GAIA-RG @IETF-100, Singapore AGENDA and NOTES

AGENDA
GAIA-RG Meeting @ IETF-100, Singapore
Wednesday, 15 November 2017 (SGT)
1330-1500 (SGT UTC+8) Afternoon Session I
Location Olivia
Etherpad: https://etherpad.tools.ietf.org/p/notes-ietf-100-gaia?useMonospaceFont=true
Jabber: https://datatracker.ietf.org/meeting/100/agenda.html#2017-11-14-083000
Video: https://olivia.conf.meetecho.com/q-meetecho/login.jsp?ietf=gaia
Audio: https://datatracker.ietf.org/meeting/100/agenda.html#2017-11-14-083000

Welcome, Agenda Bash, Minutes taker, Blue sheets, Status
Jane Coffin, co-chair, Introduction, progress
5 mins

All speakers
15 mins to present and 3 for Q&A

-Dissecting the African Internet: An Intra-Continental Study
Amreesh Phokeer, AFRINIC, Mauritius

-Bringing CN Knowledge to Disaster Relief
Luis Martinez, Ibero-American University, Mexico City, Mexico

-Rise of the Crypto Mesh
Arjuna Sathiaseelan, GAIA Co-Chair & University of Cambridge, Cambridge, UK
Remote

-Self-service Connectivity: Feasiblity, Business models and Sustainability
Leandro Navarro, UPC and Ammbr Research Labs

-Althea: Incentivized Mesh
Jehan Tremback, Althea Networks
Remote

Open discussion of informational best practices document and next steps for GAIARG
Chairs/All, 20-25 mins

NOTES

Amreesh Phokeer: dissecting African Internet (AFRINIC)

Ø Bottle necks in African Internet and how to overcome them.

What do we know:
Internet is expensive (1gig = 15$ in S-Africa)
Peering is poor (the study focuses on that, many circuitous routes).

RQ: which countries are better interconnected, which ones are not?

Methods: study uses two-platforms: the RIPE ATLAS (hardware based) and SpeedChecker (software based).

For the targets used: 213 speedtest servers in 42 countries

Data collection:
- Random target choosing
- Launch 10 consecutive pings
- Return the minimum RTT observed

3 months, 4 times a day, pings and traceroutes, 42200 RTT samples, 315 traces captures, 319 ASNs.

IXPs tend to work.
Mean in Africa = 78ms

- Some countries performing well: Mauritius, reunion, and Cote d'Ivoire = under 30ms
- South Africa, Egypt, Benin = Under 40 ms
- Neighboring countries should have
- Four clusters: north, south, west, east which seems the expected outcome but…
- There are unusual cases in west-Africa: Senegal, Liberia, Benin are in the northern cluster instead of the west.
- Madagascar and Seychelles are clustered with the northern countries, faster to send over Morocco than over South-Africa.
- Somalia is on the east coast but clustered with countries on the west coast.
- Two unclustered countries: the latency was so high that they couldn't be clustered (Ethiopia and Angola).
- Ethiopia all upstream providers are overseas, similar for Angola (60%)

Africa upstream providers:
- 37.8% of traceroute path are transit outside of Africa.
- 6.6% through South-Africa.
- Orange accounts for 17% for the French-speaking countries in west-Africa (where the situation is sub-optimal).

Hops between clusters:
- 50% have hops outside to before coming back to Cluster

Takeaways:
Improving peering fabric is crucial. Implications for GAIA: access, affordability. Performance, peering fabric, local content/CDN/caching

Link to paper referenced during discussion: http://www.eecs.qmul.ac.uk/~tysong/files/africa-internet.pdf

Q&A:

1. Why is Ethiopia different?

One monopoly provider, no competition, no IXP. Cross-border connectivity among land-locked is complicated. Sometimes they charge VAT on traffic that crosses borders.

Bringing CN Knowledge to Disaster Relief
Luis Martinez, Ibero-American University, Mexico City, Mexico

This presentation focused on real-time bottom-up work in Mexico after the recent earthquake, and the need for greater collaboration and use of tech to help in pre/post disaster situations. See slides for more information and contact Luis Martinez if you would like to know more.
Q&A: There were several questions during the meeting about the work being done on CNs in Mexico.

