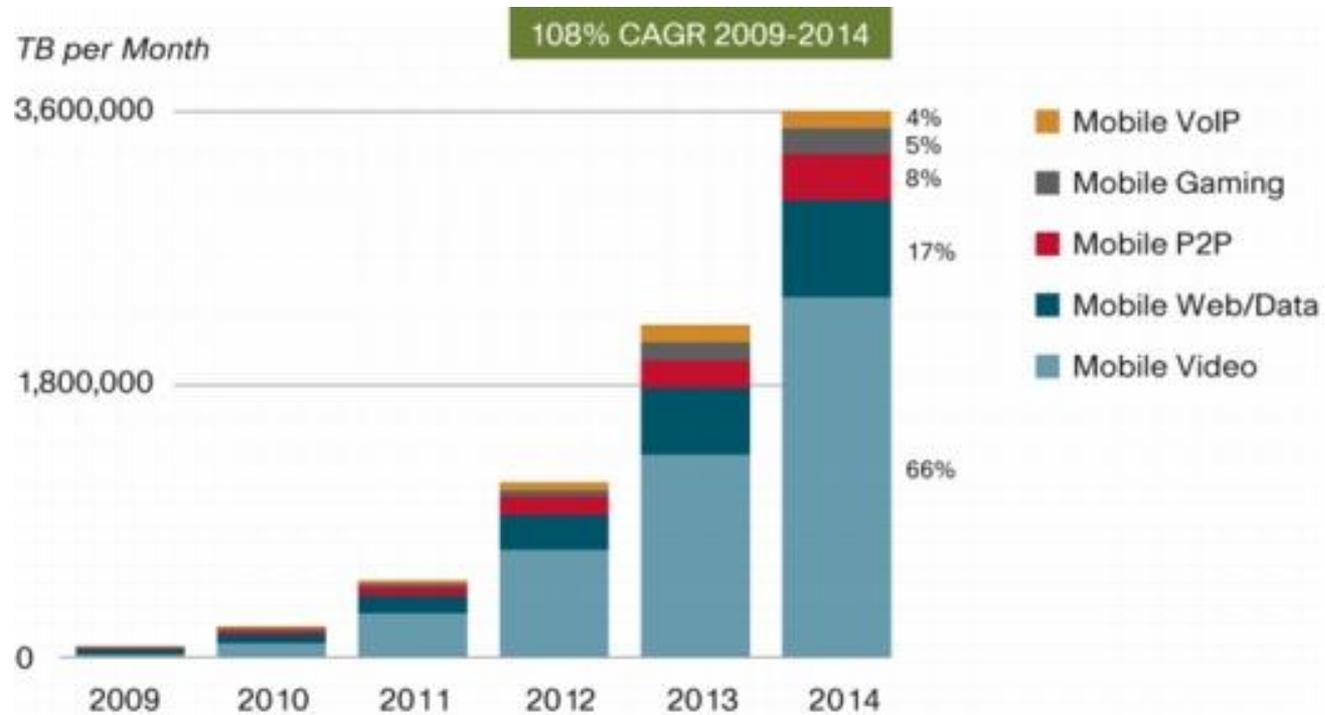


Empowering Browser Security for Mobile Devices Using Smart CDNs

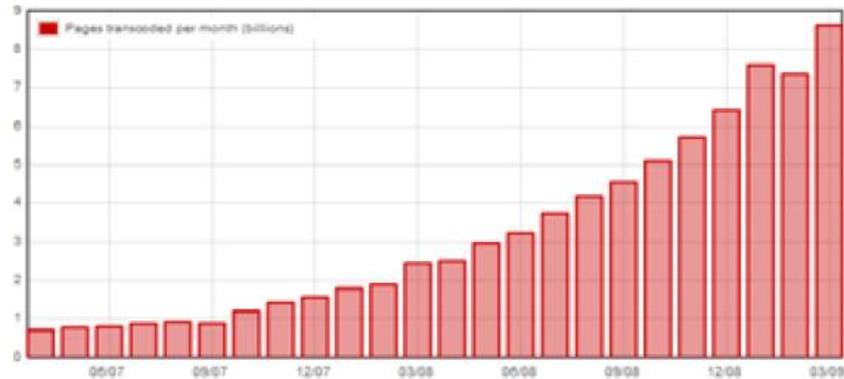
Ben Livshits and David Molnar
Microsoft Research

