

R3.4 Change Orders

Updated: 4/30/11

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.

Dec '09, Jan/Feb/Mar/Apr/May/June/July/Sep/Dec '10, Jan/Feb/Apr '11: Neustar clarification changes.

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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

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

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.

Apr '11 LNPAWG – As a result of some discussion during Turn-Up and Group testing, clarifying text will be added to the documentation.

Requirements:

Req-1 NPAC SMS Record ID Maximum Value Rollover

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

Req-2 NPAC SMS Record ID Inventory Mechanism

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

Note: NPAC operational considerations may roll over a record ID before it reaches the maximum positive value, minimum negative value, or maximum negative 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 (Audit ID, Action ID, 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 (Audit ID, Action ID, 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 (Audit ID, Action ID, 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 (Audit ID, Action ID, 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:

Section 2.3, SOA to NPAC Interface (and 2.4 NPAC SMS to Local SMS Interface)

Mapping of this functionality into the CMIP Definitions is provided in *Section 4 (see Exhibit 8.)* The NPAC SMS currently uses a 32-bit signed integer for the Naming ID Value. ID value interpretation is based on the way an LNP system treats binary integer numbers. Signed interpretation will see negative numbers when the 32nd bit is used. Unsigned interpretation will always see positive numbers.

Binary Signed Unsigned

Numbers Numbers Numbers

00000000000000000000000000000001 1 1

```

0000000000000000000000000000010 2 2
0000000000000000000000000000011 3 3
... ..
01111111111111111111111111111110 2147483646 2147483646
01111111111111111111111111111111 2147483647 2147483647
Rollover
10000000000000000000000000000000 -2147483648 2147483648
10000000000000000000000000000001 -2147483647 2147483649
10000000000000000000000000000010 -2147483646 2147483650
10000000000000000000000000000011 -2147483645 2147483651
... ..
11111111111111111111111111111101 -3 4294967293
11111111111111111111111111111110 -2 4294967294
11111111111111111111111111111111 -1 4294967295
Rollover Rollover
0000000000000000000000000000001 1 1
0000000000000000000000000000010 2 2
0000000000000000000000000000011 3 3

```

It is anticipated that all Service Providers will be able to successfully handle Naming ID Values up to this maximum. With the implementation of NANC 147, record IDs will be automatically rolled over when the ID exhausts the 32-bit values (or prior to for operational considerations). Using a signed interpretation, a “sign” rollover occurs when the ID increments from 31-bit to 32-bit.. Due to NPAC operational considerations, a record ID may roll over before it reaches the maximum value. For record IDs that are persistent (e.g., SV ID), an inventory mechanism will be used, such that IDs will be assigned in a non-contiguous sequence. With the inventory feature of the NPAC, IDs may be sent out of order such that large 32-bit values are sent by the NPAC followed by smaller 31-bit values.

GDMO:

Here is the current GDMO behavior for the following attributes:

- 8.0 – LNP Audit Discrepancy Version Id
- 32.0 – LNP Service Provider LRN ID

- 39.0 – LNP Service Provider NPA-NXX ID
- 50.0 – LNP Subscription Audit ID
- 99.0 – LNP Subscription Version Id
- 101.0 – LNP LSMS Filter NPA-NXX ID
- 122.0 – LNP Number Pool Block Id
- 137.0 – LNP Service Provider NPA-NXX-X ID

The NPAC SMS currently uses a 32-bit signed integer for the Naming ID Value. The maximum value is $([2^{**31}] - 1)$ or 2147483647 and the minimum value is $-(2^{**31})$ or -214648648. Rollover will take place when the ID reaches the maximum value (or prior to for operational considerations). The next ID value after the maximum of 214748647 will be -214748648.

It is anticipated that all Service Providers will be able to successfully handle Naming ID Values within this range as well as rollover after the maximum value is reached.

Here is the updated text.

The NPAC SMS uses a 32-bit signed integer for the Naming ID Value. ~~The maximum value is $([2^{**31}] - 1)$ or 2147483647 and the minimum value is $-(2^{**31})$ or -214648648.~~

ID value interpretation is based on the way an LNP system treats binary integer numbers.

Signed interpretation will see negative numbers when the 32nd bit is used.

Unsigned interpretation will always see positive numbers.

Binary Signed Unsigned

Numbers Numbers Numbers

00000000000000000000000000000001 1 1

00000000000000000000000000000010 2 2

00000000000000000000000000000011 3 3

... ..

011111111111111111111111111111110 2147483646 2147483646

011111111111111111111111111111111 2147483647 2147483647

Rollover

1000 -2147483648 2147483648

1001 -2147483647 2147483649

100010 -2147483646 2147483650

100011 -2147483645 2147483651

... ..

