

Consulting Report

2009 Disaster Recovery Process Modernization

June 23, 2020

Cindy Rougeou, LASERS Executive Director The LASERS Audit Committee

EXECUTIVE SUMMARY

Audit Services observed the Disaster Recovery Team complete a disaster recovery test on October 18, 2019. The systems included in this test were successfully restored and validated within eight hours.

In addition to the disaster recovery testing exercise, Audit Services reviewed changes related to the modernization of the disaster recovery process and disaster recovery related items in the LASERS Business Continuity Plan.

During this review, the following observations were noted and detailed below:

- 1. Previous business continuity and disaster recovery related solution has not been formally implemented.
- 2. Enhancements should be made to the current business continuity and disaster recovery testing plan.

BACKGROUND

This was a planned engagement on the fiscal year end (FYE) 2020 Audit Plan. The fieldwork for this engagement was completed on March 11, 2020.

Business continuity is an organization's ability to ensure operations are not severely impacted by a disaster or unplanned incident. Disaster Recovery (DR) is an area of business continuity that aims to protect an organization from the effects of significant negative events. DR allows an organization to

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maintain or quickly resume mission-critical functions following a disaster. A disaster is defined by LASERS IT Division as "an occurrence causing destruction and distress to the geographical area, physical building, or technological capabilities of LASERS."

A critical step to the updated disaster recovery process involves a daily off-site replication of certain production systems to our vendor, iLand, which allows for these systems to be accessible in the event the on-site data center becomes unavailable. This process change has resulted in the following improvements as compared to the previous disaster recovery solution:

- Ability to restore certain production systems in a few hours instead of multiple days.
- Testing of the disaster recovery process for an increased number of production systems on a quarterly basis instead of testing only one production system at a time annually.

Quarterly, IT uses documented procedures to test the DR process and functionality of the production systems in the off-site environment at iLand. LASERS IT staff performs the disaster recovery test via an encrypted virtual private network (VPN) connection. After the environment is deemed available, members of the LASERS IT Disaster Recovery Team complete various tests of key systems, such as SOLARIS, Optimus, JD Edwards, and Network FileShares.

Recently, IT completed the replacement of LASERS on-site email system and implemented Microsoft Office 365, a secure cloud based email solution. This transition to Microsoft Office 365 allows the email system to remain functional with no interruption or delay in the event of a disaster.

SCOPE, OBJECTIVES, AND METHODOLOGY

The scope of this engagement was to review LASERS Business Continuity Plan, focusing on the:

- Comparison of the modernized disaster recovery process to previous practices.
- Recovery process from disaster declaration to system restoration for SOLARIS, Optimus, JD Edwards, and Network FileShares. (Note: Backup solutions were not included in this engagement.)
- Ability for business users to access and utilize the restored systems.

The primary objective of this engagement was to evaluate LASERS Business Continuity Plan focusing on Disaster Recovery and the Information Technology Division's process for restoring LASERS production systems after a disaster.

Procedures used to complete this engagement included:

- Review LASERS Business Continuity Plan focusing on Disaster Recovery.
- Review IT's testing plan and procedures for disaster recovery testing.
- Review and compare previous disaster recovery related vendor contracts to current agreements and solutions.
- Observe IT complete a disaster recovery testing exercise.
- Conducting other inquiries considered necessary to achieve engagement objectives.

This engagement was conducted in accordance with the Institute of Internal Auditors' <u>International</u> <u>Standards for the Professional Practice of Internal Auditing</u> and the policies and procedures of the Audit Services Division.

OBSERVATIONS, RECOMMENDATIONS, AND RESPONSES

1. PREVIOUS BUSINESS CONTINUITY AND DISASTER RECOVERY RELATED SOLUTION NOT FORMALLY IMPLEMENTED

OBSERVATION

LASERS previously utilized SunGard Availability Services (SunGard) for certain business continuity and disaster recovery related solutions. However, the agreement with SunGard was not renewed because of the following improvements to the disaster recovery process by IT:

- Replication of certain production systems occurring daily to iLand, a secure cloud based storage solution.
- Email systems are being migrated to Microsoft Office 365.

In comparing the modernized disaster recovery process to previous practices, it was determined that there is one solution which has not been formally implemented. In historical agreements with SunGard, a mobile workspace solution was available to LASERS which would be furnished with fifty work stations that included printers, computers, and phones, as well as, equipment for a temporary on-site data center. The use of this solution would typically occur in a disaster scenario where the LASERS on-site data center and facilities would be unavailable for an extended period of time.

