



LIONSHARE

Lionshare@Internet2 Agenda

- LionShare Overview (Alex Valentine)
- LionShare Security (Derek Morr)
- Q&A



LionShare Overview

- The LionShare project is a federated P2P network for academic collaboration.
- Major Components:
 - LionShare Peer
 - PeerServer
 - Security
 - Repositories



Background

- Visual Image User Study VIUS
- Initial Prototype
- Grant from the Mellon Foundation
- Participants:
 - Penn State University
 - Internet 2
 - eduSource/Simon Fraser University
 - Open Knowledge Initiative (OKI)



LionShare Uses

- Publish Personal Media Collections
- Person to Person Collaboration
- Group Projects
- Departmental Collaboration
- Multi-institutional Collaboration



LionShare Arch

- LionShare Peer Alpha based on the Limewire Open Source Project
- Modified version of the Gnutella Protocol
- P2P + Client/Server Architecture
- Decentralized+Centralized Topology
- Federated Authentication
- Access Control
- Traditional Repositories
- Java (Peer & PeerSever)



Components

- LionShare Peer
- LionShare PeerServer
- SASL CA
- AA
- DR OSID's
- GwebCache



The 3 A's

- Authentication
- Authorization
- Accountability



LionShare Peer

- Components
 - Limewire Backend
 - Hypersonic DB
- Features
 - Search
 - Share
 - Collaborate
 - Organize



Search

- LS Search can search and retrieve from the following components:
 - Other Peers
 - PeerServers
 - Repositories (DR OSID)
 - Other Networks (DR OSID)
 - Local Library
- Browse Host
- Searches are not Authenticated (Scaling Issues)



Share

- Share locally on a Peer
- Share persistently on a PeerServer
- Share metadata Only
- Control access to whom you share with
- Users cannot share anonymously



Collaborate

- Chat
 - One on one chat
 - Group Chat
 - Admin created chatrooms
 - User created chatrooms
 - Implementation Details to Come
- User Profile
- User profile+Group Chat+Browse Host == Collaborative tool



Organize

- Metadata
 - Metadata Entry/Editing
 - Metadata Automation
 - From file
 - Image metadata (jpg, psd)
 - Document metadata (pdf, doc)
 - From profile
 - Batch Metadata Entry
- Local Library Search



Metadata

- Schema Support
 - IEEE LOM (IMS)
 - Dublin Core
 - Custom Schemas
 - By Media Type
 - User Created Schemas*
 - * under consideration



LionShare PeerServer

- Components
 - Gnutella Core
 - Apache Tomcat
 - PostgreSQL
- Features
 - Persistent File Sharing
 - Public Access
 - Administration/Auditing/Stats
 - Implementation details soon



Gnutella Protocol

- Ping
 - Used for probing the network and establishing connections.
- Pong
 - Respond to ping requests and file sharing metadata
- Push
 - A mechanism that allows a firewalled servent to share file-based data to the network.
 - Servent == Peer



Gnutella Protocol (cont)

