

# Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update

January 29, 2009



The Cisco<sup>®</sup> Visual Networking Index (VNI) Global Mobile Data Traffic Forecast Update is part of the comprehensive Cisco VNI Forecast, an ongoing initiative to track and forecast the impact of visual networking applications. This paper presents some of Cisco's key global mobile traffic projections and growth trends.

## Executive Summary

**Globally, mobile data traffic will double every year through 2013, increasing 66 times between 2008 and 2013.** Mobile data traffic will grow at a CAGR of 131 percent between 2008 and 2013, reaching over 2 exabytes per month by 2013.

**Mobile data traffic will grow from 1 petabyte per month to 1 exabyte per month in half the time it took fixed data traffic to do so.** In the 7 years from 2005 to 2012, mobile data traffic will have increased a thousand-fold. The Internet grew from 1 petabyte per month to 1 exabyte per month in 14 years.

**Almost 64 percent of the world's mobile traffic will be video by 2013.** Mobile video will grow at a CAGR of 150 percent between 2008 and 2013. Mobile video has the highest growth rate of any application category measured within the Cisco VNI Forecast at this time.

**Mobile broadband handsets with higher than 3G speeds and laptop aircards will drive over 80 percent of global mobile traffic by 2013.** A single high-end phone like the iPhone/Blackberry generates more data traffic than 30 basic-feature cell phones. A laptop aircard generates more data traffic than 450 basic-feature cell phones.

**Latin America will have the strongest growth of any region at 166 percent CAGR,** followed by Asia Pacific (APAC) at 146 percent.

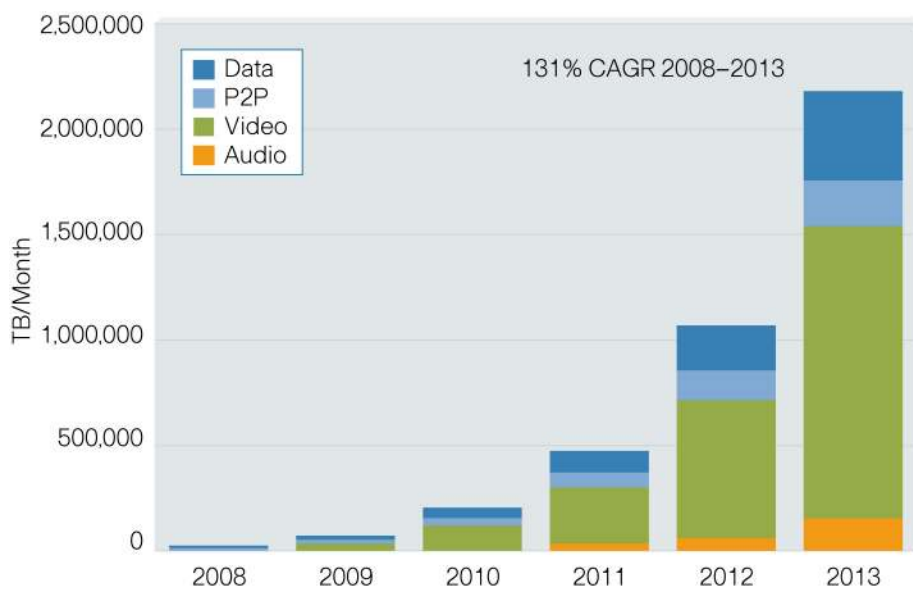
**APAC will account for one-third of all mobile data traffic by 2013.** Together, Western Europe and APAC will account for over 60 percent of global mobile data traffic.

**Western Europe will have the most mobile video traffic of all regions in 2013.** Mobile video will account for 73 percent of mobile data traffic in Western Europe.

### The Impact of Video and Advanced Devices on Mobile Traffic

According to the Cisco VNI Global Mobile Data Traffic Forecast, video will be responsible for the majority of the traffic growth between 2008 and 2013. As Figure 1 shows, overall mobile data traffic is expected to grow to 2 exabytes per month by 2013, and over 1.4 of those are due to mobile video traffic.

