Integrating MyProxy with Site Authentication

Jim Basney
Senior Research Scientist
National Center for Supercomputing Applications
University of Illinois at Urbana-Champaign
jbasney@ncsa.uiuc.edu

http://myproxy.ncsa.uiuc.edu/

MyProxy

- **A service for managing X.509 PKI credentials**
  - A combined credential repository and certificate authority
- **An Online Credential Repository**
  - Issues short-lived X.509 Proxy Certificates
  - Long-lived private keys never leave the MyProxy server
- **An Online Certificate Authority**
  - Issues short-lived X.509 End Entity Certificates
- **Supporting multiple authentication methods**
  - Passphrase, Certificate, PAM, SASL, Kerberos
- **Open Source Software**
  - Included in Globus Toolkit 4.0

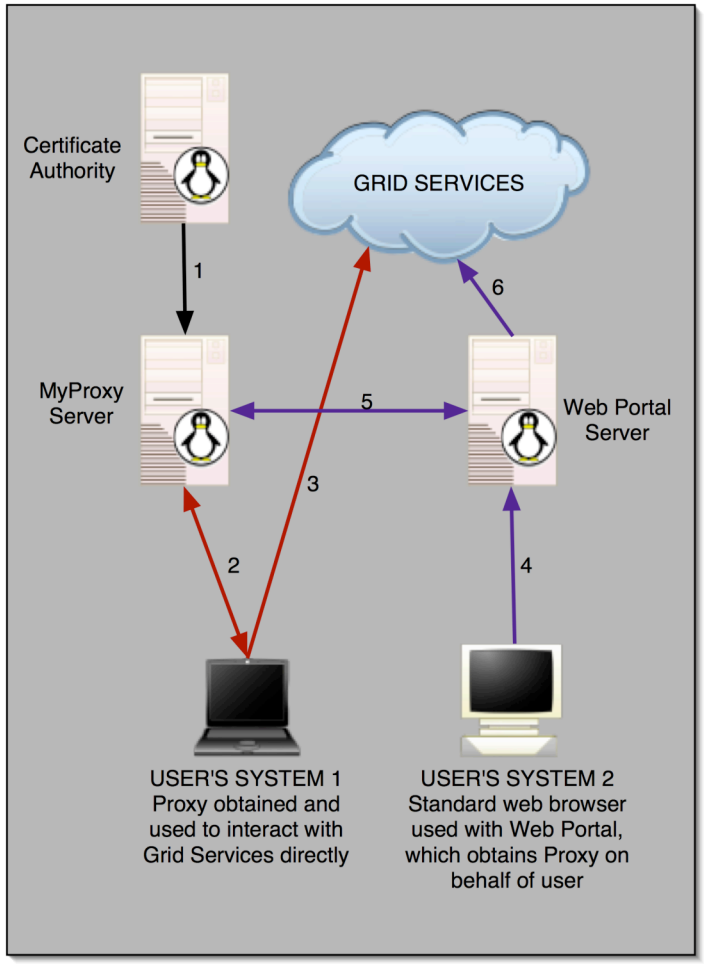
MyProxy Logon

- **Authenticate to retrieve PKI credentials**
  - End Entity or Proxy Certificate
  - Trusted CA Certificates
  - Certificate Revocation Lists
- **MyProxy maintains the user's PKI context**
  - Users don't need to manage long-lived credentials
  - Enables server-side monitoring and policy enforcement
    - For example: passphrase quality checks
  - CA certificates and CRLs updated automatically at login

MyProxy Online Credential Repository

- **Stores X.509 End Entity and Proxy credentials**
  - Private keys encrypted with user-chosen passphrases
  - Credentials may be stored directly or via proxy delegation protocol
  - Users can store multiple credentials from different CAs
- **Access to credentials controlled by user and administrator policies**
  - Set authentication requirements
  - Control whether credentials can be retrieved directly or if only proxy delegation is allowed
  - Restrict lifetime of retrieved proxy credentials

