

OVERVIEW AND UPDATES · CONTENT DELIVERY AND STREAMING

Content Delivery Protocols and Tools

Content delivery origin, packaging, protocols and related tools

IETF

3GPP

ETSI



OCTOBER 2026 – www.5g-mag.com

About the project

The documents the project rests on

RFC 3926

FLUTE

File Delivery over Unidirectional Transport: files from one sender to any number of receivers, built on ALC and LCT.

3GPP TS 26.346

Technical Specification

FLUTE in MBMS download delivery, with the MBMS Download Profile. TS 26.517 adds the Object Distribution Method of 5G MBS.

ETSI TS 103 973

Technical Specification

The Coded Multisource Media Format (CMMF), a container for coded media from several sources.

FIND OUT MORE

Technical Analysis

Specifications

Reference Tools

LEARN

The building blocks

How FLUTE is built on ALC, and what each block gives it



LCT (Layered Coding Transport)

In-band session management: each packet carries a session and an object identifier.

CC (congestion control)

MBMS download does not use it.

FEC (Forward Error Correction)

Gives ALC its reliability, with the choice of an FEC code.

ALC (Asynchronous Layered Coding)

Combines the three building blocks.

FLUTE

A fully specified protocol to transport files, with a File Delivery Table that indexes the files in band.

The three FLUTE profiles

FLUTE as the IETF defines it, and the two ways 3GPP profiles it

RFC 3926

Unprofiled FLUTE

FLUTE with no 3GPP constraints, for any FLUTE sender and receiver.

TS 26.346

MBMS download

BM-SC and MBMS Client. The MBMS Download Profile sets the usage of the FDT attributes and elements.

TS 26.517

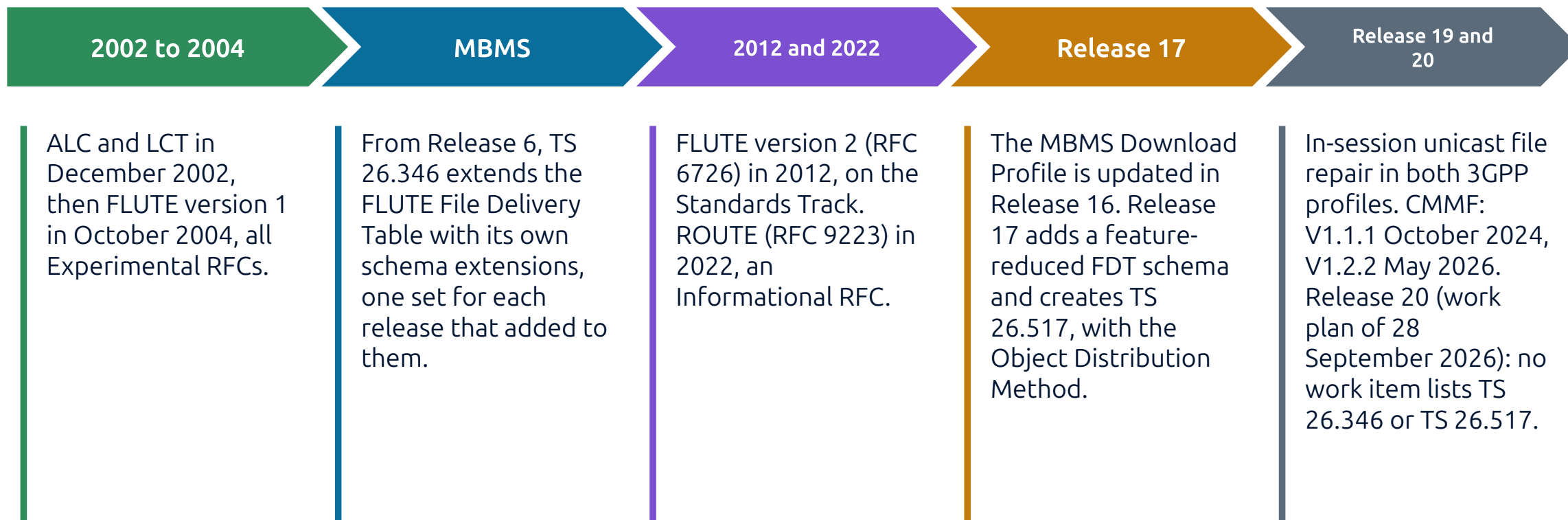
MBS Object Distribution

MBSTF and MBS Client. Conforms to the MBMS Download Profile, with additional requirements.

