**Origination Date:** 02/23/12

**Originator:** Comcast

### Change Order Number: NANC 449

**Description:** Active-Active SOA connection to NPAC – same SPID (Delegation Model)

**Functional Backwards Compatible:** Yes

**IMPACT/CHANGE ASSESSMENT**

|  |  |
| --- | --- |
| FRS | IIS |
| Y | Y |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| GDMO | ASN.1 | **NPAC** | SOA | LSMS |
| Y | Y | Y | Y | N |

|  |  |  |  |
| --- | --- | --- | --- |
| **XML** | **NPAC** | SOA | LSMS |
| Y | Y | Y | N |

**Business Need:**

Currently, the NPAC is configured to enable a carrier to have one active SOA connection for a single SPID. As carrier systems become more complex with a greater need to support high transaction volume, carriers should have the option to enable multiple active connections for the same SPID to the NPAC. This will enable a carrier to connect to the NPAC from multiple geographical locations to allow business continuity in the event of network failure or single site failure. Such functionality is very important given carriers have a very small window to respond to porting transaction requests such as defined in Next Day porting.

To illustrate, a carrier would have at its option, an opportunity to construct two (2) or more active SOA connections to the NPAC for the same SPID. If one of the connections is broken due to a network failure, porting transactions can be diverted to another active NPAC connection thereby reducing business impacts during the porting process.

Use of multiple active SOA connections from a single SPID should be voluntary by carriers who wish to improve their application and network redundancy. The advantage of having such active-active SOA infrastructure would improve porting efficiency during times of network impairment and natural disasters.

May ’13 LNPAWG meeting:

In order to facilitate the deployment of NANC 449 (CMIP version of Active-Active SOA connection to the NPAC – same SPID), the functionality should be included in the XML interface (NANC 372) as well.

**Description of Change:**

This change order is being created to analyze and document the change to the NPAC that would allow multiple associations from the same SPID and same function mask at the same time.

The current NPAC behavior (defined in chapter 5 of the IIS) allows a single association based on SPID/Function Mask at any one point in time. If a subsequent association is made, the existing one is terminated. Section 5.6 (Single Association for SOA/LSMS) states, “A SOA/LSMS system may connect to the NPAC SMS with one association for the same function (same bit mask). The NPAC SMS will abort any previous associations that use that same function.” NANC 383 (Separate SOA channel for notifications) was implemented in release 3.3 to allow notifications to be sent over a separate SOA association, but does not allow for multiple associations using the same bit mask which is what is desired.

With this change order, a SOA would be able to connect with a second association using the same SPID value and same function mask values. This means that both SOA A and SOA B are up running and active at the same time, connected to the same NPAC regions at the same time, and potentially sending/receiving SOA transactions as the same time.

Working assumptions:

* Network data (NPA-NXX, LRN, Dash-X) will be sent to SOA A & B.
* SOA Requests (e.g., NSP SV Create Request) sent from SOA A will have Responses sent back to SOA A (this is required as SOA B does not have the invoke ID of SOA A’s Request).
* Notifications initiated at the NPAC (e.g., SV StatusAttributeValueChange) will be sent to both SOA A and SOA B, regardless of whether SOA A, SOA B, other SP SOA, NPAC personnel, or NPAC business rules initiated the transaction that led to the notification.
* Functionality applies to two (2) or more SOA connections at the same time.
* Performance expectation is on a per SOA basis, not a per SPID basis.
* Notifications would be recoverable such that if SOA A was not associated and notifications were instead sent to SOA B, that SOA A would be able to get those missed notifications via recovery.
* Service Provider tunables (i.e., “SPIDables”) need to be evaluated to determine which can remain at the Service Provider level, and which would need granularity at the SOA level.
* Sep ’13, the full echo-back of data as the initiator is independent of having multiple SOAs defined.
* Nov ’13, with the implementation of NANC 372 (XML Interface), delegation is available when using the XML Interface.
* Mar ’15, notifications that are suppressed (pending implementation of NANC 458) are not sent to SOA A or SOA B. Request SPID – Delegate SPID relationship will be used for the Active-Active relationship (with the new Active-Active Indicator and the Request SPID attribute), therefore, the initiating and non-initiating Service Provider tunable parameters are no longer needed, and are removed in this version of the document. In an Active-Active scenario, the new indicator associated with Active-Active identifies an Initiator New SP SOA that does not need echo-back of data (since they were the ones that sent it in the request), and the non-Initiator New SP SOA that does need full echo-back of data (and would receive it in both the Object Creation Notification and the Attribute Value Change Notification), so that they are in sync with the Initiator New SP SOA.

Sep ’12 LNPAWG meeting:

Neustar sent out (8/31/2012) the following note prior to the Sep meeting to facilitate the discussion.

During our analysis of NANC 449 after the discussion at the July 2012 LNPAWG meeting, several questions have come up to which the answers will dictate our next steps with this change order.

Based on the current definition of NANC 449:

1. two or more SOA connections
2. from the same SPID
3. using the same CMIP association function mask information
4. sending/receiving CMIP requests/responses individually
5. receiving NPAC notifications whether or not involved in initial request

Our current NPAC architecture supports the current NPAC requirement (one CMIP association, per SPID, per function mask). In order to support the 449 notion of two or more, a CMIP change will be required. Furthermore, the two or more associations must perform the same type of work and support the same optional fields, thereby eliminating the potential for SOA A to support functionality that is different from SOA B for a given SPID.The functional changes get complicated as we introduce the CMIP changes (e.g., the need for a SOA-Instance-ID to differentiate SOA A from SOA B for items like recovery), and the potential desire to support different message sets.

As an alternative, we have looked at a “relationship” architecture where SOA B uses a different SPID value than the SOA A main SPID value, and within the NPAC we have a “relationship” table that allows B to perform the same functions as A. For example, a national Service Provider (SPID 2222) is performing an OSP SV Concur. In one region that message could come from SOA A (2222), and in another region that message could come from SOA B (Y222). Because the entry in the “relationship” table says that effectively Y222 is the same as 2222, the NPAC edits will accept this message. For the NSP in both of these ports, they would see the OSP as 2222, thereby not causing confusion that the OSP is Y222.Additionally, since the “relationship” table is stored solely in the NPAC, this approach does not require 2222 to update any NPAC data to be owned by Y222 (SV ownership still remains with 2222).

Please discuss this internally and be prepared to provide input during the Sep 2012 LNPAWG meeting (change management agenda item):

1. Current 449 definition
	1. Higher development level of effort
	2. All SOAs must support same functionality
	3. Requires CMIP changes to GDMO and ASN.1
2. “relationship” approach
	1. Requires setup of “related” SPID in NPAC data, but not stored in local systems
	2. All SOAs can support whatever optional data they wish to support (settings at the SPID level)
	3. Does not require CMIP changes
	4. Does not require any changes to existing NPAC data (e.g., nothing is changed to be owned by Y222)

Apr ’13:

In preparation for discussion at the May 2013 LNPAWG meeting, Comcast has provided an update to NANC 449.

In addition to multiple connections to the NPAC, the following functionality should be considered in order to support the carrier option of a NANC 449 solution:

1. Add the echo-back of LRN, GTT and Optional data fields in order to achieve consistent and complete data for both instances (SOA A/SOA B). This will be required because the LRN, GTT and Optional data are expected to originate from a single instance only and are not returned by the NPAC today in the Object Creation Notification. Hence, the non-originating instance would be missing this information.
2. Add a new field to the New Service Provider Create Request, “Order ID”. This field, resident in many SOAs today, allows the SOA to coordinate ordering system information with NPAC porting information. Consideration for other data fields or elements would be included to support use of other SOA systems in use by other service providers. This new field will be included on both the New Service Provider Create Request and the echo-back information in #1 above to the non-originating instance. This would ensure multiple instances of SOA connectivity would contain complete and synchronized data.

May ’13 LNPAWG meeting:

After discussion about having Active-Active SOA connection functionality in the new XML interface defined in NANC 372, the group agreed to include that functionality in this change order. So, all references for Active-Active SOA will apply to both the CMIP interface and the XML interface. The group also agreed to change the new SOA field from “Order ID” to “Cross-Reference ID”. Neustar agreed to add draft requirements to this document to facilitate discussion at the July meeting.

