


```

MM      MM      AAAAAA  PPPPPPPP  VV      VV  88888888  NN      NN
MM      MM      AAAAAA  PPPPPPPP  VV      VV  88888888  NN      NN
MMMM    MMMM    AA      AA  PP      PP  VV      VV  88      88  NN      NN
MMMM    MMMM    AA      AA  PP      PP  VV      VV  88      88  NN      NN
MM      MM      AA      AA  PP      PP  VV      VV  88      88  NNNN    NN
MM      MM      AA      AA  PP      PP  VV      VV  88      88  NNNN    NN
MM      MM      AA      AA  PPPPPPPP  VV      VV  88888888  NN  NN  NN
MM      MM      AA      AA  PPPPPPPP  VV      VV  88888888  NN  NN  NN
MM      MM      AAAAAAAAAA  PP      VV      VV  88      88  NN  NN  NNNN
MM      MM      AAAAAAAAAA  PP      VV      VV  88      88  NN  NN  NNNN
MM      MM      AA      AA  PP      VV      VV  88      88  NN      NN
MM      MM      AA      AA  PP      VV      VV  88      88  NN      NN
MM      MM      AA      AA  PP      VV      VV  88888888  NN      NN
MM      MM      AA      AA  PP      VV      VV  88888888  NN      NN

```

```

LL      IIIIII  SSSSSSSS
LL      IIIIII  SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LL      II      SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LLLLLLLLLLLL IIIIII  SSSSSSSS
LLLLLLLLLLLL IIIIII  SSSSSSSS

```

```

1 0001 0 MODULE MAPVBN (
2 0002 0 LANGUAGE (BLISS32),
3 0003 0 IDENT = 'V04-000'
4 0004 0 ) =
5 0005 1 BEGIN
6 0006 1
7 0007 1
8 0008 1 *****
9 0009 1 *
10 0010 1 * COPYRIGHT (c) 1978, 1980, 1982, 1984 BY *
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27 0027 1 *
28 0028 1 *
29 0029 1 *****
30 0030 1
31 0031 1 ++
32 0032 1
33 0033 1 FACILITY: F11ACP Structure Level 1
34 0034 1
35 0035 1 ABSTRACT:
36 0036 1
37 0037 1 This routine maps the specified virtual blocks to their
38 0038 1 corresponding logical blocks using the supplied window.
39 0039 1 The window is turned if necessary.
40 0040 1
41 0041 1 ENVIRONMENT:
42 0042 1
43 0043 1 STARLET operating system, including privileged system services
44 0044 1 and internal exec routines.
45 0045 1
46 0046 1 --
47 0047 1
48 0048 1
49 0049 1 AUTHOR: Andrew C. Goldstein, CREATION DATE: 3-Mar-1977 12:20
50 0050 1
51 0051 1 MODIFIED BY:
52 0052 1
53 0053 1 V03-006 CDS0005 Christian D. Saether 20-Aug-1984
54 0054 1 Modify test for no lock.
55 0055 1
56 0056 1 V03-005 CDS0004 Christian D. Saether 14-Aug-1984
57 0057 1 Modify handling of fcb rebuilding.

