



Using the jFed tool to experiment from zero to hero

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Tutorial



Starting simple

Going to advanced topics but still an easy user interface

Agenda:

- Account/projects
- Simple two-node experiment
- Overview of advanced features

Fed4FIRE Testbed Portal

[→ Login](#)[Sign Up](#)

What is this Portal?

This Fed4FIRE Testbed Portal provides accounts for accessing *testbed resources*. The testbeds can be used to execute *experiments*. The accounts offer access to a large

Account



Overview

Projects

> bvermeu2

> testwimthijs

> rsporto

Experiments



bvermeu2

Active

Full name: Brecht2 Vermeulen
Company: Ghent University
Location: Gent, Belgium
Email: brecht.vermeulen@atlantis.ugent.be

Edit Profile

Change Password

Projects

bvermeu2

Role: Lead
Members: 1

testwimthijs

Role: Lead
Members: 4

rsporto

Role: Lead
Members: 10 (+1 pending)

Request to join a project Request a new project

Experiments

gen5

Created: 2020-02-18 08:38 CET
Expiring: 2020-02-19 10:37 CET

Slivers: 7

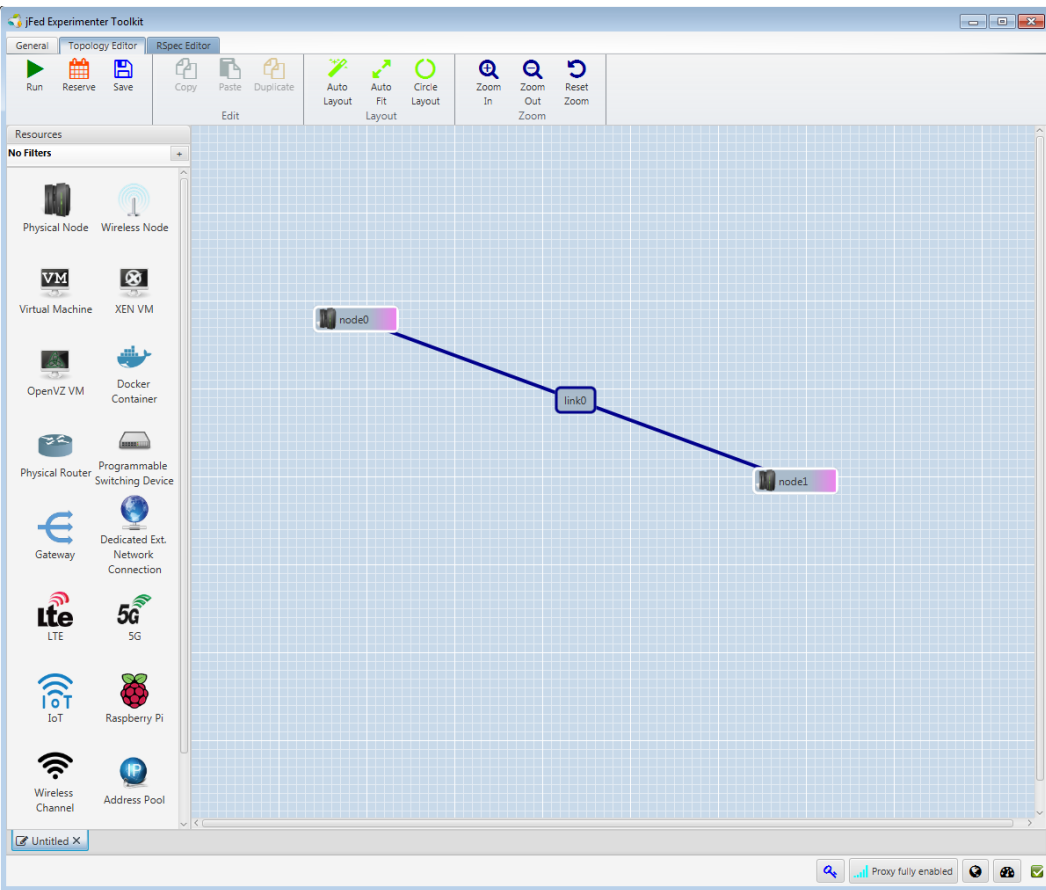
Open in jFed

twonodesb

Expired

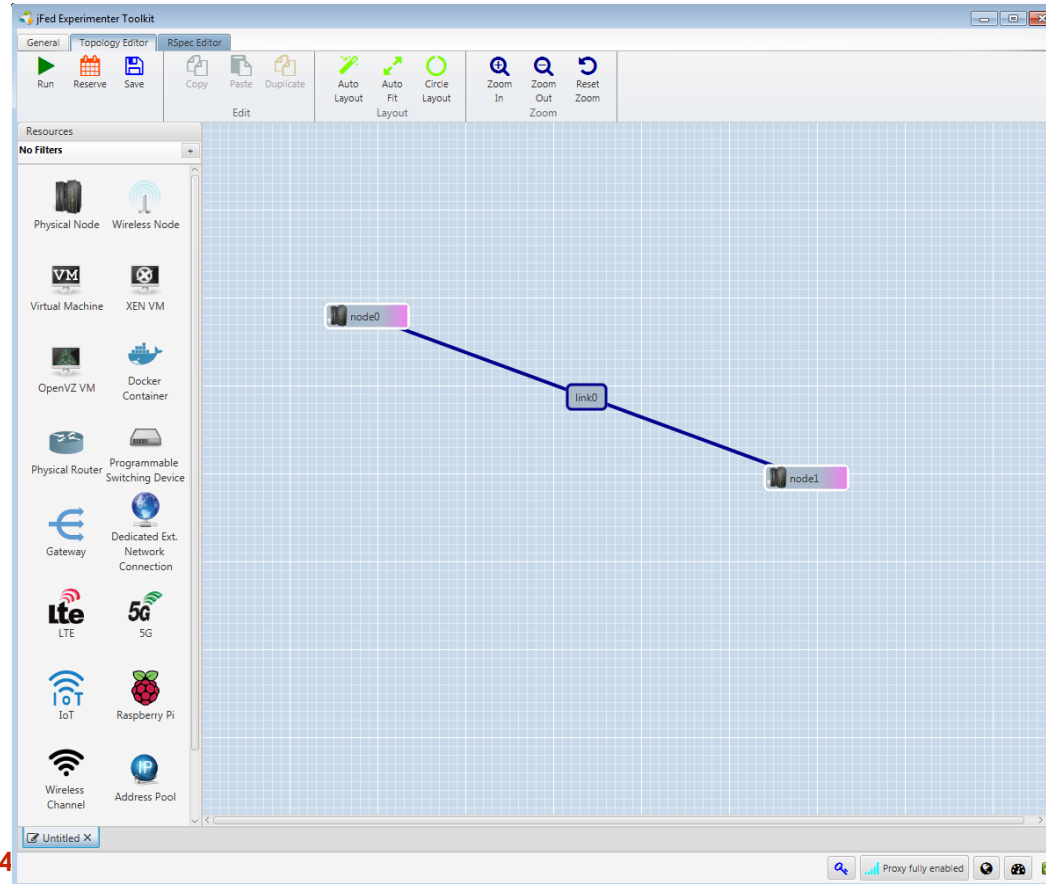
Created: 2020-02-18 03:35 CET
Expiring: 2020-02-18 05:35 CET

Slivers: 0

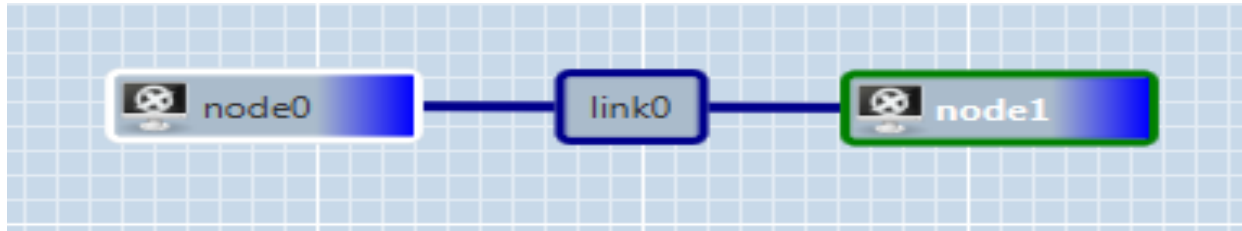


Basic experiment

<https://jfed.ilabt.imec.be> (download & doc)



Setup



Draw your topology in jFed



Advanced link configuration (double click the link)

Properties of link0

General Impairment Link Type

Simple link impairment

Capacity: 0 Kbits/s

Latency: 100 ms

Packet Loss: 0 [0..1]

Advanced link impairment

From	To	Capacity (Kbit...	Latency (ms)	Packet Loss ([0...
node0:if0	node1:if0	0	100	0
node1:if0	node0:if0	0	100	0

