Summary Report of BKNIX Peering Forum 2021

THNIC Foundation and BKNIX Co., Ltd. annually host the BKNIX Peering Forum (BPF) to update participants from the Internet Exchange industry in related knowledge, technologies and trends. The BPF also offers participants invaluable networking and peering opportunities.

This year, the 'BKNIX Peering Forum 2021' was organized as an online conference on May 13 – 14, 2021 as the world is still in the midst of the Covid-19 pandemic. The topics of the event covered cloud ecosystem, regional communication network, data transmission trends and network security management. In addition, the organizer opened an online platform for participants and exhibitors to meet and conduct business.

As many as 240 persons registered to attend the 'BKNIX Peering Forum 2021'. They comprised a wide range of corporate, communications and Internet business representatives, including Internet service providers, content delivery network service providers, Internet data center providers, media network service providers, data exchange center operators and other related service providers, domestic and international.

Presentation Topics

The keynote speaker, presenters and panel discussions provided informative and interesting sessions during the BPF 2021.
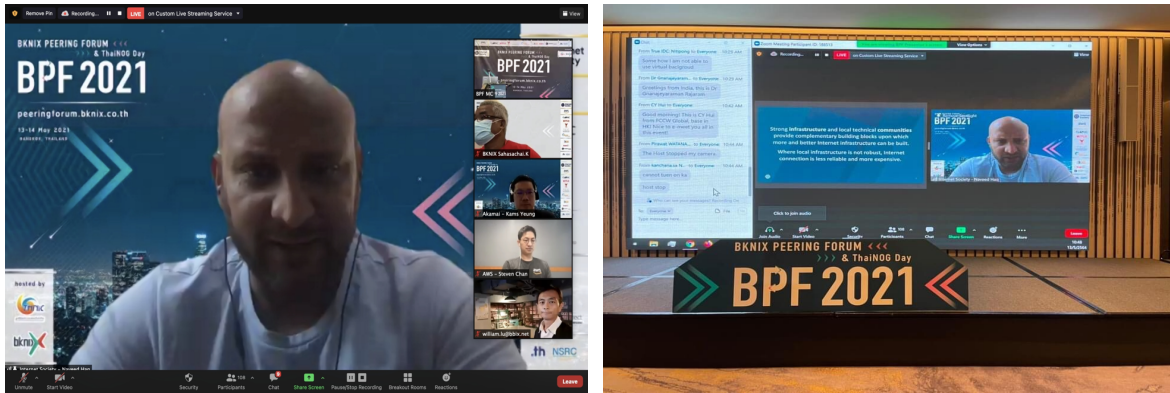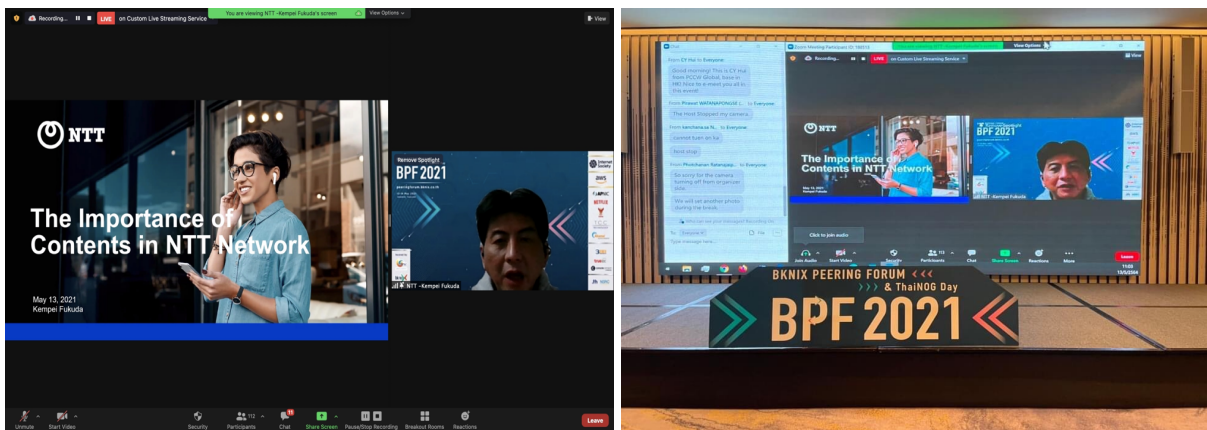
มูลนิธิศูนย์สารสนเทศเครือข่ายไทย
THAI NETWORK INFORMATION CENTER FOUNDATION

