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LL	IIIIII	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	
LL	IIIIII	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LL	II	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	
LL	II	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LL	II	BB	EE	FF	
LLLLLLLLLL	IIIIII	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	
LLLLLLLLLL	IIIIII	BBBBBBBB	EEEEEEEEEE	FFFFFFFFFF	

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
LLLLLLLLLL	IIIIII	SSSSSSSS	
LLLLLLLLLL	IIIIII	SSSSSSSS	

(2) 57
(3) 115
(4) 210
(5) 320

DECLARATIONS
LIB\$GET_EF - Allocate one local event flag
LIB\$FREE_EF - Deallocate one local event flag
LIB\$RESERVE_EF - Reserve a local event flag

```
0000 1 .TITLE LIBSEF - Resource allocator for local event flags
0000 2 .IDENT 1-006/ ; File: LIBEF.MAR Edit: MDL1006
0000 3
0000 4
0000 5 *****
0000 6 *
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0000 24 *
0000 25 *
0000 26 *****
0000 27
0000 28
0000 29 ++
0000 30 FACILITY: General Utility Library
0000 31
0000 32 ABSTRACT:
0000 33
0000 34 Three routines for allocating and deallocating local event
0000 35 flag numbers. Using these routines allows use of local
0000 36 event flags by multiple procedures without conflicts.
0000 37
0000 38 ENVIRONMENT: User Mode, AST Reentrant
0000 39
0000 40 --
0000 41 AUTHOR: Steven B. Lionel, CREATION DATE: 08-DEC-78
0000 42
0000 43 MODIFIED BY:
0000 44
0000 45 SBL : VERSION 1
0000 46 1-001 - Original
0000 47 1-002 - Pre-reserve event flags 1-23. SBL 18-Dec-78
0000 48 1-003 - Put before PSECT names and make error codes be
0000 49 global. JBS for SBL 23-JAN-1979
0000 50 1-004 - Correct a typo in edit 003. JBS 24-JAN-1979
0000 51 1-005 - Add a first time flag to allow initialization of non-zero data at
0000 52 run-time, thus allowing the linker to perform demand-zero compression
0000 53 and helping performance. MDL 6-Jul-1984
0000 54 1-006 - Change interpretation of 1/2 the bits in EF_POOL, eliminating the need for
0000 55 a first time flag and restoring AST re-entrancy. MDL 7-Aug-1984
```



```

0000 57 .SBTTL DECLARATIONS
0000 58 :
0000 59 : INCLUDE FILES:
0000 60 :
0000 61 :
0000 62 :
0000 63 : EXTERNAL DECLARATIONS:
0000 64 :
0000 65 .DSABL GBL ; Prevent undeclared
0000 66 ; symbols from being
0000 67 ; automatically global.
0000 68 .EXTRN LIB$_INSEF ; Error codes
0000 69 .EXTRN LIB$_EF_ALRRES
0000 70 .EXTRN LIB$_EF_ALRFRE
0000 71 .EXTRN LIB$_EF_RESSYS
0000 72
0000 73 :
0000 74 : MACROS:
0000 75 :
0000 76 :
0000 77 :
0000 78 : EQUATED SYMBOLS:
0000 79 :
00000004 0000 80 ef_number = 4 ; event flag number parameter
0000 81 :
0000 82 : OWN STORAGE:
0000 83 :
00000000 0000 84 .PSECT _LIB$DATA RD, WRT, NOEXE, NOSHR, PIC, LONG, -
0000 85 CON, LCL, REL, USR
0000 86
00000000 00000000 0000 87 EF_POOL: ; Pool of available event flags
0000 88 .QUAD 0
0000 89
0000 90 : PLEASE NOTE !!!
0000 91 :
0000 92 : EF_POOL is structured as follows:
0000 93 : Low order bit (bit 0) represents event flag number 63.
0000 94 : High order bit (bit 63) represents event flag number 0.
0000 95 :
0000 96 : Bits 0-31 of EF_POOL (event flags 32-63) are interpreted as follows:
0000 97 : 0 => available
0000 98 : 1 => reserved
0000 99 : Bits 32-63 of EF_POOL (event flags 0-31) are interpreted as follows:
0000 100 : 0 => reserved
0000 101 : 1 => available
0000 102 :
0000 103 : Thus, the initial setting of 0 allows for:
0000 104 : Event flags 0 and 24-31 are reserved to the system.
0000 105 : Event flags 1-23 are pre-reserved.
0000 106 : Event flags 32-63 are available for use.
0000 107 :
0000 108 :
0000 109 : PSECT DECLARATIONS:
0000 110 :
00000000 0000 111 .PSECT _LIB$CODE PIC, USR, CON, REL, LCL, SHR, -
0000 112 EXE, RD, NOWRT, LONG
0000 113

