Boxes (Atoms)

This sub-section documents the structural *atom or box types* for the file formats. All files in this family are structured as a series of boxes (also known as atoms). Each box has a size and a four-character-code type. Boxes may contain other boxes.

User-data types are in a separate table below.

ISO family codes

See below for additional QuickTime codes.

code	description	specification
Search...	Search...	Search...
2dqr	2D region quality ranking	OMAF
2dss	spatial relationship 2D source	OMAF
ainf	Asset information to identify, license and play	DECE
assp	alternative startup sequence properties	ISO
auxi	Auxiliary track type information	HEIF
avcn	AVC NAL Unit Storage Box	DECE
bidx	Box Index	ISO-Partial
bloc	Base location and purchase location for license acquisition	DECE
bmdm	Buffer Model Description	JPXS

bpcc	Bits per component	JPEG2000
brob	Brotli-compressed box	JPEG XL
buff	Buffering information	NALu Video
bxml	binary XML container	ISO
ccid	OMA DRM Content ID	OMA DRM 2.1
ccst	Coding constraints box	HEIF
cdef	type and ordering of the components within the codestream	JPEG2000
cinf	complete track information	ISO
clip	Reserved	ISO
cmap	mapping between a palette and codestream components	JPEG2000
co64	64-bit chunk offset	ISO
coif	composition information	OMAF
coin	Content Information Box	DECE
colr	specifies the colourspace of the image	JPEG2000
covi	coverage information	OMAF
crgn	Reserved	ISO
crhd	reserved for ClockReferenceStream header	MP4v2
csgp	compact sample to group	ISO
cslg	composition to decode timeline mapping	ISO
cstb	corrected wall clock start time	ONVIF
ctab	Reserved	ISO

`ctts`	(composition) time to sample	ISO
`cvru`	OMA DRM Cover URI	OMA DRM 2.1
`dihd`	Data Integrity Hash	ISO-Partial
`dinf`	data information box, container	ISO
`dint`	Data Integrity	ISO-Partial
`dmon`	Mastering Display Metadata	JPXS
`dref`	data reference box, declares source(s) of media data in track	ISO
`dsgd`	DVB Sample Group Description Box	DVB
`dstg`	DVB Sample to Group Box	DVB
`edts`	edit list container	ISO
`elst`	an edit list	ISO
`emsg`	event message	DASH
`evti`	Event information	ATSC 3.0 A337
`etyp`	extended type and type combination	ISO
`Exif`	Exif Metadata	JPXS
`fdel`	File delivery information (item info extension)	ISO
`feci`	FEC Informatiom	ISO
`fecr`	FEC Reservoir	ISO
`fidx`	Box File Index	ISO-Partial
`fiin`	FD Item Information	ISO
`fire`	File Reservoir	ISO

`fovd`	fisheye omnidirectional video	OMAF
`fovi`	fisheye video essential info	OMAF
`fpar`	File Partition	ISO
`free`	free space	ISO
`frma`	original format box	ISO
`frpa`	Front Part	ISO-Partial
`ftyp`	file type and compatibility	ISO
`fvsi`	fisheye video supplemental info	OMAF
`gitn`	Group ID to name	ISO
`grpi`	OMA DRM Group ID	OMA DRM 2.0
`grpl`	Groups list box	ISO
`hdlr`	handler, declares the media (handler) type	ISO
`hmhd`	hint media header, overall information (hint track only)	ISO
`hpix`	Hipix Rich Picture (user-data or meta-data)	Hipix
`icnu`	OMA DRM Icon URI	OMA DRM 2.0
`ID32`	ID3 version 2 container	id3v2
`idat`	Item data	ISO
`ihdr`	Image Header	JPEG2000
`iinf`	item information	ISO
`iloc`	item location	ISO
`imap`	Reserved	ISO

