

FED4FIRE

jFed toolkit, Fed4FIRE, Federation

Brecht Vermeulen
Wim Van de Meerssche
Thijs Walcarius
brecht.vermeulen@iminds.be



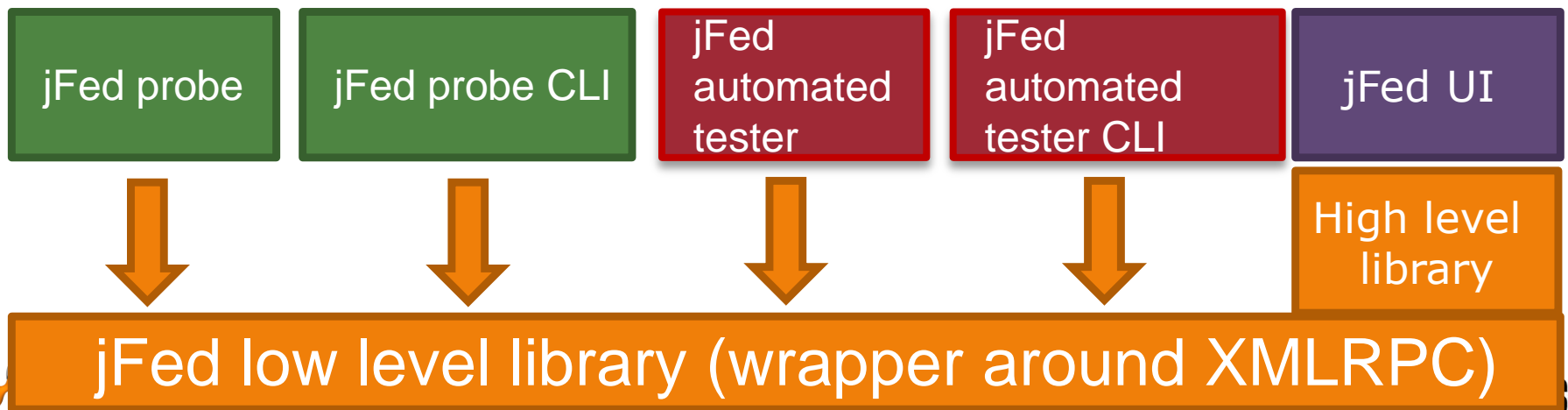
GEC 19, Mar 2014

Topics

- jFed toolkit update
 - Monitoring, testing and experimenter tool (NEW)
- Federation API
- Fed4FIRE update
 - European federation of testbeds
 - First federated experiments

jFed toolkit

- <http://jfed.iminds.be>
- Release 4.1.0 (and 4.2.0 beta)
- Written in Java(FX)
- MIT license
- Test and monitor federation (improved)
- Experimenter tool jFed UI (NEW)



jFed probe: manual testing + API learning

The screenshot shows the jFed probe interface. On the left is a tree view of API categories. The main area is for configuring a specific command. The 'Server to use' section has radio buttons for 'Server of Logged in users Authority', 'Server of Known Authority' (selected), 'Custom Server URL', and 'Use SSH Proxy when available'. The 'Authority' is 'iMinds Virtual Wall 2' and the 'Server URL' is 'https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0'. The 'Command' is 'getVersion'. Below is an 'Arguments' table with columns 'Include?', 'Name', and 'Value'. A 'Call' button is on the right.

Include?	Name	Value
----------	------	-------

Geni Aggregate Manager API v2 - GetVersion [Navigation icons] auto

Authority: iMinds Virtual Wall 2
Server URL: https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0
Call start time: Wed Mar 19 11:17:34 CET 2014
Call stop time: Wed Mar 19 11:17:36 CET 2014
(2 seconds ago) (0 seconds ago = 2 seconds and 269 milliseconds after start)

Save all details: as text... as xml...
HTTP Request | HTTP Reply | XmlRpc Request | XmlRpc Reply | Geni Reply Value | Geni Reply Code & Output | Processed Geni Reply Value | ProtoGeni Error Log

Geni Reply Value:
{
 "url": "https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am",
 "hrn": "iminds-wall2.cm",
 "geni_ad_rspec_versions": [
 {



Experimenter UI (NEW)

The screenshot displays the jFed Experimenter Toolkit interface. At the top, there are three tabs: "General", "Experiment Editor", and "Experiment Controller". Below the tabs is a toolbar with icons for "New", "Open", "Open URL", "Save", "Run", "Update Status", "Terminate", "Recover", "Preferences", and "Report a bug".

The main workspace shows a network diagram on a light blue grid background. It consists of three green rectangular nodes: "server" on the left, "client" on the right, and "illinois" below the "server". A blue line labeled "link3" connects the "server" and "client" nodes.

At the bottom, there is a "Progress" panel with a list of tasks, all of which are checked:

- Register experiment gec3
- Initialize nodes at InstaGENI Illinois
- Initialize nodes at Utah Emulab
- Waiting for nodes from InstaGENI Illinois to become ready.

