



Research Forecast Report

Fixed Internet traffic worldwide: forecasts and analysis 2013–2018

February 2013

Rupert Wood

Contents

Slide no.

6. Executive summary

7. Executive summary

8. Key implications

9. Key implications

10. Forecasts

11. This Report measures and forecasts Internet data generated by fixed connections

12. Forecasting fixed Internet traffic is important for two key reasons

13. Fixed Internet traffic will increase at a CAGR of between 38% and 47% worldwide during the next five years

14. Traffic growth in emerging economies will be stronger

15. North America will have by far the highest average usage levels

16. The rate of fixed Internet traffic growth will outstrip or match that of mobile data in many regions between 2012 and 2017

17. Data sources

18. Fixed data traffic is inherently more difficult to measure and to forecast than mobile data traffic

19. National regulatory authority statistics are limited and show significant variation

20. UK ISPs may have overestimated aggregated bandwidth demand in the past three years

Slide no.

21. IXP bandwidth statistics provide one indicator of growth, but their usefulness for forecasting is limited

22. Our estimates of actual usage levels are much lower than those of Cisco Systems

23. Market drivers and inhibitors

24. Summary of main forecast drivers

25. There is still room for substantial growth in the number of fixed broadband connections in emerging economies

26. There is a clear correlation between low access speed and low usage, but not always one between high access speed and high usage

27. The future for broadband in emerging economies is not all wireless

28. Trends in device usage: connected TVs and STBs

29. Larger screens are on the way, but will not have a profound effect on traffic levels before 2018

30. Smartphones probably depress Internet traffic growth

31. Tablets add to fixed-line traffic, but they can be substitutive of larger screens

32. The efficacy of the law with respect to file sharing and copyright has dramatic effects on the level of traffic

33. Making NGA available will release some pent-up demand for upstream traffic, but traffic will become more asymmetrical in the long term

Contents

Slide no.

- 34. Gigabit consumer access could trigger an entirely different future pattern of consumption
- 35. Median usage is a useful measure to assess the viability of LTE substitution
- 36. Methodology**
- 37. Outline of methodology
- 38. Usage scenarios: Households with high propensity to take online TV, with or without off-TV effect
- 39. Usage scenarios: Households with low propensity to take online TV, with or without off-TV effect
- 40. The range of GB consumption from these scenarios is great, but provides limits for our forecast ranges of rates of growth of Internet data

Slide no.

- 41. Market definition**
- 42. Definition of geographical regions [1]
- 43. Definition of geographical regions [2]
- 44. About the author and Analysys Mason**
- 45. About the author
- 46. About Analysys Mason
- 47. Research from Analysys Mason
- 48. Consulting from Analysys Mason

List of figures

- Figure 1: Scope of this forecast
- Figure 2: Fixed Internet traffic by region, upper limit, 2011–2018
- Figure 3: Fixed Internet traffic by region, lower limit, 2011–2018
- Figure 4: Fixed Internet traffic CAGR by region, lower and upper limits, 2012–2017
- Figure 5: Fixed Internet traffic CAGR by country, lower and upper limits, 2012–2017
- Figure 6: Average data consumption per fixed broadband connection by region, upper limit, 2011–2018
- Figure 7: Average data consumption per fixed broadband connection by country, upper limit, 2018
- Figure 8: Fixed Internet and mobile data traffic CAGRs by region, 2010–2012
- Figure 9: Fixed Internet traffic upper and lower CAGRs and mobile data traffic CAGR by region, 2012–2017
- Figure 10: Average data consumption per fixed broadband connection, selected countries, 1Q 2011–2Q 2012
- Figure 11: Virgin Media's 2009 forecast and actual average data consumption per fixed broadband connection by access speed tier, UK, 2011–2013
- Figure 12: Figure 12: TalkTalk's 2010 forecast and actual average data consumption per fixed broadband connection, UK, 2011–2012
- Figure 13: Growth in peak bandwidth at the largest IXP, selected countries, November 2011 to November 2012
- Figure 14: Average data consumption per fixed broadband connection, Cisco VNI forecasts and Analysys Mason estimates, Western Europe and North America, December 2011 and December 2012
- Figure 15: Main drivers and inhibitors of fixed Internet traffic growth
- Figure 16: Fixed broadband connections by region, 2011–2018
- Figure 17: Average fixed broadband access speed and average data consumption per connection, 200 UK local authority areas, June 2012
- Figure 18: Next-generation access as a percentage of broadband connections, developed economies, 2011–2017
- Figure 19: Peak and average bandwidth per fixed broadband subscriber and peak:average ratio, upper and lower limits, Western Europe, 2011–2018
- Figure 20: Approximate bandwidth requirements for various video formats
- Figure 21: Smartphone penetration, selected regions, 2011–2017
- Figure 22: Tablet data traffic and connections, cellular and Wi-Fi, Western Europe, 2011–2017
- Figure 23: Countries on USTR watch lists
- Figure 24: Upstream traffic as a percentage of fixed Internet traffic by region, 2011–2018
- Figure 25: Slower-than-, equal-to-, and faster-than-real-time speeds, and bandwidth requirements
- Figure 26: Median data consumption, upper limit, per fixed broadband connection by region, 2011–2018

