

## R3.4 Change Orders

Updated: 12/31/09

**Jan '09:** During the January 2009 LNPAWG meeting the group reviewed and approved the change orders prioritized for the next release, and agreed to send these change orders from the LNPAWG to the NAPM LLC. The purpose of this document is to provide only those change orders prioritized and not the entire change order list.

**Feb'09:** NeuStar clarification changes.

**Sep/Oct'09:** Neustar clarification changes. Removal of NANC 429, 430, and 435 (implemented in R3.3.3.5 during the May/Jun timeframe). Removal of NANC 417 (removed at NAPM LLC request).

**Nov'09:** Meeting discussion and clarification changes.

### *Table of Contents*

Backward Compatibility Definition	4
Change Order Number: NANC 147	5
Change Order Number: NANC 355	8
Change Order Number: NANC 396	17
Change Order Number: NANC 397	22
Change Order Number: NANC 408	28
Change Order Number: NANC 413	52
Change Order Number: NANC 414	55
Change Order Number: NANC 416	62
Change Order Number: NANC 418	66
Change Order Number: NANC 420	68
Change Order Number: NANC 421	71
Change Order Number: NANC 422	73
Change Order Number: NANC 424	75
Change Order Number: NANC 426	77
Change Order Number: NANC 427	83
Change Order Number: NANC 428	91
Change Order Number: NANC 433	93

Change Order Number: NANC 434 95

***Backward Compatibility Definition***

There are two areas of Backward Compatibility. These are defined below:

- Pure Backward Compatibility – implies that interface specification has NOT been modified and therefore, no recompile is necessary. Also, no behavior on the NPAC SMS has been modified to provide any change to the previously existing functionality accessible over the interface.
- Functional Backward Compatibility – implies that the interface may have been modified, however the changes are such that only a recompile is necessary to remain backward compatible. Any new functionality is optionally implemented by accessing the newly defined features over the interface. Also, no changes may be made to any existing interface functionality that will require modifications to SOA and/or LSMS platforms.

The general guideline is that subsequent releases of a major release (e.g., 2.0, 2.1, 2.1.1, etc.) must support Pure Backward Compatibility. Also, major releases should support at least one version of Functional Backward Compatibility (i.e., R3.0 should be Functional Backward Compatible to R2.0). The objective is that all releases remain Functional Backward Compatible, if possible.

**Origination Date:** 8/27/97

**Originator:** AT&T

**Change Order Number:** NANC 147

**Description:** Version ID Rollover Strategy

**Cumulative SP Priority, Average:** #6, 10.36

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

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FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Low	None	None

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**Business Need:**

Currently there is no strategy defined for rollover if the maximum value for any of the id fields (sv id, lrn id, or npa-nxx id) is reached. One should be defined so that the vendor implementations are in sync. Currently the max value used by Lockheed is a 4 byte-signed integer and for Perot it is a 4 byte-unsigned integer.

**Sep '99 LNPA-WG** (Chicago), since the version ID for all data is driven by the NPAC SMS, the rollover strategy should be developed by Lockheed. SPs/vendors can provide input, but from a high level, the requirement is to continue incrementing the version ID until the maximum ( $[2^{31}] - 1$ ) is achieved, then start over at 1 (**Jan/Mar/May '07 LNPAWG mtgs** – it was mentioned that the reference here to “1” is confusing since that is not the decimal equivalent when a 32-bit number is rolled over, so instead of “1” the correct reference should say “minus  $[2^{31}]$ ”), and use all available numbers at that point in time when a new version ID needs to be assigned (e.g., new SV-ID for a TN).

**Dec '05 LNPAWG:** NeuStar provided a list of five record types that could have numbers that roll over (since they come across the interface). Local vendors have action item to determine if they will have a problem with numbers that come “out of order”.

#### **Description of Change:**

A strategy on how we look for conflicts for new version ids must be developed as well as a method to provide warnings when conflicts are found.

**Oct '98 LNPAWG** (Kansas City), it was requested that we begin discussing this in detail starting with the Jan 99 LNPAWG meeting. Beth will be providing some information on current data for the ratio of SV-ID to active TNs (so that we can get a feel for how much larger the SV-ID number is compared to the active TNs).

**Sep '99 LNPA-WG** (Chicago), Lockheed will begin developing a strategy for this.

**Jun '00 LNPA-WG** (Chicago), AT&T analysis and calculation (using current and projected porting volumes) indicate that a need for a version ID rollover strategy is more than five years away. Therefore, this change order is removed from R5, and will be discussed internally by NeuStar technical staff.

**Jul '00 LNPAWG:** NeuStar will track the problem. It will be a NeuStar internal design. Change order to stay on open list for possible later Document Only changes.

**Jan '06 LNPAWG:** Moved to accepted.

**Mar '06 LNPAWG:** Action IDs and Audit IDs are now expected to rollover in 7 months in the SE Region. NANC 147 will document the rollover strategy. There will be no initiative to go to 64 bit IDs.

**Sep '06 LNPAWG:** Action IDs and Audit IDs are now expected to rollover in less than two (2) months in the SE Region. Since these numbers are really

transaction numbers and are purged on a regular basis, reuse is not an issue. The rollover strategy is to begin at 1. No vendor reported an issue with this approach. (**Jan/Mar/May '07 LNPAWG mtgs** – it was mentioned that the reference here to “1” is confusing since that is not the decimal equivalent when a 32-bit number is rolled over, so instead of “1” the correct reference should say “minus  $[2^{**}31]$ ”. As discovered during industry testing in early 2007, some vendors did have a problem with this; these vendors plan to address the problem with software patches to their customers).

NANC 147 is still needed to document the rollover strategy for long-term data (like SV-ID), where an inventory of available numbers needs to be established. At last check, this will be needed in ~850 months. NeuStar will continue to monitor the usage of SV-IDs.

**Requirements:**

Req-1 NPAC SMS Record ID Maximum Value Rollover

NPAC SMS shall roll over a record ID attribute in instances when the ID reaches the maximum value of  $(2^{**}31)-1$ , and start with an ID that is equal to the minimum value of minus  $(2^{**}31)$ .

Note: Record ID attributes include audit ID, action ID, subscription version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, and Number Pool Block ID.

Note: NPAC operational considerations may roll over a record ID before it reaches the maximum value.

Req-2 NPAC SMS Record ID Inventory Mechanism

NPAC SMS shall provide an inventory mechanism for persistent ID attributes (Subscription Version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, Number Pool Block ID) in instances when the ID reaches the maximum value of  $(2^{**}31)-1$ , and must roll over to the minimum value of minus  $(2^{**}31)$ .

Note: NPAC operational considerations may roll over a record ID before it reaches the maximum value.

Req-3 NPAC SMS Record ID Inventory – adding ID Values

NPAC SMS shall, after a roll over and thereafter, add ID values to the ID inventory for a specific persistent ID attribute (Subscription Version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, Number Pool Block ID) when that specific ID value **does not** exist in either the active database or history database, based on the frequency defined in the inventory mechanism in the housekeeping process.

Note: Available record ID values can change between housekeeping executions of the inventory mechanism (i.e., an SV-ID that is not available to be added to the inventory one month may be available to be added the next month).

Req-4 NPAC SMS Record ID Inventory – skipping ID Values

NPAC SMS shall, after a roll over and thereafter, skip ID values when adding to the ID inventory for a specific persistent ID attribute (Subscription Version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, Number Pool Block ID) when that specific ID value **does** exist in either the active database or history database, based on the frequency defined in the inventory mechanism in the housekeeping process.

**Req-5 NPAC SMS Record ID Inventory – issuing new ID Values**

NPAC SMS shall issue an ID value from the ID inventory for a specific persistent ID attribute (Subscription Version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, Number Pool Block ID) when creating a record that requires a new ID value, and the ID attribute has been rolled over.

**Req-6 NPAC SMS Record ID Inventory – skipping ID Value of Zero**

NPAC SMS shall, after a roll over and thereafter, skip ID value zero (0) when adding to the ID inventory for a specific persistent ID attribute (Subscription Version ID, LRN ID, NPA-NXX ID, NPA-NXX-X ID, Number Pool Block ID), based on the frequency defined in the inventory mechanism in the housekeeping process.

**IIS:**

No change required.

**GDMO:**

No change required.

**ASN.1:**

No change required.

**Origination Date:** 4/12/02

**Originator:** SBC

**Change Order Number:** NANC 355

**Description:** Modification of NPA-NXX Effective Date (son of ILL 77)

**Cumulative SP Priority, Average:** #2, 5.27

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

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FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	Y	Y	N	Med	Med	Med

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**Business Need:**

When the NPAC inputs an NPA Split requested by the Service Provider and the effective date and/or time of the new NPA-NXX does not match the start of PDP, the NPAC cannot create the NPA Split in the NPAC SMS. To correct this problem the NPAC can contact the Service Provider and have them delete and re-enter the new NPA-NXX specified by the NPA Split at the correct time, or the NPAC can delete and re-enter the NPA-NXX for the Service Provider.

However, the NPA-NXX may already be associated with the NPA Split at the Local SMS, and the subsequent deletion of the NPA-NXX will cause that specific record to be old time-stamped. When the NPA-NXX is re-created, that new record will have a different time stamp, and it requires a manual task for the Service Provider to search for new NPA-NXX records which might match the NPA Split. If identified and corrected, it will be added. If not identified, it will affect call routing after PDP.

**Description of Change:**

This activity would only be allowed by NPAC personnel, via the GUI, to modify the NPA-NXX Effective Date.

At the time of modification request, all existing pending subscription versions must have a due date greater than the new effective date in order for the change to occur. If one or more pending subscription versions have a due date less than the new effective date, a change would not be made and an error message would be returned to the NPAC user.

**Jul '09**, in order to maintain backward compatibility, this functionality needs to change to “no pending-like SVs exist”, such that a Service Provider that does not support this modification functionality can receive and process a delete and re-add from the NPAC.

It would be the responsibility of the owner of the NPA-NXX to resolve issues of pending versions with due dates prior to the new effective date before a change could be made.

For valid requests, the NPAC will notify the SOA/LSMS of a modified effective date (M-SET).

**Jan '03 LNPAWG**, approved, move to accepted category.

**Nov '08 LNPAWG**, discussion. Minor clarifications on the requirements. The IIS Flow and GDMO should be included for the next meeting:

**Nov '09 LNPAWG**, discussion. A proposal to include functionality that allows a Service Provider to request a BDD using SOA profile settings or LSMS profile settings was accepted. New requirements will be added for this functionality.

**Requirements:**

RR3-304 Network Data Information Bulk Download File Creation – Data in Latest View of Network Data Activity Choice

NPAC SMS shall use the *Latest View of Network Data Activity* selection to include all Network Data, in order to capture activation, modification (NPA-NXX, NPA-NXX-X ~~only~~), and deletion transactions for Network Data, but only include the latest instance of the Network Data in the Network Data Bulk Data Download files, when Network Data has more than one activity (e.g., addition, then modification of an NPA-NXX-X) within the specified time range. (Previously NANC 354 Req 5)

Note: The format of the BDD file doesn't change based on the status of the Network Data but some of the fields may be blank. Example: Creates and modifies would have all the attributes specified but disconnect and deletes would have many fields null.

**Nov '08 LNPAWG**, discussion. Requirements 1 through 17 are only applicable when requirement 18 (regional tunable) is set to TRUE.

Req-18 Regional NPA-NXX Modification Flag Indicator – Tunable Parameter

NPAC SMS shall provide a Regional NPA-NXX Modification Flag Indicator tunable parameter, which is defined as an indicator on whether or not NPA-NXX Modification capability will be supported by the NPAC SMS for a particular NPAC region.

Req-19 Regional NPA-NXX Modification Flag Indicator – Tunable Parameter Default

NPAC SMS shall default the NPA-NXX Modification Flag Indicator tunable parameter to TRUE.

Req-20 Regional NPA-NXX Modification Flag Indicator – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the NPA-NXX Modification Flag Indicator tunable parameter.

Req-1 Modify NPA-NXX data for a Service Provider

NPAC SMS shall allow NPAC personnel to modify an existing NPA-NXX for a Service Provider via the NPAC Administrative Interface.

Req-2 NPAC SMS download of network data to the Local SMS and SOA – Modification

NPAC SMS shall be able to communicate modification of NPA-NXX data for a Service Provider to Local SMSs and SOAs.

Req-3 Service Provider NPA-NXX Data Modification

NPAC SMS shall reject a Service Provider request to modify their NPA-NXX data via the NPAC SMS to Local SMS interface, the SOA to NPAC SMS interface, or the SOA Low-tech Interface.

Req-4 Modification of NPA-NXX – Effective Date Modification from OpGUI

NPAC SMS shall allow NPAC personnel to modify the effective date for an NPA-NXX as stored in the NPAC SMS via the NPAC Administrative Interface.

Req-5 Modification of NPA-NXX – Effective Date versus Current Date

NPAC SMS shall allow the NPAC personnel to modify the effective date for an NPA-NXX if the current date is less than the existing effective date for the NPA-NXX.

Req-6 Modification of NPA-NXX – New Effective Date versus No Pending SVs or Scheduled NPA-NXX-Xs/Number Pool Blocks

NPAC SMS shall allow the NPAC personnel to modify the effective date for an NPA-NXX if no pending-like Subscription Versions or Scheduled NPA-NXX-Xs/Number Pool Blocks exist within the NPA-NXX.

Req-7 Modification of NPA-NXX – Validation Error

NPAC SMS shall report an error to the NPAC Personnel and reject the modification of an NPA-NXX, if validation errors occur as defined in Requirements Req-5 and Req-6.

Req-8 Service Provider SOA NPA-NXX Modification Flag Indicator

NPAC SMS shall provide a Service Provider SOA NPA-NXX Modification Flag Indicator tunable parameter which defines whether a SOA supports NPA-NXX Modification.

Req-9 Service Provider SOA NPA-NXX Modification Flag Indicator Default

NPAC SMS shall default the Service Provider SOA NPA-NXX Modification Flag Indicator tunable parameter to FALSE.

Req-10 Service Provider SOA NPA-NXX Modification Flag Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA NPA-NXX Modification Flag Indicator tunable parameter.

Req-11 Service Provider LSMS NPA-NXX Modification Flag Indicator

NPAC SMS shall provide a Service Provider LSMS NPA-NXX Modification Flag Indicator tunable parameter which defines whether an LSMS supports NPA-NXX Modification.

Req-12 Service Provider LSMS NPA-NXX Modification Flag Indicator Default

NPAC SMS shall default the Service Provider LSMS NPA-NXX Modification Flag Indicator tunable parameter to FALSE.

Req-13 Service Provider LSMS NPA-NXX Modification Flag Indicator Modification



NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS NPA-NXX Modification Flag Indicator tunable parameter.

Req-14 Modification of NPA-NXX – Service Provider SOA NPA-NXX Modification Flag Indicator set to FALSE

NPAC SMS shall process an NPA-NXX modification request when a Service Provider SOA NPA-NXX Modification Flag Indicator tunable parameter is set to FALSE, by sending the following:

- NPA-NXX Delete
- NPA-NXX Create (with new Effective Date)

Req-15 Modification of NPA-NXX – Service Provider SOA NPA-NXX Modification Flag Indicator set to TRUE

NPAC SMS shall process an NPA-NXX modification request when a Service Provider SOA NPA-NXX Modification Flag Indicator tunable parameter is set to TRUE, by sending the following:

- NPA-NXX Modification (with new Effective Date)

Req-16 Modification of NPA-NXX – Service Provider LSMS NPA-NXX Modification Flag Indicator set to FALSE

NPAC SMS shall process an NPA-NXX modification request when a Service Provider LSMS NPA-NXX Modification Flag Indicator tunable parameter is set to FALSE, by sending the following:

- NPA-NXX Delete
- NPA-NXX Create (with new Effective Date)

Req-17 Modification of NPA-NXX – Service Provider LSMS NPA-NXX Modification Flag Indicator set to TRUE

NPAC SMS shall process an NPA-NXX modification request when a Service Provider LSMS NPA-NXX Modification Flag Indicator tunable parameter is set to TRUE, by sending the following:

- NPA-NXX Modification (with new Effective Date)

Req-18 Service Provider SOA NPA-NXX Modify BDD File Indicator

NPAC SMS shall provide a Service Provider SOA NPA-NXX Modify BDD File Indicator tunable parameter which defines whether a SOA supports NPA-NXX Modification in the BDD File.

NOTE: If the tunable parameter is set to TRUE, then the download reason will be set to modified. Otherwise, it will be set to new.

Req-19 Service Provider SOA NPA-NXX Modify BDD File Indicator Default

NPAC SMS shall default the Service Provider SOA NPA-NXX Modify BDD File Indicator tunable parameter to FALSE.

