BKNIX Peering Forum 2016

Thai Internet Service Provider Association

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Thai Internet Service Provider Association : TISPA

- ส่งเสริมการประกอบกิจการวิสาหกิจประเภทที่เกี่ยวกับ อินเทอร์เน็ต
- สนับสนุนและช่วยเหลือสมาชิกแก้ไขอุปสรรคข้อขัดข้องต่างๆ
- ทำการวิจัยเกี่ยวกับการประกอบวิสาหกิจประเภทที่อยู่ในวัตถุที่ประสงค์ แลกเปลี่ยน และเผยแพร่ความรู้ทางวิชาการ
- ส่งเสริมคุณภาพของสินค้าหรือบริการที่ผลิตหรือจำหน่าย
- ร่วมมือกับรัฐบาลในการส่งเสริมการค้า
- ส่งเสริมการผลิต การบริการ เพื่อให้สินค้าหรือบริการมีปริมาณเพียงพอแก่ความ ต้องการของตลาด
- สนับสนุน ส่งเสริม การวิจัยและพัฒนาเทคโนโลยีอินเทอร์เน็ตของประเทศ

TISPA
สมาคมผู้ให้บริการอินเทอร์เน็ตไทย
Thai Internet Service Provider Association

http://www.tispa.or.th

Thailand Internet Service Rule&Law

1. For detail understanding of License types, Law, Rule, Regulation and Regulator please visit
   - www.nbtc.go.th
   - **Office of The National Broadcasting Telecommunications Commission (NBTC)**

2. Also please study Computer Crime Act law and its amendment.
   - New revision 2016 amendment is under drafting to provide more detail types of actions and penalties and law enforcement process.
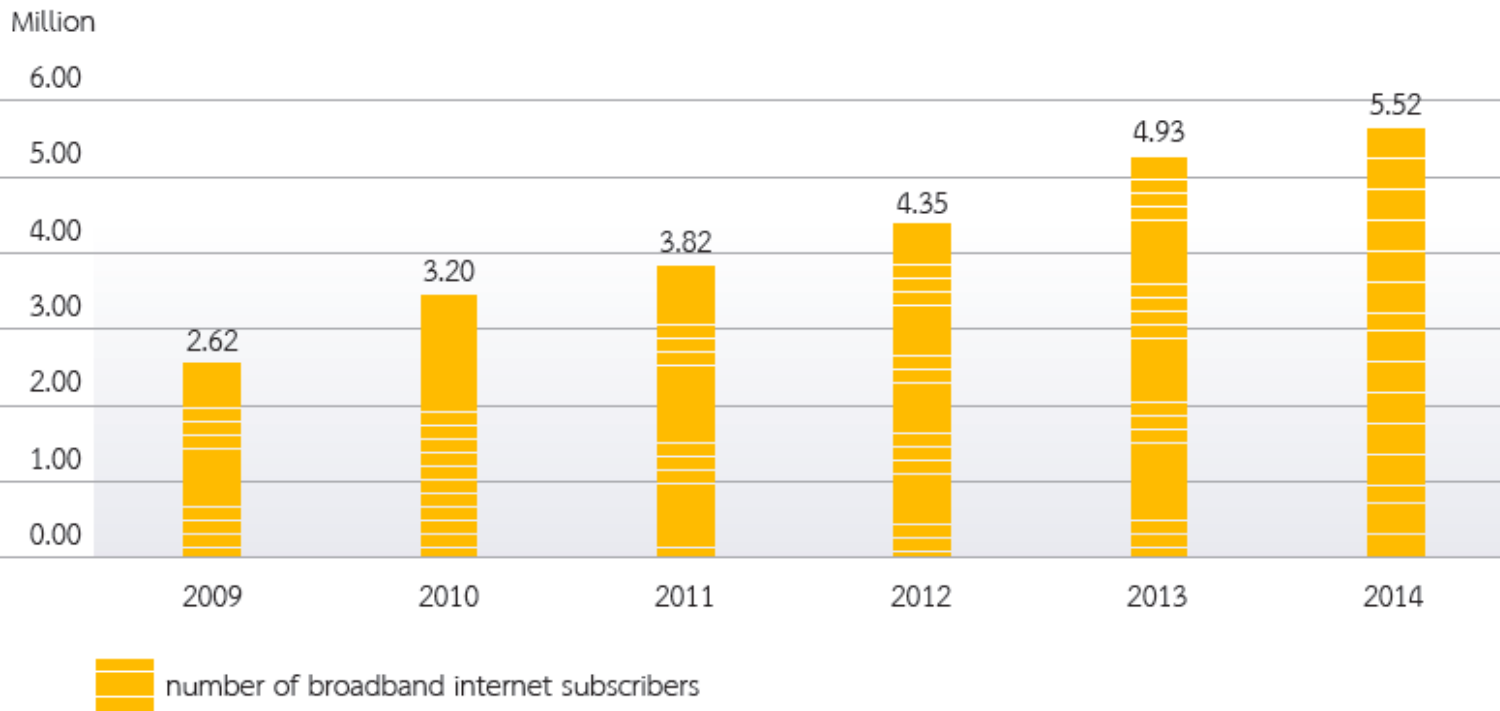
Internet Service License Types