**Figure 1.** Cisco Forecasts 2 Exabytes per Month of Mobile Data Traffic in 2013

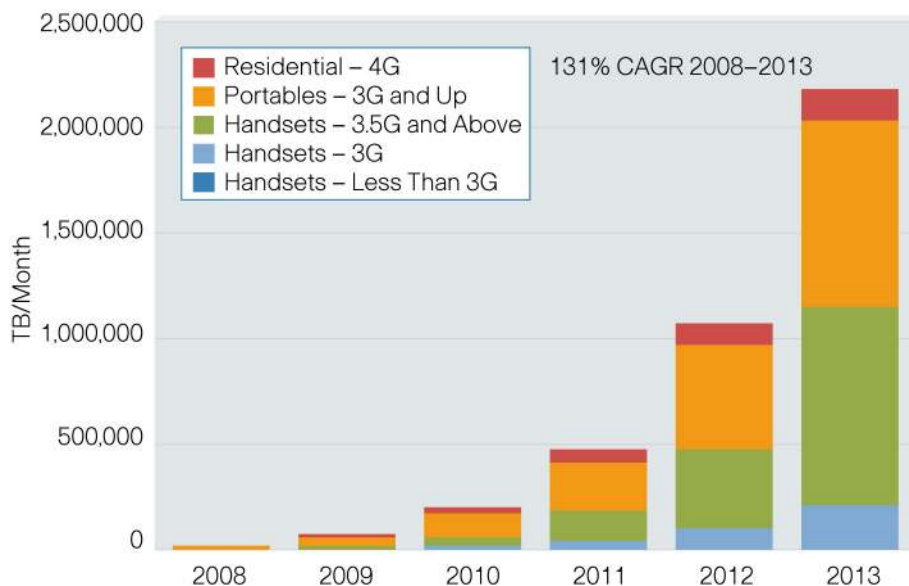


For more details, see Appendix B: Forecast and Methodology.

Source: Cisco, 2009

Figure 2 shows the devices responsible for mobile data traffic growth. Mobile broadband handsets (speeds of 3.5G and higher) and portables will account for 83 percent of all mobile data traffic by 2013. This is primarily due to the much higher usage profile of laptops and the suitability of mobile broadband handsets for high-speed, high-quality video.

**Figure 2.** Laptops and Mobile Broadband Handsets Drive Traffic Growth



Source: Cisco, 2009

The advent of laptops and high-end handsets onto mobile networks is a key driver of traffic, since these devices offer the consumer content and applications not supported by the previous generation of mobile devices. Chief among these new sources of traffic is video, but other applications such as peer-to-peer (P2P) are already making an impact. Despite the relatively small number of laptops with mobile broadband aircards today, P2P traffic from those devices already accounts for 20 percent of all mobile data traffic globally. As shown in Figure 3, a single laptop can generate as much traffic as 450 basic-feature phones, and a high-end handset such as an iPhone or Blackberry device creates as much traffic as 30 basic-feature phones.

