



OVERVIEW AND UPDATES · REFERENCE TOOLS

3GPP RAN and Core Platforms

Lab-ready 5G RAN and Core built on Open-Source platforms

About the project

The specifications behind the 5G System, the radio access network and the services the libraries consume

3GPP TS 23.501

Technical Specification, V20.3.0

System architecture for the 5G System (5GS), Stage 2: the Network Functions and reference points of the 5G Core.

3GPP TS 38.300

Technical Specification, V19.4.0

NR and NG-RAN Overall Description, Stage 2.

3GPP TS 38.401

Technical Specification, V19.3.0

NG-RAN architecture description.

FIND OUT MORE

Technical Analysis

Specifications

Reference Tools

What the platforms provide

The network infrastructure that the other Reference Tools run against

NG-RAN

The gNB, split into CU and DU, built from rt-srsRAN_Project, the fork of the srsRAN Project.

5G Core

Built from 5G-MAG's fork of Open5GS. The multicast and broadcast core functions belong to the MBS project.

LTE and UE

Built from srsRAN_4G: the basis for the LTE-based 5G Broadcast components and for UE functions for MBS.

SDR

Software Defined Radio front-ends transmit and receive the radio signal that the software generates and processes.

2

delivery technologies: MBS (5G NR with the 5G Core) and LTE-based 5G Broadcast. The forks follow this split. The description of the forks is not yet audited.

Two delivery technologies

Why the forks split

MBS

5G NR and the 5G Core

Multicast and broadcast functions deliver the same content to many devices. The RAN software basis is rt-srsRAN_Project (NR CU/DU).

5G BROADCAST (LTE-BASED)

LTE/eMBMS radio

Reuses FeMBMS, with no core and no return channel, for free-to-air TV and radio, receive-only. The RAN basis is srsRAN_4G (eNodeB with MBMS).

UPSTREAM SOFTWARE

Open source bases

The srsRAN Project and srsRAN_4G of Software Radio Systems for the radio, and the Open5GS project for the 5G Core.

The dedicated 5G Broadcast transmitter and modem are in separate repositories (rt-mbms-tx and rt-mbms-modem), which depend on this project for the radio software.

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5G Core Service Consumers

Reusable libraries that let an application call 5G Core services

BSF

libscbsf

Finds the BSF through the NRF, then which PCF manages the PDU Session of a UE, identified by its IP address (Nbsf_Management).

PCF

libscpcf

Lets an application request an application session context from the PCF, to change the network QoS of selected traffic flows of a PDU Session (Npcf_PolicyAuthorization, at N5). Tool: pcf-policyauthorization.

MB-SMF

libscmbsmf

Allocates and deallocates TMGIs (Nmbsmf_TMGI), and creates, modifies and destroys MBS Sessions with their event subscriptions (Nmbsmf_MBSSession). Tools: tmgi-tool and mbs-service-tool.

Each library implements only the consumer side of its APIs, so it needs a running 5G Core. 5G Media Streaming uses the BSF and PCF libraries; MBS uses the MB-SMF library.

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Services for 5G Media Streaming

The service operations of the PCF, the BSF and the NRF that the BSF and PCF libraries use

PCF TS 29.514 V20.1.0, clause 4.2: Npcf_PolicyAuthorization

- Create
- Update
- Delete
- Notify
- Subscribe
- Unsubscribe

BSF TS 29.521 V20.1.0, clause 4.2: Nbsf_Management

- Register
- Deregister
- Discovery
- Update
- Subscribe
- Unsubscribe
- Notify

NRF TS 29.510 V20.1.0, clause 5.3.2: Nnrf_NFDiscovery

- NFDiscover
- SCPDomainRoutingInfoGet
- SCPDomainRoutingInfoSubscribe
- SCPDomainRoutingInfoNotify
- SCPDomainRoutingInfoUnSubscribe

The specifications define these operations. Only the Network Functions that 5G Media Streaming and 5G MBS use are covered.

