

```

MMM      MMM      SSSSSSSSSSSS   CCCCCCCCCCCC   Ppppppppppppp
MMM      MMM      SSSSSSSSSSSS   CCCCCCCCCCCC   Ppppppppppppp
MMM      MMM      SSSSSSSSSSSS   CCCCCCCCCCCC   Ppppppppppppp
MMMMMM   MMMMM   SSS             CCC             Ppp          Ppp
MMMMMM   MMMMM   SSS             CCC             Ppp          Ppp
MMMMMM   MMMMM   SSS             CCC             Ppp          Ppp
MMM      MMM      MMM      SSS             CCC             Ppp          Ppp
MMM      MMM      MMM      SSS             CCC             Ppp          Ppp
MMM      MMM      MMM      SSS             CCC             Ppp          Ppp
MMM      MMM      MMM      SSSSSSSSSS   CCC             Ppppppppppppp
MMM      MMM      MMM      SSSSSSSSSS   CCC             Ppppppppppppp
MMM      MMM      MMM      SSSSSSSSSS   CCC             Ppppppppppppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSS             CCC             Ppp
MMM      MMM      MMM      SSSSSSSSSSS   CCCCCCCCCCCC   Ppp
MMM      MMM      MMM      SSSSSSSSSSS   CCCCCCCCCCCC   Ppp
MMM      MMM      MMM      SSSSSSSSSSS   CCCCCCCCCCCC   Ppp

```

```

$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D
$D

```

```
MM      MM      SSSSSSSS  CCCCCCCC  PPPPPPPP  DDDDDDDD  EEEEEEEEE  FFFFFFFF
MM      MM      SSSSSSSS  CCCCCCCC  PPPPPPPP  DDDDDDDD  EEEEEEEEE  FFFFFFFF
MMMM    MMMM    SS        CC          PP        PP        DD        DD        EE          FF
MMMM    MMMM    SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SSSSSS    CC          PPPPPPPP  DD        DD        EEEEEEEEE  FFFFFFFF
MM      MM      SSSSSS    CC          PPPPPPPP  DD        DD        EEEEEEEEE  FFFFFFFF
MM      MM      SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SS        CC          PP        PP        DD        DD        EE          FF
MM      MM      SSSSSSSS  CCCCCCCC  PP        PP        DDDDDDDD  EEEEEEEEE  FF
MM      MM      SSSSSSSS  CCCCCCCC  PP        PP        DDDDDDDD  EEEEEEEEE  FF
                                         .....
                                         .....
                                         .....
                                         .....
```

```
MM      MM      AAAAAA  RRRRRRRR
MM      MM      AAAAAA  RRRRRRRR
MMMM    MMMM    AA      AA  RR      RR
MMMM    MMMM    AA      AA  RR      RR
MM      MM      AA      AA  RR      RR
MM      MM      AA      AA  RR      RR
MM      MM      AA      AA  RRRRRRRR
MM      MM      AA      AA  RRRRRRRR
MM      MM      AAAAAAAAAA  RR  RR
MM      MM      AAAAAAAAAA  RR  RR
MM      MM      AA      AA  RR      RR
MM      MM      AA      AA  RR      RR
MM      MM      AA      AA  RR      RR
MM      MM      AA      AA  RR      RR
```

.TITLE MSCP_MACROS
 .IDENT 'V04=000'

```

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++
 FACILITY:

MSCP (Mass Storage Controll Protocol) Emulator

ABSTRACT:

AUTHOR: Kerbey T. Altmann, May 1983

MODIFIED BY:

V03-003	DWT0237	David W. Thiel	21-Aug-1984
	Add reference count field to HQB. Add queue linkage to \$HQBDEF. Add HQB queue header to \$MSUDEF. Add MSUSW MAX PKT to \$MSUDEF as synonym (and replacement for) MSUSQ_MIN PKT. Put some extra space in each structure. Add HQBSQ_PENDING to hold CDRPs pending MAP deallocation.		
V03-002	KTA3104	Kerbey T. Altmann	28-Feb-1984
	More new fields for shadowing.		
V03-001	KTA3081	Kerbey T. Altmann	15-Sep-1983
	Add new fields for shadowing and controller timeout.		

--
 Host que block

