

# specification\_epg\_v4

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/ / EPG v4 specification

## EPG v4 specification #

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## 1.1

### #

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## 1.2

### #

|            |         |   |
|------------|---------|---|
|            |         |   |
| 2005.04.19 | v4.0.6  | TV , PC<br>VOD setup /  |
| 2005.09.21 | v4.0.7  | Hold priority   |
| 2005.11.15 | v4.0.8  | Volume  |
| 2005.12.29 | v4.0.8  | Visio                      HWP  |
| 2006.01.06 | v4.0.9  | Log                      commit                                       |
| 2006.02.27 | v4.0.10 | Embedded data                      (Image                      )      |
| 2006.04.06 | v4.0.11 | iEPG flag                      (EPG time shift                      ) |
| 2007.01.05 | v4.0.12 | Region                      REGION_EX                                 |
| 2007.01.08 | v4.0.13 | Content title/copyrights                      가                       |
| 2007.01.29 | v4.0.14 | Action flags                      가                                   |

## 1.3

### #

|      |        |                    |
|------|--------|--------------------|
|      |        |                    |
| NULL |        | void               |
| BYTE | 1 byte | unsigned char      |
| WORD | 2 byte | short unsigned int |

|         |            |                        |
|---------|------------|------------------------|
| DWORD   | 4 byte     | long unsigned int      |
| QWORD   | 8 byte     | long long unsigned int |
| VSIZE   | 가          | void *malloc(size)     |
| STRING  | ( ' 0' 가 ) | signed char *          |
| UNUSED  |            |                        |
| SEEALSO | /          |                        |
| !       | (NOT)      |                        |
| ....    |            | while(*)               |

|    |                              |
|----|------------------------------|
| 가  |                              |
|    |                              |
| U  | (unsigned)                   |
| S  | (signed)                     |
| M  | Host machine byte order      |
| LE | Little endian                |
| BE | Big endian                   |
| E  | 가                            |
| V  | 가                            |
| VS | 가 ( ' 0' ' 0' )              |
| A  | ( )                          |
| PA |                              |
| EP | Embedded item ( pack data가 ) |
| BO | Byte order (byte )           |

|               |  |
|---------------|--|
| ( 가 )         |  |
|               |  |
| DWORD(U,LE)   | Little endian DWORD                    |
| VSIZE(U,LE,E) | Little endian BYTE, WORD, DWORD, QWORD |
| VSIZE(VS)     | 가                                      |
| WORD(U,LE,E)  | Little endian WORD, DWORD, QWORD       |
| DWORD         |  |

("1234",BO) | byte order '1' '4'가

## 1.4 Item packing #

| Item packing |              |                     |
|--------------|--------------|---------------------|
| Item ID      | WORD(U,LE,E) | Item ID             |
| Item size    | WORD(U,LE,E) | Item data byte size |
| Item data    | VSIZE(V,VS)  | Item size data      |

| Item packing |  |
|--------------|--|
| Item ID      |  |
| 0xFFFFE      | Item size Item data가 . ( #1)                                       |
| 0x0000FFFE   | Item ID가 0xFFFF DWORD 0x0000FFFE<br>Item size, Item data 가 . ( #2) |

### 1.4.1 item id item size #

- item id item size 가 WORD WORD  
0xFFFF WORD DWORD(WORD \* 2)  
0xFFFFFFFF QWORD(DWORD \* 2) DWORD
- packing : ItemID=0x1234, ItemSize=3, ItemData="123" ( )

|             | Item ID |      | Item size |      | Item data |     |     |
|-------------|---------|------|-----------|------|-----------|-----|-----|
| Byte offset | 0       | 1    | 2         | 3    | 4         | 5   | 6   |
|             | 0x34    | 0x12 | 0x03      | 0x00 | '1'       | '2' | '3' |

- packing : ItemID=0x12345678, ItemSize=3, ItemData="123" (Item ID 가 )

|             | WORD EX |      | Item ID |      |      |      | Item size |      | Item data |     |     |
|-------------|---------|------|---------|------|------|------|-----------|------|-----------|-----|-----|
| Byte offset | 0       | 1    | 2       | 3    | 4    | 5    | 6         | 7    | 8         | 9   | 10  |
|             | 0xff    | 0xff | 0x78    | 0x56 | 0x34 | 0x12 | 0x03      | 0x00 | '1'       | '2' | '3' |

- packing : ItemID=0x1234, ItemSize=131072, ItemData="123 . . . x" (Item size 가 )

|      | Item ID |   | WORD EX |   | Item size |   |   |   | Item data |   |    |     |        |
|------|---------|---|---------|---|-----------|---|---|---|-----------|---|----|-----|--------|
| Byte | 0       | 1 | 2       | 3 | 4         | 5 | 6 | 7 | 8         | 9 | 10 | ... | 131079 |

|        |      |      |      |      |      |      |      |      |     |     |     |     |     |
|--------|------|------|------|------|------|------|------|------|-----|-----|-----|-----|-----|
| offset |      |      |      |      |      |      |      |      |     |     |     |     |     |
|        | 0x34 | 0x12 | 0xff | 0xff | 0x00 | 0x00 | 0x02 | 0x00 | '1' | '2' | '3' | ... | 'x' |