Req-20 Service Provider SOA NPA-NXX Modify BDD File Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA NPA-NXX Modify BDD File Indicator tunable parameter.

Req-21 Service Provider LSMS NPA-NXX Modify BDD File Indicator

NPAC SMS shall provide a Service Provider LSMS NPA-NXX Modify BDD File Indicator tunable parameter which defines whether an LSMS supports NPA-NXX Modification in the BDD File.

NOTE: If the tunable parameter is set to TRUE, then the download reason will be set to modified. Otherwise, it will be set to new.

Req-22 Service Provider LSMS NPA-NXX Modify BDD File Indicator Default

NPAC SMS shall default the Service Provider LSMS NPA-NXX Modify BDD File Indicator tunable parameter to FALSE.

Req-23 Service Provider LSMS NPA-NXX Modify BDD File Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS NPA-NXX Modify BDD File Indicator tunable parameter.

FRS, Table E-3, NPA-NXX Download File Example. Add the following rows in yellow highlight.

1	Service Provider Id	0001
2	NPA-NXX Id	2853
3	NPA-NXX Value	303123
4	Creation TimeStamp	19960101155555
5	Effective TimeStamp	19960105000000
6	Download Reason	0
7	Modified TimeStamp	Not present if LSMS or SOA does not support the Modified feature (NANC 355)

IIS:

IIS Change: add a new flow for the Modification of NPA-NXX Effective Date.

B.x.y Modification of NPA-NXX Effective Date Using M-SET

This scenario reflects the message flow for a Modification of an NPA-NXX Effective Date.

1. M-SET Request serviceProvNPA-NXX (NPAC SMS internal)

2. M-SET Response serviceProvNPA-NXX (NPAC SMS internal)
3. M-SET Request serviceProvNPA-NXX (from NPAC SMS to SOA if SP SOA tunable TRUE) or M-DELETE and M-CREATE Request serviceProvNPA-NXX (from NPAC SMS to SOA if SP tunable FALSE)
4. M-SET Response serviceProvNPA-NXX (from SOA to NPAC SMS if SP SOA tunable TRUE) or M-DELETE and M-CREATE Response serviceProvNPA-NXX (from NPAC SMS to SOA if SP tunable FALSE)
5. M-SET Request serviceProvNPA-NXX (from NPAC SMS to LSMS if SP LSMS tunable TRUE) or M-DELETE and M-CREATE Request serviceProvNPA-NXX (from NPAC SMS to LSMS if SP LSMS tunable FALSE)
6. M-SET Response serviceProvNPA-NXX (from LSMS to NPAC SMS if SP LSMS tunable TRUE) or M-DELETE and M-CREATE Response serviceProvNPA-NXX (from NPAC SMS to LSMS if SP LSMS tunable FALSE)

GDMO:

Attribute and Behavior description for Modification of NPA-NXX Effective Date.  
(modified in yellow)

-- 18.0 LNP Service Provider NPA-NXX Managed Object Class

serviceProvNPA-NXX MANAGED OBJECT CLASS

DERIVED FROM "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2 : 1992":top;

CHARACTERIZED BY

serviceProvNPA-NXX-Pkg;

CONDITIONAL PACKAGES

serviceProvNPA-NXX-ModificationTimePkg PRESENT IF

!the service provider is supporting NPA-NXX modification timestamp!;

REGISTERED AS {LNP-OIDS.lnp-objectClass 18};

serviceProvNPA-NXX-PKG PACKAGE

ATTRIBUTES

serviceProvNPA-NXX-EffectiveTimeStamp GET-REPLACE,

serviceProvDownloadReason GET-REPLACE,

...

serviceProvNPA-NXX-Behavior BEHAVIOUR

DEFINED AS !

All attributes (except NPA-NXX Effective Date) are read-only. The serviceProv-NPA-NXX-EffectiveTimeStamp can only be modified if the current date and time is prior to the current value of the Effective Timestamp, no pending-like Subscription Versions exist, no Scheduled NPA-NXX-Xs/Number Pool Blocks exist, and can only be modified by NPAC Personnel. If modified, the download will be set to 'modified'.

A Local SMS or SOA cannot modify any of the attributes on the NPAC SMS. A modify by the NPAC SMS (NPA-NXX Effective Timestamp) will result in an M-SET to the Local SMS or SOA that supports this feature. If not supported, the modify will result in an M-DELETE followed by an M-CREATE.

The Local SMS will receive the serviceProvNPA-NXX-ModificationTimePkg attribute in create and modify downloads, query replies, and recovery responses if the 'NPAC New Functionality Support' indicator is set for the 'LSMS NPA-NXX Modification Flag' in their service provider profile on the NPAC SMS.

The SOA will receive the serviceProvNPA-NXX-ModificationTimePkg attribute in create and modify downloads, query replies, and recovery responses if the 'NPAC New Functionality Support' indicator is set for the 'SOA NPA-NXX Modification Flag' in their service provider profile on the NPAC SMS.

```
-- xx.0 Service Provider NPA-NXX Modification Time Package
serviceProvNPA-NXX-ModificationTimePkg PACKAGE
BEHAVIOUR serviceProvNPA-NXX-ModificationTimePkgBehavior;
ATTRIBUTES
serviceProvNPA-NXX-ModifiedTimeStamp GET-REPLACE;
REGISTERED AS {LNP-OIDS.lnp-package xx};
--
-- xx.0 LNP Service Provider NPA-NXX Modification Time Stamp
--
```

serviceProvNPA-NXX-ModifiedTimeStamp ATTRIBUTE  
WITH ATTRIBUTE SYNTAX LNP-ASN1.GeneralTime;  
MATCHES FOR EQUALITY, ORDERING;  
BEHAVIOUR serviceProvNPA-NXX-ModifiedTimeStampBehavior;  
REGISTERED AS {LNP-OIDS.lnp-attribute xx};  
serviceProvNPA-NXX-ModifiedTimeStampBehavior BEHAVIOUR  
DEFINED AS !

This attribute provides the date and time the  
serviceProvNPA-NXX object was last modified on the NPAC SMS.

!;

ASN.1:

New attribute for recovery of Modification of NPA-NXX Effective Date. (modified  
in yellow)

NPA-NXX-DownloadData ::= SET OF SEQUENCE {  
service-prov-mpa-nxx-id [0] NPA-NXX-ID,  
service-prov-mpa-nxx-value [1] NPA-NXX OPTIONAL,  
service-prov-mpa-nxx-effective-timestamp [2] GeneralizedTime OPTIONAL,  
service-prov-download-reason [3] DownloadReason,  
service-prov-mpa-nxx-creation-timestamp [4] GeneralizedTime OPTIONAL,  
service-prov-mpa-nxx-modified-timestamp [5] GeneralizedTime OPTIONAL  
}

**Origination Date:** 9/9/04

**Originator:** LNPAWG

**Change Order Number:** NANC 396

**Description:** NPAC Filter Management – NPA-NXX Filters

**Cumulative SP Priority, Average:** #16, 14.43

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

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FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Med	None	None

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**Business Need:**

The existing NPAC Filter Management process only allows a filter to be applied for a particular NPA-NXX if that particular NPA-NXX has previously been opened within NPAC. The NPAC also supports the ability for a SOA/LSMS to manage their own filters over the CMIP interface. Using this method, however, SOA/LSMS administrators must still wait upon receipt of a new code opening from the NPAC to create a new filter for those cases where they do not want to receive any Subscription Versions for that NPA-NXX. Because of how the NPAC Filter Management process works in conjunction with the SOA/LSMS implementation options, SOA/LSMS administrators are manually unable to efficiently filter out unnecessary Subscription Versions based on NPA-NXX for the purpose of SOA/LSMS capacity management. As a result, unnecessary Subscription Versions are sent to a SOA/LSMS or an unnecessary amount of resources are spent by the end user monitoring NPA-NXX activity at the NPAC in real-time to ensure Subscription Versions that are not needed are indeed not being sent to their SOA/LSMS. An unnecessary amount of resources are also spent by the NPAC maintaining these filters for carriers.

Alternatively, a SOA/LSMS could implement an automated mechanism to manage filters over the CMIP interface, based on a local database table (or file). This table (or file) would contain codes that the SOA/LSMS wishes to filter out. So, when a new code is opened in NPAC and broadcast to the SOA/LSMS, the automated mechanism could issue a new filter request to the NPAC over the CMIP interface. The issue with this approach is that it requires every SOA/LSMS (that wishes to use this functionality) to implement this feature.

**Description of Change:**

This Change order proposes that filters may be implemented for an NPA-NXX before it is entered into the NPAC or a filter should be able to be implemented at the NPA level to account for any NXX in a particular NPA, even before an NXX may exist under that NPA within NPAC.

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

1. The NPAC will **continue to support** filters at the NPA-NXX level.
  - a. The NPAC will keep the existing edit rule where an NPA-NXX must already exist in the NPAC in order to create a filter for that NPA-NXX. Note: in order to allow NPAC Personnel to manage updates, this rule will not apply to NPAC Personnel.

- b. The existing NPA-NXX filters will continue to be supported for NPAC personnel to maintain, via the NPAC GUI, for a requesting Service Provider.
  - c. The existing NPA-NXX filters will continue to be supported across the CMIP interface.
2. The NPAC will **add support** of filters at the NPA level.
- a. The NPAC existing “*NPA-NXX must exist*” edit rule will NOT apply when creating NPA filters.
  - b. The new NPA filters will be supported for NPAC personnel to maintain, via the NPAC GUI, for a requesting Service Provider.
  - c. Once an NPA filter is added, all subordinate NPA-NXX filters will be deleted.
  - d. The new NPA filters can also be removed by NPAC Personnel via the NPAC GUI.
3. Existing filter functionality related to broadcasts will remain in the NPAC (i.e., the NPAC will NOT broadcast data to an LSMS that has a filter for a given NPA or NPA-NXX).
4. No modifications required to local systems (SOA, LSMS).
5. No tunable changes.
6. No report changes.

**Jul '08 LNPAWG**, discussion. Need to develop requirements for Sep '08 review. The existing Filter requirements are sufficient for existing NPA-NXX functionality, so only those below for NPA filters are needed:

**Requirements:**

RR3-7 Query Filtered NPA-NXXs for a Local SMS

NPAC SMS shall allow a Service Provider to query filtered NPA-NXXs for a given Local SMS via the NPAC SMS to Local SMS interface and the SOA to NPAC SMS interface.

NOTE: .The NPAC SMS maintains NPA-level filters internally. Therefore, they are NOT returned as a result of a query request.

Req 1 Create Filtered NPA for a Local SMS – Existing NPA-NXX not Required

NPAC SMS shall allow NPAC Personnel on behalf of a requesting Service Provider to create a filtered NPA for a given Local SMS, via the NPAC Administrative interface.

Req 2 Create Filtered NPA for a Local SMS – Delete Subordinate NPA-NXXs Deleted.

Req-3 Filtered NPA Behaviour for a Local SMS

NPAC SMS shall treat a filtered NPA the same as a filtered NPA-NXX for broadcasts and BDD files for a given Local SMS.

Note: A filtered NPA is equivalent to a filtered NPA-NXX for every NXX under that NPA.

Req-4 Delete Filtered NPA for a Local SMS

NPAC SMS shall allow NPAC Personnel on behalf of a requesting Service Provider to delete a filtered NPA for a given Local SMS, via the NPAC Administrative interface.

Req-5 Create Filtered NPA for a SOA – Existing NPA-NXX not Required

Deleted.

Req-6 Create Filtered NPA for a SOA – Delete Subordinate NPA-NXXs

Deleted.

Req-7 Filtered NPA Behaviour for a SOA

Deleted.

Req-8 Delete Filtered NPA for a SOA

Deleted.

Req-9 Filtered NPA Behaviour – Overlap Allowed

NPAC SMS shall allow the creation of an NPA-NXX Filter (6-digits) even if the corresponding NPA Filter (3-digits) already exists.

Note: Allowing overlap allows the Service Provider to maintain filtering functionality when moving from a 3-digit basis to a 6-digit basis.

Req-10 Create Filtered NPA-NXX for a Local SMS – NPAC Personnel – Existing NPA-NXX Not Required

NPAC SMS shall allow NPAC Personnel to create a filtered NPA-NXX for a given Local SMS, even if the corresponding NPA-NXX network data does **NOT** exist in the NPAC SMS.

Note: This is needed to allow NPAC Personnel to manage filtering functionality for a Service Provider.

IIS:

No change required.

GDMO:

Behavior description for NPA-level filter. (modified in yellow)

-- 25.0 LNP Service Provider Filter NPA-NXX Managed Object Class



```

lsmsFilterNPA-NXX MANAGED OBJECT CLASS
DERIVED FROM "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2 : 1992":top;
CHARACTERIZED BY
lsmsFilterNPA-NXX-Pkg;
REGISTERED AS {LNP-OIDS.lnp-objectClass 25};
lsmsFilterNPA-NXX-Pkg PACKAGE
BEHAVIOUR
lsmsFilterNPA-NXX-Definition,
lsmsFilterNPA-NXX-Behavior;
ATTRIBUTES
lsmsFilterNPA-NXX-ID GET,
lsmsFilterNPA-NXX-Value GET;
;
lsmsFilterNPA-NXX-Definition BEHAVIOUR
DEFINED AS !
The lsmsFilterNPA-NXX class is the managed object
used to identify the NPA-NXX values for which a service provider
does not want to be informed of subscription version broadcasts,
network downloads, or SOA notifications.
!;
lsmsFilterNPA-NXX-Behavior BEHAVIOUR
DEFINED AS !
NPAC SMS Managed Object used for the Local SMS to NPAC SMS interface
and the NPAC SMS to SOA interface.
All attributes are read only. Once created, the lsmsFilterNPA-NXX
object can be deleted via the Local SMS or SOA interface. The
lsmsFilterNPA-NXX-ID is specified by the NPAC SMS.
The Local SMS or SOA can M-DELETE, M-CREATE and M-GET the
lsmsFilterNPA-NXX objects on the NPAC SMS. (LSMS Network Data
Association Function).
The NPAC SMS maintains NPA-level filters internally. Even though

```

they filter all subordinate NPA-NXXs, they are not broadcast or returned in a query result, over the

Local SMS or SOA interface.

!;

ASN.1:

No change required.

**Origination Date:** 7/28/04

**Originator:** Verizon Wireless and SNET Diversified Group

**Change Order Number:** NANC 397

**Description:** Large Volume Port Transactions and SOA Throughput

**Cumulative SP Priority, Average:** Mandatory

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

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FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	High	Med-High	Med-High

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**Business Need:**

*Overview – Service Providers have voiced concerns about the volume of port transactions that the NPAC can process per second when mass changes need to be made and broadcasted to the industry. Now that wireless service providers are porting throughout the , the volume of port transactions has increased and will continue to increase in general, and mass changes will need to be made more frequently as well. The consolidations of Carriers and Switches will also generate an increase in the number of Mass Modifications for the update of the Network Data Tables (LIDB, CNAM, CLASS, ISVM and SMSSC).*

As wireless service providers are continually managing their networks and load-balancing the traffic and subscribers on them, the need for HLR and DPC database changes may become more frequent and of larger volumes in the future. For example, the wireless carrier may need to modify LRNs for 100,000 ported in subscribers to effectively change their switch designations. Ultimately, the NPAC must be able to handle those 100,000 transactions in a short amount of time. The desired process would be to modify all the records in one evening rather than having to split up the changes over a period of days or weeks. Similarly,

Service Providers who have consolidated or have changed business plans need to update the Network Tables in order to ensure proper routing to Database Storage (LIDB, CNAM, etc.).

Intense coordination is required to effect the changes necessary to properly route the queries associated with these databases, including LERG, LARG and CNARG updates, GTT changes in STPs and end office routing changes. Additionally, modifications need to be made to the Network Tables in the NPAC and the transaction limitations force such modifications to be spread over weeks and/or months straining the resources of an industry already processing changes on a 24X7 basis. The two methods available for large volume NPAC changes are 1) modifications done through the SOA and 2) modifications done using the industry Mass Modification process. Processing through the SOA, at the current rate of 4 to 6 transactions per second, it could take more than 4 hours to make LRN changes to 100,000 subscribers. If something goes wrong and the Service Provider needs to back out of the changes, then another 4 hours would be required to make the corrections. This could start to creep into regular business hours in large volume ports. There is a concern about technology migrations and the current 25K/night operational limitation (originally submitted as PIM 43, and now turned into a change order). This is not an immediate need, but something that should be planned for the three-five years out timeframe.

