

CU*ANSWERS HIGH AVAILABILITY PROGRAM REVIEW - ONLINE AND MOBILE BANKING ENVIRONMENT EVENT DATE(S): 12/06/2023

EVENT SUMMARY

Following the successful pattern of the HA rollover program for CU*BASE core-processing, recovery teams at CU*Answers performed the annual live production rollover for the online and mobile banking environment (known as **It's Me 247** and **BizLink 247**) on December 6, 2023. The window for the rollover test was limited to one hour beginning at 5:00 AM ET. The time and duration of the test was selected to minimize impact given the proximity to holiday traffic volumes on both online and mobile channels. The timing of the exercise also aligned with the recent installation of new servers at the secondary data center. The primary goal of the exercise was to test access and native application functionality on the new servers. A follow-up OLB rollover will be scheduled with a longer duration following the holiday season to perform a more thorough test of all features and vendor integrations.

The online/mobile banking environment consists of a pool of load-balanced, redundant servers at the primary production facility in a secure DMZ environment. A clone of this environment is installed on servers at the secondary data center. Application updates are applied to servers at both the primary and secondary data centers to achieve synchronization.

The [previous OLB rollover](#) was performed on February 6, 2022. In addition to the installation of new servers as mentioned above, several new features and third-party vendor integrations have been implemented since the previous rollover. Ensuring that online and mobile banking applications will function the same at both the primary and secondary data centers is an ongoing process requiring regular live production testing.

The OLB rollover consists of a relatively straightforward process including a DNS change to redirect desktop and mobile traffic to the web servers at the secondary data center. The amount of time required for these changes to propagate throughout the Internet for most users is approximately five minutes. Once completed, these servers become the production hosts for the application.

During this OLB rollover, test participants observed immediate issues connecting to the secondary web servers prior to receiving a login prompt. Credit unions with login widgets on their web sites received error messages indicating a connection reset had occurred. As corrective measures were taken, these issues became more intermittent, eventually clearing themselves at the halfway (30-minute) mark of the exercise. In the time remaining, teams focused on testing internal/native features of the application such as viewing accounts, checks, and statements, A2A transfers, and bill pay.

By 6:00 AM ET, the DNS change to redirect all traffic back to the production servers was completed and applications tested. Time did not allow for a thorough check of all product features available through the more than 60 third-party vendor integrations. These will be a focus of the follow-up OLB rollover planned for Q1 2024.

The remainder of this report provides details on the timeline of the event and challenges observed.

EVENT TIMELINE

Prior to the event, communications were sent to all CU*BASE credit unions informing them of the scheduled OLB rollover with instructions for reporting any online and mobile banking issues. The rollover began at 5:00 AM ET with a deadline of 6:00 AM for completion.

Wednesday, December 6, 2023

- 5:00 AM – Recovery teams initiate the rollover by changing DNS entries for sites that comprise the online and mobile banking environments.
 - Web application services on servers at the primary data center were disabled.
 - Within the first few minutes, test participants identified error messages when attempting to connect to the secondary servers through desktop browsers and mobile device apps.
 - Initial steps to restart web application services on the secondary servers did not resolve the connectivity issue.
- 5:20 AM - A configuration change to the ruleset specific to the virtual IP (VIP) for the **It's Me 247** web site on the Web Application Firewall (WAF) was performed to restore connectivity and allow test participants to login to the application.
 - Intermittent connectivity issues were reported signaling a potential problem with one or more hosts in the web server pool.
 - Hostfiles were synchronized across load balancers.
 - A permissions misconfiguration was found on one web server and corrected to restore connectivity and reduce intermittent login errors.
- 5:35 AM – Test participants reported successful logins and began testing internal/native features of the application.
 - A2A transfers, member account dashboards, statements, checks, bill pay all were successful.
 - Some credit unions were identified as using an outdated login widget or beta URL.
 - Some features such as CardHub were unsuccessful (likely due to vendor IP whitelisting requirements for servers at the secondary data center).
- 5:45 AM – To keep the maintenance window within the allotted hour, teams began the process to redirect online and mobile banking back to the primary data center.
 - Log files were archived for research to help identify any additional issues that members may have experienced for verification during the follow-up OLB rollover.
- 6:00 AM – All applications were tested successful on the production web servers, concluding the OLB rollover event.

