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EEEEEEEEEE XX XX TTTTTTTTTT HH HH DDDDDDDD RRRRRRRR
EEEEEEEEEE XX XX TTTTTTTTTT HH HH DDDDDDDD RRRRRRRR
EE XX XX TT HH HH DD DD RR RR
EE XX XX TT HH HH DD DD RR RR
EE XX XX TT HH HH DD DD RR RR
EEEEEEEE XX XX TT HH HH DD DD RRRRRRRR
EEEEEEEE XX XX TT HH HH DD DD RRRRRRRR
EE XX XX TT HH HH DD DD RR RR
EE XX XX TT HH HH DD DD RR RR
EE XX XX TT HH HH DD DD RR RR
EEEEEEEEEE XX XX TT HH HH DDDDDDDD RR RR
EEEEEEEEEE XX XX TT HH HH DDDDDDDD RR RR

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LL IIIIII SSSSSSSS
LL IIIIII SSSSSSSS
LL II SS
LL II SS
LL II SS
LL II SSSSSS
LL II SSSSSS
LL II SS
LL II SS
LL II SS
LLLLLLLLLL IIIIII SSSSSSSS
LLLLLLLLLL IIIIII SSSSSSSS

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:001 :CDS0004
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:001 :CDS0004
:002 :CDS0004
:003 :CDS0004
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```

0001 0 MODULE EXTHDR (
0002 0
0003 0     LANGUAGE (BLISS32),
0004 0     IDENT = 'V04-001'
0005 1 BEGIN
0006 1
0007 1
0008 1 *****
0009 1 *
0010 1 *  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
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0027 1 *
0028 1 *
0029 1 *****
0030 1
0031 1 ++
0032 1
0033 1 FACILITY: F11ACP Structure Level 2
0034 1
0035 1 ABSTRACT:
0036 1
0037 1     This routine creates an extension file header for the given file
0038 1     header.
0039 1
0040 1 ENVIRONMENT:
0041 1
0042 1     STARLET operating system, including privileged system services
0043 1     and internal exec routines.
0044 1
0045 1 --
0046 1
0047 1
0048 1 AUTHOR: Andrew C. Goldstein, CREATION DATE: 27-Jul-1977 10:15
0049 1
0050 1 MODIFIED BY:
0051 1
0052 1     V04-001 CDS0004      Christian D. Saether    15-Nov-1984
0053 1     Set reference count for new extension fcb to 1.
0054 1
0055 1     V03-006 CDS0003      Christian D. Saether    14-Aug-1984
0056 1     Modify creation of extension fcbs.
0057 1

```

```

: 55      0058 1 |
: 56      0059 1 |
: 57      0060 1 |
: 58      0061 1 |
: 59      0062 1 |
: 60      0063 1 |
: 61      0064 1 |
: 62      0065 1 |
: 63      0066 1 |
: 64      0067 1 |
: 65      0068 1 |
: 66      0069 1 |
: 67      0070 1 |
: 68      0071 1 |
: 69      0072 1 |
: 70      0073 1 |
: 71      0074 1 |
: 72      0075 1 |
: 73      0076 1 |
: 74      0077 1 |
: 75      0078 1 |
: 76      0079 1 |
: 77      0080 1 |
: 78      0081 1 |
: 79      0082 1 |
: 80      0083 1 |
: 81      0084 1 |

```

V03-005 LMP0286 L. Mark Pilant, 26-Jul-1984 13:24
Correct a broken CALL offset.

V03-004 ACG0415 Andrew C. Goldstein, 6-Apr-1984 20:59
Set CLF_NOBUILD in FCB initialization, since ACL is
already there.

V03-003 ACG0408 Andrew C. Goldstein, 21-Mar-1984 11:40
Make APPLY_RVN and DEFAULT_RVN macros; also fix handling
of RVN in Back link.

V03-002 CDS0002 Christian D. Saether 18-Jan-1984
Modify interface to DEFAULT_RVN.

V03-001 CDS0001 Christian D. Saether 30-Dec-1983
Use L_NORM linkage and BIND_COMMON macro.

V02-007 LMP0003 L. Mark Pilant, 11-Dec-1981 14:00
Add support for cathedral windows.

V02-006 ACG0167 Andrew C. Goldstein, 16-Apr-1980 19:26
Previous revision history moved to F11B.REV

..

LIBRARY 'SYSS:LIBRARY:LIB.L32';
REQUIRE 'SRC\$:FCPDEF.B32';

