Origination Date: 03/12/08

Originator: LNPAWG

### Change Order Number: NANC 429

### Description: URI Fields (Voice)

### Cumulative SP Priority, Weighted Average: N/A

Functionally Backwards Compatible: Yes

## IMPACT/CHANGE ASSESSMENT

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| FRS | IIS | GDMO | ASN.1 | NPAC | SOA | LSMS |
| Y | Y | Y | Y | Y | Y | Y |

**Business Need:**

**Voice URI Field**

No solution currently exists to address the issue of industry-wide distribution of IP end-point addressing information for IP-based Voice service. No solution addresses portability of such service. A call originating from one provider’s IP service typically has no information as to whether the dialed TN’s service is IP-based or not, nor what its address is, forcing the use of the PSTN as an intermediary between IP networks. This need not be the case. Look up databases are not the issue, as many methods of looking up the data exist. Typically, VoIP providers[[1]](#footnote-1) have their own intra-network look up capability in order to terminate calls. The issue lies in the availability of a sharing and distribution mechanism for TN-level routing information between all interested service providers. The provisioning and distributing of routing information is the precise charter of the NPAC for all ported and pooled TNs.

It so happens that today, the vast majority of TNs using IP-based Voice service involve an NPAC transaction (existing TNs migrating to VoIP are ported, new assignments are typically taken from a pooled block). The ability for IP-based SPs to share routing data associated with a ported or pooled TN surely will be desired (it is on the “to do” list of IP-groups within many SPs offering or planning to offer VoIP service). The addition of a Voice URI and the various URIs below, because the URIs are merely addressing information, is directly analogous to adding DPC and SSN information to ported and pooled TNs. The addition of the URI fields described in this change order is unlikely to cause additional NPAC activates, because the fields are intended for numbers that would be ported or pooled anyway. This is therefore the most cost effective method of provisioning IP look up engines (in whatever flavor they happen to take) with URI information relating to a ported or pooled TN.

The addition of these URI fields to the NPAC also benefits the industry in that it inherently coordinates and synchronizes the update of the SS7-based number portability look up databases with that of the IP-based look up databases. Should the updates not be synchronized, service could be affected for an indeterminate amount of time.

**Description of Change:**

The NPAC/SMS will provide the ability to provision a Voice URI for each SV and Pooled Block record.

This information will be provisioned by the SOA and broadcast to the LSMS upon activation of the SV or Pooled Block and upon modification for those SOA and LSMS associations optioned “on” to send and receive this data.

This field shall be added to the Bulk Data Download file, and be available to a Service Provider’s SOA/LSMS.

This field will be supported across the interface on an opt-in basis only and will be functionally backward compatible.

The OptionalData CMIP attribute will be populated with an XML string. The string is defined by the schema documented in the XML section below. XML is used to provide future flexibility to add additional fields to the SV records and Pool Block records when approved by the LLC.

**Major points/processing flow/high-level requirements:**

This change order proposes to add a new field to the subscription version and number pool block objects. Hence, the FRS, IIS, GDMO, and ASN.1 will need to reflect the addition of this field. This new field will cause changes to the NPAC CMIP interface, however it will be functionally backward compatible and optional by service provider.

**Requirements:**

Section 1.2, NPAC SMS Functional Overview

Add a new section that describes the functionality of the Voice URI (Uniform Resource Identifier) Field (Optional Data). See description of Change above.

Section 3.1, NPAC SMS Data Models

Add new attribute for the Voice URI (Uniform Resource Identifier) Field (Optional Data). See below:

| **NPAC CUSTOMER DATA MODEL** |
| --- |
| **Attribute Name** | **Type (Size)**  | **Required** | **Description** |
| [snip] |  |  |  |
| NPAC Customer SOA Voice URI Indicator | B | √ | A Boolean that indicates whether the NPAC Customer supports Voice URI information from the NPAC SMS to their SOA. The Voice URI is the network address to the Service Provider’s gateway for voice service.The default value is False. |
| NPAC Customer LSMS Voice URI Indicator | B | √ | A Boolean that indicates whether the NPAC Customer supports Voice URI information from the NPAC SMS to their LSMS. The Voice URI is the network address to the Service Provider’s gateway for voice service.The default value is False. |
| [snip] |  |  |  |

Table 3-2 NPAC Customer Data Model

| **Subscription Version Data MODEL** |
| --- |
| **Attribute Name** | **Type (Size)** | **Required** | **Description** |
| [snip] |  |  |  |
| Voice URI | C (255) |  | Voice URI for Subscription Version.This field may only be specified if the service provider SOA supports Voice URI. The Voice URI is the network address to the Service Provider’s gateway for voice service. |
| [snip] |  |  |  |

Table 3‑6 Subscription Version Data Model

| **number pooling block hoder information Data MODEL** |
| --- |
| **Attribute Name** | **Type (Size)** | **Required** | **Description** |
| [snip] |  |  |  |
| Voice URI | C (255) |  | Voice URI for Number Pool Block.This field may only be specified if the service provider SOA supports Voice URI. The Voice URI is the network address to the Service Provider’s gateway for voice service. |
| [snip] |  |  |  |

Table 3‑8 Number Pooling Block Holder Information Data Model

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

NPAC SMS shall allow NPAC personnel 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, Voice URI (if the requesting SOA supports Voice URI data), Billing ID, End User Location Type or End User Location Value.

