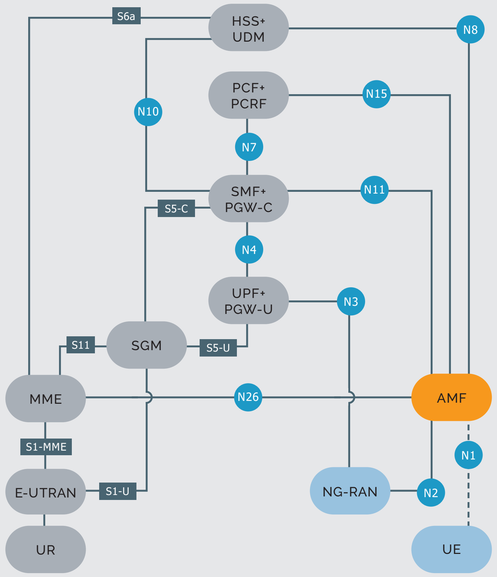
Monitoring 5G Services

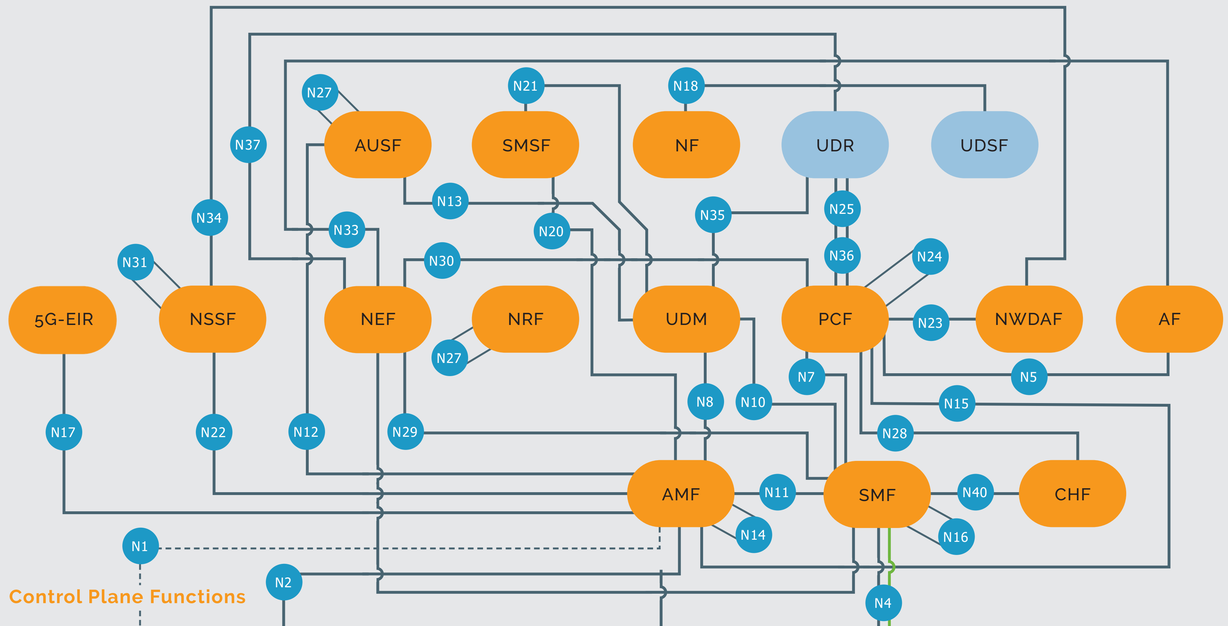
With RADCOM

RADCOMize your 5G NETWORK

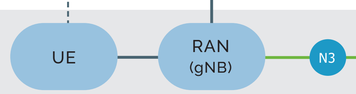
Non-roaming Architecture for Interworking between 4G EPC and 5GC