```

MAT
Sym

ACL
AQB
BITI
CACI
CHII
DATI
DIRI
FCB
FMGI
HEAI
INDI
MVL
QUO
RVT
VCB
WCB

PSE

SCO

Pha

Ini
Com
Pas
Sym
Pas
Sym
Pse
Cro
Ass

The
282
The
245
2 p

```
58 0058 1 :  
59 0059 1 :  
60 0060 1 : V03-004 CDS0003 Christian D. Saether 25-Apr-1984  
61 0061 1 : Use longword addressing on some routines.  
62 0062 1 : V03-003 CDS0002 Christian D. Saether 30-Dec-1983  
63 0063 1 : Use L_NORM linkage and BIND_COMMON macro.  
64 0064 1 :  
65 0065 1 : V03-002 CDS0001 Christian D. Saether 2-Feb-1983  
66 0066 1 : Changes for distributed file system. Don't believe  
67 0067 1 : FCBSL_FILESIZE anymore, always check the header.  
68 0068 1 :  
69 0069 1 : V03-001 ACG0297 Andrew C. Goldstein, 5-Aug-1982 18:26  
70 0070 1 : Fix maintenance of UCB context in updating cathedral windows  
71 0071 1 :  
72 0072 1 : V02-004 ACG0229 Andrew C. Goldstein, 23-Dec-1981 21:08  
73 0073 1 : Move updating of PMS$GL_TURN from TURN_WINDOW  
74 0074 1 :  
75 0075 1 : V02-003 LMP0003 L. Mark Pilant, 9-Dec-1981 14:07  
76 0076 1 : Added support for cathedral windows.  
77 0077 1 :  
78 0078 1 : V02-002 ACG0167 Andrew C. Goldstein, 16-Apr-1980 19:25  
79 0079 1 : Previous revision history moved to F11A.REV  
80 0080 1 : **  
81 0081 1 :  
82 0082 1 :  
83 0083 1 LIBRARY 'SYSS$LIBRARY:LIB.L32';  
84 0084 1 REQUIRE 'SRC$:FCPDEF.B32';
```

```

86 1075 1 GLOBAL ROUTINE MAP_VBN (VBN, WINDOW, BLOCK_COUNT, UNMAPPED_BLOCKS) : L_NORM =
87 1076 1
88 1077 1  +-
89 1078 1
90 1079 1  FUNCTIONAL DESCRIPTION:
91 1080 1
92 1081 1      This routine maps the specified virtual blocks to their
93 1082 1      corresponding logical blocks using the supplied window.
94 1083 1      the window is turned if necessary.
95 1084 1
96 1085 1  CALLING SEQUENCE:
97 1086 1      MAP_VBN (ARG1, ARG2, ARG3, ARG4)
98 1087 1
99 1088 1  INPUT PARAMETERS:
100 1089 1      ARG1: desired VBN
101 1090 1      ARG2: address of window to use
102 1091 1      ARG3: number of blocks to map
103 1092 1           if not present, 1
104 1093 1
105 1094 1  IMPLICIT INPUTS:
106 1095 1      CURRENT_VCB: address of VCB in process
107 1096 1      CURRENT_UCB: address of UCB in process
108 1097 1
109 1098 1  OUTPUT PARAMETERS:
110 1099 1      ARG4: if present, address to store number of unmapped blocks
111 1100 1
112 1101 1  IMPLICIT OUTPUTS:
113 1102 1      NONE
114 1103 1
115 1104 1  ROUTINE VALUE:
116 1105 1      starting LBN or -1 if no map
117 1106 1
118 1107 1  SIDE EFFECTS:
119 1108 1      window may be turned, header may be read, volume may be switched
120 1109 1
121 1110 1  --
122 1111 1
123 1112 2 BEGIN
124 1113 2
125 1114 2 MAP
126 1115 2     WINDOW           : REF BBLOCK;
127 1116 2
128 1117 2 LOCAL
129 1118 2     COUNT,           ! number of blocks to map
130 1119 2     UNMAPPED,       ! address to store unmapped block count
131 1120 2     DUMMY,          ! place for above by default
132 1121 2     UCB             : REF BBLOCK,   ! address of mapping UCB
133 1122 2     FCB             : REF BBLOCK,   ! address of FCB of file
134 1123 2     HEADER         : REF BBLOCK,   ! address of file header
135 1124 2     LBN;           ! resulting LBN of map
136 1125 2
137 1126 2 EXTERNAL
138 1127 2     CLUS$GL_CLUB    : ADDRESSING_MODE (GENERAL);
139 1128 2     PMS$GL_TURN     : ADDRESSING_MODE (ABSOLUTE);
140 1129 2     ! system count of window turns
141 1130 2
142 1131 2 BIND_COMMON;