- packing : ItemID=0x1234, ItemSize=65535, ItemData="123 . . . x" (Item size 가 0xffff, 65535 WORD 가 )

|             | Item ID |      | WORD EX |      | Item size |      |      |      | Item data |     |     |     |       |
|-------------|---------|------|---------|------|-----------|------|------|------|-----------|-----|-----|-----|-------|
| Byte offset | 0       | 1    | 2       | 3    | 4         | 5    | 6    | 7    | 8         | 9   | 10  | ... | 65542 |
|             | 0x34    | 0x12 | 0xff    | 0xff | 0xff      | 0xff | 0x00 | 0x00 | '1'       | '2' | '3' | ... | 'x'   |

- packing : ItemID=0xFFFE, ItemSize=0 (Item ID 0xFFFE #1, Item ID가 0xFFFE Item data가 Item size Item data )

|             | Item ID |      |
|-------------|---------|------|
| Byte offset | 0       | 1    |
|             | 0xFE    | 0xFF |

- packing : ItemID=0xFFFE, ItemSize=3, ItemData="123" (Item ID 0xFFFE #2, Item ID가 0xFFFE Item data가 Item ID #1 #2가 )

|             | WORD EX |      | Item ID |      |      |      | Item size |      | Item data |     |     |
|-------------|---------|------|---------|------|------|------|-----------|------|-----------|-----|-----|
| Byte offset | 0       | 1    | 2       | 3    | 4    | 5    | 6         | 7    | 8         | 9   | 10  |
|             | 0xff    | 0xff | 0xFE    | 0xFF | 0x00 | 0x00 | 0x03      | 0x00 | '1'       | '2' | '3' |

## 1.5 EPG layout overview #

- EPG "EPG transfer header (iEPG)" 가 가 "EPG header" 가 "EPG" 가 Embedded data가
- EPG time\_t
- Color ABGR8888 item . ( )
- Item ID 0x8000 ~ 0x8FFF ipsatcommon.h EPG packing

### 1.5.1 EPG transfer header (iEPG) #

- EPG (iEPG ID, iEPG Name) "EPG transfer header" DEF\_EITEM\_IEPG\_VERSION

| EPG transfer header (iEPG)    |               |                      |
|-------------------------------|---------------|----------------------|
| Item ID                       |               |                      |
| DEF_EITEM_IEPG_VERSION        | DWORD(U,LE)   | iEPG version         |
| DEF_EITEM_INBT_LIST_SAT       | DWORD(U,LE,A) | INBT list            |
| DEF_EITEM_INBT_LIST_IP        | DWORD(U,LE,A) | IP INBT list         |
| DEF_EITEM_EPG_TYPE            | DWORD(U,LE,A) | EPG                  |
| DEF_EITEM_IEPG_NAME           | VSIZE(VS)     | iEPG name            |
| DEF_EITEM_IEPG_ID             | DWORD(U,LE)   | iEPG ID              |
| DEF_EITEM_IEPG_START_TIME     | DWORD(U,LE)   | iEPG                 |
| DEF_EITEM_IEPG_END_TIME       | DWORD(U,LE)   | iEPG                 |
| DEF_EITEM_CONTENT_VALID_ST    | DWORD(U,LE)   | Content              |
| DEF_EITEM_CONTENT_VALID_ET    | DWORD(U,LE)   | Content              |
| DEF_EITEM_CONTENT_SERVER_BODY | VSIZE(EP)     | Content server       |
| DEF_EITEM_CONTENT_TABLE_BODY  | VSIZE(EP)     | Content (CM)         |
| DEF_EITEM_HOLD_PRIORITY       | DWORD(U,LE)   | Hold priority (Main) |
| DEF_EITEM_IEPG_FLAGS          | DWORD(U,LE)   | iEPG flags (SEEALSO) |

### 1.5.2 EPG header #

- EPG (EPG ID, EPG Name) "EPG header" DEF\_EITEM\_EPG\_VERSION Content

| EPG header            |             |             |
|-----------------------|-------------|-------------|
| Item ID               |             |             |
| DEF_EITEM_EPG_VERSION | DWORD(U,LE) | EPG version |
| DEF_EITEM_EPG_NAME    | VSIZE(VS)   | EPG name    |
| DEF_EITEM_EPG_ID      | DWORD       | EPG ID      |

|                              |           |                 |
|------------------------------|-----------|-----------------|
|                              | (U,LE)    |                 |
| DEF_EITEM_CONTENT_TABLE_BODY | VSIZE(EP) | Content (INBT ) |

### 1.5.3 EPG #

- EPG 1 EPG body

|                    |           |          |
|--------------------|-----------|----------|
| EPG                |           |          |
| Item ID            |           |          |
| DEF_EITEM_EPG_BODY | VSIZE(EP) | EPG body |
| ....               |           |          |