Below the progress panel is a taskbar with several open windows: "Untitled", "gec3", "Untitled1", "gec4", "Untitled2", "gec5", "openflow", "openflow", "Untitled3", and "gec6".

Philosophy

- Leverages APIs from jFed Probe testing
- Can be used by a new experimenter (abstract things !)
- Full power when needed
 - raw Rspec
 - API call insight
- Debug and support
 - Leverage API call analysis from jFed probe
 - For support: send all those calls to support !
- Can work around firewall port blocking stuff through SSH proxy
- Cross platform: Windows, OS X, Linux
- Saves and reads RSpecs

Abstract resources

The screenshot displays the jFed Experimenter Toolkit interface. The main window is titled "jFed Experimenter Toolkit" and features a menu bar with "General", "Experiment Editor", and "Experiment Controller". Below the menu bar is a toolbar with icons for "New", "Open", "Open URL", "Save", "Run", "Update Status", "Terminate", "Recover", "Preferences", and "Report a bug".

The central workspace shows a workflow diagram with three nodes: "server", "link3", and "client", connected by a blue line. A "Properties of illinois" dialog box is open, showing the following fields:

- Node name: illinois
- Select testb...: InstaGENI Illinois
- Select node: Any available node, Specific node: [dropdown]

The dialog box has "Save" and "Cancel" buttons. The bottom status bar shows "Untitled X" and "gec3". A tooltip at the bottom reads: "Click and drag the circle to a target node to create a new link."

Raw Rspec editing: “support everything”

The screenshot displays the jFed Experimenter Toolkit interface. The main window is titled "jFed Experimenter Toolkit" and features three tabs: "General", "Experiment Editor", and "Experiment Controller". The "Experiment Editor" tab is active, showing a toolbar with icons for Copy, Paste, Duplicate, Zoom In, Zoom Out, Reset Zoom, Format Code, Search, Search & Replace, Graphical Editor, and Raw Rspec. The "Raw Rspec" button is highlighted in yellow. Below the toolbar is a "Computing Elements" sidebar with icons for Generic Node, Physical Node, OpenVZ VM, XEN VM, and Virtual Machine. The main area is a code editor displaying XML RSpec code. The code defines a request with two nodes: "illinois" (a Xen VM) and "server" (a physical node), and a link between them. The status bar at the bottom shows "Untitled X" and "gec3".

```
1 <?xml version="1.0" encoding="UTF-8"?><rspec xmlns="http://www.geni.net/resources/rspec/3"
  xmlns:jFed="http://jfed.iminds.be/rspec/ext/jfed/1"
  xmlns:jFedBonfire="http://jfed.iminds.be/rspec/ext/jfed-bonfire/1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" generated="2014-03-19T11:56:29.379+01:00"
  generated_by="Experimental jFed Rspec Editor" type="request"
  xsi:schemaLocation="http://www.geni.net/resources/rspec/3
  http://www.geni.net/resources/rspec/3/request.xsd">
2   <node client_id="illinois"
  component_manager_id="urn:publicid:IDN+instageni.illinois.edu+authority+cm" exclusive="false">
3     <sliver type name="emulab-xen"/>
4     <jFed:location x="79.0" y="116.0"/>
5     <jFed:nodeDescription>xen-vm</jFed:nodeDescription>
6   </node>
7   <node client_id="server" component_manager_id="urn:publicid:IDN+emulab.net+authority+cm"
  exclusive="true">
8     <sliver type name="raw-pc"/>
9     <jFed:location x="103.0" y="8.0"/>
10    <jFed:nodeDescription>physical-node</jFed:nodeDescription>
11    <interface client_id="node1:if0"/>
12  </node>
13  <node client_id="client" component_manager_id="urn:publicid:IDN+emulab.net+authority+cm"
  exclusive="true">
14    <sliver type name="raw-pc"/>
15    <jFed:location x="413.0" y="10.0"/>
16    <jFed:nodeDescription>physical-node</jFed:nodeDescription>
17    <interface client_id="node2:if0"/>
18  </node>
19  <link client_id="link3">
20    <component_manager name="urn:publicid:IDN+emulab.net+authority+cm"/>
21    <link type name="lan"/>
22    <interface_ref client_id="node1:if0"/>
23    <interface_ref client_id="node2:if0"/>
24  </link>
```


Debug by looking into API calls

The screenshot displays the 'jFed Calls Overview' application. On the left, a task list shows 12 tasks, with task 0 'Resolve User & Slices' highlighted in pink. The main area is divided into 'Task details' and 'Task calls'.

Task details:

- Name: Create Sliver @ urn:publicid:IDN+ instageni.illinois.edu+ authority+ cm
- State: SUCCESS
- Start Time: Wed Mar 19 11:51:00 CET 2014
- Stop Time: Wed Mar 19 11:52:03 CET 2014
- Duration: 1 minute, 3 seconds and 18 milliseconds

This task depends on:

- 5 Get Slice Credential urn:publi
- 6 Get User SSH Keys

Tasks depending on this task:

...

