Rich Communication Centre Enabler

Approved Version 1.0 – 25 Oct 2016

Open Mobile Alliance

OMA-ER-RCC-V1_0-20161025-A

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1. Scope

This Enabler Release (ER) document is a combined document of architecture and technical specification for Rich Communication Centre (RCC). The RCC Enabler provides a basic architecture with different components and interfaces involved. It also defines the functionalities supported on the specified components and interfaces required to enable several requirements as defined in [RCC-RD].

2. References

2.1 Normative References

[OSE] "OMA Service Environment", Open Mobile Alliance™, URL:http://www.openmobilealliance.org/

[RFC2119] "Key words for use in RFCs to Indicate Requirement Levels", S. Bradner, March 1997, URL:http://www.ietf.org/rfc/rfc2119.txt

[RFC4234] "Augmented BNF for Syntax Specifications: ABNF". D. Crocker, Ed., P. Overell. October 2005, URL:http://www.ietf.org/rfc/rfc4234.txt

[SCRRULES] "SCR Rules and Procedures", Open Mobile Alliance™, OMA-ORG-SCR_Rules_and_Procedures, URL:http://www.openmobilealliance.org/

2.2 Informative References

[OMADICT] "Dictionary for OMA Specifications", Version 2.9, Open Mobile Alliance™, OMA-ORG-Dictionary-V2_9, URL:http://www.openmobilealliance.org/

3. Terminology and Conventions

3.1 Conventions

The key words “MUST”, “MUST NOT”, “REQUIRED”, “SHALL”, “SHALL NOT”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” in this document are to be interpreted as described in [RFC2119].

All sections and appendixes, except “Scope” and “Introduction”, are normative, unless they are explicitly indicated to be informative.

3.2 Definitions

Agent group	RCC provide RCC service based on the agent group. Agent group is created by RAF, and include one RAF (creator) and one or more sub-agent. MSF can provide RCF service according to Agent group’s busy status.
Master agent	The RAF who create the agent group.
Sub-agent	The RAF member of the agent group.

3.3 Abbreviations

ASF	Automatic Service Function
CIF	Context Information Function
CSTMF	Call -Session-Task Management Function
CTI	Computer Telephony Integration
IVR	Interactive Voice Response
IVVR	Interactive Voice/Video Response
MSF	Manual Service Function
OMA	Open Mobile Alliance
RAF	RCC Agent Function
RCF	RCC Client Function
SMMF	Social Media Management Function

4. Introduction

Communication centre service has been a prosperous industry for many years; however, traditional communication centres, specifically call centres, are becoming restricted under the background of Web2.0 and mobile internet booming, evolution of network to ALL-IP and the tendency of Telco capabilities exposure due to its self-contained system and outdated business mode. What's more important is that cloud computing is emerging now which also has tremendous impact on communication centre.

There have had some standards for traditional call centre services, including ECMA CSTA, ECMA TSAPI, ITU-T Y.2216, etc. However, these standards are majorly designed for legacy network or specifically for network-coupled services, and usually provide voice-based services and cannot accommodate emerging\existing new requirement and tendency, especially for on demand services in the internet and cloud computing scenarios.

4.1 Version 1.0

RCC1.0 ER provides architecture and technical specification of RCC services. Several aspects are described in this specification, including:

- High-level RCC services, e.g., agent (de-)registration, agent assignment, Master agent and sub-agent management.
- Social media based RCC functions
- Cloud-based RCC services (e.g., virtualization, multi-tenants)
- RCC capability APIs

5. Architectural Model

5.1 Architectural Diagram

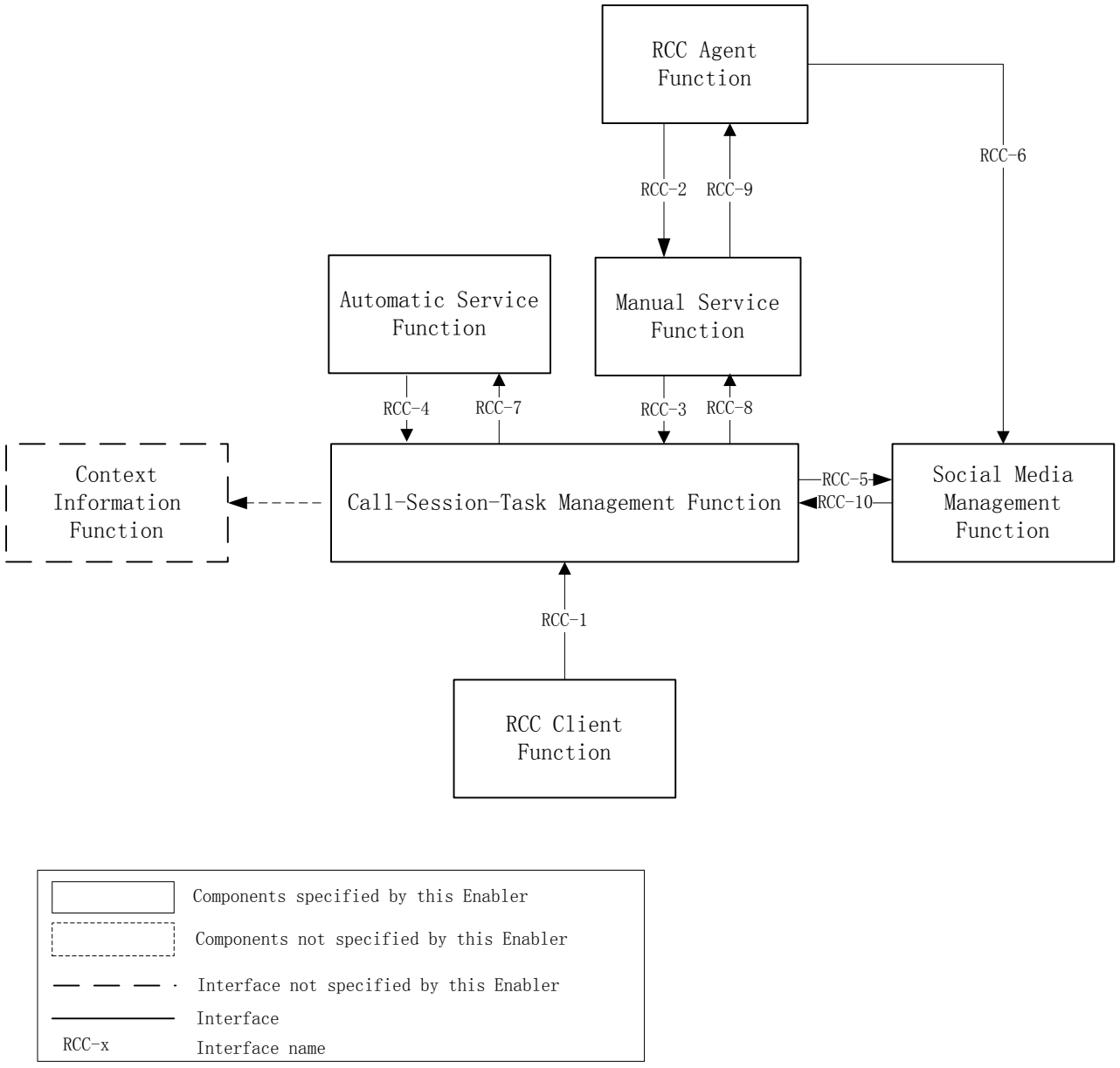

Figure 1: RCC Architectural Diagram

5.2 Functional Components and Interfaces/reference points definition

5.2.1 RCC Functional Components

This section identifies and describes the logical functional entities involved in RCC functional architecture. The purpose of this section is to ensure that all possible functions are identified which are required to enable a RCC service.

The functions involved in RCC can be classified into three categories: client-side functions, server-side functions and external functions.

5.2.1.1 Server-side functions

5.2.1.1.1 Automatic Service Function (ASF)

ASF is responsible for automatic service activities within RCC platform. This function SHALL enable the RCC clients serving their own inquiries by following automatic guidance. Besides, the ASF SHALL also enable the social media information processed automatically. Typical implementation and deployment of ASF are IVR/IVVR or portal. Functions supported by ASF include:

- Automatic real-time interactive response: the ASF supports to accept the calls and sessions distributed by the CSTMF, and provide automatic real-time interactive response to the RCC clients via Interactive Voice Response (IVR), Interactive Voice/Video Response (IVVR).
- Automatic non-real-time interactive response: the ASF supports to accept the non real-time tasks distributed by the CSTMF and provides automatic services to the RCC clients and provides automatic reply to social web pages. Non-real-time usually refers to text-alike services, such as text-based robot services, social-media automatic service, etc.
- Real-time service transfer: the ASF supports to transfer real-time service from the ASF to the MSF according to client's choices. The real-time services include call and session related services.
- Service transfer for the RCF initiated non real-time services: the ASF supports to transfer non real-time service from the ASF to the MSF for the RCF through which the RCF can acquire manual services.
- Service transfer for supporting social media services: the ASF supports to determine and manage social media information services transferring to the MSF based on certain criteria.

5.2.1.1.2 Manual Service Function (MSF)

MSF is responsible for manual service activities within RCC platform. This function SHALL enable RCC session/call, events and tasks managed, queued and distributed. Additionally, this function SHALL also support proper RCC agents selecting for RCC Client. Typical implementation and deployment of MSF is CTI. Functions supported by MSF include:

- RCF queuing: The MSF supports to queue the requests from the RCF in case there is no RAF available at the moment, and distribute a request to the RAF if there is any RAF available.
- Social media queuing: The MSF supports to queue social media tasks in case there is no RAF available at the moment and distributes social media tasks to the RAF if there is any RAF available.
- RAF registration/deregistration: The MSF supports to accept registration/deregistration request from the RAF, process the request and reply the result to the RAF.
- RAF request of creating sub-agent: The MSF supports to accept the sub-agent creation request from the RAF, create sub-agents and reply the creation result to the RAF.
- RAF selection & distribution: The MSF supports to accept message of requesting RAF, and determine vacant online RAF to provide RAF service. If there are no vacant online mobile RAFs available, the MSF chooses a mobile RAF from offline mobile RAFs to serve as a RAF according to the skills and terminal context information of the RAF.
- Mobile RAF notification & activation: After selecting one offline RAF, the MSF sends a notification message to the mobile terminal based on its serving ID which is determined by the selected RAF ID. The notification message is used to notify the RAF to access to the MSF through mobile terminal to provide RAF service.
- Charge RCC customers: The MSF supports charging customers based on different polices. The MSF supports setting charging polices from the RAF through RCC-2.
- RAF authentication: The MSF supports to authenticate the agent before providing service to customers.

5.2.1.1.3 Call-Session-Task Management Function (CSTMF)

CSTMF is responsible for call, session and task management activities within RCC platform. This function SHALL support calls, sessions and tasks management and distribution to ASF or MSF. The tasks refer to non real time services, including text-based services, social media procession, etc.Functions supported by CSTMF include:

- Call & Session management and distribution: The CSTMF supports to manage and control calls and sessions distributed from the underlying communication network, and distribute the calls and sessions to the ASF and MSF accordingly through interface RCC-7 and RCC-8.

- Social media information acquirement: The CSTMF supports two types of social media information acquirement. One is subscription-notification model, which refers that the CSTMF subscribes social media information from the SMMF. The subscription includes certain policies for the social media information aggregation. Then the CSTMF receives notification information from the SMMF. The other one is request-response model, which refers that the CSTMF sends a request to the SMMF and receives response from the SMMF.

- Task management and distribution for RCF: The CSTMF supports to manage and control tasks from the RCF (e.g., text chatting), and distributes the tasks to the ASF or MSF accordingly through interface RCC-7 or RCC-8. The management and control refers to tasks queuing based on certain policies (e.g., skills) in case there are no RAF available. If there is any RAF available, the CSTMF SHALL choose one task and distribute the task to the RAF. The distribution refers to tasks scheduling for the ASF or MSF.

- Task management and distribution for SMMF: The CSTMF supports to receive social media information from the SMMF which aggregates information from target websites, formats the information according to certain policies and then the CSTMF distributes the formatted information to the ASF or the MSF for further process based on the analysis of the attributes in the information through interface RCC-7 or RCC-8. If the attributes matches pre-configured matching information, the CSTMF distributes the social media information to the ASF, otherwise distributes it to the MSF.

- Rule Management: The CSTMF supports to manage the preset rules which are used to distribute call-session-task to the ASF and MSF, according to the received information (e.g. call information, call type) from the request of RCF.

- Context-aware services: the CSMTF supports to distribute RCF requests to the appropriate RAF based on Context Information. How the CSMTF get the information from the CIF is out of scope of this Enabler.

5.2.1.1.4 Social Media Management Function (SMMF)

SMMF is responsible for social media messages (e.g., blogs, micro-blogs, BBS, SNS) management activities. This function SHALL enable social media messages managed and routed to ASF and MSF for further processing. Typically, the SMMF is implemented and deployed as an isolated gateway. Functions supported by SMMF include:

- Social media aggregation policy management: The SMMF supports social media aggregation policy configuration request from the CSTMF by exposing the configuration interface to the CSTMF. The policy for social media aggregation includes (but not limited to) the types of social media, key words, author, filter criteria, etc.

- Social media information search: The SMMF supports to accept social media information search request from the CSTMF, and search social media information one or multiple times from target websites based on the policy information in the request or pre-configured locally.

  Note: the search function can reuse the existing search engine functionalities.

- Social media information processing and distribution: The SMMF supports to aggregate, format and filter social media information, according to the pre-configured policy or the policy carried in the request, and then distribute the information to the CSTMF.

- Social media information subscription: the SMMF responds with the social media information to the CSTMF upon the subscription request from the CSTMF. The SMMF sends the media information in notifications to the CSTMF upon the subscription from the CSTMF.

- Social media information caching: the SMMF MAY support caching the available detailed media information. When receiving detailed social media information request from the RAF, the SMMF first checks if it exists locally, if not found, the SMMF retrieves the information from the target websites.

- Profile management: The SMMF supports to manage profile information of both webpage content authors and the accounts information of the website for enterprise customers, and provides the profile information to CSTMF.

- Post answers: SMMF supports a function for posting answers to web pages.

5.2.1.2 Client-side functions

5.2.1.2.1 RCC Agent Function (RAF)

The RAF is a RCC functional component resident on the agent's device, which enables the agent to establish connection with MSF to provide the RCC services to the customer and to manage the agent and agent group.

The RAF interacts with the MSF through RCC-2.

Functions supported by RAF include:

- Connection management: The RAF supports to establish a connection to the MSF or resume an existing connection between the RAF and the MSF.

- Registration to MSF: The RAF supports registration to the MSF. In the registration request, the RAF specifies basic information of the RAF, including the profile information of the RAF, e.g., name, description, etc. Once the registration is successfully fulfilled, the MSF replies the RAF with a response. Particularly, during registration process, when the RAF resides on mobile terminal, the RAF ID will be bound with one mobile terminal serving ID (e.g., MSISDN) and one mobile terminal serving ID matches only one RAF ID and vice versa.

- Deregistration from MSF: The RAF also supports deregistration from the MSF through the interface RCC-2. After deregistration from the MSF, the RAF is disabled to login the MSF and registration information of the RAF may be deleted.

- Update agent profile on MSF: The RAF sends profile update request containing new profile parameters to the MSF and accepts the response from the MSF.

- Login\logout to\from MSF: The RAF sends a login request containing user name and AuthData to MSF and accepts the response from the MSF. The RAF also supports to logout from the MSF.

- Agent/agent group status management: The agent/agent group supports to request setting the status of the agent/agent group to the MSF. The status includes busy, available, away, etc.

- Agent group creation: The RAF supports to request the MSF creating agent group which constitutes of sub-agents and a master agent (the creator RAF). The request contains parameters for the agent group, including the Master agent identity, sub-agent identities, etc. As a consequence, the creator RAF becomes the Master agent which cooperateswith the sub-agents.

- Sub-agent management: The RAF supports to manage and set service policies for the agent group during and after the creation operation, including tasks distribution policy, right, concurrent number of tasks, etc. The RAF also supports to query and receive the account information of the agent group, including volume of busyness for both Master agent and sub-agents.

