

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Toll Free Assignment Modernization)	WC Docket No. 17-192
)	
Toll Free Service Access Codes)	CC Docket No. 95-155

EX PARTE OF TWILIO INC.

Dated: January 26, 2018

Twilio Inc. (“Twilio”) submits this ex parte in response to the Federal Communications Commission’s Notice of Proposed Rulemaking for Toll Free Assignment Modernization on WC Docket No. 17-192 and CC Docket No. 95-155.¹

Twilio commends the Commission’s consideration of an innovative approach to making the allocation of toll-free numbers on a “more equitable and efficient basis by assigning mutually exclusive toll-free numbers to the parties that value them most” through the creation of an auction and secondary market.²

In these dockets’ NPRM, the Commission poses important questions about developing appropriate mechanisms to authenticate the proper subscriber of a toll-free number, and the Commission correctly identifies the varied entities and potential for dispute in the context of brokers, buyers and sellers in a potential auction of an unassigned portion of the 833 block of toll-free numbers.³

Entrants seeking to obtain a custom toll-free number will place great economic importance on both obtaining and retaining use of the number. While “vanity” numbers can play an important role in an organization’s marketing strategy and therefore impart a greater economic benefit to a phone number’s subscriber, Twilio stresses that the fundamental, inherent value of a phone number is its functionality.

Twilio urges the Commission to consider two aspects of ensuring that the toll-free numbers obtained by subscribers as part of an auction or secondary market retain their functionality, and thus their economic benefit to the subscriber.

I. The Commission should declare that the RespOrg system is the appropriate mechanism for determining toll-free subscribers in order to impart confidence in auctions or secondary markets.

First, it is imperative that any secondary market includes clear mechanisms to identify and preserve a phone number’s true subscriber for a toll-free number’s full functionality. To that end, the Commission should affirmatively define a subscriber’s sole right to enable a toll-free number’s text messaging capability.

¹ See Toll Free Assignment Modernization, Toll Free Service Access Codes, WC Docket No. 17- 192 and CC Docket No. 95-155, FCC 17-124 https://apps.fcc.gov/edocs_public/attachmatch/DA-17-1011A1.pdf

² Ibid.

³ 82 FR 47669: Proposed rule in Toll Free Assignment Modernization; Toll Free Service Access Codes published October 13, 2017 <https://www.federalregister.gov/documents/2017/10/13/2017-22187/toll-free-assignment-modernization-toll-free-service-access-codes>

The potential for disputes over ownership or usage rights imperils confidence in participating in an auction, and in general can diminish confidence in the toll-free number system as a whole.

To that end, Twilio urges the Commission to declaratively determine that the assignment of a mutually exclusive toll-free number imparts full use of a number's full functionality. The award and verification of such assignment is best achieved through a neutral, single registry, such as the current RespOrg system for managing and administering toll-free numbers.

Like other commenters in these dockets, Twilio urges the Commission to solve for affirmative assignment through formal support of a provider-neutral RespOrg registry.⁴ This is a long standing and well understood mechanism for subscriber verification, and consensus on a single point of neutral verification is the best approach for avoiding ownership disputes or service disruption.

II. The Commission should affirmatively define a subscriber's sole right to enable a toll-free number's text messaging capability and should intervene in industry behavior that diminishes the functionality of text messaging on toll-free numbers.

Second, in response to the Commission's question in the NPRM -- "Assuming we use an auction methodology for future code openings or other toll-free assignments and identify mutually exclusive numbers, how should we define?" -- Twilio urges the Commission to define a number subscriber's "mutual exclusivity" to include text messaging capability of a toll-free number.⁵

Twilio urges the Commission to consider the full functionality and valuation of a toll-free number, both of which now include text messaging capabilities.

Businesses, nonprofit organizations and government entities have responded quite positively to engaging with consumers through phone numbers that are equipped with both voice and messaging capabilities. Twilio has seen enthusiastic adoption of SMS-enabled toll-free numbers since they were formally offered to customers on the Twilio platform in 2014.⁶

⁴ See ex parte by CSF/Aerialink, Midori Interactive, THE telco, West Corp., 800 Response, Twilio, Call 'em All, Hook Mobile, MoNage, Signal One, Bandwidth.com <https://www.fcc.gov/ecfs/filing/110963648642> CC 95-155 and WT 08-7

⁵ See comments of The Alliance for Telecommunications Industry Solutions on these dockets: [https://ecfsapi.fcc.gov/file/111359498285/Toll Free Modernization Comments 11-13-17 SNAC.pdf](https://ecfsapi.fcc.gov/file/111359498285/Toll%20Free%20Modernization%20Comments%2011-13-17%20SNAC.pdf) The Alliance for Telecommunications Industry Solutions expresses similar concerns on Service Subscriber disputes with a secondary market noting: "If a dispute arises, it's unclear to ATIS SNAC as to how the resolution would be determined."

⁶ Twilio has approximately 10,000 833-prefixed toll-free numbers available for utilization with Twilio customers. See <https://www.twilio.com/sms/toll-free>. All of Twilio's toll-free numbers are SMS-enabled. Twilio offers voice and SMS-enabled toll-free numbers for \$2 per month, and also allows developers to maintain current voice provider

Two industry-wide developments that impact the functionality of SMS-enabled toll-free numbers have the potential to diminish the perceived value of toll-free numbers and undermine utilization, and thus we urge the Commission to weigh these issues as it proceeds in a potential assignment modernization.

First, recent technical errors by the sole administrator of toll-free text message aggregation have created multiple incidents where the functionality of SMS-enabled toll-free numbers was disrupted across the industry and across providers.⁷ Given the concentration of SMS transmittal to a sole aggregator, technical issues and limitations disrupt the PSTN functionality to an entire range of telephone numbers and subjects the future functionality of such numbers to the technical improvements the provider cares to make to their infrastructure and internal processes, if any.

