

Version: 'V04-000'

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Facility:

Image Activator Internal Structure Definitions

Abstract:

This file contains definitions of the structures used internally by the various components of the image activator.

Author:

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Creation Date:

15 April 1983

Modified By:

- V03-009 LJK0280 Lawrence J. Kenah 9-May-1984
Change WRONG_SYS_STB flag to SYS_STB.
- V03-008 LJK0271 Lawrence J. Kenah 3-Apr-1984
Define bitfields in IAC\$GL_IMAGCTX. Perform miscellaneous cleanup.
- V03-007 LJK0267 Lawrence J. Kenah 28-Mar-1984
Add room in CTX storage area for global section name.

- V03-006 WMC0001 Wayne Cardoza 23-Jan-1984
 ICB image length should be 44
 Add callers mode to own storage
 Add pointer to sequential load ISDs
- V03-005 LJK0240 Lawrence J. Kenah 2-Aug-1983
 Add control flag for writable shareable images.
- V03-004 LJK0237 Lawrence J. Kenah 26-Jul-1983
 Add cell for image base address and flag to indicate
 that privileges are to be removed.
- V03-003 LJK0225 Lawrence J. Kenah 7-Jul-1983
 Add own storage data cells needed for compatibility mode
 images.
- V03-002 LJK0215 Lawrence J. Kenah 24-Jun-1983
 Keep Image Control Block definition here until naming issues
 are sorted out. The name ICB is already in use by the network.

module CTXDEF;

{+
{ CTX - Image Activator Context Block

{ These definitions describe impure storage that is carried between
{ two routines inside the image activator. The block is typically
{ allocated on the stack with its address stored in the ICB.
{-

aggregate CTXDEF structure prefix CTX_:

 BUFFER longword unsigned; /* Address to read image header into
 IHDBUF longword unsigned; /* Address of decoded image header
 VBN longword unsigned; /* Next VBN of header to read
 ISD_OFFSET word unsigned; /* Offset within block to next ISD
 ALIAS word; /* Contents of last word of first block
 GENERATION word unsigned; /* Version number of image header
 CTX_1 word fill; /* Spare word for filler
 GSD_NAME character length 48; /* Storage space for GSD name
constant 'LENGTH' equals . prefix CTX_ tag C; /* Size of context area
constant 'LENGTH' equals . prefix CTX_ tag K; /* Size of context area

end CTXDEF;

end_module CTXDEF;

module OWNDEF;

{+ OWN - Image Activator OWN Storage

These definitions describe the OWN storage used by the image activator. This storage exists in several P1 pages and is used to contain all of the information that is needed to describe a given activation but is not required after the activation completes.

aggregate OWNDEF structure prefix "";

```
INTERNAL_FLAGS structure longword unsigned; /* Name attributes
/* The following two flags are mutually exclusive
MAIN PROGRAM bitfield mask; /* Activation of main program
MERGE bitfield mask; /* Merged activation
IMAGE_ACCOUNT bitfield mask; /* Image accounting enabled
REMOVE_PRIVILEGE bitfield mask; /* Remove CMKRNL and CMEXEC privilege
TRANSFER_BIAS_STORED bitfield mask; /* Set to indicate that transfer array bias has been stored
P1_MERGE_PO bitfield mask; /* Indicates PO part of P1 merge
end INTERNAL_FLAGS;
```

```
LOCK_STATUS_BLOCK structure quadword unsigned;
LOCK_STATUS word unsigned;
OWN_T word fill;
LOCK_ID longword unsigned;
end LOCK_STATUS_BLOCK;
```

```
FILE_NAME_SIZE word unsigned; /* Size in bytes of image file name
OTHER_CHANNEL word unsigned; /* Channel on which primary image file is opened
FINAL_STATUS longword unsigned; /* Ultimate return status from SYSSIMGACT
OTHER_KFE_ADDRESS longword unsigned; /* Address of KFE that describes primary image file
TRANSFER_ARRAY_BIAS longword unsigned; /* Amount by which to adjust transfer addresses
USER_STACK_SIZE longword unsigned;
IMAGE_IO_SEG_SIZE longword unsigned;
CALL_MODE byte unsigned; /* Callers mode
OWN_2 byte dimension 3 fill;
SEQ_LOAD_ISDS longword unsigned; /* Address of ISDs for sequential load
RMS_BASE longword unsigned; /* Address of alternate RMS dispatcher
```