- Comment and score: The RAF supports to send comment and score of the customer after offering RCC services to the customers. The RAF comments the RCF on the request from the MSF and the comment information is transferred to the MSF.

- Social media information management: The RAF supports to accept the distributed social information from the MSF and post the reply to the MSF, SMMF or social web pages directly.

- Status management: RAF supports the function to manage the status (e.g. resolved, unresolved) of the requests from RCF.
- Service suspending/resuming: The RAF supports to send a request of suspending service temporarily to the MSF and accepts the response from the MSF. The RAF also supports to request resuming the service after the suspension.
- Customer setting: The RAF supports an Agent (both master Agent, Sub-agent) to set a specified customer as his/her own customer.

5.2.1.2.2 RCC Client Function (RCF)

RCF is responsible for acquiring RCC services within RCC Client. This function SHALL support interacting with RCC server-side functions and acquiring relevant automatic and\or manual services. In RCC, RCF supports various types: native client software, browser or traditional terminal (e.g., phone) without dedicated software.

- RCC service inquiry: The RCF supports to get RCC services from the CSTMF through the interface RCC-1 via various ways, e.g., fixed access, mobile access. The RCF can also get RCC services via multiple media channels, e.g., voice, video, text-chatting, email, etc.
- RAF selection: The RCF supports to select an appropriate RAF from a set of candidate RAFs provided by ASF through CSTMF when the RCF requests RCC manual services. The RCF determines the RAF based on relevant RCF information, including RCF identity, RCF comments, etc. Once the RCF selects one RAF, the RCF replies to the CSTMF with a response containing the selected RAF.
- Comment to RAF: The RCF supports to comment the RAF through the interface RCC-1 after acquiring RCC services offered by RAF. Comments are transferred to the CSTMF throughthe interface RCC-1.
- Score to RAF: The RCF supports to score the RAF through the interface RCC-1 after acquiring RCC services offered by RAF. Score is transferred to the CSTMF through the interface RCC-1.

5.2.1.3 External functions

5.2.1.3.1 Context Information Function (CIF)

CIF is responsible for providing context information (e.g., location, presence) to RCC platform through the interface RCC-6. This function SHALL support to provide context information of RCC client to RCC platform for supporting context-aware RCC services. And this function is out scope of RCC.

5.2.2 Interfaces Definition

5.2.2.1 RCC-1

This interface is exposed by CSTMF and can be used by RCF to acquire RCC services.

The functions supported by RCC-1 include:

- RCC-1 SHALL support to request by RCF and may respond with a candidate RAF list to RCF.
- RCC-1 SHALL support to send the selected RAF from RCF to the CSTMF.
- RCC-1 SHALL support to send the comments and score from RCF to the CSTMF.

5.2.2.2 RCC-2

This interface is exposed by MSF and can be used by RAF to provide RCC services.

The functions supported by RCC-2 include:

- RCC-2 SHALL support to enable the RAF to register/de-register to MSF.
- RCC-2 SHALL support to enable the RAF to login/logout to MSF.

- RCC-2 SHALL support to enable the RAF to create\manage RAFs.
- RCC-2 SHALL support to enable the RAF to establish a connection to the MSF or resume an existing connection between the RAF and the MSF.
- RCC-2 SHALL support to send the comments and score of the customer from the RAF to the MSF.
- RCC-2 SHALL support to enable the MSF to set charging polices from the RAF.
- RCC-2 SHALL support to enable the RAF to create/manage agent group.

5.2.2.3 RCC-3

This interface is exposed by CSTMF and can be used by MSF to support manual services.

The functions supported by RCC-3 include:

- RCC-3 SHALL support to enable the CSTMF to accept request from MSF for context information of a call/session.

5.2.2.4 RCC-4

This interface is exposed by CSTMF and can be used by ASF to interact with CSTMF for providing automatic services for RCC clients.

The functions supported by RCC-4 include:

- RCC-4 SHALL support to enable the ASF to dispatch call/session to CSTMF.

5.2.2.5 RCC-5

This interface is exposed by the SMMF and used by the CSTMF to acquire social media information from the SMMF.

The functions supported by RCC-5 include:

- RCC-5 SHALL support to request social media information and get response with the aggregated and pre-processed social media information.
- RCC-5 SHALL support to subscribe social media information from the SMMF.
- RCC-5 SHALL support to request social media information configuration from CSTMF to SMMF and receive configuration result code from the SMMF.

5.2.2.6 RCC-6

This interface is exposed by Social Media Management Function, and can be used by RAF to configure policies and retrieve social media information directly from the SMMF.

The functions supported by RCC-6 include:

- RCC-6 SHALL support to enable the RAF to configure policies and retrieve social media information directly from the SMMF.

5.2.2.7 RCC-7

This interface is exposed by ASF and can be used by CSTMF to interact with ASF for providing automatic services for RCC clients.

The functions supported by RCC-7 include:

- RCC-7 SHALL support to enable the CSTMF to dispatch call/session to ASF.

5.2.2.8 RCC-8

This interface is exposed by MSF and can be used by CSTMF to transfer call/session.

The functions supported by RCC-8 include:

- RCC-8 SHALL support to enable the CSTMF to dispatch call/session to MSF.
- RCC-8 SHALL support to enable the CSTMF to distribute the formatted social media information to the MSF
- RCC-8 SHALL support to enable the CSTMF to get RAF status through MSF.
- RCC-8 SHALL support to enable the CSTMF to provide context information of a call/session to MSF

5.2.2.9 RCC-9

This interface is exposed by RAF and can be used by MSF to transfer call/session.

The functions supported by RCC-9 include:

- RCC-9 SHALL support to enable the MSF to dispatch call/session to RAF.

5.2.2.10 RCC-10

This interface is exposed by the CSTMF and used by the SMMF to notify CSTMF about the social information and subscribe social media information.

The functions supported by RCC-10 include:

- RCC-10 SHALL support to notify CSTMF about the social notification according to the notification policy.

6. RCC Operations and Functions

6.1 ASF Operations and Functions

6.1.1 Task handling

Upon receiving a task handling request from the CSTMF, the ASF checks all information contained in the request message. The message structure is defined in section 7.7.1. If the information in the message is complete, the ASF SHALL handle the request properly and respond to the CSTMF with a message containing a status code indicating the task request is accepted; otherwise an error code is responded to the CSTMF.

6.1.2 Task transfer

In case the ASF determines the task request received from the CSTMF should be handled manually, the ASF SHOULD transfer the task request to the MSF via the CSTMF. The task transfer request message structure is defined in section 7.4.1.

6.2 MSF Operations and Functions

6.2.1 Registration

Upon receiving a registration request from the RAF, the MSF checks all information contained in the request message. The message structure is defined in section 7.2.1. If the information in the message is complete and authentic, the MSF SHALL respond the RAF with a message containing a status code indicating the registration is accepted; otherwise an error code is responded.

After registration operation is handled successfully, the RAF SHALL be able to login to the MSF and provide RCC services accordingly.

6.2.2 Deregistration

Upon receiving a deregistration request from the RAF, the MSF checks all information contained in the request message. The message structure is defined in section 7.2.2. If the information in the message is completed and authentic, the SMF SHALL respond the RAF with a message containing a status code indicating the deregistration request is accepted; otherwise an error code is responded.

After deregistration operation is handled successfully, the MSF MAY or MAY NOT delete the registration information of the RAF on it.

6.2.3 Registration information update

Upon receiving a request for updating RAF's registration information from the RAF, the MSF checks all information contained in the request. The message structure is defined section 7.2.3. If the request is authentic and the information in the message is complete and consistent, the MSF SHALL update the information accordingly and respond the RAF with a message containing a status code indicating the update operation is accepted; otherwise an error code is responded.

6.2.4 Login

Upon receiving a request for logining to the MSF from the RAF, the MSF checks all information contained in the request. The message structure is defined in section 7.2.4. If the information in the message is complete and the account information is matching, the MSF SHALL respond the RAF with a message containing a status code indicating the login operation is accepted and successful; otherwise an error code is responded.

After login request is accepted, a service connection between the RAF and the MSF is established and the MSF SHALL be able to schedule and distribute calls or sessions or tasks from RCFs or SMMF and the RAF SHALL be able to provide RCC services.

6.2.5 Logout

Upon receiving a request for logout from the MSF from the RAF, the MSF checks all information contained in the request. The message structure is defined in section 7.2.5. If the information in the message is complete and the account information is matching, the MSF SHALL respond the RAF with a message containing a status code indicating the logout operation is accepted and successful; otherwise an error code is responded.

After logout operation is accepted, the service connection between the RAF and the MSF SHALL be disconnected, and data connection between the RAF and the MSF MAY be disconnected or disabled which means the connection can be resumed again when the RAF requests to login to the MSF after a moment.

6.2.6 Agent group creation

The RCC MSF receives a request message from the RCC RAF via RCC-2 requesting creating an agent group. The message contains the RAF ID and one or more sub-agent IDs. The MSF creates an agent group where the requestor agent is designated as the Master agent after checking the parameters in the request and correlates the agent group, the Master agent and sub-agents. MSF provides agent group based RCC services to customers when receiving customer's request.The message for agent group creation is defined in section 7.2.6.

An agent group creation response SHALL be replied to the RAF by the MSF. And the response contains necessary parameters including result information of the operation. After agent group is created successfully, the MSF can support login request from the sub-agent accordingly.

6.2.7 Sub-agent addition

The RCC MSF receives a request message from the RAF (Master agent) via RCC-2 requesting adding a new sub-agent. The message contains the sub-agent ID, alias.etc. The message for addition of a new sub-agent is defined in section 7.2.8.

A response is expected to be replied to the RAF. And the response contains necessary parameters including result information of the operation. After a sub-agent is created successfully, the MSF can accept the the sub-agent to login and the sub-agent can provide RCC services accordingly. Also, the sug-agent should be able to be managed by the Master agent.

6.2.8 Sub-agent modification

The RCC MSF receives a request message from the RAF (Master agent) via RCC-2 requesting modifying account information of a specified sub-agent. The message contains the detail information of the sub-agent account. The message for modifying specified sub-agent information is defined in section 7.2.9.

A response is expected to be replied to the RAF (Master agent). And the response contains necessary parameters including result information of the operation.

6.2.9 Sub-agent deletion

The RCC MSF receives a request message from the RAF (Master agent) via RCC-2 requesting deleting a specific sub-agent. The message contains the sub-agent ID. The message for deletion of a specific sub-agent is defined in section 7.2.10.

A response is expected to be replied to the RAF (Master agent). And the response contains necessary parameters including result information of the operation. After a sub-agent is deleted successfully, the sub-agent information in the MSF MAY be deleted or marked with invalid status.

6.2.10 Agent group configuration

The RCC MSF receives a request message from the RAF (Master agent) via the RCC-2 requesting configuring the service policies for the agent group. The policies include overall tasks distribution, sub-agent concurrent number of tasks, sub-agent rights, etc. The message for the agent group service policy configuration is defined in section 7.2.7.

A response message for the agent group service policy configuration is expected to be replied by the the MSF.

6.2.11 Account busyness query

The RCC MSF receives an account busyness query request from the RAF (Master agent) via the RCC-2 requesting querying the account busyness information of the agent group. The message is defined in section 7.2.12.

A response message for the account busyness query response is expected to be replied by the MSF including the account information of the busyness volume of both Master agent and sub-agents.

6.2.12 Charge

After setting charging polices from the RAF, The MSF SHALL be able to charge customers accordingly. The charge structure is defined in section 7.2.1. Charging polices include:

- Charging based on the time cycle of service: After selecting this charging policy and setting the policy parameters from the RAF, the MSF SHALL be able to charge customers when the service is subscribed. The MSF SHALL be able to charge the customers who have been subscribed RCC service automatically in the next charging cycle. The cycle for charging includes day, week, month and year.

- Charging based on the frequency of service: After selecting this charging policy and setting the policy parameters from the RAF, the MSF SHALL be able to charge customers based on the frequency of service which provide to customers, The MSF SHALL be able to charge the customer at the time when the customer acquires the RCC service for the first time. The MSF SHALL be able to record the frequency of the service which have been provided to the customer.

- Charging based on the lasting time of service: After selecting this charging policy and setting the policy parameters from the RAF, the MSF SHALL be able to charge customers at the time when the customer start to acquire the RCC service. The MSF SHALL be able to record the lasting time of service which have being provided to the customer and charge the customer based on it.

6.2.13 Status management

The RCC RAF sends a request message to the MSF via RCC-2 requesting setting the status of the RAF. The message includes AgentID and Status information.

A status setting response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation.

6.2.14 Feedback management

The RCC MSF receives a request message from the RAF requesting to set the feedback to the RCC customers who was served shortly before by the RAF. The request includes the RCF ID (customer's ID), feedback information and service ID, etc. The detail information is defined in section 7.2.14.1.

A response is expected to be issued from the MSF to the RAF. And the response includes necessary parameters including the result information of the operation. The detail information is defined in section 7.2.14.2.

6.2.15 Agent group deletion

The RCC MSF receives a request message from the RCC RAF via RCC-2 requesting deleting a group of sub-agents. The message contains the RAF ID and Group ID.

The MSF checks the parameters in the request and delete the correlation of the agent group, the Master agent and sub-agents. The message for agent group deletion is defined in section 7.2.15.

An agent group deletion response SHALL be replied to the RAF by the MSF. And the response contains necessary parameters including result information of the operation. After agent group is deleted successfully, the MSF cannot support login request from the sub-agent anymore.

6.3 CSTMF Operations and Functions

6.3.1 Call/Session Distribution and Management

Upon receiving a call/session request from the RCF, the CSTMF checks the related session description information contained in the request, and queues the received requests. CSTMF routes the request to the ASF. In the request, it includes the session description information related to the media channel.

After receiving the call/session response from ASF, CSTMF sends back the media resource description information to the RCF. So the call/session is established between RCF and ASF, through CSTMF. ASF can communicate with RCF through the established call/session, according to the manual selection by the user from RCF.

Upon receiving a task request from the RCF after session initiation, the CSTMF acts as user interface server and allocates the connectivity identifier and sends it back in the response. In the request, it includes the API functionality identifier to handle the request. The message exchanges may be recorded and analyzed to get the API name corresponding to the API functionality identifier by both sides.

6.3.2 RCF Registration

The CSTMF accepts registration request from a RCF through the interface RCC-1.

The registration request message is defined in section 7.1.1.1, which includes information of customer name, customer ID, AuthData, customer contact(s), customer preferences, etc.

A registration response is expected to be responded from the CSTMF to the RCF. The response contains necessary parameters including the result information of the registration.

[Editor's Note]: The customer preference is to be checked and what is the relationship between customer preference and "introduction" parameter.

6.3.3 RCF Deregistration

The CSTMF accepts de-registeration request from the RCF through the interface RCC-1.

The deregistration request message includes information of customer ID and AuthData, and the message is defined in section 7.1.2.1.

A deregistration response is expected to be responded from the CSTMF. The response contains necessary parameters including result information of deregistration.

6.3.4 RCF Registration Update

The RCC CSTMF accepts registration information update request from a RCF through the interface RCC-1.

The update request message includes information of AuthData, customer contact(s), customer preferences, etc. The message is defined in section 7.1.3.1.

A registration information update response is expected to be sent from the CSTMF. And the response contains necessary parameters including result information of the update operation.

6.3.5 RCF Login

The RCC CSTMF accepts login request through the interface RCC-1. The request message includes information of RCF's account and AuthData, and the message is defined in section 7.1.4.1.

A login response is expected to be sent from the CSTMF. And the response contains necessary parameters including result information of the login operation. After login successfully, the RCF can get RCC service accordingly.

6.3.6 RCF Logout

The RCC CSTMF accepts logouts request from a RCF through the interface RCC-1. The request message includes information of agent's account and the message is defined in section 7.1.5.1.

A logout response is expected to be sent from the CSTMF. And the response contains necessary parameters including result information of the logout operation. After logout successfully, the RCF disconnects with the CSTMF.

6.3.7 Task Request

The RCC RCF sends a task to CSTMF via RCC-1 requesting RCC service.The CSTMF distributes the task to the ASF or MSF.