159 ถนน พิชัย แขวงถนนนครไชยศรี เขตดุสิต กรุงเทพ 10300
159 Thanon Phichai, Khwaeng Thanon Nakhon Chaisi, Khet Dusit, Bangkok 10300
Tel +66 2244 8261 Fax +66 2244 8264

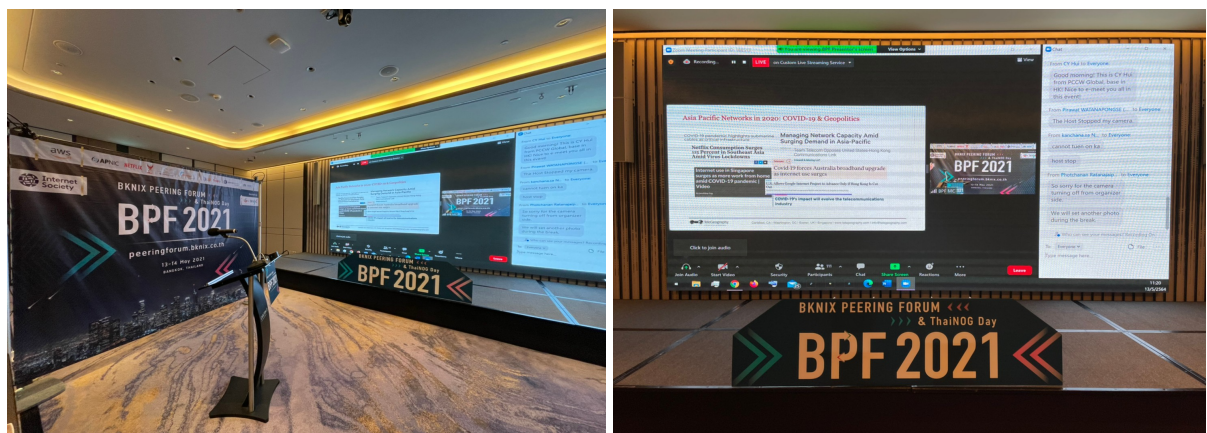- **Internet peering in Asia-Pacific** by Naveed Haq (ISOC)
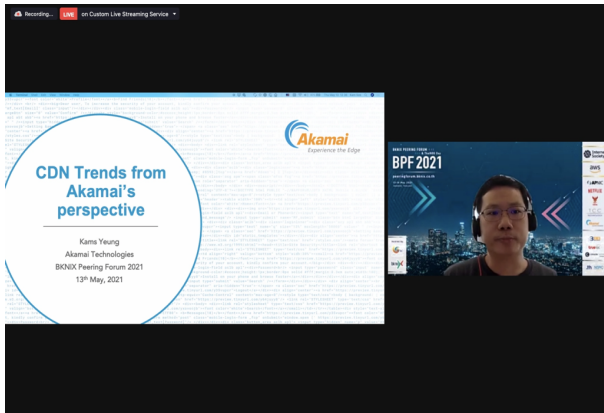

- **Session 1: Content**
  - **The Importance of Contents in NTT Network** by Kempei Fukuda (NTT Ltd.)

