ATIS Open Web Alliance

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Objective

- This presentation provides an introduction to the ATIS Open Web Alliance, and the motivation behind its formation.

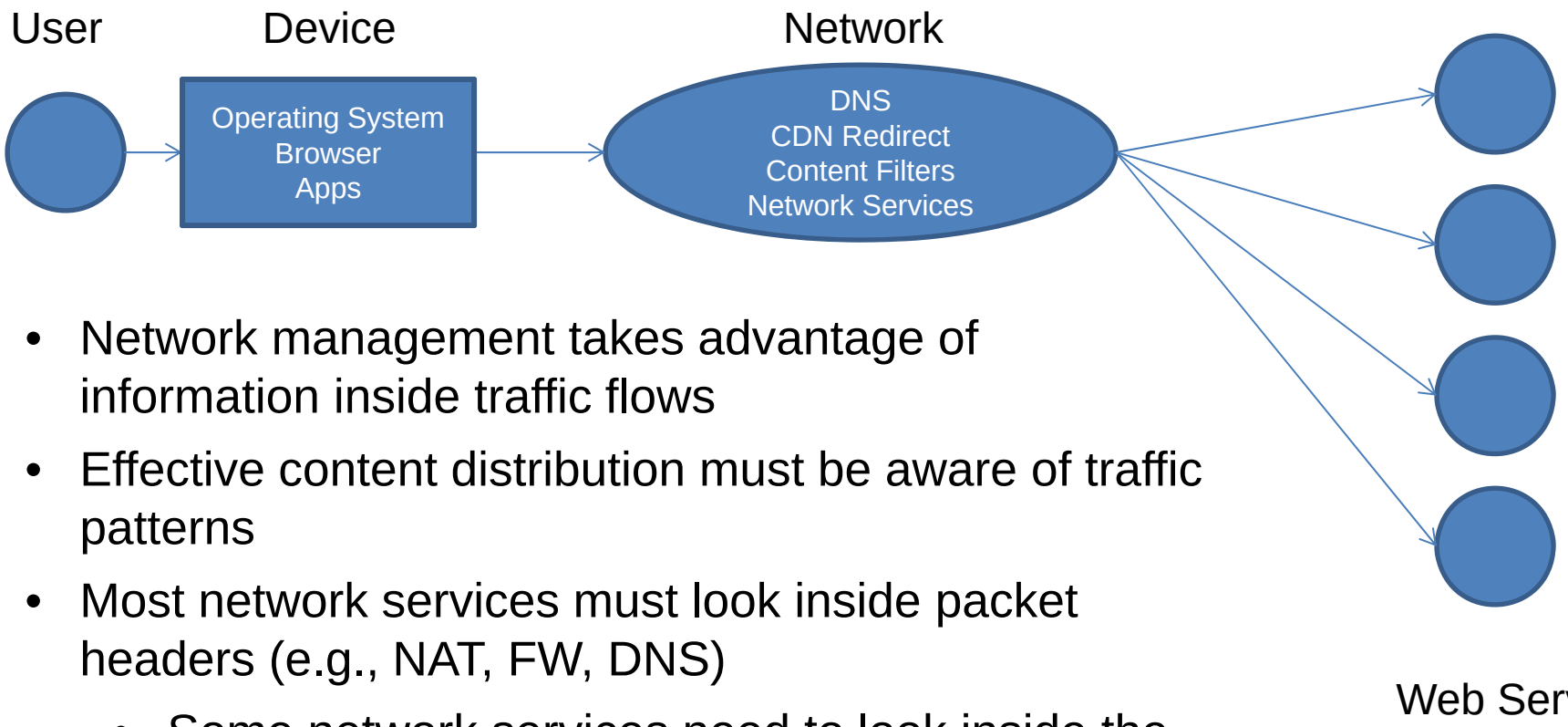
Overview

- SPDY was introduced by Google to reduce webpage load times.
  - “An experimental protocol for a faster web”
  - SPDY includes mandatory encryption for all traffic
- SPDY accepted by the IETF as the basis for HTTP/2.0.
  - IETF undecided on mandatory encryption for all HTTP/2.0 traffic
- Target date for HTTP/2.0 is November 2014.