A response is expected to be sent from the CSTMF, the response contains reply information which may contain a queuing number when there are no RAF available, etc. The message is defined in section 7.1.8.

6.3.8 Feedback management from RCF

The CSTMF receives a request message from the RCF requesting to set the feedback to the RAF which offered the RCC service to the RCF. The request includes the ClientID, AgentID, service ID and feedback information. The detail information is defined in section 7.1.9.1.

A response is expected to be issued from the CSTMF to the RCF. And the response includes necessary parameters including the result information of the operation. The detail information is defined in section 7.1.9.2.

6.3.9 Task distribution

The RCC CSTMF accepts a task from the SMMF through the interface RCC-10 and distributes the task to the ASF via interface RCC-7 by sending a task request message. The task request message structure is defined in section 7.7.1.

A response message is expected to be received from the ASF, and the response contains necessary parameters including result information of the task handling operation.

6.3.10 Task transfer

In case the ASF determines the task request received from the CSTMF should be handled manually, after the ASF transfers the task request to the CSTMF, the CSTMF SHALL transfer the task to the MSF. The task transfer message structure is the same as task request message which is sent from the CSTMF to the MSF and defined in section 7.8.1.

6.4 SMMF Operations and Functions

6.4.1 Social media search

After receiving information request from the CSTMF, the SMMF SHALL connect to target websites through social media proprietary APIs or interfaces and SHALL search social media messages from target websites for one or multiple times using certain policies carried in the request or pre-confiurged locally. The SMMF SHALL search social media based on user profile information, and search conditions (e.g. keywords) in the request. The request and the policy structure is defined in section 7.5. In case there are a set of policies configured locally, the request SHALL contain an identity which is used for referring certain policies.

6.4.2 Social media process

After aggregating social media information, the SMMF SHALL pre-process the message using certain policies. The pre-rocess includes formatting, filtering, etc. The formatting refers the SMMF formats the aggregated social media information according to certain policies or templates which MAY be configured locally or carried in the aggregation request from the CSTMF. The filtering refers the SMMF deletes certain social media information according certain policies.

Afer pre-process the social media, the SMMF SHALL generate tasks for further handling by RCC platform functions. The tasks SHALL include pre-processed social media information.

6.4.3 Social media information response

Afer social media information is aggregated and pre-processed by the SMMF, the tasks SHALL be responded to the CSTMF for further handling.

6.4.4 Direct operation by RAF

Once receving request from the RAF, the SMMF SHALL perform certain actions based on the request. The request includes two types:

One for policy configuration which can be used by the SMMF to search and aggregate social media information, once the configuration operation is completed, the SMMF SHALL respond the RAF with a result code which is defined in section 7.6.1.

The other one is for query and aggregating social media. After aggregating and pre-processing social media information, the SMMF SHALL respond the RAF with result information. The detail information of the message is defined in section 7.6.2.

6.5 RAF Operations and Functions

6.5.1 Registration

An individual registers to RCC Enabler to act as a full time or part time RCC agent by sending a registration request to the MSF through the interface RCC-2.

The registration request message is defined in section 7.2.1 which includes information of agent name, agent ID, AuthData, agent contact(s), agent skills, agent introduction, charging policy and service policy, etc.

A registration response is expected to be received from the MSF. The response contains necessary parameters including the result information of the registration.

6.5.2 Deregistration

An agent deregisters to RCC Enabler to stop acting as a RCC agent by sending a deregistration request to the MSF through the interface RCC-2.

The deregistration request message includes information of agent ID and AuthData.The message is defined in section 7.2.2.

A deregistration response is expected to be received from the MSF. The reponse contains necessary parameters including result information of deregistration.

6.5.3 Registration Information Update

The RCC agent modifies registration information by sending a modification request to the MSF through the interface RCC-2.

The modification request message includes information of agent contact(s), agent skills, agent introduction, charging policy and service policy, etc. The message is defined in section 7.2.3.

A registration information update response is expected to be received from the MSF. And the response contains necessary parameters including result information of the update operation.

6.5.4 Login

The RCC RAF logins to the RCC platform by sending a login request to the MSF through the interface RCC-2. The request message includes information of agent’s account name and AuthData, and the message is defined in section 7.2.4.

A login response is expected to be received from the MSF. And the response contains necessary parameters including result information of the login operation. After login successfully, the RAF can accept the tasks distribution by the MSF and provide RCC service accordingly.

6.5.5 Logout

The RCC RAF logouts from the RCC platform by sending a logout request to the MSF through the interface RCC-2. The request message includes information of agent's account, and the message is defined in section 7.2.5.

A logout response is expected to be received from the MSF. And the response contains necessary parameters including result information of the logout operation. After logout successfully, the RAF stops providng RCC services.

6.5.6 Agent group creation

The RCC RAF sends a request message to the MSF via RCC-2 requesting creating a group of sub-agents. The message contains the RAF ID and one or more sub-agent IDs, and the RAF becomes the Master agent of the agent group accordingly. The message for agent group creation is defined in section 7.2.6.

An agent group creation response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation. After agent group is created successfully, the sub-agent can login to the MSF and provide RCC services accordingly, and the sub-agent can be managed by the Master agent.

6.5.7 Sub-agent addition

The RCC RAF (Master agent) sends a request message to the MSF via RCC-2 requesting adding a new sub-agent. The message contains the sub-agent ID, alias.etc. The message for addition of a new sub-agent is defined in section 7.2.8.

A response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation. After a sub-agent is created successfully, the sub-agent can login to the MSF and provide RCC services accordingly. Also, the sub-agent should be able to be managed by the Master agent.

6.5.8 Sub-agent modification

The RCC RAF (Master agent) sends a request message to the MSF via RCC-2 requesting modifying account information of a specified sub-agent. The message contains the detail information of the sub-agent account. The message for modifying specified sub-agent information is defined in section 7.2.9.

A response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation.

6.5.9 Sub-agent deletion

The RCC RAF (Master agent) sends a request message to the MSF via RCC-2 requesting deleting a specific sub-agent. The message contains the sub-agent ID. The message for deletion of a specific sub-agent is defined in section 7.2.10.

A response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation. After a sub-agent is deleted successfully, the sub-agent information in the MSF MAY be deleted or marked with invalid status.

6.5.10 Agent group configuration

The RCC RAF sends a request message to the MSF via the RCC-2 requesting configuring the service policies for the agent group. The policies include overall tasks distribution, sub-agent concurrent number of tasks, sub-agent rights, etc. The message for the agent group service policy configuration is defined in section 7.2.7.

A response message for the agent group service policy configuration is expected to be received from the MSF.

6.5.11 Account busyness query

The RCC RAF (Master agent) sends an account busyness query request to the MSF via the RCC-2 requesting querying the account busyness information of the agent group. The message is defined in section 7.2.12.

A response message for the account busyness query response is expected to be received from the MSF including the account information of the busyness volume of both Master agent and sub-agents.

6.5.12 Feedback management

The RCC RAF sends a request message to the MSF via RCC-2 requesting to set the feedback (e.g., comment, score) to the RCC customer who has just been served by the RAF. The request includes the RCF ID (customer's ID), feedback information and service ID, etc. The detail information is defined in section 7.2.14.

A response is expected to be received from the MSF. And the response includes necessary parameters including the result information of the operation.

6.5.13 Agent group deletion

The RCC RAF sends a request message to the MSF via RCC-2 requesting deleting a group of sub-agents. The message contains the RAF ID and the GroupID. The message for agent group deletion is defined in section 7.2.15.

An agent group deletion response is expected to be received from the MSF. And the response contains necessary parameters including result information of the operation. After agent group is deleted successfully, the sub-agent cannot login to the MSF and provide RCC services anymore.

6.5.14 Status management

The RCC RAF sends a request message to the MSF via RCC-2 requesting to set the status of the RAF. The request includes AgentID and Status information. The detail information is defined in section 7.2.13.1.

A response is expected to be received from the MSF. And the response includes necessary parameters including the result information of the operation. The detail information is defined in section 7.2.13.2.

6.5.15 Policy Configuration

The RCC RAF sends a request message to the SMMF via RCC-6 requesting to set the configuration of the RAF. The request includes AgentID, Keyword TargetURL and other necessary information. The detail information is defined in section 7.6.1.1.

A response is expected to be received from the SMMF via RCC-6. And the response includes necessary parameters including the result information of the operation. The detail information is defined in section 7.6.1.2.

6.6 RCF Operations and Functions

6.6.1 Registration

RCC RCF MAY register to RCC Enabler to become a RCC customer, by sending a registration request to the CSTMF through the interface RCC-1.

The registration request message is defined in section 7.1.1.1, which includes information of customer name, customer ID, AuthData, customer contact(s), customer preferences, etc.

A registration response is expected to be received from the CSTMF. The response contains necessary parameters including the result information of the registration.

6.6.2 Deregistration

RCC RCF MAY deregister to RCC Enabler by sending a deregistration request to the CSTMF through the interface RCC-1.

The deregistration request message includes information of customer ID and AuthData, and the message is defined in section 7.1.2.1.

A deregistration response is expected to be received from the MSF. The response contains necessary parameters including result information of deregistration.

6.6.3 Registration Information Update

The RCC RCF MAY modify registration information by sending an update request to the CSTMF through the interface RCC-1.

The update request message includes information of AuthData, customer contact(s), customer preferences, etc. The message is defined in section 7.1.3.1.

A registration information update response is expected to be received from the CSTMF. And the response contains necessary parameters including result information of the update operation.

6.6.4 Login

The RCC RCF MAY login to the RCC platform by sending a login request to the CSTMF through the interface RCC-1. The request message includes information of RCF's account and AuthData, and the message is defined in section 7.1.4.

A login response is expected to be received from the CSTMF. And the response contains necessary parameters including result information of the login operation. After login successfully, the RCF can get RCC service accordingly.

6.6.5 Logout

The RCC RCF MAY log out from the RCC platform by sending a logout request to the CSTMF through the RCC-1 interface. The request message includes information of RCF's account, and the detail of the message is defined in section 7.1.5.

A logout response is expected to be received from the CSTMF. The response contains necessary parameters including result information of the logout operation.

6.6.6 Agent query

A RCF sends a request to RCF platform requesting RCC service through the RCC-1 interface, and the request may contain parameter describing the attributes of the request, and the detail of the request message is defined in section 7.1.6.

A response is expected to be received from the CSTMF. The response may contain a group of candidate agents for serving the RCF including the description information of the candidate agents.

6.6.7 Agent selection from an agent group

When receiving a group of candidate agents from the CSTMF, the RCF SHALL select one candidate agent from the group based on the description information of the agent. The RCF sends a message to the RCC CSTMF including the selected agent information. The detail information of the message is defined in section 7.1.7.

6.6.8 Feedback management

The RCF sends a request message to the CSTMF via RCC-1 requesting to set the feedback (e.g., comment, score) to the RAF which offered the RCC service to the RCF. The request includes the ClientID, AgentID, Service ID and feedback information. The detail information is defined in section 7.1.8.1.

A response is expected to be received from the CSTMF. And the response includes necessary parameters including the result information of the operation. The detail information is defined in section 7.1.8.2.

7. Interface descriptions

7.1 RCC-1

7.1.1 Registration

Registration operation enables the RCF to register to RCC CSTMF.

The operation consists of 2 messages: a RCFRegistrationRequest message from the RCF to the CSTMF and a RCFRegistrationResponse message from the CSTMF to the RAF.

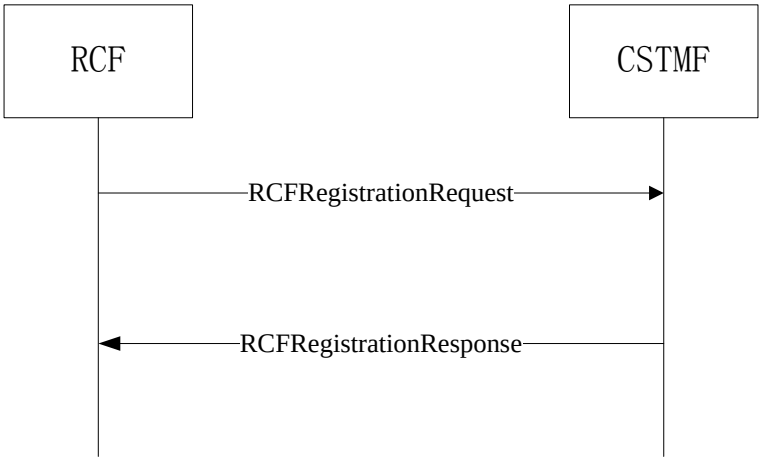

Figure 2: RCF Registration messages exchange

7.1.1.1 RCFRegistrationRequest

Name	Cardinality	Data Type	Description
ClientName	1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
AuthData	1	String	The AuthData is used for authentication purposes and can be password or other generated code (e.g., Hashcode).
Introduction	0..1	String	The introduction of the RCC client.
ContactList	0..1	Structure	The contact(s) of the RCF which can be used by the RCC agent to provide RCC services.

Table 1: RCFRegistrationRequest message

7.1.1.2 RCFRegistrationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the registration.

Table 2: RCFRegistrationResponse message

7.1.2 Deregistration

Deregistration operation enables the RCF to deregister from RCC CSTMF.

The operation consists of 2 messages: a RCFDeregistrationRequest message from the RCF to the CSTMF and a RCFDeregistrationResponse message from the CSTMF to the RCF.

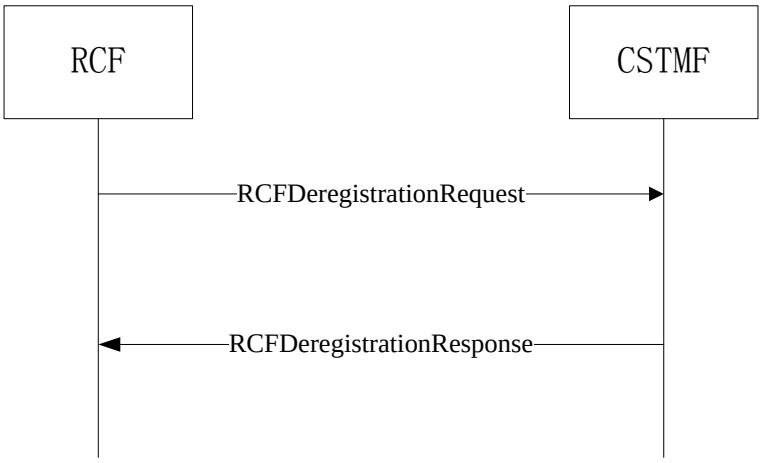

Figure 3: RCC RCF Deregistration messages exchange

7.1.2.1 RCFDeregistrationRequest

Name	Cardinality	Data Type	Description
ClientID	1	String	The account ID of the RCF.
AuthData	1	String	The AuthData is used for authentication purposes.

Table 3: RCFRegistrationRequest message

7.1.2.2 RCFDeregistrationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the deregistration.

Table 4: RCFRegistrationResponse message

7.1.3 Registration information update

Registration information update operation enables the RCF to update RCC client's registration information on RCC platform.

The operation consists of 2 messages: a RCFRegInfoUpdateRequest message from the RCF to the CSTMF and a RCFRegInfoUpdateResponse message from the CSTMF to the RCF.

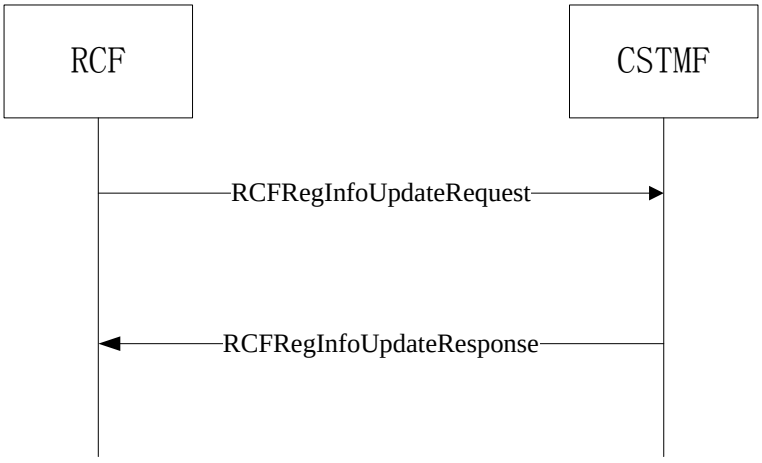

Figure 4: RCF registration information update messages exchange

7.1.3.1 RCFRegInfoUpdateRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCC client.
ClientID	1	String	The account ID is used to indicate the target client information record.
AuthData	1	String	The AuthData is used for authentication purposes.
Introduction	0..1	String	The introduction of the RCF.
ContactList	0..1	Structure	The contact(s) of the RCF which can be used by the RCC agent to provide RCC services.