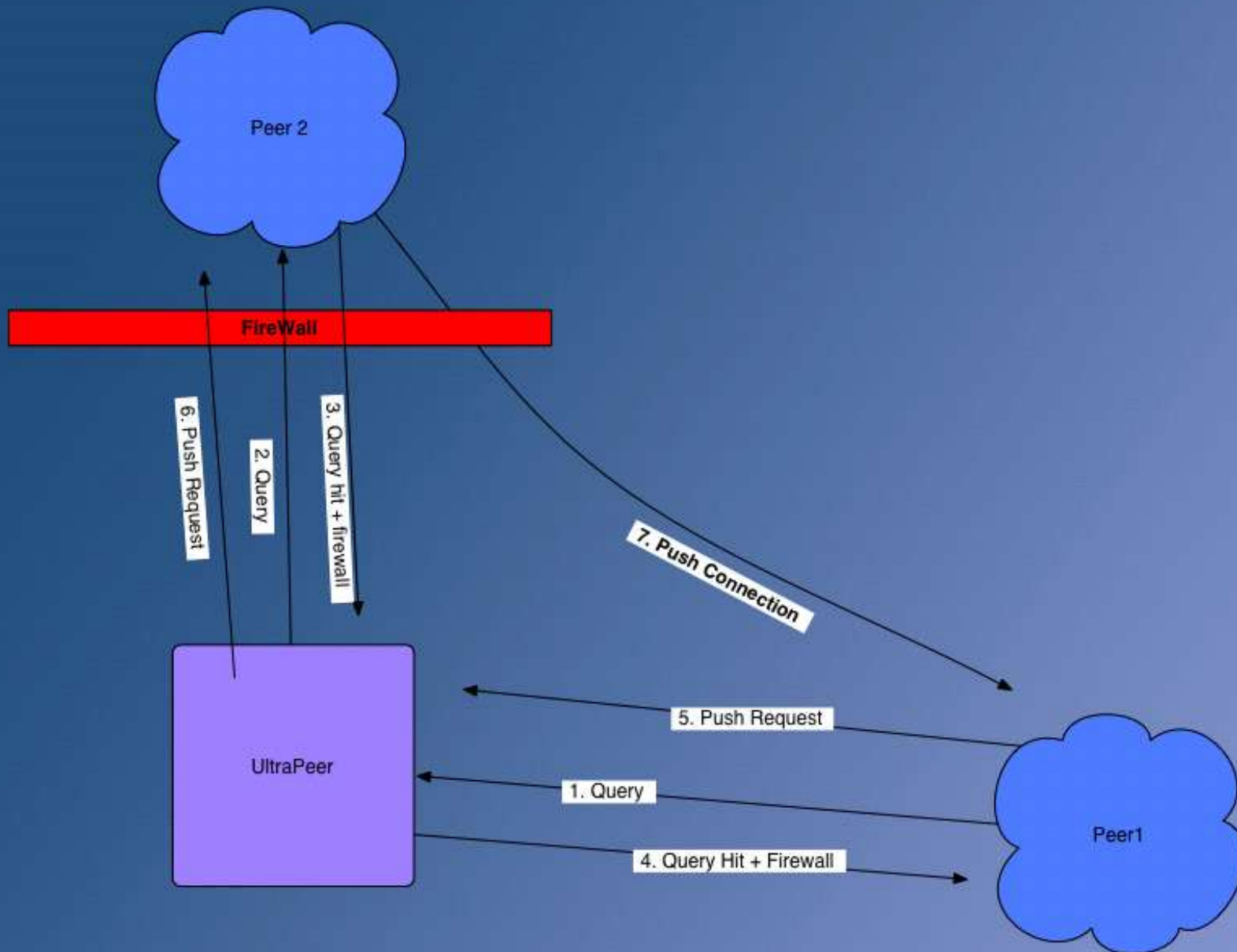
- Query
 - A search of shared files on the network
- Queryhit
 - A response to a Gnutella Query
 - Filtered back through the path of the query
- Bye
- Additional Features



Gnutella Push

- A Gnutella Peer (P1) gets a query hit from a firewalled peer (P2) which indicates its status
- The Peer routes a push message to the firewalled peer through the path of the original
- The firewalled peer sends a special request to the requesting Peer (P1)
- Push Does not work when both peers are behind a firewall.
 - JXTA Rendezvous