SPDY Protocol and SPDY Proxies

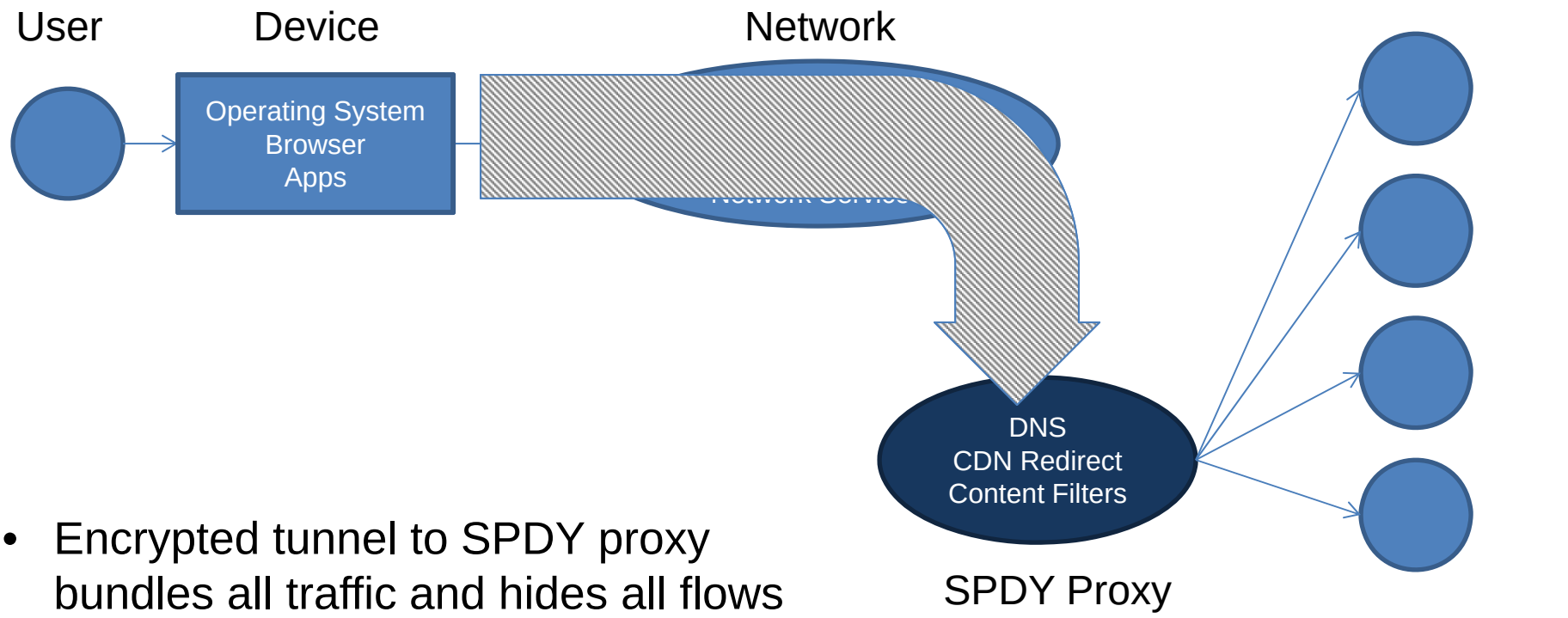
- SPDY proxies have been deployed to help implement the SPDY protocol for communications with non-SPDY servers.
- The SPDY protocol and SPDY proxies have implications for network management, content distribution and network services.
  - The problem is bundling multiple flows inside a single opaque (encrypted) tunnel
- Additional background available in white paper: *An Analysis of the SPDY Protocol and the SPDY Proxy*.

