



MENOG 8

Challenges in deploying IPv6 in Mobile operator Network

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Agenda

- What is Mobily?
- IPv4 depletion and Era of IPv6
- Mobile Operator Network Layout, IPv6 Challenges
 - End Users and Handheld Devices
 - Core IP Network
 - Packet Core Network
 - Internet Gateways and VAS
 - Global Internet
- Conclusion



What is Mobily?!

Etihad Etisalat (Mobily) was established in 2004 by a consortium led by Etisalat the UAE based telecom

Mobily is the second mobile service provider in Saudi Arabia

Mobily acquired Bayanat al-Oula which was a licensed Data Service Provider in March 2008

Mobily acquired absolute majority stakes in Zajil, an Internet Service Provider in November 2008

Mobile Broadband (MobilyConnect) and Wireless Fixed Broadband (BB@Home) are some of the main data products for consumer market in Mobily

Today, Mobily equates to 40%+ market share of the voice mobile and 60% of Mobile Broadband subscriptions in Saudi Arabia

Check our website <http://www.mobily.com.sa/>



IPv4 depletion and Era of IPv6

- It is not another Y2K phenomena
- IPv4 has around four billion IP addresses
- IPv6 gives 3.4 multiply by 10 to the power of 38 IP addresses
- IANA has allocated the last IPv4 address blocks to regional Internet Registries in **Feb 2011**

“It's no longer a question of if they will run out, but when”