(**May '07 LNPAWG mtg** – the following paragraph is retained for historical purposes, even though the quantity limitation on the industry Mass Modification notification process has been updated. The current value as of Mar '07 is set to 10,000 changes per hour, per region, seven days a week). The industry Mass Modification process is limited to 25,000 changes per region per day Monday through Friday and 50,000 changes per region per day Saturday and Sunday. This limitation applies to all service providers requesting a change, so if more than one service provider wishes to make changes on a particular day, the limitation encompasses all service providers wishing to modify records. A wireless subscriber migration involves more than just that service provider; it also involves each of that service provider's roaming partners updating their networks on the same night, resulting in a very large coordinated effort among many parties.

There are also concerns about multiple wireless service providers doing these same types of migrations on the same nights and what coordination needs to take place to ensure that all service providers are able to manage their networks as needed and when needed. Using the Mass Modification method for large volume projects requires a high level of coordination and scheduling especially if other service providers in the region also need to do large modifications at the same time.

Additional updates between the NPAC and the SOA may be needed using the Mass Modification process. This adds additional time and coordination to fully complete a large volume project.

**Description of Change:**

The performance impacts to the SOAs, NPAC, and LSMSs need to be determined for large volume ports.

As porting volumes increase, it will be very important for all systems to be capable of reliably receiving downloads while retaining their association under heavier loads.

All systems should be able to maintain their current required availability level under heavy loads. Large volume porting should not require scheduled downtime.

The current plan is for service providers to start compiling technology migration forecast estimates and provide this information to Steve Addicks by March '05. At that time, the Architecture Team will begin a review of the data (without service provider names) and begin some analysis on next steps.

Jan '06 LNPAWG – moved to Accepted per LNPAWG discussion.

Jan, Mar '07 LNPAWG – continued discussion in Architecture Planning Team's meeting.

For the May meeting, the requirements will be included to reflect current values and new values that would be necessary for 25K/hr.

The current (Mar '07) industry Mass Modification notification process is set to 10,000 changes per hour, per region, seven days a week.

May '07 LNPAWG – continued discussion in Architecture Planning Team's meeting.

The updated requirements were reviewed. The performance increase would likely affect more than just software changes (i.e., hardware, network). When questioned again on the need to allow half the time for the back out, Verizon Wireless responded that a problem may not be known until the entire migration was completed, and therefore the back-out requirement would need a comparable time interval to perform the back out.

NeuStar suggested an option that would use a new message to indicate “starting migration now”, and a subsequent message to indicate “migration complete” or “migration should be backed out”. This approach allows a potential to use much more of the maintenance window for the initial broadcast, since database back out or commits will be much faster than additional SV modification broadcasts. Discussion will continue during the Jul '07 APT mtg.

Jul '07 LNPAWG – continued discussion in Architecture Planning Team's meeting.

The discussion was centered on the volume number and the various options on the approach to accomplishing the 100K updates overnight. Pros and cons for each of these were discussed.

1.) is it 100K in eight hours with a single message to indicate begin and another single message to indicate end? (effectively up to 100,002 messages, assuming no ranges),

- 2.) is it 100K in four hours to allow a full back out by sending 100K back out messages? (effectively up to 200,000 messages, assuming no ranges),
- 3.) is it 100K in eight hours utilizing TN lists where there is enough time to perform both the updates as well as a potential back-out? (potentially as few as two messages, assuming one message with a list of 100K TNs, and another single message with a list of 100K TNs to back-out)
- 4.) is it a case where 100K+ could be accomplished using a selection criteria rather than TNs or TN-Ranges? (a single message that says “update where LRN =xyz”)
- 5.) is it a case where associating DPC data with an LRN and broadcasting as network data rather than SV data would help? (much fewer messages, but quantity unknown at this time) or
- 6.) is it a higher number than 100K to accommodate a large company merger where millions of numbers may be involved? This item reflects the discussion on NANC 349 and the batch offline mode, since the group agreed to stop working on 349 and just work the volume issues here in 397. (could possible use any method)

1. The single message approach. This method clearly cuts down on the number of messages sent across the CMIP interface. However, the updates to the SCP have been identified as the bottleneck, so this method might not be that effective. Additionally, this method is only effective if vendors and Service Providers implement the functionality to process this new message. This would require development on the NPAC side as well.

2. The full-back out approach. This method requires 50% of the time to be allocated for updates to be sent out, and the other 50% for revert-back messages to be sent out. It is expected that the quantity of messages would be the same for both the initial updates and the back-outs. The benefit of this method is that existing messages could be used, so no new development is required.

3. The TN range approach. This method reduces the number of messages sent across the CMIP interface. The current ASN.1 definition does not support a TN/TN-range list for modify requests, so there would be development required (GDMO/ASN.1 changes and NPAC code changes). The max size of the message would have to be discussed.

4. The selection criteria approach. This method reduces the number of messages sent across the CMIP interface AND minimize the size of those messages. The selection criteria may be sub-divided to better manage the groups of updates.

5. The single DPC associated to an LRN approach. This method could potentially cut down many messages. However, it loses the flexibility to associate more than one pair of DPC/SSN values to a single LRN, which several Service Providers indicated they use in production today. With this approach, the NPAC network data would be expanded to include associated DPC/SSN with each LRN. Other desired DPC values will continue to be populated at the SV level on an exception basis.

6. The larger volume question. This question is currently under discussion at the LNPAWG.

Sep '07 LNPAWG – continued discussion in both the LNPAWG meeting (Change Management agenda item) and the Architecture Planning Team's meeting.

The discussion during the LNPAWG meeting centered on the selection criteria. VZW, as originator of this change order, indicated that the LRN selection (change from value A to value B) is one way that changes are made. Would also want capability to perform a subset of the LRN. Very unlikely to use NPA as a criteria. The selection criteria could include any/all of the following: SPID, LRN, NPA or NPA ranges or lists, NPA-NXX or NPA-NXX ranges or lists, LNP Type. One problem that has not been discussed is “how best to handle failed lists?”, since it's criteria based, and not TN based like production today.

Another option to include in this list is to add capacity. After some discussion, the group agreed to use 397 as the increase in performance numbers, and move all of the alternative options into a new change order. That new change order will be discussed during the APT meeting.

The discussion during the APT meeting provided a re-cap of the LNPAWG discussion, and walked through each of the six points from the Jul '07 meeting notes (above).

- 1.) not needed for new change order,
- 2.) not needed for new change order,
- 3.) look at message efficiency and incorporate both TN lists and TN-range lists,
- 4.) the issue is determining the failed list. This assumes that the DBs are in sync. There are complex queries in both places. May need to break out these issues and talk through them to get agreement that we won't pursue these at this time.
- 5.) today there are SPs that use more than one DPC for a single LRN code. Continue discussion on having the DPC at the LRN level and DPC at the SV level for exception basis (what are the pros/cons). Would want to explicitly broadcast at the LRN level, so that we know they have this data. Also a conversion effort to clean up or sync up the SVs to use this new approach,
- 6.) continue to discuss large volume as necessary.

For NANC 397, the group agreed to document that this 25K/hr would occur in no more than four regions at a time.

Nov '07 LNPAWG– continued discussion in the LNPAWG meeting (Change Management agenda item). The group accepted 397 as the change order that updates the transaction rate from 4.0/sec up to 7.0/sec. All other options have been moved into NANC 425, and will be discussed as necessary under that change order.

No additional requirements work is anticipated for NANC 397 now that the numbers have been updated. This change order is now awaiting prioritization and implementation.

**Requirements:**

Current requirements, NANC 393, FRS 3.3, downloads to the LSMS are 14,760/hr. Change bars indicate new numbers to support 25K/hr.

R6-28.1 SOA to NPAC SMS interface transaction rates - sustained

A transaction rate of ~~4.0~~ 7.0 CMIP transactions (sustained) per second shall be supported by each SOA to NPAC SMS interface association.

R6-28.2 SOA to NPAC SMS interface transaction rates - peak

NPAC SMS shall support a rate of 10.0 CMIP operations per second (peak for a five minute period, within any 60 minute window) over a single SOA to NPAC SMS interface association.

R6-29.2 NPAC SMS to Local SMS interface transaction rates - peak

~~NPAC SMS shall, support a rate of 5.2 CMIP operations per second (peak for a five minute period, within any 60 minute window) over each NPAC SMS to Local SMS interface association.~~

***This requirement will be deleted. Therefore, the LSMS performance rate will be strictly a sustained rate.***

RR6-107 SOA to NPAC SMS interface transaction rates – total bandwidth

NPAC SMS shall support a total bandwidth of ~~40.0~~ 70.0 SOA CMIP transactions per second (sustained) for a single NPAC SMS region. (previously NANC 393, NewReq 1)

RR6-108 NPAC SMS to Local SMS interface transaction rates – sustained

NPAC SMS shall support a rate of ~~4.0~~ 7.0 CMIP transactions per second (sustained) over each NPAC SMS to Local SMS interface association. (previously NANC 393, NewReq 2)

RR6-109 NPAC SMS to Local SMS interface transaction rates – total bandwidth

NPAC SMS shall support a total bandwidth of ~~156~~ 210 Local SMS CMIP transactions per second (sustained) for a single NPAC SMS region. (previously NANC 393, NewReq 3)

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 10/20/05

**Originator:** T-Mobile

**Change Order Number:** NANC 408

**Description:** SPID Migration Automation Change

**Cumulative SP Priority, Average:** #1, 4.00

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

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FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	Y	Y	Y	High	Med	Med

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**Business Need:**

NANC 323 SPID Migration – Currently Service Providers and the NPAC require a fair amount of manual processing, beginning with the initial SPID migration request form, through performing the actual SPID migration during the maintenance window. With the frequency of SPID Migrations (several times every month), this creates a personnel resource situation that could be helped through software automation.

As discussed during the Oct '05 LNPAWG meeting, an effort will be started to identify areas of most concern and/or areas for improvement. Possible discussion areas include:

- Automating the request form process (online web GUI). Incorporate edits to ensure valid data is entered and submitted.
- Incorporating an online scheduling function (i.e., if it's available, you can reserve/book it).
- Self-maintenance of scheduled migrations (modify or delete).
- Automated checking/warning/cancelling/reporting of pending-like SVs that need to be handled prior to the migration.
- Enhancing the interface to pass SMURF (*SPID Migration Update Request Files*) data across the interface (new messages).
- Automatic generation of both preliminary and final SMURF data.
- Changes to data definitions, such that the SPID attribute can be updated automatically via messages.



- Other reporting functions that are automatically generated after a SPID migration (e.g., SV counts).
- E-mail notifications to the SPID Migration distro.

***Nov '05 LNPAWG mtg comments:***

Discussion on Issues:

1. Manual handling of SMURF files. Can we have some type of automation?
2. Number of migrations. Since have to process serially, can we limit the number of migrations?
3. SP1, changes with Linux with secure FTP, since we had previously done automated downloads.
4. SP2, auto push down instead of having to go pick them up. However, SP3, concern about auto push, rather than allowing us to decide when to go get them. Right now not real excited about automation. Have some security issues, and cost-benefit issues. Major concern is how can this reduce our costs.
5. SP4, our pull down is automated, but would want the SMURF files earlier. SP3, yes need to get the SMURF files earlier. NeuStar comment – main issue is that things could change as long as the NPAC is up and available. NeuStar to look at what can be done to make it earlier in the maint window.
6. SP6, feedback from his IT folks. What automation that can save me time and labor costs on the weekends. Really need something that is cost justifiable. Never heard about the forms internally.
7. SP7, not a whole lot of interest. Area of automation, with getting SMURF file sooner, and getting some type of notification when they're ready on the FTP site. E-mail notif (this is what several people want). Never heard about the online forms internally.

Discussion on Potential New Features:

1. SP5, we have received positive internal feedback on online GUI access. Also ability to adjust the schedule online (trade online, swap with other migrations that we already have sched).
2. Online scheduling was positive feedback. Want the real-time feedback, rather than waiting for a day or more to get feedback.
3. Where should the online sched be located? On public web, secure web, or require an LTI user account? Answer, secure website. Prob, is that won't have immediate access to NPAC data.
4. Also some back office validation. Need to get more info on this from SPs. This will be provided at a later date from the SPs.

5. Clean up of Pending-likes. Right now get e-mail from NeuStar. SP tries to get them activated, or will get them cancelled. Helpful feature would be a Web site that shows the pending-likes, rather than the e-mail that goes through multiple groups before getting to the right person. When automated, provide the list of what was auto cancelled (not sure if from e-mail or on the web).
6. SP3, method or rpt that shows the actual count of what was modified. This would help with verifying or reconcile against our numbers. NeuStar comment – we currently provides an estimate ahead of time, but no count of actuals. SP3 wants something post migration on number of SVs that were migrated with current SP value. In some cases would want the details as well.
7. SP8, questions internally about the count. Does this include EDR or non-EDR? NeuStar comment – we have recently changed the method.
8. Interface changes. First thing would be to be able to modify the SPID over the interface. Some vendors have pure CMIP implementation that would prohibit this over the interface, since SPID is part of distinguished name. No problem on NPAC side. Vendor1, indicated not a problem with the SMURF files, but would have problem with modifying the SPID. Vendor2, we've talked more about modifying the whole thing. We could handle SPID modify.

Nov '05 Summary, SPs want SMURF files sooner, notif on when it's available, post migration SV counts and reporting, and automating pieces of current process, rather than enhancing the interface.

***Mar '06 LNPAWG mtg comments: (discussed three areas, prior to migration, during migration, after migration)***

Discussion on Potential New Features:

1. SPID Migration Form. Available online, available to enter on web site. Have Drop-Down list of SP contacts (for us to contact them for Q&A, agreement, etc.). Also incorporate edits such as LRN.
2. SPID Migration Calendar. Available online, and able to “pick” our own timeslot.
3. Automated Distribution. We have scripts to automatically grab the SMURF files already, so no need for automated distro. FTP works today.
4. Clean up of Pending-Like process. SP1 explained the process. Question to every else, “*are you comfortable with this process?*” What about if we just default to having NPAC do this for us? NeuStar comment – not part of the documented process. Also, manual effort on NPAC side. Not the best idea to move from one manual process to another. SP2, what about automating the cleanup process? NeuStar comment – yes it could be done.

SP2, we don't see a problem if there is a charge for those that use this feature. NeuStar to discuss with NAPM.

Discussion on Current Process:

1. Preliminary SMURF files. NeuStar, "*does anyone still need or use them?*" SP3, yes we continue to use them for sizing and estimating purposes.
2. No comments or concerns about activities during the migration window (maintenance).
3. After the migration, SP3, looking for actual counts.

***Jul '06 LNPAWG mtg comments: (discussed three areas, prior to migration, during migration, after migration)***

NeuStar discussed some of the New Features coming up in R3.3.1:

1. SPID Migration SMURF Files. An enhancement is being made that allows SMURF files to be saved after initial distribution. Currently NPAC Personnel must manually create SMURF files for each distribution. With this enhancement subsequent distribution will use the saved files, allow necessary updates to occur, then re-generate the SMURF files for additional distributions.
2. Clean up of Pending-Like SVs. An enhancement is being made that allows NPAC Personnel to initiate the clean-up of Pending-Like SVs in an automated fashion. Currently, the process requires manual handling of all Pending-Like SVs.

Discussion on Potential New Features:

1. SPID Migration Form. Available online, available to enter on web site.
2. SPID Migration Calendar. Available online, and able to "pick" our own timeslot. For both the Form and the Calendar, self service is desired by multiple SPs. The analogy was used to equate the new process to being able to perform online airline reservations and bookings (obtain list of flights, check availability and times, make a reservation, and obtain a confirmation number).
3. Post Migration Counts. SP1 indicated again, a desire to obtain post migration counts (similar to the pre migration estimated counts that are currently provided).  
**Dec '06**, new change order NANC 418 (Post-SPID Migration SV Counts) has been opened in the change management list.

***Jul '07 LNPAWG mtg comments:***

Discussion on Potential New Features:

1. The "self-service" function has been raised again. Several SPs see the value in scheduling SPID Migrations themselves (similar to web-based airline

reservation bookings that are available for consumers today).

2. SMURF File Automation. Some SPs want to investigate the possibility of sending SMURF or SMURF equivalent information over the interface rather than continue to use the FTP manual batch process. The group was reminded on the initial concerns and why the implementation included SMURF files to begin with:
  - a. A concern about the volume of transactions over the CMIP interface.
  - b. Modifying the SPID value over the interface violates the CMIP standard, since it's a naming attribute in the managed object class hierarchy.

NeuStar will investigate both of these items and provide more information to be discussed during the Sep '07 meeting.

