Cloud Services in Community Networks and by Citizen Participation

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Community Network Cloud?

Community cloud. The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be owned, managed, and operated by one or more of the organizations in the community, a third party, or some combination of them, and it may exist on or off premises. [NIST Definition]

Community network clouds

- built in community network
- hosted on community-owned computing and communication resources
- providing services of local interest
- deployment and maintenance by citizens for citizens
Some operational community networks
Some operational community networks
Community network characteristics

Collaboration

IP Network

Heterogeneous Hardware
“Don't buy the network, be the network!”
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Community Network
Community Network Cloud Ingredients

Software

- Cloudy
  - Distro with IaaS, SaaS, PaaS
  - > 2 years R&D, developers from CN, experimental deployment

Participation tools

- Cloudy user & dev mailing list (since March 2015)
- Code repository
- Website http://cloudy.community (since January 2015)

Heterogeneous hardware

- Desktop computer
- Raspberry Pi
- BeagleBone Black
- ALIX

Website:
http://cloudy.community
Cloudy distro approach

Clommunity distro
i386 686-pae
09abr 2014 23:00 UTC
master@39aebe9db53c

Boot menu

- Live (686-pae)
- Live (686-pae failsafe)
- Install
- Graphical install
- Advanced options

Press ENTER to boot or TAB to edit a menu entry

http://cloudy.community

Cloudy download http://repo.clommunity-project.eu/images/
Cloudy
Community Network Cloud distribution

Web interface

Search service

Community services

Network services
Cloud in the Guifi Community Network
### Community Network Cloud in Guifi.net
#### User participation (snapshot summer 2015)

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Community networks are socio-economic-technical systems
Research challenges
1. Microclouds
1. Microclouds
2. Federation between uClouds
2. Federation between uClouds
2. Federation between uClouds socio-economic architecture extension
3. Interclouds integrate SMEs
4. Common Pool Resource\(^1\) coexistence business + voluntarism

Need to build an ecosystem

Guifi SME "compensation system"

\(^1\) Draws ideas from work of Elinor Ostrom Nobel Price winner.
Is this limited to Community Networks?

Can it happen in the Internet?

Can you participate?

- IPv6

- Open software platform (e.g. Cloudy), not restricted vendor specific OS
Towards Citizen Community Clouds

Imagine services co-created by citizens

Some ideas:

• IoT home automation
• Smart Grid energy management
• Ambient intelligence + e-Health
• Local “big data” analytics

Citizen creativity!

Important condition: Service framework must be open.
Citizen Community Clouds

- Decentralization of current cloud offers:
  - more SMEs and more geographic distribution (more providers at the edge).

- Fits with current Fog computing approach

- Citizens participate and their creativity is brought in.

- Users/society benefit:
  - more tailored services for local needs
References

guifi.net Telecommunications Network
Open, Free and Neutral: https://guifi.net/en

Cloudy demo: http://84.88.85.42
Cloudy Web: http://cloudy.community
CLOMMUNITY project Web: http://www.clommunity-project.eu/

Questions?

Comments?