

CCCCCCCCCCCC	LLL	IIIIIIII	UUU	UUU	TTTTTTTTTTTTTTTT	LLL
CCCCCCCCCCCC	LLL	IIIIIIII	UUU	UUU	TTTTTTTTTTTTTTTT	LLL
CCCCCCCCCCCC	LLL	IIIIIIII	UUU	UUU	TTTTTTTTTTTTTTTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCC	LLL	III	UUU	UUU	TTT	LLL
CCCCCCCCCCCC	LLLLLLLLLLLLLLLL	IIIIIIII	UUUUUUUUUUUUUU	UUUUUUUUUUUUUU	TTTT	LLLLLLLLLLLLLLLL
CCCCCCCCCCCC	LLLLLLLLLLLLLLLL	IIIIIIII	UUUUUUUUUUUUUU	UUUUUUUUUUUUUU	TTTT	LLLLLLLLLLLLLLLL
CCCCCCCCCCCC	LLLLLLLLLLLLLLLL	IIIIIIII	UUUUUUUUUUUUUU	UUUUUUUUUUUUUU	TTTT	LLLLLLLLLLLLLLLL

```

SSSSSSSS  EEEEEEEEE  TTTTTTTTT  CCCCCCCC  LL      UU      UU      SSSSSSSS  UU      UU  BBBB8888
SSSSSSSS  EEEEEEEEE  TTTTTTTTT  CCCCCCCC  LL      UU      UU      SSSSSSSS  UU      UU  BBBB8888
SS        EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
SS        EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
SS        EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
SS        EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
SSSSSS    EEEEEEEE  TT        CC        LL      UU      UU      SSSSSS  UU      UU  BBBB8888
SSSSSS    EEEEEEEE  TT        CC        LL      UU      UU      SSSSSS  UU      UU  BBBB8888
                EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
                EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
                EE        TT        CC        LL      UU      UU      SS      UU      UU  BB      BB
                EE        TT        TT        LL      UU      UU      SS      UU      UU  BB      BB
SSSSSSSS  EEEEEEEEE  TT        CC        LL      UU      UU      SSSSSSSS  UU      UU  BBBB8888
SSSSSSSS  EEEEEEEEE  TT        CC        LL      UU      UU      SSSSSSSS  UU      UU  BBBB8888

```

```

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
LLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLL  IIIIII  SSSSSSSS

```

(2)

56

'SETSVALIDATE\_QUORUM'

```

0000 1      .TITLE SETCLUSUB
0000 2      .IDENT /V04-000/
0000 3      *****
0000 4      *
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0000 21     *  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 22     *
0000 23     *
0000 24     *  *****
0000 25     *
0000 26     *  ++
0000 27
0000 28     FACILITY:      SET CLUSTER
0000 29
0000 30     ABSTRACT:      Subroutines which run at elevated IPL for SET CLUSTER
0000 31
0000 32     AUTHOR:        Paul R. Beck
0000 33
0000 34     DATE:          19-FEB-1984
0000 35
0000 36     REVISION HISTORY:
0000 37
0000 38           V03-001 DWT0205      David W. Thiel      26-Mar-1984
0000 39           Revise interface to connection manager.
0000 40
0000 41     --
0000 42
0000 43     Define offsets and constants
0000 44
0000 45           $IPLDEF
0000 46           $CLUBDEF
0000 47           $CSBDEF
0000 48           $SBDEF
0000 49
00000000 50           .PSECT SET$CODE      BYTE, RD, NOWRT, EXE
0000 51
0000 52     Define timer for 1/10 second
0000 53
00000000 54     ONE_TENTH:      .LONG      -1*1000*1000*1, -1