Jul ’13 LNPAWG meeting:

The various flavors of echo-back were discussed. As a result, an additional feature will be added that allows a SOA (whether the initiator of a request, or the non-initator of a request) to indicate a preference on full echo-back for an ObjectCreationNotification and an AttributeValueChangeNotification.

Sep ’13 LNPAWG meeting:

Upon further discussion, all notifications will go to both SOA A and SOA B. Also, the echo-back will now be associated with the New SP only (no need to echo routing data to the Old SP, this will be removed from the requirements). This applies to an ObjectCreationNotification and an AttributeValueChangeNotification.

Nov ’13 LNPAWG meeting:

The use of the Delegation Model for Active-Active SOA applies to both the CMIP interface and the XML interface.

Mar ’15 LNPAWG meeting:

Discussed as to whether or not the requirements were up-to-date in light of the development work that has taken place since this change order was initially introduced. Functionality such as XML and Notification Suppression will be synced-up in the requirements of this change order for review during the next meeting.

May ’15 LNPAWG meeting:

The updates for XML and Notification Suppression were discussed. Updates (to include Number Pool Blocks, and LSMS Query Response) will be made and reviewed during the July meeting.

Jul ’15 LNPAWG meeting:

The updates for Customer support indicators, Number Pool Blocks, and LSMS Query Response were discussed. Updates (to queries, number pool block) will be made and reviewed during the September meeting.

Requirements:

Section 1.2, NPAC SMS Functional Overview

Add a new section that describes the functionality of the Active-Active SOA scenario. See Description of Change above.

Section 3.1, NPAC SMS Data Models

Add new attributes for the Active-Active SOA (Active-Active for echo-back, cross-reference ID). See below:

| **NPAC CUSTOMER DATA MODEL** |
| --- |
| **Attribute Name** | **Type (Size)**  | **Required** | **Description** |
| [snip] |  |  |  |
| NPAC Customer Cross-Reference ID Indicator – SOA | B | √ | A Boolean that indicates whether the NPAC Customer (SOA) supports Cross-Reference ID in Subscription Version records (create and modify prior to activation, query response), and Number Pool Block records (create by SOA, query response).The default value is False. |
| NPAC Customer Cross-Reference ID Indicator – LSMS | B | √ | A Boolean that indicates whether the NPAC Customer (LSMS) supports Cross-Reference ID in Subscription Version records (query response), and Number Pool Block records (query response).The default value is False. |
| NPAC Customer Cross-Reference ID Indicator – LTI | B | √ | A Boolean that indicates whether the NPAC Customer (LTI) supports Cross-Reference ID in Subscription Version records (create and modify prior to activation, query response), and Number Pool Block records (create by LTI, query response).The default value is False. |
| [snip] |  |  |  |

Table 3-2 NPAC Customer Data Model

| **npac customer Request-Delegate DATA MODEL** |
| --- |
| **Attribute Name** | **Type (Size)** | **Required** | **Description** |
| Request NPAC Customer ID | C (4) | √ | An alphanumeric code which uniquely identifies an NPAC Customer that will act as a request SPID |
| Delegate NPAC Customer ID | C (4) | √ | An alphanumeric code that uniquely identifies an NPAC Customer that will act as a delegate SPID associated with a request SPID. |
| NPAC Customer Active-Active Indicator | B | √ | A Boolean that indicates whether the NPAC Customer in this Request SPID – Delegate SPID entry is an Active-Active Relationship, thereby allowing the echo-back of subscription version data to the non-Initiator New Service Provider SOA.This only applies to a SOA-to-SOA relationship.The default value is False. |

Table 3‑6 NPAC Customer Request-Delegate Data Model

| **SubscriPTION VERSION Data MODEL** |
| --- |
| **Attribute Name** | **Type (Size)** | **Required** | **Description** |
| [snip] |  |  |  |
| Cross-Reference ID | C ( 25) |  | An alphanumeric code which identifies a Cross-Reference ID or Cross-Reference Number from the service provider’s ordering system into the SOA.This optional field may only be specified if the service provider SOA supports Cross-Reference ID. |
| [snip] |  |  |  |

Table 3‑7 Subscription Version Data Model

| **Number Pooling Block holder Information Data MODEL** |
| --- |
| **Attribute Name** | **Type (Size)** | **Required** | **Description** |
| [snip] |  |  |  |
| Cross-Reference ID | C ( 25) |  | An alphanumeric code which identifies a Cross-Reference ID or Cross-Reference Number from the service provider’s ordering system into the SOA.This optional field may only be specified if the service provider SOA supports Cross-Reference ID. |
| [snip] |  |  |  |

Table 3‑9 Number Pooling Block Holder Information Data Model

Section 3.1.3, Block Holder, Addition

RR3-149 Addition of Number Pooling Block Holder Information – Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the value formats for the following input data, is valid according to the formats specified in the Subscription Version Data Model upon Block creation for a Number Pool: (Previously B-250, reference NANC 399)

NPA-NXX-X Holder SPID

NPA-NXX-X

LRN (pseudo-LRN value of 000-000-0000)

Class DPC

Class SSN

LIDB DPC

LIDB SSN

CNAM DPC

CNAM SSN

ISVM DPC

ISVM SSN

WSMSC DPC (if supported by the Block Holder SOA)

WSMSC SSN (if supported by the Block Holder SOA)

Number Pool Block SV Type (if supported by the Block Holder SOA)

Alternative SPID (if supported by the Block Holder SOA)

Last Alternative SPID (if supported by the Block Holder SOA)

Alt-End User Location Value (if supported by the Block Holder SOA)

Alt-End User Location Type (if supported by the Block Holder SOA)

Alt-Billing ID (if supported by the Block Holder SOA)

Voice URI (if supported by the Block Holder SOA)

MMS URI (if supported by the Block Holder SOA)

SMS URI (if supported by the Block Holder SOA)

Cross-Reference ID (if supported by the Block Holder SOA)

Section 3.2, NPAC Personnel Functionality

Add new requirements for Mass Update/Mass Create that involves echo-back.

R3-7.1 Select Subscription Versions mass changes for one or more Subscription Versions

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC personnel, via the NPAC Administrative Interface, to select Subscription Versions for mass update which match a user defined combination of any of the following: SPID, LNP Type (any single LNP Type or none), TN, TN range (NPA-NXX-xxxx through yyyy, where yyyy is greater than xxxx), LRN, DPC values, SSN values, Billing ID, End User Location Type, ~~or~~ End User Location Value, or Cross-Reference ID (pending-like SVs only). (Previously part of B-760 and B-761)

Note: If a single LNP Type is selected, then only that LNP Type will be used, otherwise, if no LNP Type is selected, then no restriction is imposed on the LNP Type as a selection criteria.

R3-7.2 Administer Mass update on one or more selected Subscription Versions

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC personnel, via the NPAC Administrative Interface, to specify a mass update action to be applied against all Subscription Versions selected (except for Subscription Versions with a status of old, partial failure, sending, disconnect pending or canceled) for LRN, DPC values, SSN values, SV Type, Alternative SPID, Last Alternative SPID, Alt-End User Location Value, Alt-End User Location Type, Alt-Billing ID, Voice URI, MMS URI, SMS URI, Billing ID, End User Location Type, ~~or~~ End User Location Value, or Cross-Reference ID (pending-like SVs only). (reference NANC 399)

Note: Service Provider Personnel are limited to LRN, DPCs, and SSNs.

Req 1 Mass Update – Active-Active SOA – Notify non-Initiator New Service Provider SOA with all data in the Attribute Value Change Notification to the New Service Provider

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to perform a Mass Update in an Active-Active SOA scenario, and notify the non-Initiator New Service Provider SOA of all modified Subscription Version data in the Attribute Value Change Notification when the Service Provider Active-Active Indicator is TRUE.

Req 2 Mass Create – Active-Active SOA – Notify non-Initiator New Service Provider SOA with all data in the Object Creation Notification to the New Service Provider

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to perform a Mass Create in an Active-Active SOA scenario, and notify the non-Initiator New Service Provider SOA of all Subscription Version data in the Object Creation Notification when the Service Provider Active-Active Indicator is TRUE.

