Identity Provider & Service Provider

Presentation by

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and

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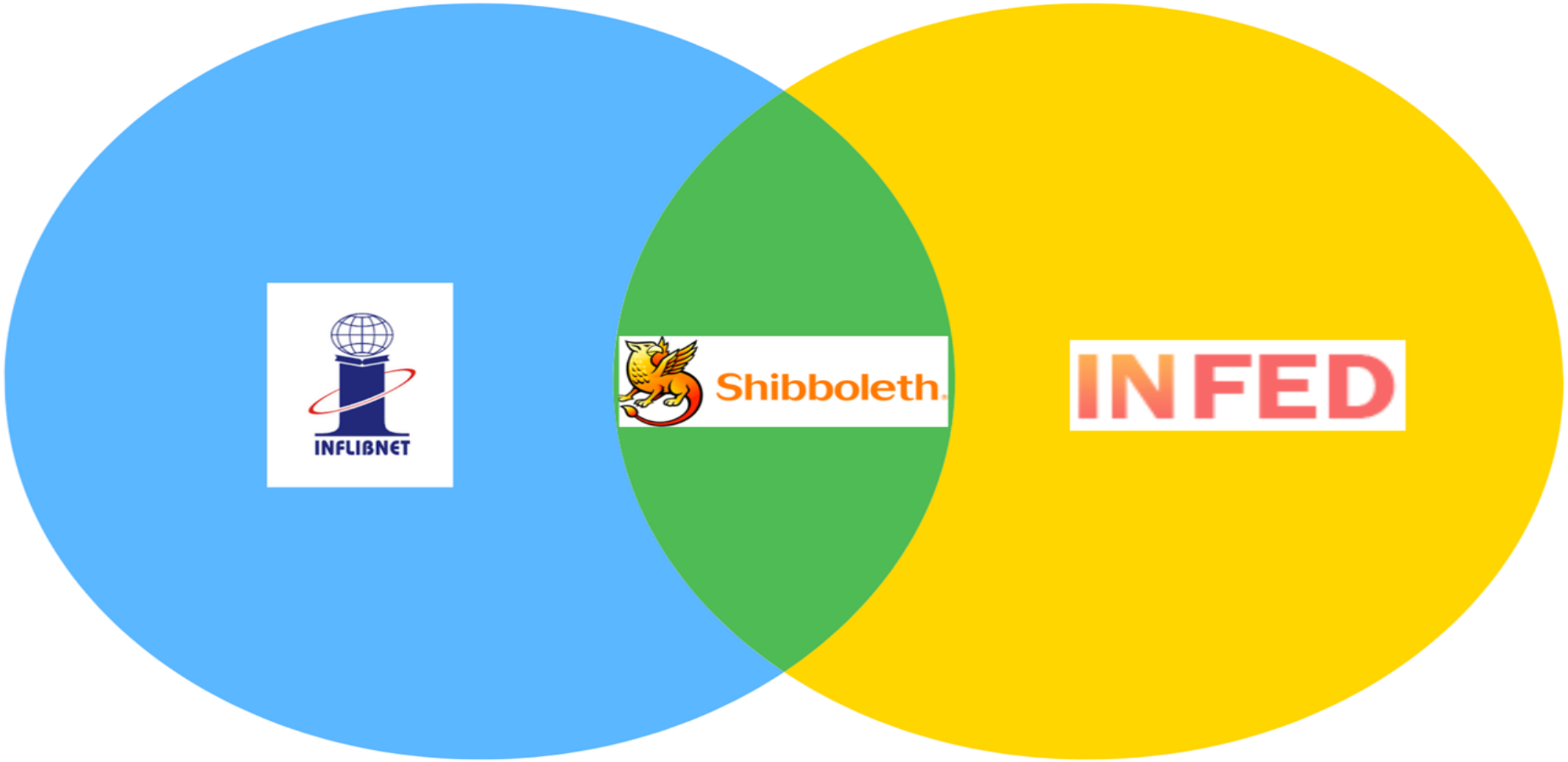
- Information and Library Network (INFLIBNET) Centre, Gandhinagar is an autonomous Inter-University Centre of UGC (Ministry of Education, Govt. of India).
- Initiated by the UGC in March 1991 as a project under the IUCAA, it became an autonomous Inter-University Centre in June 1996.
- INFLIBNET modernises university libraries in India to maximise information use. INFLIBNET aims to promote intellectual communication in India.

INFED

- INDIAN Access Management Federation (INFED) was established by INFLIBNET to coordinate with in the process of implementing a user authentication and access control mechanism.
- The INDIAN Access Management Federation (INFED) oversees the management of trust between all parties, including publishers and member institutions.
- In order to authenticate authorised users from institutions, the INDIAN Access Management Federation (INFED) has embraced Shibboleth, an open source programme based on standards.

