IMS
Solutions

CSCF

1. Description

CSCF (Call Session Control Function) is a system within the 3G network that handles SIP-based call control and session management to enable a wide range of multimedia services. It fully complies with the CSCF specifications defined in the IP Multimedia Core Network (IM-CN) as per 3GPP Release 6 and also incorporates some features introduced in Release 7. Telcoware CSCF supports essential functionalities like Proxy-CSCF (P-CSCF), Interrogating-CSCF (I-CSCF), and Serving-CSCF (S-CSCF), along with features such as BGCF and IBCF.

● P-CSCF

· Function as initial connection point for IMS UE to access IM-CN Subsystem(IMS)

· Support IPsec and SigComp

· Interwork with PCRF through AF to provide QoS

· Support telecommunication for UE in NAT through IMS-ALG

● I-CSCF

· Act as access point to IMS Network that callee belongs to, Provide HSS interworking and THIG defined by standard.
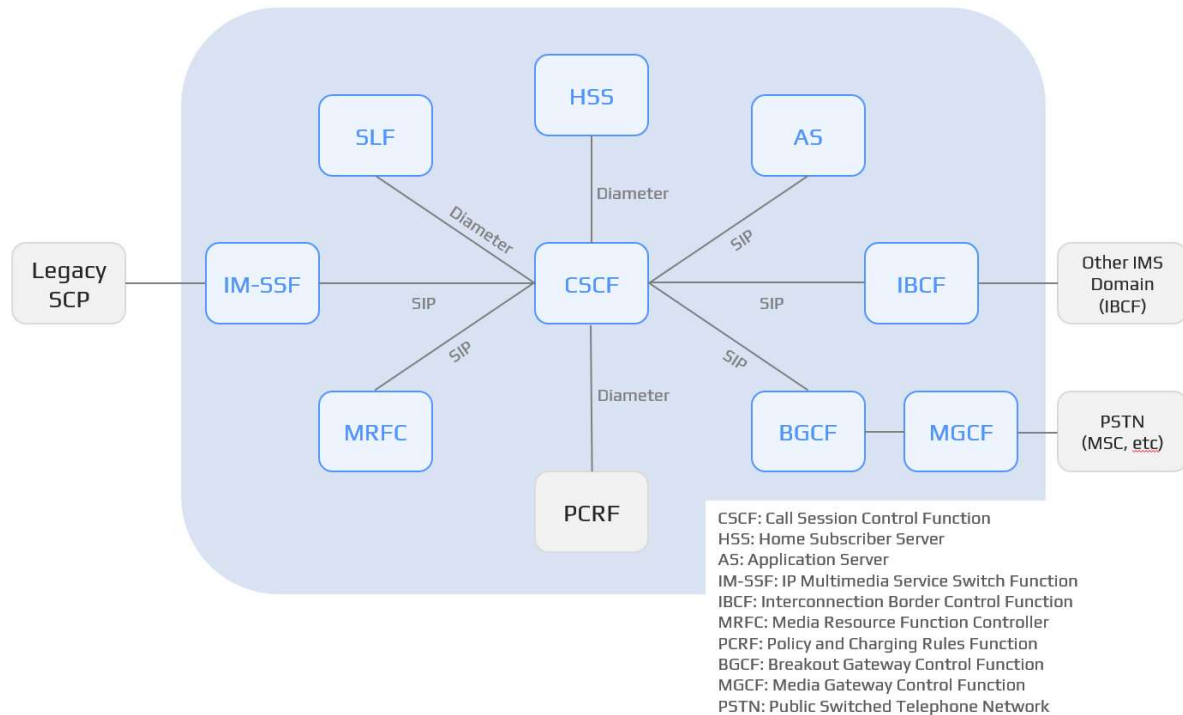
● S-CSCF

· Voice call and video call are seamlessly integrated, enabling a smooth transition between them without the need to disconnect or hang up

· Manage all session states of IMS

· Interwork with HSS to retrieve subscriber profile and provide services, including interworking with an Application server, based on received iFC

· Public Service Indicator (PSI)

