
**Information technology — JPEG 2000
image coding system — Part 9:
Interactivity tools, APIs and protocols**

**AMENDMENT 5: UDP transport and
additional enhancements to JPIP**

*Technologies de l'information — Système de codage d'images
JPEG 2000 — Partie 9: Outils d'interactivité, interfaces de programmes
d'application et protocoles*

AMENDEMENT 5: Transport UDP et autres améliorations du JPIP





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Published in Switzerland

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Amendment 5 to ISO/IEC 15444-9:2005 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*, in collaboration with ITU. The identical text is published as Rec. ITU-T T.808 (2005)/Amd.5 (03/2013).

**INTERNATIONAL STANDARD
RECOMMENDATION ITU-T**

**Information technology – JPEG 2000 image coding system:
Interactivity tools, APIs and protocols**

Amendment 5

UDP transport and additional enhancements to JPIP

1) Clause 6.1

Replace the third paragraph in this clause (between Figure 3 and Figure 4) with the following text:

This protocol can be used over several different transports as shown in Figure 4. This Recommendation | International Standard includes informative annexes on the use of the JPIP protocol over HTTP, TCP and UDP, and provides suggestions for other example implementations. The JPIP protocol itself is neutral with respect to underlying transport mechanisms for the client requests and server responses, except in regard to channel requests represented by the New Channel ("cnew") request field (see C.3.3) and the New Channel ("JPIP-cnew") response header (see D.2.3), where transport-specific details shall be communicated. This Recommendation | International Standard defines four specific transports, which are identified by the strings "http", "https", "http-tcp" and "http-udp" in the value string associated with New Channel requests.

2) Clause A.3.6.4

Replace clause A.3.6.4 with the following new clause A.3.6.4:

Wherever header, precinct or tile data bins exist, their codestream ID shall appear in a Placeholder box within an appropriate metadata bin. The only exception to this requirement is for unwrapped JPEG 2000 codestreams, which are not embedded within a JPEG 2000 family file format.

The codestream ID values that appear within the relevant Placeholder box shall conform to any requirements imposed by the containing file format. For example, JPX files formally assign a sequence number to codestreams that are found in Contiguous Codestream boxes or Fragment Table boxes, either at the top level of the file, or within Multiple Codestream boxes. The first codestream in the logical target shall have a codestream ID of 0; the next shall have a codestream ID of 1; and so forth.

Placeholders that reference multiple codestream IDs may be used only where the meaning of those codestreams is well defined by the type of the box that is being replaced. For JPX files, Contiguous Codestream boxes, Fragment Table boxes and Multiple Codestream boxes may be replaced by Placeholder Boxes that specify codestream IDs. Placeholders replacing Contiguous Codestream boxes and Fragment Table boxes may specify only a single codestream ID, while a placeholder replacing a Multiple Codestream box may specify multiple codestream IDs, corresponding to the number of codestreams that are found within the box.

3) Clause B.1

Replace the second paragraph of B.1 with the following:

The purpose of sessions is to reduce the amount of explicit communication required between the client and server. Within a session, the server is expected to remember client capabilities and preferences supplied in previous requests so that this information need not be sent in every request. Even more importantly, the server may keep a log of data it knows the client to have received so that this information need not be re-transmitted in response to future requests. This log is subsequently referred to as the cache model. The cache model would typically be persistent for the duration of a session. Unless explicitly instructed otherwise, the server may assume that the client caches all data it receives within a session, and may model the client's cache, sending only those portions of the compressed image data or metadata which the client does not already have in its cache.

4) Clause C.1.2

Replace the server-control-field and client-cap-pref-field lists with the following:

```

server-control-field = align                ; C.7.1
                        / wait                ; C.7.2
                        / type                ; C.7.3
                        / drate               ; C.7.4
                        / sendto              ; C.7.5
                        / abandon             ; C.7.6
                        / barrier             ; C.7.7
                        / twait               ; C.7.8

client-cap-pref-field = cap                 ; C.10.1
                        / pref                ; C.10.2
                        / csf                 ; C.10.3
                        / handled             ; C.10.4

```

5) Clause C.3.3

Replace the second and third paragraphs with the following text:

The value string identifies the names of one or more transport protocols that the client is willing to accept. This Recommendation | International Standard defines only the transport names, "http", "https", "http-tcp", and "http-udp". Details of the use of JPIP over the "http" transport appear in Annex F. Annex G describes the use of JPIP over the "http-tcp" transport and Annex K describes the use of JPIP over the "http-udp" transport.

If the server is willing to open a new channel, using one of the indicated transport protocols, it shall return the new channel identifier token using the New Channel response header (see D.2.3). In this case, the present request is the first request within the new channel.

6) Equation C-3

Modify equation C-3 with the following augmented version of the equation and subsequent explanatory text, to take account of the new rotation support in ISO/IEC 15444-2:2004/Amd.3. While making these editorial changes, note that many of the symbols from the original equation are similar.

First, define the rotated frame size, offset, width and height of the composite image as follows: