**Origination Date:** 5/7/19

**Originator:** iconectiv

### Change Order Number: NANC 541

**Description:** Time Based Recovery Limit

**Functional Backwards Compatible:** Not Applicable

**IMPACT/CHANGE ASSESSMENT**

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

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| XML | XIS | XSD | NPAC | SOA | LSMS |
| N | N | N | N | N |

**Business Need**

iconectiv developed recovery capabilities based on NPAC SMS FRS requirements to allow CMIP-based local systems to recover Subscription Version and Network data elements. During industry discussions, some industry participants expressed a need for clarification for what is the 24 hour period. Agreement was understood regarding the interval of 24 hours. However, the start time of the recovery was not bound and therefore could have mislead local systems regarding how far back Time Based Recovery could be facilitated before requiring a Bulk Data download. See also PIM 123

**Description of Change:**

Define the Time Based Recovery process and supported timeframes in more detail in the Industry documentation as highlighted below, to remove the ambiguity surrounding the current Time Based Recovery process. The current tunables for Time Based Recovery will remain unchanged, however, an additional tunable will be added regarding when a Time Based Recovery request can be submitted relative to current date/time.

**FRS Changes**

[Snip]

**Section 6.7 – Recovery**

The following will be added in Section 6.7 – Recovery prior to the beginning of sub section 6.7.1.

The following identifies the NPAC SMS capabilities to limit the length of time a Local system can be down and subsequently utilize Time Based Recovery to recover data miussed during that downtime. If a Local system is down longer that the tunable limit then Bulk Data Download files should be utilized to recover data.

Req 1 Maximum Time Based Recovery Start Time Limit

NPAC SMS shall provide a Time Based Recovery – Maximum Time Based Recovery Start Time Limit tunable parameter which defines how far back a SOA or LSMS is allowed to request a Time Based Recovery. Local systems that are down for greater than the Maximum Time Based Recovery Start Time Limit tunable will need to utilize the Bulk Data Download process to recover missing data.

Req 2 Maximum Time Based Recovery Start Time Limit Default

NPAC SMS shall default the Time Based Recovery – Maximum Time Based Recovery Start Time Limit tunable parameter to 1440 minutes.

Req 3 Maximum Time Based Recovery Start Time Limit Modification

NPAC SMS shall allow NPAC Personnel, via the NPAC Administrative Interface, to modify the Maximum Time Based Recovery Start Time Limit tunable parameter.

**Req 4 Maximum Time Based Recovery Start Time Limit**

NPAC SMS shall utilize the Maximum Time Based Recovery Start Time Limit tunable to limit when the Local System can initiate the Time Based Recovery request to recover data missed during that downtime. If a time based recovery request is received with a Start Time of recovery that is prior to the current system date/time minus the Time Based Recovery - Maximum Time Based Recovery Start Time Limit, the request shall be rejected.

**Appendix C updates**

|  |
| --- |
| **Communication Tunables** |
| **Tunable Name** | **Default Value** | **Units** | **Valid Range** |
| **Maximum Time Based Recovery Start Time Limit** | 1440 | minutes | 1-5760 |
| The maximum time between the start time of a Time Based Recovery request and the current system date and time. |

**GDMO changes**

[Snip]

-- 1.0 LNP Download Action

lnpDownloadBehavior BEHAVIOUR

 [Snip]

Failed - go into retry mode. Re-issue the request a configurable

 number of additional retry attempts with an "x" amount of delay

 between requests ("x" is a configurable amount of time after

 receiving the failure for each request). If a failed response

 is received for the final retry request, abort the association

 and re-start the recovery process. Note: It is recommended that

 the Local SMS or SOA use the same value that the NPAC SMS uses

 for the retry interval. It is also recommended that the Local SMS

 use a value of at least two (2) for configurable number of

 additional retry attempts.

OR

Failed – if the failure is related to a violation of the Maximum Time Based Recovery Start Time Limit tunable, do not retry the request. The Local System has been down longer than the allowable timeframe for Time Based Recovery and therefore the Local system must utilize other means to recover data e.g., Bulk Data Download files.

[Snip]

-- 15.0 Notification Recovery Action

lnpNotificationRecoveryBehavior BEHAVIOUR

 [Snip]

Failed - go into retry mode. Re-issue the request a configurable

 number of additional retry attempts with an "x" amount of delay

 between requests ("x" is a configurable amount of time after

 receiving the failure for each request). If a failed response

 is received for the final retry request, abort the association

 and re-start the recovery process. Note: It is recommended that

 the Local SMS or SOA use the same value that the NPAC SMS uses

 for the retry interval. It is also recommended that the Local SMS

 use a value of at least two (2) for configurable number of

 additional retry attempts.