11111111111111111111111111111111111101 -3 4294967293

11111111111111111111111111111111111110 -2 4294967294

111111111111111111111111111111111111 -1 4294967295

Rollover Rollover

001 1 1

00010 2 2

00011 3 3

Rollover will take place when the ID reaches the ~~maximum value~~ exhausts the 32-bit values (or

prior to for operational considerations). ~~The next ID value after the maximum of 214748647 will be -214748648.~~ Using a signed interpretation,

a “sign” rollover occurs when the ID increments from 31-bit to 32-bit.

With the inventory feature of the NPAC, IDs may be sent out of order such that large 32-bit values are sent by the NPAC followed by smaller 31-bit values.

It is anticipated that all Service Providers will be able to successfully handle Naming ID Values within this 32-bit range as well as rollover after the ~~maximum value is reached~~ 32-bit values are exhausted.

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

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

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.

Jun '10 LNPAWG, discussion. The explicit tagging in the NPA-NXX-DownloadData ASN.1 definition has been updated to ensure backward compatibility.

Sep '10 LNPAWG, discussion. The explicit tagging in the NPA-NXX-DownloadData ASN.1 definition that was updated above (June 2010) was also done in the LRN-DownloadData ASN.1. In order to ensure backward compatibility, the explicit tagging is removed.

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.

RR3-663 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, that is not a new NPA-NXX in an NPA Split, if no pending-like Subscription Versions or Scheduled NPA-NXX-Xs/Number Pool Blocks exist within the NPA-NXX. (previously NANC 355, Req 6)

Note: The modification restriction during an NPA Split is required in order to maintain data consistency between the NPA-NXX Effective Date and the NPA

Split Permissive Dial Dates.

RR3-289 NPA Split – Load File from Industry Source Data, Pushing Out PDP Start Date

NPAC SMS shall process the NPA Split Load Flat File and for each NPA split that is already scheduled in the NPAC SMS, check for an effective date change in the new NPA-NXX where the PDP start date is pushed out to a further date in the future, and if no pending subscription versions exist in the new NPA-NXX, update both the new NPA-NXX Effective Date and the PDP start date. (previously NANC 192 Req 6)

Note: The update of the new NPA-NXX effective date will be accomplished via a delete and re-add of the new NPA-NXX. Both of these will be broadcast to all accepting SOAs and LSMSs. For SOAs/LSMSs that support the modification of an NPA-NXX Effective Date, the update will be accomplished via a modification instead of the delete and re-add.

RR3-290 NPA Split – Load File from Industry Source Data, Pulling In PDP Start Date

NPAC SMS shall process the NPA Split Load Flat File and for each NPA split that is already scheduled in the NPAC SMS, check for an effective date change in the new NPA-NXX where the PDP start date is pulled in to a closer date, and if no pending subscription versions exist in the new NPA-NXX update both the new NPA-NXX Effective Date and PDP start date. (previously NANC 192 Req 7)

Note: The update of the new NPA-NXX effective date will be accomplished via a delete and re-add of the new NPA-NXX. Both of these will be broadcast to all accepting SOAs and LSMSs. For SOAs/LSMSs that support the modification of an NPA-NXX Effective Date, the update will be accomplished via a modification instead of the delete and re-add.

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.

NOTE: The tunable parameter is used for both modification transactions sent over the interface as well as modifications messages in the BDD File. If the

tunable parameter is set to TRUE, then the download reason in the BDD File will be set to modified. Otherwise, it will be set to new.

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.

NOTE: The tunable parameter is used for both modification transactions sent over the interface as well as modifications messages in the BDD File. If the tunable parameter is set to TRUE, then the download reason in the BDD File will be set to modified. Otherwise, it will be set to new.

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 and same NPA-NXX-ID)

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 and same NPA-NXX-ID)

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-21 Service Provider SOA NPA-NXX Modify BDD File Indicator

Deleted.

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

Deleted.

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

Deleted.

Req-24 Service Provider LSMS NPA-NXX Modify BDD File Indicator

Deleted.

Req-25 Service Provider LSMS NPA-NXX Modify BDD File Indicator Default

Deleted.

Req-26 Service Provider LSMS NPA-NXX Modify BDD File Indicator Modification

Deleted.

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

1	Service Provider Id	0001
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 and the timestamp value is not null!;

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 serviceProvNPA-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 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, and the timestamp value is not null.

The serviceProvNPA-NXX-ModifiedTimeStamp is modified when either the First Usage Timestamp is updated or the Effective Timestamp is

updated.

The SOA will receive the serviceProvNPA-NXX-ModificationTimePkg attribute in 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, and the timestamp value is not null.

