

Cloud Computing: Communications and Energy Efficiency

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ECO-CLOUD FNR Project

- Objective
 - Energy-efficient management of **communications in cloud computing**
 - Novel solutions in **(a)** network hardware (switches, routers and links), **(b)** data center communication systems, and **(c)** communication protocols.

- FNR funding 400K euro, started in June 2013



- Partners

- University of Luxembourg
- University of Sydney
- Tri-ICT



Special Issues

- IEEE Transactions on Cloud Computing
 - Special issue on “**Cloud Networking**”
 - Submission deadline: November 15, 2014
- Journal of Grid Computing (Impact Factor 1.603)
 - Special issue on “**Green Cloud Computing**”
 - Submission deadline: November 30, 2014
- International Journal of Metaheuristics
 - Special Issue on “**Metaheuristics and the Cloud**”
 - Submission deadline: October 31, 2014
- Elsevier Computer Networks
 - Special Issue on “**Communications and Networking in the Cloud II**”
 - Submission deadline: January 15, 2015



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Cloud Computing Simulator

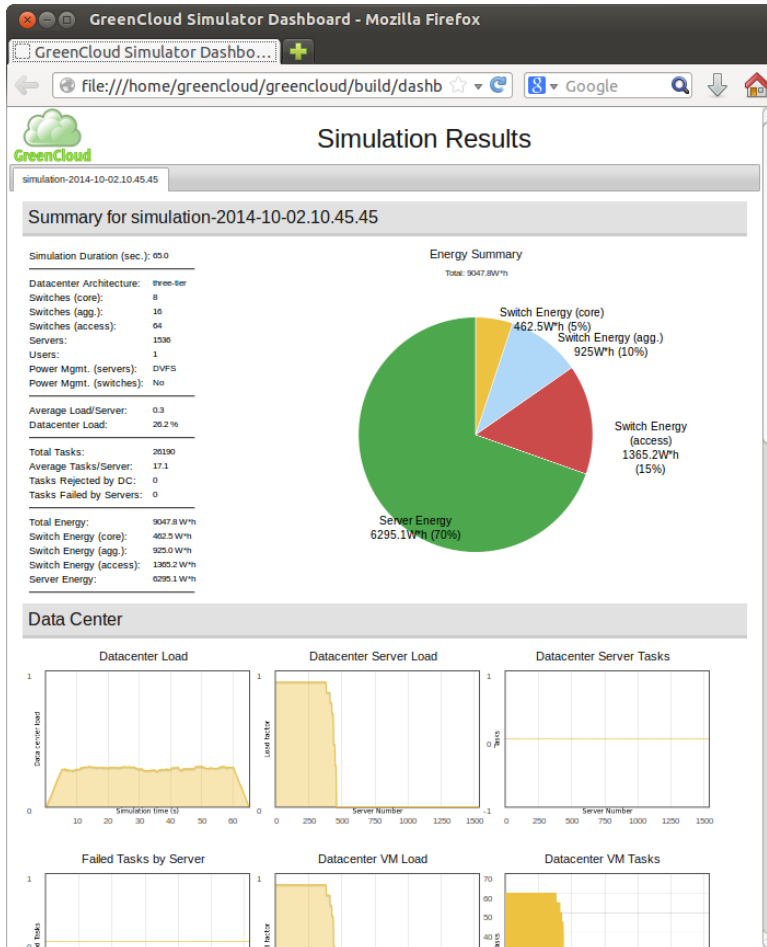


Simulating Energy-Efficient Clouds

available at
<http://greencloud.gforge.uni.lu>

- Measures cloud performance and energy efficiency
- First to simulate cloud **communications with packet-level precision**
- Implements network-aware scheduling
- Implements complete TCP/IP protocol stack

GreenCloud: Screenshots



```

# Type of DC architecture
set sim(dc_architecture) "three-tier debug"

# Set the time of simulation end
set sim(end_time) 60.1

# Start collecting statistics
set sim(start_time) 0.1

set sim(tot_time) [expr $sim(end_time) - $sim(start_time)]

set sim(linkload_stats) "enabled"

# Set the interval time (in seconds) to make graphs and to create files
set sim(interval) 0.1

# Setting up main simulation parameters
source "setup_params.tcl"

# Get new instance of simulator
set ns [new Simulator]
    
```

Power management of computing servers: No
Power management of network switches: No

Progress to 0 %
Progress to 10 %
Progress to 20 %
Progress to 30 %
Progress to 40 %
Progress to 50 %
Progress to 60 %
Progress to 70 %
Progress to 80 %
Progress to 90 %

Thank you!

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