Table 5: RCFRegInfoUpdateRequest message

7.1.3.2 RCFRegInfoUpdateResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the update request.

Table 6: RCFRegInfoUpdateResponse message

7.1.4 Login

Login operation enables the RCF to login to RCC platform before getting RCC services.

The operation consists of 2 messages: a RCFLoginRequest message from the RCF to the CSTMF and a RCFLoginResponse message from the CSTMF to the RCF.

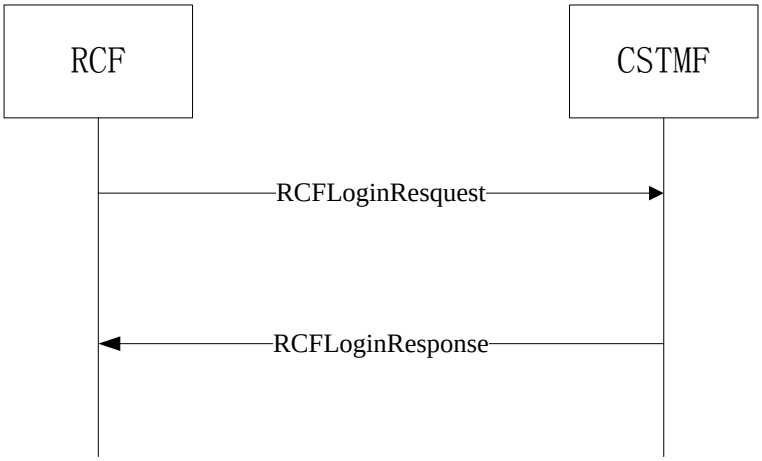

Figure 5: RCF login messages exchange

7.1.4.1 RCFLoginRequest

Name	Cardinality	Data Type	Description
ClientID	1	String	The account ID of the RCF.
AuthData	1	String	The AuthData is used for authentication purposes.

Table 7: RCFLoginRequest message

7.1.4.2 RCFLoginResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the login request.

Table 8: RCFLoginResponse message

7.1.5 Logout

Logout operation enables the RCF to logout from RCC platform.

The operation consists of 2 messages: a RCFLogoutRequest message from the RCF to the CSTMF and a RCFLogoutResponse message from the CSTMF to the RCF.

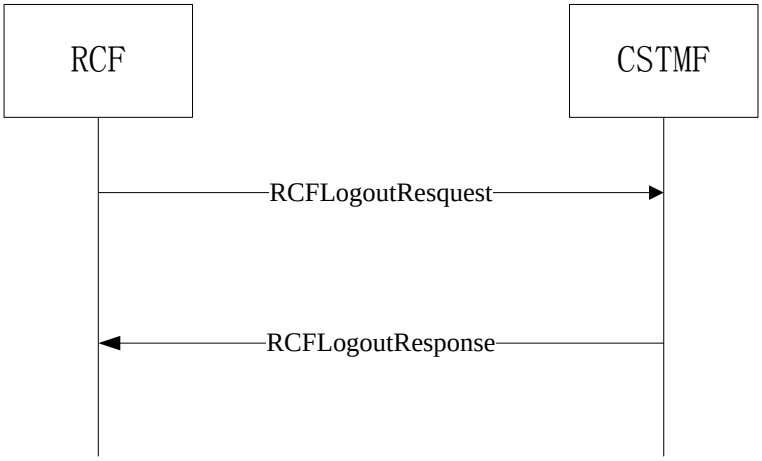

Figure 6: RCF logout messages exchange

7.1.5.1 RCFLogoutRequest

Name	Cardinality	Data Type	Description
ClientID	1	String	The account ID of the RCF.

Table 9: RCFLogoutRequest message

7.1.5.2 RCFLogoutResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the logout request.

Table 10: RCFLogoutResponse message

7.1.6 Agent query

Agent query operation enables the RCF to query a group of candidate agents for serving itself.

The operation consists of 2 messages: a CandidateAgentQuery message from the RCF to the CSTMF and a CandidateAgentResponse message from the CSTMF to the RCF.

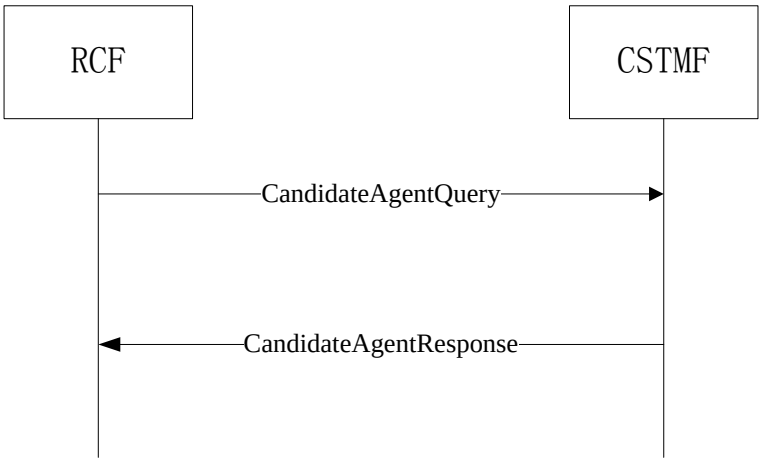

Figure 7: Candidate Agent query message exchange

7.1.6.1 CandidateAgentQuery

Name	Cardinality	Data Type	Description
ClientID	1	String	The account ID of the RCF.
CandidateAgentID	0…n	String	The account ID of the RAF. This field could be the key word to query the agent information.
ServiceClassification	0…1	String	The classification of the service. This field could be the key word to query the agent information.
ServiceKeywords	0…n	String	The keywords of the service. This field could be the key words to query the agent information.

Table 11: CandidateAgentQuery message

7.1.6.2 CandidateAgentResponse

Name	Cardinality	Data Type	Description
CandidateAgent	0..n	Stucture	The information of the candidate agents.

Table 12: CandidateAgentResponse message

Name	Cardinality	Data Type	Description
CandidateAgentID	1	String	The account ID of the candidate agent.
AgentName	1	String	The account name of the candidate agent.
Status	1	Enumeration	The status of the candidate agent. The Status includes three enumeration values: 0: Busy 1: Available 2: Away
Score	0…1	Integer	The average score of the candidate agent.
Comment	0…1	String	The comment from the RCF to the candidate agent.
Introduction	0…1	String	The introduction about the candidate agent and the service he can provide.
ChargeInformation	0…1	String	The charging information about the service which is provided from this candidate agent.

Table 13: CandidateAgent Structure in CandidateAgentResponse message

7.1.7 Agent selection

Agent selection operation enables the RCF to select one agent from a group of candidate agents for serving itself.

The operation consists of 2 messages: a SelectAgentRequest message from the RCF to the CSTMF and a SelectAgentResponse message from the CSTMF to the RCF.

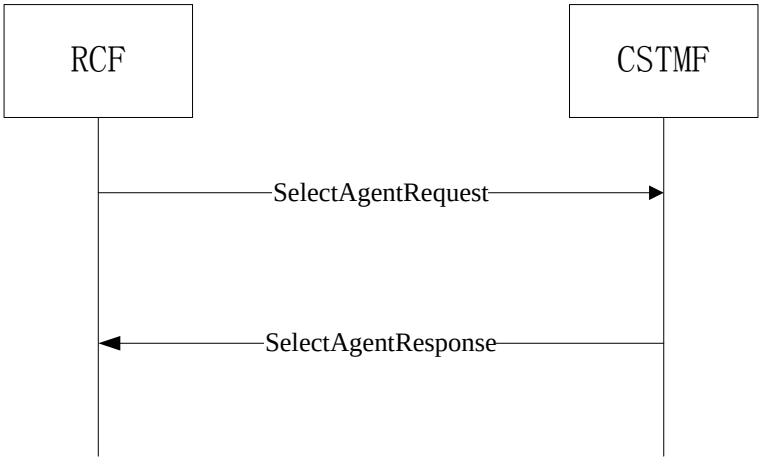

Figure 8: Select agent notification message exchange

7.1.7.1 SelectAgentRequest

Name	Cardinality	Data Type	Description
ClientID	1	String	The account ID of the RCF.
AgentID	1	String	The ID of the selected Agent.

Table 14: SelectAgentRequest message

7.1.7.2 SelectAgentResponse

Name	Cardinality	Data Type	Description
ResultStatus	1	String	The status for indicating the acceptance of selected agent.

Table 15: SelectAgentResponse message

7.1.8 Task Request

Task management operation enables the CSTMF to recieve a task request from the RCF getting RCC service.

The operation consists of 2 messages: a RCFTaskRequest from the RCF to the CSTMF and a RCFTaskResponse from the CSTMF to the RCF.

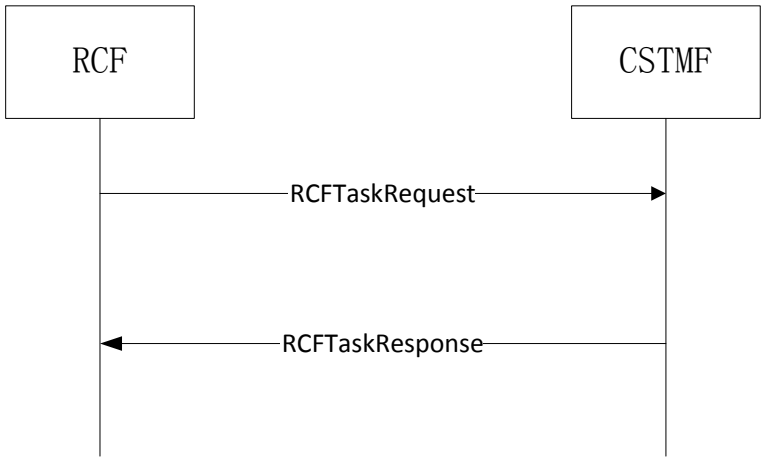

Figure 9: RCC task request messages exchange

7.1.8.1 RCFTaskRequest

Name	Cardinality	Data Type	Description
ClientName	1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
RequestTime	1	String	The time of the request sending from the RCF.
TaskID	1	String	The account ID of the task.
TaskClassification	1	String	The classification of the task. The CSTMF would distribute the task based on it.
TaskContent	1	String	The content of the request.
AgentID	0..1	String	The account ID of the RAF.This field is effective when the RCF has selected one candidate agent.

Table 16: RCFTaskRequest message

7.1.8.2 RCFTaskResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.
QueuingNumber	0…1	Integer	The queuing number. This field is effective when there are no RAF available.
TaskReply	0…1	String	This field is effective when the service is provided through website, email or other text-based form.

Table 17: RCFTaskResponse message

7.1.9 Feedback management

Feedback management enables the RCF to provide comments and/or scores of the RAF to the CSTMF after acquiring RCC services offered by RAF.

The operation consists of two messages: a RCFFeedbackSettingRequest from the RCF to the CSTMF and a RCFFeedbackSettingResponse from the CSTMF to the RCF.

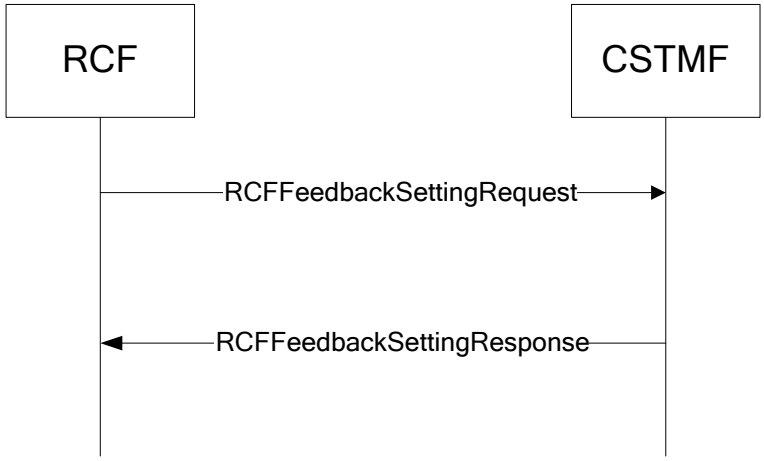

Figure 10: Feedback setting messages exchange

7.1.9.1 RCFFeedbackSettingRequest

Name	Cardinality	Data Type	Description
ClientID	1	String	The ID of the RCF.
AgentID	1	String	The ID of the RAF.
ServiceID	1	String	The ID of the service between the RAF and the RCF.
Feedback	1	Structure	The feedback from the RCF to the CSTMF. The feedback is a structure value, and the detail of the structure can be refered in the following table in this section.

Table 18: RCFFeedbackSettingRequest message

Name	Cardinality	Data Type	Description
Comment	0..1	String	The comment from the RCF to the RAF.
Score	0..1	Integer	The score from the RCF to the RAF.

Table 19: Feedback structure

7.1.9.2 RCFFeedbackSettingResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result to indicate the feedback setting operation.

Table 20: RCFFeedbackSettingReponse message

7.1.10 Session distribution

Session distribution operation enables the RCF to request call/session distribution from CSTMF.

The operation consists of two messages: a RCFSessionRequest message from the RCF to the CSTMF and a RCFSearchResponse message from the CSTMF to the RCF.

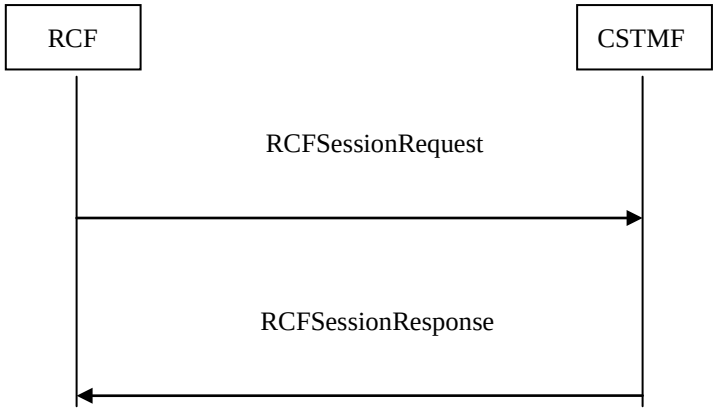

Figure 11: RCF session distribution messages exchange

7.1.10.1 RCFSessionRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
RequestTime	0..1	String	The time of the request sending from the RCF.
SessionID	1	String	The ID of the session.
SessionDescription	0..1	String	The description of the session. The CSTMF would distribute the session based on it.
SessionContent	0..1	String	The content of the session request.
AgentID	0..1	String	The account ID of the RAF. This field is effective when the RCF has selected one candidate agent.

Table 21: RCFSessionRequest message

7.1.10.2 RCFSessionResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.
QueuingNumber	0…1	Integer	The queuing number. This field is effective when there are no RAF available.
MediaDescription	0…1	String	Media resource description information is used to establish call/session between RCF and ASF, through CSTMF

Table 22: RCFSessionResponse message

7.2 RCC-2

7.2.1 Registration

Registration operation enables the RAF to register to RCC MSF.

The operation consists of 2 messages: a RAFRegistrationRequest message from the RAF to the MSF and a RAFRegistrationResponse message from the MSF to the RAF.

