



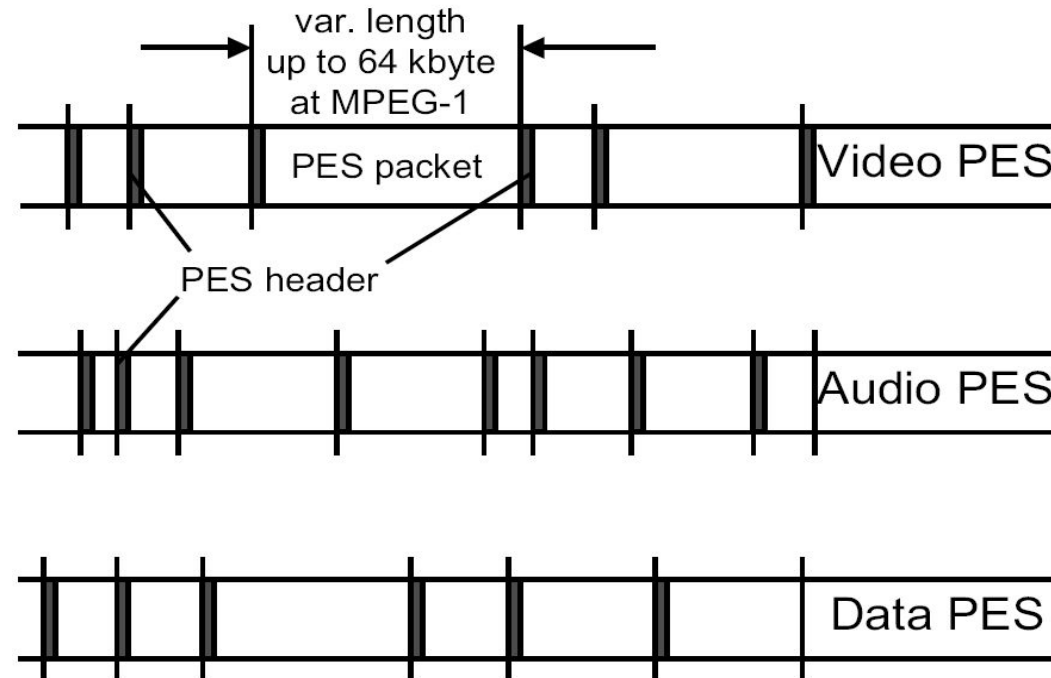
Breathe ideas.

DTV Basic

Day 4 - MPEG Data Stream

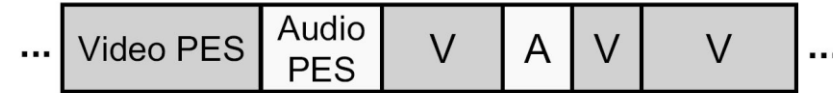
MPEG Elementary Streams

- The compressed video and audio signals in MPEG are called ES - “elementary streams”
- There are thus video streams, audio streams and, quite generally, data streams, the latter containing any type of compressed or uncompressed data.
- Each PES packet usually has a size of up to 64 kbytes uncompressed data.



