J 5

```
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUU         UUU
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUU         UUU
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
CCC              DDD         DDD  UUU         UUU
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUUUUUUUUUUUUUU
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUUUUUUUUUUUUUU
   CCCCCCCCCCCC  DDDDDDDDDDDD     UUUUUUUUUUUUUUU
```

FILEID**UPGRADE

K 3

```
UU      UU  PPPPPPPP      GGGGGGGG  RRRRRRRR      AAAAAA    DDDDDDDD    EEEEEEEEEE
UU      UU  PPPPPPPP      GGGGGGGG  RRRRRRRR      AAAAAA    DDDDDDDD    EEEEEEEEEE
UU      UU  PP      PP  GG          RR      RR  AA      AA  DD      DD  EE
UU      UU  PP      PP  GG          RR      RR  AA      AA  DD      DD  EE
UU      UU  PP      PP  GG          RR      RR  AA      AA  DD      DD  EE
UU      UU  PP      PP  GG          RR      RR  AA      AA  DD      DD  EE
UU      UU  PPPPPPPP    GG          RRRRRRRR    AA      AA  DD      DD  EEEEEEEE
UU      UU  PPPPPPPP    GG          RRRRRRRR    AA      AA  DD      DD  EEEEEEEE
UU      UU  PP          GG    GGGGGG  RR  RR      AAAAAAAAAA  DD      DD  EE
UU      UU  PP          GG    GGGGGG  RR  RR      AAAAAAAAAA  DD      DD  EE
UU      UU  PP          GG        GG  RR    RR    AA      AA  DD      DD  EE              ....
UU      UU  PP          GG        GG  RR    RR    AA      AA  DD      DD  EE              ....
UUUUUUUUUU  PP            GGGGGG    RR      RR  AA      AA  DDDDDDDD    EEEEEEEEEE      ....
UUUUUUUUUU  PP            GGGGGG    RR      RR  AA      AA  DDDDDDDD    EEEEEEEEEE      ....

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
```

```
0 MODULE upgrade          (IDENT='V04-000',
0                          ADDRESSING_MODE(EXTERNAL=GENERAL))
1 = BEGIN
1
1 !*********************************************************************************
1 !*                                                                               *
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1 !*                                                                               *
1 !*********************************************************************************
1
1 !++
1 ! Facility:     Command Definition Utility, CLI Table Upgrade Module
1 !
1 ! Abstract:     This module is solely responsible for the upgrading of
1 !               old format CLI tables to the latest format level.  The
1 !               module is included in both the CDU and the CLIs, and thus
1 !               must be completely self-contained.
1 !
1 ! Environment:  No assumptions may be made about the environment.
1 !               No own storage is allowed.
1 !               No external references are allowed.
1 !
1 ! Author:       Paul C. Anagnostopoulos
1 ! Creation:     8 March 1983
1 !
1 ! Modifications:
1 !
1 !       V04-003 BLS0285                 Benn Schreiber          9-MAR-1984
1 !               If image name length is 0, then it's a routine address,
1 !               which counts for 4 bytes.
1 !
1 !       V04-002 BLS0270                 Benn Schreiber          9-FEB-1984
1 !               Correct errors in structure length computation.
1 !
1 !       V04-001 PCA1026                 Paul C. Anagnostopoulos 25-Jul-1983
1 !               Add probe to check readability of command table to be
1 !               converted.  Fix bug in creation of entity block, so that
1 !               a label is always included.
1 !--
1
```

```
;    58          0058  1
;    59          0059  1 library 'sys$library:lib';
;    60          0060  1 require 'clitabdef';
;    61          0385  1 require 'cli5def';
;    62          0657  1 require 'cdureq';
;      1 !       P S E C T   N A M E S
;      1 !       ---------   ---------
;      1
;      1 ! The following psect names are chosen so DCL won't break when it links
;      1 ! with this module.  The leading underscores cause the psect to appear
;      1 ! at the end of the image.
;      1
;      1 psect plit = _cdu$plit(align(0),read,nowrite,noexecute);
;      1 psect code = _cdu$code(align(0),read,nowrite,execute);
;      1
;      1
;      1 !       T A B L E   O F   C O N T E N T S
;      1 !       ---------   ---   ---------------
;      1
;      1 forward routine
;      1         cdu$upgrade_table,
;      1         upgrade_5_to_6,
;      1         upgrade_5_to_6_allocate,
;      1         upgrade_5_to_6_vector: novalue,
;      1         upgrade_5_to_6_command: novalue,
;      1         upgrade_5_to_6_entity: novalue;
;      1
;      1
;      1 !       M A C R O   D E F I N I T I O N S
;      1 !       ---------   ---------------------
;      1
;      1 ! The following macro will return the length of an ASCIC string which is
;      1 ! present at a certain offset within a block.  If the offset is within the
;      1 ! fixed portion of the block, then there is no string.  Or, the byte at the
;      1 ! offset may not be readable.
;      1
;      1 macro
;    M 1         ascic_length(the_block,the_offset) =
;    M 1                 (builtin
;    M 1                         prober;
;    M 1
;    M 1                 if the_offset lequ 8 then
;    M 1                         0
;    M 1                 else if prober(%ref(psl$c_user),%ref(1),the_block+the_offset) then
;    M 1                         1>ch$rchar(the_block+the_offset)
;    M 1                 else
;    M 1                         0
;      1                 ) %;
;      1
;      1 ! The following macro will translate an old block address into the
;      1 ! corresponding new block address.  This is done by looking up the old
;      1 ! address in the vector of old addresses and taking the corresponding entry
;      1 ! from the vector of new addresses.  Note that the zeroth entry of the vectors
;      1 ! contains the entry count.
;      1
;      1 macro
;    M 1         new_block_address(old_block_address) =
;    M 1                 (bind
;    M 1                         old_block_address_bind = old_block_address: block[,byte];
;    M 1
;    M 1                 incr i from 1 to .old_vector[0] do
;    M 1                         if old_block_address_bind eqla .old_vector[.i] then
;  121        M 1128  1                             exitloop .new_vector[.i]
;  122          1129  1                    ) %;
```

```
1 !++
1 ! Description:  This routine is called whenever a CLI table is about to be
1 !               used.  Its goal is to upgrade the CLI table to the latest
1 !               format level, so that no other module need be concerned
1 !               with any format but the latest.
1 !
1 ! Parameters:   table           By reference, the address of the CLI table
1 !                               (its primary vector block).
1 !               new_pointer     Optional, by reference, a longword which is
1 !                               to receive the address of the upgraded table.
1 !               get_vm          Optional, by reference, the address of a
1 !                               routine with the same interface as LIB$GET_VM,
1 !                               for obtaining virtual memory.
1 !               free_vm         Optional, by reference, self-explanatory.
1 !
1 !
1 ! Returns:      A status describing what happened.
1 !
1 ! Notes:
1 !--
1
1 GLOBAL ROUTINE cdu$upgrade_table(table: pointer,
1                                 new_pointer: ref vector[1,long],
1                                 get_vm: pointer,
1                                 free_vm: pointer)
2 = BEGIN
2
2 local
2         level: long;
2
2 builtin
2         nullparameter,
2         prober;
2
2
2 ! The first thing to do is ensure that we can read the table.  If not,
2 ! just return a bad status.  This is done because we may be called
2 ! by DCL when there is no current CLI table.
2
2 if not prober(%ref(psl$c_user),%ref(1),.table) then
2         return msg(cli$_invtab);
2
2 ! We need to do is determine the format level of the table.
2 ! Prior to level 6, the primary vector block had a different format, so
2 ! we have to determine the basic format and then the exact level.
2
3 level = (if .table[vec_w_size] eqlu vec_k_length and
3          .table[vec_b_type] eqlu block_k_vector then
3                 .table[vec_b_strlvl]                    ! Level 6 or later.
3         else
2                 .table[vec5_b_strlvl]);                 ! Level 5 or earlier.
2
2 ! Select on the format level of the table.
2
2 selectoneu .level of set
2
2 [5]:
```

```
:  181          1187  2
:  182          1188  2          ! It's a level 5 table, so we can upgrade it to the latest level.
:  183          1189  2          ! If we were called with only one argument, however, that means that
:  184          1190  2          ! the caller doesn't think we should upgrade an old table.  This is
:  185          1191  2          ! true of the process-permanent table, because the user should
:  186          1192  2          ! understand the implication of upgrading old CLDs, and is thus
:  187          1193  2          ! required to do it by hand.
:  188          1194  2
:  189          1195  3          (if nullparameter(2) then
:  190          1196  3                  return msg(cli$_oldtab);
:  191          1197  3
:  192          1198  3          ! Call a routine to upgrade the table.  It returns the final status.
:  193          1199  3
:  194          1200  2          return upgrade_5_to_6(.table,new_pointer[0],.get_vm,.free_vm););
:  195          1201  2
:  196          1202  2 [6]:
:  197          1203  2
:  198          1204  2          ! Level 6 is the current level.
:  199          1205  2
:  200          1206  3          (if not nullparameter(2) then
:  201          1207  3                  new_pointer[0] = .table;
:  202          1208  3          return msg(cli$_oktab););
:  203          1209  2
:  204          1210  2 [otherwise]:
:  205          1211  2
:  206          1212  2          ! God knows what this table is.
:  207          1213  2
:  208          1214  2          return msg(cli$_invtab);
:  209          1215  2 tes;
:  210          1216  2
:  211          1217  1 END;


                                                                    .TITLE  UPGRADE
                                                                    .IDENT  \V04-000\

                                                                    .EXTRN  CLI$_INVTAB, CLI$_OLDTAB
                                                                    .EXTRN  CLI$_OKTAB

                                                                    .PSECT  _CDU$CODE,NOWRT,0

                                              0004 00000            .ENTRY  CDU$UPGRADE_TABLE, Save R2                     ; 1151
                            52 00000000G  8F   D0 00002            MOVL    #CLI$_INVTAB, R2                               ;
                            50        04  AC   D0 00009            MOVL    TABLE, R0                                      ; 1169
                    60      01            03   0C 0000D            PROBER  #3, #1, (R0)                                   ;
                                          04   12 00011            BNEQ    1$                                             ;
                            50            52   D0 00013            MOVL    R2, R0                                         ; 1170
                                               04 00016            RET                                                    ;
                            14            60   B1 00017 1$:        CMPW    (R0), #20                                      ; 1176
                                          0C   12 0001A            BNEQ    2$                                             ;
                            01        02  A0   91 0001C            CMPB    2(R0), #1                                      ; 1177
                                          06   12 00020            BNEQ    2$                                             ;
                            51        04  A0   9A 00022            MOVZBL  4(R0), LEVEL                                   ; 1178
                                          04   11 00026            BRB     3$                                             ;
                            51        28  A0   9A 00028 2$:        MOVZBL  40(R0), LEVEL                                  ; 1180
                            05            51   D1 0002C 3$:        CMPL    LEVEL, #5                                      ; 1186
                                          21   12 0002F            BNEQ    6$                                             ;
```

```
                     02              6C  91 00031          CMPB    (AP), #2                                              ; 1195
                                     05  1F 00034          BLSSU   4$                                                    ;
                           08        AC  D5 00036          TSTL    8(AP)                                                 ;
                                     08  12 00039          BNEQ    5$                                                    ;
                     50 00000000G    8F  DO 0003B 4$:      MOVL    #CLI$_OLDTAB, RO                                      ; 1196
                                         04 00042          RET                                                           ;
                     7E        0C    AC  7D 00043 5$:      MOVQ    GET_VM, -(SP)                                         ; 1200
                               08    AC  DD 00047          PUSHL   NEW_POINTER                                           ;
                                     50  DD 0004A          PUSHL   RO                                                    ;
                 0000V  CF           04  FB 0004C          CALLS   #4, UPGRADE_5_TO_6                                    ;
                                         04 00051          RET                                                           ;
                     06              51  D1 00052 6$:      CMPL    LEVEL, #6                                             ; 1202
                                     16  12 00055          BNEQ    8$                                                    ;
                     02              6C  91 00057          CMPB    (AP), #2                                              ; 1206
                                     09  1F 0005A          BLSSU   7$                                                    ;
                           08        AC  D5 0005C          TSTL    8(AP)                                                 ;
                                     04  13 0005F          BEQL    7$                                                    ;
                  08  BC             50  DO 00061          MOVL    RO, @NEW_POINTER                                      ; 1207
                     50 00000000G    8F  DO 00065 7$:      MOVL    #CLI$_OKTAB, RO                                       ; 1208
                                         04 0006C          RET                                                           ;
                     50              52  DO 0006D 8$:      MOVL    R2, RO                                                ; 1214
                                         04 00070          RET                                                           ; 1217

; Routine Size:  113 bytes,    Routine Base:  _CDU$CODE + 0000
```

```
!++
! Description:  This is the main routine for upgrading a level 5 (VMS V3)
!               CLI table to level 6 (VMS V4).
!
! Parameters:   table           By reference, the address of the CLI table
!                               (its primary vector block).
!               new_pointer     By reference, a longword in which to return
!                               the address of the new table.
!               get_vm          By reference, see above.
!               free_vm         By reference, see above.
!
! Returns:      By reference, the new primary vector block.
!
! Notes:
!--

ROUTINE upgrade_5_to_6(table: pointer,
                       new_pointer: ref vector[1,long],
                       get_vm: pointer,
                       free_vm: pointer)
= BEGIN

local
        status: long,
        old_vector: ref vector[,long],
        new_vector: ref vector[,long],
        block_count: long initial(0),
        old_block: pointer;


! First we must allocate space for two vectors, with an entry for each of
! the blocks in the old CLI table.  The OLD_VECTOR will contain the
! addresses of the old CLI table blocks, while the NEW_VECTOR will contain
! the address of the corresponding new block.

status = (.get_vm)(%ref(.table[vec5_l_free]/12*4), old_vector);
status = (.get_vm)(%ref(.table[vec5_l_free]/12*4), new_vector);

! Now we can allocate space for new blocks, one for each of the old
! blocks.  This is done by scanning the old CLI table from beginning to
! end, and calling the allocation routine for each one.  As we go, the
! old and new block address vectors will be filled in.  Note that the first
! entry in the vectors will reference the primary vector block.

old_block = .table;
while .old_block lssa .table + .table[vec5_l_free] do (
        increment(block_count);
        old_vector[.block_count] = .old_block;
        old_block = .old_block +
              upgrade_5_to_6_allocate(.old_block,new_vector[.block_count],.table,.get_vm);
        if .new_vector[.block_count] eqla 0 then
              return msg(cli$_invtab);
);

! Store the block count as the zeroth entry in both vectors, so that the
! vectors are self-describing.

