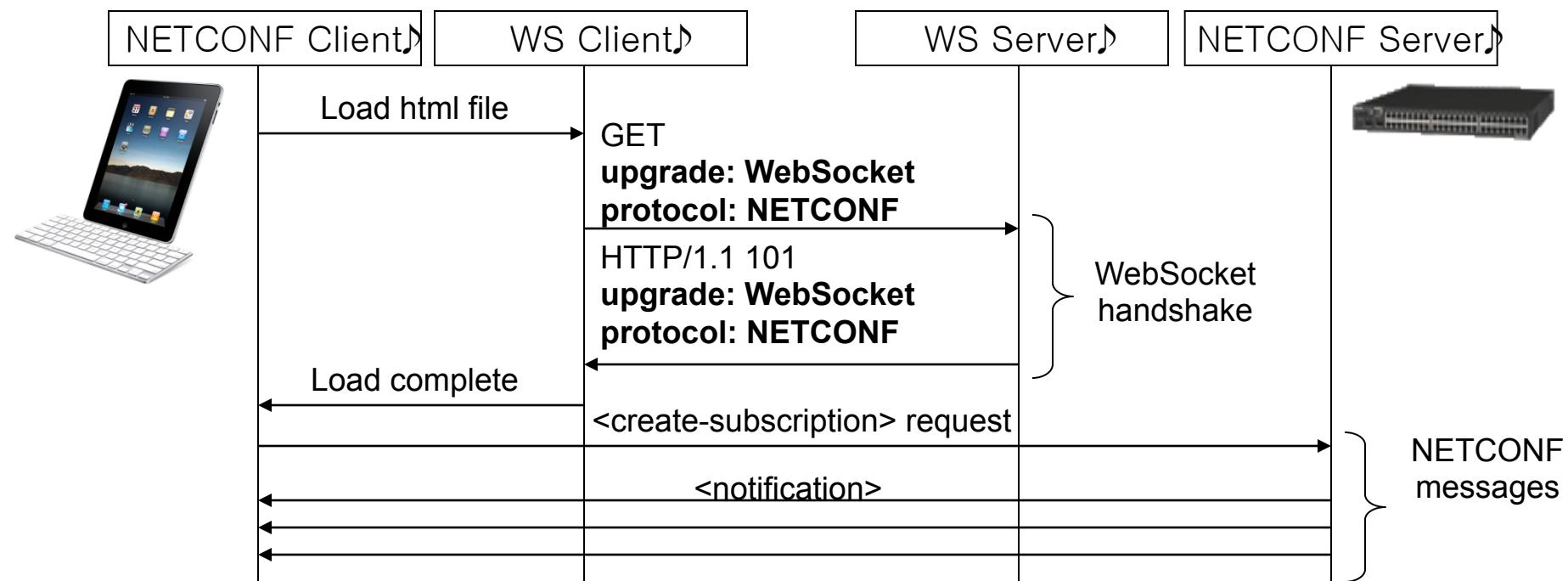


Background

- The number of Web-based management system is increasing.
 - AWS (Amazon Web Service)
 - DMTF CMWG (Distributed Management Task Force Cloud Management Working Group)
 - SNIA CDMI (Storage Network Industry Initiative Cloud Data Management Interface)
 - Juniper REST API, Cisco XML/HTTP API for UCS, etc.
- NETCONF is providing SOAP/HTTP transport mapping for development of Web-based management system, but it lacks Notification mechanism since HTTP is unidirectional.
 - As an alternative, RFC 4743 proposes NETCONF/SOAP/BEEP or installment of HTTP servers on both NETCONF server and client. But these are onerous to implement.
 - RFC 5277 limited the transport protocols of NETCONF Notification to SSH, BEEP or console on the grounds that Notification requires bidirectional capability.
- But now, WebSocket, an extension of HTTP with bi-directional capability, is under development at HYBI WG at IETF and W3C.

NETCONF message(1)

- NETCONF messages concerning Notification should be sent after WS handshake is complete. WS handshake is conducted between WS client and server upon receipt of NETCONF client's request.

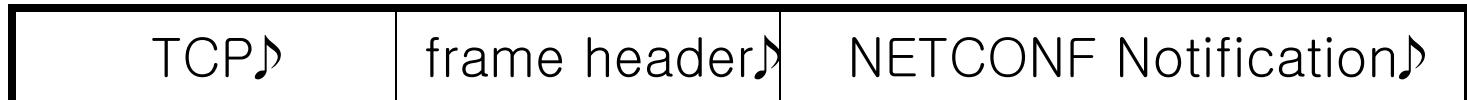


NETCONF message(2)

- NETCONF messages about Notification should be sent according to the specification of WebSocket protocol. Encapsulation is conducted by WS client and server upon receipt of NETCONF messages.
- But, WebSocket protocol is still under development.
 - According to the previous specification (-00) and current implementations, NETCONF message is encapsulated as follows.



- According to current specification (-06) of WebSocket protocol, NETCONF message is encapsulated as follows.



Conclusions

- We proposed a way of sending NETCONF Notification over WebSocket protocol.
- We think that for NETCONF to support WS as a way of sending Notification is meaningful for NETCONF's future deployment. At least it is used in conjunction with NETCONF/SOAP/HTTP.
- We're still in the development stage. Thus, we're willing to keep updating.
 - Does WG have interests?
 - If YES, should this I-D wait until the completion of WebSocket protocol?
 - If NO, should this I-D be updated as an Experimental I-D?

Objectives of the I-D

- To propose a way of sending NETCONF Notification over WebSocket protocol.
- To sense interests in this I-D at this WG.

WebSocket

- WebSocket API is under development in W3C under the name of HTML5 (Draft 28 as of February 2011).
- WebSocket protocol is under development at HYBI in IETF (-06 as of February 2011).
- Implementation
 - Server
 - Jetty (Java-based)
 - Apache + pywebsocket (python-based)
 - Kaazing (Java-based)
 - etc.
 - Client
 - Google Chrome
 - Fire Fox β 4.00 ~ 4.07
 - Safari
- NETCONF Notification can be implemented on top of these technologies.

Demo

