Short Term Bidirectional Goals

- HTTP for bidirectional web

- Best Practice Draft

- Future Work?

Bidirectional HTTP
(aka Comet, Server Push)

- Long Polling (aka Hanging Get)

    - Delay responding to a HTTP request until there are events to deliver

    - Legal HTTP, but some overheads

- Streaming (aka forever frame)

    - A HTTP response with content that is partially flushed to deliver events.

    - Efficient, but not strictly "legal" HTTP

Bidirectional HTTP Examples

- **BOSH** – long polling transport for XMPP

- **Bayeux** – long polling messaging for Ajax libraries (Dojo, Jquery etc.)

- **Server-Sent Events** – W3C specification for a streaming content-type

- **Google (Wave & gchat)** – streaming with long polling fall back

- Non browser clients – **Second Life, Mobiles**

- Many More....

Good News

- Mostly works and very widely deployed.

- Works with existing infrastructure / intermediaries:
  - Browsers
  - Load balancing
  - Aggregation
  - SSL Offload
  - Authentication/Authorization
  - Accounting (mostly)
  - Allows value-add and reasonable policy

Connection Problems

- Bidirectional breaks HTTP's Connection pooling

  - Effectively reserves a shared resource.

  - Resource starvation (2(6?) connection limit)

  - Queue or pipeline behind bidirectional request

  - Pool shared between frames/tabs/windows.

Proxy/Intermediary Problems

- Difficult to know/tell if streaming will work
  - Caching and/or buffering

- Undisclosed and non discoverable idle timeouts
  - Polling more frequent than required

- Detecting closed connections problematic
  - Liveness is important

Other Issues

- Headers are verbose and mostly redundent

- Pipelining not usable

- Resource scaling in intermediaries/servers

- Cross Domain

Best Practices

http://www.ietf.org/id/draft-loreto-http-bidirectional-01.txt

- Best practices document may:
    - capture common experience
    - provide common vocab to discuss issues
    - avoid repeating mistakes
    - focus attention on fixable problems

Short Term Future Work?

- Define "hints" for bidirectional requests
  - For connection management?
  - For abbreviated headers?
  - Discoverable timeouts
  - Streaming content types

- More ?