The serviceProvNPA-NXX-ModifiedTimeStamp is modified when either the subscriptionVersionNewNPA-NXX notification (First Usage) is sent or the serviceProvNPA-NXX-EffectiveTimeStamp is

updated.

```
-- 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-npa-nxx-id NPA-NXX-ID,  
  service-prov-npa-nxx-value NPA-NXX OPTIONAL,  
  service-prov-npa-nxx-effective-timestamp GeneralizedTime OPTIONAL,  
  service-prov-download-reason DownloadReason,  
  service-prov-npa-nxx-creation-timestamp GeneralizedTime OPTIONAL,  
  service-prov-npa-nxx-modified-timestamp [0] GeneralizedTime OPTIONAL  
}
```

Not related to NANC 355 directly, but updated for consistency reasons and to ensure backward compatibility. The explicit tagging was added, then removed.

```
LRN-DownloadData ::= SET OF SEQUENCE {  
  service-prov-lrn-id {0} LRN-ID,  
  service-prov-lrn-value {1} LRN OPTIONAL,  
  service-prov-download-reason {2} DownloadReason,  
  service-prov-lrn-creation-timestamp {3} 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

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

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

NPAC SMS shall delete all subordinate NPA-NXX filters when a filtered NPA is created for a given Local SMS.

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.

Req 11 Delete Filtered NPA-NXX – Deletion of NPA-NXX

NPAC SMS shall delete an NPA-NXX filter when the corresponding NPA-NXX network data is deleted.

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

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

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. (see LNPAWG update below for January 2011)

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.

Jan '11 LNPAWG – To clarify the discussion held during the Sep '07 LNPAWG

meeting, the last paragraph should be updated as follows (new wording in yellow highlight): “For NANC 397, the group agreed to document that this 25K/hr would occur in no more than four regions at a time for the type of network migration described in the business need section. This is provided to assist in network bandwidth planning for interfaces between the SOA/LSMS and the NPAC. However, given the regionalized NPAC solution, every region will support the 25K/hr rate, such that all regions could simultaneously be performing the 25K/hr rate, in addition to normal porting volumes/rates”. As discussed during the meeting, the updated requirement of 7.0 transactions per second is for an NPAC region, and since there are seven regions, the NPAC nationally has a performance requirement of 7x7 transactions per second. The four-region concept is a User behavior assumption, not an NPAC performance requirement (or limitation).

Mar/Apr ‘11 LNPAWG – Continued the discussion of the NANC 397 engineering assumption. The group agreed to add the revised text to the change order. That text is listed below, and will be added to the IIS:

NANC 397 increases the performance requirements for each NPAC region from 4 transactions per second per Service Provider to 7 transactions per second per Service Provider.

"Service Provider" assumption:

There is an engineering assumption; Service Providers must support the new performance requirements for NANC 397. The Service Provider’s local systems will support the minimum throughput rate with each of a Service Provider’s specific association to NPAC regions, based on the requirements of NANC 397.

As Service Providers are responsible for their local systems that support their interfaces to the NPAC (aka SOA, LSMS and corresponding downstream network elements), each Service Provider should work with their local system vendors to ensure that their (the Service Provider) interface solution will adequately support the same industry requirements with the NPAC without impact to other Service Providers in the industry.

It is recommended that each Service Provider spend time working performance requirements with their local system vendors as well as the NPAC vendor.

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:

Add a new section for the text discussed during the Mar/Apr '11 LNPAWG meetings.

NPAC and SOA/LSMS Interface Performance (below will be a new section, 2.5, in Part I of the IIS)

In NPAC Release 3.4, performance requirements were increased for each NPAC region from 4 transactions per second per Service Provider to 7 transactions per second per Service Provider.

An engineering assumption is that Service Providers must support these new performance requirements, such that a Service Provider's local systems will support the minimum throughput rate with each of a Service Provider's specific association to NPAC regions. As Service Providers are responsible for their local systems that support their interfaces to the NPAC (SOA, LSMS, and corresponding downstream network elements), each Service Provider should work with their local system vendors to ensure that the Service Provider's interface solution will adequately support the same industry requirements with the NPAC without impact to other Service Providers in the industry.

It is recommended that each Service Provider spend time working performance requirements with their local system vendors as well as the NPAC vendor.

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

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

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 are not scheduled in the GUI for dates when the Blackout Dates have not 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 the NPAC Low-Tech Interface and NPAC Administrative Interface, show the following information for each maintenance day:

- Maintenance date
- Total 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
- Contact Information
- 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

Note: A Migration request that includes only NPA-NXXs is considered an “online” migration that will be sent over the CMIP interface to Service Providers that support the functionality (SMURF data will be used by Service Providers that do not support the functionality). If migration data includes at least one NPA-NXX-X or LRN, it is considered “offline” and all Service Providers will use SMURF data.

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 Approval

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 approved 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 Approval

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 approved 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 Other 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 to be the first Service Provider to enter a SPID Migration.

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

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

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

Req X14 SPID Migration Update – Approval by NPAC Personnel Required

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

Req X15 SPID Migration Update – Cancel by NPAC Personnel

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

Req X16 SPID Migration Update - Service Providers Viewing Migrations

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