Note: Adding the echo-back of all data in the Object Creation Notification allows both New Service Provider SOA A and New Service Provider SOA B to have data such as LRN, GTT, Optional data, and Cross-Reference ID (if supported by the Service Provider SOA).

3.8.5, Notification Suppression section, update intro paragraph to include CMIP Interface.

This functionality applies to the XML interface, the CMIP Interface, the NPAC Administrative GUI Interface, and the Service Provider Low-Tech Interface.

3.9.x, new section, Cross-Reference ID Indicator

Req 3 Service Provider SOA Cross-Reference ID Indicator

NPAC SMS shall provide a Service Provider SOA Cross-Reference ID Indicator tunable parameter which defines whether this SOA supports Cross-Reference ID functionality when sending in New Service Provider SV/NPB Create Requests and receiving SV/NPB Query Responses.

Req 4 Service Provider SOA Cross-Reference ID Indicator Default

NPAC SMS shall default the Service Provider SOA Cross-Reference ID Indicator to FALSE.

Req 5 Service Provider SOA Cross-Reference ID Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA Cross-Reference ID Indicator tunable parameter.

Req 6 Service Provider LSMS Cross-Reference ID Indicator

NPAC SMS shall provide a Service Provider LSMS Cross-Reference ID Indicator tunable parameter which defines whether this LSMS supports Cross-Reference ID functionality when receiving SV/NPB Query Responses.

Req 7 Service Provider LSMS Cross-Reference ID Indicator Default

NPAC SMS shall default the Service Provider LSMS Cross-Reference ID Indicator to FALSE.

Req 8 Service Provider LSMS Cross-Reference ID Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS Cross-Reference ID Indicator tunable parameter.

3.13.3, Block Holder, Addition

Req 9 Activate Number Pool Block – Active-Active SOA – Create Notifications

NPAC SMS shall, in an Active-Active SOA scenario, for all Number Pool Block create messages applicable to SOA A, also notify SOA B.

3.13.6, Block Holder, Query

Req 10 Query of Number Pool Block Holder Information for Cross-Reference ID Indicator – Service Provider Personnel – SOA Interface

NPAC SMS shall allow a Service Provider SOA via the SOA-to-NPAC SMS Interface, to receive a query response of Block Holder Information that includes Cross-Reference ID Indicator, if the value in the requesting Service Provider’s SOA Cross-Reference ID Indicator is set to TRUE.

Req 11 Query of Number Pool Block Holder Information for Cross-Reference ID Indicator – Service Provider Personnel – LSMS Interface

NPAC SMS shall allow a Service Provider Local SMS via the NPAC SMS-to-Local SMS Interface, to receive a query response of Block Holder Information that includes Cross-Reference ID Indicator, if the value in the requesting Service Provider’s LSMS Cross-Reference ID Indicator is set to TRUE.

Req 12 Query of Number Pool Block Holder Information for Cross-Reference ID Indicator – Service Provider Personnel – LTI

NPAC SMS shall allow a Service Provider via the NPAC SOA Low-tech Interface, to receive a query response of Block Holder Information that includes Cross-Reference ID Indicator, if the Service Provider Low-Tech Interface Cross-Reference ID Indicator is TRUE.

5.1, Subscription Version Management

Req 13 Subscription Version – Active-Active SOA – All Notifications

NPAC SMS shall, in an Active-Active SOA scenario, for all Subscription Version changes applicable to SOA A, also notify SOA B.

Note: This applies to both a New Service Provider SOA and an Old Service Provider SOA.

R5‑16 Create Inter-Service Provider (non-PTO) Subscription Version - New Service Provider Optional input data

NPAC SMS shall accept the following optional fields from NPAC personnel or the new Service Provider upon Subscription Version creation for an Inter-Service Provider port, when the Porting to Original flag is set to False: (reference NANC 399)

1. Billing Service Provider ID
2. End‑User Location ‑ Value
3. End‑User Location ‑ Type
4. Alternative SPID (if supported by the Service Provider SOA)
5. Last Alternative SPID (if supported by the Service Provider SOA)
6. Voice URI (if supported by the Service Provider SOA)
7. MMS URI (if supported by the Service Provider SOA)
8. SMS URI (if supported by the Service Provider SOA)
9. Cross-Reference ID (if supported by the Service Provider SOA)

Req 14 Create Subscription Version – Cross-Reference ID

NPAC SMS shall accept the following optional field from NPAC Personnel or the new Service Provider upon Subscription Version creation, when the Porting to Original flag is set to True:

1. Cross-Reference ID (if supported by the Service Provider SOA)

R5‑18.1 Create Subscription Version - Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the value formats for the following input data, if supplied, is valid according to the formats specified in Table 3-6 upon Subscription Version creation for an Inter-Service Provider port: (reference NANC 399)

1. LNP Type
2. [snip]
3. New SP Medium Timer Indicator (if supported by the Service Provider SOA)
4. Old SP Medium Timer Indicator (if supported by the Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

RR5-5 Create “Intra-Service Provider Port” (non-PTO) Subscription Version - Current Service Provider Optional Input Data

NPAC SMS shall accept the following optional fields from the NPAC personnel or the Current Service Provider upon a Subscription Version Creation for an Intra-Service Provider port, when the Porting to Original flag is set to False: (reference NANC 399)

1. Billing Service Provider ID
2. [snip]
3. MMS URI (if supported by the Service Provider SOA)
4. SMS URI (if supported by the Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

RR5-6.1 Create “Intra-Service Provider Port” Subscription Version - Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the value formats for the following input data, if supplied, is valid according to the formats specified in Table 3-6 upon Subscription Version creation for an Intra-Service Provider port: (reference NANC 399)

1. LNP Type
2. [snip]
3. MMS URI (if supported by the Service Provider SOA)
4. SMS URI (if supported by the Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

Req 15 Create Subscription Version – Active-Active SOA – Notify Non-Initiating SOA with all data in the Object Creation Notification to the New Service Provider

NPAC SMS shall, in an Active-Active SOA scenario when the Active-Active Indicator is TRUE, notify the non-originating SOA of all Subscription Version data in the Object Creation Notification.

Note: Adding the echo-back of all data in the Object Creation Notification allows the non-originating SOA to receive data such as LRN, GTT, Optional data, and Cross-Reference ID (if supported by the Service Provider SOA). The originating SOA already has this data as it was sent to the NPAC in the request.

Req 16 Create Subscription Version – Active-Active SOA – Notify Non-Initiating SOA with all modified data in an Attribute Value Change Notification to the New Service Provider

NPAC SMS shall, in an Active-Active SOA scenario when the Active-Active Indicator is TRUE, notify the non-originating SOA of all modified Subscription Version data in the Attribute Value Change Notification.

Note: Adding the echo-back of all modified data in the Attribute Value Change Notification (second Create of an SV, or modify-pending of an SV) allows the non-originating SOA to receive data such as LRN, GTT, Optional data, and Cross-Reference ID (if supported by the Service Provider SOA).