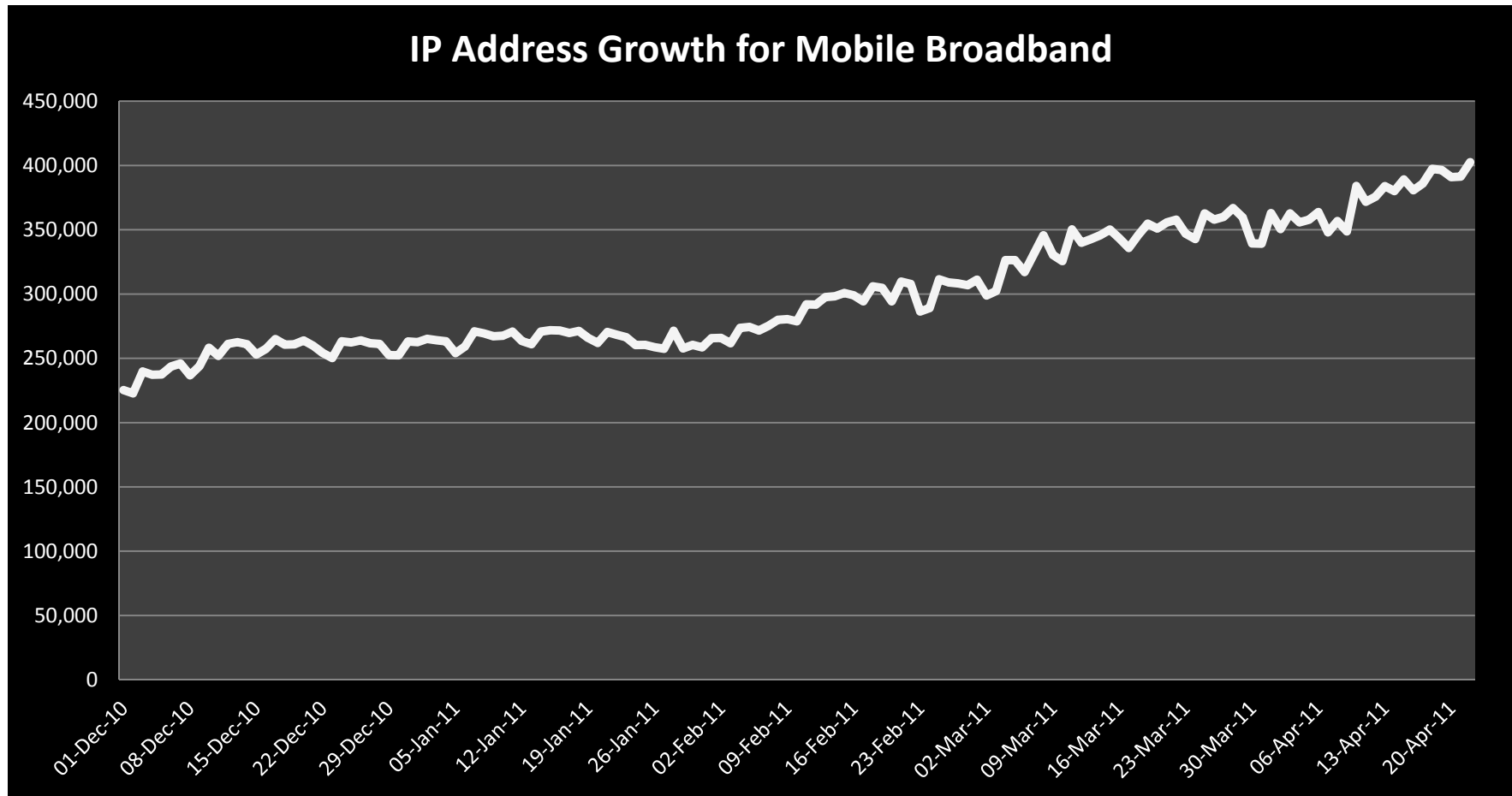
IPv4 depletion and Era of IPv6

The main driver for Mobily is to cope up with the huge demand of Internet traffic, applications, increase of number of subscriber and preparing the network to adopt 4G LTE

- In 2010, there was 2.9 Million MBB in Saudi Arabia