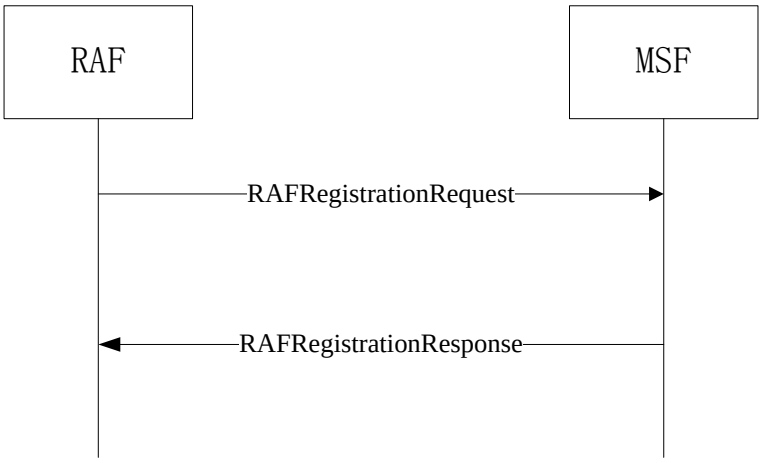

Figure 12: RCC Registration messages exchange

7.2.1.1 RAFRegistrationRequest

Name	Cardinality	Data Type	Description
AgentName	1	String	The account name of the RCC agent.
AuthData	1	String	The AuthData is used for authentication purposes and can be password or other generated code (e.g., Hashcode).
AgentGender	1	Enumertion	The gender of the RCC agent. 0: Male; 1: Female
Introduction	1	String	The introduction of the RCC agent.
ContactList	1	Structure	The contact(s) of the RAF which can be used by the RCC agent to provide RCC services.
SkillList	1	Structure	The skill(s) of the RAF which can be used by the RCC platform to distribute calls, sessions or tasks.
Charge	0…n	Structure	The charging polices which can be used by the RCC agent to charge RCC customers.
ServicePolicy	0…n	Structure	The serving policies which can be used by the RCC platform to distribute requests from RCC customers or social messages.

Table 23: RAFRegistrationRequest message

Name	Cardinality	Data Type	Description
ContactName	1	String	The name of the contact.
ContactNumber	1	String	The phone number of the contact
ContactInf	1	String	The information of the contact

Table 24: contactList structure

Name	Cardinality	Data Type	Description
SkillName	1	String	The name of the contact.
SkillID	1	String	The ID of the skill
SkillInf	1	String	The information of the skill

Table 25: skillList structure

7.2.1.2 RAFRegistrationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the registration.
AgentID	1	String	The account ID of the RAF. The AgentID is assigned by the MSF and should be unique in the whole RCC system.

Table 26: RAFRegistrationResponse message

7.2.2 Deregistration

Deregistration operation enables the RAF to deregister from RCC MSF.

The operation consists of 2 messages: a RAFDeregistrationRequest message from the RAF to the MSF and a RAFDeregistrationResponse message from the MSF to the RAF.

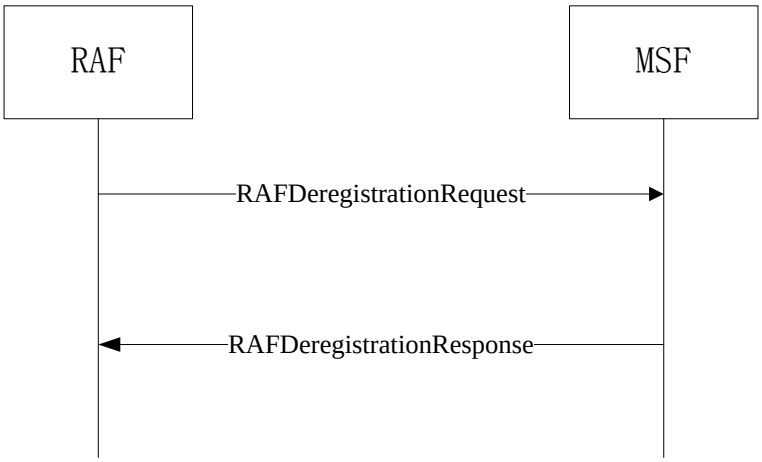

Figure 13: RCC Deregistration messages exchange

7.2.2.1 RAFDeregistrationRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF.
AuthData	1	String	The AuthData is used for authentication purposes.

Table 27: RAFRegistrationRequest message

7.2.2.2 RAFDeregistrationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the deregistration.

Table 28: RAFRegistrationResponse message

7.2.3 Registration information update

Registration information update operation enables the RAF to update RCC agent's registration information on RCC platform.

The operation consists of 2 messages: a RAFRegInfoUpdateRequest message from the RAF to the MSF and a RAFRegInfoUpdateResponse message from the MSF to the RAF.

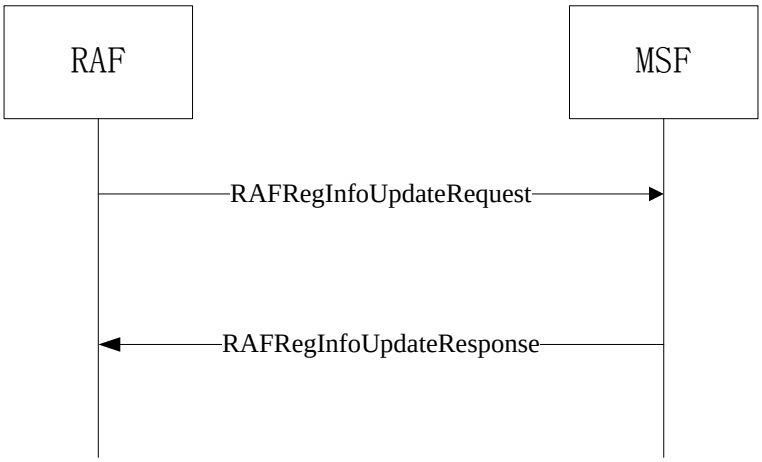

Figure 14: RCC registration information update messages exchange

7.2.3.1 RAFRegInfoUpdateRequest

Name	Cardinality	Data Type	Description
AgentName	1	String	The account name of the RAF.
AgentID	1	String	The account ID of the RAF. The AgentID should be unique in the whole RCC system.
AuthData	1	String	The AuthData is used for authentication purposes.
AgentGender	1	Enumertion	The gender of the RCC agent. 0: Male; 1: Female
Introduction	0	String	The introduction of the RAF.
ContactList	0…1	Structure	The contact(s) of the RAF which can be used by the RCC agent to provide RCC services.
SkillList	0…1	Structure	The skill(s) of the RAF which can be used by the RCC platform to distribute calls, sessions or tasks.
Charge	0…n	Structure	The charging polices which can be used by the RCC agent to charge RCC customers.
ServicePolicy	0…n	Structure	The serving policies which can be used by the RCC platform to distribute requests from RCC customers or social messages.

Table 29: RAFRegInfoUpdateRequest message

7.2.3.2 RAFRegInfoUpdateResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the update request.

Table 30: RAFRegInfoUpdateResponse message

7.2.4 Login

Login operation enables the RAF to login to RCC platform before providing RCC services to customers.

The operation consists of 2 messages: a RAFLoginRequest message from the RAF to the MSF and a RAFLoginResponse message from the MSF to the RAF.

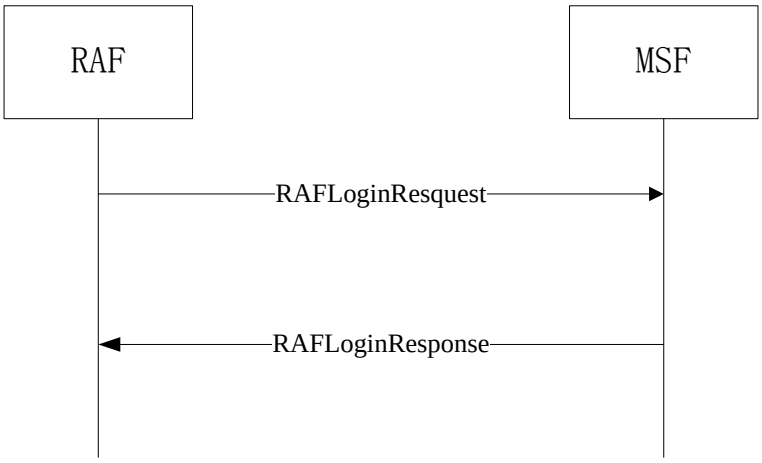

Figure 15: RCC login messages exchange

7.2.4.1 RAFLoginRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF.
AuthData	1	String	The AuthData is used for authentication purposes.

Table 31: RAFLoginRequest message

7.2.4.2 RAFLoginResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the login request.

Table 32: RAFLoginResponse message

7.2.5 Logout

Logout operation enables the RAF to logout from RCC platform.

The operation consists of 2 messages: a RAFLogoutRequest message from the RAF to the MSF and a RAFLogoutResponse message from the MSF to the RAF.

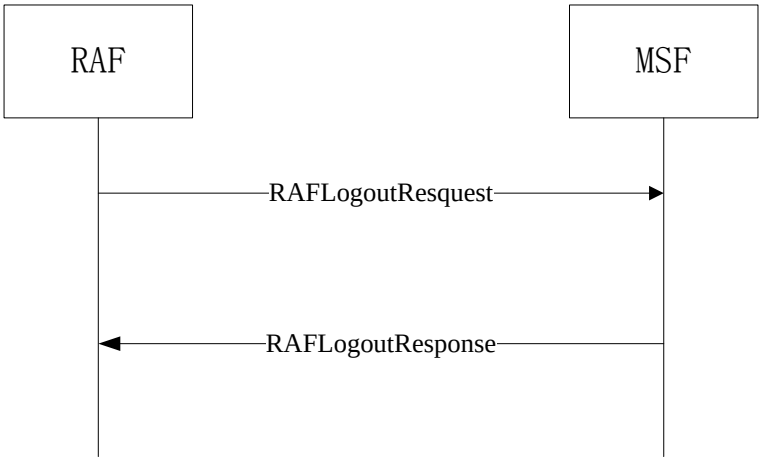

Figure 16: RCC logout messages exchange

7.2.5.1 RAFLogoutRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF.

Table 33: RAFLogoutRequest message

7.2.5.2 RAFLogoutResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the logout request.

Table 34: RAFLogoutResponse message

7.2.6 Agent group creation

Agent group creation enables the Master agent to create a group of RCC sub-agents.

The operation consists of 2 messages: a RAFGroupCreationRequest from the RAF to the MSF and a RAFGroupCreationResponse from the MSF to the RAF.

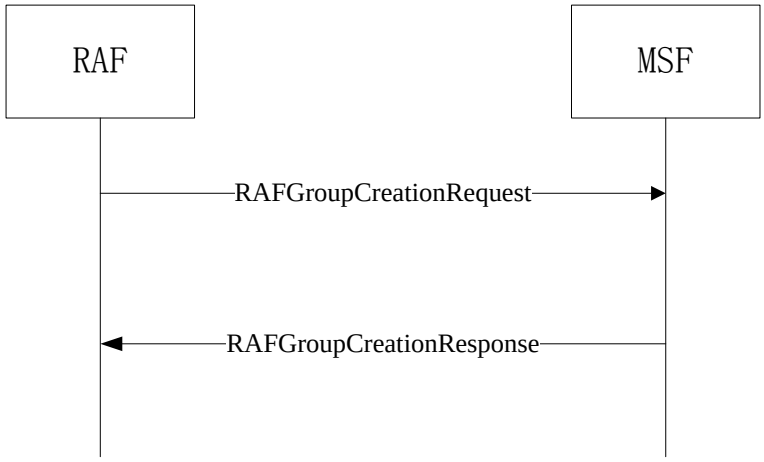

Figure 17: RCC agent group creation messages exchange

7.2.6.1 RAFGroupCreationRequest

Name	Cardinality	Data Type	Description
GroupID	1	String	The ID of the RAF group
GroupName	1	String	The name of the RAF group
AgentID	1	String	The Master agent ID
SubAgentInfo	0…n	Structure	The SubAgentInfo is a structure, and the details of the structure can be referred in the following table in this section.
GroupType	1	String	The busyness type of the agent group (e.g., healthy consultation).

Table 35: RAFGroupCreationRequest message

7.2.6.2 RAFGroupCreationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the agent group creation operation.

Table 36: RAFGroupCreationResponse message

7.2.7 Agent group configuration

Agent group modification enables the Master agent to configure a certain agent group.

The operation consists of 2 messages: a RAFGroupConfigRequest from the RAF to the MSF and a RAFGroupConfigResponse from the MSF to the RAF.

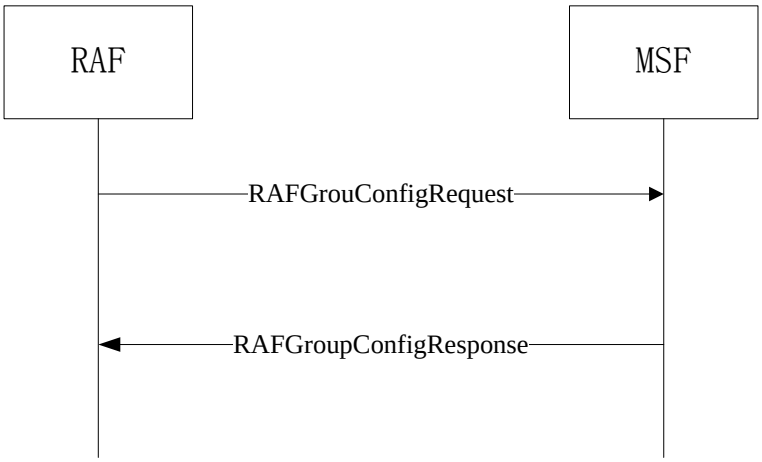

Figure 18: RCC agent group configuration messages exchange

7.2.7.1 RAFGroupConfigRequest

Name	Cardinality	Data Type	Description
GroupID	1	String	The ID of the RAFs group.
GroupName	1	String	The name of the RAF group.
GroupType	1	String	The busyness type of the group.

Table 37: RAFGroupConfigRequest message

7.2.7.2 RAFGroupConfigResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the agent group creation operation.

Table 38: RAFGroupConfigResponse message

7.2.8 Sub-agent addition

Sub-agent addition enables the Master agent to add a new sub-agent by adding a new account.

The operation consists of 2 messages: a SubAgentAddRequest from the RAF to the MSF and a SubAgentAddResponse from the MSF to the RAF.

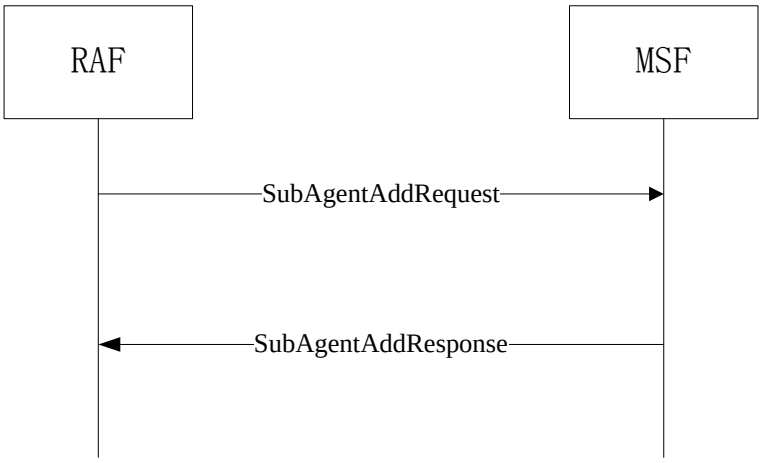

Figure 19: RCC sub-agent addition messages exchange

7.2.8.1 SubAgentAddRequest

Name	Cardinality	Data Type	Description
SubAgentInfo	1..n	Structure	The SubAgentInfo is a Structure, and the details of the structure can be referred in section 7.11.3.

Table 39: SubAgentAddRequest message

7.2.8.2 SubAgentAddResponse

Name	Cardinality	Data Type	Description
ResultCode	1	String	The result code is used to indicate the result of the sub-agent addition operation.

Table 40: SubAgentAddResponse message

7.2.9 Sub-agent modification

Sub-agent modification enables the Master agent to modify the account information of a specific sub-agent.

The operation consists of 2 messages: a SubAgentModificationRequest from the RAF to the MSF and a SubAgentModificationResponse from the MSF to the RAF.

