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Part 4: MMT reference software

Technologies de l'information — Codage à haute efficacité et livraison des medias dans des environnements hétérogènes —
Partie 4: Logiciel de référence pour le transport des médias MPEG (MMT)

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23008 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The MMT reference and conformance software is defined as part of the MPEG-H standard in this document. This document outlines the MMT reference and conformance software and describes how it is used for conformance testing. It also collects a list of MMT features that need to be verified as part of conformance testing.

The attachment, available at https://standards.iso.org/iso-iec/23008/-4/ed-1/en, contains the updated reference software source code implementing the MPEG media transport: MMT.tar.gz.

Information technology — High efficiency coding and media delivery in heterogeneous environments —

Part 4:
MMT reference software

1 Scope

This document provides the reference software for MMT and its description.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 23008-1, *Information technology — High efficiency coding and media delivery in heterogeneous environments — Part 1: MPEG media transport (MMT)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions given in ISO/IEC 23008-1 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 General

The reference and conformance software operates according to Figure 1. It takes as input the MPUs, generic files and signalling messages that are to be transmitted. The MMTP sender then generates the MMTP flow as a multiplex of MMTP packets from the different sources and uses BSD sockets to send them to a pre-configured destination IP address and port number using MMTP over UDP. The MMTP receiver de-multiplexes the MMTP flow based on the *packet_id* and the *mode* and passes the packets to the corresponding reconstruction module. The reconstruction module extracts the payload and reconstructs the resource (i.e. the MPU, the generic file, or the signalling message).

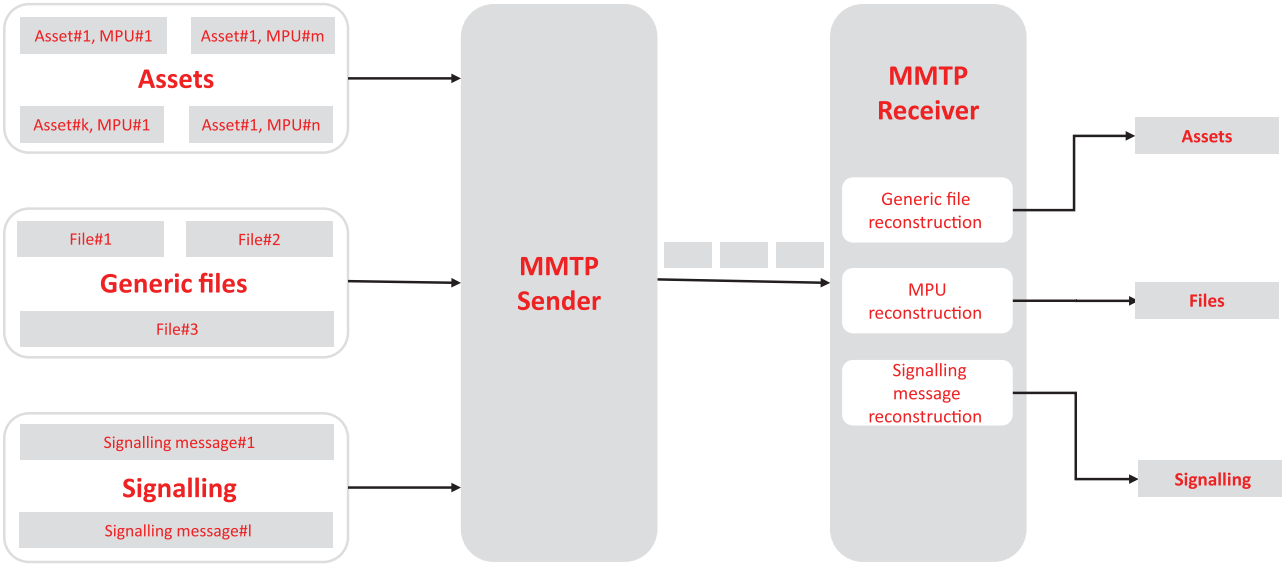

Figure 1 — Operation of reference and conformance software

Figures 2 and 3 depict the structure and class diagram of the reference and conformance software. The yellow, orange and green boxes indicate classes, general or binary files (MPU, generic, configuration, and packet dump), and XML files respectively.

