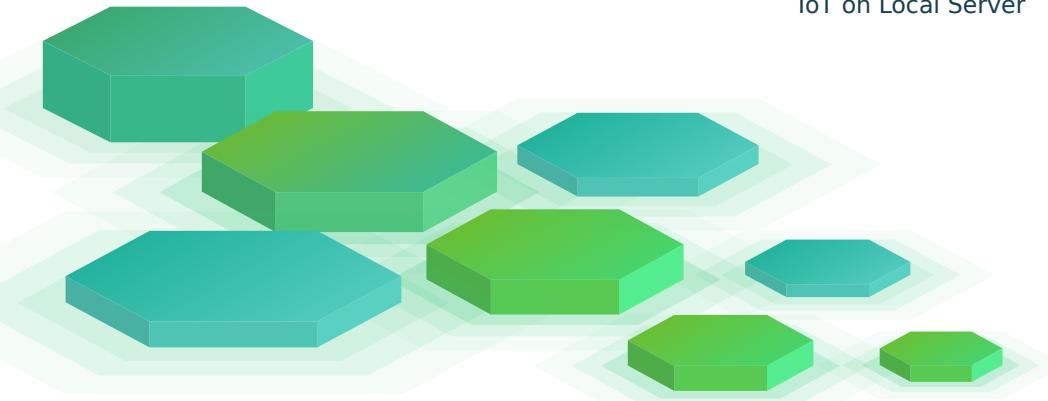




Minimizing International Internet Traffic Usage From Internet of Things Devices Using Local Server on openSUSE with Blynk

06 October 2019

IoT on Local Server



Muhamad Andhika Prasetya
andhika.181031@mhs.its.ac.id





OutLine

01

Introduction

- Who is?
- KLAS
- Why did I choose this Topic?

02

Internet of Things

- What is IoT?
- IoT in Indonesia.

03

IX and OpenIX

- Why did I Choose Local Internet Traffic?
- What is IX and OpenIX?

04

Blynk

- Why did I Choose Blynk?
- What is Blynk?
- Alternative

< >

05

Conclusion

06

References

OutLine(2)

Where Are We Now?

Introduction



- Who is?
- KLAS
- Why did I choose this Topic?

Internet of Things



- What is IoT?
- IoT in Indonesia

IX and OpenIX



- Why did I Choose Local Internet Traffic?
- What is IX and OpenIX?



Blynk

- Why did I Choose Blynk?
- What is Blynk?
- Alternative

Who Is?



Muhamad Andhika Prasetya

Student at Departemen of Electrical
Automation Engineering – Institut Teknologi
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KLAS : Member of Training Division

Contact Me:

Email :
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Whatsapp : 0895631421101

Instagram : @mas.andhikasaja

KLAS

(Surabaya Linux User Group)

Linux User Group Community on Surabaya.

- Facebook Page:
<https://fb.com/kelompoklinuxareksurboyo>
- Instagram:
[@klas_activity](https://www.instagram.com/klas_activity)

Who are the administrators of KLAS?

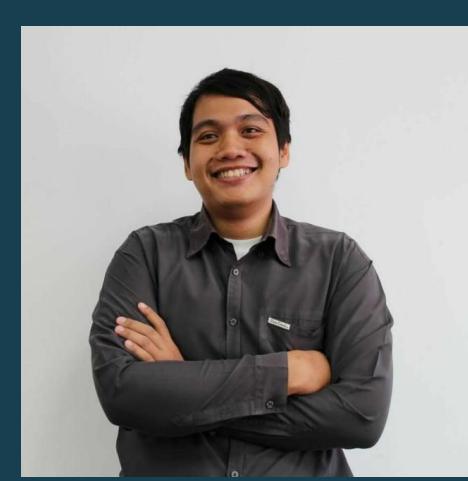
KLAS Monthly Agenda's.



KLAS Organizational Structure

Joko Susilo

Leader



Darian
Rizaludin

Public Relation



Robby Yasin

Secretary and
Treasurer



KLAS

Organizational Structure

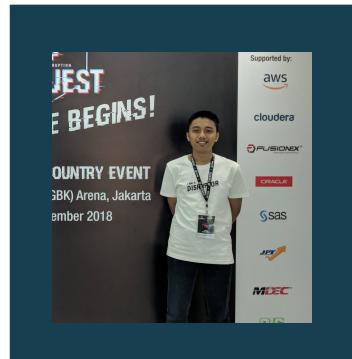
Training Division



Chotibul Umam
Head of Division



David Wahyu P
Member



Muhamad Andhika P
Member

KLAS

Organizational Structure

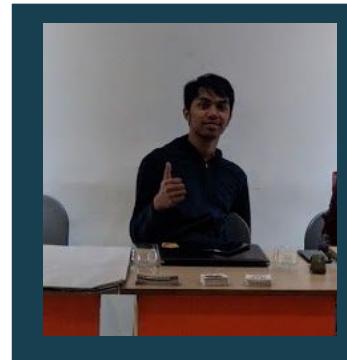
Research and Development Division



Imanuel Ronaldo
Head of Division



Fadhil Yori H
Member

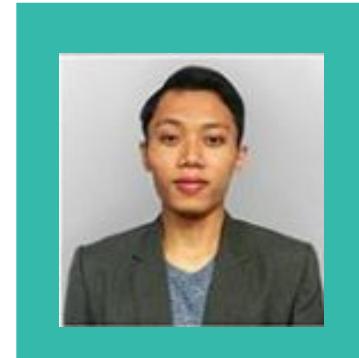


Muhammad Riza N
Member

KLAS

Organizational Structure

Creative Division



Hervy Qurrotul A. Z.
Head of Division



Ulima Ina Sabrina
Member

KLAS Monthly Agenda



Kelompok
Linux
Arek Suroboyo

Cangkruk'an KLAS Poster's



This poster is for an IoT server creation workshop. It features a green background with a central 3D model of a server tower and IoT nodes. The title 'Lokakarya Fundamental Membuat Server Internet of Things' is at the top. It lists speakers: David Wahyu Pratomo, S.T. and M. Andhika Prasetya from KLAS. The date is 'Sabtu, 21 September 2019' at '09.00 WIB - Selesai'. The location is 'Ruang Training APJII JATIM Lantai 11, Intiland Tower, Jl. Panglima Sudirman, No 101-103, Genteng, Kota Surabaya'. The price is 'Rp 150.000,-'. It includes a list of materials: IoT Kit, IoT Cloud Server, and practical experience. It also lists a contact person, Darian Rizaludin, and logos for APJII, Cloudkilat, and KLAS.

This poster is for a DNS server workshop. It features a green background with a central 3D model of a server tower and IoT nodes. The title 'LOKAKARYA DNS // SERVER' is at the top. It says 'Membahas DNS Server Fundamental. Praktik membuat DNS Server.'. The date is 'Sabtu, 30 Maret 2019' at '10.00 WIB - Selesai'. The location is 'LAB. Fasilkom, R. D204, Universitas Narotama'. The price is 'Rp 60.000'. It includes a list of materials: CLI Linux and SSH configuration. It lists a contact person, Umam, and logos for APJII, Cloudkilat, and KLAS.