```

```
;  270         1275  2 old_vector[0] = new_vector[0] = .block_count;
;  271         1276  2
;  272         1277  2 ! Once the new blocks are allocated, we can fill them in.  We make a pass
;  273         1278  2 ! over the address vectors, calling a routine for each of the possible
;  274         1279  2 ! cases.
;  275         1280  2
;  276         1281  3 incru i from 1 to .block_count do (
;  277         1282  3
;  278         1283  3         bind
;  279         1284  3                 new_block = .new_vector[.i]: block[,byte];
;  280         1285  3
;  281         1286  4         (selectoneu .new_block[vec_b_type] of set
;  282         1287  4         [block_k_vector]:        upgrade_5_to_6_vector;
;  283         1288  4         [block_k_command]:       upgrade_5_to_6_command;
;  284         1289  4         [block_k_entity]:        upgrade_5_to_6_entity;
;  285         1290  3         tes) (new_block,.old_vector[.i],.new_vector,.old_vector,.get_vm);
;  286         1291  2 );
;  287         1292  2
;  288         1293  2 ! Store the address of the new table in the requested place.
;  289         1294  2
;  290         1295  2 new_pointer[0] = .new_vector[1];
;  291         1296  2
;  292         1297  2 ! Free up the memory that was allocated for the address vectors.
;  293         1298  2
;  294         1299  2 status = (.free_vm)(%ref(.table[vec5_l_free]/12*4), old_vector);
;  295         1300  2 status = (.free_vm)(%ref(.table[vec5_l_free]/12*4), new_vector);
;  296         1301  2
;  297         1302  2 return msg(cli$_upgtab);
;  298         1303  2
;  299         1304  1 END;


                                                        .EXTRN  CLI$_UPGTAB

                                     00FC 00000 UPGRADE_5_TO_6:
                                                        .WORD   Save R2,R3,R4,R5,R6,R7                      ; 1234
                  5E            0C  C2 00002            SUBL2   #12, SP                                     ;
                                53  D4 00005            CLRL    BLOCK_COUNT                                 ; 1238
                          04    AE  9F 00007            PUSHAB  OLD_VECTOR                                  ; 1253
                  55      04    AC  D0 0000A            MOVL    TABLE, R5                                   ;
     52         24  A5          0C  C7 0000E            DIVL3   #12, 36(R5), R2                             ;
                  52            04  C4 00013            MULL2   #4, R2                                      ;
            04    AE            52  D0 00016            MOVL    R2, 4(SP)                                   ;
                          04    AE  9F 0001A            PUSHAB  4(SP)                                       ;
            0C    BC            02  FB 0001D            CALLS   #2, @GET_VM                                 ;
                  57            50  D0 00021            MOVL    R0, STATUS                                  ;
                          08    AE  9F 00024            PUSHAB  NEW_VECTOR                                  ; 1254
            04    AE            52  D0 00027            MOVL    R2, 4(SP)                                   ;
                          04    AE  9F 0002B            PUSHAB  4(SP)                                       ;
            0C    BC            02  FB 0002E            CALLS   #2, @GET_VM                                 ;
                  57            50  D0 00032            MOVL    R0, STATUS                                  ;
                  56            55  D0 00035            MOVL    R5, OLD_BLOCK                               ; 1262
                  54      08    AE  D0 00038            MOVL    NEW_VECTOR, R4                              ; 1267
     52           55      24    A5  C1 0003C 1$:        ADDL3   36(R5), R5, R2                              ; 1263
                  52            56  D1 00041            CMPL    OLD_BLOCK, R2                               ;
                                26  1E 00044            BGEQU   2$                                          ;
```

```
                            53  D6 00046        INCL    BLOCK_COUNT                                   ; 1264
        04 BE43             56  D0 00048        MOVL    OLD_BLOCK, @OLD_VECTOR[BLOCK_COUNT]           ; 1265
                      0C    AC  DD 0004D        PUSHL   GET_VM                                        ; 1267
                            55  DD 00050        PUSHL   R5                                            ;
                          6443  DF 00052        PUSHAL  (R4)[BLOCK_COUNT]                             ;
                            56  DD 00055        PUSHL   OLD_BLOCK                                     ;
      0000V  CF             04  FB 00057        CALLS   #4, UPGRADE_5_TO_6_ALLOCATE                   ;
             56             50  C0 0005C        ADDL2   R0, OLD_BLOCK                                 ;
                          6443  D5 0005F        TSTL    (R4)[BLOCK_COUNT]                             ; 1268
                            D8  12 00062        BNEQ    1$                                            ;
             50 00000000G   8F  D0 00064        MOVL    #CLI$_INVTAB, R0                              ; 1269
                                04 0006B        RET                                                   ;
             64             53  D0 0006C 2$:    MOVL    BLOCK_COUNT, (R4)                             ; 1275
        04   BE             53  D0 0006F        MOVL    BLOCK_COUNT, @OLD_VECTOR                      ;
             52             01  D0 00073        MOVL    #1, I                                         ; 1281
                            42  11 00076        BRB     8$                                            ;
             51           6442  D0 00078 3$:    MOVL    (R4)[I], R1                                   ; 1284
             50       02    A1  9A 0007C        MOVZBL  2(R1), R0                                     ; 1286
             01             50  91 00080        CMPB    R0, #1                                        ; 1287
                            07  12 00083        BNEQ    4$                                            ;
             50     0000V   CF  9E 00085        MOVAB   UPGRADE_5_TO_6_VECTOR, R0                     ;
                            1B  11 0008A        BRB     7$                                            ;
             02             50  91 0008C 4$:    CMPB    R0, #2                                        ; 1288
                            07  12 0008F        BNEQ    5$                                            ;
             50     0000V   CF  9E 00091        MOVAB   UPGRADE_5_TO_6_COMMAND, R0                    ;
                            0F  11 00096        BRB     7$                                            ;
             04             50  91 00098 5$:    CMPB    R0, #4                                        ; 1289
                            05  13 0009B        BEQL    6$                                            ;
             50             01  CE 0009D        MNEGL   #1, R0                                        ;
                            05  11 000A0        BRB     7$                                            ;
             50     0000V   CF  9E 000A2 6$:    MOVAB   UPGRADE_5_TO_6_ENTITY, R0                     ;
                      0C    AC  DD 000A7 7$:    PUSHL   GET_VM                                        ; 1290
                      08    AE  DD 000AA        PUSHL   OLD_VECTOR                                    ;
                            54  DD 000AD        PUSHL   R4                                            ;
                      10 BE42   DD 000AF        PUSHL   @OLD_VECTOR[I]                                ;
                            51  DD 000B3        PUSHL   R1                                            ;
             60             05  FB 000B5        CALLS   #5, (R0)                                      ;
                            52  D6 000B8        INCL    I                                             ; 1281
             53             52  D1 000BA 8$:    CMPL    I, BLOCK_COUNT                                ;
                            B9  1B 000BD        BLEQU   3$                                            ;
        08   BC       04    A4  D0 000BF        MOVL    4(R4), @NEW_POINTER                           ; 1295
                      04    AE  9F 000C4        PUSHAB  OLD_VECTOR                                    ; 1299
 52     24   A5             0C  C7 000C7        DIVL3   #12, 36(R5), R2                               ;
             52             04  C4 000CC        MULL2   #4, R2                                        ;
        04   AE             52  D0 000CF        MOVL    R2, 4(SP)                                     ;
                      04    AE  9F 000D3        PUSHAB  4(SP)                                         ;
        10   BC             02  FB 000D6        CALLS   #2, @FREE_VM                                  ;
             57             50  D0 000DA        MOVL    R0, STATUS                                    ;
                      08    AE  9F 000DD        PUSHAB  NEW_VECTOR                                    ; 1300
        04   AE             52  D0 000E0        MOVL    R2, 4(SP)                                     ;
                      04    AE  9F 000E4        PUSHAB  4(SP)                                         ;
        10   BC             02  FB 000E7        CALLS   #2, @FREE_VM                                  ;
             57             50  D0 000EB        MOVL    R0, STATUS                                    ;
             50 00000000G   8F  D0 000EE        MOVL    #CLI$_UPGTAB, R0                              ; 1302
                                04 000F5        RET                                                   ; 1304

; Routine Size:  246 bytes,    Routine Base:  _CDU$CODE + 0071
```

```
1 !++
1 ! Description:  This routine is called to allocate a level 6 block
1 !               corresponding to an old level 5 block.
1 !
1 ! Parameters:   old_block       By reference, the old block for which a new
1 !                               one is to be allocated.
1 !               new_pointer     By reference, a longword to receive the
1 !                               address of the new block.
1 !               table           By reference, the address of the old CLI
1 !                               table.
1 !               get_vm          By reference, see above.
1 !
1 ! Returns:      Length of the old block.
1 !
1 ! Notes:
1 !--
1
1 ROUTINE upgrade_5_to_6_allocate(old_block: pointer,
1                                 new_pointer: ref vector[1,long],
1                                 table: pointer,
1                                 get_vm: pointer)
2 = BEGIN
2
2 local
2       status: long,
2       new_block: pointer,
2       old_length: long;
2
2
2 ! To allocate a new block, we must determine the type of the old block.
2 ! This is not easy.  Once determined, we can allocate space for the new
2 ! block and set up its type and subtype.  We must also determine the length
2 ! of the old block so we can return it.
2
2 ! First we will determine whether the old block is a vector block.
2 ! This is done by comparing its address to the addresses of the primary
2 ! vector block, the verb name table, and the command block pointer table.
2
3 if .old_block eqla .table then (
3
3       ! It's the primary vector block.
3
3       old_length = vec5_k_length;
3       status = (.get_vm)(%ref(vec_k_length), new_block);
3       new_block[vec_b_type] = block_k_vector;
3       new_block[vec_b_subtype] = .old_block[vec5_b_cli]+1;
3
3 ) else if .old_block eqla .table + .table[vec5_l_verbtbl] then (
3
3       ! It's the verb name table.
3
3       old_length = .table[vec5_l_verbend] - .table[vec5_l_verbtbl];
3       status = (.get_vm)(%ref(vec_k_header_length + .old_length), new_block);
3       new_block[vec_b_type] = block_k_vector;
3       new_block[vec_b_subtype] = vec_k_verb;
3
3 ) else if .old_block eqla .table + .table[vec5_l_comdptr] then (
3
3               ! It's the command block pointer table.
3
3               old_length = .table[vec5_l_verbend] - .table[vec5_l_verbtbl];
3               status = (.get_vm)(%ref(vec_k_header_length + .old_length), new_block);
3               new_block[vec_b_type] = block_k_vector;
3               new_block[vec_b_subtype] = vec_k_command;
3
3       ) else (
3
3               local
3                       chg_length: long,
3                       cmd_length: long,
3                       cmdnam_length: long,
3                       ent_length: long;
3
3               ! Because the level 5 table blocks are not self-identifying, it is
3               ! difficult to determine what kind of block we have.  We will
3               ! calculate the block length for each of the three other block types,
3               ! and then decide which one we have.
3
3               chg_length =    chg5_k_length +
3                               ascic_length(.old_block,.old_block[chg5_w_image]);
3               cmdnam_length = ascic_length(.old_block,.old_block[cmd5_w_image]);
3               !
3               ! If the length is 0 (ascic_length adds 1 for the count byte) then
3               ! there is no image name.  Length will be 4 for routine address
3               !
3               if .cmdnam_length eql 1
3                   then cmdnam_length = 4;
3               cmd_length =    cmd5_k_length + .cmdnam_length +
3                               ascic_length(.old_block,.old_block[cmd5_w_outputs]);
3               ent_length =    ent5_k_length +
3                               ascic_length(.old_block,.old_block[ent5_w_name]) +
3                               ascic_length(.old_block,.old_block[ent5_w_label]) +
3                               ascic_length(.old_block,.old_block[ent5_w_defval]) +
3                               ascic_length(.old_block,.old_block[ent5_w_prompt]);
3
4               if .chg_length eqlu .old_block[chg5_b_size] then (
4
4                       ! We have a change block.  This becomes a command block in
4                       ! the new table.
4
4                       old_length = .chg_length;
4                       status = (.get_vm)(%ref(cmd_k_length + 4+1), new_block);
4                       new_block[cmd_b_type] = block_k_command;
4                       new_block[cmd_b_subtype] = cmd_k_syntax;
4
4               ) else if .cmd_length eqlu .old_block[cmd5_b_size] then (
4
4                       ! We have a command block.
4
4                       old_length = .cmd_length;
4                       status = (.get_vm)(%ref(cmd_k_length + 4+1 + 12), new_block);
4                       new_block[cmd_b_type] = block_k_command;
4                       new_block[cmd_b_subtype] = cmd_k_verb;
4
;  415         1419  4         ) else if .ent_length eqlu .old_block[ent5_b_size] then (
;  416         1420  4
;  417         1421  4                 ! We have an entity block.
;  418         1422  4
;  419         1423  4                 old_length = .ent_length;
;  420         1424  4                 status = (.get_vm)(%ref(ent_k_length + 16 + 16 + 64 + 16), new_block);
;  421         1425  4                 new_block[ent_b_type] = block_k_entity;
;  422         1426  4
;  423         1427  4         ) else (
;  424         1428  4
;  425         1429  4                 ! Oh God, who knows what this block is?
;  426         1430  4
;  427         1431  4                 old_length = 0;
;  428         1432  4                 new_block = 0;
;  429         1433  3         );
;  430         1434  2 );
;  431         1435  2
;  432         1436  2 ! Store the address of the new block where requested, and return the length
;  433         1437  2 ! of the old block;
;  434         1438  2
;  435         1439  2 new_pointer[0] = .new_block;
;  436         1440  2 return .old_length;
;  437         1441  2
;  438         1442  1 END;



                                                    01FC 00000 UPGRADE_5_TO_6_ALLOCATE:
                                                                      .WORD   Save R2,R3,R4,R5,R6,R7,R8                  ; 1322
                         5E              08  C2 00002                 SUBL2   #8, SP                                     ;
                         54       04     AC  D0 00005                 MOVL    OLD_BLOCK, R4                              ; 1343
                         53       0C     AC  D0 00009                 MOVL    TABLE, R3                                  ;
                         53              54  D1 0000D                 CMPL    R4, R3                                     ;
                                         21  12 00010                 BNEQ    1$                                         ;
                         52              3C  D0 00012                 MOVL    #60, OLD_LENGTH                            ; 1347
                                  04     AE  9F 00015                 PUSHAB  NEW_BLOCK                                  ; 1348
                   04    AE              14  D0 00018                 MOVL    #20, 4(SP)                                 ;
                                  04     AE  9F 0001C                 PUSHAB  4(SP)                                      ;
                   10    BC              02  FB 0001F                 CALLS   #2, @GET_VM                                ;
                         51       04     AE  D0 00023                 MOVL    NEW_BLOCK, R1                              ; 1349
                   02    A1              01  90 00027                 MOVB    #1, 2(R1)                                  ;
     03    A1      2A    A4              01  81 0002B                 ADDB3   #1, 42(R4), 3(R1)                          ; 1350
                                         54  11 00031                 BRB     3$                                         ; 1343
           51            53       0C     A3  C1 00033 1$:             ADDL3   12(R3), R3, R1                             ; 1352
                         51              54  D1 00038                 CMPL    R4, R1                                     ;
                                         21  12 0003B                 BNEQ    2$                                         ;
           52      10    A3       0C     A3  C3 0003D                 SUBL3   12(R3), 16(R3), OLD_LENGTH                 ; 1356
                                  04     AE  9F 00043                 PUSHAB  NEW_BLOCK                                  ; 1357
                   04    AE       08     A2  9E 00046                 MOVAB   8(R2), 4(SP)                               ;
                                  04     AE  9F 0004B                 PUSHAB  4(SP)                                      ;
                   10    BC              02  FB 0004E                 CALLS   #2, @GET_VM                                ;
                         51       04     AE  D0 00052                 MOVL    NEW_BLOCK, R1                              ; 1358
                   02    A1     0301     8F  B0 00056                 MOVW    #769, 2(R1)                                ;
                                         29  11 0005C                 BRB     3$                                         ; 1352
           51            53       1C     A3  C1 0005E 2$:             ADDL3   28(R3), R3, R1                             ; 1361
```

