The Cloudy Distribution in Community Network
Clouds in Guifi.net

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Abstract—This demo paper presents Cloudy, a Debian-based
distribution to build and deploy clouds in community networks.
The demonstration covers the following aspects: Installation of
Cloudy, the Cloudy GUI for usage and administration by end
users, demonstration of Cloudy nodes and services deployed in
the Guifi community network.

Index Terms—community networks; cloud computing;

I. INTRODUCTION

We present the demonstration of a community network
cloud, a cloud which is deployed in community wireless
the foundational architectural elements of such a community
cloud, we demonstrate in this paper a real deployed system.
The community cloud which we demonstrate materializes
the vision of clouds in community networks, hosted on
community-owned computing and communication resources,
and providing services of local interest.

II. COMMUNITY NETWORK CLOUDS

A. Community networks

Community networks consist of IP-based communication
networks which local communities of citizens build and op-
erate on their own. The dimensions of community networks
range from tenth of nodes to large deployments with sev-
eral thousands of nodes. Guifi.net1 is our target community
network where we deployed the cloud infrastructure. With
more than 25000 nodes, Guifi can be considered the largest
community network worldwide. Figure 1 shows the wireless
links and nodes of Guifi.net in the area around Barcelona.

Community networks often originated as a solution for
providing Internet access to the population of areas which were
unattended by commercial telecom operators. Internet access
is therefore still seen by many users as important (and often
the only) service of community networks. Community clouds

1http://guifi.net/
have developed Cloudy\textsuperscript{5}, a Debian-based distribution to build community network clouds.

Cloudy is open-source and can be downloaded from public repositories\textsuperscript{6}. Cloudy is meant to be useful and usable for the end-user, to be installed on any kind of on-premise devices, which then can become part of community network clouds. Therefore, Cloudy has also been installed on desktop PCs as well as on low-resource single-board-computers such as Raspberry Pi and BeagleBoard Black\textsuperscript{7}.

Figure 2 shows Cloudy’s Web-GUI after login. It can be seen that Cloudy contains three main types of services: 1) search, 2) community services, and 3) Guifi.net services.

1) Search service: The search service is available through two systems: Avahi-Tinc and Serf\textsuperscript{8}. Figure 3 shows some services which are discovered by Serf. Here it is dnsservice, owp, peerstreamer, proxy3, serf, snpservice, synchthing, tahoe-lafs, tincvpn. If clicked on a particular service, e.g. proxy3, the list of cloudy instances which have this service are shown.

2) Community services: If clicked on the community services in Figure 2, a list of applications appear. These applications can be activated by the user. Currently, Cloudy provides Getinconf, OpenVZ, Peerstreamer, Syncthing, Tahoe-LAFS, WebDAV. OpenVZ allows Cloudy users to provide infrastructure resources to the cloud. Peerstreamer allows live streaming of events. Synching allows to synchronize and share folders among machines and users. Tahoe-LAFS provides a secure and fault-tolerant data storage service.

3) Guifi.net community network management services: The services for community network management are shown in Figure 4. The Proxy3 service enables with the Squid-Proxy a gateway to the Internet. SNPServices is a tool used for network monitoring and DNSServices activates a DNS server.

D. Status of community network cloud deployment

More than 20 instances of Cloudy are deployed in the Guifi community networks. Some Cloudy instances run on Jetway bare bone devices, others run on desktop PCs within virtual machines provided with Proxmox. The current number of active Cloudy nodes and running services inside the Guifi community network can be seen through an open Cloudy instance accessible from the Internet\textsuperscript{9}.

III. DEMONSTRATION

The community network cloud demonstration at the IM 2015 conference is a live demo in two parts: 1) A demo of our experimental facility, Community-Lab, which allowed us to conduct experiments, test and evaluate many of the community cloud services [4]. We will connect to the Web interface of Community-Lab, connect to testbed nodes, and show how we used the testbed for experimental community cloud research. 2) A live demo of Cloudy, the community network cloud distribution. For this purpose, we will connect to the Web-GUI of Cloudy instances and explore the cloud deployed in the community network, use the service discovery and see some cloud services, e.g. Tahoe-LAFS, Peerstreamer and Syncting.

REFERENCES


\[5\] http://cloudy.community/

\[6\] http://repo.community-project.eu/images/

\[7\] see boards and guides in http://wiki.community-project/howto

\[8\] https://serfdom.io/

\[9\] with guest:guest login http://http://84.88.85.42/