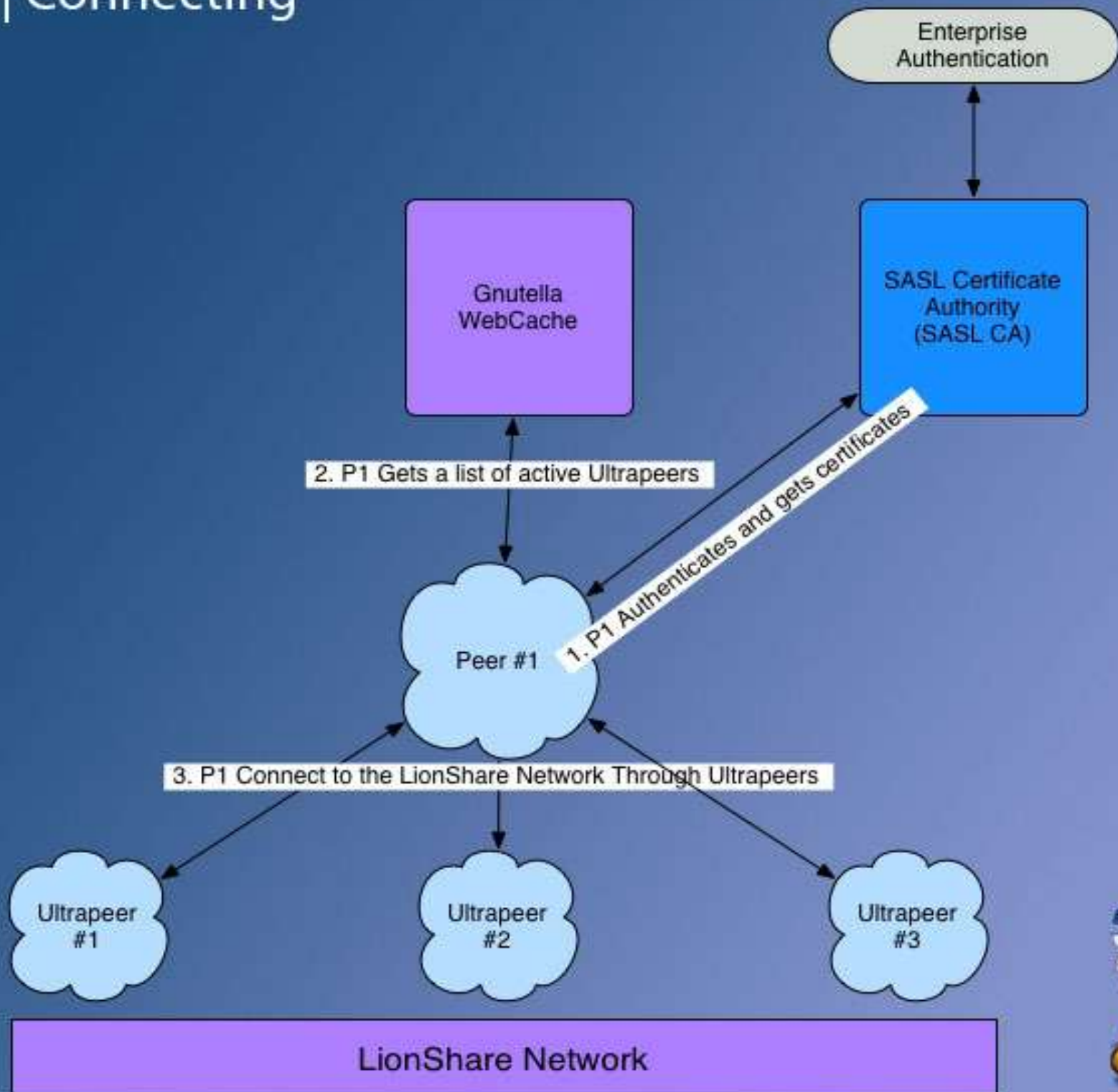




Peer Discovery

- 1. User Authenticates
- 2. LS Peer attempts to connect to addresses in the Pong Cache
- 3. If the pong cache does not lead to the # of default connections, the LS Peer contacts a webcache
- 4. Try-X-Ultrapeers





Gnutella Enhancements

- HUGE (Hash URN Gnutella Extensions)
- Metadata
- Browse Host
- Chat (very basic)
- Swarm Downloading (disabled for LS)
- Incomplete File Sharing
- Ultrapeers



Status

- LionShare Peer
 - Metadata Entry
 - Image View/Preview
 - Private Network
- LionShare PeerServer
 - Version 0.1
 - Basic File Sharing



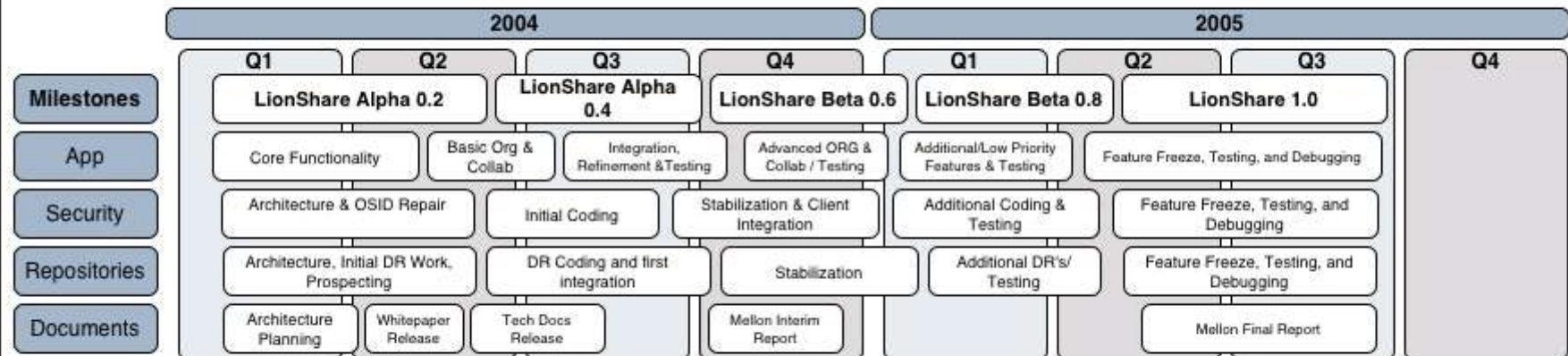
Upcoming Milestones

- LionShare 0.2 (Butters)
 - May 2004
 - Basic Peer and Peerserver
 - Metadata Entry
 - Image Preview
- LionShare 0.4 (Kenny)
 - Fall 2004
 - Security integration
 - New GUI
 - Lightweight Database for LS Peer



Tentative Roadmap

LionShare Project Timeline



<http://lionshare.its.psu.edu>

