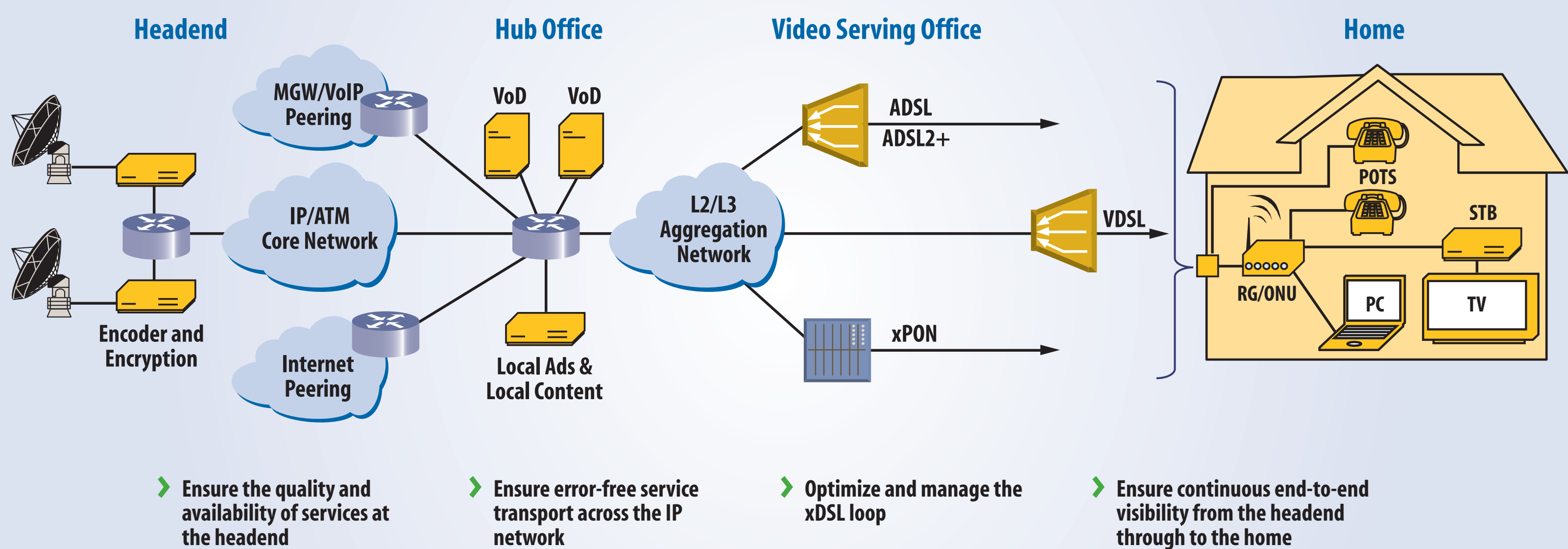
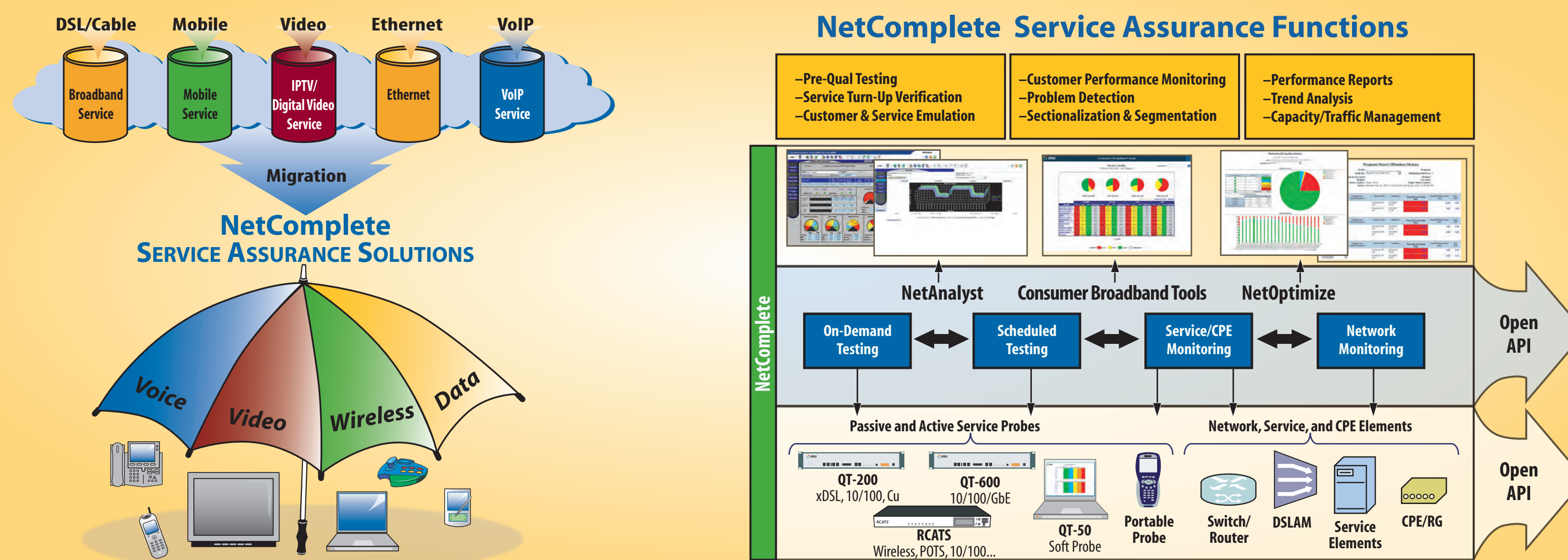