```

: 83 1075 1 GLOBAL ROUTINE EXTEND_HEADER (FIB, OLD_HEADER, FCB, NEW_VOLUME, BLOCKS_NEEDED) : L_NORM =
: 84 1076 1
: 85 1077 1 !++
: 86 1078 1
: 87 1079 1 FUNCTIONAL DESCRIPTION:
: 88 1080 1
: 89 1081 1     This routine creates an extension file header for the given file
: 90 1082 1     header.
: 91 1083 1
: 92 1084 1
: 93 1085 1 CALLING SEQUENCE:
: 94 1086 1     EXTEND_HEADER (ARG1, ARG2, ARG3, ARG4, ARG5)
: 95 1087 1
: 96 1088 1 INPUT PARAMETERS:
: 97 1089 1     ARG1: address of user FIB
: 98 1090 1     ARG2: address of present last file header
: 99 1091 1     ARG3: address of present last FCB or 0
100 1092 1     ARG4: if not present, stay on present volume
101 1093 1         if present:
102 1094 1             if non-zero, force switch to given volume
103 1095 1             if zero, switch to any other volume
104 1096 1     ARG5: number of blocks needed on new volume
105 1097 1
106 1098 1 IMPLICIT INPUTS:
107 1099 1     CURRENT_WINDOW: address of file window or 0
108 1100 1     PRIMARY_FCB: primary FCB of file
109 1101 1     CURRENT_VCB: address of VCB of volume
110 1102 1
111 1103 1 OUTPUT PARAMETERS:
112 1104 1     NONE
113 1105 1
114 1106 1 IMPLICIT OUTPUTS:
115 1107 1     NONE
116 1108 1
117 1109 1 ROUTINE VALUE:
118 1110 1     address of new file header
119 1111 1
120 1112 1 SIDE EFFECTS:
121 1113 1     file header created, window turned, FCB created
122 1114 1
123 1115 1 !--
124 1116 1
125 1117 2 BEGIN
126 1118 2
127 1119 2 MAP
128 1120 2     FIB           : REF BBLOCK,   ! user FIB arg
129 1121 2     OLD_HEADER  : REF BBLOCK,   ! file header arg
130 1122 2     FCB         : REF BBLOCK;   ! FCB arg
131 1123 2
132 1124 2 LOCAL
133 1125 2     OLD_FID     : BBLOCK [FID$C_LENGTH], ! file ID of old header
134 1126 2     EXT_FID     : BBLOCK [FID$C_LENGTH], ! file ID of new header
135 1127 2     VBN        : ! index file VBN of new header
136 1128 2     LBN        : ! LBN of new header
137 1129 2     HEADER     : REF BBLOCK,   ! buffer address of current file header
138 1130 2     NEW_HEADER  : REF BBLOCK;   ! address of new file header
139 1131 2

```