Second, Twilio notes the concern that the blocking or filtering on consented, lawful text messages, including those sent by text-enabled toll-free numbers, further depreciates the value of the toll-free number. As Twilio has noted in a number of filings with the Commission, more than 100 million opted-in text messages are blocked each year.⁸

With the increased adoption of text-enabled toll-free numbers, the blocking and throttling behavior increasingly impacts businesses, government agencies and nonprofit organizations - even as wireless carriers promote their own text-enabled toll-free number offerings for high volume use cases.⁹

but enable SMS functionality on Twilio's platform. <https://www.twilio.com/blog/2014/06/introducing-twilio-sms-on-toll-free-numbers-nt.html>

⁷ On December 5, 2017 a technical error on a service provider's platform caused a two hour industry-wide outage on toll-free SMS to and from US handsets. Twilio's publicly available Reason For Outage is attached as Exhibit A. The December incident is one of multiple industry-wide outages to occur due to technical errors on a single provider. See Twilio comment on CC Docket No. 95-155 filed August 30, 2017 p.4 footnote 8: "Further, voluntary enforcement such as the CTIA messaging guidelines are insufficient to prevent adverse impacts on consumers through diminished technical outcomes of improper gatekeeper activity. As discussed in proceedings WT Docket No. 08-7 and WT Docket No. 95-155, some mobile operators force traffic routing of toll-free number text messaging exclusively through a specific provider. A recent outage on that provider resulted in an industry-wide delay of all inbound and outbound text messages to toll-free numbers for over five hours and forty three minutes.

<https://status.twilio.com/incidents/gv8hjwkpwwgl>"
<https://ecfsapi.fcc.gov/file/108311463017675/Twilio%20Comment%20on%20FCC%20NPRM%20WC%20Docket%20No.%2017-108.pdf>

⁸ See Twilio ex parte on WT Docket No. 08-7 filed January 17, 2017

<https://ecfsapi.fcc.gov/file/10117896504859/Twilio%20Ex%20Parte%20and%20Exhibits%201%2017%202017.pdf>

⁹ See AT&T Landline Texting API Product brief: "In another scenario, a utility provider sends service messages requesting customers to lower electricity consumption on days when high temperatures are likely to place a severe load the grid. The AT&T Landline Texting API solution *delivers high throughput* so that messages can be delivered promptly..." Emphasis added. <https://www.business.att.com/content/productbrochures/landline-texting-api-product-brief.pdf>

A subscriber who invests a significant amount of money to obtain a vanity toll-free number should not have text messages arbitrarily blocked, or worse, the phone number itself disabled, due to the non-public, non-transparent business decisions of a wireless carrier or aggregator.

These issues are of particularly heightened concern considering the Commission's leadership on ensuring deliverability of public broadcast notifications across communications platforms.

CONCLUSION

The fundamental value of a phone number rests on deliverability and functionality - that both calls and messages sent from that number will be received as determined by a number's subscriber.

We urge the Commission to codify ownership and deliverability expectations as it explores modernization opportunities in communication, and in particular on these dockets.

Respectfully submitted,

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EXHIBIT A



Reason for Outage Reference 4606876524216320

US Toll-Free SMS Outage

Summary

On December 5th at 13:43 (UTC) a technical error on a service provider's platform caused an industry-wide outage on toll-free SMS to and from US handsets. This caused inbound and outbound SMS to fail to and from US Toll Free Numbers to fail.

The provider in question employs a third-party network security vendor who, during a maintenance window, applied a misconfigured security update, which caused all traffic to be improperly identified as invalid. The provider restored service after two hours.

Timeline

[2017-12-05 13:42pm UTC]: Customer Impact begins, inbound and outbound SMS to/from US Toll Free numbers starts to fail

[2017-12-05 13:47pm UTC]: Twilio monitoring detects the issue and alerts Twilio Carrier Operations team of a decrease in deliverability to and from US destinations for SMS traffic sent from toll-free numbers

[2017-12-05 13:48pm UTC]: Twilio Carrier Operations team immediately investigates and starts troubleshooting the issue

[2017-12-05 14:37pm UTC]: Provider sends an outage notification

[2017-12-05 14:44pm UTC]: Internal Incident created - all relevant Twilio teams paged

[2017-12-05 16:01pm UTC]: Provider confirms resolution in traffic and Twilio Carrier Operation team confirms delivery rate has returned to normal levels

Impact

The disruption caused 100% of messages sent to and from Twilio toll free numbers to and from US handsets to fail during the incident timeframe.

Root Cause Analysis

Twilio's service provider employs a third-party network security platform to protect their platform from messaging threats. This third party provider made a configuration error during a maintenance window that caused all messages traversing their platform to fail causing a complete industry wide outage for US Toll Free SMS. Once the issue was identified the service provider made changes on their platform to bypass the affected third-party vendor.

Resolution Plan

While toll-free text messaging represents a small fraction of all text message traffic, the concentration of traffic to a single service provider is concerning. Because the provider controls the majority of toll free text message traffic in the US, outages on their platform have an outsized impact on the reliability of toll free text messaging.

- Twilio continues to work with the provider to determine better redundancy options and improve their time to recover during outages.
- Twilio also continues to explore other commercial solutions to delivery of Toll Free Messaging

Conclusion

We would like to apologize for the impact this incident has had on our customers. We are continually working to improve the quality, resilience and robustness of our systems, as our first priority. We are applying the lessons learned from these events to implement betterments that will prevent failures of this kind from impacting our customers in the future.