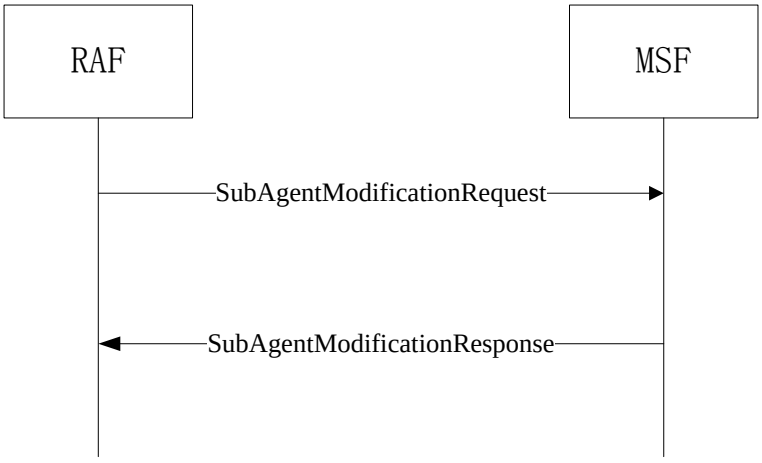

Figure 20: RCC sub-agent modification messages exchange

7.2.9.1 SubAgentModificationRequest

Name	Cardinality	Data Type	Description
SubAgentInfo	1..n	Structure	The SubAgentInfo is a Structure, and the details of the structure can be referred in section 7.11.3.

Table 41: SubAgentAddRequest message

7.2.9.2 SubAgentModificationResponse

Name	Cardinality	Data Type	Description
ResultCode	1	String	The result code is used to indicate the result of the sub-agent modification operation.

Table 42: SubAgentModificationResponse message

7.2.10 Sub-agent deletion

Sub-agent deletion enables the Master agent to delete the account information of a specific sub-agent.

The operation consists of 2 messages: a SubAgentDeletionRequest from the RAF to the MSF and a SubAgentDeletionResponse from the MSF to the RAF.

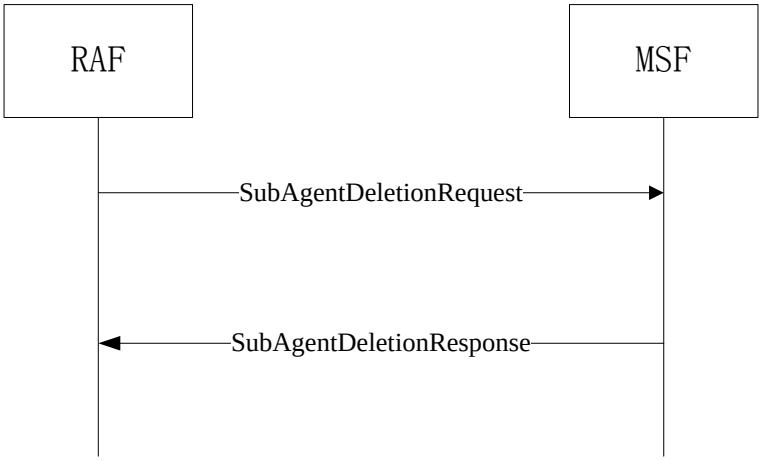

Figure 21: RCC sub-agent deletion messages exchange

7.2.10.1 SubAgentDeletionRequest

Name	Cardinality	Data Type	Description
SubAgentInfo	1..n	Structure	The SubAgentInfo is a Structure, and the details of the structure can be referred in section 7.11.3.

Table 43: SubAgentDeletionRequest message

7.2.10.2 SubAgentDeletionResponse

Name	Cardinality	Data Type	Description
ResultCode	1	String	The result code is used to indicate the result of the sub-agent deletion operation.

Table 44: SubAgentDeletionResponse message

7.2.11 Sub-agent query

Sub-agent query enables the Master agent to query the account information of a specific sub-agent.

The operation consists of 2 messages: a SubAgentQueryRequest from the RAF to the MSF and a SubAgentQueryResponse from the MSF to the RAF.

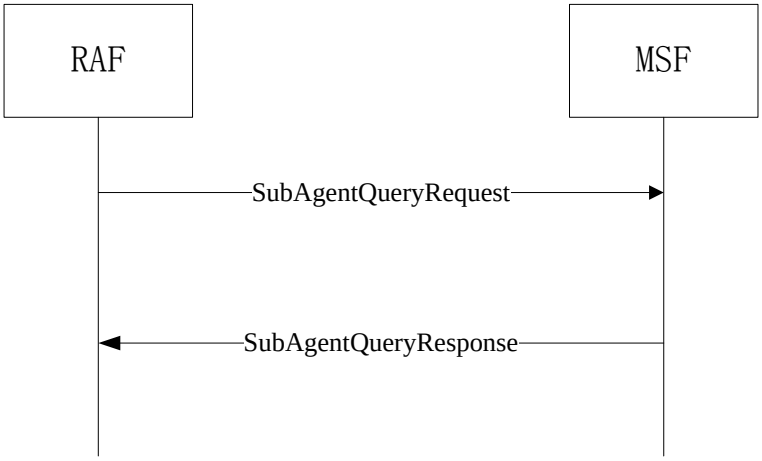

Figure 22: RCC sub-agent query messages exchange

7.2.11.1 SubAgentQueryRequest

Name	Cardinality	Data Type	Description
SubAgentID	1	String	The ID of the sub-agent.

Table 45: SubAgentQueryRequest message

7.2.11.2 SubAgentQueryResponse

Name	Cardinality	Data Type	Description
SubAgentID	1	String	The ID of the sub-agent.
SubAgentName	1	String	The name of the sub-agent.
SubAgentGender	1	Enumertion	The gender of the sub-agent. 0: Male; 1: Female
SubAgentIntro	0..1	String	The introduction information to the sub-agent.
SubAgentSkillList	0..1	List	A list of sub-agent skills.

Table 46: SubAgentQueryResponse message

7.2.12 Account busyness query

Agent group account busyness query enables the Master agent to query the busyness volume of both Master agent and sub-agent.

The operation consists of 2 messages: a RAFGroupBusynessQueryRequest from the RAF to the MSF and a RAFGroupBusynessQueryResponse from the MSF to the RAF.

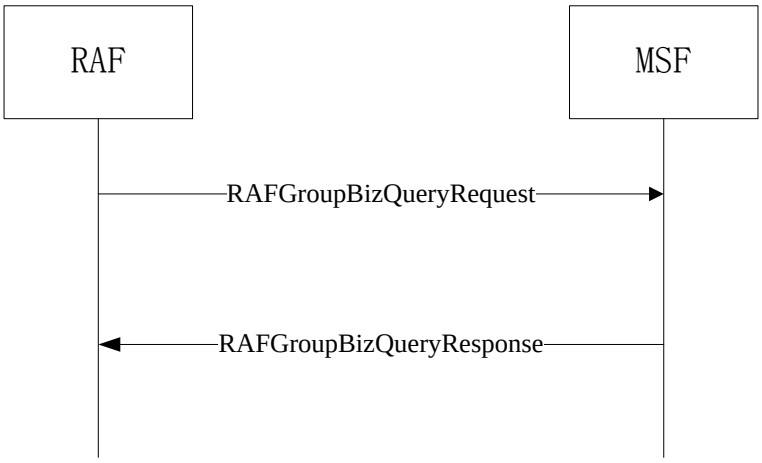

Figure 23: RCC agent group busyness query messages exchange

7.2.12.1 RAFGroupBusynessQueryRequest

Name	Cardinality	Data Type	Description
GroupID	1	String	The ID of the RAFs group.
BusynessVolume Type	1	String	The type of the busyness volume (e.g., time length).
Amount	1	Double	The amount of the busyness volume.
StartDate	1	Date	The start date to calculate the volume of busyness.
EndDate	1	Date	The end date to calculate the volume of busyness.
StartTime	1	Time	The start time to calculate the volume of busyness.
EndTime	1	Time	The end time to calculate the volume of busyness.

Table 47: RAFGroupBusynessQueryRequest message

7.2.12.2 RAFGroupBusynessQueryResponse

Name	Cardinality	Data Type	Description
Amount	1	Double	The amount of the busyness volume of an agent group.

Table 48: RAFGroupBusynessQueryReponse message

7.2.13 Status management

Status management operation enables the RAF to set the status to the MSF.

The operation consists of two messages: a RAFStatusSettingRequest from the RAF to the MSF and a RAFStatusSettingResponse from the MSF to the RAF.

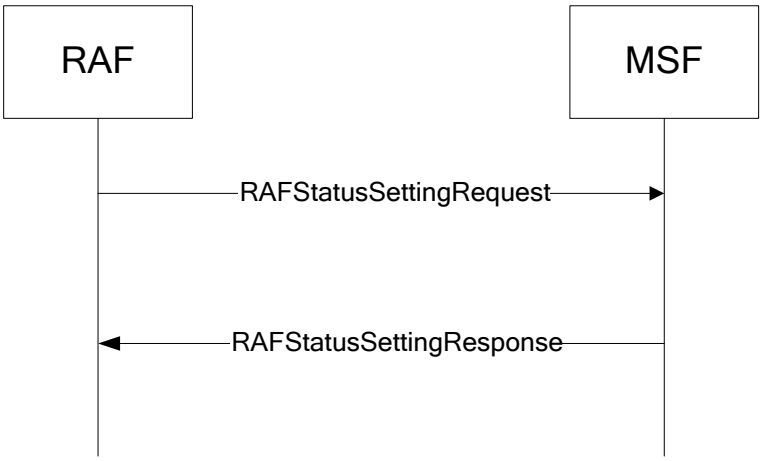

Figure 24: RCC agent status setting messages exchange

7.2.13.1 RAFStatusSettingRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF. The AgentID is assigned by the MSF and should be unique in the whole RCC system.
Status	1	Enumeration	The status of the RAF. The Status includes three enumeration values: 0: Busy 1: Available 2: Away

Table 49: RAFStatusSettingRequest message

7.2.13.2 RAFStatusSettingResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the status setting operation.

Table 50: RAFStatusSettingResponse message

7.2.14 Feedback management

Feedback management enables the agent to provide feedback to the customer after providing RCC services.

The operation consists of 2 messages: a RAFFeedbackSettingRequest from the RAF to the MSF and a RAFFeedbackSettingResponse from the MSF to the RAF.

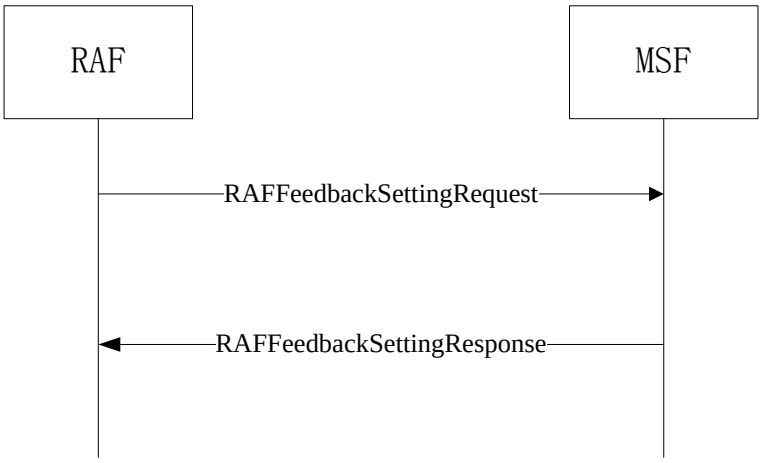

Figure 25: Feedback setting messages exchange

7.2.14.1 RAFFeedbackSettingRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The ID of the RAF.
ClientID	1	String	The ID of the RCF.
ServiceID	1	String	The ID of the service between the RAF and the RCF.
Feedback	1	Structure	The feedback from the RAF to the RCF. The feedback is a structure value, and the detail okf the structure can be refered in the following table in this section.

Table 51: RAFFeedbackSettingRequest message

Name	Cardinality	Data Type	Description
Comment	0..1	String	The comment from the RAF to the RCF.
Score	0..1	Integer	The score from the RAF to the RCF.

Table 52: Feedback structure

7.2.14.2 RAFFeedbackSettingResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result to indicate the feedback setting operation.

Table 53: RAFFeedbackSettingReponse message

7.2.15 Agent group deletion

Agent group deletion enables the Master agent to delete a group of RCC sub-agents.

The operation consists of 2 messages: a RAFGroupDeletionRequest from the RAF to the MSF and a RAFGroupDeletionResponse from the MSF to the RAF.

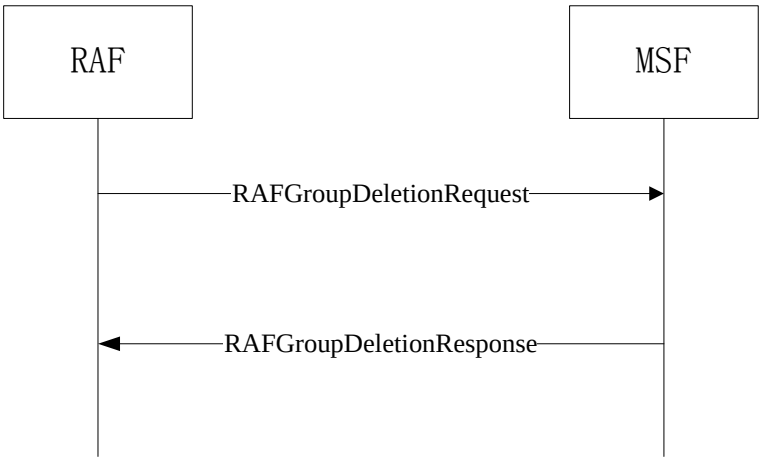

Figure 26: RCC agent group creation messages exchange

7.2.15.1 RAFGroupDeletionRequest

Name	Cardinality	Data Type	Description
GroupID	1	String	The ID of the RAF group
AgentID	1	String	The Master agent ID

Table 54: RAFGroupDeletionRequest message

7.2.15.2 RAFGroupDeletionResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the agent group deletion operation.

Table 55: RAFGroupDeletionResponse message

7.3 RCC-3

7.3.1 Status management

Status management operation enables the MSF to set the status to the CSTMF.

The operation consists of two messages: a RAFStatusSettingRequest from the MSF to the CSTMF and a RAFStatusSettingResponse from the MSF to the CSTMF.

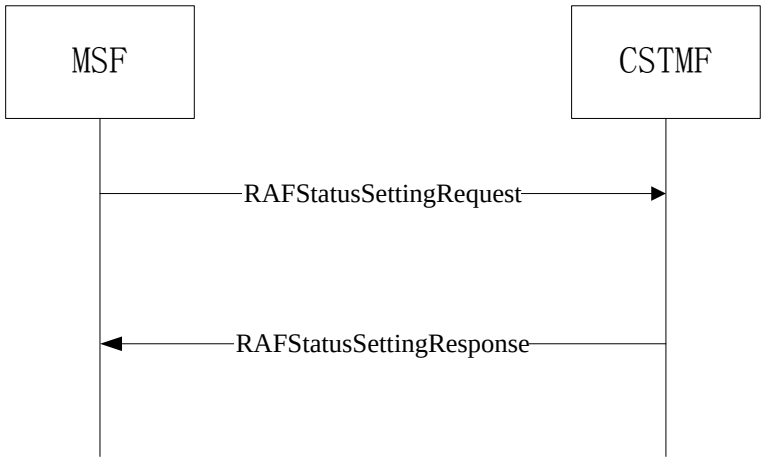

Figure 27: RCC agent status setting messages exchange

7.3.1.1 RAFStatusSettingRequest

Name	Cardinality	Data Type	Description
AgentStatusInfo	1..n	Structure	The Agents status information of the RAFs.

Table 56: RAFStatusSettingRequest message

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF. The AgentID is assigned by the MSF and should be unique in the whole RCC system.
Status	1	Enumeration	The status of the RAF. The Status includes three enumeration values: 0: Busy 1: Available 2: Away

Table 57: AgentStatusInfo structure

7.3.1.2 RAFStatusSettingResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the status setting operation.

Table 58: RAFStatusSettingResponse message

7.4 RCC-4

7.4.1 Task Transfer Request

Task management operation enables the ASF to transfer a task to CSTMF, so CSTMF can transfer the task request to MSF.

The operation consists of 2 messages: a ASFTaskTransferRequest from the ASF to the CSTMF and a ASFTaskTransferResponse from the CSTMF to the ASF.

