

**Source:** SA1  
**Title:** Various CRs to 22.127 Rel-4 and Rel-5  
**Document for:** Approval  
**Agenda Item:** 7.1.3

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Spec	CR	Rev	Phase	Cat	Subject	Version-Current	Version-New	Doc-2nd-Level
22.127	009		Rel-4	F	Detailed requirements for transaction history retrieval	4.1.0	4.2.0	S1-010530
22.127	010		Rel-5	C	CR on Decoupling the OSA API	4.1.0	5.0.0	S1-010531
22.127	011		Rel-4	F	Terminal capabilities	4.1.0	4.2.0	S1-010391
22.127	012		Rel-5	B	Introduction of OSA support to enable Policy Management	4.1.0	5.0.0	S1-010392
22.127	013		Rel-5	B	De-Registration Function	4.1.0	5.0.0	S1-010393

## CHANGE REQUEST

⌘ **22.127** CR **009** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Detail Transaction History Retrieval Function		
<b>Source:</b>	⌘ SA1		
<b>Work item code:</b>	⌘ OSA1	<b>Date:</b>	⌘ 11/05/2001
<b>Category:</b>	⌘ F	<b>Release:</b>	⌘ REL-4
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification)		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		

<b>Reason for change:</b>	⌘ Details on Transaction History Retrieval are not sufficiently for implementation by CN5.
<b>Summary of change:</b>	⌘ The requirement for the Retrieval of a subscriber's transaction history has been document for some time. It was indicated that the requirement is not perfectly clear. As a consequence the requirements is detailed in the way that an OSA application shall be able to: <ul style="list-style-type: none"> <li>• Retrieve a list of monetary or non-monetary amounts that have been debited from or credited to a subscribers online account,</li> <li>• specify the time interval for which the transaction history shall be retrieved,</li> <li>• request additional information on the specific transaction (e.g. the application or service description provided with the actual transaction).</li> </ul>
<b>Consequences if not approved:</b>	⌘ Text could be misinterpreted to put additional requirements to networks and not required effort might be spend by other groups.

<b>Clauses affected:</b>	⌘ 12.2.4		
<b>Other specs affected:</b>	<input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

## 12.2.4 Charging functions

### Call and Event Charging

Call and Event Charging functions enable the application to instruct the network and inform the user with charging information and to add some additional charging information to the network generated Call Detail Records. Some of the following charging facilities are available only if the network either controls the account or has access to it.

The OSA Call and Event Charging function shall enable an application to:

- define and manage thresholds (e.g. session duration, data volume) for a call;
- provide additional charging information to be included in the Call Detail Record. This may contain information transparent to the network;
- transfer Advice of Charge data (as defined in [5]) to the terminal.

### Service Usage

These charging functions shall enable applications to augment subscriber accounts maintained by the network and to charge subscribers for using services. These applications are not necessarily telecommunication related. In addition to charging subscribers for service usage, these functions could also be used for payments in an online purchase scenario.

Provided, that these functions are supported by the underlying network an application shall be able to:

- Check, if – for the service to be provided by the application – the charge is covered by the subscribers account or credit limit
- Reserve – for the service to be provided by the application – a charge in the subscribers account, that can be deduced from the account after service delivery.
- Deduct an amount from the subscriber's account. If a reservation has been made earlier, this amount should be taken from the reserved amount.
- Release a reservation acquired earlier. If part of a reservation has been deducted already, just release the remaining reservation.
- Add non-monetary units to a subscriber's account.
- Deduct non-monetary units from a subscriber's account.
- Reverse a completed charge transaction, e.g. after repudiation.

The functions for charging application usage shall meet the following general requirements:

- Hide payment policy (e.g. prepaid/postpaid) from applications
- Hide payment type (credit card, cash, bank withdrawal) from applications
- Hide subscriber's identity towards the application. This would provide anonymity (like for prepaid customers).
- Support prepaid subscribers. This requires that the application immediately gets informed if the subscriber's account covers the service usage costs. If not, the application may reject serving the subscriber.
- Allow for Multi-currency support. This shall allow service providers to request charging in their preferred currency

### General Account functions

These functions provide access to sensitive data. They shall be restricted to client applications that had been granted additional privileges via suitable means, i.e. as authorised by the framework function.

The OSA general Account function shall enable an application to:

-retrieve a transaction history of a subscriber's account, this may include

- the retrieval of a list of monetary or non-monetary amounts that have been debited from or credited to a subscribers online account.

- the request of additional information on the specific transaction (e.g. the application or service description provided with the actual transaction).

- check a subscriber's current account balance.

- monitor the subscribers account and may request to get informed of any change.

In case an application retrieves a list for a subscribers' transaction history, it shall specify the time interval for which the transaction history shall be retrieved.