```

;
      .MACRO $HQBDEF,$GBL
      $DEFINI HQB,$GBL

$DEF  HQBSL_FLINK      .BLKL      ; Linkage to tie HQB's to MSUSQ_HQBLIST
$DEF  HQBSL_BLINK     .BLKL
$DEF  HQBSW_SIZE      .BLKW
$DEF  HQBSB_TYPE      .BLKB
$DEF  HQBSB_PORT      .BLKB
      .BLKL
$DEF  HQBSL_UNIT_ONLN .BLKL      ; Bit map of units host has online
$DEF  HQBSL_CDT       .BLKL      ; Pointer to CDT for connection
$DEF  HQBSW_CNT_FLGS  .BLKW
$DEF  HQBSW_HST_TMO   .BLKW      ; Host time out period
$DEF  HQBSW_USE_FRAC  .BLKW      ; Fraction of resources for this host
$DEF  HQBSB_VEC       .BLKB
$DEF  HQBSB_FLAG      .BLKB
$SEQU HQBS$TIME       8
$DEF  HQBSQ_TIME      .BLKQ      ; Time ONLINE command issued
$DEF  HQBSW_NUM_QUE   .BLKW
$DEF  HQBSW_MAX_QUE   .BLKW
$DEF  HQBSW_REFCT     .BLKW      ; Count of outstanding packets
$DEF  HQBSQ_PENDING   .BLKQ      ; CDRP's pending UNMAP after disconnect
$DEF  HQBSK_LEN       .BLKL      ; Spare
$DEF  HQBSK_LEN
      $DEFEND HQB,$GBL,DEF
      .ENDM $HQBDEF

```

```

;
; Unit que block
;

```

```

      .MACRO $UQBDEF,$GBL
      $DEFINI UQB,$GBL

$DEF  UQBSL_SHDW_FL   .BLKL
$DEF  UQBSL_SHDW_BL   .BLKL
$DEF  UQBSW_SIZE      .BLKW
$DEF  UQBSB_TYPE      .BLKB
      .BLKB      1
$DEF  UQBSB_HOST_CNT  .BLKB      ; Number of hosts having unit online
$DEF  UQBSB_CMD_PEND  .BLKB
$DEF  UQBSW_STATUS    .BLKW      ; Status of the unit
$DEF  UQBSW_MULT_UNT  .BLKW      ; Special MSCP kludge
$DEF  UQBSW_UNT_FLGS  .BLKW      ; Unit flags
      .BLKL      1
$SEQU UQB$S_UNIT_ID   8
$DEF  UQB$Q_UNIT_ID   .BLKQ      ; Unit id
$DEF  UQBSL_MEDIA_ID  .BLKL      ; Media type id

```

```

$DEF  UQBSW_SHDW_UNT  .BLKW      ; Shadow unit
$DEF  UQBSW_SHDW_STS  .BLKW
$DEF  UQBSW_UNIT      .BLKW
$DEF  UQBSB_SLOT      .BLKB      1
$DEF  UQBSB_FLAGS     .BLKB
$DEF  UQBSL_VOL_SER   .BLKL      ; Volume serial
$DEF  UQBSL_UCB       .BLKL      ; Pointer to unit's UCB
$DEF  UQBSL_HOST_ONLN .BLKL      ; Hosts online
$DEF  UQBS$NAME       16
$DEF  UQBST_NAME      .BLKB      16
$DEF  UQBSL_MAXBLOCK  .BLKL      ; Maximum LBN size
$DEF  UQBSL_START_LBN .BLKL      ; Starting LBN if logical disk
$DEF  UQBSW_NUM_QUE   .BLKW
$DEF  UQBSW_MAX_QUE   .BLKW
$DEF  UQBSW_NUM_OPS   .BLKW
$DEF  UQBSW_MAX_OPS   .BLKW
$DEF  UQBSL_FENCEL    .BLKL
$DEF  UQBSL_FENCEH    .BLKL
$DEF  UQBSL_CDRP_FL   .BLKL
$DEF  UQBSL_CDRP_BL   .BLKL
$DEF  UQBSQ_BLOCKQ    .BLKQ
$DEF  UQBSQ_SHQ       .BLKQ
$DEF  UQBSL_SHDW_LOW  .BLKL
$DEF  UQBSL_SHDW_MST .BLKL
$DEF  UQBSW_NUM_BLK   .BLKW
$DEF  UQBSW_MAX_BLK   .BLKW
$DEF  UQBSQ_UNITQ     .BLKQ
$DEF  UQBSL_CPY_CDRP  .BLKL
      .BLKL  4

```

```

$DEF  UQBSC_LEN
$DEF  UQBSK_LEN

```

```

$DEF  UQBSV_CIP      0
$DEF  UQBSM_CIP      1
$DEF  UQBSV_BLOCKED  1
$DEF  UQBSM_BLOCKED  2
$DEF  UQBSV_2PASS    2
$DEF  UQBSM_2PASS    4
$DEF  UQBSV_CMDPEND  3
$DEF  UQBSM_CMDPEND  8
$DEF  UQBSV_SEQ      4
$DEF  UQBSM_SEQ      16
$DEF  UQBSV_RIP      5
$DEF  UQBSM_RIP      32

```

