

# Inherent/IDRen status update in Indonesia by August 2018

The Third Indonesia Telemedicine Workshop  
30<sup>th</sup> August 2018 , Hotel Borobudur Jakarta  
Basuki Suhardiman

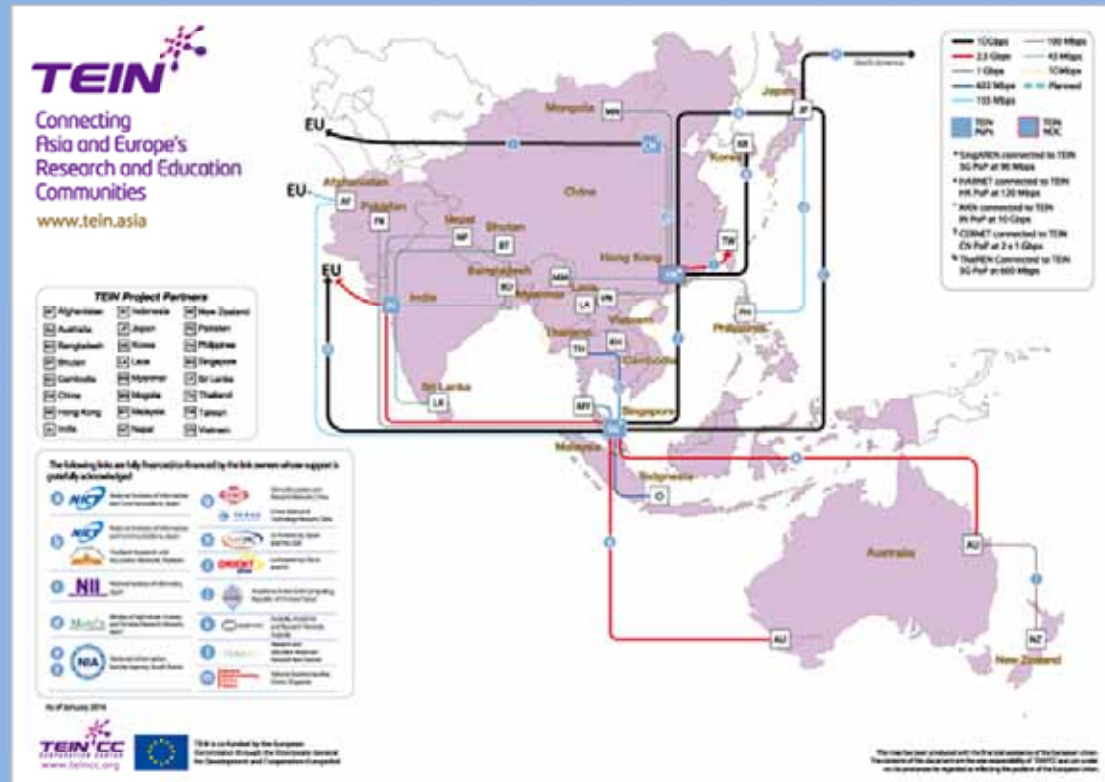
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- Organization status
- Network Status
- Application on Network
- Future Collaboration

- ❖ **NREN :**
- ❖ **IDREN/Inherent**
  - ❖ Initiated by several Universities members 2015 , as continues program of INHERENT
    - ❖ ITB (as TEIN representative in Indonesia)
    - ❖ University of Indonesia (Jakarta)
    - ❖ University of Gajahmada (Jogjakarta)
    - ❖ University of Brawijaya (Malang)
    - ❖ Surabaya Institute of Technology ( Surabaya)
  - ❖ Approved by Ministry of Science Technology
    - ❖ Directorate General of Learning and Student Affairs (Higher Education)
    - ❖ Funding for the Link via ITB (TEIN/Asi@connect)
- ❖ **Number of member :**
  - ❖ **50 – 70 Institution**
  - ❖ **50 with Own IP address and ASN**
  - ❖ **20 still apply for their own IP address**
- **Backbone :**
  - ❖ **International Backbone from Bandung to Singapore , 1 Gbps**
  - ❖ **Domestic Backbone 1 Gbps – 2 Gbps**