It should be noted that both IT and Audit Services had concerns whether this was a viable solution since it was never tested, some requirements (e.g., setup, logistical, etc.) were never addressed, and the contract did not cover the entire computing environment since pension payroll was the primary goal at the time. Some of these concerns were noted in the final audit report for Project 1030 Business Continuity and Disaster Recovery. The related observation and details from this report can be found in Appendix A of this document.

According to IT, these were some of the reasons the Disaster Recovery Modernization project was initiated by IT which, upon completion, will address the data center related concerns associated with this solution. However, the evaluation and implementation of the non-data center related components of this solution (e.g., an alternate physical location equipped with workspaces, workstations, phones, printers/copiers, and other equipment necessary to continue operations) should be coordinated by LASERS business continuity lead. There have been informal discussions on possible solutions for the non-data center related components, but not formally reviewed, approved, and documented in the business continuity plan related documents.

RECOMMENDATION

Executive should work with the business continuity lead, IT, and other key divisional process owners to determine possible solutions that will allow for continuity in the event the LASERS on-site data center and facilities would not be available for an extended period of time. Items for consideration include, at a minimum, the following:

- 1. Define what is considered full and minimal operations for computer systems, operational processes, staff, and facilities.
- 2. Reasonably identify the conditions that would assist in differentiating between the need for full versus minimal operations.

3. Evaluate the current solutions in place to fulfill these expectations and document possible recommended areas of improvement. Any recommendations should include timelines and associated costs and be presented to management for approval.

DIVISION RESPONSE

Executive agrees with this recommendation. Members of Executive will work with Trey Roche, the business continuity team lead, along with IT and other key divisional process owners to determine possible solutions that will allow for continuity in the event the LASERS on-site data center and facilities would not be available for an extended period of time. This has been assigned a medium priority with a target completion date of July 1, 2021.

2. BUSINESS CONTINUITY AND DISASTER RECOVERY TESTING PLAN ENHANCEMENTS

OBSERVATION

Information Technology staff members utilize LASERS Disaster Recovery Guide to complete testing of critical production systems (i.e., SOLARIS, Optimus, etc.) at LASERS. This procedure manual and testing plan contains process steps to restore services in the event of a disaster affecting certain production systems stored in the LASERS on-site data center. As an example, the testing plan currently covers critical functions at LASERS, such as, the processing of monthly pension payroll and employee payroll.

Due to the modernization of the disaster recovery process, LASERS is able to test critical production systems more efficiently and on a more frequent basis. With this improvement, there is an opportunity to enhance the testing plan coverage and effectiveness. The following are some example areas of possible enhancement:

- Evaluate testing ownership (i.e., business continuity lead versus IT).
- Incorporate simulated scenarios into the testing approach and process.
- Incorporate and utilize non-IT staff and business process owners into the testing process and rotate testers periodically.
- Include additional production systems into the testing process.
- Expand the level of testing performed on the critical production systems.
- Establish criteria to measure the success and expected outcome from each testing exercise.

It should be noted that some of these areas are considered long term in nature and will take some time to fully mature and develop. However, these type of changes will improve the business continuity testing process and reduce the potential risk to LASERS should an unforeseen disaster occur.

RECOMMENDATION

The business continuity team lead should work with IT and other divisional process owners to evaluate the current business continuity testing plan and identify areas of improvement. As part of this evaluation, the items noted in the observation should be considered along with the impact in terms of resources and cost. Upon the conclusion of the evaluation, any recommendations should be presented to management for approval.

DIVISION RESPONSE

Executive agrees with this recommendation. Trey Roche, the business continuity team lead, will work with IT to plan expanded disaster relief testing. Expanded testing will include the testing of additional production systems over time and the incorporation of business owner staff in the testing process. This has been assigned a medium priority with a target completion date of December 31, 2021.

FOLLOW-UP

A follow-up to this engagement will not be scheduled at this time. Audit Services will maintain this information on a tracking report. These items will be tracked until they are closed.

