SOAP Network API for Roaming Provisioning

Candidate Version 1.0 – 14 Apr 2014

Open Mobile Alliance

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Contents

Figures

Tables

1. Scope

This specification defines a SOAP API for Roaming Provisioning according to [IF_7_SPEC].

2. References

2.1 Normative References

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2.2   Informative References

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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

For the purpose of this document, all definitions from the OMA Dictionary apply [OMADICT].

3.3 Abbreviations

ACR	Anonymous Customer Reference
API	Application Programming Interface
ARP	Alternate Roaming Provider
DSP	Domestic Service Provider
GSM	Global System for Mobile Communications
GSMA	GSM Association
HTTP	HyperText Transfer Protocol
ICCID	Integrated Circuit Card IDentifier
IF	Interface
IMSI	International Mobile Subscriber Identity
ISDN	Integrated Services Digital Network
LBO	Local Break Out
MNO	Mobile Network Operator
MNP	Mobile Number Portability
MSISDN	Mobile Subscriber ISDN Number
MVNO	Mobile Virtual Network Operator
OMA	Open Mobile Alliance
RSA	Rivest, Shamir and Adleman
SCR	Static Conformance Requirements
SIM	Subscriber Identity Module
SIP	Session Initiation Protocol
SMS	Short Message Service
SSL	Secure Sockets Layer
TADIG	GSMA Transferred Account Data Interchange Group
TLS	Transport Layer Security
TS	Technical Specification
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
VAT	Value Added Tax

WSDL	Web Services Description Language
XML	eXtensible Markup Language
XSD	XML Schema Definition

4. Introduction

The Technical Specification of the SOAP Network API for Roaming Provisioning provides Web Service Definition, Fault Definitons, the WSDL as well as support material including sequnce diagrams and examples for this interface.

Article 4 of the European Roaming Regulation [EU531_2012] requires that Domestic Service Providers (DSPs) shall enable their customers to access regulated voice, SMS and data roaming services as a bundle provided by an Alternative Roaming Provider (ARP), i.e. decoupling in the home country. It requires furthermore that neither domestic nor roaming providers shall prevent their customers from accessing data roaming services provided directly on a visited network, i.e.decoupling in the visited country.

Two types of decoupling models are considered in the regulation. For the first type of decoupling, where regulated voice, SMS and data roaming services are provided as a bundle, the Single-IMSI solution has been chosen. Under the Single IMSI technical modality the separate sale of roaming services is technically still provided by the DSP, which serves as the host mobile network operator to the ARP. The separate sale of roaming services is provided on a wholesale basis to the ARP, which resells the services to the roaming customer at the retail level. This basic option of resale of retail roaming services does not allow the ARP to control which visited networks are to be used in preference to others.

For the second type of decoupling, where data roaming services provided directly on a visited network, the Local Break Out (LBO) solution has been chosen. The basic requirements are the implementation and activation of the processing of data roaming traffic in the visited network and the requirement not to prevent the manual or automatic selection of a visited network.

The SOAP Network API for Roaming Provisioning is provided to permit the technical relation between the DSP and ARP during the provisioning phase for the SingleIMSI scenario.

4.1   Version 1.0

Version 1.0 of this specification supports the following operations:

- Establish a relationship between a DSP and an ARP for a Single IMSI service.

- Obtain information of a Single IMSI service.

- Terminate a relationship between a DSP and an ARP for a Single IMSI service.

- Swap roaming service for a Single IMSI, from a "donor" ARP to a "recipient" ARP.

- Suspend roaming for a Single IMSI service, to allow fraud management checks.

- Stop roaming suspension for a Single IMSI service.

- Change charging interface between a DSP and an ARP for a Single IMSI service, from online billing to offline billing or vice-versa.

5. Detailed service description

This section is organized to support a comprehensive understanding of the Roaming Provisioning SOAP API design. It specifies all aspects of the Roaming Provisioning Web Service, these being:

- Sequence diagrams.
- Name spaces.
- Data definitions.
- Interface specification plus detailed operation descriptions.
- Fault definitions.
- Service policies.
- WSDL Description of the interfaces.

The SOAP Network API for Roaming Provisioning is provided to permit the technical relation between the DSP and ARP during the provisioning phase for the SingleIMSI scenario.

The operations defined are:

- Roaming change from DSP to an ARP. A new roaming subscription is activated.

- Roaming change with swap between two ARPs. A new roaming subscription is activated for the recipient ARP, while the roaming subscription of the donor ARP is deactivated.

- Roaming change from ARP to DSP, initiated by DSP. The roaming subscription is deactivated by DSP. This operation is also used:

  - o if the subscriber ports out via MNP while having a roaming subscription with an ARP;

  - o if the subscriber changes user identifier(s) while having a roaming subscription with an ARP. The ARP will activate a new roaming subscription with the new user identifier(s).

- Roaming change from ARP to DSP, initiated by ARP. The roaming subscription is deactivated by ARP.

- Roaming suspension, requested by ARP in case of suspected fraud.

- Roaming un-suspension, requested by ARP in case the fraud risk is sufficiently mitigated.

- Change of billing interface used for a subscriber, initiated by DSP.

- Change of billing interface used for a subscriber, initiated by ARP.

5.1   Sequence Diagrams

The following subsections describe the sequence flows of typical scenarios.

Note: All messages represented by dashed arrows (e.g. PreProvisioningAck) are synchronous technical acknowledgements and just mean 'message received'. These acknowledgements do not imply any business acceptance of the message payload.

5.1.1   Roaming Change from DSP to an ARP

This figure below shows a scenario for a roaming change from a DSP to an ARP.

This process applies when a customer wants to subscribe an ARP roaming subscription.
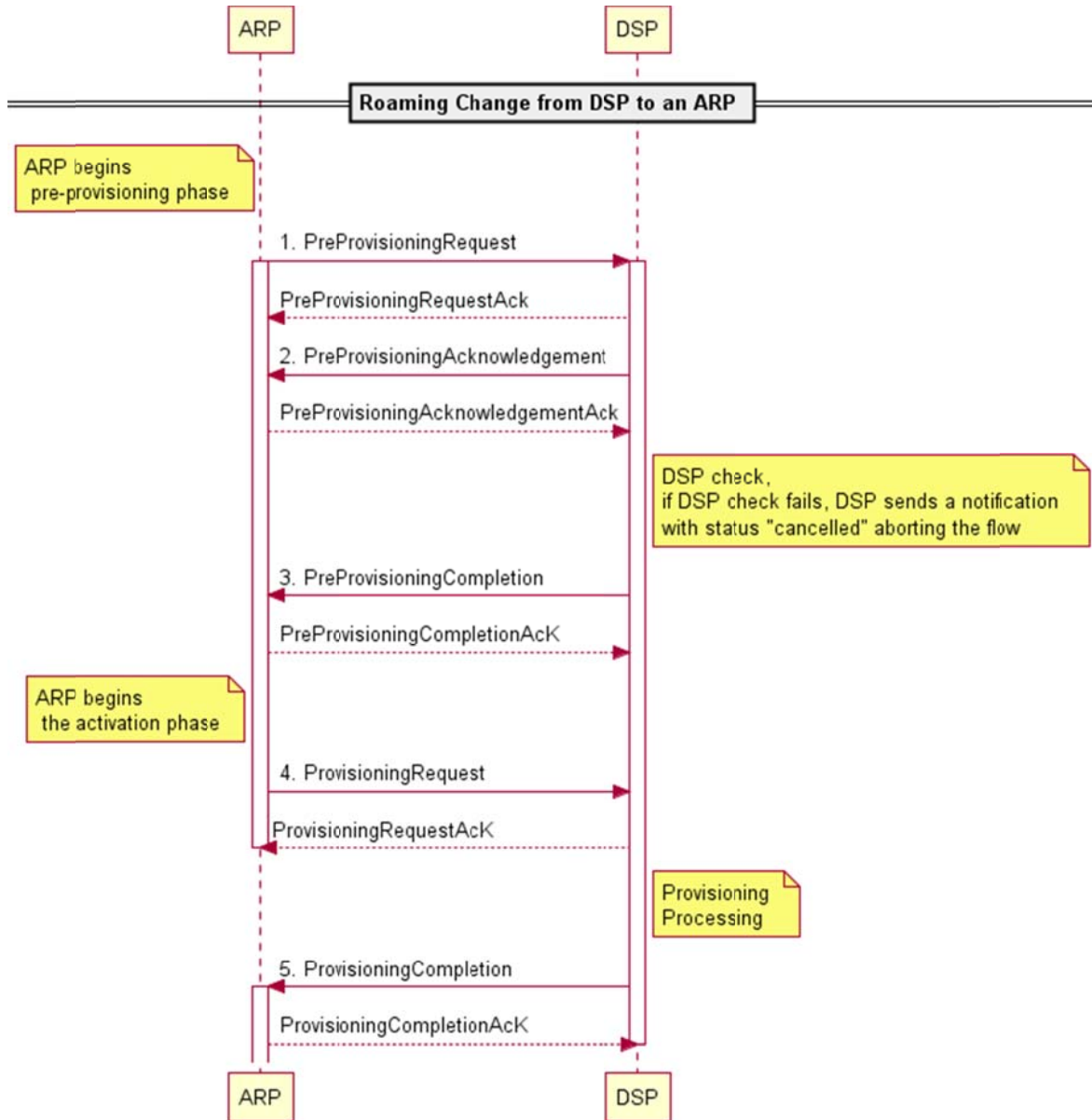
Figure 1: Roaming subscription activation

Outline of the flows:

1. An ARP requests the pre-provisioning of a roaming subscription for a certain userId.

2. The DSP sends a PreProvisioningAcknowledgement to the ARP. This message includes the time at which the DSP received the PreProvisioningRequest.

3. The DSP notifies the ARP about the result of pre provisioning. If the pre-provisioning failed the flow ends.

4. The ARP requests the activation of the roaming subscription.

5. The DSP notifies the ARP about the completion of activation phase (OK or NOT OK).

5.1.2   Roaming Change from ARP to DSP

This figure below shows a scenario for a change from ARP to DSP, initiated by DSP.