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                                          M  4
UPGRADE                                   15-Sep-1984 23:53:23    VAX-11 Bliss-32 V4.0-742              Page  15
V04-000                                   14-Sep-1984 11:58:28    DISK$VMSMASTER:[CDU.SRC]UPGRADE.B32;1      (5)

                         51          54  D1 00063          CMPL    R4, R1                                   ;
                                     22  12 00066          BNEQ    4$                                       ;
          52       10    A3     0C   A3  C3 00068          SUBL3   12(R3), 16(R3), OLD_LENGTH               ; 1365
                                04   AE  9F 0006E          PUSHAB  NEW_BLOCK                                ; 1366
                   04    AE     08   A2  9E 00071          MOVAB   8(R2), 4(SP)                             ;
                                04   AE  9F 00076          PUSHAB  4(SP)                                    ;
                   10    BC     02   FB  00079             CALLS   #2, @GET_VM                              ;
                         51     04   AE  D0 0007D          MOVL    NEW_BLOCK, R1                            ; 1367
                   02    A1   0401   8F  B0 00081          MOVW    #1025, 2(R1)                             ;
                              0142   31  00087 3$:         BRW     24$                                      ; 1361
                         51     02   A4  32 0008A 4$:      CVTWL   2(R4), R1                                ; 1384
                         08          51  B1 0008E          CMPW    R1, #8                                   ;
                                     0F  1B 00091          BLEQU   5$                                       ;
        6144             01          03  0C 00093          PROBER  #3, #1, (R1)[R4]                         ;
                                     08  13 00098          BEQL    5$                                       ;
                         51        6144  9A 0009A          MOVZBL  (R1)[R4], R1                             ;
                                     51  D6 0009E          INCL    R1                                       ;
                                     02  11 000A0          BRB     6$                                       ;
                                     51  D4 000A2 5$:      CLRL    R1                                       ;
                         51          09  C0 000A4 6$:      ADDL2   #9, CHG_LENGTH                           ; 1383
                         56     04   A4  32 000A7          CVTWL   4(R4), R6                                ; 1385
                                     57  D4 000AB          CLRL    R7                                       ;
                         08          56  B1 000AD          CMPW    R6, #8                                   ;
                                     04  1A 000B0          BGTRU   7$                                       ;
                                     57  D6 000B2          INCL    R7                                       ;
                                     0F  11 000B4          BRB     8$                                       ;
        6644             01          03  0C 000B6 7$:      PROBER  #3, #1, (R6)[R4]                         ;
                                     08  13 000BB          BEQL    8$                                       ;
                         53        6644  9A 000BD          MOVZBL  (R6)[R4], CMDNAM_LENGTH                  ;
                                     53  D6 000C1          INCL    CMDNAM_LENGTH                            ;
                                     02  11 000C3          BRB     9$                                       ;
                                     53  D4 000C5 8$:      CLRL    CMDNAM_LENGTH                            ;
                         01          53  D1 000C7 9$:      CMPL    CMDNAM_LENGTH, #1                        ; 1390
                                     03  12 000CA          BNEQ    10$                                      ;
                         53          04  D0 000CC          MOVL    #4, CMDNAM_LENGTH                        ; 1391
                         55     0A   A4  32 000CF 10$:     CVTWL   10(R4), R5                               ; 1393
                         08          55  B1 000D3          CMPW    R5, #8                                   ;
                                     0F  1B 000D6          BLEQU   11$                                      ;
        6544             01          03  0C 000D8          PROBER  #3, #1, (R5)[R4]                         ;
                                     08  13 000DD          BEQL    11$                                      ;
                         55        6544  9A 000DF          MOVZBL  (R5)[R4], R5                             ;
                                     55  D6 000E3          INCL    R5                                       ;
                                     02  11 000E5          BRB     12$                                      ;
                                     55  D4 000E7 11$:     CLRL    R5                                       ;
                         58     10 A543  9E 000E9 12$:     MOVAB   16(R5)[CMDNAM_LENGTH], CMD_LENGTH        ; 1392
                         0F          57  E8 000EE          BLBS    R7, 13$                                  ; 1395
        6644             01          03  0C 000F1          PROBER  #3, #1, (R6)[R4]                         ;
                                     08  13 000F6          BEQL    13$                                      ;
                         53        6644  9A 000F8          MOVZBL  (R6)[R4], R3                             ;
                                     53  D6 000FC          INCL    R3                                       ;
                                     02  11 000FE          BRB     14$                                      ;
                                     53  D4 00100 13$:     CLRL    R3                                       ;
                         55     06   A4  32 00102 14$:     CVTWL   6(R4), R5                                ; 1396
                         08          55  B1 00106          CMPW    R5, #8                                   ;
                                     0F  1B 00109          BLEQU   15$                                      ;
        6544             01          03  0C 0010B          PROBER  #3, #1, (R5)[R4]                         ;
                                     08  13 00110          BEQL    15$                                      ;
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                    55          6544  9A 00112        MOVZBL  (R5)[R4], R5                          ;
                                  55  D6 00116        INCL    R5                                    ;
                                  02  11 00118        BRB     16$                                   ;
                                  55  D4 0011A  15$:  CLRL    R5                                    ;
                    53            55  C0 0011C  16$:  ADDL2   R5, R3                                ; 1395
                    55      08    A4  32 0011F        CVTWL   8(R4), R5                             ; 1397
                    08            55  B1 00123        CMPW    R5, #8                                ;
                                  0F  1B 00126        BLEQU   17$                                   ;
        6544        01            03  0C 00128        PROBER  #3, #1, (R5)[R4]                      ;
                                  08  13 0012D        BEQL    17$                                   ;
                    55          6544  9A 0012F        MOVZBL  (R5)[R4], R5                          ;
                                  55  D6 00133        INCL    R5                                    ;
                                  02  11 00135        BRB     18$                                   ;
                                  55  D4 00137  17$:  CLRL    R5                                    ;
                    55            53  C0 00139  18$:  ADDL2   R3, R5                                ; 1396
                    53      0E    A4  32 0013C        CVTWL   14(R4), R3                            ; 1398
                    08            53  B1 00140        CMPW    R3, #8                                ;
                                  0F  1B 00143        BLEQU   19$                                   ;
        6344        01            03  0C 00145        PROBER  #3, #1, (R3)[R4]                      ;
                                  08  13 0014A        BEQL    19$                                   ;
                    53          6344  9A 0014C        MOVZBL  (R3)[R4], R3                          ;
                                  53  D6 00150        INCL    R3                                    ;
                                  02  11 00152        BRB     20$                                   ;
                                  53  D4 00154  19$:  CLRL    R3                                    ;
                    53      14  A345  9E 00156  20$:  MOVAB   20(R3)[R5], ENT_LENGTH                ; 1397
51        64        08            00  ED 0015B        CMPZV   #0, #8, (R4), CHG_LENGTH              ; 1400
                                  1D  12 00160        BNEQ    21$                                   ;
                    52            51  D0 00162        MOVL    CHG_LENGTH, OLD_LENGTH                ; 1405
                            04    AE  9F 00165        PUSHAB  NEW_BLOCK                             ; 1406
                04  AE            25  D0 00168        MOVL    #37, 4(SP)                            ;
                            04    AE  9F 0016C        PUSHAB  4(SP)                                 ;
                10  BC            02  FB 0016F        CALLS   #2, @GET_VM                           ;
                    51      04    AE  D0 00173        MOVL    NEW_BLOCK, R1                         ; 1407
                02  A1    0202    8F  B0 00177        MOVW    #514, 2(R1)                           ;
                                  4D  11 0017D        BRB     24$                                   ; 1400
58        64        08            00  ED 0017F  21$:  CMPZV   #0, #8, (R4), CMD_LENGTH              ; 1410
                                  1D  12 00184        BNEQ    22$                                   ;
                    52            58  D0 00186        MOVL    CMD_LENGTH, OLD_LENGTH                ; 1414
                            04    AE  9F 00189        PUSHAB  NEW_BLOCK                             ; 1415
                04  AE            31  D0 0018C        MOVL    #49, 4(SP)                            ;
                            04    AE  9F 00190        PUSHAB  4(SP)                                 ;
                10  BC            02  FB 00193        CALLS   #2, @GET_VM                           ;
                    51      04    AE  D0 00197        MOVL    NEW_BLOCK, R1                         ; 1416
                02  A1    0102    8F  B0 0019B        MOVW    #258, 2(R1)                           ;
                                  29  11 001A1        BRB     24$                                   ; 1410
53     01 A4        08            00  ED 001A3  22$:  CMPZV   #0, #8, 1(R4), ENT_LENGTH             ; 1419
                                  1C  12 001A9        BNEQ    23$                                   ;
                    52            53  D0 001AB        MOVL    ENT_LENGTH, OLD_LENGTH                ; 1423
                            04    AE  9F 001AE        PUSHAB  NEW_BLOCK                             ; 1424
                04  AE      8E    8F  9A 001B1        MOVZBL  #142, 4(SP)                           ;
                            04    AE  9F 001B6        PUSHAB  4(SP)                                 ;
                10  BC            02  FB 001B9        CALLS   #2, @GET_VM                           ;
                    50      04    AE  D0 001BD        MOVL    NEW_BLOCK, R0                         ; 1425
                02  A0            04  90 001C1        MOVB    #4, 2(R0)                             ;
                                  05  11 001C5        BRB     24$                                   ; 1419
                                  52  D4 001C7  23$:  CLRL    OLD_LENGTH                            ; 1431
                            04    AE  D4 001C9        CLRL    NEW_BLOCK                             ; 1432
```