List of figures

Figure 27: Fixed Internet traffic forecast methodology

Figure 28: Minutes of usage per household per day by type, high online TV and high off-TV, 2009–2020

Figure 29: Minutes of usage per household per day by type, high online TV and low off-TV, 2009–2020

Figure 30: Minutes of usage per household per day by type, low online TV and high off-TV, 2009–2020

Figure 31: Minutes of usage per household per day by type, low online TV and low off-TV, 2009–2020

Figure 32: Data consumption per fixed broadband connection by type, high online TV and high off-TV, 2011–2018

Figure 33: Data consumption per fixed broadband connection by type, low online TV and high off-TV, 2011–2018

Figure 34: Data consumption per fixed broadband connection by type, high online TV and low off-TV, 2011–2018

Figure 35: Data consumption per fixed broadband connection by type, low online TV and low off-TV, 2011–2018

Figure 36: Regional breakdown used in this Report

Figure 37: Regional breakdown used in this Report

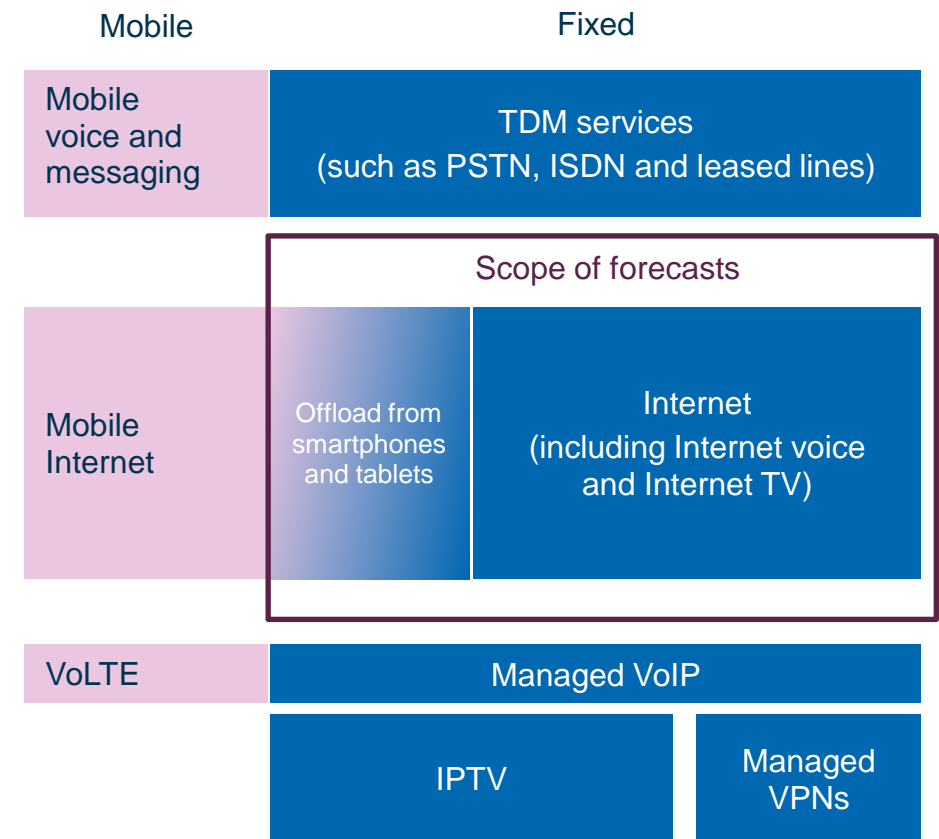
This Report measures and forecasts Internet data generated by fixed connections

