

FED4FIRE

GTS Support in jFed



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Contents of this presentation

- What is jFed?
- Designing an experiment
- Using GTS resources

What is jFed?

- jFed is a Java-based framework for testbed federation
- Developed to support all resources in the Fed4FIRE-project



Fed4FIRE = Federation for Future Internet
Research and Experimentation

Fed4FIRE assets - facilities

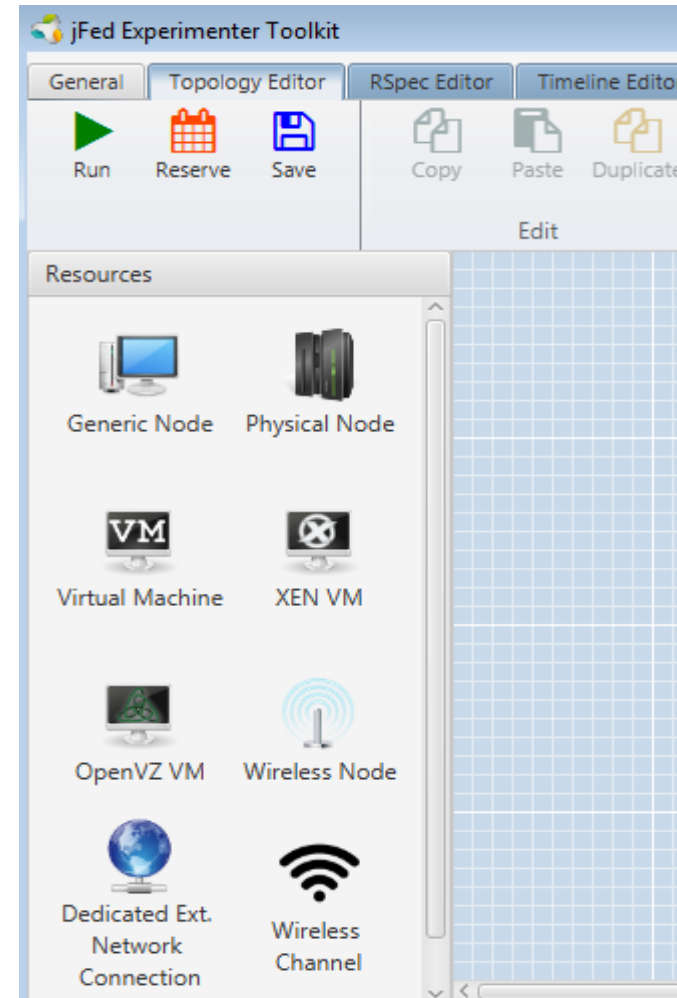


- Wired
- Wireless
- Open Flow
- Cloud
- Other

Fed4FIRE facilities

- Diverse technologies
- Diverse implementation stacks

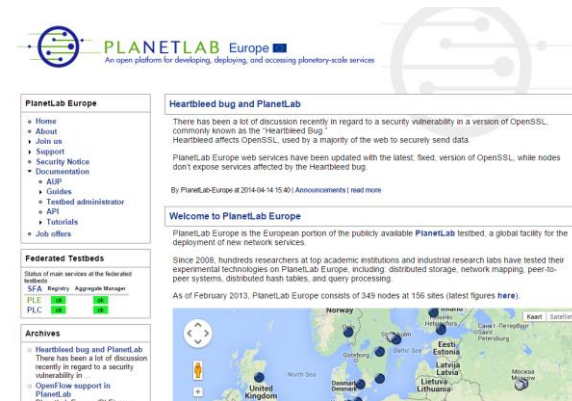
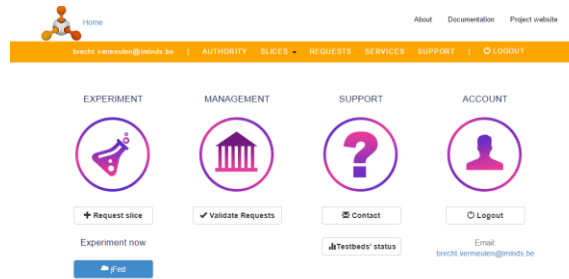
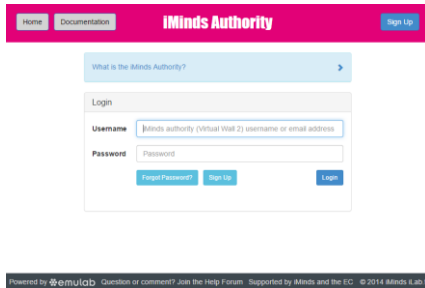
→ Abstract this for the user



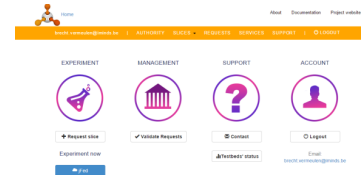
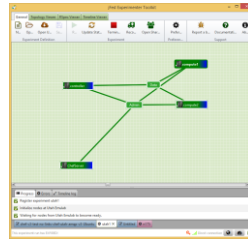
Goals of federation

- Make it easy for experimenters to use multiple testbeds
 - Single account
 - Single (or small number) of tools, choice of tools
- Multiple testbeds
 - To scale up
 - To use/combine special resources (e.g. wireless robots)
 - Redundancy (e.g. testbed in maintenance)
 - To re-use experiments (class exercises, scientifically, ...)
 - To compare environments (e.g. wireless, openflow hardware, ...)

