Networks Between Nations

An International Comparison of Networks

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**Introduction**

In this paper I will be comparing the internet technologies and policies of several different countries. These comparisons will be in terms of monthly bandwidth index, average monthly cost for the end user in USD (using 6Mbps cable/ADSL as the benchmark), penetration rate (percentage of the population that use the internet), and some notes on the structure and implementation of the internet in each country. For the sake of brevity (otherwise this paper could go on for 30 pages) I will only be covering the top 20 countries in order of highest amount of internet users as this makes up 73.8% of the world’s population.

**China**

**Monthly bandwidth index:** 18.09 Mbps down per month (March, 2014)

**Average monthly cost:** 19.39 U.S Dollars

**Penetration rate:** 40.1% (out of a population of 1,355,692,576)

**Structure:** The Chinese government owns the internet access routes and most ISPs in China rent their bandwidth from the government. The most prevalent internet technology in China is broadband (most of which is DSL).

**United States of America**

**Monthly bandwidth index:** 22.33 Mbps (March, 2014)

**Average monthly cost:** 46.22 U.S. Dollars

**Penetration rate:** 78.3% (out of a population of 318,892,103)

**Structure:** Most of the internet access path are owned and regulated by privately owned businesses (and at time of writing there is a serious lack in competition between these few businesses). The most prevalent internet technology is broadband (DSL, and cable) with the former most prevalent being dial-up.

**India**

**Monthly bandwidth index:** 4.5Mbps (March, 2014)

**Average monthly cost:** 19.51U.S. Dollars

**Penetration rate:** 11.4% (out of a population of 1,236,344,631)

**Structure:** Supposedly the infrastructure in India is extremely eclectic in terms of both the technology available and who provides it. Both public and private companies provide internet access and if you can name it (broadband, dial-up, WiMAX, etc.), it’s probably implemented in some capacity in India. The two most common ways the internet is accessed in India are by internet cafes and through mobile phones.

**Japan**

**Monthly bandwidth index:** 41.97Mbps (March, 2014)

**Average monthly cost:** 37.35 U.S. Dollars

**Penetration rate:** 79.5%(out of a population of 127,103,388)

**Structure:** As one would expect from the technological fun-land that is Japan, their network infrastructure is something to envy. Originally, Japan made use of broadband technologies (much like the rest of the world) but replaced most of their DSL with FTTH (Fiber To The Home) utilizing lattice towers (which are often shared by operators) for the last kilometer. However, this model is so popular in Japan (the average person enjoys 1gigabit services) that the country faces bandwidth issues.

**Brazil**

**Monthly bandwidth index:** (March, 2014)

**Average monthly cost:** 34.58 U.S. Dollars

**Penetration rate:** 42.2% (out of a population of 202,656,788). It is worth noting that mobile phone subscriber penetration is 99.8%

**Structure:** Internet access is provided in Brazil mostly by private companies. Brazil’s most common internet technology is ADSL broadband however; they also offer other technologies such as cable modems and FTTH. The issues that Brazil faced with their implementation of high speed internet over a wide area was that they lacked the infrastructure but from what I understand nearly 90% of Brazilian cities now have broadband access due to a strong government backing/regulation of healthy ISP competition driving down costs and increasing quality and availability (not all business has to be a bitter slap-fight whilst being watched by an out-of-touch/apathetic governing body, I’m not pointing any fingers though)

**Russia**

**Monthly bandwidth index:** 20.19Mbps (March, 2014)

**Average monthly cost:** 11.35 U.S. Dollars

**Penetration rate:** 44.3% (out of a population of 142,500,482)

**Structure:** Internet access in Russia is mostly obtained through privately owned ISP companies. The most prominent internet technologies in Russia are various broadband technologies but from I am to understand, FTTx (Fiber to building) is becoming quite popular at around 40% of building in Russia being connected through fiber optics.