This process applies when a customer wants to migrate back from an ARP contract to a DSP offer.
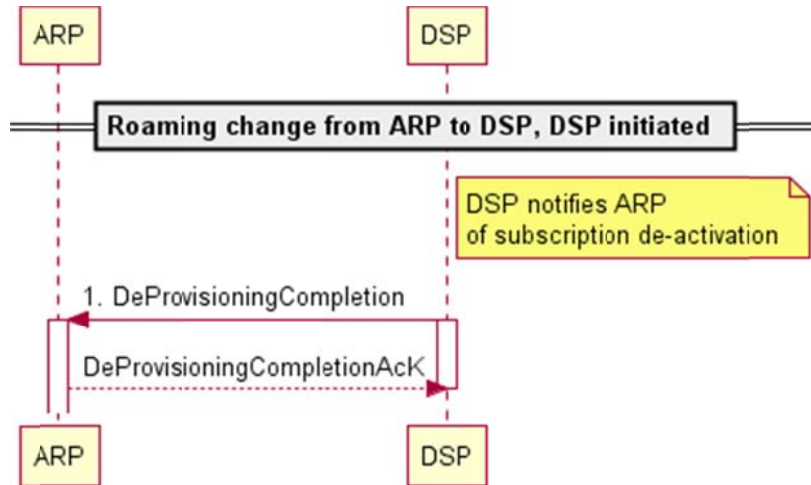
Figure 2: Change from ARP to DSP

Outline of the flows:

1. The DSP notifies the ARP whether the subscription has been deactivated successfully or not.

5.1.3 Signalling status change, ARP initiated

This figure below shows a scenario for changing the signalling status.

This process applies when an ARP requests to the DSP to change their billing basis for a roaming subscription from online to offline or vice versa.
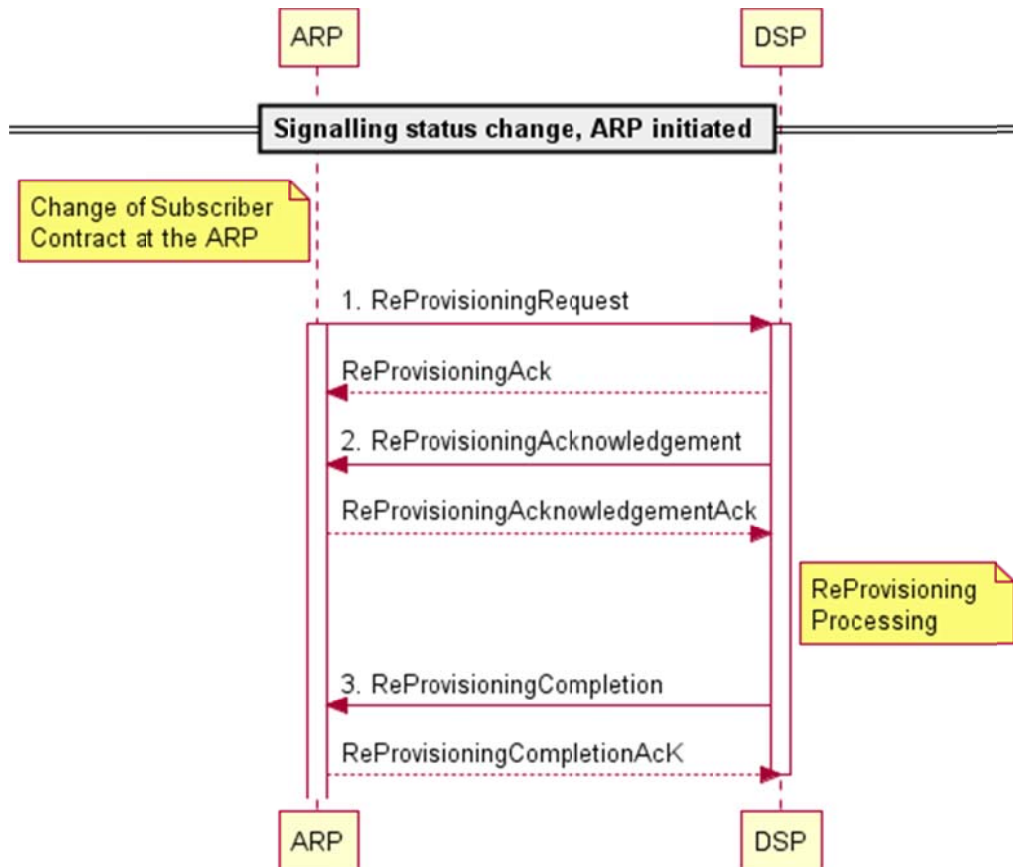
Figure 3: Signalling status change – ARP initiated

Outline of the flows:

1. The ARP requests the DSP to change the customer charge type containing the new signalling status, "OffLine" or "OnLine".
2. The DSP sends a ReProvisioningAcknowledgement to the ARP. This message includes the time at which the DSP received the ReProvisioningRequest.
3. The DSP informs the ARP about the outcome of signalling status change.

5.1.4 Signalling status change, DSP initiated

This figure below shows a scenario for changing the signalling status.

This process applies when DSP changes the billing interface for an ARP customer.
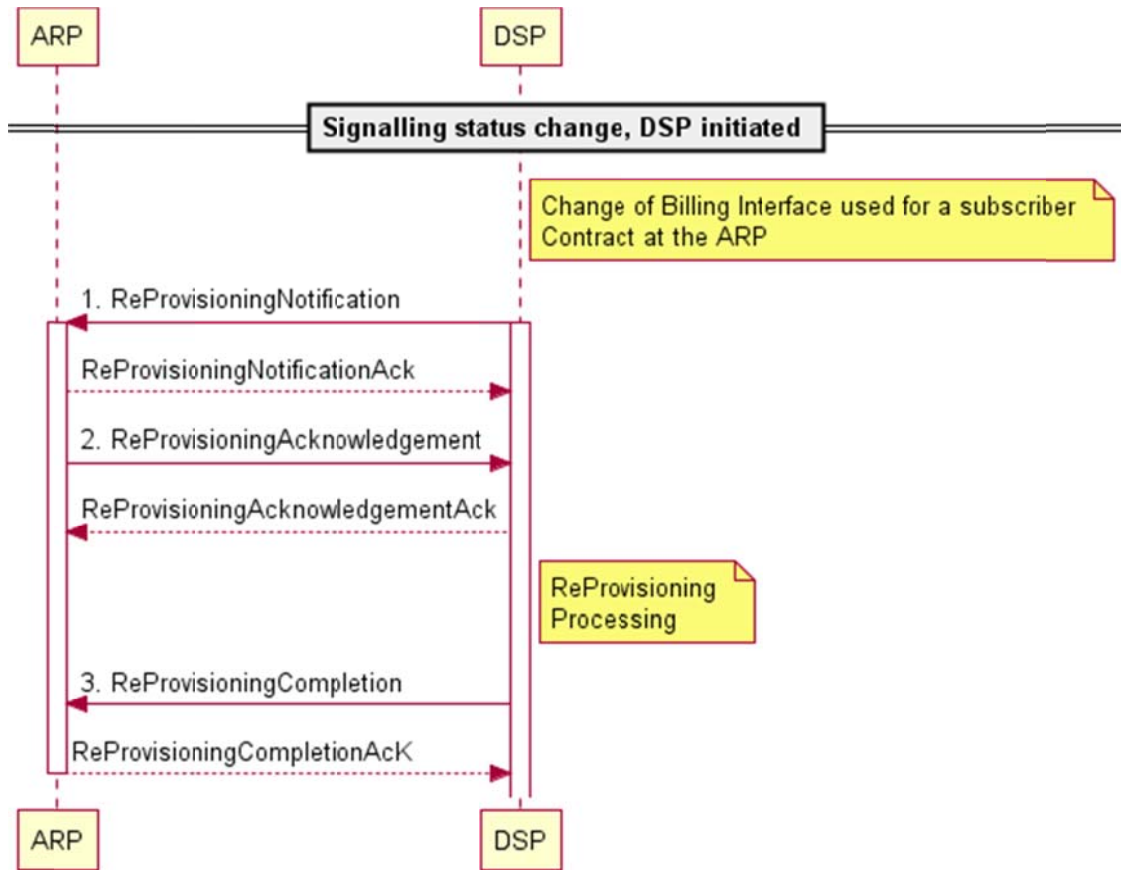
Figure 4: Signalling status change – DSP initiated

Outline of the flows:

1. The DSP informs the ARP that the signalling status is going to change to from "OnLine" to "OffLine"or vice versa.

2. After the ARP re-provisioned its systems to be capable of receiving records for the subscriber relating to both pre- and post-paid charging principles, the ARP sends a ReProvisioningAcknowledgement to the DSP. This message includes the time at which the ARP received the ReProvisioningNotification.

3. The DSP informs the ARP about the completion of signalling status change.

5.1.5   Activation with Swap between two ARPs

This figure below shows a scenario for the subscription swap between two ARPs. This process applies when a customer requires an ARP subscription having another one active and the Donor ARP can't stop the process.
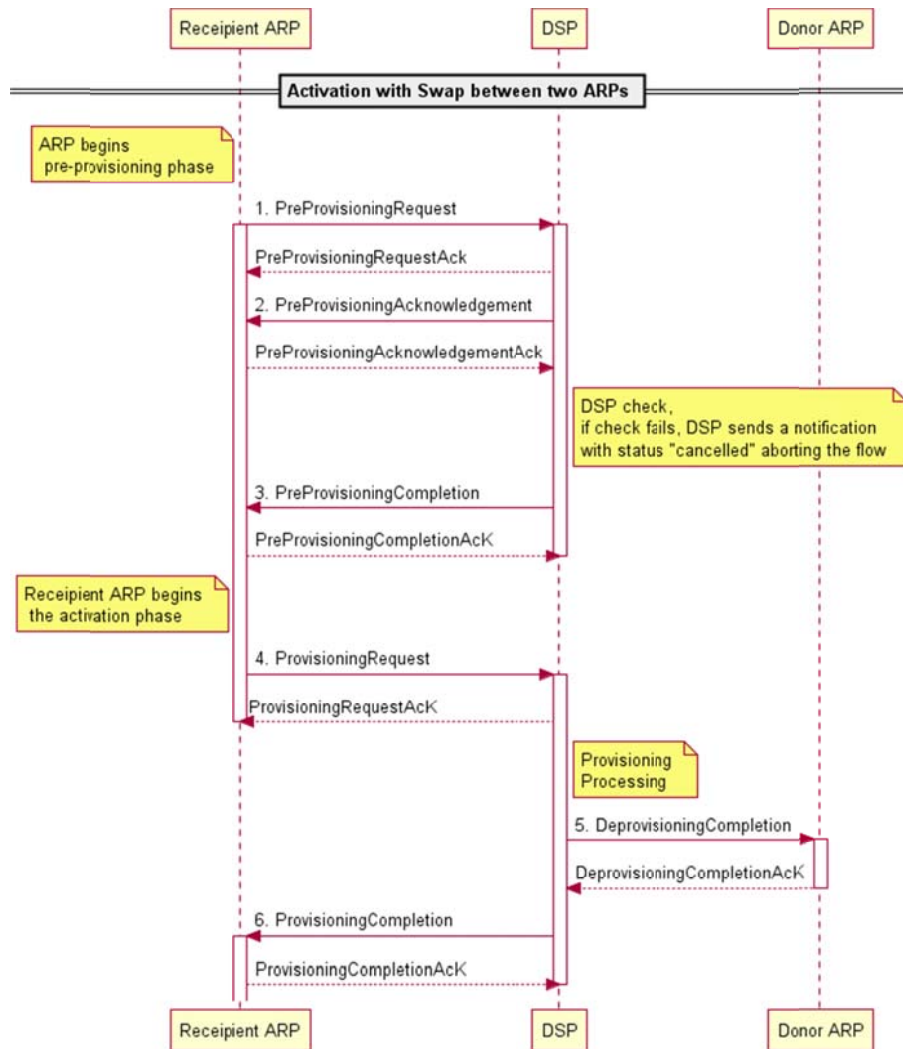
Figure 5: Activation with Swap between two ARPs

