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