Cangkruk'an KLAS Documentation



Cangkruk'an KLAS Documentation (2)



Why did I Choose This Topic?

Where Are We Now?

Introduction



- Who is?
- KLAS
- Why did I choose this Topic?

Internet of Things



- What is IoT?
- IoT in Indonesia

IX and OpenIX



- Why did I Choose Local Internet Traffic?
- What is IX and OpenIX?



Blynk

- Why did I Choose Blynk?
- What is Blynk?
- Alternative

What is IoT?

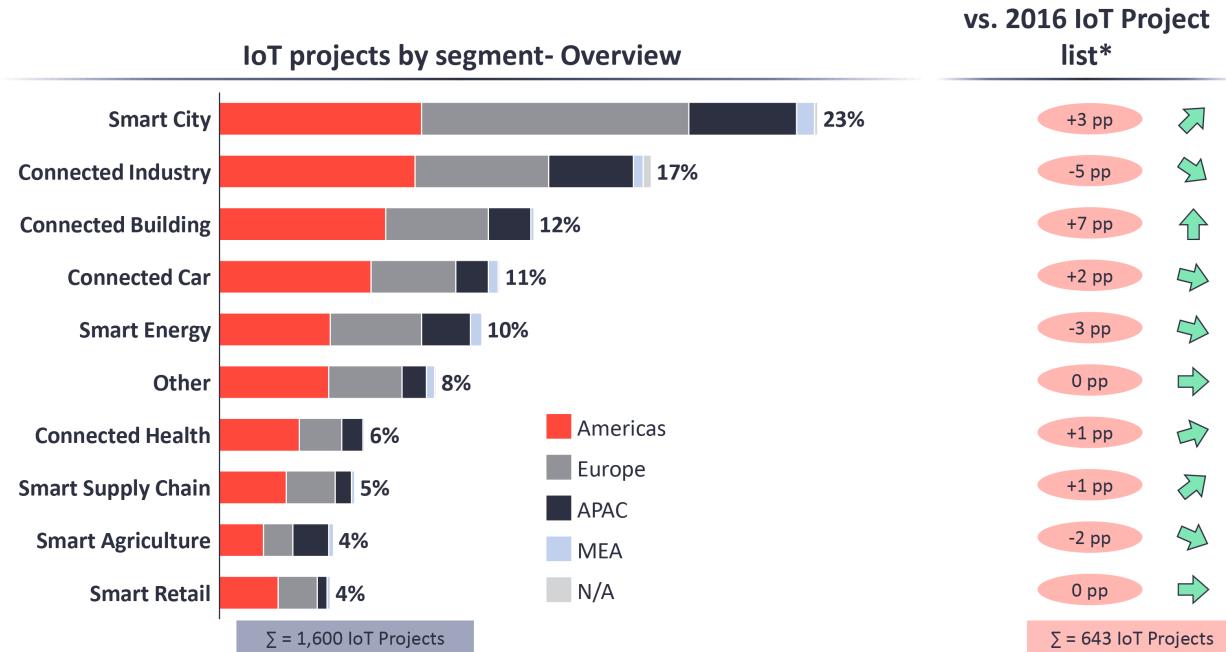


The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. - Oracle

IoT in the World Today

2 Meta-Analysis

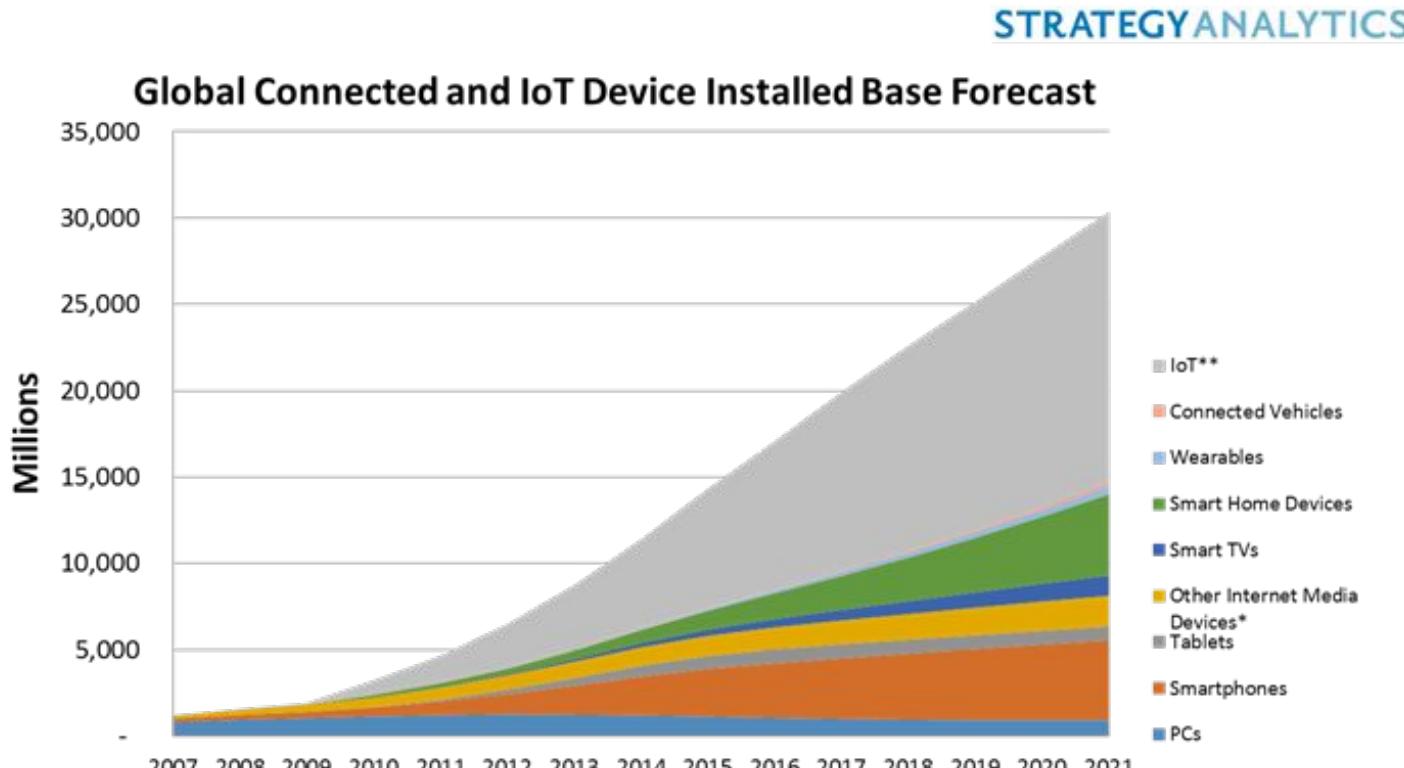
Segment deep-dive 1/11: Projects by overall segment