RR3-210 Block Holder Information Mass Update – Update Fields

NPAC SMS shall allow NPAC Personnel, via a mass update, to update the block holder default routing information (LRN, DPC(s), and SSN(s), Voice URI (if the requesting SOA supports Voice URI data)), for a 1K Block as stored in the NPAC SMS. (Previously B-762)

R3‑8 Off-line batch updates for Local SMS Disaster Recovery

NPAC SMS shall support an off‑line batch download (via 4mm DAT tape and FTP file download) to mass update Local SMSs with Subscription Versions, NPA-NXX-X Information, Number Pool Block and Service Provider Network data.

The contents of the batch download are:

1. Subscriber data:
2. [snip]
3. Voice URI (for Local SMSs that support Voice URI data)
4. [snip]
5. Block Data
6. [snip]
7. Voice URI (for Local SMSs that support Voice URI data)
8. [snip]

RR3-79.1 Number Pool NPA-NXX-X Holder Information – Routing Data Field Level Validation

NPAC SMS shall perform field-level data validations to ensure that the value formats for the following input data, are valid according to the formats specified in the Block Data Model upon Block creation scheduling for a Number Pool, or when re-scheduling a Block Create Event: (Previously N-75.1).

[snip]

Voice URI (if supported by the Block Holder SOA)

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)

[snip]

Voice URI (if supported by the Block Holder SOA)

RR3-157 Modification of Number Pooling Block Holder Information – Routing Data

NPAC SMS shall allow NPAC personnel, Service Provider via the SOA to NPAC SMS Interface, or Service Provider via the NPAC SOA Low-tech Interface, to modify the block holder default routing information (LRN, DPC(s), and SSN(s)), and Voice URI field (if supported by the Block Holder SOA), for a 1K Block as stored in the NPAC SMS. (Previously B-320)

R4-8 Service Provider Data Elements

NPAC SMS shall require the following data if there is no existing Service Provider data:

[snip]

NPAC Customer SOA Voice URI Indicator

NPAC Customer LSMS Voice URI Indicator

R5‑16 Create 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:

1. [snip]
2. Voice URI (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:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

RR5-5 Create “Intra-Service Provider Port” 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:

1. [snip]
2. Voice URI (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:

1. [snip]
2. Voice URI (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:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5‑28 Modify 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:

1. [snip]
2. Voice URI (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.

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5‑36 Modify Active Subscription Version - Input Data

NPAC SMS shall allow the following data to be modified for an active Subscription Version:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5‑37 Active Subscription Version - New Service Provider Optional input data.

NPAC SMS shall accept the following optional fields from the new Service Provider or NPAC personnel for an active Subscription Version to be modified:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5‑38.1 Modify Active 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 of an active version:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5-74.3 Query Subscription Version - Output Data

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:

1. [snip]
2. Voice URI (if supported by the Service Provider SOA)

R5-74.4 Query Subscription Version - Output Data

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

1. [snip]
2. Voice URI (if supported by the Service Provider LSMS)

RR5-91 Addition of Number Pooling Subscription Version Information – Create “Pooled Number” Subscription Version

NPAC SMS shall automatically populate the following data upon Subscription Version creation for a Pooled Number port: (Previously SV-20)

1. [snip]
2. Voice URI (Value set to same field as Block)

Req 1 – Service Provider SOA Voice URI Edit Flag Indicator

NPAC SMS shall provide a Service Provider SOA Voice URI Edit Flag Indicator tunable parameter which defines whether a SOA supports Voice URI.

Req 2 – Service Provider SOA Voice URI Edit Flag Indicator Default

NPAC SMS shall default the Service Provider SOA Voice URI Edit Flag Indicator tunable parameter to FALSE.

Req 3 – Service Provider SOA Voice URI Edit Flag Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA Voice URI Edit Flag Indicator tunable parameter.

Req 4 – Service Provider LSMS Voice URI Edit Flag Indicator

NPAC SMS shall provide a Service Provider LSMS Voice URI Edit Flag Indicator tunable parameter which defines whether an LSMS supports Voice URI.

Req 5 – Service Provider LSMS Voice URI Edit Flag Indicator Default

NPAC SMS shall default the Service Provider LSMS Voice URI Edit Flag Indicator tunable parameter to FALSE.

Req 6 – Service Provider LSMS Voice URI Edit Flag Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS Voice URI Edit Flag Indicator tunable parameter.