R5‑27.1 Modify Subscription Version - New Service Provider Data Values

NPAC SMS shall allow the following data to be modified in a pending or conflict Subscription Version for an Inter-Service Provider or Intra-Service Provider port by the new/current Service Provider or NPAC personnel: (reference NANC 399)

1. Location Routing Number (LRN) ‑ the identifier of the ported to switch (excluding setting or removing a pseudo-LRN).
2. Due Date ‑ date on which transfer of service from old facilities‑based Service Provider to new facilities-based Service Provider is planned to occur.
3. Class DPC
4. Class SSN
5. LIDB DPC
6. LIDB SSN
7. CNAM DPC
8. CNAM SSN
9. ISVM DPC
10. ISVM SSN
11. WSMSC DPC (if supported by the Service Provider SOA)
12. WSMSC SSN (if supported by the Service Provider SOA)
13. SV Type (if supported by the Service Provider SOA)
14. Alternative SPID (if supported by the Service Provider SOA)
15. Last Alternative SPID (if supported by the Service Provider SOA)
16. Alt-End User Location Value (if supported by the Service Provider SOA)
17. Alt-End User Location Type (if supported by the Service Provider SOA)
18. Alt-Billing ID (if supported by the Service Provider SOA)
19. Voice URI (if supported by the Service Provider SOA)
20. MMS URI (if supported by the Service Provider SOA)
21. SMS URI (if supported by the Service Provider SOA)
22. New SP Medium Timer Indicator (if supported by the Service Provider SOA)
23. Cross-Reference ID (if supported by the Service Provider SOA)

R5-27.2 Modify “porting to original” Subscription Version - New Service Provider Data Values

NPAC SMS shall allow the following data to be modified in a pending, or conflict Subscription Version for a “porting to original” port by the new Service Provider or NPAC personnel:

1. Due Date - New Service Provider date on which “port to original” is planned to occur.
2. New SP Medium Timer Indicator (if supported by the Service Provider SOA)
3. Cross-Reference ID (if supported by the Service Provider SOA)

R5‑28 Modify (non-PTO) Subscription Version - New Service Provider Optional input data

NPAC SMS shall accept the following optional fields from the NPAC personnel or the new Service Provider upon modification of a pending or conflict Subscription version, when the Porting to Original flag is set to False: (reference NANC 399)

1. Billing Service Provider ID
2. [snip]
3. MMS URI (if supported by the Service Provider SOA)
4. SMS URI (if supported by the Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

RR5-181 Modify (PTO) Subscription Version – New Service Provider Optional input data

NPAC SMS shall accept the following optional fields from the NPAC Personnel or the new Service Provider, when the Porting to Original flag is set to True, upon modification of a pending or conflict subscription version:

1. Billing Service Provider ID
2. End‑User Location ‑ Value
3. End‑User Location ‑ Type
4. Cross-Reference ID (if supported by the Service Provider SOA)

R5‑29.1 Modify Subscription Version - Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the value formats for the following input data, if supplied, is valid according to the formats specified in Table 3-6 upon Subscription Version modification. (reference NANC 399)

1. LNP Type
2. [snip]
3. New SP Medium Timer Indicator (if supported by the New Service Provider SOA)
4. Old SP Medium Timer Indicator (if supported by the Old Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

R5‑31.3 Modify Subscription Version - Successful Modification Notification

NPAC SMS shall send an appropriate message to the old and new Service Providers upon successful modification of a Subscription Version.

Note: Pending Subscription Version notifications for pseudo-LRN are only sent if the NPAC Customer SOA Pseudo-LRN Indicator is set to TRUE and the NPAC Customer SOA Pseudo-LRN Notification Indicator is set to TRUE.

Note: Pending Subscription Version notifications for active-active SOA scenarios will include all modified Subscription Version data to the non-Initiator New Service Provider SOA.

R5-40.3 Modify Active Subscription Version - Modification Success User Notification

NPAC SMS shall notify the originating user indicating successful modification of an active Subscription Version.

Note: Active Subscription Version notifications for active-active SOA scenarios will include all modified Subscription Version data to the non-Initiator New Service Provider SOA.

R5-74.3 Query Subscription Version - Output Data - SOA

NPAC SMS shall return the following output data for a Subscription Version query request initiated by NPAC personnel or a SOA to NPAC SMS interface user: (reference NANC 399)

1. Subscription Version ID
2. [snip]
3. New SP Medium Timer Indicator (if supported by the Service Provider SOA)
4. Old SP Medium Timer Indicator (if supported by the Service Provider SOA)
5. Cross-Reference ID (if supported by the Service Provider SOA)

Note: If the New SP Medium Timer Indicator value or Old SP Medium Timer Indicator value is not set on the Subscription Version, then it will not be returned in the query response.

R5-74.4 Query Subscription Version - Output Data - LSMS

NPAC SMS shall return the following output data for a Subscription Version query request initiated over the NPAC SMS to Local SMS interface: (reference NANC 399)

1. Subscription Version ID
2. [snip]
3. MMS URI (if supported by the Service Provider LSMS)
4. SMS URI (if supported by the Service Provider LSMS)
5. Cross-Reference ID (if supported by the Service Provider LSMS)

## 6.14 XML Message and CMIP Message Delegation

With the implementation of NANC 449, Active-Active SOA, the NPAC Delegation function applies to both the CMIP Interface and the XML Interface.

RR6-237 XML Message and CMIP Message Delegation – Functionality

NPAC SMS shall support a delegation mechanism in the XML interface and the CMIP Interface that allows a delegate SPID SOA to submit a request on behalf of a request SPID SOA. (Previously NANC 372, Req 32)

Note: Upon validation of the SOA delegation relationship, the request is evaluated as if received from the request SPID. The response to a request is sent to the delegate SPID, not the request SPID. Delegation applies to the SOA, not to the LSMS.

RR6-238 XML Message and CMIP Message Delegation – Relationship Establishment

NPAC SMS shall provide a mechanism for NPAC Personnel to establish the SOA delegation relationship of a delegate SPID to a request SPID via the NPAC Administrative Interface. (Previously NANC 372, Req 33)

Note: The SOA delegation relationship can be from any one SPID to any other SPID. Delegation applies to the XML SOA, the CMIP SOA, and NPAC Low-Tech Interface, not to the LSMS.

RR6-239 XML Message and CMIP Message Delegation – Relationship Removal by NPAC Personnel

NPAC SMS shall provide a mechanism for NPAC Personnel to remove the SOA delegation relationship of the delegate SPID to the request SPID via the NPAC Administrative Interface. (Previously NANC 372, Req 34)

Note: Messages queued for the request SPID as a result of an activity from the delegate SPID will not be affected.

RR6-240 XML Message and CMIP Message Delegation – Relationship Removal upon SPID Removal

NPAC SMS shall remove the SOA delegation relationship of the delegate SPID to the request SPID upon deletion of the delegate SPID. (Previously NANC 372, Req 35)

RR6-241 XML Message and CMIP Message Delegation – Notifications

NPAC SMS shall send all notifications for a request SPID to both the request SPID and the delegate SPID(s). (Previously NANC 372, Req 36)

Note: The delegate SPID(s) must support the notification in order to receive it.

RR6-242 XML SPID and CMIP SPID Delegation – Audit Requests

NPAC SMS shall not allow an audit request to be submitted by a delegate on behalf of a request SPID. (Previously NANC 372, Req 37)

Note: Delegates should request audits using their own SPID value.

RR6-243 SPID Delegation – NPAC Personnel

NPAC SMS shall allow NPAC Personnel to view all request SPIDs related to a delegate SPID via the NPAC Administrative Interface. (Previously NANC 372, Req 38)

IIS:

Update section 2.2 (updated text in yellow highlight).

Multiple associations per service provider to the NPAC SMS can be supported when using different function masks. Active-Active SOA functionality can be supported by using the NPAC Delegation function. The secure association establishment is described in *Section* .

Update section 5.6 (updated text in yellow highlight).

Single Association for SOA/LSMS

A SOA/LSMS system may connect to the NPAC SMS with one association for the same function (same bit mask). The NPAC SMS will abort any previous associations that use that same function. Active-Active SOA functionality can be supported by using the NPAC Delegation function.