### 1.5.4 Embedded data #

- Embedded data 가 EPG EPG data
- EPG Embedded data ID EPG ID Embedded data ID 0

|   |  |  |
|---|--|--|
| Embedded data table body (DEF_EITEM_EMBEDDED_DATA_BODY) |  |  |
| Content description (DEF_EITEM_CONTENT)                 |  |  |
| ....  |  |  |

|   |               |                    |
|---|---------------|--------------------|
| Content description (DEF_EITEM_CONTENT) |               |                    |
| Item ID                                 |               |                    |
| DEF_EITEM_CONTENT_ID                    | WORD(U,LE,E)  | Embedded data ID   |
| DEF_EITEM_CONTENT_TYPE                  | VSIZE(U,LE,E) | Embedded data      |
| DEF_EITEM_CONTENT_ENCRYPTION_TYPE       | VSIZE(U,LE,E) | Encryption         |
| DEF_EITEM_CONTENT_USAGE                 | VSIZE(U,LE,E) |                    |
| DEF_EITEM_CONTENT_LENGTH                | DWORD(U,LE)   | ( : msec)          |
| DEF_EITEM_CONTENT_REGION                | DWORD(U,LE)   | (SEEALSO)          |
| DEF_EITEM_CONTENT_FCOLOR                | DWORD(U,LE)   | (foreground color) |
| DEF_EITEM_CONTENT_BCOLOR                | DWORD(U,LE)   | (background color) |
| DEF_EITEM_CONTENT_OCOLOR                | DWORD(U,LE)   | (outline color)    |
|   |               |                    |

|                               |                 |                       |
|-------------------------------|-----------------|-----------------------|
| DEF_EITEM_CONTENT_ALPHA_LEVEL | VSIZE(U,LE,E)   | Alpha blending level  |
| DEF_EITEM_CONTENT_DESCRIPTION | VSIZE(VS,V)     | 가                     |
| DEF_EITEM_CONTENT_DATA        | VSIZE(V)        | Embedded data (DATA0) |
| DEF_EITEM_CONTENT_REGION_EX   | WORD (S/U,LE,A) | (SEEALSO)             |
| DEF_EITEM_CONTENT_TITLE       | VSIZE(VS,V)     |                       |
| DEF_EITEM_CONTENT_COPYRIGHTS  | VSIZE(VS,V)     |                       |

## 1.6 iEPG version & EPG version #

- DWORD(U,LE) packing 가 .

|  |               |
|--|---------------|
| : Version A.B.C build D                |               |
|  |               |
| (DWORD >> 24) & 0xFF                   | Major version |
| (DWORD >> 16) & 0xFF                   | Minor version |
| (DWORD >> 8) & 0xFF                    | Extra version |
| (DWORD >> 0) & 0xFF                    | Build version |
| ) 0x04000B0A : Version 4.0.11 build 10 |               |

## 1.7 INBT list #

- INBT list packing IP INBT 가 INBT ID가 0

### 1.7.1 INBT list #

|                                     |               |
|-------------------------------------|---------------|
| INBT list (DEF_EITEM_INBT_LIST_SAT) |               |
|                                     |               |
| DWORD(U,LE,A)                       | INBT ID array |

### 1.7.2 IP INBT list #

|    |                                    |
|----|------------------------------------|
| IP | INBT list (DEF_EITEM_INBT_LIST_IP) |
|    |                                    |
|    |                                    |

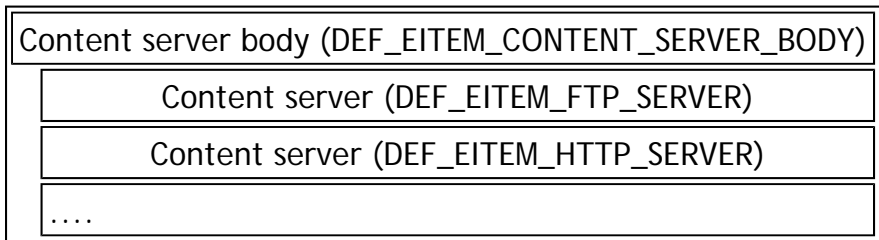


DWORD(U,LE,A)

INBT ID array

### 1.7.3 Content server body (DEF\_EITEM\_CONTENT\_SERVER\_BODY) #

- Content server body      FTP server      DEF\_EITEM\_FTP\_SERVER      HTTP server      DEF\_EITEM\_HTTP\_SERVER 가 1      Embedded pack



| Content server (DEF_EITEM_FTP_SERVER) |               |                     |
|---------------------------------------|---------------|---------------------|
| Item ID                               |               |                     |
| DEF_EITEM_SERVER_IP                   | VSIZE(VS)     | FTP server IP       |
| DEF_EITEM_USER_ID                     | VSIZE(VS)     | FTP login user name |
| DEF_EITEM_PASSWORD                    | VSIZE(VS)     | FTP login password  |
| DEF_EITEM_SUBPATH                     | VSIZE(VS)     | FTP sub path        |
| DEF_EITEM_FTP_MODE                    | VSIZE(U,LE,E) | FTP                 |
|                                       |               | 0 Default ( )       |
|                                       |               | 1 Active mode       |
|                                       |               | 2 Passive mode      |