```
                          08   BC         04   AE   D0 001CC 24$:     MOVL    NEW_BLOCK, @NEW_POINTER                               ; 1439
                               50              52   D0 001D1          MOVL    OLD_LENGTH, R0                                        ; 1440
                                                    04 001D4          RET                                                           ; 1442

; Routine Size:  469 bytes,    Routine Base:  _CDU$CODE + 0167
```

```
1 !++
1 ! Description:  This routine is called to fill in a new vector block from
1 !               the corresponding old block.
1 !
1 ! Parameters:   new_block       By reference, the new block to be filled in.
1 !                               The type and subtype are already present.
1 !               old_block       By reference, the corresponding old block.
1 !               new_vector      By reference, the vector of new block
1 !                               addresses.  Zeroth entry is block count.
1 !               old_vector      By reference, the vector of old block
1 !                               addresses.
1 !               get_vm          By reference, see above.
1 !
1 ! Returns:      Nothing.
1 !
1 ! Notes:
1 !--
1
1 ROUTINE upgrade_5_to_6_vector(new_block: pointer,
1                               old_block: pointer,
1                               new_vector: ref vector[,long],
1                               old_vector: ref vector[,long],
1                               get_vm: pointer)                        : novalue
1
2 = BEGIN
2
2 local
2       entry_count: long;
2
2
2 ! Select on the subtype of the vector block.
2
2 selectoneu .new_block[vec_b_subtype] of set
2
2 [vec_k_dcl,
2  vec_k_mcr]:
2
2       ! We have the primary vector block.  Fill in each field from the
2       ! old primary vector block.  We cannot determine the overall table
2       ! size.
2
3       (new_block[vec_w_size] = vec_k_length;
3       new_block[vec_w_flags] = 0;
3       new_block[vec_b_strlvl] = 6;
3       new_block[vec_w_tro_count] = 2;
3       new_block[vec_l_verbtbl] = new_block_address(.old_block+.old_block[vec5_l_verbtbl]) - .new_block;
3       new_block[vec_l_comdptr] = new_block_address(.old_block+.old_block[vec5_l_comdptr]) - .new_block;
2       new_block[vec_l_table_size] = 0;);
2
2 [vec_k_verb]:
2
2       ! We have the verb name table.  Initialize the new block header.
2       ! Then copy the verb name entries, converting them from blank
2       ! padded with bit 7 set to zero padded with bit 7 clear.
2
3       (bind
3               new_verb_names = .new_block + vec_k_header_length: vector[,long],
;   497         1500  3                   old_primary = .old_vector[1]: block[,byte],
;   498         1501  3                   old_verb_names = .old_block: vector[,long];
;   499         1502  3
;   500         1503  3           entry_count = (.old_primary[vec5_l_verbend] - .old_primary[vec5_l_verbtbl]) / 4;
;   501         1504  3           new_block[vec_w_size] = vec_k_header_length + .entry_count*4;
;   502         1505  3           new_block[vec_w_flags] = 0;
;   503         1506  3           new_block[vec_w_tro_count] = 0;
;   504         1507  3
;   505         1508  4           incr i from 0 to .entry_count-1 do (
;   506         1509  4
;   507         1510  4                   bind
;   508         1511  4                           old_name = old_verb_names[.i]: vector[4,byte],
;   509         1512  4                           new_name = new_verb_names[.i]: vector[4,byte];
;   510         1513  4
;   511         1514  4                   new_name[0] = .old_name[0] and %x'7f';
;   512         1515  4                   new_name[1] = (if .old_name[1] eqlu ' ' then %x'00' else .old_name[1]);
;   513         1516  4                   new_name[2] = (if .old_name[2] eqlu ' ' then %x'00' else .old_name[2]);
;   514         1517  4                   new_name[3] = (if .old_name[3] eqlu ' ' then %x'00' else .old_name[3]);
;   515         1518  2           ););
;   516         1519  2
;   517         1520  2   [vec_k_command]:
;   518         1521  2
;   519         1522  2           ! We have the command block pointer table.  Initialize the new
;   520         1523  2           ! block header.  Then copy the pointers, translating them to point
;   521         1524  2           ! at the new command blocks.
;   522         1525  2
;   523         1526  3           (bind
;   524         1527  3                   new_command_block_pointers = .new_block + vec_k_header_length: vector[,long],
;   525         1528  3                   old_primary = .old_vector[1]: block[,byte],
;   526         1529  3                   old_command_block_pointers = .old_block: vector[,long];
;   527         1530  3
;   528         1531  3           entry_count = (.old_primary[vec5_l_verbend] - .old_primary[vec5_l_verbtbl]) / 4;
;   529         1532  3           new_block[vec_w_size] = vec_k_header_length + .entry_count*4;
;   530         1533  3           new_block[vec_w_flags] = 0;
;   531         1534  3           new_block[vec_w_tro_count] = .entry_count;
;   532         1535  3
;   533         1536  3           incr i from 0 to .entry_count-1 do
;   534         1537  4                   new_command_block_pointers[.i] = (if .old_command_block_pointers[.i] eqlu 0 then 0 else
;   535         1538  4                           new_block_address(old_command_block_pointers[.i+1]+.old_command_block_pointers[.i])
;   536         1539  3                                   .new_vector[1]);
;   537         1540  2           );
;   538         1541  2
;   539         1542  2   tes;
;   540         1543  2
;   541         1544  2   return;
;   542         1545  2
;   543         1546  1   END;



                                        00FC 00000 UPGRADE_5_TO_6_VECTOR:
                                                         .WORD   Save R2,R3,R4,R5,R6,R7                        : 1461
                    50      04   AC   D0 00002           MOVL    NEW_BLOCK, R0                                 : 1475
                    51      03   A0   9A 00006           MOVZBL  3(R0), R1                                     :
                                 63   13 0000A           BEQL    7$                                            : 1477
```

```
                       02              51 91 0000C        CMPB    R1, #2                          ;
                                       5E 1A 0000F        BGTRU   7$                              ;
                       60              14 B0 00011        MOVW    #20, (R0)                       ; 1484
                    04 A0    00020000  8F D0 00014        MOVL    #131072, 4(R0)                  ; 1485
                    04 A0              06 90 0001C        MOVB    #6, 4(R0)                       ; 1486
                       52          08  AC D0 00020        MOVL    OLD_BLOCK, R2                   ; 1488
              53       52          0C  A2 C1 00024        ADDL3   12(R2), R2, R3                  ;
                                       51 D4 00029        CLRL    I                               ;
                                       0E 11 0002B        BRB     2$                              ;
                  10 BC41              53 D1 0002D  1$:   CMPL    R3, @OLD_VECTOR[I]              ;
                                       07 12 00032        BNEQ    2$                              ;
                       51     0C BC41     D0 00034        MOVL    @NEW_VECTOR[I], R1              ;
                                       08 11 00039        BRB     3$                              ;
              ED       51          10  BC F3 0003B  2$:   AOBLEQ  @OLD_VECTOR, I, 1$              ;
                       51              01 CE 00040        MNEGL   #1, R1                          ;
        08    A0       51              50 C3 00043  3$:   SUBL3   R0, R1, 8(R0)                   ;
                       52          1C  A2 C0 00048        ADDL2   28(R2), R2                      ; 1489
                                       51 D4 0004C        CLRL    I                               ;
                                       0E 11 0004E        BRB     5$                              ;
                  10 BC41              52 D1 00050  4$:   CMPL    R2, @OLD_VECTOR[I]              ;
                                       07 12 00055        BNEQ    5$                              ;
                       51     0C BC41     D0 00057        MOVL    @NEW_VECTOR[I], R1              ;
                                       08 11 0005C        BRB     6$                              ;
              ED       51          10  BC F3 0005E  5$:   AOBLEQ  @OLD_VECTOR, I, 4$              ;
                       51              01 CE 00063        MNEGL   #1, R1                          ;
        0C    A0       51              50 C3 00066  6$:   SUBL3   R0, R1, 12(R0)                  ;
                                   10  A0 D4 0006B        CLRL    16(R0)                          ; 1490
                                          04 0006E        RET                                     ; 1475
                       03              51 91 0006F  7$:   CMPB    R1, #3                          ; 1492
                                       6F 12 00072        BNEQ    16$                             ;
                       51          10  AC D0 00074        MOVL    OLD_VECTOR, R1                  ; 1500
                       51          04  A1 D0 00078        MOVL    4(R1), R1                       ;
              51    10 A1          0C  A1 C3 0007C        SUBL3   12(R1), 16(R1), R1              ; 1503
              56       51              04 C7 00082        DIVL3   #4, R1, ENTRY_COUNT             ;
              51       56              02 78 00086        ASHL    #2, ENTRY_COUNT, R1             ; 1504
              60       51              08 A1 0008A        ADDW3   #8, R1, (R0)                    ;
                                   04  A0 D4 0008E        CLRL    4(R0)                           ; 1505
                       52              01 CE 00091        MNEGL   #1, I                           ; 1508
                                       48 11 00094        BRB     15$                             ;
                       51     08 BC42     DE 00096  8$:   MOVAL   @OLD_BLOCK[I], R1               ; 1511
                       53     08 A042     DE 0009B        MOVAL   8(R0)[I], R3                    ; 1512
    54        61       07              00 EF 000A0        EXTZV   #0, #7, (R1), R4                ; 1514
                       63              54 90 000A5        MOVB    R4, (R3)                        ;
                       20          01  A1 91 000A8        CMPB    1(R1), #32                      ; 1515
                                       04 12 000AC        BNEQ    9$                              ;
                                       54 D4 000AE        CLRL    R4                              ;
                                       04 11 000B0        BRB     10$                             ;
                       54          01  A1 9A 000B2  9$:   MOVZBL  1(R1), R4                       ;
                    01 A3              54 90 000B6  10$:  MOVB    R4, 1(R3)                       ;
                       20          02  A1 91 000BA        CMPB    2(R1), #32                      ; 1516
                                       04 12 000BE        BNEQ    11$                             ;
                                       54 D4 000C0        CLRL    R4                              ;
                                       04 11 000C2        BRB     12$                             ;
                       54          02  A1 9A 000C4  11$:  MOVZBL  2(R1), R4                       ;
                    02 A3              54 90 000C8  12$:  MOVB    R4, 2(R3)                       ;
                       20          03  A1 91 000CC        CMPB    3(R1), #32                      ; 1517
                                       04 12 000D0        BNEQ    13$                             ;
```

