

## **Analysis: NPAC Transition To Take A Minimum of Two Years, Likely Longer**

By Bill Reidway, Vice President of Numbering Services at Neustar

### **Overview**

Based on its expertise as the current Local Number Portability Administrator, and in collaboration with external experts in systems integration, telecommunications, IT, and large scale transformation, Neustar respectfully submits the attached analysis, which confirms early estimates by the NAPM LLC regarding the likely duration of a transition of LNPA services. The analysis confirms that such an activity would consume industry resources for a minimum period of two years, starting from the date of selection - even under optimal conditions. This implies that the industry could not conceivably be at full readiness and connected to a new LNPA prior to mid 2016 – **over one year after the FCC’s expected start of a new LNPA contract, and a significant duration into the 5-year term implied by the RFP.**

Because Neustar has understood for some time that migrating from today’s high performance environment to a new and untested platform and administrator would not be without significant cost and risk we engaged outside experts to assist in conducting an evaluation of the industry’s proposed timeline for implementation and transition. Our effort leveraged Neustar’s experience managing the NPAC and the LNPA service today, in combination with a variety of subject-matter experts who could provide insight into any matters related to the transition for which we did have first-hand expertise.

The questions we sought to answer were threefold. First, if Neustar were to approach transition as a new vendor today, using our existing codebase and resources, how soon could we make the platform available at high quality to the industry? And second, based on our experience with other industry implementations, how soon could the NPAC’s current users be migrated to a new platform at an equivalent level of stability? Finally, to account for previous delays in the process, what steps could be undertaken to compress the schedule without compromising quality?

The results, as described below, show that assuming virtually no implementation, testing, or deployment obstacles, even an experienced vendor working in cooperation with an industry that has no resource or time constraints, an NPAC under new management cannot be in production in time for a July 2015 deadline. Lingering uncertainty as to the full scope of requirements adds to the complexity and risk.

Neustar is not asserting that an LNPA transition is not possible, nor that one should never be attempted. At a minimum, however, the consideration of such a transition should include a full evaluation of impacts on stakeholders, including the impacts of serious delay, outright failure, and the potential pressure to move quickly at the expense of quality and stability.

We used as a baseline the industry’s original timeline, published over three years ago by the NAPM, LLC. The NAPM, LLC set its original timeline for a transition at approximately 33 months. Since then, every deadline in the vendor selection process has slipped, and several stakeholders have affirmed that such slips could not be mitigated easily:

#### **NAPM LLC Participant, on Aggressive Timeline May 21, 2010 NANC Transcript**

“Thank you, Madam Chairman. I just wanted to add that the timeline that is presenting right now doesn’t preclude any of the possibilities that have been mentioned. This is what I would consider personally an aggressive timeline.”

**NAPM LLC Process Outline December 16, 2010 Report to NANC**

“On November 30, 2010 the FCC directed the NAPM LLC to delay the RFI and Pre-Qualification information scheduled for release December 1, 2010 until further notice from the FCC. The timeline is in jeopardy and will be extended. The revised timeline and requisite dates will be dependent on the length of the delay.”

**NANC Participant, on Delays in the Process, from December 16, 2010 NANC Transcript, Page 33**

“Being intimately involved in the process, and the timeline, and the project plan that was submitted to the NANC, and all of the work that we’ve already put into this and all of the work that needs to happen over the next couple of years, I can conclusively say that every day there is a delay in deciding if the LLC is going to be the entity who will be putting this RFI/RFP together will cause -- every single day that goes by will cause a delay, period, end of story.”

**NAPM LLC on Need for Extension March 9, 2011 Report to NANC**

“The NAPM LLC remains at a standstill on the RFI/RFP process waiting for FCC approval to continue. The timeline for completion of the process remains in jeopardy and the extension of time needed for completion of the work will be dependent on the length of the delay.”

In our analysis below, in many cases we have assumed periods that are shorter than the industry’s initial estimates, recognizing the urgency of the schedule and the possibility that certain tasks can be performed early or in parallel. However, some things cannot be short-circuited, and in truth some items required additional clarity. The following is a high-level overview of an adjusted transition plan and a clear critical path.

