CU*ANSWERS HIGH AVAILABILITY PROGRAM REVIEW

EVENT DATE: 6/26/2013 – 6/27/2013

SUMMARY

As part of our corporate strategic technology plan to ensure system performance and capacity for CU*BASE core processing, server equipment is evaluated and upgraded on a 36-month rotation. To effectively migrate newly leased IBM Power hosts that represent CUAPROD and HA into the production environment, existing high availability (HA) tools and procedures are used.

The new IBM hosts were purchased, received and configured in mid-June and added to the iTERA replication pool. The first host targeted for production was CUAPROD. For the purpose of this event, recovery teams prepared to "rollover" production from the old CUAPROD host to the new CUAPROD host following similar procedures as used in previous exercises to rollover processing to a host at our HA datacenter. In this case, procedures were created to rollover to a replication partner in the same production datacenter.

The first rollover attempt scheduled for Sunday, June 23, at 10 PM was called off for reasons detailed in this report. The rescheduled rollover for Wednesday, June 26, also began at 10 PM. Although a few issues did surface, this report reflects a very successful equipment migration for CUAPROD. In addition to an upgrade to new hardware, this project also provides an upgrade to a new IBM operating system (V7R1).

This report identifies any challenges observed, lessons learned, and events to be performed for project completion.

EVENT REVIEW

The first attempt to rollover processing to the new CUAPROD was scheduled for Sunday, June 23, at 10 PM. One of the "pre-roll" auditing checks performed (built into the replication software) was reporting an abnormal completion time that proceeded well into the scheduled maintenance period. The call to postpone the event was made shortly before midnight. No additional system downtime was experienced by users. Once technical teams were able to determine the cause of the extended audit check and confirm the integrity of the data, the rollover event was rescheduled.

On Wednesday, June 26, at 10 PM, the production system was taken offline and rollover procedures initiated. It was expected that this process would require more recovery time than a regular rollover event due to the host name and IP address swap and the need for multiple system reboots (IPLs). Vendor support personnel from both iTERA and IBM were utilized during this event to assist with network interface and IP address issues as well as memory pool allocation and system configuration settings. By 3:15 AM, system auditing had been completed and recovery teams were bringing subsystems (ItsMe247, CU*TALK, ATM/Debit/Credit cards, etc.) online for testing.

The Operations Team began daily EOD/BOD processing at 4:00 AM. The new CUAPROD was available for external users by 5:45 AM.

During recovery testing, users began to experience slow login times and abnormal session timeouts. This became even more obvious by the time the first wave of client credit unions user sessions initiated, creating system performance issues that were difficult to detect using system monitoring tools. This issue was resolved by 8:15 AM when system memory pool allocation settings were "fine-tuned" to best reflect the requirements after the initial wave of user sessions were established.

To recap the timeline of events of June 26-27, 2013:

- 10:00 PM - CU*BASE application taken off-line
- 1:00 AM - New CUAPROD host brought up for internal system testing/confirmation
- 3:00 AM - New CUAPROD host brought up for internal application testing/confirmation
- 4:00 AM - Operations Team begins EOD/BOD processing on new CUAPROD host
- 5:45 AM - CU*BASE login access for external users enabled
- 7:00 AM - Extra support representatives deployed and positioned to respond to reported issues
- 8:15 AM - System performance settings "fine-tuned" on new CUAPROD to address reported issues
- 9:00 AM - Posted status alert update to all clients (identifying the few remaining issues to be resolved)

CHALLENGES

For a project of this scope and complexity, some issues and challenges are anticipated. Recovery and support teams were on hand to tackle them as they surfaced.

1. During the movement of host names and IP addresses, the replication software generated an error message which prompted the cooperation of the vendor support team to validate and proceed. Multiple host restarts (IPL) were performed to confirm the host identity migration.
2. System performance issues (user jobs, logins, printing, etc.) were observed by the initial wave of users. All performance issues were resolved by reconfiguring (fine tuning) the global memory pool allocation settings.
3. Some search features (Inquiry/Phone/Teller account number, etc.) were not functioning as expected on the new host. This issue was resolved with program changes due to the version of SQL included in the new operating system (V7R1).
4. CU*SPY daily and member credit card bureau reports were not imported due to the maintenance window for the server upgrade. Reports were imported manually.
5. In the days following the system upgrade, it was determined that five specific reports were not being routed properly for import into CU*SPY. This was corrected (with a program change) for all future reports and those routed improperly were manually imported into CU*SPY.
6. A delay in the daily card maintenance file transmission was expected following the upgrade. Following the system upgrade, files transmissions to COOP were unsuccessful due to a missing file in the application bin directory. This was corrected and the file transmission restored.

SUCCESSES

1. In a nutshell, this project consisted of a fork-lift upgrade to the CU*BASE production host including new hardware and new operating system.
2. This server migration project was initially scheduled to begin on the evening following a "relatively light" production day of Sunday 6/23. Due to reasons identified in the summary above, the project was rescheduled to begin the evening of Wednesday, 6/26. While this schedule change did slightly reduce the amount of time and margin available for testing and troubleshooting, all recovery teams were confident in the migration plan, the preparation efforts, and the capabilities of the team. The success of the project proves them right.
3. This project demonstrated the ability of the iTERA replication software to function properly on different hardware and operating systems.

EVENTS TO BE PERFORMED

After one full week of production on the new CUAPROD hardware, we will begin the process of introducing the new HA host into the environment and deprecate the existing hardware.

1. Migrate the new HA host (identical hardware and configuration as the new CUAPROD) to the production environment and confirm data replication.
2. Securely sanitize and prep old hosts for shipment back to IBM on or before 7/29.
3. Perform a High-Availability rollover test (tentatively scheduled for 9/15-18) on the new hardware.