## CHANGE REQUEST

⌘ **22.127** **CR** **010** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Decoupling the OSA API		
<b>Source:</b>	⌘ Nortel Networks		
<b>Work item code:</b>	⌘ OSA1-IOAPI	<b>Date:</b>	⌘ 11/05/2001
<b>Category:</b>	⌘ <b>C</b>	<b>Release:</b>	⌘ REL-5
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (essential correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)

<b>Reason for change:</b>	⌘ The aim of this change request is to challenge the assumption that the OSA API shall use a CORBA transport and broaden the applicability of the OSA to provide operators with a wider choice of applications from which to choose.
<b>Summary of change:</b>	⌘ Introduces a requirement for transport independent for the OSA API and to align as far as possible with JAIN as well as ETSI SPAN and PARLAY
<b>Consequences if not approved:</b>	⌘ Subsequently TS 23.127 will need to be aligned.

<b>Clauses affected:</b>	⌘ 6
<b>Other specs affected:</b>	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ 23.127 <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘

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## 6 High level requirements to OSA

The following high level requirements apply to the OSA application programming interface (API). The standardised API shall be:

- independent of vendor specific solutions;
- independent of programming languages, operating systems, underlying communication technologies, etc used in the service capabilities;
- secure, scalable and extensible;
- independent of the location where service capabilities are implemented;
- independent of supported server capabilities in the network;
- independent of the transport mechanism between the service capability features server and the application server;
- Access to Service Capability Features shall be realised using modern state of the art access technologies, e.g. distributed object oriented technique might be considered.;
- OSA shall be aligned as far as possible with equivalent work in other bodies, such as ETSI SPAN ~~and~~ Parlay and JAIN;
- OSA shall allow applications access to home network service capability features. Access to Service capability features other than those provided by the home network is not required.

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## CHANGE REQUEST

⌘ **22.127** CR **011** ⌘ rev **-** ⌘ Current version: **4.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Terminal capabilities		
<b>Source:</b>	⌘ SA1		
<b>Work item code:</b>	⌘ OSA	<b>Date:</b>	⌘ 11/05/2001
<b>Category:</b>	⌘ F	<b>Release:</b>	⌘ REL-4
Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:	
F (correction)		2 (GSM Phase 2)	
A (corresponds to a correction in an earlier release)		R96 (Release 1996)	
B (Addition of feature),		R97 (Release 1997)	
C (Functional modification of feature)		R98 (Release 1998)	
D (Editorial modification)		R99 (Release 1999)	
Detailed explanations of the above categories can be found in 3GPP TR 21.900.		REL-4 (Release 4)	
		REL-5 (Release 5)	

<b>Reason for change:</b>	⌘ Clarification of the support of terminal capabilities
<b>Summary of change:</b>	⌘ OSA functions which are dependent on the ability of a terminal to notify its terminal capabilities, can only be supported for terminals actually capable of notifying its terminal capabilities. Notes are added to clearly state this limitation.
<b>Consequences if not approved:</b>	⌘ Text could be misinterpreted to put additional requirements to terminals

<b>Clauses affected:</b>	⌘ 11.1, 12.3.5
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘

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# 11 Event Notification Function

The Event Notification Function shall allow an application to specify the initial point of contact which it is interested in. It provides the necessary mechanisms which enables an application to request a notification if a subscriber or network related event occurs.

For all subscriber Related Events the application shall always specify the subscriber for which the Event Notification Function is valid.

The Event Notification Function includes the availability of offering additional criteria to be specified by the application. The set of criteria is individual and may vary for the event requested. The detailed set of criteria available for each of the events above are described in [6].

## 11.1 Subscriber Related events:

- A new network service or network service capability registers,
  - when a new network service capability feature registers with the Registration Function and this event is armed by an application, that application shall be notified.
- A user becomes available.
  - when a subscriber registers to a network and this event is armed by an application, that application shall be notified.
- An initial call processing event occurs.
  - when a call to or from a given user is created and this event is armed by an application, that application shall be notified.
- A message is sent or received.
  - when a message to or from a given user is sent or received and this event is armed by an application, that application shall be notified.
- A chargeable event happens.
  - when a chargeable event occurs for a given user and this event is armed by an application, that application shall be notified.
- The user's status is changed.
  - when a given user changes her status (e.g. from idle to busy) and this event is armed by an application, that application shall be notified.
- The user's location is changed.
  - when a given user changes her location (e.g. leaving a certain area which is "identifiable" by the network) and this event is armed by an application, that application shall be notified.
- The Terminal Capabilities are changed.
  - when a given user changes her terminal ~~the capabilities of a terminal change~~ (e.g. from non MExE to a MExE capable terminal ~~when a keyboard is attached~~) and this event is armed by an application, that application shall be notified.