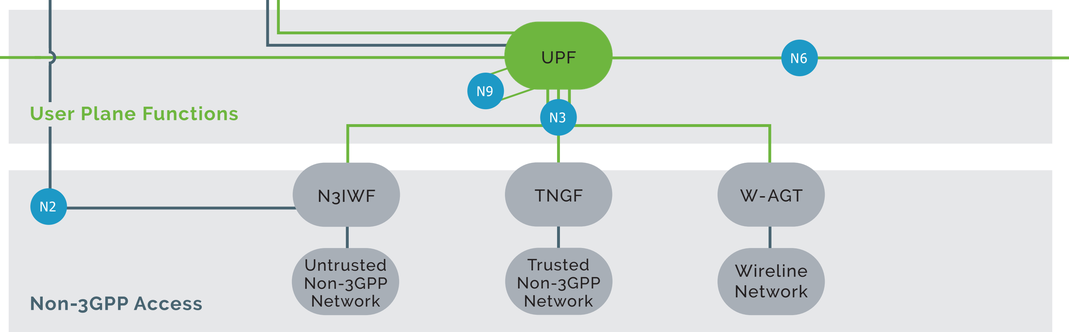
5G Service-based Architecture (SBA)



hPLMN



Access Network



5GC Reference Points

Reference Point	Between	Between	3GPP Spec	Protocol Stack
N1	UE	AMF	TS 23.501	IP | SCTP | NG-AP | NAS
N2	(R)AN	AMF	TS 23.501	IP | SCTP | NG-AP
N3	(R)AN	UPF	TS 23.501	IP | UDP | GTP-U
N4	UPF	SMF	TS 23.501	N4-C: IP | UDP | PFCP N4-U: IP | UDP | GTP-U
N5 *	PCF	AF	TS 23.501	IP | TCP | HTTP2 | JSON
N6	UPF	DN	TS 23.501	IP | UDP | GTP-U
N7 *	SMF	PCF	TS 23.501	IP | TCP | HTTP2 | JSON
N8 *	AMF	UDM	TS 23.501	IP | TCP | HTTP2 | JSON
N9	UPF	UPF	TS 23.501	IP | UDP | GTP-U
N10 *	SMF	UDM	TS 23.501	IP | TCP | HTTP2 | JSON
N11 *	AMF	SMF	TS 23.501	IP | TCP | HTTP2 | JSON
N12 *	AMF	AUSF	TS 23.501	IP | TCP | HTTP2 | JSON
N13 *	AUSF	UDM	TS 23.501	IP | TCP | HTTP2 | JSON
N14 *	AMF	AMF	TS 23.501	IP | TCP | HTTP2 | JSON
N15 *	AMF	PCF	TS 23.501	IP | TCP | HTTP2 | JSON
N16 *	SMF	SMF	TS 23.501	IP | TCP | HTTP2 | JSON
N17 *	AMF	5G-EIR	TS 23.501	IP | TCP | HTTP2 | JSON
N18 *	NF	UDSF	TS 23.501	IP | TCP | HTTP2 | JSON
N19 *	PSA	PSA	TS 23.501	IP | TCP | HTTP2 | JSON
N20 *	AMF	SMSF	TS 23.501	IP | TCP | HTTP2 | JSON
N21 *	SMSF	UDM	TS 23.501	IP | TCP | HTTP2 | JSON
N22 *	AMF	NSSF	TS 23.501	IP | TCP | HTTP2 | JSON
N23 *	PCF	NWDAF	TS 23.501	IP | TCP | HTTP2 | JSON
N24 *	PCF	PCF	TS 23.501	IP | TCP | HTTP2 | JSON
N25 *	UDR	PCF	TS 29.513	IP | TCP | HTTP2 | JSON
N26	AMF	MME	TS 23.502	IP | UDP | GTP-C
N27 *	NRF	NRF	TS 23.501	IP | TCP | HTTP2 | JSON
N28 *	PCF	CHF	TS 32.240	IP | TCP | HTTP2 | JSON
N29 *	NEF	SMF	Depreciated	IP | TCP | HTTP2 | JSON
N30 *	NEF	PCF	TS 29.554	IP | TCP | HTTP2 | JSON
N31 *	NSSF	NSSF	TS 23.501	IP | TCP | HTTP2 | JSON
N32 *	SEPP	SEPP	TS 23.501	IP | TCP | HTTP2 | JSON
N33 *	NEF	AF	TS 23.501	IP | TCP | HTTP2 | JSON
N34 *	NSSF	NWDAF	TS 23.501	IP | TCP | HTTP2 | JSON
N35 *	UDM	UDR	TS 23.501	IP | TCP | HTTP2 | JSON
N36 *	PCF	UDR	TS 23.501	IP | TCP | HTTP2 | JSON
N37 *	NEF	UDR	TS 23.501	IP | TCP | HTTP2 | JSON
N40 *	SMF	CHF	TS 23.501	IP | TCP | HTTP2 | JSON
N50 *	AMF	CBCF	TS 23.501	IP | TCP | HTTP2 | JSON
N51 *	AMF	NEF	TS 23.501	IP | TCP | HTTP2 | JSON
N51i *	AMF	I-NEF	TS 23.501	IP | TCP | HTTP2 | JSON
N52 *	NEF	UDM	TS 23.501	IP | TCP | HTTP2 | JSON
N53 *	I-NEF	NEF	TS 23.501	IP | TCP | HTTP2 | JSON
N55 *	AMF	UCMF	TS 23.501	IP | TCP | HTTP2 | JSON
N56 *	NEF	UCMF	TS 23.501	IP | TCP | HTTP2 | JSON
N57 *	AF	UCMF	TS 23.501	IP | TCP | HTTP2 | JSON
N58 *	AF	NEF	TS 23.501	IP | TCP | HTTP2 | JSON
MWu	UE	N3IWF	TS 23.501	CP: IP | IPsec (tunnel mode) | Inner IP | GRE UP: IP | IKEv2
Y1	UE	Non-3GPP Network	N/A	Not specified by 3GPP
Y2	Non-3GPP Network	N3IWF	N/A	Not specified by 3GPP