MyProxy and Grid Portals



GridPort

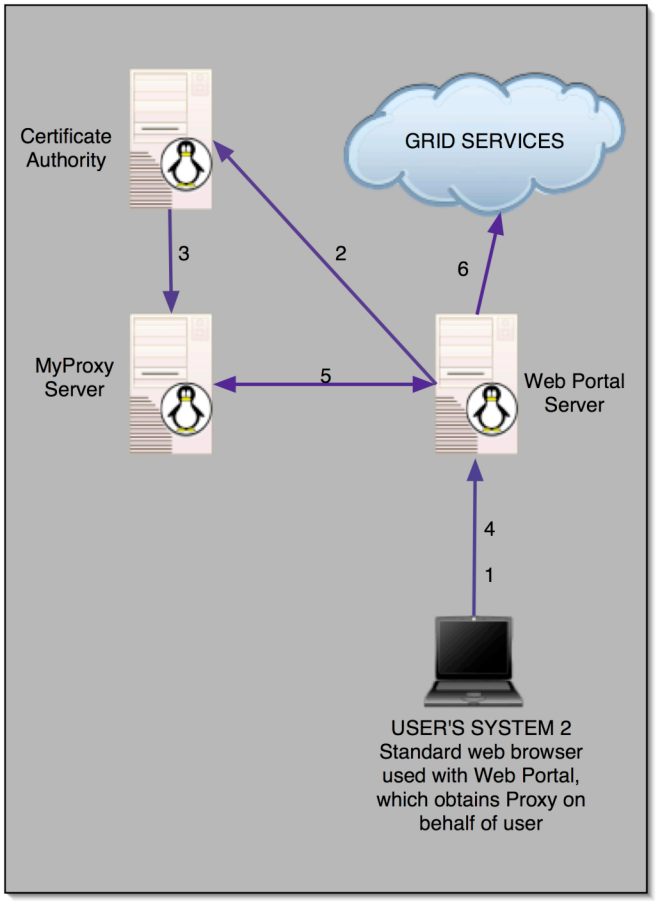
OGCE
open grid computing environment

gridsphere portal framework
open-source / portlet jsr168 compliant

User Registration Portals

PURSE:
Portal-based User Registration Service

GAMA:
Grid Account Management Architecture



MyProxy Online Certificate Authority

- **Issues short-lived X.509 End Entity Certificates**
  - Leverages MyProxy authentication mechanisms
  - Compatible with existing MyProxy clients
- **Ties in to site authentication and accounting**
  - Using PAM and/or Kerberos authentication
  - “Gridmap” file maps usernames to certificate subjects
- **Avoid need for long-lived user keys**
- **Server can function as both CA and repository**
  - Issues certificate if no credentials for user are stored

Pluggable Authentication Modules

- **Flexible, standard authentication mechanism**
  - Specified by DCE RFC 86.0
  - Supported by Unix/Linux vendors
- **Many available modules:**
  - Authentication: Unix Password, One Time Password, Radius, Kerberos, AFS, LDAP, SQL, SMB, Netware
  - Access Control: Access, Deny, Filter, Tally, Time
- **MyProxy server PAM support**
  - Configure PAM authentication as sufficient or required
  - Create standard PAM configuration file for MyProxy
  - Compatible with existing MyProxy clients

Simple Authentication and Security Layer

- **Authentication protocol framework**
  - Specified by IETF RFC 2222
  - Used by LDAP, POP, and IMAP
- **Supports multiple mechanisms:**
  - PLAIN, DIGEST-MD5, GSSAPI, NTLM
- **MyProxy support:**
  - Configure available mechanisms for client and server
  - Tested with GSSAPI (Kerberos) and PLAIN
- **Use Kerberos ticket to obtain PKI credentials from MyProxy**

Example: LTER Grid Pilot Study

- **Build a portal for environmental acoustics analysis**
- **Leverage existing LDAP usernames and passwords for portal authentication**
  - Obtain PKI credentials for job submission and data transfer
  - Using MyProxy PAM LDAP authentication

Long Term Ecological Research
Network Information System

National Center for Supercomputing Applications

NCSA

Example: TeraGrid User Portal

- **Use TeraGrid-wide Kerberos username and password for portal authentication**
  - Obtain PKI credentials for resource access across TeraGrid sites via portal and externally
- **Plan to use MyProxy CA with Kerberos PAM authentication**
  - Leverage existing NCSA Online CA

Example: NERSC OTP PKI

- **Address usability issues for One Time Passwords**
  - Obtain session credentials using OTP authentication
- **Prototyping MyProxy CA with PAM Radius authentication**
  - ESnet Radius Authentication Fabric federates OTP authentication across sites

National Energy Research Scientific Computing Center

Conclusion

- **MyProxy leverages site authentication**
  - Using PAM and SASL to obtain PKI session credentials
- **MyProxy eases credential distribution**
  - User Registration Portals provide an interface for loading credentials into MyProxy
  - Online CA distributes credentials using existing MyProxy clients and authentication methods

- **For more information:**
  - http://myproxy.ncsa.uiuc.edu/
  - jbasney@ncsa.uiuc.edu