Task calls:

Geni Aggregate Manager API v2 - CreateSliver

Authority: InstaGENI Illinois

Server URL: https://boss.instageni.illinois.edu:12369/protoqeni/xmlrpc/am/2.0

Call start time: Wed Mar 19 11:51:00 CET 2014 Call stop time: Wed Mar 19 11:51:15 CET 2014

(1 minute and 27 seconds ago) (1 minute and 13 seconds ago = 14 seconds and 591 milli...

Save all details: as text... as xml...

HTTP Request | HTTP Reply | XmlRpc Request | XmlRpc Reply | Geni Reply Value | Geni Reply Code & Output | Processed Geni Reply Value | Result Rs

GeniResponseCode=0 = Success

Result:

```
<rspec xmlns="http://www.geni.net/resources/rspec/3" xmlns:jFed="http://jfed.iminds.be/rspec/ext/jfed/1" xmlns:jFedBonfire="http://jfed.iminds.be/rspec/ext
<node xmlns:jFed="http://jfed.iminds.be/rspec/ext/jfed/1" client_id="illinois" component_manager_id="urn:publicid:IDN+ instageni.illinois.edu+ authority+ cm"
  <sliver_type name="emulab-xen"/>
  <jFed:location x="79.0" y="116.0"/>
  <jFed:nodeDescription>xen-vm</jFed:nodeDescription>
<rs:vnode xmlns:rs="http://www.protogeni.net/resources/rspec/ext/emulab/1" name="pcvm3-40"/> <host name="illinois.gec3.ch-geni-net.instageni.illinois.
<node client_id="server" component_manager_id="urn:publicid:IDN+ emulab.net+ authority+ cm" exclusive="true">
  <sliver_type name="raw-pc"/>
  <jFed:location x="103.0" y="8.0"/>
  <jFed:nodeDescription>physical-node</jFed:nodeDescription>
  <interface client_id="node1:if0"/>
</node>
<node client_id="client" component_manager_id="urn:publicid:IDN+ emulab.net+ authority+ cm" exclusive="true">
  <sliver_type name="raw-pc"/>
  <jFed:location x="413.0" y="10.0"/>
  <jFed:nodeDescription>physical-node</jFed:nodeDescription>
  <interface client_id="node2:if0"/>
</node>
```

Save...