OR

Failed – if the failure is related to a violation of the Maximum Time Based Recovery Start Time Limit tunable, do not retry the request. The Local System has been down longer than the allowable timeframe for Time Based Recovery and therefore the Local system must utilize other means to recover data e.g., Bulk Data Download files.

**IIS Changes**

**[Snip]**

**5.3.4 Recovery**

‘Time-Based’ Recovery Requests

All 'time-based' recovery requests specifying time range criteria are limited to the NPAC SMS tunable, “Maximum Download Duration”. When the SOA or LSMS issues a recovery request (whether Service Provider, Network, Subscription, Number Pool Block, or Notification Data) with time-based criteria, the NPAC SMS will compare the time range indicated in the request to the “Maximum Download Duration” tunable.

Additionally all 'time-based' recovery requests specifying time range criteria are limited to the NPAC SMS tunable, “Maximum Time Based Recovery Start Time Limit”. When the SOA or LSMS issues a recovery request (whether Service Provider, Network, Subscription, Number Pool Block, or Notification Data) with time-based criteria, if the Start Time of recovery is prior to the current system date/time minus the Maximum Time Based Recovery Start Time Limit tunable, the request shall be rejected. If a Local system is down longer than the tunable limit then Bulk Data Download files should be utilized to recover data.

For service providers that do not support linked replies, Subscription data 'time-based' recovery requests specifying time range criteria are also limited to the number of TNs specified in the Service Provider specific tunable, “Maximum TN Download in Recovery Request”. Therefore, a valid request will fall within the duration, the Maximum Time Based Recovery Start Time Limit and the quantity tunable values.

For service providers that do not support linked replies, Notification data 'time-based' recovery requests specifying time range criteria are also limited to the number of notifications specified in the NPAC SMS tunable, “Maximum Number of Download Notifications”. Therefore, a valid request will fall within the duration, the Maximum Time Based Recovery Start Time Limit time and the quantity tunable values.

For service providers that do not support linked replies, for all types of 'time-based' recovery requests, where the tunable value is exceeded, an appropriate error message is issued over the interface from the NPAC SMS to the originating system. This applies to duration overages (“Maximum Download Duration”), “the Maximum Time Based Recovery Start Time Limit”) and number of record overages (“Maximum TN Download in Recovery Request” for subscription data, and “Maximum Number of Download Notifications” for notification data).

**EFD Changes**

**[Snip]**

B.7 Local SMS and SOA Recovery

For all download requests in this section, the Local SMS or SOA should behave as follows in response to the possible download M-ACTION response from the NPAC SMS:

Success – process the data received from the NPAC SMS, continue processing.

No-data-selected – no data was found, continue processing.

Criteria-too-large (using the Maximum Number of Download Records tunable) – break up the request into a smaller time range and re-issue the request to the NPAC SMS (only applies to SV requests).

OR

Criteria-too-large (using the Maximum Number of Download Notifications tunable) – break up the request into a smaller time range and re-issue the request to the NPAC SMS (only applies to notification requests).

Time-range-invalid (using the Maximum Download Duration tunable) – break up the request into shorter time ranges and re-issue the request to the NPAC SMS.

Failed – go into retry mode. Re-issue the request configurable number of additional retry attempts with an “x” amount of delay between requests (“x” is based on a configurable amount of time after receiving the failure for each request). If a failed response is received for the final retry request, abort the association and re-start the recovery process. Note: It is recommended that the Local SMS or SOA use the same value that the NPAC SMS uses for retry interval.

OR

Failed – if the failure is related to a violation of the Time Based Recovery - Maximum Time Based Recovery Start Time Limit, do not retry the request. The Local System has been down longer than the allowable timeframe for Time Based Recovery and therefore the Local system must utilize other means to recover data e.g., Bulk Data Download files.

***Appendix A. Errors***

[Snip]

 *Exhibit 1 CMIP Error Mapping to NPAC SMS Errors*

|  |  |  |  |
| --- | --- | --- | --- |
| **MS Error** | **Description** | **CMIP Error** | **Description** |
| 5138 | OCN of NPANXX does not match SPID | 2 | accessDenied\_er |
| 5139 | NpaNxx modify new effective date is in the past | 10 | processingFailure\_er |
| 5140 | SPID Migration request error | 6 | invalidAttributeValue\_er |
| 5200 | Maximum Time Based Recovery Start Time Limit | 20 | complexityLimitation |
| 5500 | One or more subscriptions will be affected by change. Require user acknowledgment to proceed. | 2 | accessDenied\_er |