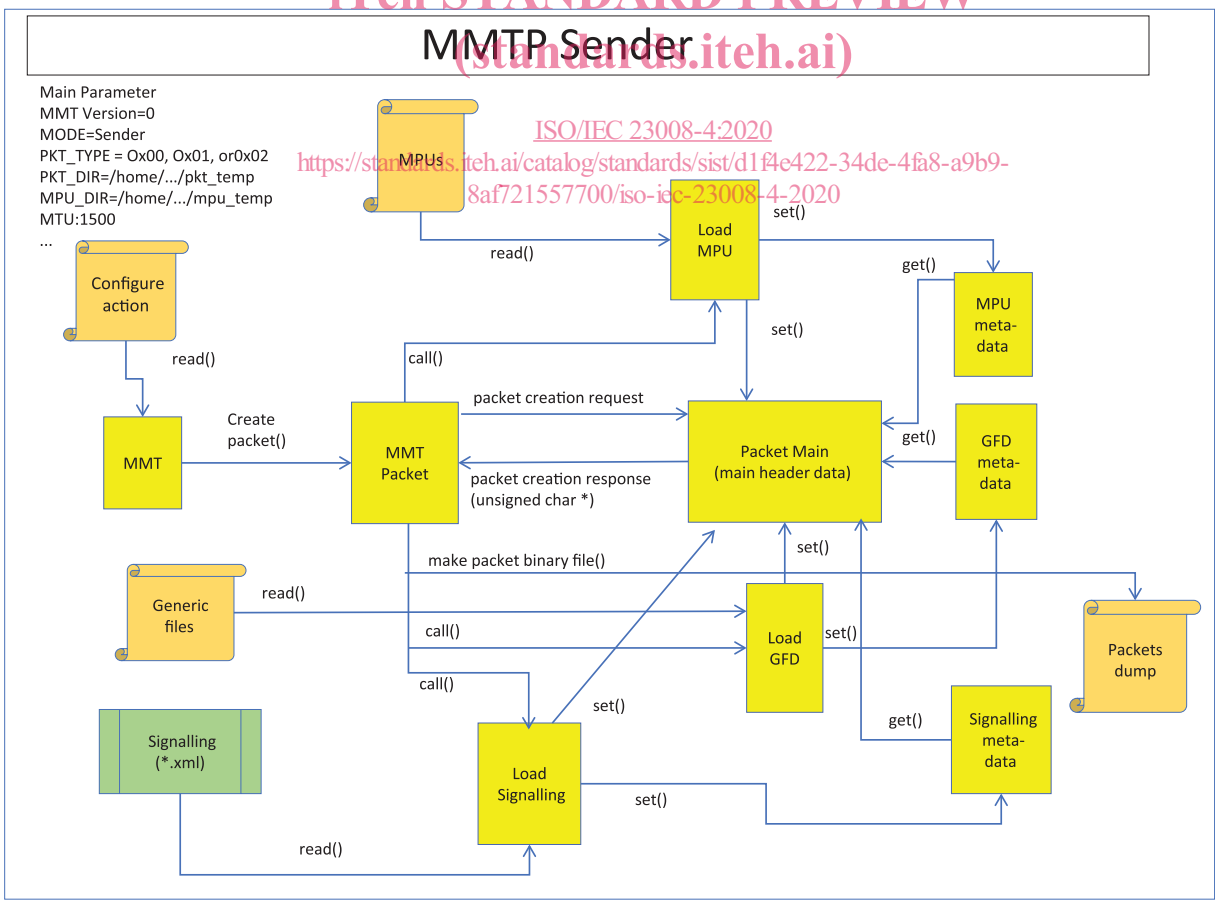

Figure 2 — Class diagram of MMTP sender

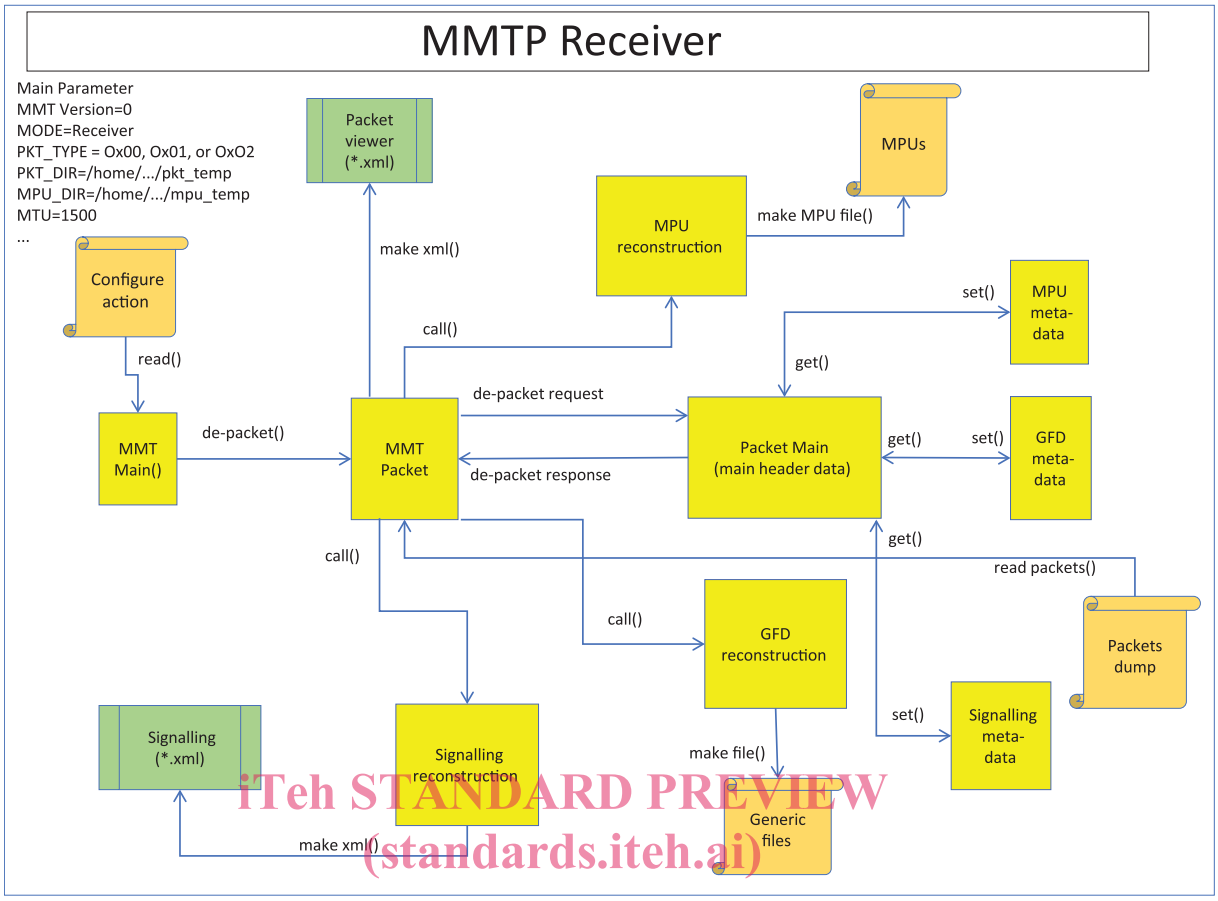

Figure 3 — Class diagram of MMTP receiver

The MMTP reference software works on both the sender and receiver side with a configuration (Demon 0: sender and 1: receiver). The MMTP sender has three functions: loading files (MPUs, generic, and signalling files) from pre-configured directories, the creation of MMT packets, and storing packets. The receiver side also has several functions: loading packets, de-packetizing, and the reconstruction of files. The MMT, MMT packet, packet main, MPU metadata, GFD metadata and signalling metadata classes are used on both the sender and receiver side. The loading module with load MPU, load GFD, and load signalling class are used only on the sender side and the related reconstruction classes are used only on the receiver side.

— MMT: MMT is a main class. MMT reads a configuration file (MMT_config) and distinguishes MMTP as sender and receiver mode. If the mode is sender, the MMT reads all files from the sender directories that are pre-configured in certain locations to load MPUs, generic, and signalling files and starts a packetizing process for each file. The MMT calls a MMT packet class for the creation of packets. On the other hand, if the mode is receiver, the MMT calls a de-packetization function.

— MMT packet: The main function of MMT packet is packetization and de-packetization. In sender mode, the MMT packet distinguishes packet types (such as 0x00: MPU, 0x01:GFD, 0x02:Signalling), calls loaders for each mode and calls the packet main class to manipulate header information. If the mode is receiver, it calls the de-packetization module and reconstruction module for each mode.

— Packet Main (main header data): The MMTP main packet header is defined except the payload data fields. The Packet Main calls MPU metadata, GFD metadata, and signalling metadata to store meta information for each mode.

— MPU metadata: The MMTP payload header for MPU mode is defined and creates the MPU packet and de-packet.