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Services for 5G MBS

The service operations of the MB-SMF that the MB-SMF library uses

Nmbsmf_TMGI TS 29.532 V20.0.0, clause 5.2.2

TMGI Allocate

TMGI Deallocate

Nmbsmf_MBSSession TS 29.532 V20.0.0, clause 5.3.2, at reference point Nmb1

Create

Update

Release

ContextUpdate

StatusSubscribe

StatusUnsubscribe

StatusNotify

ContextStatusSubscribe

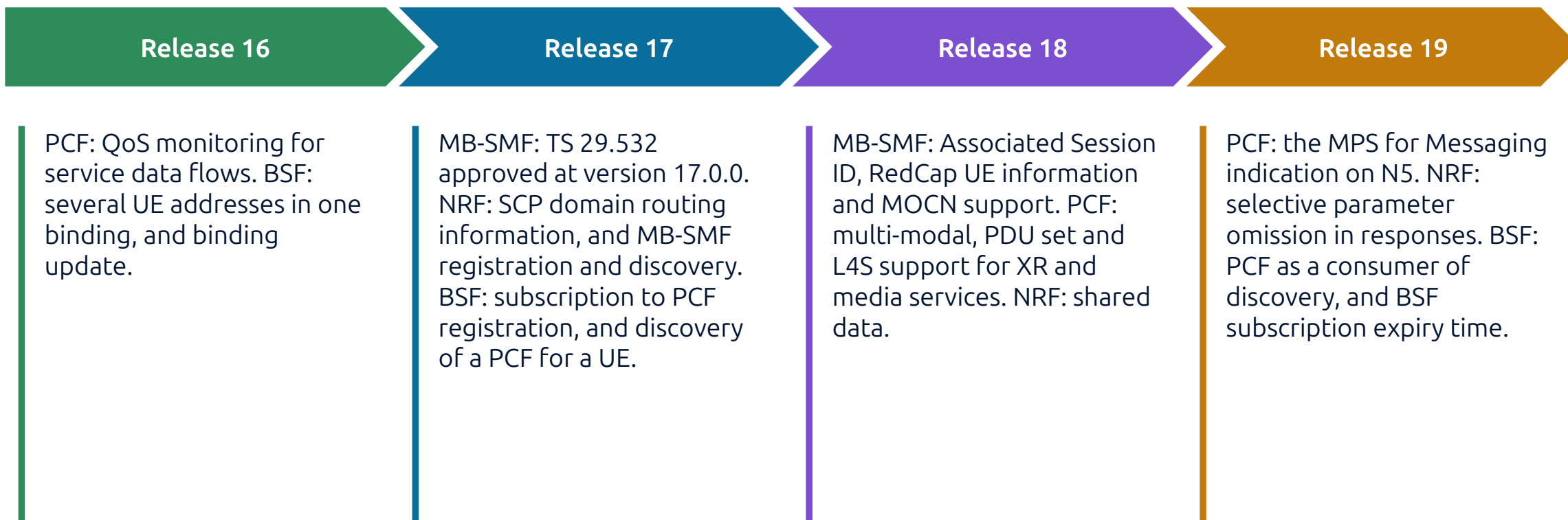
ContextStatusUnSubscribe

ContextStatusNotify

The library finds the MB-SMF through the NRF discovery service (Nnrf_NFDiscovery).

What later releases changed

What each 3GPP release added to the services the libraries consume



Release 20 (work plan of 28 September 2026): work items list TS 29.510 and TS 29.514; none lists TS 29.521 or TS 29.532.