```

```

143 1132
144 1133
145 1134
146 1135
147 1136
148 1137
149 1138
150 1139
151 1140
152 1141
153 1142
154 1143
155 1144
156 1145
157 1146
158 1147
159 1148
160 1149
161 1150
162 1151
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168 1157
169 1158
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171 1160
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179 1168
180 1169
181 1170
182 1171
183 1172
184 1173
185 1174
186 1175
187 1176
188 1177
189 1178
190 1179
191 1180
192 1181
193 1182
194 1183
195 1184
196 1185
197 1186
198 1187
199 1188

EXTERNAL ROUTINE
REBLD PRIM FCB : L_NORM NOVALUE, ! rebuild a primary fcb from header
BUILD_EXT FCBS : L_NORM NOVALUE, ! build extension fcb chain,
SWITCH VOLUME : L_NORM, ! switch context to specified volume
MAP WINDOW : L_NORM, ! scan window map
READ_HEADER : L_NORM, ! read file header
TURN_WINDOW : L_NORM ADDRESSING_MODE (GENERAL), ! turn window
REMAP_FILE : L_NORM; ! remap the file into segmented windows

! Check the VBN for legality - i.e., non-zero

FCB = .WINDOW[WCBSL_FCB];

IF .VBN EQL 0
THEN
RETURN -1;

IF .VBN GTRU .FCB [FCBSL_FILESIZE]
THEN
BEGIN
IF .FCB [FCBSB_ACCLKMODE] NEQ 0
THEN
BEGIN
IF NOT .FCB [FCBSV_STALE]
THEN
RETURN -1;
END
ELSE
IF NOT .BBLOCK [CURRENT_UCB [UCBSL_DEVCHAR2], DEV$V_CLU]
OR .CLU$GL_CLUB EQL 0
THEN
RETURN -1;

! Either the FCB has been marked stale, or this is a nolock access (which
! means the fcb is always suspect because it cannot be marked stale),
! so rebuild the fcb and extension fcb chain, if there is one.

HEADER = READ_HEADER (0, .FCB);
REBLD_PRIM_FCB (.FCB, .HEADER);

IF .HEADER [FH2$W_EX_FIDNUM] NEQ 0
OR .HEADER [FR2$B_EX_FIDNMX] NEQ 0
THEN
BUILD_EXT_FCBS (.HEADER);

END;

! If an extension was done on a file which was completely mapped, and more
! than one user was accessing it, it is necessary to remap the file to get
! all the blocks correctly mapped.

```

```
200 1189 2
201 1190 2 IF .WINDOW[WCBSV_CATHEDRAL] AND NOT .WINDOW[WCBSV_COMPLETE]
202 1191 2 THEN REMAP_FILE (?);
203 1192 2
204 1193 2 ! Make the filesize test again, in case we did a reconstruction of the
205 1194 2 ! chain above. This allows the window to be remapped in that case, if
206 1195 2 ! necessary.
207 1196 2
208 1197 2
209 1198 2 IF .VBN GTRU .FCB [FCBSL_FILESIZE]
210 1199 2 THEN
211 1200 2     RETURN -1;
212 1201 2
213 1202 2 ! If the file is multi-header, scan the extension FCB's for the one
214 1203 2 ! containing the desired VBN. The right FCB is identified by noting that
215 1204 2 ! there are no more, or that the start VBN of the next one is greater than
216 1205 2 ! the desired VBN.
217 1206 2
218 1207 2
219 1208 2 UNTIL
220 1209 2     (IF .FCB[FCBSL_EXFCB] EQL 0 THEN 1
221 1210 2     ELSE .BLOCK [ .FCB[FCBSL_EXFCB], FCBSL_STVBN] GTRU .VBN
222 1211 2     )
223 1212 2 DO FCB = .FCB[FCBSL_EXFCB];
224 1213 2
225 1214 2 ! If chasing extension FCB's took us to another volume, switch the context to
226 1215 2 ! that volume.
227 1216 2
228 1217 2
229 1218 2 SWITCH_VOLUME (.FCB[FCBSW_FID_RVN]);
230 1219 2
231 1220 2 ! Default the optional arguments.
232 1221 2
233 1222 2
234 1223 2 COUNT = (IF ACTUALCOUNT GEQ 3
235 1224 2     THEN .BLOCK_COUNT
236 1225 2     ELSE 1
237 1226 2     );
238 1227 2 UNMAPPED = (IF ACTUALCOUNT GEQ 4
239 1228 2     THEN .UNMAPPED_BLOCKS
240 1229 2     ELSE DUMMY
241 1230 2     );
242 1231 2
243 1232 2 ! Attempt to map the transfer with the existing window. If the map fails
244 1233 2 ! completely, turn the window and try once more. When any blocks map,
245 1234 2 ! return the relevant data.
246 1235 2
247 1236 2
248 1237 2 DECR I FROM 2 TO 1 DO
249 1238 2     BEGIN
250 1239 2
251 1240 2     LBN = KERNEL_CALL (MAP_WINDOW, .VBN, .WINDOW, .COUNT, .UNMAPPED, UCB);
252 1241 2     IF .LBN NEQ -1 THEN EXITLOOP;
253 1242 2
254 1243 2     PMS$GL_TURN = .PMS$GL_TURN + 1; ! count window turn in PMS data base
255 1244 2     HEADER = READ_HEADER TO, .FCB);
256 1245 2     KERNEL_CALL (TURN_WINDOW, .WINDOW, .HEADER, .VBN, .FCB[FCBSL_STVBN]);
```

```

: 257      1246 3
: 258      1247 2      END;
: 259      1248 2
: 260      1249 2      IF .UCB NEQ .CURRENT_UCB
: 261      1250 2      THEN BUG_CHECK (BADRVNWCBC, FATAL, 'Inconsistent RVN in window map pointer');
: 262      1251 2      RETURN .CBN;
: 263      1252 2
: 264      1253 1      END;