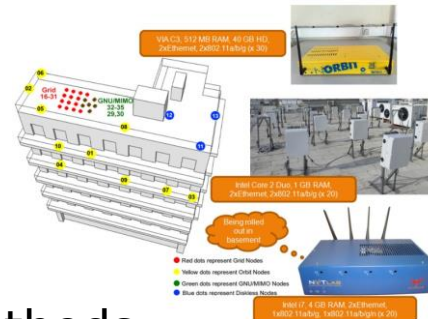
Design principles



Multiple identity provider



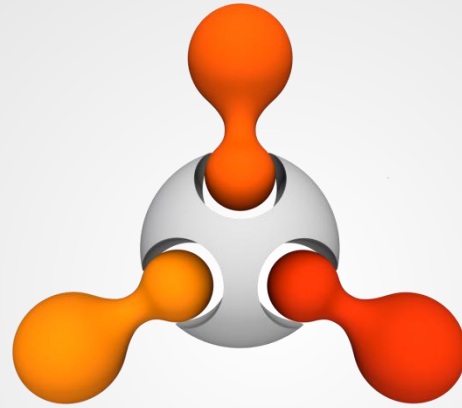
Multiple tools



Multiple testbeds

All of them can appear and disappear !

Testbeds
trust IdPs
in federation



FED4FIRE

**International federation and
connectivity**



International federation and connectivity

Compatible initiatives in:

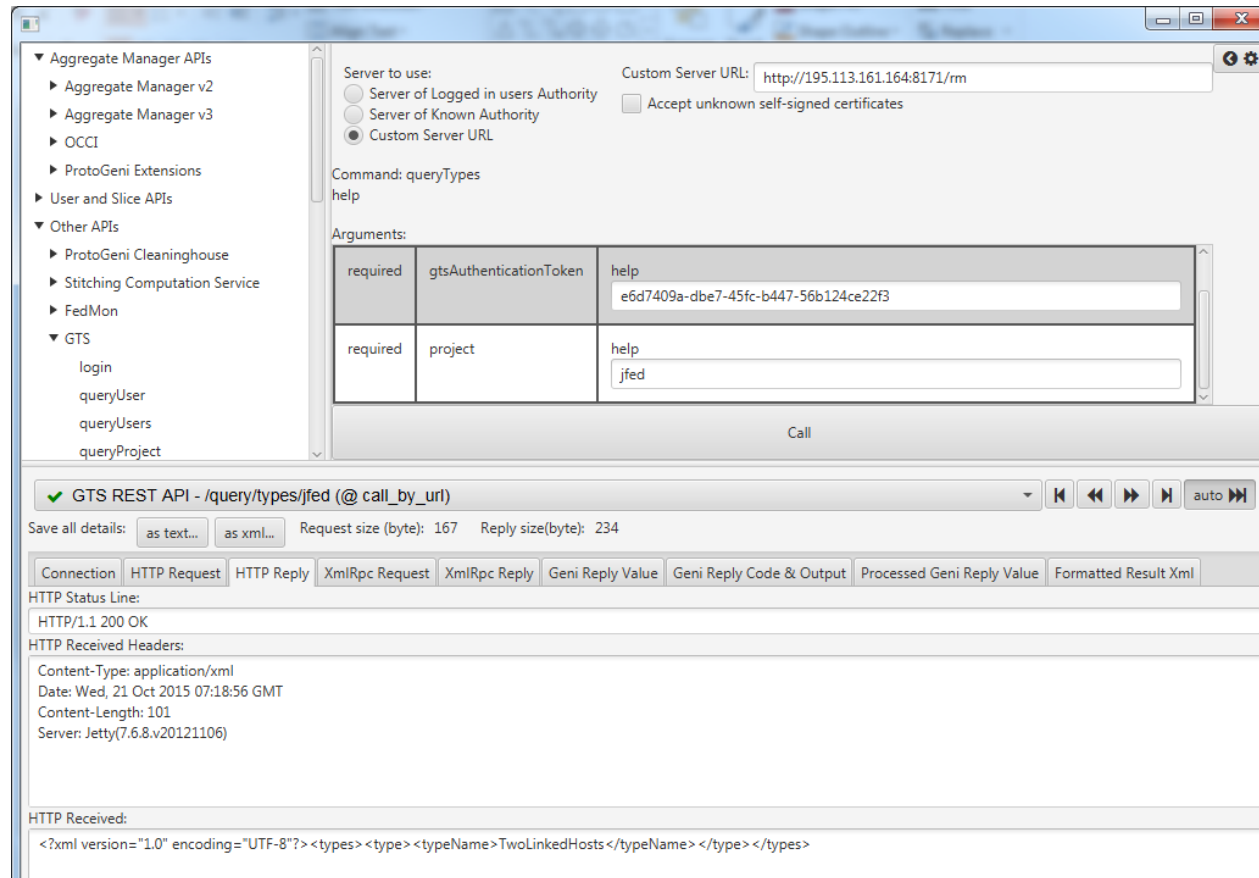
- South-Korea
- Canada
- Japan
- Brazil
- China

What is jFed?