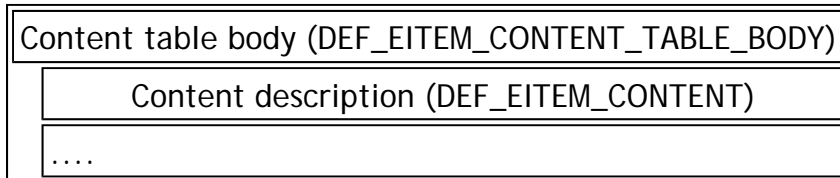
| Content server (DEF_EITEM_HTTP_SERVER) |           |                      |
|--|-----------|----------------------|
| Item ID                                |           |                      |
| DEF_EITEM_SERVER_IP                    | VSIZE(VS) | HTTP server IP       |
| DEF_EITEM_USER_ID                      | VSIZE(VS) | HTTP login user name |
| DEF_EITEM_PASSWORD                     | VSIZE(VS) | HTTP login password  |
| DEF_EITEM_SUBPATH                      | VSIZE(VS) | HTTP sub path        |
|  |           | HTTP                 |
|  |           |                      |
|  |           |                      |

|                     |               |   |                         |
|---------------------|---------------|---|-------------------------|
| DEF_EITEM_HTTP_MODE | VSIZE(U,LE,E) | 0 | Default ( )             |
|                     |               | 1 | Not use keep alive mode |
|                     |               | 2 | Use keep alive mode     |

- Content server body EPG body . ( INBS/INBM/INBT .)

## 1.8 Content table body (DEF\_EITEM\_CONTENT\_TABLE\_BODY) #

- Content table body "EPG transfer header" "EPG header"
- "EPG transfer header" CM Content 가 "EPG header" INBT가 Content 가



| Content description (DEF_EITEM_CONTENT) |               |                    |
|---|---------------|--------------------|
| Item ID                                 |               |                    |
| DEF_EITEM_CONTENT_ID                    | DWORD(U,LE)   | Content ID         |
| DEF_EITEM_CONTENT_TYPE                  | VSIZE(U,LE,E) | Content            |
| DEF_EITEM_CONTENT_TRANSFER_TYPE         | VSIZE(U,LE,E) |                    |
| DEF_EITEM_CONTENT_ENCRYPTION_TYPE       | VSIZE(U,LE,E) | Encryption         |
| DEF_EITEM_CONTENT_USAGE                 | VSIZE(U,LE,E) |                    |
| DEF_EITEM_CONTENT_FILENAME              | VSIZE(VS)     |                    |
| DEF_EITEM_CONTENT_SUBPATH               | VSIZE(VS)     | Content sub path   |
| DEF_EITEM_CONTENT_LENGTH                | DWORD(U,LE)   | ( : msec)          |
| DEF_EITEM_CONTENT_CATEGORY              | VSIZE(VS)     |                    |
| DEF_EITEM_CONTENT_FILESIZE              | VSIZE(U,LE,E) |                    |
| DEF_EITEM_CONTENT_REGION                | DWORD(U,LE)   | (SEEALSO)          |
| DEF_EITEM_CONTENT_FCOLOR                | DWORD(U,LE)   | (foreground color) |
| DEF_EITEM_CONTENT_BCOLOR                | DWORD(U,LE)   | (background color) |
| DEF_EITEM_CONTENT_OCOLOR                | DWORD(U,LE)   | (outline color)    |



Frame buffer 가 resx=1280, resy=720

|  |
|--|
| $0(\text{real\_x}) = 0 * 1280 / (8192 - 1);$ |
| $0(\text{real\_y}) = 0 * 720 / (4096 - 1);$  |
| $1280(\text{real\_w}) = 8192 * 1280 / 8192;$ |
| $720(\text{real\_h}) = 4096 * 720 / 4096;$   |

- $x=200, y=100, w=400, h=200, \text{scalex}=800, \text{scaley}=400$   
INBT Frame buffer 가 resx=1280, resy=720

|   |
|---|
| $320(\text{real\_x}) = 200 * 1280 / (800 - 1);$ |
| $180(\text{real\_y}) = 100 * 720 / (400 - 1);$  |
| $640(\text{real\_w}) = 400 * 1280 / 800;$       |
| $360(\text{real\_h}) = 200 * 720 / 400;$        |

## 1.9 EPG body #

- 1 body 가 DEF\_EITEM\_BODY\_TYPE\_{Body type} Body 가 packing

|                                      |
|--------------------------------------|
| EPG overview                         |
| EPG transfer header (iEPG) (SEEALSO) |
| EPG header (SEEALSO)                 |
| EPG (SEEALSO)                        |

|   |
|---|
| EPG                                     |
| EPG body (DEF_EITEM_EPG_BODY) (SEEALSO) |
| ....                                    |

|                               |
|-------------------------------|
| EPG body (DEF_EITEM_EPG_BODY) |
| EPG body header (SEEALSO)     |
| Layer (SEEALSO)               |
| ....                          |

|                                |  |  |
|--------------------------------|--|--|
| EPG body header                |  |  |
| Item ID                        |  |  |
| DEF_EITEM_EPG_BODY_TYPE_LINEAR |  |  |

|                                  |                   |                                    |
|----------------------------------|-------------------|------------------------------------|
| DEF_EITEM_EPG_BODY_TYPE_MEMORIAL | VSIZE<br>(U,LE,E) | 1 Body 1<br>Body type<br>(SEEALSO) |
| DEF_EITEM_EPG_BODY_TYPE_DAILY    |                   |                                    |
| DEF_EITEM_EPG_BODY_TYPE_WEEKLY   |                   |                                    |
| DEF_EITEM_EPG_BODY_TYPE_MONTHLY  |                   |                                    |
| DEF_EITEM_EPG_BODY_TYPE_YEARLY   |                   |                                    |
| DEF_EITEM_MEMORIAL_START_TIME    | DWORD<br>(U,LE)   |                                    |
| DEF_EITEM_MEMORIAL_END_TIME      | DWORD<br>(U,LE)   |                                    |
| DEF_EITEM_EPG_BODY_RUN_TIME      | DWORD<br>(U,LE)   | Body ( :<br>msec)                  |