- In 2010, the growth of Mobile BB and Wireless Fixed BB exceed 100% compare to 2009 in Mobily
- In 2010, the Internet traffic volume exceed 150TB per day in Mobily
- The new revenue stream from machine-to-machine application
- Mobily needs to serve their BB subscribers today!!



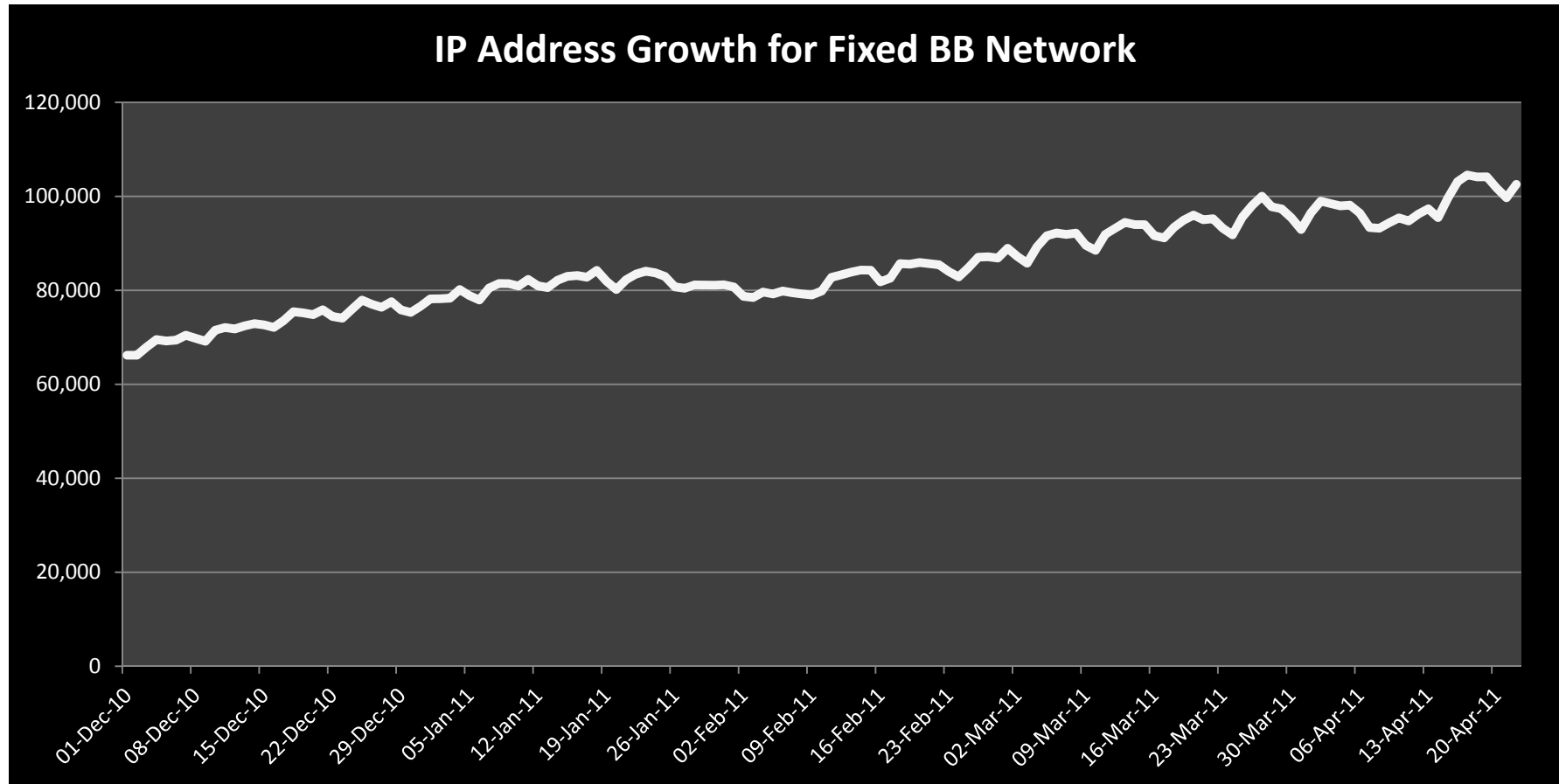
Growth of Mobile Broadband (DHCP)