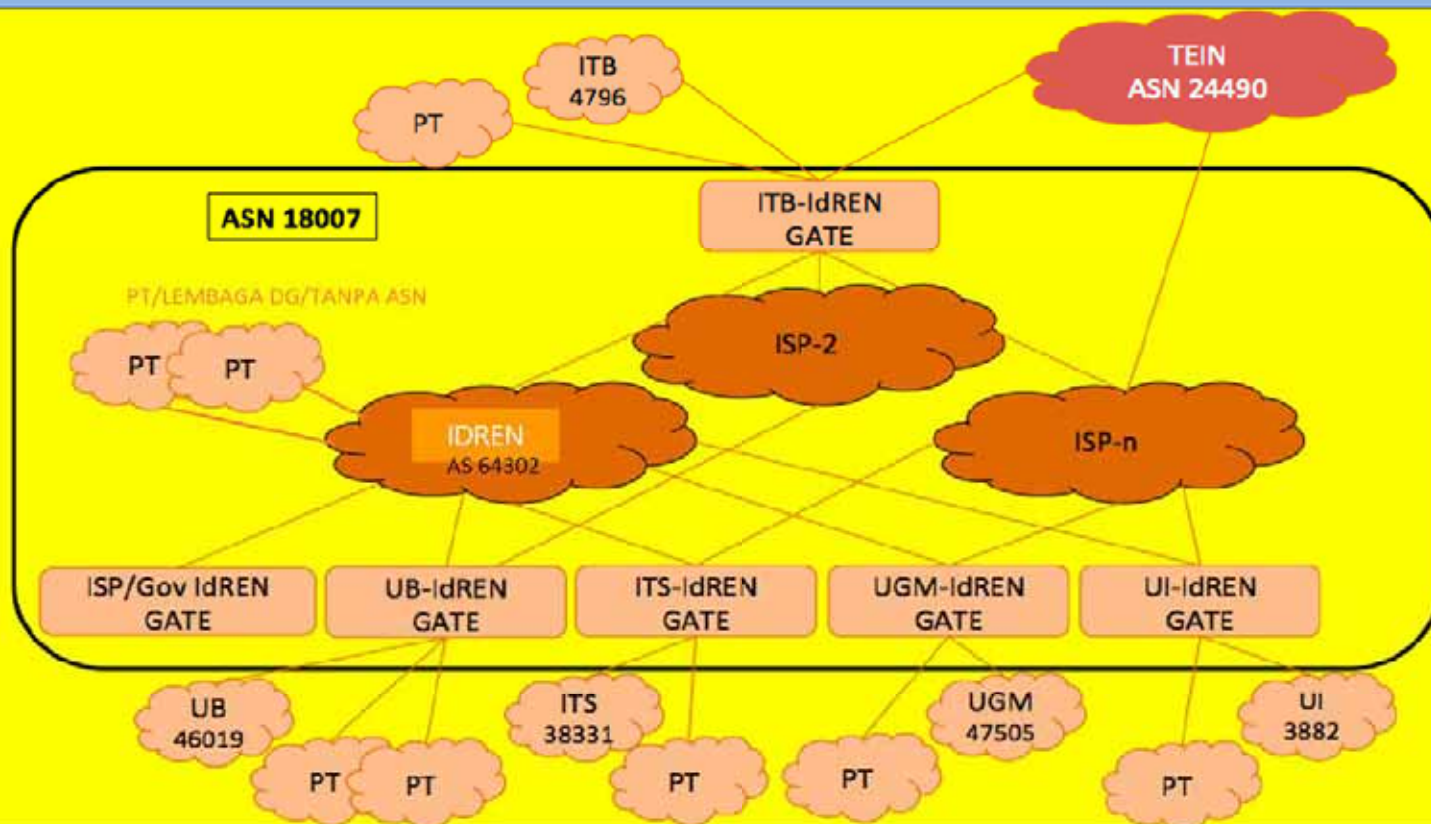
- Current Network Status to TEIN/Asi@connect
- Topology of IDREN
  - General Topology
  - By Network of PT Telkom
  - By Network of PT Indosat

- Link to NREN Connect to TEIN4 upgraded from 622 Mbps to 1 Gbps to SG pop (Asi@Connect)
- L2VPN to Singaren via TEIN4 Pop
- Proposed the Multistakeholder Organization for “Inherent”