Mobile Web Growth

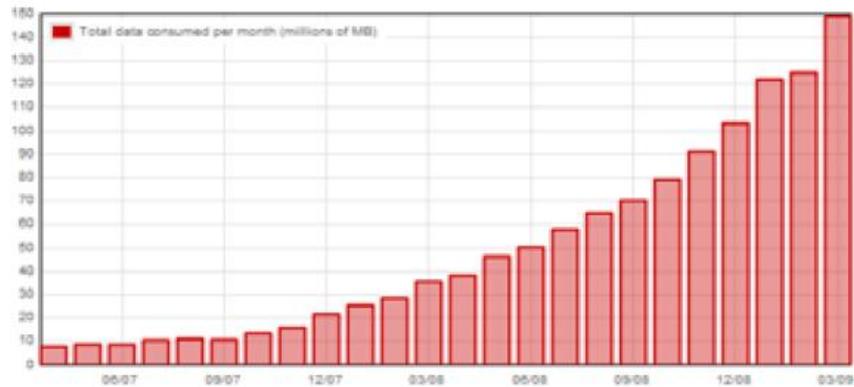


Source: Cisco VNI Mobile, 2010

Opera Mobile Study

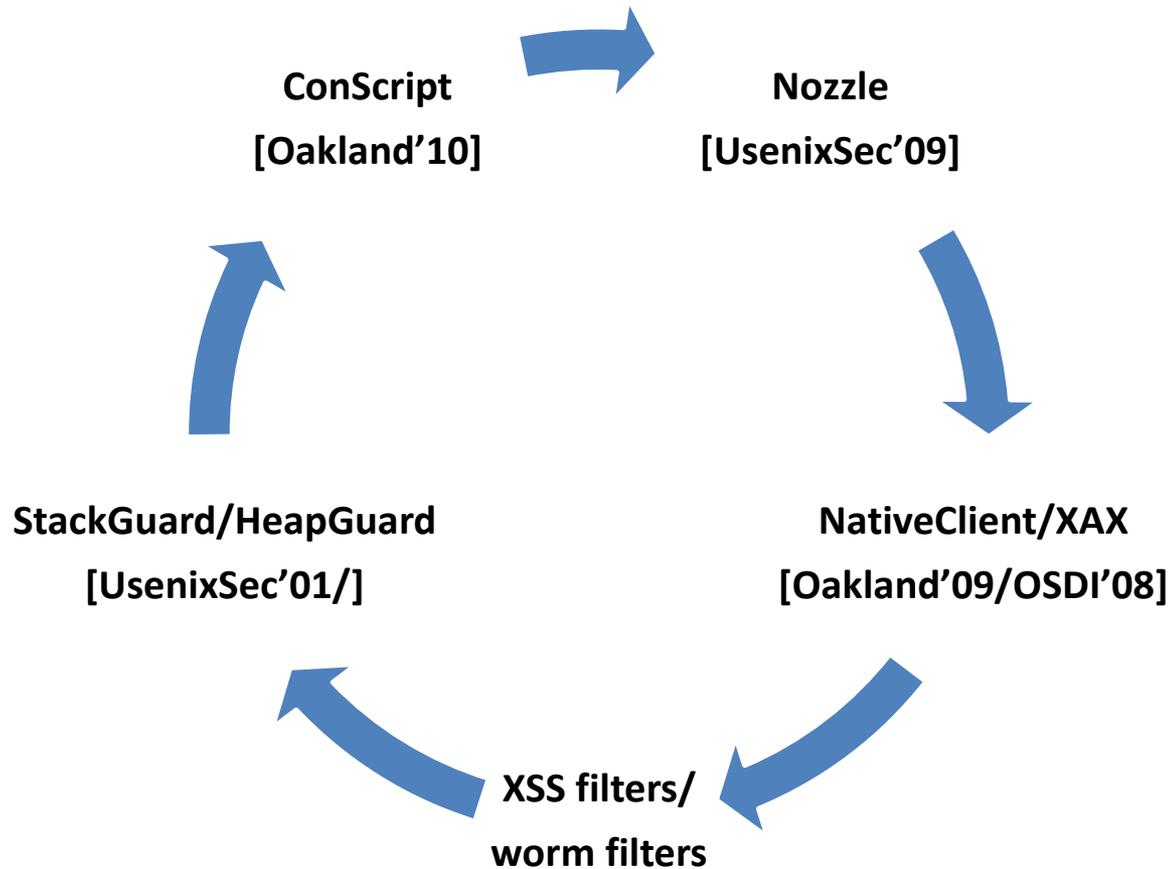


Pages transcoded by Opera Mini per month (billions)