```
                                        51  D4 000D2          CLRL    R1                                  ;
                                        04  11 000D4          BRB     14$                                 ;
                             51    03   A1  9A 000D6 13$:     MOVZBL  3(R1), R1                           ;
                         03  A3         51  90 000DA 14$:     MOVB    R1, 3(R3)                           ;
                   B4        52         56  F2 000DE 15$:     AOBLSS  ENTRY_COUNT, I, 8$                  ; 1508
                                            04 000E2          RET                                         ; 1475
                             04         51  91 000E3 16$:     CMPB    R1, #4                              ; 1520
                                        64  12 000E6          BNEQ    24$                                 ;
                             55    10   AC  D0 000E8          MOVL    OLD_VECTOR, R5                      ; 1528
                             51    04   A5  D0 000EC          MOVL    4(R5), R1                           ;
                   51    10  A1    0C   A1  C3 000F0          SUBL3   12(R1), 16(R1), R1                  ; 1531
                   56        51         04  C7 000F6          DIVL3   #4, R1, ENTRY_COUNT                 ;
                   51        56         02  78 000FA          ASHL    #2, ENTRY_COUNT, R1                 ; 1532
                   6C        51         08  A1 000FE          ADDW3   #8, R1, (R0)                        ;
                                   04   A0  B4 00102          CLRW    4(R0)                               ; 1533
                         06  A0         56  B0 00105          MOVW    ENTRY_COUNT, 6(R0)                  ; 1534
                             52         01  CE 00109          MNEGL   #1, I                               ; 1536
                                        3A  11 0010C          BRB     23$                                 ;
                             54    08 BC42  D0 0010E 17$:     MOVL    @OLD_BLOCK[I], R4                   ; 1537
                                        04  12 00113          BNEQ    18$                                 ;
                                        51  D4 00115          CLRL    R1                                  ;
                                        2A  11 00117          BRB     22$                                 ;
                             53    08 BC42  DE 00119 18$:     MOVAL   @OLD_BLOCK[I], R3                   ; 1538
                                        51  D4 0011E          CLRL    I                                   ;
                                        12  11 00120          BRB     20$                                 ;
                             57    04 A443  9E 00122 19$:     MOVAB   4(R4)[R3], R7                       ;
                           6541         57  D1 00127          CMPL    R7, (R5)[I]                         ;
                                        07  12 0012B          BNEQ    20$                                 ;
                             51    0C BC41  D0 0012D          MOVL    @NEW_VECTOR[I], R1                  ;
                                        07  11 00132          BRB     21$                                 ;
                   EA        51         65  F3 00134 20$:     AOBLEQ  (R5), I, 19$                        ;
                             51         01  CE 00138          MNEGL   #1, R1                              ;
                             54    0C   AC  D0 0013B 21$:     MOVL    NEW_VECTOR, R4                      ; 1539
                             51    04   A4  C2 0013F          SUBL2   4(R4), R1                           ;
                        08 A042         51  D0 00143 22$:     MOVL    R1, 8(R0)[I]                        ; 1537
                   C2        52         56  F2 00148 23$:     AOBLSS  ENTRY_COUNT, I, 17$                 ;
                                            04 0014C 24$:     RET                                         ; 1546

; Routine Size:  333 bytes,    Routine Base:  _CDU$CODE + 033C
```

```
1 !++
1 ! Description:  This routine is called to fill in a new command block from
1 !               the corresponding old block.
1 !
1 ! Parameters:   new_block       By referance, the new block to be filled in.
1 !                               The type and subtype are already present.
1 !               old_block       By reference, the corresponding old block.
1 !               new_vector      By reference, the vector of new block
1 !                               addresses.  Zeroth entry is block count.
1 !               old_vector      By reference, the vector of old block
1 !                               addresses.
1 !               get_vm          By reference, see above.
1 !
1 ! Returns:      Nothing.
1 !
1 ! Notes:
1 !--
1
1 ROUTINE upgrade_5_to_6_command(new_block: pointer,
1                               old_block: pointer,
1                               new_vector: ref vector[,long],
1                               old_vector: ref vector[,long],
1                               get_vm: pointer)               : novalue
1
2 = BEGIN
2
2 local
2       variable_ptr: pointer;
2
2
2 ! Set up to add information to the variable portion of the new block.
2
2 variable_ptr = new_block[cmd_z_variable];
2
2 ! Split up depending upon whether we are to build a verb command block
2 ! or a syntax change command block.
2
3 if .new_block[cmd_b_subtype] eqlu cmd_k_verb then (
3
3       ! We are building a verb command block.  Fill in the new block from
3       ! the old one.
3
3       new_block[cmd_w_flags] = 0;
3       new_block[cmd_v_abbrev] = .old_block[cmd5_v_ahrev];
3       new_block[cmd_v_nostat] = .old_block[cmd5_v_nostat];
3       new_block[cmd_v_foreign] = .old_block[cmd5_v_foreign];
3       new_block[cmd_v_immed] = .old_block[cmd5_v_immed];
3       new_block[cmd_v_mcrparse] = .old_block[cmd5_v_mcrparse];
3       new_block[cmd_v_parms] = new_block[cmd_v_quals] = new_block[cmd_v_disallows] = true;
3       new_block[cmd_w_tro_count] = 3;
4       new_block[cmd_l_parms] = (if .old_block[cmd5_w_parms] eqlu 0 then 0 else
3               new_block_address(.old_block+.old_block[cmd5_w_parms]) - .new_vector[1]);
4       new_block[cmd_l_quals] = (if .old_block[cmd5_w_quals] eqlu 0 then 0 else
3               new_block_address(.old_block+.old_block[cmd5_w_quals]) - .new_vector[1]);
3       new_block[cmd_l_disallow] = 0;
3       new_block[cmd_b_handler] = (if .old_block[cmd5_w_image] eqlu 0 then 0 else cmd_k_user);
3       new_block[cmd_v_minparm] = .old_block[cmd5_v_minparm];
```

```
;  602          1604  3          new_block[cmd_v_maxparm] = .old_block[cmd5_v_maxparm];
;  603          1605  3          new_block[cmd_b_verbtyp] = 0;
;  604          1606  3          new_block[cmd_w_name] = 0;
;  605          1607  3          if .old_block[cmd5_w_image] eqlu 0 then
;  606          1608  3                  new_block[cmd_w_image] = 0
;  607          1609  4          else (
;  608          1610  4                  bind
;  609          1611  4                          routine_longword = .old_block + .old_block[cmd5_w_image]: long;
;  610          1612  4
;  611          1613  4                  new_block[cmd_w_image] = .variable_ptr - .new_block;
;  612          1614  4                  variable_ptr[0,0,32,0] = .routine_longword;
;  613          1615  4                  variable_ptr[4,0,8,0] = 0;
;  614          1616  4                  variable_ptr = .variable_ptr + 4+1;
;  615          1617  3          );
;  616          1618  3          if .old_block[cmd5_w_outputs] eqlu 0 then
;  617          1619  3                  new_block[cmd_w_outputs] = 0
;  618          1620  4          else (
;  619          1621  4                  bind
;  620          1622  4                          outputs_list = .old_block + .old_block[cmd5_w_outputs]: vector[,byte];
;  621          1623  4
;  622          1624  4                  new_block[cmd_w_outputs] = .variable_ptr - .new_block;
;  623          1625  4                  ch$move(1+.outputs_list[0],outputs_list[0], .variable_ptr);
;  624          1626  4                  variable_ptr = .variable_ptr + 1+.outputs_list[0];
;  625          1627  3          );
;  626          1628  3          new_block[cmd_w_prefix] = 0;
;  627          1629  3
;  628          1630  3  ) else (
;  629          1631  3
;  630          1632  3          ! We are building a syntax change command block.  Fill in the new
;  631          1633  3          ! block from the old one as much as possible.
;  632          1634  3
;  633          1635  3          new_block[cmd_w_flags] = 0;
;  634          1636  3          new_block[cmd_v_parms] = .old_block[chg5_v_parms];
;  635          1637  3          new_block[cmd_v_quals] = .old_block[chg5_v_quals];
;  636          1638  3          new_block[cmd_v_disallows] = true;
;  637          1639  3          new_block[cmd_w_tro_count] = 3;
;  638          1640  4          new_block[cmd_l_parms] = (if .old_block[chg5_w_parms] eqlu 0 then 0 else
;  639          1641  3                  new_block_address(.old_block+.old_block[chg5_w_parms]) - .new_vector[1]);
;  640          1642  4          new_block[cmd_l_quals] = (if .old_block[chg5_w_quals] eqlu 0 then 0 else
;  641          1643  3                  new_block_address(.old_block+.old_block[chg5_w_quals]) - .new_vector[1]);
;  642          1644  3          new_block[cmd_l_disallow] = 0;
;  643          1645  4          new_block[cmd_b_handler] = (if not .old_block[chg5_v_image] then cmd_k_same
;  644          1646  4                                  else if .old_block[chg5_w_image] eqlu 0 then cmd_k_none
;  645          1647  3                                  else cmd_k_user);
;  646          1648  3          new_block[cmd_v_minparm] = .old_block[chg5_v_minparm];
;  647          1649  3          new_block[cmd_v_maxparm] = .old_block[chg5_v_maxparm];
;  648          1650  3          new_block[cmd_b_verbtyp] = 0;
;  649          1651  3          new_block[cmd_w_name] = 0;
;  650          1652  3          if .old_block[chg5_w_image] eqlu 0 then
;  651          1653  3                  new_block[cmd_w_image] = 0
;  652          1654  4          else (
;  653          1655  4                  bind
;  654          1656  4                          routine_longword = .old_block + .old_block[chg5_w_image]: long;
;  655          1657  4
;  656          1658  4                  new_block[cmd_w_image] = .variable_ptr - .new_block;
;  657          1659  4                  variable_ptr[0,0,32,0] = .routine_longword;
;  658          1660  4                  variable_ptr[4,0,8,0] = 0;
;   659          1661  4                variable_ptr = .variable_ptr + 4+1;
;   660          1662  3          );
;   661          1663  3          new_block[cmd_w_outputs] = 0;
;   662          1664  3          new_block[cmd_w_prefix] = 0;
;   663          1665  2 );
;   664          1666  2
;   665          1667  2 ! Now we can fill in the final size of the new block.
;   666          1668  2
;   667          1669  2 new_block[cmd_w_size] = .variable_ptr - .new_block;
;   668          1670  2
;   669          1671  2 return;
;   670          1672  2
;   671          1673  1 END;