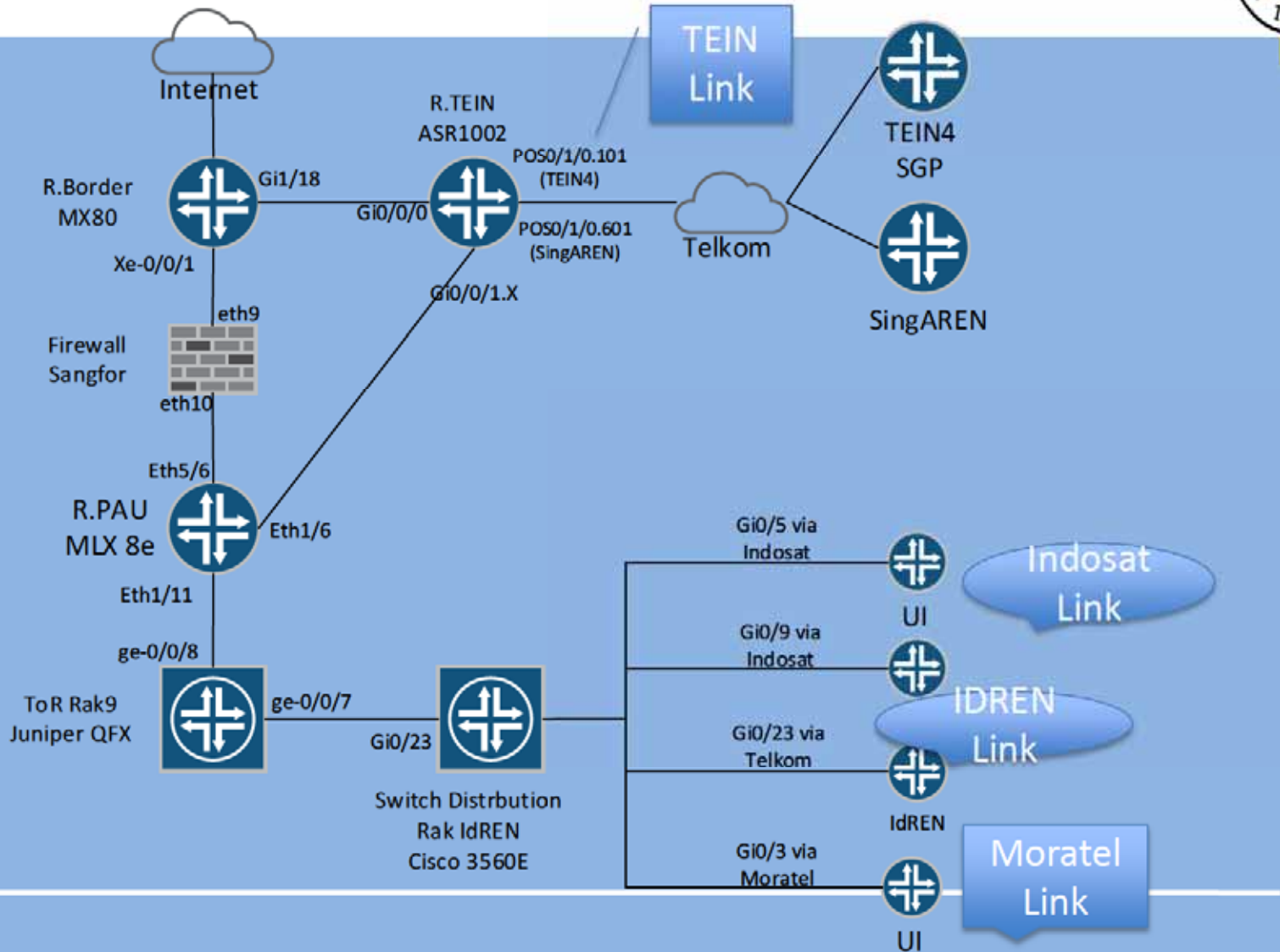


# General Topology of IDREN

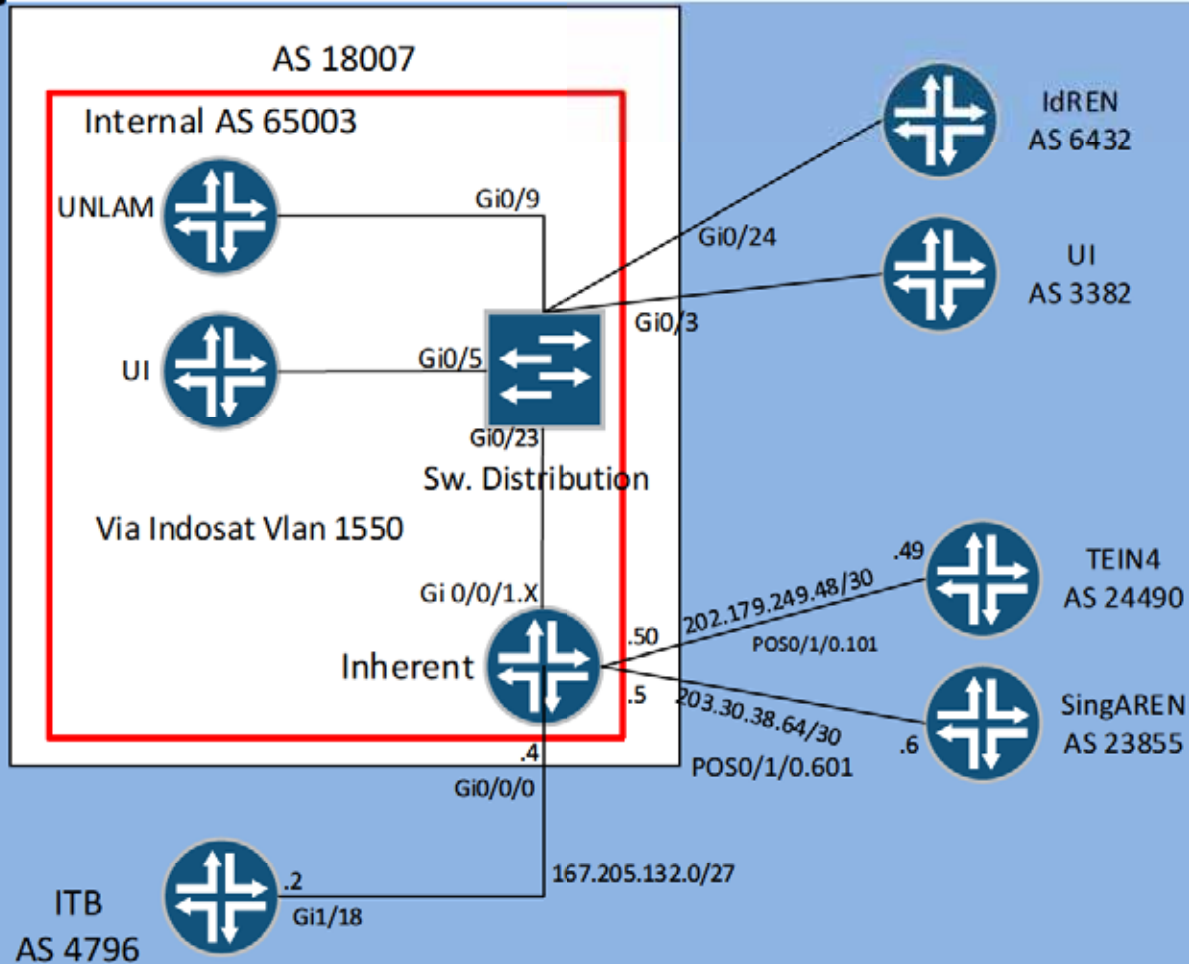
- Basic Topology



# Layer1 Network @NOC

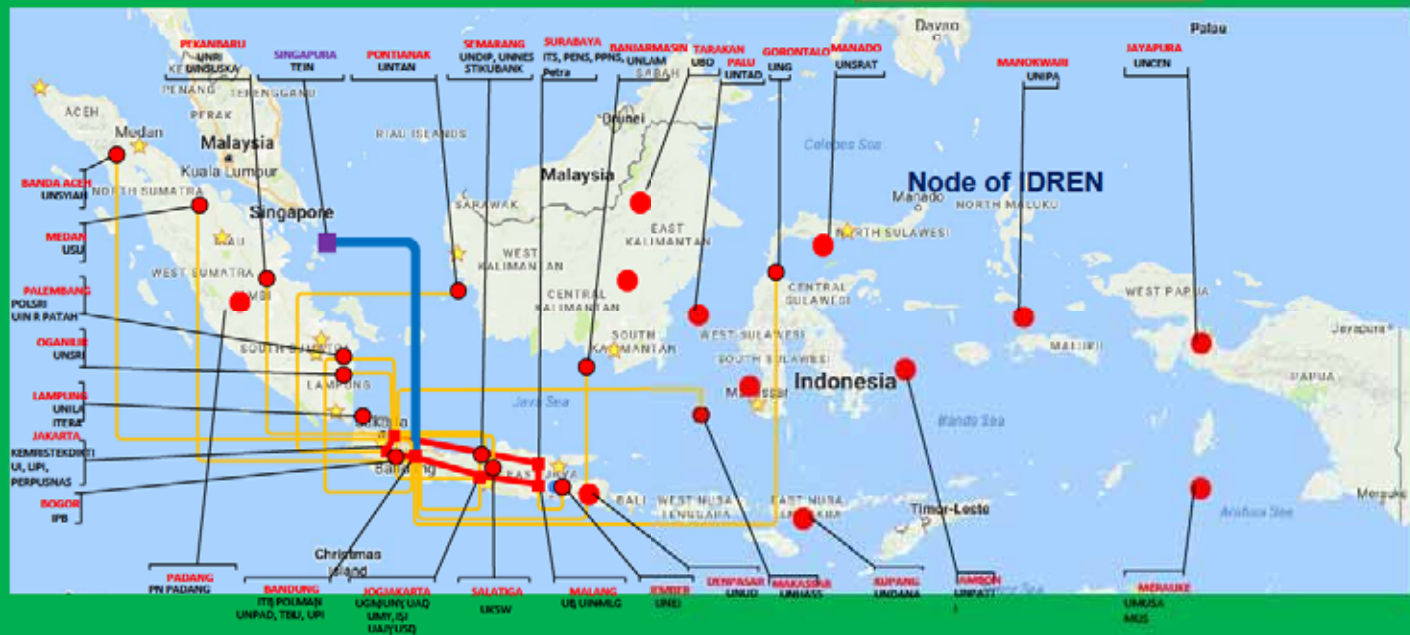


# Layer 2 and 3 Network @NOC











# Node of IDREN (Network provided by PT Telkom)

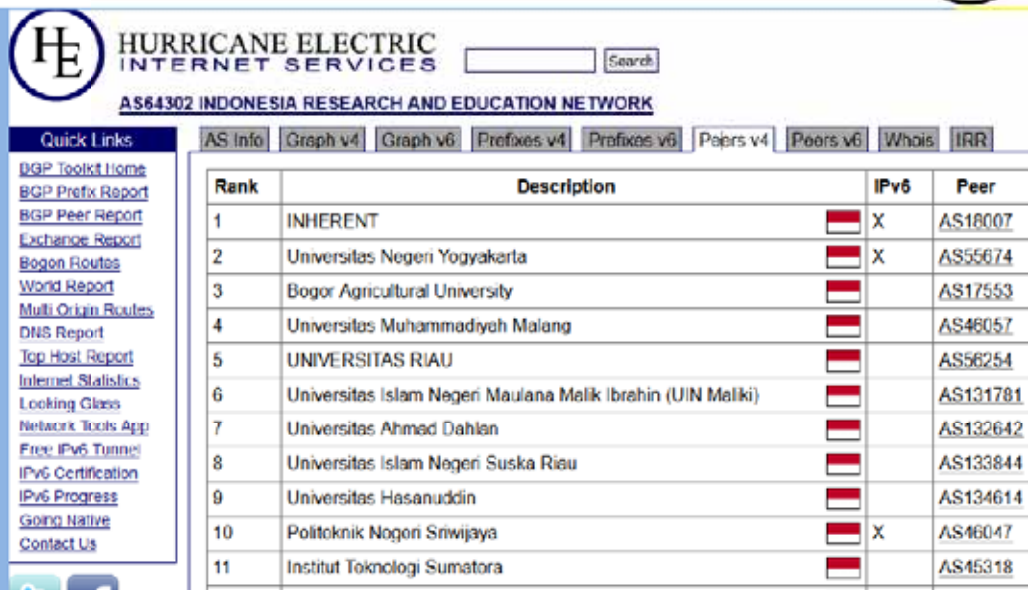


- [http://bgp.he.net/AS18007#\\_peers](http://bgp.he.net/AS18007#_peers)
- More than 50 Universities has been connect ,
- 50 Universities have their Own IP address and ASN, target 100 Universities have their own IP and ASN (next year)

Rank	Description		IPv6	Peer
1	INDONESIA RESEARCH AND EDUCATION NETWORK		X	<a href="#">AS64302</a>
