HyBi Design Space
(draft-loreto-design-space-bidirectional-00)

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Motivation for this I-D

• Provide architectural context for:
  • Short-term solutions such as new HTTP headers for use with existing long-polling technologies (Comet, BOSH, etc.)
  • Long-term solutions such as WebSocket, BWTP, and Reverse HTTP
Major Considerations

• Discuss clients, servers, and a range of intermediaries

• Bidirectionality (“bidi”) can change HTTP patterns:
  • Server can request resources of client
  • URIs on the client?
  • Message passing added to REST style
Clients 1: Browsers

- Standard HTTP (e.g., Comet, BOSH)
- Standard HTTP with extensions (e.g., to allow cross-domain functionality)
- Standard HTTP with plugin (of interest?)
- Invoke non-HTTP transport from within browser (e.g., WebSocket, BWTP)
Clients 2: Special-Purpose HTTP Clients

- Rich clients using standard HTTP (e.g., Second Life Viewer)
- Clients using a minimal subset of standard HTTP (e.g., XMPP clients with BOSH)
- Clients supporting HTTP with extensions, clients invoking non-HTTP transports (do we have examples of these?)
Servers 1: Standard HTTP

• Option 1: Bidi is part of the HTTP server’s responsibilities

• Option 2: Bidi is handled by a server that is separate from the main HTTP server

• In both cases, events are transported over standard HTTP

• Examples: Comet, BOSH, Lightstreamer
Servers 2: Non-Standard

• In-Band: Bidi is part of HTTP server, but events are transported via an upgraded HTTP connection

• Out-of-Band: Bidi is part of separate server, and events are transported via a non-HTTP protocol

• Examples: WebSocket, BWTP
Intermediaries (1)

- Proxies
- Gateways
- Caching servers
- Load balancers
- Other?
Intermediaries (2)

- For standard HTTP transports that rely on legal HTTP (e.g., long polling), bidi is controlled using headers or cookies (some new headers might be helpful).

- For streaming HTTP transports, bidi depends on packet-by-packet transmission, so caching and buffering by intermediaries can disrupt communication.
Intermediaries (3)

• Some existing non-HTTP transports might tunnel their protocol over the HTTP CONNECT mechanism (is this abusive?)

• For yet-to-be-defined transports that invoke non-HTTP methods, upgraded intermediaries of the future might provide special support for relaying