```

'SET\$VALIDATE\_QUORUM'

```

0008 56 .SBTTL 'SET$VALIDATE_QUORUM'
0008 57 :++
0008 58 : SET$VALIDATE_QUORUM
0008 59 :
0008 60 : FUNCTIONAL DESCRIPTION:
0008 61 : Validate proposed value for quorum to ensure that it is neither
0008 62 : too high nor too low, and pin it accordingly if it is out of range.
0008 63 : Pass the validated quorum value to the connection manager for
0008 64 : setting in the cluster.
0008 65 : CALLING SEQUENCE:
0008 66 : CALL SET$VALIDATE_QUORUM ( quorum, new_quorum )
0008 67 : INPUT PARAMETERS:
0008 68 : P1 = new quorum value, or 0
0008 69 : If 0, set according to (V+2)/2 formula.
0008 70 : IMPLICIT INPUTS:
0008 71 : V = CLUB$W_VOTES, total number of cluster votes
0008 72 : OUTPUT PARAMETERS:
0008 73 : new_quorum = address of longword to receive actual value set
0008 74 : IMPLICIT OUTPUTS:
0008 75 : none
0008 76 : COMPLETION CODES:
0008 77 : $$$NORMAL = quorum set
0008 78 : SIDE EFFECTS:
0008 79 :
0008 80 :--
000C 0008 81 :
000A 0008 82 : .ENTRY SET$VALIDATE_QUORUM, ^M<R2,R3>
000A 000A 83 :
000A 000A 84 : This work must be done in kernel mode, and synchronized with the
000A 000A 85 : connection manager.
000A 000A 86 :
53 50 D0 000A 87 5$: $CMKRNLS B^CHANGE_QUORUM,(AP) ; Do this in kernel mode
0016 88 : MOVL R0,R3 ; Save status of request
0019 89 :
0019 90 : At this point, we wait in user mode for a short time, then test to see
0019 91 : if the connection manager has completed its work.
0019 92 :
0019 93 10$: $SETIMR_S - ; Define a tick
0019 94 : efn = #EXESC_SYSEFN - ; ...use system event flag
0019 95 : daytim = B^ONE_TENTH ; ...shouldn't be perceptible
27 50 E9 0028 96 : BLBC R0,15$ ; any error will be program bug
002E 97 : $WAITFR_S -
002E 98 : efn = #EXESC_SYSEFN ; Wait a tick
17 50 E9 0038 99 : BLBC R0,15$ ;
C9 53 E9 003E 100 : BLBC R3,5$ ; Retry the command (couldn't handle it befo
0041 101 : $CMKRNLS B^TEST_QUORUM ; Test CLUB$V_ADJ_QUORUM
004D 102 : BLBC R0,10$ ; If LBC, not done
08 BC C9 50 E9 004D 102 : BLBC R0,10$ ; If LBC, not done
52 D0 0050 103 : MOVL R2,#8(AP) ; new_quorum <- assigned value
04 0054 104 : RET
0055 105 :
00000000'GF 50 DD 0055 106 15$: PUSHL R0 ; P1 = condition (assume no FA0 args)
01 FB 0057 107 : CALLS #1,G^LIB$SIGNAL ; Signal the error.
04 005E 108 : RET ; Done

```

'SET\$VALIDATE\_QUORUM'

```

005F 110 CHANGE_QUORUM:
005F 111 .WORD 0 ; Entry point
51 04 AC 0000 0061 112 MOVL 4(AP),R1 ; Get P1 = new quorum (value)
DO 0065 113 SETIPL B^IPL_SYNCH ; Make sure code won't page at SYNCH
0069 114 :
0069 115 : Tell the connection manager to set a new quorum. The connection manager
0069 116 : must handle this since it is done in a coordinated fashion across the
0069 117 : cluster. The quorum value is passed in R1 to this routine.
0069 118 :
0069 119 : Note that the connection manager is responsible for sanity-checking the
0069 120 : quorum value.
00000000'GF 0069 121 :
16 0069 122 JSB G^CNX$CHANGE_QUORUM ; Set new quorum value
006F 123 :
006F 124 : Done with the synchronized part. Return status in R0 to user mode.
006F 125 :
04 006F 126 SETIPL #0 ; Out of synch
0072 127 RET ; Back to user mode
    
```