- This forecast provides an independent (of vendor) view of open Internet traffic in geographical regions and selected countries.
- It applies recent trends identified in part in Analysys Mason's *Connected Consumer* survey¹ and assesses their impact on fixed broadband (and by implication mobile broadband) investment cases.
- It provides a complement to our wireless traffic forecasts.² That forecast splits wireless traffic generated by small- and medium-screen devices (principally smartphones and tablets) into cellular and Wi-Fi traffic. The fixed Internet traffic forecast places these elements in their proper context as fixed traffic.
- The forecast does not include:
 - independently derived detailed breakdowns of traffic into protocol or application types
 - TDM services, or operator-managed IP services, such as VoIP, IPTV and IP-VPNs.
- The forecast does include:
 - OTT video services, often referred to as Internet TV or OTT voice services (such as Skype).

¹ See Analysys Mason's Forecast Report *The Connected Consumer Survey 2012: fixed broadband*. Available at www.analysismason.com/FBBsurvey2012.

² See Analysys Mason's Forecast Report *Wireless network traffic worldwide: forecasts and analysis 2012–2017*, available at www.analysismason.com/WNTF2012.

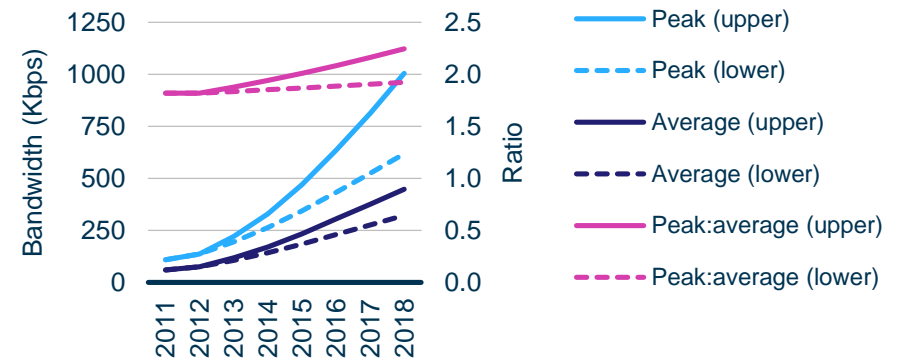
Figure 1: Scope of this forecast [Source: Analysys Mason, 2013]



Trends in device usage: connected TVs and STBs

- OTT video:** In our previous forecasts (July 2011) we noted that increases in OTT video traffic, when viewed primarily on PCs, appeared to be driven mainly by increasing numbers of users, and perhaps of an increasing number of services, rather than by increasing levels of usage of individual services. For services like the BBC iPlayer at least this appears still to be the case.
- STB-based OTT services:** Several broadband providers now offer STBs optimised for OTT viewing as an incentive to use their services. For example, in the UK, both BT and the leading altnet TalkTalk now offer free YouView boxes to IPTV subscribers. We see this as a half-way stage to full connected TV: important for familiarisation, but still in essence supplementary and generally co-existing on the same box as a DVR. The STB is a workaround for the connected TV, and as such not a particularly desirable consumer item.
- Connected TVs:** We believe this is where the real potential for take-off in traffic consumption lies. Once OTT TV is on the main remote control, then it becomes mainstream TV viewing rather than a supplementary service. Internet traffic will become increasingly shaped by general TV viewing profiles (the number of hours watched, the time of day when TV is watched).

Figure 19: Peak and average bandwidth per fixed broadband subscriber and peak:average ratio, upper and lower limits, Western Europe, 2011–2018 [Source: Analysys Mason, 2013]



- One important effect of this change will be a concentration of data traffic during the peak evening TV viewing hours. This will change the busy-hour/average Internet traffic throughput ratio from what has been a fairly consistent 1.8:1 to something less efficient, unless people choose or are encouraged to use off-peak downloading as opposed to streaming. The busy-hour/average ratio for TV is about 2.6:1.
- CDNs will continue to be able to offset some of this additional burden, but their efficacy depends on concentration of taste in viewing habits and whether they are distributed out beyond aggregation node.

