3GPP TSG CN Plenary Meeting #20
04-06 June 2003. Hämeenlinna, FINLAND

~~NP-030246~~NP-030304

Source: CN5 (OSA)

Title: Revised Rel-6 CR 29.198-04-1 OSA API Part 4: Call control; Sub-part 1: Call Control Common Definitions

Agenda item: 9.7

Document for: APPROVAL

Doc-1st-Level	Spec	CR	R	Ph	Subject	Cat	Ver-Curr	Doc-2nd-Level	WI
~~NP-030246~~ NP-030304	29.198-04-1	006	~~-~~1	Rel-6	Add support for multi services	~~F~~ C	5.2.0	N5-021159	OSA3

joint API group (Parlay, ETSI Project OSA, 3GPP TSG_CN WG5) **N5-021159 rev 1**
Meeting #21, Dublin, IRELAND, 28 – 31 October 2002

CR-Form-v5

CHANGE REQUEST

⌘ **29.198-04-1** **CR** **006** ⌘ **rev** **-1** ⌘ Current version: **5.2.0** ⌘

*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 **X**

Title:	⌘	Add support for multi services
Source:	⌘	Appium
Work item code:	⌘	OSA3
Date:	⌘	05/11/2002
Category:	⌘	~~F~~ C
Release:	⌘	*REL-6*

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
REl-4 (Release 4)
REl-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	OSA Specification currently does not cater for the possibility that a network may allow more applications to be invoked on the same call or session. The current restriction in the OSA specification originate from the Single Point of Control principle as defined in IN CS1 allowing only one service at a time to control a call.
Summary of change:	⌘	Add a description that as a network option the core network may support a Multiple Points of Control concept enabling multiple services to act on the same call or session. The change proposed is solely in the text part.
Consequences if not approved:	⌘	From a network operators viewpoint no multi service support possible with the OSA Call Control APIs. It prevents more opportunities for traffic in the networks if we do not allow two or more separate clients to register for different call events on the same termination.

Clauses affected:	⌘	4.3 (new)		
Other specs affected:	⌘	**X** Other core specifications	⌘	29.198-04-3
		☐ Test specifications		
		☐ O&M Specifications		
Other comments:	⌘	Correlated with 29.198-04-3 CR in N5-021139		

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at: http://www.3gpp.org/3G_Specs/CRs.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

Introduction

The OSA Specifications is lacking a description of the possibility to allow multiple services to control the call or session.

Part 4-1

Changes to 3GPP TS 29.198-04-1

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. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 29.198-1 "Open Service Access; Application Programming Interface; Part 1: Overview".

[2] 3GPP TS 22.127: "Stage 1 Service Requirement for the Open Service Access (OSA) (Release 5)".

[3] 3GPP TS 23.127: "Virtual Home Environment (Release 5)".

[4] 3GPP TS 22.002: "Circuit Bearer Services Supported by a PLMN".

[5] ISO 4217 (1995): "Codes for the representation of currencies and funds ".

6] 3GPP TS 24.002: "GSM-UMTS Public Land Mobile Network (PLMN) Access Reference Configuration".

[7] 3GPP TS 22.003: "Circuit Teleservices supported by a Public Land Mobile Network (PLMN)".

[8] ITU-T Recommendation Q.1238-2 (2000): "Interface Recommendation for Intelligent Network Capability Set 3: SCF - SSF interface".

4 Call Control SCF

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4.3 Application Control of a Call or Session

4.3.1 Introduction

Services should be provision-able by multiple independent parties and therefore multiple applications may apply control to the same instance of a call or a session. How this may be enabled is further described in the following.

However, first some reflections on what is meant with application control:

Single application control may be classified as to allow at the same point in time during call or session processing only one application to be capable to influence the call or session. This does not exclude more applications on the same call, but they cannot operate at the same time. This is referred to as ***"Single point of Control (SPC)"*** in IN terminology.

Multiple application control may be classified as to allow at the same point in time during call or session processing more than one application to be capable to influence the call or session. This is referred to as ***"Multiple Points of Control (MPC)"*** in IN terminology.
MPC will demand some rules for event handling among multiple applications on a call like the cascaded chain principle as applied in IN CS3 [8], where MPC has been introduced.

4.3.2 Concept of Multiple Points of Control

The term "multiple points of control" refers to the situation when multiple concurrently executing applications apply control to one and the same instance of a call or session.

General Objective:

"If there are more than one controlling application acting on the same call or session, then the event notification detection point processing requested by any of the involved applications shall be performed in the same way as if notification reporting had occurred in different call or session control instances, which are separated by a Network Node interface".

Note: The objective description above is taken from [8], but slightly generalized to become none IN specific.

The MPC general objective signifies the cascaded chain principle, which is further explained below through an informative cascaded chain model.

4.3.2.1 Cascaded Chain Model

When services running in different nodes apply control to a call or session, even if they are unaware of each other, they provide a cascading of applications. They provide a natural ordering of applications. This ordering can be said to be upstream or downstream. A downstream ordering is the ordering of applications as they are invoked downstream in the network from the calling party (e.g. origin client, UAC) toward the called party (e.g. destination server, UAS). An upstream ordering is the ordering of applications as they are invoked upstream in the network from the called party toward the calling party.