**Analysis: A Transition Would Require 26-33 months**

<b>Current Critical Path (published by NAPM LLC December 2010)</b>		<b>Adjusted Critical Path (Neustar's Analysis)</b>	
<b>Contract Negotiations</b>	7 months	<b>Contract Negotiations</b> Neustar assumes negotiation and FCC approval be compressed, given accelerated deadlines	4 months
<b>Vendor Development Life Cycle</b> (Assumes that design / implementation / testing activities start after the new vendor contract has been approved)	18 months	<b>Vendor Development Life Cycle</b> Neustar allows that vendor activities in support of building a new NPAC platform may start prior to the contract being approved, if access to Neustar's software is not required. We nevertheless estimate that the new LNPA, in collaboration with the industry, the incumbent, and service bureau vendors, would need a minimum of 9 months from contract approval BEFORE industry testing could begin, to ensure that all 71,000 internal NPAC test cases were executed and certified, along with preparing surrounding services for evaluation. During this phase a new LNPA would also a) prepare testing environments and execution plans, b) establish connectivity and data conversion protocols, and c) hire staff and certify full neutrality	9 months
		<b>Vendor Operational Readiness</b> Following full implementation by the new LNPA, but prior to the start of Industry Testing, Neustar estimates that a new LNPA would need a period of at least 2 months to certify production readiness and completion of platform testing, approve all methods and procedures, help-desk functions, NPAC billing, LEAP, IVR, and WDNC. Included during this phase would also be performance testing and various walk-throughs of data migration and production cutover.	2 months
<b>Industry Testing</b> (Vendor testing and service provider testing are assumed to be done in parallel)	8 months	<b>Industry Testing</b> <ul style="list-style-type: none"> <li>• SOA/LSMS Vendor Testing (3 months)</li> <li>• Service Provider / Continued Vendor Testing (6 months)</li> </ul> Based on Neustar's experience, previous industry implementations, Neustar assumes that vendors should be given 3 months to do proper testing with a new NPAC to identify and correct issues before windows are opened for service providers to do the same. Following that, vendors and service providers can test in parallel, presuming proper coordination.	9 months
<b>All NPAC Regions Live on New Vendor System</b> (Assumes single national cutover performed in a maintenance window)	1 day (NPAC maintenance window)	<b>All NPAC Regions Live on New Vendor System:</b> Neustar assumes that regions would be cut over in sequence, to minimize risk from hidden issues. During this phase, the incumbent vendor would still be in place in remaining regions. Region 1 cutover would be followed by a 30-day "soak" period – after which follow-on regions could be scheduled weekly or bi-weekly	2 months
<b>Total</b>	<b>33 months</b>	<b>Total</b>	<b>26 months</b>
		Neustar's adjusted critical path is extraordinarily aggressive based on our experience and technical understanding of the current platform. It assumes a "sunny day" Vendor Development Life Cycle phase, with zero major systems or operational problems identified following the Vendor Operational Readiness phase. It similarly leaves no room for disputes, delays, moratoriums or fall-backs to the current platform.	

This is a **minimum schedule**, and represents Neustar's most conservative estimates for implementation, deployment, and testing. A transition following a **likely path** is certain to take at least as long as the industry originally estimated in 2010.

Implicit in both the original and adjusted timelines is that transitioning to a new LNPA would require complex coordination across thousands of carrier accounts, law enforcement and public safety agencies, regulators and other stakeholder groups during different phases of the transition. With success resting on the efforts of multiple stakeholder groups, seamless management and sequencing of interdependent work streams needs to occur over a fixed and universally binding timeline.

However, clear definition of roles and responsibilities across the stakeholders and adequate planning to underwrite this complex project **do not currently exist to support this transition**. Basic elements of a program plan such as governance and roles and responsibility definitions, project plan and critical path analysis, and risk assessment and contingency planning have not yet been shared with those parties who would need to contribute to the project's execution.

Adding to the complexity, LNP functional requirements as currently documented by the industry will need to be reviewed and updated to capture the current and evolving needs of LNP stakeholders, especially at the level of detail required for flawless implementation of a new platform. These services include, but are not limited, to mass update and mass porting (MUMP), Ecosystem Management, Disaster Recovery, and emerging industry transformations such as the transition to all-IP network. This activity, which will be complicated by the unfamiliarity of a new vendor's staff with the current LNP system nuances, is likely to contribute to additional delays and challenges in implementation, and if not properly accounted for, a loss of critical services.

