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When you want to share secured online services or access restricted digital content, the Shibboleth system offers a powerful, scalable, and easy-to-use solution. It leverages campus identity and access management infrastructures to authenticate individuals and then sends information about them to the resource site, enabling the resource provider to make an informed authorization decision. Shibboleth software is at work today providing this capability—it's a powerful, secure, standards-based and user-friendly, interrealm access-control solution for research and education.

The Shibboleth system provides a standards-based link between existing campus authentication systems and resource providers of all kinds. For example, when a student requests access to a protected video clip, her home organization (origin site) requests her to authenticate (if she has not done so already) and then passes on the information that she is enrolled in Biology 562 to the site housing the video. The provider (target site) uses the fact that she is enrolled in this course to determine her eligibility to access the video.

Middleware components enable "transparent use," providing consistent infrastructure for security, privacy and access to protected resources:

- Identity—unique markers of person, machine, service, or group
- Authentication—how you prove or establish your identity
- Authorization—what an identity is permitted to do
- Directories—where an identity's basic characteristics (attributes) are kept

From anywhere in the world, users authenticate at their home campuses and those institutions pass information (attributes) on each user's behalf to the resource provider. Users don't need to remember multiple passwords for each restricted site to which they have access.

Below are typical scenarios that the Shibboleth system addresses:

- Enabling anonymous access (and thereby protecting personal privacy) by a member of the campus community to a licensed information resource available to "active members of the community."
- Ensuring anonymous access to a remote information resource where access is limited to "people associated with Course X at the origin site."
- Providing access to a restricted service using an attribute such as a person's name to determine authorization. For example, a team of researchers forming a multi-institutional workgroup can control the release of their attribute information to the workgroup site. In this scenario, access would be denied if an individual chose not to provide the required information.

The Shibboleth System Is a Solution for the Campus and the User

Because only information (attributes about the person requesting authentication) is exchanged, the Shibboleth system allows institutions with different technology architectures and security systems to easily collaborate without using proxies or managing thousands of external or transitory accounts. It also simplifies the process of integrating a service, such as access to a licensed library resource with campus-based authentication systems. The Shibboleth system can:

- Leverage existing infrastructure (once it's installed, other Shibboleth software-enabled sites can be easily added).
- Facilitate collaboration with other campuses, organizations, and off-campus vendor systems.
- Operate without releasing identity, where appropriate.

Who Is Using the Shibboleth System?

Internet2 and a group of leading campus middleware architects from Internet2 member schools and corporate partners constitute the project and implementation team for the Shibboleth initiative. Organizations collaborating in its development include national and international higher education institutions, their partners, content providers, and government agencies.

- At The Pennsylvania State University during fall semester of 2002, Information Technology Services and the Department of Physics piloted the Shibboleth system. Now in production for more than a year, the Shibboleth system has successfully enabled 1,200 Penn State students enrolled in three physics courses to access resources at North Carolina State University to complete their course assignments.

- The National Science Digital Library (NSDL), funded by the National Science Foundation, uses the Shibboleth system to facilitate seamless access for its patrons and community participants. David Millman, the director of Research and Development at Academic Information Systems at Columbia University and a member of the NSDL Core Integration Team said, "The NSDL has long been committed to the Shibboleth technology because of its scalable, distributed architecture and its privacy protections, both critical goals of the NSDL itself."

During 2003, twenty university campuses and higher education service providers, along with six digital content providers/publishers and three course management vendors/publishers, participated in the Shibboleth Pilot Project. Numerous campuses and higher education associations as well as content, service, and learning management system vendors are working on improvements and enhancements to the Shibboleth system.

"At Ohio State, we believe that the ability to provide trusted authentication across different organizations is an essential requirement for today's course management systems. We're working with other universities, as well as our library, to offer single sign-on capabilities to diverse and distributed student populations with the course management system as the front door to these integrated services."

Steve Acker, Director of Learning Technologies Research and Innovation at The Ohio State University

Federations: Sharing Resources across Domains

When a number of organizations join together to use Shibboleth software to share access to resources in a common way, this is called a Federation. The Shibboleth system supports federations by providing scalable methods to manage and distribute configuration and security information among a large number of organizations, and a common vocabulary for user attributes. Internet2 is establishing federations in support of the needs of US Higher Education, and other federations are emerging in other communities.

To Learn More

Visit shibboleth.internet2.edu for information about implementation requirements, software downloads, email lists, and software demonstrations. Contact shib-info@internet2.edu with specific questions.

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