● BGCF

· Select MGCF for interworking with PSTN

● IBCF

· Security and NAT traversal feature for interworking between IMS networks

CSCF: Call Session Control Function
HSS: Home Subscriber Server
AS: Application Server
IM-SSF: IP Multimedia Service Switch Function
IBCF: Interconnection Border Control Function
MRFC: Media Resource Function Controller
PCRF: Policy and Charging Rules Function
BGCF: Breakout Gateway Control Function
MGCF: Media Gateway Control Function
PSTN: Public Switched Telephone Network

2. Key Features

● Subscriber registration management

● P2P session setup and control

● P2P Messaging

● Support for various multimedia services

● Bearer system management

● Signaling compression

● IPsec feature

● Cloud Native Feature support

· Container based Micro Services Architecture

· Independent Component Scale

· Rapid Deployment & Self-Healing

· Session-Less Logic
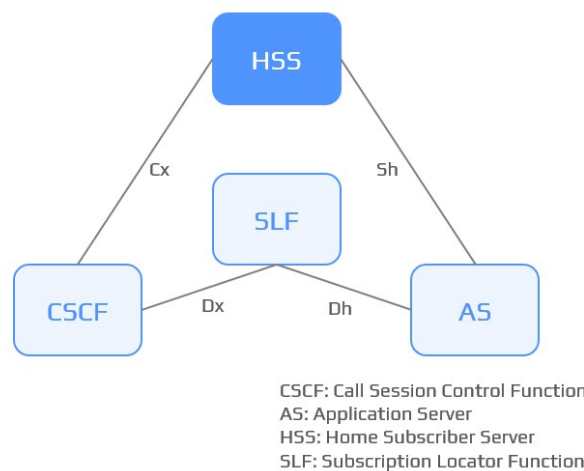
● Compliance with international standards

· 3GPP TS 23.218, 23.228, 24.228, 24.229, 29.228, 29.229, 29.329,

· IETF RFC3261, RFC3262, RFC3263, RFC3264, RFC2976

HSS

1. Description

　HSS(Home Subscriber Server) functions as a semi-permanent database for subscriber data, including ID, service permission, authentication, status, and iFC information, which is maintained through provisioning on IMS network. It interfaces with various systems such as I/S-CSCF, SIP AS, OSA SCS, IM-SSF to exchange and store subscriber data.

　In the 3GPP roadmap, HSS integrates with HLR and AuC to support subscriber information for Legacy CS/PS and LTE networks.

CSCF: Call Session Control Function
AS: Application Server
HSS: Home Subscriber Server
SLF: Subscription Locator Function

2. Key Features

● Subscriber information management

● Service Profile management

● Interworking with CSCF/AS through Diameter

● Compliance with the international standards

・3GPP TS 23.228, 29.228, 29.229, 29.328, 29.329

・IETF RFC3588

IBCF

1. Description

IBCF(Interconnection Border Control Function) serves as a border controller when connecting with the IMS(IP Multimedia Subsystem) network, addressing security and interworking issues when interfacing with different networks.

IBGF(Interconnection Border Gateway Function) facilitates media relay among user equipment(UE) within the service provider's network.
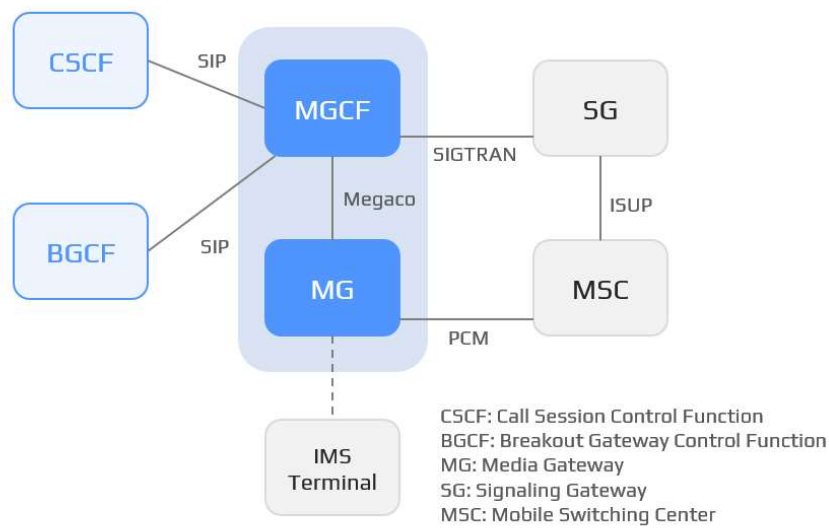

