

Nebraska ESUCC InCommon K-12 Pilot Summary

September 14, 2015

Overview

Our experience with the Quilt-Internet2 InCommon Federation's K-12 pilot program has been incredibly valuable for the knowledge our team has gained in the area of federated identity and the connections made with collaboration partners, best practices and vendor services during the course of our project. These will have a profound positive impact on our ongoing and future work in service of Nebraska K-12 education and allow us to contribute to work in other states nationwide. While we did not meet our original goals and expectations, thanks to the lessons learned and others' shared experiences we have a working federated identity system in pilot with a number of Nebraska school districts and are poised to spread this technology statewide in the next 2-3 years, as well as to offer access to a rich set of applications for participating school districts and educational service units (ESUs). Even larger than the immediate benefits of this project is the ongoing collaboration that has developed between Nebraska efforts, the IlliniCloud and other partners. We envision a community of partners developing, contributing, and supporting open software and solutions for K-12 education nationwide.

Original Pilot Description

(This is presented in the original form that was submitted in Fall, 2013)

Pilot target constituents: Initially, the Northeast Nebraska Network Consortium (NNNC) and the Greater Nebraska Educational Network Consortium (GNENC) including 10 ESUs and 182 K-12 school districts, progressing to 17 ESUs and 249 K-12 school districts post-pilot.

Pilot Scope: Initially 2 IdPs during the 2013-2014 school year

Initial Pilot Goals:

- To federate every K-12 staff member and student within the NNNC and GNENC pilot regions
- To federate access to:
 - Safari Montage learning object repository systems
 - Pilot data dashboard system in development by the Nebraska Department of Education
 - Zimbra e-mail service
 - Atomic Learning
 - Learn360
 - eLibrary
 - Educate state leaders in educational technology to the importance and benefits of federated identity management and InCommon
 - Assist with the development of the K-12Person schema
 - Use our experiences to inform our design work toward a state-wide K-12 federation

Targeted start and end dates for initial pilot: May, 2013 – May, 2014

Post-pilot longer term goals:

- Construct a state-wide federation of all K-12 staff members and students (possibly 8 IdPs) by the end of the 2014-2015 school year
- Progressively integrate all internal applications as service providers in the state federation and external applications via the InCommon federation and NET+ services
- Develop a state-wide system for user identity including stronger authentication measures such as multi-factor authentication where appropriate.

Federation model selected for project: In pilot, two single IdPs with delegated administration.

Post-pilot, possibly a federation-to-federation with IdP Proxy for the interface to InCommon. This will be in design during the pilot project.

InCommon Affiliate assistance/role in pilot: The Gluu EDU solution has been purchased for the NNNC region. We are in initial discussions with other affiliates and will evaluate the fit of those solutions to our needs as we progress.

Targeted applications or cloud services:

- Safari Montage learning object repository
- Pilot data dashboard system in development by the Nebraska Department of Education
- E-mail service (Zimbra, others)
- Atomic Learning
- Learn360
- Other educational content licensed to Nebraska schools
- Google Apps for Education
- Learning Management systems (Blackboard, Moodle, ANGEL)
- Student Information Systems
- Human Resources Information Systems

Outcomes

Challenges Encountered

- School districts, ESUs and application providers all had and continue to have work to do to prepare our environments for implementation of a federated single sign-on system, from shoring up account management practices to security and authorization decisions and policies. There is a wide variance in the availability and suitability of local district directory systems, and more work is needed in this area to be able to serve all districts statewide.

- Our team approached this work with some knowledge of federated identity through the experiences of the University of Nebraska campuses, but did not anticipate the amount of research and education that would be needed for potential administrators and users of a federated K-12 system.
- Old models of application provisioning such as uploads of spreadsheets and manual entry have been in place for so long that many technology personnel are comfortable with that process and don't immediately understand the benefits of integrating applications with a single sign-on system linking data and identity management functions. It takes substantive discussion and demonstration around the federated environment to build understanding.
- Availability of staff time and other financial resources were constraints to our progress, but also led us to be careful and creative in our approach and implementation.

Spending

We have committed resources to the project in four main areas: staff time, contracted services, hosting infrastructure, and travel related to meetings and conferences. Altogether our estimated commitment over the 2 years of the project has been \$250,000 to-date.

Successes and Benefits

The regular pilot conference calls and connections made with other projects allowed us to hear and benefit from those collective experiences and explore a wide variety of solutions and providers. We took the considerable time of nearly two years to research the options that best fit our needs and resources and to build support among our in-state partners, ESUs and school districts. Our organization and partners decided to contract with Unicon to consult with us on the final selection and implementation of open source, open license software to meet our needs for a SAML identity provider/proxy system and application launch portal. The project team selected the SimpleSAMLphp and uPortal projects to meet these needs. SimpleSAMLphp lives up to its name and has been very flexible and extendable to work with the authentication and attribute sources presented by our pilot districts. The IlliniCloud consortium commissioned significant extensions to the uPortal software with Unicon's services. These extensions allow an operator to serve multiple school district "tenants" with one uPortal instance, as well as presenting a very clean tablet-like application launch interface. IlliniCloud's work spanned 3 years and a significant financial investment, contributions which is now available to all uPortal users worldwide. We are very pleased to be able to contribute in at least a small way to the work begun by their project.