Outline of the flows:

1. A Recipient ARP requests the pre-provisioning of a roaming subscription for a certain userId.

2. The DSP sends a PreProvisioningAcknowledgement to the Recipient ARP. This message includes the time at which the DSP received the PreProvisioningRequest.

3. The DSP notifies the Recipient ARP about the result of pre-provisioning. If the pre-provisioning failed, the flow ends.

4. The Recipient ARP requests the activation of the roaming subscription.

5. The DSP notifies the Donor ARP, which had an active roaming subscription for the same user that the roaming subscription has been deactivated (reason "Swap to another ARP").

6. The DSP notifies the Recipient ARP about the completion of activation phase.

Note: Steps 5 & 6 are independent and do not have to be executed in the given order.

5.1.6   Fraud Management and Prevention: ARP suspends and then un-suspends the roaming subscription

This figure below shows a scenario for the suspension/un-suspension of a subscription within a fraud management process.
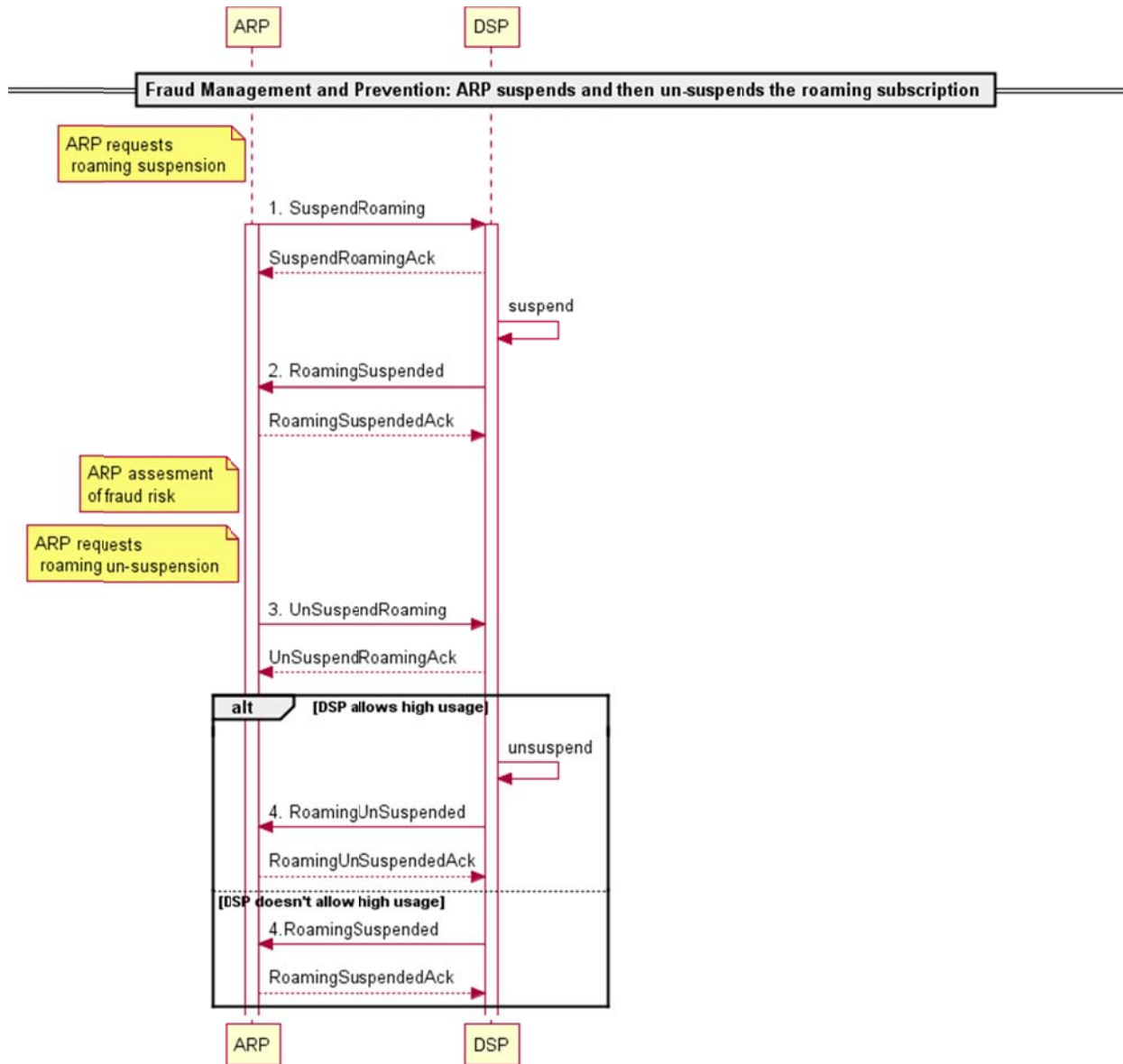
Figure 6: Roaming subscription suspension and un-suspension

Outline of the flows:

1. The ARP requests the suspension of a roaming subscription.

2. The DSP informs the ARP about the completion of suspension.

3. The ARP requests the un-suspension of the suspended roaming. Note: If the ARP does not allow high usage then this flow end here and the service deactivation according to the flow in section 5.1.8 follows.

4. The DSP notifies the ARP about the result of the un-suspension by either sending RoamingUnsuspended or RoamingSuspended.

5.1.7 Fraud Management and Prevention: ARP suspends and then deactivates the roaming subscription

This figure below shows a scenario for the suspension and subsequent deactivation of a subscription within a fraud management process.
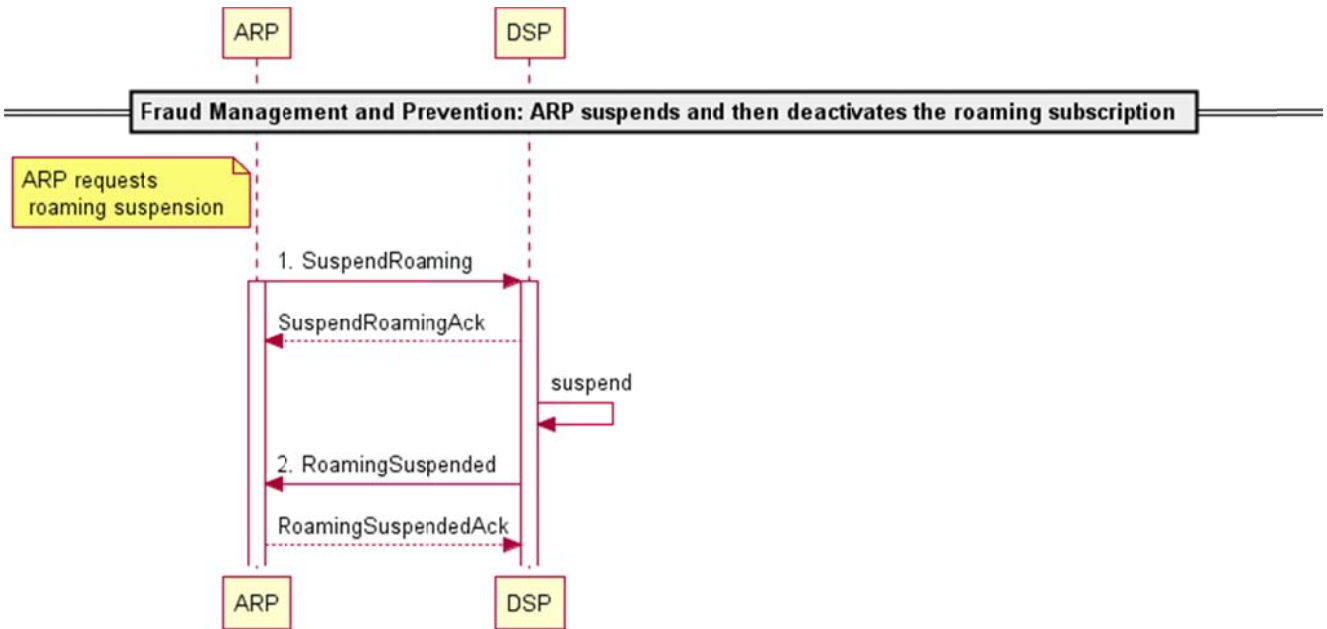
Figure 7: Roaming subscription suspension and deactivation

Outline of the flows:

1. The ARP requests the suspensions of a roaming subscription.
2. The DSP informs the ARP about the completion of suspension.

   Then the service deactivation follows according to the flow in section 5.1.8 applies with "Fraud Management" as Reason Code.