- Three components:
 - jFed Probe
 - jFed Automated Tester
 - jFed Experimenter

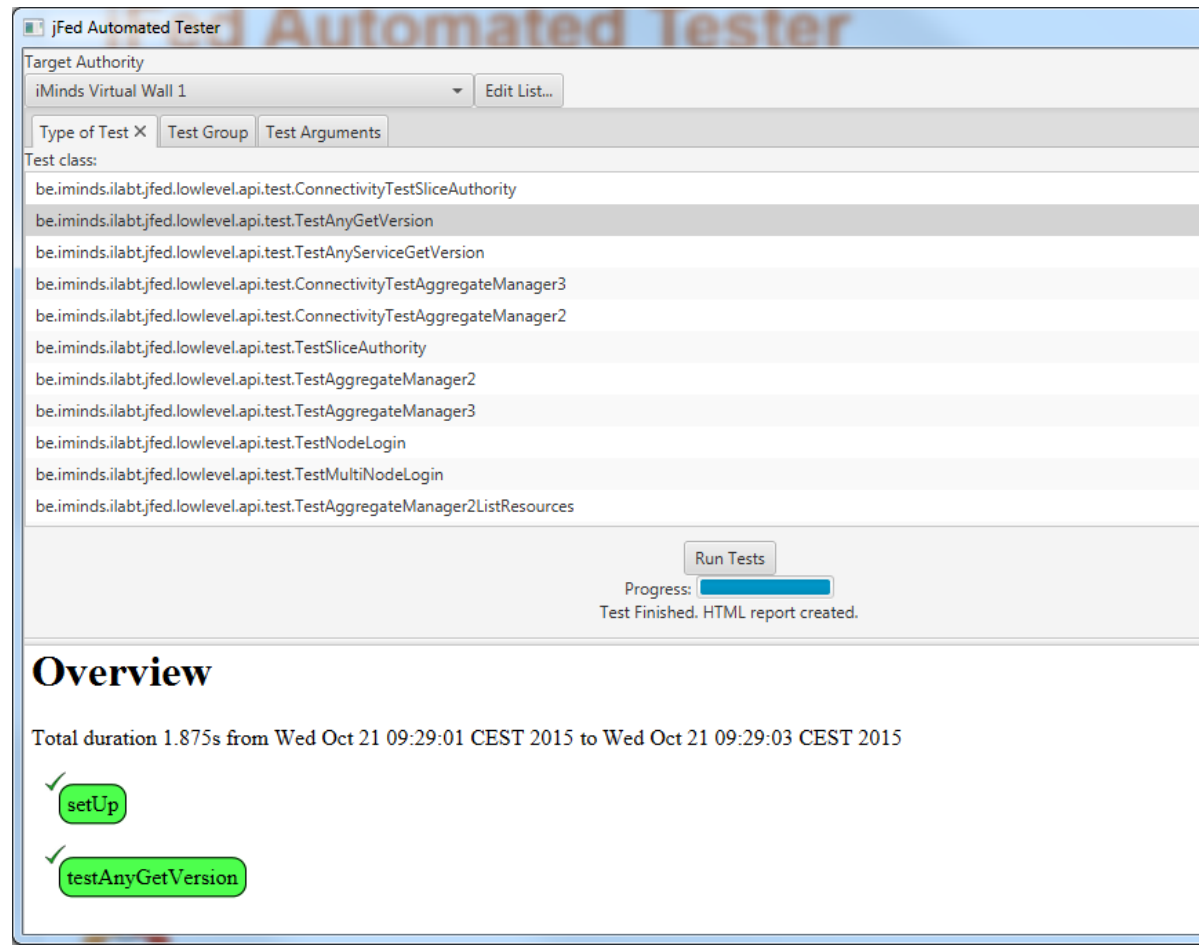
jFed Probe

- Assists developers in testing API implementations
- Supports GTS API and more than 10 other API's!



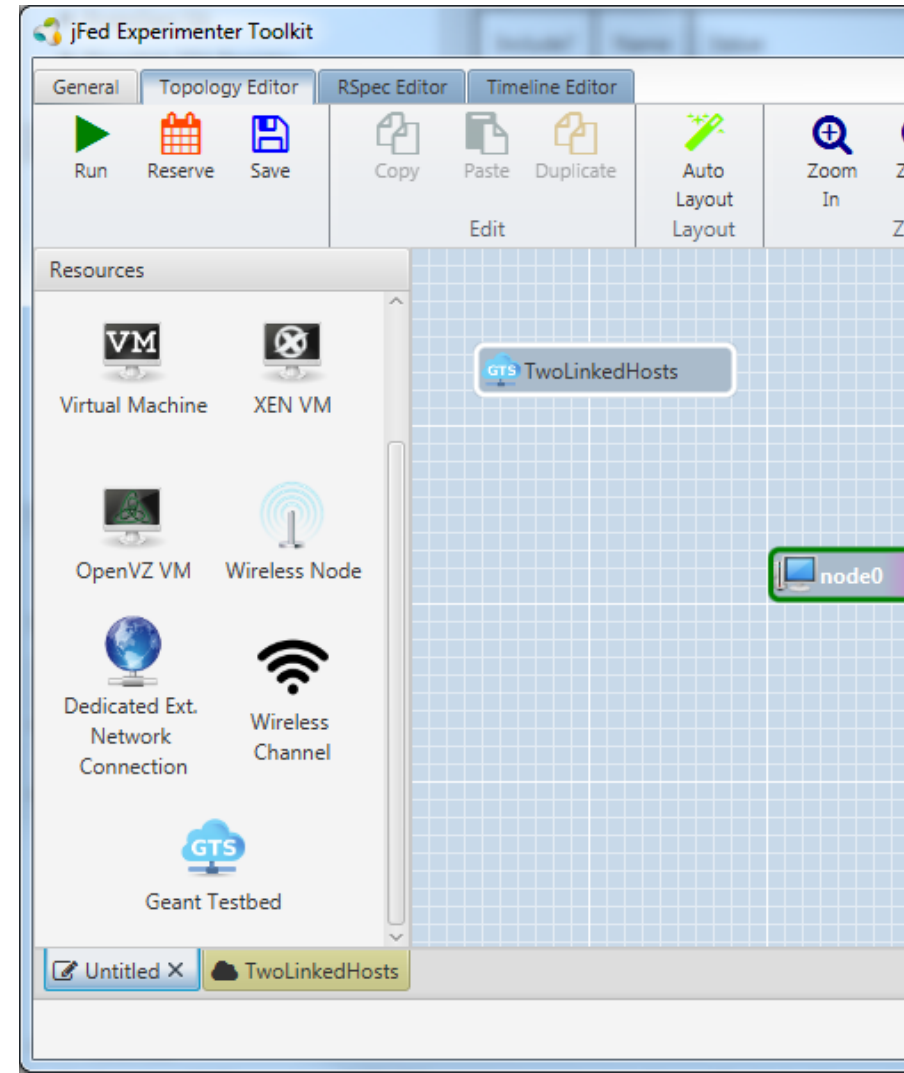
jFed Automated Tester

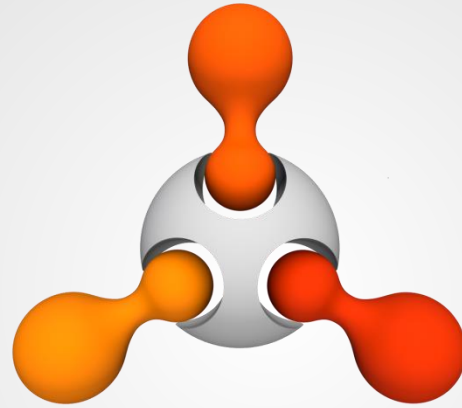
- Performs extensive full-automated tests
- Simulates complete workflow of an experiment