***Sep '07 LNPAWG mtg comments:***

Discussion on Potential New Features:

1. As a follow-up to the July discussion on SMURF File Automation, the group discussed and agreed that not only for migrations that involved no SVs (i.e., just NPA-NXXs), but also for migrations that involved a small volume of SVs (e.g., less than 25K), it would be appropriate to allow those to be automated as well. Based on YTD figures, this would encompass 95% of SPID Migrations (332 of 353). Using a cap would help to ensure that the load over the interface was manageable.
2. Using the new "self-service" function, need to figure out a way to get the proper authorization by SPID B when requesting a migration. Group recommendation was to use the company PIN. Also need to figure out how best to get concurrence from SPID A, and also what to do if the contact for SPID A is no good. What are the options to do the validation that SPID A is OK with SPID B doing the migration?
3. During the development of NANC 323, the industry agreement was that the SPID Migration date should be as close to, but not before the LERG Effective Date. To accommodate timely migrations a "process it now" feature should be incorporated. May want to consider only allowing this for LERG ED in the past, and not in the future. Are there any negative impacts on not enforcing any synchronization between the migration date and the LERG ED?
4. The issue of modifying the SPID value over the interface was discussed. This is not an issue for the NPAC, and for some vendors. It is unclear whether or not other vendors (not present during the discussion) have issues.

***Nov '07 LNPAWG mtg comments:***

No issues were identified with the Sep '07 notes, however two items were requested for the next meeting, 1.) detail on the SV counts (of the 353 identified in #1 above), and 2.) a sample ACTION message for the modify (#4 above).

#### **Description of Change:**

This change order recommends that SPID Migration Automation Changes be added to the NPAC. From the Jul '07 meeting, there are two changes being discussed.

1. Self-service feature for requesting SPID Migrations. This change adds a web-based solution that allows a Service Provider to input their SPID migration data, then check for and reserve available slots based on their input data. The following items would apply:

- A Service Provider may only schedule migrations for its own data.
- Each migration request must be designated for a single migration window (i.e., weekend). If multiple weekends are desired, they must be broken down into multiple migration requests.
- Once a reserved slot has been allocated for a SPID migration, the Service Provider may change the migration to a different slot based on availability. If changed, the original (previous) slot is released, and becomes available to other Service Providers.
- A Service Provider may cancel a reserved SPID migration up to *tunable* number of days/hours before the actual migration.
- Once a SPID Migration is scheduled for a specific data item, that same data item cannot be scheduled for another SPID Migration. This prevents a Service Provider from “double booking” different weekends.

2. Sending NPA-NXX ownership change information to Service Providers. This change allows the NPAC to send NPA-NXX ownership changes via CMIP messages over the interface. The following items would apply:

- A new set of CMIP messages (M-ACTIONS) would be incorporated to indicate the ownership change.
- The messages will be sent in a real-time fashion, and are not dependent on a SPID migration window.
- These messages would apply for SPID Migrations where no (zero) SVs were involved. If SVs were involved, that SPID Migration would use the current SMURF file approach. **Sep '07 update**, the group agreed that a manageable number of SVs should be considered for interface updates (rather than the SMURF file approach). This is captured in the Sep '07 discussion above. **Jan '09 update**, the group agreed to maintain the no (zero) SVs position for interface messages. What this means is that a SPID Migration slated for interface updates (e.g., NPA-NXX contains zero SVs),

could become a SMURF File migration right before the start of the SPID Migration.

**Jul '08 LNPAWG**, discussion. Need to develop requirements for Sep '08 review. See below requirements.

**Nov '08 LNPAWG**, discussion. Minor clarifications on the requirements. Requirements 1 through 11 are only applicable when requirement 12 (regional tunable) is set to TRUE. The IIS Flow and new message should be included for the next meeting:

### **Requirements:**

Req X1 SPID Migration Blackout Dates – GUI Entry By NPAC Personnel

NPAC SMS shall allow NPAC Personnel via the NPAC Administrative Interface, to add and remove SPID migration Blackout dates.

Req X2 SPID Migration Blackout Dates – Displaying in the GUI

The NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to view SPID Migration Blackout Dates.

Req X3 SPID Migration Last Scheduling Date - Tunable Parameter

NPAC SMS shall provide a Regional SPID Migration Last Scheduling Date tunable parameter, which is defined as the last date that a SPID Migration may be entered into the NPAC system.

Note: This tunable date is used to make sure SPID Migrations can't be scheduled in the GUI for dates when the Blackout Dates haven't been specified by LNPAWG and/or entered into the NPAC system.

Req X4 SPID Migration Last Scheduling Date – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Last Scheduling Date tunable parameter to none.

Req X5 SPID Migration Last Scheduling Date – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Last Scheduling Date tunable parameter.

Req X6 SPID Migration Entry Restriction - Last Scheduling Date – Service Provider Personnel

NPAC SMS shall reject a SPID Migration request from Service Provider Personnel, via the NPAC Low-Tech Interface, that has a scheduled date beyond the SPID Migration Last Scheduling Date.

Req X7 SPID Migration Update – Migration Summary Information

NPAC SMS shall, via NPAC Low-Tech Interface and NPAC Administrative Interface, show the following information for each maintenance day:

- Maintenance date
- SV count for pending and approved migrations
- Total number of migrations in the region for pending and approved migrations
- Total number of migrations for all regions for pending and approved migrations
- Total quota for SV count and migration count in each region and migration count for all regions

Req 1 SPID Migration Update – GUI Availability/Selection function for Service Provider and NPAC Personnel

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to query for available SPID Migration timeslots.

Req 1.1 SPID Migration Update – Available Migration Window Minimum – Tunable Parameter

NPAC SMS shall provide a SPID Migration Available Migration Window Minimum tunable parameter, which is defined as the minimum length of time between the current date (exclusive) and the SPID Migration date (inclusive), when a Service Provider requests to see available SPID Migration timeslots.

Req X8 SPID Migration Update – Available Migration Window Minimum – Reject

The NPAC SMS shall reject a request from a Service Provider, via the NPAC Low-Tech Interface, if the length of time between the current date and the SPID Migration date is less than the Available Migration Window Minimum tunable.

Req X9 SPID Migration Update - NPAC Personnel Scheduling SPID Migrations to Any Migration Date in the Future

NPAC SMS shall allow NPAC Personnel to schedule a SPID migration to any migration date in the future after providing a warning if the SPID migration is scheduled to a date earlier than SPID migration creation date plus the Available Migration Window Minimum tunable.

Req 1.2 SPID Migration Update – Available Migration Window Minimum – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Available Migration Window Minimum tunable parameter to thirty-two (32) calendar days.

Req 1.3 SPID Migration Update – Available Migration Window Minimum – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Available Migration Window Minimum tunable parameter.

#### Req 2 SPID Migration Update – GUI Entry by Service Provider and NPAC Personnel

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to “select and request” a SPID Migration, by entering selection input criteria (mandatory: migrating away from SPID, migrating to SPID; at least one of the following three: NPA-NXX, LRN, and/or NPA-NXX-X) for a partial SPID Migration Update Request Process.

#### Req X10 SPID Migration Update – GUI Entry by Service Provider and NPAC Personnel – Required Fields

NPAC SMS shall require the originator of a SPID Migration to enter the following fields:

- From SPID
- To SPID
- Scheduled Date
- NPA-NXX ownership effective date (if NPA-NXX is included in the Migration)
- at least one of the following three: NPA-NXX, LRN, and/or NPA-NXX-X

#### Req X11 SPID Migration Update – Generation of SPID Migration Name

NPAC SMS shall automatically generate the SPID Migration Name field that conforms to the SPID Migration naming convention <From SPID>\_<To SPID>\_<Scheduled Date>. (Example: 1111\_2222\_09282009).

#### Req-2.0.1 SPID Migration Update – GUI Modification by Service Provider Prior to Other Service Provider Concurrence or NPAC Personnel Confirmation

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, to modify a currently scheduled SPID Migration that they entered, only if the other Service Provider has not concurred, and NPAC Personnel have not confirmed the SPID Migration.

Note: Migration data (e.g., NPA-NXX, LRN) is modifiable. SPID value is not modifiable.

#### Req-2.1 SPID Migration Update – GUI Cancellation by Service Provider Prior to NPAC Personnel Confirmation

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, to cancel a currently scheduled SPID Migration that they entered,



only if the other Service Provider has not concurred, and NPAC Personnel have not confirmed the SPID Migration.

#### Req-2.2 SPID Migration Update – GUI Error for Double Booking

NPAC SMS shall reject a request from Service Provider Personnel, via the NPAC Low-Tech Interface, for a SPID Migration when the requested data is already part of a pending SPID Migration request.

#### Req X12 SPID Migration Update – GUI Concurrence by Service Provider and NPAC Personnel

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to concur a previously entered SPID Migration.

#### Req X13 SPID Migration Creation by “migrating-from” and “migrating-to” SPIDs

NPAC SMS shall allow either the ‘migrating-from’ or ‘migrating-to’ service provider be the first Service Provider to enter a SPID Migration.

#### Req-3 SPID Migration Update – GUI Entry Service Provider – Confirmation by NPAC Personnel

NPAC SMS shall, via the NPAC Administrative Interface, require NPAC Personnel to “confirm” a SPID Migration as defined in Req-2.

Note: In an A-to-B migration, “confirmation” will involve validation by SPID A. M&Ps will be defined for this function.

#### Req X14 SPID Migration Update – Confirmation by NPAC Personnel Required

NPAC SMS shall require Service Provider concurrence as well as confirmation by NPAC personnel before performing a SPID Migration.

#### Req X15 SPID Migration Update – Reject by NPAC Personnel

NPAC SMS shall require NPAC Personnel, via the NPAC Administrative Interface, to enter a reject reason text anytime a SPID Migration is rejected.

#### Req X16 SPID Migration Update - Service Providers Viewing Migrations

NPAC SMS shall allow service providers to view all SPID migrations that have been confirmed by NPAC Personnel.

#### Req X17 SPID Migration Update - Service Providers Viewing Their Own Migrations

NPAC SMS shall allow only the ‘migrating-from’ or ‘migrating-to’ Service providers to view SPID migrations that haven’t been confirmed by NPAC Personnel.

#### Req X18 “Re-work” Option for Cancelled or Rejected SPID Migrations

NPAC SMS shall allow Service Provider Personnel, via the NPAC Low-Tech Interface, and NPAC Personnel, via the NPAC Administrative Interface, to create a new SPID migration by cloning a cancelled or rejected migration.

Req X19 SPID Migration Creation – Disallowing Scheduling of Two SPID Migrations with the same “Migrating-From” and “Migrating-To” SPID to the same Maintenance Day

NPAC SMS shall disallow scheduling of two SPID Migrations with the same “Migrating-From” and “Migrating-To” SPID to the same Maintenance Day.

Req X20 SPID Migration Email List - Tunable Parameter

NPAC SMS shall provide a Service Provider SPID Migration Email List tunable parameter, which is defined as the email address(s) that are notified of SPID Migration operations.

Req X21 SPID Migration Email List – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Email List tunable parameter to <empty>.

Req X22 SPID Migration Email List – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Email List tunable parameter.

Req X23 SPID Migration E-mail due to NPAC Personnel Operations

NPAC SMS shall send e-mail notifications to all Service Providers for the following SPID Migration operations when performed by NPAC Personnel:

- approval of a SPID Migration
- modification of an approved SPID Migration
- cancellation of an approved SPID Migration

Req X24 SPID Migration E-mail to “migrating-from” and “migrating-to” Service Providers

NPAC SMS shall send e-mail notifications to the “migrating-from” and “migrating-to” Service Providers for the following SPID Migration operations:

- creation of a new SPID Migration
- concurrence of an existing SPID Migration
- modification of an existing SPID Migration
- cancellation of an existing SPID Migration

Req-4 SPID Migration Update – Cancellation Window – Tunable Parameter Deleted.

Req-5 SPID Migration Update – Cancellation Window – Tunable Parameter Default

Deleted.

Req-6 SPID Migration Update – Cancellation Window – Tunable Parameter Modification

Deleted.

Req-7 SPID Migration Update – GUI Cancellation by Service Provider

Deleted.

Req-8 SPID Migration Update – GUI Cancellation by Service Provider – Notification to NPAC Personnel

Deleted.

Req-8.1 SPID Migration Update – GUI Cancellation by NPAC Personnel on behalf of Service Provider

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to cancel a currently scheduled SPID Migration on behalf of a migrating-to SPID or migrating-from SPID.

Req-8.2 SPID Migration Update – GUI Modification by NPAC Personnel of Scheduled SPID Migration

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify a currently scheduled SPID Migration on behalf of a migrating-to SPID or migrating-from SPID.

Note: Migration data (e.g., NPA-NXX, LRN) is modifiable. SPID value is not modifiable.

**Req X25 SPID Migration Update – Disallowing Modification of “migrating-to” SPID**

NPAC SMS shall not allow the modification of the migration-to SPID of existing SPID migrations

Req-9 SPID Migration Update – GUI Execution by NPAC Personnel of Scheduled SPID Migration

NPAC SMS shall, via the NPAC Administrative Interface, allow NPAC Personnel to execute a previously scheduled SPID Migration, in cases when there are no (zero) active-like subscription versions or Number Pool Blocks that would have the New SPID value changed in that NPA-NXX that is being migrated.

Note: This online activity allows a SPID Migration that will modify the NPA-NXX Service Provider ID (code owner). Unlike other SPID Migration activity (i.e., SMURF file generation), this function is allowed during any NPAC uptime. ‘Active-like’ Subscription Versions are defined as Subscription Versions that

contain a status of active, sending, partial failure, old with a Failed SP List, or disconnect pending. M&Ps will indicate that this online activity (the actual execution) will be performed as close to the Maintenance window as practical. Online GUI execution works on an all-or-nothing basis (e.g., if attempting to modify five NPA-NXXs, and three of the five have zero SVs/NPBs, but two of the five have some SVs/NPBs, then the entire request of five will fail).

Req-10 SPID Migration Update – GUI Execution by NPAC Personnel – Notification to Local SMS and SOA

NPAC SMS shall notify all accepting Local SMSs and SOAs of the modification of the NPA-NXX owning Service Provider, immediately after validation of a SPID Migration as defined in Req-9.

Note: In conjunction with the online GUI activity defined in Req-9, the message will be sent out prior to the beginning of the maintenance window.

Note: To maintain consistency with SMURF Files, SPID Migration transactions sent over the interface will not apply NPA-NXX filters for the given Service Provider.

Req-11 SPID Migration Update – Pending-Like SVs Cleaned Up

NPAC SMS shall clean up pending-like Subscription Versions at the time of SPID Migration where the migrating-from Service Provider in the NPA-NXX that is being migrated is the Old Service Provider SPID in those Subscription Versions, by setting the status to Cancelled.

Req X26 Completed SPID Migrations Retention – Tunable Parameter

NPAC SMS shall provide a Regional Completed SPID Migration Retention tunable parameter, which is defined as the number of days before a completed SPID Migration will be purged from the database.

Req X27 Completed SPID Migrations Retention – Tunable Parameter Default

NPAC SMS shall default the Completed SPID Migration Retention tunable parameter to 30 days.

Req X28 Completed SPID Migrations Retention – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Completed Migrations Retention tunable parameter.

Req X29 Completed SPID Migrations Retention – Housekeeping Purge

NPAC SMS shall purge completed SPID Migrations from the database after tunable Completed Migration Retention days have passed since the completion of the Migration.

Req X30 Canceled SPID Migrations Retention - Tunable Parameter

NPAC SMS shall provide a Regional SPID Migration Canceled SPID Migration Retention tunable parameter, which is defined as the number of days before a canceled SPID Migration will be purged from the database.

Req X31 Canceled SPID Migrations Retention – Tunable Parameter Default

NPAC SMS shall default the Canceled SPID Migration Retention tunable parameter to 30 days.

Req X32 Canceled SPID Migrations Retention – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Canceled Migrations Retention tunable parameter.

Req X33 Canceled SPID Migrations Retention – Housekeeping Purge

NPAC SMS shall purge canceled SPID Migrations from the database after tunable Canceled Migration Retention days have passed since the Migration was canceled.

Req-12 Regional SPID Migration Online Functionality Indicator – Tunable Parameter

NPAC SMS shall provide a Regional SPID Migration Online Functionality Indicator tunable parameter, which is defined as an indicator on whether or not SPID Migration Online Functionality capability will be supported by the NPAC SMS for a particular NPAC region.

Req-13 Regional SPID Migration Online Functionality Indicator – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Online Functionality Indicator tunable parameter to TRUE.

Req-14 Regional SPID Migration Online Functionality Indicator – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Online Functionality Indicator tunable parameter.