**Germany**

**Monthly bandwidth index:** 25.61(March, 2014)

**Average monthly cost:** 30.24 U.S. Dollars

**Penetration rate:** 83% (out of a population of 80,996,685)

**Structure:** Internet access in Germany is mostly provided by privately owned ISPs. The most common technology used in internet access in Germany is currently broadband DSL however; German ISP leader Deutsche Telekom will be introducing (and is currently promoting) VDSL2 by the second half of 2014.

**Indonesia**

**Monthly bandwidth index:** 4.06Mbps (March, 2014)

**Average monthly cost:** 29.70 U.S. Dollars

**Penetration rate:** 22.1% (out of a population of 253, 609,643)

**Structure:** Indonesian internet is typically accessed through an ISP. The most prevalent internet technologies are ADSL and mobile phones. What makes Indonesia unique is that ADSL customer are often given two bills, on from the telephone company (PT Telekom) for use of the line and one from the ISP for use of the internet.

**United Kingdom**

**Monthly bandwidth index:** 26.43Mbps (March, 2014)

**Average monthly cost:** 32.23 U.S. Dollars

**Penetration rate:** 83.6% (out of a population of 63,742,977)

**Structure:** Internet services in the United Kingdom are fairly similar to those of the United States of America. A variety of technologies are available (some cable modems here, some FTTH there, etc.) the most common among them being broadband DSL as mostly provided by two or three large, privately owned companies.

**France**

**Monthly bandwidth index:** 30.05Mpbs(March, 2014)

**Average monthly cost:** 40.95 U.S. Dollars

**Penetration rate:** 79.6% (out of a population of 66,259,012)

**Structure:** All internet access in France is provided by ISPs who, due to fierce competition between ISP companies, often provide some services (such as VoIP landlines) for free with their packages and quotas are considered outdated which has led to unmetered broadband internet. The primary internet technology is ADSL with a market that is slanted toward and honest attempt to put an end to ISP price wars (which is refreshing in my opinion).

**Nigeria**

**Monthly bandwidth index:** 4.55Mbps (March, 2014)

**Average monthly cost:** 85.03 U.S. Dollars

**Penetration rate:** 28.4% (out of a population of 177,155,754)

**Structure:** The primary method of accessing the internet in Nigeria is through mobile phones using WAP. Some towns have internet cafes, but most people in Nigeria just take advantage of the satellite link that is available across the country using their mobile phones. The access paths are controlled by ISPs.

**Mexico**

**Monthly bandwidth index:** 12.33Mbps (March, 2014)

**Average monthly cost:** 30.54 U.S. Dollars

**Penetration rate:** 36.5%(out of a population of 120,286,655)

**Structure:** Mexico’s internet access paths are controlled by ISPs. The most prominent internet technologies are broadband technologies with ADSL being the most common. The interesting thing about Mexico in terms of the internet is that they have little to no censorship laws (though most individuals and organizations, the press in particular, self-censor) however; Mexico could potentially see a proposition its first censorship law passed in 2014 (which was met with public ire).

**Iran**

**Monthly bandwidth index:** 3.1Mbps (March, 2014)

**Average monthly cost:** 51.58 U.S. Dollars

**Penetration rate:** 53.3%(out of a population of 80,840,713)

**Structure:** The internet in Iran is somewhat messy. From what I can understand, the main use of the internet is through CoffeeNets (internet cafes) connected to the internet by means of satellite dishes. The use of internet in Iran is subject to very heavy censorship laws that ISPs are required to install filters in order to comply with said laws. Iran has also gone on record as wanting to create a private internet for their own nation much like North Korea has done.

