

**Source:** ERICSSON, NOKIA, SIEMENS AG

**Title:** Service Features

**Document for:** Discussion / Decision

<b>CHANGE REQUEST No :</b> <input type="text"/>		<i>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</i>
Technical Specification / Report UMTS	<input type="text" value="22.05"/>	Version: <input type="text" value="3.4.0"/>
Submitted to <input type="text" value="#4"/> TSG_SA	for approval <input checked="" type="checkbox"/>	without presentation ("non-strategic") <input type="checkbox"/>
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**Proposed change affects:**

*(at least one should be marked with an X)*

USIM  TE  Network

**Work item:** Virtual Home Environment

**Source:** ERICSSON, NOKIA; SIEMENS AG

**Date:** 1999-05-07

**Subject:** Due to elaboration of a stage 1 specification of VHE it is proposed to move the definition of the service capability features to the stage 1 of VHE 22.21 and deleted it from 22.05.

**Category:**

*(one category and one release only shall be marked with an X)*

- F Correction
- A Corresponds to a correction in an earlier release
- B Addition of feature
- C Functional modification of feature
- D Editorial modification

**Release:**

- Phase 2
- Release 96
- Release 97
- Release 98
- UMTS 99

**Reason for change:**

- Changes to conform to
- 1) rename the term service feature to service capability feature
  - 2) movement of the section 8 to TS 22.21.

**Clauses affected:** 2.1, 3.1, 4.3, 4.4, 8, Annex A

**Other specs affected:**

- Other releases of same spec  → List of CRs:
- Other core specifications  → List of CRs:
- MS test specifications / TBRs  → List of CRs:
- BSS test specifications  → List of CRs:
- O&M specifications  → List of CRs:

**Other comments:**



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## 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

### 2.1 Normative references

- [1] GSM 02.02: "Digital cellular telecommunications system (Phase 2+); Bearer services supported by a GSM Public Land Mobile Network (PLMN)".
- [2] GSM 02.03: "Digital cellular telecommunications system (Phase 2+); Teleservices supported by a GSM Public Land Mobile Network (PLMN)".
- [3] GSM 02.04: "Digital cellular telecommunications system (Phase 2+); General on supplementary services".
- [4] GSM 02.42: "Digital cellular telecommunications system (Phase 2+); Network Identity and Timezone (NITZ); Service description; Stage 1".
- [5] GSM 02.43: "Digital cellular telecommunications system (Phase 2+); Support of Localised Service Area (SoLSA); Service description; Stage 1".
- [6] GSM 02.57: "Digital cellular telecommunications system (Phase 2+); Mobile Station Application Execution Environment (MExE); Service description; Stage 1".
- [7] GSM 02.71: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Service definition - Stage 1".
- [8] GSM 02.78: "Digital cellular telecommunications system (Phase 2+); Customised Applications for Mobile network Enhanced Logic (CAMEL); Service definition - Stage 1".
- [9] GSM 02.90: "Digital cellular telecommunications system; Unstructured Supplementary Service Data (USSD) - Stage 1".
- [10] GSM 22.01: "Universal Mobile Telecommunications System (UMTS); Service aspects; Service principles".
- [11] GSM 22.2021: "Universal Mobile Telecommunications System (UMTS); Virtual Home Environment (VHE), Stage 1".
- [12] GSM 23.10: "Universal Mobile Telecommunications System (UMTS); UMTS Access Stratum; Services and Functions".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of this TS, the following definitions apply:

**Basic telecommunication service** : this term is used as a common reference to both bearer services and teleservices.

**Bearer service** : is a type of telecommunication service that provides the capability of transmission of signals between access points.

**Call** : a logical association between several users (this could be connection oriented or connection less).

**Connection** : is a communication channel between two or more end-points (e.g. terminal, server etc.).

**Mobile termination** : the mobile termination is the component of the mobile station which supports functions specific to management of the radio interface (Um).

**Multimedia service** : Multimedia services are services that handle several types of media. For some services, synchronisation between the media is necessary (e.g. synchronised audio and video). A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single call.

**Nomadic Operating Mode** : Mode of operation where the terminal is transportable but being operated while stationary and may in addition require user co-operation (e.g. close to open spaces, antenna setup...).

**Quality of Service** : the collective effect of service performances which determine the degree of satisfaction of a user of a service. It is characterised by the combined aspects of performance factors applicable to all services, such as;

- service operability performance;
- service accessibility performance;
- service retainability performance;
- service integrity performance; and
- other factors specific to each service.

**Service capability feature** : Standardised building block used to create services.

**Supplementary service** : is a service which modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a standalone service. It must be offered together with or in association with a basic telecommunication service. The same supplementary service may be common to a number of basic telecommunication services.