jFed Experimenter

- End-user tool to design, provision and manage experiments

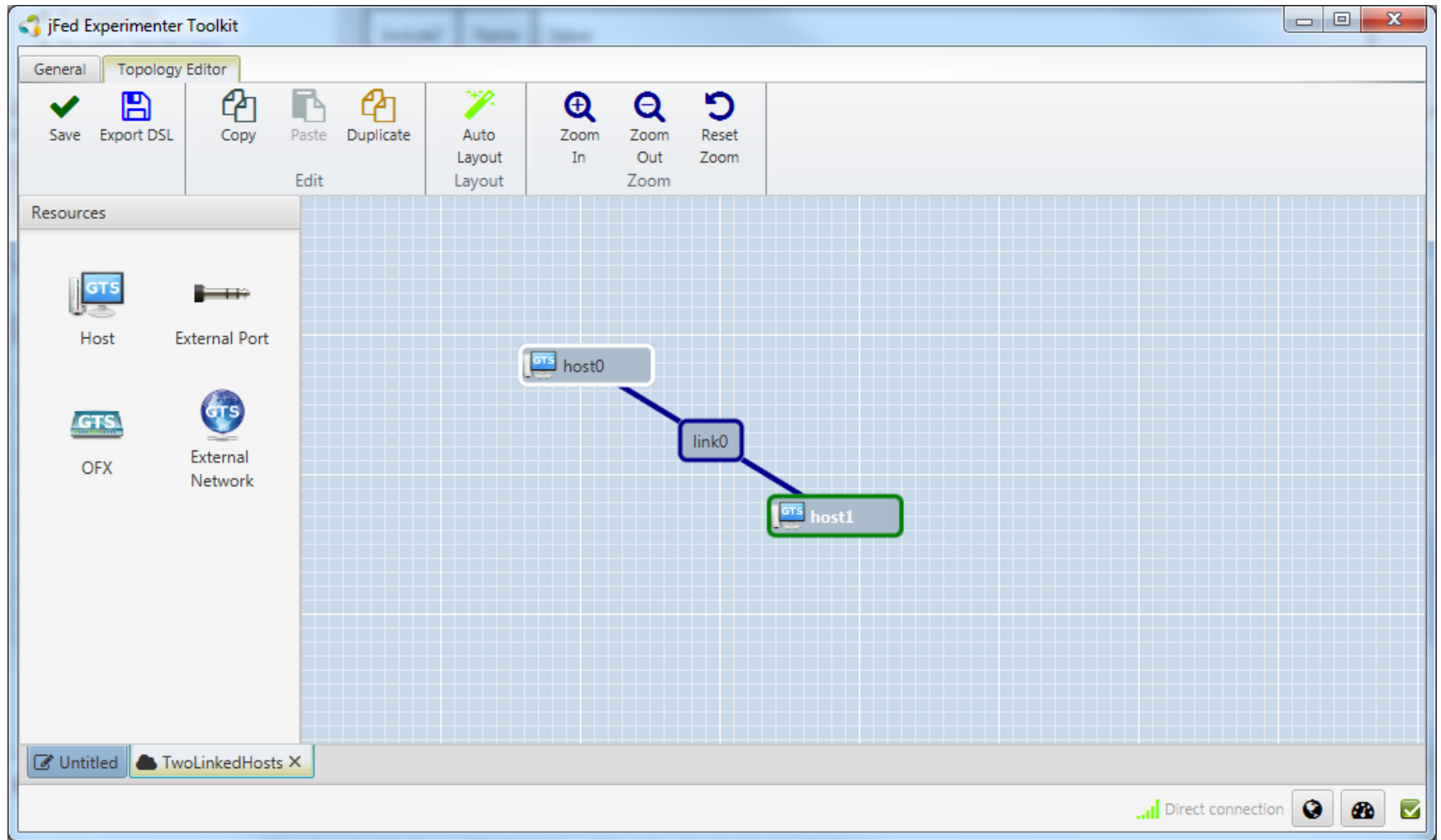


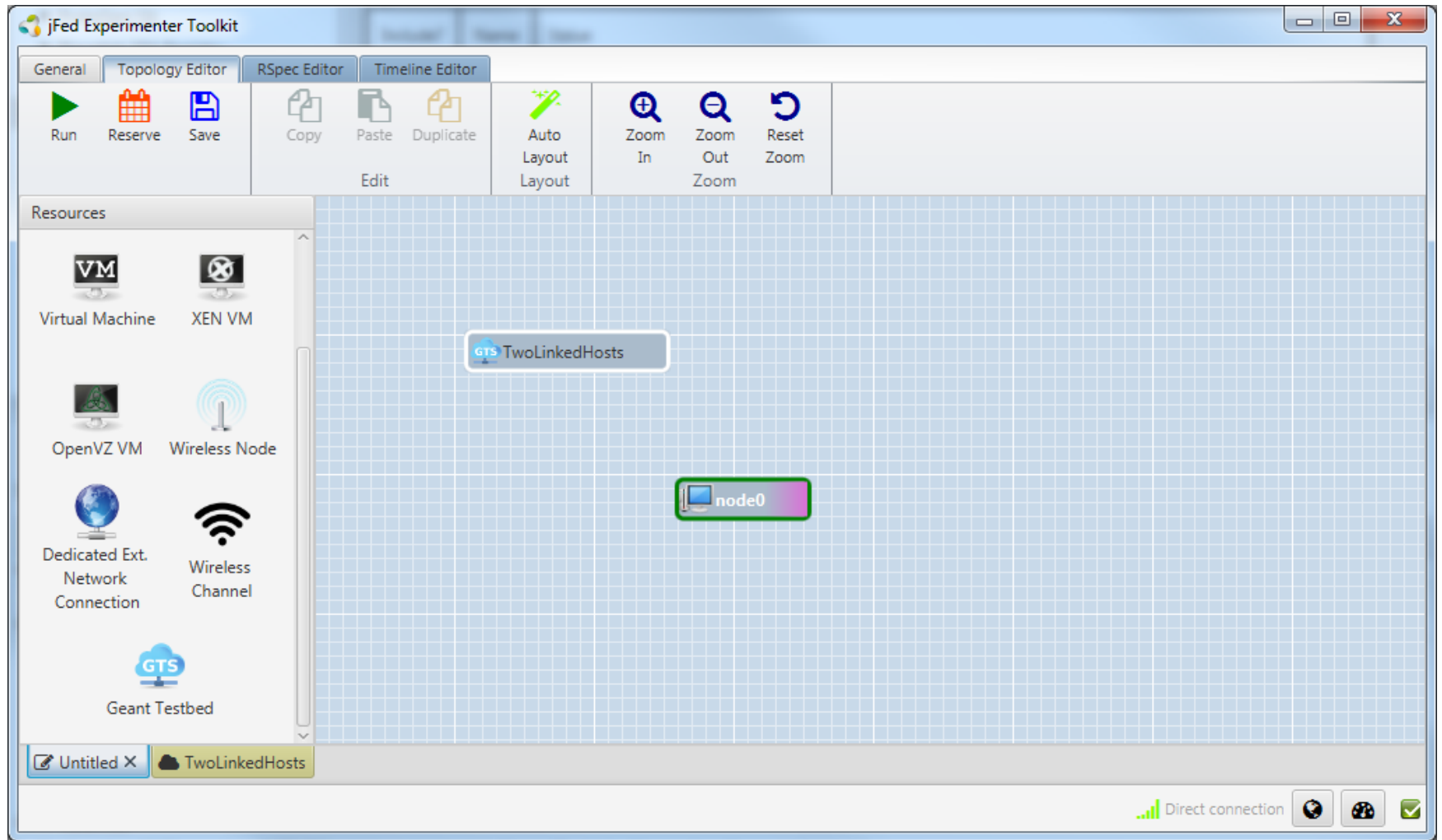


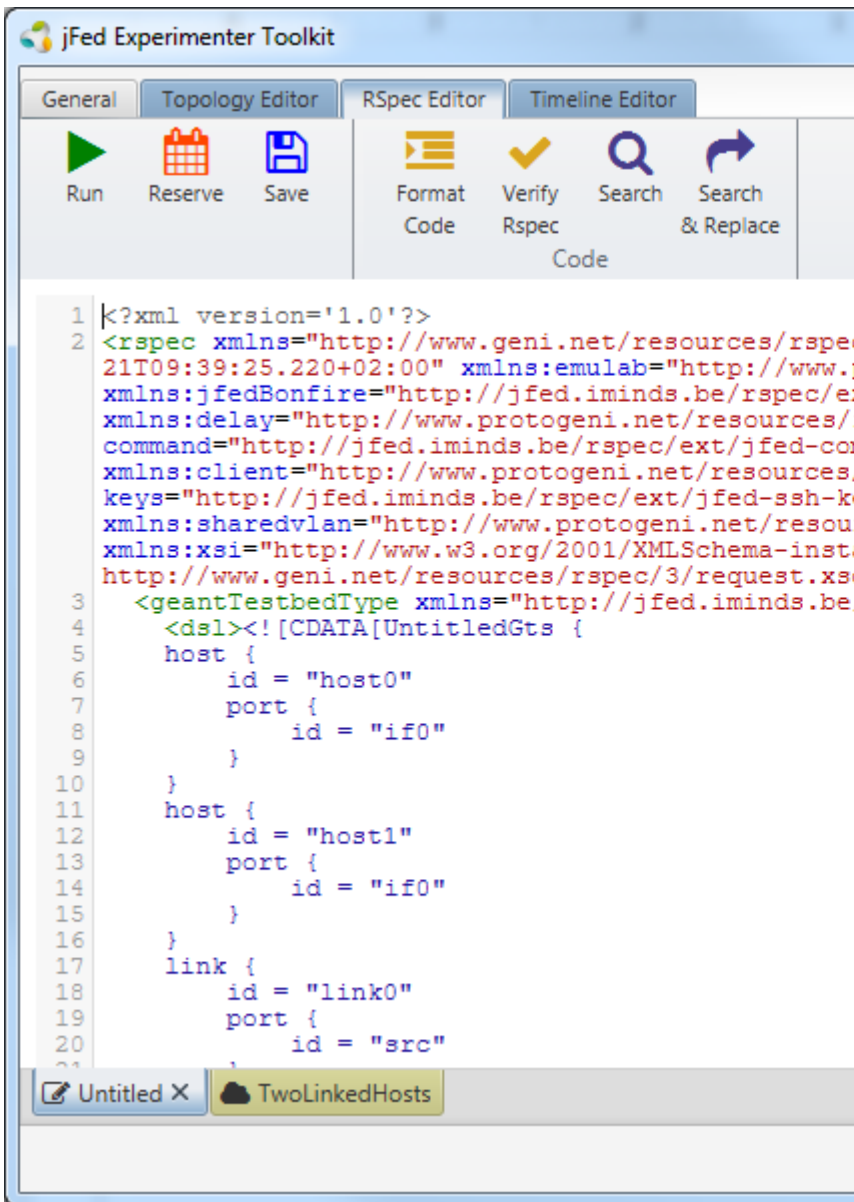
FED4FIRE

DEMO









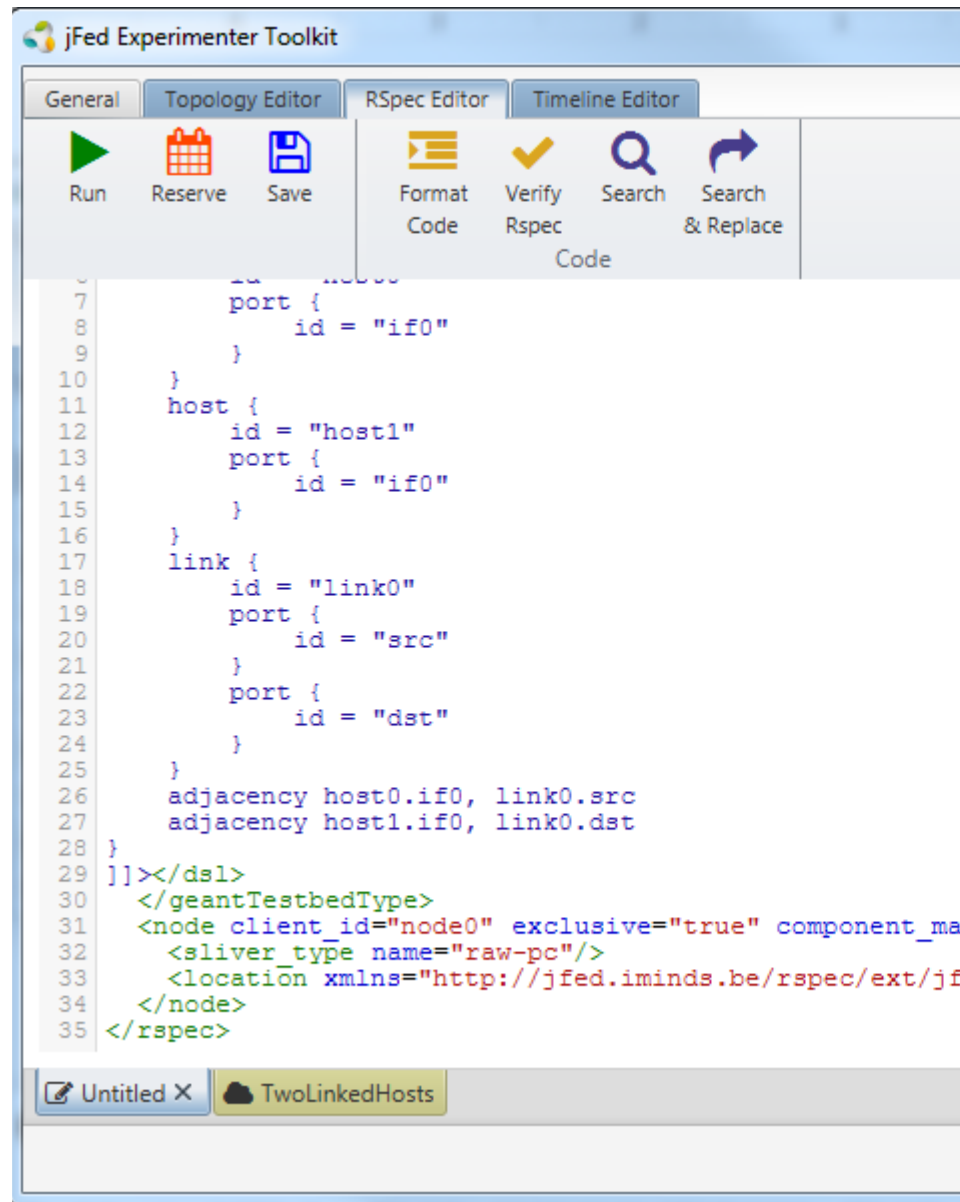
The screenshot shows the jFed Experimenter Toolkit interface with the RSpec Editor tab active. The toolbar includes buttons for Run, Reserve, Save, Format Code, Verify Rspec, Search, and Search & Replace. The main text area displays an XML RSpec configuration for a network topology. The configuration includes namespaces for GENI, emulab, jFed, and Protogeni, and defines a `geantTestbedType` with a `dsl` block containing two hosts and a link.