Copyright © 2018 by www.iot-analytics.com All rights reserved

* = relative shift of all projects vs. the 2016 List of 643 Enterprise IoT projects in percentage points

IoT in the World Today (2)

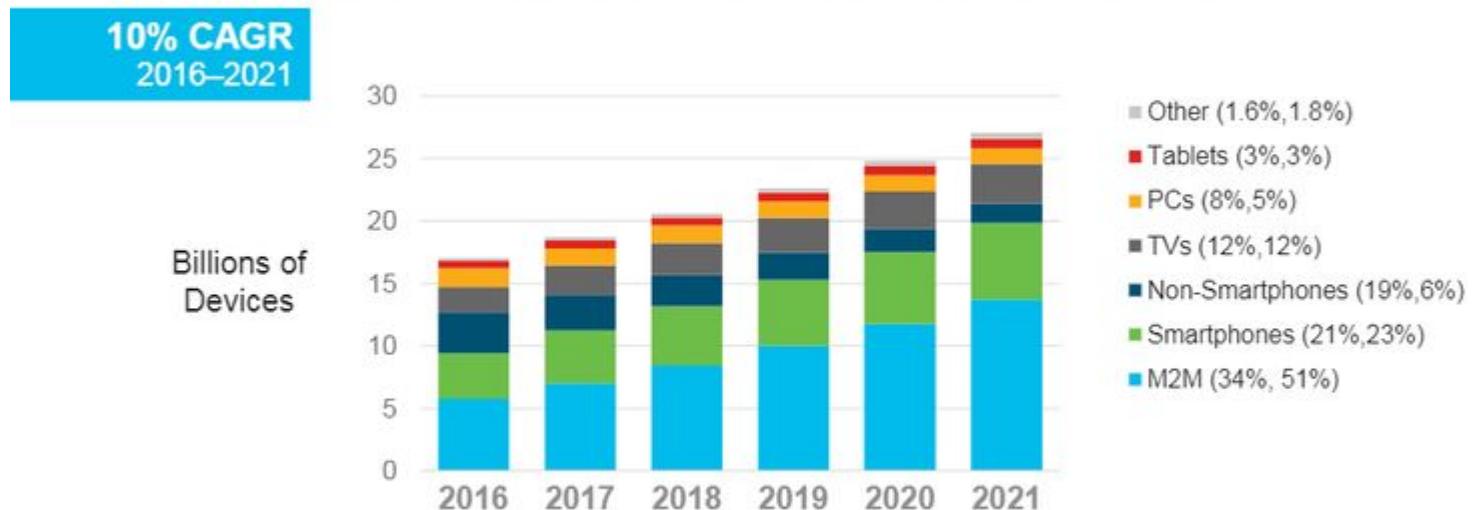


Source – Strategy Analytics research services ,October 2017: IoT Strategies , Connected Home Devices, Tablet and Touchscreen Strategies, Wireless Smartphone Strategies, Wearable Device Ecosystem, Smart Home Strategies

IoT in the World Today (3)

Global Device/Connection Growth by Type

By 2021, M2M connections will be more than half of total connections

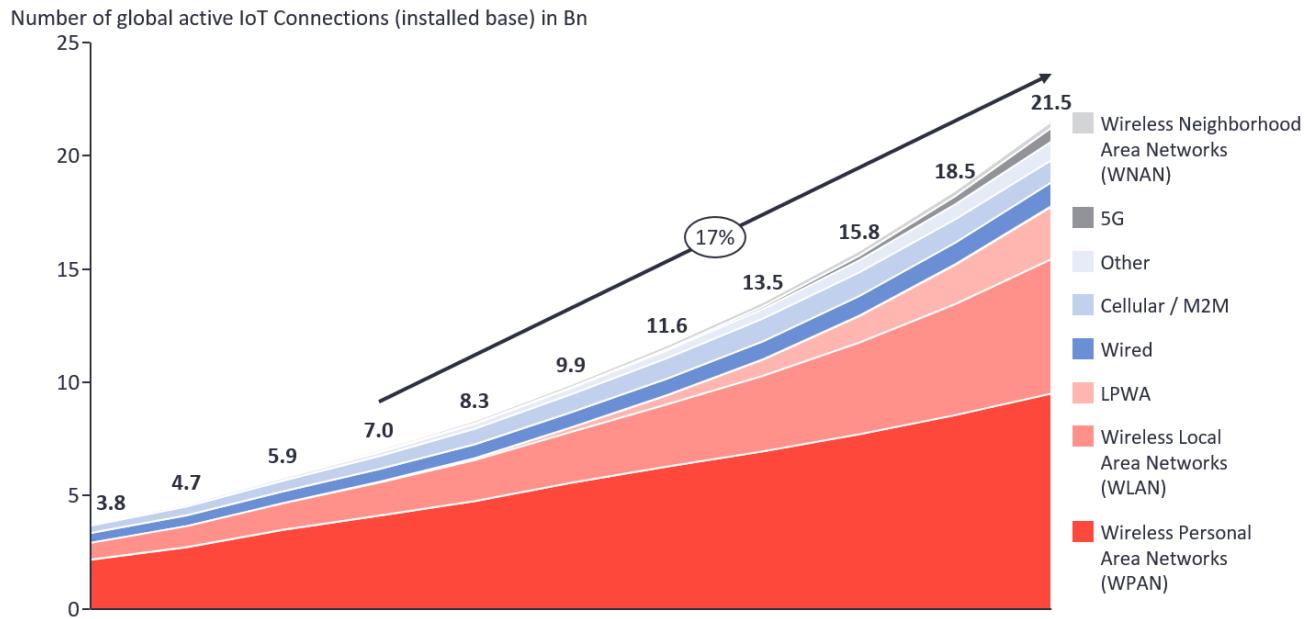


* Figures (n) refer to 2015, 2021 device share

Source: Cisco VNI Global IP Traffic Forecast, 2016–2021

IoT in the World Today (3)

Global Number of Connected IoT Devices



Note: IoT Connections do not include any computers, laptops, fixed phones, cellphones or tablets. Counted are active nodes/devices or gateways that concentrate the end-sensors, not every sensor/actuator. Simple one-directional communications technology not considered (e.g., RFID, NFC). Wired includes Ethernet and Fieldbuses (e.g., connected industrial PLCs or I/O modules); Cellular includes 2G, 3G, 4G; LPWAN includes unlicensed and licensed low-power networks; WPAN Includes Bluetooth, Zigbee, Z-Wave or similar; WLAN Includes Wi-fi and related protocols; WNAN Includes non-short range mesh; Other Includes satellite and unclassified proprietary networks with any range.

Source: IoT Analytics Research 2018

*IoT Analytics Research 2018

IoT in Indonesia Today

- Goverment

Teknologi IoT Solusi Pengembangan Industri Masa Depan



Kementerian Perindustrian mendukung penuh kepada perusahaan operator telekomunikasi di Indonesia yang dapat membangun ekosistem inovasi. Hal ini guna mengembangkan teknologi digital sebagai solusi masa depan dalam upaya peningkatan daya saing industri nasional.