**Teleservice**; is a type of telecommunication service that provides the complete capability, including terminal equipment functions, for communication between users according to standardised protocols and transmission capabilities established by agreement between operators.

## 4.3 Supplementary services

A supplementary service modifies or supplements a basic telecommunication service. Consequently, it cannot be offered to a user as a stand alone service. It must be offered together or in association with a basic telecommunication service. The same supplementary service may be applicable to a number of basic telecommunication services.

Two methods are used for the characterisation of supplementary services;

- The first method is used for the description of existing standardised supplementary services. These services are specified through the detailing of each of the operations involved in service provision and service usage (the provision/withdrawal, registration/erasure, activation/deactivation, invocation and interrogation operations). Clause 7 lists these services.
- The second method enables the provision of HE/SN specific supplementary services. ~~by using To make this possible,~~ standardised building blocks referred to as service capability features ~~are specified in clause 8 to build these services.~~ The combination and parametrisation of these service capability features allow the creation of supplementary services.

UMTS shall be able to handle multiple supplementary services within a call. Interactions shall be handled when several supplementary services are activated in the same call.. When multiple supplementary services can be activated concurrently, some prioritisation of the services will be necessary. Certain services may override or deactivate other services.

Interactions between operator specific supplementary services are not defined.

The following issues need consideration when interactions between services occur;

- Different phases of a call.
- A service spanning on more than one network.
- Service interactions that may occur between services offered to a single user, as well as between services offered to different interacting users.

NOTE: The methods defined for characterisation of services are description methods. They do not imply or restrict different implementations.

## 4.4 Service capability features

UMTS service capability features are based on functionality and mechanisms such as provided by SAT, MExE, IN and CAMEL. These toolkits are the basic building blocks for the VHE. These service capability features can be used both by standardised and non-standardised services through the UMTS Application Programming Interface. The UMTS services and applications get access to UMTS service capabilities (bearers, mechansims) for transport of user data through the UMTS adaptation layer. This lowest layer of the VHE is responsible for the selection of appropriate service capabilities according to the requirements of services and applications.

High level service capability features requirements :

- . support of wide range of user applications,
- . support of rapid application/service development,
- . support of easy deployment of new services,
- . scalability.

More detailed description and how service capability features are used, are specified in UMTS 22.21 (VHE).

## 8 Service features

Service features are building blocks which can be used to create services. The functionality offered by a service feature may depend upon the underlying service capability used to realise the service feature e.g. CAMEL, MExE etc.. Service features may be used to offer the user some control over a service such as the ability to modify a service, subscribe or unsubscribe to a service.

Service features are associated with call/session control, bearer control, mobility management. The term calls is used to encompass not only circuit-switched (e.g. voice) calls, but also virtual-circuit sessions set-up to handle packet data traffic.

The following service features are required;

- security/privacy;
- access control;
- address translation;
- call/session/bearer control;
- location;
- messaging;
- service control;
- user interaction.

### 8.1 Security/Privacy features

- presentation of or restriction of information associated with a party involved in a call or a session (e.g. calling line ID, calling name, location...);
- encryption of user data and signalling;

### 8.2 Access Control features

The access control features are defined to provide access to the UMTS network to the UMTS users over the serving network's air interface. These features include;

- user registration;
- user de-registration;
- mutual authentication.

### 8.3 Address Translation Features

This address translation feature shall allow UMTS to offer the wide range of addressing options including;

- E.164 Numbering (e.g. GSM MS ISDN);
- ASEA Numbering (ATM);
- IP v6 Numbering;
- X.25 Numbering;
- Internet symbolic naming.

## 8.4 Call/Session/Bearer Control Features

These features will be used to establish, handle and terminate calls. The following service features shall be supported;

- call/session set up (point to point, point to multi point, multi point to multi point);
- add/delete a party from a call/session;
- call/session termination;
- call/session establishment e.g. answering of calls;
- monitoring of call/session states and events;
- modification of the bearer service attributes.
- capability at initial call set up to modify or reject the called party address;
- capability for an incoming call to modify or reject the called party address both at early and late stage of the call;
- capability to suspend and resume a call;
- capability to re-route a call;
- capability to be notified when a specified terminal is free or is ready to accept the call.