```

! end of routine MAP_VBN

```

.TITLE MAPVBN
.IDENT \V04-000\

.EXTRN CLUSGL CLUB, PMSSGL TURN
.EXTRN REBLD PRIM_FCB, BUILD_EXT_FCBS
.EXTRN SWITCH_VOLUME, MAP_WINDOW
.EXTRN READ_HEADER, TURN_WINDOW
.EXTRN REMAP_FILE, BUGS_BADRVNWCBC

```

.PSECT \$CODE\$,NOWRT,2

			00FC 00000	.ENTRY MAP_VBN, Save R2,R3,R4,R5,R6,R7	: 1075
	5E	08	C2 00002	SUBL2 #8, -SP	: 1146
	50	08	AC D0 00005	MOVL WINDOW, R0	: 1148
	52	18	A0 D0 00009	MOVL 24(R0), FCB	: 1152
		04	AC D5 0000D	TSTL VBN	: 1156
		60	13 00010	BEQL 6\$: 1159
38	A2	04	AC D1 00012	CMPL VBN, 56(FCB)	: 1161
		3F	1B 00017	BLEQU 4\$: 1164
		08	A2 95 00019	TSTB 11(FCB)	: 1165
		06	13 0C01C	BEQL 1\$: 1174
	12	23	A2 E8 0001E	BLBS 35(FCB), 2\$: 1176
		4E	11 00022	BRB 6\$: 1178
	50	94	AA D0 00024 1\$:	MOVL -108(BASE), R0	: 1179
	46	3C	A0 E9 00028	BLBC 60(R0), 6\$: 1181
		00	D5 0002C	TSTL CLUSGL_CLUB	: 1188
		3E	13 00032	BEQL 6\$: 1190
		52	DD 00034 2\$:	PUSHL FCB	: 1191
		7E	D4 00036	CLRL -(SP)	: 1198
0000G	CF	02	FB 00038	CALLS #2, READ_HEADER	: 1200
	53	50	D0 0003D	MOVL R0, HEADER	
		0C	BB 00040	PUSHR #M<R2,R3>	
0000G	CF	02	FB 00042	CALLS #2, REBLD PRIM_FCB	
		0E	A3 B5 00047	TSTW 14(HEADERT)	
		05	12 0004A	BNEQ 3\$	
		13	A3 95 0004C	TSTB 19(HEADER)	
		07	13 0004F	BEQL 4\$	
		53	DD 00051 3\$:	PUSHL HEADER	
0000G	CF	01	FB 00053	CALLS #1, BUILD_EXT_FCBS	
	50	08	AC D0 00058 4\$:	MOVL WINDOW, R0	
0A	0B	A0	06 E1 0005C	BBC #6, 11(R0), 5\$	
05	0B	A0	05 E0 00061	BBS #5, 11(R0), 5\$	
	0000G	CF	00 FB 00066	CALLS #0, REMAP_FILE	
	38	A2	04 AC D1 0006B 5\$:	CMPL VBN, 56(FCB)	
		04	1B 00070	BLEQU 7\$	
	50	01	CE 00072 6\$:	MNEGL #1, R0	
		04	00075	RET	