**Figure 3.** High-End Handsets and Laptops Can Multiply Traffic

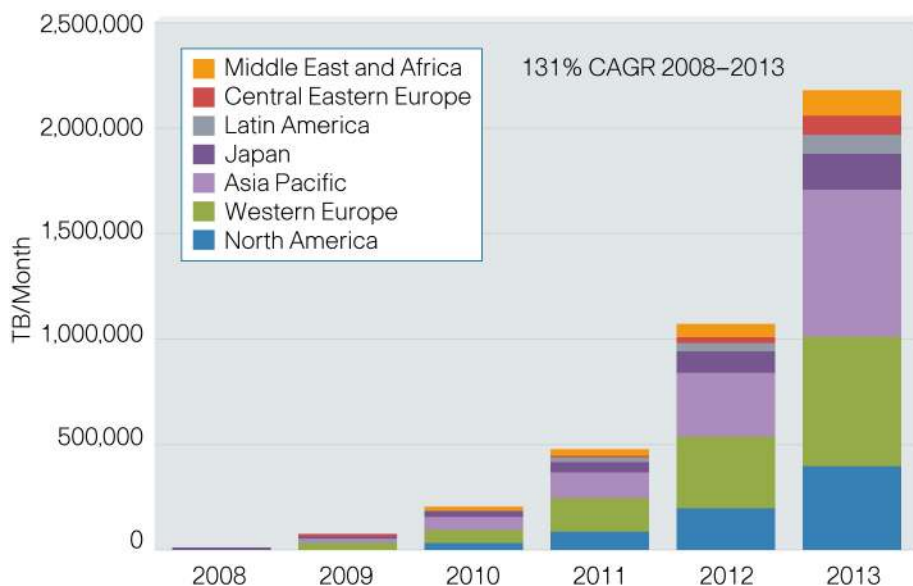


Source: Cisco, 2009

## Regional Trends

As shown in Figure 4, Western Europe and APAC will account for over 60 percent of global mobile data traffic. In many countries in Europe, mobile operators are offering mobile broadband services at prices and speeds comparable to fixed broadband. Though there are often data caps on mobile broadband services that are lower than those of fixed broadband, some consumers are opting to forgo their fixed lines in favor of mobile. Mobile broadband substitution has a familiar ring to it from the mobile voice substitution effect that began in the late 1990s and is continuing today.

**Figure 4.** Western Europe and APAC Will Account for 60 Percent of Mobile Traffic in 2013



Source: Cisco, 2009

## Long-Term Outlook: Device Diversification and Ubiquitous Mobility

Mobile voice service is already considered a necessity by many, and mobile data, video, and TV are now becoming an essential part of consumers' lives. Mobile subscribers are growing rapidly and bandwidth demand due to data/video is increasing. Mobile M2M connections continue to increase. The next five years are projected to provide unabated mobile video adoption despite the economic downturn. Operators are rolling out increased bandwidth via EDGE, EV-DO, HSDPA, and related upgrades. There is a need for backhaul capacity to increase for mobile broadband, data access, and video services to engage the end consumer as well as keep costs in check.

In order to deploy next-generation mobile networks, there is a greater need for service portability and interoperability. With the proliferation of mobile and portable digital devices, there is an imminent need for the network to allow for all these devices to be connected seamlessly. This openness will create a network that will broaden the range of applications and services that can be shared, creating a highly enriched mobile broadband experience. The expansion of wireless ubiquity will drive an increased volume of consumers to who access and rely on mobile networks, creating a need for greater economies of scale and lower per-bit cost.

Currently, the most compelling applications for 3G include mobile TV, a light version of video conferencing, simple games and multimedia, MMS, SMS, email, and Internet browsing. According to the Cisco VNI Global Mobile Data Traffic Forecast, the 3.5G and higher and WiMAX technology categories will grow at a CAGR of 168 percent by 2013. The long-term future of mobile networks promises to create a premium experience with applications such as telemedicine, mobile virtual presence, M2M applications such as telematics, enriched navigation experience, interactive gaming, remote sensing applications, mobile education systems, mobile emergency management systems, and far richer advertising opportunities for mobile advertising and entertainment. 4G may be the rainmaker to make this happen. The implication of ubiquitous high-speed mobile data for traffic is difficult to overestimate. As illustrated in Figure 5, the mobile data traffic footprint of a single mobile subscriber in 2015 could very conceivably be 450 times what it was 10 years earlier in 2005.

**Figure 5.** Potential Growth in Data Traffic from a Single Mobile Subscriber



In addition to sheer volume, mobile operators will need to implement intelligent networking technologies in order to support the diversity and quality requirements of advanced, next-generation mobile applications.

#### **For More Information**

Inquiries can be directed to [traffic-inquiries@cisco.com](mailto:traffic-inquiries@cisco.com).

## Appendix A: The Cisco VNI Global Mobile Data Traffic Forecast

Table 1 shows a detailed breakout of the Cisco Global Mobile Data Traffic Forecast.

