

Center for Information Technology Integration

Statement of Work

July 12, 2006

This statement of work constitutes the joint understanding of CITI and ITCOM in pursuing a continuing research and development partnership.

Statement of Work

CITI's previous work, performed under a CITI/ITCOM Statement of Work dated May 2, 2006, extended the Network Testing and Deployment (NTAP) framework for secure invocation of network testing tools on remote platforms. The extensions included investigation and demonstrated operation of 10 Gbps hardware within the NTAP framework and the addition of packet capture capability to the testing regime, storing securely for later analysis packets seen at a PMP during a test.

The primary goals of the partnership for FY 2007 are to integrate the `thrulay` tool (for measuring throughput and packet delay) with NTAP, to instrument and reorganize the data model for improved scalability, and to provide support for NTAP to campus core routers. Progress towards a fourth goal, extending the NTAP framework to operate between independent authentication and authorization domains, will continue independently of this SOW.

These goals are implemented in the following tasks.

Task 1: Integrate

CITI will integrate Stanislav Shalunov's `thrulay` tool into the NTAP framework. `Thrulay` measures both throughput and packet delay along a segment using a client and server running in each of two attached PMPs, in a configuration similar to the `iperf` tool. On an ongoing basis, CITI will also investigate additional tools for integration with the NTAP framework.

Task 2: Scale

The NTAP framework records test results in an LDAP database accessible through the NTAP GUI, which displays result summaries in a two-dimensional matrix; clicking through these summarized results allows access to the underlying detailed performance data and performance histories stored in the database. Initial experience has shown that as the number of test results increases into the thousands, the performance of these accesses degrades; in particular, the time required to locate the most recent tests for a given matrix cell increases with the size of the database.

CITI will instrument the existing NTAP database access functions, analyze the results for varying synthetic and/or real workloads, and design and implement a reorganization of the NTAP data model where necessary to address these performance issues, either by

caching recently performed test results stored in the existing database, reorganizing the database, or by migrating to an in-memory database such as gdbm.

Task 3: Support

Beginning in the July/August time frame, ITCOM expects to deploy NTAP PMPs to the network core. Working with ITCOM, CITI will generate the topology databases for the core routes and the first-mile NDT tool, create or update the relevant installation RPMs, and address operational issues arising with the use of the NTAP portal and PMPs.

Milestones and Deliverables

July 1, 2006

Task 1, 2, 3 begin.

September 1, 2006

Task 1 deliverable: Thrulay tool integrated with existing NTAP framework.

Task 3 deliverable: Topology databases generated. Completion of this task depends on ITCOM's deployment schedule.

November 1, 2006

Task 2 deliverable: Instrumentation of NTAP framework completed.

March 1, 2007

Task 2 deliverable: Data model design completed.

June 1, 2007

Task 2 deliverable: Data model reorganization completed.

June 30, 2007

Task 2 deliverable: Research report suitable for publication in refereed conference or journal.

Task 1,2,3 complete.