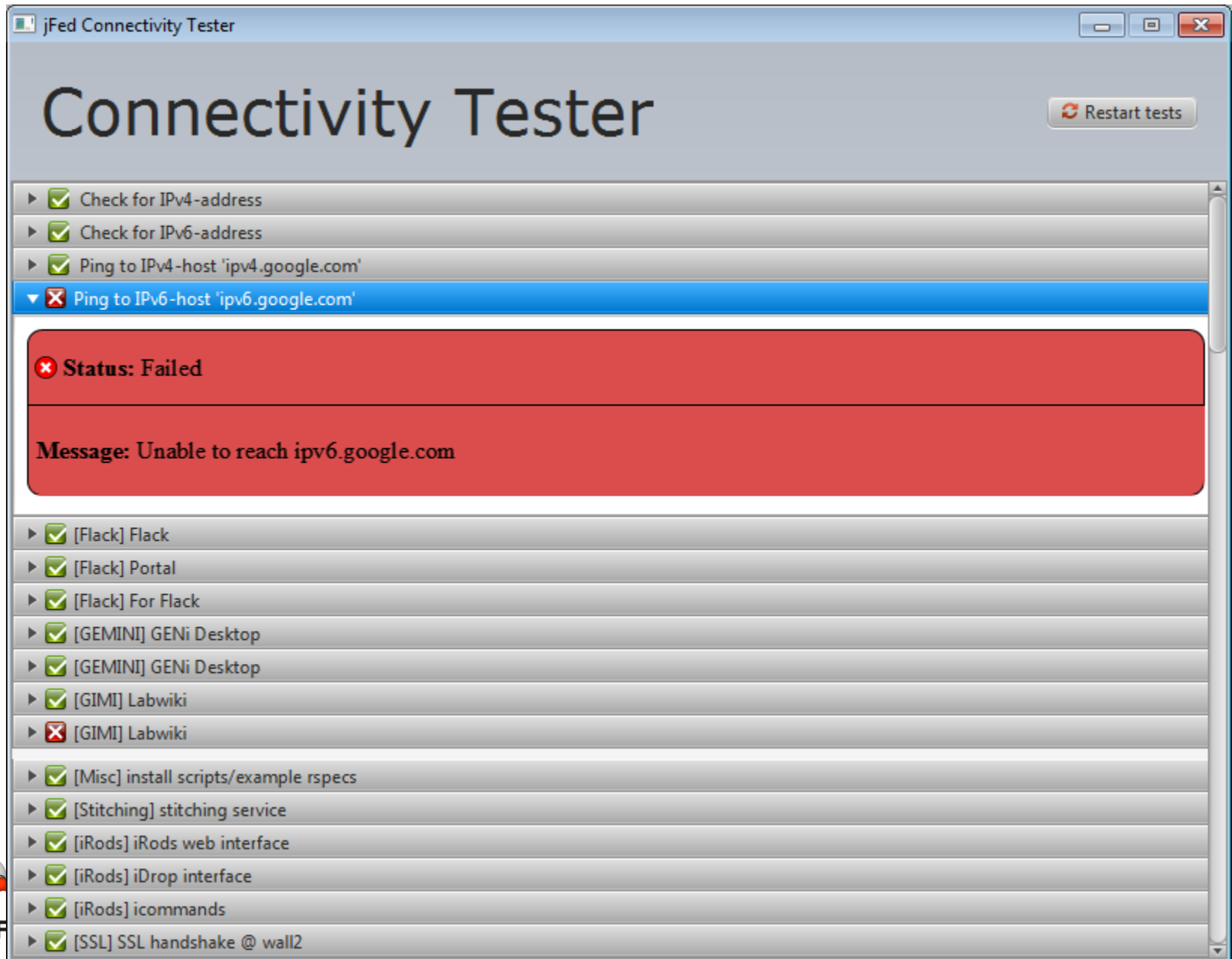
Bug reports and support

The screenshot displays the jFed Experimenter Toolkit interface. The main window has a menu bar with 'General', 'Experiment Editor', and 'Experiment Controller'. Below the menu bar is a toolbar with icons for 'New', 'Open', 'Open URL', 'Save', 'Run', 'Update Status', 'Terminate', 'Recover', 'Preferences', and 'Report a bug'. The main workspace shows a diagram with three nodes: 'server', 'link3', and 'client' connected by lines, and a separate 'illinois' node. A 'Progress' panel at the bottom left lists several tasks with checkmarks: 'Register experiment gec3', 'Initialize nodes at InstaGENI Illinois', 'Initialize nodes at Utah Emulab', and 'Waiting for nodes from InstaGENI Illinois to become ready'. A 'jFed Bug Report' dialog box is open in the foreground, containing the following information:

- Bug description:** (Please include: expected outcome, steps to reproduce)
- jFed version:** 4.1.0-SNAPSHOT (rev. #1079 at 2014-03-19 11:04:10) - build #6
- Environment:** Windows 7 6.1 x86 - Java 1.7.0_45 (Oracle Corporation)
- Reporter credential:** urn:publicid:IDN+ch.geni.net+user+brechtv
- Reporter email address:** brecht.vermeulen@iminds.be
- Included calls:** 50 calls

The 'Included calls' field is circled in blue. The dialog box also features 'Submit' and 'Cancel' buttons at the bottom right.

Connectivity test (also in bug report)



jFed Connectivity Tester

Connectivity Tester

Restart tests

- ▶ Check for IPv4-address
- ▶ Check for IPv6-address
- ▶ Ping to IPv4-host 'ipv4.google.com'
- ▶ Ping to IPv6-host 'ipv6.google.com'

✖ Status: Failed

Message: Unable to reach ipv6.google.com

- ▶ [Flack] Flack
- ▶ [Flack] Portal
- ▶ [Flack] For Flack
- ▶ [GEMINI] GENi Desktop
- ▶ [GEMINI] GENi Desktop
- ▶ [GIMI] Labwiki
- ▶ [GIMI] Labwiki
- ▶ [Misc] install scripts/example rspecs
- ▶ [Stitching] stitching service
- ▶ [iRods] iRods web interface
- ▶ [iRods] iDrop interface
- ▶ [iRods] icommands
- ▶ [SSL] SSL handshake @ wall2