5.1.8 DeActivation of contract

This figure below shows a scenario for the deactivation of a contract.
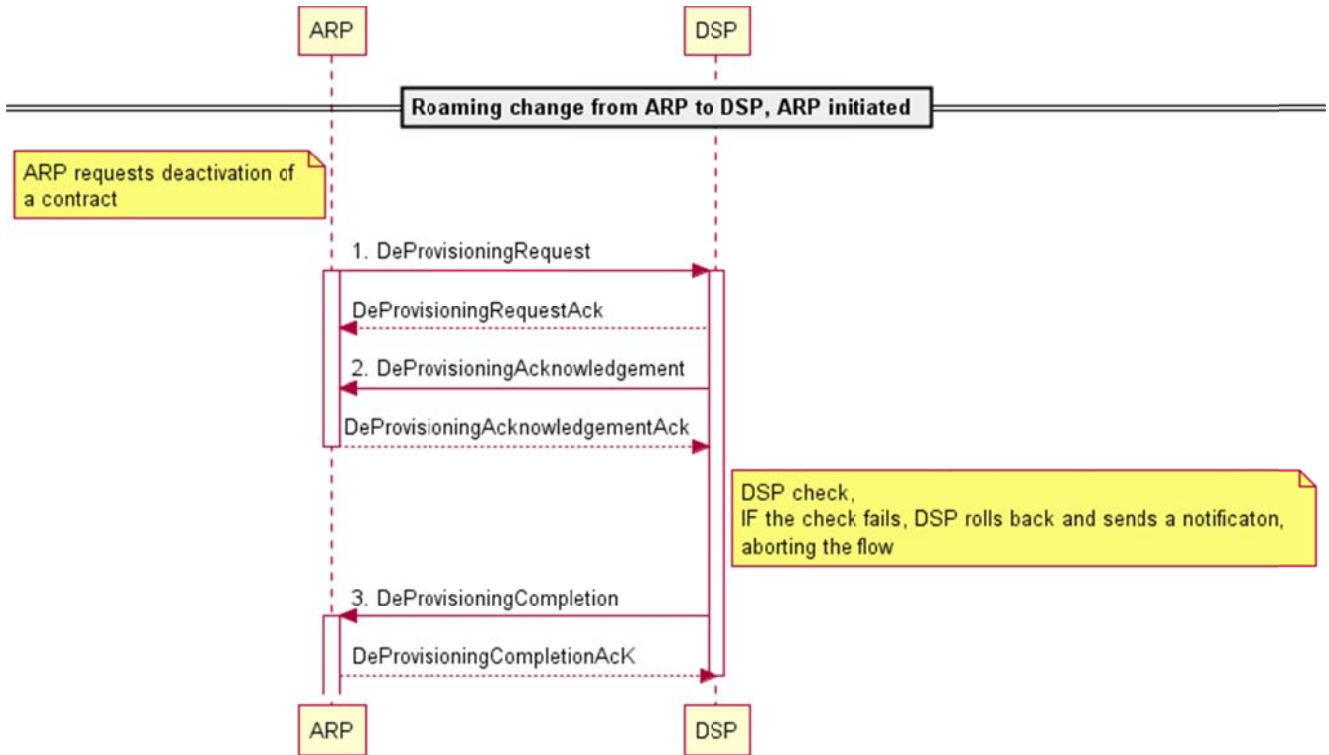
Figure 8: De-activation of roaming subscription

Outline of the flows:

1. The ARP requests the deactivation of a roaming subscription.

2. The DSP notifies the ARP about the result of the deactivation ("DeactivationAuthorized" or back to the "Active" status). If the DSP has refused the deactivation the flow stops here.

3. The DSP notifies the ARP about the completion of the deactivation process.

5.2 Use of Web Services technologies

5.2.1 Web Service message content

5.2.1.1 SOAP

All Web Service messages SHALL send and accept messages that conform to the SOAP use defined in the WS-I Basic Profile [WSI1.1], using the document/literal encoding style.

5.2.1.2 XML

All Web Service messages SHALL send and accept messages that conform to the XML use defined in the WS-I Basic Profile [WSI1.1].

5.2.1.3 HTTP

All Web Service messages SHALL send and accept messages that conform to the HTTP use defined in the WS-I Basic Profile [WSI1.1].

5.2.2   Web Service interface definitions

Web Services interfaces are defined according to the following.

5.2.2.1   WSDL

All Web Service interfaces SHALL be defined using WSDL 1.1 as defined in the WSDL specification [WSDL1.1] and be conformant to the WSDL use defined in WS-I Basic Profile [WSI1.1].

5.2.3   Security

If a message contains an identifier and/or credentials representing the sender of the message, this SHALL be accomplished in one of the following mechanisms:

- WS-Security [WS-SEC];
- VPN (Virtual Private Network) tunnel based on IPsec or TLS has to be created before starting to exchange Web Service messages;
- HTTPS (HTTP over TLS) as specified in the WS-I Basic Profile [WSI1.1].

If message confidentiality and/or integrity are required by web service provider, this SHALL be accomplished in one of the following mechanisms:

- XML encryption [XML-ENC] and/or XML signature [XML-SIG] as specified in WS-Security [WS-SEC];
- IPsec or TLS used to create VPN tunnel is profiled in [OMA-SEC_CF];
- HTTPS (HTTP over TLS) as specified in [OMA-SEC_CF].

5.3   XML Schema Data Type Definition

The XML schema for the data structures defined in the section below is given in [SUP_RoamProv].

5.3.1   Namespaces

The XML namespace for the Roaming Provisioning data types is:

> urn:oma:wsdl:roamingprovisioning:1

The 'xsd' namespace prefix is used in the present document to refer to the XML Schema data types defined in XML Schema [XMLSchema1, XMLSchema2]. The use of namespace prefixes such as 'xsd' is not semantically significant.

5.3.2   Structures

The subsections of this section define the data structures used in the RoamingProvisioning API.

Some of the structures can be instantiated as so-called root elements.

For structures that contain elements which describe a user identifier, the following applies:

- If a user identifier (e.g. address, participantAddress, etc.) of type anyURI is in the form of an MSISDN, it MUST be defined as a global number according to [RFC3966] (e.g. tel:+19585550100). The use of characters other than digits and the leading "+" sign SHOULD be avoided in order to ensure uniqueness of the resource URL.

- If an equipment identifier of type anyURI is in the form of a SIP URI, it MUST be defined according to [RFC3261].

- If a user identifier (e.g. address, userId, etc) of type anyURI is in the form of an Anonymous Customer Reference (ACR), it MUST be defined according to [IETF_ACR_draft], i.e. it MUST include the protocol prefix 'acr:' followed by the ACR.

Note: The description of sender respectively receiver elements in the data structures below just considered the scenario ARP-DSP. In an ARP-MVNO-MNO scenario the MVNO or MNO can also be a sender respectively receiver.

5.3.2.1   Type: Ack

This type represents the synchronous technical acknowledgement of 'message received'. It does not imply any business acceptance of the message payload. Business acceptance (or rejection) is reflected in the business acknowledgement types and faults defined below for each message.

Element	Type	Optional	Description
(empty)			In the current version of this specification, this type is empty.

5.3.2.2   Type: PreProvisioningRequest

This type represents a roaming subscription.

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
arp	Tadig	No	TADIG code of the ARP requesting the PreProvisioning operation (it is possible that this is a different ARP from the 'sender')
userIdenitifier	UserIdentifier	No	Array of parameters used to communicate UserId.
arpSignallingStatus	ArpSignalling	Yes	Signalling (billing type) status of ARP subscription
transactionId	TransactionId	No	Unique identifier for this sequence of requests. Generated by the ARP and used for traceability.
authorizationInformation	AuthorizationInformation	Yes	Authorization parameters as defined by national regulator
bilateralInformation	BilateralInformation	Yes	Bilaterally agreed content

5.3.2.3   Type: Tadig

Restriction base	Restriction
xsd:string	xsd:length="5", as per [TADIG]

5.3.2.4   Type: BilateralInformation

Restriction base	Restriction
xsd:string	xsd:maxLength="80"

5.3.2.5   Type: PreProvisioningAcknowledgement

This type defines the receiver's business acknowledgement of the PreProvisioningRequest.

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
requestArrivalTimestamp	DateTimeStamp	No	Timestamp of PreProvisioning request message arrival
subscriptionId	SubscriptionId	No	Unique Id for this subscription. Generated by the DSP.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

transactionId	TransactionId	No	The transactionId originally provided in the PreProvisioningRequest.

5.3.2.6   Type: SubscriptionId

Restriction base	Restriction
xsd:string	xsd:maxLength="30". Concatenation of DSP TADIG code, ARP TADIG code and unique code generated by DSP

5.3.2.7   Type: DateTimeStamp

Note: The date is specified in the following form "YYYY-MM-DDThh:mm:ss[+/-]hh:mm" where:

• YYYY indicates the year

• MM indicates the month

• DD indicates the day

• T indicates the start of the required time section

• hh indicates the hour

• mm indicates the minute

• ss indicates the second

• [+/-]hh:mm indicates time zones

Example:

2013-05-01T19:50:00+01:00

Note: To ensure that the time zone offset is included, and to ensure compatibility with XML Schema 1.0, the lexical representation of xsd:dateTimeStamp from [XML1.1Schema2] is utilised.

Restriction base	Restriction
xsd:string	xsd:pattern value=".*(Z|(\+|-)[0-9][0-9]:[0-9][0-9])"

5.3.2.8   Type:PreProvisioningCompletion

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
interfaceProvider	InterfaceProvider	Yes	Array of parameters that identify the provider for each interface. Populated only when notificationCode="0".
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
userIdentifier	UserIdentifier	Yes	Array of parameters used to communicate UserId.
notificationCode	ActivationNotification Code	No	The result of the pre-provisioning request.
notificationDescription	NotificationDescriptio n	Yes	The description of the notification code.
arpSignallingStatus	ArpSignalling	Yes	Signalling (billing type) status of ARP subscription

bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the PreProvisioningRequest.

5.3.2.9   Type: ActivationNotificationCode

This is a union of the StandardActivationNotificationCode enumeration, LocalActivationNotificationCode type and BilateralActivationNotificationCode type.

5.3.2.10   Type: LocalActivationNotificationCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="100"
	xsd:maxInclusive value="199"

5.3.2.11   Type: BilateralActivationNotificationCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="200"
	xsd:maxInclusive value="500"

5.3.2.12   Type: ProvisioningRequest

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the PreProvisioningRequest.

5.3.2.13   Type: ProvisioningCompletion

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
provisioningStartTimestamp	DateTimeStamp	No	Timestamp of the provisioning start
provisioningEndTimestamp	DateTimeStamp	No	Timestamp of the provisioning end
notificationCode	CompletionCode	No	The result of the Provisioning request.

notificationDescription	NotificationDescription	Yes	Description of the notification code.
transactionId	TransactionId	No	The transactionId originally provided in the PreProvisioningRequest.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

5.3.2.14   Type: CompletionCode

This is a union of the StandardCompletionCode enumeration, LocalCompletionCode type and BilateralCompletionCode type.