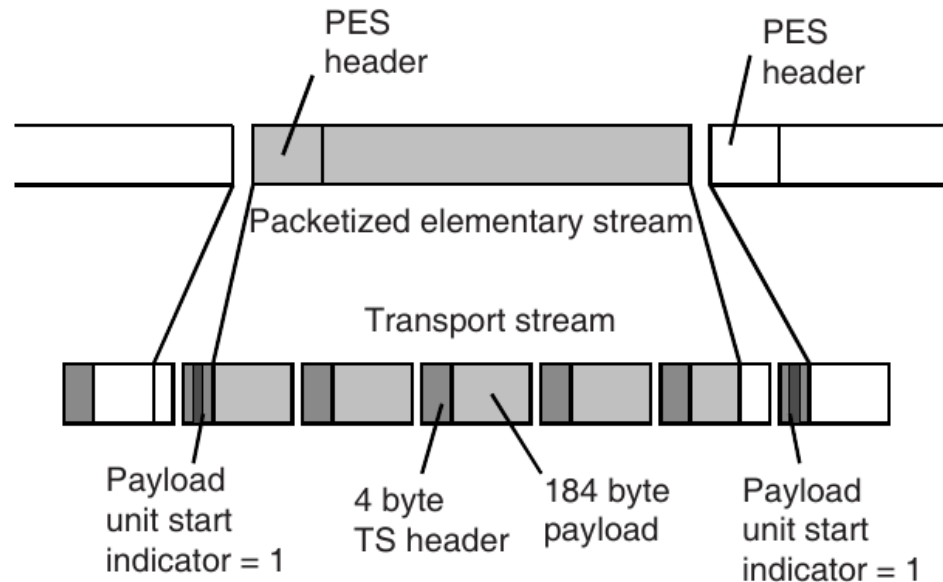
Multiplexed PES packets

- Audio and video PES packets are simply multiplexed and stored on a data medium



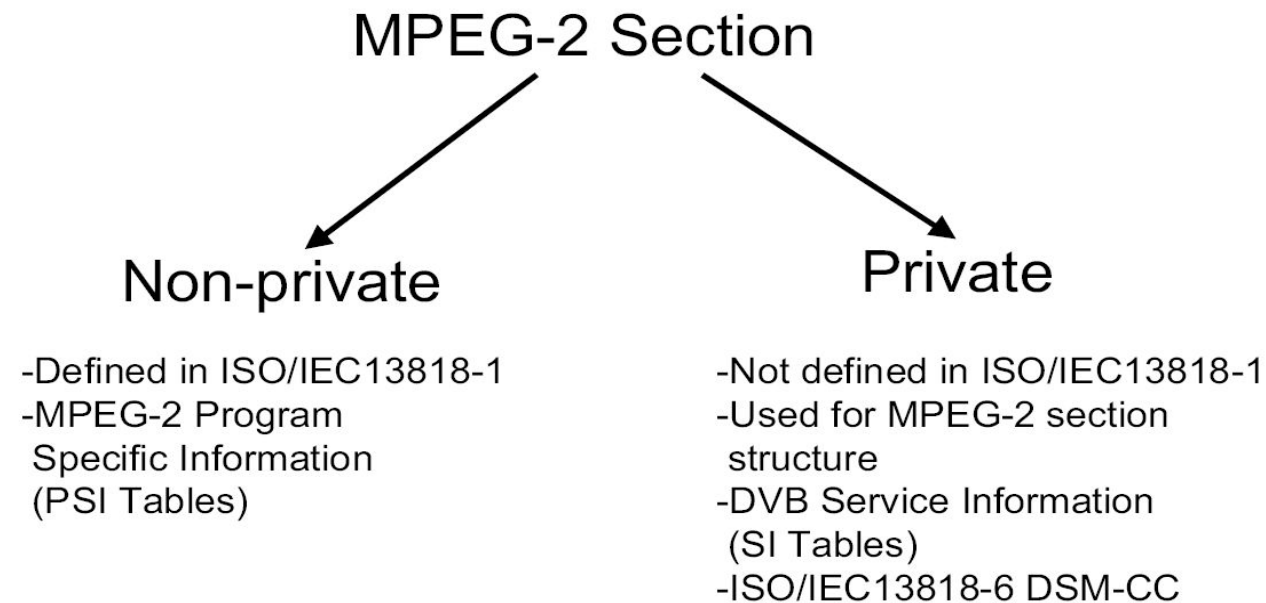
Multiplexed video and audio PES packets

Application:
 MPEG-1 Video CD
 MPEG-2 SVCD
 MPEG-2 Video DVD



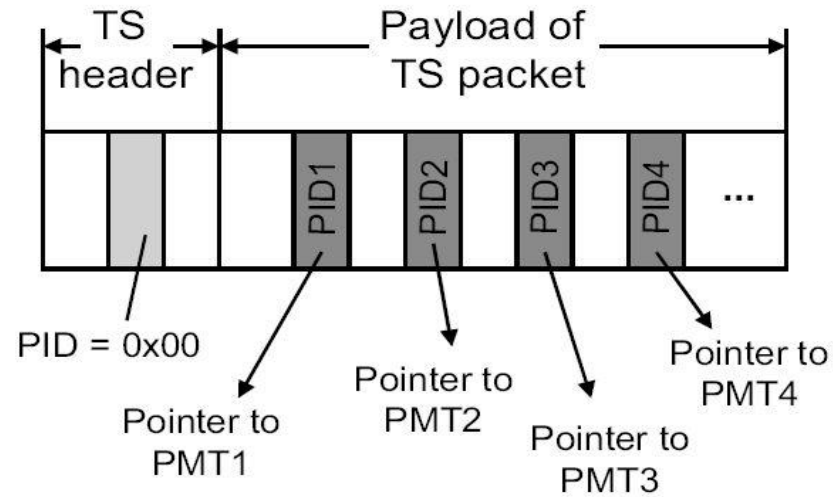
Program specific information

- PSI tables are certain lists of data in the transport stream which describe the instantaneous structure of the transport stream
- PSI tables - are occasionally transmitted in the transport stream providing metadata.