TCP ports and firewalls

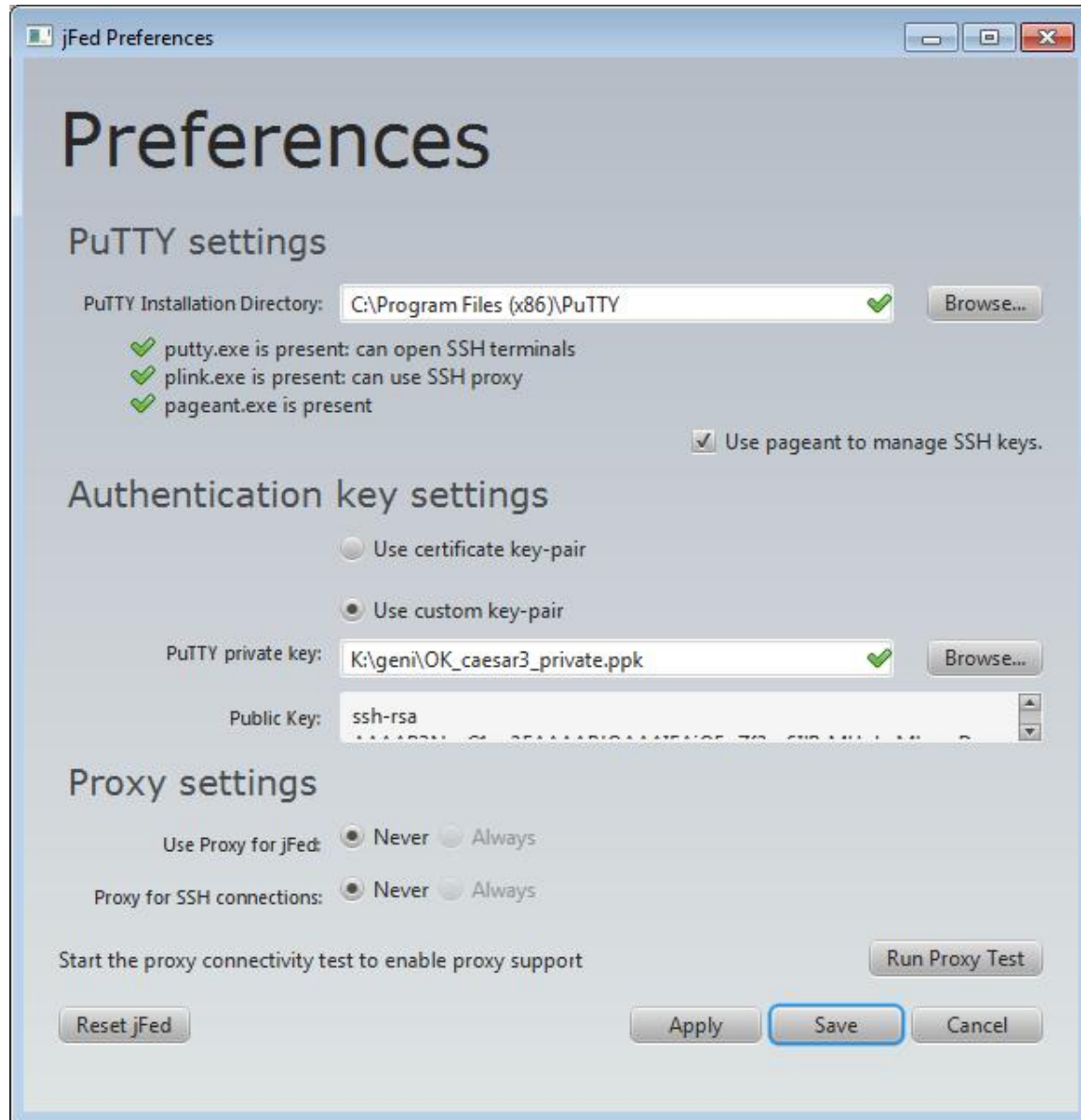
- 12369, 12346, 11443, 8081, ...
- Add IPv6 for node access in Europe