Our pilot project is currently serving 7 school districts which are a cross-section of sizes and geographic locations, serving just over 60,000 students within the state. These districts are using the single sign-on environment to access a student data dashboard application called ADVISER, which was developed using software components produced by the Ed-Fi Alliance. The system is designed to compile real-time, actionable data and present it in a convenient metric-based view for teachers to allow early identification of problem areas or trends involving their students. Key personnel in these districts are using the system to validate their data and test the application with most planning a wider rollout of the system to staff members during the

2015-16 school year. Thirty additional school districts are preparing to adopt the system and stage live student data in late 2015 or early 2016.

Before the vision for a federated single sign-on environment supporting a broad set of applications can be realized in all Nebraska school districts, teachers, students and administrators must manage individual, unsynchronized accounts over the set of applications they use in their daily work. Provisioning, deprovisioning and correlation of these accounts are manual processes. This leads to wasted time enabling and disabling access as enrollments change, and managing password problems. Our BlendEd initiative's leaders have identified the frustration of logging into multiple systems as a barrier to educators adoption and use of applications and resources, regardless how high their quality.

The federated single sign-on solution envisioned and piloted by this project is one of three components that will streamline student, teacher and administrator access to and management of an integrated learning environment. The single sign-on framework will facilitate easy access to applications from system administrators easily selecting and managing access to students and teachers being one click away from an application once it has been turned on for their use. A second component of this environment is the collection of applications and resources into a launch portal where users can see and access a rich set of applications that have been configured and provisioned for their use--one click away. Finally, automatically correlating user accounts and access across multiple applications is an important step toward relating formative activity data from these applications and providing real-time, actionable data to teachers, students, parents and administrator to personalize and improve student learning and outcomes.

Moving Forward

Lessons Learned and Recommendations

The name "InCommon" is very fitting in many ways to the needs and solutions we became aware of through our pilot project. Knowing that K-12 systems nationwide have similar needs and use similar software technology to meet those needs, it should not come as a surprise that many approach the project of federation and single sign-on in similar ways as well. There were many years of thought, planning and work invested in solutions to the challenges in this project space and that has only increased through the work of our fellow pilot projects. High quality solutions are available, and a growing community is very open to sharing our experiences, processes, and designs with others who have interest. The first and best point of advice is to talk to those around you, those responsible for efforts in other states and institutions.

Another is that while this technology simplifies access to applications and resources for our users, change is involved and can be difficult to understand and to accept. Education is needed at all levels for those who administer, support and use the federated environment to build understanding of the changes to operational processes and daily use that are possible in the federated environment, and to equip them to effectively use the system.

A third recommendation applies to all projects, and that is to consider the sustainability of any solutions implemented. It is vital to our efforts that a solution be implemented which is both available to all of our constituents (school districts of all sizes, locations and financial conditions) and which can be provided reliably on a long-term basis. We must match our staffing availability and funding sources with the software licensing, hosting, network and staffing requirements. The open source software community is very helpful in this regard, but it is a fallacy to believe this type of software is “free”.

Future Plans and Next Steps

Having the live system in place and in the hands of pilot districts, we plan to expand and refine the system, adding additional applications, functionality and numbers of participating districts. As mentioned above, a number of additional school districts and ESUs are interested in using the system. With original pilots and the first wave of early adopter districts who are preparing to use the system, about 40 districts and 10 ESUs will be on board by the end of the 2015-2016 school year, with another 50 districts and 7 ESUs planned during the 2016-2017 school year and statewide rollout to all 245 districts during the 2017-2018 school year. Learning management systems, existing in-state applications, and Google Apps for Education are early targets for applications to be added to the environment. We will continue a process of suggestion and review by participating districts and ESUs to prioritize application and feature development.

For the duration of the rollout activities, we expect to continue to face the challenges of changing habits and practices both of users and system administrators, as well as to continue to be responsive to the needs, refinements and advancement of applications, resources and data that educators will need to readily access. To address these challenges and the unexpected, we will continue and enhance our process of user input, review and prioritization that has brought the work to its present state along with continuing to build our collection and network of professional development resources related to this project.

We also will continue our work with collaboration partners in other states to strengthen those relationships, to build a foundation for related self-sustaining open source software projects that can be of benefit nationwide, and to explore operational and financial models that will allow the K-12 institutions of Nebraska to participate in broader federations such as InCommon.

Conclusion

We are very thankful for our involvement in the Quilt-InCommon K-12 federation pilot project for the enhanced services that will be available to all K-12 institutions in our state as a result and for the expanded awareness of the benefits of federation and collaboration in a nationwide context. Our combined work will have a great and lasting impact on K-12 education.