CSCF: Call Session Control Function
IBCF: Interconnection Border Control Function
TrGW: Transition Gateway
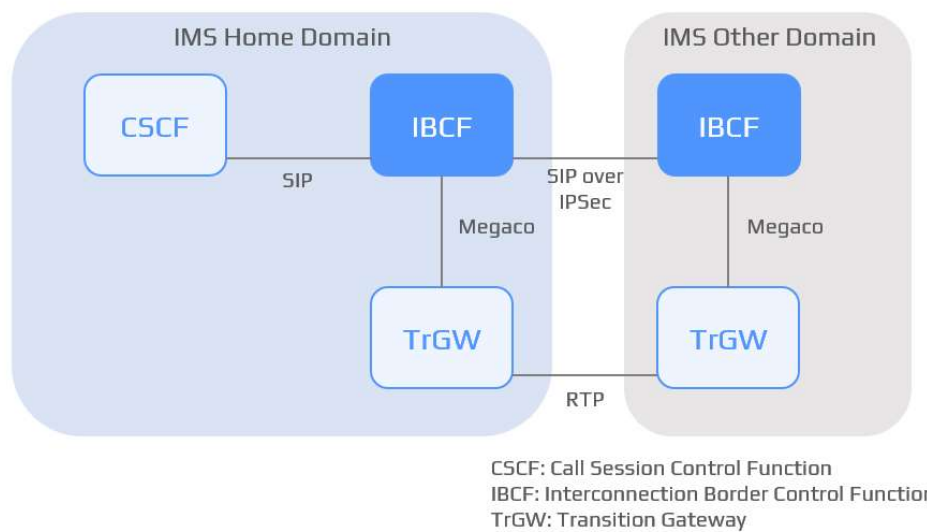
2. Key Features

● Security

● NAT support and media control

● Session filtering

● Topology and infrastructure hiding

● Protocol conversion and routing

● Billing

● Media Relay/Transcoding

● PNF/VNF Type support

MGCF

1. Description

MGCF (Media Gateway Control Function) acts as a gateway connecting the IMS network with the PSTN/CS network. It plays a crucial role in converting and mapping between the ISUP call control protocol used in the PSTN/CS network and the SIP call control protocol used in the IMS network. Additionally, it can manage MG resources using Megaco/H.248 when required.

CSCF: Call Session Control Function
BGCF: Breakout Gateway Control Function
MG: Media Gateway
SG: Signaling Gateway
MSC: Mobile Switching Center

2. Key Features

● SIP/ISUP message conversion

● IMS signaling interworking

● CS(Circuit Switched) signaling interworking

● Media resource(Megaco/H.248) control

SBC/IMS-ALG

1. Description

 Telcoware SBC (Session Border Controller) serves as a network boundary node, safeguarding a business operator's private network from malware attacks originating in the open public network while ensuring service accessibility and QoS.