```

1 <?xml version='1.0'?>
2 <rspec xmlns="http://www.geni.net/resources/rspec/3" xmlns:emulab="http://www.geni.net/resources/emulab" xmlns:jfed="http://www.jfed.iminds.be/rspec/ext/jfed-com" xmlns:delay="http://www.protogeni.net/resources/delay" command="http://jfed.iminds.be/rspec/ext/jfed-com" xmlns:client="http://www.protogeni.net/resources/client" xmlns:sharedvlan="http://www.protogeni.net/resources/sharedvlan" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://www.geni.net/resources/rspec/3/request.xsd http://www.geni.net/resources/rspec/3/request.xsd">
3   <geantTestbedType xmlns="http://jfed.iminds.be/rspec/ext/jfed-com">
4     <dsl><![CDATA[
5       UntitledGts {
6         host {
7           id = "host0"
8           port {
9             id = "if0"
10          }
11        }
12        host {
13          id = "host1"
14          port {
15            id = "if0"
16          }
17        }
18        link {
19          id = "link0"
20          port {
21            id = "src"
22          }
23        }
24      }
25    ]]></dsl>
26  </geantTestbedType>
27  <node client_id="node0" exclusive="true" component_manager="raw-pc">
28    <location xmlns="http://jfed.iminds.be/rspec/ext/jfed-com">
29      <location/>
30    </node>
31  </rspec>

```

The bottom status bar shows two tabs: "Untitled X" and "TwoLinkedHosts".