Part II, update the following flow descriptions to indicate Cross-Reference ID as an optional attribute. Add a note to the descriptions that notifications for Active-Active scenarios are sent to both New Service Provider SOAs (only non-Initiator gets full echo-back of data), and that modify scenarios have notifications that include all modified attributes to the non-Initiator:

1. B.4.4.1, Number Pool Block Create/Activate by the SOA
2. B.4.4.33, Number Pool Block Query by the Block Holder SOA
3. B.5.1.2, Subscription Version Create by the Initial SOA (New Service Provider)
4. B.5.1.3, Subscription Version Create by the Second SOA (New Service Provider)
5. B.5.2.3, Subscription Version Modify Prior to Activate Using M-ACTION
6. B.5.2.4, Subscription Version Modify Prior to Activate Using M-SET
7. B.5.6, Subscription Version Query

GDMO:

-- 21.0 LNP NPAC Subscription Version Managed Object Class

subscriptionVersionNPAC MANAGED OBJECT CLASS

 DERIVED FROM subscriptionVersion;

 CHARACTERIZED BY

 subscriptionVersionNPAC-Pkg;

 REGISTERED AS {LNP-OIDS.lnp-objectClass 21};

subscriptionVersionNPAC-Pkg PACKAGE

 BEHAVIOUR

 subscriptionVersionNPAC-Definition,

 subscriptionVersionNPAC-Behavior-1,

 subscriptionVersionNPAC-Behavior-2;

 ATTRIBUTES

 subscriptionVersionStatus GET-REPLACE,

 subscriptionOldSP GET-REPLACE,

 subscriptionNewSP-DueDate GET-REPLACE,

 subscriptionNewSP-CreationTimeStamp GET-REPLACE,

 subscriptionOldSP-DueDate GET-REPLACE,

 subscriptionOldSP-Authorization GET-REPLACE,

 subscriptionStatusChangeCauseCode GET-REPLACE,

 subscriptionOldSP-AuthorizationTimeStamp GET-REPLACE,

 subscriptionBroadcastTimeStamp GET-REPLACE,

 subscriptionConflictTimeStamp GET-REPLACE,

 subscriptionCustomerDisconnectDate GET-REPLACE,

 subscriptionEffectiveReleaseDate GET-REPLACE,

 subscriptionDisconnectCompleteTimeStamp GET-REPLACE,

 subscriptionCancellationTimeStamp GET-REPLACE,

 subscriptionCreationTimeStamp GET-REPLACE,

 subscriptionFailed-SP-List GET-REPLACE,

 subscriptionModifiedTimeStamp GET-REPLACE,

 subscriptionOldTimeStamp GET-REPLACE,

 subscriptionOldSP-CancellationTimeStamp GET-REPLACE,

 subscriptionNewSP-CancellationTimeStamp GET-REPLACE,

 subscriptionOldSP-ConflictResolutionTimeStamp GET-REPLACE,

 subscriptionNewSP-ConflictResolutionTimeStamp GET-REPLACE,

 subscriptionPortingToOriginal-SPSwitch GET-REPLACE,

 subscriptionPreCancellationStatus GET-REPLACE,

 subscriptionTimerType GET-REPLACE,

 subscriptionBusinessType GET-REPLACE,

 subscriptionNewSPMediumTimerIndicator GET-REPLACE,

 subscriptionOldSPMediumTimerIndicator GET-REPLACE,

 subscriptionCrossRefId GET-REPLACE,

 subscriptionRequestSP GET-REPLACE,

 subscriptionInitiatorSuppIndicator GET-REPLACE,

 subscriptionRequestorSuppIndicator GET-REPLACE,

 subscriptionOtherSuppIndicator GET-REPLACE;

[snip]

subscriptionVersionNPAC-Behavior-1 BEHAVIOUR

 DEFINED AS !

 NPAC SMS Managed Object for the SOA to NPAC SMS and the Local SMS to

 NPAC SMS interface.

[snip]

 New service provider SOAs can only modify the following attributes:

 subscriptionLRN

 subscriptionNewSP-DueDate

 subscriptionCLASS-DPC

 subscriptionCLASS-SSN

 subscriptionLIDB-DPC

 subscriptionLIDB-SSN

 subscriptionCNAM-DPC

 subscriptionCNAM-SSN

 subscriptionISVM-DPC

 subscriptionISVM-SSN

 subscriptionWSMSC-DPC

 subscriptionWSMSC-SSN

 subscriptionEndUserLocationValue

 subscriptionEndUserLocationType

 subscriptionBillingId

 subscriptionSvType

 subscriptionOptionalData

 subscriptionNewSPMediumTimerIndicator

 subscriptionCrossRefId

 !;

subscriptionVersionNPAC-Behavior-2 BEHAVIOUR

 DEFINED AS !

[snip]

 The subscriptionCrossRefId is only returned on SOA/LSMS queries

 to service providers that support the cross-reference ID.

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 30.0 Number Pool Block NPAC Data Managed Object Class

--

numberPoolBlockNPAC MANAGED OBJECT CLASS

 DERIVED FROM numberPoolBlock;

 CHARACTERIZED BY

 numberPoolBlockNPAC-Pkg;

 REGISTERED AS {LNP-OIDS.lnp-objectClass 30};

numberPoolBlockNPAC-Pkg PACKAGE

 BEHAVIOUR

 numberPoolBlockNPAC-Definition,

 numberPoolBlockNPAC-Behavior;

 ATTRIBUTES

 numberPoolBlockBroadcastTimeStamp GET,

 numberPoolBlockCreationTimeStamp GET,

 numberPoolBlockDisconnectCompleteTimeStamp GET,

 numberPoolBlockModifiedTimeStamp GET,

 numberPoolBlockSOA-Origination GET-REPLACE,

 numberPoolBlockStatus GET,

 numberPoolBlockFailed-SP-List GET,

 numberPoolBlockCrossRefId GET,

 numberPoolBlockRequestSP GET-REPLACE,

 numberPoolBlockInitiatorSuppIndicator GET-REPLACE,

 numberPoolBlockRequestorSuppIndicator GET-REPLACE,

 numberPoolBlockOtherSuppIndicator GET-REPLACE;

 NOTIFICATIONS

 numberPoolBlockStatusAttributeValueChange,

 "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2 : 1992":attributeValueChange

 accessControlParameter numberPoolBlockNPA-NXX-XParameter,

 "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2 : 1992":objectCreation

 accessControlParameter;

 ;

numberPoolBlockNPAC-Definition BEHAVIOUR

 DEFINED AS !

 The numberPoolBlock class is the managed object

 used to identify number pool block NPAC information.

 !;

numberPoolBlockNPAC-Behavior BEHAVIOUR

 DEFINED AS !

[snip]

 The numberPoolBlockCrossRefId is only returned on SOA/LSMS queries

 to service providers that support the cross-reference ID.

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 999.0 LNP Subscription Cross Ref Id

subscriptionCrossRefId ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.CrossRefId;

 MATCHES FOR EQUALITY;

 BEHAVIOUR subscriptionCrossRefIdBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute 999};

subscriptionCrossRefIdBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Cross Reference Id for the

 subscription version.

!;

-- 999.0 LNP Subscription Initiator Suppression Indicator

subscriptionInitiatorSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.SelfNotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR subscriptionInitiatorSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

subscriptionInitiatorSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the subscription version Initiator

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Subscription Requestor Suppression Indicator

subscriptionRequestorSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.NotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR subscriptionRequestorSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

subscriptionRequestorSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the subscription version Requestor

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Subscription Other Suppression Indicator

subscriptionOtherSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.NotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR subscriptionOtherSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

subscriptionOtherSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the subscription version Other

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Subscription Request Service Provider

subscriptionRequestSP ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.ServiceProvId;

 MATCHES FOR EQUALITY, ORDERING;

 BEHAVIOUR subscriptionRequestSPBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute 999};

subscriptionRequestSPBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the subscription Request

 Service Provider for a subscription version.

 This attribute is also used to store the Request service provider

 id for a service provider request.

!;

-- 999.0 LNP Number Pool Block Cross Ref Id

numberPoolBlockCrossRefId ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.CrossRefId;

 MATCHES FOR EQUALITY;

 BEHAVIOUR numberPoolBlockCrossRefIdBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute 999};

numberPoolBlockCrossRefIdBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Cross Reference Id for the

 number pool block.

!;

-- 999.0 LNP Number Pool Block Initiator Suppression Indicator

numberPoolBlockInitiatorSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.SelfNotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR numberPoolBlockInitiatorSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

numberPoolBlockInitiatorSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Number Pool Block Initiator

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Number Pool Block Requestor Suppression Indicator

numberPoolBlockRequestorSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.NotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR numberPoolBlockRequestorSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

numberPoolBlockRequestorSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Number Pool Block Requestor

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Number Pool Block Other Suppression Indicator

numberPoolBlockOtherSuppIndicator ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.NotifSuppIndicator;

 MATCHES FOR EQUALITY;

 BEHAVIOUR numberPoolBlockOtherSuppBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute xxx};

numberPoolBlockOtherSuppBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Number Pool Block Other

 Notification Suppression indicator on whether or not notifications

 should be suppressed.