 It supports SIP, RTP, MSRP, and XCAP protocols for a wide range of services including voice, video, messaging, and multimedia.
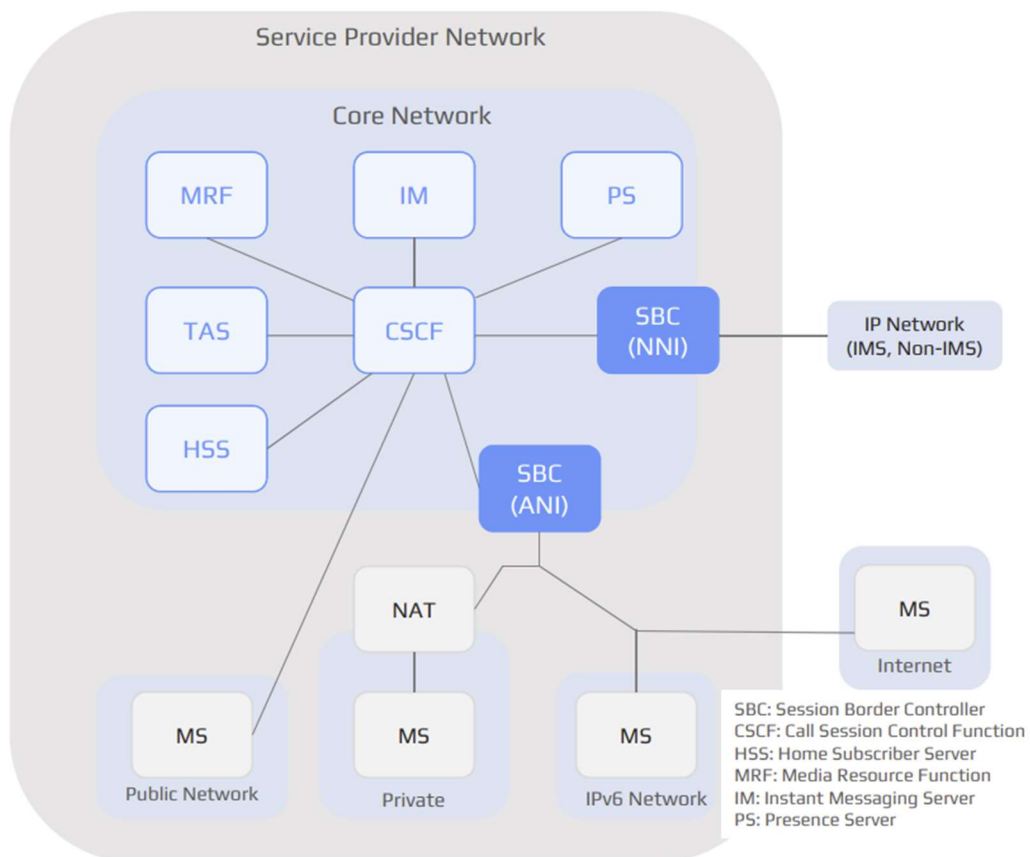
2. Key Features

● SIP/RTP/MSRP/XCAP NAT Traversal

● IPv4/IPv6 Interworking

● High-capacity media processing

● Encryption/decryption(TLS/SRTP)

- DDoS protection

- Packet Flooding attack protection

- Overload control

- Realm-based session control

- Diffserv/ToS Marking

- Lawful interception feature

- Available within 3GPP P-CSCF, IBCF

- ETSI TISPAN BGF Compliant

C4-SSW

1. Description

Telcoware C4-SSW (Softswitch) is a system designed for IP-based call processing. This system offers the same services as the traditional circuit-based C4 Switch, while also supporting a variety of next-generation IP-based protocols, thus extending the range of services it can provide. C4-SSW controls SG and MG/TG to deliver a wide array of services and seamlessly integrates with various external network nodes.

● SG

· SG(Signaling Gateway) allows IP-based SSW to interwork with the original SS7 network. It interworks with SSW through IP-based protocol, SIGTRAN and supports various forms of interworking including M2UA, M3UA, and SUA.