5.3.2.15   Type: LocalCompletionCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="100" xsd:maxInclusive value="199"

5.3.2.16   Type: BilateralCompletionCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="200" xsd:maxInclusive value="500"

5.3.2.17   Type: ReProvisioningRequest

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
oldARPSignallingStatus	ArpSignalling	No	Old signalling status of ARP subscription
newARPSignallingStatus	ArpSignalling	No	New signalling status of ARP subscription
transactionId	TransactionId	No	The new transactionId provided by ARP with this request.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

5.3.2.18   Type: ReProvisioningRequestAcknowledgement

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP, if responding to a ReProvisioningRequest; or the ARP, if responding to a ReProvisioningNotification)
receiver	Tadig	No	TADIG code of the receiver (the ARP, it this is a response to a ReProvisioningRequest, or the DSP, if this is a response to a ReProvisioningNotification)

subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
arrivalTimestamp	DateTimeStamp	No	Date and Time of when either the ReprovisioningRequest or the ReProvisioningNotification has been received, depending on scenario.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the ReProvisioningRequest.

5.3.2.19   Type: ReProvisioningNotification

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
changeType	ChangeType	No	Code signifiying 'From Online to Offline' (1), or 'From Offline to Online' (2)
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The new transactionId provided by the DSP with this request.

5.3.2.20   Type: ReProvisioningNotificationAcknowledgement

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP, if responding to a ReProvisioningRequest; or the ARP, if responding to a ReProvisioningNotification)
receiver	Tadig	No	TADIG code of the receiver (the ARP, it this is a response to a ReProvisioningRequest, or the DSP, if this is a response to a ReProvisioningNotification)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
arrivalTimestamp	DateTimeStamp	No	Date and Time of when either the ReprovisioningRequest or the ReProvisioningNotification has been received, depending on scenario.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the

			ReProvisioningNotification.

5.3.2.21   Type: ReProvisioningCompletion

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
interfaceProvider	InterfaceProvider	No	Array of parameters that identify the provider for each interface (IF1, IF2, IF3 …) It will be populated only in case Notification Code=0
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
changeStartTimestamp	DateTimeStamp	No	Timestamp of the provisioning start
changeEndTimestamp	DateTimeStamp	No	Timestamp of the provisioning end
ARPSignallingStatus	ArpSignalling	No	Signalling Status of ARP subscription after the ReProvisioning
transactionId	TransactionId	No	The transactionId originally provided in the ReProvisioningRequest or ReProvisioningNotification dependent on part of which process this message is.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
notificationCode	ActivationNotification Code	No	The result of the ReProvisioning request.
notificationDescription	NotificationDescription	Yes	Description of the notification code.

5.3.2.22   Type: SuspendRoaming

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
transactionId	TransactionId	No	The new transactionId provided by ARP within this request.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

5.3.2.23   Type: RoamingSuspended

Element	Type	Optional	Description

sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
notificationCode	SuspensionCode	No	This field will be populated accordingly with local privacy regulation. In case the sender has privacy restrictions for sending this information, "generic" codes must be used
notificationDescription	NotificationDescription	Yes	Free text description of the Notification Code
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the SuspendRoaming or UnSuspendRoaming dependent on part of which process this message is.

5.3.2.24   Type: SuspensionCode

This is a union of the StandardSuspensionCode enumeration, LocalSuspensionCode type and BilateralSuspensionCode type.

5.3.2.25   Type: LocalSuspensionCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="100" xsd:maxInclusive value="199"

5.3.2.26   Type: BilateralSuspensionCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="200" xsd:maxInclusive value="500"

5.3.2.27   Type: UnSuspendRoaming

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
transactionId	TransactionId	No	The new transactionId provided by the ARP with this request.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

5.3.2.28 Type: RoamingUnSuspended

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
notificationCode	SuspensionCode	No	This field will be populated accordingly with local privacy regulation. In case the sender has privacy restrictions for sending this information, "generic" codes must be used
notificationDescription	NotificationDescription	Yes	Free text description of the Notification Code
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the UnSuspendRoamingRequest.

5.3.2.29 Type: DeProvisioningRequest

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the ARP)
receiver	Tadig	No	TADIG code of the receiver (the DSP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
deactivationReason	DeactivationReason	No	The reason why the ARP is being requested to deactivate the subscription identified by subscription Id.
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The new transactionId provided by ARP or DSP with this request.

5.3.2.30 Type: DeactivationReason

This is a union of the StandardDeactivationReason enumeration, LocalDeactivationReason type and BilateralDeactivationReason type.

5.3.2.31 Type: LocalDeactivationReason

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="100" xsd:maxInclusive value="199"

5.3.2.32   Type: BilateralDeactivationReason

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="200" xsd:maxInclusive value="500"

5.3.2.33   Type: DeProvisioningAcknowledgement

Element	Type	Optional	Description
sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement.
notificationCode	DeactivationNotificationCode	No	Confirms deactivation or code why deactivation cannot proceed.
notificationDescription	NotificationDescription	Yes	Description of the notification code
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.
transactionId	TransactionId	No	The transactionId originally provided in the DeProvisioningRequest.

5.3.2.34   Type: DeactivationNotificationCode

This is a union of the StandardDeactivationNotificationCode enumeration, LocalDeactivationNotificationCode type and BilateralDeactivationNotificationCode type.

5.3.2.35   Type: LocalDeactivationNotificationCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="100" xsd:maxInclusive value="199"

5.3.2.36   Type: BilateralDeactivationNotificationCode

Restriction base	Restriction
xsd:integer	xsd:minInclusive value="200" xsd:maxInclusive value="500"

5.3.2.37   Type: NotificationDescription

Restriction base	Restriction
xsd:string	xsd:maxLength value="80"

5.3.2.38   Type: DeProvisioningCompletion

Element	Type	Optional	Description

sender	Tadig	No	TADIG code of the sender (the DSP)
receiver	Tadig	No	TADIG code of the receiver (the ARP)
subscriptionId	SubscriptionId	No	The subscriptionId as provided in the PreProvisioningAcknowledgement. Note: in case this message is sent to the donor ARP as part of the swap process this is the donor ARP's subscriptionId.
deProvisioningStartTimestamp	DateTimeStamp	No	Timestamp of the deprovisioning start
deProvisioningEndTimestamp	DateTimeStamp	No	Timestamp of the deprovisioning end
transactionId	TransactionId	No	The transactionId originally provided in the DeProvisioningRequest or a new transactionId if this message is send to donor ARP within the swap process.
deactivationReason	DeactivationReason	Yes	In case the Deactivation has been requested for Fraud Management reason (i.e. Code Value 4), the DSP should treat the request as a priority and process it as soon as possible, Optionally, DSP and ARP can agree bilaterally on a specific Fraud Suspension Code. In case the DeProvisioningCompletion is sent as part of a process that doesn't contain a DeProvisioningRequest sent by ARP (Service Deactivation Initiated by the DSP or Swap to another ARP, or MNP port-out, Change of UserId, etc.) this field must be populated
notificationCode	DeactivationNotificationCode	No	The result of DeProvisioningCompletion
bilateralInformation	BilateralInformation	Yes	Content agreed bilaterally between DSP and ARP.

5.3.2.39   Type: UserIdentifier

Element	Type	Optional	Description
MSISDN	Msisdn	Yes	MSISDN of the user
IMSI	Imsi	Yes	IMSI of the user
ICCID	Iccid	Yes	Unique serial number of the user SIM
The following combinations of the above elements are valid: any one of the elements, any two of the elements, all three elements.			

5.3.2.40   Type: Msisdn

Restriction base	Restriction
xsd:string	maxLength="16"

5.3.2.41   Type: Imsi

Restriction base	Restriction
xsd:string	maxLength="15"

5.3.2.42   Type: Iccid

Restriction base	Restriction
xsd:string	maxLength="20"

5.3.2.43   Type: AuthorizationInformation

An array of elements as per National Regulator requirements.

Element	Type	Optional	Description
<any element>	< type is defined by the schema which implements the element>	Yes	Array of elements as per National Regulator requirements for authorization Note that element <any element> can be any element from any other namespace (schema) than the target namespace, which defines the value of the attribute. Type of such element is defined by the schema implementing the element. The processing of the contents MUST be skipped. In XML implementations, the element must be qualified with the namespace prefix.

5.3.2.44   Type: InterfaceProvider

Element	Type	Optional	Description
interface	Interface, cardinality 1-9	No	The name and provider for a specific interface utilised in roaming. If a given interface (as defined by the 'name' value) is not included, it is assumed to be provided by the sender.

5.3.2.45   Type: InterfaceProvider

Attribute	Type	Optional	Description
name	If	No	The roaming interface name
provider	Tadig	No	TADIG code of the interface provider

5.3.2.46   Type: ServiceException

This type is specified in [3GPP TS 29.199-01] and imported from [PXPROF-Common-WSDL].

Element	Type	Optional	Description
messageId	xsd:string	No	Exception Id
text	xsd:string	No	Description of the exception including optional

			variables
variables	xsd:string	Yes	Value of each variable used

5.3.2.47   Type: PolicyException

This type is specified in [3GPP TS 29.199-01] and imported from [PXPROF-Common-WSDL].

Element	Type	Optional	Description
messageId	xsd:string	No	Exception Id
text	xsd:string	No	Description of the exception including optional variables
variables	xsd:string	Yes	Value of each variable used

5.3.3   Enumerations

The subsections of this section define the enumerations used in the Roaming Provisioning SOAP API.

5.3.3.1   Enumeration: ArpSignalling

This enumeration defines the signalling charge type of the ARP subscription

Enumeration	Description
OnLine	Online (pre-paid) charge type of ARP subscription
OffLine	Offline (post-paid) charge type of ARP subscription

5.3.3.2   Enumeration: If

This enumeration defines the interfaces that are provided for Single IMSI roaming.

Enumeration	Description
IF1	A real-time interface for voice retail billing.
IF2	A real-time interface for SMS retail billing.
IF3	A real-time interface for Data/MMS retail billing
IF4	A near real-time interface for providing mobility information to the ARP, to inform the ARP that one of its customers has started to roam or has changed network.
IF5	A real-time USSD interface to enable the ARP to provide pre-paid account queries (conditional).
IF6	Invoicing interface, providing Charging Records.
IF7	Provisioning interface enabling the management of ARP subscriptions.
IF8	Interface for high usage and fraud control (conditional).
IF9	Bi- Directional interface for standard SMS exchange (optional).