* a Service-based Interface

5GC Network Entities

Abbreviation	Network Function	Role
5G-EIR	5G-Equipment Identity Register	Enables authentication of devices in the network. Protects networks and revenues against the use of stolen and unauthorized devices.
AF	Application Function	Performs the same function as the EPC AF.
AMF	Access and Mobility Management Function	Performs most of the functions that the MME performs in a 4G network.
AUSF	Authentication Server Function	Performs the authentication function of 4G HSS.
CBCF	Cell Broadcast Center Function	Supports public warning system functionality.
CCS	Convergent Charging System Function	Provides account management, rating and charging functions.
CHF	Charging Function	Allows charging services to be offered to authorized network functions.
DN	Data Network	e.g. Internet access or 3rd party services.
I-NEF	Intermediate Network Exposure Function	Provides a mechanism for securely exposing services and features of the 5G core.
N3IWF	Non-3GPP Interworking Function	Responsible for interworking between untrusted non-3GPP networks and the 5G Core.
NEF	Network Exposure Function	Provides a mechanism for securely exposing services and features of the 5G core.
NF	Network Function	
Non-3GPP Network	Networks not defined by 3GPP	Examples of these are a Wi-Fi, and DSL network.
NRF	Network Repository Function	Allows every network function to discover the services offered by other network functions.
NSSF	Network Slice Selection Function	Redirects traffic to a network slice.
NWDAF	Network Data Analytics Function	Responsible for providing network analysis information upon request from network functions.
PCF	Policy Control Function	Governs the network behavior by supporting a unified policy framework. Also, provides policy rules to Control Plane functions.
PSA	PDU Session Anchor	The user plane function that terminates the N6 interface of a PDU session within a 5G core network.
RAN	Radio Access Network	Using radio technology provides access to the core network.
SEPP	Security Edge Protection Proxy	Protects control plane traffic that is exchanged between different 5G operator networks.
SMF	Session Management Function	Handles management of UE sessions.
SMSF	Short Message Service Function	Supports the transfer of SMS over NAS.
TNGF	Trusted Non-3GPP Gateway Function	Enables the UE to connect to the 5G Core over WLAN access technology.
UCMF	UE radio Capability Management Function	Used for storage of dictionary entries corresponding to either PLMN-assigned or manufacturer assigned UE Radio Capability IDs.
UDM	Unified Data Management	Performs parts of the 4G HSS function.
UDR	Unified Data Repository	A converged repository of subscriber information that can be used to service a number of network functions.
UDSF	Unstructured Data Storage Function	Part of the UDM entity. Network Functions (NFs) can store/retrieve "unstructured" data from an Unstructured Data Storage Function (UDSF).
UE	User Equipment	Any device used directly by an end-user to communicate (a handheld phone, laptop etc.).
UPF	User Plane Function	A combination of the data plane parts of the SGW and PGW in 4G.
W-AGF	Wireline Access Gateway Function	Enables wireline access to the 5G Core.

5G Deployment and Migration Options - Non-Standalone (NSA) and Standalone (SA)