● MG/TG

· MG(Media Gateway) and TG(Trunk Gateway) offer E1 interfaces for interworking with TDM-based voice networks, along with other interfaces including ATM, PRI, and R2. C4-SSW controls MG/TG using the Megaco/H.248 protocol.
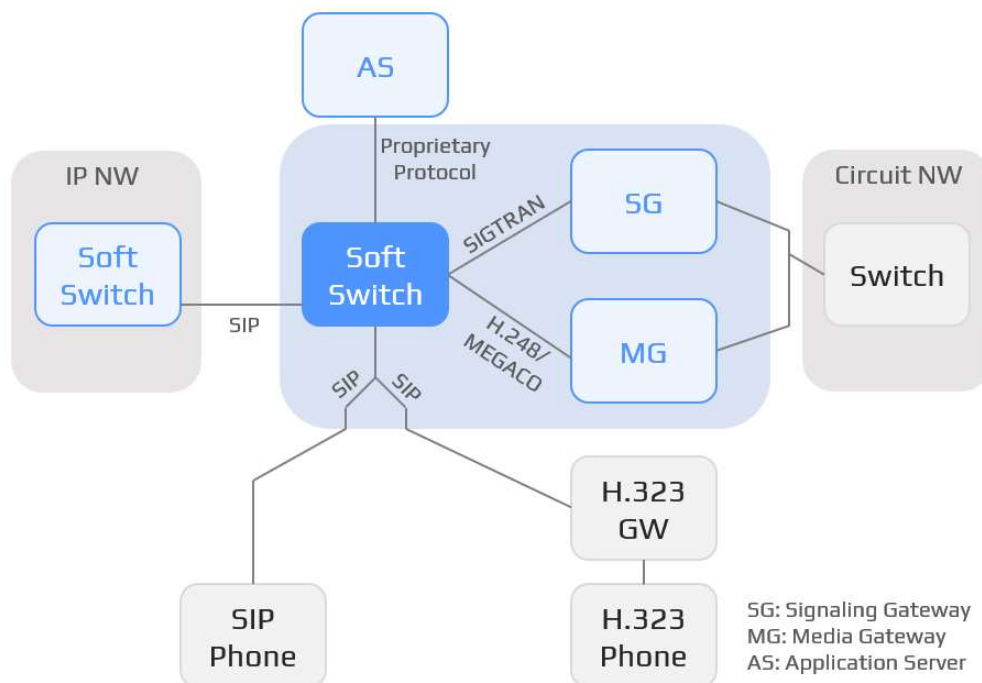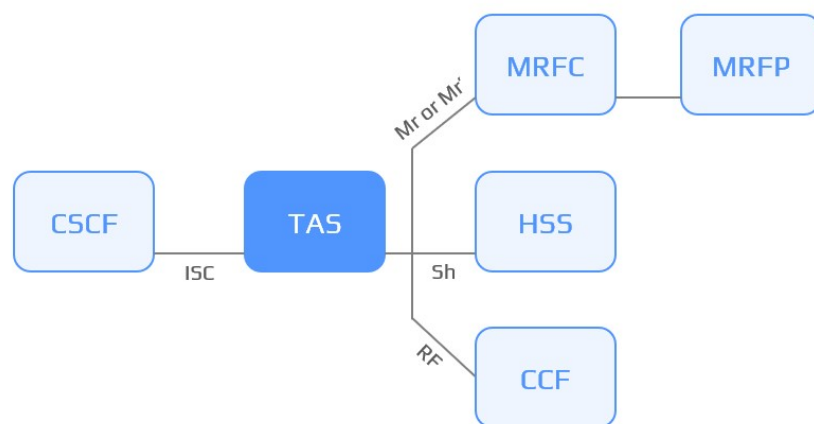
2. Key Features

● SIP protocol processing

● ISUP protocol processing

● PRI protocol processing

● R2 protocol processing (through Megaco)

● MG, TG control (Megaco/H.248)

● Interworking with SG (using SIGTRAN protocol)

● Call processing, number translation, routing and resources management

● Interworking with Intelligent Network (INAP)

● A variety of trunking services

● Easily upgraded to 3GPP IMS or 3GPP2 MMD network

TAS

1. Description

IMS Multimedia Telephony service encompasses a variety of services related to or combined with user communication. TAS(Telephony Application Server) is a system that additional multimedia services between users on the IMS platform.

TAS provides services like caller identification, outgoing/incoming call restrictions, call forwarding, lettering, ring-back tones, and more, enhancing users' communication experience.