5.3.3.3   Enumeration: StandardActivationNotificationCode

This enumeration defines the result of an activation pre-provisioning request. This field will be populated accordingly with local privacy regulation. In case the sender has privacy restrictions for sending this information, the"generic" codes must be used.

Enumeration	Description
0	Activable
1	No Active Agreement
2	Not authorized - Generic
3	Not authorized - Not customer of this DSP
4	Not authorized - Incorrect Authorization Method
5	Not authorized - Incorrect Authorization Credentials
6	Not eligible - Generic
7	Not eligible - Recipient ARP doesn't have an agreement with DSP
8	Not eligible - Customer not controlled by DSP
9	Not eligible - Subscriber's domestic service has been suspended
10	Not eligible - Subscriber's roaming service has been suspended
11	Not eligible - Subscriber has no contract to receive roaming service
12	Not eligible - The service requestor is not the legal responsible party
13	Not eligible There is another ongoing provisioning or deprovisioning request for this UserId
14	Not eligible Request is based on non-primary UserId for the subscription
15	Not eligible Customer requested MNP (Mobile Number Portability)
16	Incorrect value of attribute – Generic
17	Incorrect value of attribute – Unknown ARP
18	Incorrect value of attribute – TransactionId syntactically not correct
19	Incorrect value of attribute – TransactionId, no open transaction
20	Incorrect value of attribute – SubscriptionId syntactically not correct
21	Incorrect value of attribute – SubscriptionId no open subscription
22	Incorrect value of attribute – TransactionId not unique

Note: Codes 16 to 22 are added on top of the codes specified in [IF_7_SPEC].

5.3.3.4   Enumeration: StandardCompletionCode

This enumeration defines the result of an activation pre-provisioning completion. This field will be populated accordingly with local privacy regulation. In case the sender has privacy restrictions for sending this information, the"generic" codes must be used.

Enumeration	Description
0	Activated
1	Not Activated - Generic

2	Not Activated - DSP has not yet sent a PreProvisioningCompletion
3	Not Activated - DSP has not yet sent a PreProvisioningCompletion(NOK)
4	Not Activated - Invalid Transaction ID
5	Not Activated - valid Transaction ID but the MSISDN does not match what was sent in the PreProvisioningRequest
6	Incorrect value of attribute – Generic
7	Incorrect value of attribute – Unknown ARP
8	Incorrect value of attribute – TransactionId syntactically not correct
9	Incorrect value of attribute – TransactionId, no open transaction
10	Incorrect value of attribute – SubscriptionId syntactically not correct
11	Incorrect value of attribute – SubscriptionId no open subscription
12	Incorrect value of attribute – TransactionId not unique

Note: Codes 6 to 12 are added on top of the codes specified in [IF_7_SPEC].

5.3.3.5   Enumeration: StandardDeactivationNotification

This enumeration defines the reasons for a deactivation notification. In case the DeProvisioningCompletion is sent as part of a process that doesn't contain a DeProvisioningRequest sent by ARP (Service Deactivation Initiated by the DSP or Swap to another ARP, or MNP port-out, Change of UserId, etc.) then this field must be populated

Enumeration	Description
0	Deprovisioned
1	Not deprovisioned - Not authorised - Generic
2	Not deprovisioned - Not authorised - Not customer of this DSP
3	Not deprovisioned - Not eligible - Generic
4	Not deprovisioned - Not eligible - There is another ongoing provisioning or de-provisioning request for this UserId
5	Incorrect value of attribute – TransactionId syntactically not correct
6	Incorrect value of attribute – TransactionId not unique

Note: Codes 5 to 6 are added on top of the codes specified in [IF_7_SPEC].

5.3.3.6   Enumeration: StandardDeactivationReason

This enumeration defines reasons for a deactivation request. In case the Deactivation has been requested for Fraud Management reason (i.e. Code Value 4), the DSP should treat the request as a priority and process it as soon as possible, Optionally, DSP and ARP can agree bilaterally on a specific Fraud Suspension Code, available in the deactivationReason type.

Enumeration	Description
0	Request by customer
1	The deactivation has been requested because a MNP (Mobile Number Portability) port out. (this

	value MUST be only used in conjunction with a Deactivated state)
2	Swap to another ARP
3	Customer deactivation by DSP
4	Fraud management
5	Termination of contract with the subscriber - bill payer initiated
6	Termination of contract with the subscriber - operator initiated
7	Change in subscriber primary identifier
8	Subscription notification incompatible with ARP contract
9	This code is not yet defined, i.e. it is left for future use
10	Generic

5.3.3.7   Enumeration: StandardSuspensionCode

This enumeration defines the state of a roaming suspension request. This field will be populated accordingly with local privacy regulation.In case the sender has privacy restrictions for sending this information, "generic" codes must be used.

Enumeration	Description
0	Suspended / ReActivated
1	Not Suspended / ReActivated - Generic
2	Not Suspended / ReActivated - Invalid Transaction ID
3	Not Activated - Invalid Subscription ID
4	Not Suspended / Not ReActivated - There is another ongoing provisioning or deprovisioning request for this UserId
5	Incorrect value of attribute – TransactionId not unique

5.4   Web Service interface definition

5.4.1   Port: ServiceActivation – exposed by DSP

5.4.1.1   Operation: RequestPreProvision

This operation is used by ARP to request pre-provisioning.

5.4.1.1.1   Input message: PreProvisioningRequest

PartName	PartType	Optional	Description
body	PreProvisioningRequest	No	The pre-provisioning request

5.4.1.1.2   Output message: PreProvisioningRequestAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.1.2   Operation: RequestProvision

This operation is used by ARP to request provisioning.

5.4.1.2.1   Input message: ProvisioningRequest

PartName	PartType	Optional	Description
body	ProvisioningRequest	No	The provisioning request

5.4.1.2.2   Output message: ProvisioningRequestAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.2   Port: ServiceActivation – exposed by ARP

5.4.2.1   Operation: AcknowledgePreProvision

This operation is used by the DSP to confirm to ARP that the PreProvisioningRequest has been taken on.

5.4.2.1.1   Input message: PreProvisioningAcknowledgement

PartName	PartType	Optional	Description
body	PreProvisioningAcknowledgement	No	A business acknowledgement of the PreProvisioningRequest

5.4.2.1.2   Output message: PreProvisioningAcknowledgementAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.2.2   Operation: CompletePreProvision

This service is used by DSP to notify ARP if the customer can be provisioned or not

5.4.2.2.1   Input message: PreProvisioningCompletion

PartName	PartType	Optional	Description
body	PreProvisioningCompletion	No	The result of the pre-provisioning request

5.4.2.2.2   Output message: PreProvisioningCompletionAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.2.3   Operation: CompleteProvision

This service is used by DSP to notify the result of an activation request of an ARP subscription.

5.4.2.3.1   Input message: ProvisioningCompletion

PartName	PartType	Optional	Description
body	ProvisioningCompletion	No	The result of the provisioning request

5.4.2.3.2   Output message: ProvisioningCompletionAck

PartName	PartType	Optional	Description

Body	Ack	No	Synchronous acknowledgement

5.4.3 Port: ServiceUpdate – exposed by DSP

5.4.3.1 Operation: AcknowledgeReProvision

This service is used by the ARP to confirm to DSP that the ReProvisioningNotification has been received.

5.4.3.1.1 Input message: ReProvisioningNotificationAcknowledgement

PartName	PartType	Optional	Description
body	ReProvisioningNotificationAcknowledgement	No	The business acknowledgement of the re-provisioning notification

5.4.3.1.2 Output message: ReProvisioningNotificationAcknowledgementAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.3.2 Operation: RequestReProvision

This service is used by ARP to request to DSP to change the customer signalling (charge) type at ARP (online/offline)

5.4.3.2.1 Input message: ReProvisioningRequest

PartName	PartType	Optional	Description
body	ReProvisioningRequest	No	The request to change signalling type

5.4.3.2.2 Output message: ReProvisioningAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.4 Port: ServiceUpdate – exposed by ARP

5.4.4.1 Operation: AcknowledgeReProvision

This operation is used by the DSP to confirm to the ARP that the ReProvisioningRequest has been taken on.

5.4.4.1.1 Input message: ReProvisioningRequestAcknowledgement

PartName	PartType	Optional	Description
body	ReProvisioningRequestAcknowledgement	No	The business acknowledgement of the re-provisioning request

5.4.4.1.2 Output message: ReProvisioningRequestAcknowledgementAck

PartName	PartType	Optional	Description
body	Ack	No	

5.4.4.2 Operation: CompleteReProvision

This operation is used by the DSP to confirm to ARP that the customer charge type at ARP (online/offline) has been changed.

5.4.4.2.1 Input message: ReProvisioningCompletion

PartName	PartType	Optional	Description

body	ReProvisioningCompletion	No	The result of the signalling change request

5.4.4.2.2   Output message: ReProvisioningCompletionAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.4.3   Operation: NotifyReProvision

This operation is used by the DSP to inform ARP that a ReProvisioning process has been started.

5.4.4.3.1   Input message: ReProvisioningNotification

PartName	PartType	Optional	Description
body	ReProvisioningNotification	No	The notification of the signalling change request

5.4.4.3.2   Output message: ReProvisioningNotificationAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.5   Port: ServiceDeactivation – exposed by DSP

5.4.5.1   Operation: RequestDeProvision

This operation is used by ARP to ask DSP to cancel an ARP subscription.

5.4.5.1.1   Input message: DeProvisioningRequest

PartName	PartType	Optional	Description
body	DeProvisioningRequest	No	The de-provisioning request

5.4.5.1.2   Output message: DeProvisioningRequestAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.6   Port: ServiceDeactivation – exposed by ARP

5.4.6.1   Operation: AcknowledgeDeProvision

This operation is used by the DSP to confirm to the ARP that the DeprovisioningRequest has been taken on.

5.4.6.1.1   Input message: DeProvisioningAcknowledgement

PartName	PartType	Optional	Description
body	DeProvisioningAcknowledgement	No	A business acknowledgement of the de-provisioning request

5.4.6.1.2   Output message: DeProvisioningAcknowledgementAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.6.2   Operation: CompleteDeProvision

This operation is used by DSP to notify the result of a cancellation request of an ARP subscription, either positive or negative.

5.4.6.2.1   Input message: DeProvisioningCompletion

PartName	PartType	Optional	Description
body	DeProvisioningCompletion	No	The result of de-provisioning completion.