Save Cancel

Login and ping



Double click the green (when it's ready) node in jFed

```
brechtv@node0: ~
Using username "brechtv".
Authenticating with public key "imported-openssh-key" from agent
Welcome to Ubuntu 12.04 LTS (GNU/Linux 3.2.0-56-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

brechtv@node0:~$ ping node1
PING node1-link0 (192.168.0.2) 56(84) bytes of data.
64 bytes from node1-link0 (192.168.0.2): icmp_req=1 ttl=64 time=402 ms
64 bytes from node1-link0 (192.168.0.2): icmp_req=2 ttl=64 time=200 ms
64 bytes from node1-link0 (192.168.0.2): icmp_req=3 ttl=64 time=200 ms
64 bytes from node1-link0 (192.168.0.2): icmp_req=4 ttl=64 time=201 ms
^C
--- node1-link0 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 200.886/251.214/402.009/87.063 ms
brechtv@node0:~$
```

Install iperf on both nodes



The screenshot shows a "Multi Command" dialog box with the following fields and options:

- Nickname:** cmd-F3eChE
- Script will be stored in:** cmd-F3eChE.sh and logged to cmd-F3eChE.log
- Command:**

```
#!/bin/bash -e
sudo apt-get install iperf
```
- Nodes:** A table with two rows, both checked.

	client_id
<input checked="" type="checkbox"/>	node0
<input checked="" type="checkbox"/>	node1

Buttons: Run SSH Command, Cancel

Hint: Check the ESPEC tab for results.

Learning more



- Go back to the design mode (blue tab), and go to the rspec editor: you can also manually change things, save the RSpec, etc
- If you right click a node and configure it, you can also select images
- For XEN VMs you can configure RAM, extra disk, routable control IP. Also Exogeni can be selected under virtual machine and configured. (we will not start such an experiment)
- Go to the running experiment (bottom green tab), in RSpec view and verify details on nodes, login, RSpec manifest
- Information on options for a running node:
 - Node reload = reload the image for that node (=reformat the node)
 - Node info = detailed ssh info + interface info
 - Node reboot = simple reboot of the node
 - create image = will take an image of your node that you can use in new experiments (we won't do this now)

Info about the experiment on the node



- Geni-get commands
 - e.g. `geni-get client_id`
 - Geni-get commands
- `wget https://doc.ilabt.imec.be/downloads/geni-get-info.py`
`chmod u+x geni-get-info.py`
`./geni-get-info.py`

Manage experiments



Renew in jFed can extend this (for all slivers), or you can renew in the portal (near future)

In jFed, you can Edit ssh keys on the nodes if you want to add other users ('edit ssh keys button')

If you close jFed, or have created an experiment with another tool, you can 'recover' this experiment

In jFed you can share the experiment with other people in your project, to make others member of the slice and be able to recover it in jFed e.g.

Let's break and reboot



Verify that eth0 is your control interface (where you are logged in)

Turn off: 'ifconfig eth0 down', your ssh connection will be lost

Fix it:

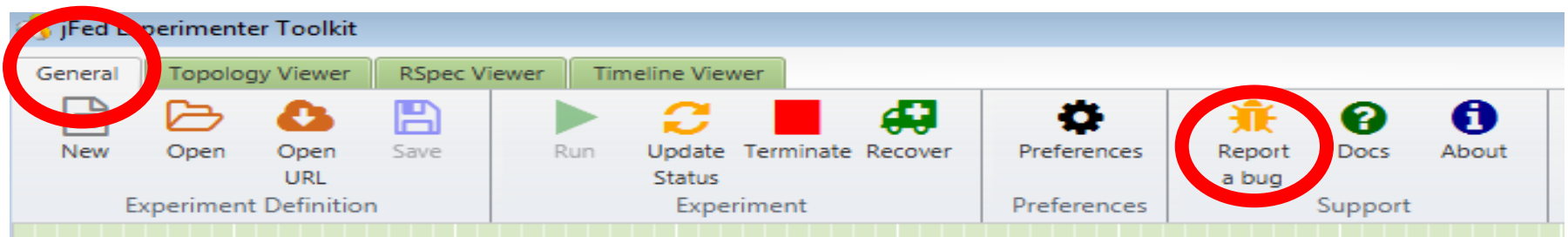
- Now, in jFed right click the node and click reboot
- After that you can access the node again

Terminate your experiment



That was your first experiment

If anything goes wrong, push bugreport button



Upscale further ?



Use the duplicate button in jFed

Use bash scripting to create RSpecs

Preferences overview



Ssh authentication: add your own key

Proxy: in case of firewall problems or to access IPv6 nodes

Ssh agent forwarding to login from node to node automatically:
login on a node, and then ssh to another IP address in your
topology



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QUESTIONS ?

WWW.FED4FIRE.EU