	50	0C	A2	D0	00076	7\$:	MOVL	12(FCB), R0	:	1209
			0C	13	0007A		BEQL	8\$:	
04	AC	2C	A0	D1	0007C		CMPL	44(R0), VBN	:	1210
			05	1A	00081		BGTRU	8\$:	
	52		50	D0	00083		MOVL	R0, FCB	:	1212
			EE	11	00086		BRB	7\$:	
0000G	7E	28	A2	3C	00088	8\$:	MOVZWL	40(FCB), -(SP)	:	1218
	CF		01	FB	0008C		CALLS	#1, SWITCH_VOLUME	:	
	03		6C	91	00091		CMPB	(AP), #3	:	1223
			06	1F	00094		BLSSU	9\$:	
	56	0C	AC	D0	00096		MOVL	BLOCK_COUNT, COUNT	:	1224
			03	11	0C09A		BRB	10\$:	
	56		01	D0	0009C	9\$:	MOVL	#1, COUNT	:	1223
04			6C	91	0009F	10\$:	CMPB	(AP), #4	:	1227
			06	1F	000A2		BLSSU	11\$:	
	55	10	AC	D0	000A4		MOVL	UNMAPPED_BLOCKS, UNMAPPED	:	1228
			03	11	000A8		BRB	12\$:	
	55		6E	9E	000AA	11\$:	MOVAB	DUMMY, UNMAPPED	:	1227
	54		02	D0	000AD	12\$:	MOVL	#2, I	:	1237
		04	AE	9F	000B0	13\$:	PUSHAB	UCB	:	1240
			55	DD	000B3		PUSHL	UNMAPPED	:	
			56	DD	000B5		PUSHL	COUNT	:	
0000G	7E	04	AC	7D	000B7		MOVQ	VBN, -(SP)	:	
	CF		05	FB	000BB		CALLS	#5, MAP_WINDOW	:	
	57		50	D0	000C0		MOVL	R0, LBN	:	
FFFFFFFF	8F		57	D1	000C3		CMPL	LBN, #-1	:	1241
			27	12	000CA		BNEQ	14\$:	
		00000000G	9F	D6	000CC		INCL	@#PMSSGL_TURN	:	1243
			52	DD	000D2		PUSHL	FCB	:	1244
			7E	D4	000D4		CLRL	-(SP)	:	
0000G	CF		02	FB	000D6		CALLS	#2, READ_HEADER	:	
	53		50	D0	000DB		MOVL	R0, HEADER	:	
		2C	A2	DD	000DE		PUSHL	44(FCB)	:	1245
		04	AC	DD	000E1		PUSHL	VBN	:	
			53	DD	000E4		PUSHL	HEADER	:	
		08	AC	DD	000E6		PUSHL	WINDOW	:	
00000000G	00		04	FB	000E9		CALLS	#4, TURN_WINDOW	:	
	BD		54	F5	000F0		SOBGTR	I, 13\$:	1237
	94	AA	04	AE	D1 000F3	14\$:	CMPL	UCB, -108(BASE)	:	1249
			04	13	000F8		BEQL	15\$:	
				FEFF	000FA		BUGW		:	1250
				0000*	000FC		.WORD	<BUG\$_BADRVNWC!4>	:	
	50		57	D0	000FE	15\$:	MOVL	LBN, R0	:	1251
			04	00	00101		RET		:	1253

; Routine Size: 258 bytes. Routine Base: \$CODE\$ + 0000

```

: 265      1254  1
: 266      1255  1 END
: 267      1256  0 ELUDOM

```

PSECT SUMMARY

```
:
: Name                Bytes                Attributes
: $CODES              258 NOVEC,NOWRT, RD , EXE,NOSHR, LCL, REL, CON,NOPIC,ALIGN(2)
```

Library Statistics

```
:
: File                ----- Symbols ----- Pages Processing
:                   Total   Loaded   Percent   Mapped   Time
: _$255$DUA28:[SYSLIB]LIB.L32;1  18619    30      0      1000    00:01.9
```