Growth of 57% in five months



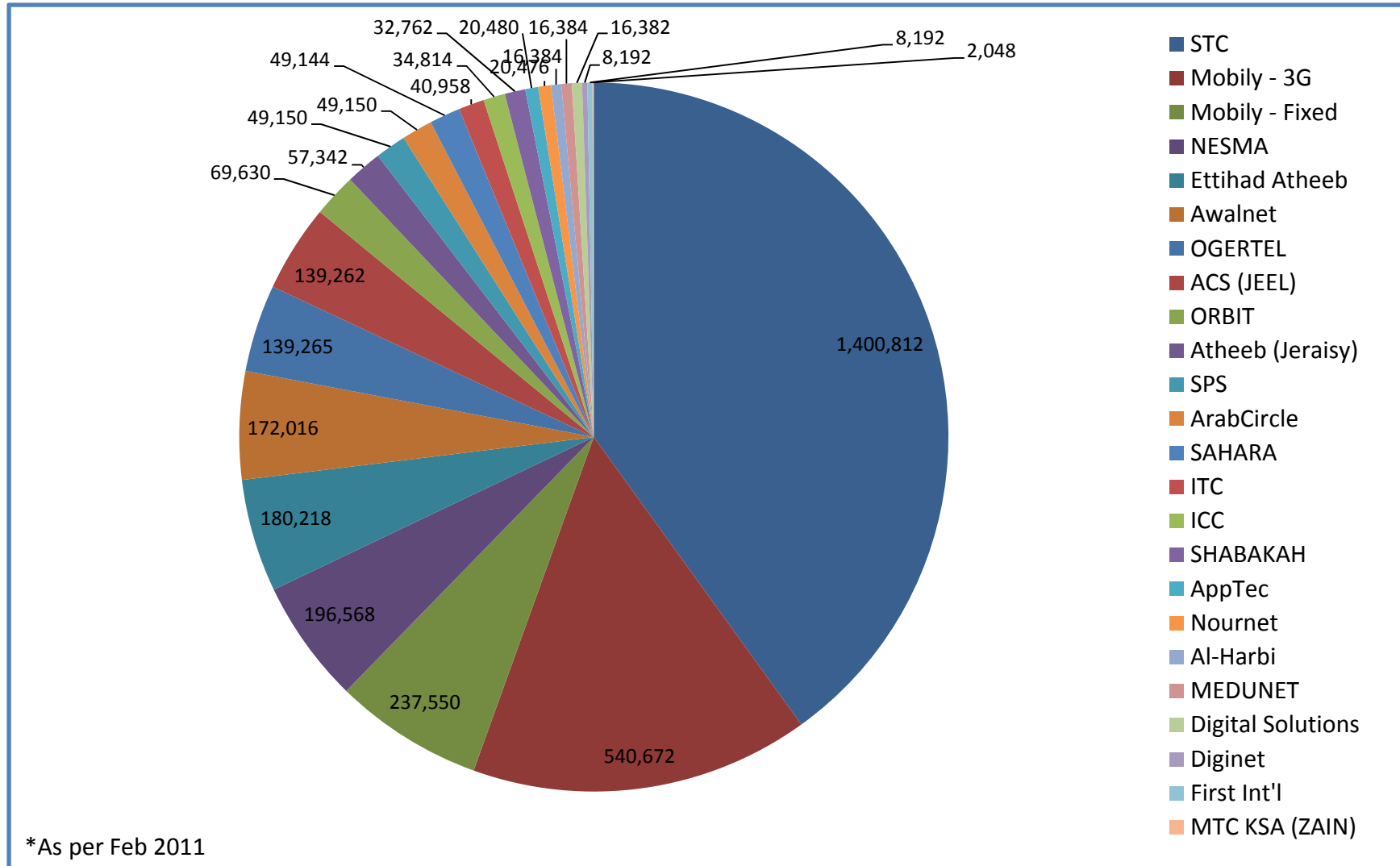
Growth of Wireless Fixed Broadband (DHCP)