Req 7 Activate Subscription Version - Send Voice URI to Local SMSs

NPAC SMS shall, for a Service Provider that supports Voice URI, send the Voice URI attribute for an activated Inter or Intra-Service Provider Subscription Version port via the NPAC SMS to Local SMS Interface to the Local SMSs.

Req 8 Activate Number Pool Block - Send Voice URI to Local SMSs

NPAC SMS shall, for a Service Provider that supports Voice URI, send the Voice URI attribute for an activated Number Pool Block via the NPAC SMS to Local SMS Interface to the Local SMSs.

Req 9 Audit for Support of Voice URI

NPAC SMS shall audit the Voice URI attribute as part of a full audit scope, only when a Service Provider’s LSMS supports Voice URI.

**Appendix B – Glossary**

URI – Uniform Resource Identifier

**Appendix E – Bulk Data Download File Examples.**

NOTE: If a Service Provider supports Voice URI, MMS URI, PoC URI, or Presence URI, the format of the Bulk Data Download file will contain delimiters for all four attributes.

| **Explanation of the fields in the subscription download file** |
| --- |
| **Field Number** | **Field Name** | **Value in Example** |
| 1 | Version Id  | 0000000001 |
| [snip] |  |  |
| 999 | Voice URI | Not present if LSMS or SOA does not support the Voice URI as shown in this example. If it were present the value would be as defined in the SV Data Model. |
|  |  |  |

Table E- 1 -- Explanation of the Fields in The Subscription Download File

| **Explanation of the fields in the Block download file** |
| --- |
| **Field Number** | **Field Name** | **Value in Example** |
| 1 | Block Id  | 1 |
| [snip] |  |  |
| 999 | Voice URI | Not present if LSMS or SOA does not support the Voice URI as shown in this example. If it were present the value would be as defined in the SV Data Model. |
|  |  |  |

Table E- 6 -- Explanation of the Fields in The Subscription Download File

# IIS

Addition to the current IIS flow descriptions that relate to SV and NPB attributes.

Flow B.4.4.1 – Number Pool Block Create/Activate by SOA

Flow B.4.4.2 – Number Pool Block Create by NPAC SMS

Flow B.4.4.12 – Number Pool Block Modify by NPAC SMS

Flow B.4.4.13 – Number Pool Block Modify by Block Holder SOA

If the “SOA Supports Voice URI Indicator” is set in the service provider’s profile on the NPAC SMS, the following attributes may optionally be included:

Voice URI

Flow B.5.1.2 – Subscription Version Create by the Initial SOA (New Service Provider)

Flow B.5.1.3 – Subscription Version Create by Second SOA (New Service Provider)

Flow B.5.1.11 – Subscription Version Create for Intra-Service Provider Port

[snip]

The following items may optionally be provided unless subscriptionPortingToOriginal-SP is true:

[snip]

Voice URI – if supported by the Service Provider SOA

Flow B.5.2.1 – Subscription Version Modify Active Version Using M-ACTION by a Service Provider SOA

Flow B.5.2.3 – Subscription Version Modify Prior to Activate Using M-ACTION

Flow B.5.2.4 – Subscription Version Modify Prior to Activate Using M-SET

[snip]

The current service provider can only modify the following attributes:

[snip]

Voice URI – if supported by the Service Provider SOA

Flow B.5.6 – Subscription Version Query

[snip]

The query return data includes:

[snip]

Voice URI – if supported by the Service Provider (SOA, LSMS)

**GDMO:**

No Change Required.

**ASN.1:**

No Change Required.

**XML:**

Note – the XML shown below is existing NANC 399 and new NANC 428.

<?xml version="1.0" encoding="UTF-8"?>

<xs:schema targetNamespace="urn:npac:lnp:opt-data:1.0" elementFormDefault="qualified" attributeFormDefault="unqualified" xmlns:xs="http://www.w3.org/2001/XMLSchema" xmlns="urn:npac:lnp:opt-data:1.0">

 <xs:simpleType name="SPID">

 <xs:restriction base="xs:string">

 <xs:length value="4"/>

 </xs:restriction>

 </xs:simpleType>

 **<xs:simpleType name="Generic-URI">**

 **<xs:restriction base="xs:string">**

 **<xs:minLength value="1"/>**

 **<xs:maxLength value="255"/>**

 **</xs:restriction>**

 **</xs:simpleType>**

 <xs:complexType name="OptionalData">

 <xs:sequence>

 <xs:element name="ALTSPID" type="SPID" nillable="true" minOccurs="0"/>

 **<xs:element name="VOICEURI" type="Generic-URI" nillable="true" minOccurs="0"/>**

 </xs:sequence>

 </xs:complexType>

 <xs:element name="OptionalData" type="OptionalData"/>

</xs:schema>

1. Meaning any service provider (facility-based or otherwise) providing voice service over IP [↑](#footnote-ref-1)