Assuring IPTV QoE from the Headend to the Home

IPTV Network Architecture

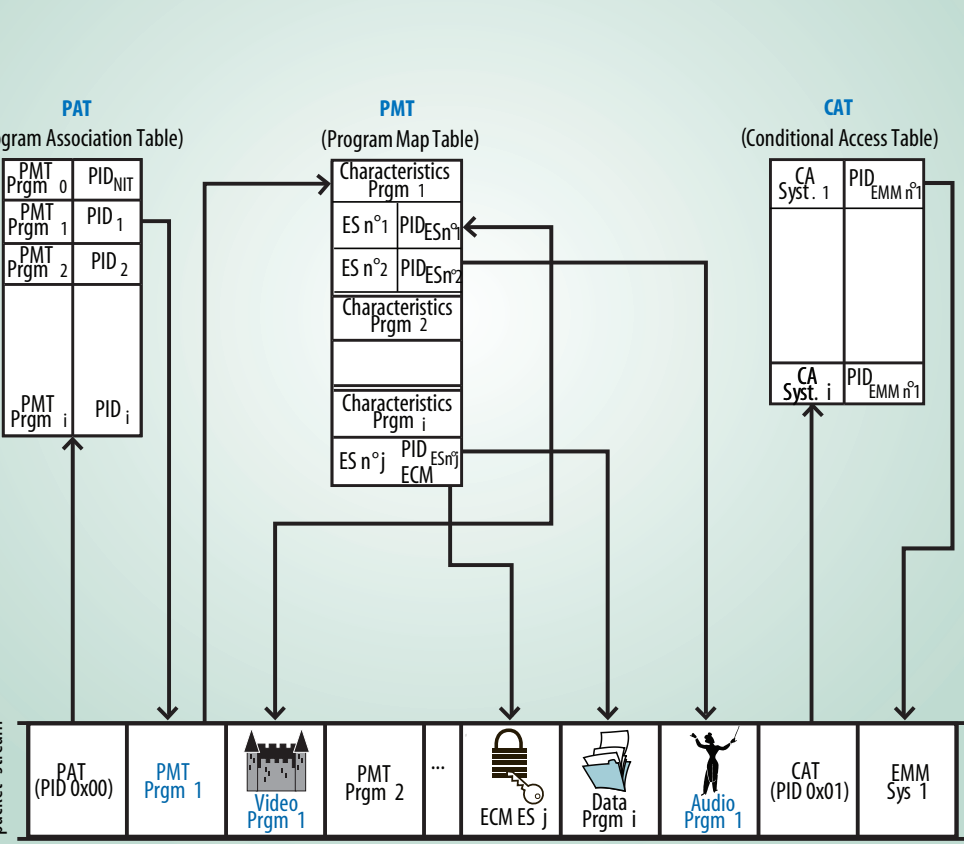


NetComplete™ Service Assurance Solutions Portfolio

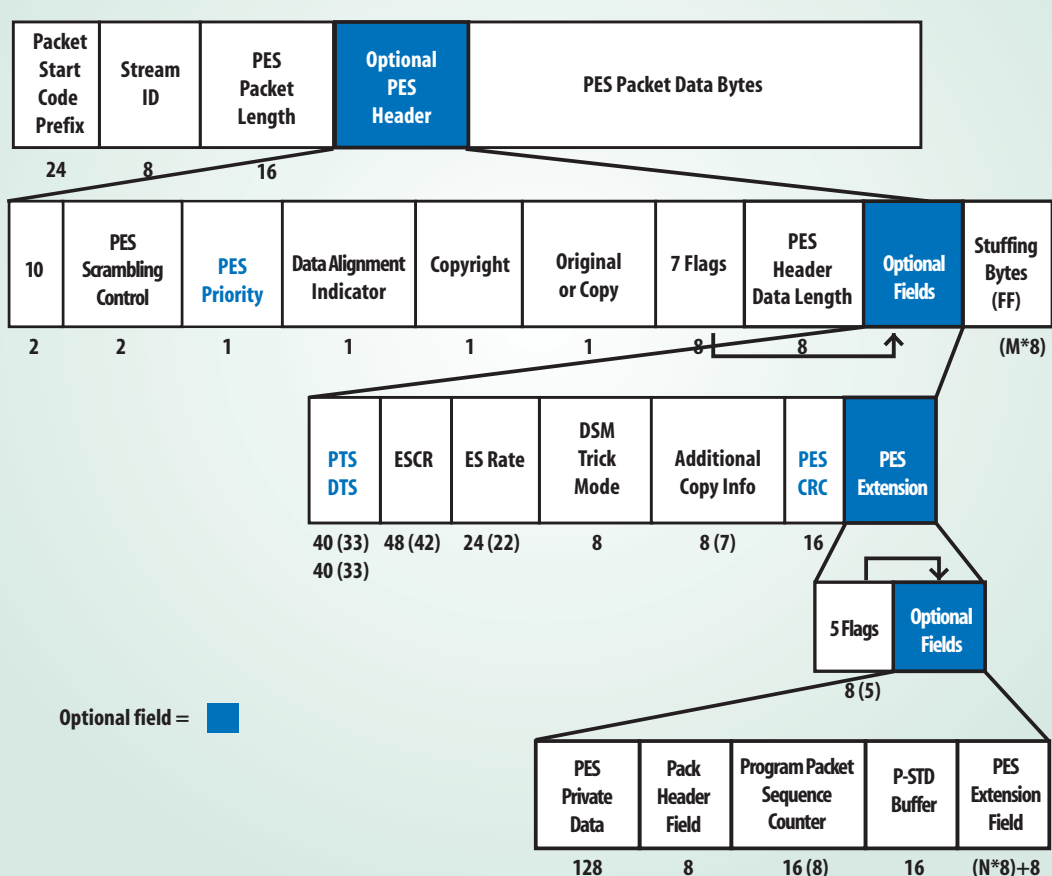


Technology

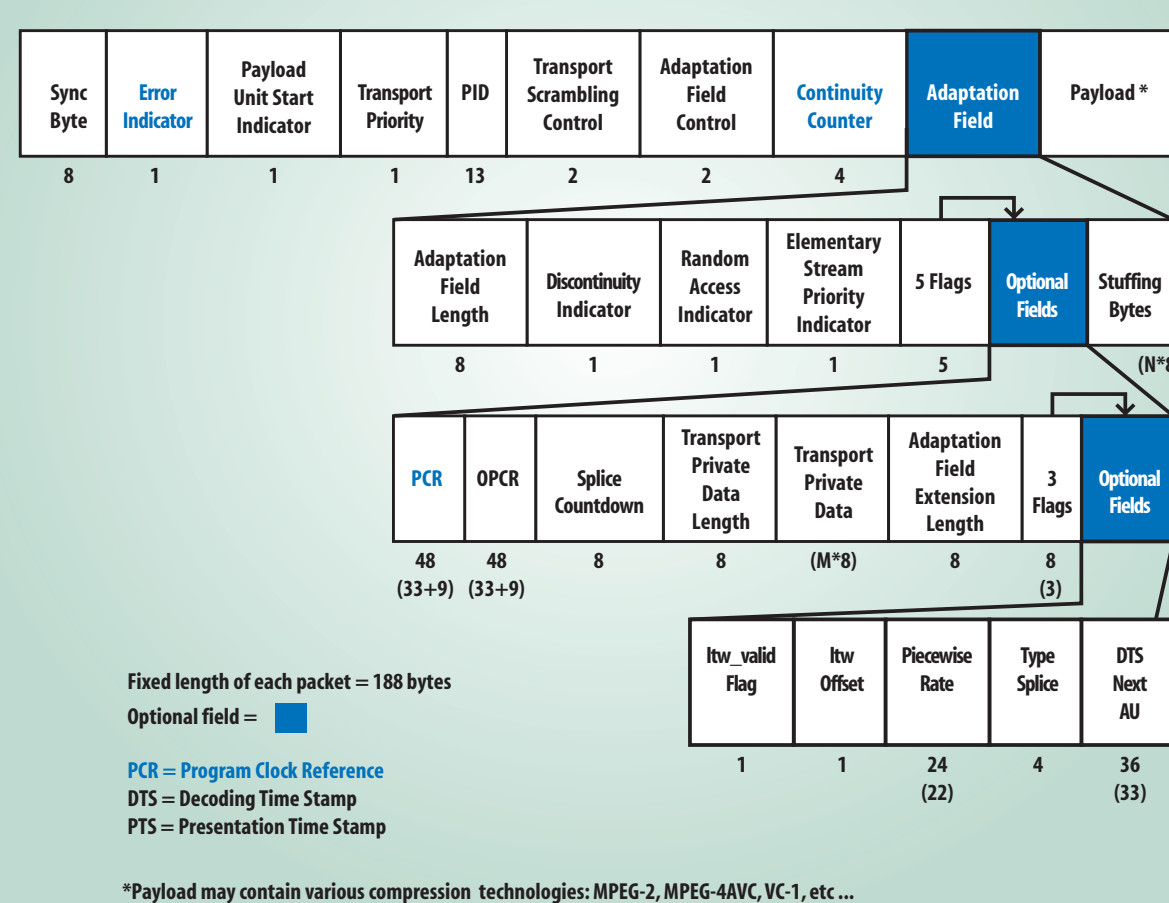
Program Specific Information (PSI)



Packetized Elementary Stream (PES) Structure



MPEG-2 Transport Stream Structure



Definitions

Name	Description
Conditional Access Table (CAT)	This table provides the PID 0x0001 value for the packets containing each Entitlement Management Message (EMM). EMMs update the subscription options or pay-per-view rights per subscriber.
Moving Picture Experts Group (MPEG)	The standards body responsible for the development of MPEG-2, the standard for digital television broadcasting.
Packet	A packet is the basic unit of data in a transport stream. It consists of a sync byte, whose value is 0x47, followed by three one-bit flags and a 13-bit PID. This is followed by a 4-bit continuity counter. Additional optional transport fields, as signaled