2	Trans-Eurasia Information Network (TEIN2) - SG		X	<a href="#">AS24490</a>
3	Singapore Advanced Research and Education Network			<a href="#">AS23855</a>
4	Institut Teknologi Nasional			<a href="#">AS136871</a>
5	University of Indonesia		X	<a href="#">AS3382</a>
6	Institute of Technology Bandung		X	<a href="#">AS4796</a>

# Provide Network by PT Telkom

- <https://bgp.he.net/AS64302>
- More than 50 Universities connected and have their Own IP address
- Still Progress to other universities for Apply IP address/ASN



**HE HURRICANE ELECTRIC INTERNET SERVICES**

**AS64302 INDONESIA RESEARCH AND EDUCATION NETWORK**

Quick Links: [AS Info](#) | [Graph v4](#) | [Graph v6](#) | [Prefixes v4](#) | [Prefixes v6](#) | [Peers v4](#) | [Peers v6](#) | [Whois](#) | [IRR](#)

Rank	Description	IPv6	Peer
1	INHERENT	X	AS18007
2	Universitas Negeri Yogyakarta	X	AS55674
3	Bogor Agricultural University		AS17553
4	Universitas Muhammadiyah Malang		AS46057
5	UNIVERSITAS RIAU		AS56254
6	Universitas Islam Negeri Maulana Malik Ibrahim (UIN Maliki)		AS131781
7	Universitas Ahmad Dahlan		AS132642
8	Universitas Islam Negeri Suska Riau		AS133844
9	Universitas Hasanuddin		AS134614
10	Politeknik Negeri Sriwijaya	X	AS46047
11	Institut Teknologi Sumatera		AS45318

