Network impact of Web access to device APIs

W3C Workshop on Security for Access to Device APIs from the Web

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Mat Ford

Background

- ISOC is focused on continued operation of the global Internet
  - Taking a holistic approach to identify issues and opportunities
  - Many network growth issues and opportunities cross boundaries and cut into competing interests
- Our purposes are to:
  - Identify and help elaborate such cross-boundary network issues
  - Promote resolution through open dialogue and collaboration in appropriate fora
  - Promote and validate the open, collaborative Internet development model

Background

- Concerned with identifying forces pushing towards
  - islands of networking
  - emergence of multiple networked realities
- Looking to drive a modern understanding and consistent implementation of the end-to-end principle of the Internet
- We also aim to support development and deployment of key technologies for stable and secure Internet infrastructure

Interest areas

- These motivations and concerns lead us to an interest in the topic of this workshop in at least three areas:

    - Network impact
    - Open interfaces
    - Layering

Network impact

- What are potential impacts on network layer?

- What are potential side-effects on network usage?

- Web apps inherently more secure as potentially more regularly updated?

- Exposing device APIs to the web may increase potential for remote exploit
  - New generations of network worms and bots

Network impact

- New patterns of network usage
  - IP nets typically dimensioned based upon assumptions about end-host behaviour that are increasingly invalid
  - More M2M and background bulk transfers (P2P) create new pressures on operators
  - Is there potential for increasingly sophisticated web applications to drive disruptive patterns of network usage?

Open interfaces

- Open interfaces are the bedrock of the Internet's success

- Gross functionality of the network should not depend on use of proprietary equipment

- Open interfaces maximise the potential for innovative applications to emerge, thereby increasing the value of the network to all

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Layering

- Internet != Web

- Minimise potential for undesirable interactions between layers

- Maximise potential to change properties of one layer without negatively impacting other layers

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Some examples

- Strong(er) coupling between app layer and net layer is generally undesirable:
  - Optimising app performance by requiring network support
  - Sharing IP addresses across subscribers will require apps to know more about the net

Some (mobile specific) examples

- Does the amount of glue needed to provide a seamless user experience work to balkanize services by device/provider/etc?

- User expectations of consistent service and behaviour when roaming?

- Potentially a lot of middlebox interactions required

- Potential conflicts caused by fairly atomic widgets accessing hardware features on a handset (like geo-location data) without any kind of unified version of user preferences at the local level

- Lots of questions re: conflicts in policy, data portability, service mismatches while roaming, etc.

- And then there're the security and privacy concerns

Concluding remarks

- Need for a strong and consistent security model when allowing web apps access to device APIs is obvious
  - This workshop is valuable, thanks organisers!

- Please try to keep the concerns and principles raised here in mind when developing in this space

- Increasingly sophisticated web apps are enriching the Internet and exposing device APIs has potential to do the same

- Need to be vigilant against harming some fundamental properties that have brought us to where we are today

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Thanks for your attention!

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