

Ⓢ)))

Media

((((⇒😊

OpenFlow

Web

App

ID

TCP/IP

- Whatsapp
 - chat
 - pict
 - video
 - voice

ports

⋮

Metadata

Filter:

- video
- game
- voice
-

Filter:

- DDoS
- Zombie

+ Deep Packet analysis ⇒ estimate
 + weight: latency

Keynote 2: 12:30-13:00



Vijay Sivaraman received his B. Tech. from the Indian Institute of Technology in Delhi in 1994, his M.S. from North Carolina State University in 1996, and his Ph.D. from the University of California at Los Angeles in 2000, all in Computer Science. He has worked at Bell-Labs as a student Fellow, in a silicon valley start-up manufacturing optical switch-routers, and as a Senior Research Engineer at the CSIRO in Australia. He is currently a Professor at the University of New South Wales in Sydney, Australia. His research interests include Software Defined Networking for carrier, enterprise, and home networks, and Internet-of-Things technologies for smart-homes and smart-cities.

Title: "Software Defined Networking (SDN) in Next-Generation Telecom Infrastructure: Some quick wins and the road ahead"

Abstract: SDN technology will undoubtedly shape the telecoms networks of the future – this talk will outline some much-needed "quick wins" along this long journey. We will show how SDN can reinvent home networking by providing a platform for value-add service creation; we will then demonstrate how SDN can provide better visibility and management of streaming video traffic in carrier and enterprise networks; and finally we will show how SDN can redefine the value of inter-domain interconnects. We will conclude with a short discussion on the potential for security to be the compelling use-case for SDN adoption.

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Seer: SDN Based Home Networking

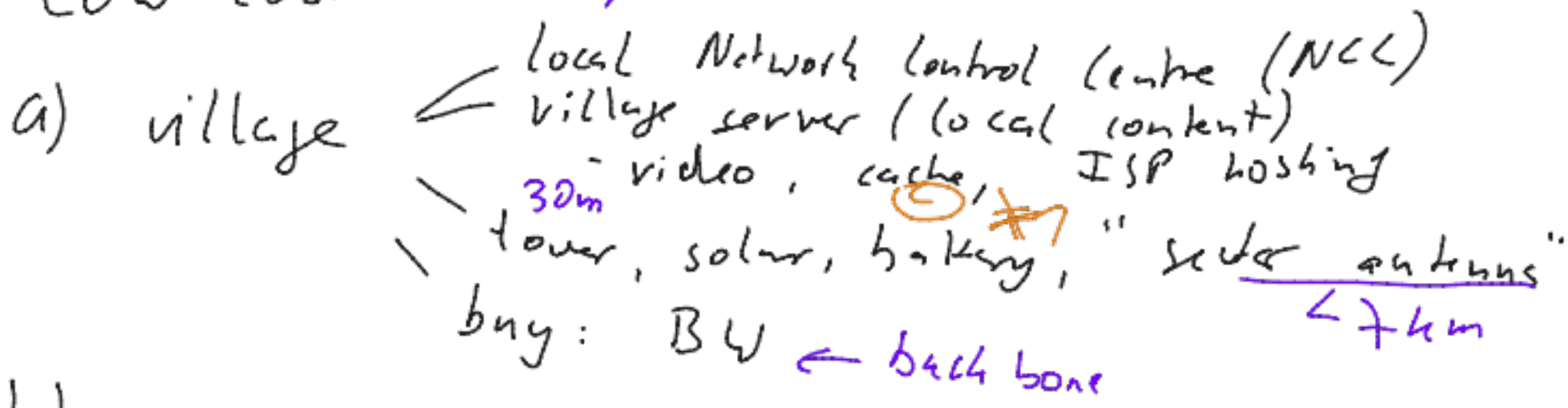
- Architecture:
 - Home gateway: TP-LINK AC1750 (off-the-shelf)
 - Firmware: OpenWRT and OVS (open-source)
 - Controller: FloodLight (open-source)
 - Applications: Ruby-on-rails + postgresSQL
 - Portal: ReactJS + Rubix

<http://www2.ee.unsw.edu.au/~vijay/pubs/talks/16antsSDN.pdf>



<http://www.networkseer.com/>

Global NCC - ~~central~~ Mikrotik RB 960 ~ 70 US\$
Low-cost



b) local hot-spot: solar, battery, light, USB charger
receive antennas of hot-spot