- **Basic Internet Service Provider**
  - License type I (No network or not owning infrastructure or network)
  - Easy to apply and grant
- **Internet Exchange Provider (Type II or III)**
  - IX (Internet Exchange – for domestic exchange)
  - IIG (International Internet Gateway operator – for international internet provide)
    - Can apply for With or without own network
- **Type III Telecom Operator**
  - Built own network such as broadband infrastructure
- Please also study license fee and USO fee in NBTC website especially if you would like to apply for more than one license or your nature of business required to apply for more than one license
- Unclear definition of "NBTC Charging and NBTC fees for one company with many licenses" – causing most of providers apply one company one license type.

Internet Broadband users in Thailand
End of 2014 there are 5.5 Million users [Home or Condo]
Connection Type is ADSL or VDSL and start from 18 Mbps

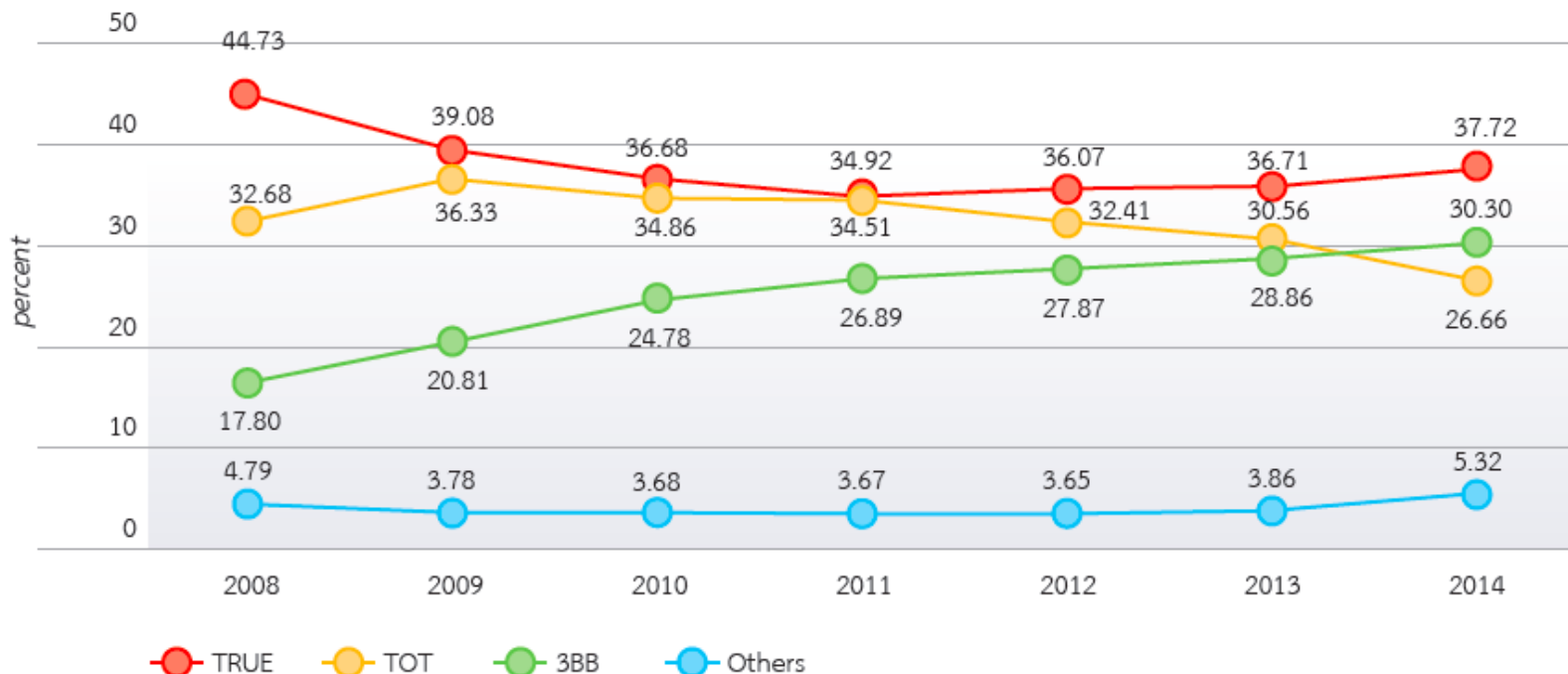Chart 46: Number of Broadband Internet Subscribers during 2009 - 2014