Although the vendor selection process has proceeded with numerous delays, the start date of a new contract has remained fixed. Such pressure to proceed in haste without addressing this accumulation of risk could result in severe disruptions to the industry. As demonstrated in this paper, the proposed transition opens more questions than it answers.

Prior to making any selection recommendation, the NANC should insist on, or conduct itself, a formal and independent assessment of how the various LNP stakeholders would be affected by the transition, including the incorporation of a likely delay from the original schedule and providing answers to the following questions:

- Has the selection process succeeded in accurately and comprehensively assessing the risk / reward tradeoffs for all stakeholders affected by the transition – including smaller carriers, law enforcement, and public safety?
- Who will oversee the overall transition itself, and provide impartial oversight of execution and management of stakeholder requirements?
- How will the required allocation of responsibility, time, and resources among stakeholders be determined?
- Who will provide neutral management of competing stakeholder interests, and how will these disputes between the parties be managed?
- Will the industry be required to absorb any “black-out” period during which porting and associated network activity may need to be suspended, to support data migration and testing?
- What contingency plans are in place in the event that experiences issues such that a reversion to Neustar's platform is required?
- In the event a region-by-region cutover is part of the industry's plan:
  - Will an additional acceleration of the schedule be required?
  - How will the order of regions to be transitioned be determined?
  - How will the industry work with two overlapping LNPA providers, with likely different performance and service levels, during the transition period?
- What changes in service and consumer experience – either permanent or temporary – are likely to emanate from a transition to another LNPA, and will stakeholders be adequately prepared for those changes?

At the very least, the public record lacks information that is relevant to interested parties, and which is critical if the NANC is to make an informed decision. In some cases, these assessments may not yet have been done at all – even though in combination they have the potential to cost the industry hundreds of millions of dollars over the next three years, and fundamentally alter the consumer experience and industry’s innovation trajectory in unpredictable ways.

## Appendix

### **Assumptions in Adjusted Critical Path**

Even after applying conservative assumptions, we estimate that the transition to a new vendor would be complete at least 13 months after the end of Neustar's current contract term in June 2015. This is a minimum duration, in that it assumes a significant progress by an alternate vendor prior to or in parallel with final selection and contract negotiation, and virtually no issues encountered during transition, including technical issues, resource availability, legal disputes, or business conflicts amongst the industry.

The critical path for development and testing in this analysis is based on the presumption that the industry would license Neustar's software and make it available to a new LNPA. The timeline for vendor implementation is thus based on the need to modify the licensed software to operate in a new environment and meet the RFP's requirements.

Alternatively, a prospective LNPA has the option to forego access to existing NPAC software, and choose to build from scratch. Choosing this path would conceivably permit development and internal testing to begin even sooner - however, it increases the overall time needed to deploy the full suite of requirements, and indisputably increases the likelihood that the final platform will behave in ways dissimilar to the current NPAC, thereby increasing the overall risk of the transition project itself. If this path is chosen, additional time on the schedule should be added to accommodate testing and certification.

Finally, the analysis also assumes that ALL NPAC/SMS functionality will be required on day 1 for a given region, and an iterative transition to a new platform (with two NPACs operating in tandem for a single region) is not possible.

The following sections describe additional risks to each section of the schedule which were NOT accommodated in the critical path analysis. These items have the potential to add more time to the schedule.

### **Contract Negotiations (Best case timeline: 4 months)**

Neustar estimated that this step would take three months shorter than the NAPM's original schedule assumed, although it must also accommodate FCC approval and neutrality certification during the same period. Any disputes related to either will necessarily delay final signing of the contract.

This period will also incorporate the industry's requirement to identify the scope of transition services required by the incumbent vendor, including developing the tools necessary for fall-back in the event temporary reversion is needed following a regional cutover.

Finally, during the contract finalization period, the industry (i.e., NAPM LLC, NANC, and the LNPA working group) will need to establish a program management organization (PMO) to provide oversight, governance, and conflict resolution for the transition itself. The industry must either devote its own resources to effectively run the PMO, or outsource this function to a neutral and impartial third party. The industry must also review and approve a neutrality framework to govern any LNPA vendor.