Operator:

- Sat: > 30,000 people
- Fibre > 10,000 people
- Low-cost ≈ 5,000 people

* 1 Raspberry Pi

V-Apps



price performance

Palo Alto Networks ~ 1000 USD

SENSE
SDR ~ 720 USD

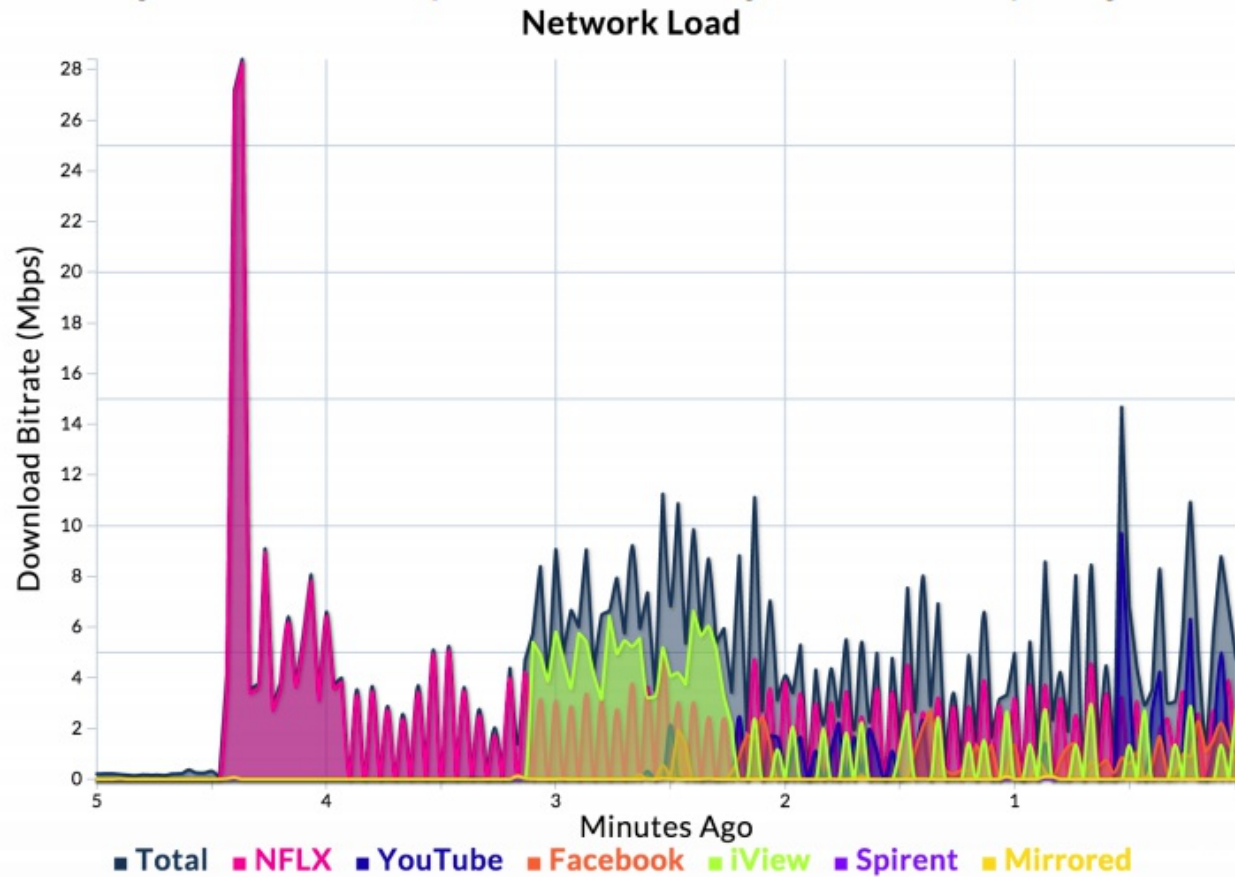
RB 960 POS filtering
white list

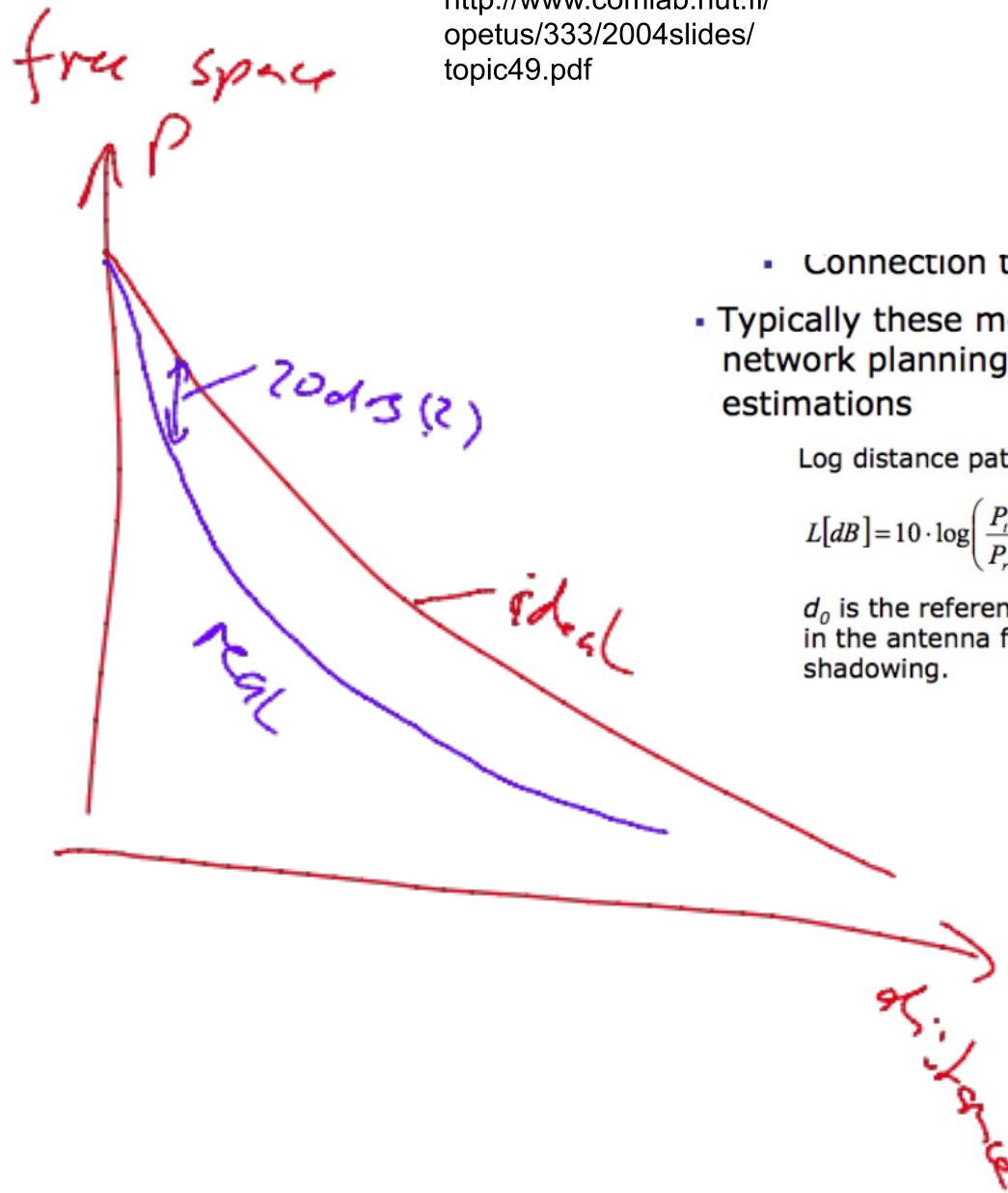
"close world approach"

Real-time Traffic Visibility

Video flow properties (src/dst, web/mobile, b/w, quality)

- Analytics on video profile to identify resolution/quality





- Connection type (LOS/NLOS)
- Typically these models are used in radio network planning for rough cell coverage estimations

Log distance path loss model with shadowing:

$$L[dB] = 10 \cdot \log\left(\frac{P_t}{P_r}\right) = L(d_0) + 10 \cdot n \cdot \log\left(\frac{d}{d_0}\right) + X_\sigma$$

d_0 is the reference distance which should be in the antenna far field. X_σ describes the shadowing.

Path loss exponents for 5 GHz

Overall	2.8-2.9	
Urban environment	LOS	1.4
	NLOS	2.8
Suburban environment	LOS	2.5
	NLOS	3.4
Rural environment	LOS	3.3
	NLOS	5.9