Source: Telecommunications Policy and Resources Management Bureau

Source NBTC 2014 Annual Report

TISPA Estimated ARPU = 700 Bt/mth

Thailand Broadband Internet
95% are provided by 3 operators

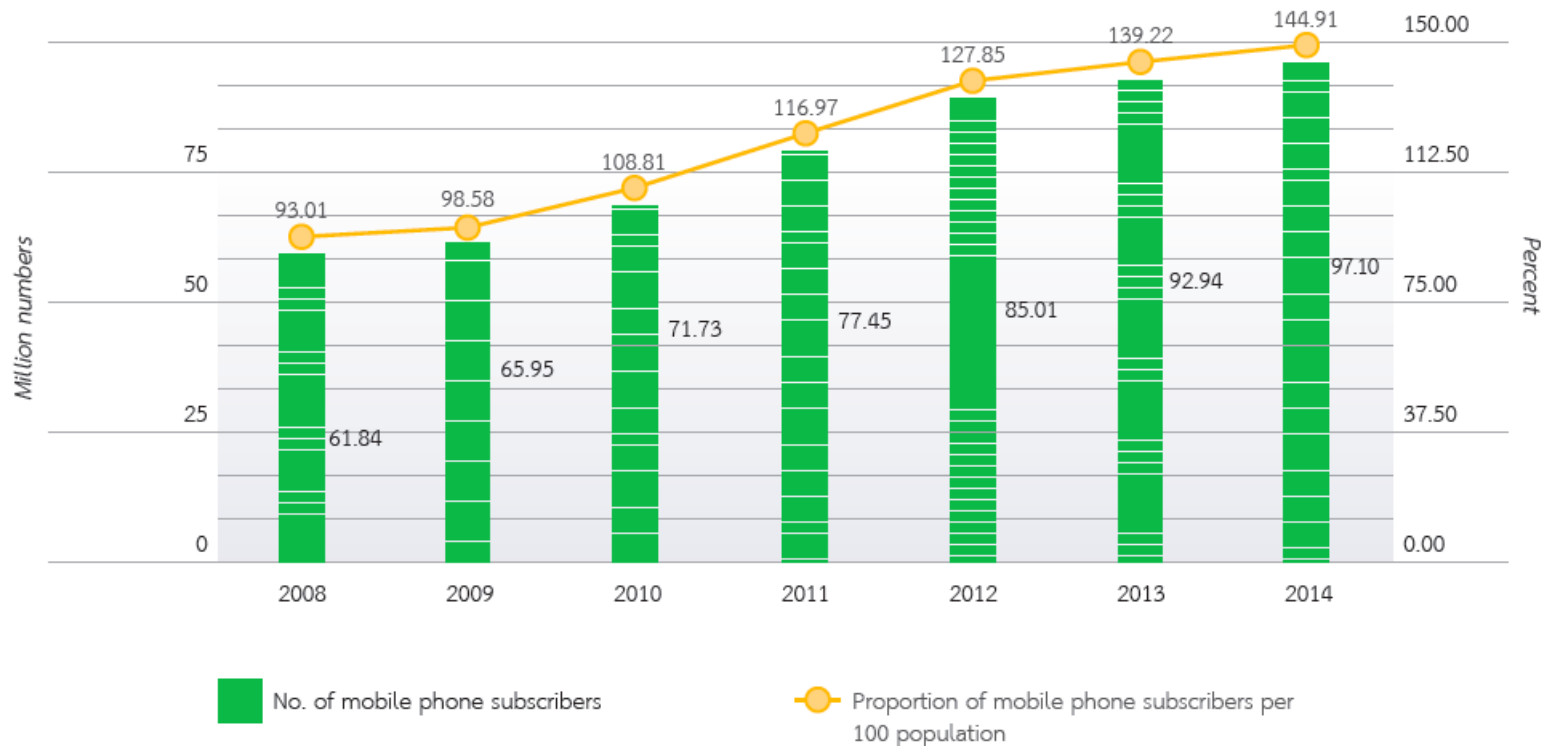Chart 48: Market Share of Broadband Internet Service (2008 - 2014)