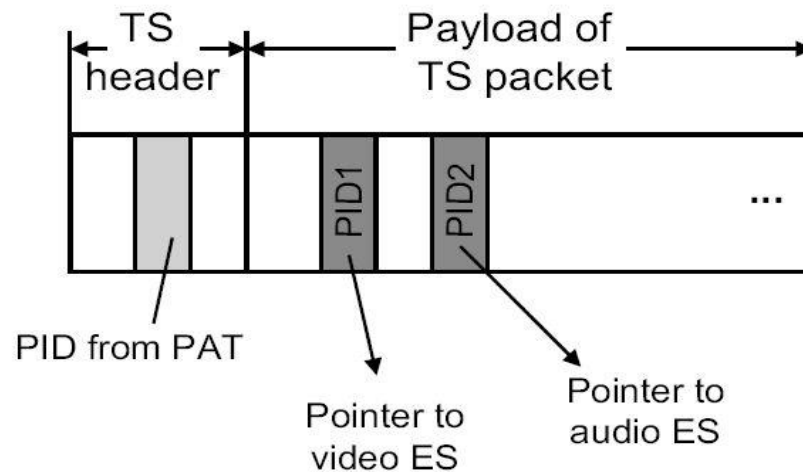
A table is = 1 ... N sections of same type
(max. 1024 byte / 4096 byte per section)

PAT and PMT



1 PID entry per program

PAT =
Program
Association
Table



1 PID entry per elementary stream

PMT =
Program
Map
Table

PAT table

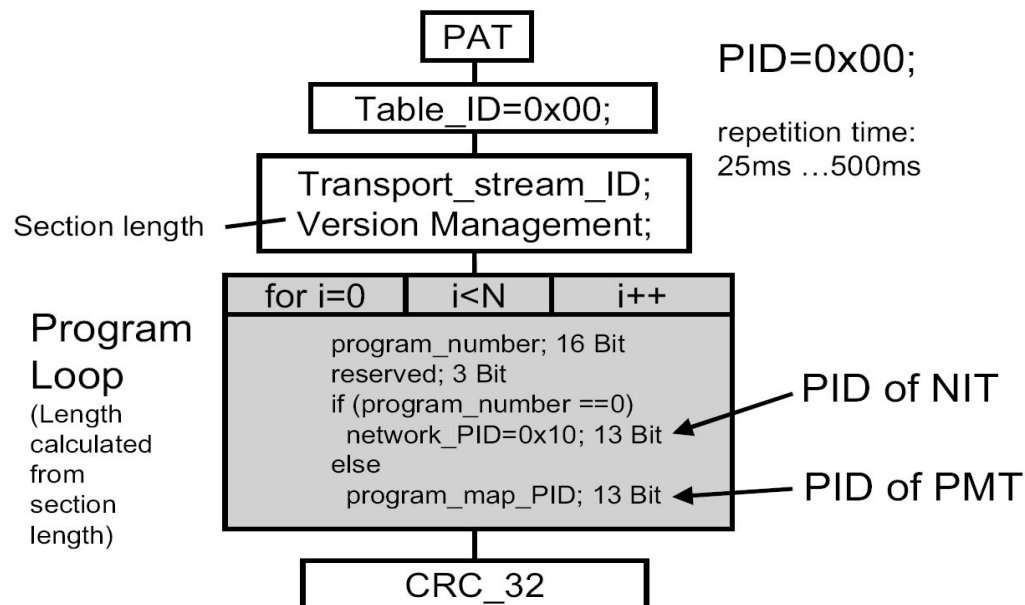


Table header/ version management

Program Association Section		
Table id	9 bit	0x00
Section syntax indicator '0'	1 bit	1
reserved	1 bit	0
Section length	2 bit	3
Transport stream id	12 bit	57
reserved	16 bit	0x2712
Version number	2 bit	3
Current/next indicator	5 bit	1
Section number	1 bit	1
Section number	8 bit	0
Last section number	0 bit	0
Program Loop		
Program number	16 bit	0xC620
reserved	3 bit	7
Program map PID	13 bit	0x0109
Program number	16 bit	0x0000
reserved	3 bit	7
Network PID	13 bit	0x0010
Program number	16 bit	0x138C
reserved	3 bit	7
Program map PID	13 bit	0x0104
Program number	16 bit	0xC60C
reserved	3 bit	7
Program map PID	13 bit	0x0100
Program number	16 bit	0xC60D
reserved	3 bit	7
Program map PID	13 bit	0x0101
Program number	16 bit	0xC60E
reserved	3 bit	7
Program map PID	13 bit	0x0102