2. Key Features

● Compliance with 3GPP TS 24.229, 23.228, 22.173, 24.173, and 29.163 standards

● PNF/VNF Type support

● Interwork with HSS for subscriber status inquiry

● Interwork with MRF for announcement

● Configure add-on service through using defined SIP-based feature code

· Provide direct interworking Ut Interface between UE and TAS
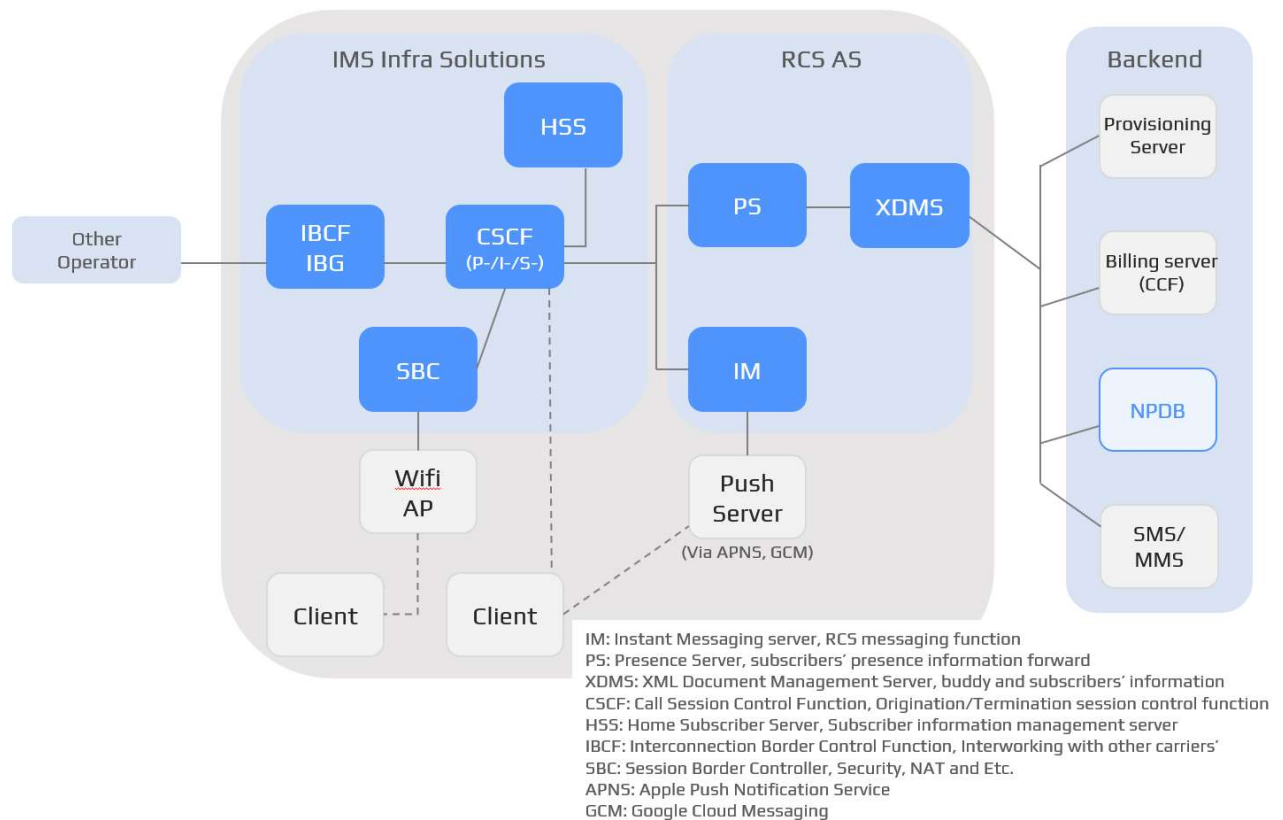
· Offer SIP Interface through CSCF

● Service provided

· Video Conference Call: A multi-party video conference service that allows you to switch to a conference call by adding participants during the call

· Password-Protected Calling: Enable calls to be made only to individiuals who know the password

· Caller Number Display/Non-Display: Either show the caller's phone number on the receiving device or prevent its display.

· Lettering: Information set by the caller, such as a nickname, is shown to the recipient when the call is made.

· Ring Back Tone: Information set by the recipient is displayed to the caller when the call is connected.