Only the MBMS Download Profile has a name in the specifications. Both 3GPP profiles are defined on FLUTE version 1.

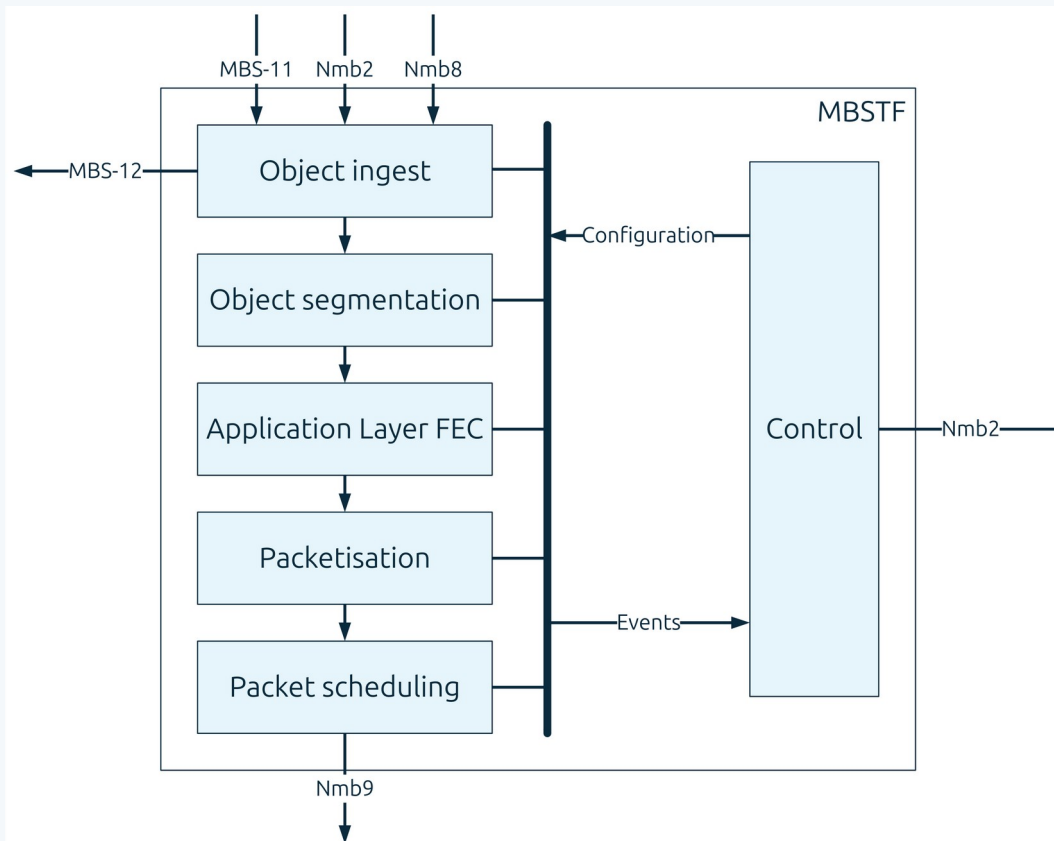
How it grew

FLUTE, its 3GPP profiles, ROUTE and CMMF over time



Architecture

Inside the MBSTF, for the MBS Object Distribution Method



Object ingest

Takes objects from the MBS Application Provider, pulled or pushed.

Object segmentation

Partitions an object into payload units suitable for MBS transmission.

Application Layer FEC

Optional: supports object recovery when some packets are not received.

Packetisation

Places the payload units, and optionally the FEC data, into transmission packets.

Packet scheduling

Schedules the outgoing packet stream according to the target bit rate.

Beyond the three profiles

Also in the scope of the project

RFC 6726

FLUTE version 2

Obsoletes version 1 and is not backwards compatible with it. Both 3GPP profiles refer to version 1.

RFC 9223

ROUTE

Delivers application objects, including objects with real-time constraints, over unidirectional transport. Aligned with FLUTE.

ETSI TS 103 973

CMMF

A container for coded multisource media, so a client can draw from several sources at once. It carries media of an already packaged format.

TS 26.346 and TS 26.517 do not use ROUTE. CMMF is agnostic to the transport; it specifies content delivery protocol instantiations.