!;

-- 999.0 LNP Number Pool Block Request Service Provider

numberPoolBlockRequestSP ATTRIBUTE

 WITH ATTRIBUTE SYNTAX LNP-ASN1.ServiceProvId;

 MATCHES FOR EQUALITY, ORDERING;

 BEHAVIOUR numberPoolBlockRequestSPBehavior;

 REGISTERED AS {LNP-OIDS.lnp-attribute 999};

numberPoolBlockRequestSPBehavior BEHAVIOUR

 DEFINED AS !

 This attribute is used to specify the Number Pool Block Request

 Service Provider for a Number Pool Block.

 This attribute is also used to store the Request service provider

 id for a service provider request.

!;

-- 3.0 LNP Subscription Version Activate Action

subscriptionVersionActivate ACTION

 BEHAVIOUR

 subscriptionVersionActivateDefinition,

 subscriptionVersionActivateBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.ActivateAction;

 WITH REPLY SYNTAX LNP-ASN1.ActivateReply;

 REGISTERED AS {LNP-OIDS.lnp-action 3};

subscriptionVersionActivateDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionActivate action is the action that can be

 used by the SOA of the new service provider to activate a

 subscription version id, tn or a range of tns via the SOA to

 NPAC SMS interface.

 !;

subscriptionVersionActivateBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 4.0 LNP Subscription Version Cancel Action

subscriptionVersionCancel ACTION

 BEHAVIOUR

 subscriptionVersionCancelDefinition,

 subscriptionVersionCancelBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.CancelAction;

 WITH REPLY SYNTAX LNP-ASN1.CancelReply;

 REGISTERED AS {LNP-OIDS.lnp-action 4};

subscriptionVersionCancelDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionCancel action is the action that can be

 used by the SOA to cancel a subscription version via the SOA to

 NPAC SMS interface.

 !;

subscriptionVersionCancelBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 5.0 LNP Subscription Version Disconnect Action

subscriptionVersionDisconnect ACTION

 BEHAVIOUR

 subscriptionVersionDisconnectDefinition,

 subscriptionVersionDisconnectBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.DisconnectAction;

 WITH REPLY SYNTAX LNP-ASN1.DisconnectReply;

 REGISTERED AS {LNP-OIDS.lnp-action 5};

subscriptionVersionDisconnectDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionDisconnect action is the action that is

 used by the SOA to disconnect a subscription version via the SOA to

 NPAC SMS interface.

 !;

subscriptionVersionDisconnectBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 7.0 LNP Subscription Version Modify Action

subscriptionVersionModify ACTION

 BEHAVIOUR

 subscriptionVersionModifyDefinition,

 subscriptionVersionModifyBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.ModifyAction;

 WITH REPLY SYNTAX LNP-ASN1.ModifyReply;

 REGISTERED AS {LNP-OIDS.lnp-action 7};

subscriptionVersionModifyDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionModify action is the action that can be

 used by the SOA to modify a subscription version via the SOA to

 NPAC SMS interface.

 !;

subscriptionVersionModifyBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 New service providers may specify modified valid values for the

 following attributes,

 on a pending or conflict subscription version,

 when the service provider's "Cross Ref ID”

 indicator is TRUE, and may NOT specify these values when the

 indicator is set to FALSE:

 subscriptionCrossRefId

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 8.0 LNP New Service Provider Cancellation Acknowledge Request

subscriptionVersionNewSP-CancellationAcknowledge ACTION

 BEHAVIOUR

 subscriptionVersionNewSP-CancellationAcknowledgeDefinition,

 subscriptionVersionNewSP-CancellationAcknowledgeBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.CancellationAcknowledgeAction;

 WITH REPLY SYNTAX LNP-ASN1.CancellationAcknowledgeReply;

 REGISTERED AS {LNP-OIDS.lnp-action 8};

subscriptionVersionNewSP-CancellationAcknowledgeDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionNewSP-CancellationAcknowledge action

 is the action that is used via the SOA to NPAC

 SMS interface by the new service provider to acknowledge

 cancellation of a subscriptionVersionNPAC with a status of

 cancel-pending.

 !;

subscriptionVersionNewSP-CancellationAcknowledgeBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 10.0 LNP Subscription Version Remove From Conflict

subscriptionVersionRemoveFromConflict ACTION

 BEHAVIOUR

 subscriptionVersionRemoveFromConflictDefinition,

 subscriptionVersionRemoveFromConflictBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.RemoveFromConflictAction;

 WITH REPLY SYNTAX LNP-ASN1.RemoveFromConflictReply;

 REGISTERED AS {LNP-OIDS.lnp-action 10};

subscriptionVersionRemoveFromConflictDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionRemoveFromConflict action

 is the action that is used via the SOA to NPAC

 SMS interface by either the old or new service provider to set the

 subscription version status from conflict to pending.

 !;

subscriptionVersionRemoveFromConflictBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 11.0 LNP New Service Provider Subscription Version Create

subscriptionVersionNewSP-Create ACTION

 BEHAVIOUR

 subscriptionVersionNewSP-CreateDefinition,

 subscriptionVersionNewSP-CreateBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.NewSP-CreateAction;

 WITH REPLY SYNTAX LNP-ASN1.NewSP-CreateReply;

 REGISTERED AS {LNP-OIDS.lnp-action 11};

subscriptionVersionNewSP-CreateDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionNewSP-Create action is the action that is

 used via the SOA to NPAC SMS interface by the

 new service provider to create a new subscriptionVersionNPAC.

 !;

subscriptionVersionNewSP-CreateBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The new service provider may optionally specify valid values for the

 following attributes, when the service provider's "Cross Ref ID"

 indicator is TRUE, and must NOT specify these values when the

 indicator is set to FALSE:

 subscriptionCrossRefId

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 12.0 LNP Old Service Provider Cancellation Acknowledge Request

subscriptionVersionOldSP-CancellationAcknowledge ACTION

 BEHAVIOUR

 subscriptionVersionOldSP-CancellationAcknowledgeDefinition,

 subscriptionVersionOldSP-CancellationAcknowledgeBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.CancellationAcknowledgeAction;

 WITH REPLY SYNTAX LNP-ASN1.CancellationAcknowledgeReply;

 REGISTERED AS {LNP-OIDS.lnp-action 12};

subscriptionVersionOldSP-CancellationAcknowledgeDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionOldSP-CancellationAcknowledge action

 is the action that is used via the SOA to NPAC

 SMS interface by the old service provider to acknowledge

 cancellation of a subscriptionVersionNPAC with a status of

 cancel-pending.

 !;

subscriptionVersionOldSP-CancellationAcknowledgeBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 14.0 LNP Old Service Provider Subscription Version Create

subscriptionVersionOldSP-Create ACTION

 BEHAVIOUR

 subscriptionVersionOldSP-CreateDefinition,

 subscriptionVersionOldSP-CreateBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.OldSP-CreateAction;

 WITH REPLY SYNTAX LNP-ASN1.OldSP-CreateReply;

 REGISTERED AS {LNP-OIDS.lnp-action 14};

subscriptionVersionOldSP-CreateDefinition BEHAVIOUR

 DEFINED AS !

 The subscriptionVersionOldSP-Create action is the action that is

 used via the SOA to NPAC SMS interface by the

 old service provider to create a new subscriptionVersionNPAC.

 !;

subscriptionVersionOldSP-CreateBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

[snip]

-- 16.0 LNP Service Provider Number Pool Block Create

numberPoolBlock-Create ACTION

 BEHAVIOUR

 numberPoolBlock-CreateDefinition,

 numberPoolBlock-CreateBehavior;

 MODE CONFIRMED;

 WITH INFORMATION SYNTAX LNP-ASN1.NumberPoolBlock-CreateAction;

 WITH REPLY SYNTAX LNP-ASN1.NumberPoolBlock-CreateReply;

 REGISTERED AS {LNP-OIDS.lnp-action 16};

numberPoolBlock-CreateDefinition BEHAVIOUR

 DEFINED AS !

 The numberPoolBlock-Create action is the action that is

 used on the NPAC SMS via the SOA to NPAC SMS interface by the

 block holder SOA to create a new numberPoolBlockNPAC.

 !;

numberPoolBlock-CreateBehavior BEHAVIOUR

 DEFINED AS !