Req-15 Service Provider SOA Automated SPID Migration Indicator

NPAC SMS shall provide a Service Provider SOA Automated SPID Migration Indicator tunable parameter which defines whether a SOA will receive/not-receive automated SPID Migration transactions over their SOA connection.

Req-15.1 Service Provider SOA Automated SPID Migration Indicator Default

NPAC SMS shall default the Service Provider SOA Automated SPID Migration Indicator tunable parameter to FALSE.

Req 16 Service Provider SOA Automated SPID Migration Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA Automated SPID Migration Indicator tunable parameter.

#### Req 17 Service Provider SOA Automated SPID Migration Indicator Usage

NPAC SMS shall send automated SPID Migration transactions over the SOA connection only when the Service Provider SOA Automated SPID Migration Indicator tunable parameter is set to TRUE.

NOTE: To maintain consistency with SMURF Files, SPID Migration transactions sent over the interface will not apply NPA-NXX filters for the given Service Provider.

#### Req-18 Service Provider LSMS Automated SPID Migration Indicator

NPAC SMS shall provide a Service Provider LSMS Automated SPID Migration Indicator tunable parameter which defines whether an LSMS will receive/not-receive automated SPID Migration transactions over their LSMS connection.

##### Req-18.1 Service Provider LSMS Automated SPID Migration Indicator Default

NPAC SMS shall default the Service Provider LSMS Automated SPID Migration Indicator tunable parameter to FALSE.

#### Req 19 Service Provider LSMS Automated SPID Migration Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS Automated SPID Migration Indicator tunable parameter.

#### Req 20 Service Provider LSMS Automated SPID Migration Indicator Usage

NPAC SMS shall send automated SPID Migration transactions over the LSMS connection only when the Service Provider LSMS Automated SPID Migration Indicator tunable parameter is set to TRUE.

NOTE: To maintain consistency with SMURF Files, SPID Migration transactions sent over the interface will not apply NPA-NXX filters for the given Service Provider.

#### Req-21 Service Provider SOA FTP SMURF File Indicator

NPAC SMS shall provide a Service Provider SOA FTP SMURF File Indicator tunable parameter which defines whether a SOA will receive/not-receive SMURF Files in their FTP directory in cases where they received automated SPID Migration transactions over their SOA connection.

##### Req-21.1 Service Provider SOA FTP SMURF File Indicator Default

NPAC SMS shall default the Service Provider SOA FTP SMURF File Indicator tunable parameter to FALSE.

Req 22 Service Provider SOA FTP SMURF File Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SOA FTP SMURF File Indicator tunable parameter.

Req 23 Service Provider SOA FTP SMURF File Indicator Usage

Deleted.

Req-24 Service Provider LSMS FTP SMURF File Indicator

NPAC SMS shall provide a Service Provider LSMS FTP SMURF File Indicator tunable parameter which defines whether an LSMS will receive/not-receive SMURF Files in their FTP directory in cases where they received automated SPID Migration transactions over their LSMS connection.

Req-24.1 Service Provider LSMS FTP SMURF File Indicator Default

NPAC SMS shall default the Service Provider LSMS FTP SMURF File Indicator tunable parameter to FALSE.

Req 25 Service Provider LSMS FTP SMURF File Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider LSMS FTP SMURF File Indicator tunable parameter.

Req 26 Service Provider LSMS FTP SMURF File Indicator Usage

Deleted.

Req X34 SPID Migration Update – Quota Management

NPAC SMS shall apply quota to SPID Migration operations for Total US SPID Migrations, Total Regional Migrations, and Regional SV Counts when NPAC Personnel approve a SPID migration.

Req X35 SPID Migration Update – Quota Management – Quota Exceeded Warning

NPAC SMS shall check quota to SPID Migration operations when a Service Provider creates or modifies a SPID Migration and provide a warning if any of the quotas have been exceeded.

Req X36 SPID Migration Update – Quota Management – Quota Exceeded Warning Content

NPAC SMS shall include the Pending and Approved counts for all exceeded quotas in the Quota Exceeded Warning Message.

Req-27 SPID Migration Update – Migration Quota Tunable Parameter

NPAC SMS shall provide a SPID Migration Quota tunable parameter, which is defined as the maximum number of SPID Migrations timeslots within a region for a given SPID Migration maintenance window.

Req-28 SPID Migration Update – Migration Quota Tunable Parameter Default

NPAC SMS shall default the SPID Migration Quota tunable parameter to seven (7) migrations.

Req-29 SPID Migration Update – Migration Quota Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Quota tunable parameter.

Req-30 SPID Migration Update – All Regions Migration Quota Tunable Parameter

NPAC SMS shall provide an All Regions SPID Migration Quota tunable parameter, which is defined as the maximum number of SPID Migrations timeslots for all regions for a given SPID Migration maintenance window.

Req-31 SPID Migration Update – All Regions Migration Quota Tunable Parameter Default

NPAC SMS shall default the All Regions SPID Migration Quota tunable parameter to twenty-five (25) migrations.

Req-32 SPID Migration Update – All Regions Migration Quota Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the All Regions SPID Migration Quota tunable parameter.

Rr3-274 SPID Migration Update – SPID Migration Transactions not included in Recovery Response

NPAC SMS shall exclude SPID Migration CMIP interface transactions in a recovery response.

Req-34 Service Provider FTP SMURF File in lieu of missed SPID Migration Transactions

NPAC SMS shall provide SMURF Files in a Service Provider's FTP directory in cases where they normally receive automated SPID Migration transactions over their SOA/LSMS connection, but were not associated at the time the automated SPID Migration transactions were sent over their CMIP interface.

Note: This is the mechanism that providers will be expected to recover missed SPID migration messages. Based on FRS requirement RR3-274 the NPAC doesn't not include SPID migration data in the recovery messages sent over the CMIP interface.

Req-35 SPID Migration Update – SV Quota Tunable Parameter



NPAC SMS shall provide a SPID Migration SV Quota tunable parameter, which is defined as the maximum number of SVs within a region for a given SPID Migration maintenance window.

NOTE: The number includes both ported and pooled SVs.

NOTE: The quantity of SVs can be dynamic, so the quantity is based on the number of SVs for a given migration at the time of the SPID Migration request. For subsequent migrations in a given window, the previous SPID Migration SV quantities are not recalculated. Modifying a SPID Migration will cause SV quantities to be recalculated.

Req-36 SPID Migration Update – SV Quota Tunable Parameter Default

NPAC SMS shall default the SPID Migration SV Quota tunable parameter to five hundred thousand (500,000) SVs.

Req-37 SPID Migration Update – SV Quota Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration SV Quota tunable parameter.

Req X37 Maintenance Window Day of the Week - Tunable Parameter

NPAC SMS shall provide a Regional Maintenance Window Day of the Week tunable parameter, which is defined as the day of the week in which SPID Migrations are performed.

Req X38 Maintenance Window Day of the Week – Tunable Parameter Default

NPAC SMS shall default the Maintenance Window Day of the Week tunable parameter to “SU” (Sunday).

Req X39 Maintenance Window Day of the Week – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the Maintenance Window Day of the Week tunable parameter.

Req X40 Maintenance Window Start Time Hour - Tunable Parameter

NPAC SMS shall provide a Regional Maintenance Window Start Time Hour tunable parameter, which is defined as the hour in which the weekly Service Provider maintenance window begins.

Req X41 Maintenance Window Start Time Hour – Tunable Parameter Default

NPAC SMS shall default the Maintenance Window Start Time Hour tunable parameter to midnight (Central Time Zone).

Req X42 Maintenance Window Start Time Hour – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the Maintenance Window Start Time Hour tunable parameter.

Req X43 Online SPID Migration Lead Time - Tunable Parameter

NPAC SMS shall provide a Regional Online SPID Migration Lead Time tunable parameter, which is defined as the minutes before the maintenance window that online SPID Migrations will be performed.

Req X44 Online SPID Migration Lead Time – Tunable Parameter Default

NPAC SMS shall default the Online SPID Migration Lead Time tunable parameter to 90 minutes.

Req X45 Online SPID Migration Lead Time – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the Online SPID Migration Lead Time tunable parameter.

Req X46 Online SPID Migration – Database Updates

NPAC SMS shall perform SPID database updates for any SPID Migration that provides online operations 90 minutes (defined by Online SPID Migration Lead Time tunable) before the start of the weekly service provider maintenance window (defined by Maintenance Window Day Of The Week + Maintenance Window Start Time Hour tunables).

Req X47 Preliminary SPID Migration SMURF Files Lead Time - Tunable Parameter

NPAC SMS shall provide a Regional Preliminary SPID Migration SMURF Files Lead Time tunable parameter, which is defined as the number of days before a SPID Migration scheduled date when the Preliminary SMURF files are automatically generated.

Req X48 Preliminary SPID Migration SMURF Files Lead Time – Tunable Parameter Default

NPAC SMS shall default the Online SPID Migration SMURF Lead Time tunable parameter to 10 days.

Req X49 Preliminary SPID Migration SMURF Files Lead Time – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the Preliminary SPID Migration SMURF Files Lead Time tunable parameter.

Req X50 Generation of Preliminary SMURF files

NPAC SMS shall generate and distribute Preliminary SMURF files for a SPID Migration 10 days (tunable Preliminary SPID Migration SMURF Files Lead Time) prior to the scheduled date for the SPID Migration.

Req X51 Generation of Final SMURF files

NPAC SMS shall generate and distribute the Final SMURF files for a SPID Migration at the start of the Service Provider Maintenance Window, in which the SPID Migration will be executed.

Req X52 Offline-Only SPID Migration Flag

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify a SPID Migration and set the Offline-Only indicator.

Req X53 SPID Migration Suspended Status

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify a SPID Migration to a status of Suspended.

Req X54 Suspended SPID Migrations – No Automatic Online Migration

NPAC SMS shall skip SPID Migrations with a status of suspended when automatically executing online SPID Migrations.

Req X55 Suspended SPID Migrations – No Manual Online Migration

NPAC SMS shall reject requests via the NPAC Administrative Interface, to execute online SPID Migrations with a status of suspended.

**Req X56 SPID Migration Suspension/Un-suspension – No Quota Change**

NPAC SMS shall not adjust its quota on a maintenance day when a SPID Migration scheduled to this date is suspended or un-suspended.

**Req X57 Automatic suspension when pre-migration validations fail**

NPAC SMS shall suspend a SPID migration if the network data validations fail during the preprocessing of the SPID migration.

Req X58 SPID Migration - FTP Site Directory Structure

NPAC SMS shall include the scheduled date of the SPID Migration as a subdirectory where SPID Migration SMURF files are stored if the Service Provider tunable SPID Migration Date Subdirectory Indicator is set to TRUE.

Req X59 SPID Migration – FTP Site Date Subdirectory - Service Provider Tunable

NPAC SMS shall provide a Service Provider SOA Automated SPID Migration Indicator tunable parameter which defines whether a SOA will receive/not-receive automated SPID Migration transactions over their SOA connection.

Req X60 SPID Migration – FTP Site Date Subdirectory - Service Provider Indicator Default

NPAC SMS shall default the Service Provider SPID Migration FTP Date Subdirectory Indicator tunable parameter to FALSE.

Req X61 SPID Migration – FTP Site Date Subdirectory – Service Provider Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider SPID Migration FTP Date Subdirectory Indicator tunable parameter.

\_\_\_\_\_

\_\_\_\_\_

IIS:

IIS Change: add a new flow for the SPID Migration Action.

B.x.y Online SPID Migration Using SPID Migration Action

This scenario reflects the message flow for a SPID Migration from the NPAC SMS to the SOA and the NPAC SMS to the Local SMS. This action is used to change SPID ownership of NPA-NXX, NPA-NXX-X, and LRN during a SPID Migration.

1. M-ACTION Request lnpSpidMigration (from NPAC SMS to SOA if SP SOA tunable TRUE) or SMURF file processing (from NPAC SMS to SOA FTP site if SP tunable FALSE)
2. M-ACTION Response lnpSpidMigration (from SOA to NPAC SMS if SP SOA tunable TRUE) or SMURF file processing (from NPAC SMS to SOA FTP site if SP tunable FALSE)
3. M-ACTION Request lnpSpidMigration (from NPAC SMS to LSMS if SP LSMS tunable TRUE) or SMURF file processing (from NPAC SMS to SOA FTP site if SP tunable FALSE)
4. M-ACTION Response lnpSpidMigration (from LSMS to NPAC SMS if SP LSMS tunable TRUE) or SMURF file processing (from NPAC SMS to SOA FTP site if SP tunable FALSE)

GDMO:

**GDMO: (new)**

This new migration ACTION would fall under the LNPNetwork MO.

-- x.0 LNP SPID Migration Action

lnpSpidMigration ACTION

BEHAVIOUR

```

lnpSpidMigrationDefinition,
lnpSpidMigrationBehavior;
MODE CONFIRMED;
WITH INFORMATION SYNTAX LNP-ASN1.LnpSpidMigrationAction;
WITH REPLY SYNTAX LNP-ASN1.LnpSpidMigrationReply;
REGISTERED AS {LNP-OIDS.lnp-action x};
lnpSpidMigrationDefinition BEHAVIOUR
DEFINED AS !

```

The lnpSpidMigration is the action that is used on the NPAC SMS via the SOA to NPAC SMS interface and the NPAC SMS to Local SMS interface to initiate SPID ownership changes related to a SPID Migration.

```

!;
lnpSpidMigrationBehavior BEHAVIOUR
DEFINED AS !

```

Preconditions: This action is issued from an lnpNetwork object.

Postconditions: After this action has been executed by the NPAC, the SOA or LSMS receiving this message will update all applicable local records for NPA-NXX, NPA-NXX-X, and LRN.

The SOA or LSMS must change the SPID attribute on the applicable records to the *migrating-to-sp* value.

The action success or failure and reasons for failure will be returned in the Action Reply.

NPA-NXX Filters will not be applied to SPID Migration messages sent over the interface.

```

-- x.0 LNP SPID Migration Package
lnpSpidMigrationPkg PACKAGE
BEHAVIOUR lnpSpidMigrationPkgBehavior;
ACTIONS
lnpSpidMigration;
REGISTERED AS {LNP-OIDS.lnp-package xx};
lnpSpidMigrationPkgBehavior BEHAVIOUR

```

DEFINED AS !

This package provides for conditionally including the  
lnpSpidMigration action.

!;

**GDMO: (modified in yellow)**

-- 11.0 LNP Network Managed Object Class

lnpNetwork MANAGED OBJECT CLASS

DERIVED FROM "CCITT Rec. X.721 (1992) | ISO/IEC 10165-2 : 1992":top;

CHARACTERIZED BY

lnpNetworkPkg;

CONDITIONAL PACKAGES

lnpDownloadPkg PRESENT IF

!the object is instantiated on the NPAC SMS!;

lnpSpidMigrationPkg PRESENT IF

!the object is instantiated on the NPAC SMS!;

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

-- 1.0 LNP Download Action

lnpDownload ACTION

BEHAVIOUR

lnpDownloadDefinition,

lnpDownloadBehavior;

MODE CONFIRMED;

WITH INFORMATION SYNTAX LNP-ASN1.DownloadAction;

WITH REPLY SYNTAX LNP-ASN1.DownloadReply;

REGISTERED AS {LNP-OIDS.lnp-action 1};

lnpDownloadBehavior BEHAVIOUR

DEFINED AS !

Downloading data for SPID Migrations is not included in a recovery  
response.