'SETSVALIDATE\_QUORUM'

```

0073 129 :
0073 130 : Subroutine to return new quorum in R2, or error if not yet set.
0073 131 :
0073 132 TEST_QUORUM:
0000 0073 133 .WORD 0
0075 134
0075 135 SETIPL B^IPL SYNCH ; Lock down page, synch with cnx mgr
52 00000000'GF D0 0079 136 MOVL G^CLUSGL CLUB,R2 ; Get CLUB structure
50 D4 0080 137 CLRL R0 ; Assume new quorum not set yet.
1B E0 0082 138 BBS #CLUBSV_ADJ QUORUM,- ; If BS, still in process of setting quorum
1C A2 0084 139 CLUBSL_FLAGS(R2),-
07 0086 140 10$
52 20 A2 3C 0087 141 MOVZWL CLUBSW_QUORUM(R2),R2 ; Done...get new quorum.
50 01 D0 0088 142 MOVL #1,R0 ; Flag success
008E 143 10$: SETIPL #0 ; Desynchronize
04 0091 144 RET ; Done
0092 145
0092 146 IPL_SYNCH:
00000008 0092 147 .LONG IPLS_SYNCH ; End of locked-down portion

```

SETCLUSUB  
V04-000

'SETSVALIDATE\_QUORUM'

0096 149 .END

L 9

15-SEP-1984 23:42:14 VAX/VMS Macro V04-00 Page 5  
4-SEP-1984 23:18:34 [CLIUTL.SRC]SETCLUSUB.MAR;1 (5)



SETCLUSUB  
Symbol table

M 9

```

$ST1          = 00000000
CHANGE_QUORUM 0000005F R    02
CLUSGL_CLUB   ***** X    02
CLUBSL_FLAGS  = 0000001C
CLUBSV_ADJ_QUORUM = 0000001B
CLUBSW_QUORUM = 00000020
CNX$CHANGE_QUORUM ***** X    02
EXESC_SYSEFN ***** X    02
IPLS_SYNCH   = 00000008
IPL_SYNCH    00000092 R    02
LIB$SIGNAL   ***** X    02
ONE_TENTH    00000000 R    02
PR$IPL       ***** X    02
SET$VALIDATE_QUORUM 00000008 RG   02
SYSSCMKRNL   ***** GX   02
SYSSSETIMR   ***** GX   02
SYSSWAITFR   ***** GX   02
TEST_QUORUM  00000073 R    02
    
```

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

PSECT name	Allocation	PSECT No.	Attributes
. ABS .	00000000 ( 0.)	00 ( 0.)	NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE
\$ABSS	00000000 ( 0.)	01 ( 1.)	NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE
SET\$CODE	00000096 ( 150.)	02 ( 2.)	NOPIC USR CON REL LCL NOSHR EXE RD NOWRT NOVEC BYTE

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

Phase	Page faults	CPU Time	Elapsed Time
Initialization	10	00:00:00.09	00:00:01.75
Command processing	82	00:00:00.96	00:00:04.82
Pass 1	181	00:00:03.55	00:00:19.60
Symbol table sort	0	00:00:00.40	00:00:00.72
Pass 2	53	00:00:00.68	00:00:03.33
Symbol table output	4	00:00:00.03	00:00:00.34
Psect synopsis output	1	00:00:00.03	00:00:00.52
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	333	00:00:05.74	00:00:31.08

The working set limit was 900 pages.  
17041 bytes (34 pages) of virtual memory were used to buffer the intermediate code.  
There were 20 pages of symbol table space allocated to hold 297 non-local and 4 local symbols.  
149 source lines were read in Pass 1, producing 16 object records in Pass 2.  
18 pages of virtual memory were used to define 17 macros.

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

Macro library name	Macros defined
-----	-----
\$255\$DUA28:[CLIUTL.OBJ]CLIUTL.MLB;1	0
\$255\$DUA28:[SYS.OBJ]LIB.MLB;1	5
\$255\$DUA28:[SYSLIB]STARLET.MLB;2	9
TOTALS (all libraries)	14

413 GETS were required to define 14 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LIS\$:SETCLUSUB/OBJ=OBJ\$:SETCLUSUB MSRC\$:SETCLUSUB/UPDATE=(ENH\$:SETCLUSUB)+EXECMLS/LIB+LIB\$:CLIUTL/LIB



0052 AH-BT13A-SE  
VAX/VMS V4.0

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