"Untuk mengimplementasikan industri 4.0, salah satu faktor pendukung utamanya adalah ketersediaan infrastruktur digital. Salah satunya adalah *internet of things* (IoT)," kata Menteri Perindustrian Airlangga Hartarto pada peresmian Laboratorium IoT (IoT Lab) bernama X-CAMP yang dibangun oleh PT XL Axiata Tbk di Jakarta, Selasa (13/11).

Menperin menjelaskan, terdapat lima teknologi digital sebagai fundamental dalam penerapan revolusi industri 4.0 di Indonesia, yaitu IoT, *artificial intelligence*, *wearables* (*augmented reality* dan *virtual reality*), *advanced robotics*, dan *3D printing*. "Jadi, hari ini kita fokus pada *Internet of everythings*. Ini yang harus dikuasai oleh generasi muda kita," ujarnya.

IoT in Indonesia Today

- Industrial

Teknologi

SAINS & TEKNOLOGI

TELEKOMUNIKASI

GADGET

ELEKTRONIK

STA

Home > Teknologi > Sains & Teknologi

Smart Factory Schneider Electric di Batam Jadi Pabrik Percontohan

Smart Factory Schneider Electric di Batam Jadi Pabrik Percontohan



Andhika Anggoro Wening - Bisnis.com
30 April 2019 | 00:45 WIB



Smart factory di Batam mengimplementasikan EcoStruxur yang berbasis IoT (Internet of Things) sehingga mudah dioperasikan, dan kompatibel – yang memungkinkan pelacakan secara real-time atas kinerja operasional dan visibilitas yang lebih baik. Dengan aplikasi Manufacturing Control Tower dashboards, manajer pabrik dapat membuat keputusan yang lebih baik dan lebih cepat dapat menyelesaikan masalah yang terjadi dalam kegiatan operasional. Dengan solusi ini, pabrik Batam dapat mengurangi waktu perawatan sebesar 17% dan resiko produk cacat/gagal sebesar 46%.

IoT in Indonesia Today

- Industrial (2)



The image shows the top navigation bar of the Schneider Electric website. It features a green header with the slogan "Life Is On" and the Schneider Electric logo. A search bar is positioned at the top right. Below the header, there are menu options: PRODUCTS, SOLUTIONS, SERVICES, SUPPORT, and ABOUT US, each with a dropdown arrow. The background of the page is white, and there is some faint text visible behind the main content area.

Schneider Electric's Batam Smart Factory recognized by the World Economic Forum as a Fourth Industrial Revolution Lighthouse

- The factory in Batam, Indonesia, is the third Schneider Electric Smart Factory recognized^{*} by the World Economic Forum as advanced manufacturing sites
- Schneider Electric's Smart Factory Program has launched nine showcase factories around the world, demystifying digital transformation for industry
- EcoStruxure™ solutions, the foundation of Schneider Electric's Smart Factories, drive efficiencies in an increasingly competitive environment

The factory in Batam has comprehensively deployed a wide range of Industrial Internet of Things (IIoT) technologies including smart sensors, alarm prediction management, site benchmarking, and augmented reality to create an empowered workforce that has visibility into operations, maintenance, and energy use. With the goal to reduce maintenance costs while increasing overall equipment efficiency, the factory is so far reporting a 44% reduction in machine downtime in one year.

In addition, the factory leverages IT/OT convergence by implementing digital tools like planning and scheduling management that provide an end-to-end view of demand, aligns all partners, and engages all workers, resulting in a 40% improvement in on-time delivery.

IoT in Indonesia Today

- Academics

Kampus ITS, ITS News– Internet of Things (IoT) di era revolusi industri memiliki kemampuan untuk mentransfer data tanpa adanya interaksi antar manusia yang mampu mendistrupsi peran pustakawan. Melihat hal itu, Perpustakaan Institut Teknologi Sepuluh Nopember (ITS) menggelar seminar bertema penerapan teknologi IoT untuk mendukung pelayanan perpustakaan di Hotel Sartika Premiere, Rabu (25/9)

Dr Ir H Abdul Hamid MP, Kepala Dinas Perpustakaan dan Kearsipan Provinsi Jawa Timur, mengatakan, minat baca untuk Jawa Timur berada pada urutan ketiga skala nasional dengan angka 73,9 persen. Target pada 2020 akan naik lebih dari 75,1 persen dengan sasaran utama mahasiswa. Oleh sebab itu, perlu sinergitas antara perguruan tinggi dengan pemerintah Provinsi Jawa Timur. "Pentingnya penggerutan ide yang baik untuk memaksimalkan ketersediaan buku di masyarakat," gumam Hamid.

Hamid memaparkan, fungsi dan fasilitas perpustakaan saat ini perlu ditambahkan. Contohnya fasilitas untuk membaca dan meminjam yang hingga saat ini dibatasi oleh jam layanan. Dengan perkembangan teknologi, perpustakaan dapat menyediakan buku digital. Sehingga masyarakat tidak akan terbatas jam layanan perpustakaan.

Selain itu, dibutuhkan penambahan fungsi dari perpustakaan. Seperti fungsi perpustakaan yang awalnya untuk membaca ditambahkan fungsi sebagai *working space*. "Pasti banyak masyarakat yang akan mengunjungi perpustakaan dengan fungsi tambahan," terangnya.

Where Are We Now?

Introduction



- Who is?
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- Why did I choose this Topic?

Internet of Things



- What is IoT?
- IoT in Indonesia

IX and OpenIX



- Why did I Choose Local Internet Traffic?
- What is IX and OpenIX?

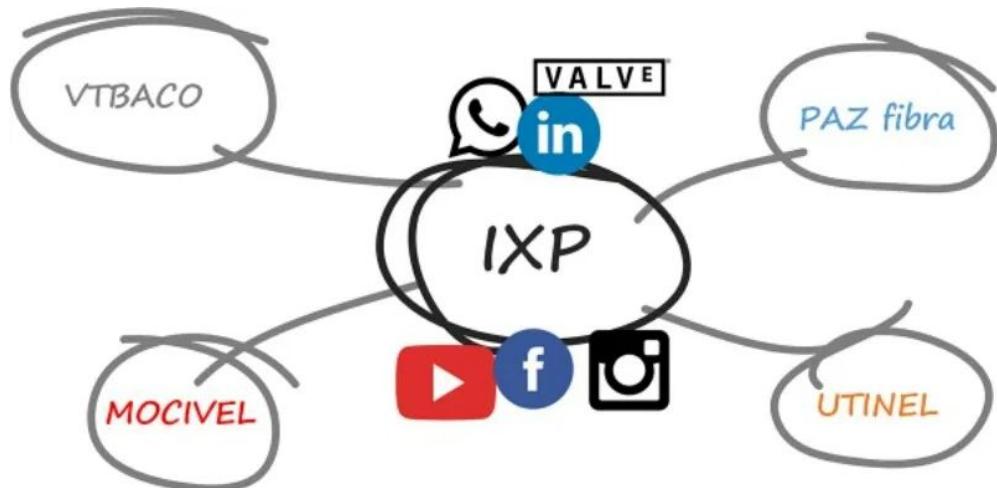


Blynk

- Why did I Choose Blynk?
- What is Blynk?
- Alternative

Why did I Choose Local Internet Traffic?