                                                01FC 00000 UPGRADE_5_TO_6_COMMAND:
                                                                  .WORD    Save R2,R3,R4,R5,R6,R7,R8                            ; 1565
                                 57       04   AC   D0 00002      MOVL     NEW_BLOCK, R7                                        ; 1579
                                 56       20   A7   9E 00006      MOVAB    32(R7), VARIABLE_PTR                                 ;
                                 51       04   A7   9E 0000A      MOVAB    4(R7), R1                                            ; 1589
                                 50       08   AC   D0 0000E      MOVL     OLD_BLOCK, R0                                        ; 1590
                                 54       04   A0   9E 00012      MOVAB    4(R0), R4                                            ; 1602
                                 01       03   A7   91 00016      CMPB     3(R7), #1                                            ; 1584
                                                03  13 0001A      BEQL     1$                                                   ;
                                              010D  31 0001C      BRW      17$                                                  ;
                                                61  B4 0001F 1$:  CLRW     (R1)                                                 ; 1589
                                 52       03   A0   9E 00021      MOVAB    3(R0), R2                                            ; 1590
          61          01         00            62   F0 00025      INSV     (R2), #0, #1, (R1)                                   ;
          53          62         01            01   EF 0002A      EXTZV    #1, #1, (R2), R3                                     ; 1591
          61          01         01            53   F0 0002F      INSV     R3, #1, #1, (R1)                                     ;
          53          62         01            02   EF 00034      EXTZV    #2, #1, (R2), R3                                     ; 1592
          61          01         02            53   F0 00039      INSV     R3, #2, #1, (R1)                                     ;
          53          62         01            03   EF 0003E      EXTZV    #3, #1, (R2), R3                                     ; 1593
          61          01         03            53   F0 00043      INSV     R3, #3, #1, (R1)                                     ;
          53          62         01            04   EF 00048      EXTZV    #4, #1, (R2), R3                                     ; 1594
          61          01         04            53   F0 0004D      INSV     R3, #4, #1, (R1)                                     ;
                                 61       E0   8F   88 00052      BISB2    #224, (R1)                                           ; 1595
                            06   A7            03   B0 00056      MOVW     #3, 6(R7)                                            ; 1596
                                 53       08   A0   32 0005A      CVTWL    8(R0), R3                                            ; 1597
                                               04   12 0005E      BNEQ     2$                                                   ;
                                               51   D4 00060      CLRL     R1                                                   ;
                                               26   11 00062      BRB      6$                                                   ;
                                               51   D4 00064 2$:  CLRL     I                                                    ; 1598
                                               12   11 00066      BRB      4$                                                   ;
                      52         50            53   C1 00068 3$:  ADDL3    R3, R0, R2                                           ;
                         10 BC41               52   D1 0006C      CMPL     R2, @OLD_VECTOR[I]                                   ;
                                               07   12 00071      BNEQ     4$                                                   ;
                                 51    0C BC41      D0 00073      MOVL     @NEW_VECTOR[I], R1                                   ;
                                               08   11 00078      BRB      5$                                                   ;
                      E9         51       10   BC   F3 0007A 4$:  AOBLEQ   @OLD_VECTOR, I, 3$                                   ;
                                 51            01   CE 0007F      MNEGL    #1, R1                                               ;
                                 52       0C   AC   D0 00082 5$:  MOVL     NEW_VECTOR, R2                                       ;
                                 51       04   A2   C2 00086      SUBL2    4(R2), R1                                            ;
                            08   A7            51   D0 0008A 6$:  MOVL     R1, 8(R7)                                            ; 1597
```