= problems

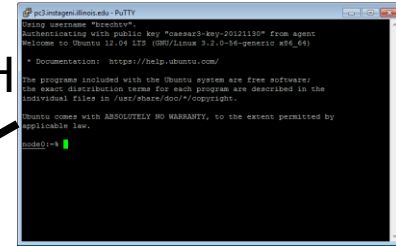
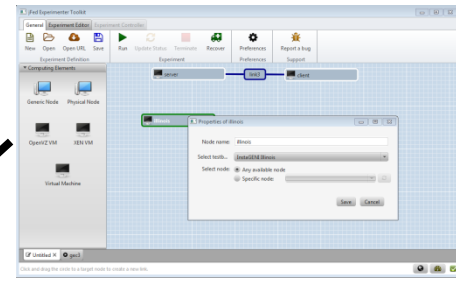
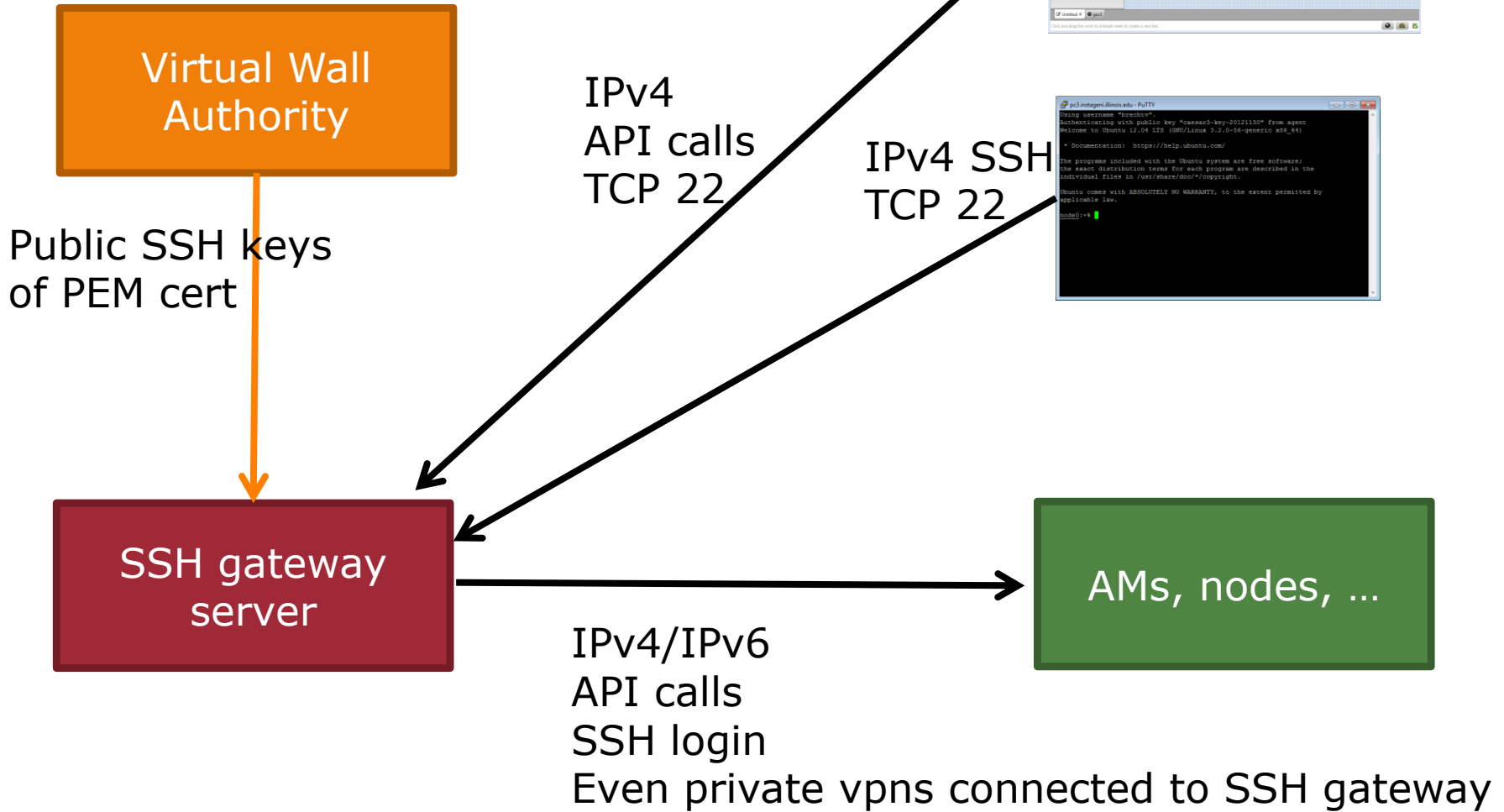
- First step: Detection (connectivity tester)
- Second step: work around -> SSH proxy

SSH proxy (optional !)

- For API calls
- For SSH login
- Automatic SSH agent for extra comfort



SSH proxy: only TCP 22



RSpec world and tutorial world

The screenshot displays the jFed Experimenter Toolkit interface. The main window has a title bar "jFed Experimenter Toolkit" and a menu bar with "General", "Experiment Editor", and "Experiment Controller". Below the menu bar is a toolbar with icons for "New", "Open", "Open URL", "Save", "Run", "Update Status", "Terminate", "Recover", "Preferences", and "Report a bug".

An "Open Experiment Definition" dialog box is open in the center. It has a title bar with a close button and an information icon. The dialog contains the text "Open Experiment Definition" and a prompt "Please enter the URL:". A text input field contains the URL "http://jfed.iminds.be/openflow.rspec". There are "Ok" and "Cancel" buttons at the bottom of the dialog.

