Progress Report

DOE award: DE-SC0008597 (University of Illinois)
Project Title: CILogon-HA: Higher Assurance Federated Identities for DOE Science
Project PI: James Basney
Report Date: May 2013
Period covered by this report: September 2012 – May 2013

Progress/Accomplishments During Current Funding Period

The CILogon-HA project began in September 2012. In the nine months since project start, CILogon-HA has 1) issued its first IGTF accredited certificates using InCommon Silver (higher assurance) identities, 2) worked in partnership with Open Science Grid and Globus Online to enable federated access via InCommon, 3) enabled second factor authentication using Google Authenticator, 4) expanded support for SAML outside the web browser, and 5) supported LIGO migration from the DOEGrids CA to the CILogon CA.

In September 2012, Virginia Tech became the first university in the country to achieve the InCommon Silver level of assurance, which CILogon can translate into a credential accredited by the International Grid Trust Federation (IGTF) for acceptance by Open Science Grid and other cyberinfrastructure around the world. CILogon-HA staff collaborated with staff at Virginia Tech and Open Science Grid to demonstrate end-to-end access to Open Science Grid resources using these higher assurance credentials. Because of CILogon's IGTF accreditation, Virginia Tech researchers can also use their credentials for access to XSEDE (Extreme Science and Engineering Discovery Environment) and other computing infrastructure supporting research around the world. As additional InCommon identity providers reach the Silver level, CILogon-HA staff will ensure that users on those campuses can also easily obtain IGTF credentials.

Researchers at over 80 InCommon member institutions (including ANL and LBNL) can now obtain "basic" level of assurance certificates from CILogon, which are accepted by Globus Online and select Open Science Grid services. Over 20 InCommon member institutions were connected to CILogon during the past year. CILogon integrates with Globus Online via the OAuth protocol to provide a seamless log-on experience. In collaboration with Open Science Grid, CILogon has enabled access to Fermilab resources for Grid Laboratory of Wisconsin researchers and access to Brookhaven resources for members of the Snowmass collaboration. Outreach to additional Open Science Grid virtual organizations is ongoing.

CILogon-HA added support for multi-factor authentication via two approaches. First, access to CILogon from Virginia Tech at the Silver level uses a multi-factor smartcard issued by Virginia Tech to researchers. Second, CILogon-HA can add a second authentication factor as a "step-up" level of assurance for certificate issuance. In the current funding period, CILogon-HA added support for the Google Authenticator mobile

app, which implements one-time passwords according to the open standards developed by the Initiative for Open Authentication (OATH) (unrelated to OAuth). CILogon's second factor support is designed to accomodate multiple methods, and CILogon may support additional methods (such as Duo) in the future according to community requirements.

CILogon-HA promoted adoption of the SAML ECP protocol by InCommon identity providers to support federated authentication outside the browser, which is valuable for some scientific workflows. Since September 2012, three additional InCommon members enabled SAML ECP support with CILogon: LIGO, University of Illinois, and University of Wisconsin. University of Wisconsin's support for SAML ECP made access to Open Science Grid more convenient for Grid Laboratory of Wisconsin researchers.

With the retirement of the DOEGrids CA this year, LIGO migrated to using the CILogon CA in production for issuing user certificates for LIGO Data Grid access. LIGO users run the ligo-proxy-init command to authenticate with their @LIGO.ORG (albert.einstein) credentials to obtain a short-lived (3 day) certificate from the CILogon CA. By obtaining short-lived certificates on demand using their existing LIGO identities, LIGO users can avoid the complexities of manually requesting, downloading, managing, and renewing long-lived certificates. In fact, LIGO users need not know anything about CILogon or X.509 certificates to use ligo-proxy-init and do their work on the LIGO Data Grid. Behind the scenes, ligo-proxy-init uses the SAML ECP protocol via InCommon to authenticate to CILogon, enabling CILogon to issue certificates via the command-line for LIGO identities.

A paper presenting CILogon, including the combined results from NSF Award 0943633 (September 2009 through August 2013) and this DOE award, has been accepted for presentation at the XSEDE13 conference and inclusion in the conference proceedings:

> Jim Basney, Terry Fleury, and Jeff Gaynor, "CILogon: A Federated X.509 Certification Authority for CyberInfrastructure Logon," XSEDE Conference, July 2013, San Diego, CA.

Plans for Next Year Funding Period

In the second year of the project, CILogon-HA will 1) engage with additional DOE facilities on use of federated identities, 2) integrate with additional InCommon Silver identity providers as they come online, 3) adopt emerging protocols including OpenID Connect for integration with external services, 4) promote international level-of-assurance standardization through IGTF and REFEDS, and 5) continue operation and support of the CILogon-HA service for existing users.

Globus Online and Open Science Grid will continue to be key project partners, facilitating adoption of CILogon-HA by additional DOE facilities and virtual organizations. For example, discussions are currently underway for enabling federated authentication to Globus Online for NERSC users and federated authentication to Open

Science Grid for Computational Sciences at Indiana University (CSIU) virtual organization members, using CILogon-HA services. An upcoming release of the Globus Connect Multi User (GCMU) software will enable easy installation of Globus Online and CILogon client software for integration with federated identities by InCommon members.

CILogon-HA project staff will continue to post news items on project milestones at http://www.cilogon.org/news.

Unexpended Funds

The projected year-end (August 31, 2013) balance for this award is $23,714 (16% of the $150,000 project year 1 budget). These excess funds, to be carried over to the second project year, are due to staff transitioning from other projects during the first year of this project. This project is now fully staffed, and current budget projections show a balance under 5% at end of project year 2 and all funds expended on schedule by end of project year 3.