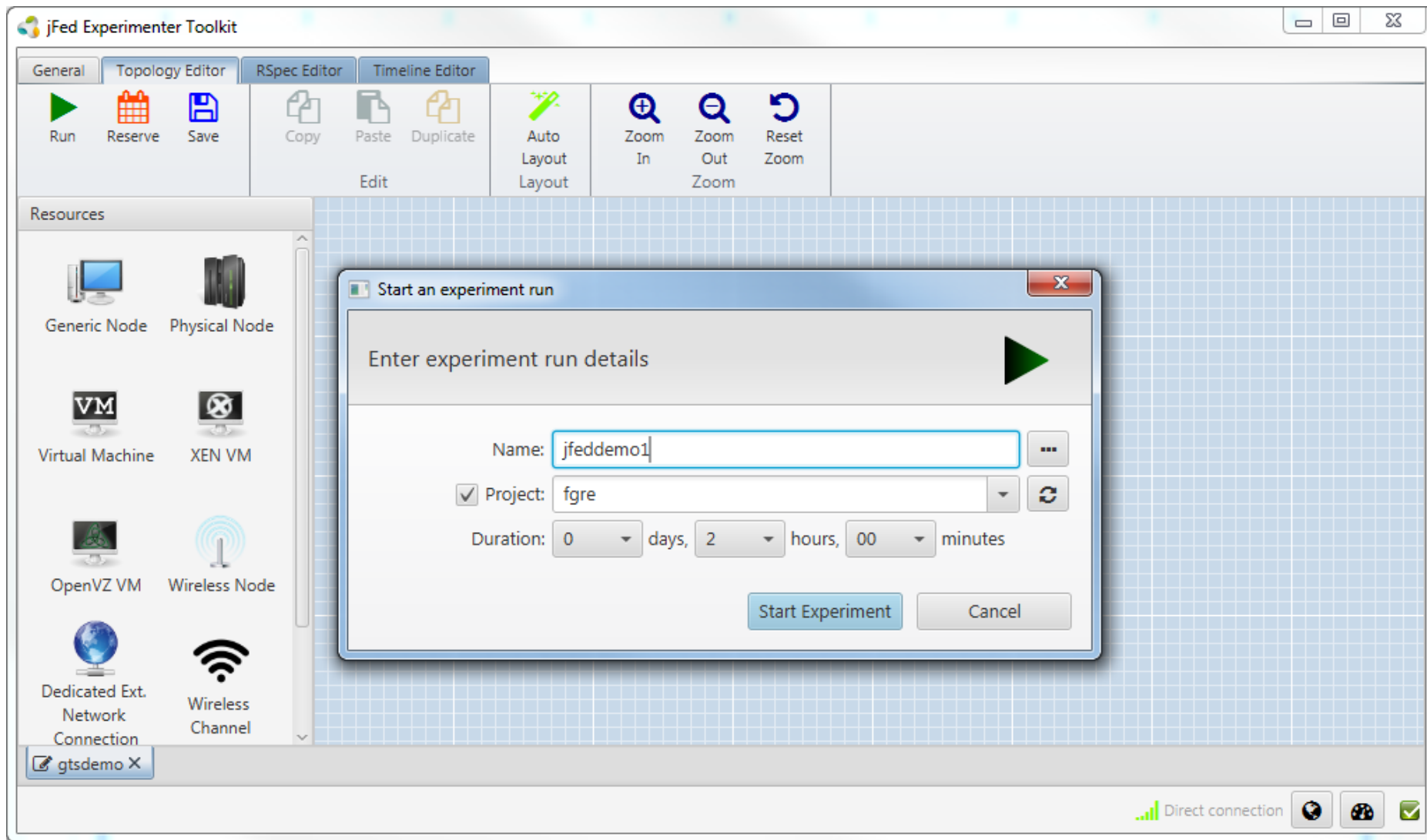
The screenshot shows the jFed Experimenter Toolkit interface with the RSpec Editor tab active. The toolbar is identical to the first screenshot. The main text area displays a different XML RSpec configuration, which is more complete, including node definitions and adjacency links.

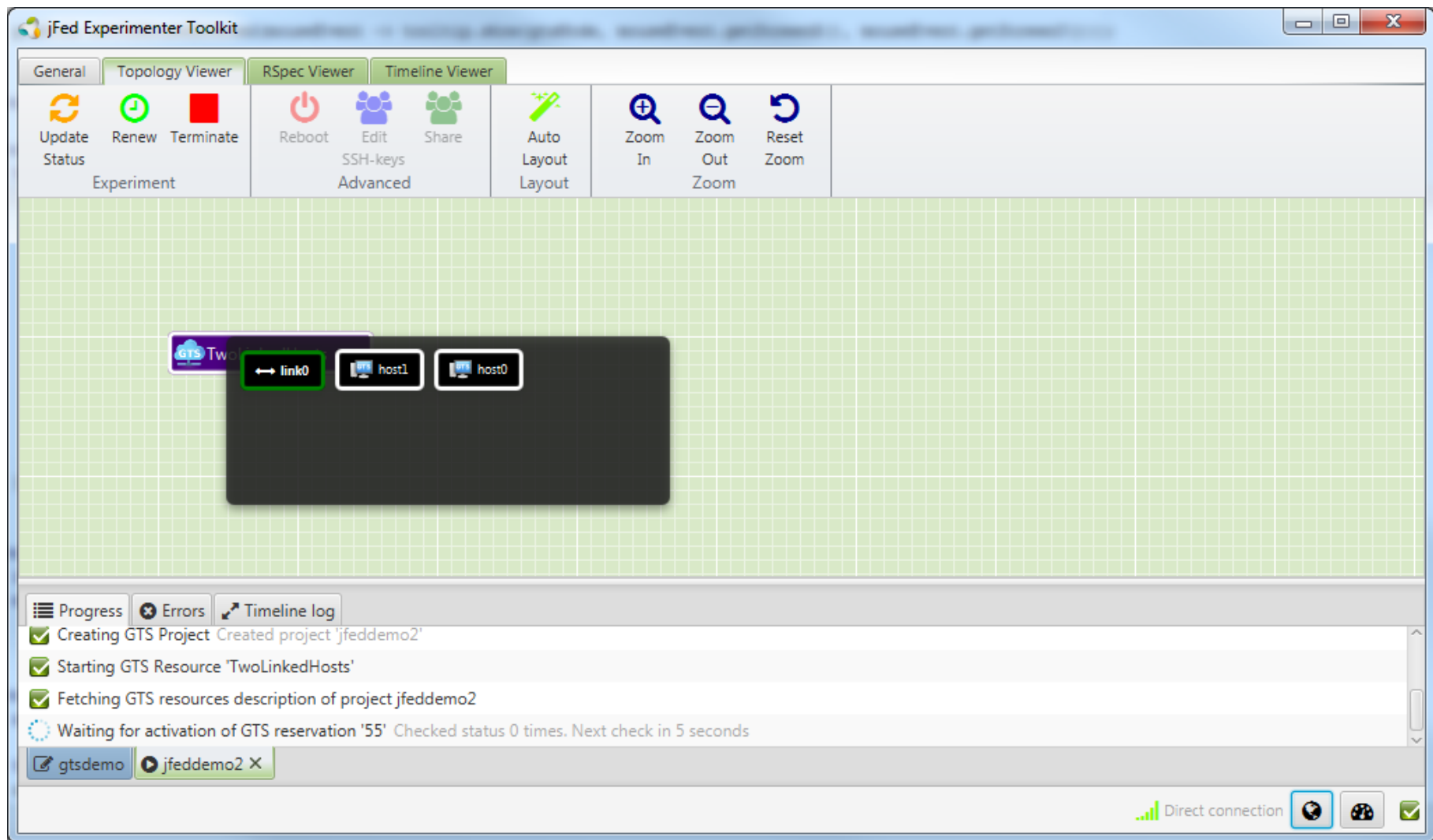
```

7   port {
8     id = "if0"
9   }
10 }
11 host {
12   id = "host1"
13   port {
14     id = "if0"
15   }
16 }
17 link {
18   id = "link0"
19   port {
20     id = "src"
21   }
22   port {
23     id = "dst"
24   }
25 }
26 adjacency host0.if0, link0.src
27 adjacency host1.if0, link0.dst
28 }
29 ]]></dsl>
30 </geantTestbedType>
31 <node client_id="node0" exclusive="true" component_manager="raw-pc">
32   <sliver_type name="raw-pc"/>
33   <location xmlns="http://jfed.iminds.be/rspec/ext/jfed-com">
34     <location/>
35   </node>
36 </rspec>