What is IX (Internet Exchange)?



The primary purpose of an IXP is to allow networks to interconnect directly, via the exchange, rather than through one or more third-party networks.

The primary advantages of direct interconnection are cost, latency, and bandwidth.

What is OpenIX (Open Internet Exchange)?

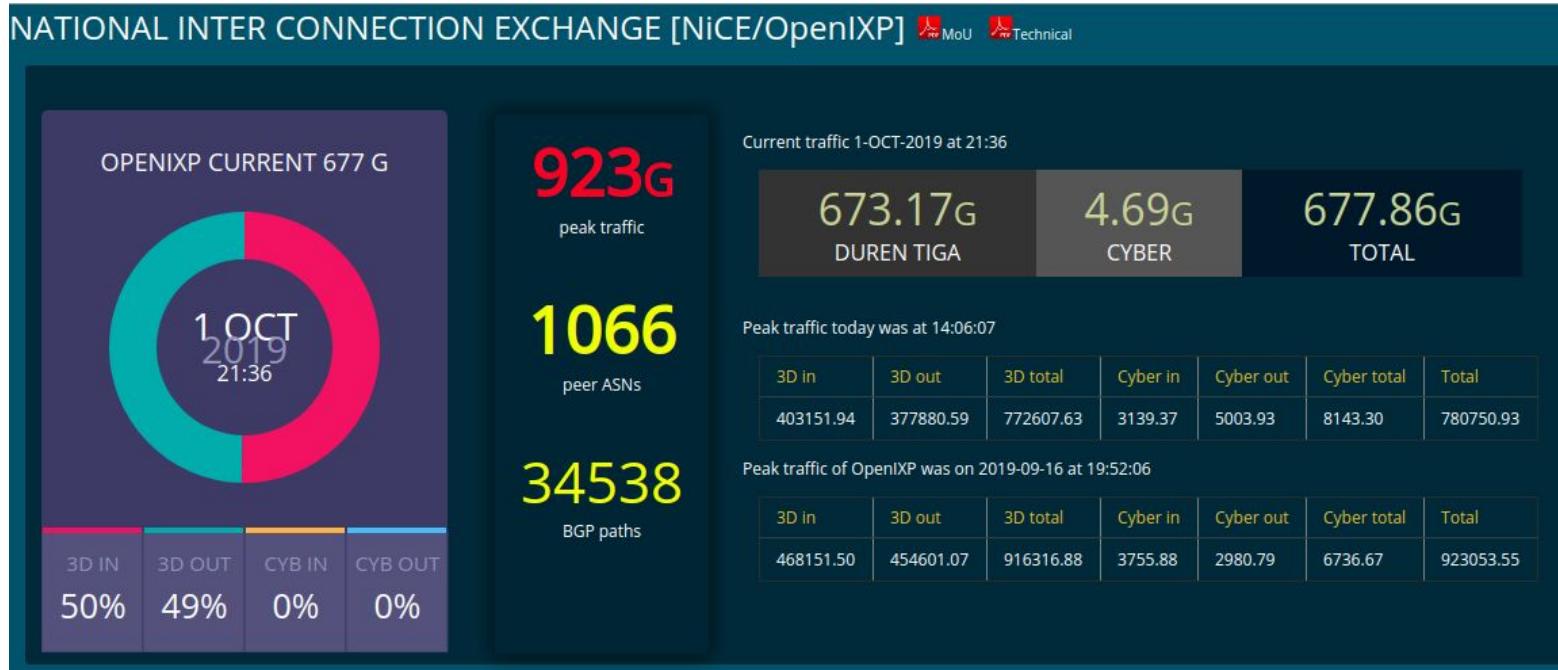


*OpenIXP Gathering 2017

With the advance growth of the Internet, it is now necessary to reduce routing cost and increase availability. The Internet Registries has also acknowledge the need of corporates having multiple upstreams.

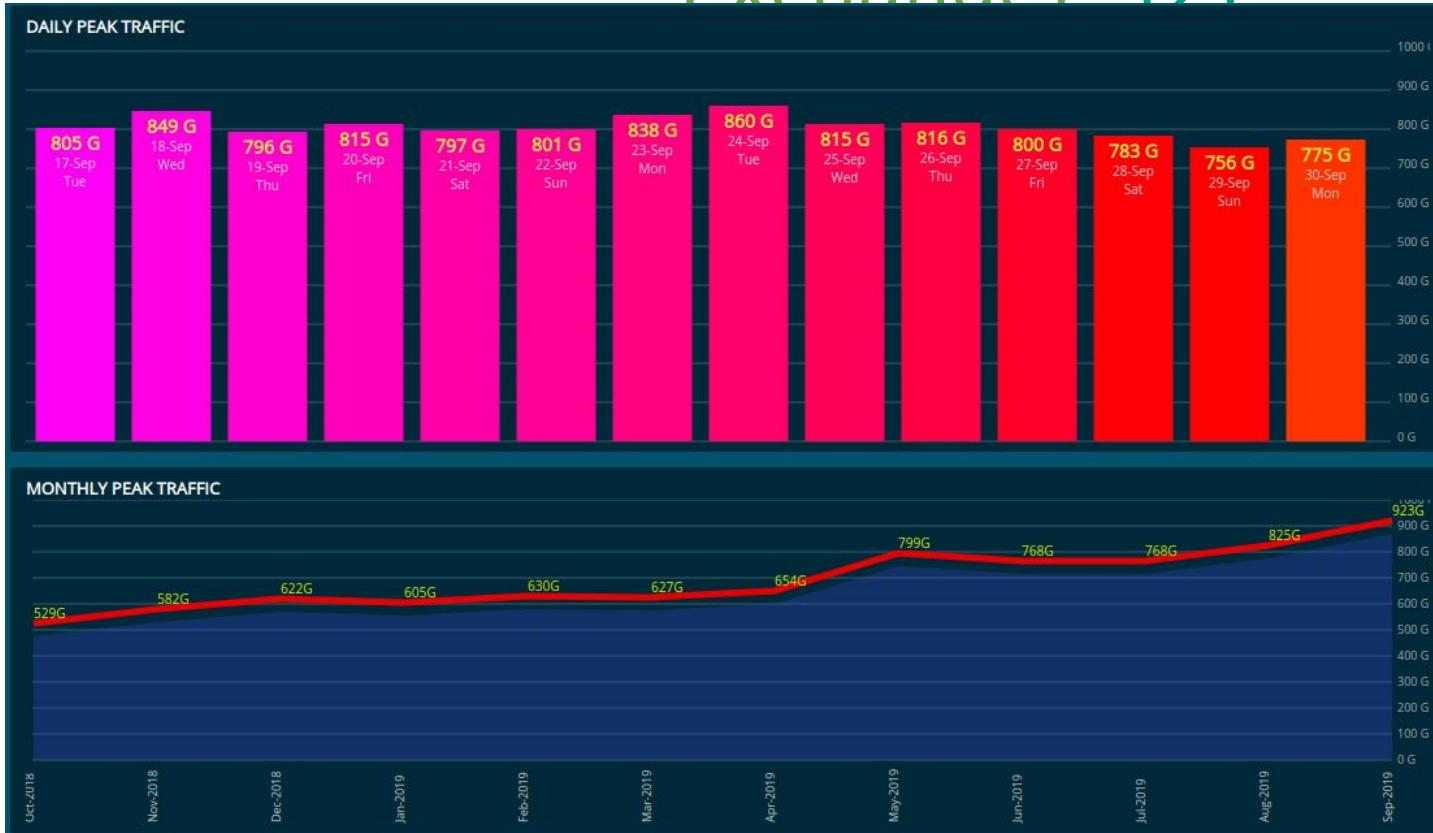
Having a more efficient path and reduce routing cost associated with Internet connectivity is the main objective of an OpenIXP.

