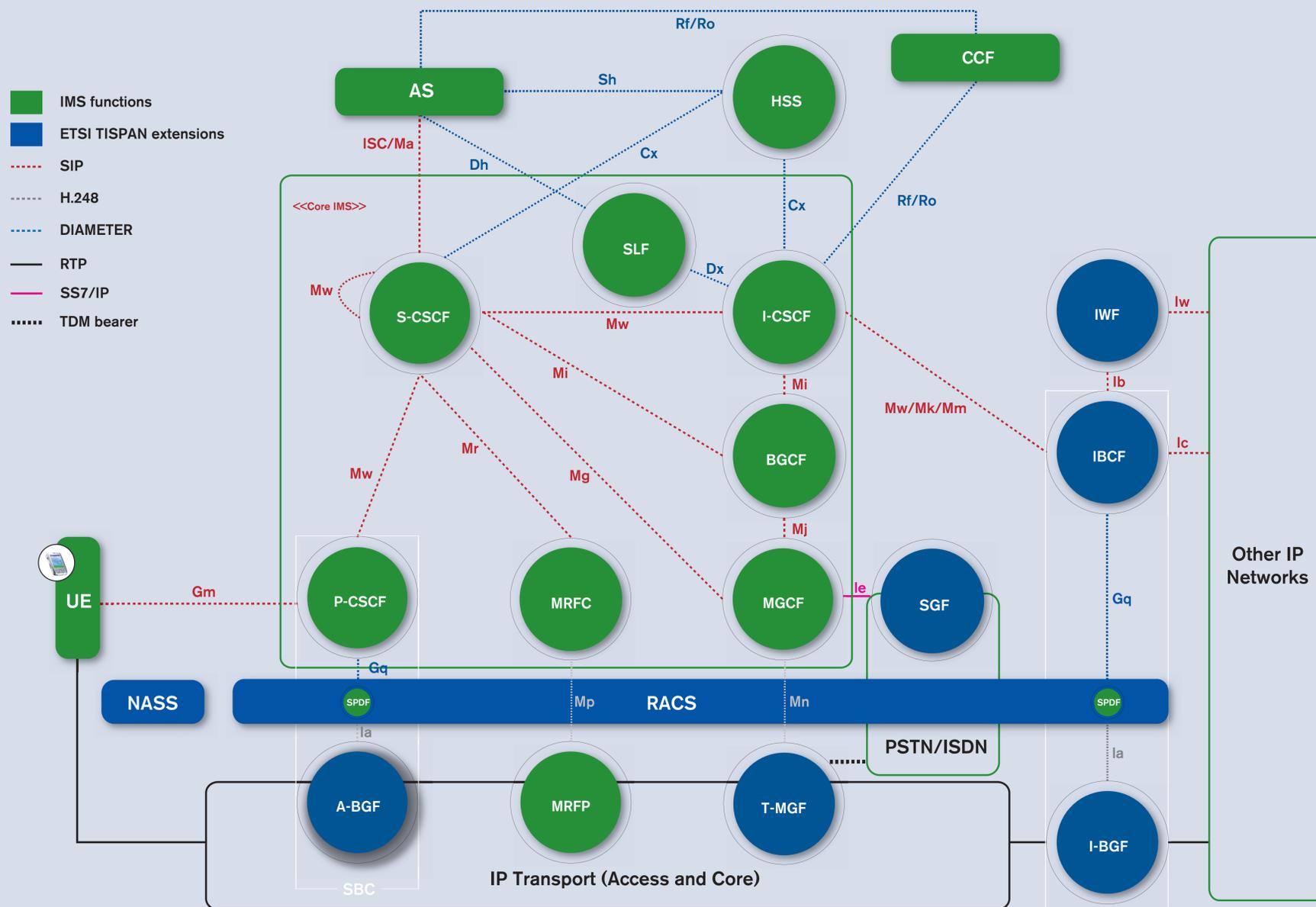


Fixed Mobile Convergence

IMS Architecture (Source: TISPAN-3GPP)



- IMS functions
- ETSI TISPAN extensions
- - - - SIP
- - - - H.248
- - - - DIAMETER
- RTP
- SS7/IP
- - - - TDM bearer