Req X18 SPID Migration Creation – “Re-work” Option for Cancelled SPID Migrations

Deleted.

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(es) 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

Deleted.

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 active-like subscription versions or Number Pool Blocks (quantity of zero) 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 and NPBs Cleaned Up

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

Note: For Number Pool Blocks this will be the Block Holder SPID, and for Subscription Versions this will be either the New SPID or Old SPID.

Note: This applies to pending-like records where the OSP (migrating-from SPID) is either the code holder or the block holder, and also pending-like records where the previous port is an active record (migrating-from SPID is the NSP) that is

being migrated (e.g., SV1 is active and will be migrated, SV2 is pending-like and will be cancelled).

Req X26 Completed SPID Migration 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 Migration Retention – Tunable Parameter Default

NPAC SMS shall default the Completed SPID Migration Retention tunable parameter to 365 days.

Req X28 Completed SPID Migration 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 Migration Retention – Housekeeping Purge

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

Req X30 Cancelled SPID Migration Retention - Tunable Parameter

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

Req X31 Cancelled SPID Migration Retention – Tunable Parameter Default

NPAC SMS shall default the Cancelled SPID Migration Retention tunable parameter to 365 days.

Req X32 Cancelled SPID Migration Retention – Tunable Parameter Modification

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

Req X33 Cancelled SPID Migration Retention – Housekeeping Purge

NPAC SMS shall purge cancelled SPID Migrations from the database after tunable Cancelled SPID Migration Retention days have passed since the cancellation of the SPID Migration.

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

Deleted.

Req-21.1 Service Provider SOA FTP SMURF File Indicator Default

Deleted.

Req 22 Service Provider SOA FTP SMURF File Indicator Modification

Deleted.

Req 23 Service Provider SOA FTP SMURF File Indicator Usage

Deleted.

Req-24 Service Provider LSMS FTP SMURF File Indicator

Deleted.

Req-24.1 Service Provider LSMS FTP SMURF File Indicator Default

Deleted.

Req 25 Service Provider LSMS FTP SMURF File Indicator Modification

Deleted.

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 Rejection for Service Provider Personnel

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

Req X35.5 SPID Migration Update – Quota Management – Quota Exceeded Warning for NPAC Personnel

NPAC SMS shall check quota to SPID Migration operations when NPAC Personnel 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 Migration 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.

Req-33 SPID Migration Update – SPID Migration Transactions not included in Recovery Response

Deleted (duplicate of RR3-274).

Req-34 Service Provider FTP SMURF File

NPAC SMS shall provide SMURF Files in a Service Provider’s FTP directory.

Note: This is the mechanism that providers that support the interface message will be expected to recover missed SPID migration messages. Based on FRS requirement RR3-274 the NPAC does 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 tunable 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.

NOTE: The migration will be treated as offline when the indicator is set to TRUE, and treated as online when set to FALSE. There are no restrictions on multiple updates to the 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 SPID Migration FTP Date Subdirectory Indicator tunable parameter which defines whether a subdirectory for each SPID Migration will be created.

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.

Per LNPAWG Action Item 120809-04 that was discussed during the Jan '10 LNPAWG meeting, it was agreed that requirement RR3-263 (update Old SP value of current SVs during a SPID Migration) can be deleted because of data inaccuracy issues. This will be implemented along with NANC 408.

Req X62 SPID Migration – Service Provider GUI Login Restriction

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to identify each Service Provider GUI user's login as either authorized or not-authorized for SPID Migration GUI access.

Req X63 SPID Migration Update – Online-to-Offline Restriction Window – Tunable Parameter

NPAC SMS shall provide a SPID Migration Online-to-Offline Restriction Window tunable parameter, which is defined as the number of calendar days between the current date (exclusive) and the SPID Migration date (inclusive), that a change is *not* allowed to the Service Provider's data associated with SPID Migration data that would cause the SPID Migration to move from online-to-offline.

Note: An example of the Service Provider's data associated with SPID Migration data is the addition of an LRN where the first six digits of the LRN are the same value as one of the NPA-NXX records specified in the SPID Migration data.

Both Service Providers and NPAC Personnel would receive an error message when attempting to create such an LRN.

Note: NPAC Personnel will have override capability within the restriction window for emergency purposes.

Req X64 SPID Migration Update – Online-to-Offline Restriction Window – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Online-to-Offline Restriction Window tunable parameter to fourteen (14) calendar days.

Req X65 SPID Migration Update – Online-to-Offline Restriction Window – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Online-to-Offline Restriction Window tunable parameter.

Req X66 SPID Migration Update – SPID Migration Date Restriction Window – Tunable Parameter

NPAC SMS shall provide a SPID Migration Date Restriction Window tunable parameter, which is defined as the number of calendar days (inclusive) that a SPID Migration is allowed prior to the SPID Migration Effective Date.

Note: NPAC Personnel will have override capability within the restriction window for emergency purposes.

Req X67 SPID Migration Update – SPID Migration Date Restriction Window – Tunable Parameter Default

NPAC SMS shall default the SPID Migration Date Restriction Window tunable parameter to three (3) calendar days.

Req X68 SPID Migration Update – SPID Migration Date Restriction Window – Tunable Parameter Modification

NPAC SMS shall allow NPAC SMS Personnel, via the NPAC Administrative Interface, to modify the SPID Migration Date Restriction Window 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.

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.

Migration creation timestamp will be set when the migration is requested via the NPAC GUI (LTI, Admin GUI).

Migration due date will be set to the start time of the maintenance window associated with the migration.

Migration activation timestamp will be set when the NPAC starts processing the migration (a time prior to the start of the maintenance window).