**Vendor Development Life Cycle and Operational Readiness (Best case timeline: 11 months):** The critical path timeline above assumes a significant baseline of work by the LNPA *prior* to the contract

being awarded. As a result we cut the NAPM's initial assessment for vendor development life cycle in half to 9 months. In the event the alternate vendor chooses to build its own software, the overall time for implementation should be increased, and would need to have begun even earlier to adhere to the critical path outlined here. In either case, a set of activities exists that can *only* happen in collaboration with the industry, to provide guidance and oversight.

For example, the current NPAC is maintained using more than **71,000 automated and manual test cases**, and should be implemented in such a way to ensure that issues experienced by one carrier do not spread across the LNP's ecosystem of stakeholders. The extensive testing that must be conducted by the vendor must be completed prior to industry testing.

The following items are standard in large-scale deployments such as the NPAC, and could create additional risk to the schedule:

- New LNPA must contract and execute any third party / outsourcing arrangements necessary
- New LNPA may have challenges garnering technical and operational resources with necessary LNPA experience
- Service provider connectivity challenges may introduce variability into the network implementation timeline)
- Requirements disputes between vendor and industry / service providers, regarding platform software or surrounding services
- Additional involvement from the industry or regulators
- Issues discovered during internal functional / integration / performance testing

Following full readiness by the vendor, Neustar estimates an additional period of 2 months to prepare and certify the methods and procedures necessary to fulfill the balance of LNPA services and items necessary to complete the transition itself, including but not limited to:

- Ancillary services such as LEAP, WDNC, and Billing / Collections
- Disaster Recovery / Industry Failover procedures
- Mass Update / Mass Port processes
- Data conversion / procedures to fallback to incumbent in the event of issues

During this phase, while completing implementation, the new LNPA will also need to complete various activities related to service readiness, which can be evaluated and certified by industry during the testing phase. A new vendor would have to undertake a series of organizational development activities to stand up a new LNPA:

- **Neutrality:** In establishing a new LNPA, any new vendor must undertake several steps to maintain competitive neutrality. First, the vendor may need to restructure its business to remain unaligned with any industry segment, so that competing LNP users are treated impartially with respect to costs, schedule, and terms and conditions. In addition, a new LNPA must implement a new neutrality framework capable of providing senior leadership governance of neutrality principles, and develop, deploy and enforce neutrality policies and procedures. With the transition involving hiring of a new organization, each new hire would undergo neutrality training and certification prior to interfacing with any customer and/or production systems. Given the significance of neutrality within LNP, we have also estimated that the definition and development of processes would take approximately 8 weeks. **It is important to note that until these processes are clearly defined, documented, and disseminated to staff**

**through training and certification, a new LNPA would be unable to access any NPAC / SMS data, or any customer related history.** For purposes of this analysis, we have assumed that certification of a new LNPA would require 6 to 7 months after contract the vendor selection in May, 2014.

- **Talent and Skills:** Transitioning LNPA vendors would present a substantial challenge in terms of identifying, recruiting and onboarding staff with North American LNP experience. The new LNPA will be challenged with finding engineering and customer operations talent with LNP experience, especially during the period when both LNPAs will be operational. Accordingly, we conservatively estimate that it would take a new LNPA approximately 60 days to onboard the core engineering and operations staff required to facilitate the transition. As this staff is on boarded, it would undergo relevant neutrality training and certification, followed by significant investments of time to build their baseline understanding of the NPAC platform. Between initial onboarding and new LNPA go-live, a new organization would manage a continuous onboarding of resources with functional skill sets related to engineering, customer operations, and SG&A.
- **Processes:** Core to LNP operations are the processes designed and developed by the current LNPA. The maturity of these processes reflects the current LNPA's state of operational excellence, and is underscored by average customer operations staff tenure of over 11 years. In maintaining its level of service excellence, the current LNPA operates over 25 internal processes including complex ones like SPID migration and VPN configuration and 60+ external processes like re-synchronizing with the NPAC SMS and new user provisioning. Recognizing that all current LNPA subject matter expertise will be lost during transition, we conservatively estimate that a new LNPA would require 65 days to retrofit and document basic level LNP operational processes. Through trial-and-error, these processes will gradually mature as a new vendor develops a deeper understanding of NPAC platform nuances.