· Call Waiting: Allow the receiver to accept another call when they are already on a call

· Call Hold: Temporarily place a call on hold

· Call Forwarding(Unconditional/Conditional): Forward calls to a third-party specified by the receiver

· Call Blocking(International Outgoing Call Block, Anonymous Incoming Call Block): Block outgoing or incoming calls

· Voice Messaging: Let callers leave a voice message when the receiver can't answer

· Missed Call Notification: Notify the receiver of missed calls when they can't answer

· Call Completion: Inform the caller when the receiver, who couldn't answer earlier, is available to answer the call

RCS(IM,PS)

1. Description

Telcoware RCS IM System is a communication system that enables one-to-one or group chatting and file transfers. It operates independently from the Access Network on the IP Network, ensuring the same service is provided across various wired and wireless networks, including the Internet, Wireless LAN, and mobile networks like CDMA 1x, EV-DO, and GPRS.

IM: Instant Messaging server, RCS messaging function
PS: Presence Server, subscribers' presence information forward
XDMS: XML Document Management Server, buddy and subscribers' information
CSCF: Call Session Control Function, Origination/Termination session control function
HSS: Home Subscriber Server, Subscriber information management server
IBCF: Interconnection Border Control Function, Interworking with other carriers'
SBC: Session Border Controller, Security, NAT and Etc.
APNS: Apple Push Notification Service
GCM: Google Cloud Messaging

2. Key Features

● One-to-one or group chatting

● File transfer (using MSRP/HTTP)

● IM to SMS/MMS and SMS/MMS to IM through IPSMGW interworking

● Broadcast communication to simultaneously send message to RCS and SMS users

● Gifticon(Gift card) server interworking

● Presence interworking

● CSCF interworking

● Billing information collection and/or interworking with billing server

● The latest SIP Stack: RFC3261, RFC3262, RFC3263, RFC3264, RFC3265, RFC3320, RFC3325, RFC3428, RFC3455

● Compliance with international standards: 3GPP R5, 3GPP R6, OMA SIMPLE IM, RCS-e

MRF

1. Description

MRF(Media Resource Function) provides media resources for the home network and consists of the following two components:

● MRFC(Media Resource Function Controller): Communicate with the application server and

control MRFP's media resources

● MRFP(Media Resource Function Processor): Directly handle all media resources and perform the following functions:

· Mixing of incoming media streams for multi-party use

· Managing media stream sources for multimedia announcements

· Processing media stream with audio transcoding and media analysis
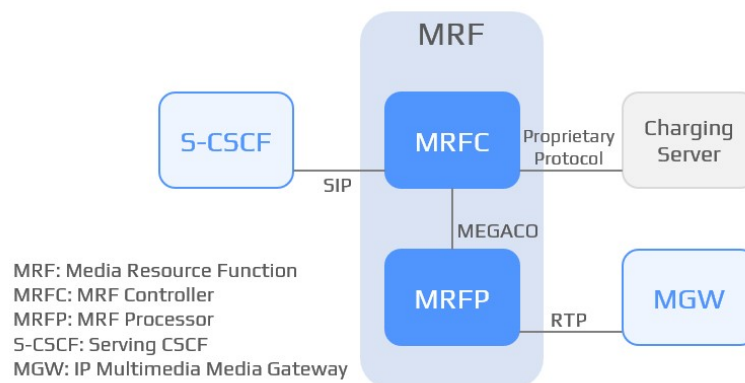
2. Key Features

● MRF Media Processing Features: Including DTMF detection, Tone transmission, Announcement transmission, Transcoding, Audio conference, and Video conference

● Service Provided

· AS Interworking(SIP) : CSCF, TAS

· Billing Interworking Capability(Diameter)

· Service-Specific Media Resource Management and Audio Resource Management

· Media Resources regardless of User Access Method

· Media Resource Control and Diverse Multimedia Resource Management

· Group Management, including Group Session Management, and Channel Management

● Compliance with international standards- 3GPP TS 22.228, 23.002, 23.218, 23.228, 24.228, 24.229, 29.002, 29.333, RFC3261, RFC3262, RFC3264, RFC3265, RFC2976, and etc.