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# **Collection and Dissemination of Internet Bandwidth Data: A case study of Thailand**

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## **Introduction**

The Internet has been growing rapidly in the past decade in both network size and bandwidth usage. There are several ways to measure the growth of Internet. The International Telecommunication Union (ITU) defines the International Internet Bandwidth as an indicator which could be used to measure the growth of Internet usage. This paper presents a case study of Thailand in collection and dissemination of Internet bandwidth data. The following topics will be discussed.

## **Definition**

The ITU's definition of International Internet Bandwidth is "Total capacity of international Internet bandwidth in Mega Bits Per Second (Mbps). If capacity is asymmetric (i.e., more incoming than outgoing), provide incoming capacity."

In our work, the International Internet Bandwidth is slightly revised as "total capacity of international Internet bandwidth in Mega Bits Per Second (Mbps) or higher (i.e., Giga Bits Per Second, Gbps). If capacity is asymmetric (i.e., incoming is not equal to outgoing), provide larger capacity." Basically, the total capacity of International Internet Bandwidth is the sum of Internet bandwidth from all ISPs, Telecom Operators, Research and Education Networks that connect to international providers.

Nowadays, the international Internet bandwidth in many countries is much larger than those in the past years. The total capacity of international Internet bandwidth in the order of Giga Bits Per Second (Gbps) can be easily achieved. Therefore, it might be appropriate to include the higher order unit like Giga Bits Per Second (Gbps) in the definition.

## **Background**

The telecommunication industry in Thailand had been governed by two state enterprises: the Telephone Organization of Thailand (TOT) and the Communications Authority of Thailand (CAT) for a long time (since 1954). TOT (now TOT Corporation Public Company Limited) had controls over the domestic telephone industry while CAT (now CAT Telecom Public Company Limited) regulated the international telecommunications, including half-circuits to the Internet. Therefore, telecommunications services in Thailand have been mostly provided by two state-owned telecommunications operators. Anyhow, a number of companies have been awarded with a government concession in the last decade to provide telecommunications services.

Recently, the Telecommunications Business Act B.E. 2543 (2000) has entered into force with the objective to protect the public interests and to facilitate the free and fair competition environment for the Thai telecommunications industry. This Act defines the opening of the market with the new regulations for the industry and the ownership of the foreign investor to the telecommunications business. It also defines types of telecommunication services, network interconnection, tariff regulations, universal service obligations, etc. The Telecommunications Business Act is currently implemented by the National Telecommunications Commission (NTC).

### **Getting ISP License**

CAT reserved the international Internet bandwidth leased for state academics and government until 1995 when NECTEC's legal entity, the National Science and Technology Development Agency (NSTDA), TOT and CAT set up Thailand's first commercial ISP, Internet Thailand Company. Nevertheless, CAT reserved the right for granting new ISP licenses and created a legal formula for establishing ISP. A new ISP must be a joint venture with CAT, which will get 35 percent of the total equity, and every ISP must buy leased circuits to the Internet through or from CAT. CAT also set up guideline pricing for ISPs, how much they can charge their customers.

The regulation has been changed after the National Telecommunications Commission (NTC) was established. At present, a potential company can apply for a commercial ISP license directly with NTC. After getting the license, the company will become a new ISP. There are currently 21 commercially licensed ISPs.

### **Connecting ISP to the Internet**

ISP can connect to the Internet by purchasing International Internet Gateway (IIG) services or connecting to an international service provider using international private leased circuit (IPLC). For domestically exchange of data traffic, ISPs can connect to National Internet Exchange (NIX). Previously, both NIX and IIG were managed solely by CAT Telecom. The IPLC is also mostly provided by CAT Telecom. Recently, TOT Corporation has been granted license from the National Telecommunications Commission (NTC) to establish new NIX and IIG. TOT Corporation can also provide IPLC services.

### **International Bandwidth Data Collection and Dissemination**

Basically, international bandwidth data come from telecom operators and ISPs. In our case, Internet Information Research (IIR) staff asks CAT Telecom and ISPs for updated data on a monthly basis. IIR staff then records the changes as well as updates the Internet connectivity map and information on IIR webpage [1]. The updated information and the Internet connectivity map will be posted on the webpage once a month. Starting from this month (October 2006), IIR staff will also ask TOT Corporation to provide international bandwidth data.

### **Data Collection Method**

We set up the procedure for data collection as follows:

On the 25<sup>th</sup> of each month, IIR staff will make phone calls to get Internet bandwidth data mainly from telecom operators. Data may also come from ISPs and Research and Education Network (REN) operators sometimes. IIR staff will have a few days to verify the data, update the database, and modify the Internet connectivity map. On the 1<sup>st</sup> of the following month, new Internet connectivity map and updated information will be sent to telecom operators and ISPs as well as posted on the web.

### **Experience Sharing**

Collecting Internet bandwidth data requires quite a bit of human efforts and collaborations from all parties involved especially telecom operators and ISPs. In our case, IIR staff receives good collaborations from both telecom operators and ISPs in providing Internet bandwidth data. The reasons might be because NECTEC is a government organization and neutral to both telecom operators and ISPs. NECTEC has made the Internet bandwidth data available since the beginning of Internet development in Thailand. Therefore, it is a reliable source of Internet statistics in Thailand for the public access. ISPs also require the Internet connectivity map for presenting their business to customers. This could impact customers' decision in selecting ISPs. Due to the importance of Internet bandwidth data, immediate update of the Internet bandwidth data and connectivity map are sometimes requested. We try to restrict the collection and dissemination of Internet bandwidth data once a month which is so far acceptable to all parties.

### **Conclusion**

Collection and dissemination of Internet bandwidth data are very useful and essential for several reasons. The Internet bandwidth data can be used to indicate the growth of Internet for the country. Telecom operators can use the Internet bandwidth data for network and capacity planning. ISPs can also benefit from the Internet bandwidth data if they appropriately apply to their business use. Therefore, the work of collection and dissemination of Internet bandwidth data should be handled by neutral and reliable party. It is important to have good collaborations with all parties involved in order to be able to successfully collect Internet bandwidth data.

### **Reference**

[1] Internet Information Research (IIR), <http://iir.ngi.nectec.or.th>