CENTRAL OREGON
community college

BANNER DISASTER RECOVERY TEST

INFORMATION TECHNOLOGY SERVICES

Spring 2015

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EXECUTIVE SUMMARY

COCC's Information Technology Services department hosted our second annual Disaster Recovery (DR) test of the Banner Enterprise Resources Planning (ERP) software. Last year's DR test was enlightening for all involved, while requiring significantly more effort than expected. ITS retained several objects from last year's work to reduce downtime for an actual DR scenario as well as for this year's DR test. These components include (but are not limited to) an Ethernet switch, Oracle Virtual Machine (OVM) builds, host files, technical and procedural documentation.

Building upon our previous year's success, ITS enlisted the Payroll department, with the goal to research and prove the ability to rebuild the Payroll processing system and print payroll checks during an outage. Because COCC prides itself on taking care of its staff and faculty and leadership has stated that that ability to pay staff and faculty on time is a top priority. The worst-case scenario for Payroll would be a Banner ERP outage during the middle of payroll processing. Therefore, this DR test would require capturing the Banner system during an active payroll, rebuilding to a DR system, resetting the payroll process back to step one, reprocessing payroll, and printing payroll checks plus performing an upload to the Financial Institution's (FI) test database with Automated Clearing House (ACH) scheduled transfers.

In order to print Payroll, there must be infrastructure support for a MICR printer and a MS Window's server that supports conversion of Banner reports to check forms. Because of the 'virtual environment' of many of COCC's windows servers, INF was able to build a DR environment for the Windows Server systems. This allowed for a much greater functionality for the testers, including Active Directory login capabilities, time server, DNS server, Windows File and Printer services, and much more. While there was no network drive capabilities, (because of the fact that we did not restore the network SAN,) testers were able to save documents to the desktop or local disk drive.

In summary, the capabilities of the 2015 DR test were leaps and bounds greater than the capabilities of the 2014 DR test. We were able to verify that we still need an offsite DR recovery center that is ready for operations in the case of a primary datacenter failure. We were able to prove the value of virtual windows server systems for both recovery and functionality in a DR situation. ITS plans to spend 2016 building up a DR offsite center in the Redmond Tech Center MDF. It has been discussed and agreed upon that a third DR test would prove redundant, that we have seen the value of a pre-staged DR center, and feel that the time invested in building it would prove invaluable. I wager that 2017 will be the first DR test of that new DR offsite datacenter; follow the http://wwww.cocc.edu/InfoSec/DRTest page for further information.

Introduction

Central Oregon Community College utilizes Ellucian Banner to manage the enterprise resource planning functions for the organization. In an effort to facilitate continued availability of this service, and to minimize the potential for future unplanned outages, Dan Cecchini commissioned a project for Information Technology Services to perform a disaster recovery test for the systems comprising Banner. This project assessed the current disaster recovery capability of the Banner system using existing resources, provided a real world example of the efforts and time required for recovering from a catastrophic hardware failure.

PURPOSE

Once the DR test team had officially determined that Banner was the primary focus for the disaster recovery test, the team investigated all options for recovery and investigated the most likely applicable recovery scenarios. As COCC does not yet have any form of offsite datacenter for recovery, the team concluded that current DR process would be to a recovery of the Banner systems onto existing unused hardware. Information Technology Services expected to accomplish this by powering up existing unused, antiquated hardware, and then rebuilding or restoring operating systems and databases from backup storage mediums as appropriate.

SCOPE

- While testing disaster recovery (particular, while testing Banner, the core collegiate business systems,) it is possible that restored technology will conflict with existing production technology. *It would be unacceptable that DR test recovery systems interfere with business functions.*
- The project must ensure that it does not alter any production data.
- In an effort to save costs, the project should use existing infrastructure where possible
- The DR test team should include representatives from each major business functional area (see page 6), so that verification of the recovered data is as holistic as possible.
- While testing, representatives from business functional areas should also test and verify that they can modify and report against business data, as would be required by their departments during a declared emergency and recovery effort.

PARTICIPATING DEPARTMENTS / MEMBERS

ITS	Dan Cecchini – Chief Information Officer
MIS	Ed Sea –Director ITS
INF	Laura Boehme –Director ITS
ECS	Cindy Jeffreys – Lead Systems Integrator
INF	Jeff Floyd – Sr. Network Administrator
INF	Wade DeBraal – Network Administrator
MIS	Paul Niswonger – DBA
MIS	Lynn Roy – Banner Programmer
User Services	J.C. Root – Microcomputer Specialist
Payroll	Shelly Huckins - Payroll
Fiscal Services	Lisa Bloyer – Director of Accounting
Human Resources	Katie Ritter – HR Specialist
Financial Aid	Ashlee Sanders
Student Module	Chris Mills - Student Module Analyst
Admissions and Records	Jason Frost
Campus Public Safety	Cady-Mae Hunt – Office Specialist Dispatcher
Continuing Education	Jerry Schulz - Director
Purchase Orders	Jan Fisher
Course section level setup	Elaine Simay - Barton
Course catalog setup	John Armour
Banner Self Service	Chris Mills – Student Module Mgr.
Special Test - Needs Analysis	Ashlee Sanders
Special Test – US Bank Student Loans	Work in Progress
Special Test – Payroll Check Print	Shelly Huckins

AUTHORITIES AND REFERENCES

ORACLE OFFICIAL DISASTER RECOVERY DOCUMENTATION

Oracle VM 3: Overview of Disaster Recovery Solutions
Oracle VM 3: Backup and Recovery Best Practices

DR BUSINESS GROUP RESULTS

Payroll:
Payroll was unable to participate in testing do to both the fact that the department had recently changed leadership to Shelley Huckins, and the fact that preparation for the test was happening during the end of the year processing.