Network Services



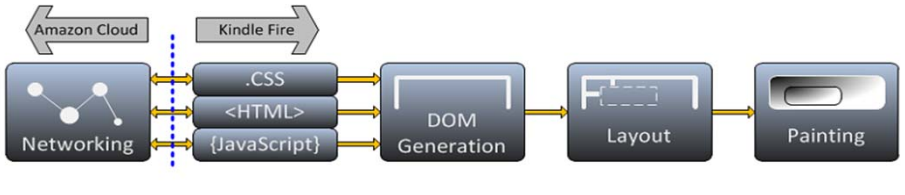
- Network management takes advantage of information inside traffic flows
- Effective content distribution must be aware of traffic patterns
- Most network services must look inside packet headers (e.g., NAT, FW, DNS)
  - Some network services need to look inside the packets to analyze the content (e.g., parental controls)

SPDY Proxy



- Encrypted tunnel to SPDY proxy bundles all traffic and hides all flows
- Breaks network management, content distribution and network services

SPDY Proxies and Impacts

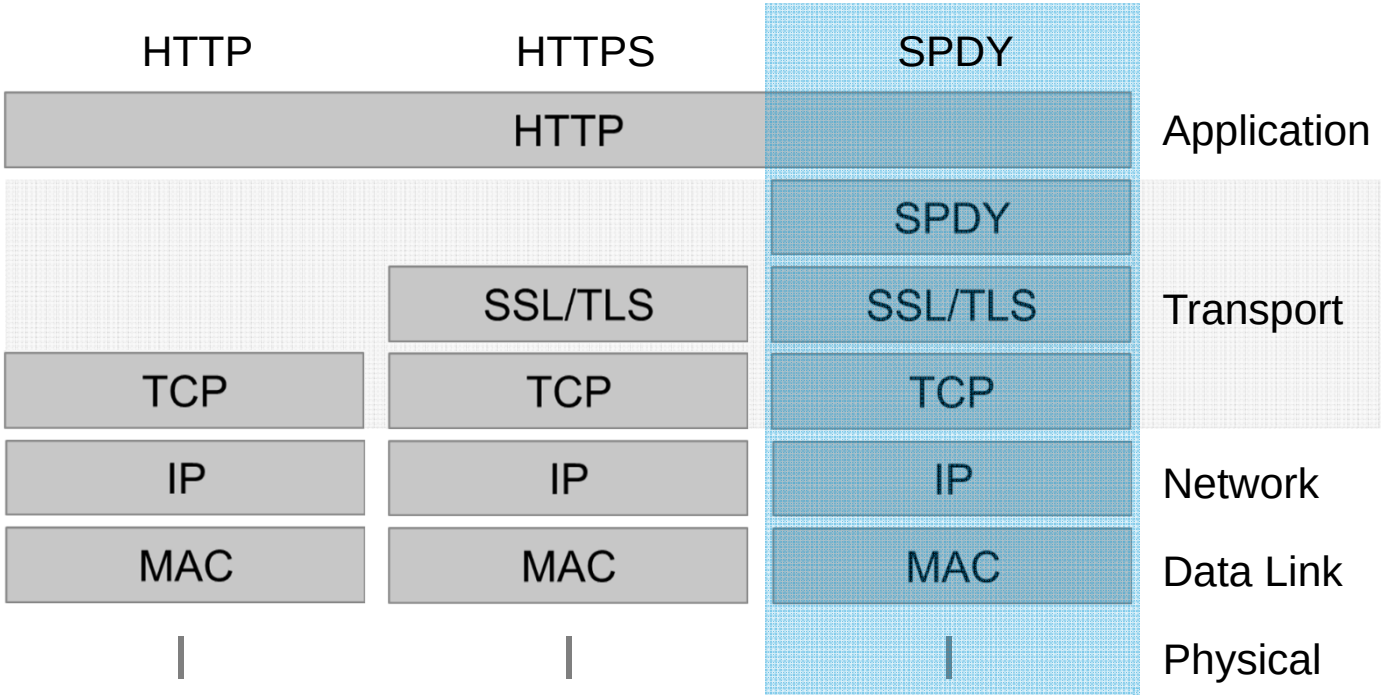


Amazon Silk Browser

Google Chrome

- **Dramatically changes traffic flows, infrastructure scaling, and peering relationships:**
  - **Changes flow size and duration (fewer, higher-bandwidth flows)**