```
-- 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 GraphicString255 OPTIONAL
}
LnpSpidMigrationAction ::= SEQUENCE {
migration-from-sp          [0] ServiceProvId,

```

```

migration-to-sp          [1] ServiceProvId,
migration-npa-nxx-data  [2] MigrationNPANXXData,
migration-creation-timestamp [3] GeneralizedTime,
migration-due-date      [4] GeneralizedTime,
migration-activation-timestamp [5] GeneralizedTime
}

```

```

MigrationNPANXXData ::= SET OF SEQUENCE {
npa-nxx-id  NPA-NXX-ID,
npa-nxx-value NPA-NXX
}

```

Sample ACTION:

```

=====
LocalSMS-SpidMigrationAction ::= {
migration-from-sp "XXXX"
migration-to-sp "YYYY"
migration-npa-nxx-data ::= {
npa-nxx-id 6001
npa-nxx-value "500100"
npa-nxx-id 6002
npa-nxx-value "500101"
migration-creation-timestamp "20070101000000Z"
migration-due-date "20071211000000Z"
migration-activation-timestamp "20071212000000Z"
}
}

```

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

added in Feb '10

7. subscriptionAudit MANAGED OBJECT. Behavior clarification (add text in yellow).

The NPAC SMS will initialize the number of completed TNs to 0 when the audit is created, and update to indicate a TN count when the audit is cancelled or when the compare is completed.

Remove incorrect behavior (cut-and-paste error).

~~The TN of the SV will be put in the additionalInformation parameter of AttributeValueChangeInfo that is defined in the standard Attribute-ASN1Module.~~

8. subscriptionAuditStatus ATTRIBUTE. Behavior clarification (text in yellow).

This attribute is used to specify the status of an audit. Valid values are in-progress, ~~suspended~~, canceled, and complete.

added in May '10

9. subscriptionVersionModify ACTION. Behavior clarification (add text in yellow).

Service Providers can modify attributes associated with active, pending, cancel-pending, disconnect-pending or conflict subscription versions.

An SP that sent up a Cancel Request in error, could un-do the cancel request by setting the subscription version status to pending (new-version-status in SubscriptionModifyData). This allows the subscription version to change from cancel-pending back to pending. The NPAC verifies that the Service Provider sending the modify to the NPAC is the same Service Provider that initiated the Cancel Request (otherwise return an error). There is no restriction on when this new message can be sent during the tunable period of time that the subscription version is cancel-pending. Any other modified attributes on an un-do request are ignored.

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
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 LNPAWG 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 in the release containing NANC 440 and NANC 441. It will only be kept in this document for reference purposes.

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*

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*

added in Jan '10

5. SOA and LSMS separation in BDD – add requirements and Appendix E BDD table entries that define separate SOA and LSMS indicators for BDD files (existing behavior is unhighlighted, new behavior is highlighted):

1. *BDD-SV File*
 - a. *LSMS supports EDR*
 - b. *LSMS supports WSMSC*
 - c. *LSMS supports SV Type*
 - d. *LSMS supports Optional parameters*
 - e. *SOA supports WSMSC*
 - f. *SOA supports SV Type*
 - g. *SOA supports Optional parameters*
2. *BDD-NPB File*
 - a. *LSMS supports WSMSC*
 - b. *LSMS supports SV Type*
 - c. *LSMS supports Optional parameters*
 - d. *SOA supports WSMSC*

- e. *SOA supports SV Type*
 - f. *SOA supports Optional parameters*
3. *BDD-Notifications File*
- a. *SOA supports SV Type*
 - b. *SOA supports Optional parameters*
4. *BDD-Customer File*
- a. *SOA supports SP Type*
 - b. *LSMS supports SP Type*
 - c. *(if either SOA supports is TRUE, or LSMS supports is TRUE, the SP Type field is included in the BDD file)*

added in Feb '10

6. Add a new sub-section below 1.2.19 (Medium Timers for Simple Ports). Describe the various scenarios that affect the inclusion/exclusion of the medium timers in the actual notifications and in the BDD-notifications file.

added in Mar '10

7. Text correction for the following requirement:

R5-74.4 Query Subscription Version - Output Data - LSMS

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

1. [snip]
2. Timer Type (for SOAs that support Timer Type)