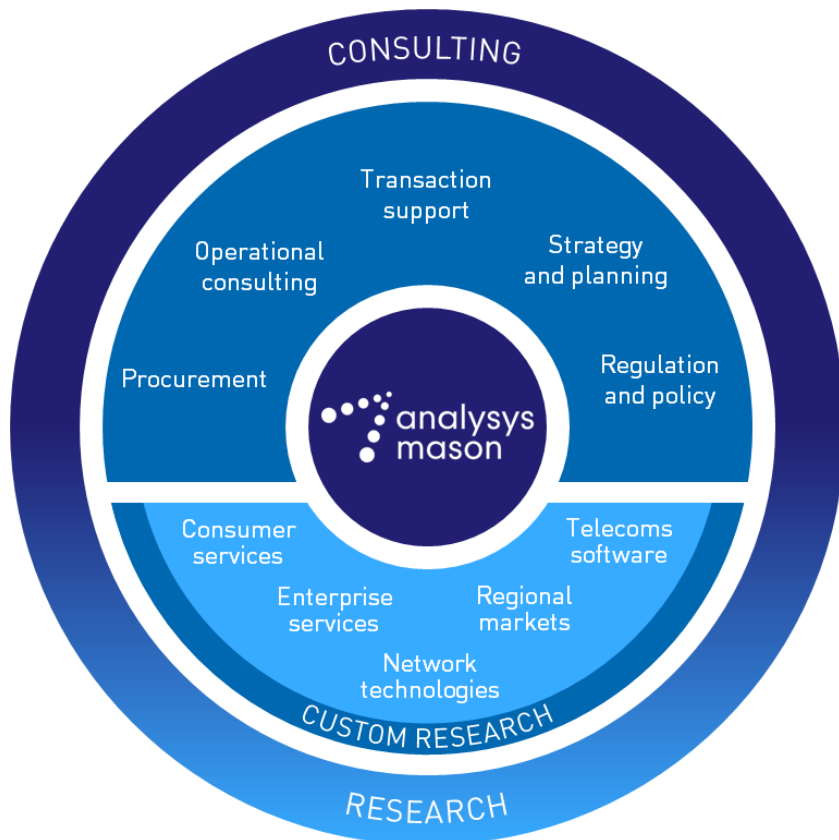
About the author



Rupert Wood (Principal Analyst) is the lead analyst for Analysys Mason's *Fixed Networks* research programme. His primary areas of specialisation include next-generation networks, long-term industry strategy and forecasting the dynamics of convergence and substitution across fixed and mobile platforms. Rupert regularly contributes to the international press on a wide range of telecoms subjects and has been quoted by *The Times*, *The Economist*, *Business Week*, *Telecommunications Online* and *Kommersant*. Rupert has a PhD from the University of Cambridge, where he was a Lecturer before joining Analysys Mason.

About Analysys Mason

Knowing what's going on is one thing. Understanding how to take advantage of events is quite another. Our ability to understand the complex workings of telecoms, media and technology (TMT) industries and draw practical conclusions, based on the specialist knowledge of our people, is what sets Analysys Mason apart. We deliver our key services via two channels: consulting and research.



Consulting

- Our focus is exclusively on TMT.
- We support multi-billion dollar investments, advise clients on regulatory matters, provide spectrum valuation and auction support, and advise on operational performance, business planning and strategy.
- We have developed rigorous methodologies that deliver tangible results for clients around the world.

For more information, please visit www.analysismason.com/consulting.

Research

- We analyse, track and forecast the different services accessed by consumers and enterprises, as well as the software, infrastructure and technology delivering those services.
- Research clients benefit from regular and timely intelligence in addition to direct access to our team of expert analysts.
- Our dedicated Custom Research team undertakes specialised and bespoke projects for clients.

For more information, please visit www.analysismason.com/research.

