Root Cause Analysis


Summary: On Monday March 11, 2010, from approximately 9:00AM until 11:30 AM, the OIT Support Center received multiple reports from people who could not access services from off campus and from behind the Pix firewall. Banner and Google Apps were listed as affected services. Connectivity issues were sporadic yet repeatable. The Support Center contacted Network Engineering who identified an incorrect NS record as the problem. The record was corrected, and service was restored at approximately 11:30AM.

Detail: During the migration of one of UAF’s subdomains from an external hosting service to the OIT DNS servers, an error was made on a NS Record. The error causes queries from external DNS servers to one of the OIT DNS servers to fail. Due to the client query mechanism of DNS, the error did not affect customers on the UA network, only external DNS servers attempting to resolve local cache expired records from the OIT DNS server that contained the error. This would result in an approximate 33% error rate. This corroborates the sporadic nature of the outage.

Action Items and Future Prevention: Network Engineering does not process a DNS change as an system change or outage activity but rather as an administrative task. Network Engineering may receive between 10 to 50 DNS record change requests per day. Changes are generally authorized by the requesting party, as they are the group/individual responsible for the specific host/server/service in question. The requests are reviewed by Network Engineering staff for correctness prior to completion. In this case, the review did not prevent an error from being introduced into the system.

DNS change requests are currently handled through the Support Center as an incident rather than a change. This process, as well as any other process that makes changes to the system, would benefit from the practice of migrating to the change or preapproved change process. The process would be documented and validated at the OIT level versus the department. If DNS changes were migrated to the preapproved change process, there would be additional oversight to the process without adding any bureaucratic constraints.