Note: The ability to support this function is dependent on the ability of a terminal (through e.g. MExE or WAP) to notify changes in its capabilities. Therefore this function will *not* be able to supply event notifications for terminals not supporting notification of their terminal capabilities.



### 12.3.5 Terminal Capabilities functions

The Terminal Capabilities functions enable the application to ~~find out what~~determine the capabilities of the user's terminal supports (note: "terminal" covers both (mobile) equipment and USIM).

Note 1: The ability to support this function is dependent on the ability of a terminal (through e.g. MExE or WAP) to notify its terminal capabilities. Therefore this function will *not* be able to supply terminal capabilities for terminals not supporting notification of their terminal capabilities.

Note 2: "Terminal" covers both (mobile) equipment and USIM.

The following functions shall be provided:

- **retrieval of Terminal Capabilities:**

- the application shall be able to retrieve the capabilities of the terminal. This includes:
  - the media that the terminal is capable to deal with (e.g. audio, video, ; this information is needed by the application e.g. when the user wants to download messages from the mailbox);
  - the number of calls/sessions that the terminal can deal with simultaneously.

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Sophia Antipolis, France  
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<b>CHANGE REQUEST</b>	
⌘ <b>22.127</b> <b>CR</b> <b>012</b> ⌘ rev <b>-</b> ⌘	Current version: <b>4.1.0</b> ⌘

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**Proposed change affects:** ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ Introduction of OSA support to enable Policy Management		
<b>Source:</b>	⌘ SA1		
<b>Work item code:</b>	⌘ OSA1	<b>Date:</b>	⌘ 11/05/2001
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-5
	<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)

<b>Reason for change:</b>	⌘ The concept of introducing Policy Management interfaces into OSA was agreed for inclusion in Release 2000 at the SA1 OSA Ad Hoc in October 2000. As Release 2000 was split into Release 4 and Release 5 OSA support for Policy Management was removed from Release 4. This CR re-introduces OSA Policy Management requirements for Release 5 in improved form.
<b>Summary of change:</b>	⌘ Policies provide a flexible means to describe, manage and execute business or engineering processes. They may also be used to provide flexibility and scalability to a large spectrum of applications. These include end-user interactions, billing and charging applications, location based services, network management, load management, etc. The characteristics of policies make policy APIs an attractive tool to be used by ASPs' and network providers in their applications and services. This CR describes OSA interface requirements to enable Policy Management in Release 5
<b>Consequences if not approved:</b>	⌘ OSA will not be able to support Policy Management functions in Rel'5

<b>Clauses affected:</b>	⌘ 3.1, 10		
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	
<b>Other comments:</b>	⌘		

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**Applications:** software components providing services to users by utilising service capability features.

**Application Interface:** standardised Interface used by applications to access service capability features.

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

**Charging:** A function whereby information related to a chargeable event is formatted and transferred in order to make it possible to determine usage for which the charged party may be billed.

**HE-VASP:** Home Environment Value Added Service Provider. For the definition see [1]

**Home Environment:** For the definition see [1]

**Local Service:** For the definition see [1]

**Personal Service Environment:** For the definition see [1]

**Policy:** is a formalism that may be used to express business, engineering or management criteria. A policy is represented by a set of rules. Rules are expressed as condition(s)-actions(s) pairs. When the conditions associated with a rule are satisfied the associated actions are executed.

Note: Policies created by applications are matched against the policies of a Network.

**Policy Event :** A policy event is associated with the action part of designated rule(s). The event is generated when the action part is executed.

**Policy Management:** is the capability to create, modify and delete policy related information, including policy events.

**Policy Enabled Service:** is a Service which has some or all of its properties expressed in terms of policy rules. E.g. Charging Service wherein charging criteria are expressed in terms of policy rules

**Policy Decision Point:** A function of the network where the applicable policy is chosen.

**Policy Enforcement Point:** A function of the network where the chosen policy is applied.

**Policy Repository:** A function of the network where policies are stored.

**Policy Enabled network:** is a network that supports at least one instance of a Policy Repository and Policy Decision Point and Policy Enforcement Point.

**Service Capabilities:** bearers defined by parameters, and/or mechanisms needed to realise services. These are within networks and under network control.

**Service Capability Feature:** functionality offered by service capabilities that are accessible via the standardised application interface.

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**Service Provider:** an organisation which delivers services to the subscriber. This can be e.g. the operator of the subscriber's Home Environment or an authorised VASP.

Note: In the context of this specification it is assumed, that at least one application providing the services of the Service Provider makes use of OSA functions

**Services:** a service is the user experience provided by one or more applications.

**User:** For the definition see [1]

**Virtual Home Environment:** For the definition see [1]

Further 3G related definitions are given in 3G TS 21.905 [3].