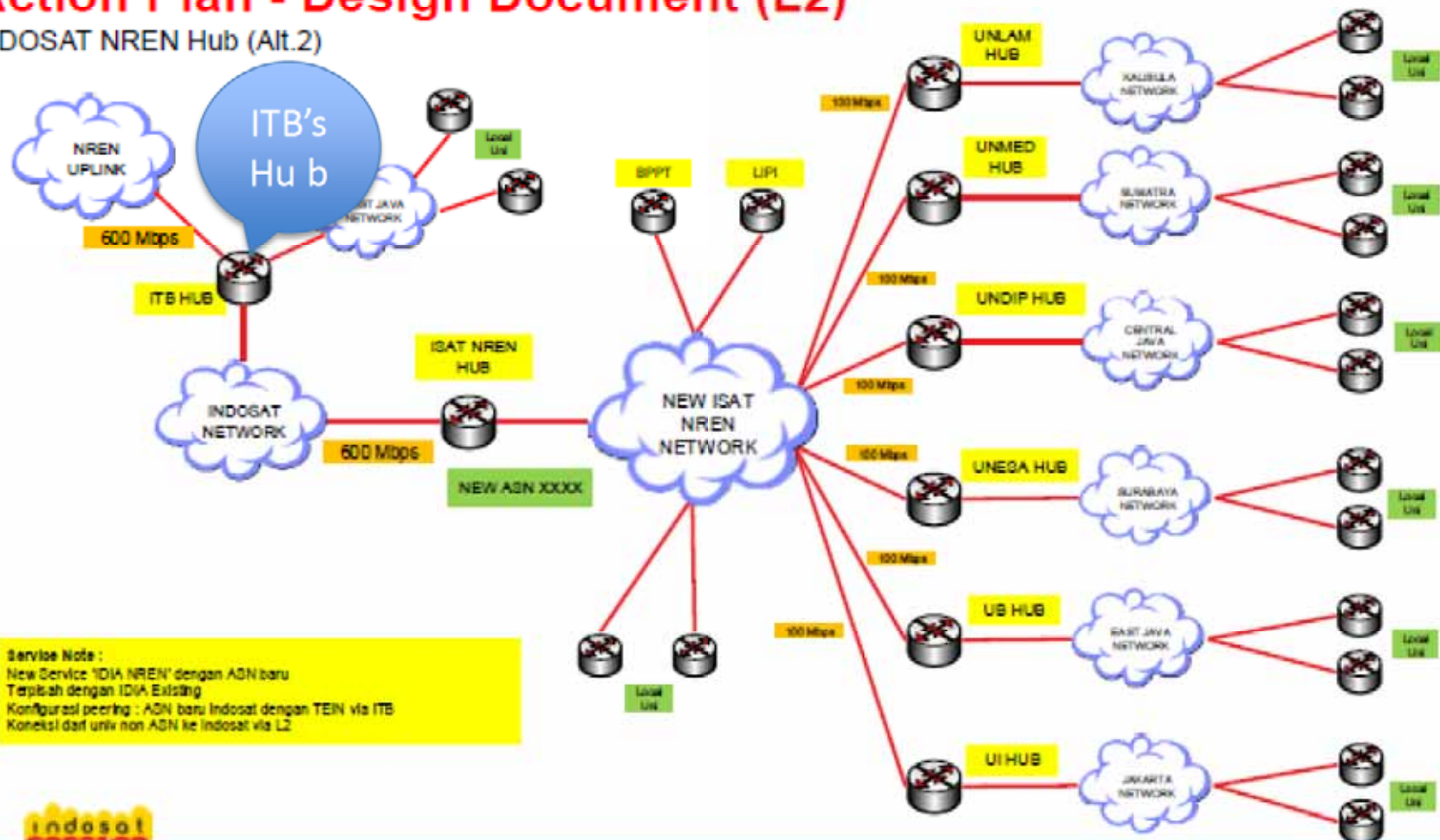
Quick Links: [BGP Toolkit Home](#) | [BGP Prefix Report](#) | [BGP Peer Report](#) | [Exchange Report](#) | [Bogon Routes](#) | [World Report](#) | [Multi Origin Routes](#) | [DNS Report](#) | [Top Host Report](#) | [Internet Statistics](#) | [Looking Glass](#) | [Network Tools App](#) | [Free IPv6 Tunnel](#) | [IPv6 Certification](#) | [IPv6 Progress](#) | [Going Native](#) | [Contact Us](#)

# Network Provide by PT Indosat

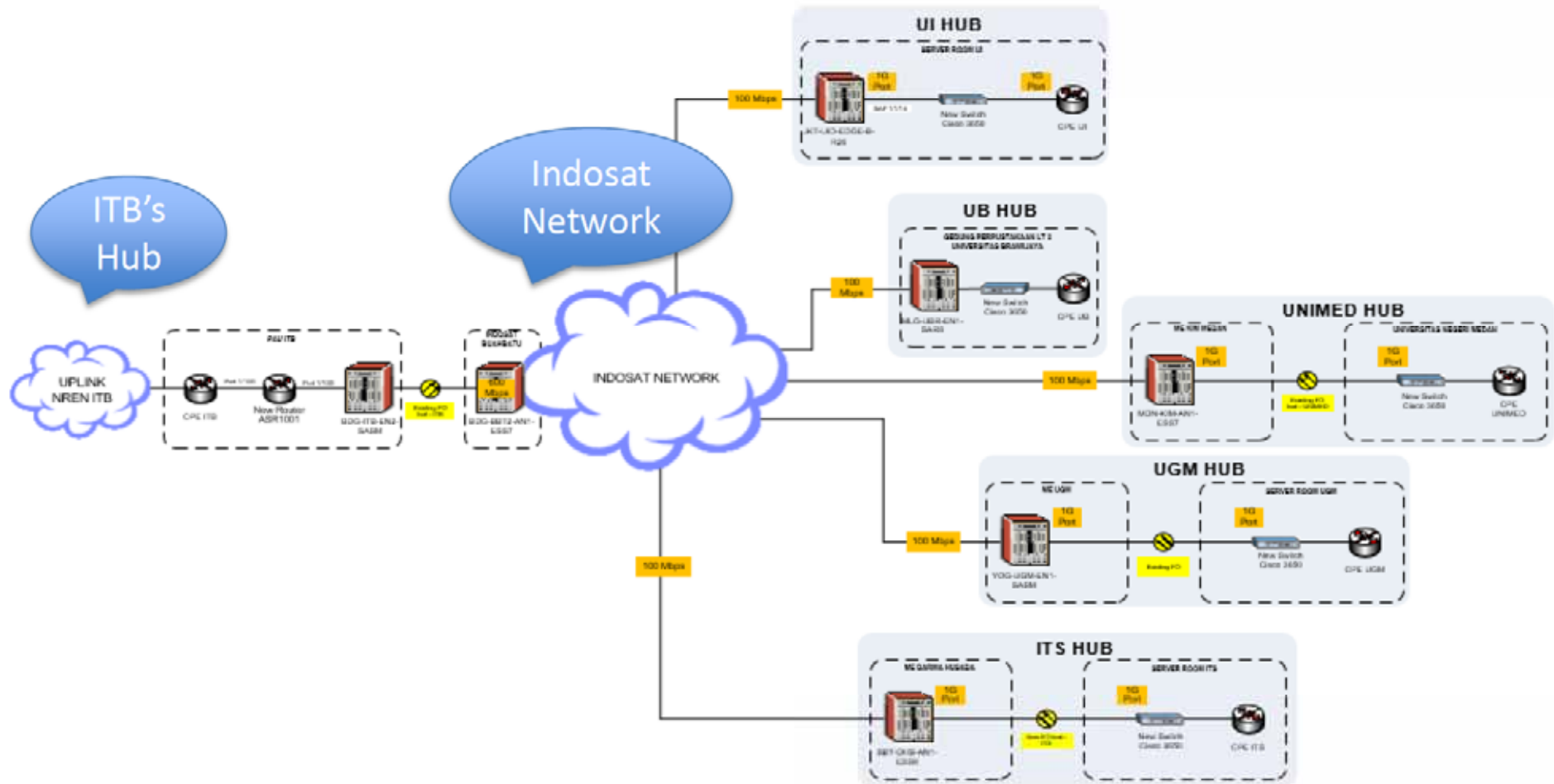
- Indosat Provide the Network as same as PT Telkom
- Put new Router Connected to ASN 18007
  - Apply new IP address and ASN for Indosat Cloud Network
  - Apply L3 Switch in several University Nodes
    - Jakarta – University of Indonesia
    - Bandung – ITB
    - Jogjakarta – Gajahmada University
    - Malang – Brawijaya University
    - Surabaya – Sepuluh November Institute

