Disaster Recovery Exercise Report:

Exercise conducted November 9, 2013

Video wall monitoring network health - Service Desk, Indiana University Bloomington
Background

The Global Network Operations Center (GlobalNOC) at Indiana University supports some of the world’s most advanced research and education networks. This includes campus networks, statewide research and education networks, regional optical networks, national research and education networks, and international interconnects – and the projects and research that traverse them. Our mission is to "Advance the future of research, education, and the public interest through the support and evolution of networks."

The GlobalNOC Service Desk operates fully redundant facilities located in Indiana on the Indiana University-Purdue University Indianapolis (IUPUI) and Indiana University Bloomington campuses. Located 52 miles apart, these facilities run 24 hours per day, 7 days per week, and 365 days per year.

The GlobalNOC Systems Engineering group configures and maintains the hardware and software systems the Service Desk uses to proactively monitor, identify, triage, track, escalate, and resolve any service or performance impacting issues.

The mission critical nature of the supported networks requires that the Service Desk and its network health monitoring systems be available 100% of the time and sustain continuity of operations in the event one of the sites is lost.
Disaster Preparedness Summary

The GlobalNOC Service Desk’s fully redundant facilities in Indianapolis and Bloomington oversee all mission critical systems – including, but not limited to, phone, email, network health monitoring, and ticketing systems.

In addition to working onsite at the two Operation Centers, Service Desk and Engineering team members regularly work remotely. Because they reside around the state of Indiana, this further increases our geographic dispersion. Remote team members have access to the full suite of tools and are continuously video connected to one of the Operation Centers. Using two way video and audio, the team collaborates as if remote staff were physically in the Operation Center. The Service Desk also has an agreement to access and operate in an alternative building, dubbed the Contingency Network Operations Center (CNOC), should one of the Operation Centers be inaccessible for an extended period of time.

The GlobalNOC network management systems are housed in state of the art secure data centers on the Indiana University campuses in Bloomington and Indianapolis. All systems have power protection, including generator protection. A highly resilient network interconnects the data centers and our network operations centers, and all critical systems are replicated in Bloomington and Indianapolis. Systems are configured in either hot-spare or warm-spare configurations, and the GlobalNOC also maintains a live, monitored spare hardware pool to mitigate problems due to hardware failure. Ultimately, the GlobalNOC network management system has been designed for transparent
failover for many systems, and manual failover procedures for the remaining critical systems are well documented and regularly exercised.

The GlobalNOC is bound by Indiana University policy that mandates the creation, annual maintenance, and testing of departmental disaster recovery plans. In addition to the disaster recovery plan, the Service Desk and Engineering groups maintain step-by-step tactical plans in case of disaster. The entire staff is trained to access and execute the disaster recovery/business continuity plan.

**Scenario and Objectives**

The November 9th event testing disaster preparedness was carefully planned. The goal was to simulate the complete loss and inaccessibility of the Informatics & Communications Technology Complex (ICTC) building on the IUPUI campus due to a force majeure event. This included the Network Operation Center, data center, and all supporting technology and systems located in the ICTC building. Further, the test needed to roll operations and systems to redundant facilities.

Objectives involved testing:

1. Tactical plans and staff ability to execute disaster recovery/business continuity plan without management/supervisor instruction
2. Ability to operate from CNOC located at IUPUI library
3. Required time to rollover operations from IUPUI NOC to CNOC
4. Ability of Bloomington NOC and remote staff to assume full operational responsibility
5. Potential impact to customers via random reports of network issues
6. Readiness of the technology systems to cope with a significant disaster event, including failover of critical systems in Indianapolis facility to their backup systems at other facilities
Exercise Summary

The exercise started at 10am ET on November 9th, when the Systems Engineering Team began shutting down ICTC systems to simulate failure of the facility. The Service Desk began seeing critical alarms, at which time an event was declared. The Service Desk manager transferred operational responsibility to the Bloomington NOC, then initiated an evacuation of the GlobalNOC ICTC facility and asked participants to relocate to the CNOC facility located in the IUPUI library. All Service Desk personnel gathered critical items and departed to set up contingency operations pursuant to the Disaster Recovery Plan. The Bloomington NOC successfully assumed responsibility, and at no time experienced an interruption to production operations.

At the IUPUI library, it took approximately 10 minutes to set up the CNOC with full internet and phone service. Calls routed and the CNOC operated at a diminished capacity while Systems Engineering continued the failover process. Over the next three hours, staff conducted a comprehensive test of systems and process, logging any resulting issues for review.

At 1pm ET, the event was declared over and systems were restored to their original production configurations. Service Desk staff packed up the CNOC and moved back to the ICTC building to resume normal operations.
Exercise Result

All objectives were successfully tested. A dedicated observer recorded detailed notes of any areas of difficulty or inefficiency, identifying potential for improvement. Additionally, all actions were logged and time stamped in a central chat room used for the exercise. Immediately following the exercise, a debrief of all participants took place to ensure the accuracy and completeness of the notes and event timeline.

A comprehensive list of issues and areas for improvement circulated among the participants and the GlobalNOC directors. The list included suggested fixes and the budget required to address them, if applicable. The GlobalNOC directors gave carte blanche budget approval to address each of the identified issues or areas of improvement. Due to its proprietary nature and confidentiality and security concerns, the list of issues will not be publicly released.

Closing

All objectives were successfully tested, and an appropriate budget is in place to resolve any issues identified. The GlobalNOC project management team has created a project to drive and monitor the progress of issue resolution, with a projected close date of May 30, 2014. The GlobalNOC will conduct another Disaster Recovery Test during the fourth quarter of 2014.

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