```

```
0000 115 .SBTTL LIB$GET_EF - Allocate one local event flag
0000 116 :++
0000 117 : FUNCTIONAL DESCRIPTION:
0000 118 :
0000 119 : LIB$GET_EF allocates one local event flag from a process-wide
0000 120 : pool. If a flag is available for use, its number is returned
0000 121 : to the caller. If no flags are available, an error is returned
0000 122 : as the function value.
0000 123 :
0000 124 : CALLING SEQUENCE:
0000 125 :
0000 126 : status.wlc.v = LIB$GET_EF (ef_number.wl.r)
0000 127 :
0000 128 : INPUT PARAMETERS:
0000 129 :
0000 130 : NONE
0000 131 :
0000 132 : IMPLICIT INPUTS:
0000 133 :
0000 134 : EF_POOL, a table of available event flag numbers in OWN
0000 135 : storage.
0000 136 :
0000 137 : OUTPUT PARAMETERS:
0000 138 :
0000 139 : ef_number - The number of the local event flag allocated
0000 140 : or -1 if none were available.
0000 141 :
0000 142 : IMPLICIT OUTPUTS:
0000 143 :
0000 144 : If successful, an entry is made into EF_POOL indicating that
0000 145 : a local event flag has been reserved.
0000 146 :
0000 147 : FUNCTION VALUE:
0000 148 : COMPLETION CODES:
0000 149 :
0000 150 : SSS_NORMAL - Routine successfully completed.
0000 151 :
0000 152 : LIB$_INSEF - Insufficient event flags. There were no
0000 153 : more event flags available for allocation.
0000 154 : If this error is returned, ef_number is
0000 155 : also set to -1 in case the caller does not
0000 156 : check for failure.
0000 157 :
0000 158 : SIDE EFFECTS:
0000 159 :
0000 160 : NONE
0000 161 :
0000 162 : --
0000 163 :
4000 0000 164 .ENTRY LIB$GET_EF, ^M<IV> ; Save nothing
0002 165 :
0002 166 :+
0002 167 : Scan EF_POOL for first available event flag number
0002 168 :-
0002 169 :
0002 170 SCAN:
50 00000000*EF 20 00 EB 0002 171 FFC #0, #32, EF_POOL, R0
```


LIBSEF
1-006

1 3

- Resource allocator for local event fl 15-SEP-1984 23:59:41 VAX/VMS Macro V04-00
LIB\$GET_EF - Allocate one local event fl 6-SEP-1984 11:06:03 [LIBRTL.SRC]LIBEF.MAR;1

