Contribution to WTIM-12 session

SOURCE: CISCO Systems
TITLE: Forecasting Fixed and Mobile Data Traffic: Cisco’s Visual Networking Index
Forecasting Fixed and Mobile Data Traffic: Cisco’s Visual Networking Index

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Cisco Visual Networking Index (VNI) Global Forecast Update 2011-2016

Cisco® VNI Forecast research is an ongoing initiative to predict global traffic growth. This study focuses on consumer and business mobile data traffic and its key drivers.

Global Forecast Data

Global Speed Data
Sample Size > 1M

Source: Cisco VNI Global Data Traffic Forecast, 2011-2016
By 2016, global IP traffic will reach an annual run rate of 1.3 zettabytes per year.

1.3 Zettabytes is equal to:
- 10X More than all IP traffic generated in 2008 (121 exabytes)
- 38 Million DVDs per hour

What is a zettabyte?
- One trillion gigabytes
- Approximately $10^{21}$ (1,000,000,000,000,000,000,000 bytes)

By 2016, global IP traffic will increase 4X from 2011 - 2016.

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VNI Projections and Actuals (Global)
Actual Growth Has Been Within 10% of Projected Growth


Forecast Methodology

Connections  Adoption  Usage  Bitrates and Speeds  Traffic

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Forecast Methodology

Step 1: Number of users and devices
- Consumer vs business
- Mobile vs fixed
- Wi-fi hotspot usage
- Population forecasts by age segment

Step 2: Application Adoption
- Number of users for each sub-segment estimated
  - Short-form vs. short-form + long-form
  - Variable regional adoption rates
Step 3: Minutes of Use (MOU)
Estimated for each application sub-segment
Minute-per-subscriber baseline for applications
Cisco Connected Life Market Watch
comScore Video Metrix (PC-based MOU)

Step 4: Bitrates
Kilobyte (KB) applied to MOU of each application sub-segment
Regional & Country average broadband speeds forecasted
Representative Bitrate established; increases with bb speed
Local bitrates: ave bb speed, digital screen sizes, devices
Forecast Methodology

Step 5: Rollup & Traffic Migration Assessment
Bitrates, MOU, and users aggregated for average monthly traffic
Reconcile Internet, managed IP and mobile segments

Sources of Statistical Data

National Statistical Agencies → Various e.g. ACMA (Australia), MIC (Japan), Ofcom (UK), MIIT/ CNII (China), CRTC (Canada), Anatel (Brazil), and others

Cisco Direct Data Collection → Global Internet Speed Tests
Connected Life Market Watch survey

Third Party Measurement & Analysts → Informa, IDC, Frost & Sullivan, Gartner, Ovum, and others
comScore, Nielsen, Ookla, Arbitron, and others

VNI Usage program → Service Provider customers’ data:
Aggregate volume and traffic type
Challenges/ Opportunities

- Challenges:
  - Point of Measurement:
    - End users; point of peering; long-haul?
    - Domestic traffic (CDNs; local cache at IXPs)
  - Data:
    - Accuracy
    - Common definitions

- Opportunities:
  - Aggregation - data/ results from domestic SPs (subs; peak traffic)
  - Definition – e.g. broadband
  - Measurement - granular data on subs; speeds; devices
  - Assess – technology, application, content

Cisco VNI Web Sites


- Press Releases
- White Papers / FAQs
- Cisco VNI Web-based Tools / Free Apps
Thank you.