Source: Telecommunications Policy and Resources Management Bureau

Source NBTC 2014 Annual Report

Mobile Phone subscribers in Thailand
97 Million in 2014 (1.4 phones per person)

Chart 42: Number of Mobile Phone Service Subscribers (2008 – 2014)

Million numbers

| | | | | | 144.91 | 150.00 |

139.22

127.85

116.97

108.81

98.58

93.01

97.10

92.94

85.01

77.45

71.73

65.95

61.84

| 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |

Percent

112.50

75.00

37.50

0.00

No. of mobile phone subscribers

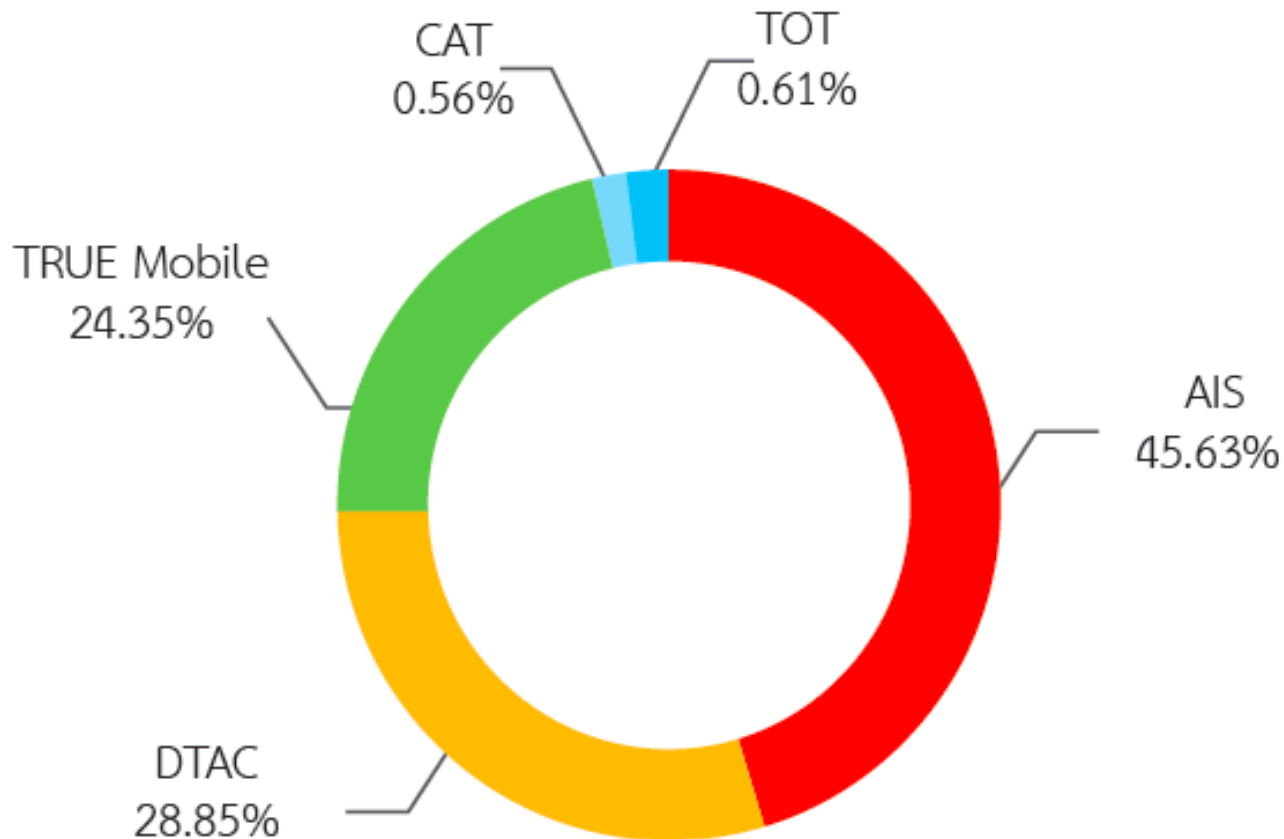Proportion of mobile phone subscribers per 100 population