  - **Increasing inbound traffic from proxy owner (to end users)**
  - **Increasing outbound traffic to proxy owner (from other CSP, ASP)**
- **Eliminates visibility into traffic flows**
  - **Lost visibility into individual flows (5-tuples)**
  - **Lost visibility into DNS requests (clients don't resolve DNS)**
- **Changes VAS paradigm**
  - **Bypasses carrier VAS services**
  - **Couples caching, video optimization, image compression, web acceleration with proxy**
  - **Enables co-processing model for HTTP (networking, HTML, page rendering, etc.)**

What is SPDY?



Google Protocol to replace HTTP(S) that forms the foundation for HTTP 2.0

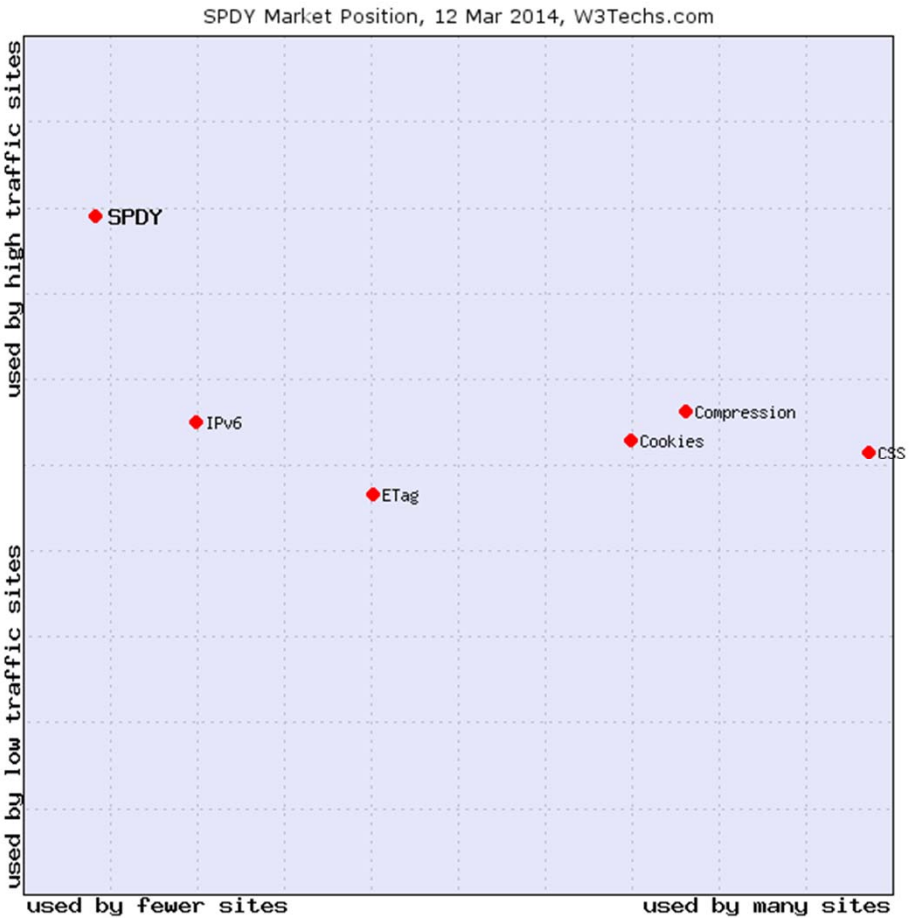
- **Goals: Improve page load time, content protection and consumer privacy**
- **Implementation: Combination of TCP INTCWIND modification, request multiplexing, SSL encryption**

