CU*ANSWERS
Business Resumption

2012 High Availability Program Review

November 20, 2012

Event Details

Planned HA rollover event performed to move core CU*BASE processing from systems at the primary production datacenter in Kentwood to identical systems at the HA datacenter in Muskegon.

Event Start Date: November 7, 2012
Event End Date: November 13, 2012

This report identifies any challenges observed, lessons learned, and recommendations for future events.

For more information on the CU*Answers Disaster Recovery and High Availability programs, please visit the Business Continuity Planning section of our web site at http://www.cuanswers.com/bcp/

Overview

The opportunity to once again test our preparedness level and capability to roll primary core processing from our production facility in Kentwood, MI to our high availability (HA) facility in Muskegon, MI presented itself in the form of a datacenter infrastructure upgrade. To accommodate future growth, a project was initiated in 2012 to increase utility power at our primary production facility effectively doubling our power capacity.

This final phase of the project included the forklift upgrade of key redundant power components (computer room UPS and generator) during non-peak hours. To minimize service interruptions to our clients, core processing was once again moved to the HA datacenter.

This report identifies any challenges observed, lessons learned, and recommendations for future events.

Event Review

The production system at was taken offline at 10:00 PM ET on Wednesday, (11/07) and brought back online at the HA datacenter at approximately 11:45 PM ET. Our target window of 30-60 minutes was extended as we diagnosed and corrected an issue that prevented stable data replication between hosts.

On Sunday, (11/11) at 5:00 AM, network engineers began migrating data communications equipment and server cabinets to the new UPS. Core processing services continued without interruption at the HA datacenter. Downtime for non-core processing services was minimal due to redundant power components contained within most systems and devices. This process (along with proper redundant power testing) was completed by 10:45 AM.

The production system at the HA datacenter was taken offline at 10:00 PM ET on Tuesday, (11/13) and brought back online at the primary production datacenter at 10:40 PM ET. Additional testing and auditing was performed until 11:00 PM ET.

Challenges

While most core processing rollover events are performed following a precise outlined plan, on occasion a few unscripted obstacles surface that recovery teams must navigate around. This exercise provided the following challenges:

Documentation used during the rollover event did not reflect a recent network IP address change for communications with one of our third party vendors. This was diagnosed using existing daily run sheet documentation and corrected for future rollover events.

Immediately following the initial rollover on (11/7), there were complications in stabilizing the replication of data between hosts. This required an additional hour of troubleshooting, correcting and testing before the system was brought back online. Also related to this issue was the process of establishing and stabilizing network communications with third party vendors. Network engineers isolated a firewall appliance that is part of a cluster at the HA datacenter. This appliance was removed and scheduled for a wipe, rebuild and test before restoring to the network cluster.

The delay in restoring communications with third party vendors created a scenario where daily card maintenance had to be performed the following day (new date after midnight). This required manual intervention with the third party vendor.

After the initial rollover on (11/7), host-to-host support communications to self-processors was

interrupted (did not affect production traffic). This was also related to the firewall appliance noted above. The issue was identified and corrected on (11/8).

Continuing Efforts and Recommendations

One of the purposes of performing recovery tests and exercises is to incrementally improve our capability and preparedness in the event of an actual outage. As a result of this exercise, the following recommendations are provided:

- We will continue to evaluate HA rollover documentation including methods to streamline processes with automation and performing concurrent procedures where sequential steps are typically taken.
- Meet with recovery team members to review notes and recommended changes to Operations Menu Toolkits prior to the next rollover event to improve efficiency.
- Determine if a better method of centralizing communications between multiple remote recovery team participants is available to aid in the process of troubleshooting and diagnosing issues that arise.
- We will continue to seek opportunities to expand our pool of skilled personnel for rollover and recovery efforts through continued cross-training and preparedness education.
- Determine if a system program change would eliminate the need to coordinate the manual intervention with third party vendors for card maintenance after midnight (see challenge identified above)