3. Business Hours Type (for SOAs that support Business Hours)
4. [snip]
5. Alt-End User Location Value (if supported by the Service Provider SOA)
6. Alt-End User Location Type (if supported by the Service Provider SOA)
7. Alt-Billing ID (if supported by the Service Provider SOA)
8. Voice URI (if supported by the Service Provider SOA)
9. MMS URI (if supported by the Service Provider SOA)
10. SMS URI (if supported by the Service Provider SOA)

New text should read:

R5-74.4 Query Subscription Version - Output Data - LSMS

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

1. [snip]
 2. ~~Timer Type (for SOAs that support Timer Type)~~
 3. ~~Business Hours Type (for SOAs that support Business Hours)~~
 4. [snip]
 5. Alt-End User Location Value (if supported by the Service Provider SOALSMS)
 6. Alt-End User Location Type (if supported by the Service Provider SOALSMS)
 7. Alt-Billing ID (if supported by the Service Provider SOALSMS)
 8. Voice URI (if supported by the Service Provider SOALSMS)
 9. MMS URI (if supported by the Service Provider SOALSMS)
 10. SMS URI (if supported by the Service Provider SOALSMS)
8. AR3.1 was previously deleted in section 3.1. To maintain consistency, it needs to be deleted from section 1.5.
9. In requirement R7-111.8, change “SP” to “Service Provider”.
10. In requirement R7-85.2, change “NPA Administrative” to “NPAC Administrative”.
11. In requirement R7-107.1, change “provide” to “provides”.
12. In requirement R7-108.2, change “acknowledgment” to “Service Providers’ acknowledgment”.
13. Add a row for Notification BDD Timer Type Business Hours Indicator to NPAC Customer Data Model to be consistent with requirements for Notification BDD Timer Type Business Hours tunable parameter.
- added in Apr '10***
14. Update table 1-3 in section 1.2.15 for proper GMT offset for simple ports.
15. In requirement RN3-4.17, add note that the last NPA-NXX within an NPA Split is allowed to be removed.
16. In requirement RR3-27, clarify that it’s the messages that are filtered and sent over the SOA interface.
17. In requirement R7-56, change the heading from “Use of Encryption” to “User ID and System ID”.

18. In requirement R7-94.1, change the text from “a public key crypto system” to “an RSA public key crypto system”. This change makes R7-94.2 unnecessary, so it will be deleted.
 19. In requirement R7-98, add note that heartbeat Notifications do not include Access Control.
 20. Remove obsolete requirement R7-107.3, Paper copy of MD5 Hashes of Keys.
 21. In requirement R7-107.4, update the text, “NPAC SMS shall support exchange of the list of keys ~~in person or~~ remotely.”
 22. In requirement R7-107.5, update the text, “NPAC SMS shall convey the lists via ~~two different channels, diskette sent via certified mail, and a file sent via Email or~~ Secure FTP using encryption mechanisms if the keys are exchanged remotely.”
 23. In requirement R7-108.1, update the text, “NPAC SMS shall support the Service Providers’ acknowledgment via ~~2 secure electronic forms, Email or~~ Secure FTP using encryption mechanisms.”
 24. Remove obsolete requirement R7-109.1, Periodic Paper List of Public Keys NPAC Uses.
 25. Remove obsolete requirement R7-109.2, Acknowledgment of Paper List of Public Keys.
 26. In requirement R7-111.4, add note that the yearly change applies to the NPAC signing key.
- added in May '10***
27. In requirement R7-97, update the bulleted text to be consistent with the bullets in R7-96.
 - ~~The unique identity of the sender~~System ID
 - System type
 - User ID
 - ~~The Generalized Time, corresponding to the issuance of the message~~Departure Time
 - A sequence number
 - ~~A key identifier~~Key ID
 - Key list ID
 - ~~The digital signature of the sender’s identity, Generalized Time and sequence number listed above~~Digital Signature
 28. Remove obsolete requirement RR7-2, Modifying User Name.
 29. Update Subscription BDD File field numbers in Appendix E.

added in Jun '10

30. In BDD Response File requirements RR3-327, RR3-328, and RR3-330, update the note to explicitly define a “negative” response.
31. Re-organize BDD File overview text in Appendix E.
32. Add Download Reason to Data Model section (SV, NPA-NXX, LRN).

added in Jul '10

33. Based on action item 060810-06 and discussion during the July meeting, pending-like PTO SVs should be added to the list of pending-like SVs that need to be cancelled prior to a SPID Migration. Update requirements RR3-259 and RR3-275.