Foundation for HTTP 2.0 (IETF HTTPBIS Working Group)

Source: Cisco, *State of the Mobile Service Provider: "Middleboxes & SPDY"*

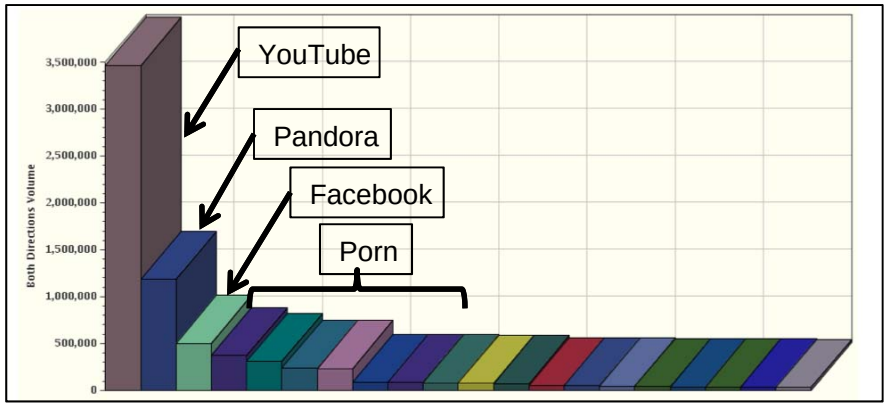
SPDY Market Position

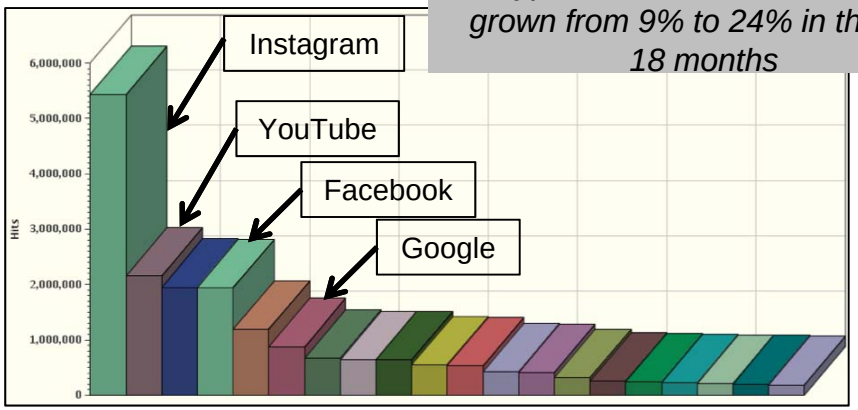
Low number of destinations, High Impact



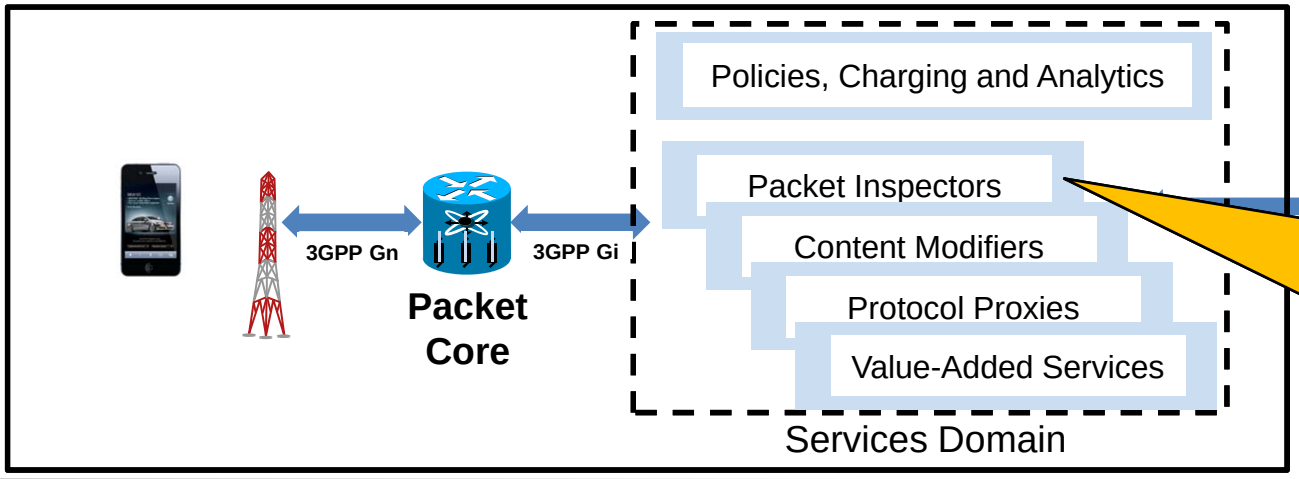
- **Used by few (~0.7%) websites**
  - **Compare to IPv6 (3.8% of websites)**
- **Websites include**
  - **Google/YouTube (2012) - #1 / #3**
  - **Twitter (2012) - #11**
  - **Wordpress (2012) - #18**
  - **Facebook (Mar 2013) - #2**
  - **Tumblr (2014)**
- **Functional in most devices and browsers**
  - **Android / Kindle**
  - **Chrome (All OS)**
  - **Firefox (All OS)**
  - **Internet Explorer (Win8)**
  - ***Absent in Safari (All OS)***

Impact on Mobile Middleboxes





Encrypted traffic on the Internet has grown from 9% to 24% in the last 18 months



SP losing visibility into content and applications running across their infrastructure

Impacts ability to manage traffic, improve subscriber experience, and drive new revenue models

Open Web Alliance

- ATIS is launching Open Web Alliance to initiate a broad engagement with all segments of the Internet business ecosystem to:
  - Develop solutions that do not infringe on the established trust relationships with the user
  - Collaborate with privacy advocacy groups to promote the use of secure communications and educate the user community
  - Consult with regulatory bodies in realignment of the requirements with the current Internet reality
- See *An Analysis of the SPDY Protocol and the SPDY Proxy* for additional background.