What is OpenIX (Open Internet Exchange)?



*OpenIXP Traffic 1 October 2019

What is OpenIX (Open Internet Exchange)? (2)



*OpenIXP Traffic Per day and Per month

What is OpenIX (Open Internet Exchange)? (3)

OpenIXP Sumbang Rp 4,4 T Per Tahun Untuk Indonesia

Oleh: [Tempo.co](#)

Selasa, 24 Januari 2017 11:54 WIB

0 KOMENTAR



OpenIX dimulai dengan hanya 20 Internet Service Provider (ISP) tersambung dengan bandwidth hanya beberapa Mbps. Saat ini, Indonesia menduduki posisi ketiga sebagai negara dengan Internet exchange terbesar di dunia. Selain itu, peak traffic 277 Gbps di OpenIX Indonesia menempatkan negara kita di urutan 3 besar dunia.

Johar Alam Rangkuti, Komisaris PT IDC Indonesia sekaligus kepala admin OpenIXP, dalam paparannya mengatakan, "Jika setiap bulan membayar US\$ 100 untuk Internet, dalam satu tahun kita menyumbangkan Rp 4,4 triliun kepada negara ini."

Where Are We Now?

Introduction



- Who is?
- KLAS
- Why I choose this Topic?

Internet of Things



- What is IoT?
- IoT in Indonesia

IX and OpenIX



- Why did I Choose Local Internet Traffic?
- What is IX and OpenIX?



Blynk

- Why did I Choose Blynk?
- What is Blynk?
- Alternative

Why did I Choose **Blynk**?

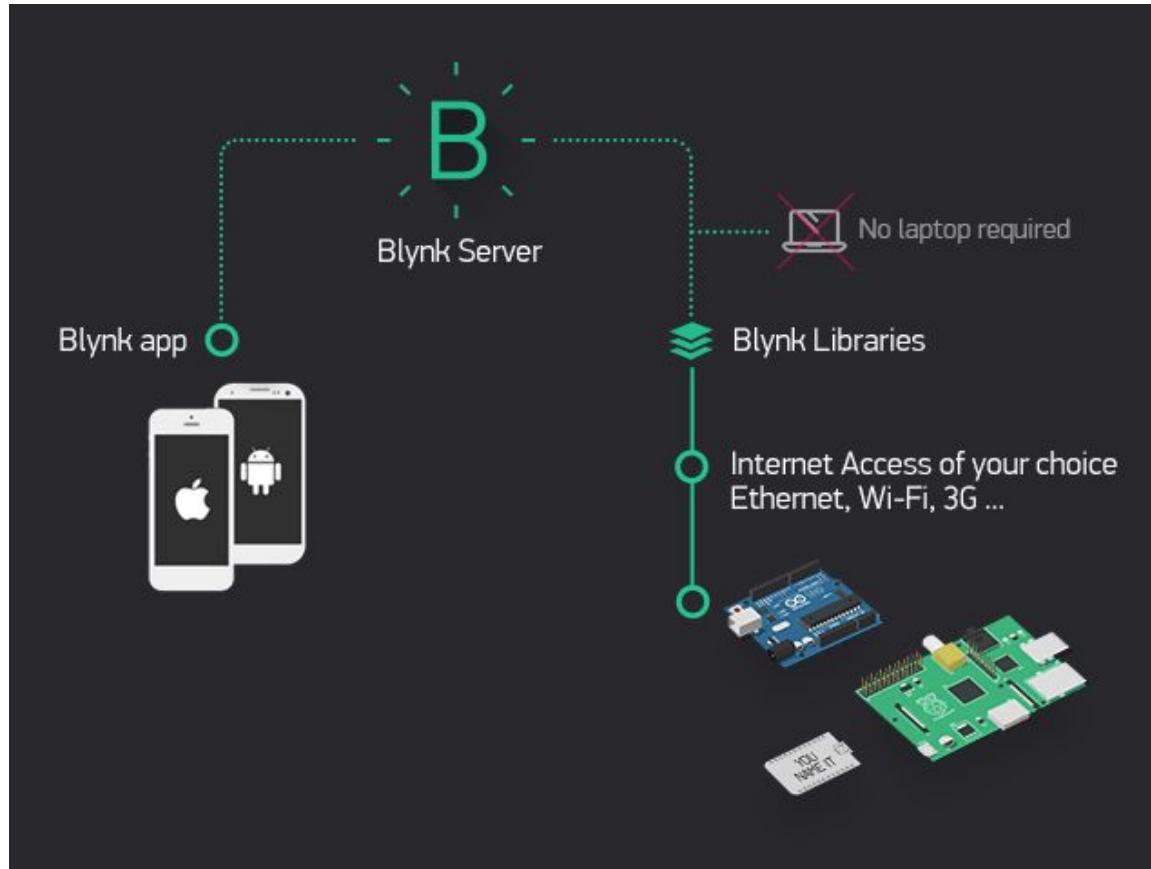
What is Blynk?



Blynk is a hardware-agnostic IoT platform with white-label mobile apps, private clouds, device management, data analytics, and machine learning.

Blynk was born as a Kickstarter project created by Pasha Baiborodin, and backed by 2,321 supporters who pledged \$49,235 to help bring it to life.

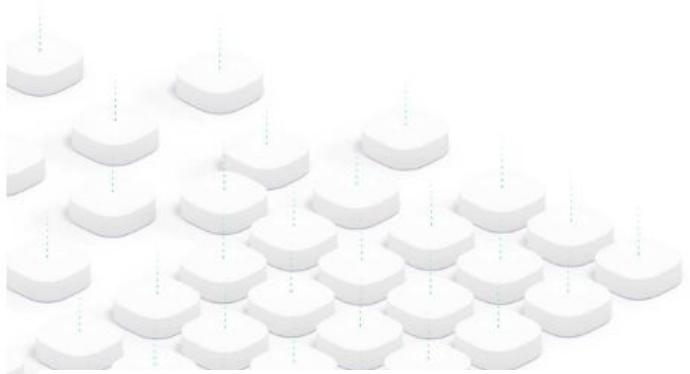
What is Blynk? - Work Flow?