- Shibboleth is a standards-based, open-source SSO solution that allows various institutions to access network services in a federation and it uses (SAML).
- Shibboleth is a open-source software package that authenticates authorised users using an organization's internal identity and access management system.
- it establishes protocols for the safe exchange of identity information between institutions and service providers.
- Shibboleth builds rust relationship, providing federated, single sign-on access for end-users.


INFLIBNET
Shibboleth
INFED

Single Sign-On (SSO) System

Single sign-on is an authentication scheme that allows a user to log in with a single ID to any of several related, yet independent, software systems.
True single sign-on allows the user to log in once and access services without re-entering authentication factors.
Reference (How its works): https://www.onelogin.com/learn/how-single-sign-on-works

LDAP (Lightweight Directory Access Protocol)

LDAP, the Lightweight Directory Access Protocol, is a mature, flexible, and well supported standards-based mechanism for interacting with directory servers.

It's often used for authentication and storing information about users, groups, and applications, but an LDAP directory server is a fairly general-purpose data store and can be used in a wide variety of applications.

Reference: https://www.techtarget.com/searchmobilecomputing/definition/LDAP
https://www.varonis.com/blog/the-difference-between-active-directory-and-ldap

SAML (Security Assertion Markup Language)

SAML stands for Security Assertion Markup Language. It is an XML-based open-standard for transferring identity data between two parties: an identity provider (IdP) and a service provider (SP).

Identity Provider — Performs authentication and passes the user's identity and authorization level to the service provider.

Service Provider — Trusts the identity provider and authorizes the given user to access the requested resource.

Reference: https://auth0.com/blog/how-saml-authentication-works/
: https://www.onelogin.com/learn/saml

The sv-saml-client3.xml file looks like this

```
<xwss:JAXRPCSecurity xmlns:xwss="http://java.sun.com/xml/ns/
xwss/config">
   <xwss:Service>
      <xwss:SecurityConfiguration dumpMessages="true">
        <xwss:SAMLAssertion type="SV" strId="SV-123"/>
         <xwss:Sign includeTimestamp="false">
            <xwss:X509Token certificateAlias="xws-security-
client"/>
            <xwss:Target type="qname">
                {http://schemas.xmlsoap.org/soap/
envelope/}Body
            </xwss:Target>
            <xwss:SignatureTarget type="uri" value="SV-123">
               <xwss:Transform algorithm="http://docs.oasis-
open.org/wss/2004/01/
                    oasis-200401-wss-soap-message-
security-1.0#STR-Transform">
                  <xwss:AlgorithmParameter
name="CanonicalizationMethod"
                     value="http://www.w3.org/2001/10/
xml-exc-c14n#"/>
               </xwss:Transform>
            </xwss:SignatureTarget>
         </xwss:Sign>
         <xwss:Timestamp />
      </xwss:SecurityConfiguration>
   </xwss:Service>
    <xwss:SecurityEnvironmentHandler>
      sample.SecurityEnvironmentHandler
    </xwss:SecurityEnvironmentHandler>
</xwss:JAXRPCSecurity>
```

Refrence: https://docs.oracle.com/cd/E17802_01/webservices/webservices/docs/1.6/tutorial/doc/XWS-SecuritySamples7.html