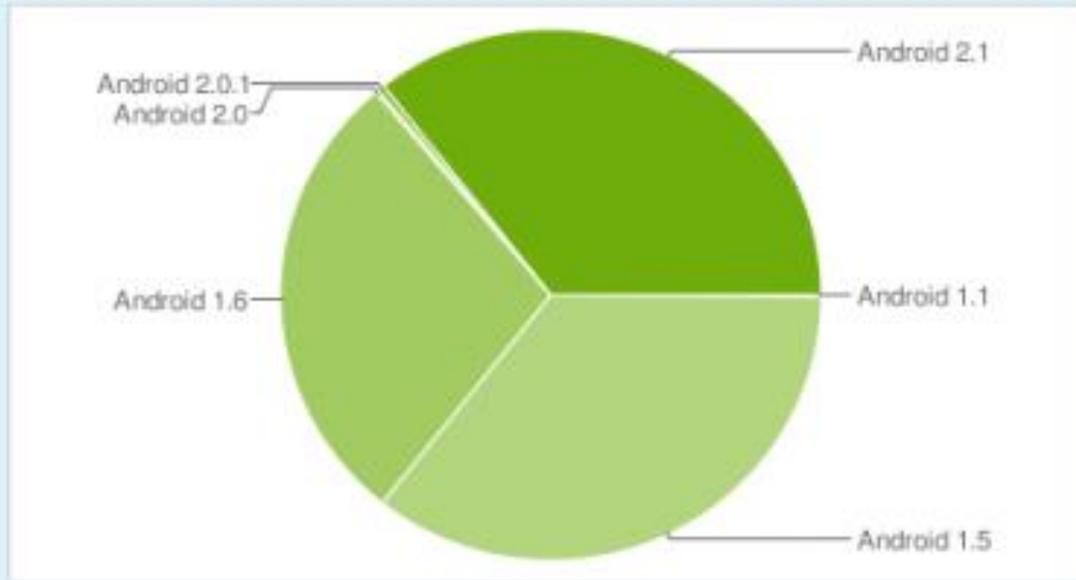


Total data consumed per month (millions of MB)

Research in Desktop Browser Security



Mobile: Difficulties of Adoption

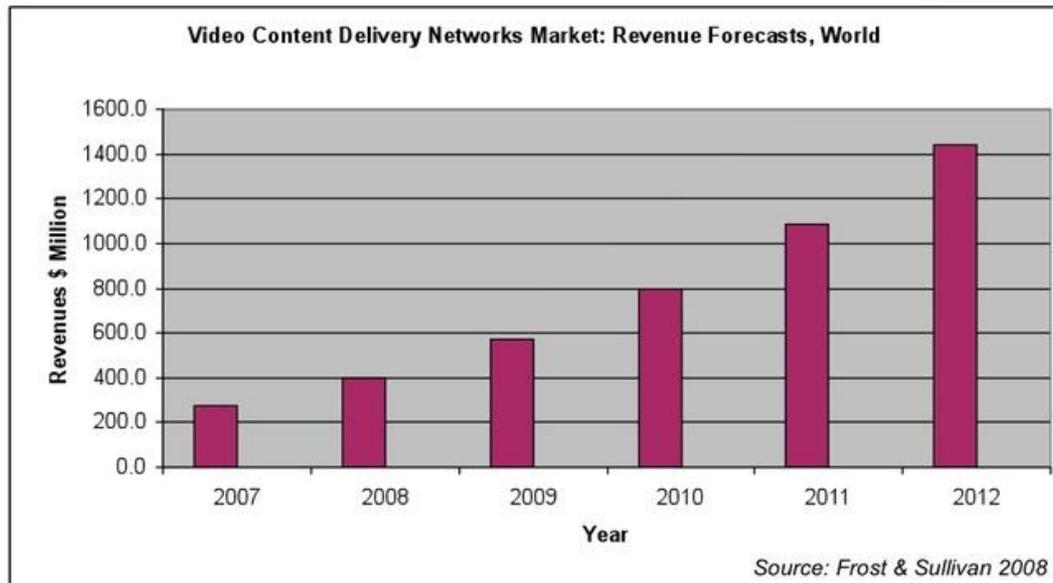


Android Platform	Percent of Devices
Android 1.1	0.1%
Android 1.5	34.1%
Android 1.6	28.0%
Android 2.0	0.2%
Android 2.0.1	0.4%
Android 2.1	37.2%