in the optional adaptation field, may follow. The rest of the packet consists of payload. Packets are most often 188 bytes in length, but some transport streams consist of 204-byte packets which end in 16 bytes of Reed-Solomon error correction data.
Packetized Elementary Stream (PES)	A stream containing variable-length packets of video, audio, or data.
Packet Identifier (PID)	A unique integer value that identifies elements in the transport stream such as tables, data, or the audio for a program. Each table or elementary stream in a transport stream is identified by a 13-bit PID. A demultiplexer extracts elementary streams from the transport stream in part by looking for packets identified by the same PID.
Programs	A transport stream has a concept of programs, which are groups of one or more PIDs that are related to each other. For instance, a transport stream used in digital television might contain three programs, to represent three television channels. Suppose each channel consists of one video stream, one or two audio streams, and any necessary metadata. A receiver wishing to tune to a particular channel merely has to decode the payload of the PIDs associated with its program. It can discard the contents of all other PIDs.
Program Association Table (PAT)	The PAT lists PIDs for all PMTs in the stream. Packets containing PAT information always have PID 0x0.
Program Map Table (PMT)	The PMT lists the PID values for the packets containing a program's video, audio, clock reference, and data components. It also lists the PID value for each entitlement control message (ECM) in the stream. ECMs enable a decoder to descramble the audio, video, and data for a program.
Program Clock Reference (PCR)	A time stamp in the transport stream used to synchronize the decoder's clock with the original system time clock of the encoder. The PCR is transmitted at least every 0.1 seconds.
Transport Stream	A stream of 188-byte transport packets that contain audio, video, or data belonging to one or several programs.

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