```
140 1132 2 BIND_COMMON;
141 1133 2
142 1134 2 EXTERNAL ROUTINE
143 1135 2     INIT_FCB2      : L_NORM,      ! initialize FCB
144 1136 2     TURN_WINDOW   : L_NORM, ADDRESSING_MODE (GENERAL), ! update window
145 1137 2     CHECKSUM      : L_NORM,      ! checksum file header
146 1138 2     SELECT_VOLUME  : L_NORM,      ! select new volume for use
147 1139 2     MARK_DIRTY    : L_NORM,      ! mark header for writeback
148 1140 2     CHARGE_QUOTA   : L_NORM,      ! charge user's disk quota
149 1141 2     CREATE_HEADER  : L_NORM,      ! create a new file ID and header
150 1142 2     SWITCH_VOLUME  : L_NORM,      ! switch context to desired volume
151 1143 2     READ_HEADER    : L_NORM,      ! read file header
152 1144 2     CREATE_FCB     : L_NORM;      ! create an fcb.
153 1145 2
154 1146 2
155 1147 2 ! Save the file ID of the current last header. If the file is accessed, fix
156 1148 2 ! up the FCB if it is not the primary and turn the window to include blocks
157 1149 2 ! from the header if possible. Then prepare the old header for write-back.
158 1150 2
159 1151 2
160 1152 2 CHSMOVE (FID$C LENGTH, OLD_HEADER[FH2$W FID], OLD FID);
161 1153 2 OLD_FID[FID$W_RVN] = .OLD_FID[FID$W_RVN] + .CURRENT_RVN;
162 1154 2
163 1155 2 IF .FCB NEQ 0 AND .FCB NEQ .PRIMARY_FCB
164 1156 2 THEN
165 1157 2     BEGIN
166 1158 2     CLEANUP_FLAGS[CLF_NOBUILD] = 1;
167 1159 2     KERNEL_CALL (INIT_FCB2, .FCB, .OLD_HEADER);
168 1160 2     END;
169 1161 2
170 1162 2 IF .CURRENT_WINDOW NEQ 0
171 1163 2 THEN IF NOT .CURRENT_WINDOW[WCBSV_CATHEDRAL]
172 1164 2 THEN KERNEL_CALL (TURN_WINDOW, .CURRENT_WINDOW, .OLD_HEADER, .PRIMARY_FCB[FCB$L_FILESIZE], .FCB[FCB$L_STVBN])
173 1165 2
174 1166 2 CHECKSUM (.OLD_HEADER);
175 1167 2
176 1168 2 ! Now create the new file ID. Map and read the corresponding block in the
177 1169 2 ! index file to extract the file sequence number; then punt the buffer.
178 1170 2
179 1171 2
180 1172 2 IF ACTUALCOUNT GEQU 4
181 1173 2 THEN
182 1174 2     BEGIN
183 1175 2     IF .NEW_VOLUME NEQ 0
184 1176 2     AND .FIB[FIB$V_EXACT]
185 1177 2     THEN
186 1178 2     SWITCH_VOLUME (.NEW_VOLUME)
187 1179 2     ELSE
188 1180 2     SELECT_VOLUME (.FIB, .BLOCKS_NEEDED);
189 1181 2     END;
190 1182 2
191 1183 2 NEW_HEADER = CREATE_HEADER (EXT_FID);
192 1184 2 LBN = .HEADER_LBN;
193 1185 2
194 1186 2 ! Get back the old file header, which may or may not have been written out
195 1187 2 ! due to buffer pool thrashing. Check the segment number for overflow.
196 1188 2 ! Plug in the header extension linkage and write it.
```

```
1189 :
1190 :
1191 HEADER = READ HEADER (OLD_FID, FCB);
1192 IF .HEADER[FH2$W_SEG_NUM] GEQU 65535
1193 THEN ERR EXIT (SS$ HEADERFULL);
1194 CHSMOVE (FID$C_LENGTH, EXT_FID, HEADER[FH2$W_EXT_FID]);
1195
1196 CHECKSUM (.HEADER);
1197 MARK_DIRTY (.HEADER);
1198 IF ACTUALCOUNT GEQU 4
1199 THEN
1200 BEGIN
1201 SWITCH_VOLUME (.NEW_FID_RVN);
1202 END;
1203
1204 ! We now fabricate a buffer and copy the old header into it, thus
1205 ! keeping the attributes. Note that we truncate the Ident area to only the
1206 ! file name, to gain map pointer space.
1207
1208 CHSMOVE (512, .HEADER, .NEW_HEADER);
1209 HEADER_LBN = .LBN;
1210 FILE_HEADER = .NEW_HEADER;
1211
1212 CHSMOVE (FID$C_LENGTH, EXT_FID, NEW_HEADER[FH2$W_FID]);
1213 NEW_HEADER[FH2$B_FID_RVN] = 0;
1214
1215 ! If this is the first extension header of the file, copy the file ID
1216 ! of the primary into the back link. Once there, it will propagate to
1217 ! succeeding extension headers.
1218
1219 IF .NEW_HEADER[FH2$W_SEG_NUM] EQL 0
1220 THEN
1221 BEGIN
1222 CHSMOVE (FID$C_LENGTH, OLD_FID, NEW_HEADER[FH2$W_BACKLINK]);
1223 DEFAULT_RVN (NEW_HEADER[FH2$W_BK_FIDRVN], .CURRENT_RVN);
1224 END
1225
1226 ! If we're already in an extension header, the RVN may have to be fixed
1227 ! up, if the new extension header is on a different volume.
1228
1229 ELSE
1230 BEGIN
1231 APPLY_RVN (NEW_HEADER[FH2$W_BK_FIDRVN], .OLD_FID[FID$B_RVN]);
1232 DEFAULT_RVN (NEW_HEADER[FH2$W_BK_FIDRVN], .CURRENT_RVN);
1233 END;
1234 NEW_FID = 0; ! header extension is complete
1235
1236 NEW_HEADER[FH2$W_SEG_NUM] = .NEW_HEADER[FH2$W_SEG_NUM] + 1;
1237 CHSFILL (0, FID$C_LENGTH, NEW_HEADER[FH2$W_EXT_FID]);
1238 NEW_HEADER[FH2$B_MAP_INUSE] = 0;
1239 NEW_HEADER[FH2$B_CONTIG] = 0;
1240 NEW_HEADER[FH2$B_LOCKED] = 0;
1241 NEW_HEADER[FH2$B_MPOFFSET] = .NEW_HEADER[FH2$B_IDOFFSET] +
1242 ($BYTEOFFSET (FID$W_REVISION)) / 2;
```