added in Oct '10

34. NPA-NXX Filter clarification. Since NPA-NXX Filters apply at the SPID level, text should indicate both SOA and LSMS (currently only indicates LSMS even though requirements also say “via the NPAC SMS to Local SMS interface and the SOA to NPAC SMS interface”). Update requirements RR3-5, RR3-6, RR3-7, RR3-8, RR3-9, RR3-692, RR3-693, RR3-694, RR3-696.

added in Dec '10

35. Appendix E, BDD Files. Block Download File, clearly indicate that tunables “SOA supports WSMSC” and “LSMS supports WSMSC” will always be included in the Block BDD File. Notification Download File, consolidate paragraphs on attributes included in file, and clarify that inclusion is based on support at time of BDD file generation.

added in Feb '11

36. NPAC Customer Data Model. Remove the row labeled “Service Provider LSMS Supports Cancel-Pending to Conflict Cause Code” as this is not a valid profile setting.
37. In requirement RR3-259, wording clarification on ‘pending-like’ Blocks, and separation of SVs versus Blocks.
38. Block BDD File. Add the missing URI fields, Voice URI, MMS URI, SMS URI. The placement is the same as the SV BDD File (i.e., in between Alt-Billing ID and Last Alternative SPID).
39. Notification BDD. Timer Type, Business Hours, and Medium Timer Indicators wording clarifications. Add missing Billing ID and End User fields, and renumber fields.

added in Apr '11

40. Wireless timers. In Section 1.2.15, Time References in the NPAC SMS, correct the day references for Canada. Instead of Sunday-Saturday, should be Monday-Saturday.

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).

added in Jan '10

2. Documentation correction for IIS Flows, B.4.2.2 (LRN Creation by the SOA) and B.4.2.6 (LRN Creation by the Local SMS), to remove the incorrect text in step 1 ("The NPAC verifies that the service provider creating the LRN information is the same as the service provider that owns the service provider network data. If not, then an accessDenied M-CREATE error response is returned.").

added in Feb '10

3. Documentation correction for IIS Flows, B.5.1.6.3 (Subscription Version Create: No Create Action from the Old Service Provider SOA After Final

Concurrence Window), to change the incorrect tunable reference in step 3 (“NPAC SMS sends the new service provider, if they support the notification according to their ~~NPAC Customer SOA Supports New SP Notification of Old SP T2 Expiration Indicator in their service provider profile~~ Subscription Version Old SP Final Concurrence Timer Expiration Notification priority setting..”).

added in Feb '10

4. Documentation correction for IIS Flows, B.2.2 (SOA Initiated Audit Cancellation by the SOA), and B.2.3 (SOA Initiated Audit Cancellation by the NPAC), to add a note indicating the audit status is changed to enumeration 1-cancelled upon cancellation.

added in Apr '10

5. Update Appendix A, Error Code section, for new error codes for Simple Ports.

added in Jun '10

6. Documentation correction for section B.5.1.6 which lists SV Activation, yet sub-flows B.5.1.6.2 – B.5.1.6.5 are SV Create scenarios.

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, and a separate AVC notification is sent that includes the modified attributes, ~~Medium~~None.

FRS, Table E-8, Notification Download File Example. Add the following rows in yellow highlight. Include a note that the new rows are dependent on the S-3.00C setting at the time of BDD file generation.

subscriptionVersionNPAC-attributeValueChange

1	Creation TimeStamp
2	Service Provider ID
3	System Type
4	Notification ID
5	Object ID
6	New Service Provider Creation Time Stamp
7	New Service Provider Due Date
8	Old Service Provider Authorization Time Stamp
9	Old Service Provider Due Date
10	Old Service Provider Authorization
11	Conflict Time Stamp
12	Timer Type
13	Business Hours
14	New SP Medium Timer Indicator

15	Old SP Medium Timer Indicator
----	----------------------------------

16	Fields 16 through 30, and 33 to the end of the list are included LRN
17	CLASS DPC

subscriptionVersionNPAC-attributeValueChange

18	CLASS SSN
19	LIDB DPC
120	LIDB SSN
21	CNAM DPC
22	CNAM SSN
23	ISVM DPC
24	ISVM SSN
25	WSMSC DPC
26	WSMSC SSN
27	Billing ID
28	End User Location Value
29	End User Location Type
30	SV Type
31	Version TN
32	Version ID
33	Optional Data