**South Korea**

**Monthly bandwidth index:** 51.27Mbps (March, 2014)

**Average monthly cost:** 25.52 U.S. Dollars

**Penetration rate:** 82.5% (out of a population of 49,039,986)

**Structure:** South Korea accesses the internet through large ISPs. The most common technology in current use is ADSL but VDSL is also becoming popular. The interesting thing about South Korea in terms of the internet is that they have embraced the internet to such a degree it is undoubtedly engrained into their culture (for example, there is a real-name policy proposal at the government level that the KCC only considering stopping, for now). South Korea has some of the highest penetration rates in the world with some of the lowest DSL prices in the world with the fastest speeds. Some have even claimed that South Korea’s internet is the most developed in the world.

**Turkey**

**Monthly bandwidth index:** 9.52Mbps (Nov, 2013)

**Average monthly cost:** 27.46 U.S. Dollars

**Penetration rate:** 44.4% (out of a population of 80,694,485)

**Structure:** Turkey’s internet access is handled by ISPs. The most used internet technology in Turkey is ADSL with VDSL and mobile technologies also garnishing some popularity. The interest thing about Turkey’s internet is that their ISPs use a “fair use” quota policy that is so strict it often leaves subscribers capped within the first week of the month (of course such a policy earns constant criticism from the public).

**Italy**

**Monthly bandwidth index:** 8.15Mbps (March, 2014)

**Average monthly cost:** 34.90 U.S. Dollars

**Penetration rate:** 58.4% (out of a population of 61,680,122)

**Structure:** Italy is quite average in its implementations of the internet. The main access to the internet is through ISPs with some projects being spearheaded by the Italian government. The most primary internet technology is ADSL but has a large FTTH markets in the world with ISPs and the Italian government both hoping to have high-speed internet in more than half the home in Italy by the year 2020.

**Philippines**

**Monthly bandwidth index:** 3.55Mbps (March, 2014)

**Average monthly cost:** 42.50 U.S. Dollars

**Penetration rate:** 32.4% (out of a population of 107,668,231)

**Structure:** The internet access paths in the Philippines are made available by privately owned ISPs. The most common internet technology is ADSL with other broadband technologies available for use. The interesting thing about the Philippines in terms of the internet is that they found an interesting solution to the net neutrality problem by having ISPs interconnect to one another through exchange points.

**Spain**

**Monthly bandwidth index:** 24.42Mbps (March, 2014)

**Average monthly cost:** 47.18

**Penetration rate:** 67.2% (out of a population of 47,737,941)

**Structure:** The internet access paths are accessed through ISP companies. The most prevalent internet technology is ADSL with other fixed and mobile broadband technologies varying in popularity. The interesting about Spain is that much like France, most of (if not all) wired connections are completely unmetered and include free landline calls within Spain (with some limited calls to mobile phones).

**Vietnam**

**Monthly bandwidth index:** 13.01Mbps (March, 2014)

**Average monthly cost:** 13.65 U.S. Dollars

**Penetration rate:** 33.9% (out of a population of 93,421,835)

**Structure:** The internet in Vietnam is accessed by way of ISP companies. The most prominent technology used in Vietnam is broadband DSL. The interesting thing about Vietnam’s internet is that they (much like China) have a very strict censorship policy which has led to conflicts with activists and has earned the internet in Vietnam the “Bamboo Firewall”.

**Egypt**

**Monthly bandwidth index:** 2.62 Mbps(March, 2014)

**Average monthly cost:** 50.71

**Penetration rate:** 35.6% (out of a population of 86,895,099)

**Structure:** The access paths to the internet are owned almost entirely by one company in Egypt, Telecom Egypt (although there have been talks of the Egyptian government selling an additional fixed-line license in order to end Telecom Egypt’s monopoly). The most common internet technology is ADSL though other broadband technologies are available. The interesting thing about Egypt in terms of the internet is the censorship in Egypt ultimately stoked protests in Egypt which led the government to shut down the internet connections for most of Egypt and the arrest of several well-known Egyptian bloggers and online-activists. These events were reversed after a statement was made by U.S. president Barrack Obama called for a lift on the ban as well as large companies such as Google provided support and services to protesters.

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