What is Blynk? - How it Work?



BLYNK.EDGENT AND BLYNK.CLOUD



Connection management

Blynk Library can connect any hardware over Ethernet, WiFi, or GSM, 2G, 3G, LTE, etc.

Flexible firmware API

Extensive hardware-cloud-app API. Choose: C++, JS, Python, or HTTP

Connect **any** device to open and secure cloud

Choose from over 400 hardware models that work out-of-the-box with fast and open-source Blynk Cloud. Easily connect them over WiFi, LTE, 2G-4G, or Ethernet

Public and private servers

Blynk Cloud is open-source. It can be run by us, in your cloud environment like Amazon, or privately hosted on your local machine

Fast and reliable

Blynk Server is deployable in minutes. It's real-time, and ready to manage billions of requests from your edge devices

What is Blynk? - How it Work? (2)

MOBILE APPLICATION CONSTRUCTOR

**Drag-n-drop beautiful IoT
apps in minutes**

Choose from a variety of pre-designed widgets to build native iOS and Android apps that control electronics, monitor sensor data, get notifications, and much more.

Control your hardware from anywhere in the world!



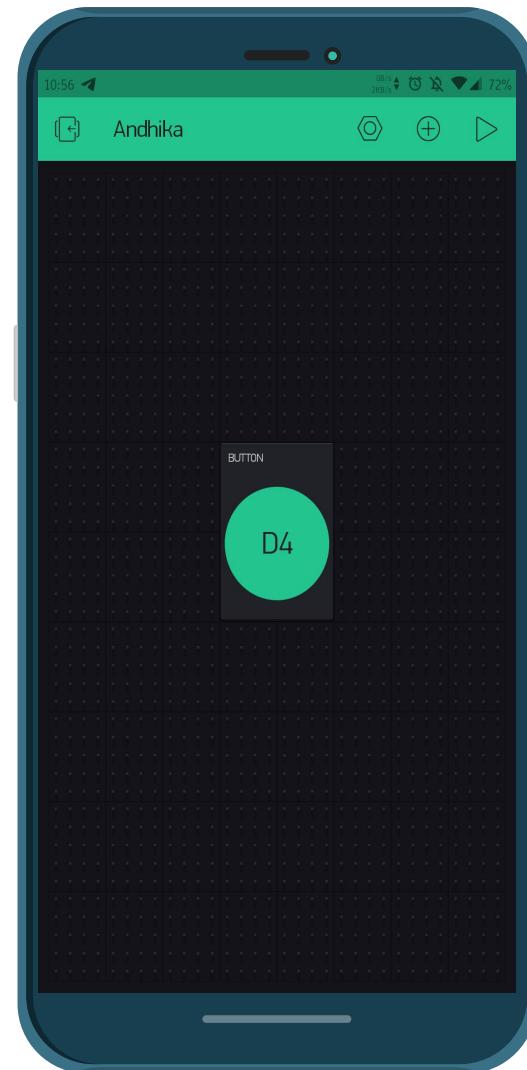
What is Blynk? - How it Work? (3)

**Manage your connected
business in real-time**

Get business insights, set access levels, manage end-users, devices, organizations, payments, ship firmware updates to your fleet over-the-air, and use machine learning algorithms.

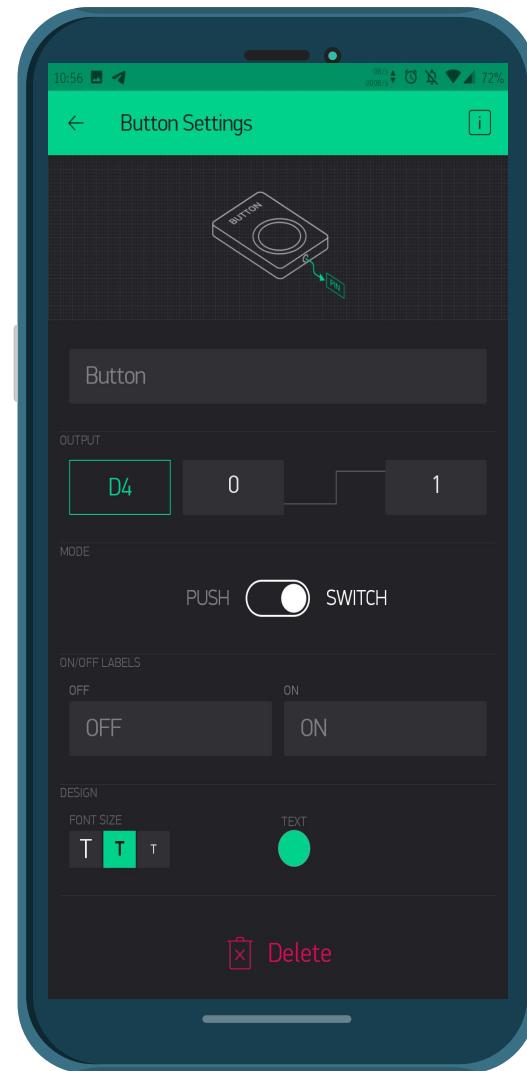


Blynk Mobile Dashboard



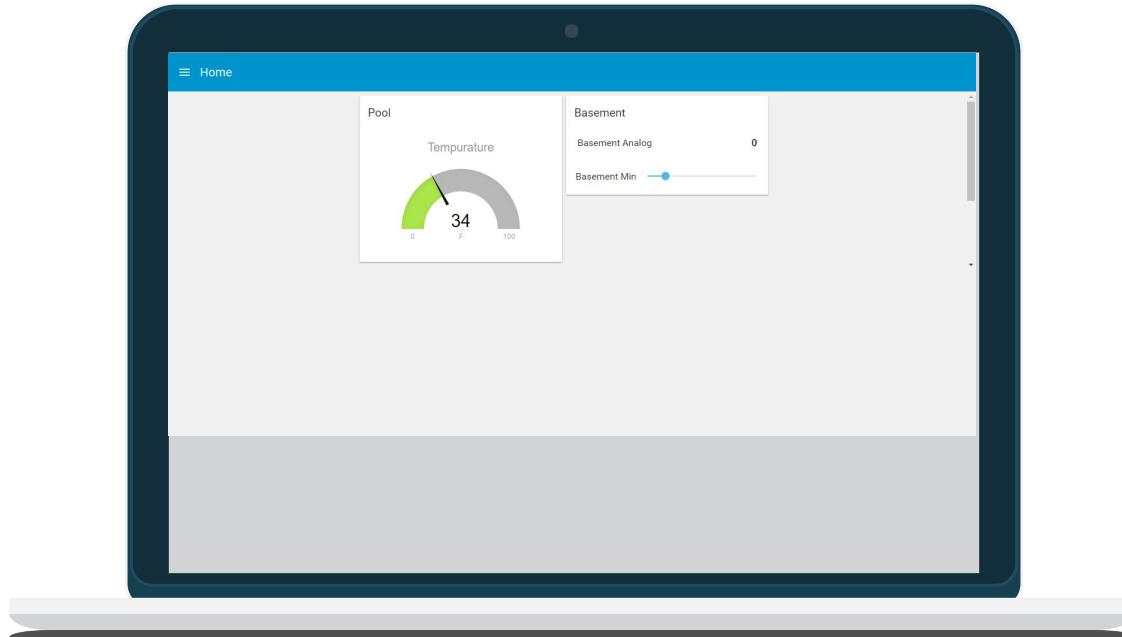
Simple
Drag-n-drop
Customizable
Time-effective
Cost-effective

Blynk Button Setting



Easy right?