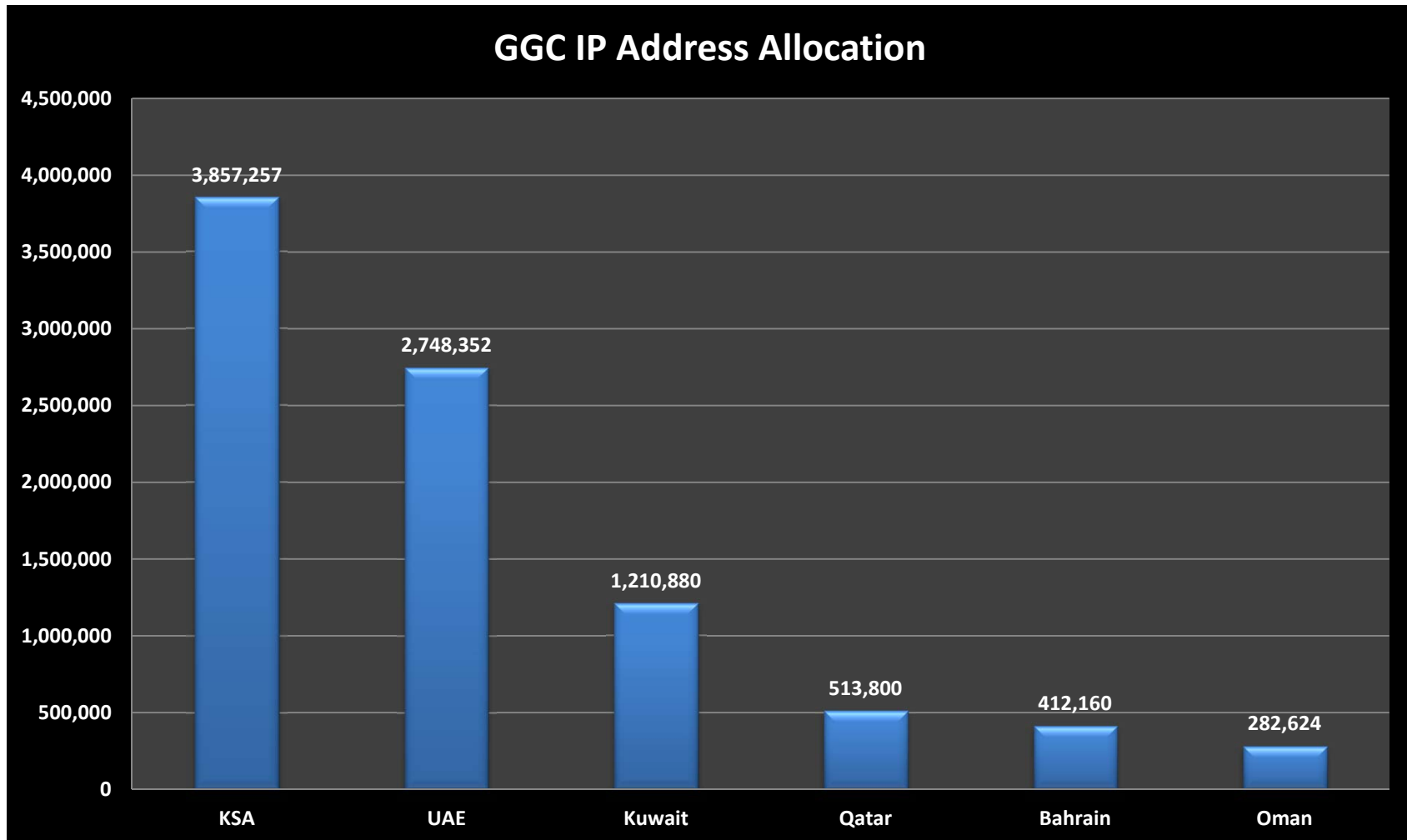
Growth of 65% in five months



IP Address allocation in Saudi Arabia

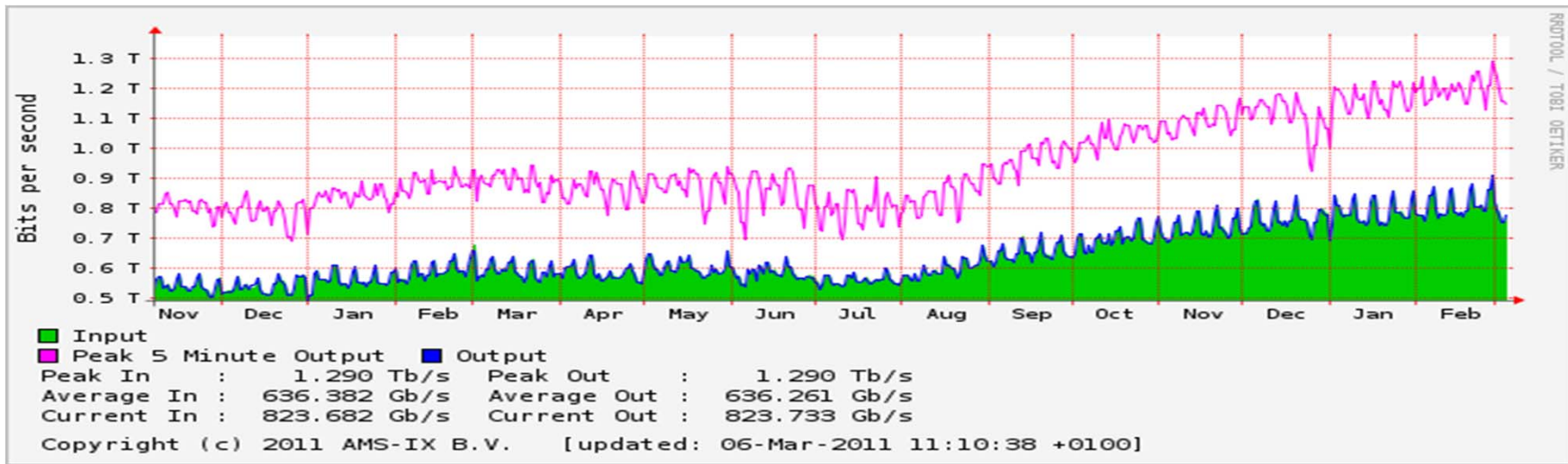


GGC IP Address allocation Status

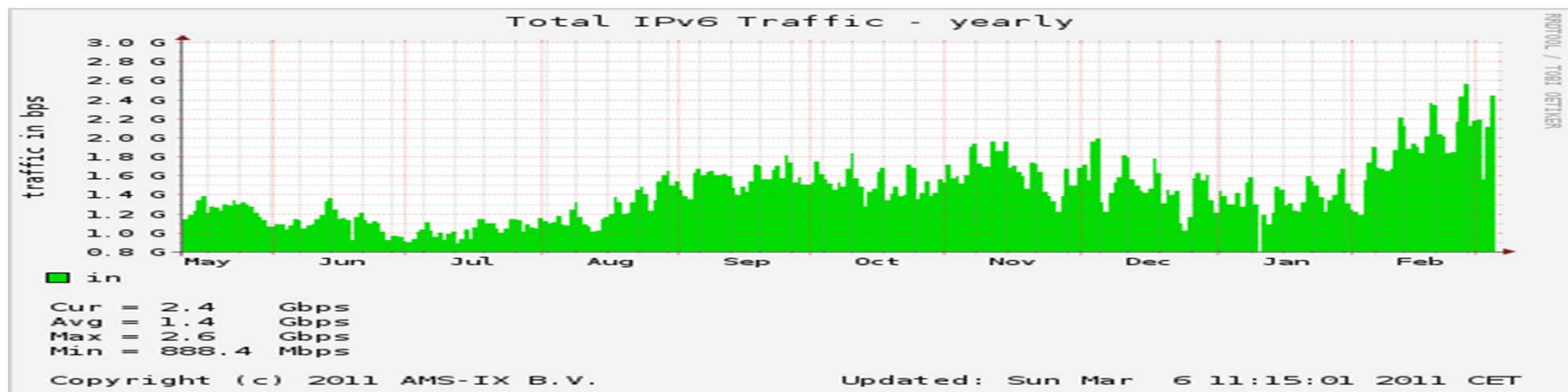


INTERNETv4 is 500 times bigger

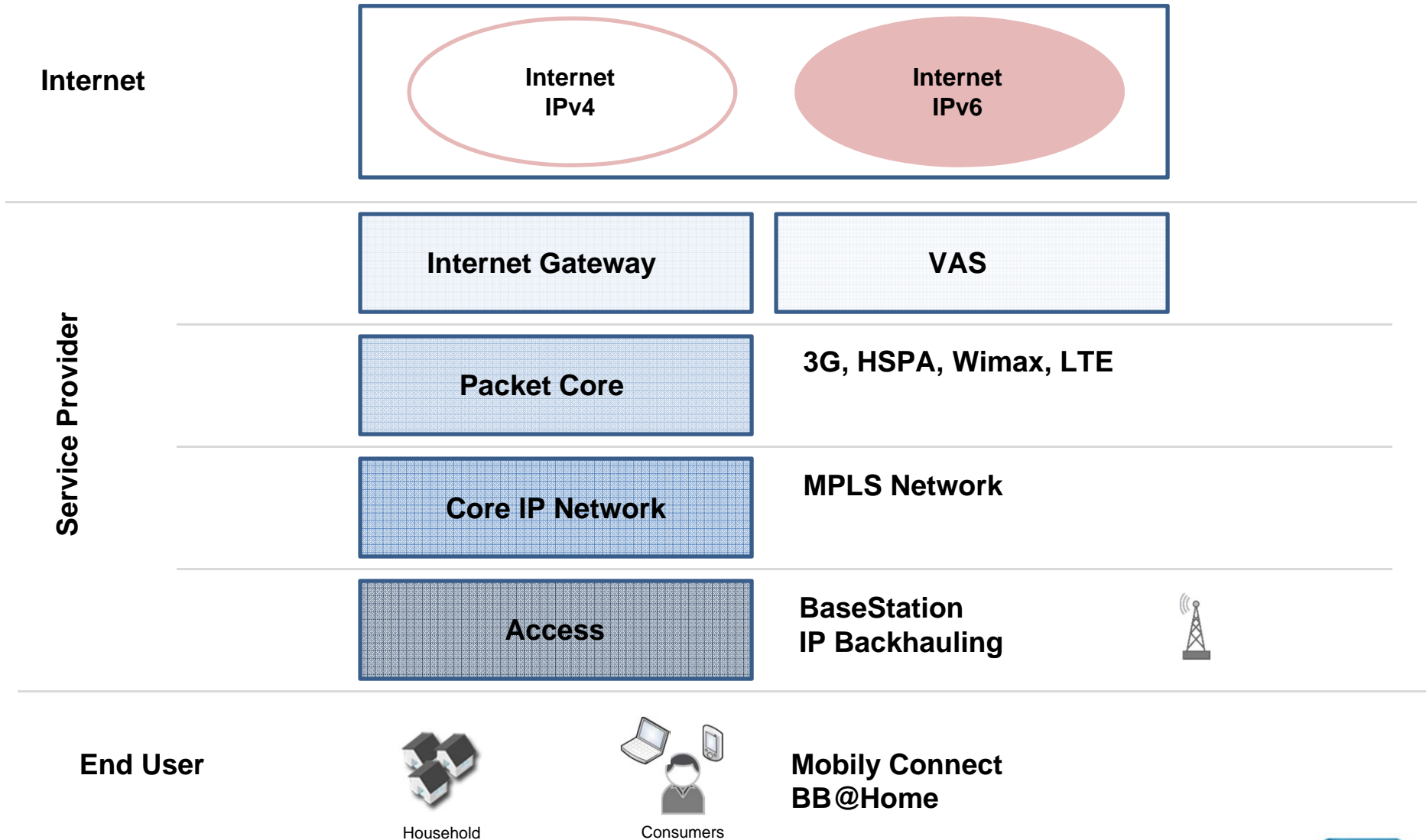