Data collected during two weeks ending on May 17, 2010

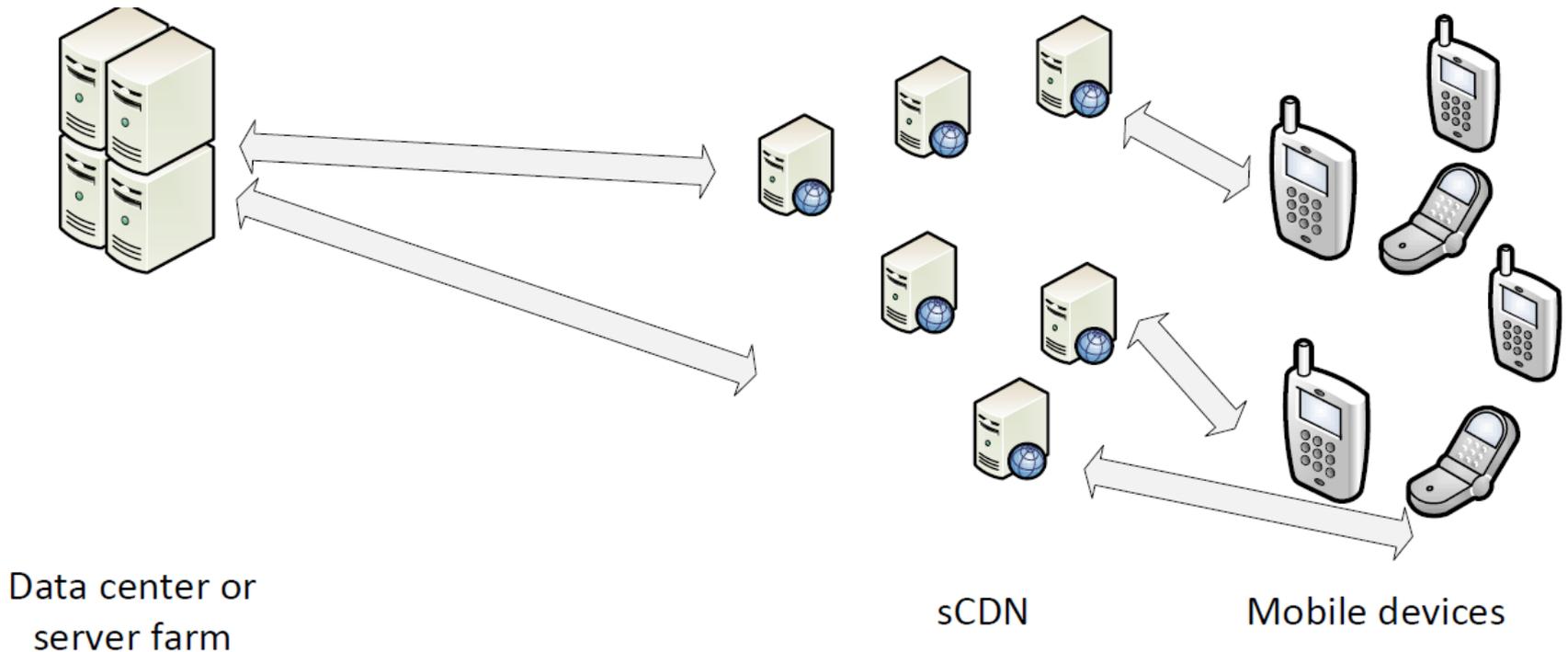
CDNs are Growing

Video CDN Market Forecasts



- CAGR: well over 30%
- Exponential growth from quarter of a billion dollars to over \$1Bn

Consequence: Fat Middle Tier



Rise of “smart CDN” (sCDN)
What does this mean for security?

Two Research Directions

- What if the middle tier is not trustworthy?
- What new security services can we provide?

