CU*ANSWERS HIGH AVAILABILITY PROGRAM REVIEW

EVENT DATE(S): 9/13/2020 – 9/20/2020

SUMMARY

As part of an ongoing business continuity program, CU*Answers actively maintains a high-availability (HA) core processing environment with near real-time data replication between identical hosts located at two geographically dispersed, state-of-the-art data centers. A minimum of twice each year, live HA rollover events are scheduled to redirect CU*BASE production and operations to the secondary data center (located in Yankton, SD) for a period of one full business week or longer. At the conclusion of the rollover event, core processing is redirected back, and operations resumed at the primary data center (located in Kentwood, MI). These live production HA rollover events are invaluable to validate procedures and ensure the ability to recover CU*BASE GOLD core processing in an effective and timely manner when incidents occur that threaten to disrupt business operations.

In addition to core processing, CU*Answers also performs annual rollover exercises of the **It's Me 247** online and mobile banking environments. For the first time, these two rollover events were scheduled to occur simultaneously. To take the high availability program up a notch, during this test, live online banking transactions from web servers at the secondary data center would post to the CU*BASE HA host in the Yankton, SD data center.

The timeline proceeded as follows:

September 9, 6:00 – 7:30 AM ET	Brief "practice" **It's Me 247** rollover conducted
September 13, 3:00 – 4:00 AM ET	HA rollover performed to bring CU*BASE online at the Yankton, SD data center. Primary production would remain until the rollback scheduled for September 20.
September 15, 6:00 AM – 11:00 PM ET	Full-day live **It's Me 247** rollover is performed with transactions posting to the secondary CU*BASE host at the Yankton, SD data center.
September 20, 3:00 AM – 4:00 AM ET	HA rollback is performed to bring CU*BASE online at the Kentwood, MI data centers, returning both environments to normal production.

*NOTE: The purpose of this report is to highlight the details of the CU*BASE GOLD rollover event. A separate report has been published with the details of the **It's Me 247** online banking rollover event.*

The rollover event was completed successfully with relatively few issues. Those issues included connectivity issues from a small number of credit union staff working remotely from home and from staff at two branch locations.

These were resolved by making the necessary firewall and routing changes at the credit union. The duration of the initial rollover on September 13 was slightly longer than previous exercises (50-60 minutes as opposed to 30-45 minutes). This is attributed to the growth in the number of files and objects that are replicated as well as the number of changes that occurred in the six months since the last rollover. Both are significant reasons to continue the six-month rollover schedule.

This year, careful consideration has been made to address the impact to credit unions and members during the global pandemic and severe weather season that has marked 2020. Intentionally forcing a brief disruption during the rollover process had to be monitored very closely with prompt failback plans in place. Extra precautions and preparations were made to allow us to test our level or resilience during such a volatile time, for both the core processing and online banking environments.

To address the concerns of an available staff during a pandemic, this rollover included a test of the operational reciprocal agreement between Site-Four and CU*Answers where daily processing for one nightly shift was performed by members of the Site-Four Operations Team, and roles reversed the following evening with CU*Answers performing daily operations for Site-Four core processing. This emphasizes the fact that high availability and recovery capabilities are not limited to technology. Perhaps the greatest asset is the skilled and experienced employee.

The following sections identify challenges observed, lessons learned, and recommendations for consideration related to this event.

EVENT DETAILS

As identified in the Summary section above, the planned HA rollover began on **Sunday, September 11th** at 3:00 AM ET and completed by 4:15 AM. Connectivity with all third-party EFT vendor networks was restored by 4:05 AM. During each rollover process, all third-party EFT vendors function in "stand-in" mode adhering to predefined settings on transaction types and amounts (set by the credit union). Once all post-roll application testing was completed, the Operations Team performed normal EOD/BOD processing to prepare for the new business day.

On the following **Tuesday**, the **It's Me 247** rollover was performed to redirect online banking traffic to web servers at the secondary data center with transactions posting to the CU*BASE HA host the Yankton, SD data center.

On **Tuesday evening, September 13th**, CU*Answers Operations Team performed all overnight processing for Site-Four core processing (shadowed by a Site-Four Operations Team member), an objective of the colocation/reciprocal agreement between the two partners.

On **Wednesday evening, September 14th**, Site-Four Operations Team performed all overnight processing for CU*Answers core processing (shadowed by a CU*Answers Operations Team member).

On the morning of **Sunday**, **September 20th**, beginning at 3:00 AM, recovery teams started the process to roll-back CU*BASE production to the primary data center. This was completed by 4:00 AM with all services back online.

CHALLENGES AND CONTINUING EFFORTS

Every rollover event, planned or unplanned, provides an opportunity for a valuable learning experience. Even those that appear relatively smooth on the surface often require decisions to be made and resolutions to apply behind the scenes. Every recovery team member gives their all to minimize the impact to clients and members, while performing their job with an intense focus. Challenges observed during this rollover event include the following:

1. Slowly expanding window required for completing the live production CU*BASE rollovers.
    o Over time, the rapid growth in the amount transactions processed and data stored eclipses the benefits of increased speed acquired with new hardware and technology investments. With continuous efforts to shrink downtime, recovery teams always must balance the risk when planning and executing a safe and effective rollover exercise.
    o While many exercises are completed within 30-45 minutes, as with this rollover some can require 45-60 minutes before systems are back online. Scheduling these exercises during non-peak hours (3:00–4:00 AM) helps to mitigate the impact. During periods of downtime, applications like GOLD and **It's Me 247** are offline; however, ATM/Debit transactions are conducted using preconfigured stand-in limits.

2. During the rollover period, a small number of credit unions reported an inability to access CU*BASE GOLD by select staff members working remotely from home in response to the ongoing pandemic.
    o Multiple announcements sent to credit unions prior to the rollover included a requirement to test connectivity to the HA host from GOLD workstations at each branch office location. These announcements did not specifically address testing connectivity from remote users working at home. CU*Answers Network Services technicians worked with credit union IT support teams to correct the issues by modifying firewall and routing configurations.
    o Announcements during future exercises will include testing from GOLD workstations at any location, whether in the office or remote.

3. Late in the week, two credit unions reported that they were not able to print reports generated on the Saturday prior to the rollover (September 19) while connected to the HA host.
    o Troubleshooting techniques included reprinting and moving to an alternate print queue. Both of these attempts were unsuccessful. Due to the limited amount of time prior to the scheduled rollback, a deeper analysis was not performed. After the HA rollback, the credit unions were able to print the reports.
    o Efforts will be documented and revisited during the next rollover event.

CLOSING REMARKS

Whether planned or unexpected, each recovery test and high-availability rollover exercise provides the opportunity to continually improve the process and adjust procedures to accommodate the ongoing changes in technology and applications that make up the core-processing environment. The value and significance of these exercises are multiplied when we consider the ever-changing threat landscape from hardware component failures, dependency on third-party vendors and supply chains, and the frequency and scope of today's natural disasters including global pandemics.

The investment made over the past two decades in building and testing its Business Continuity Management Program has positioned the CUSO to navigate the storms on the horizon and enable it to reach for new opportunities and serve its owners and client credit unions in innovative ways.

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Unless otherwise noted, all times noted in this report are Eastern Time.