Support teams monitored calls for the remainder of the day. No additional issues were reported. Notes were collected as part of the debriefing process and planning initiated to schedule the follow-up OLB rollover after the holidays.

CHALLENGES OBSERVED

Given the duration of time since the previous OLB rollover (more than 18 months) and the recent implementation of new web servers at the secondary data center, teams anticipated some challenges that are often difficult to detect outside of a live production test.

Many of the challenges observed are noted earlier in this report in the Event Timeline section. The below include additional steps taken and action items to pursue prior to the next scheduled OLB rollover exercise.

- Determining an appropriate maintenance window for performing the online and mobile banking rollover test.
 - With close to 400 credit unions across six time zones with 24/7 access, selecting an appropriate window that minimizes member experience impact is no easy task.
 - Given that this was the initial OLB rollover performed on the new servers at the secondary data center, teams intentionally shortened the maintenance window to minimize impact and to quickly identify and troubleshoot any high priority issues that surface.
 - The solution was to separate the OLB rollover into multiple stages to allow teams to focus on specific areas and make/validate corrections before proceeding. The stages are as follows:
 1. Confirm site connectivity and native application features (one-hour window).
 2. Test prioritized list of third-party vendor integrations (over a multiple hour window).
 3. Conduct a full end-to-end OLB rollover test (spread out over one or more business days).
- Identifying credit union web sites that are using outdated login widgets and URLs (beta.itsme247.com).
 - For web sites that CU*Answers manages, clients receive the most recent login widgets.
 - Other client sites are issued multiple announcements with instructions for updating the login code and appropriate URL.
 - While some outdated widgets and URLs may provide basic functionality, they are no longer supported for new features and application revisions.
 - Teams have stopped short of forcing error messages for sites that are out of compliance, but this may need to change if it impedes the success of future testing.
- The manual process of auditing and testing the synchronization of web application firewalls and load balancers between the primary and secondary data centers.
 - While the OLB environments at the primary and secondary data centers are very similar, they are not identical (designed to work in parallel to production). Many configuration changes and system updates require a manual process on appliances at both sites, including:
 - Firmware/OS upgrades
 - Systems/security updates
 - VIP configuration changes
 - WAF rule changes
 - SSL/TLS certificate changes
 - Manually auditing the configurations on all relevant devices at both primary and secondary data centers may need to be performed more frequently and in a more structured manner.

- One of the purposes of performing live, production rollovers is to quickly identify and correct such inconsistencies.
 - To ensure OLB platform resilience, an automated process will be considered to identify any configuration mismatch.
- Testing all product features of the online and mobile banking platform given the integration with a growing network of 60+ third-party vendors.
 - As noted earlier in this report, the integration with multiple CU*BASE partners and self-processors, in addition to the more than 60 upstream and downstream third-party vendor interfaces, creates an application environment that is complex and dynamic. Change is constant and the discipline of implementing, testing, and maintaining those changes throughout each data center is required. Design and support teams must understand how each change impacts the ability to operate from both the primary and secondary sites. Future rollovers will dictate our success in this.
 - As a core-processor working with third-party vendors, one of the challenges is that developers often do not have user (member) accounts to test functionality. While a credit union can assist in testing the changes in the production environment, it is only during rollover events that we can validate the changes at the secondary data center. The nature and frequency of application changes will in part dictate how often future rollover events will be scheduled.

CONCLUSION

The previous two OLB rollover exercises were scheduled during the same maintenance window as the CU*BASE core HA rollover event. The consistent expansion and complexity of the online and mobile banking environments has reached a point where they will be conducted separately to allow teams to focus on conducting more thorough tests.

Considering the new server hardware and number of changes and new features added to the **It's Me 247** online/mobile banking environment since the [previous OLB rollover in February of 2022](#), the lessons learned, and information gathered during this initial rollover exercise will prove to be extremely valuable in preparing for the follow-up events.

Performing these rollover and recovery exercises on a regular basis helps us to improve our processes, sharpen our skills, and design and deliver better products in the 24x7 world we live in. CU*Answers is committed to that goal as demonstrated in this report.

Report submitted by Jim Lawrence - CBCP, CISSP | CU*Answers | Vice President of Business Continuity and Operations

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