Source NBTC 2014 Annual Report

It is estimated that 40% of mobile users use internet (mobile data service)

TISPA Estimated ARPU = 300 Bt/mth
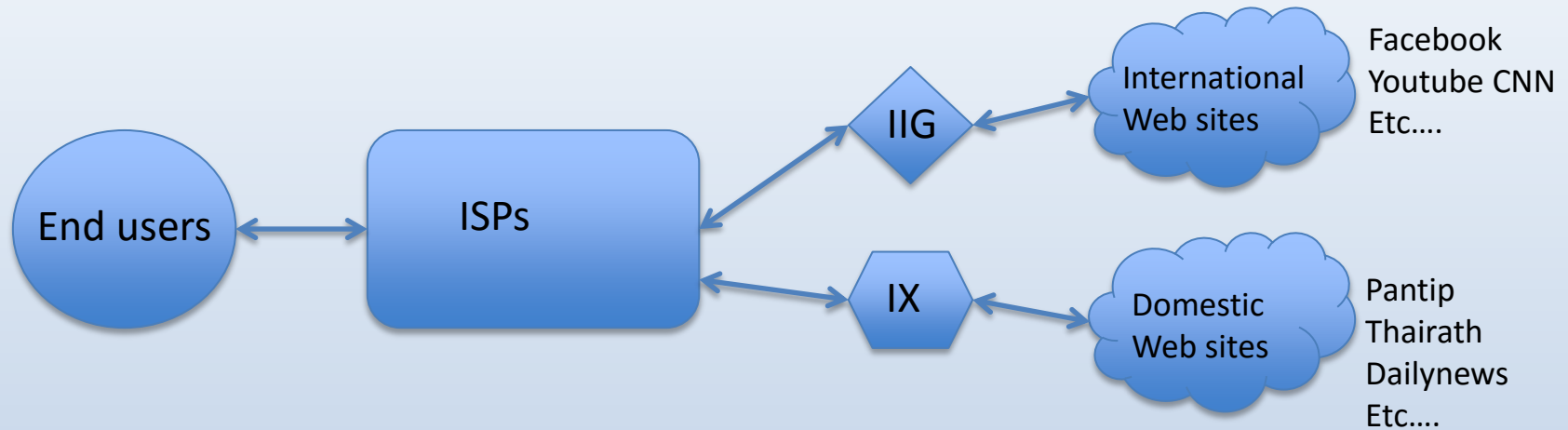
Thailand Mobile phone subscribers
99% are provided by 3 major Telcos

CAT
0.56%

TOT
0.61%

TRUE Mobile
24.35%

AIS
45.63%

DTAC
28.85%

Source NBTC 2014 Annual Report

Simplified diagram of how end users connect to internet in Thailand

- 95% of Broadband Services are provided by 3 Major Telcos (True, TOT, 3BB)

- **99% of Mobile phone users are provided by 3 Major telcos (AIS,True, DTAC)**

- It is estimated that 40% of mobile users use internet (mobile data service) ISPs are Major Telcos which may use their subsidiaries to apply for different license such as ISP, IIG or IX