IMPLEMENT

Repositories

The repositories of the 3GPP RAN and Core Platforms

REPOSITORY	WHAT IT IS	COVERS	LATEST RELEASE
rt-5gc-service-consumers	reusable service consumer libraries for the 5GC Network Functions, with command line tools	BSF, PCF and MB-SMF libraries	2.1.1 5 Jun 2026 GitHub
rt-srsRAN_Project	fork of the srsRAN Project, for the development and adaptation of NG-RAN procedures	NG-RAN (gNB)	none yet GitHub
srsRAN_4G	fork of srsRAN_4G, for the development and adaptation of NG-RAN procedures	LTE radio and UE	none yet GitHub
srsRAN	fork of the discontinued srsRAN suite, kept for reference; superseded by srsRAN_4G and rt-srsRAN_Project	Kept for reference	none yet GitHub
open5gs	fork of Open5GS, for the development and adaptation of 5GC network functions	5G Core	v0.1.4-5mbs-v2.7.2-o5gs 14 Jul 2026 GitHub

FIND OUT MORE

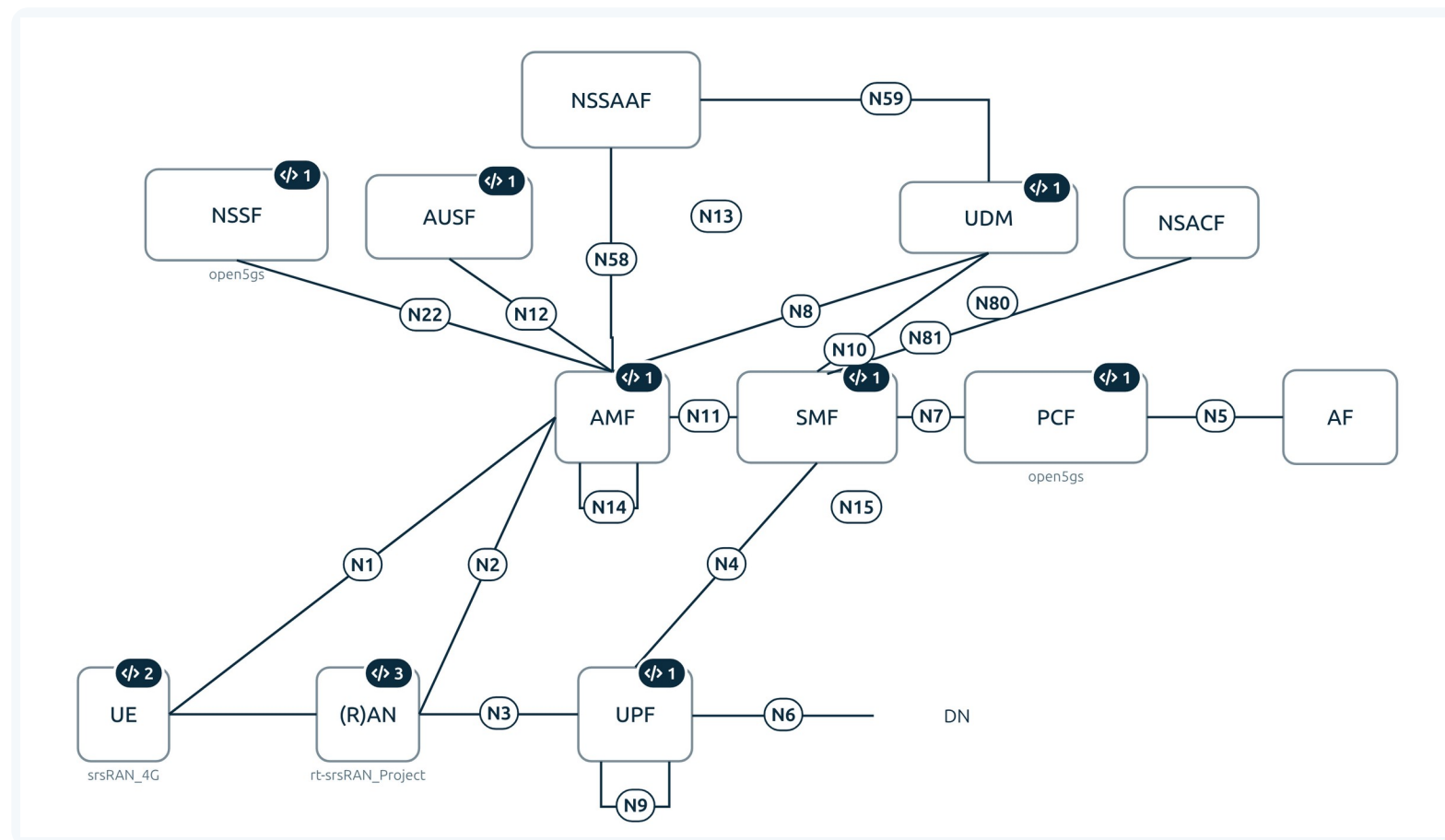
- Technical Analysis
- Specifications
- Reference Tools

