

Internet On The Move Survey

Jon Crowcroft, Heidi Howard, Arjuna Sathiaselalan, Narseo Valina

Abstract—The abstract goes here.

Index Terms—IEEEtran, journal, L^AT_EX, paper, template.

I. INTRODUCTION

THIS survey intends to identify and explore the problems that need to be tackled before ubiquitous internet access is available everywhere to all. We begin by looking at the current situation regarding internet access on mobile devices and the current predicated developments over the coming years. After identified the challenges that need to be tackled, we move onto the current research going into solving these challenges, from the conceptual ideas to real life deployments, we evaluated proposed solutions against each other and explore how the a combination of solution working at different layers can advance the availability of internet on the move to the next set of challenges.

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II. GLOBAL SCENARIO

A. Key Players

Today's availability of internet on the move, as been shaped by the key players in field. These key players take the research and determine what is turned into reality.

1) *Client Side*: Before ISPs, Network providers or governments invest in infrastructure, there need to be a strong business or social case for the investment. The handset manufactures are responsible for providing the clients with the hardware required to make use of technologies. The handset manufactures need to respond to market demand, though they have the power to push there chosen technologies into the market and attempt to push market demand.

The handset manufactures need to determine if they have a sufficiently strong position in the market to push a propriety technology into the market therefore creating new demand in the market for their specific handset range therefore propelling them into an even stronger market position. Alternatively if they are not in a sufficiently stronger position, they can parter with other key players to push new more open technologies.

As well as handset manufactures there is also the manufactures of other mobile devices such as laptops, netbooks, e readers, personal games consoles, MiWifi, dongles etc..

The extend to which the users make use of the new hardware capabilities of there devices is party determined by the mobile OS and the API provided for developers. Some OS have decided to restrict the functionality which they provide to uses whilst other OS's have taken a more open approach.

Some users respond to restricted APIs by choosing to gain root access or "jailbreak" to there mobile devices. Root (also know as superuser) access allows the user and their application

to change file permissions and install custom firmware and software.

On an Android device for examples, gaining root access to a mobile device allows the user to install a custom ROM. Sometimes custom ROMs port now android version before being officially released or they focus on improved speed and performance but most important for the context of the survey is how custom ROMs allow the user to make use of more functionality of hardware that was not previously exposed by the stock OS

2) *Network Infrastructure*:

3) *Research Standards*:

B. Spectrum

C. Public Policy

D. Coverage

1) *2G*:

2) *3G*:

3) *4G*:

E. Mobile Broadband Traffic

F. Wide area WiFi networks

G. Infrastructure

H. Development

III. UK SCENARIO

The UK is in critical time for internet on the move, with heavy investment in 4G which is let to produce results and extensive Wi-Fi coverage in some density urban areas whilst 15% of the population remain disconnected. [1]

- A. *Government*
- B. *Spectrum*
- C. *Coverage*

IV. APPLICATION LAYER

- A. *P2P*
- B. *Bonding*
- C. *AAA*
- D. *Security*
- E. *DNS*
- F. *SIP*
- G. *Delay Tolerant Networks*

V. TRANSPORT LAYER

- A. *multipath TCP*
- B. *Multi-homed TCP*
- C. *Stream Control Transmission Protocol (SCTP)*
- D. *Datagram Congestion Control Protocol (DCCP)*
- E. *TCP adaptations*

VI. NETWORK LAYER

- A. *IP eXchange (IPX)*
- B. *Mobile IP*
- C. *Host Identity Protocol (HIP)*
- D. *IPsec*
- E. *IPv4*
- F. *Transition to IPv6*

Back in June 2011, the Internet Society held the World IPv6 Day. It was marketed as the next step in the IPv6 deployment and offered a mini flag day to the Internet's key players. Whilst parts of the world move forward, other areas are being left behind. In the Asia Pacific for example, some users struggle to access services that are only IPv4 compatible when ISPs fail to offer tunnelling services or tunnelling services make a notable impact on latency.

Why not have an IPv6 flag day, reminiscent of the Network Control Program (NCP) to the Transmission Control Protocol / Internet Protocol (TCP/IP) on January 1st 1983.

- G. *Hierarchical Mobile IPv6*
- H. *Fast Mobile IPv6*
- I. *Resource Reservation Protocol*
- J. *Cisco's Hot Standby Router Protocol (HSRP)*
- K. *Virtual Router Redundancy Protocol (VRRP)*
- L. *Less than best effect (scavenger class)*

VII. DATA LINK AND PHYSICAL LAYER

- A. *Multiprotocol Label Switching (MPLS) for QoS*
- B. *Offloading/Onloading*
- C. *3G Onloading (3GOL)*
- D. *Bonding 3G and Wifi*
- E. *Wifi (IEEE 802.11)*
- F. *WiMAX*
- G. *WiMax 2*
- H. *Mobile WiMax (IEEE 802.16e)*
- I. *WiMax Advanced (IEEE 802.16m)*
- J. *LTE*
- K. *LTE Advance*
- L. *High-Speed Packet Access (HSPA)*
- M. *Evolved High-Speed Packet Access (HSPA+)*
- N. *3rd Generation Partnership Project (3GPP)*
- O. *4G*
- P. *5G*
- Q. *WiFox*
- R. *WPA and WPA2*
- S. *Mesh networking (IEEE 802.11s)*
- T. *Mobile Broadband Wireless Access (MBWA) (IEEE 802.20)*
- U. *Joint user multi-user beamforming*
- V. *MIMO transmitter*
- W. *Pocket Switched Networks*
- X. *Virtual LANs for QoS*

VIII. SECURITY

IX. CLOUD AND VIRTUALIZATION

- A. *Signposts*

X. MULTILAYER

- A. *LCD*
- B. *Eduroam/JANET european academic network*
- C. *measuring performance achieved*
- D. *BT FON*
- E. *Guifi*
- F. *PAWS*
- G. *Opportunistic Communication*
- H. *Home Location Register (HLR)*
- I. *Home Subscriber Service (HSS)*

XI. CONCLUSION

The conclusion goes here.

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