Reece Babin Auditor

Ryan Babin, CIA, CISA, CPA Audit Services Director

Cc: Trey Boudreaux Dan Bowden Eric Schoonmaker Trey Roche Greg Byrd Appendix A

OBSERVATIONS, RECOMMENDATIONS, AND RESPONSES

2. LASERS SHOULD EVALUATE AND ENHANCE THE CURRENT DATA CENTER DISASTER RECOVERY SOLUTION

OBSERVATION

In the event of a disaster that renders LASERS data center inoperable, the current contract with SunGard provides that LASERS, upon request, would be supplied with a mobile trailer. This trailer will contain all the IT equipment necessary for LASERS to continue business and will serve as a temporary data center. A mobile data center has the benefit of mobility since it is difficult to determine where LASERS operations would be moved to. In addition, LASERS also has the option to request to use one of SunGard's physical facilities to restore operations.

Currently, the annual cost to retain SunGard's services is \$69,408. To acquire the mobile data center after a disaster, there would be an initial fee of \$12,500. LASERS would also be required to pay a daily rate of \$1,250 from the day of declaration and on day 31, the daily rate would increase to \$3,000 a day.

Outside of the fees paid to SunGard, LASERS would incur additional costs to utilize the mobile data center. SunGard only provides the hardware items and limited work space. Some examples of items that LASERS would be responsible for include:

- Determining the location to place the mobile data center. Powering the mobile data center.
- Establishing a connection to the internet.
 - A large amount of the total data storage space is only accessible via an internet connection.
 - LASERS personnel may have to connect remotely.
- Providing personnel to utilize the equipment.
- Security of the equipment and data inside the mobile data center.

In the event of a major catastrophe, it could be difficult for LASERS to address the items noted above on short notice. Currently, there is not a plan in place to address these various factors and the associated costs.

It should also be noted that Audit Services performed research with other public pension funds to determine what methods are currently being utilized to recover IT systems. Due to the constantly changing technological environment, various methods are being used to recover data systems ranging from simple data backup tapes to complete identical equipment set-ups in remote locations.

RECOMMENDATION #1

IT and Policy & Research should develop a formalized plan to address utilization of SunGard's mobile data center which considers the following:

• Agreements should be researched and implemented to address the items associated with utilizing a mobile data center.

- As part of this, LASERS could contact other state agencies and create an agreement for use of the necessary items to utilize a mobile data center and continue operations. This would facilitate the recovery of LASERS systems by not having to plan these items after the disaster hits or pay retainer fees to vendors.
- LASERS should consider installing the additional power requirements before a disaster occurs. In the event of a disaster to the data center, but not the building, LASERS could not currently supply power to the trailer because there is no connection point.
- Whether the mobile data center option should be continued.

Target completion date is June 30, 2011.

RESPONSE

IT believes that the mobile data center contract with SunGard should remain in place. In the event of a total building loss, such as a fire, the mobile data center would be invaluable in restoring vital systems in a timely manner. IT agrees that an electrical connection to the Retirement System Building stand-by generator should be put in place prior to the actual need for it. IT also agrees that LASERS should negotiate a reciprocal agreement with one or more other state agencies, such as Corrections facilities or LSU campuses, to provide space and electrical power for the SunGard Mobile Data Center in the event that the Retirement Systems Building stand-by generator is destroyed or otherwise unavailable. IT is aware that a diesel fuel contract is in the process of being established to maintain a steady supply of fuel for the generators.

Executive also agrees with the proposed recommendation.

RECOMMENDATION #2

LASERS IT systems are constantly changing as new technologies become available and affordable. In addition, the IT division has long-term goals that, when completed, will increase the overall efficiency of LASERS. These changes will also affect the way LASERS would perform a future disaster recovery. For these reasons, and as part of a longer term initiative, IT should work with Policy & Research to identify alternative methods to recover the IT systems in the event of a disaster.

The study should address efficiency, effectiveness, feasibility of implementation, and associated costs. Keep in mind that the costs involved in some solutions may appear to be highly initially, but could potentially save more money by increasing efficiency of employees, decreasing or eliminating costs of current contracts, and providing a more reliable process to restore LASERS systems.

Target completion date is June 30, 2011.

RESPONSE

IT agrees that as technology improves and new technologies come on line, the need to make major and minor changes to the current disaster recovery plan are likely. With that in mind, IT regularly reviews these new technologies, runs tests on new processes, and internally discusses the costs, benefits, and risks associated with making changes to the current plan. IT is open to working with Policy and Research to formally present these findings.