International or Global Web sites

Global Websites

Other countries IXs

IP Transit operators

Simplified Connectivity Architecture of ISP IX and IIG for Thailand Internet Service

Local or Domestic Websites

Servers hosted in Data Center or Own Premise

Thai IX Operators

Thai IIG Operators

Thai IX ISPs

Individual or Corporate Internet Users
connect via Mobile or Wifi or Fixed Broadband

Thailand International internet connection map

Thailand Domestic internet connection map

Source: http://internet.nectec.or.th/webstats/internetmap.current.iir?Sec=internetmap_current

Thailand Domestic Internet Exchange Simplified Connectivity Diagram

There are 11 IX operators
Comprising 6 large Telcos
(CAT,TOT,AIS,TRUE,DTAC,3BB)
And 5 other companies

Each IX may connect to one or more IX based on mutual or commercial benefit.
Cost of connections are varied subject to each IX rule (i.e. half circuit, charge circuit etc.)
ISPs may choose to connect to one or more IX.

This architecture provide high reliability and flexibility.
At country level, no single point of failure

1	**CAT**
2	**BB Connect**
3	**CSL**
4	**JasTel (3BB)**
5	**AWN-IX (AIS)**
6	**SYMC**
7	**TCCT**
8	**TIG-IX (TRUE)**
9	**TOT**
10	**DTAC**
11	**BKNIX**

IX operators and domestic bandwidth

Approximately 3800 Gbps of physical connections
(counting every connection of IX and IIG operators)

	IX Name	Brand	ISPs&IX Connections No.	Total Bandwidth Gbps
1	CAT-IX	CAT	40	1,170
2	BB Connect-IX	UIH	5	204
3	CSL-IX	CSLOXINFO	8	204
4	JasTel-IX	3BB/JASTEL	13	441
5	AWN-IX(SBN)	AIS	11	332
6	SYMC-IX	Symphony	6	47
7	TCCT-IX	TCC	14	345
8	TIG-IX (TRUE)	TRUE	18	509
9	TOT-IX	TOT	15	331
10	DTAC-IX	DTAC	8	195
11	BKNIX	BKNIX	10	73

Source Nectec Internet Statistics website

Example of Size and Type of provider

There are 11 IX operators in Thailand. One example, at CAT-NIX, there are 40 providers (IX and ISP) connect with CAT IX with difference in size of bandwidth (example are shown below). CAT IX was the origin of IX in Thailand because CAT used to be the licensor prior to NBTC.

For actual connections of all ISPs and IX, please refer to NECTEC internet map and statisitics

http://internet.nectec.or.th/webstats/apnicstats.iir?Sec=apnic
then choose NIX data

No.	AS Number	Name	Type of Service Provider	Bandwidth	
1	AS45265	CSL-IX	NIX	40	Gbps.
2	AS38081	TIG-IX	NIX	10	Gbps.
3	AS45667	TCCT-IX	NIX	1	Gbps.
4	AS45642	JasTel-IX	NIX	10	Gbps.
5	AS45458	AWN-IX (SBN)	NIX	10	Gbps.
6	As133543	DTAC-IX	NIX	2	Gbps.
7	AS132280	Symphony -ISP	ISP	10	Gbps.
8	AS9931	CAT-ISP	ISP	450	Gbps.
9	AS4618	INET	ISP	14	Gbps.
10	AS4765	PACNET	ISP	7	Gbps.

International Bandwidth
of selected Major Mobile and Broadband operators

Gbps	Operator Brand	ISP	IIG
250	3BB Broadband	Trippple T internet	JASTEL
440	AIS Mobile	AWN-ISP	AWN-IIG
296	TRUE Broadband and Mobile	TIG-Internet	TIG-IIG
460	TOT Broadband	TOT-ISP	TOT-IIG
400	Dtac Mobile	Dtac-trinet	Dtac-IIG
1846	Total		

As of March 2016 it is estimated that 1,846 Gbps of international Bandwidth are used for approx. 40 million mobile users and 6 million broadband users. For domestic bandwidth should be about 2,000 Gbps. Note: data is not official but Derived and estimated from NECTEC internet statistics website.

Thank You