Scope

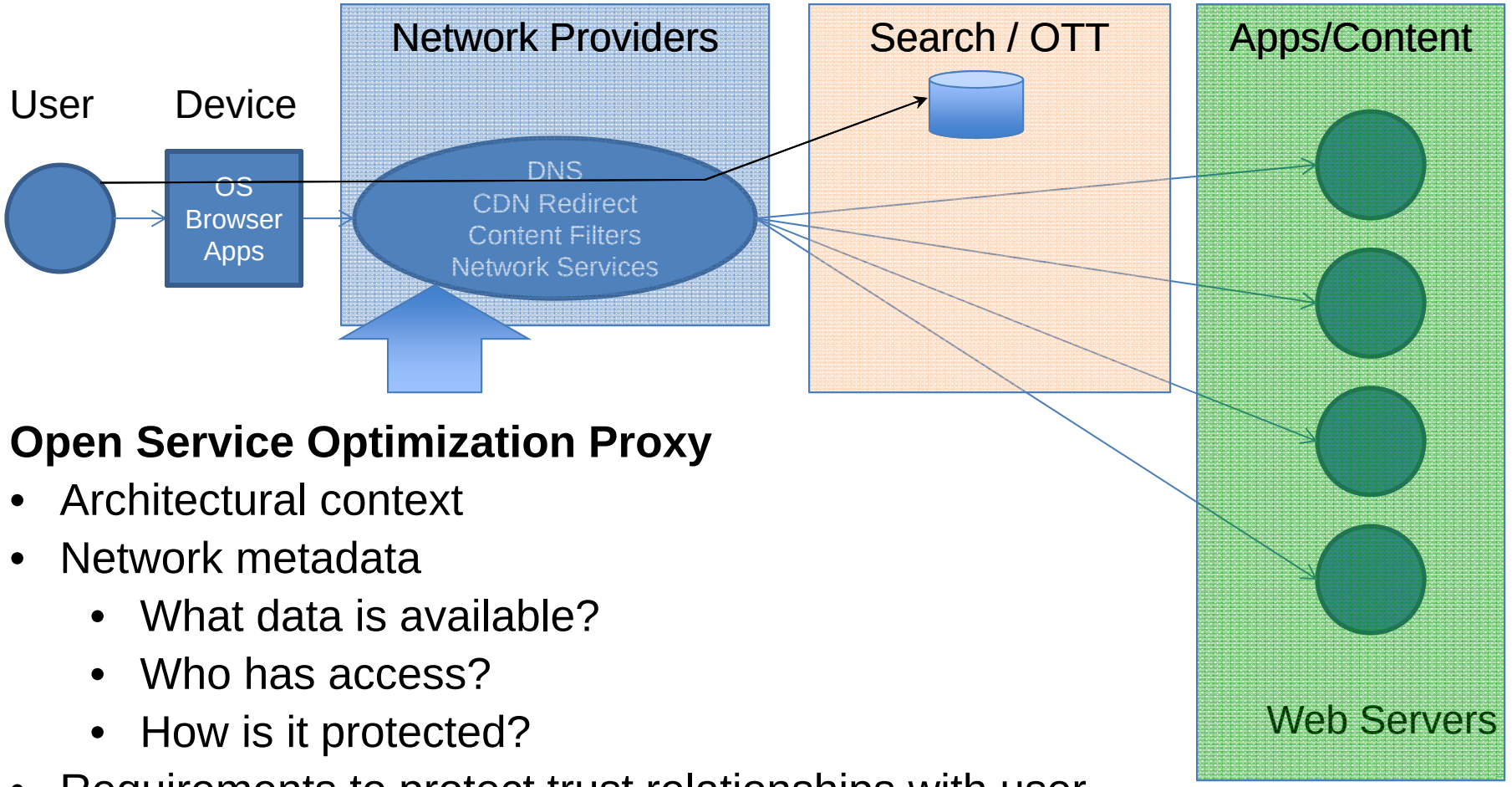
- Analysis of Open (SPDY) Service Optimization Proxy
  - Technology impact (clients, applications, DNS, CDN)
  - Business model impact (peering, CDN, VAS)
  - Specify how to subscribe to a SPDY proxy from client browser/application (Search / Discover? Beacon? DNS resolution?)
  - Determine how deep to embed in mobile OS
  - Architecture for supporting localization of SPDY traffic during roaming and handovers (mobile)

Output

Open Service Optimization Proxy:

- Formally document the high level characteristics of an open service optimization proxy.
  - Use cases
  - Architectural context
  - Requirements
  - Value proposition
  - Related work
  - Open issues
- Publish open service optimization proxy document before the completion of HTTP/2.0 (November 2014).

Open Service Optimization Proxy



Open Service Optimization Proxy

- Architectural context
- Network metadata
  - What data is available?
  - Who has access?
  - How is it protected?
- Requirements to protect trust relationships with user

In Summary

- SPDY is an indication of a broader emerging challenge:
  - Split browsers
  - The role of proxies
  - Opportunistic encryption of all traffic
- One size does not fit all.
- The user should be involved in making trade-offs.
  - SPDY proxy bypasses intermediate services the user may want to access
- Open Web Alliance objective is to begin the dialog.

ATIS Open Web Alliance

- Launching May 2014
- For additional information contact Jim McEachern at jmceachern@atis.org