`imda`	Identified media data	ISO
`imif`	IPMP Information box	ISO
`infe`	Item information entry	ISO
`infu`	OMA DRM Info URL	OMA DRM 2.0
`iods`	Object Descriptor container box	MP4v2
`ipco`	ItemPropertyContainerBox	ISO
`iphd`	reserved for IPMP Stream header	MP4v2
`ipma`	ItemPropertyAssociation	ISO
`ipmc`	IPMP Control Box	ISO
`ipro`	item protection	ISO
`iprp`	Item Properties Box	ISO
`iref`	Item reference	ISO
`j2kH`	JPEG 2000 header info	J2KHEIF
`j2kP`	JPEG 2000 prefix	J2KHEIF
`jbrd`	JPEG bitstream reconstruction data	JPEG XL
`jP$20$20`	JPEG 2000 Signature	JPEG2000
`jp2c`	JPEG 2000 contiguous codestream	JPEG2000
`jp2h`	Header	JPEG2000
`jp2i`	intellectual property information	JPEG2000
`jumb`	JPEG Universal Metadata Box Format (JUMBF)	JPEG Systems
`JXL$20`	JPEG XL Signature	JPEG XL
`jxll`	JPEG XL Level	JPEG XL

`jxlc`	JPEG XL Codestream	JPEG XL
`jxli`	JPEG XL Frame Index	JPEG XL
`jxlp`	JPEG XL Partial Codestream	JPEG XL
`jpvi`	JPEG XS Video Information	JPXS
`jpvs`	JPEG XS Video Support	JPXS
`jptp`	JPEG XS Video Transport Parameter	JPXS
`JXS$20`	JPEG XS Signature	JPXS
`jxpl`	JPEG XS Profile and Level	JPXS
`kmat`	Reserved	ISO
`leva`	Leval assignment	ISO
`load`	Reserved	ISO
`loop`	Looping behavior	WhatsApp
`lrcu`	OMA DRM Lyrics URI	OMA DRM 2.1
`m7hd`	reserved for MPEG7Stream header	MP4v2
`matt`	Reserved	ISO
`md5i`	MD5IntegrityBox	HEIF
`mdat`	media data container	ISO
`mdhd`	media header, overall information about the media	ISO
`mdia`	container for the media information in a track	ISO
`mdri`	Mutable DRM information	OMA DRM 2.0
`meco`	additional metadata container	ISO

`mehd`	movie extends header box	ISO
`meof`	media offset	OMAF
`mere`	metabox relation	ISO
`mesh`	mesh box	OMAF
`meta`	Metadata container	ISO
`mfhd`	movie fragment header	ISO
`mfra`	Movie fragment random access	ISO
`mfro`	Movie fragment random access offset	ISO
`minf`	media information container	ISO
`mjhd`	reserved for MPEG-J Stream header	MP4v2
`mmvi`	multimap video	V3C-SYS
`moof`	movie fragment	ISO
`moov`	container for all the meta-data	ISO
`movd`	mesh omnidirectional video	OMAF
`mstv`	MVC sub track view box	NALu Video
`mvcg`	Multiview group	NALu Video
`mvci`	Multiview Information	NALu Video
`3dpr`	MVDDepthResolutionBox	NALu Video
`mvex`	movie extends box	ISO
`mvhd`	movie header, overall declarations	ISO
`mvra`	Multiview Relation Attribute	NALu Video
`nmhd`	Null media header, overall information (some tracks only)	ISO
`ochd`	reserved for ObjectContentInfoStream header	MP4v2

`odaf`	OMA DRM Access Unit Format	OMA DRM 2.0
`odda`	OMA DRM Content Object	OMA DRM 2.0
`odhd`	reserved for ObjectDescriptorStream header	MP4v2
`odhe`	OMA DRM Discrete Media Headers	OMA DRM 2.0
`odrb`	OMA DRM Rights Object	OMA DRM 2.0
`odrm`	OMA DRM Container	OMA DRM 2.0
`odtt`	OMA DRM Transaction Tracking	OMA DRM 2.0
`ohdr`	OMA DRM Common headers	OMA DRM 2.0
`otcf`	OMAF timed text configuration	OMAF
`otyp`	Original file type	ISO
`ovly`	overlay configuration	OMAF
`padb`	sample padding bits	ISO
`paen`	Partition Entry	ISO
`pclr`	palette which maps a single component in index space to a multiple- component image	JPEG2000
`pdat`	Partial Data	ISO-Partial
`pdin`	Progressive download information	ISO
`pfhd`	Partial File Header	ISO-Partial