```
$DEFEND UQB,$GBL,DEF
```

```
.ENDM $UQBDEF
```

```

:
: Communication area
:

```

```
.MACRO $MSUDEF,$GBL
```

\$DEFINI MSU,\$GBL

```

$EQU  MSUSV_START      31      ; State flag
$EQU  MSUSK_UNIT_SIZ   4        ; LOG2 of MAX UNIT
$EQU  MSUSK_MAX_UNIT   16       ; Maximum number of units
$EQU  MSUSK_HOST_SIZ   4        ; LOG2 of MAX HOST
$EQU  MSUSK_MAX_HOST   16       ; Maximum number of simultaneous hosts
$EQU  MSUSK_MAX_OPC    64       ; Maximum MSCP opcode
$EQU  MSUSK_AC_START   1        ; START ACTION
$EQU  MSUSK_AC_STOP    2        ; STOP ACTION
$EQU  MSUSK_AC_ADD     3        ; ADD ACTION
$EQU  MSUSK_AC_REM     4        ; REMOVE ACTION
$EQU  MSUSK_AC_DISC    5        ; DISCONNECT ACTION
$EQU  MSCPSR_MIN_SIZE  12       ; Minimum MSCP packet size

$DEF  MSUSL_D1          .BLKL
$DEF  MSUSL_D2          .BLKL
$DEF  MSUSW_SIZE        .BLKW
$DEF  MSUSB_TYPE        .BLKB
$DEF  MSUSB_SUBTYPE     .BLKB
$DEF  MSUSL_P1          .BLKL
$DEF  MSUSL_P2          .BLKL
$DEF  MSUST_NAME        .BLKB 16
$DEF  MSUSB_VEC         .BLKB 28
$DEF  MSUSL_STATE       .BLKL
$DEF  MSUSW_PACKET      .BLKW      ; Number of credits and maximum packets per host
$DEF  MSUSW_INI_PKT     .BLKW      ; Number of allocated packets
$DEF  MSUSW_NUM_PKT     .BLKW      ; Number of free packets
$DEF  MSUSW_MIN_PKT     .BLKW      ; Obsolete name for next field
$DEF  MSUSW_MAX_PKT     .BLKW      ; Maximum number of free packets
$DEF  MSUSW_INI_HOST    .BLKW
$DEF  MSUSW_NUM_HOST    .BLKW
$DEF  MSUSL_BUFF_HEAD   .BLKL      ; Head of the buffer pool
$DEF  MSUSL_MAX_BUF     .BLKL
$DEF  MSUSL_SMALL       .BLKL
$DEF  MSUSL_FRACTION    .BLKL
$DEF  MSUSW_NUM_QUE     .BLKW
$DEF  MSUSW_MAX_QUE     .BLKW

$DEF  MSUSL_CDSV_SIZE   .BLKL
$DEF  MSUSL_CDRP_SAVE   .BLKL
$DEF  MSUSQ_QUEUE       .BLKW      ; Start of queues
$DEF  MSUSL_CDRP_LIST   .BLKL
$DEF  MSUSL_MEM_WAIT    .BLKL 1
$DEF  MSUSL_UQB_LIST    .BLKL 1
$DEF  MSUSL_UQB_LIST    .BLKL 1
$EQU  MSUSC_NUMQUE      3          ; Number of queues
$DEF  MSUSL_HOST_DSBL   .BLKL 1
$DEF  MSUSL_UNIT_VEC    .BLKL      MSUSK_MAX_UNIT
$DEF  MSUSL_HOST_VEC    .BLKL      MSUSK_MAX_UNIT
$DEF  MSUSL_HOST_VEC    .BLKL      MSUSK_MAX_HOST
$DEF  MSUSL_HOST_VEC    .BLKL      MSUSK_MAX_HOST
$DEF  MSUSQ_CTRL_ID     .BLKQ

```


A grid of 15 columns and 10 rows of technical diagrams and code snippets. The diagrams include:

- MSCP**: Multiple Signal Channel Protocol diagrams.
- MSCP MAP**: Mapping diagrams for MSCP.
- ADDUNIT LIS**: List of added units.
- MSCP LIS**: List of MSCP units.
- MPWATT LIS**: List of MPWATT units.
- MPTIMER LIS**: List of MPTIMER units.
- XDELTA LIS**: List of XDELTA units.
- MSCPDEF MAR**: MSCP definition macro source code.

Each diagram typically consists of a header section, a list of items, and a detailed schematic or code block.