- Memorial start/end time
  - Memorial start time / /  
00:00:00
  - Memorial end time / /  
23:59:59
  - Memorial body daily body ( )  
daily

### 1.9.1 DEF\_EITEM\_BODY\_TYPE\_LINEAR ( ) #

|      |        |
|------|--------|
|      |        |
| 0    | body   |
| y=!0 | y body |

### 1.9.2 DEF\_EITEM\_BODY\_TYPE\_MEMORIAL ( ) #

|   |     |
|---|-----|
|   |     |
| 0 | 0 가 |

### 1.9.3 DEF\_EITEM\_BODY\_TYPE\_DAILY ( ) #

|    |             |
|----|-------------|
|    |             |
| !0 | 0 가 (INBM ) |

### 1.9.4 DEF\_EITEM\_BODY\_TYPE\_WEEKLY ( )

) #

|       |       |
|-------|-------|
|       |       |
| 1 ~ 7 | ~ ( ) |

### 1.9.5 DEF\_EITEM\_BODY\_TYPE\_MONTHLY ( ) #

|      |            |
|------|------------|
|      |            |
| 1~31 | 1 ~ 31 ( ) |

### 1.9.6 DEF\_EITEM\_BODY\_TYPE\_YEARLY ( ) #

|         |             |
|---------|-------------|
|         |             |
| 1 ~ 366 | 1 ~ 366 ( ) |

## 1.10 Layer (DEF\_EITEM\_LAYER\_{layer name}) #

- layer EPG body 1 Layer Action  
 1 Embedded packing CDN CDN layer  
 Action 1 packing CDN content 가  
 CDN layer CDN content packing CDN layer CDN action 1

| Item ID                  |           |                |
|--------------------------|-----------|----------------|
| DEF_EITEM_LAYER_AV       | VSIZE(EP) | AV layer       |
| DEF_EITEM_LAYER_STILL_1  | VSIZE(EP) | Still layer #1 |
| DEF_EITEM_LAYER_STILL_2  | VSIZE(EP) | Still layer #2 |
| DEF_EITEM_LAYER_STILL_3  | VSIZE(EP) | Still layer #3 |
| DEF_EITEM_LAYER_STILL_4  | VSIZE(EP) | Still layer 34 |
| DEF_EITEM_LAYER_CAPTION  | VSIZE(EP) | Caption layer  |
| DEF_EITEM_LAYER_CDN      | VSIZE(EP) | CDN layer      |
| DEF_EITEM_LAYER_BYPASS   | VSIZE(EP) | Bypass layer   |
| DEF_EITEM_LAYER_FILECAST | VSIZE(EP) | Filecast layer |
| DEF_EITEM_LAYER_COMMAND  | VSIZE(EP) | Command layer  |

|                       |           |             |
|-----------------------|-----------|-------------|
| DEF_EITEM_LAYER_AUDIO | VSIZE(EP) | Audio layer |
| ....                  |           |             |

## 1.11 Action (DEF\_EITEM\_ACTION) #

- Action 1  
Embedded packing  
action item
- 1  
OVERRIDE  
content table
- 가
- Layer

|                                      |
|--------------------------------------|
| Layer (DEF_EITEM_LAYER_{layer name}) |
| Action (DEF_EITEM_ACTION)            |
| ....                                 |

| Action (DEF_EITEM_ACTION)        |                   |                        |
|----------------------------------|-------------------|------------------------|
| Item ID                          |                   |                        |
| DEF_EITEM_ACTION_TYPE            | DWORD<br>(U,LE)   | Action<br>(SEEALSO     |
| DEF_EITEM_ACTION_ENCRYPTION_TYPE | VSIZE<br>(U,LE,E) | Encryptic<br>(OVERRID  |
| DEF_EITEM_ACTION_CONTENT_ID      | DWORD<br>(U,LE)   | Content I              |
| DEF_EITEM_ACTION_REGION          | DWORD<br>(U,LE)   | (OVERRID<br>(SEEALSO   |
| DEF_EITEM_ACTION_LENGTH          | DWORD<br>(U,LE)   | (<br>msec)<br>(OVERRID |
| DEF_EITEM_ACTION_REPEAT          | VSIZE<br>(U,LE,E) |                        |
| DEF_EITEM_ACTION_DST_IP          | VSIZE(VS)         | (CM                    |
| DEF_EITEM_ACTION_DST_PORT        | WORD<br>(U,LE,E)  | (CM                    |
| DEF_EITEM_ACTION_SRC_IP          | VSIZE(VS)         | (CM                    |
| DEF_EITEM_ACTION_SRC_PORT        | WORD              |                        |