`pfil`	Partial File	ISO-Partial
`pitm`	primary item reference	ISO
`ploc`	Partial Segment Location	ISO-Partial
`pnot`	Reserved	ISO
`povd`	projected omnidirectional video	OMAF
`prfr`	projection format	OMAF
`prft`	Producer reference time	ISO
`pseg`	Partial Segment	ISO-Partial
`pshd`	Partial Segment Header	ISO-Partial
`pssh`	Protection system specific header	ISO Common Encryption
`ptle`	Partial Top Level Entry	ISO-Partial
`res$20`	grid resolution	JPEG2000
`resc`	grid resolution at which the image was captured	JPEG2000
`resd`	default grid resolution at which the image should be displayed	JPEG2000
`rinf`	restricted scheme information box	ISO
`rotn`	rotation box	OMAF
`rosc`	sphere region configuration	OMAF
`rvif`	recommended viewport information	OMAF
`rwpk`	region-wise packing	OMAF
`saio`	Sample auxiliary information offsets	ISO
`saiz`	Sample auxiliary information sizes	ISO
`sbgp`	Sample to Group box	ISO

`schi`	scheme information box	ISO
`schm`	scheme type box	ISO
`sdep`	Sample dependency	NALu Video
`sdhd`	reserved for SceneDescriptionStream header	MP4v2
`sdtp`	Independent and Disposable Samples Box	ISO
`sdvp`	SD Profile Box	SDV
`segr`	file delivery session group	ISO
`seii`	SEI information box	NALu Video
`senc`	Sample specific encryption data	ISO Common Encryption
`sgpd`	Sample group definition box	ISO
`sidx`	Segment Index Box	ISO
`sinf`	protection scheme information box	ISO
`skip`	free space	ISO
`smhd`	sound media header, overall information (sound track only)	ISO
`sprg`	sub-picture region	OMAF
`srmb`	System Renewability Message	DVB
`srmc`	System Renewability Message container	DVB
`srpp`	STRP Process	ISO
`srqr`	sphere region quality ranking	OMAF
`ssix`	Sub-sample index	ISO
`sstl`	SVC sub track layer box	NALu Video
	sample table box, container for the	

`stbl`	time/space map	ISO
`stco`	chunk offset, partial data-offset information	ISO
`stdp`	sample degradation priority	ISO
`sthd`	Subtitle Media Header Box	ISO
`stmg`	MVC sub track multiview group box	NALu Video
`strd`	Sub-track definition	ISO
`stri`	Sub-track information	ISO
`stsc`	sample-to-chunk, partial data-offset information	ISO
`stsd`	sample descriptions (codec types, initialization etc.)	ISO
`stsg`	Sub-track sample grouping	ISO
`stsh`	shadow sync sample table	ISO
`stss`	sync sample table (random access points)	ISO
`stsz`	sample sizes (framing)	ISO
`stti`	Sub track tier box	NALu Video
`stts`	(decoding) time-to-sample	ISO
`styp`	Segment Type Box	ISO
`stz2`	compact sample sizes (framing)	ISO
`subs`	Sub-sample information	ISO
suep	signer identity information	ONVIF
`sumi`	supplemental surveillance meta information	MPEG-VSAF
`surl`	Source URL	ISO-Partial

`swtc`	Multiview Group Relation	NALu Video
`tenc`	Track Encryption	ISO Common Encryption
`tfad`	Track fragment adjustment box	3GPP
`tfdt`	Track fragment decode time	ISO
`tfhd`	Track fragment header	ISO
`tfma`	Track fragment media adjustment box	3GPP
`tfra`	Track fragment radom access	ISO
`tibr`	Tier Bit rate	NALu Video
`tiri`	Tier Information	NALu Video
`tkhd`	Track header, overall information about the track	ISO
`traf`	Track fragment	ISO
`trak`	container for an individual track or stream	ISO
`tref`	track reference container	ISO
`trep`	track extension properties	ISO
`trex`	track extends defaults	ISO
`trgr`	Track grouping information	ISO
`trik`	Facilitates random access and trick play modes	DECE
`trun`	track fragment run	ISO
`tstb`	TileSubTrackGroupBox	NALu Video
`ttyp`	track type and compatibility	ISO
`tyco`	type and-combination	ISO
`udta`	user-data	ISO