#### **Industry Testing (9 months, including 3 months for SOA/LSMS vendor testing)**

In addition to the mandatory NPAC vendor certification testing, carriers will be engaging in a variety of activities needed to ensure an NPAC transition is successful. Intensity of involvement will vary across the transition timeline, but will become most significant during preparation and establishment of network connectivity, validation of requirements, and testing. For critical path purposes, we estimate that the preparation and testing activities will last 9 months between LNPA operational readiness and the first regional cutover. Carriers will need to execute the following activities during this phase.

- Assessing functional readiness
- Validating and transferring user agreements
- Establishing dual connectivity (production, test, and failover) between the incumbent and the new LNPA
- Performing user acceptance testing (UAT)
- Conducting NPAC certification / turn-up testing. **Turn-up testing and Regression testing** requires all connected SOAs and LSMSs undergo certification, which includes 451 test cases per connected system (i.e. over 17,000 industry test cases). The number of test cases for each phase of testing may be higher if the industry deems transition risk to be high, or if the decision is made by individual providers to conduct end-to-end or performance testing.
- Planning for multi-region connectivity and variations in service / performance



In addition to the testing of the NPAC platform itself and all connected systems, which will be performed by larger service providers and their vendors, **all** service providers will also need to take the time to test and be trained regarding their interactions with the LNPA, the NPAC GUI, mass porting, Billing & Collections, and user administration / configuration.

**Key post go-live activities:** Following the LNPA cutover, successful transition would require the industry to assume responsibilities for change management, which is currently performed by Neustar. This includes administration of NPAC.com, customer reporting, and facilitation of change management meetings.

Additional risks to this phase include:

- Service impacting issues in vendor test and production environments, that could impact environment availability
- Delays due to inter-operability issues among vendors (alternate NPACs unlikely to behave identically – SOAs and LSMSs impacted by variations, pushing errors to service providers)
- Delays in industry coordination for testing (SOA/LSMS vendors, service providers, LEAs)
- Resource constraints from other service provider priorities

#### **All NPAC Regions Go Live (Best case timeline: 2 months)**

Our experience shows that migration of the current NPAC data must be performed in three stages: development, operational readiness testing, and go-live. Data migrations are likely to be executed region by region, with each migration occurring on a Sunday to align with the current industry maintenance windows. A 4 week “soak time” is allowed after deployment of the first region to enable the monitoring of platform stability and to allow for surfacing of any unknown bugs. The subsequent two regional deployments (3 regions each) will each have a two week “soak time”; thus we conservatively estimate that go-live migration will take two months.

Neustar’s analysis does not include the following scenarios that could introduce further delays:

- Some carriers may not be operationally ready to transition, as each NPAC region will require an industry flash cut, all constituents must be ready on the selected go live date, independent of size or resources
- Initial region is likely to be the most difficult in terms of discovering and fixing issues; industry must choose which region and whose consumers will be the ‘guinea pig’
- Issues following 1<sup>st</sup> region go live due to:
  - Transaction errors or data integrity issues
  - Need to execute a back-out plan - there are no provisions to run multiple NPACs in parallel, and there are no specifications covering reversion back the Neustar NPAC in the event transition is a failure
  - Longer timeframes needed to identify and resolve service impacting issues
  - Defect corrections and patches to be applied in test and production environments
  - Increased mean time to repair for service issues and system errors will drive longer service interruptions and outages, thereby slowing competitive porting requests
- Issues following go live with LNPA processes (especially for multi-regional providers) could have significant impacts on large projects run by the industry and could further delay remaining NPAC regions from transitioning (the vast majority of NPAC activity is performed by users in all seven regions)

**LEAs / Other:**

Law Enforcement Agencies (LEA), Public Safety groups, and telemarketer organizations would be significantly impacted by LNPA transition. For LEAs, it is imperative that public safety agencies currently using LNP services do not lose access as a result of and during the transition. Similarly, telemarketing firms, which rely on the LNPA to update DNC registries in order to avoid FCC fines, would need to ensure that DNC functionality remains current. These groups will also be burdened with communicating new information and interfaces to their own stakeholders and providing training to their user base on the new platform interfaces and functionality. Close coordination between these stakeholders and a new LNPA on requirements development and testing is essential. Overall, we conservatively believe that these stakeholders would require five months of close coordination with a new vendor to successfully transition current LNP functionality to a new vendor.