  - **Asia Pacific Networks in 2020 – 2021** by Shermaine Yung (TeleGeography)
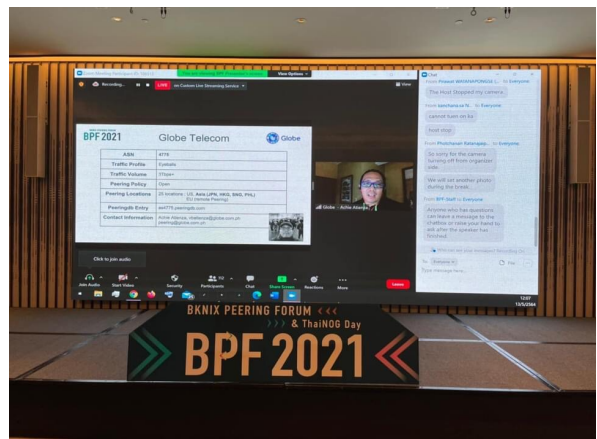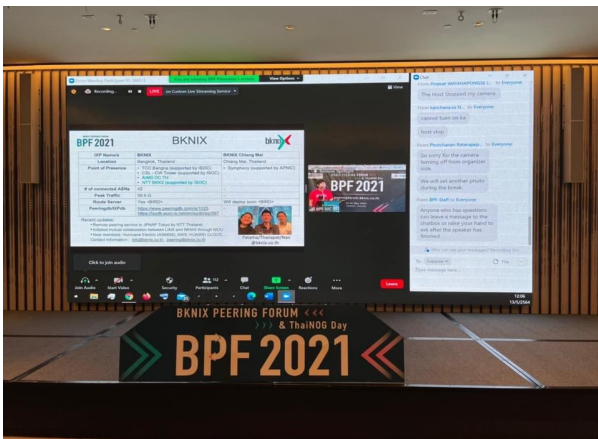
- o **CDN Trends from Akamai's Perspective** by Kam Sze Yeung (Akamai)
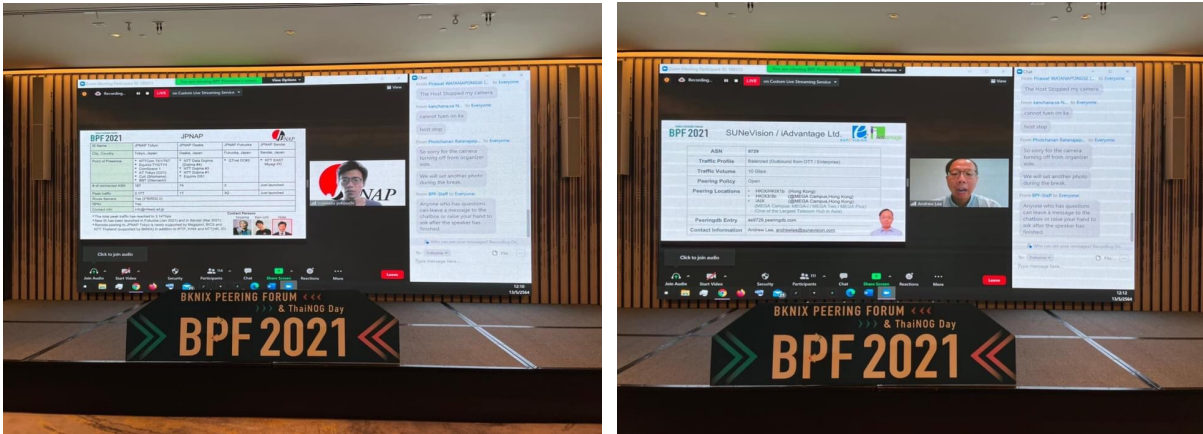

- **Peering personal (Slide)**
  - o **Akamai Technologies**
  - o **Amazon Web Services**
  - o **BKNIX**
  - o **Globe Telecom**

  - o **IPTP Networks AS41095**
  - o **JPIX**
  - o **JPNAP**
  - o **SUNeVision / iAdvantage Ltd.**

- **Session 2: Technology**

  Chaired by Philip Smith

  o **Mind Your MANRS – Routing security in the AWS network** by Fredrik Korsback (AWS)

  o **Segment Routing – a new paradigm for IP routing** by Paresh Khatri (Nokia Corporation)

  o **Cloud business ecosystem, challenges and trends in Thailand** by Nitipong Boon-long (TRUE IDC)