`uinf`	a tool by which a vendor may provide access to additional information associated with a UUID	JPEG2000
`UITS`	Unique Identifier Technology Solution	Universal Music Group
`ulst`	a list of UUID's	JPEG2000
`url$20`	a URL	JPEG2000
`uuid`	user-extension box	ISO
`v3sc`	V3C spatial region collection	V3C-SYS
`vmhd`	video media header, overall information (video track only)	ISO
`vpbb`	Volumetric media bounding box	V3C-SYS
`vssn`	viewing space	OMAF
`vunt`	V3C unit header	V3C-SYS
`vvhd`	volumetric visual media header	ISO
`vwdi`	Multiview Scene Information	NALu Video
`wmpi`	segment position in the watermark pattern	DASH-IF watermarking
`xml$20`	XML container	ISO
`xml$20`	a tool by which vendors can add XML formatted information	JPEG2000
`!mof`	Compressed movie fragment	ISO
`!mov`	Compressed movie	ISO
`!six`	Compressed segment index	ISO
`!ssx`	Compressed subsegment index	ISO

`iroi`	SVC region of interest box	NALu Video
`ldep`	Tier dependency box	NALu Video
`rrgn`	SVC rect region box	NALu Video
`svdr`	SVC dependency range	NALu Video
`svip`	Initial parameter sets box for tiers	NALu Video
`svpr`	Priority range	NALu Video
`tran`	SVC lightweight transcoding	NALu Video
`vipr`	View priority Box	NALu Video
`sdp$20`	SDP information	ISO
`stvi`	Stereo Video Box	ISO
`spki`	Sample packing information box	ISO
`aedb`	audio element description	ISO
`aelm`	audio element box	ISO
`aepp`	audio element positioning interactivity polar box	ISO
`aepr`	audio element prominence interactivity box	ISO
`aesb`	audio element selection box	ISO
`aesd`	audio element selection description box	ISO
`ardi`	audio rendering indication	ISO
`labl`	Label box	ISO
`elng`	Extended Language Tag	ISO
`rsot`	Redundant Sample Original Timing	ISO
`ssrt`	Sub-sample Reference Table Box	ISO

User-data Codes

code	description	specification
ades	description of the content for accessibility purposes (similar to the HTML alt attribute); formatted as for the cprt user-data item	Apple
albm	Album title and track number for media	3GPP
alou	Album loudness base	ISO
angl	Name of the camera angle through which the clip was shot	Apple
auth	Author of the media	3GPP
clfn	Name of the clip file	Apple
clid	Identifier of the clip	Apple
clsf	Classification of the media	3GPP
cmid	Identifier of the camera	Apple
cmnm	Name that identifies the camera	Apple
coll	Name of the collection from which the media comes	3GPP
cprt	copyright etc.	ISO
date	Date and time, formatted according to ISO 8601, when the content was created. For clips captured by recording devices, this is typically the date and time when the clip's recording started.	Apple
dscp	Media description	3GPP
gnre	Media genre	3GPP

`hinf`	hint information	ISO
`hnti`	Hint information	ISO
`hpix`	Hipix Rich Picture (user-data or meta-data)	Hipix
`kind`	Track kind	ISO
`kywd`	Media keywords	3GPP
`loci`	Media location information	3GPP
`ludt`	Track loudness container	ISO
`manu`	Manufacturer name of the camera	Apple
`modl`	Model name of the camera	Apple
`orie`	Orientation information	3GPP
`perf`	Media performer name	3GPP
`prmd`	Production metadata box	Youtube
`reel`	Name of the tape reel	Apple
`rtng`	Media rating	3GPP
`scen`	Name of the scene for which the clip was shot	Apple
`shot`	Name that identifies the shot	Apple
`slno`	Serial number of the camera	Apple
`strk`	Sub track information	ISO
`thmb`	Thumbnail image of the media	3GPP
`titl`	Media title	3GPP
`tlou`	Track loudness base	ISO
`tsel`	Track selection	ISO
`urat`	User 'star' rating of the media	3GPP
`yrrc`	Year when media was recorded	3GPP

swre	Name and version number of the software that generated this movie	Apple

QuickTime Codes

code	description	specification
albm	Album title and track number (user-data)	3GPP
auth	Media author name (user-data)	3GPP
clip	Visual clipping region container	QT
clsf	Media classification (user-data)	3GPP
cprt	copyright etc. (user-data)	ISO
crgn	Visual clipping region definition	QT
csgm	Compact sample to group used in QuickTime File Format	QT
ctab	Track color-table	QT
dcfD	Marlin DCF Duration, user-data atom type	OMArlin
elng	Extended Language Tag	QT
imap	Track input map definition	QT
kmat	Compressed visual track matte	QT
load	Track pre-load definitions	QT
matt	Visual track matte for compositing	QT
pnot	Preview container	QT
wide	Expansion space reservation	QT

MP4 Registration Authority

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