Page 4
(3)

```
50 00000000'EF 20 15 12 000B 172      BNEQ  FOUND      ; One was found
                        20 EA 000D 173      FFS   #32, #32, EF_POOL, R0 ; Try next 32 positions
                        1B 13 0016 174      BEQL  ALL_OUT    ; None available
                        0018 175
                        0018 176 ;+
                        0018 177      Now recheck and set the bit under interlock, in case someone
                        0018 178      has set it at AST level in the meantime.
                        0018 179 :-
                        0018 180
E2 00000000'EF 50 08 E5 0018 181 FOUND_LOW:
                        11 11 0018 182      BBCC  R0, EF_POOL, SCAN      ; Repeat scan if already set
                        0020 183      BRB   LEAVE_GET
                        0022 184
DB 00000000'EF 50 E2 0022 185 FOUND:
                        0022 186      BBSS  R0, EF_POOL, SCAN      ; Repeat scan if already set
                        002A 187
                        002A 188 ;+
                        002A 189      Return success with event flag number in ef_number.
                        002A 190 :-
                        002A 191
                        002A 192 LEAVE_GET:
04 BC 3F 50 C3 002A 193      SUBL3  R0, #63, @ef_number(AP) ; Subtract from 63 because
                        002F 194      ; lo order table bit is
                        002F 195      ; event flag 63.
                        002F 196
                        50 01 D0 002F 197      MOVL  #1, R0          ; SSS$ NORMAL
                        04 04 0032 198      RET                    ; Exit
                        0033 199
                        0033 200 ;+
                        0033 201      Return error since no event flags available
                        0033 202 :-
                        0033 203
                        0033 204 ALL_OUT:
50 04 BC 01 CE 0033 205      MNEGL  #1, @ef_number(AP)      ; Set ef-number to -1
00000000'8F D0 0037 206      MOVL  #LIB$_INSEF, R0        ; Insufficient event flags
04 04 003E 207      RET                    ; Exit
                        003F 208
```

```
003F 210 .SBTTL LIB$FREE_EF - Deallocate one local event flag
003F 211 :++
003F 212 : FUNCTIONAL DESCRIPTION:
003F 213 :
003F 214 : LIB$FREE_EF is the complement of LIB$GET_EF. When a routine
003F 215 : called LIB$GET_EF to allocate a local event flag, and no
003F 216 : longer needs it, LIB$FREE_EF should be called to free the
003F 217 : event flag for use by other routines.
003F 218 :
003F 219 : CALLING SEQUENCE:
003F 220 :
003F 221 : status.wlc.v = LIB$FREE_EF (ef_number.rl.r)
003F 222 :
003F 223 : INPUT PARAMETERS:
003F 224 :
003F 225 : ef_number - The number of the event flag to be
003F 226 : deallocated. This is the value returned
003F 227 : to the user by LIB$GET_EF.
003F 228 :
003F 229 : IMPLICIT INPUTS:
003F 230 :
003F 231 : EF_POOL, a table of available event flag numbers in OWN
003F 232 : storage.
003F 233 :
003F 234 : OUTPUT PARAMETERS:
003F 235 :
003F 236 : NONE
003F 237 :
003F 238 : IMPLICIT OUTPUTS:
003F 239 :
003F 240 : An entry is made in EF_POOL indicating that the event flag
003F 241 : is free for use.
003F 242 :
003F 243 : FUNCTION VALUE:
003F 244 : COMPLETION CODES:
003F 245 :
003F 246 : SSS_NORMAL - Routine successfully completed.
003F 247 :
003F 248 : LIB$EF_ALRFRE - Event flag already free.
003F 249 :
003F 250 : LIB$EF_RESSYS - Event flag reserved to system. This
003F 251 : occurs if ef_number is outside the ranges
003F 252 : of 1-23 and 32-63.
003F 253 :
003F 254 : SIDE EFFECTS:
003F 255 :
003F 256 : NONE
003F 257 :
003F 258 : --
003F 259 :
003F 260 : .ENTRY LIB$FREE_EF, ^M<IV> ; Save nothing
0041 261 :
0041 262 : +
0041 263 : Check to see if ef_number is in the proper range.
0041 264 : -
0041 265 :
0041 266 : CMPL @ef_number(AP), #63 ; Bigger than 63?
```

4000

3F 04 BC D1


```

      31 14 0045 267      BGTR RES_SYS_1      ; Yes, error
      04 BC D5 0047 268      TSTL @ef_number(AP) ; Less than 1?
      2C 15 004A 269      BLEQ RES_SYS_1      ; Yes, error
17    04 BC 91 004C 270      CMPB @ef_number(AP), #23 ; 1-23?
      15 15 0050 271      BLEQ OK_LOW        ; Yes, ok
20    04 BC 91 0052 272      CMPB @ef_number(AP), #32 ; 32-63?
      20 19 0056 273      BLSS RES_SYS_1      ; No, error
      0058 274
      0058 275 ;+
      0058 276      ef_number is in range 32-63. Now, unset the bit.
      0058 277 ;:-
      0058 278
      0058 279 OK_1:
50    3F 04 BC C3 0058 280      SUBL3 @ef_number(AP), #63, R0 ; Convert to bit offset
1B 00000000'EF 50 E5 005D 281      BBCC R0, EF_POOL, ALR_FRE ; Clear but error if
      0D 11 0065 282      ; already clear.
      0065 283      BRB LEAVE_FRE
      0067 284
      0067 285 ;+
      0067 286      ef_number is in range 1-23. Now, set the bit.
      0067 287 ;:-
      0067 288
      0067 289 OK_LOW:
50    3F 04 BC C3 0067 290      SUBL3 @ef_number(AP), #63, R0 ; Convert to bit offset
OC 00000000'EF 50 E2 006C 291      BBSS R0, EF_POOL, ALR_FRE ; SET but error if
      0074 292      ; already SET.
      0074 293
      0074 294 ;+
      0074 295      Return success
      0074 296 ;:-
      0074 297
      0074 298 LEAVE_FRE:
50    01 D0 0074 299      MOVL #1, R0 ; SS$_NORMAL
      04 0077 300      RET
      0078 301
      0078 302 ;+
      0078 303      Error if event flag number reserved to system or
      0078 304      out of range.
      0078 305 ;:-
      0078 306
      0078 307 RES_SYS_1:
50    00000000'8F D0 0078 308      MOVL #LIB$_EF_RESSYS, R0 ; Event flag reserved
      04 007F 309      RET
      0080 310
      0080 311 ;+
      0080 312      Error if event flag already free.
      0080 313 ;:-
      0080 314
      0080 315 ALR_FRE:
50    00000000'8F D0 0080 316      MOVL #LIB$_EF_ALRFRE, R0 ; Event flag already free
      04 0087 317      RET
      0088 318
```

```
0088 320 .SBTTL LIB$RESERVE_EF - Reserve a local event flag
0088 321 :++
0088 322 : FUNCTIONAL DESCRIPTION:
0088 323 :
0088 324 : LIB$RESERVE_EF is used when a routine wants to allocate
0088 325 : a particular local event flag number. This is different
0088 326 : from LIB$GET_EF which allocates an arbitrary event flag.
0088 327 :
0088 328 : To deallocate an event flag reserved with LIB$RESERVE_EF
0088 329 : use LIB$FREE_EF.
0088 330 :
0088 331 : CALLING SEQUENCE:
0088 332 :
0088 333 : status.wlc.v = LIB$RESERVE_EF (ef_number.rl.r)
0088 334 :
0088 335 : INPUT PARAMETERS:
0088 336 :
0088 337 : ef_number - The number of the event flag desired to be
0088 338 : allocated.
0088 339 :
0088 340 : IMPLICIT INPUTS:
0088 341 :
0088 342 : EF_POOL, a table of available event flags located in OWN
0088 343 : storage.
0088 344 :
0088 345 : OUTPUT PARAMETERS:
0088 346 :
0088 347 : NONE
0088 348 :
0088 349 : IMPLICIT OUTPUTS:
0088 350 :
0088 351 : An entry is made in EF_POOL indicating that the event
0088 352 : flag is allocated.
0088 353 :
0088 354 : FUNCTION VALUE:
0088 355 : COMPLETION CODES:
0088 356 :
0088 357 : SS$_NORMAL - Routine successfully completed.
0088 358 :
0088 359 : LIB$_EF_ALRRES - Event flag already reserved.
0088 360 :
0088 361 : LIB$_EF_RESSYS - Event flag reserved to system. This
0088 362 : occurs if ef_number is outside the ranges
0088 363 : of 1-23 and 32-63.
0088 364 :
0088 365 : SIDE EFFECTS:
0088 366 :
0088 367 : NONE
0088 368 :
0088 369 : --
0088 370 :
4000 0088 371 .ENTRY LIB$RESERVE_EF, ^M<IV> ; Save nothing
008A 372 :
008A 373 :+
008A 374 : First check to see if ef_number is in range.
008A 375 :-
008A 376 :
```



```
3F 04 BC D1 008A 377 CMPL @ef_number(AP), #63 ; Greater than 63?
      31 14 008E 378 BGTR RES_SYS_2 ; Yes, error
      04 BC D5 0090 379 TSTL @ef_number(AP) ; Less than 1?
      2C 15 0093 380 BLEQ RES_SYS_2 ; Yes, error
17 04 BC 91 0095 381 CMPB @ef_number(AP), #23 ; 1-23?
      15 15 0099 382 BLEQ OK_LOW2 ; Yes, ok
20 04 BC 91 009B 383 CMPB @ef_number(AP), #32 ; 32-63?
      20 19 009F 384 BLSS RES_SYS_2 ; No, error
      00A1 385
      00A1 386 ;+
      00A1 387 ;+
      00A1 388 ;+
      00A1 389 ;+
      00A1 390 OK_2:
50 3F 04 BC C3 00A1 391 SUBL3 @ef_number(AP), #63, R0 ; Convert to bit offset
1B 00000000'EF 50 E2 00A6 392 BBSS R0, EF_POOL, ALR_RES ; Reserve it, but error
      OD 11 00AE 393 ; if already reserved.
      00B0 394 BRB LEAVE_RES
      00B0 395
      00B0 396 ;+
      00B0 397 ;+
      00B0 398 ;+
      00B0 399 ;+
      00B0 400 OK_LOW2:
50 3F 04 BC C3 00B0 401 SUBL3 @ef_number(AP), #63, R0 ; Convert to bit offset
OC 00000000'EF 50 E5 00B5 402 BBCC R0, EF_POOL, ALR_RES ; Reserve it, but error
      00BD 403 ; if already reserved.
      00BD 404
      00BD 405 ;+
      00BD 406 ;+
      00BD 407 ;+
      00BD 408 ;+
      00BD 409 LEAVE_RES:
      50 01 D0 00BD 410 MOVL #1, R0 ; $$$ NORMAL
      04 00C0 411 RET ; Exit
      00C1 412
      00C1 413 ;+
      00C1 414 ;+
      00C1 415 ;+
      00C1 416 ;+
      00C1 417 ;+
      00C1 418 RES_SYS_2:
50 00000000'8F D0 00C1 419 MOVL #LIB$EF_RESSYS, R0 ; Reserved to system
      04 00C8 420 RET ; Exit
      00C9 421
      00C9 422 ;+
      00C9 423 ;+
      00C9 424 ;+
      00C9 425 ;+
      00C9 426 ALR_RES:
50 00000000'8F D0 00C9 427 MOVL #LIB$EF_ALRRES, R0 ; Already reserved
      04 00D0 428 RET ; Exit
      00D1 429
      00D1 430 .END
```