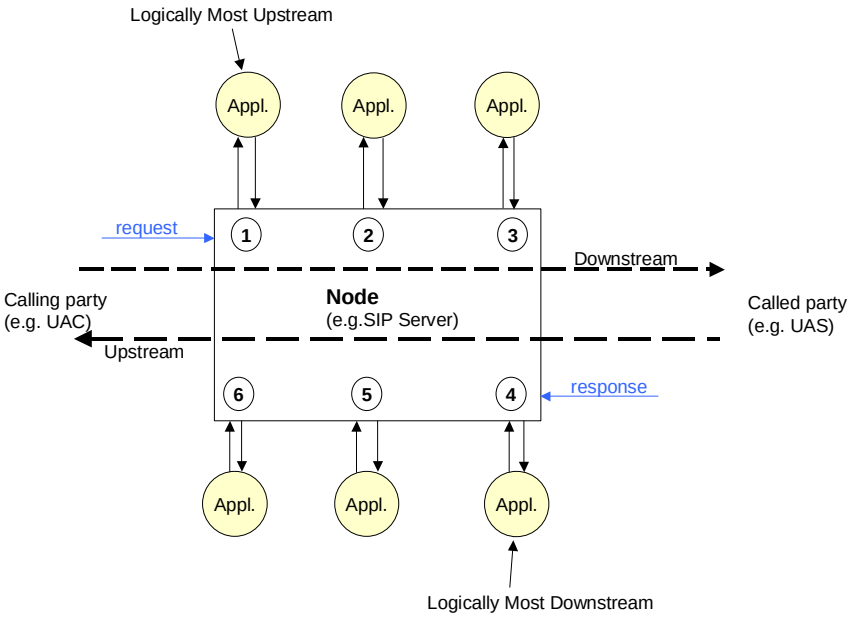

Figure x: Cascaded Chain Model

When applications that apply control to one instance of a call or session are invoked in some order, on the same node, the applications can be thought of as cascaded.

When a "request" is received then the earlier the application is invoked, based on this event, the more logically upstream it is considered to be in the chain of cascaded applications. When a response is received then the earlier the applications is invoked, based on this event, the more logically downstream it is considered to be in the chain of cascaded applications.

This means that the applications are treated as if they were triggered in different nodes (or hosts). This model is conceptually simple and may provide a natural algorithm for resolving conflicts between the instructions of multiple service applications at the same call or session event.

On reception of a call or session event in the network the actions are executed in order of priority in the following manner:

1. Control is passed to the first application.

2. Some response is received from the first application

3. Control is passed to the second application

4. Some response is received from the second application and so on.

In this way a decision about whether to invoke a subsequent application can depend on the output from the previous application.

If the first application terminates the request then the second application must not be invoked.

The most simple form of cascading is an order based in which the applications are triggered on a single event. If for example three application "X1" "Y1" and "Z1" need to be triggered on event "e"; then specifying an order say X1-Y1-Z1 for event e means that first "X1" is contacted and its instructions taken, then the output of this is passed to "Y1" and finally the output of "Y1" is passed to "Z1". (The letter represents the application and the number an instance of the application running for a given user.

How about future events that should invoke the same instances of "X" "Y" and "Z"? For these events there could be a totally different order, specified say YXZ. It would however be administratively very complex if one has to specify an

order for all instances for all events. Thus a general basic principle may be useful like the cascaded chain for defining a default ordering in the cases where this is not possible. The actual order depends on whether the event is coming from the calling party (downstream) or the called party (upstream).

If however a new application A1 should be triggered on "er" then it would be necessary to place this somewhere in the order. However, a default general assumption can be that event reporting to already invoked applications should have precedence over the invocation of new applications [8].

Anyhow, as a network operator's option any MPC generalized rules specified may be replaced or enhanced by network operator specific rules.

4.3.3 Service Interactions

A variety of different services, service enablers, and capabilities are being standardized. There are potential feature interactions among these various services, service enablers, and capabilities.
Conflicts, incompatibilities, or modifications of one feature's characteristics due to interactions with another active feature need to be resolved in case of multiple services.
In case there are multiple initial notification requests (filter criteria) assigned for one subscriber, a priority describe the order in which the applications shall be contacted when the call or session encounters an event that matches the initial filter criteria. Handling of service/application interaction issues to prevent undesired interactions when multi services are to be supported is outside the scope of this specification. It is the basic assumption that the network operator is responsible for the provisioning of triggers in the network as in this domain full awareness exists of all other services and applications.

4.3.4 Multiple services - applicability of MPC for Parlay/OSA

As far as the OSA/Parlay API is concerned a user can choose his clients as he wishes, i.e. the user may subscribe to more services over the network, each one being to a separate client application, not necessary placed in the same physical entity.

From an OSA/Parlay gateway side it is a network implementation issue if multiple or single point of control mechanisms are supported. Multi service support extends the number of applications that can register for notifications. An example of multi service support network could be an OSA/Parlay Gateway in a UMTS IMS network or IN network complying with the multiple points of control principle as defined for IN CS3.

Overlapping criteria have been defined for GCCS and MPCCS to prevent multiple points of control, leading to possible interaction problems. Where Multi service support is provided, the overlap criteria rules as defined to secure single point of control can be overruled.