**Table 1.** Mobile Data Traffic 2008–2013

IP Traffic 2006–2012							
	2008	2009	2010	2011	2012	2013	CAGR 2008–2013
<b>By Application (TB per month)</b>							
Audio	3,612	7,996	16,930	35,486	74,503	154,988	112%
Video	13,062	38,681	107,714	274,820	650,310	1,390,548	154%
P2P	6,714	15,851	33,784	69,856	134,224	220,829	101%
Data	9,680	22,547	48,984	102,054	217,282	417,847	112%
<b>By Device Type (TB per month)</b>							
Handsets	11,266	29,568	76,948	194,132	484,060	1,152,786	152%
Portables	18,461	45,487	105,298	233,706	493,631	880,797	117%
Residential	3,342	10,020	25,167	54,378	98,628	150,629	114%
<b>By Connection Speed (TB per month)</b>							
Handsets – Less than 3G	1,141	2,265	4,157	7,129	12,274	19,083	76%
Handsets – 3G	5,600	11,821	23,551	46,426	96,777	198,676	104%
Handsets – 3.5G and Above	4,525	15,482	49,240	140,576	375,009	935,027	190%
Portables – 3G and Up	18,461	45,487	105,298	233,706	493,631	880,797	117%
Residential – 4G	3,342	10,020	25,167	54,378	98,628	150,629	114%
<b>By Geography (TB per month)</b>							
North America	6,282	16,981	40,808	90,882	201,455	397,265	129%
Western Europe	9,785	25,572	65,381	158,325	341,567	615,477	129%
Asia Pacific	7,709	20,171	50,450	123,397	302,788	701,044	146%
Japan	6,000	13,950	29,910	58,541	103,466	166,109	94%
Latin America	725	1,847	4,715	12,729	35,727	95,668	166%
Central Eastern Europe	838	2,249	5,806	14,586	37,209	88,699	154%
Middle East and Africa	1,729	4,304	10,343	23,755	54,107	119,951	133%
<b>Total (TB per month)</b>							
<b>Total Mobile Data Traffic</b>	<b>33,068</b>	<b>85,075</b>	<b>207,412</b>	<b>482,216</b>	<b>1,076,319</b>	<b>2,184,212</b>	<b>131%</b>

Source: Cisco, 2009

### Definitions

Portables: This category includes laptops with mobile data cards

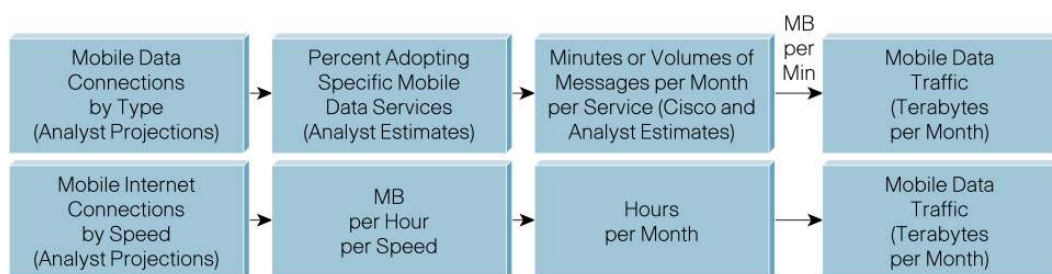
## Appendix B: The Cisco VNI Global Mobile Data Traffic Forecast Methodology

The Cisco VNI Global Mobile Data Forecast relies upon forecasts for mobile broadband connections published by Informa Telecoms and Media.<sup>1</sup> In addition, mobile data usage surveys from other analyst firms served as a reference.

Mobile data traffic includes handset-based data traffic, such as text messaging, multimedia messaging, and handset video services. Mobile Internet traffic is generated by wireless cards for portable computers, Wi-Fi hotspots, and handset-based mobile Internet usage.

Figure 6 shows a simplified illustration of the methodology behind this mobile data and Internet traffic forecast.

**Figure 6.** Methodology for the Cisco Global Mobile Data Traffic Forecast



<sup>1</sup> Informa's forecast has an unprecedented level of granularity, separating urban and suburban usage patterns from rural, with splits by application, geography, and upstream versus downstream. Cisco's mobile data forecast is based on Informa's mobile broadband connections forecast. Informa also publishes a mobile data traffic forecast, but Cisco's forecast differs from Informa in growth assumptions. Informa estimates that mobile data traffic (including VoIP but not simple voice) amounts to 15 petabytes per month in 2007. Cisco's estimate is close to Informa's at 17 petabytes per month. However, Cisco's estimate for 2013 is six times even the most aggressive scenario from Informa. Despite the conservative nature of the overall IP traffic forecast, in this case Cisco has made some aggressive assumptions regarding the potential for mobile broadband to start to act as a substitute for fixed broadband. For instance, we assume that for Western European laptop mobile broadband users, the average usage per month was 856 megabytes per user at the end of 2007, and will grow to over 4 gigabytes per month by 2012. This is aggressive growth when viewed in the context of current mobile usage, but is still modest compared to the Western European laptop fixed-line usage, which Cisco estimates was 3 gigabytes per user per month in 2007, and will grow to 18 gigabytes per user per month by 2012.



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