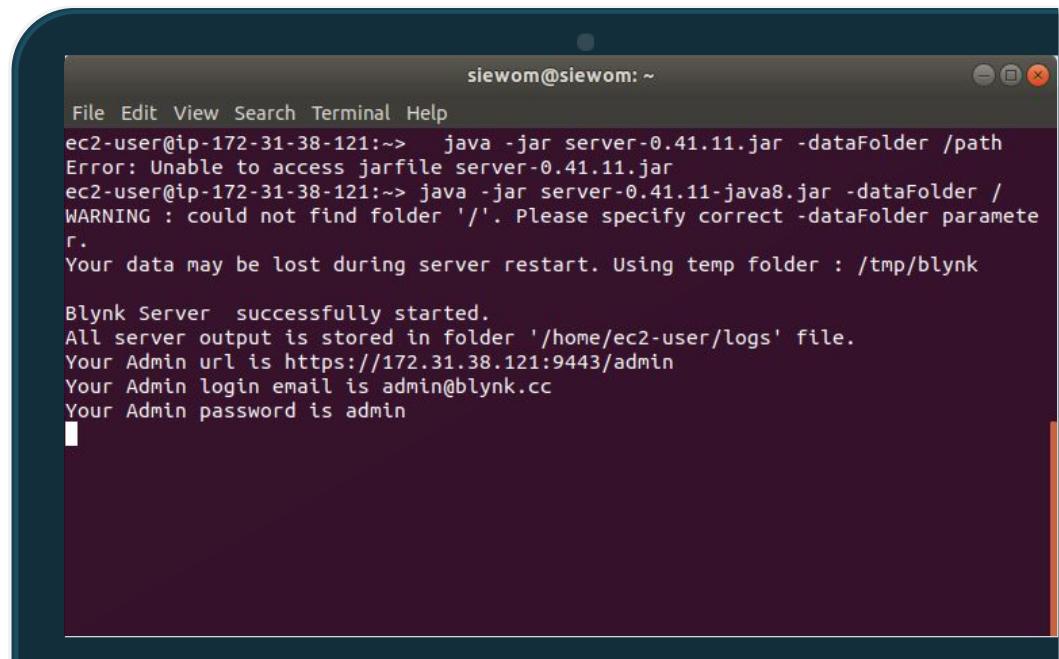
Device Mockup



Beta Project Blynk Web Based Dashboard.

Blynk Server

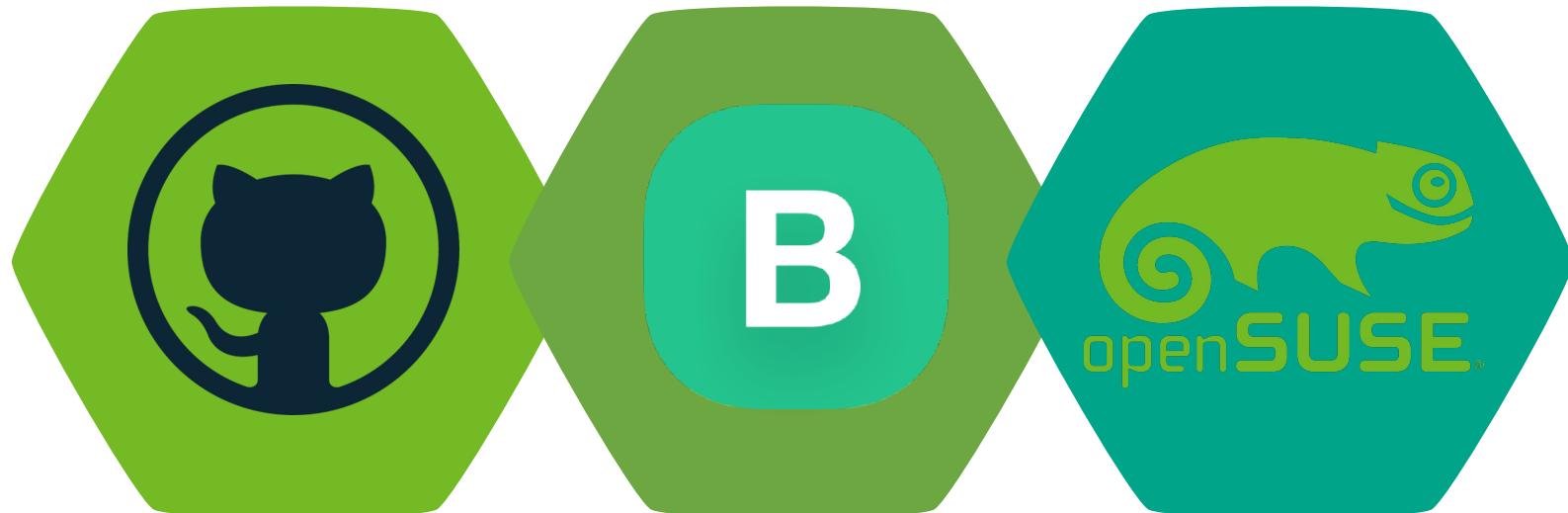
Simple
Easy to Run
Easy to Config



```
siewom@siewom:~  
File Edit View Search Terminal Help  
ec2-user@ip-172-31-38-121:~> java -jar server-0.41.11.jar -dataFolder /path  
Error: Unable to access jarfile server-0.41.11.jar  
ec2-user@ip-172-31-38-121:~> java -jar server-0.41.11-jar8.jar -dataFolder /  
WARNING : could not find folder '/'. Please specify correct -dataFolder parameter.  
Your data may be lost during server restart. Using temp folder : /tmp/blynk  
  
Blynk Server successfully started.  
All server output is stored in folder '/home/ec2-user/logs' file.  
Your Admin url is https://172.31.38.121:9443/admin  
Your Admin login email is admin@blynk.cc  
Your Admin password is admin
```

Blynk Server Documentation

<https://github.com/blynkkk/blynk-server>



Where Are We Now?



Conclusion



References

Conclusion



Where Are We Now?



Conclusion



References

References

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Picture:

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- 11. <https://avatars1.githubusercontent.com/u/11541426?s=400&v=4>

Join the conversation,
contribute & have a lot
of fun!

www.opensuse.org





Finish

Thank You





Short
Break

5 Minutes





Coffe
Break

12:00-12.30