Internet IPv4 as per AMS-IX



Internet IPv6 as per AMS-IX



Mobile Operator Network Layout



Handheld devices

End User



Household



Consumers

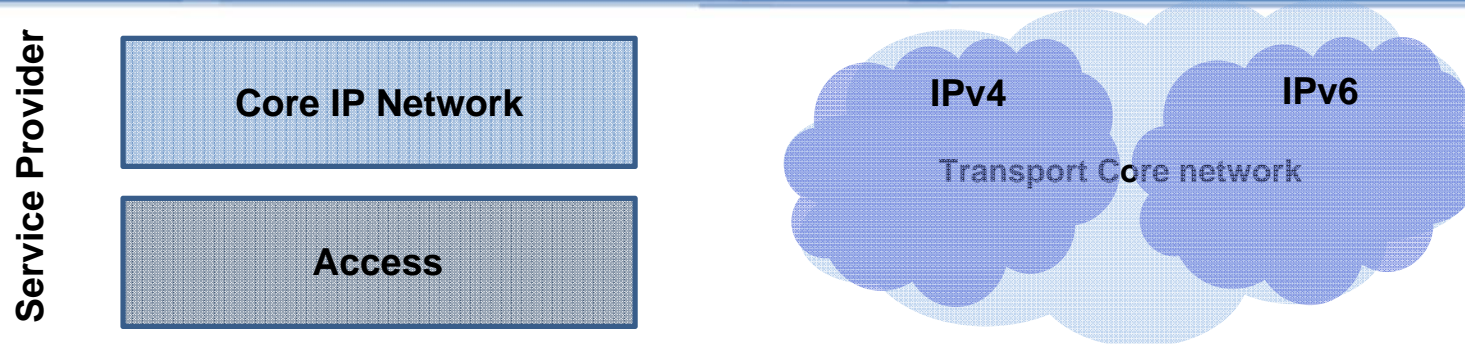
- IP address transition or Change from IPv4 to IPv6 should be transparent
- Services on IPv4 and IPv6 should work and performance the same way
- End user is expecting to reach everywhere
- There are trials and testing for providing IPv6 for End Users
- Most of the dongle modems need no upgrade since they depend on the OS of the end device
- Wireless router CPEs shall be upgraded to support dual stack