```
                        53      06  A0  32 0008E         CVTWL   6(R0), R3                                 ; 1599
                                    04  12 00092         BNEQ    7$                                        ;
                                    51  D4 00094         CLRL    R1                                        ;
                                    26  11 00096         BRB     11$                                       ;
                                    51  D4 00098 7$:     CLRL    I                                         ; 1600
                                    12  11 0009A         BRB     9$                                        ;
                52              50  53  C1 0009C 8$:     ADDL3   R3, R0, R2                                ;
                        10 BC41         52  D1 000A0         CMPL    R2, @OLD_VECTOR[I]                        ;
                                    07  12 000A5         BNEQ    9$                                        ;
                        51      0C BC41 D0 000A7         MOVL    @NEW_VECTOR[I], R1                        ;
                                    08  11 000AC         BRB     10$                                       ;
                E9      51      10  BC  F3 000AE 9$:     AOBLEQ  @OLD_VECTOR, I, 8$                        ;
                        51          01  CE 000B3         MNEGL   #1, R1                                    ;
                        52      0C  AC  D0 000B6 10$:    MOVL    NEW_VECTOR, R2                            ;
                        51      04  A2  C2 000BA         SUBL2   4(R2), R1                                 ;
                   0C   A7          51  D0 000BE 11$:    MOVL    R1, 12(R7)                                ; 1599
                                10  A7  D4 000C2         CLRL    16(R7)                                    ; 1601
                        52          64  32 000C5         CVTWL   (R4), R2                                  ; 1602
                                    53  D4 000C8         CLRL    R3                                        ;
                                    52  D5 000CA         TSTL    R2                                        ;
                                    06  12 000CC         BNEQ    12$                                       ;
                                    53  D6 000CE         INCL    R3                                        ;
                                    51  D4 000D0         CLRL    R1                                        ;
                                    03  11 000D2         BRB     13$                                       ;
                        51          02  D0 000D4 12$:    MOVL    #2, R1                                    ;
                   14   A7          51  90 000D7 13$:    MOVB    R1, 20(R7)                                ;
 15   A7        04      00      02  A0  F0 000DB         INSV    2(R0), #0, #4, 21(R7)                     ; 1603
      51    02  A0      04          04  EF 000E2         EXTZV   #4, #4, 2(R0), R1                         ; 1604
 15   A7        04      04          51  F0 000E8         INSV    R1, #4, #4, 21(R7)                        ;
                                16  A7  94 000EE         CLRB    22(R7)                                    ; 1605
                                18  A7  B4 000F1         CLRW    24(R7)                                    ; 1606
                        05          53  E9 000F4         BLBC    R3, 14$                                   ; 1607
                                1A  A7  B4 000F7         CLRW    26(R7)                                    ; 1608
                                    0D  11 000FA         BRB     15$                                       ;
            1A  A7      56          57  A3 000FC 14$:    SUBW3   R7, VARIABLE_PTR, 26(R7)                  ; 1613
                                  6240  9F 00101         PUSHAB  (R2)[R0]                                  ; 1614
                        86          9E  D0 00104         MOVL    @(SP)+, (VARIABLE_PTR)+                   ;
                                    86  94 00107         CLRB    (VARIABLE_PTR)+                           ; 1615
                        51      0A  A0  32 00109 15$:    CVTWL   10(R0), R1                                ; 1618
                                    03  12 0010D         BNEQ    16$                                       ;
                                  00ED  31 0010F         BRW     32$                                       ;
            1C  A7      56          57  A3 00112 16$:    SUBW3   R7, VARIABLE_PTR, 28(R7)                  ; 1624
                        58        6140  9A 00117         MOVZBL  (R1)[R0], R8                              ; 1625
                        52      01  A8  9E 0011B         MOVAB   1(R8), R2                                 ;
                66    6140          52  28 0011F         MOVC3   R2, (R1)[R0], (VARIABLE_PTR)              ;
                        56     01 A846  9E 00124         MOVAB   1(R8)[VARIABLE_PTR], VARIABLE_PTR         ; 1626
                                  00D6  31 00129         BRW     33$                                       ; 1628
                                    61  B4 0012C 17$:    CLRW    (R1)                                      ; 1635
      52    01  A0      01          01  EF 0012E         EXTZV   #1, #1, 1(R0), R2                         ; 1636
      61        01      05          52  F0 00134         INSV    R2, #5, #1, (R1)                          ;
      52    01  A0      01          02  EF 00139         EXTZV   #2, #1, 1(R0), R2                         ; 1637
      61        01      06          52  F0 0013F         INSV    R2, #6, #1, (R1)                          ;
                        61      80  8F  88 00144         BISB2   #128, (R1)                                ; 1638
                   06   A7          03  B0 00148         MOVW    #3, 6(R7)                                 ; 1639
                        53      05  A0  32 0014C         CVTWL   5(R0), R3                                 ; 1640
                                    04  12 00150         BNEQ    18$                                       ;
                                    51  D4 00152         CLRL    R1                                        ;
```

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                                          K  5
UPGRADE                                   15-Sep-1984 23:53:23    VAX-11 Bliss-32 V4.0-742                 Page  26
V04-000                                   14-Sep-1984 11:58:28    DISK$VMSMASTER:[CDU.SRC]UPGRADE.B32;1        (7)

                                    26 11 00154         BRB     22$                              ;
                                    51 D4 00156 18$:    CLRL    I                                ; 1641
                                    12 11 00158         BRB     20$                              ;
               52          50       53 C1 0015A 19$:    ADDL3   R3, R0, R2                       ;
                      10 BC41       52 D1 0015E         CMPL    R2, @OLD_VECTOR[I]               ;
                                    07 12 00163         BNEQ    20$                              ;
                           51  0C BC41 D0 00165         MOVL    @NEW_VECTOR[I], R1               ;
                                    08 11 0016A         BRB     21$                              ;
               E9          51  10   BC F3 0016C 20$:    AOBLEQ  @OLD_VECTOR, I, 19$              ;
                           51       01 CE 00171         MNEGL   #1, R1                           ;
                           52  0C   AC D0 00174 21$:    MOVL    NEW_VECTOR, R2                   ;
                           51  04   A2 C2 00178         SUBL2   4(R2), R1                        ;
                      08   A7       51 D0 0017C 22$:    MOVL    R1, 8(R7)                        ; 1640
                           53  07   A0 32 00180         CVTWL   7(R0), R3                        ; 1642
                                    04 12 00184         BNEQ    23$                              ;
                                    51 D4 00186         CLRL    R1                               ;
                                    26 11 00188         BRB     27$                              ;
                                    51 D4 0018A 23$:    CLRL    I                                ; 1643
                                    12 11 0018C         BRB     25$                              ;
               52          50       53 C1 0018E 24$:    ADDL3   R3, R0, R2                       ;
                      10 BC41       52 D1 00192         CMPL    R2, @OLD_VECTOR[I]               ;
                                    07 12 00197         BNEQ    25$                              ;
                           51  0C BC41 D0 00199         MOVL    @NEW_VECTOR[I], R1               ;
                                    08 11 0019E         BRB     26$                              ;
               E9          51  10   BC F3 001A0 25$:    AOBLEQ  @OLD_VECTOR, I, 24$              ;
                           51       01 CE 001A5         MNEGL   #1, R1                           ;
                           52  0C   AC D0 001A8 26$:    MOVL    NEW_VECTOR, R2                   ;
                           51  04   A2 C2 001AC         SUBL2   4(R2), R1                        ;
                      0C   A7       51 D0 001B0 27$:    MOVL    R1, 12(R7)                       ; 1642
                               10   A7 D4 001B4         CLRL    16(R7)                           ; 1644
                           05  01   A0 E8 001B7         BLBS    1(R0), 28$                       ; 1645
                           51       04 D0 001BB         MOVL    #4, R1                           ;
                                    0C 11 001BE         BRB     30$                              ;
                               02   A0 B5 001C0 28$:    TSTW    2(R0)                            ; 1646
                                    04 12 001C3         BNEQ    29$                              ;
                                    51 D4 001C5         CLRL    R1                               ;
                                    03 11 001C7         BRB     30$                              ;
                           51       02 D0 001C9 29$:    MOVL    #2, R1                           ;
                      14   A7       51 90 001CC 30$:    MOVB    R1, 20(R7)                       ; 1645
15  A7         04          00       64 F0 001D0         INSV    (R4), #0, #4, 21(R7)             ; 1648
    51         64          04       04 EF 001D6         EXTZV   #4, #4, (R4), R1                 ; 1649
15  A7         04          04       51 F0 001DB         INSV    R1, #4, #4, 21(R7)               ;
                               16   A7 94 001E1         CLRB    22(R7)                           ; 1650
                               18   A7 B4 001E4         CLRW    24(R7)                           ; 1651
                           51  02   A0 32 001E7         CVTWL   2(R0), R1                        ; 1652
                                    05 12 001EB         BNEQ    31$                              ;
                               1A   A7 B4 001ED         CLRW    26(R7)                           ; 1653
                                    0D 11 001F0         BRB     32$                              ;
           1A  A7          56       57 A3 001F2 31$:    SUBW3   R7, VARIABLE_PTR, 26(R7)         ; 1658
                                  6140 9F 001F7         PUSHAB  (R1)[R0]                         ; 1659
                           86       9E D0 001FA         MOVL    @(SP)+, (VARIABLE_PTR)+          ;
                                    86 94 001FD         CLRB    (VARIABLE_PTR)+                  ; 1660
                               1C   A7 B4 001FF 32$:    CLRW    28(R7)                           ; 1663
                               1E   A7 B4 00202 33$:    CLRW    30(R7)                           ; 1664
               67          56       57 A3 00205         SUBW3   R7, VARIABLE_PTR, (R7)           ; 1669
                                       04 00209         RET                                      ; 1673
```

```
; Routine Size:  522 bytes,    Routine Base:  _CDU$CODE + 0489
```

```
1 !++
1 ! Description:  This routine is called to fill in a new entity block from
1 !               the corresponding old block.
1 !
1 ! Parameters:   new_block       By reference, the new block to be filled in.
1 !                               The type and subtype are already present.
1 !               old_block       By reference, the corresponding old block.
1 !               new_vector      By reference, the vector of new block
1 !                               addresses.  Zeroth entry is block count.
1 !               old_vector      By reference, the vector of old block
1 !                               addresses.
1 !               get_vm          By reference, see above.
1 !
1 ! Returns:      Nothing.
1 !
1 ! Notes:
1 !--
1
1 ROUTINE upgrade_5_to_6_entity(new_block: pointer,
1                               old_block: pointer,
1                               new_vector: ref vector[,long],
1                               old_vector: ref vector[,long],
1                               get_vm: pointer)                : novalue
1
2 = BEGIN
2
2 local
2         status: long,
2         variable_ptr: pointer;
2
2
2 ! Set up to add information to the variable portion of the new block.
2
2 variable_ptr = new_block[ent_z_variable];
2
2 ! Now fill in the new entity block from the old one.  Note that we cannot
2 ! differentiate between qualifiers and keywords.
2
2 new_block[ent_b_subtype] =
2         (if .old_block[ent5_w_number] lequ 8 then ent_k_parameter else ent_k_qualifier);
2 new_block[ent_w_flags] = 0;
2 new_block[ent_v_val] = .old_block[ent5_v_val];
2 new_block[ent_v_neg] = .old_block[ent5_v_neg];
2 new_block[ent_v_deftrue] = .old_block[ent5_v_deftrue];
2 new_block[ent_v_batdef] = .old_block[ent5_v_batdef];
2 new_block[ent_v_valreq] = .old_block[ent5_v_valreq];
2 new_block[ent_v_list] = .old_block[ent5_v_list];
2 new_block[ent_v_concat] = .old_block[ent5_v_concat];
2 new_block[ent_v_impcat] = .old_block[ent5_v_impcat];
2 new_block[ent_v_verb] = .old_block[ent5_v_verb];
2 new_block[ent_v_parm] = .old_block[ent5_v_parm];
2 new_block[ent_v_mcroptdelim] = .old_block[ent5_v_mcroptdlm];
2 new_block[ent_v_mcrignore] = .old_block[ent5_v_mcrignore];
2 new_block[ent_w_tro_count] = 3;
3 new_block[ent_l_next] = (if .old_block[ent5_b_next] eqlu 0 then 0 else
2         new_block_address(.old_block+.old_block[ent5_b_next]) - .new_vector[1]);
3 new_block[ent_l_syntax] = (if .old_block[ent5_w_syntax] eqlu 0 then 0 else
2               new_block_address(.old_block+.old_block[ent5_w_syntax]) - .new_vector[1]);
2
2       ! For the user type definition, we have to create a skeleton type block as
2       ! a header for the keyword entity blocks.
2
2       if .old_block[ent5_w_keywords] eqlu 0 then
2               new_block[ent_l_user_type] = 0
3       else (
3               local
3                       type_block: pointer;
3
3               status = (.get_vm)(%ref(type_k_length), type_block);
3               type_block[type_w_size] = type_k_length;
3               type_block[type_b_type] = block_k_type;
3               type_block[type_b_subtype] = type_k_type;
3               type_block[type_w_flags] = 0;
3               type_block[type_w_tro_count] = 1;
3               type_block[type_l_keywords] = new_block_address(.old_block+.old_block[ent5_w_keywords]) - .new_vecto
3               type_block[type_w_name] = type_block[type_w_prefix] = 0;
3               new_block[ent_l_user_type] = .type_block - .new_vector[1];
2       );
2
2       ! Continue filling in the entity block.  Note that we can't get the entity
2       ! number except for parameters.
2
2       new_block[ent_b_number] =
2               (if .new_block[ent_b_subtype] eqlu ent_k_parameter then .old_block[ent5_w_number] else 0);
2       new_block[ent_b_valtype] = .old_block[ent5_b_valtype];
2       new_block[ent_w_name] = .variable_ptr - .new_block;
3       if .old_block[ent5_w_name] lequ 8 then (
3               variable_ptr[0,0,8,0] = 2;
3               variable_ptr[1,0,8,0] = 'P';
3               variable_ptr[2,0,8,0] = '0' + .old_block[ent5_w_name];
3               variable_ptr = .variable_ptr + 1+2;
3       ) else (
3               bind
3                       entity_name = .old_block + .old_block[ent5_w_name]: vector[,byte];
3
3               ch$move(1+.entity_name[0],entity_name[0], .variable_ptr);
3               variable_ptr = .variable_ptr + 1+.entity_name[0];
2       );
2       if .old_block[ent5_w_label] eqlu 0 then
2               new_block[ent_w_label] = .new_block[ent_w_name]
3       else (
3               bind
3                       entity_label = .old_block + .old_block[ent5_w_label]: vector[,byte];
3
3               new_block[ent_w_label] = .variable_ptr - .new_block;
3               ch$move(1+.entity_label[0],entity_label[0], .variable_ptr);
3               variable_ptr = .variable_ptr + 1+.entity_label[0];
2       );
2       if .old_block[ent5_w_prompt] eqlu 0 then
2               new_block[ent_w_prompt] = 0
3       else (
3               bind
3                       entity_prompt = .old_block + .old_block[ent5_w_prompt]: vector[,byte];
3
```

```
UPGRADE                                                          B 6
V04-000                                                   15-Sep-1984 23:53:23    VAX-11 Bliss-32 V4.0-742              Page  30
                                                          14-Sep-1984 11:58:28    DISK$VMSMASTER:[CDU.SRC]UPGRADE.B32;1   (8)

:  787          1788  3          new_block[ent_w_prompt] = .variable_ptr - .new_block;
:  788          1789  3          ch$move(1+.entity_prompt[0],entity_prompt[0], .variable_ptr);
:  789          1790  3          variable_ptr = .variable_ptr + 1+.entity_prompt[0];
:  790          1791  2  );
:  791          1792  2  if .old_block[ent5_w_defval] eqlu 0 then
:  792          1793  2          new_block[ent_w_defval] = 0
:  793          1794  3  else (
:  794          1795  3          bind
:  795          1796  3                  entity_defval = .old_block + .old_block[ent5_w_defval]: vector[,byte];
:  796          1797  3
:  797          1798  3          new_block[ent_w_defval] = .variable_ptr - .new_block;
:  798          1799  3          variable_ptr[0,0,8,0] = 1+.entity_defval[0];
:  799          1800  3          ch$move(1+.entity_defval[0],entity_defval[0], .variable_ptr+1);
:  800          1801  3          variable_ptr = .variable_ptr + 1 + 1+.entity_defval[0];
:  801          1802  2  );
:  802          1803  2
:  803          1804  2  ! Now we can fill in the final size of the new block.
:  804          1805  2
:  805          1806  2  new_block[ent_w_size] = .variable_ptr - .new_block;
:  806          1807  2
:  807          1808  2  return;
:  808          1809  2
:  809          1810  1  END;



                                              03FC 00000 UPGRADE_5_TO_6_ENTITY:
                                                               .WORD   Save R2,R3,R4,R5,R6,R7,R8,R9                   ; 1692
                          5E            08   C2 00002          SUBL2   #8, SP                                         ;
                          57       04   AC   7D 00005          MOVQ    NEW_BLOCK, R7                                  ; 1707
                          56       1E   A7   9E 00009          MOVAB   30(R7), VARIABLE_PTR                           ;
                          08       04   A8   B1 0000D          CMPW    4(R8), #8                                      ; 1713
                          05            1A 00011               BGTRU   1$                                             ;
                          50            01   D0 00013          MOVL    #1, R0                                         ;
                          03            11 00016               BRB     2$                                             ;
                          50            02   D0 00018 1$:      MOVL    #2, R0                                         ;
                   03     A7            50   90 0001B 2$:      MOVB    R0, 3(R7)                                      ;
                          50       04   A7   9E 0001F          MOVAB   4(R7), R0                                      ; 1714
                          60            B4 00023               CLRW    (R0)                                           ;
                          51       10   A8   9E 00025          MOVAB   16(R8), R1                                     ; 1715
     52          61       01            01   EF 00029          EXTZV   #1, #1, (R1), R2                               ;
     60          01       00            52   F0 0002E          INSV    R2, #0, #1, (R0)                               ;
     52          61       01            02   EF 00033          EXTZV   #2, #1, (R1), R2                               ; 1716
     60          01       01            52   F0 00038          INSV    R2, #1, #1, (R0)                               ;
     52          61       01            03   EF 0003D          EXTZV   #3, #1, (R1), R2                               ; 1717
     60          01       02            52   F0 00042          INSV    R2, #2, #1, (R0)                               ;
     52          61       01            04   EF 00047          EXTZV   #4, #1, (R1), R2                               ; 1718
     60          01       03            52   F0 0004C          INSV    R2, #3, #1, (R0)                               ;
     52          61       01            05   EF 00051          EXTZV   #5, #1, (R1), R2                               ; 1719
     60          01       04            52   F0 00056          INSV    R2, #4, #1, (R0)                               ;
     52          61       01            06   EF 0005B          EXTZV   #6, #1, (R1), R2                               ; 1720
     60          01       05            52   F0 00060          INSV    R2, #5, #1, (R0)                               ;
     52          61       01            07   EF 00065          EXTZV   #7, #1, (R1), R2                               ; 1721
     60          01       06            52   F0 0006A          INSV    R2, #6, #1, (R0)                               ;
     60          01       07       01   A1   F0 0006F          INSV    1(R1), #7, #1, (R0)                            ; 1722
```

```
        52        61        01        09  EF 00075          EXTZV   #9, #1, (R1), R2                    ; 1723
  01    A0        01        00        52  F0 0007A          INSV    R2, #0, #1, 1(R0)                   ;
        52        61        01        0A  EF 00080          EXTZV   #10, #1, (R1), R2                   ; 1724
        60        01        09        52  F0 00085          INSV    R2, #9, #1, (R0)                    ;
        52        61        01        0B  EF 0008A          EXTZV   #11, #1, (R1), R2                   ; 1725
        60        01        0A        52  F0 0008F          INSV    R2, #10, #1, (R0)                   ;
        52        61        01        0C  EF 00094          EXTZV   #12, #1, (R1), R2                   ; 1726
        60        01        0B        52  F0 00099          INSV    R2, #11, #1, (R0)                   ;
                       06   A7        03  B0 0009E          MOVW    #3, 6(R7)                           ; 1727
                            51        68  9A 000A2          MOVZBL  (R8), R1                            ; 1728
                                      04  12 000A5          BNEQ    3$                                  ;
                                      50  D4 000A7          CLRL    R0                                  ;
                                      26  11 000A9          BRB     7$                                  ;
                                      50  D4 000AB 3$:      CLRL    I                                   ; 1729
                                      12  11 000AD          BRB     5$                                  ;
                  52        58        51  C1 000AF 4$:      ADDL3   R1, R8, R2                          ;
                       10 BC40        52  D1 000B3          CMPL    R2, @OLD_VECTOR[I]                  ;
                                      07  12 000B8          BNEQ    5$                                  ;
                            50   0C BC40  D0 000BA          MOVL    @NEW_VECTOR[I], R0                  ;
                                      08  11 000BF          BRB     6$                                  ;
                  E9        50   10   BC  F3 000C1 5$:      AOBLEQ  @OLD_VECTOR, I, 4$                  ;
                            50        01  CE 000C6          MNEGL   #1, R0                              ;
                            51   0C   AC  D0 000C9 6$:      MOVL    NEW_VECTOP, R1                      ;
                            50   04   A1  C2 000CD          SUBL2   4(RT), R0                           ;
                       08   A7        50  D0 000D1 7$:      MOVL    R0, 8(R7)                           ; 1728
                            51   0A   A8  32 000D5          CVTWL   10(R8), R1                          ; 1730
                                      04  12 000D9          BNEQ    8$                                  ;
                                      50  D4 000DB          CLRL    R0                                  ;
                                      26  11 000DD          BRB     12$                                 ;
                                      50  D4 000DF 8$:      CLRL    I                                   ; 1731
                                      12  11 000E1          BRB     10$                                 ;
                  52        58        51  C1 000E3 9$:      ADDL3   R1, R8, R2                          ;
                       10 BC40        52  D1 000E7          CMPL    R2, @OLD_VECTOR[I]                  ;
                                      07  12 000EC          BNEQ    10$                                 ;
                            50   0C BC40  D0 000EE          MOVL    @NEW_VECTOR[I], R0                  ;
                                      08  11 000F3          BRB     11$                                 ;
                  E9        50   10   BC  F3 000F5 10$:     AOBLEQ  @OLD_VECTOR, I, 9$                  ;
                            50        01  CE 000FA          MNEGL   #1, R0                              ;
                            51   0C   AC  D0 000FD 11$:     MOVL    NEW_VECTOR, R1                      ;
                            50   04   A1  C2 00101          SUBL2   4(RT), R0                           ;
                       0C   A7        50  D0 00105 12$:     MOVL    R0, 12(R7)                          ; 1730
                            53   0C   A8  32 00109          CVTWL   12(R8), R3                          ; 1736
                                      05  12 0010D          BNEQ    13$                                 ;
                                 10   A7  D4 0010F          CLRL    16(R7)                              ; 1737
                                      50  11 00112          BRB     17$                                 ;
                                 04   AE  9F 00114 13$:     PUSHAB  TYPE_BLOCK                          ; 1742
                       04   AE        10  D0 00117          MOVL    #16, 4(SP)                          ;
                                 04   AE  9F 0011B          PUSHAB  4(SP)                               ;
                       14   BC        02  FB 0011E          CALLS   #2, @GET_VM                         ;
                            50   04   AE  D0 00122          MOVL    TYPE_BLOCK, R0                      ; 1743
                            60        10  B0 00126          MOVW    #16, (R0)                           ;
                       02   A0 0103   8F  3C 00129          MOVZWL  #259, 2(R0)                         ; 1744
                       06   A0        01  B0 0012F          MOVW    #1, 6(R0)                           ; 1747
                                      51  D4 00133          CLRL    I                                   ; 1748
                                      12  11 00135          BRB     15$                                 ;
                  52        58        53  C1 00137 14$:     ADDL3   R3, R8, R2                          ;
                       10 BC41        52  D1 0013B          CMPL    R2, @OLD_VECTOR[I]                  ;
```

```
                                    07  12 00140          BNEQ      15$                                          ;
                       52      0C BC41  D0 00142          MOVL      @NEW_VECTOR[I], R2                           ;
                                    08  11 00147          BRB       16$                                          ;
              59       51      10   BC  F3 00149 15$:     AOBLEQ    @OLD_VECTOR, I, 14$                          ;
                       52           01  CE 0014E          MNEGL     #1, R2                                       ;
                       51      0C   AC  D0 00151 16$:     MOVL      NEW_VECTOR, R1                               ;
     08   A0           52      04   A1  C3 00155          SUBL3     4(RT), R2, 8(R0)                             ;
                               0C   A0  D4 0015B          CLRL      12(R0)                                       ; 1749
     10   A7           50      04   A1  C3 0015E          SUBL3     4(R1), R0, 16(R7)                            ; 1750
                       01      03   A7  91 00164 17$:     CMPB      3(R7), #1                                    ; 1757
                                    06  12 00168          BNEQ      18$                                          ;
                       50      04   A8  3C 0016A          MOVZWL    4(R8), R0                                    ;
                                    02  11 0016E          BRB       19$                                          ;
                                    50  D4 00170 18$:     CLRL      R0                                           ;
              14  A7   50               90 00172 19$:     MOVB      R0, 20(R7)                                   ;
              15  A7           03   A8  90 00176          MOVB      3(R8), 21(R7)                                ; 1758
     16   A7           56           57  A3 0017B          SUBW3     R7, VARIABLE_PTR, 22(R7)                     ; 1759
                       50      04   A8  32 00180          CVTWL     4(R8), R0                                    ; 1760
                       08           50  B1 00184          CMPW      R0, #8                                       ;
                                    0B  1A 00187          BGTRU     20$                                          ;
                       86    5002   8F  B0 00189          MOVW      #20482, (VARIABLE_PTR)+                      ; 1761
          86           50           30  81 0018E          ADDB3     #48, R0, (VARIABLE_PTR)+                     ; 1763
                                    12  11 00192          BRB       21$                                          ; 1760
                       59         6048  9A 00194 20$:     MOVZBL    (R0)[R8], R9                                 ; 1769
                       51      01   A9  9E 00198          MOVAB     1(R9), R1                                    ;
          66         6048           51  28 0019C          MOVC3     R1, (R0)[R8], (VARIABLE_PTR)                 ;
                       56      01 A946  9E 001A1          MOVAB     1(R9)[VARIABLE_PTR], VARIABLE_PTR            ; 1770
                       50      06   A8  32 001A6 21$:     CVTWL     6(R8), R0                                    ; 1772
                                    07  12 001AA          BNEQ      22$                                          ;
              18  A7           16   A7  B0 001AC          MOVW      22(R7), 24(R7)                               ; 1773
                                    17  11 001B1          BRB       23$                                          ;
     18   A7           56           57  A3 001B3 22$:     SUBW3     R7, VARIABLE_PTR, 24(R7)                     ; 1778
                       59         6048  9A 001B8          MOVZBL    (R0)[R8], R9                                 ; 1779
                       51      01   A9  9E 001BC          MOVAB     1(R9), R1                                    ;
          66         6048           51  28 001C0          MOVC3     R1, (R0)[R8], (VARIABLE_PTR)                 ;
                       56      01 A946  9E 001C5          MOVAB     1(R9)[VARIABLE_PTR], VARIABLE_PTR            ; 1780
                       50      0E   A8  32 001CA 23$:     CVTWL     14(R8), R0                                   ; 1782
                                    05  12 001CE          BNEQ      24$                                          ;
                               1A   A7  B4 001D0          CLRW      26(R7)                                       ; 1783
                                    17  11 001D3          BRB       25$                                          ;
     1A   A7           56           57  A3 001D5 24$:     SUBW3     R7, VARIABLE_PTR, 26(R7)                     ; 1788
                       59         6048  9A 001DA          MOVZBL    (R0)[R8], R9                                 ; 1789
                       51      01   A9  9E 001DE          MOVAB     1(R9), R1                                    ;
          66         6048           51  28 001E2          MOVC3     R1, (R0)[R8], (VARIABLE_PTR)                 ;
                       56      01 A946  9E 001E7          MOVAB     1(R9)[VARIABLE_PTR], VARIABLE_PTR            ; 1790
                       51      08   A8  32 001EC 25$:     CVTWL     8(R8), R1                                    ; 1792
                                    05  12 001F0          BNEQ      26$                                          ;
                               1C   A7  B4 001F2          CLRW      28(R7)                                       ; 1793
                                    1B  11 001F5          BRB       27$                                          ;
     1C   A7           56           57  A3 001F7 26$:     SUBW3     R7, VARIABLE_PTR, 28(R7)                     ; 1798
                       59         6148  9A 001FC          MOVZBL    (R1)[R8], R9                                 ; 1799
                       50      01   A9  9E 00200          MOVAB     1(R9), R0                                    ;
                       66           50  90 00204          MOVB      R0, (VARIABLE_PTR)                           ;
     01   A6         6148           50  28 00207          MOVC3     R0, (R1)[R8], 1(VARIABLE_PTR)                ; 1800
                       56      02 A946  9E 0020D          MOVAB     2(R9)[VARIABLE_PTR], VARIABLE_PTR            ; 1801
          67           56           57  A3 00212 27$:     SUBW3     R7, VARIABLE_PTR, (R7)                       ; 1806
                                        04 00216          RET                                                    ; 1810
```

```
; Routine Size:  535 bytes,    Routine Base:  _CDU$CODE + 0693

;  810          1811  1
;  811          1812  1 END
;  812          1813  0 ELUDOM



;                                    PSECT SUMMARY
;
;      Name                        Bytes                        Attributes
;
;  _CDU$CODE                          2218  NOVEC,NOWRT,  RD ,  EXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(0)


;                             Library Statistics
;
;                                               -------- Symbols --------      Pages       Processing
;      File                                     Total    Loaded   Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]LIB.L32;1                18619         9         0      1000          00:01.9



;                                    COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/LIS=LIS$:UPGRADE/OBJ=OBJ$:UPGRADE MSRC$:UPGRADE/UPDATE=(ENH$:UPGRADE)

; Size:          2218 code + 0 data bytes
; Run Time:         00:48.9
; Elapsed Time:     01:45.2
; Lines/CPU Min:     2224
; Lexemes/CPU-Min: 25888
; Memory Used:  305 pages
; Compilation Complete
```