- [A-BGF] Access-Border Gateway Function**
 - Controls the transport boundary at layers 3 and 4 between subscribers and the service provider's network
 - Acts as a pinhole firewall and network address translation (NAT) device protecting the service provider's IMS core
 - Controls access by packet filtering on IP address/port and opening/closing gates (pinholes) into the network
 - Uses network address and port translations (NAPT) to hide the IP addresses/ports of the service elements in the IMS core
 - Performs quality of service (QoS) packet marking, bandwidth and signaling-rate policing, usage metering and QoS measurements for the media flows
 - Provides network-based NAT traversal for the media flows in wireline networks
- [AS] Application Server**
 - Provides service control for IMS
 - Interacts with the HSS to obtain subscriber profile information
 - Supports applications such as Presence, Conferencing, Online Charging, IP Context services and Voice Call Continuity (VCC)
- [BGCF] Breakout Gateway Control Function**
 - Selects the network in which PSTN breakout is to occur
 - Selects local MGCF or peer BGCF
 - Provides security through authorization of peer networks
- [CCF] Charging Collection Function**
 - Transfers charging information from IMS entities to the network operator's chosen billing system(s)
- [HSS] Home Subscriber Service**
 - Supports IMS level authentication and authorization
 - Maintains IMS subscriber profile(s)
 - Keeps track of the S-CSCF assigned to a subscriber
- [IBCF] Interconnection Border Control Function**
 - Provides signaling level interconnection with other IP-based services subsystem
 - Controls the boundary between different service provider networks
 - Provides signaling security for the IMS core
 - Invokes the IWF function when interworking between different SIP profiles or different protocols are required
 - Provides IPv4/IPv6 interworking and session screening
 - Performs admission control and bandwidth allocation
 - Interacts with I-BGF for control of the boundary at the transport layers
- [I-BGF] Interconnect Border Gateway Function**
 - Controls the transport boundary at layers 3 and 4 between service provider networks
 - Acts as a pinhole firewall and NAT device protecting the service provider's IMS core
 - Controls access by packet filtering on IP address/port and opening/closing gates (pinholes) into the network
 - Uses NAPT to hide the IP addresses/ports of the service elements in the IMS core
 - Performs QoS packet marking, bandwidth and signaling-rate policing, usage metering and QoS measurements for the media flows
- [I-CSCF] Interrogating CSCF**
 - Serves as the initial point of contact for other networks
 - Performs stateless SIP proxy functions
 - Selects a S-CSCF for a user performing SIP registration
 - Routes SIP requests received from another network to the S-CSCF
 - Queries HSS for the address of the S-CSCF
 - Sends SIP requests or responses to:
 - I-CSCF in another operator's network
 - S-CSCF in another operator's network
 - MGCF for mobile termination call after processing INVITE
 - Provides topology hiding internetwork gateway function
- [IWF] Interworking Function**
 - Invoked by IBCF when interworking between different SIP profiles or different protocols is required
- [MGCF] Media Gateway Control Function**
 - Controls T-MGF in order to allocate, modify and deallocate media resources in the T-MGF
 - Communicates with the S-CSCF, I-CSCF and BGCF
 - Performs protocol conversion between ISUP and SIP
 - Supports interworking between SIP and non-call-related signaling
 - Determines the next hop in IP routing for incoming calls from legacy networks

- [MRFC] Media Resource Function Controller**
 - Controls the media stream resources in the MRFP
 - Interprets information coming from an AS via the S-CSCF and controls the MRFP accordingly
- [MRFP] Media Resource Function Processor**
 - Controls bearers on the Mb reference point
 - Provides resources to be controlled by the MRFC
 - Mixes incoming media streams (e.g., for multiple parties)
 - Sources media streams (e.g., for multimedia announcements)
 - Processes media streams (e.g., audio transcoding and media analysis)
 - Provides floor control (i.e., manage access rights to shared resources in a conferencing environment)
- [NASS] Network Attachment Subsystem**
 - Provides dynamic provision of IP addresses and on the terminal configuration parameters
 - Supports IP layer authentication prior to or during address allocation procedure
 - Authorizes network access based on user profiles
 - Provides IP layer location management
- [P-CSCF] Proxy CSCF**
 - Serves as the initial point of contact for UE to the network
 - Performs stateful SIP proxy functions
 - Sends the SIP REGISTER request received from the UE to an I-CSCF
 - Sends all subsequent SIP messages received from the UE to the S-CSCF
 - Inserts public user identity for UE-initiated requests
 - Performs SIP message compression
 - Enforces the bearer resources as negotiated in the SDP when the service-based policy is used
- [RACS] Resource and Admission Control Subsystem**
 - Performs admission control to the access and aggregation segment of the network
 - Performs resource reservation that permits applications to request bearer resources in the access and aggregation networks
 - Uses the service-based policy to determine how to support requests from applications for transport resources
 - Controls the traversal of far-end NAT. Controls the near-end NAT at the borders of the IMS network and at the border between the core network and an access network
- [S-CSCF] Serving Call Session Control Function**
 - Acts as a registrar defined in [IETF RFC 3261]
 - Retrieves the subscriber profile from the HSS, including AS filter criteria
 - Provides session control for the registered endpoint sessions
 - Ensures that the media indicated by SDP for a session are within boundaries of the subscriber profile
 - Interacts with application service platforms for the support of services
- [SGF] Signaling Gateway Function**
 - Provides reliable transport of SS7 signaling over IP using SCTP
 - Converts SIP signaling to ISUP/BICC signaling
- [SLF] Subscription Locator Function**
 - Enables the I-CSCF, S-CSCF and AS to find the address of the HSS that contains the subscriber data for a given user identity
- [SPDF] Service Policy Decision Function**
 - Acts as a policy decision point for service-based local policy control of IP bearer resources
 - Makes decisions about IP bearer resource allocation requests
- [T-MGF] Trunking Media Gateway Function**
 - Interacts with the MGCF for resource control
 - Terminates bearer channels from circuit-switched network and media streams from packet network
 - Supports media conversion, bearer control and payload processing
 - Detects events and notifies the MGCF