34	Optional Data – 2
n	Optional Data – x

subscriptionVersionRangeAttributeValueChange

(* if a
consecutive
list)

1	Creation TimeStamp
2	Service Provider ID
3	System Type
4	Notification ID
5	Object ID
6	New Service Provider Creation Time Stamp
7	New Service Provider Due Date
8	Old Service Provider Authorization Time Stamp
9	Old Service Provider Due Date
10	Old Service Provider Authorization
11	Conflict Time Stamp

subscriptionVersionNPAC-attributeValueChange

12 Timer Type

13 Business Hours

14 New SP Medium Timer
Indicator

15 Old SP Medium Timer
Indicator

16 Fields 16 through 30, and 36 to the end of the list are included in the LRN

subscriptionVersionNPAC-attributeValueChange

17	CLASS DPC
18	CLASS SSN
19	LIDB DPC
20	LIDB SSN
21	CNAM DPC
22	CNAM SSN
23	ISVM DPC
24	ISVM SSN
25	WSMSC DPC
26	WSMSC SSN
27	Billing ID
28	End User Location Value
29	End User Location Type
30	SV Type
31	Range Type Format
32	Starting Version TN
33	Ending Version TN
34	Starting Version ID
35	Ending Version ID
36	Optional Data
37	Optional Data – 2
n	Optional Data – x

subscriptionVersionRangeAttributeValueChange

(* if *not* a
consecutive
list)

1	Creation TimeStamp
2	Service Provider ID
3	System Type
4	Notification ID
5	Object ID
6	New Service Provider Creation Time Stamp
7	New Service Provider Due Date
8	Old Service Provider Authorization Time Stamp
9	Old Service Provider Due Date
10	Old Service Provider Authorization
11	Conflict Time Stamp

subscriptionVersionNPAC-attributeValueChange

12 Timer Type

13 Business Hours

14 New SP Medium Timer
Indicator

15 Old SP Medium Timer
Indicator

16 Fields 16 through 30, and 38 to the end of the list are included in the
LRN

subscriptionVersionNPAC-attributeValueChange

17	CLASS DPC
18	CLASS SSN
19	LIDB DPC
20	LIDB SSN
21	CNAM DPC
22	CNAM SSN
23	ISVM DPC
24	ISVM SSN
25	WSMSC DPC
26	WSMSC SSN
27	Billing ID
28	End User Location Value
29	End User Location Type
30	SV Type
31	Range Type Format
32	Starting Version TN
33	Ending Version TN
34	Variable Field Length
35	Version ID
36	Version ID
37	... Version ID "n"
38	Optional Data
39	Optional Data – 2
n	Optional Data – x

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 icates 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:

Sep '08 LNPAWG, discussion. The group agreed to accept option 3.

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 DPC-SSN is specified and 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 DPC-SSN is specified and 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 DPC-SSN is specified and 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 DPC-SSN is specified and 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 DPC-SSN is specified and 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 DPC-SSN is specified and 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-3*~~*class1InterconnectedVoIP (3)*

~~*sp-type-4*~~*(4)*

sp-type-5 (5)

}

Origination Date: 8/18/09

Originator: NeuStar

Change Order Number: NANC 439

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:

Per approval by the NAPM LLC (SOW 75 for “Elimination of Dial-Up Port to NPAC Network”), there is the elimination of all existing dial-up access arrangements for NPAC LTI users. As such, the text in the FRS needs to remove all references to dial-up access.

Description of Change:

Update the FRS.

Requirements:

R7-41 System Access, User Authentication Procedure Entry – ~~Dial-Up~~SSL VPN Limitations

NPAC SMS shall provide a mechanism to limit the users authorized to access the system via ~~dial-up~~SSL VPN facilities.

R7-43.3 ~~Dial-Up~~SSL VPN Access

NPAC SMS shall use smart cards to authenticate users accessing the NPAC SMS via ~~dial-up~~SSL VPN.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

No change required.

Origination Date: 1/31/10

Originator: LNPAWG

Change Order Number: NANC 443

Description: Doc-Only Change Order: ASN.1 Update

Cumulative SP Priority, Average: not rated, included

Functional Backward Compatible: YES

IMPACT/CHANGE ASSESSMENT

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

Business Need:

The current documentation needs to be updated.

Description of Change:

Update ASN.1 for Audit Status label.

Requirements:

No change required.

IIS:

No change required.

GDMO:

No change required.

ASN.1:

The label associated with enumeration 1 needs to be changed from “suspended” to “cancelled”.