ASN.1:

LnpSpidMigrationReply ::= SEQUENCE {

```

status ENUMERATED {
success (0),
failed (1)
},
error-text [1] IMPLICIT GraphicString(SIZE(1..255)) OPTIONAL
}

```

```

LnpSpidMigrationAction ::= SEQUENCE {
migration-from-sp      [0] ServiceProvId,
migration-to-sp        [1] ServiceProvId,
migration-creation-timestamp [2] GeneralizedTime OPTIONAL,
migration-due-date     [3] GeneralizedTime OPTIONAL,
migration-activation-timestamp [4] GeneralizedTime OPTIONAL,
spidMigrationObjects  [5] SET OF MigrationNetworkData
}

```

```

MigrationNetworkData ::= CHOICE {
npa-nxx-data [0] MigrationNPANXX-Data,
lrn-data    [1] MigrationLRN-Data,
npa-nxx-x-data [2] MigrationNPA-NXX-X-Data
}

```

```

MigrationNPANXX-Data ::= SEQUENCE {
npa-nxx-id  NPA-NXX-ID,
npa-nxx-value NPA-NXX,
}

```

```

MigrationLRN-Data ::= SEQUENCE {
lrn-id  LRN-ID,
lrn-value LRN,
}

```

```

MigrationNPA-NXX-X-Data ::= SEQUENCE {
npa-nxx-x-id  NPA-NXX-X-ID,
npa-nxx-x-value NPA-NXX-X,
}

```

Sample ACTION:

```
=====
LocalSMS-SpidMigrationAction ::= {
migration-from-sp "XXXX"
migration-to-sp "YYYY"
migration-creation-timestamp "20070101000000Z"
migration-due-date "20071211000000Z"
migration-activation-timestamp "20071212000000Z"
spidMigrationObjects ::= {
npa-nxx-data ::= {
npa-nxx-id 6001
npa-nxx-value "500100"
}
npa-nxx-data ::= {
npa-nxx-id 6002
npa-nxx-value "500101"
}
lrn-data ::= {
lrn-id 7000
lrn-value "2221111000"
}
lrn-data ::= {
lrn-id 7001
lrn-value "2221111001"
}
npa-nxx-x-data ::= {
npa-nxx-x-id 8001
npa-nxx-x-value "4001001"
}
npa-nxx-x-data ::= {
npa-nxx-x-id 8002
npa-nxx-x-value "4001002"
}
}
```

**Origination Date:** 5/31/06

**Originator:** NeuStar

**Change Order Number:** NANC 413

**Description:** Doc Only Change Order: GDMO

**Cumulative SP Priority, Average:** not rated, included

**Functional Backward Compatible:** YES



## IMPACT/CHANGE ASSESSMENT

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
N	N	Y	N	Low	None	None

---

**Business Need:**

The current documentation needs to be updated.

**Description of Change:**

Correct the current documentation.

**Requirements:**

No change required.

IIS:

No change required.

GDMO:

***added in Aug '06***

1. subscriptionVersionNewSP-Create ACTION. Behavior clarification (new text in yellow).

New service providers must specify valid values for the following attributes, when the service provider's "SOA Sv Type Data" indicator is TRUE, and must NOT specify these values when the indicator is set to FALSE. These attributes must also be specified when the subscriptionPortingToOriginal-SPSwitch is FALSE (rejected if subscriptionPortingToOriginal-SPSwitch is set to TRUE):

subscriptionSvType

When the subscriptionPortingToOriginal-SPSwitch is FALSE the new service provider may specify valid values for the following attributes (ignored if subscriptionPortingToOriginal-SPSwitch set to TRUE):

subscriptionEndUserLocationValue

subscriptionEndUserLocationType

subscriptionBillingId

***added in Aug '06***

2. subscriptionVersionModify ACTION. Behavior clarification (new text in yellow).

New service providers can only modify the following attributes for pending or conflict subscription versions, and when the subscriptionPortingToOriginal-SPSwitch is FALSE (rejected if subscriptionPortingToOriginal-SPSwitch set to TRUE):

subscriptionLRN

[snip]

**added in Apr '07**

3. Behavior clarification (new text in yellow) for the following attributes:

auditDiscrepancyVersionId, serviceProvLRN-ID, serviceProvNPA-NXX-ID, subscriptionAuditId, subscriptionVersionId, lsmsFilterNPA-NXX-ID, numberPool-BlockId, serviceProvNPA-NXX-X-ID.

For the attribute actionId, this entire paragraph will be added.

The NPAC SMS currently uses a 32-bit signed integer for the Naming ID Value. The maximum value is  $([2^{*31}] - 1)$  or ~~2.14B~~ 2147483647 and the minimum value is  $-(2^{*31})$  or -2147483648. Rollover will take place when an ID of maximum value is incremented. The next ID value after the maximum of 2147483647 will be -2147483648. It is anticipated that all Service Providers will be able to successfully handle Naming ID Values ~~up to this maximum~~ within this range as well as rollover after the maximum value is reached.

**added in Jun '07**

4. Behavior clarification (new text in yellow) for the incorrect usage of >:

--

-- 21.0 LNP NPAC Subscription Version Managed Object Class

--

subscriptionVersionNPAC-Behavior-2 BEHAVIOUR

DEFINED AS !

been returned. The subscription version linked replies will be sorted by TN and then by subscription version ID so a filter can be treated to return the next set of data where the TN value is greater than or equal to the last TN returned plus one, OR the TN is equal to the last TN returned AND the subscription version id is greater than or equal to the last subscription version id returned plus one. (e.g., (TN >= 123-456-78901 OR (TN = 123-456-7890 AND ID >= 12345))

!;

*added in Sep '09*

5. subscriptionVersionNewSP-Create ACTION. Behavior clarification (new text in yellow).

subscriptionPortingToOriginal-SPSwitch can only be specified as TRUE for a TN that is currently ported and is being ported back to the original service provider, along with the home switch of the NPA-NXX. If the value of subscriptionPortingToOriginal-SPSwitch is TRUE, the LRN and GTT data should be not specified (rejected if specified). If

6. subscriptionVersionModify ACTION. Behavior clarification (new text in yellow).

New service providers can only modify the following attributes for pending or conflict subscription versions, and when the subscriptionPortingToOriginal-SPSwitch is FALSE (ignored if subscriptionPortingToOriginal-SPSwitch set to TRUE):

subscriptionEndUserLocationValue

subscriptionEndUserLocationType

subscriptionBillingId

ASN.1:

No change required.

**Origination Date:** 11/14/06

**Originator:** LNPAWG (from PIM 51)

**Change Order Number:** NANC 414

**Description:** Validation of Code Ownership in the NPAC

**Cumulative SP Priority, Average:** #3, 5.67

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Med	None-Low	None-Low

**Business Need:**

Because there is no validation of ownership when a code is opened in NPAC’s network data, codes sometimes are opened in NPAC under the wrong SPID. When code ownership is incorrectly indicated in the NPAC’s network data, SOA failures occur whenever a carrier submits a new SP create request for a non-ported number. Further, some carriers rely on the NPAC’s network data to determine the proper destination for the LSR/WPR. Code ownership errors thus can cause fall-out and delay the porting process.

There have been instances of carriers working around the NPAC’s validation of TN ownership when code ownership data is not correct in NPAC. This is done by entering the wrong old-SP SPID value, to match the NPAC’s code ownership data, in the new SP’s create request. This allows the pending SV create request to pass the NPAC’s TN ownership validation. While this approach allows the NPAC porting processes to proceed, but the actual current service provider does not receive NPAC notifications about the impending port. In the long term, this work around could impact all carriers in a region because correcting the code ownership (and SV ownership) errors requires a time-consuming manual or NANC 323 SPID migration.

An incorrect code ownership indication in NPAC’s network data delays the porting process and can create a substantial burden on industry to correct subsequent errors in individual ported TN records.

**Open Issues:**

There appear to be two open questions that must be answered in order to design and implement this change order.

- Source of code-ownership data

The source of code ownership data must be reliable and must be public. Should the NPAC rely on NANPA data? Or should some other methodology be used to verify code ownership?

**Dec ’06 LNPAGW con call:** The logical choice is the PA public data. This provides OCN to code cross reference.

- Source of all OCN related to each NPAC SPID

Each NPAC SPID may be associated with more than one OCN. A public source for the related OCN data must be determined and a method to keep this information current must be developed.

**Dec '06 LNPAWG con call:** The major question raised and discussed is the source for code ownership. Several other discussion items included:

How will we get and maintain the table for this data?

Do we really need to have all this data?

In previous discussions, the thought was to store the OCNs in the NPAC (implementation side). This way we would have a cross-reference to NPAC SPID. It could be based on their NPAC profile.

It appears that the big issue is how to get the data started. We would need everyone to provide the initial data.

We could have one option where we reject the NPA-NXX Create if the cross-reference is not found.

Aren't we just moving the problem to a different area? What prevents the cross-reference table from getting problems?

One benefit is that we eliminate the typo question that was raised previously.

How do we keep problems from happening on an on-going basis?

Can't we be more proactive, rather than reactive?

The NPAC would request that they fill out the profile as things change. However, it still relies on the SP providing the data.

Would carriers have access to this data?

Collectively, we need to decide what we want because we're starting to define requirements here.

This seems like a big problem and hard to administer (the maintenance of the data).

One question we need to answer is whether or not we should allow an SP to add their own cross-reference entries.

If we're going to do it, this sounds like it is the simplest way to do it.

Another question to ask, whether we want a manual effort to do this on a hly basis until we get this implemented, since this was also part of the PIM. We would have to do a one-time clean-up regardless of whether we do the manual process as an interim solution.

We need to determine the M&P on how to get the data to NeuStar. Is it an Excel spreadsheet, Help Desk, on the web site, over the interface?

We also still need to determine if carriers can view other carrier's data.

The Change Order was accepted on a consensus vote. Service Providers should come prepared to the January '07 meeting to discuss the issues raised during the con call.

**Jan '07 LNPAWG meeting:** Logical choice would be for code holder to provide data to NeuStar:

- Using SP-provided OCN to SPID relationship data, NPAC can resolve operational items.
- Issues come up if OCN to SPID relationship data is not provided to NPAC in timely fashion: NPAC would inappropriately reject, or accept, a request if ownership information is missing or outdated.
- Initially, SPs provide set of OCNs associated with each NPAC SPID.
- Initially, NPAC performs manual review to identify code ownership errors. (This can be done as part of the NPAC SMS software change proposed in this change order, when the new validation is implemented, or can be performed as a separate manual activity performed as time permits once the new validation is implemented.)
- Ongoing, SPs notify NPAC when their OCN to SPID association information changes.

Maintenance of OCN to SPID relationship information will be described in the M&P write-up.

Manual portion of this change order (if industry decides to perform) adds the following:

- Perform an initial review
- Perform manual or NANC 323 migration to correct code ownership errors.
- Perform subsequent reviews on some regular basis (e.g., monthly) of codes opened since previous review.
- Perform subsequent manual or NANC 323 migrations as new code ownership errors are revealed.

Next step. NeuStar to develop requirements.

#### **Meeting Discussions:**

**Mar '07 LNPAWG meeting:** Additional points from meeting discussion:

- A routine creation of the discrepancy list should be provided.
- The update of the code assignee table needs to be done on a regular basis (daily, weekly, monthly). After some discussion it was generally agreed,

that a daily occurrence was logical. The NPAC would implement a tunable for the update interval, granularity will be number of days.

- Any discrepancies must be resolved by the appropriate SP. In most cases this will require the code holder to correct the NANP's code assignee record before the NPAC can change the code assignee value that is used by the NPAC for the code validation process defined in this change order. For the Canadian region the source is "CNA". The edit or validation step will only work once the SP corrects the data source. Upon correction, the SP should notify NPAC personnel of the updated/correct information.

**May '07 LNPAWG meeting:** Additional points from meeting discussion:

- The group agreed that the manual code validation process should be implemented. The request from the LNPAWG will be sent to the NAPM LLC.
- The Service Providers will be collecting OCN-to-SPID relationship information and providing that information to NeuStar.

**Jul '07 LNPAWG meeting:** Additional points from meeting discussion:

- The focus of this change order is now on the mechanized validation since the manual validation process was finalized at the last meeting.
- As discussed during the May '07 meeting, it was assumed that Service Providers were using a single SPID per OCN (today's environment generally has one NPAC SPID for all of that Service Provider's valid OCNs). One SP reported that this is not the case for them (they have two SPIDs on the same OCN). This means that the SPID-to-OCN relationship can be many-to-many (rather than the assumed one-to-many), which complicates the mechanized validation.
- The OCN-to-SPID relationship data will not be entered over the CMIP interface, but would be entered by NPAC Personnel via the NPAC GUI. Detailed M&Ps would need to be developed to address the "duplicate" entry issue (many-to-many).

#### **Description of Change:**

The proposed change is to verify code ownership when new NPA-NXXs are opened in the NPAC. This will alleviate the problem of NPA-NXXs that are opened under the wrong SPID, which causes operational issues for both back-office systems and port requests. The following items apply:

- NANPA website is the public data source for code ownership.
- SPs provide the set of OCNs associated with each NPAC SPID.

- SPs notify NeuStar for any code ownership changes that are not reflected accurately on the NANPA website. (This can occur if SP performs code transfer without notifying NANPA.)
- NeuStar enhances the NPA-NXX Create request validation rules to verify code ownership.
- Code ownership applies to NPA Splits (if the OCN of the new NPA-NXX is not associated with the owner of the old NPA-NXX, the NPAC will reject the split request).

Nov '08 LNPAWG, discussion. Requirements 1 through 7 in the attachment are only applicable when requirement 8 (regional tunable) is set to TRUE.

**Requirements:**

Req 1 Valid NPA-NXXs for each SPID

NPAC SMS shall establish a list of valid NPA-NXXs for each SPID using information obtained from an industry source.

Req 2 Maintaining List of Valid NPA-NXXs for each SPID

NPAC SMS shall maintain the list of valid NPA-NXXs for each SPID using information obtained from an industry source.

Req 3 Updating List of Valid NPA-NXXs for each SPID

NPAC SMS shall update the list of valid NPA-NXXs for each SPID using information obtained from an industry source.

Req 4 Valid OCNs for each SPID

NPAC SMS shall establish a list of valid OCNs for each SPID using information obtained from each SPID entity.

Req 5 Maintaining List of Valid OCNs for each SPID

NPAC SMS shall maintain the list of valid OCNs for each SPID using information obtained from each SPID entity.

Req 6 Updating List of Valid OCNs for each SPID

NPAC SMS shall update the list of valid OCNs for each SPID using information obtained from each SPID entity.

Req 7 Rejection of NPA-NXXs that Do Not Belong to the OCN/SPID

NPAC SMS shall reject a Service Provider request to open an NPA-NXX for portability if the associated OCN/SPID does not own that NPA-NXX.

Req 8 Regional NPAC NPA-NXX Ownership Edit Flag Indicator

NPAC SMS shall provide a Regional NPA-NXX Ownership Edit Flag Indicator, which defines whether or not NPA-NXX Ownership edits will be enforced by the NPAC SMS for a particular NPAC Region.



Req 9 Regional NPAC NPA-NXX Ownership Edit Flag Indicator Modification  
NPAC SMS shall provide a mechanism for NPAC Personnel to modify the Regional NPA-NXX Ownership Edit Flag Indicator.

Req 10 Regional NPAC NPA-NXX Ownership Edit Flag Indicator – Default Value

NPAC SMS shall default the Regional NPA-NXX Ownership Edit Flag Indicator to TRUE.

Req 11 Rejection of NPA Split for an NPA-NXX that Does Not Belong to the OCN/SPID

NPAC SMS shall reject an NPA Split request if the OCN of the new NPA-NXX is not associated with the owner of the old NPA-NXX.

Assumptions:

1. If Service Providers do not provide a list of OCNs for each SPID, then only the SPID value will be populated in the ownership table.
2. All OCN-to-SPID ownership data must be provided by a date determined by NeuStar, prior to the rollout of this feature.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 9/13/06

**Originator:** LNPAWG

**Change Order Number:** NANC 416

**Description:** BDD File for Notifications – Adding New Attributes

**Cumulative SP Priority, Average:** #14, 13.62

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Low	Low	None

---

**Nov'09:** LNPAWG meeting discussion, indicated that this change order will be implemented along in the release containing NANC 440 and NANC 441.

**Business Need:**

As indicated in NANC 412, doc-only FRS updates, two attributes are not included in the Notification BDD file, even though they are part of the actual notification that is sent to the SOA. With this change order (action item 0906-02), those two attributes will be added to the BDD file, Business Type and Timer Type for Object Creation Notifications, so that the CMIP notification and the BDD file are consistent.

This change order would require development effort for both SOA systems and the NPAC.

**Description of Change:**

**Nov '08 LNPAWG**, discussion. Minor clarification on the requirements. The attached shows the placement of the two attributes in the BDD file. These attributes will be included when the Service Provider Notification BDD Attributes Indicator is set to TRUE.

**Requirements:**

Req 1 Service Provider Notification BDD Attributes Indicator

NPAC SMS shall provide a Service Provider Notification BDD Attributes Indicator tunable parameter which defines whether a Service Provider supports the Timer Type and Business Hours attributes in their BDD Files.

Req 2 Service Provider Notification BDD Attributes Indicator Default

NPAC SMS shall default the Service Provider Notification BDD Attributes Indicator tunable parameter to FALSE.

Req 3 Service Provider Notification BDD Attributes Indicator Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Service Provider Notification BDD Attributes Indicator tunable parameter.

FRS, Table E-8, Notification Download File Example. Add the following rows in yellow highlight.

