

1. **Research Title:** Secure End Node Testbed (SENT) for RDT&E of Advanced Remote Authentication Technologies

2. **Individual Sponsor:**

Govt Lead:

Mr. Michael Nowak, AFRL/RYW
AFRL/RYW Bldg 620
2241 Avionics Circle
WPAFB, OH 45433-7333
Michael.Nowak@WPAFB.AF.MIL

Technical POC:

Mr. Kevin Sweere, AFRL/RYW
AFRL/RYW Bldg 620
2241 Avionics Circle
WPAFB, OH 45433-7333
Kevin.Sweere.ctr@us.af.mil

3. **Academic Area/Field and Education Level:** Software Engineering / Computer Engineering / Computer Security / Networking (BA/BS, MS level)
4. **Objectives:** Add additional authentication technologies. For smartcard authentication, reduce stack to essential code only (e.g. possibly removing Java VM), add internal and external auditing tools wrt integrity. Define and implement input filtering for each authentication technology. Conduct static and dynamic software security analysis. Iteratively apply the Three Tenets of Cyber-Security design methodology. Collect webSSO end node metrics (e.g. Google Analytics). Evaluate the webSSO's and connections vulnerabilities. Contribute to Central Authentication Service open source community (<http://www.jasig.org/cas>). Develop the easily adopted, deployable Secure End Node Authenticator (SENA) product. Provide evidence for an accreditation (DIACAP) package.
5. **Description:** The Secure End Node Testbed (SENT) is a secure, non-persistent, Single Sign On webserver (webSSO) and a foundational tool for research and development of various remote user and device authentication technologies and methods. SENT is both the system to create customized LiveCDs and the LiveCD itself designed to run within a Department of Defense (DoD) network's public-facing demilitarized zone (DMZ). SENT may lead to the Secure End Node Authenticator (SENA), a type-accredited, hyper-secure, nimble, free-to-acquire, extremely-low-total cost system that can provide a small DoD unit a custom authentication webSSO within a just few days. First phase's report and code available at https://software.forge.mil/sf/projects/secure_end_node_testbed_sent_a_1. One SENT implementation deployed and providing CAC-in for Gmail, <https://sent.afrl-wrs.hpc.mil/>.
6. **Research Classification/Restrictions:** None for research. Deployment on DREN require DoD PKI certificates which may require partnership with a DoD employee (network administrator).
7. **Eligible Research Institutions:** Place an X in all that apply.

Universities (DAGSI)



AFIT (only)



USAFA