Postellation: A DTN Implementation

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Plan

- Key Design Considerations
- Features
- HTTP over DTN
- DTN News Service
- Virtual DTN Cloud and demo

Postellation

- <post>ellation:
  - Postal service is store and forward “network”
  - Has optional “custody”
- post<ellation>:
  - Constellation => network

Key Design Considerations

- **Lean** Bundle protocol implementation
  - → good for embedded systems
- **Smart** HTTP proxy
  - → enabling Web/SOA application developers to use DTN "transparently"
- **Easy** deployment of DTN networks
  - → enabling a much larger number of end-users to use DTN, develop a community, applications, ...

Features

- written in lean and “vanilla” C → for embedded systems
- Portable code: compiles/runs/tested on:
  - Linux (kernel 2.6+)
  - *BSD, MacOSX (Leopard, Snow Leopard)
  - Windows (from XP to W7)
- Bundle Protocol (RFC5050)
- Convergence Layers:
  - UDP, TCP and TCP-TLS
- Transport: IPv4 ***and IPv6***

Features (cont.)

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- Included applications:
  - dtnping/dtnpong
  - dtnsend/dtnrecv
  - HTTP/HTTPS Proxy
  - RSS news service delivery, such as NASA news over DTN!
- Packagers for Windows, MacOSX and Linux
- Automated registration of nodes to our DTN node:
  - ***No configuration to do.***
  - ***And you are connected to the DTN network***

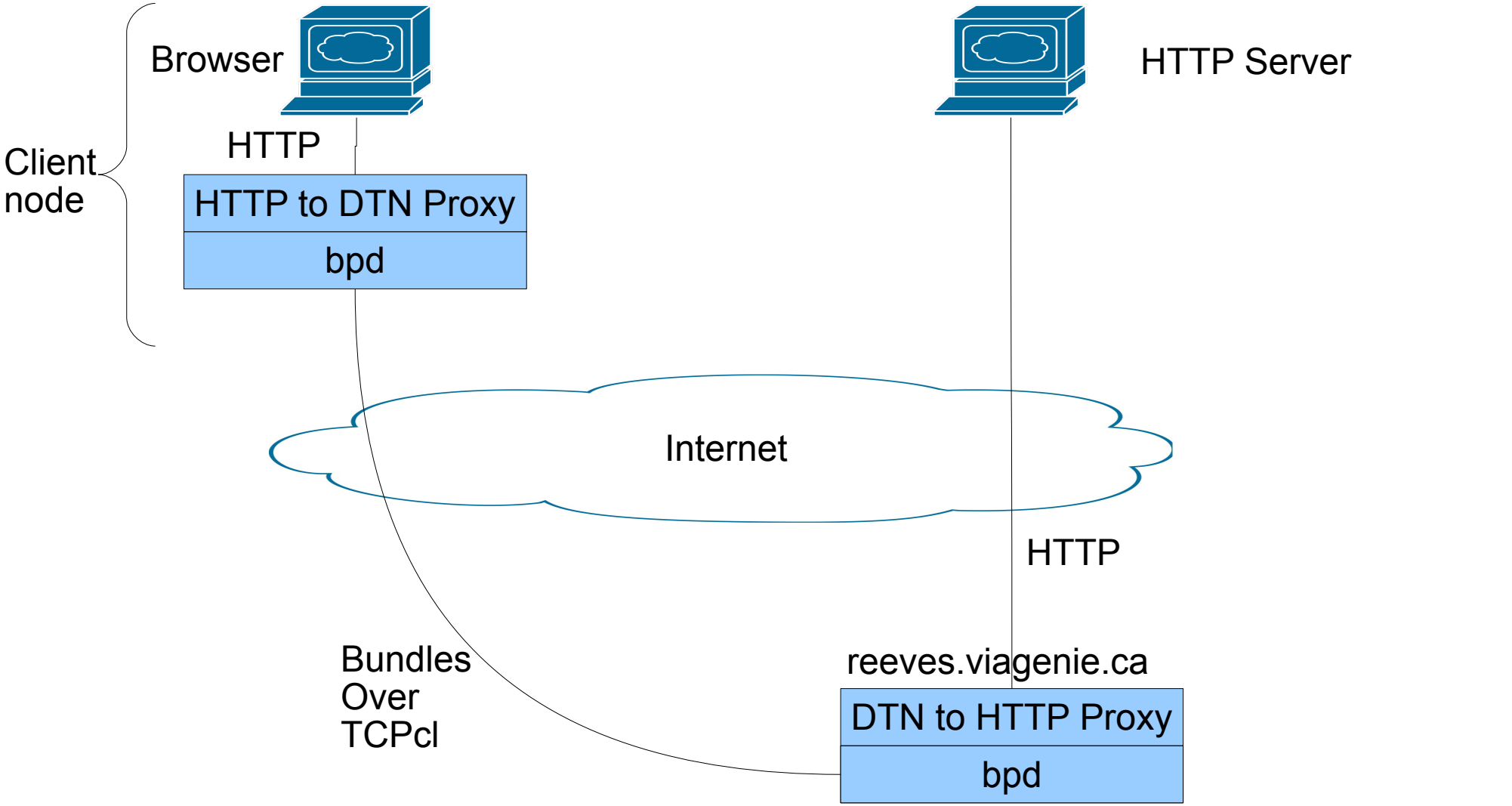
HTTP Proxy

- Support:
  - http
  - https
  - or any http tunnels
- Smarts to facilitate transparency of Web applications over DTN
- Implemented as a local proxy
  - For bundling HTTP requests into Bundles
- With a remote proxy
  - For unbundling HTTP requests and sending them over IP