IMPLEMENT

Repositories

The repositories of the project, from their descriptions

REPOSITORY	WHAT IT IS	COVERS	LATEST RELEASE
rt-libflute	a FLUTE server and client, with a demo transmitter and a demo receiver	FLUTE server FLUTE client	0.12.4 1 Sep 2026 GitHub
rt-cmmf-encoder	a reference implementation of a CMMF Encoder according to ETSI TS 103 973	No encoder code yet	none yet GitHub
rt-media-origin	a media origin server and packager for content delivery testing	Media origin	none yet GitHub
rt-media-android-application	an Android test app and a laptop test rig that check that every delivery method of the media origin arrives on a phone and plays as configured	Test app	none yet GitHub
flute-conformance-validator	tests a FLUTE implementation against the FLUTE profiles of RFC 3926, TS 26.346 and TS 26.517	FLUTE conformance	none yet GitHub

FIND OUT MORE

[Technical Analysis](#)

[Specifications](#)

[Reference Tools](#)

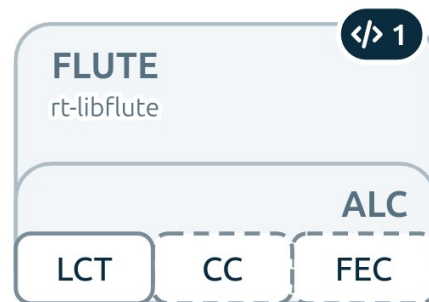
released

no release yet

IMPLEMENT

Repositories in the architecture

The Reference Tools on the specification figure, as the figure generator draws them



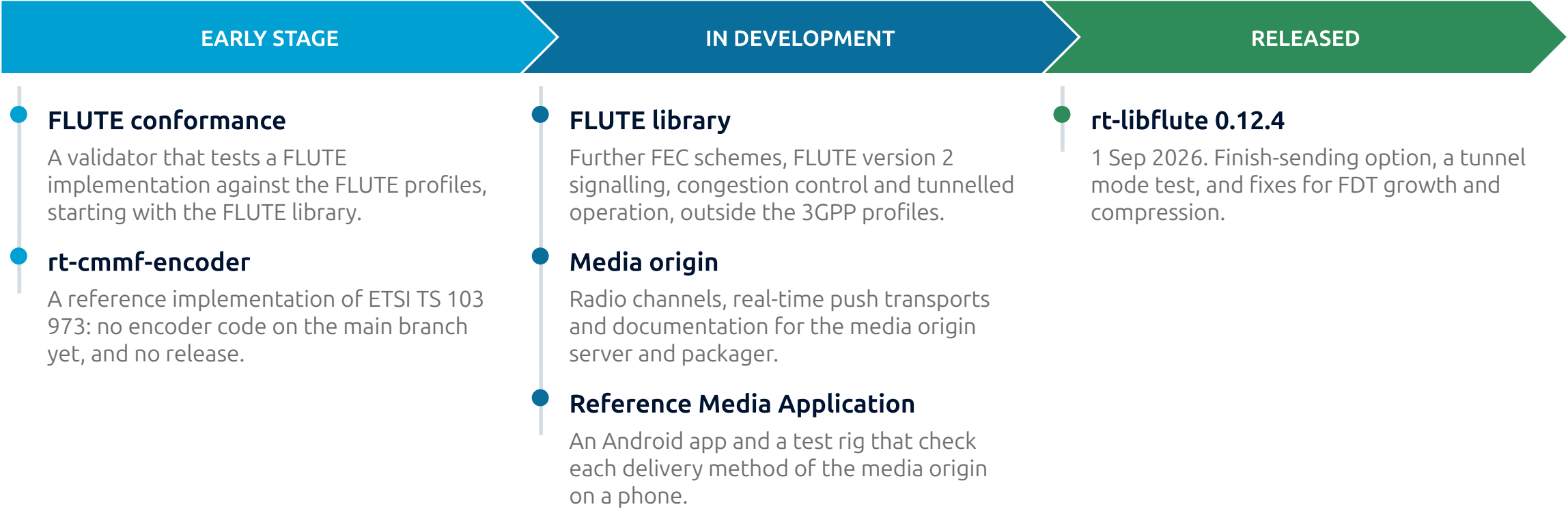
PROVIDED BY THE REFERENCE TOOLS

1 rt-libflute

Boxes without a badge are not mapped to a repository.

Latest updates and roadmap

Status on 23 October 2026



MERGED SINCE 0.12.4 7 pull requests in 4 repositories

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