

Cisco Visual Networking Index—Forecast Q&A: June 2009

Q. Why has Cisco developed the Visual Networking Index—Forecast and Methodology?

A. Given the ramifications and implications of prior Internet traffic growth rates, Cisco felt compelled to provide a realistic forecast that is based on multiple levels and sources of real data and projections. While this data is obviously of great interest to Cisco, we also feel that our customers (in all segments) and the industry at large might benefit from our findings.

Q. What is visual networking?

A. The variety of consumer and business IP networking trends are largely being driven by video and social networking/collaboration (such as web 2.0 technologies), the combination of which is termed visual networking. A visual networking experience can range from a prearranged TelePresence meeting to the fluid and flawless delivery of video to any device a consumer chooses—be it a TV, PC, or mobile handset.

Q. What is the methodology behind the Visual Networking Index—Forecast?

A. The forecast relies on analyst projections for Internet users, broadband connections, video subscribers, mobile connections, and Internet application adoption. Our trusted analyst forecasts come from Kagan, Ovum, Informa, IDC, Gartner, ABI, AMI, Screendigest, Parks Associates, Pyramid and a variety of other sources.

Cisco also collects traffic data directly from a number of our service provider customers, and this data is used to validate and adjust the usage assumptions underlying the forecast model.

Q. Have there been any methodological changes since the last forecast update?

A. Yes. In general, we have moved from a linear forecasting model to an iterative forecasting model. Our methodology has become more focused on connection-centric metrics (e.g., sessions, transactions, etc.) rather than consumer-centric metrics.

The following enhancements have also been incorporated into the methodology:

- More granular traffic topology, including data center
- Traffic associated with cloud computing—the implications of SaaS vs. software updates
- Business traffic by application
- Business traffic due to consumerization of IT

Q. Have you changed your assumptions in the latest forecast update?

A. When the Cisco VNI Forecast is updated, it reflects changes that have been made to all of the underlying analyst data that serve as inputs to our research. Any changes in analyst forecasts will be reflected in the IP traffic figures that we publish. In addition to updating the underlying analyst forecasts, Cisco will adjust connection and usage assumptions in response to changing consumer behavior.

Q. How accurate is your forecast?

A. The Cisco VNI forecast has been characterized as “conservative” by some industry analysts and academicians. However, last year’s Cisco VNI projections have aligned with several actual growth reports (independent, non-Cisco).

For example, the Cisco VNI Forecast projected a global Internet growth rate of 51% for 2008.

- Telegeography reported actual growth of 53% for International Internet traffic (as of mid-2008)
- [The Minnesota Internet Traffic Studies \(MINTS\)](#) group reported a range of 50%-60% for actual global Internet traffic growth in 2008

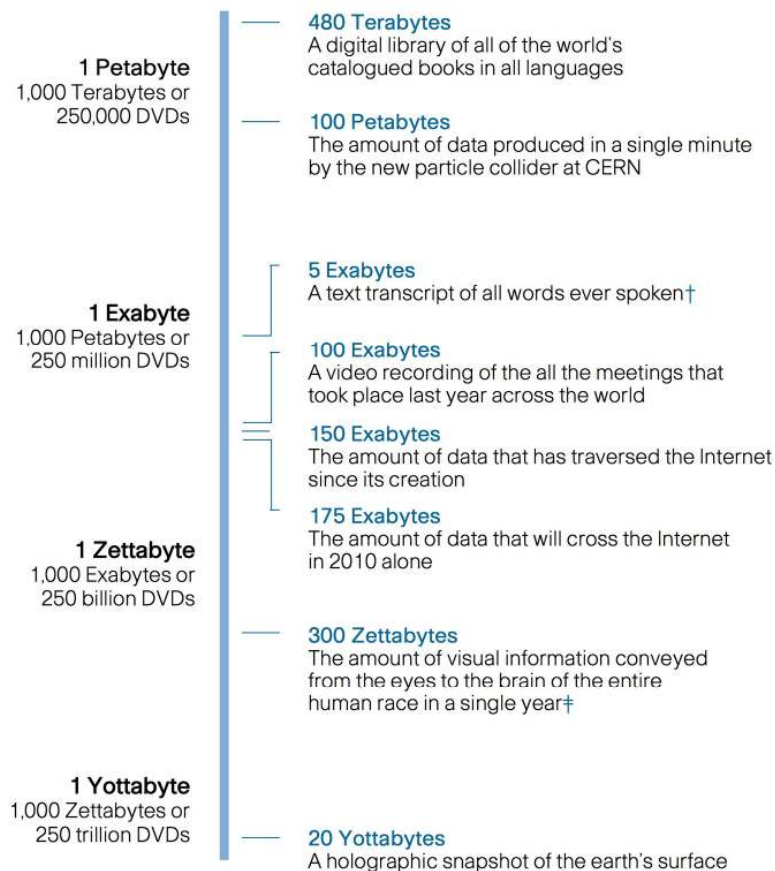
Q. The growth rate seems low, given the rapid adoption of video.

A. There is no question that video is generating a substantial amount of traffic. However, the volumes are so large that sustaining high growth rates becomes increasingly difficult. For instance, despite a declining growth rate, Cisco is projecting that global Internet traffic in 2013 will be 3.5 times larger than it was in 2009.

Q. What is an exabyte? What is a zettabyte?

A. An exabyte is 1,000,000,000 gigabytes. A zettabyte is 1,000 exabytes. The chart in Figure 1 shows a number of examples of data that reaches the exabyte and zettabyte scale.

Figure 1. The Zettabyte Scale



† Roy Williams, "Data Powers of Ten," 2000

‡ Based on a 2006 estimate by the University of Pennsylvania School of Medicine that the retina transmits information to the brain at 10 Mbps.

All other figures are Cisco estimates.

Source: Cisco, 2008

Q. Why is VoIP traffic so low?

A. While immensely popular, VoIP is very lightweight in terms of bandwidth. However, it is an important consideration for service providers in that quality of service (QoS) is important for voice, and one strategy for improving QoS is to increase capacity so that there is always sufficient bandwidth for the speedy transport of time-sensitive voice and video traffic.

Q. Does this forecast include signaling traffic?

A. No, signaling traffic is not included. However, an estimate can be made using the standard rule that IP signaling traffic is approximately 3 percent of bearer traffic.

Q. Why is broadcast TV traffic so low in comparison to VoD traffic?

A. Broadcast traffic is low because it is a one-to-many service rather than a one-to-one service, like VoD. For each VoD request, a new stream must be served, whereas when hundreds of people tune in to the same television show, only one copy of this show needs to cross most of the network, until close to the edge where it is split and sent over each access line. In this forecast, the access-line traffic for broadcast TV is not included.

Q. What about satellite video traffic?

A. Because satellite is similar to broadcast in that it is one-to-many, the exclusion of satellite from the forecast is not expected to make any significant difference. However, direct broadcast satellite (DBS) providers are now deploying set-top services that simulate VoD by pushing the top 25 programs to the set-top boxes overnight and enabling on-demand access to less popular content through the subscriber's Internet connection. The on-demand streaming is certain to have an impact on traffic in the future, and has been factored in to the assumptions for Internet video.

Q. What about digital terrestrial video traffic?

A. Like satellite, digital terrestrial television (DTT) is a one-to-many service, so the exclusion of DTT is not expected to materially impact the accuracy of the forecast. Also similar to satellite, Pay-DTT providers may move to establish a broadband connection to the home in order to be able to offer on-demand content, Internet content, and interactive content. This scenario has not been included in this forecast, because the penetration of DTT remains low throughout the forecast period. DTT may be included in future versions of the forecast.



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