5.4.6.2.2   Output message: DeProvisioningCompletionAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.7   Port: ServiceSuspension – exposed by DSP

5.4.7.1   Operation: RequestRoamingSuspension

This operation is used by ARP to ask DSP the suspension of the roaming service within a Fraud Management Process.

5.4.7.1.1   Input message: SuspendRoaming

PartName	PartType	Optional	Description
body	SuspendRoaming	No	The roaming suspension request

5.4.7.1.2   Output message: SuspendRoamingAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.7.2   Operation: UnSuspendRoaming

This operation is used by the ARP to ask the DSP for the the unsuspension of the roaming service within a Fraud Management Process.

5.4.7.2.1   Input message: UnSuspendRoaming

PartName	PartType	Optional	Description
body	UnSuspendRoaming	No	The roaming un-suspension request

5.4.7.2.2   Output message: UnSuspendRoamingAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.8   Port: ServiceSuspension – exposed by ARP

5.4.8.1   Operation: RoamingSuspended

This service is used by DSP to notify ARP about the suspension of the roaming service.

5.4.8.1.1   Input message: RoamingSuspended

PartName	PartType	Optional	Description
body	RoamingSuspended	No	The notification of roaming suspension

5.4.8.1.2 Output message: RoamingSuspendedAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.4.8.2 Operation: RoamingUnSuspended

This service is used by DSP to notify ARP about the unsuspension of the roaming service.

5.4.8.2.1 Input message: RoamingUnSuspended

PartName	PartType	Optional	Description
body	RoamingUnSuspended	No	The roaming un-suspension notification

5.4.8.2.2 Output message: RoamingUnSuspendedAck

PartName	PartType	Optional	Description
body	Ack	No	Synchronous acknowledgement

5.5 Faults

ServiceExceptions and PolicyExceptions are defined in [3GPP TS 29.199-1]. The values and short description applicable to this specification are listed in the following sub-sections. For detailed description on handling of different fault cases please refer to Appendix C.

5.5.1 Service exceptions

SVC0001 - Service error

SVC0002 - Invalid input value

SVC0003: Invalid input value with list of valid values

SVC0004 - No valid addresses

SVC0005: Duplicate correlator

SVC0008 – Overlapping Criteria

5.5.2 Policy exceptions

POL0001 - Policy error

POL0002 - Privacy error

POL0003: Too many addresses

POL0004: Unlimited notifications not supported

POL0005: Too many notifications requested

POL0006 - Groups not allowed.

POL0009: Invalid frequency requested

POL0010 – Retention time interval expired

POL0012: Too many description entries specified

POL0013: Addresses duplication

5.6 Service policies

Name	Type	Description

Acceptable delay to provision	Provisioning	The server MAY set a policy to enforce a maximum delay between a succesful pre-provisioning and the subsequent request to provision. If enforced, this policy SHOULD activate following the DSP's receipt of the ProProvisioningRequestCompletionAck, and be evaluated on receipt of a ProvisioningRequest for the same subscriber Id. In case the policy is breached, the server SHALL send a PolicyException fault in response to the ProvisioningRequest, with messageID POL0010 and text 'Requested information unavailable as the retention time interval has expired'

Table 1 Service policies

5.7   WSDL for Roaming Provisioning

The WSDL representation for the Roaming Provisioning interface is contained in the support file [SUP_RoamProv] and consists of the following files:

- oma-roaming-provisioning-interface-v1_0.xsd

- for exposure by ARPs:

  - oma-roaming-provisioning- service-arp_v1_0.wsdl

- for exposure by DSPs:

  - oma-roaming-provisioning -service-dsp_v1_0.wsdl

Appendix A.   Change History   (Informative)

A.1   Approved Version History

Reference	Date	Description
n/a	n/a	No prior version

A.2   Draft/Candidate Version 1.0 History

Document Identifier	Date	Sections	Description
Draft Versions OMA-TS- SOAP_NetAPI_RoamingProvisioning- V1_0	09 Jul 2013	All	First baseline (OMA-ARC-2013-0079R01-INP_First_draft_baseline_SOAP_Roaming_Provisioning_TS)
	16 Jul 2013	3.3, 4, 5	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0002-CR_Introduction_and_service_description

	01 Aug 2013	5	Incorporated:
			    OMA-ARC-RoamAPI_SOAP-2013-0003-CR_Sequence_Diagrams
			    OMA-ARC-RoamAPI_SOAP-2013-0004-CR_Service_Interfcae_Definition

	08 Aug 2013	All	Editorial clean up
	23 Sep 2013	All	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0006-CR_CONRR_TS_comments_resolution
	17 Oct 2013	Some	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0010R01-CR_Added_Faults_and_updated_Ack
	21 Oct 2013	5.3, 5.4	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0012-CR_TS_bug_fixes
	23 Oct 2013	Many	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0016R02-CR_TS_more_bug_fixes OMA-ARC-RoamAPI_SOAP-2013-0015R01-CR_TS_faults_section_update OMA-ARC-RoamAPI_SOAP-2013-0014R01-CR_TS_security_section_update
	05 Nov 2013	5.2.3, 5.3.2, 5.3.3,	Incorporated: OMA-ARC-RoamAPI_SOAP-2013-0018-CR_TS_security_section_and_other_bug_fixes
Candidate Version OMA-TS- SOAP_NetAPI_RoamingProvisioning- V1_0	19 Nov 2013	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2013-0365R01-INP_RoamAPI_SOAP_V1_0_ERP_and_ETR_for_Candidate_Approval
Draft Version OMA-TS- SOAP_NetAPI_RoamingProvisioning- V1_0	02 Apr 2014	5.3.2.39	Incorporated CR: OMA-ARC-2014-0023R02-CR_SOAP_Roaming_TS_bug_fix Editorial changes
Candidate Version OMA-TS- SOAP_NetAPI_RoamingProvisioning- V1_0	14 Apr 2014	n/a	Status changed to Candidate by TP TP Ref # OMA-TP-2014-0077-INP_RoamAPI_SOAP_V1_0_ERP_for_Notification

Appendix B.   Static Conformance Requirements   (Normative)

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

The "Reference" column of the SCR tables below refers to a section in this document.

B.1   SCR for Roaming Provisioning

B.1.1   SCR for RoamingProvisioning Server

Item	Function	Reference	Requirement
ROAMPROV-SOAP-SUPPORT-S-001-M	Support for the Roaming Provisioning interface	5	
ROAMPROV-SOAP-SUPPORT-S-002-M	Support for the SOAP/ XML request & response format	5	

Table 2 SCR for RoamingProvisioning Server Functions

B.1.2   SCR for RoamingProvisioning.DSP Server

Item	Function	Reference	Requirement
ROAMPROV-DSP-S-001-M	Support for Service Activation	5.4.1	
ROAMPROV-DSP-S-002-M	Support of operation: RequestPreProvision	5.4.1.1	
ROAMPROV-DSP-S-003-M	Support of operation: RequestProvision	5.4.1.2	
ROAMPROV-DSP-S-005-M	Support for Service Update	5.4.3	
ROAMPROV-DSP-S-006-M	Support of operation: AcknowledgeReProvision	5.4.3.1	
ROAMPROV-DSP-S-007-M	Support of operation: RequestReProvision	5.4.3.2	
ROAMPROV-DSP-S-008-M	Support for Service Deactivation	5.4.5	
ROAMPROV-DSP-S-009-M	Support of operation: RequestDeProvision	5.4.5.1	
ROAMPROV-DSP-S-010-M	Support for Service Suspension	5.4.7	
ROAMPROV-DSP-S-011-M	Support of operation: RequestRoamingSuspension	5.4.7.1	
ROAMPROV-DSP-S-012-M	Support of operation: UnSuspendRoaming	5.4.7.2	

Table 3 SCR for Roaming Provisioning DSP Server Functions

B.1.3   SCR for RoamingProvisioning.ARP Server

Item	Function	Reference	Requirement
ROAMPROV-ARP-S-001-M	Support for Service Activation	5.4.2	
ROAMPROV-ARP-S-002-M	Support of operation: AcknowledgePreProvision	5.4.2.1	
ROAMPROV-ARP-S-003-M	Support of operation: CompletePreProvision	5.4.2.2	
ROAMPROV-ARP-S-005-M	Support of operation:	5.4.2.3	

Item	Function	Reference	Requirement
	CompleteProvision		
ROAMPROV-ARP-S-006-M	Support for Service Update	5.4.4	
ROAMPROV-ARP-S-007-M	Support of operation: AcknowledgeReProvision	5.4.4.1	
ROAMPROV-ARP-S-008-M	Support of operation: CompleteReProvision	5.4.4.2	
ROAMPROV-ARP-S-009-M	Support of operation: NotifyReProvision	5.4.4.3	
ROAMPROV-ARP-S-010-M	Support for Service Deactivation	5.4.6	
ROAMPROV-ARP-S-011-M	Support of operation: AcknowledgeDeProvision	5.4.6.1	
ROAMPROV-ARP-S-012-M	Support of operation: CompleteDeProvision	5.4.6.2	
ROAMPROV-ARP-S-001-M	Support for Service Suspension	5.4.8	
ROAMPROV-ARP-S-002-M	Support of operation: RoamingSuspended	5.4.8.1	
ROAMPROV-ARP-S-003-M	Support of operation: RoamingUnSuspended	5.4.8.2	

Table 4 SCR for Roaming Provisioning ARP Server Functions

Appendix C. Handling of fault cases (Normative)

In order to assure interoperability and limit the needed investments as indicated in [EU1203_2012] this chapter describes behaviour in error cases and how the faults shall be handled.

C.1 Handling of incorrect message structure

Issues with malformed message structure that is not compatible with provided WSDLs SHALL be reported back to the requestor as Service Exceptions within SOAP Fault structure. List of exceptions is provided in section 5.5.1.

C.2 Handling of incorrect values of sender and receiver attributes

In case the value of the sender and receiver attributes from the message payload are not matching the bespoke sender or recipient of the message retrieved based on the information from the transportation layer, the SOAP Fault SHALL be sent back as part of the synchronous Ack message. It SHALL indicate the incorrect attribute.

