LNP Problem/Issue Identification and Description Form

**Submittal Date** (03/31/2020): **PIM # 130**

**Company(s) Submitting Issue**: iconectiv, 10x People

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**(NOTE: Submitting Company(s) is to complete this section of the form along with Sections 1, 2 and 3.)**

1. **Problem/Issue Statement:** (Brief statement outlining the problem/issue.)

As of 2020, the XML interface has been in production for several years. Over the past two years, there has been an increase in the number of systems using the XML interface. Through experience of using the interface, both the LNPA and 10x People believe there are areas that can be improved to provide value to the industry.

1. **Problem/Issue Description:** (Provide detailed description of problem/issue.)

A. Examples & Impacts of Problem/Issue:

1) XML provides the opportunity to inject instantly a much higher volume of requests to the NPAC as compared to the CMIP interface (up to 100 requests per XML document, with up to 5 simultaneous connections allowed). There are no industry-agreed-upon rules for managing high-volume XML traffic so as not to overwhelm local systems.

2) There is a need for XML LSMS systems to query efficiently for subscription versions, number pool blocks, and network data, to facilitate resynchronization without use of BDDs after long-duration outages.

B. Frequency of Occurrence:

1) High volume traffic, at least for short durations of several minutes, is a daily occurrence. These short durations of high-volume requests, lead to congestion on the LSMS interfaces. Longer duration high volumes periods have been observed as well.

2) When XML downloads are turned off for an LSMS system, there is not an efficient way to recover the records that were not sent. While not a frequent occurrence, downloads have been turned off for XML LSMSs at times.

1. NPAC Regions Impacted:

 Mid Atlantic \_\_\_ Midwest\_\_\_ Northeast\_\_\_ Southeast\_\_\_ Southwest\_\_\_ Western\_\_\_

 West Coast\_\_\_ ALL X

D. Rationale why existing process is deficient:

1) Existing requirements do not describe how the NPAC is to prioritize traffic and/or throttle requests when there is high traffic volume and LSMS systems are unable to meet the offered load. The XML interface allows an order of magnitude more requests per second than does the CMIP interface, given the batch and parallel nature of the XML interface as compared to the serial nature of the CMIP interface.

2) If any messages are deleted or not generated for an XML system, the XML system must query the NPAC for the records that were missed. In addition, while performing such a query process, any XML LSMS must currently accept new downloads from the NPAC. In order to limit the processing load on the LSMSs in particular, it would be more efficient to hold new downloads to the LSMS while the LSMS is resynchronizing with the NPAC via queries. Finally, queries need to be efficient to allow the local systems to resynchronize as quickly as possible.

E. Identify action taken in other committees / forums:

None

F. Any other descriptive items:

None

1. **Suggested Resolution:**

A subcommittee, either the Architecture Planning Team or a similar subcommittee, be created to examine the proposals and determine what, if any, changes could be made.

Recommend the Architecture Planning Team or similar subcommittee discuss the following topics and any others that may increase interface throughput and/or minimize complexity of the interface:

1) Changes to NPAC outbound flow control, including whether the existing system-level tunables should be replaced with per-SPID tunables and separated for SOA and LSMS. This could also be applied to the CMIP interface.

2) Changes to NPAC outbound flow control algorithm to be a “sliding window” or “tapering” algorithm, which would gradually slow new outbound traffic upon detection of congestion, rather than the current on/off threshold algorithm. This could also be applied to the CMIP interface.

3) Limits to the number of delegate SPIDs that may be configured for any given SPID to a reasonable number that does not impact service provider business needs. Current configurations are not a concern, but there is a potential that increased use could impact overall processing.

4) Change NPAC processing to prohibit or silently ignore suppression settings when New SP and Old SP are delegates of one another and a request is submitted by the New SP/Old SP. Such a configuration is not used in the production regions today.

1. **Final Resolution:**

After discussions at the APT, several topics were advanced to the NPIF. These resulted in the separate PIMs and Change Orders listed in the “Related Documents” at the end of this PIM.

**NPIF:** (only)

PIM #130 v3 Final Resolution Date: 11/8/2022

Related Documents: CO 554, CO 557, CO 559, PIM 140, PIM 141

Issue Resolution Referred to: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Why Issue Referred: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_