  o **BKNIX BCP Initiative** by Kittinan Sriprasert (BKNIX)
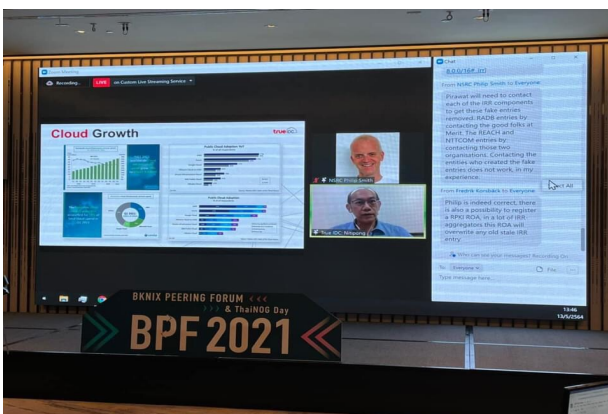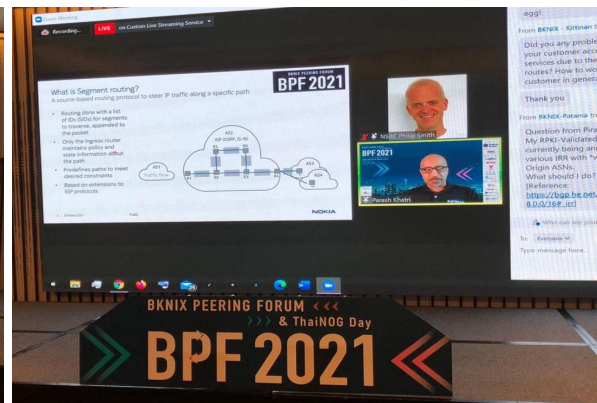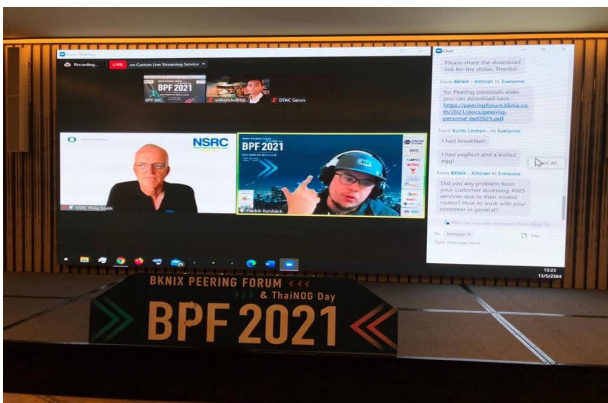
- **Session 3: Keynote Speech: "Evolution of interconnects"** by Kurtis Lindqvist (LINX)
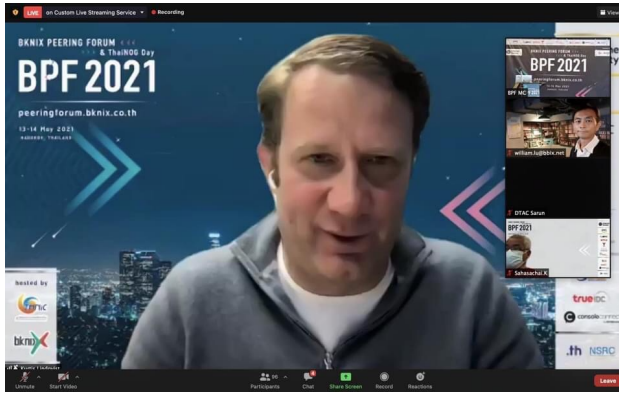
- **Session 4: Panel Discussion on IXP Trends**

  Moderator by Katsuyasu Toyama (JPNAP)

  o Kempei Fukuda (NTT Ltd.)

  o Kurtis Lindqvist (LINX)

  o Bani Lara (ASTI)

  o Matt Jansen (Facebook)
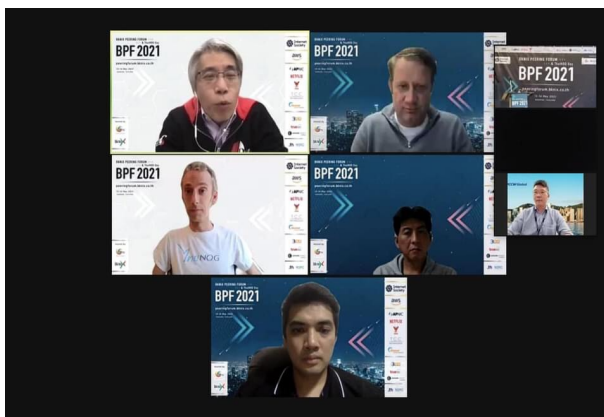
- **Virtual Social**

Sponsors

      The Thai Network Information Center Foundation and BKNIX Co., Ltd. thanked sponsors who contributed to the BKNIX Peering Forum 2021 and made the event so successful.