[snip]

 The new service provider may optionally specify valid values for the

 following attributes, when the service provider's "Cross Ref ID"

 indicator is TRUE, and must NOT specify these values when the

 indicator is set to FALSE:

 numberPoolBlockCrossRefId

 The Delegation function is supported through the use of the

 Request SPID attribute.

 The Notification Suppression function is supported, and can

 suppress notifications for Grantor, Delegates, and Other

 Service Provider.

 [snip]

ASN.1:

CrossRefId ::= GraphicString25

NewSP-CreateData ::= SEQUENCE {

 chc1 [0] EXPLICIT CHOICE {

 subscription-version-tn [0] PhoneNumber,

 subscription-version-tn-range [1] TN-Range

 },

 subscription-lrn [1] LRN OPTIONAL,

 subscription-new-current-sp [2] ServiceProvId,

 subscription-old-sp [3] ServiceProvId,

 subscription-new-sp-due-date [4] GeneralizedTime,

 subscription-class-dpc [6] EXPLICIT DPC OPTIONAL,

 subscription-class-ssn [7] EXPLICIT SSN OPTIONAL,

 subscription-lidb-dpc [8] EXPLICIT DPC OPTIONAL,

 subscription-lidb-ssn [9] EXPLICIT SSN OPTIONAL,

 subscription-isvm-dpc [10] EXPLICIT DPC OPTIONAL,

 subscription-isvm-ssn [11] EXPLICIT SSN OPTIONAL,

 subscription-cnam-dpc [12] EXPLICIT DPC OPTIONAL,

 subscription-cnam-ssn [13] EXPLICIT SSN OPTIONAL,

 subscription-end-user-location-value [14]

 EndUserLocationValue OPTIONAL,

 subscription-end-user-location-type [15] EndUserLocationType OPTIONAL,

 subscription-billing-id [16] BillingId OPTIONAL,

 subscription-lnp-type [17] LNPType,

 subscription-porting-to-original-sp-switch [18]

 SubscriptionPortingToOriginal-SPSwitch,

 subscription-wsmsc-dpc [19] EXPLICIT DPC OPTIONAL,

 subscription-wsmsc-ssn [20] EXPLICIT SSN OPTIONAL,

 subscription-sv-type [21] EXPLICIT SVType OPTIONAL,

 subscription-optional-data [22] EXPLICIT OptionalData OPTIONAL,

 subscription-med-ind [23] EXPLICIT MediumTimerIndicator OPTIONAL,

 subscription-cross-ref-id [24] CrossRefId OPTIONAL,

 subscription-request-sp [25] ServiceProvId OPTIONAL,

 subscription-initiator-suppression [26]

 EXPLICIT SelfNotifSuppIndicator OPTIONAL,

 subscription-request-sp-suppression [27]

 EXPLICIT NotifSuppIndicator OPTIONAL,

 subscription-other-sp-suppression [28]

 EXPLICIT NotifSuppIndicator OPTIONAL

}

NewSP-CreateInvalidData ::= CHOICE {

 subscription-version-tn [0] EXPLICIT PhoneNumber,

 subscription-version-tn-range [1] EXPLICIT TN-Range,

 subscription-lrn [2] EXPLICIT LRN,

 subscription-new-current-sp [3] EXPLICIT ServiceProvId,

 subscription-old-sp [4] EXPLICIT ServiceProvId,

 subscription-new-sp-due-date [5] EXPLICIT GeneralizedTime,

 subscription-class-dpc [6] EXPLICIT DPC,

 subscription-class-ssn [7] EXPLICIT SSN,

 subscription-lidb-dpc [8] EXPLICIT DPC,

 subscription-lidb-ssn [9] EXPLICIT SSN,

 subscription-isvm-dpc [10] EXPLICIT DPC,

 subscription-isvm-ssn [11] EXPLICIT SSN,

 subscription-cnam-dpc [12] EXPLICIT DPC,

 subscription-cnam-ssn [13] EXPLICIT SSN,

 subscription-end-user-location-value [14] EXPLICIT EndUserLocationValue,

 subscription-end-user-location-type [15] EXPLICIT EndUserLocationType,

 subscription-billing-id [16] EXPLICIT BillingId,

 subscription-lnp-type [17] EXPLICIT LNPType,

 subscription-porting-to-original-sp-switch [18]

 EXPLICIT SubscriptionPortingToOriginal-SPSwitch,

 subscription-wsmsc-dpc [19] EXPLICIT DPC,

 subscription-wsmsc-ssn [20] EXPLICIT SSN,

 subscription-sv-type [21] EXPLICIT SVType,

 subscription-optional-data [22] EXPLICIT OptionalData,

 subscription-med-ind [23] EXPLICIT MediumIndicatorError,

 subscription-cross-ref-id [24] EXPLICIT CrossRefId,

 subscription-request-sp [25] EXPLICITServiceProvId,

 subscription-initiator-suppression [26]

 EXPLICIT NotifSuppIndicatorError,

 subscription-request-sp-suppression [27]

 EXPLICIT NotifSuppIndicatorError,

 subscription-other-sp-suppression [28]

 EXPLICIT NotifSuppIndicatorError

}

NotifSuppIndicatorError ::= CHOICE {

 indicator-value [0] BOOLEAN,

 no-value [1] NULL

}

NumberPoolBlock-CreateAction ::= SEQUENCE {

 block-npa-nxx-x NPA-NXX-X,

 block-holder-sp ServiceProvId,

 block-lrn LRN,

 block-class-dpc DPC,

 block-class-ssn SSN,

 block-lidb-dpc DPC,

 block-lidb-ssn SSN,

 block-isvm-dpc DPC,

 block-isvm-ssn SSN,

 block-cnam-dpc DPC,

 block-cnam-ssn SSN,

 block-wsmsc-dpc [0] DPC OPTIONAL,

 block-wsmsc-ssn [1] SSN OPTIONAL,

 block-sv-type [2] SVType OPTIONAL,

 block-optional-data [3] OptionalData OPTIONAL,

 block-cross-ref-id [4] CrossRefId OPTIONAL,

 block-request-sp [5] ServiceProvId OPTIONAL

}

NumberPoolBlock-CreateInvalidData ::= CHOICE {

 block-npa-nxx-x [0] EXPLICIT NPA-NXX-X,

 block-lrn [1] EXPLICIT LRN,

 block-class-dpc [2] EXPLICIT DPC,

 block-class-ssn [3] EXPLICIT SSN,

 block-lidb-dpc [4] EXPLICIT DPC,

 block-lidb-ssn [5] EXPLICIT SSN,

 block-isvm-dpc [6] EXPLICIT DPC,

 block-isvm-ssn [7] EXPLICIT SSN,

 block-cnam-dpc [8] EXPLICIT DPC,

 block-cnam-ssn [9] EXPLICIT SSN,

 block-wsmsc-dpc [10] EXPLICIT DPC,

 block-wsmsc-ssn [11] EXPLICIT SSN,

 block-sv-type [12] EXPLICIT SVType,

 block-optional-data [13] EXPLICIT OptionalData,

 block-cross-ref-id [14] EXPLICIT CrossRefId,

 block-request-sp [15] EXPLICITServiceProvId

}

OldSP-CreateData ::= SEQUENCE {

 chc1 [0] EXPLICIT CHOICE {

 subscription-version-tn [0] PhoneNumber,

 subscription-version-tn-range [1] TN-Range

 },

 subscription-new-current-sp [1] ServiceProvId,

 subscription-old-sp [2] ServiceProvId,

 subscription-old-sp-due-date [3] GeneralizedTime,

 subscription-old-sp-authorization [4] ServiceProvAuthorization,

 subscription-status-change-cause-code [5] SubscriptionStatusChangeCauseCode,

 subscription-lnp-type [6] LNPType,

 subscription-med-ind [7] EXPLICIT MediumTimerIndicator OPTIONAL,

 subscription-request-sp [8] ServiceProvId OPTIONAL,

 subscription-initiator-suppression [9]

 EXPLICIT SelfNotifSuppIndicator OPTIONAL,

 subscription-request-sp-suppression [10]

 EXPLICIT NotifSuppIndicator OPTIONAL,

 subscription-other-sp-suppression [11]