released no release yet

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Repositories in the architecture

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



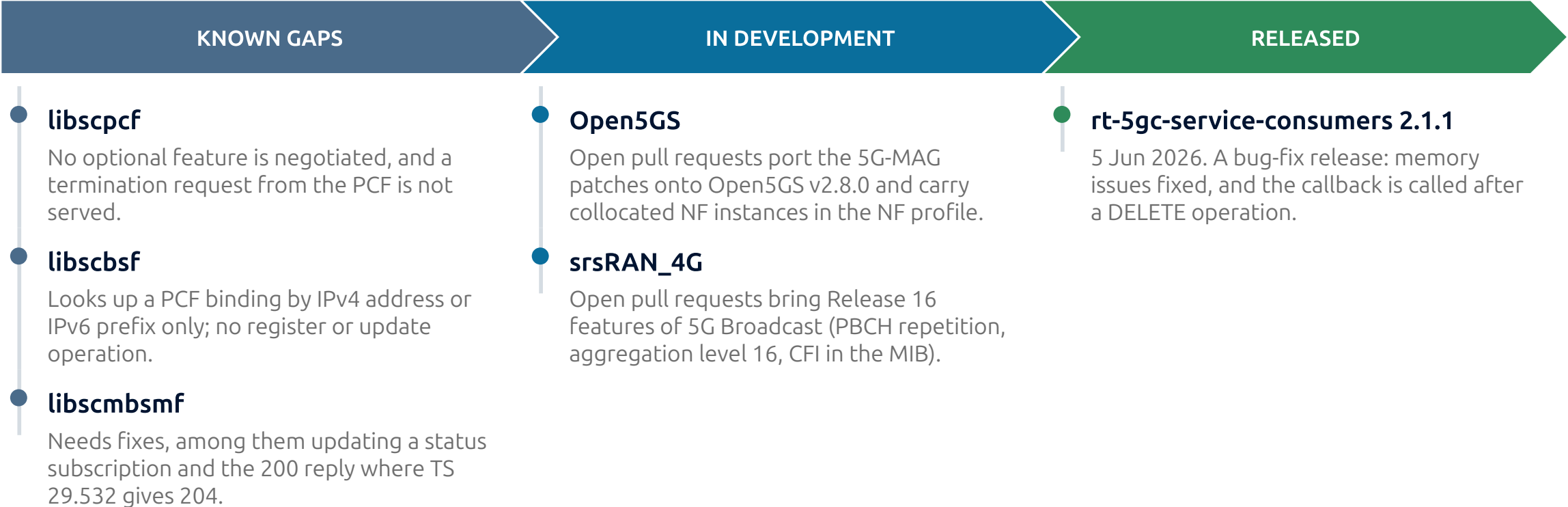
PROVIDED BY THE REFERENCE TOOLS

- 1 open5gs
- 2 srsRAN_4G
- 3 rt-srsRAN_Project

Boxes without a badge are not mapped to a repository.

Latest updates and roadmap

Status on 23 October 2026



MERGED SINCE 5 JUN 2026 9 pull requests in 2 repositories

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