LIBSEF
Symbol tableN 3
- Resource allocator for local event fla 15-SEP-1984 23:59:41 VAX/VMS Macro V04-00
6-SEP-1984 11:06:03 [LIBRTL.SRC]LIBEF.MAR;1Page 9
(5)

ALL_OUT	00000033	R	02
ALR_FRE	00000080	R	02
ALR_RES	000000C9	R	02
EF_NUMBER	= 00000004		
EF_POOL	00000000	R	01
FOUND	00000022	R	02
FOUND_LOW	00000018	R	02
LEAVE_FRE	00000074	R	02
LEAVE_GET	0000002A	R	02
LEAVE_RES	000000BD	R	02
LIB\$FREE_EF	0000003F	RG	02
LIB\$GET_EF	00000000	RG	02
LIB\$RESERVE_EF	00000088	RG	02
LIB\$EF_ALRFRE	*****	X	00
LIB\$EF_ALRRRES	*****	X	00
LIB\$EF-RESSYS	*****	X	00
LIB\$INSEF	*****	X	00
OK_1	00000058	R	02
OK_2	000000A1	R	02
OK_LOW	00000067	R	02
OK_LOW2	000000B0	R	02
RES_SYS_1	00000078	R	02
RES_SYS_2	000000C1	R	02
SCAN	00000002	R	02

+-----+
! Psect synopsis !
+-----+

PSECT name	Allocation	PSECT No.	Attributes														
. ABS	00000000 (0.)	00 (0.)	NOPIC	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE				
_LIB\$DATA	00000008 (8.)	01 (1.)	PIC	USR	CON	REL	LCL	NOSHR	NOEXE	RD	WRT	NOVEC	LONG				
_LIB\$CODE	000000D1 (209.)	02 (2.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG				

+-----+
! Performance indicators !
+-----+

Phase	Page faults	CPU Time	Elapsed Time
Initialization	32	00:00:00.03	00:00:02.00
Command processing	125	00:00:00.32	00:00:02.10
Pass 1	73	00:00:00.52	00:00:03.20
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	81	00:00:00.49	00:00:03.37
Symbol table output	3	00:00:00.04	00:00:00.47
Psect synopsis output	3	00:00:00.01	00:00:00.01
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	319	00:00:01.42	00:00:11.16

The working set limit was 1050 pages.

4949 bytes (10 pages) of virtual memory were used to buffer the intermediate code.

There were 10 pages of symbol table space allocated to hold 24 non-local and 0 local symbols.

430 source lines were read in Pass 1, producing 19 object records in Pass 2.

0 pages of virtual memory were used to define 0 macros.

+-----+
! Macro library statistics !
+-----+

Macro library name

Macros defined

_\$255\$DUA28:[SYSLIB]STARLET.MLB;2

0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS\$:LIBEF/OBJ=OBJ\$:LIBEF MSRC\$:LIBEF/UPDATE=(ENH\$:LIBEF)

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