{ The following cells are used to keep safe copies of the various components of the argument list.

```
IMAGE_NAME_DESC quadword unsigned;
DFLT_NAME_DESC quadword unsigned;
BUFFER_ADDRESS longword unsigned;
INPUT_FLAGS longword unsigned;
INPUT_ADDRESS_RANGE structure quadword unsigned;
INPUT_START_ADDRESS longword unsigned;
INPUT_END_ADDRESS longword unsigned;
end INPUT_ADDRESS_RANGE;
RETURN_ARRAY_ADDRESS longword unsigned;
RETURN_ADDRESS_RANGE structure quadword unsigned;
RETURN_START_ADDRESS longword unsigned;
RETURN_END_ADDRESS longword unsigned;
end RETURN_ADDRESS_RANGE;
INPUT_IDENT structure quadword unsigned;
MATCH_CONTROL longword unsigned;
VERSION structure longword unsigned;
```

```
        MINOR_ID bitfield length 24 mask;  
        MAJOR_ID bitfield length 8  mask;  
    end VERSION;  
end INPUT_IDENT;  
ACCESS_MODE longword unsigned;  
constant 'OWN_STORAGE_SIZE' equals . prefix '' tag ''; /* Size of OWN storage  
end OWNDEF;  
end_module OWNDEF;
```

```

module $ICBDEF;
{+
{ ICB - Image Control Block
{
{   There is one image control block for each image (executable or
{   shareable) that is currently mapped into process address space.
{-

aggregate ICB$DEF structure prefix ICBS;
  FLINK longword unsigned;          /* Forward link in list
  BLINK longword unsigned;         /* Backward link in list
  SIZE word unsigned;              /* Size of ICB in bytes
  TYPE byte unsigned;              /* Structure type for ICB
  constant ICB_TYPE_CODE equals 127 prefix ICBS tag K;
  ICB 1 byte fill;                 /* Spare for alignment
  ACCESS_MODE byte unsigned;       /* Access mode of image
  ACT_CODE byte unsigned;          /* Activation code
  constant
    ( MAIN PROGRAM                 /* Object of RUN command
    , MERGED_IMAGE                 /* Additional image mapped
    ; GLOBAL_IMAGE_SECTION         /* Image described by global ISD
    ) equals 1 increment 1 prefix ICBS tag K;
  CHAN word unsigned;              /* Channel on which image file is opened
  FLAGS structure longword unsigned; /* Name attributes
    EXPREG bitfield mask;          /* Image mapped at end of address space
    SHAREABLE bitfield mask;       /* Image installed /SHAREABLE
    OPEN_FOR_WRITE bitfield mask;  /* Image will be opened for write
    RES_READER bitfield mask;      /* Image header already decoded
    LOAD_IMAGE bitfield mask;      /* Load image from sequential device
    INITIALIZE bitfield mask;      /* Image contains initialization code
    DONE bitfield mask;            /* Image is completely activated
    SYS_STB bitfield mask;         /* Image is linked against SYS.STB
  end FLAGS;

/* The image name is stored as a counted ASCII string.
IMAGE_NAME character length 40;    /* Name string (counted ASCII)
FILL 1 longword fill;
"IDENT" structure quadword unsigned;
  MATCH_CONTROL structure longword unsigned;
  MATCH_CONTROL bitfield length 3 mask;
  end MATCH_CONTROL;
  VERSION structure longword unsigned;
  MINOR_ID bitfield length 24 mask;
  MAJOR_ID bitfield length 8 mask;
  end VERSION;
end "IDENT";
ADDRESS_RANGE structure quadword unsigned;
  STARTING_ADDRESS longword unsigned;
  END_ADDRESS longword unsigned;
end ADDRESS_RANGE;
IHD longword unsigned;             /* Address of IHD for image
KFE longword unsigned;             /* Address of KFE for image
CONTEXT longword unsigned;         /* Address of context block
BASE_ADDRESS longword unsigned;    /* Base address at which image is mapped
INITIALIZE longword unsigned;      /* Address of initialization code

```

```
constant 'LENGTH' equals . prefix ICBS tag C; /* Length of ICB  
constant 'LENGTH' equals . prefix ICBS tag K; /* Length of ICB  
end ICBSDEF;  
end_module $ICBDEF;
```

module \$IMAGCTXDEF;

```
{+
IMAGCTX - Context of Currently Executing Image
The following bitfields are stored in the cell IAC$GL_IMAGCTX in the
image activator context page in P1 space.

The low order 16 bits of this word contain context that survives for
the life of an image. This word is cleared by image rundown.

The high order word passes context from the image activator service
running in exec mode to the $IMGFIX service that runs in user mode.
This word is cleared each time that the image activator service is
entered.
```

```
aggregate IMAGCTXDEF union prefix IMAGCTX$:
  BITS structure longword fill;
  EXEONLY bitfield mask;          /* Execute only file
  PRIV bitfield mask;            /* Image installed with enhanced privilege
  BITS 1 bitfield LENGTH 16-^ fill; /* Get to start of second word
  SETVECTOR bitfield mask;      /* Privileged vectors to be installed
  INITIALIZE bitfield mask;     /* Shareable image initialization
  REORDER bitfield mask;       /* Initialization order is significant
  end BITS;
end IMAGCTXDEF;
end_module $IMAGCTXDEF;
```