Fiscal Services:
Testing was successful and largely uneventful. The only exception being that during the timeframe when Lisa Bloyer ran her reports, and when the ITS performed the system backups, some students had made payments to their accounts online. Lisa was able to reconcile these transactions and they verify that they were no data integrity issues.

Human Resources:
Katie Graham was able to test successfully and found no issues.

Financial Aid:
Pam Beyer created the disaster recovery test plan for her department, however was unable to test because of scheduling issues.

Student Module:
Chris Mills was able to test successfully and found no issues.

Admissions and Records:
Stella Mackey was able to test successfully and found no issues.

Campus Public Safety:
Cady-Mae Hunt was able to test successfully and found no issues. However her department relies on with information from Argos, including a 'Weekly Parking Offenders' report which is emailed from Argos. As Argos is not part of the testing, things of this nature are not in the scope of this report.

Community Learning:
Jerry Schulz was able to test successfully and found no issues.

Purchase Orders:
Stephanie Goetsch was able to test successfully and found no issues.

Course Section Level Setup:
Elaine Simay-Barton was able to test successfully and found no issues. However as Form Fusion was not setup, many printed reports were missing content such as logos, bar codes, digital signatures, and any other information requiring images or special typographical fonts.

Course Catalog Setup:
John Armour was able to test successfully and found no issues.

Self Service:
Chris Mills was able to test successfully and found no issues.

ACRONYMS

Active Directory (AD): A system storing the configuration of servers and workstations for COCC's Windows networked infrastructure including user accounts, file and printer shares, security policies, and numerous other items.

Banner: Enterprise Resource Planning software used by COCC, sold and supported by the vendor 'Ellucian'.

Cisco switch: A networking device that processes network traffic between servers, workstations, and telecommunication devices.

Datacenter: A facility used to house computer systems and associated components, such as telecommunications and storage systems.

Disaster Recovery (DR): Recovery or continuation of technology infrastructure, which are vital to an organization after a natural or human-induced disaster. Disaster recovery focuses on the technology systems that support business functions, as opposed to business continuity, which involves planning to keep all aspects of a business functioning in the midst of disruptive events.

Enterprise Computer Services (ECS): The ITS department which performs server and storage integration for the applications MIS supports, email, backup services, and plethora other services.

Enterprise Resource Planning (ERP): ERP is form of business management software, often an integrated suite of applications, that a company can use to collect, store, manage and interpret data from core business activities.

Environment: Loosely defines a collection of applications, network and server infrastructure, configurations and data resulting in a functional conglomeration of technology that supports a set of business functions.

Ethernet: A family of networking technologies for local area networks.

Infrastructure (INF): The Information Technology Services department which supports network WAN & LAN, cabling, switch and router management, firewall and DMZ technologies, and myriad other services.

Demilitarized Zone (DMZ): Perimeter network or sub network that contains and exposes Central Oregon Community College's external-facing services such as website and Bobcat Web to the Internet.

Wide Area Network (WAN): A network covering a broad area, often spanning and bridging metropolitan areas such as Redmond, Madras, Prineville and Bend.

Local Area Network (LAN): Computer network interconnecting computers within a limited area, such as Metolius, Pioneer, Boyle Education Center, and other main college campus buildings.

Information Technology Services (ITS): The department responsible for implementing and supporting computing systems and related services at Central Oregon Community College.

Image: A backup file of the hard drive of a workstation, saved as a large file onto a server used to restore said workstation to the same configuration as existed at the time of image creation.

Java: An interpreted programming language, used for numerous things. Most noteworthy in this context is the fact that Java is required for workstations to connect to Ellucian Banner.

Management Information Systems (MIS): The ITS department which supports Banner, Argos, Bobcat Web, Ektron Web, and other college business applications.

Argos: An enterprise reporting solution designed to meet the reporting needs of organizations by utilizing ad-hoc queries, advanced dashboards, interactive charts and data cubes.

Network Interface Card (NIC): A controller that implements the electronic circuitry required to communicate using electricity over network cables, or radio waves in a wireless network. NICs allow workstations and servers to communicate with each other over the COCC LAN.

Oracle Servers: Severs running Oracle operating systems and databases, most commonly used at COCC for a platform on which Banner operates.

Oracle VM Manager (OVM): Operating system that hosts Oracle virtual machine systems.

Oracle: Vendor which provides many technologies used to host and run the Banner application.

Risk: The potential to lose something of value when a threat (such as a fire) takes advantage of a vulnerability (our buildings, even with sprinklers, are not fireproof.)

Threat: A threat is a negative action or occurrence that may cause harm, such as a fire, power outage, or disgruntled employee.

Virtual LAN (VLAN): A methodology for segregating physical networks into separate logical networks, enhancing network security and performance.

Virtual Machine (VM): A software-based emulation of a computer. This technology allows for significant cost savings and efficiency by running many 'virtual machines' inside of one physical computer. As a result, expensive hardware produces more computational workload per dollar.

Vulnerability: Vulnerability is a weakness that could potentially allow a threat to cause harm.

Workgroup Mode: Workstations networked together in a peer-to-peer configuration, tied to the controlling directory structure of the institution. In this case, part of the segregation of the DR network from COCC's production network.

Workstation: A computer used by the institution for inputting, researching, processing and reporting business data.