---

subscriptionVersionNPAC-ObjectCreation

---

subscriptionVersionNPAC-ObjectCreation

---

1	Creation TimeStamp	For example:
2	Service Provider ID	1001
3	System Type	0
4	Notification ID	1006
5	Object ID	21
6	New Service Provider Creation Time Stamp	200505182316
7	New Service Provider Due Date	200505302300
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	New Current Service Provider ID	1001
12	Old Service Provider ID	1003
13	Conflict Time Stamp	
14	Status Change Cause Code	
15	Subscription Version Status	1
	Timer Type	0
	Business Hours	0
16	Version TN	3034401000
17	Version ID	1239999909

subscriptionVersionRangeObjectCreation

(\* if a  
consecutive  
list)

1	Creation TimeStamp	For example:
2	Service Provider ID	1003
3	System Type	0
4	Notification ID	16
5	Object ID	14
6	New Service Provider Creation Time Stamp	200505182316
7	New Service Provider Due Date	200505302300
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	New Current Service Provider ID	0001
12	Old Service Provider ID	1003
13	Conflict Time Stamp	
14	Status Change Cause Code	
15	Subscription Version Status	1
	Timer Type	0

---

subscriptionVersionNPAC-ObjectCreation

---

	Business Hours	0
16	Range Type Format	1
17	Starting Version TN	3034401000
18	Ending Version TN	3034402000
19	Starting Version ID	1234500001
20	Ending Version ID	1234501002

subscriptionVersionRangeObjectCreation

(\* if *not* a  
consecutive  
list)

1	Creation TimeStamp	For example:
2	Service Provider ID	1003
3	System Type	0
4	Notification ID	16
5	Object ID	14
6	New Service Provider Creation Time Stamp	200505182316
7	New Service Provider Due Date	200505302300
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	New Current Service Provider	0001
12	Old Service Provider ID	1003
13	Conflict Time Stamp	
14	Status Change Cause Code	
15	Subscription Version Status	1
	Timer Type	0
	Business Hours	0
16	Range Type Format	2
17	Starting Version TN	3034401000
18	Ending Version TN	3034401097
19	Variable Field Length	Indicates the
20	Version ID	2050505050
21	Version ID	2050505059
22	... Version ID "n"	2050507019

---

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 12/18/06

**Originator:** Syniverse Technologies

**Change Order Number:** NANC 418

**Description:** Post-SPID Migration SV Counts

**Cumulative SP Priority, Average:** #4, 8.33

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Low	None	None

---

**Business Need:**

In an effort to avoid errors during a SPID Migration, and the resulting down-time to correct them, this is a request to provide record count information of the contents of the SMURF files that are distributed to perform updates to the LSMS platforms throughout the industry. This information could be provided either as a part of the distributed file, or in some other industry notification.

The current SMURF file provides a count of the number of LRNs that are changing. However, it does not provide a count of SVs that are changing per (each) LRN. When the SMURF files are run, every SV that is assigned to an affected LRN is changed in the LSMS. It would be very helpful to know how many SVs are assigned to each LRN that will be changed during the update process.

The notices that are sent out include only an estimate of the number of SVs, as they are created well in advance of the actual creation of the production SMURF file. Performing spot checks to confirm those estimates has led to the conclusion that there are extremely wide disparities between the estimates provided in the notice and the actual number of SVs that are updated using the LRNs included in the SMURF file. For the purpose of ensuring the integrity of the file received, as well as the update process results, the actual number of SVs per LRN that are transmitted in the SMURF file should be provided.

**Description of Change:**

This change order would add a post-migration SV count for each LRN in a SMURF file. The logistics on this would need to be worked out, but the general process is that NeuStar would provide some type of industry notification on the actual quantity, at the LRN level, of SVs updated during the migration.

The current proposal is to provide a separate post-migration report to the ustry. This report would capture, by LRN, the quantity of SVs updated by the NPAC during the migration.

**Mar '07 LNPAWG meeting:** The name of this change order is being changed to reflect the post-migration report approach rather than the modified LRN SMURF file approach.

**Nov '08 LNPAWG,** discussion. Minor clarification on the requirements. This count includes all SVs (LSPP, LISP, POOL) under an LRN. For this change order, it will be broken down by pooled and non-pooled counts.

**Sep '09.** This count will also include NPBs.

**Requirements:**

Req 1 SPID Migration Reports – Post-Migration SV and NPB Count Report

NPAC SMS shall support a migration-specific SPID Migration Report that lists each designated LRN for the SPID Migration, and the associated quantity of SVs and NPBs, for each LRN, that were updated by the NPAC SMS during the SPID Migration.

Assumptions:

1. The distribution method for the Post-Migration SV Count Report will be FTP (same as SMURF file). This will be addressed in the M&P document.
2. The Post-Migration SV Count Report will be available approximately 24 hours after the conclusion of an NPAC maintenance window where a SPID Migration was processed. This will be addressed in the M&P document.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 3/31/07

**Originator:** NeuStar

**Change Order Number: NANC 420**

**Description:** Doc-Only Change Order: FRS Updates

**Cumulative SP Priority, Average:** not rated, included

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	None	None	None

---

**Business Need:**

Update the current documentation to be consistent and reflect the current behavior.

**Description of Change:**

Update the FRS.

**Requirements:**

1. Remove unnecessary page break in Table 0-1 Notation Key between RR and RX abbreviation description. Remove RR table entry described as “This is a requirement that was identified in a NPAC SMS release subsequent to 1.X.” – this description was erroneously added in version 3.0.0. The original RR description (last table entry), “This is a requirement that was identified as a new requirement for the system, during post-award meetings with the Illinois LCC.” – should remain (with correction of LCC to LLC).

2. Prepaid Wireless SV Type -- With the implementation of NANC 399 and SV Type, several placeholder values were set aside for future use. During the Mar '07 LNPAWG mtg, it was agreed to begin using one of these placeholder values. In both the intro section (1.2.16) and the data model section (SV data model – table 3-6, and Number Pool Block data model – table 3-8), the text for “SV Type 4” should be replaced with “Prepaid Wireless”.

***added in Apr'08***

3. Text correction for the following requirement:

RR5-179 Create Inter-Service Provider 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 True.

New text should read:

RR5-179 Create Inter-Service Provider PTO Subscription Version – New Service Provider ~~Optional input~~ data attributes – Rejected

NPAC SMS shall ~~accept~~ reject an Inter-Service Provider Create Request that includes the following ~~optional fields~~ data attributes 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 True.

1. *LRN*
2. *Class DPC*
3. *Class SSN*
4. *LIDB DPC*
5. *LIDB SSN*
6. *CNAM DPC*
7. *CNAM SSN*
8. *ISVM DPC*
9. *ISVM SSN*
10. *WSMSC DPC (if supported by the Service Provider SOA)*
11. *WSMSC SSN (if supported by the Service Provider SOA)*
12. *Porting to Original*
13. Billing Service Provider ID
14. End-User Location - Value
15. End-User Location - Type
16. *SV Type*
17. *Alternative SPID*

**added in Apr'08**

4. Text correction for the following requirement:

RR5-180 Create “Intra-Service Provider Port” (PTO) Subscription Version – Current 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 True.

New text should read:



RR5-180 Create “Intra-Service Provider Port (PTO) Subscription Version – Current Service Provider ~~Optional input~~ data attributes – Rejected

NPAC SMS shall ~~accept~~ reject an Intra-Service Provider Create Request that includes the following ~~optional fields~~ data attributes from NPAC personnel or the Current Service Provider ~~upon Subscription Version creation for an Inter-Service Provider port~~, when the Porting to Original flag is set to True.

1. *LRN*
2. *Class DPC*
3. *Class SSN*
4. *LIDB DPC*
5. *LIDB SSN*
6. *CNAM DPC*
7. *CNAM SSN*
8. *ISVM DPC*
9. *ISVM SSN*
10. *WSMSC DPC (if supported by the Service Provider SOA)*
11. *WSMSC SSN (if supported by the Service Provider SOA)*
12. *Porting to Original*
13. Billing Service Provider ID
14. End-User Location - Value
15. End-User Location - Type
16. *SV Type*
17. *Alternative SPID*

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 3/31/07

**Originator:** NeuStar

**Change Order Number: NANC 421**

**Description:** ASN.1 and GDMO Updates for Prepaid Wireless SV Type

**Cumulative SP Priority, Average:** not rated, included

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
N	N	Y	Y	Low	Low	Low

---

**Business Need:**

The current documentation needs to be updated.

**Description of Change:**

Update GDMO and ASN.1 for Prepaid Wireless SV Type.

**Requirements:**

No change required.

IIS:

No change required.

GDMO:

GDMO Behavior clarification (new text in blue) for both the SV Type attribute (#153, shown below) and the Number Pool Block SV Type attribute (#155, not shown below, but same change):

--

-- 153.0 Subscription Version SV Type

--

subscriptionSvTypeBehavior BEHAVIOUR

DEFINED AS !

This attribute is used to specify the subscription version type.

The possible values are:

0 : wireline

1 : wireless  
2 : VoIP  
3 : voWiFi  
4 : ~~sv-type-4~~ prepaid-wireless  
5 : sv-type-5  
6 : sv-type-6  
!;  
ASN.1:

With the implementation of NANC 399 and SV Type, several placeholder values were set aside for future use. During the Mar '07 LNPAWG mtg, it was agreed to begin using one of these placeholder values. The ASN.1 change is shown below:

```
SVType ::= ENUMERATED {  
  wireline (0),  
  wireless (1),  
  voIP (2),  
  voWiFi (3),  
  sv-type-4 prepaid-wireless (4),  
  sv-type-5 (5),  
  sv-type-6 (6)  
}
```

**Origination Date:** 6/30/07

**Originator:** NeuStar

**Change Order Number:** NANC 422

**Description:** Doc-Only Change Order: IIS Updates

**Cumulative SP Priority, Average:** not rated, included

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
N	Y	N	N	None	None	None

---

**Business Need:**

Update the current documentation to be consistent and reflect the current behavior.

**Description of Change:**

Update the IIS.

**Requirements:**

No change required.

IIS:

1. Correct section 4.8, Subscription Version Queries, for the enhanced SV Query functionality over the SOA/LSMS interfaces. The text gives an example using the > operator. CMIP does not support >, so the reference text should be changed from "> value", to ">= value + 1", as shown below:

All subscription versions where ((TN >= 303-555-01501) OR (TN = 303-555-0150 AND subscription version ID >= 12345).

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 9/11/07

**Originator:** VeriSign

**Change Order Number:** NANC 424

**Description:** Number Pool Block (NPB) Donor Disconnect Notification Priority Indicator

**Cumulative SP Priority, Average:** #10, 12.00

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Low	None-Low	None

---

**Business Need:**

(PIM 65) – When Number Pool Blocks (NPBs) are disconnected, the defined flow (IIS B.4.4.24) includes an SV Donor Disconnect notification to the Donor SOA. In some instances, the Donor SOA may not wish to receive these notifications. In the current notification prioritization functionality, there is no option to indicate a priority level specific to a de-pool and the associated SV Donor Disconnect notifications. Without this option, the Donor SOA may receive unwanted notifications (if not supporting range notifications, could receive up to 1000 notifications).

**Nov '07 LNPAWG**, VeriSign validated that the documented description and proposed resolution meets the business need.

**Description of Change:**

The NPAC SMS would add a notification category specific to the SV Donor Disconnect notification when an NPB is disconnected.

**Requirements:**

Req 1 – Service Provider SOA Suppress NPB De-Pool SV Donor Disconnect Notification Indicator

Deleted.

Req-1.1 Service Provider SOA Suppress NPB De-Pool SV Donor Disconnect Notification Indicator Default

Deleted.

Req 2 – Service Provider SOA Suppress NPB De-Pool SV Donor Disconnect Notification Indicator Modification

Deleted.

**Req 3 – Service Provider SOA Suppress NPB De-Pool SV Donor Disconnect Notification Indicator Usage**

Deleted.

FRS, Table C-7, SOA Notification Priorities Tunables. Create a new row in L-6.0A, Subscription Version – Donor SP – Customer Disconnect Date Date Notification, Scenario B: the NPB is de-pooled and the associated pooled SVs are returning back to the NPA-NXX (code) owner, *Medium*.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 10/10/07

**Originator:** VeriSign

**Change Order Number:** NANC 426

**Description:** Provide Modify Request Data to the SOA from Mass Updates

**Cumulative SP Priority, Average:** #5, 9.64

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	Y	N	N	Med	Low-Med	None

---

**Business Need:**

(PIM 66) – Currently, when the NPAC conducts a mass update (modify-active) for a SOA customer; the SOA does not receive any notifications containing the modified attributes. For SOAs that maintain SV data beyond the time of port activation, this creates an out-of-synch situation between the SOA database and the NPAC database.

Nov '07 LNPAWG, VeriSign validated that the documented description and proposed resolution meets the business need.

**Description of Change:**

The NPAC SMS would add a tunable parameter to the SPID-level customer profile that could be set to allow the sending/suppression of modify data to the respective SOA as a result of a mass update (modify-active).

**Requirements:**

Req 1 – Service Provider SOA Mass Update Notification Indicator

Deleted.

Req 2 – Service Provider SOA Mass Update Notification Indicator Modification

Deleted.

**Req 3 – Service Provider SOA Mass Update Notification Indicator Usage**

Deleted.

FRS, Table C-7, SOA Notification Priorities Tunables. Create a new row in S-3.00 C, Attribute Value Change, For Mass Update of Active SVs and NPBs, MediumNone.

FRS, Table E-8, Notification Download File Example. Add the following rows in yellow highlight.

---

subscriptionVersionNPAC-attributeValueChange

---

1	Creation TimeStamp	For exa
2	Service Provider ID	1003
3	System Type	0
4	Notification ID	1001
5	Object ID	21
6	New Service Provider Creation Time Stamp	2005051
7	New Service Provider Due Date	2005053
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	Conflict Time Stamp	
12	Version TN	3034401
13	Version ID	1234567
14	LRN	7193000
15	CLASS DPC	1231231
16	CLASS SSN	123 (TH
17	LIDB DPC	1231231
18	LIDB SSN	123 (TH
19	CNAM DPC	1231231
20	CNAM SSN	123 (TH
21	ISVM DPC	1231231
22	ISVM SSN	123 (TH
23	WSMSC DPC	1231231
24	WSMSC SSN	123 (TH
25	Billing ID	
26	End User Location Value	
27	End User Location Type	
28	SV Type	0

---

subscriptionVersionNPAC-attributeValueChange

---

29

Optional Data

subscriptionVersionRangeAttributeValueChange

(\* if a  
consecutive  
list)

1	Creation TimeStamp	For exa
2	Service Provider ID	1003
3	System Type	0
4	Notification ID	15
5	Object ID	14
6	New Service Provider Creation Time Stamp	2005051
7	New Service Provider Due Date	2005053
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	Conflict Time Stamp	
12	Range Type Format	1
13	Starting Version TN	3034401
14	Ending Version TN	3034401
15	Starting Version ID	1000000
16	Ending Version ID	1000000
17	LRN	7193000
18	CLASS DPC	1231231
19	CLASS SSN	123 (TH
20	LIDB DPC	1231231
21	LIDB SSN	123 (TH
22	CNAM DPC	1231231
23	CNAM SSN	123 (TH
24	ISVM DPC	1231231
25	ISVM SSN	123 (TH
26	WSMSC DPC	1231231
27	WSMSC SSN	123 (TH
28	Billing ID	
29	End User Location Value	
30	End User Location Type	
31	SV Type	0
32	Optional Data	



---

subscriptionVersionNPAC-attributeValueChange

---

subscriptionVersionRangeAttributeValueChange  
 (\* if *not* a  
 consecutive  
 list)

1	Creation TimeStamp	For exa
2	Service Provider ID	1003
3	System Type	0
4	Notification ID	15
5	Object ID	14
6	New Service Provider Creation Time Stamp	2005051
7	New Service Provider Due Date	2005051
8	Old Service Provider Authorization Time Stamp	
9	Old Service Provider Due Date	
10	Old Service Provider Authorization	
11	Conflict Time Stamp	
12	Range Type Format	2
13	Starting Version TN	3034401
14	Ending Version TN	3034401
15	Variable Field Length	Indicato
16	Version ID	1000000
17	Version ID	1000000
18	... Version ID "n"	1000000
19	LRN	7193000
20	CLASS DPC	1231231
21	CLASS SSN	123 (TH
22	LIDB DPC	1231231
23	LIDB SSN	123 (TH
24	CNAM DPC	1231231
25	CNAM SSN	123 (TH
26	ISVM DPC	1231231
27	ISVM SSN	123 (TH
28	WSMSC DPC	1231231
29	WSMSC SSN	123 (TH
30	Billing ID	
31	End User Location Value	
32	End User Location Type	
33	SV Type	0
34	Optional Data	

---

IIS:

IIS Change: add a new notification for the modified attributes to flow B.8.3, Mass Update.