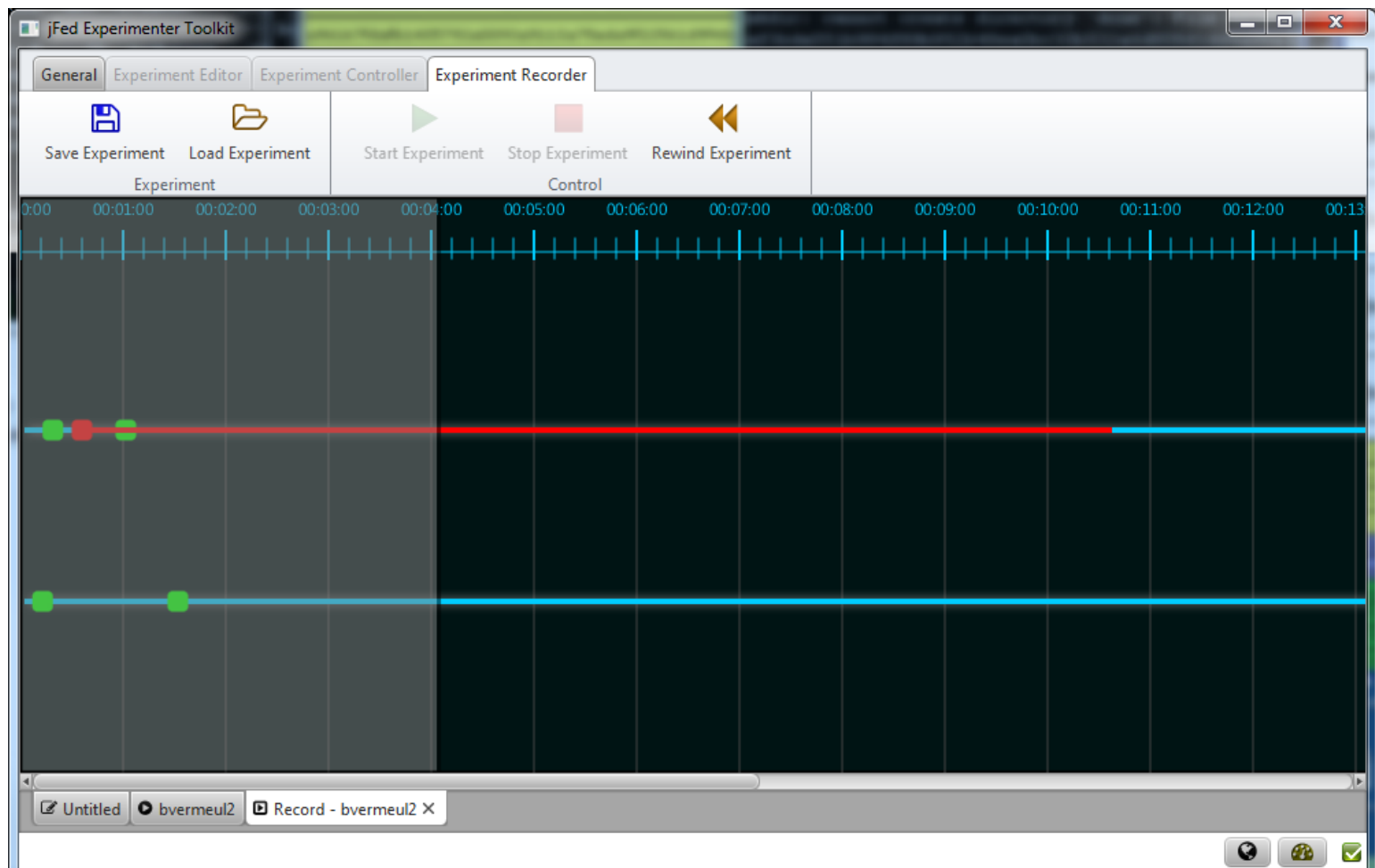
At the top of the main window, a green bar labeled "node1" is visible. At the bottom, a "Progress" panel shows a list of tasks with checkmarks:

- Register experiment gec4
- Initialize nodes at InstaGENI Illinois
- Initialize nodes at Utah Emulab
- Initialize nodes at ExoGENI ExoSM

The bottom of the interface shows a taskbar with several tabs: "Untitled", "gec3", "Untitled1", "gec4 X", "Untitled2", "gec5", and "openflow".

