoked on-unit to catch the Primos "ren" command. (Not yet fully supported.)

**rtn\$\$**

Returns to stack frame of 'call\$\$. Used internally.

**sys\$\$**

Calls the Primos command interpreter with an EOS-terminated string.

**zmem\$**

Zeroes a chunk of memory specified by a SEG-compatible segment directory. Used internally by 'ldseg\$'.