Current flow.

1. M-SET Request subscriptionVersion
2. M-SET Response subscriptionVersion
3. M-EVENT-REPORT Request subscriptionVersionStatusAttributeValueChange
4. M-EVENT-REPORT Response subscriptionVersionStatusAttributeValueChange

Updated flow.

1. M-SET Request subscriptionVersion
2. M-SET Response subscriptionVersion
3. M-EVENT-REPORT Request subscriptionVersionStatusAttributeValueChange
4. M-EVENT-REPORT Response subscriptionVersionStatusAttributeValueChange
5. M-EVENT-REPORT Request subscriptionVersionAttributeValueChange (include the modified attributes)
6. M-EVENT-REPORT Response subscriptionVersionAttributeValueChange

For flow B.8.3.1, Mass Update for a range of TNs that contains a Number Pool Block, the same type of change will apply. In this case, two notifications will be added, one for the SVs, and one for the NumberPoolBlock.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 1/8/08

**Originator:** Qwest

**Change Order Number:** NANC 427

**Description:** Error Reduction for DPC entries in new ported and pooled records

**Cumulative SP Priority, Average:** #7, 11.36

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Med-High	None	None

---

**Business Need:**

Qwest has found that some Service Providers do not populate the Vertical Services (CNAM/LIDB/CLASS/ISVM) Destination Point Code entries correctly on ported and pooled records. This creates a three-part problem: 1.) a large volume of Message Transfer Part (MTP) routing errors in participating networks, 2.) the need for trouble reports and the necessary manual work to follow up on the trouble reports, and 3.) the need for Modify broadcasts to get the ported and pooled records corrected.

Besides the impact on Service Providers that have to deal with the routing data errors, consumers are impacted when their SS7-based services do not operate correctly. Because the current Service Provider’s Final GTT values override the vertical service point codes used on the NPAC’s ported and pooled records, for numbers served within its network, the current Service Provider may not be aware of the problem unless contacted by another provider.

This change order improves the accuracy of all DPC values on new ported and pooled records.

**Description of Change:**

The proposed change modifies the NPAC, by maintaining a table of “valid” Vertical Service Destination Point Codes for each SPID (hereafter called “VST” or Vertical Service Table). The VST allows the NPAC to implement a business rule to detect a port request with one or more incorrect Destination Point Codes. Two options were initially documented, however, during the **March ’08 LNPAWG meeting**, both Option 1 and Option 2 were broken into two categories of “reporting the error back to the SOA”.

**May ’08 LNPAWG meeting**, discussion that some local systems already do this validation, so possibly do optional by Service Provider. However, this would defeat the purpose of this change order (required versus optional). All options require additional development effort, and in an effort to minimize this effort, a new Option 3 was proposed, whereby the VST is only used for LTI-initiated transactions. This is added to the list below:

- **Option 1a:** Accept request that contains a DPC entry not on VST for the SPID, but ete the DPC/SSN not found on the VST and provide notification of this change over the SOA interface.
  - **Pro:** No ay in porting. No additional SOA Create message required. Ensures that incorrect DPC entry is not used on ported or pooled

records. No SS7 routing errors are generated in carrier networks. NPAC VST updates are not time critical.

- **Con:** Allows ported number record to be established with missing DPC value. May require SOA software changes to handle new SOA error message. Likely to require Modify transaction to correct missing DPC value. Requires a new SOA notification with hybrid information that indicates the Request message was processed to completion, but the DPC value was blanked out. SOA may need to track the initial value if the NPAC blanks it out.
- **Option 1b:** Reject request that contains a DPC entry not on the VST for the SPID and provide notification of reason for rejection over the SOA interface
  - **Pro:** Prevents incorrect DPC from being used on ported or pooled records. No SS7 routing errors are generated in carrier networks. Avoids Modify transaction to correct DPC error.
  - **Con:** Could delay the port. Requires SOA to send second Create message. May require SOA software changes to handle new SOA error message. NPAC VST updates are time critical and all service providers must maintain up-to-date information.
- **Option 2a:** Same as 1a, but provide notification of deleted DPC entry via off-line report.
  - **Pro:** No delay in porting. No additional SOA Create message required. Ensures that incorrect DPC entry is not used on ported or pooled records. Error report provided to requesting New Service Provider so they can research and correct the problem at their convenience. No SS7 routing errors are generated in carrier networks. NPAC VST updates are not time critical.
  - **Con:** Allows ported number record to be established with missing DPC value. Likely to require Modify transaction to correct the missing DPC value. Requires SOA operational process change to handle new error report. Requires NPAC to store data that is used in the off-line report.
- **Option 2b:** Accept request that contains a DPC entry not on VST for the SPID and provide notification of incorrect DPC entry via off-line report.
  - **Pro:** No delay in porting. No additional SOA Create message required. Error report sent to requesting New Service Provider so they can research and correct the problem at their convenience. NPAC VST updates are not time critical.
  - **Con:** SS7 errors are generated in carrier networks. Requires Modify transaction to correct the DPC error. Requires SOA operational

process change to handle new error report. Requires NPAC to store data that is used in the off-line report.

- **Option 3:** Same as 1b, but only for LTI-initiated transactions.
  - **Pro:** Prevents incorrect DPC from being used on ported or pooled records initiated via the LTI. No SS7 routing errors are generated in carrier networks for LTI-initiated transactions. Avoids Modify transaction to correct DPC error for LTI-initiated transactions.
  - **Con:** Could delay the port. Requires LTI to send second Create message. NPAC VST updates are time critical and all service providers must maintain up-to-date information for successful completion of LTI-initiated transactions.

This change order will require input from each carrier, in order to obtain the valid point code entries to populate the VST. Each carrier will be responsible for providing any necessary updates to their point code entries. The data will be maintained in the NPAC by NPAC Personnel.

**Jul '08 LNPAWG**, discussion. Need to develop requirements for Sep '08 review. See below:

**Requirements:**

Req 1 DPC-SSN Entries Information Source for LTI or NPAC Personnel entries  
NPAC SMS shall obtain DPC-SSN information from each Service Provider that will be making subscription version create and modify requests as the New Service Provider via the SOA Low-Tech Interface or NPAC Administrative Interface.

Req 2 DPC-SSN Entries Information Maintenance

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to maintain the Service Provider DPC-SSN information.

Req-3 DPC-SSN Entries Information – Multiple Entries

NPAC SMS shall allow multiple entries of DPC-SSN pair for each GTT Type (CLASS, LIDB, CNAM, ISVM, WSMSC).

Req-4 Create “Inter-Service Provider Port” Subscription Version – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC source data, when Creating Subscription Versions via the SOA Low-Tech Interface or NPAC Administrative Interface for an Inter-Service Provider port:

1. Class DPC
2. Class SSN
3. LIDB DPC

4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-5 Create “Intra-Service Provider Port” Subscription Version – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC-SSN source data, when Creating Subscription Versions via the SOA Low-Tech Interface or NPAC Administrative Interface for an Intra-Service Provider port:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6 Create Subscription Version – Validation of DPC-SSNs for Subscription Version Creates

NPAC shall reject New Service Provider Subscription Version Create requests from the SOA Low-Tech Interface or NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC-SSN source data.

Req-6.1 Modify “Inter-Service Provider Port” Subscription Version – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider

DPC-SSN source data, when Modifying Subscription Versions via the SOA Low-Tech Interface or NPAC Administrative Interface for an Inter-Service Provider port:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6.2 Modify “Intra-Service Provider Port” Subscription Version – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC-SSN source data, when Modifying Subscription Versions via the SOA Low-Tech Interface or NPAC Administrative Interface for an Intra-Service Provider port:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6.3 Modify Subscription Version – Validation of DPC-SSNs for Subscription Version Creates

NPAC shall reject New Service Provider Subscription Version Modify requests from the SOA Low-Tech Interface or NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC source data.

#### Req-6.4 Create Number Pool Block – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC-SSN source data, when Creating Number Pool Blocks via the SOA Low-Tech Interface or NPAC Administrative Interface:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

#### Req-6.5 Create Number Pool Block – Validation of DPC-SSNs for Number Pool Block Creates

NPAC shall reject New Service Provider Number Pool Block Create requests from the SOA Low-Tech Interface or NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC source data.

#### Req-6.6 Modify Number Pool Block – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC-SSN source data, when Modifying Number Pool Blocks via the SOA Low-Tech Interface or NPAC Administrative Interface:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN



7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6.7 Modify Number Pool Block – Validation of DPC-SSNs for Number Pool Block Modifies

NPAC shall reject New Service Provider Number Pool Block Modify requests from the SOA Low-Tech Interface or NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC source data.

Req-6.8 Mass Update Pending and Active Subscription Versions – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider DPC-SSN source data, when performing a Mass Update of Pending and/or Active Subscription Versions via the NPAC Administrative Interface:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6.9 Mass Update Pending and Active Subscription Versions – Validation of DPC-SSNs for Mass Update

NPAC shall reject Mass Update requests of Pending and/or Active Subscription Versions from the NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC-SSN source data.

Req-6.10 Mass Update Pending and Active Number Pool Blocks – DPC-SSN Field-level Data Validation

NPAC SMS shall perform field-level data validations to ensure that the values for the following input data, if supplied, is valid according to the Service Provider

DPC-SSN source data, when performing a Mass Update of Pending and/or Active Number Pool Blocks via the NPAC Administrative Interface:

1. Class DPC
2. Class SSN
3. LIDB DPC
4. LIDB SSN
5. CNAM DPC
6. CNAM SSN
7. ISVM DPC
8. ISVM SSN
9. WSMSC DPC
10. WSMSC SSN

Req-6.11 Mass Update Pending and Active Number Pool Blocks – Validation of DPC-SSNs for Mass Update

NPAC shall reject Mass Update requests of Pending and/or Active Number Pool Blocks from the NPAC Administrative Interface if a valid DPC-SSN reference does not exist in the Service Provider DPC-SSN source data.

**Nov '08 LNPAWG**, discussion. Minor clarification on the requirements. Requirements 1 through 6 in the attachment are only applicable when requirement 7 (regional tunable) is set to TRUE.

Req-7 Regional LTI DPC-SSN Validation Indicator – Tunable Parameter

NPAC SMS shall provide a Regional LTI DPC-SSN Validation Indicator tunable parameter, which is defined as an indicator on whether or not LTI DPC-SSN validation capability will be supported by the NPAC SMS for a particular NPAC region.

Req-8 Regional LTI DPC-SSN Validation Indicator – Tunable Parameter Default

NPAC SMS shall default the LTI DPC-SSN Validation Indicator tunable parameter to TRUE.

Req-9 Regional LTI DPC-SSN Validation Indicator – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the LTI DPC-SSN Validation Indicator tunable parameter.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 3/12/08

**Originator:** NeuStar

**Change Order Number:** NANC 428

**Description:** Update NPAC file transfer method from FTP to Secure-FTP

**Cumulative SP Priority, Average:** #9, 11.93

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
Y	N	N	N	Low	Low	Low

---

**Business Need:**

In essence, SFTP is an interactive file transfer program, similar to FTP, except that SFTP performs all operations in an encrypted manner. It utilizes public key authentication and compression. It connects and logs into a specified host, then enters an interactive command mode. Utilizing SFTP requires the installation of the OpenSSH suite of tools. OpenSSH encrypts all traffic (including passwords) to reduce the likelihood of eavesdropping and connection hacking.

**Description of Change:**

The major reason for implementing SFTP versus FTP is security. In FTP all data is passed back and forth between the client and server without the use of encryption. Therefore data, passwords, and usernames are all transferred in clear text making them susceptible to eavesdropping, man-in-the-middle attacks, and integrity issues. The implementation of SFTP (Secure File Transfer Protocol) is estimated to be a 6-12 month coordinated effort between NeuStar and the industry.

**Jul '08 LNPAWG**, discussion. Need to develop requirements for Sep '08 review. See below:

**Requirements:**

The following existing requirements need to have text changed from “FTP” to “Secure FTP”. (R3-8, R3-15, RR3-311, RR3-227, RR3-118, RR3-207, RR3-469, RR3-328, RR3-330, RR3-333, RR6-112, R7-107.5, R7-108.1)

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

**Origination Date:** 3/12/08

**Originator:** LNPAWG

**Change Order Number:** NANC 433

**Description:** VoIP SV Type

**Cumulative SP Priority, Average:** #11, 12.44

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
N	N	Y	Y	Low	Low	Low

---

**Business Need:**

During the discussion of FCC Order 07-188, participants agreed that the SV Type values should be modified to align with the definition in the Order. This led to the following three changes.

**Description of Change:**

Update the current definitions.

**Nov '08 LNPAWG**, discussion on adding additional placeholders. The group agreed to add 7,8,9.

**Requirements:**

VoIP SV Type in the FRS-- In both the intro section (1.2.16) and the data model section (SV data model – table 3-6, and Number Pool Block data model –

table 3-8), the text for “voIP” should be replaced with “Class 2 Interconnected VoIP”, and “SV Type 5” should be replaced with “Class 1 Interconnected VoIP”.

IIS:

No change required.

GDMO:

VoIP SV Type in the GDMO – The text should be changed.

GDMO Behavior clarification (new text in blue) for both the SV Type attribute (#153, shown below) and the Number Pool Block SV Type attribute (#155, not shown below, but same change):

--

-- 153.0 Subscription Version SV Type

--

subscriptionSvTypeBehavior BEHAVIOUR

DEFINED AS !

This attribute is used to specify the subscription version type.

The possible values are:

0 : wireline

1 : wireless

2 : *class2InterconnectedVoIP*

3 : voWiFi

4 : prepaid-wireless

5 : ~~sv-type-5~~ *class1InterconnectedVoIP*

6 : sv-type-6

7 : sv-type-7

8 : sv-type-8

9 : sv-type-9

!;

ASN.1:

VoIP SV Type in the ASN.1 – The text should be changed.

SVType ::= ENUMERATED {

wireline (0),

wireless (1),  
class2InterconnectedVoIP (2),  
voWiFi (3),  
prepaid-wireless (4),  
~~sv-type-5~~ class1InterconnectedVoIP (5),  
sv-type-6 (6),  
sv-type-7 (7),  
sv-type-8 (8),  
sv-type-9 (9)  
}

**Origination Date:** 3/12/08

**Originator:** LNPAWG

**Change Order Number:** NANC 434

**Description:** VoIP SP Type

**Cumulative SP Priority, Average:** #13, 13.31

**Functional Backward Compatible:** YES

**IMPACT/CHANGE ASSESSMENT**

---

FRS	IIS	GDMO	ASN.1	NPAC	SOA	LSMS
N	N	Y	Y	Low	Low	Low

---

**Business Need:**

During the discussion of FCC Order 07-188, participants agreed that the SP Type values should be modified to align with the definition in the Order. This led to the following three changes:

**Description of Change:**

Update the current documentation.

**Requirements:**

VoIP SP Type in the FRS-- In the data model section (NPAC Customer data model – table 3-2), the text for “SP Type3” should be replaced with

“class1Interconnected VoIP”.

IIS:

No change required.

GDMO:

VoIP SP Type in the GDMO – The text should be changed.

GDMO Behavior clarification (new text in blue) for the SP Type attribute (#151, shown below) and SP Type Package (#44, shown below):

--

-- 151.0 LNP Service Provider Type

--

serviceProviderTypeBehavior BEHAVIOUR

DEFINED AS !

This attribute is used to specify the service provider type. The valid values are” wireline, wireless, ~~and~~ non-carrier, and class 1 Interconnected VoIP.

!;

-- 44.0 Service Provider Type Package

serviceProvTypePkg PACKAGE

BEHAVIOUR serviceProvTypePkgBehavior;

ATTRIBUTES

serviceProviderType GET-REPLACE;

REGISTERED AS {LNP-OIDS.lnp-package 44};

serviceProvTypePkgBehavior BEHAVIOUR

DEFINED AS !

This package provides for conditionally including the serviceProviderType attribute.

The Service Provider Type indicator initially distinguishes each Service Provider as either a Wireline, Wireless, ~~or~~ Non-Carrier or class 1 Interconnected VoIP

Service Provider. It will be able to distinguish additional types as deemed necessary in the future.

This information is sent to the SOA/LSMS upon initial creation of the

Service Provider, or upon modification of a Service Provider's Type in the NPAC.

!;

ASN.1:

VoIP SP Type in the ASN.1 – The text should be changed.

```
ServiceProviderType ::= ENUMERATED {  
wireline (0),  
wireless (1),  
non-carrier (2),  
sp-type-3class1InterconnectedVoIP (3)  
sp-type-4 (4)  
sp-type-5 (5)  
}
```