Login Page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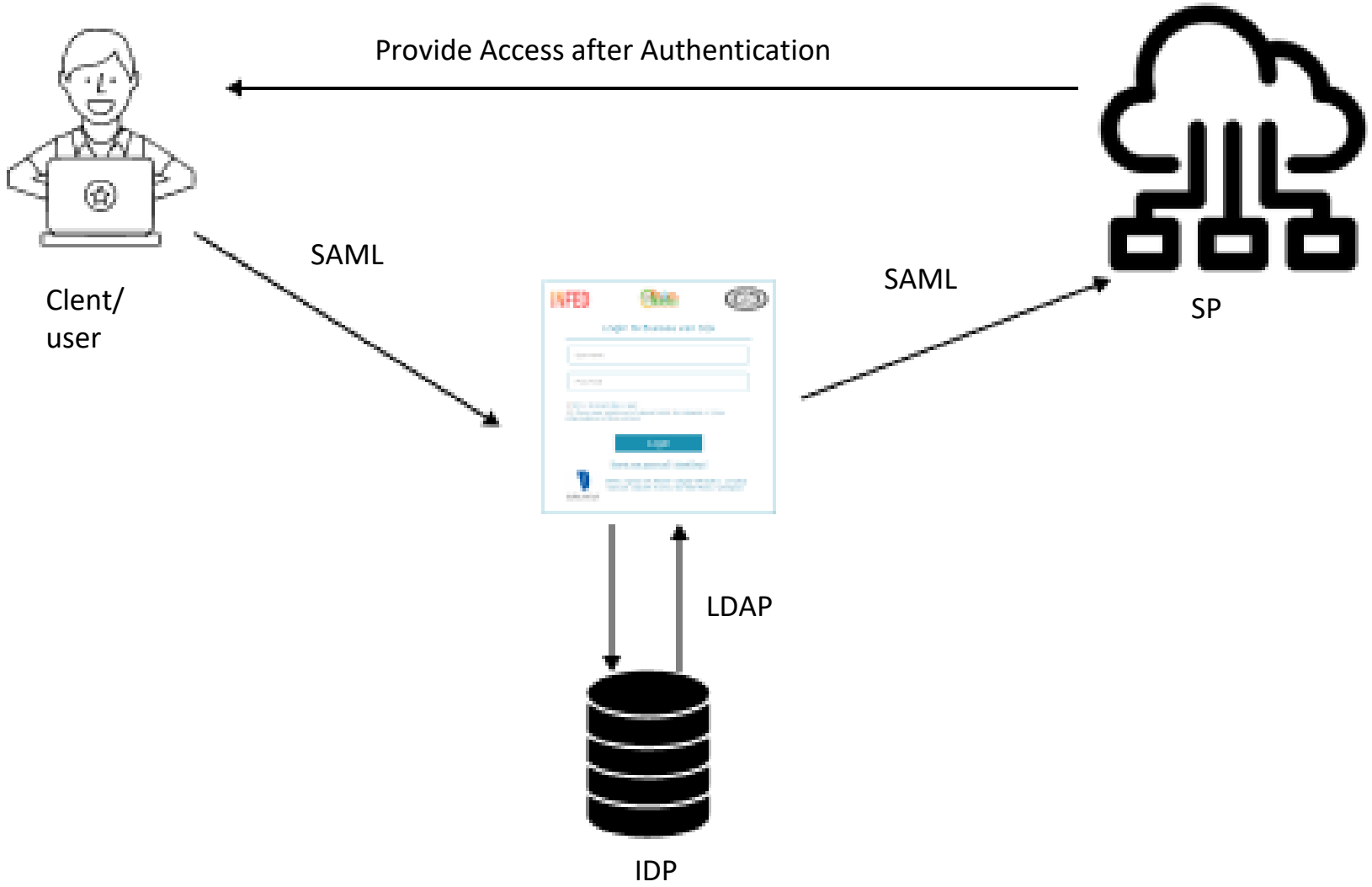
Shibboleth


Provide Access after Authentication
SAML
SAML
Clent/
user
SP
LDAP
IDP

Identity Provider & Service Provider (Components of Shibboleth)

Shibboleth consists of the following two primary components:

- **Identity Provider**: Identity Provider software is run by the institutions having a database of users entitled, to access subscription-based e-resources or services. Shibboleth leverages the organization's identity and access management system so that the individual's relationship with the institution can be used to determine access rights to subscription-based e-resources or services. In other words, different categories of users in an institution may have access to different sets of resources based on attributes assigned to them.
- **Service Provider:** Service Provider software is run by the publisher of a subscription-based e-resource or service. The Service Provider receives a set of pre-defined attributes from the Identity Provider and provides access to subscribed e-resources or services to the user depending upon the attributes received.

List of All Federations on Shibboleth

- https://technical.edugain.org/status

Software Used

- The software used for implementation of Shibboleth is all open source software developed by other projects incluading-shibboleth IDP (IDP.war), Shibboleth SP, Open LDAP, SHARPE PostgreSQL, In house-developed user creation interface, Web Server (Apache), Application Server (Tomcat), AuthN: SSOHandler used for authentication, AuthZ: Attribute Authority allowing AuthZ, HTTP, form-based or existing session/assertion (Cookie), etc.

OpenSAML

OpenSAML is a set of open source C++ & Java libraries meant to support developers working with the Security Assertion Markup Language (SAML). OpenSAML 2, the current version, supports SAML 1.0, 1.1, and 2.0.
Reference: https://shibboleth.atlassian.net/wiki/spaces/OpenSAML/overview

OpenAthens

It is an authentication system that allows you to access a range of quality information online.
OpenAthens is an identity and access management service, supplied by Jisc, a British not-for-profit information technology services company. Identity provider organisations can keep usernames in the cloud, locally or both. Integration with ADFS, LDAP or SAML is supported.
Reference: https://www.nice.org.uk/about/what-we-do/evidence-services/journals-and-databases/openathens

Advantages

- Shibboleth enables Single sign-on system.
- Shibboleth facilitates federated system.
- Protect data and user’s privacy

Limitations

- Non-proxy remote authentication fails. Many libraries struggle to create and preserve shibboleth.
- Global log out is Shibboleth's biggest difficulty. Shibboleth can't log out of all services at once, to show.
- Shibboleth's security risk is a major negative. Single Sign-On interface raises security issues because it's on both the management and client's side.
- Shibboleth implementation on proxy servers is more difficult than conventional servers.

References

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- Kamal, P., Mustafiz, S., Rahman, F. M. A., & Taher, R. (2015). Evaluating the Efficiency and Effectiveness of a Federated SSO Environment Using Shibboleth. *Journal of Information Security*, *06*(03), 166–178. https://doi.org/10.4236/jis.2015.63018
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