0045 AH-BT13A-SE
VAX/VMS V4.0

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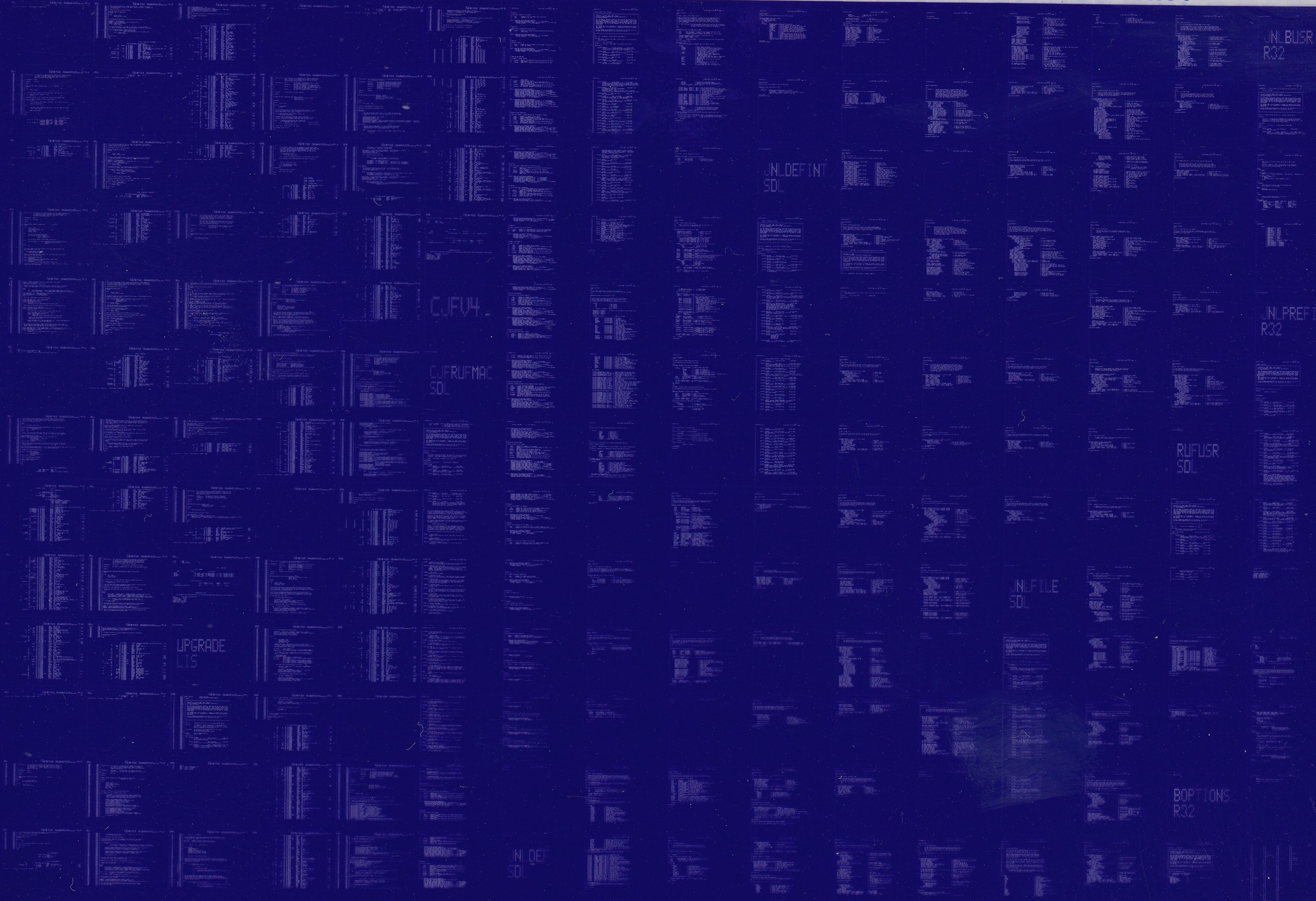
UNLBUSR
R32

UNLDEFINT
SDL

CJFV4.

UNLPREFIX
R32

CJFRUFMAC
SDL

RUFUSR
SDL

UNLFILE
SDL

UPGRADE
LIS

BOPTIONS
R32

UNLDEF
SDL