|                               |                   |                                 |
|-------------------------------|-------------------|---------------------------------|
|                               | (U,LE,E)          | (CM                             |
| DEF_EITEM_ACTION_PASS_IP      | VSIZE(VS)         |                                 |
| DEF_EITEM_ACTION_PASS_PORT    | WORD<br>(U,LE,E)  |                                 |
| DEF_EITEM_ACTION_BITRATE      | VSIZE<br>(U,LE,E) | Bitr:                           |
| DEF_EITEM_ACTION_TEXT         | VSIZE(VS)         | (                               |
| DEF_EITEM_ACTION_FCOLOR       | DWORD<br>(U,LE)   | (foregrou<br>color)<br>(OVERRID |
| DEF_EITEM_ACTION_BCOLOR       | DWORD<br>(U,LE)   | (backgrou<br>color)<br>(OVERRID |
| DEF_EITEM_ACTION_OCOLOR       | DWORD<br>(U,LE)   | (outline<br>color)<br>(OVERRID  |
| DEF_EITEM_ACTION_SCALE_WIDTH  | VSIZE<br>(U,LE,E) | 가                               |
| DEF_EITEM_ACTION_SCALE_HEIGHT | VSIZE<br>(U,LE,E) |                                 |
| DEF_EITEM_ACTION_FONT_NAME    | VSIZE(VS)         |                                 |
| DEF_EITEM_ACTION_ALPHA_LEVEL  | VSIZE<br>(U,LE,E) | Alpha<br>blending<br>level      |
| DEF_EITEM_ACTION_CHANNEL      | VSIZE<br>(U,LE,E) | Channel                         |
| DEF_EITEM_ACTION_OPEN_EFFECT  | VSIZE<br>(U,LE,E) |                                 |
| DEF_EITEM_ACTION_CLOSE_EFFECT | VSIZE<br>(U,LE,E) |                                 |
| DEF_EITEM_ACTION_OPTION       | VSIZE(V)          | ) (                             |
| DEF_EITEM_ACTION_SPEED        | VSIZE<br>(U,LE,E) |                                 |



|  |                    |                                  |
|--|--------------------|----------------------------------|
| DEF_EITEM_ACTION_USAGE                           | VSIZE<br>(U,LE,E)  | (OVERRID                         |
| DEF_EITEM_ACTION_ALTERNATION_LOCAL_CONTENT_NAME  | VSIZE(VS)          | Content<br>name                  |
| DEF_EITEM_ACTION_ALTERNATION_SYSTEM_CONTENT_NAME | VSIZE(VS)          | Content<br>name                  |
| DEF_EITEM_ACTION_FORMAT                          | VSIZE<br>(U,LE,E)  |                                  |
| DEF_EITEM_ACTION_MEDIA_SERVICE_ID                | VSIZE<br>(U,LE,E)  | Media<br>service ID<br>(for WMS) |
| DEF_EITEM_ACTION_OUTPUT                          | VSIZE<br>(U,LE,E)  | (SEEALSO                         |
| DEF_EITEM_ACTION_START                           | VSIZE<br>(U,LE,E)  |                                  |
| DEF_EITEM_ACTION_END                             | VSIZE<br>(U,LE,E)  |                                  |
| DEF_EITEM_ACTION_LIMIT                           | VSIZE<br>(U,LE,E)  |                                  |
| DEF_EITEM_ACTION_HOLD_PRIORITY                   | VSIZE<br>(U,LE,E)  | Hold                             |
| DEF_EITEM_ACTION_VOLUME                          | WORD<br>(U,LE)     | Volume<br>(SEEALSO               |
| DEF_EITEM_ACTION_EMBEDDED_DATA_ID                | WORD<br>(U,LE,E)   | Embedde<br>data ID<br>(SEEALSO   |
| DEF_EITEM_ACTION_REGION_EX                       | WORD<br>(S/U,LE,A) | (OVERRID<br>(SEEALSO             |
| DEF_EITEM_ACTION_FLAGS                           | VSIZE<br>(U,LE,E)  | Action fla<br>(SEEALSO           |

### 1.11.1 DEF\_EITEM\_ACTION\_REGION #



|                      |           |
|----------------------|-----------|
| (DWORD >> 24) & 0xFF | x1 (256 ) |
| (DWORD >> 16) & 0xFF | y1 (192 ) |
| (DWORD >> 8) & 0xFF  | x2 (256 ) |
| (DWORD >> 0) & 0xFF  | y2 (192 ) |

## 1.11.2 DEF\_EITEM\_ACTION\_REGION\_EX #

- DEF\_EITEM\_ACTION\_REGION\_EX DEF\_EITEM\_ACTION\_REGION  
DEF\_EITEM\_ACTION\_REGION 가

- 12 bytes (WORD \* 6)

|           |                |            |            |            |            |            |
|-----------|----------------|------------|------------|------------|------------|------------|
| REGION_EX | WORD(S/U,LE,A) |            |            |            |            |            |
|           | WORD(S,LE)     | WORD(S,LE) | WORD(U,LE) | WORD(U,LE) | WORD(U,LE) | WORD(U,LE) |
|           | x              | y          | w          | h          | scalex     | scaley     |

- INBT INBT Frame buffer resx, resy  
Frame buffer real\_x, real\_y, real\_w,  
real\_h

|                                      |
|--------------------------------------|
| $real\_x = x * resx / (scalex - 1);$ |
| $real\_y = y * resy / (scaley - 1);$ |
| $real\_w = w * resx / scalex;$       |
| $real\_h = w * resy / scaley;$       |