Rise of the Crypto Mesh
Arjuna Sathiaseelan, GAIA Co-Chair & University of Cambridge, Cambridge, UK
Remote

Problem: Internet requires actual physical infrastructure.

- Sharing infrastructures with users that don't have access might solve some of the issues.
- Public Access Wi-Fi Service (PAWS) launched.
- Interesting because it opened up new business models, reverse payment models
- It failed because no socio-economic incentives to keep the PAWS node alive and share network for free.
- Technical issues; better Wi-Fi___33 coverage requirements

Other projects in the GAIA space have been successful:

- Guifi.net (social cohesion, and economic compensation system)

- Taknet.

There are thus several models.

Question: How to incentivize network deployments @scale in underserved communities in emerging markets?

AMMBR: the sharing economy for telecom infrastructure. We want to build a modular router platform that can support multiple frequencies in terms of connectivity, and has an economic incentive.

Creates mesh networks that are efficient and sustainable. Multispectral capabilities. If a new tech comes in, you don't need to change the router, only change the platter.

When routers can connect, we can have networks across diverse ranges. Economic incentive is: transit pricing. All AMMBR nodes can have transits when they forward packages.

The biggest issue is to establish trust. On the Internet, nobody knows you are a dog, but with IoT nobody knows you are a fridge. Each Ammbr node manages their digital identity and digital currency. All transactions that happen would happen through the digital identifiers of the users and the devices.

Uses the blockchain. High-speed ASIC processor in each device. Uses proof of velocity/proof of elapsed time. Micro-payments for telecommunications in real time. Everything in a single chip. Hardware and the software would be open source.

It enables an infrastructure for having localized services. It provides a lot of flexibility and does not rely on traditional operators or service providers.

AMMBR: solutions for GAIA

- Start-up costs

- Feasibility

- Flexibility

- Modularity

- Extensibility

- Sustainability

Q & A:

Q: Routers don't declare what they really use? Often addressed by closed components that the user cannot change, but in open source, the user can change these recording settings?

The AMMBR foundation has its own governance model and that would ensure that every node behaves in the appropriate way. We can white list or black list routers that don't. There is a system for monitoring that. That is why BMX protocol is used.

Q: who owns the liability for the content?

This is a good question. We are talking about things like do net neutrality laws apply here? We are providing the infrastructure, but the nodes are owned by the people who run the node. In terms of connectivity and accessing the services, we have to stick to country regulation. But obviously, how you govern local services is going to be a challenge.

Self-service Connectivity: Feasiblity, Business models and Sustainability
Leandro Navarro, UPC and Ammbr Research Labs

This presentation focused on the fact that connectivity is not ubiquitous, and that the current formal model (restaurant model) does not work for everyone, everywhere. Some self-provided models (like community networks) provide connectivity and both models meet at the retail, wholesale & backhaul levels. Presentation/presenter included key points about feasibility (cost, community, funding), and business models & sustainability (these are not haphazard efforts and there are business models). It mentioned the "commons model" and posited on what the definition of "market is" in this environment, and supported a future GAIA BCP that would focus on various models of connectivity, and promoted info sharing.

Althea: Incentivized Mesh
Jehan Tremback & Justin Kilpatrick, Althea Networks
Remote

This presentation describes Althea Networks, a community mesh network in Oregon, that shares cost across its community of users. It is a last-mile network without a centralized ISP, its routers form an "incentivized mesh" network, routing over several hops. It is not a "client to hotspot" network, and uses existing hardware/products available. And, it is not about making a new blockchain, and would use the best available options out there when they are available. Althea Networks nodes charge each other for forwarding, and neighbors discuss quality to self-calibrate the network. User nodes pay up-stream, and exit nodes pay downstream on behalf of the user-node. The network is flexible, compensates members, and appears to have a built-in incentive for commercial ISPs to provide backhaul to the network.
www.altheamesh.com
www.github.com/althea-mesh