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Information technology — MPEG systems technologies —

Part 14: Partial file format

AMENDMENT 1: Support for HTTP entities, enhanced file type and byte-range priorities

Technologies de l'information — Technologies des systèmes MPEG —

Partie 14: Format de fichier partiel

AMENDEMENT 1: Prise en charge des entités HTTP, du type de fiche amélioré et des priorités des plages d'octets

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Information technology — MPEG systems technologies —

Part 14:
Partial file format

AMENDMENT 1: Support for HTTP entities, enhanced file type and byte-range priorities

4.2.4, second paragraph:

Replace the second sentence with the following:

The `FileTypeBox` of the source file, and, if present, the `OriginalFileTypeBox` and/or `ExtendedTypeBox`, whether or not correctly received, shall not be modified; they shall either:

— be encapsulated altogether in one partial segment and stored in a `PartialDataBox`, or

— be encapsulated altogether in an `OriginalFileTypeBox` immediately following the new `FileTypeBox` of the mixed partial file.

This ensures that a single `FileTypeBox` is present at the container level.

5.1.9 and 5.1.10

Add the following subclauses after 5.1.8.3, before 5.2:

5.1.9 HTTP Entity Box

5.1.9.1 Definition

Box Type: `'htte'`

Container: `PartialSegmentBox` or `PartialFileBox`

Mandatory: No

Quantity: At most one per `PartialSegmentBox`, or one in `PartialFileBox`

The `HTTPEntityBox` is used to store a set of HTTP entities (header name and body) applying to the file identified by the source URL. It is typically inserted in `PartialFileBox` or `PartialSegmentBox` by the receiver based on information carried in the delivery protocol, and can be used by the receiving entity to populate an HTTP cache.

There may be several `HTTPEntityBox` in a partial file. `HTTPEntityBox` declared in `PartialFileBox` define entities valid for the entire partial file; `HTTPEntityBox` declared in PartialSegmentBox define entities valid for the partial segment only.

The Content-Type and Content-Length entities shall not be included in this box. Content-Type may be signalled through `SourceURLBox`. Content-Length shall be recomputed from the partial file structures (chunks in `PartialSegmentLocationBox`).

5.1.9.2 Syntax

```
aligned(8) class HTTPEntityBox extends FullBox('htte', 0, 0) {
    unsigned int(32) entry_count;
    for (i=0; i<entry_count; i++) {
        utf8string name;
        utf8string body;
    }
}
```

5.1.9.3 Semantics

`entry_count` indicates the number of HTTP entities in the box.

`name` gives the name of the HTTP entity described.

`body` gives the body (content) of the HTTP entity described.

5.1.10 Byte-Range Priority Info Box

5.1.10.1 Definition

Box Type: `'brpi'`

Container: `PartialSegmentBox` or `PartialFileBox`

Mandatory: No

Quantity: At most one per `PartialSegmentBox`, or one in `PartialFileBox`

The `ByteRangePriorityInfoBox` indicates transmission priority levels of byte ranges in the source file. This allows a file reader to further optimize its repair process. By using external data reference in a partial file, it is possible to build a companion file containing priority levels of byte ranges of the source file, allowing a server to optimize its distribution (retransmission policies, FEC, etc.) of a file without modifying it.

NOTE This information is usually transported out-of-band or through well-protected packets with more FEC in the transport layer; for example, the information can be described in the FDT of the file in a FLUTE session.

If this box is present in the `PartialFileBox`, it shall indicate the byte ranges priorities for the complete file using absolute offsets, and no other `ByteRangePriorityInfoBox` shall be present in any subsequent `PartialSegmentBox`.

The following flags are defined for the `ByteRangePriorityInfoBox`:

— `relative_offset`: flag value is 0x000001. Presence of this flag indicates that indicated byte ranges are relative to the first byte of the first chunk of the partial segment containing this box. Absence of this flag indicates that indicated byte ranges are relative to the beginning (first byte) of the source file. This flag shall not be set if the container box is a `PartialFileBox`.

— `dependencies_present`: flag value is 0x000002. Presence of this flag indicates that the priority level depends on an explicit list of priority levels, rather than on levels with lower priority.

Byte in the source file not included in any of the byte ranges listed in `ByteRangePriorityInfoBox` shall be treated as having priority 0.

5.1.10.2 Syntax

```
aligned(8) class ByteRangePriorityInfoBox extends FullBox('brti', version, flags)
{
    unsigned int(32) entry_count;
    for (i=0; i < entry_count; i++) {
        if (version==1) {
            unsigned int(64) byte_range_start;
        } else {
            unsigned int(32) byte_range_start;
        }
        unsigned int(32) byte_range_length;
        unsigned int(16) priority_level;
```



```
        if (flags & dependencies_present) {
            unsigned int(16) num_dependencies;
            for (i=0; i<num_dependencies; i++) {
                unsigned int(16) depends_on_level;
            }
        }
    }
}
```

5.1.10.3 Semantics

`entry_count` is the number of index points listed in this box.

`byte_range_start` specifies the start of the byte range of the index in the source file. If version 1 is used, 64 bits data offsets are used; otherwise 32 bits data offsets are used.

`byte_range_length` specifies the size in bytes of the byte range.

`priority_level` specifies the priority level of that byte range. A value of 0 indicates the highest priority. Repair or sending operation can be prioritize based on this value.

`num_dependencies` indicates the number of explicit dependencies for this level. If 0 or not present, this indicates that byte ranges with priority in [0, `priority_level`-1] inclusive are required to process the byte range if `priority_level` is not 0, or that no additional byte ranges are needed if `priority_level` is 0. If present and not 0, this indicates the number of dependent levels required to process this byte range.

`depends_on_level` indicates the priority level of each byte range depended on. The dependencies should be ordered by increasing value of levels.