- x=0, y=0, w=8192, h=4096, scalex=8192, scaley=4096 INBT  
Frame buffer 가 resx=1280, resy=720 가

|                                       |
|---------------------------------------|
| $0(real\_x) = 0 * 1280 / (8192 - 1);$ |
| $0(real\_y) = 0 * 720 / (4096 - 1);$  |
| $1280(real\_w) = 8192 * 1280 / 8192;$ |
| $720(real\_h) = 4096 * 720 / 4096;$   |

- x=200, y=100, w=400, h=200, scalex=800, scaley=400  
INBT Frame buffer 가 resx=1280, resy=720 가

|  |
|--|
| $320(real\_x) = 200 * 1280 / (800 - 1);$ |
| $180(real\_y) = 100 * 720 / (400 - 1);$  |
| $640(real\_w) = 400 * 1280 / 800;$       |

|  |
|--|
| $360(\text{real\_h}) = 200 * 720 / 400;$ |
|--|

### 1.11.3 DEF\_EITEM\_ACTION\_FLAGS #

|                                     |            |                   |
|-------------------------------------|------------|-------------------|
|                                     |            |                   |
| DEF_EITEM_ACTION_FLAG_NONE          | 0x00000000 | flags<br>( )      |
| DEF_EITEM_ACTION_FLAG_POSITION_LOCK | 0x00000001 | action<br>(INBM ) |

### 1.11.4 DEF\_EITEM\_ACTION\_TYPE #

|   |                                     |                                    |
|---|-------------------------------------|------------------------------------|
|   |                                     |                                    |
| A | DEF_EITEM_ACTION_TYPE_MPEG          | MPEG                               |
| B | DEF_EITEM_ACTION_TYPE_STREAM_LIVE   | Live                               |
| C | DEF_EITEM_ACTION_TYPE_STREAM_DUAL   | Live Live bypass                   |
| D | DEF_EITEM_ACTION_TYPE_STREAM_BYPASS | Live bypass                        |
| E | DEF_EITEM_ACTION_TYPE_TUNER         | TV tuner capture                   |
| F | DEF_EITEM_ACTION_TYPE_AV_IN1        | #1                                 |
| G | DEF_EITEM_ACTION_TYPE_AV_IN2        | #2                                 |
| H | DEF_EITEM_ACTION_TYPE_IMAGE         | Still image                        |
| I | DEF_EITEM_ACTION_TYPE_CAPTION       | Caption                            |
| J | DEF_EITEM_ACTION_TYPE_FILECAST      | Filecast (Normal/SDP/NSC/... file) |
| K | DEF_EITEM_ACTION_TYPE_CDN           | CDN (VOD/EOD/AOD/DATA)             |
| L | DEF_EITEM_ACTION_TYPE_WARMBOOT      | S/W reboot (Command)               |
| M | DEF_EITEM_ACTION_TYPE_COLDBOOT      | H/W reboot (Command)               |
| N | DEF_EITEM_ACTION_TYPE_FORMAT        | Storage format (Command)           |
| O | DEF_EITEM_ACTION_TYPE_RESTART       | Program restart (Command)          |
| P | DEF_EITEM_ACTION_TYPE_TRANSPARENCE  | 가                                  |
| Q | DEF_EITEM_ACTION_TYPE_NULL          | 가                                  |
| R | DEF_EITEM_ACTION_TYPE_EMPTY         | 가                                  |
| S | DEF_EITEM_ACTION_TYPE_VOD_SETUP     | VOD (Command)                      |
| T | DEF_EITEM_ACTION_TYPE_COMMIT_LOG    | Log commit (Command)               |

|   |                                 |                     |
|---|---------------------------------|---------------------|
| U | DEF_EITEM_ACTION_TYPE_SETUP_LOG | Log setup (Command) |
|---|---------------------------------|---------------------|

## 1.11.5 Action Item ID

## Action type

#

| Item ID                          | 가 Action type ( )         |
|----------------------------------|---------------------------|
| DEF_EITEM_ACTION_TYPE            | A ~ U                     |
| DEF_EITEM_ACTION_ENCRYPTION_TYPE | A, B, C, D, H, J, K       |
| DEF_EITEM_ACTION_CONTENT_ID      | A, H, J, K                |
| DEF_EITEM_ACTION_REGION          | A, B, C, D, E, F, G, H, I |
| DEF_EITEM_ACTION_LENGTH          | A ~ U                     |
| DEF_EITEM_ACTION_REPEAT          | A, H, I                   |
| DEF_EITEM_ACTION_DST_IP          | B, C, D                   |
| DEF_EITEM_ACTION_DST_PORT        | B, C, D                   |
| DEF_EITEM_ACTION_SRC_IP          | B, C, D                   |
| DEF_EITEM_ACTION_SRC_PORT        | B, C, D                   |
| DEF_EITEM_ACTION_PASS_IP         | C, D, J                   |
| DEF_EITEM_ACTION_PASS_PORT       | C, D, J                   |
| DEF_EITEM_ACTION_BITRATE         | B, C, D                   |
| DEF_EITEM_ACTION_TEXT            | I                         |
| DEF_EITEM_ACTION_FCOLOR          | I                         |
| DEF_EITEM_ACTION_BCOLOR          | I                         |
| DEF_EITEM_ACTION_OCOLOR          | I                         |
| DEF_EITEM_ACTION_SCALE_WIDTH     | H, I                      |
| DEF_EITEM_ACTION_SCALE_HEIGHT    | H, I                      |
| DEF_EITEM_ACTION_FONT_NAME       | I                         |
| DEF_EITEM_ACTION_ALPHA_LEVEL     | A, B, C, D, E, F, G, H, I |
| DEF_EITEM_ACTION_CHANNEL         | E                         |
| DEF_EITEM_ACTION_OPEN_EFFECT     | A ~ U                     |
| DEF_EITEM_ACTION_CLOSE_EFFECT    | A ~ U                     |
| DEF_EITEM_ACTION_OPTION          | A ~ U                     |
| DEF_EITEM_ACTION_SPEED           | I                         |
| DEF_EITEM_ACTION_USAGE           | J, K                      |