Platinum Sponsor:

- Internet Society

Titanium Sponsor:

- Amazon Web Services – AWS

Gold Sponsor:

- Asia Pacific Network Information Center – APNIC

- Netflix Streaming Services International B.V. – NETFLIX

- Office of The National Broadcasting and Telecommunications Commission - NBTC

- T.C.C. Technology Co, Ltd.

- Akamai

Silver Sponsor:

- Triple T Broadband Public Company Limited – 3BB

- True Internet Data Center Co., Ltd. - trueIDC

- PCCW Global Limited

In-Kind Sponsor:

- THNIC

- Network Startup Resource Center – NSRC

Participants

A total of 240 participants attended the BKNIX Peering Forum 2021 from the following countries:

• Australia	6 persons		• Nigeria	1 person
• Austria	1 person		• Pakistan	1 person
• Cambodia	5 persons		• Philippines	3 persons
• China	1 person		• Singapore	10 persons
• Germany	1 person		• South Africa	1 person
• Hong Kong	18 persons		• Sweden	3 persons
• India	4 persons		• Thailand	163 persons
• Japan	8 persons		• United Kingdom	1 person
• Malaysia	5 persons		• USA	2 persons
• Myanmar	4 persons		• Vietnam	2 persons

Appendix A

Agenda

13 – 14 May 2021

Thursday, 13 May 2021

10.30 – 10.40 Welcome Speech and Opening Remark
- Dr.Gothom Arya (THNICF)

10.40 – 10.50 Internet peering in Asia-Pacific
- Naveed Haq (ISOC)

10.50 – 11.50 Session 1: Content
- The Importance of Contents in NTT Network: Kempei Fukuda (NTT Ltd.)
- Asia Pacific Networks in 2020-2021: Shermaine Yung (TeleGeography)
- CDN Trends from Akamai's perspective: Kam Sze Yeung (Akamai)

11.50 – 12.00 Peering personal (Slide)
- Akamai Technologies
- Amazon Web Services
- BKNIX
- Globe Telecom
- IPTP Networks AS41095
- JPIX
- JPNAP
- SUNeVision / iAdvantage Ltd.

12.00 – 13.00 Network Lunch

13.00 – 14.15 Session 2: Technology
Chair: Philip Smith
- Mind your MANRS – Routing security in the AWS network: Fredrik Korsback (AWS)
- Segment Routing – a new paradigm for IP routing: Paresh Khatri (Nokia Corporation)
- Cloud business ecosystem, challenges and trends in Thailand: Nitipong Boon-long (TRUE IDC)
- BKNIX BCP Initiative: Kittinan Sriprasert (BKNIX)

14.15 – 14.30 Break

14.30 – 15.30 Session 3: Keynote Speech: "Evolution of interconnects"
- Kurtis Lindqvist (LINX)

15.30 – 15.45 Break

15.45 – 17.00 Session 4: Panel Discussion on IXP Trends
　　　　　　　　Moderator: Katsuyasu Toyama (JPNAP)
- Kempei Fukuda (NTT Ltd.)
- Kurtis Lindqvist (LINX)
- Bani Lara (ASTI)
- Matt Jansen (Facebook)

17.00 – 18.00 Virtual Social

Friday, 14 May 2021

09.00 – 17.00 Peering Meeting

Appendix B

Speakers Biology

Dr.Gothom Arya
Chairman of the THNIC Foundation

After obtaining a Doctoral degree in France, I returned to teach electrical engineering at Chulalongkorn University for 28 years. I then became an Election Commissioner for 4 years and a Registrar for 2 years at the Asian Institute of Technology. Since then I have been working at Mahidol University on Peace Building especially in the Far South of Thailand. I also serve in many civil society organisations including the THNIC Foundation as its chairman.

Kurtis Lindqvist
CEO @ LINX

LINX CEO, Kurt Erik "Kurtis" Lindqvist has a broad background in engineering and business development of ISP and worldwide carrier networks. He has spent the past 20 years working actively in the Internet community in several varied roles that lead to the past four years at the London Internet Exchange.