## 3.2 Abbreviations

For the purposes of this TS the following abbreviations apply:

API	Application Programming Interface
CAMEL	Customised Application For Mobile Network Enhanced Logic
HE	Home Environment
PSE	Personal Service Environment
VHE	Virtual Home Environment
OSA	Open Service Access
SCF	Service Capability Feature
MExE	Mobile Execution Environment

Further 3G related abbreviations are given in 3G TS 21.905 [3].

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=== next change ===

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## 10 Requirements for Policy Management

Applications shall have the ability to interact with policy-enabled Service Capability Features in a secure manner. The network policies always take precedence over the application defined policies.

The OSA interface shall provide sufficient capabilities to enable applications to request:

- **To manage the application's policy-related information**  
This allows applications to create, modify and delete policies, policy events and to activate and deactivate policy rules.
- **To manage policy event notification**  
This allows applications to register for specific policy events. Once registered for such events, the application shall receive notification of the events until it explicitly requests the termination of the notification request
- **To collect policy statistics**  
This allows an application to collect policy related statistics from the network. Examples include success or failure of operations on policies and time stamps of policy events.

No requirements for this release are identified.

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CR-Form-v3	
<b>CHANGE REQUEST</b>	
⌘ <b>22.127</b> CR <b>013</b> ⌘ rev <b>-</b> ⌘ Current version: <b>4.1.0</b> ⌘	

For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.

Proposed change affects: ⌘ (U)SIM  ME/UE  Radio Access Network  Core Network

<b>Title:</b>	⌘ De-Registration Function		
<b>Source:</b>	⌘ SA1		
<b>Work item code:</b>	⌘ OSA	<b>Date:</b>	⌘ 11/05/2001
<b>Category:</b>	⌘ <b>B</b>	<b>Release:</b>	⌘ REL-5
<i>Use <u>one</u> of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (Addition of feature), <b>C</b> (Functional modification of feature) <b>D</b> (Editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use <u>one</u> of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>REL-4</b> (Release 4) <b>REL-5</b> (Release 5)	

<b>Reason for change:</b>	⌘ Add De-Registration function to the OSA Framework
<b>Summary of change:</b>	⌘ OSA already supports the registration function to make applications aware of new network service capability features. But what is missing is to inform applications on service capability features which has disappeared.
<b>Consequences if not approved:</b>	⌘ Applications does not get informed of SCF's not available any longer

<b>Clauses affected:</b>	⌘ 11.2, new chapter in 12.1
<b>Other specs affected:</b>	⌘ <input type="checkbox"/> Other core specifications ⌘ <input type="checkbox"/> <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
<b>Other comments:</b>	⌘

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## 11 Event Notification Function

The Event Notification Function shall allow an application to specify the initial point of contact which it is interested in. It provides the necessary mechanisms which enables an application to request a notification if a subscriber or network related event occurs.

For all subscriber Related Events the application shall always specify the subscriber for which the Event Notification Function is valid.

The Event Notification Function includes the availability of offering additional criteria to be specified by the application. The set of criteria is individual and may vary for the event requested. The detailed set of criteria available for each of the events above are described in [6].

### 11.1 *Subscriber Related events:*

- A new network service or network service capability registers,  
when a new network service capability feature registers with the Registration Function and this event is armed by an application, that application shall be notified.
- A user becomes available.  
when a subscriber registers to a network and this event is armed by an application, that application shall be notified.
- An initial call processing event occurs.  
when a call to or from a given user is created and this event is armed by an application, that application shall be notified.
- A message is sent or received.  
when a message to or from a given user is sent or received and this event is armed by an application, that application shall be notified.
- A chargeable event happens.  
when a chargeable event occurs for a given user and this event is armed by an application, that application shall be notified.
- The user's status is changed.  
when a given user changes her status (e.g. from idle to busy) and this event is armed by an application, that application shall be notified.
- The user's location is changed.  
when a given user changes her location (e.g. leaving a certain area which is "identifiable" by the network) and this event is armed by an application, that application shall be notified.
- The Terminal Capabilities are changed.  
when a given user changes her terminal capabilities (e.g. from non MExE to a MExE capable terminal) and this event is armed by an application, that application shall be notified.

### 11.2 *Network Related Events:*

- A network fault management condition is met.  
when a fault management condition occurs at the underlying network (e.g. congestion of network components) and this event is armed by an application, that application shall be notified.
- [A network service or network service capability de-registers,](#)  
[when a network service capability feature de-registers with the Framework all applications](#)  
[which are currently authorised to use this service capability feature shall be notified.](#)

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### 12.1.2-bis Service De-Registration function

The De-Registration function enables the non-framework service capability features (i.e. service capability features that contain non-Framework functions) to de-register with the Framework. When a service capability feature de-registers the service capability feature shall discontinue providing service to all applications. Further, the service capability feature can no longer be discovered.