Figure 28: ASF task transfer request messages exchange

7.4.1.1 ASFTaskTransferRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
RequestTime	1	String	The time of the request sending from the RCF.
TaskID	1	String	The account ID of the task.
TaskContent	1	String	The content of the request.
AgentID	0..1	String	The account ID of the RAF. This field is effective when the agent is selected by the ASF function.

Table 59: ASFTaskTransferRequest message

7.4.1.2 ASFTaskTransferResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.

Table 60: ASFTaskTransferResponse message

7.5 RCC-5

7.5.1 Social Media Search

Social media search operation enables the CSTMF to search social media information from SMMF.

The operation consists of two messages: a CSTMFSearchRequest message from the CSTMF to the SMMF and a CSTMFSearchResponse message from the SMMF to the CSTMF.

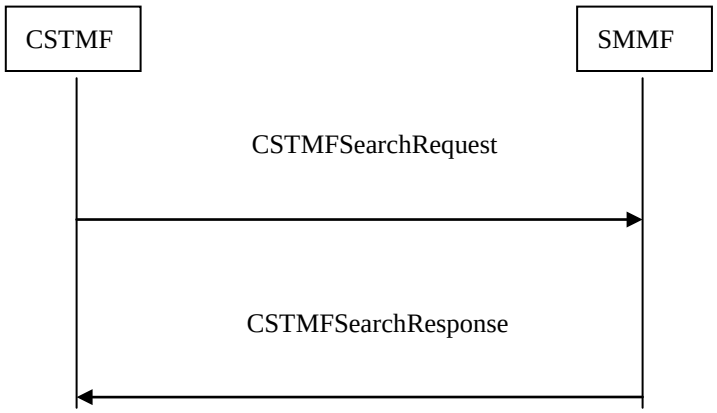

Figure 29: CSTMF social media search messages exchange

7.5.1.1 CSTMFSearchRequest

Name	Cardinality	Data Type	Description
CSTMFID	1	String	The ID of the CSTMF.
Keywords	1	String	Keywords of the social media information to be searched.

Table 61: CSTMFSearchRequest message

7.5.1.2 CSTMFSearchResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the search request.
Media	0..N	Structure	The search result for the social media.

Table 62: CSTMFSearchResponse message

7.5.2 SocialMediaSubscription Request

Social media subscription function enables the CSTMF to send a subscription to SMMF to acquire social media information frequently.

The operation consists of 2 messages: a SocialMediaSubscriptionRequest from the CSTMF to the SMMF and a socialmediasubscriptionResponse from the SMMF to the CSTMF.

7.5.2.1 SocialMediaSubscriptionRequest

Name	Cardinality	Data Type	Description
CSTMFID	1	String	The ID of the request CSTMF.
subscriptionID	1	String	The ID of the subscription which can identify the certain subscription in the system.
duration	1	String	The duration of the notification.
Frequency	0..1	String	The frequency of the notification.
SubscriptionTime	1	String	The time of the request sending from the CSTMF.
RequestContent	1	String	The content of the request. 1: sns new blog 2: sns new reply 3: new sms notification 4: new email notification 5: others
sysAccount	0..1	String	The account of the request.
userAccount	0..1	String	The account been subscription.

Table 63: SocialMediaSubscriptionRequest message

7.5.2.2 SocialMediaSubscriptionResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.

Table 64: SocialMediaSubscriptionResponse message

7.5.3 Policy configuration

Policy configuration enables the CSTMF to configure certain policies on the SMMF directly. The policies can be used by the SMMF for aggregating and processing the social information for webpages.

The operation consists of 2 messages: a PolicyConfigRequest message from the CSTMF to the SMMF and a PolicyConfigResponse message from the SMMF to the CSTMF.

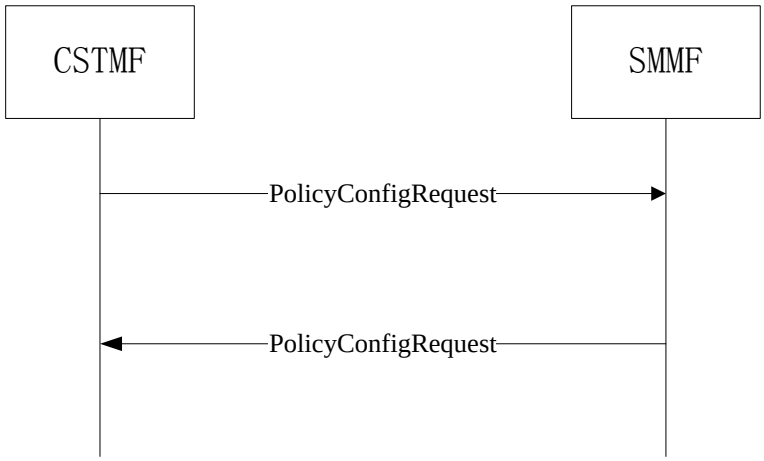

Figure 30: RCC Policy Configuration messages exchange

7.5.3.1 CSTMFPolicyConfigRequest

Name	Cardinality	Data Type	Description
CSTMFID	1	String	The ID of the CSTMF.
AgentID	1	String	The account ID of the RAF.
KeywordList	0..1	Structure	A list of keywords for searching and aggregating social information.
Filter	0..1	String	The policy for filtering the social information aggregated from social webpages.
TargetURL	0..n	String	Target website URLs for searching and aggregation social information.
TargetAccount	0..n	String	The account information for target websites specified by TargetURL.
Date	0..1	String	The date of the social information posted on websites.
Time	0..1	String	The time of the social information posted on websites.
TaskID	0..1	String	The TaskID is used to correlate with a defined task by the RAF.
Priority	0..1	String	The priority of the tasks defined by the RAF and can be used by the SMMF to execute the task.

Table 65: CSTMFPolicyConfigRequest message

7.5.3.2 CSTMFPolicyConfigResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The ResultCode is used to indicate the result code of the policy configuration operation.

Table 66: CSTMFPolicyConfigResponse message

7.6 RCC-6

7.6.1 Policy configuration

Policy configuration enables the RAF to configure certain policies on the SMMF directly. The policies can be used by the SMMF for aggregating and processing the social information for webpages.

The operation consists of 2 messages: a PolicyConfigRequest message from the RAF to the SMMF and a PolicyConfigResponse message from the SMMF to the RAF.

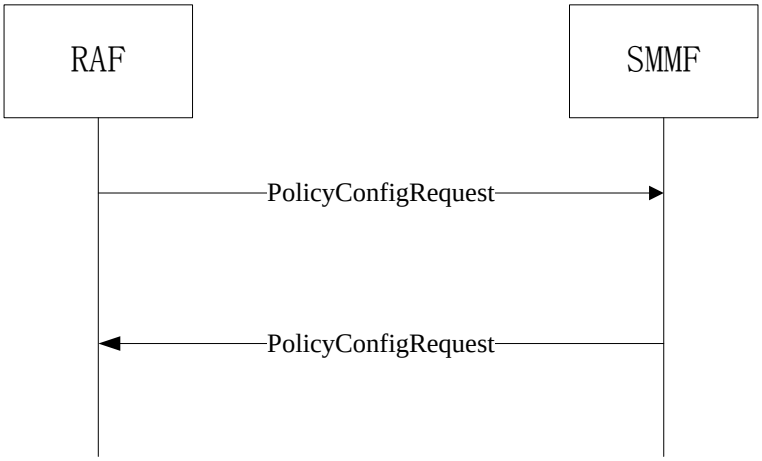

Figure 31: RCC Policy Configuration messages exchange

7.6.1.1 PolicyConfigRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF.
KeywordList	0..1	Structure	A list of keywords for searching and aggregating social information.
Filter	0..1	String	The policy for filtering the social information aggregated from social webpages.
TargetURL	0..n	String	Target website URLs for searching and aggregation social information.
TargetAccount	0..n	String	The account information for target websites specified by TargetURL.
Date	0..1	String	The date of the social information posted on websites.
Time	0..1	String	The time of the social information posted on websites.
TaskID	0..1	String	The TaskID is used to correlate with a defined task by the RAF.
Priority	0..1	String	The priority of the tasks defined by the RAF and can be used by the SMMF to execute the task.

Table 67: PolicyConfigRequest message

7.6.1.2 PolicyConfigResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The ResultCode is used to indicate the result code of the policy configuration operation.

Table 68: PolicyConfigResponse message

7.6.2 Information query

Information query enables the RAF to query social information from the SMMF directly.

The information query consists of 2 messages: a InfoQueryRequest message from the RAF to the SMMF and a InfoQueryResponse from the SMMF to the RAF.

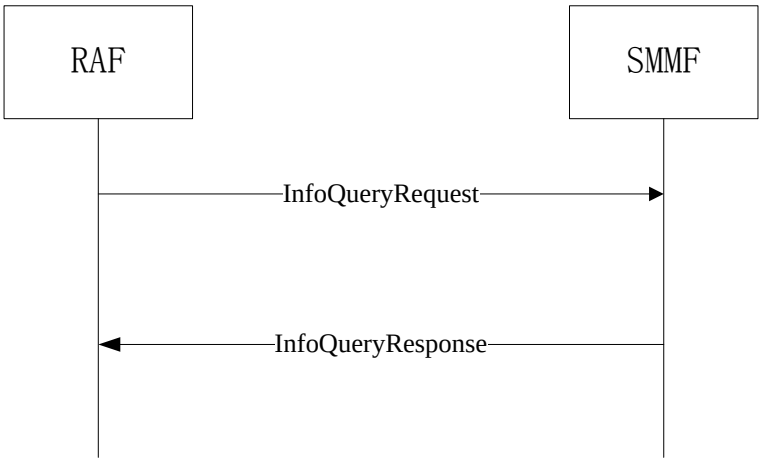

Figure 32: RCC Information query messages exchange

7.6.2.1 InfoQueryRequest

Name	Cardinality	Data Type	Description
AgentID	1	String	The account ID of the RAF.
KeywordList	0..1	Structure	A list of keywords for searching and aggregating social information.
Filter	0..1	String	The policy for filtering the social information aggregated from social webpages.
TargetURL	0..n	String	Target website URLs for searching and aggregation social information.
TargetAccount	0..n	String	The account information for target websites specified by TargetURL.
Date	0..1	String	The date of the social information posted on websites.
Time	0..1	String	The time of the social information posted on websites.
TaskID	0..1	String	The TaskID is used to correlate with a defined task by the RAF.
Priority	0..1	String	The priority of the tasks defined by the RAF and can be used by the SMMF to execute the task.

Table 69: InfoQueryRequest message

7.6.2.2 InfoQueryResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the social information query operation.
Media	0..N	Structure	The query result for the social media.

Table 70: InfoQueryResponse message

7.7 RCC-7

7.7.1 Task Request

Task management operation enables the CSTMF to send a task request to ASF.

The operation consists of 2 messages: a CSTMFTaskRequest from the CSTMF to the ASF and a CSTMFTaskResponse from the ASF to the CSTMF.

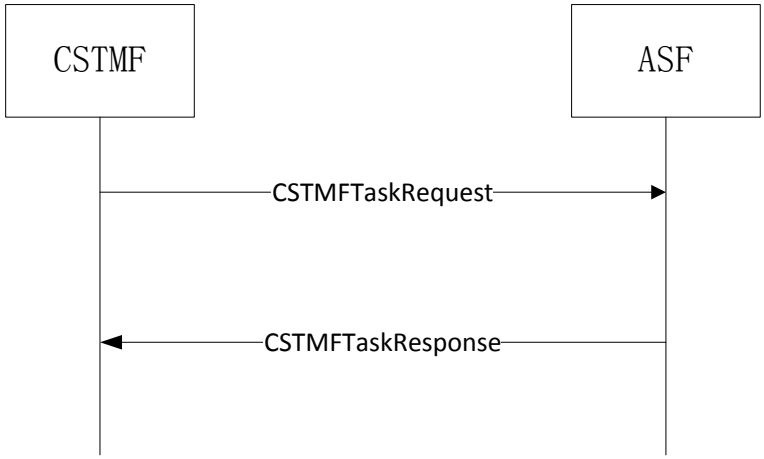

Figure 33: CSTMF task request messages exchange

7.7.1.1 CSTMFTaskRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
RequestTime	1	String	The time of the request sending from the RCF.
TaskID	1	String	The account ID of the task.
TaskContent	1	String	The content of the request.

Table 71: CSTMFTaskRequest message

7.7.1.2 CSTMFTaskResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.

Table 72: CSTMFTaskResponse message

7.8 RCC-8

7.8.1 Task Request

Task management operation enables the CSTMF to send a task request to MSF.

The operation consists of two messages: a CSTMFTaskRequest from the CSTMF to the MSF and a CSTMFTaskResponse from the MSF to the CSTMF.

7.8.1.1 CSTMFTaskRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCC client.
ClientID	1	String	The account ID of the RCF.
RequestTime	1	String	The time of the request sending from the RCF.
TaskID	1	String	The ID of the task.
TaskContent	1	String	The content of the request.
AgentID	0..1	String	The account ID of the RAF.This field is effective when the agent is selected by the ASF function.

Table 73: CSTMFTaskRequest message

7.8.1.2 CSTMFTaskResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.

Table 74: CSTMFTaskResponse message

7.9 RCC-9

7.9.1 Task Request

Task management operation enables the MSF to send a task request to RAF.

The operation consists of 2 messages: a MSFTaskRequest from the MSF to the RAF and a MSFTaskResponse from the RAF to the MSF.

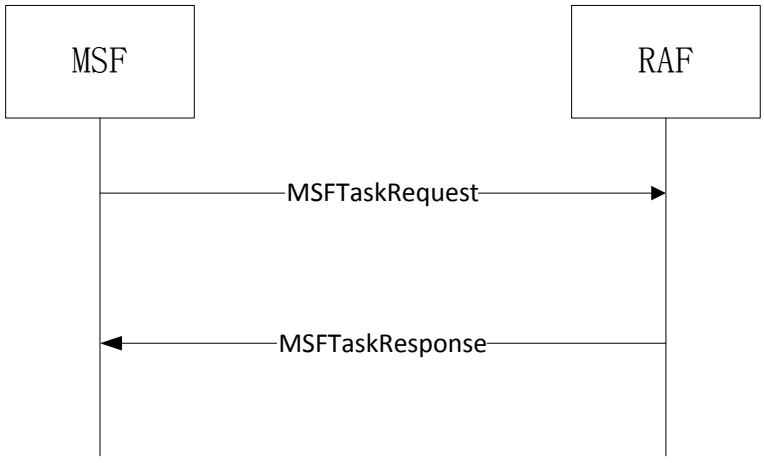

Figure 34: MSF task request messages exchange

7.9.1.1 MSFTaskRequest

Name	Cardinality	Data Type	Description
ClientName	0..1	String	The account name of the RCF.
ClientID	1	String	The account ID of the RCF.
RequestTime	1	String	The time of the request sending from the RCF.
TaskID	1	String	The account ID of the task.
TaskContent	1	String	The content of the request.
AgentID	0..1	String	The account ID of the RAF. This field is effective when the agent is selected by the ASF function.

Table 75: MSFTaskRequest message

7.9.1.2 MSFTaskResponse

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the result of the request.

Table 76: MSFTaskResponse message

7.10 RCC-10

7.10.1 SocialMediaNotify

Social media notification operation enables the CMMF to notify CSTMF about the social media information which is subscribed by CSTMF.

The operation consists of two messages: a SocialMediaNotify message from the SMMF to the CSTMF and a SocialMediaNotifyACK message from the CSTMF to the SMMF.