```

254 1246 2 NEW_HEADER[FH2$B_ACOFFSET] = ($BYTEOFFSET (FH2$W_CHECKSUM)) / 2;
255 1247 2 NEW_HEADER[FH2$B_RSOFFSET] = ($BYTEOFFSET (FH2$W_CHECKSUM)) / 2;
256 1248 2
257 1249 2 CHSFILL (0, 512 - .NEW_HEADER[FH2$B_MPOFFSET]*2, .NEW_HEADER + .NEW_HEADER[FH2$B_MPOFFSET]*2);
258 1250 2
259 1251 2 ! Now charge the user for the new extension header.
260 1252 2 !
261 1253 2
262 1254 2 CHARGE_QUOTA (.NEW_HEADER[FH2$L_FILEOWNER], 1, BITLIST (QUOTA_CHECK, QUOTA_CHARGE));
263 1255 2
264 1256 2 ! Finally create an extension FCB if the file is accessed.
265 1257 2 !
266 1258 2
267 1259 2 IF .FCB NEQ 0
268 1260 2 THEN
269 1261 2 BEGIN
270 1262 2 LOCAL
271 1263 2 NEWFCB : REF BBLOCK;
272 1264 2
273 1265 2 NEWFCB = CREATE_FCB (.NEW_HEADER);
274 1266 2
001 !CDS0004 1267 2 NEWFCB [FCB$W_REFCNT] = 1;
275 1268 2 NEWFCB [FCB$L_LOCKBASIS] = .PRIMARY_FCB [FCB$L_LOCKBASIS];
276 1269 2 FCB [FCB$L_EXFCB] = .NEWFCB;
277 1270 2 CURRENT_VCB [VCB$W_TRANS] = .CURRENT_VCB [VCB$W_TRANS] + 1;
278 1271 2 END;
279 1272 2
280 1273 2 RETURN (.NEW_HEADER);
281 1274 2
282 1275 1 END;

```

! end of routine EXTEND_HEADER

```

.TITLE EXTHDR
.IDENT \V04-001\

.EXTRN INIT_FCB2, TURN_WINDOW
.EXTRN CHECKSUM, SELECT_VOLUME
.EXTRN MARK_DIRTY, CHARGE_QUOTA
.EXTRN CREATE_HEADER, SWITCH_VOLUME
.EXTRN READ_HEADER, CREATE_FCB

.PSECT $CODE$,NOWRT,2

.ENTRY EXTEND_HEADER, Save R2,R3,R4,R5,R6,R7,R8 : 1075
SUBL2 #16, SP
MOVL OLD_HEADER, R0 : 1152
MOVC3 #6, 8(R0), OLD_FID
ADDW2 -96(BASE), OLD_FID+4 : 1153
TSTL FCB : 1155
BEQL 1$
CMPL FCB, 8(BASE)
BEQL 1$
BISB2 #8, 1(BASE) : 1158
PUSHL OLD_HEADER : 1159
PUSHL FCB
CALLS #2, INIT_FCB2
MOVL 12(BASE), R1 : 1162

```