Two Research Directions

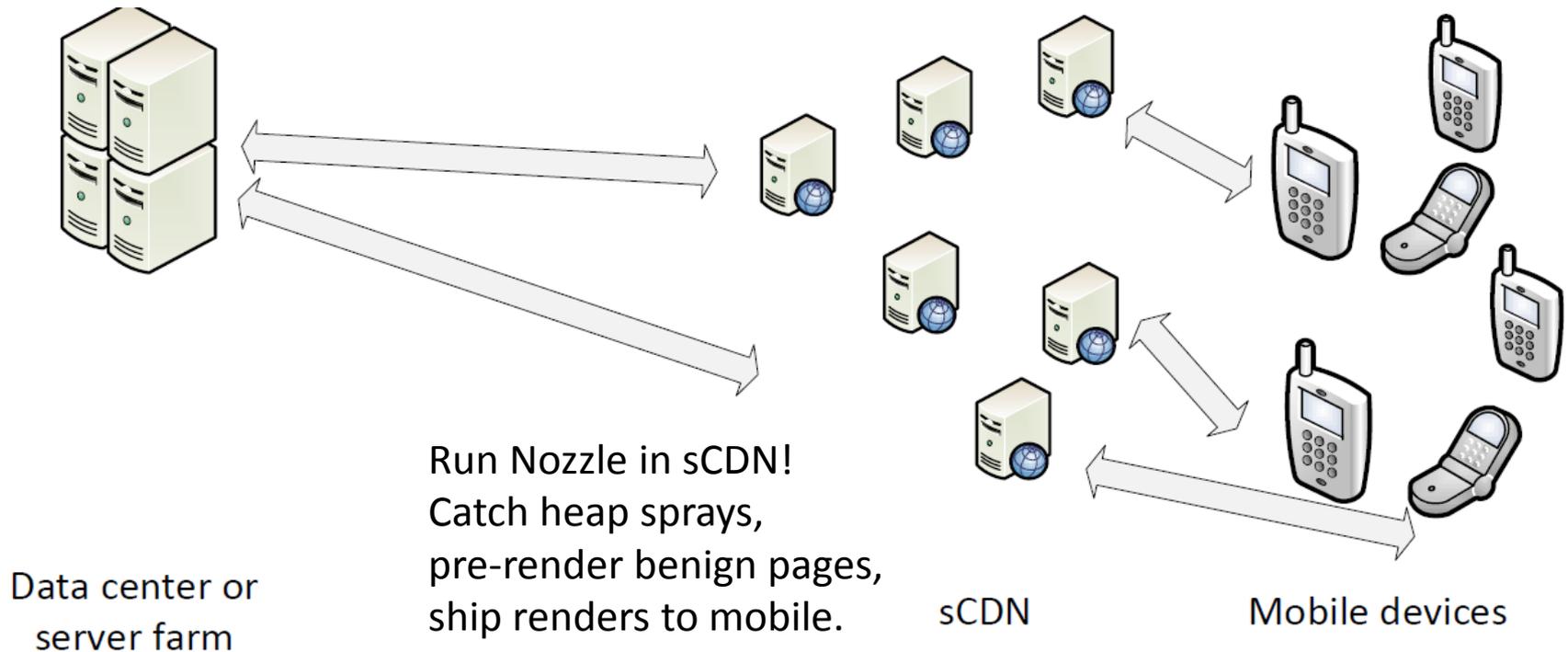
- What if the middle tier is not trustworthy?
- What new security services can we provide?

Let's do the easiest one first...

Example Service: Nozzle in Mobile

- Nozzle is a heap spraying prevention system that protects desktop browsers [UsenixSec'09]
- How to deploy Nozzle on mobile browsers?
- Software updates on all handsets..?
- Same problem for **any** browser based mitigation – StackGuard, RandomHeap, your paper at W2SP20XX...

Example Service: Nozzle in Mobile



More sCDN Security Services

- Real Time phish tracking
 - “Why is everyone suddenly going to whuffo.com?”
- URL reputation
 - “15 other people were owned by this URL”
- XSS filters
- Fuzz testing seeded with real traces

Untrustworthy Infrastructure?

- Multiple vendors
 - Linksys, Cisco, Akamai, Limelight, ...
- Multiple operators
 - Comcast, Sprint, AT&T, T-Mobile, Joe Sixpack, ...
- Multiple web applications
- How do these parties work together?
- What about privacy?

Two Research Directions

- What if the middle tier is not trustworthy?
- What new security services can we provide?