Research from Analysys Mason

We provide dedicated coverage of developments in the telecoms, media and technology (TMT) sectors, through a range of research programmes that focus on different services and regions of the world.

Practices	Programmes							
Consumer Services	Fixed Broadband and Media		Mobile Broadband and Devices		Mobile Content and Applications		Voice and Messaging	
Enterprise Services	Enterprise				SME Strategies			
Regional Markets	<i>Europe</i>						<i>Asia-Pacific</i>	
	Country Reports	Core Forecasts	Telecoms Market Matrix		The Middle East and Africa	Asia-Pacific	India Wireless	
Network Technologies	Fixed Networks			Wireless Networks		Spectrum		
Telecoms Software	<i>Application programmes</i>				<i>Data programmes</i>		<i>Strategy programmes</i>	
	Revenue Management	Service Assurance		Customer Care		Telecoms Software Market Shares		Telecoms Software Strategies
	Infrastructure Solutions	Service Delivery Platforms		Service Fulfilment		Telecoms Software Forecasts		Service Provider Strategies
Custom Research	Market Research		Market Analysis		Market Sizing and Forecasting		Benchmarking and Best Practice	

Alongside our standardised suite of research programmes, our Custom Research team undertakes specialised, bespoke research projects for clients. The dedicated team offers tailored investigations and answers complex questions on markets, competitors and services with customised industry intelligence and insights.

To find out more, please visit www.analysismason.com/research.

Consulting from Analysys Mason

For more than 25 years, our consultants have been bringing the benefits of applied intelligence to enable clients around the world to make the most of their opportunities.

Our clients in the telecoms, media and technology (TMT) sectors operate in dynamic markets where change is constant. We help shape their understanding of the future so they can thrive in these demanding conditions. To do that, we have developed rigorous methodologies that deliver real results for clients around the world.

Our focus is exclusively on TMT. We advise clients on regulatory matters, help shape spectrum policy and develop spectrum strategy, support multi-billion dollar investments, advise on operational performance and develop new business strategies. Such projects result in a depth of knowledge and a range of expertise that sets us apart.

We help clients solve their most pressing problems, enabling them to go farther, faster and achieve their commercial objectives.

To find out more, please visit www.analysismason.com/consulting.

Area	Expertise		
Regulation	Policy development and response	Margin squeeze tests	Analysing regulatory accounts
	Expert legal support	Media regulation	Postal sector costing, pricing and regulation
	Regulatory economic costing		Net cost of universal service
Spectrum policy and auction support	Radio spectrum auction support		Radio spectrum management
Transaction support	Commercial due diligence	Regulatory due diligence	Technical due diligence
	Corporate value analysis	Networks, procurement and IT excellence	Transformation services
Operational consulting	Sales, customer and back-office excellence		Innovation, product and pricing portfolio excellence
	Market research	Market analysis	Business strategy and planning
Strategy and planning	Market sizing and forecasting	Benchmarking and best practice	National and regional broadband strategy and implementation
	Strategy and business case development	Network review and design	Implementation and supplier management
Procurement and ICT	Benchmarking and cost optimisation	Procurement	Technical assurance

Published by Analysys Mason Limited • Bush House • North West Wing • Aldwych • London • WC2B 4PJ • UK

Tel: +44 (0)845 600 5244 • Fax: +44 (0)845 528 0760 • Email: research@analysysmason.com • www.analysysmason.com/research • Registered in England No. 5177472

© Analysys Mason Limited 2013. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, mechanical, photocopying, recording or otherwise – without the prior written permission of the publisher.

Figures and projections contained in this report are based on publicly available information only and are produced by the Research Division of Analysys Mason Limited independently of any client-specific work within Analysys Mason Limited. The opinions expressed are those of the stated authors only.

Analysys Mason Limited recognises that many terms appearing in this report are proprietary; all such trademarks are acknowledged and every effort has been made to indicate them by the normal UK publishing practice of capitalisation. However, the presence of a term, in whatever form, does not affect its legal status as a trademark.

Analysys Mason Limited maintains that all reasonable care and skill have been used in the compilation of this publication. However, Analysys Mason Limited shall not be under any liability for loss or damage (including consequential loss) whatsoever or howsoever arising as a result of the use of this publication by the customer, his servants, agents or any third party.