From 2002 to 2015 he was the CEO of Netnod. Kurt Erik has been the chairman of Euro-IX since 2003. He is also a dedicated WG Chair for RIPE where he has serve d as NCC-Services WG Chair since 2004. He is a regular and appreciated speaker at several International Internet conferences such as RIPE, APRICOT and Nanog.

Previously Kurt Erik has chaired the Multi6, shim6 and v6ops WGs in the IETF. He is also the co-author of two RFCs. Kurt Erik has served as a member of the Internet Architecture Board between 2005-2009.

Over the years Kurt Erik has participated actively in the development, standardisation and deployment of IPv6 in the IETF and various other operational forums. In addition Kurt Erik served as an adviser to the Swedish Minister of Information Technology and Energy cooperating with Anna-Karin Hatt and the Swedish Minister of foreign affairs, Carl Bildt.

Philip Smith
NSRC

Philip Smith has been working in the Internet industry since the early 1990s after catching the Internet bug in the mid 1980s while at University. He runs his own consulting company, PFS Internet Development.

Philip spends some of his time working for the Network Startup Resource Centre as a Senior Network Engineer and Training Coordinator, assisting with Network Operations Groups coordination, and providing network design assistance and training around the Pacific, South and South East Asia, the Middle East and Africa.

He previously worked at APNIC as Learning and Development Director, where his team's responsibilities ranged from Training, APNIC Conferences and Events, Network Operations Group support, Technical Programmes such as IPv6 Deployment, Internet Exchange Points, and Rootname Server deployments, and the Information Society Innovation Fund grants programme.

Before APNIC, he was a member of the Internet Infrastructure Group in CTO Consulting Engineering of Cisco Systems for more than thirteen years. He also served for 3 years on the Board of Trustees of the Internet Society.

Prior to joining Cisco, he spent five years at PIPEX (incorporated into UUNET, and now part of Verizon's global ISP business), the UK's first commercial ISP, where he was Head of Network Engineering. As is common with startups in a rapidly growing marketplace, Philip gained deep experience in all of the engineering roles in an ISP, from support engineer, network operations, engineering, and development, before assuming responsibility for the entire UK network operation. He was one of the first engineers working in the commercial Internet in the UK, and he helped establish the LINX Internet Exchange Point in London and played a key role in building the modern Internet in Europe.

Over the last decade and a half, Philip has been actively involved in providing consultation and advice to ISPs primarily in the Asia Pacific region, but also to other providers around the world. He concentrates specifically on network strategies, design, technology, and operations, as well as configuration, scaling, and training. He has played a major role in training ISP engineers, co-founding the Cisco ISP/IXP Workshop programme, and providing ISP training and tutorials at many network operations events around the world, including NANOG, RIPE, APNIC, SANOG, MENOG, AfNOG, PacNOG and APRICOT conferences. His other key technology interests include IPv6, BGP, OSPF and IS-IS, and network performance and data analysis.

He has also been working to promote and develop the Internet in the entire Asia Pacific region and has been actively involved in bringing the Internet

to some countries in the region. He also is actively involved in establishing Internet Exchange Points around the world, as well as advising on peering and inter-ISP relationships across the industry. He is Chair of the Board Directors of APIA (the Asia Pacific Internet Association), the organisation which organises and manages APRICOT, the region's annual ISP operations and technology conference and co-chair of APOPS (the region's ISP operational forum). Philip is also involved in the organisation committees of MENOG, SANOG and PacNOG, helps out with several country NOGs, and is a past chair and member of the NANOG Steering Committee (now NANOG Board).

Philip also has a particular research interest in the growth of the Internet and provides a detailed daily analysis of the IPv4 routing table, from an Asia Pacific perspective, to the general operator community worldwide.

Philip is a Doctor of Philosophy and has a First Class Honours Degree in Physics. A native of Scotland, he lives in Brisbane, Australia.

Naveed Haq
Regional Director @ ISOC

Naveed Ul Haq is the Asia-Pacific Regional Director for Infrastructure and Connectivity, leading technical, policy and advocacy work in Internet access, infrastructure and community development domains.