## 8.5 Location Features

Location features shall also be supported, to allow new and innovative location-based services to be developed;

- to identify and report in a standard format (e.g. geographical co-ordinates) the current location of the user's terminal.
- The precision of the location shall be network design dependent, i.e. an operator choice. This precision may vary from one part of a network to another. It may be chosen to be as low as hundreds of meters in some place and as accurate as 5 meters in other place. It is required that a minimum precision of around 50 meters can be achieved in all types of terrestrial radio environment. Technical issues may constrain the precision to be mobile state dependent as well (mobile idle / mobile in communication). Several design optional features (e.g. size of the cell, adaptive antenna technique, path loss estimation technique...) shall allow the network operator to reach cost effectively the target precision.
- Because there may be very different uses of the location information;
  - It shall be possible to make the information available to the user, HE/SN and value added service providers. The user shall be able to restrict access to the location information (permanently or on a per call basis). The restriction can be overridden by the network operator when appropriate (e.g. emergency calls).
  - It shall be possible to set the delay to get the location information (the situation is quite different whether the information is needed for call routing or if it is needed by a user application).
  - It shall be possible to select the frequency of the location information update.
- If the terminal is switched off, then the last known position and time/date shall be available. The time of last known location shall be recorded and be made available in universal time.
- to identify and report when the user's terminal enters or leaves a specified geographic area.
- It shall be possible to specify the area as a circular zone (centre and radius) to a resolution that will be limited by the accuracy capability of the part of the serving network where the user is registered.

## 8.6 — Messaging features

Messages are a block of data that may range from a few bytes to megabytes. Message delivery may involve store and forward of messages in transit. To be able to exchange and to control the exchange of messages between user the following service features shall be supported;

- capability to send messages;
- capability to receive messages;
- capability to request confirmation of receipt;
- capability to modify the content as well as the recipient of message;
- capability to reject a outgoing and/or incoming message;
- capability to re-route a message.

## 8.7 — Service control features

To allow the support of HE/SN specific services the following service features shall be supported;

- capability to download service software to network nodes;
- capability to download service software to terminals;
- capability to download service software to the USIM;
- capability to negotiate of supported capabilities between USIM, terminals, HE and SN;
- capability to negotiate bearer services and service capabilities

## 8.8 — User Interaction Features

To allow the support of HE/SN specific user interfaces, databases containing user profiles shall be provided. This user profile functionality shall provide the following interaction features :

- capability to indicate information to the user;
- capability to collect user information;
- capability to activate and deactivate a special user profile;
- capability to change the user profile.

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## Annex A (informative): Examples of services built from service capability features

### Call Barring

In standard GSM, the Call Barring services allow to prevent outgoing calls to certain sets of destinations, based on the number dialled and whether the user is roaming. In UMTS, it is proposed that this service allows to block outgoing calls based on a wider range of parameters which could include factors such as the time of day, day of week, location, type of call requested, cost of the service and/or destination. This would allow to develop Call Barring services tailored to business and personal markets to avoid abuse.

This service is invoked during the initial outgoing call set-up procedure and allow the call to be blocked prior to incurring any charges. This Service can be applied to any teleservice for both connection-oriented and connectionless-oriented services.

### Call Filtering/Forwarding

In standard GSM, there is no call filtering service. All calls are presented to the user unless a call forwarding service is used to re-direct calls; there is no different call handling depending on the incoming call parameters (although differentiation on call type (voice/data) is possible).

In UMTS, the call filtering service allows the control of whether incoming calls are accepted, forwarded or terminated. The parameters which can be used to determine the final destination of a call may include the caller ID (CLI), original number dialled, time of day, current user location/network, user profile settings and current state of the terminal.

This service shall be two-stage; immediate call filtering (handled regardless of whether the terminal is online or not) and late call filtering (handled only if the terminal is online). It shall be possible to create and operate new call filtering services which can access any of the key parameters to handle calls in this way.

### Hold

This service allows an established call to be maintained, whilst suspending use of the bearer from the incoming access point of the network. This saves on both air interface and network traffic resources when a call is temporarily suspended. The incoming access point in the network means either the originating UMTS terminal, or interworking point with another network.

### Transfer

This service allows either an established or held call to be redirected to another destination. This may either be used by setting up a new call to the destination first, or simply redirecting the existing call to the new destination. It shall be possible to revert such a call back to the diverting terminal at any time before it is accepted (answered) by the new destination. The UMTS system shall ensure that an optimal traffic route is used after the call has been answered by its new (final) destination.

### Call-back When Free

This service can be invoked where a call (or a connectionless message) cannot be delivered to its destination because it is in use. The UMTS system will inform the requesting entity when the destination is next able to accept the call, allowing a new call to be originated. This allows existing GSM services, such as Call-back When Free to be implemented. Where multiple requests are outstanding for a terminal which becomes available, the system will determine in which order the requests are handled, probably in a serial manner. Ideally, it shall be possible to create the service logic which determines the order used from a range of accessible parameters.