```

The bottom status bar shows two tabs: "Untitled X" and "TwoLinkedHosts".





jFed Experimenter Toolkit

General | Topology Viewer | RSpec Viewer | Timeline Viewer

Update Status | Renew | Terminate | Reboot | Edit SSH-keys Advanced | Share | Save experiment RSpec

Slivers

Sliver Testbed	Sliver ID	Expiration time	Status
[GTS] TwoLinkedHosts	55	2526-01-31 23:59:59	UNINITIALISED

Node login information

Node name	Hostname	Port	Username	Login
[GTS TwoLinkedHosts] host1				>_ Login
[GTS TwoLinkedHosts] host0				>_ Login

Progress | Errors | Timeline log

- ✓ Creating GTS Project Created project 'jfeddemo2'
- ✓ Starting GTS Resource 'TwoLinkedHosts'
- ✓ Fetching GTS resources description of project jfeddemo2
- ⌚ Waiting for activation of GTS reservation '55' Checked status 4 times. Next check in 10 seconds

gtsdemo | jfeddemo2 X

Direct connection

jFed Calls Overview

☒ 0 List Slices
☒ 1 Get User Credential
☒ 2 List Sub Authorities
☒ 3 Create Slice
☒ 4 GTS Login
☒ 5 Create GTS project 'jfeddemo2'
☒ 6 GTS Login
☒ 7 Start GTS Resources TwoLinkedHosts
☒ 8 GTS List Resources
☒ 9 Update reservations in project 'jfeddemo2' for '55'
☒ 10 Update reservations in project 'jfeddemo2' for '55'
☒ 11 Update reservations in project 'jfeddemo2' for '55'
☒ 12 Update reservations in project 'jfeddemo2' for '55'
☒ 13 Update reservations in project 'jfeddemo2' for '55'
☒ 14 Update reservations in project 'jfeddemo2' for '55'
☒ 15 Update reservations in project 'jfeddemo2' for '55'
☒ 16 Update reservations in project 'jfeddemo2' for '55'
☒ 17 Update reservations in project 'jfeddemo2' for '55'
☒ 18 Update reservations in project 'jfeddemo2' for '55'

Task details

Name:

Update reservations in project 'jfeddemo2' for '55'

State:

SUCCESS

Start Time:

Wed Oct 21 10:02:38 CEST 2015

Stop Time:

Wed Oct 21 10:02:38 CEST 2015

Duration:

114 milliseconds

This task depends on:

☒ 6 GTS Login

Tasks depending on this task:

Task calls

☒ GTS REST API - /query/reservations/jfeddemo2 (@ gts.geant.net)

Save all details:

as text...

as xml...

Request size (byte): 184

Reply size(byte): 1773

Connection

HTTP Request

HTTP Reply

XmlRpc Request

XmlRpc Reply

Geni Reply Value

Geni Reply Code & Output

Processed Geni F

HTTP Status Line:

HTTP/1.1 200 OK

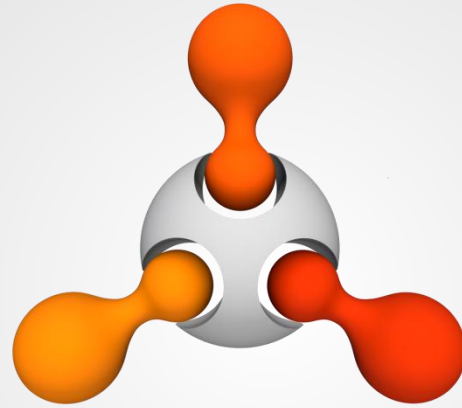
HTTP Received Headers:

Content-Type: application/xml
Date: Wed, 21 Oct 2015 08:02:39 GMT
Content-Length: 1639
Server: Jetty(7.6.8.v20121106)

HTTP Received:

<?xml version="1.0" encoding="UTF-8"?><reservations><reservation><id>102</id><endTime>17548354799000</endTime><projectName>jfed

Save...



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Thank you!

<http://jfed.iminds.be>