He is an experienced ICT practitioner, with more than 18 years' experience working with governments, telecommunication operators, development partners, service providers, and civil society organizations.

Prior to joining Internet Society, Naveed was working with Pakistan Telecommunication Authority (PTA), Government of Pakistan, as Assistant Director, Information & Communication Technologies (ICT).

He is also an alumni member of ICANN's fellowship, ISOC's Next Generation leadership and Diplo Foundation's Internet Governance capacity building program.
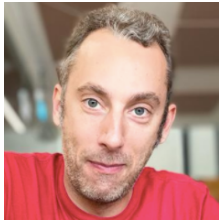
Matt Jansen
Edge Strategy Manager @ Facebook

Matt is Edge Strategy Manager at Facebook responsible for the Asia Pacific region based in Singapore. In this role he looks after peering & caching relationships, building and maintaining long term partnerships with the networks in the region as well as ever expanding our POP footprint, helping Facebook to make the world more open and connected.

Before joining Facebook Matt was Senior Network Architect at Akamai and Peering Manager at Cable&Wireless Worldwide, with a long time focus on the Asia Pacific region.

Bani Lara
Science Research Specialist @ ASTI

Bani Lara, a science research specialist at the Advanced Science and Technology Institute (ASTI), has 13 years of experience leading the network operations group of the Philippine Research Education and Government Information Network. He also takes care of the routing infrastructure of the Philippine Open Internet Exchange, as well as the core network of the Philipping Government broadband network. He earned his degree in Computer Science at the University of the Philippines in Los Banos.

Fredrik Korsback
Senior Technical Business Developer @ AWS

Fredrik is a Senior Technical Business Developer at AWS working with Peering, Routing and BGP for the AWS Global Network, recognized in the routing-tables as AS16509. He is passionate about routing-security, route-control and development of the BGP-protocol to strengthen the capabilities of the very core of the Internet.

Kam Sze Yeung
Senior Manager, Network Architecture @ Akamai

Kams Yeung is a Senior Network Architect at Akamai Technologies, the world's largest CDN. Kams has responsibilities primarily covering peering, routed interconnections and capacity planning. Kams is a 16-year veteran of the Internet industry and an international network engineering, operations and data center professional. He has served as an infrastructure team member during APRICOT-APAN 2011. Before Akamai, Kams was Product Manager at Equinix, and Senior Manager, IP Engineering at Pacnet. He's a regular supporter of APRICOT, APNIC, APF, and other industry community gatherings.

Katsuyasu Toyama
JPNAP

Katsuyasu Toyama is COO of JPNAP, the biggest internet exchange in Japan, operated by INTERNET MULTIFEED CO. He was involved with the establishment of the company in 1997, and there he designed JPNAP network and services in 2000. After leading a research project on IPv6 and security at NTT Labs., he has been working as Director of JPNAP since 2007, and also worked at NTT Communications from 2012 to 2015 to be responsible for all the Internet business on eyeball networks in Japan and ip transit service all over the world.

He is also involved with internet community activities, as a chairperson of Asia Pacific Internet Exchange Association (APIX), a leader of Peering Asia (an open and neutral peering forum in the APAC region), and a board member of Global Peering Forum (GPF).

Kempei Fukuda
VP, Services Grand Design @ NTT Ltd.

Kempei joined NTT in 1989 after getting bachelors degree from International Christian University, Tokyo. Since 1993, has devoted most of the time to global and internet business for NTT. Starting from participating in the buildout and operation of R&E network, moved on to creating NTT's first global internet backbone in 1997, and now being the head of engineering for internet services offered by NTT Communications. He also participated in some of the submarine cable projects, and was board member of PCLC, owner of PC-1 cable system.

Nitipong Boon-Long
Chief Commercial Officer @ True IDC

Nitipong is the Chief Commercial Officer of True IDC which is the major data center and cloud infrastructure provider in Thailand. He is responsible for the revenue and product development of the company. He also has extensive background in the International Telecommunications Business including roaming, carrier management, IOT and Cloud services from both local and international telecom providers.