Challenges

- Handheld devices and user terminals support for IPv6
- No real benchmark for performance of services over IPv6
- Mobile and Handheld devices Change of location
- 40% of the mobile handheld devices are smartphone in Saudi Arabia
- In one month Apple sold around 1 million iPad devices



Core IP Network



- Critical network that provides reachability to all other network elements
- Network built based on IP/MPLS technology
- IPv4 will continue running in the network as the main cloud and adopt MPLS 6PE
- IPv6 Cloud is expected to grow bigger until the complete transition
- IP Backhauling can be maintain on IPv4 since the Subscriber Data traffic is tunneled over the PDP context
- No changes are needed on RNC and BTS to support IPv6

Challenges

- Having two network raise Operational challenges
- Tune the Radio parameters to optimizes them to support IPv4 and IPv6



Packet Core Network

Service Provider



- Upgrade Packet Core Network to support 3GPP Release 8 and above to support IPv6 PDP context
- Upgrade other mobile components such as Home Location Register (HLR)
- Consider deployment of IMS to support IPv4 and IPv6
- Roaming service provider capabilities to support IPv6
- DPI and PCRF (Policy Controller) to support IPv4 and IPv6 CDRs

Challenges

- Roaming service provider capabilities to support IPv6
- Connect to GPRS Roaming eXchange (GRX)
- IPv6 CDR and Billing system
- Firewall, DHCP, and DNS
- Consider support IPv6 from the beginning of deploying LTE



Internet Gateway

Service Provider



- Enable Dual Stack IPv4 and IPv6 for Internet Gateway infrastructure
- Enable IPv6 access to Mobily Portal by using load balancer
- Large Scale NATing devices for NAT444 and NAT64
- Enable IPv6 on Filtering and Web Caching platform
- IPv6 Public Peering and IP Transit connectivity

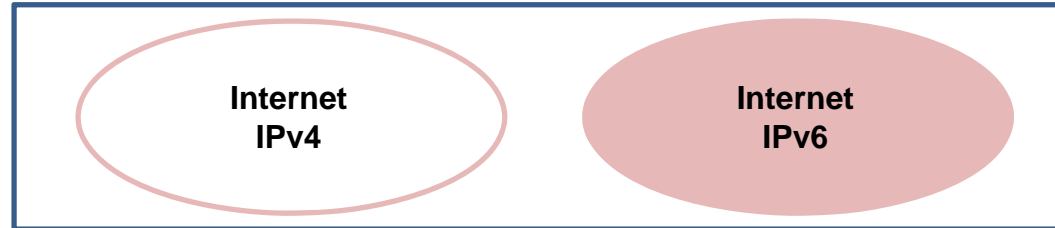
Challenges

- Some applications are not NAT Friendly
- Mobile VAS Services must be able to support both v4 and v6 stacks



Global Internet

Internet



- The Internet is divided into two Networks from Providers prospective
- Content Providers will be the main driver for IPv6
- IPv6 Day

Challenges

- Not much content on IPv6 compared to IPv4 yet
- Bad customer experience is expected due to the distribution of the content of IPv6 is much less compare to IPv4



Conclusion

- Identify the business drivers to deploy IPv6
- Identify IPv6 enabled Services
- Identify technology/Network elements to support IPv6
- Network infrastructure support of IPv6 doesn't apply smooth migration.
- Developing IPv6 Strategy plan leads by the head of the organization
- Developing IPv6 awareness among the subscribers
- Deploying IPv6 might take from two to three years





Thank You

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