```

01FC 0000
08 AE 08 5E 10 C2 00002
08 AE 08 50 08 AC D0 00005
08 AE 08 A0 06 28 00009
08 AE 0C AE A0 AA A0 0000F
08 AE 0C AC D5 00014
08 AE 08 AA 16 13 00017
08 AE 0C AC D1 00019
08 AE 01 AA 0F 13 0001E
08 AE 08 88 00020
08 AE 0C AC DD 00024
08 AE 0C AC DD 00027
0000G CF 02 FB 0002A
08 AE 51 0C AA D0 0002F 1$:

```


1A	0B	A1		1F	13	00033	BEQL	2\$			
		50	0C	06	E0	00035	BBS	#6, 11(R1), 2\$			1163
			2C	AC	DD	0003A	MOVL	FCB, R0			1164
		50	08	A0	DD	0003E	PUSHL	44(R0)			
			38	AA	DD	00041	MOVL	8(BASE), R0			
			08	A0	DD	00045	PUSHL	56(R0)			
				AC	DD	00048	PUSHL	OLD_HEADER			
				51	DD	0004B	PUSHL	R1			
00000000G	00			04	FB	0004D	CALLS	#4, TURN_WINDOW			
			08	AC	DD	00054	PUSHL	OLD_HEADER			1166
0000G	CF			01	FB	00057	CALLS	#1, CHECKSUM			
	04			6C	91	0005C	CMPB	(AP), #4			1172
				22	1F	0005F	BLSSU	4\$			
			10	AC	D5	00061	TSTL	NEW_VOLUME			1175
				12	13	00064	BEQL	3\$			
		50	04	AC	DD	00066	MOVL	FIB, R0			1176
		0A	20	A0	E9	0006A	BLBC	32(R0), 3\$			
			10	AC	DD	0006E	PUSHL	NEW_VOLUME			1178
0000G	CF			01	FB	00071	CALLS	#1, SWITCH_VOLUME			
				0B	11	00076	BRB	4\$			
			14	AC	DD	00078	PUSHL	BLOCKS_NEEDED			1180
			04	AC	DD	0007B	PUSHL	FIB			
0000G	CF			02	FB	0007E	CALLS	#2, SELECT_VOLUME			
				5E	DD	00083	PUSHL	SP			1183
0000G	CF			01	FB	00085	CALLS	#1, CREATE_HEADER			
	56			50	DD	0008A	MOVL	R0, NEW_HEADER			
	58		B0	AA	DD	0008D	MOVL	-80(BASE), LBN			1184
			0C	AC	DD	00091	PUSHL	FCB			1191
			0C	AE	9F	00094	PUSHAB	OLD_FID			
0000G	CF			02	FB	00097	CALLS	#2, READ_HEADER			
	57			50	DD	0009C	MOVL	R0, HEADER			
FFFF	8F		04	A7	B1	0009F	CMPW	4(HEADER), #65535			1192
				05	1F	000A5	BLSSU	5\$			
			08C8	8F	BF	000A7	CHMU	#2248			1193
				04	00	000AB	RET				
OE	A7	6E		06	28	000AC	MOV3	#6, EXT_FID, 14(HEADER)			1194
				57	DD	000B1	PUSHL	HEADER			1196
		0000G	CF	01	FB	000B3	CALLS	#1, CHECKSUM			
				57	DD	000B8	PUSHL	HEADER			1197
		0000G	CF	01	FB	000BA	CALLS	#1, MARK_DIRTY			
			04	6C	91	000BF	CMPB	(AP), #4			1198
				08	1F	000C2	BLSSU	6\$			
			AC	AA	DD	000C4	PUSHL	-84(BASE)			1201
		0000G	CF	01	FB	000C7	CALLS	#1, SWITCH_VOLUME			
66			0200	8F	28	000CC	MOV3	#512, (HEADER), (NEW_HEADER)			1200
		B0		58	DD	000D2	MOVL	LBN, -80(BASE)			1210
		04	AA	56	DD	000D6	MOVL	NEW_HEADER, 4(BASE)			1211
08	A6	6E		06	28	000DA	MOV3	#6, EXT_FID, 8(NEW_HEADER)			1213
			0C	A6	94	000DF	CLRB	12(NEW_HEADER)			1214
			04	A6	B5	000E2	TSTW	4(NEW_HEADER)			1221
				08	12	000E5	BNEQ	7\$			
42	A6	08	AE	06	28	000E7	MOV3	#6, OLD_FID, 66(NEW_HEADER)			1224
				18	11	000ED	BRB	9\$			1225
				46	A6	95	000EF	TSTB	70(NEW_HEADER)		1234
				05	12	000F2	BNEQ	8\$			
		46	A6	CC	AE	90	000F4	MOVB	OLD_FID+4, 70(NEW_HEADER)		
		01	46	A6	91	000F9	CMPB	70(NEW_HEADER), #T			

Library Statistics

File	----- Total	Symbols Loaded	----- Percent	Pages Mapped	Processing Time
:_\$255\$DUA18:[SYSLIB]LIB.L32;1	18619	45	0	1000	00:01.8

COMMAND QUALIFIERS

BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LISS:EXTHDR/OBJ=OBS:EXTHDR MSRC\$:EXTHDR/UPDATE=(BUG\$:EXTHDR)

: Size: 388 code + 0 data bytes
: Run Time: 00:22.0
: Elapsed Time: 00:33.8
: Lines/CPU Min: 3479
: Lexemes/CPU-Min: 43437
: Memory Used: 284 pages
: Compilation Complete