## Action Plan - Design Document (L2)

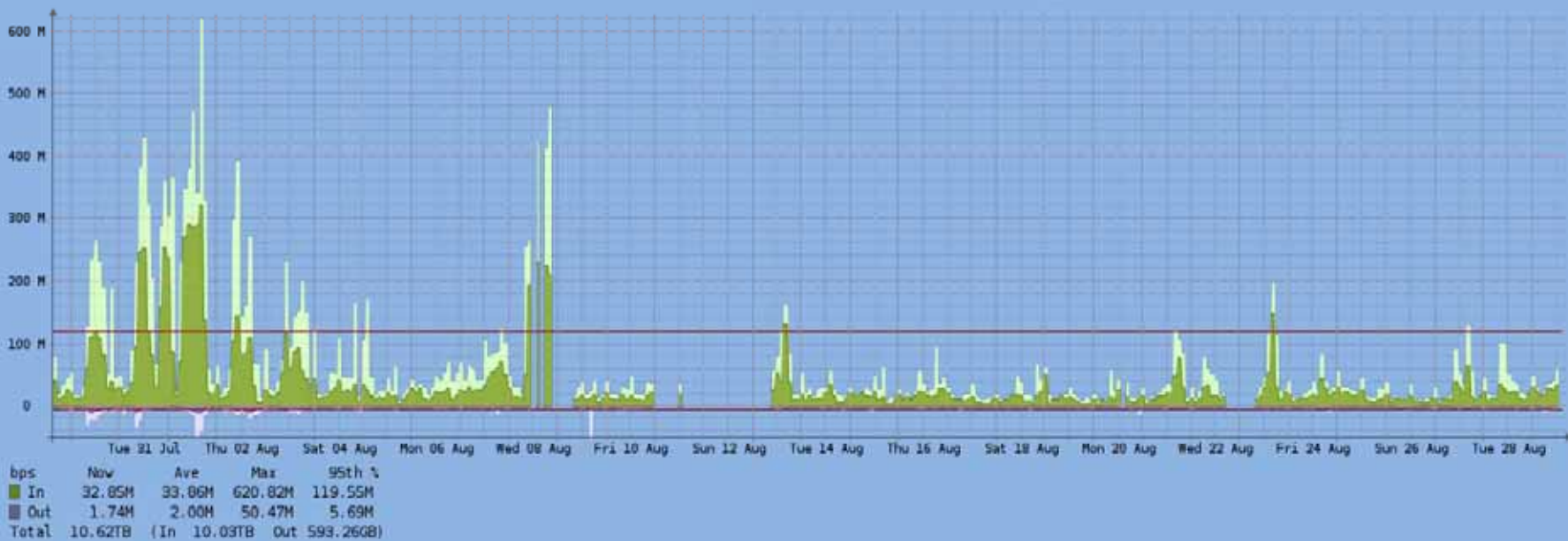
INDOSAT NREN Hub (Alt.2)



**Service Note :**  
 New Service 'IDIA NREN' dengan ASN baru  
 Terpisah dengan IDIA Existing  
 Konfigurasi peering : ASN baru Indosat dengan TEIN via ITB  
 Koneksi dari univ non ASN ke Indosat via L2