Paresh Khatri
CTO @ Nokia Corporation

Paresh Khatri is the CTO for the IP and Optical Networks Business Group for Nokia Corporation in APAC. In this role, Paresh is responsible for formulating platform and architecture strategies to meet the varied demands of operators in the Asia-Pacific region. He has been responsible for architectural design for the largest IP transformation projects in the region, and is now working closely with service providers as they address the growing demand for scale and new services that will be enabled by the evolution to 5G

Paresh's areas of expertise include the entire range of IP/MPLS technologies and applications, from the network core to the access network. His current areas of interest include 5G transport, network virtualisation and SDNs.

Paresh has more than 23 years of experience with both service providers and vendors in building carrier-grade IP/MPLS networks, including the largest IP NGN transformation project ever undertaken in Australia.

Paresh is a regular speaker at industry conferences in the APAC region and also actively participates in a number of telecommunications industry standards bodies.

Paresh holds a Bachelors of Electronic Systems Engineering (First Class Honours) and a Bachelor of Information Technology from the Queensland University of Technology.

Shermaine Yung
Research Analyst, APAC Infrastructure @ TeleGeography

Shermaine is a Research Analyst at TeleGeography and her work focuses on network infrastructure in Asia Pacific. She speaks frequently at conferences about trends and analysis of the region's network industry.

Appendix C

Press Release

THNIC-BKNIX is organizing the 'BKNIX Peering Forum 2021,' a regional online conference combining foreign collaboration and developing an overview of the Internet in Thailand.

Bangkok: Between May 13 and 14, 2021, the THNIC Foundation, in collaboration with BKNIX, hosted the 'BKNIX Peering Forum 2021,' a Regional Network Management Conference aimed at fostering collaboration with international Internet exchange service providers. This results in faster speed of the Internet in the country at lower costs. Experts in both Internet Exchange and the world-class CDN network will join as speakers of the event.

Dr. Gothom Arya, Chairman of the Thai Network Information Center Foundation (THNIC) said, "THNIC Foundation and BKNIX Co., Ltd., the administrator of Thailand's first neutral Internet exchange point jointly held the BKNIX Peering Forum 2021, which this year is the fifth year, to be a knowledge exchange platform and opens up business opportunities for sustainable infrastructure development for ISPs, content providers and cloud service providers both inbound and outbound. This year we are honored by Dr. Kurtis Lindqvist, CEO of the London Internet Exchange, UK, to make a speech on Evolution of Connectivity, which is an issue we should study and develop, because connectivity is vital to the growth of the Internet. And what role will connectivity play in fostering digital gap reduction and advocating for the use of digital technology to achieve social and economic development. This topic is somewhat interesting."

Mr. Sahasachai Kongjue, Managing Director of BKNIX Co., Ltd. said, "This year's special is that BKNIX has announced a partnership with LINX, a UK Internet exchange service provider with more than 900 ASN members that is also the world's major IX, and an Internet exchange point in Japan, JPNAP to foster connections to exchange traffic between members of each other. This will benefit BKNIX members and local Internet users as it makes Thailand's Internet faster with lower costs."

This year, the 'BKNIX Peering Forum 2021' will be organized as a fully-fledged online conference, as the world is still in the midst of the epidemic of Coronavirus 2019. The topics of the event are in the spotlight including cloud ecosystem, regional communication network, data transmission trend and network security management. In addition, the organizer also opened an online platform for cooperation negotiations among exhibitors.

This event is sponsored by ISOC, AWS, APNIC, NBTC, Netflix, TCC Technology, Akamai, 3BB, TrueIDC, PCCW Global, THNIC and NSRC, where attendees would meet with representatives from the organizations. These are available on the online meeting platform.

The attendees of the 'BKNIX Peering Forum 2021' include a wide range of corporate, communications and Internet businesses, whether it is the Internet service provider, the content delivery network service provider, the Internet data center provider, the media network service provider, the data exchange center operator and other related service providers from both domestic and international such as Australia, Cambodia, China, Germany, Nigeria, South

Africa, Hong Kong, India, Japan, Malaysia, Myanmar, Philippines, Pakistan, Sweden, Singapore, Austria, USA, UK and Vietnam, etc. More than 200 people have registered to attend the online event.

Interested persons can learn more about the event and re-watch the conference again on peeringforum.bknix.co.th.