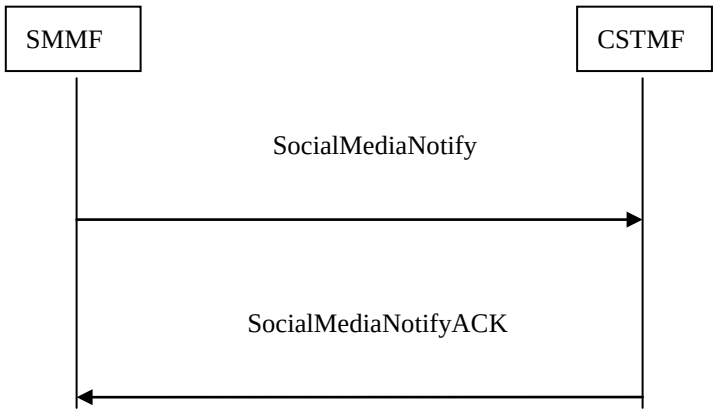

Figure 35: social media notify messages exchange

7.10.1.1 SocialMediaNotify

Name	Cardinality	Data Type	Description
CSTMFID	1	String	The ID of the CSTMF.
Media	1..N	Structure	The social media list to be notified according to the subscription.

Table 77: SocialMediaNotify message

7.10.1.2 SocialMediaNotifyACK

Name	Cardinality	Data Type	Description
ResultCode	1	Integer	The result code is used to indicate the acknowledgment of the notification.

Table 78: SocialMediaNotifyACK message

7.11 Common Structures

This section provides the common structures that be used by more than one interface.

7.11.1 Charge Structure

Name	Cardinality	Data Type	Description
ChargePolicyID	1	String	The identification of the charge policy. The ChargePolicyID should be unique in the whole RCC system.
BaseFee	1	String	The value of this field is the fee based on one cycle for charging when the charging policy is based on time cycle of service. The value of this field is the fee based on one time to acquire RCC service when the charging policy is based on the frequency of service. The value of this field is the fee for one unit of lasting time for charging when the charging policy is based on the lasting time of service.
ChargeCycle	0…1	Enumeration	The cycle for charging. This field is requierd when the charging policy is based on time cycle of service, The ChargeCycle includes four enumeration values: 0: day 1: week 2: month 3: year
Amount	0…1	Integer	The value of this field is the amount of the charging cycle when the charging policy is based on time cycle of service, and the MSF can be charge the customer automatically in each charging cycle within the amount of the charging cycle. The value of this field is the amount of times of service that should be provided to the customer when the charging policy is based on the frequency of service.

UnitTime	0…1	Enumeration	The unit of lasting time for charging. This field is requierd when the charging policy is based on the lasting time of service. The UnitTime includes four enumeration values: 0: second 1: minute 2: hour

Table 79: Charge Structure

7.11.2 ServicePolicy Structure

Name	Cardinality	Data Type	Description
ServicePolicyID	1	String	The identification of the service policy. The ServicePolicyID should be unique in the whole RCC system.
ChargePolicyID	1	String	The identification of the charge policy. The ChargePolicyID should be unique in the whole RCC system.
ServiceName	1	String	The name of the service.
ServiceDescription	1	String	The description of the service which the agent could provide to customers.
ServiceKeyword	0...n	String	The key words for the service which could help the customers to search the appropriate service.
ServiceClassification	1	String	The classification of the service.

Table 80: ServicePolicy Structure

7.11.3 SubAgentInfo Structure

Name	Cardinality	Data Type	Description
SubAgentID	1	String	The ID of the sub-agent.
SubAgentName	1	String	The name of the sub-agent.
SubAgentGender	1	Enumertion	The gender of the sub-agent. 0: Male; 1: Female
SubAgentIntro	0..1	String	The introduction information to the sub-agent.
SubAgentSkillList	0..1	List	A list of sub-agent skills.

Table 81: SubAgentInfo structure

7.11.4 Media Structure

Name	Cardinality	Data Type	Description
mediaID	1	String	The ID of the social media.
mediaType	1	Enumertion	The type of the Media: 1: sns 2: email 3: sms 0: others
SNSMedia	0..1	Structure	Mandatory when mediatype=1
EmailMedia	0..1	Structure	Mandatory when mediatype=2
SMSMedia	0..1	Structure	Mandatory when mediatype=3
otherMedia	0..1	Structure	Mandatory when mediatype=0

Table 82: Media structure

7.11.5 SNSMedia Structure

Name	Cardinality	Data Type	Description
mediaID	1	String	The ID of the social media.
receiveTime	1	String	When createtype is 0: the time of receiving the message When createtype is 1: the time of sending the message
accountType	1	Enumertion	The account type of sns 1: sina; 2: twitter; 3: tencent
sysAccount	1	String	The social network blog ID of RCC
userAccount	1	String	The social network blog ID(the same as sysAccount)
createType	1	String	The direction of the message 0,upstream; 1:downstream
blogType	1	String	When createtype=0 1: new microblog(the microblog that I follow) 2: new comments 3: other people's microblog that @ me 4: my mircoblog 5: the microblog with search keyword 6: other people's comments that @ me When createtype=1 1: publish new microblog 2: publish new comments 3: republish a microblog 4: republish and comment the microblog 5: republish and comment the original microblog
blogInfo	1	String	Then content of the microblog
picURL	0..1	String	The URL of the microblog's picture if there's one
fileInfo	0..1	String	The path of the file if there's one

Table 83: SNSMedia structure

7.11.6 MailMedia Structure

Name	Cardinality	Data Type	Description
mediaID	1	String	The ID of the social media.
receiveTime	1	String	The time of receive the mail media
createType	1	String	The direction of the message 0,upstream; 1:downstream
sysAccount	1	String	The email account of RCC
userAccount	1	String	The email account of user
receiveAddress	1	String	The receive email address
ccAddress	1	String	The cc email address
mailTitle	0..1	String	The title of the email
mailBody	0..1	String	The body of the email
mailAttach	0..1	String	The URL of the attached file

Table 84: MailMedia structure

7.11.7 SMSMedia Structure

Name	Cardinality	Data Type	Description
mediaID	1	String	The ID of the social media.
receiveTime	1	String	The time of receive the sms media
sysAccount	1	String	The sms account of RCC
userAccount	1	String	The sms account of user
createType	1	String	The direction of the message 0,upstream; 1:downstream
smsBody	1	String	The content of the sms

Table 85: SMSMedia structure

7.11.8 KeywordList Structure

Name	Cardinality	Data Type	Description
keyword	1..n	String	The keywords for searching and aggregating social information

8. Security Considerations

The RCC Enabler provides authentication, authorization, and privacy protection for the operations involved in RCC services.Mechanisms supported by RCC to assure security include:

- Black-White List: black & white list MAY be used in RCC to manage the customers and agents accessing to RCC platform.
- IP address range: IP address range SHALL be set by RCC Master agent to prevent unauthorized access by RCC sub-agent.

9. Release Information

9.1 Supporting File Document Listing

Doc Ref	Permanent Document Reference	Description
Supporting File		
N/A	N/A	N/A

Table 86: Listing of Supporting Documents in RCC 1.0 Release

9.2 OMNA Considerations

RCC 1.0 enabler does not require OMNA registrations.

Appendix A. Change History (Informative)

A.1 Approved Version History

Reference	Date	Description
OMA-ER-RCC-V1_0-20161025-A	25 Oct 2016	Status changed to Approved by TP, TP Ref # OMA-TP-2016-0100-INP_RCC_V1_0_ERP_for_Final_approval

Appendix B. Static Conformance Requirements (Normative)

The notation used in this appendix is specified in [SCRRULES].

B.1 ERDEF for RCC 1.0 - RAF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-RAF-001-M	RCC Agent Function	

Table 87: ERDEF for RCC 1.0 RAF Requirements

B.2 ERDEF for RCC 1.0 - RCF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-RCF-001-M	RCC Client Function	

Table 88: ERDEF for RCC 1.0 RCF Requirements

B.3 ERDEF for RCC 1.0 - SMMF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-SMMF-001-M	Social Media Management Function	

Table 89: ERDEF for RCC 1.0 SMMF Requirements

B.4 ERDEF for RCC 1.0 - CSTMF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-CSTMF-001-M	Call-Session-Task Management Function	

Table 90: ERDEF for RCC 1.0 CSTMF Requirements

B.5 ERDEF for RCC 1.0 - ASF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-ASF-001-M	Automatic Service Function	

Table 91: ERDEF for RCC 1.0 ASF Requirements

B.6 ERDEF for RCC 1.0 - MSF Requirements

This section is normative.

Item	Feature / Application	Requirement
OMA-ERDEF-RCC-MSF-001-M	Manual Service Function	

Table 92: ERDEF for RCC 1.0 MSF Requirements

B.7 SCR for RCF

Item	Function	Reference	Requirement
RCC-RCF-001-O	Registration	Section 6.6.1	
RCC-RCF-002-O	Deregistration	Section 6.6.2	
RCC-RCF-003-O	Registration information update	Section 6.6.3	
RCC-RCF-004-O	Login	Section 6.6.4	
RCC-RCF-005-O	Logout	Section 6.6.5	
RCC-RCF-006-M	Agent query	Section 6.6.6	
RCC-RCF-007-M	Agent selection from an agent group	Section 6.6.7	
RCC-RCF-008-M	Agent group query	Section 6.6.6	
RCC-RCF-009-M	Feedback management	Section 6.6.8	

B.8 SCR for RAF

Item	Function	Reference	Requirement
RCC-RAF-001-M	Registration	Section 6.5.1	
RCC-RAF-002-M	Deregistration	Section 6.5.2	
RCC-RAF-003-M	Registration information update	Section 6.5.3	
RCC-RAF-004-M	Login	Section 6.5.4	
RCC-RAF-005-M	Logout	Section 6.5.5	
RCC-RAF-006-M	Agent group creation	Section 6.5.6	
RCC-RAF-007-M	Sub-agent addition	Section 6.5.7	
RCC-RAF-008-M	Sub-agent modification	Section 6.5.8	
RCC-RAF-009-M	Sub-agent deletion	Section 6.5.9	
RCC-RAF-010-M	Agent group configuration	Section 6.5.10	
RCC-RAF-011-M	Account busyness query	Section 6.5.11	
RCC-RAF-012-M	Feedback management	Section 6.5.12	
RCC-RAF-013-M	Agent group deletion	Section 6.5.13	
RCC-RAF-014-M	Status management	Section 6.5.14	
RCC-RAF-015-M	Policy configuration	Section 6.5.15	

B.9 SCR for ASF

Item	Function	Reference	Requirement
RCC-ASF-001-M	Task handling	Section 6.1	
RCC-ASF-002-M	Task distribution	Section 6.1	

B.10 SCR for MSF

Item	Function	Reference	Requirement
RCC-MSF-001-M	Registration	Section 6.2.1	
RCC-MSF-002-M	Deregistration	Section 6.2.2	
RCC-MSF-003-M	Registration information update	Section 6.2.3	
RCC-MSF-004-M	Login	Section 6.2.4	
RCC-MSF-005-M	Logout	Section 6.2.5	
RCC-MSF-006-M	Agent group creation	Section 6.2.6	
RCC-MSF-007-M	Sub-agent addition	Section 6.2.7	
RCC-MSF-008-M	Sub-agent modification	Section 6.2.8	
RCC-MSF-009-M	Sub-agent deletion	Section 6.2.9	
RCC-MSF-010-M	Agent group configuration	Section 6.2.10	
RCC-MSF-011-M	Account busyness query	Section 6.2.11	
RCC-MSF-012-M	Charge	Section 6.2.12	
RCC-MSF-013-M	Status management	Section 6.2.13	
RCC-MSF-014-M	Feedback management	Section 6.2.14	
RCC-MSF-015-M	Agent group deletion	Section 6.2.15	

B.11 SCR for CSTMF

Item	Function	Reference	Requirement
RCC-CSTMF-001-O	RCF registration	Section 6.3.2	
RCC-CSTMF-002-O	RCF deregistration	Section 6.3.3	
RCC-CSTMF-003-O	RCF registration update	Section 6.3.4	
RCC-CSTMF-004-O	RCF login	Section 6.3.5	
RCC-CSTMF-005-O	RCF logout	Section 6.3.6	
RCC-CSTMF-006-M	Call/Session distribution	Section 6.3.1	
RCC-CSTMF-007-M	Task request	Section 6.3.7	
RCC-CSTMF-008-M	Feedback management	Section 6.3.8	
RCC-CSTMF-009-M	Task distribution	Section 6.3.9	

B.12 SCR for SMMF

Item	Function	Reference	Requirement
RCC-SMMF-001-M	Social media search	Section 6.4.1	
RCC-SMMF-002-M	Social media process	Section 6.4.2	
RCC-SMMF-003-M	Social media information response	Section 6.4.3	
RCC-SMMF-004-M	Direct operation by RAF	Section 6.4.4	

Appendix C. RCC Virtualization framework

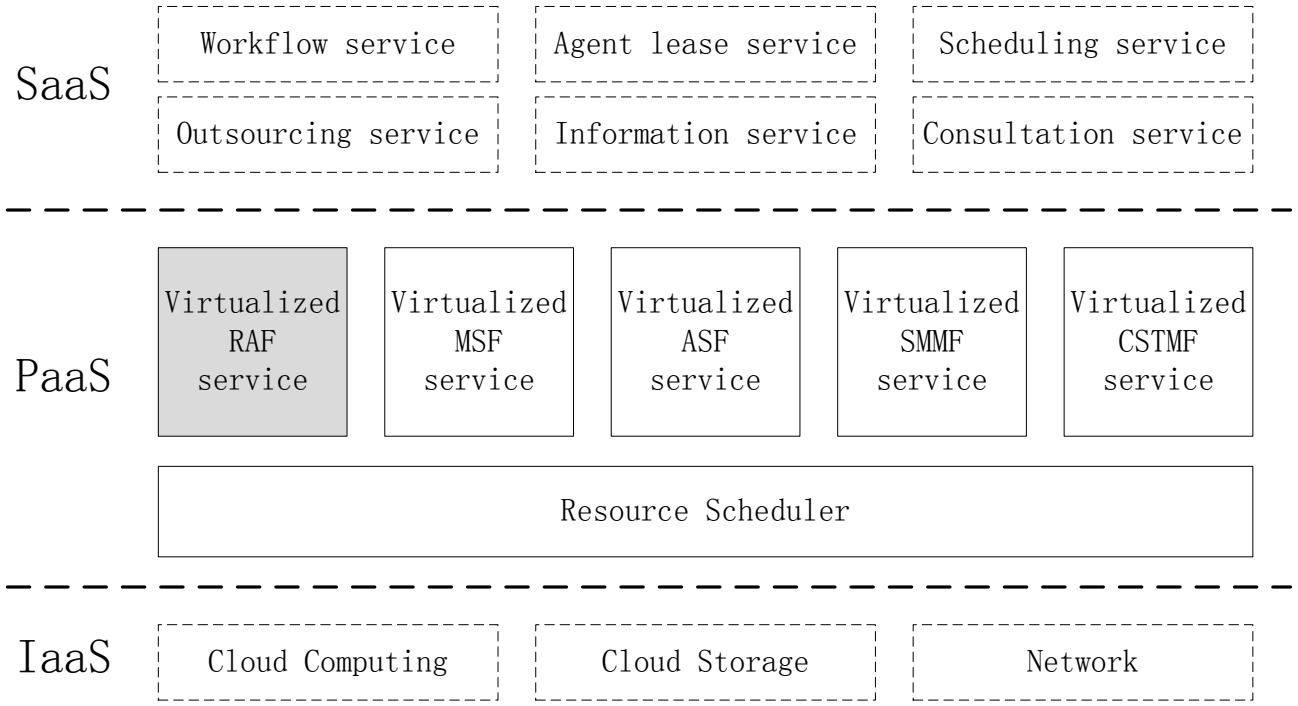

Figure 36: Virtualized RCC framework

The virtualized RCC framework constitutes of 3 layers, they are IaaS, PaaS and SaaS.

The IaaS provides Infrastructure as a Service (including, storage and network services) based on cloud computing technologies, and this layer is out scope of RCC.

The PaaS provides Platform as a Service for RCC platform capabilities to platform users based on cloud computing technologies. In RCC, the platform service capabilities include virtualized RAF service, virtualized MSF service, virtualized ASF service, virtualized SMMF service and virtualized CSTMF service. All of these services are virtualized and scheduled by a Resouce Scheduler.

The SaaS provides Software as a Service for RCC services to RCC service users based on cloud computing technologies. The RCC services includes (but not limited to) workflow service, agent lease service, scheduling service, outsourcing service, information service and consultation service, and this layer is out scope of RCC.