

# Securing Large Collaborations

By

Abdelilah Essiari (LBNL)

# Outline

- Present some of the issues with securing shared resources in collaborative environments where resources and users cross trust boundaries.
- Provide solutions and show how they are being used in a P2P file sharing application.

# Problem

- Trusted/authorized users are predefined.
  - Hard to meet ‘new people’ online during the collaboration.
- Centralized policies are managed by third party entities.
  - Hard to invite a person to a collaboration in a spontaneous fashion.

# A More Flexible Approach

- Provide ‘public but secure’ components.
  - Public and Secure
  - Secure and trusted
- Give more power to collaborators.
  - Invite
  - Escort

# Example: SCISHARE

- Queries
  - Multicast (SGL/IGP)
  - Centralized policies
- Query Responses (METADATA)
  - Unicast (SSL/HTTP)
  - Users define the policies
- Transfer (DATA)
  - Unicast (SSL/HTTP)
  - Users define the policies

# SSL: Secure and Public

- Every user can share and download
  - Provide users with pseudo certificates if they don't have any.
  - Trust Managers
    - Accept any valid chain
    - Add un-trusted users to a list
    - Users can authorize un-trusted users based on experiences.

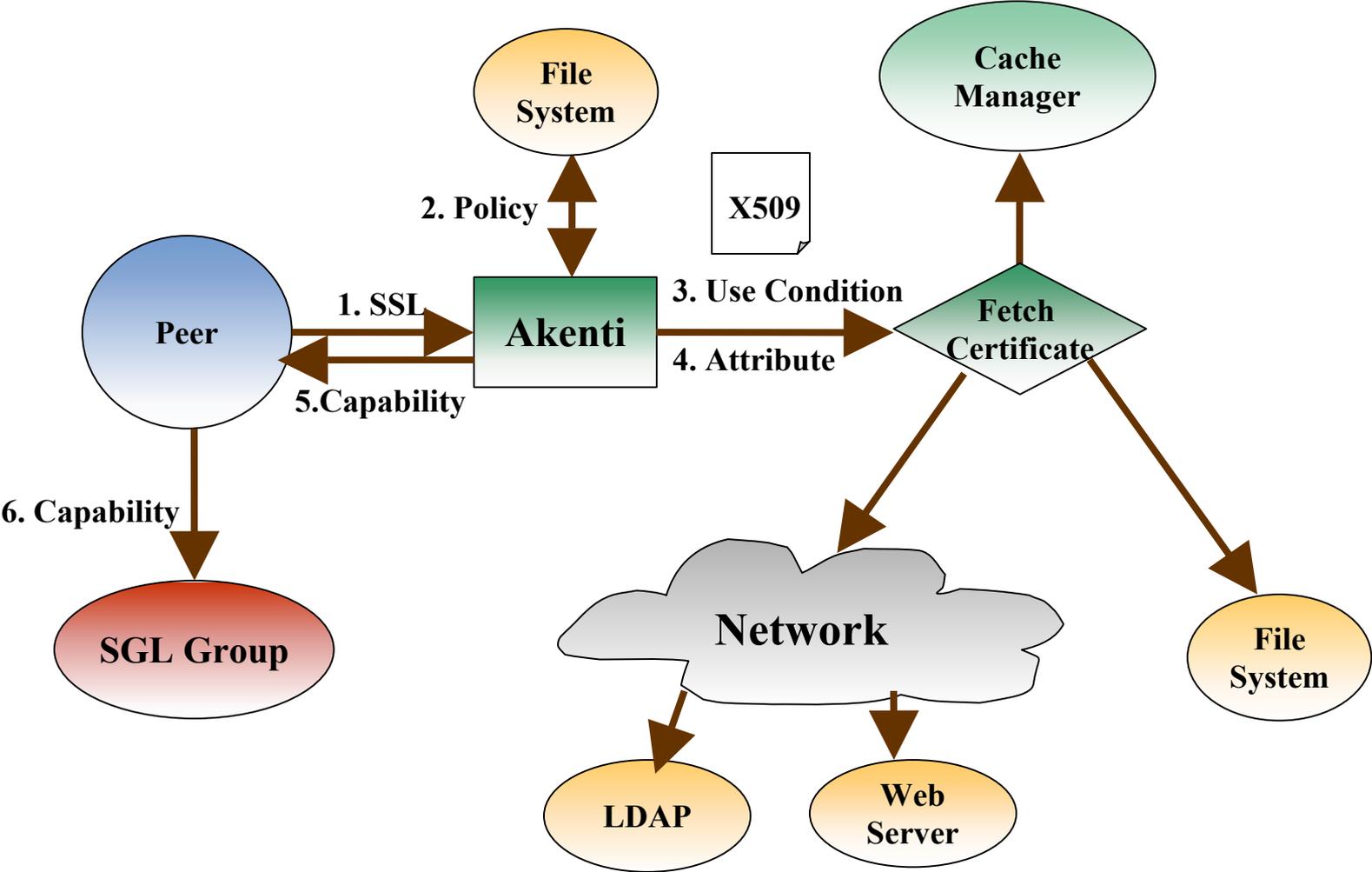
# SGL:Secure and Public

- Ever user can join
  - Pseudo certificates
  - Customized Trust Managers

# SGL: Secure and Trusted

- Central policies
  - Only trusted users can join
- Capability certificates
  - Public keys
  - Expire
  - Signed by the *enforcer*
  - Actions: *join*

# Akenti: Push Model Architecture



# Chaining Capabilities

- Augment the actions with *invite*, *escort*, and *reject*
- Very easy to invite and escort
  - Simply provide the guest with a capability (or invitation)
  - The guest presents the host's capability in addition to the invitation
  - Easy to verify the chain (invite/escort)

# Conclusion

- Did not invent any new technologies
- Did not modify existing technologies
- Akenti capabilities could well be X509 certificates or SAML authorization decisions.