- Network Traffic @NOC ITB
  - After Upgrade to 1 Gbps
  - Change From SDH to Gigabit Ethernet



# Traffic flow on TEIN4 Router (@itb)

AS number	Chart	Hosts	Alerts	Name	Seen Since	Breakdown	Throughput	Traffic▼
4796		2226		<a href="#">Institute of Technology Bandung</a>	23 days, 5 h, 56 min, 34 sec	<span>Rcvd</span>	57.6 kbit/s	5.32 TB
8068		35		<a href="#">Microsoft Corporation</a>	20 days, 2 h, 40 min, 48 sec	<span>Sent</span>	2.19 Mbit/s	3.29 TB
46049		181		<a href="#">Universitas Diponegoro</a>	22 days, 2 h, 56 min, 4 sec	<span>Rcvd</span>	3.07 Mbit/s	2.49 TB
2907		196		<a href="#">Research Organization of Information and Systems, National Institute of Informatics</a>	23 days, 5 h, 56 min, 32 sec	<span>Sent</span>	1.22 kbit/s	2.2 TB
3382		6196		<a href="#">University of Indonesia</a>	22 days, 2 h, 56 min, 4 sec	<span>Rcvd</span>	1.34 Mbit/s	1.47 TB
45705		179		<a href="#">UNIVERSITAS GADJAH MADA</a>	22 days, 2 h, 56 min, 3 sec	<span>Rcvd</span>	723.78 kbit/s	1.08 TB
58475		65		<a href="#">Universitas Lambung Mangkurat</a>	22 days, 2 h, 56 min, 4 sec	<span>Rcvd</span>	71.53 kbit/s	782.97 GB
17553		166		<a href="#">Bogor Agricultural University</a>	22 days, 2 h, 56 min, 4 sec	<span>Rcvd</span>	26.16 kbit/s	496.17 GB
17932		5		<a href="#">Japan Advanced Institute of Science and Technology</a>	9 days, 9 h, 34 min, 30 sec	<span>Sent</span>	604.67 bit/s	433.63 GB
680		109		<a href="#">Verein zur Foerderung eines Deutschen Forschungsnetzes e.V.</a>	23 days, 5 h, 56 min, 34 sec	<span>Sent</span>	60.58 kbit/s	429.29 GB
46019		191		<a href="#">Universitas Brawijaya</a>	22 days, 2 h, 56 min, 4 sec	<span>Rcvd</span>	632.5 kbit/s	418.15 GB

Base on Ntop (<http://ntop.org>)  
[http://167.205.23.39:3000/lua/as\\_stats.lua](http://167.205.23.39:3000/lua/as_stats.lua)

Status on  
 29/08/18



- Telemedicine
- Eduroam
- SDN application Initiates

- The 11th ID-Neuro case Telemedicine, taken from UGM-Sardjito Hospital. March 13th, 2018
- Almost every week there were activity on ID-telemedicine



- Build ID-Telemedicine working group among the Medicine Faculties in Indonesia
- More than 20 Faculties of Medicine are active in the the group
- Last activity, The 14th Indonesia Neurology NMO Case Teleconference July 25, 2018. 13.00 – 14.00 (Gmt +7)



The 14th Id neuro telemed, Juli 27th, 2018. Taken from UGM-SARDJITO Hospital, Yogyakarta.



**eduroam** (education roaming) is an international roaming service for users in research, higher education and further education. It provides researchers, teachers and students easy and secure network access when visiting an institution other than their own. Authentication of users is performed by their home institution, using the same credentials as when they access the network locally, while authorization to access the Internet and possibly other resources is handled by the visited institution. Users do not have to pay for using eduroam.

<https://eduroamid.info/>

- ITB initiated as NRO with Collaboration with TEINCC and AARnet
- Co-develop with UII (Universitas Islam Indonesia, Jogjakarta)
- Obstacle
  - Not many Universities's wireless support 802.1x
  - Not many Universities have central Authentication (SSO, or Radius System)
- Develop
  - Training , workshop and dissemination with TEINCC
- Eduroam enable in Indonesia
  - Institut Teknologi Bandung
  - Universitas Islam Indonesia
  - Universitas Gadjah Mada (limited availability)
  - Universitas Negeri Yogyakarta
  - Universitas Brawijaya
  - Stenden University Bali
- Will be develop on Faculties of Medicine in Indonesia ( more than 20 , member of ID-telemedicine)

# OF@TEIN Activity (SDN)/ONOS



- Workshop
  - @ITB , Bandung
  - @UII , Jogjakarta
- <https://www.eventbrite.com/e/itb-open-networking-day-transforming-networking-with-onos-tickets-43367540481#>

- Extended the Network
  - Network to Other University
  - Eduroam Access to University
- Extended the application on Network
  - Telemedicine
    - Extend collaboration and support for the ID Telemedicine Network
  - SDN/Cloud
    - Applies ONOS on some nodes (Bandung, Jakarta , Jogja)
  - Applications
    - Data Science → Weather's data,
    - Data Integration among the country



# Thank You