C.3 Handling of incorrect values of other attributes

Validation of other attributes requires processing of message payload and might be time consuming therefore in case of issues with processing of contents of attributes listed below the error SHALL be reported with the next applicable message exchanged between the parties using notification codes foreseen in this document (or agreed bilaterally). This applies to:

- ARP
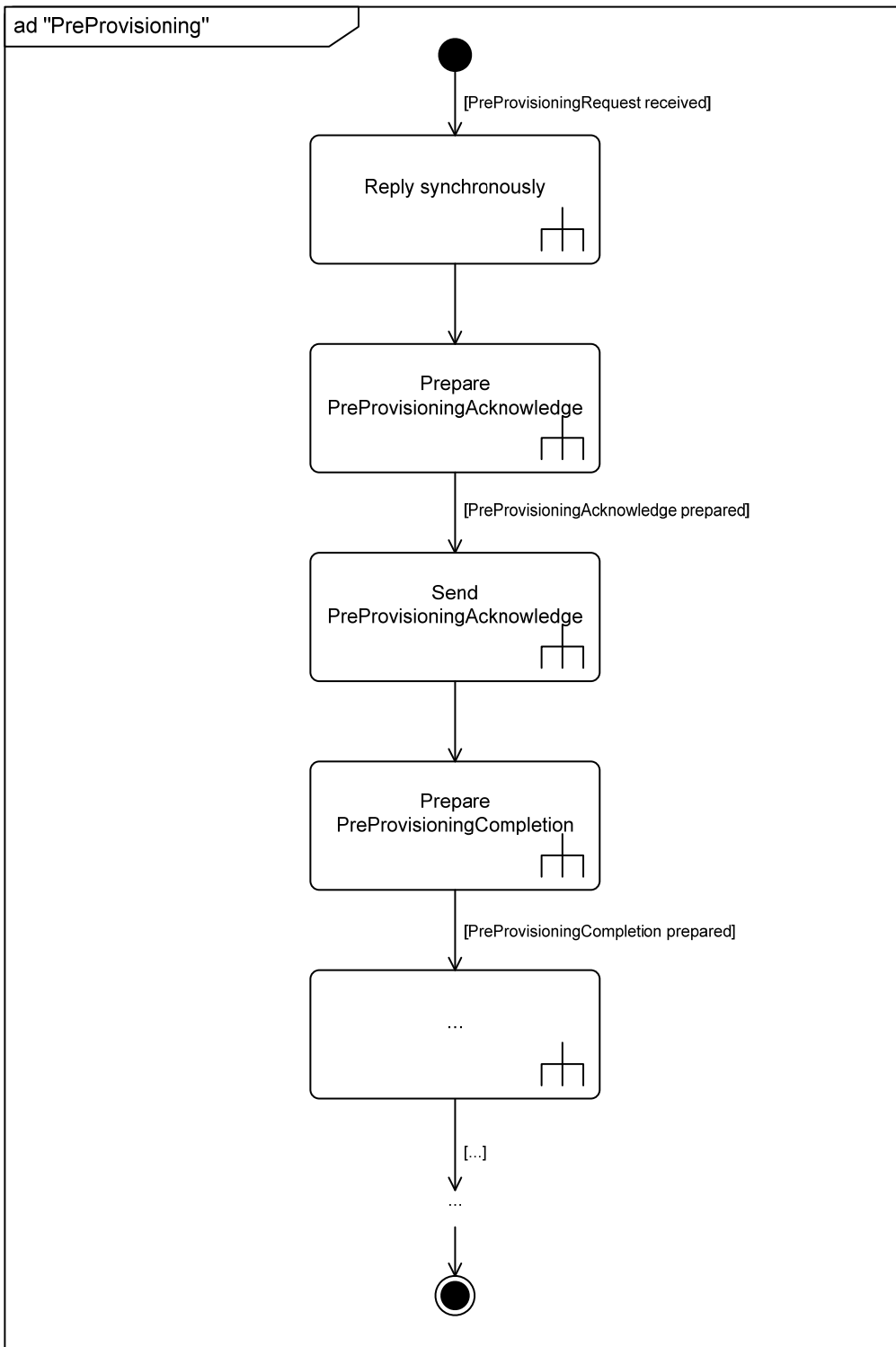
- TransactionId

- SubscriptionId

C.4 Handling of messages flow for a given process

When executing processes defined in [IF_7_SPEC] (i.e.: Provisioinig, DeProvisioing, Suspension, UnSuspension and ReProvisioning) the following rules SHALL be followed:

- The messages exchanged as part of a given processes are spanned by the same TransactionId

- Messages SHALL be sent in the order provided on diagrams in sections 5.1.

- Delivery of each of the messages SHALL be confirmed by the recipient of the message by the synchronous Ack message

- The sender SHALL continue the execution of the process only after Ack confirmation is granted. It is the duty of a message sender to make sure a message has arrived by (repeatedly) sending the message until a synchronous response can be received;

- In case a timeout is observed due to missing Ack the sender may decide to retry the delivery of the message and wait for Ack again. In case the recipient receives a duplicated request (presumable due to the fact that his first Ack did not reach the sender) he needs only to re-send the Ack and no additional handling of the duplicate is required.

- Number of such consecutive retries and time period(s) after which timeout is reported shall be agreed bilaterally between ARP and DSP.

- In case the defined number of retries has been reached the process is ended with corresponding information being written to the log. Maintenance in case of such interrupted process requires manual intervention and is not specified in this document.

The above mentioned approach implies synchronous execution on the process level that allows both parties to know the state of the other one and helps to avoid the need for a re-transmission of information related to an obsolete state of a transaction in as much as possible (repeated need to use synchronous reply). Coupling is tight and no party can come across a communication point if the other party is not ready for communication. This strategy has no impact on the WSDL it prescribes the way how the mechanism of exchange of messages shall be implemented.

The following activity diagram illustrates the synchronous flow on an example of PreProvisioing phase:

ad "PreProvisioning"

[PreProvisioningRequest received]

Reply synchronously

Prepare
PreProvisioningAcknowledge

[PreProvisioningAcknowledge prepared]

Send
PreProvisioningAcknowledge

Prepare
PreProvisioningCompletion

[PreProvisioningCompletion prepared]

...

[...]

...

For a better understanding the following diagram adds the details (including retries mechanism) to "Send the 'PreProvisioningAcknowledge'" as an example for steps to send a message:
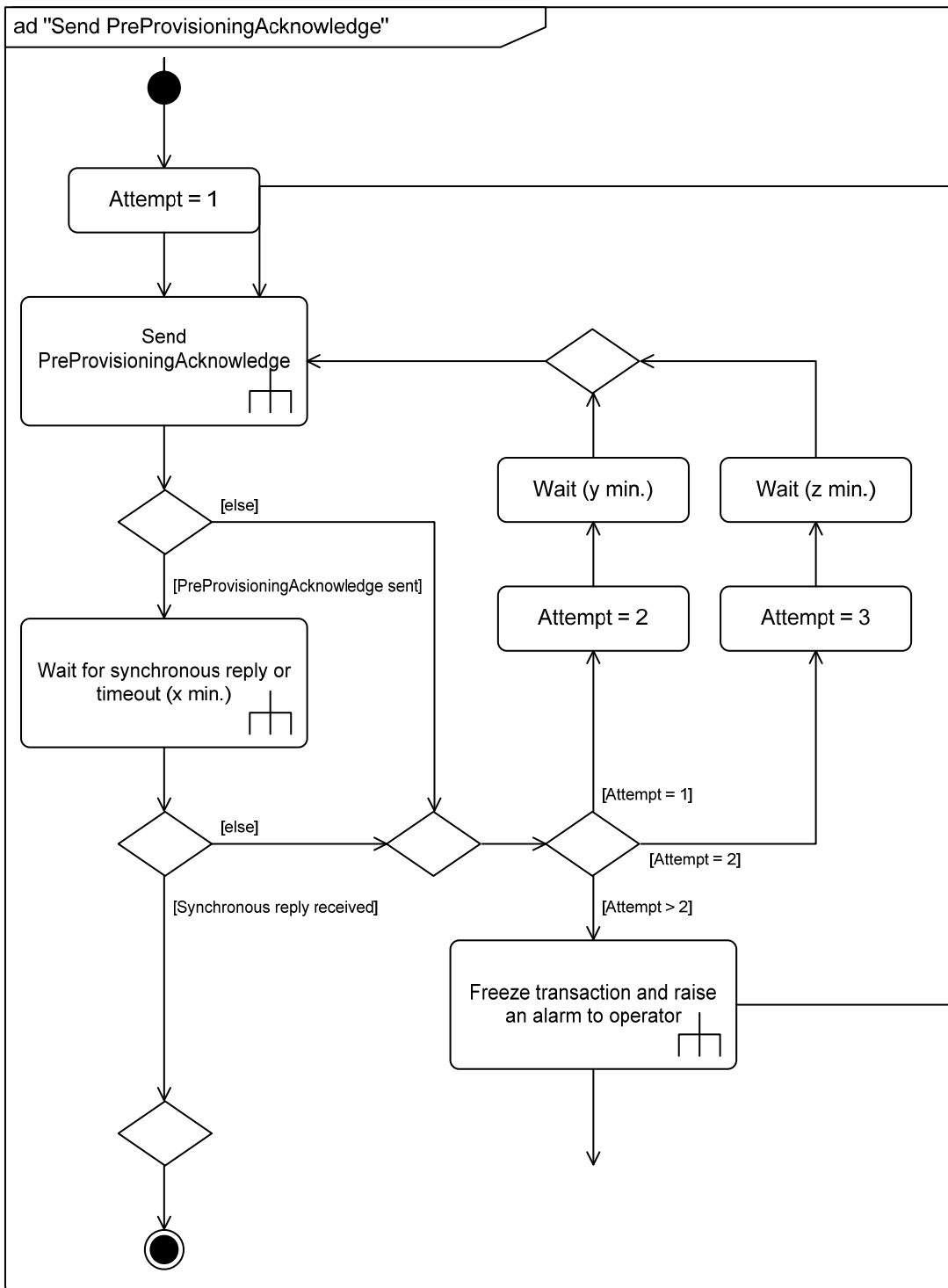
The diagram discloses that there's no clearly defined way to cope with a transaction if a communication attempt ultimately failed (on the automated level). As mentioned earlier manual activities shall follow in this case.

C.5 Handling of incorrect requests with regards to current state of the subscription or process in progress

In case a request is received that cannot be executed due to another process already being in progress – which means that the subscription is in a state that does not allow execution of requested action - the error SHALL be reported with the next applicable message exchanged between the parties using notification codes foreseen in this document (or agreed bilaterally). An example could be a situation where ARP requests ReProvisioing, the DSP is in progress of reconfiguring the interfaces and in that moment SuspendRequest is sent to DSP. It will be rejected with information that other process is in progress (e.g. NotificationCode = 4, "Not active - There is another ongoing provisioning or deprovisioning request for this UserId").