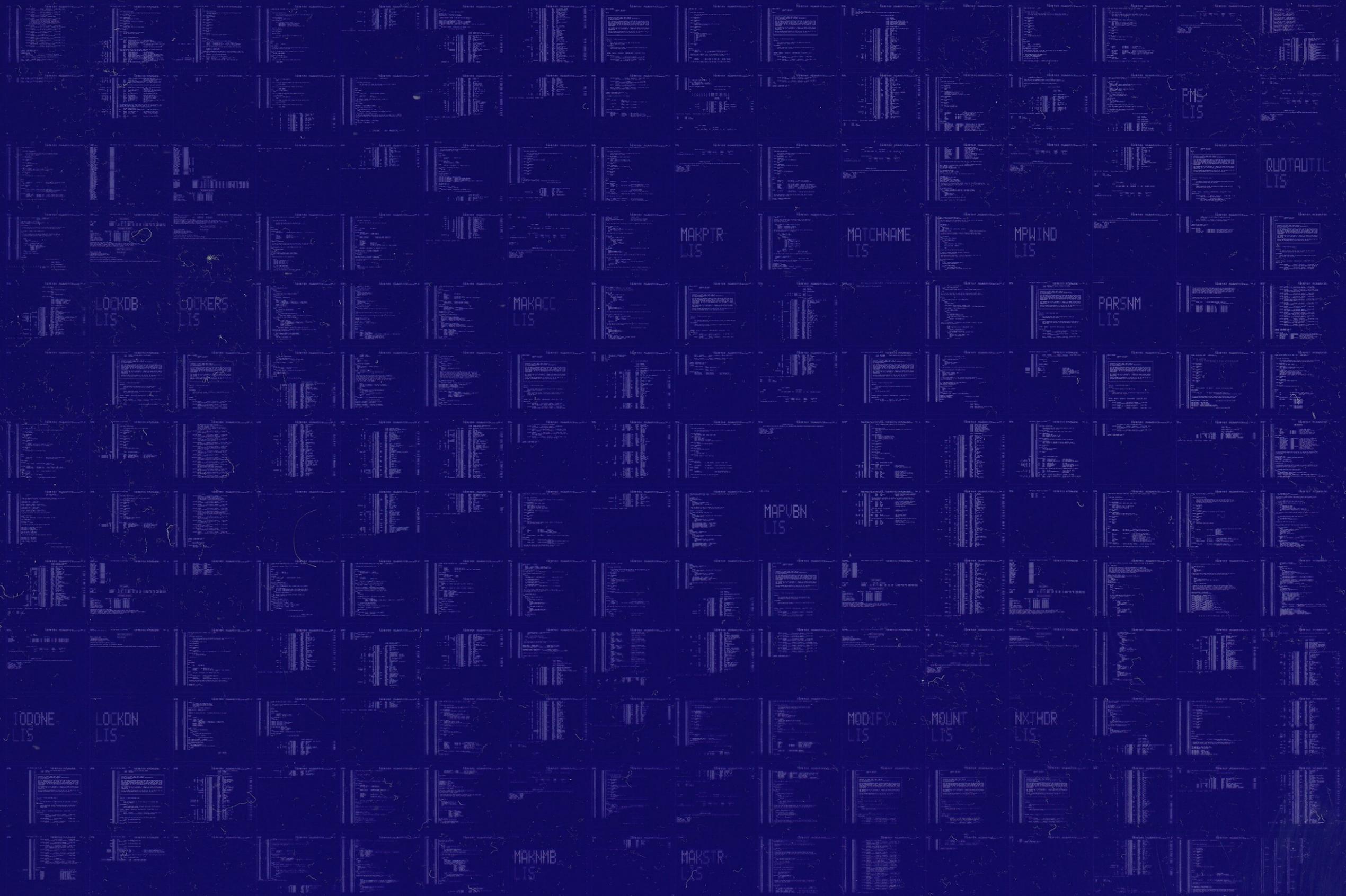
COMMAND QUALIFIERS

```
:
: BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:MAPVBN/OBJ=OBJ$:MAPVBN MSRCS$:MAPVBN/UPDATE=(ENHS:MAPVBN)
```

```
: Size:                258 code + 0 data bytes
: Run Time:            00:18.7
: Elapsed Time:       00:51.7
: Lines/CPU Min:      4021
: Lexemes/CPU-Min:    47055
: Memory Used:        237 pages
: Compilation Complete
```

0171 AH-BT13A-SE
VAX/VMS V4.0

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PM5
LIS

QUOTAUTIL
LIS

MAKPTR
LIS

MATCHNAME
LIS

MPWIND
LIS

LOCKDB
LIS

LOCKERS
LIS

MAKACC
LIS

PARSNM
LIS

MAPVBN
LIS

TODONE
LIS

LOCKDN
LIS

MODIFY
LIS

MOUNT
LIS

MYTHOR
LIS

MAKNMB
LIS

MAKSTR
LIS