|  |                           |
|--|---------------------------|
| DEF_EITEM_ACTION_ALTERNATION_LOCAL_CONTENT_NAME  | A, H                      |
| DEF_EITEM_ACTION_ALTERNATION_SYSTEM_CONTENT_NAME | A, H                      |
| DEF_EITEM_ACTION_FORMAT                          | B, C, D                   |
| DEF_EITEM_ACTION_MEDIA_SERVICE_ID                | J                         |
| DEF_EITEM_ACTION_OUTPUT                          | I                         |
| DEF_EITEM_ACTION_START                           | R                         |
| DEF_EITEM_ACTION_END                             | R                         |
| DEF_EITEM_ACTION_LIMIT                           | R                         |
| DEF_EITEM_ACTION_HOLD_PRIORITY                   | A, B, C, D, E, F, G, H, I |
| DEF_EITEM_ACTION_VOLUME                          | A, B, C, D, E, F, G       |
| DEF_EITEM_ACTION_EMBEDDED_DATA_ID                | I, H                      |
| DEF_EITEM_ACTION_REGION_EX                       | A, B, C, D, E, F, G, H, I |
| DEF_EITEM_ACTION_FLAGS                           | A ~ U                     |

### 1.11.6 DEF\_EITEM\_ACTION\_OUTPUT #

|      |                     |
|------|---------------------|
|      |                     |
| 0x00 | (TV & PC)           |
| 0x01 | TV                  |
| 0x02 | PC                  |
| 0x03 | (0x01   0x02) TV PC |
| 0x04 |                     |

### 1.11.7 DEF\_EITEM\_ACTION\_VOLUME #

- / volume Volume

| VOLUME             |                  |
|--------------------|------------------|
|                    |                  |
| 0x0000             | Mute volume      |
| 0xFFFF             | volume ( : 67)   |
| (WORD >> 8) & 0xFF | Volume (0 ~ 100) |
| (WORD >> 0) & 0xFF | Volume (0 ~ 100) |

## 1.11.8 DEF\_EITEM\_ACTION\_TYPE DEF\_EITEM\_ACTION\_TYPE\_VOD\_SETUP

#

|                            |  |
|----------------------------|--|
| Item ID                    |  |
| DEF_EITEM_ACTION_START VOD |  |
| DEF_EITEM_ACTION_END VOD   |  |
| DEF_EITEM_ACTION_LIMIT VOD |  |

## 1.11.9 DEF\_ETIEM\_ACTION\_TYPE DEF\_EITEM\_ACTION\_TYPE\_COMMIT\_LOG DEF\_EITEM\_ACTION\_OPTION #

- Commit Log channel (.)  
Commit 가 "error", "history", "play", "odp", "vod"
- Option (DEF\_EITEM\_ACTION\_OPTION {VSIZE(VS)})

```
.....
: <CHANNEL> [, <CHANNEL> [...]]
: .....
```

## 1.11.10 DEF\_ETIEM\_ACTION\_TYPE DEF\_EITEM\_ACTION\_TYPE\_SETUP\_LOG DEF\_EITEM\_ACTION\_OPTION #

- Option (DEF\_EITEM\_ACTION\_OPTION {VSIZE(VS)})

```
.....
: channel=<log channel>, limit_size=<log file >, margin_size=<log
: reduce >, max_buffer_size=<log >, sync_term=<log file
: >,
: commit_term=<log commit >, with_console=<on|off>,
: master_server=<INBLS master >, slave_server=<INBLS slave >
: .....
```

## 1.12 iEPG flags (DEF\_EITEM\_IEPG\_FLAGS)

#

|                                       |                  |
|---------------------------------------|------------------|
|                                       |                  |
| DEF_EITEM_IEPG_FLAG_WAIT_FOR_DOWNLOAD | load EPG loading |
|                                       |                  |

|                                     |   |                 |
|-------------------------------------|---|-----------------|
| DEF_EITEM_IEPG_FLAG_TIME_SHIFT      | EPG load  | Action          |
| DEF_EITEM_IEPG_FLAG_REAL_TIME_SHIFT | (DEF_EITEM_IEPG_FLAG_WAIT_FOR_DOWN<br>  DEF_EITEM_IEPG_FLAG_TIME_SHIFT) | EP              |
|                                     | load  | Action<br>shift |

## 1.13 EPG v4

## Item ID #

|         |  |
|---------|--|
| Item ID |  |
| 0x000A  |  |
| 0x0007  |  |
| 0x000D  |  |
| 0x0008  |  |
| 0x070C  |  |

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