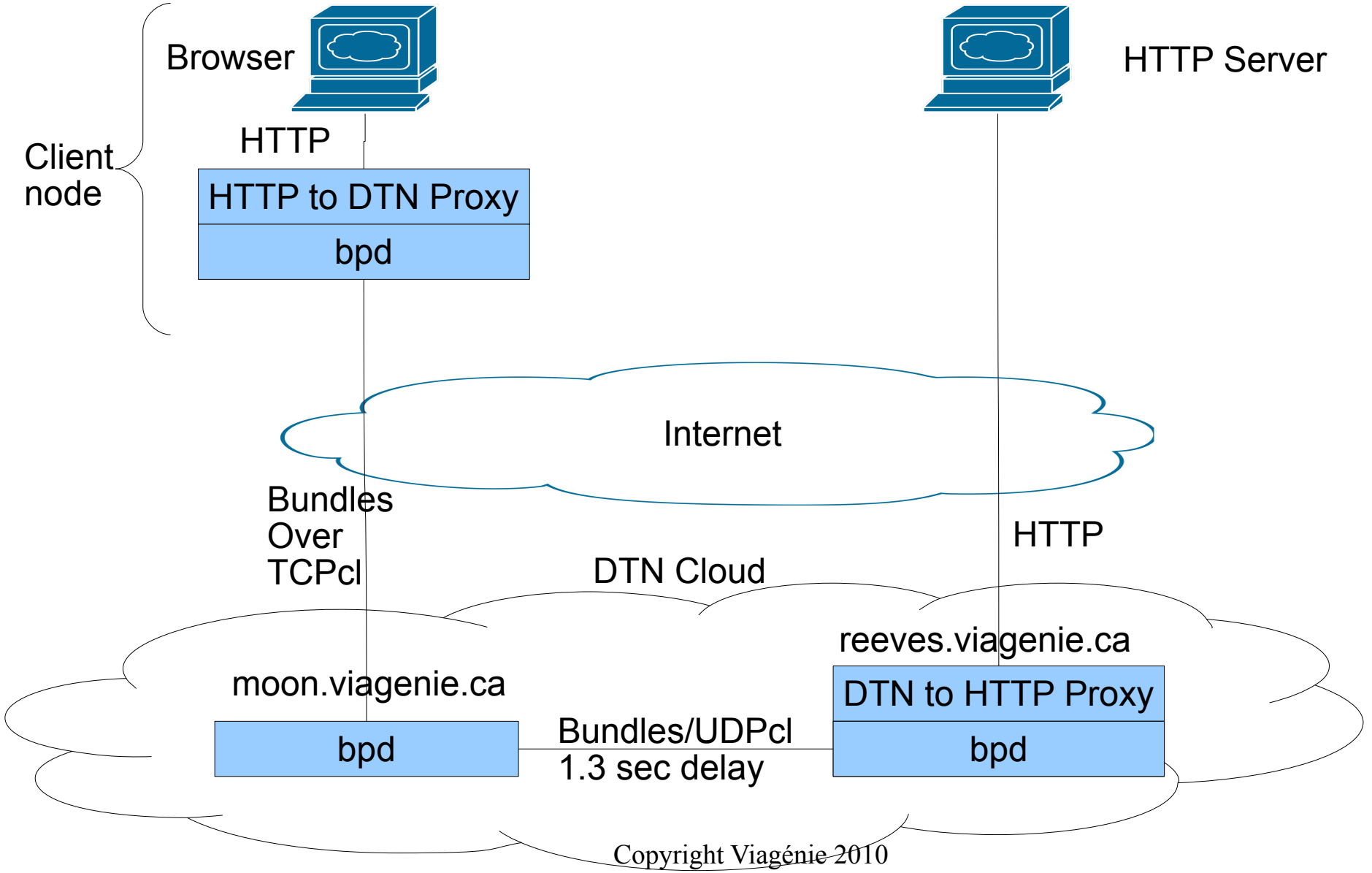
Interoperability

- Tested with IBR DTN implementation in the middle of the Postellation DTN Cloud
- Next steps: test against DTN2 and ION

Demonstration (1)



Demonstration (2)



Opening for Beta Testers

- Implementation:
  - has been tested in production work for weeks
  - connected automatically to the DTN node and HTTP proxy
- If you would like to test it out, go to:
  - http://postellation.viagenie.ca (via IPv4, IPv6 or DTN)
  - After downloading, uncompress, then run the “start” program. This will start Bundle Protocol, HTTP proxy and registers the node to the DTN network.
  - After running it, you can also subscribe to our RSS News Service Delivery over DTN, to receive your NASA news over DTN!

Conclusion

- **Lean** BP implementation → good for embedded systems
- Ported to most OS
- **Smart** http/https proxy for easy application deployment
- **Easy** deployment by automating registration and configuration
- Available for beta testing: http://postellation.viagenie.ca
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Questions?

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This presentation: http://www.viagenie.ca/publications/

References

- http://postellation.viagenie.ca