 EXPLICIT NotifSuppIndicator OPTIONAL

}

OldSP-CreateInvalidData ::= CHOICE {

 subscription-version-tn [0] EXPLICIT PhoneNumber,

 subscription-version-tn-range [1] EXPLICIT TN-Range,

 subscription-new-current-sp [2] EXPLICIT ServiceProvId,

 subscription-old-sp [3] EXPLICIT ServiceProvId,

 subscription-old-sp-due-date [4] EXPLICIT GeneralizedTime,

 subscription-old-sp-authorization [5] EXPLICIT ServiceProvAuthorization,

 subscription-status-change-cause-code [6]

 EXPLICIT SubscriptionStatusChangeCauseCode,

 subscription-lnp-type [7] EXPLICIT LNPType,

 subscription-med-ind [8] EXPLICIT MediumIndicatorError,

 subscription-request-sp [9] EXPLICIT ServiceProvId,

 subscription-initiator-suppression [10]

 EXPLICIT NotifSuppIndicatorError,

 subscription-request-sp-suppression [11]

 EXPLICIT NotifSuppIndicatorError,

 subscription-other-sp-suppression [12]

 EXPLICIT NotifSuppIndicatorError

}

NotifSuppIndicator ::= ENUMERATED {

 provider (0),

 delegates (1),

 provider-and-delegates (2)

}

SelfNotifSuppIndicator ::= BOOLEAN

SubscriptionData ::= SEQUENCE {

 subscription-lrn [1] LRN OPTIONAL,

 subscription-new-current-sp [2] ServiceProvId OPTIONAL,

 subscription-activation-timestamp [3] GeneralizedTime OPTIONAL,

 subscription-class-dpc [4] EXPLICIT DPC,

 subscription-class-ssn [5] EXPLICIT SSN,

 subscription-lidb-dpc [6] EXPLICIT DPC,

 subscription-lidb-ssn [7] EXPLICIT SSN,

 subscription-isvm-dpc [8] EXPLICIT DPC,

 subscription-isvm-ssn [9] EXPLICIT SSN,

 subscription-cnam-dpc [10] EXPLICIT DPC,

 subscription-cnam-ssn [11] EXPLICIT SSN,

 subscription-end-user-location-value [12]

 EndUserLocationValue OPTIONAL,

 subscription-end-user-location-type [13] EndUserLocationType OPTIONAL,

 subscription-billing-id [14] BillingId OPTIONAL,

 subscription-lnp-type [15] LNPType,

 subscription-download-reason [16] DownloadReason,

 subscription-wsmsc-dpc [17] EXPLICIT DPC OPTIONAL,

 subscription-wsmsc-ssn [18] EXPLICIT SSN OPTIONAL,

 subscription-sv-type [19] EXPLICIT SVType OPTIONAL,

 subscription-optional-data [20] EXPLICIT OptionalData OPTIONAL,

}

SubscriptionModifyData ::= SEQUENCE {

 subscription-lrn [0] LRN OPTIONAL,

 subscription-new-sp-due-date [1] GeneralizedTime OPTIONAL,

 subscription-old-sp-due-date [2] GeneralizedTime OPTIONAL,

 subscription-old-sp-authorization [3] ServiceProvAuthorization OPTIONAL,

 subscription-class-dpc [4] EXPLICIT DPC OPTIONAL,

 subscription-class-ssn [5] EXPLICIT SSN OPTIONAL,

 subscription-lidb-dpc [6] EXPLICIT DPC OPTIONAL,

 subscription-lidb-ssn [7] EXPLICIT SSN OPTIONAL,

 subscription-isvm-dpc [8] EXPLICIT DPC OPTIONAL,

 subscription-isvm-ssn [9] EXPLICIT SSN OPTIONAL,

 subscription-cnam-dpc [10] EXPLICIT DPC OPTIONAL,

 subscription-cnam-ssn [11] EXPLICIT SSN OPTIONAL,

 subscription-end-user-location-value [12] EndUserLocationValue OPTIONAL,

 subscription-end-user-location-type [13] EndUserLocationType OPTIONAL,

 subscription-billing-id [14] BillingId OPTIONAL,

 subscription-status-change-cause-code [15]

 SubscriptionStatusChangeCauseCode OPTIONAL,

 subscription-wsmsc-dpc [16] EXPLICIT DPC OPTIONAL,

 subscription-wsmsc-ssn [17] EXPLICIT SSN OPTIONAL,

 subscription-customer-disconnect-date [18] GeneralizedTime OPTIONAL,

 subscription-effective-release-date [19] GeneralizedTime OPTIONAL,

 new-version-status [20] VersionStatus OPTIONAL,

 subscription-sv-type [21] EXPLICIT SVType OPTIONAL,

 subscription-optional-data [22] EXPLICIT OptionalData OPTIONAL,

 subscription-new-sp-med-ind [23] EXPLICIT MediumTimerIndicator OPTIONAL,

 subscription-old-sp-med-ind [24] EXPLICIT MediumTimerIndicator OPTIONAL,

 subscription-cross-ref-id [25] CrossRefId OPTIONAL,

 subscription-request-sp [26] ServiceProvId OPTIONAL,

 subscription-initiator-suppression [27]

 EXPLICIT SelfNotifSuppIndicator OPTIONAL,

 subscription-request-sp-suppression [28]

 EXPLICIT NotifSuppIndicator OPTIONAL,

 subscription-other-sp-suppression [29]

 EXPLICIT NotifSuppIndicator OPTIONAL

}

SubscriptionModifyInvalidData ::= CHOICE {

 subscription-lrn [0] EXPLICIT LRN,

 subscription-new-sp-due-date [1] EXPLICIT GeneralizedTime,

 subscription-old-sp-due-date [2] EXPLICIT GeneralizedTime,

 subscription-old-sp-authorization [3] EXPLICIT ServiceProvAuthorization,

 subscription-class-dpc [4] EXPLICIT DPC,

 subscription-class-ssn [5] EXPLICIT SSN,

 subscription-lidb-dpc [6] EXPLICIT DPC,

 subscription-lidb-ssn [7] EXPLICIT SSN,

 subscription-isvm-dpc [8] EXPLICIT DPC,

 subscription-isvm-ssn [9] EXPLICIT SSN,

 subscription-cnam-dpc [10] EXPLICIT DPC,

 subscription-cnam-ssn [11] EXPLICIT SSN,

 subscription-end-user-location-value [12] EXPLICIT EndUserLocationValue,

 subscription-end-user-location-type [13] EXPLICIT EndUserLocationType,

 subscription-billing-id [14] EXPLICIT BillingId,

 subscription-status-change-cause-code [15]

 EXPLICIT SubscriptionStatusChangeCauseCode,

 subscription-wsmsc-dpc [16] EXPLICIT DPC,

 subscription-wsmsc-ssn [17] EXPLICIT SSN,

 subscription-customer-disconnect-date [18] EXPLICIT GeneralizedTime,

 subscription-effective-release-date [19] EXPLICIT GeneralizedTime,

 new-version-status [20] EXPLICIT VersionStatus,

 subscription-sv-type [21] EXPLICIT SVType,

 subscription-optional-data [22] EXPLICIT OptionalData,

 subscription-new-sp-med-ind [23] EXPLICIT MediumIndicatorError,

 subscription-old-sp-med-ind [24] EXPLICIT MediumIndicatorError,

 subscription-cross-ref-id [25] EXPLICIT CrossRefId,

 subscription-request-sp [26] EXPLICIT ServiceProvId,

 subscription-initiator-suppression [27]

 EXPLICIT NotifSuppIndicatorError,

 subscription-request-sp-suppression [28]

 EXPLICIT NotifSuppIndicatorError,

 subscription-other-sp-suppression [29]

 EXPLICIT NotifSuppIndicatorError

}

XML:

The cross-reference ID will be added to the following XML messages:

NewSpCreateRequest

NewSpCreateReply (InvalidData only)

ModifyRequest (Modify pending new)

ModifyReply (InvalidData only)

SvObjectCreationNotification

SvAttributeChangeNotification

SvQueryReply

NpbCreateRequest

NpbObjectCreationNotification

NpbQueryReply