



DATE: November 9, 2015  
TO: Cathy Danahy, NSRB Executive Director  
FROM: Brent Hoffman, NI President/ Nebraska.gov General Manager  
SUBJECT: Nebraska.gov Service Issues 09/20/2015

Ms. Danahy,

This memo is to serve as a formal follow-up regarding two network events which affected Nebraska.gov services Sunday evening September 20, 2015.

### Executive Summary

On Sunday evening, September 20, 2015, NIC experienced two network events that affected our online services. The first event was caused by a network device, which intermittently disrupted access to all our services for 60 minutes. The second related event affected NIC's Transaction Payment Engine (TPE) which affected the payment screens of Nebraska Interactive online services for 190 minutes. Both service disruptions were due to a switch failure within the Ashburn Data Center and not associated with any change activities by NIC's Technical Teams or Nebraska Interactive. As a result of this incident, NIC has identified and is committed to implementing near and long term improvement opportunities through our people, process, and technology stack. While future hardware failures are not 100% preventable, NIC is confident the implementation of these initiatives will significantly reduce or eliminate service degradation should a potential failure occur.

On behalf of Nebraska Interactive and NIC, I want to apologize for the unavailability of Nebraska.gov services during this time frame. Our company works very hard to minimize risks to keep Nebraska services highly available to the citizens and businesses of Nebraska. I hope you will find our after incident action steps taken reflect our seriousness of the situation.

### Impact

The first outage affecting all Nebraska.gov services for 60 minutes intermittently, means all Nebraska.gov services were unavailable during this time. Regarding the second outage affecting TPE, the outage began at 6:30 PM CT and lasted for 190



minutes on Sunday, the lightest user traffic day of the week. We have determined there was a full loss of functionality to the NIC Transaction Payment engine (TPE) during this event. While users were able to access the websites and online services, they were unable to make a payment on those services. Our applications displayed a “service down” message to inform the user of the inability to take payment. This prevented users from entering information and becoming frustrated when they are not able to make payment. Nebraska Interactive has received no calls from partners nor customers relative to the outage. TPE is an electronic service hosted out of a NIC-affiliate operated site and is included in the Penalty clause of our contract. The event began on a Sunday night within 30 minutes of the peak usage period conclusion and was resolved within the 3 hours of off-peak usage hours.

### Cause

The issue was identified as a Spanning Tree Protocol (STP) loop that caused the outage in the Ashburn vBlock and core network. A STP is designed to prevent loops by blocking one or more links in a bridged Ethernet local area network. Current analysis supports that the 3560 Catalyst® switch B went into a hung state. It stopped sending Spanning Tree messages to the directly connected 5k and 7k Cisco® switches. This in effect removed the 3560 Catalyst switch B from the Spanning Tree Domain. The resulting impact was a loop at the Cisco® 7k core. Power cycling the 3560 Catalyst Switch B restarted the processes on that device. This restored our Spanning Tree environment and returned the Ashburn network to a healthy state.

### Improvement Strategies

NIC has developed an extensive post mortem list related to process, people and technology. All tasks associated with this outage have been completed, including but not limited to; Implementing the STP loop guard configuration to mitigate future outages, reviewing and validating current infrastructure monitoring schemas to ensure accurate event detection.

After concluding a post mortem review of the incident, NIC has identified six areas of opportunity that will help to prevent such a significant service disruption in the



future. These areas include improving internal and external communications, network design evaluation, holistic event detection and monitoring, further definition of incident response team roles, responsibilities and procedures, further enhancement of technical documentation, and evaluation of event management toolset.

NIC is committed to continued action with focus on both long and short-term solutions. We believe the cumulative effect of these items will allow NIC to provide you a stable, optimized and secure egovernment services both today and into the future.

We thank you again for your partnership.

A handwritten signature in black ink, appearing to read 'Brent A Hoffman', with a long, sweeping horizontal line extending to the right.

Brent A Hoffman