sub_table is currently applicable

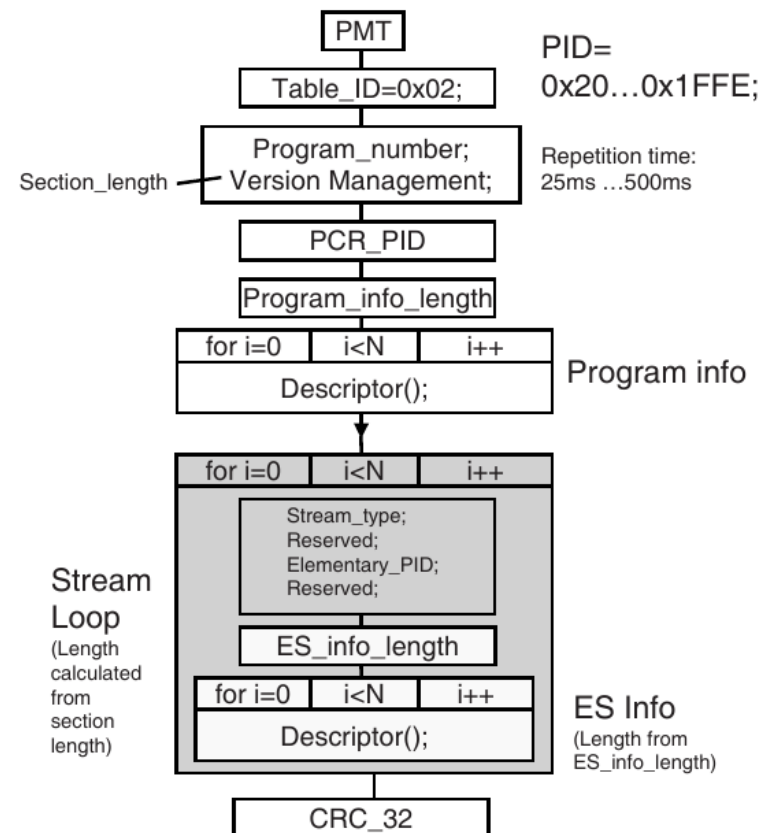
Table ID

0 = „not private“

Transport Stream ID

Program Loop

PMT table



Program Map Section			
Table id	8 bit	0x02	Table_ID
Section syntax indicator '0'	1 bit	1	„0“ = not private
reserved	1 bit	0	
Section length	12 bit	0x03	
Program number	16 bit	0x0001 (1)	Program no.
reserved	2 bit	0x3	
Version number	5 bit	0	
Current/next indicator	1 bit	1	sub_table is currently applicable
Section number	8 bit	0	
Last section number	8 bit	0	
reserved	3 bit	0x7	
PCR PID	13 bit	0x0064 (100)	PCR_PID
reserved	4 bit	0xF	
Program info length	12 bit	0	
Descriptors			
Stream Loop			
Stream type	8 bit	0x02 (2)	Video MPEG 2
reserved	3 bit	0x7	
Elementary PID	13 bit	0x0064 (100)	Video PID
reserved	4 bit	0xF	
ES info length	12 bit	0	
Descriptors			
Stream type	8 bit	0x04 (4)	Audio MPEG 2
reserved	3 bit	0x7	
Elementary PID	13 bit	0x0065 (101)	Audio PID
reserved	4 bit	0xF	
ES info length	12 bit	0	
Descriptors			
CRC 32	32 bit	0xB1909459	CRC ok

Table header/
version management

Stream loop

PSI/SI tables repetition rates

Table 3.3. Repetition rates of the PSI/SI tables according to MPEG/DVB

PSI/SI table	Max. interval (complete table)	Min. interval (single sections)
PAT	0.5 s	25 ms
CAT	0.5 s	25 ms
PMT	0.5 s	25 ms
NIT	10 s	25 ms
SDT	2 s	25 ms
BAT	10 s	25 ms
EIT	2 s	25 ms
RST	-	25 ms
TDT	30 s	25 ms
TOT	30 s	25 ms

The repetition rates of the PSI/SI tables are regulated through MPEG-2 Systems [ISO&IEC 13818/1] and DVB/SI [ETS 300468] (Table 3.3)

NIT

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