Future plans: simple experiment control

- Simple events
- Immediate commands on selection of nodes



jFed testing and monitoring

<http://monitor.ilabt.iminds.be>

API testing

Test Name	Last Test Start Time (CET)	Last Test Duration	Last Partial Success	Last Full Success	Time since last Failure	Last Log	History
InstaGeni BBN	2014-03-19 09:16:22	2 minutes and 54 seconds	SUCCESS	SUCCESS	3 days and 14 hours	log	history
InstaGeni Clemson	2014-03-19 09:19:17	37 seconds	WARN	WARN		log	history
InstaGeni GATech	2014-03-19 09:19:54	2 minutes and 26 seconds	SUCCESS	SUCCESS	21 days and 15 hours	log	history
InstaGeni Illinois	2014-03-19 09:22:21	3 minutes and 1 second	SUCCESS	SUCCESS	5 months and 5 days	log	history
InstaGeni Kettering	2014-03-19 09:25:23	43 seconds	WARN	WARN		log	history
InstaGeni MAX	2014-03-19 09:26:06	3 minutes and 2 seconds	SUCCESS	SUCCESS	2 months and 3 days	log	history
InstaGeni Missouri	2014-03-19 09:29:08	2 minutes and 7 seconds	SUCCESS	SUCCESS	6 days and 14 hours	log	history
InstaGeni NorthWestern	2014-03-19 09:31:16	2 minutes and 37 seconds	SUCCESS	SUCCESS	2 months and 2 days	log	history
InstaGeni NYSERNET	2014-03-19 09:33:53	48 seconds	WARN	WARN		log	history
InstaGeni Princeton	2014-03-19 09:34:41	2 minutes and 30 seconds	SUCCESS	SUCCESS	1 month and 10 days	log	history
InstaGeni SOXAtlanta	2014-03-19 09:37:11	1 minute and 56 seconds	SUCCESS	SUCCESS	7 days and 14 hours	log	history
InstaGeni Uky	2014-03-19 09:39:08	5 minutes and 20 seconds	SUCCESS	SUCCESS	1 month and 15 days	log	history
InstaGeni Utah DDC	2014-03-19 09:44:29	2 minutes and 30 seconds	SUCCESS	SUCCESS	13 days and 2 hours	log	history
LARC	2014-03-19 09:47:00	14 seconds	FAILURE	FAILURE		log	history
ORCA ExoGeni BBN	2014-03-19 09:48:26	2 minutes and 7 seconds	SUCCESS	SUCCESS	2 days and 2 hours	log	history
ORCA ExoGeni Duke	2014-03-19 09:50:33	2 minutes and 32 seconds	SUCCESS	SUCCESS	1 month and 19 days	log	history
ORCA ExoGeni ExoSM	2014-03-19 09:53:06	4 minutes and 29 seconds	FAILURE	FAILURE		log	history
ORCA ExoGeni FIU	2014-03-19 09:57:35	2 minutes and 31 seconds	SUCCESS	SUCCESS	12 days and 14 hours	log	history
ORCA ExoGeni Nicta	2014-03-19 10:00:06	2 minutes and 2 seconds	SUCCESS	SUCCESS	4 days and 14 hours	log	history
ORCA ExoGeni OSF	2014-03-19 10:02:09	1 minute and 56 seconds	SUCCESS	SUCCESS	17 days and 2 hours	log	history
ORCA ExoGeni RCI	2014-03-19 10:04:05	2 minutes and 35 seconds	SUCCESS	SUCCESS	12 days and 14 hours	log	history
ORCA ExoGeni UFL	2014-03-19 10:06:41	1 minute and 55 seconds	SUCCESS	SUCCESS	12 days and 14 hours	log	history

- ✓ setUp
- ✓ getVersion
- ✓ getTestUserCredential
- ✓ getTestUserInfo
- ✓ retrieveCredentialSomehow
- ✗ createProject
- ✓ createSlice
- ✗ lookupProjectsByUrnNoFilter
- ✗ lookupProjectsByNameNoFilter
- ✓ getSliceCredentials
- ✗ updateProject
- ✓ lookupSlicesNoFilter
- ✗ lookupProjectsNoFilterAfterUpdate
- ✓ updateSlice
- ✗ lookupProjectMembers
- ✗ lookupProjectsForMember
- ✓ lookupSlicesNoFilterAfterUpdate
- ✓ lookupSliceMembers

Federation API for MA and SA

- Implement only 1 API and talk to multiple federations
- Interoperate with other tools, e.g. GENI portal



The screenshot shows the GENI portal interface. At the top, it says "Logged in as Brecht Vermeulen (brechtv) | Logout". The main navigation bar includes "Home", "Projects", "Slices", "Profile", and "Help". The breadcrumb trail is "Home > Project CHtest > Slice gec4 > Sliver Status for gec4". The main heading is "Status of Slivers on slice: gec4". A blue bar indicates "Querying aggregates for status of resources...". Below this, there are three tables showing the status of aggregates and resources.

Status	Aggregate
READY	ExoGENI ExoSM

Status	Resource
READY	urn:publicid:IDN+exogeni.net+sliver+f40d023b-98bf-4714-a478-8ed297e535efe:node1

Status	Aggregate
READY	Utah ProtoGENI

Status	Resource
READY	node2

Status	Aggregate
READY	Illinois InstaGENI

Status	Resource
READY	node0

Federation AM/SA/Registry APIs

- Current server implementations:
 - Protogeni (emulab.net, wall2.ilabt.iminds.be)
 - GPO
- Some bugs, some features missing in imple
- Advantages of standardization:
 - Good specification (try to get the right API specs for a proprietary API as an external tool developer)
 - Test framework developed together with standard
 - Multiple implementations that improve standard

Uniform Clearinghouse APIs

Specification and prototype: GPO, Utah, Ofelia, iMinds

Registry API

Total duration 13.28s from Fri Oct 25 22:47:20 CEST 2013

- ✓ `setUp`
- ✓ `lookupMemberAuthoritiesNoFilter`
- ✓ `lookupTrustRoots`
- ✓ `lookupAggregatesNoFilter`
- ✓ `lookupSliceAuthoritiesNoFilter`
- ✓ `getVersion`
- ✓ `lookupMAForUrns`
- ✓ `lookupMemberAuthoritiesWithMatchNoFilter`
- ✗ `lookupAMForUrns`
- ✓ `lookupSAForUrns`
- ✓ `lookupSliceAuthoritiesWithMatchNoFilter`
- ✓ `lookupAggregatesWithMatchNoFilter`
- ✓ `lookupMemberAuthoritiesWithFilter`
- ✓ `lookupSliceAuthoritiesWithFilter`
- ✓ `lookupAggregatesWithFilter`

Member Auth API

Total duration 19.683s from Fri Oct 25 22:46:19 CEST 2013

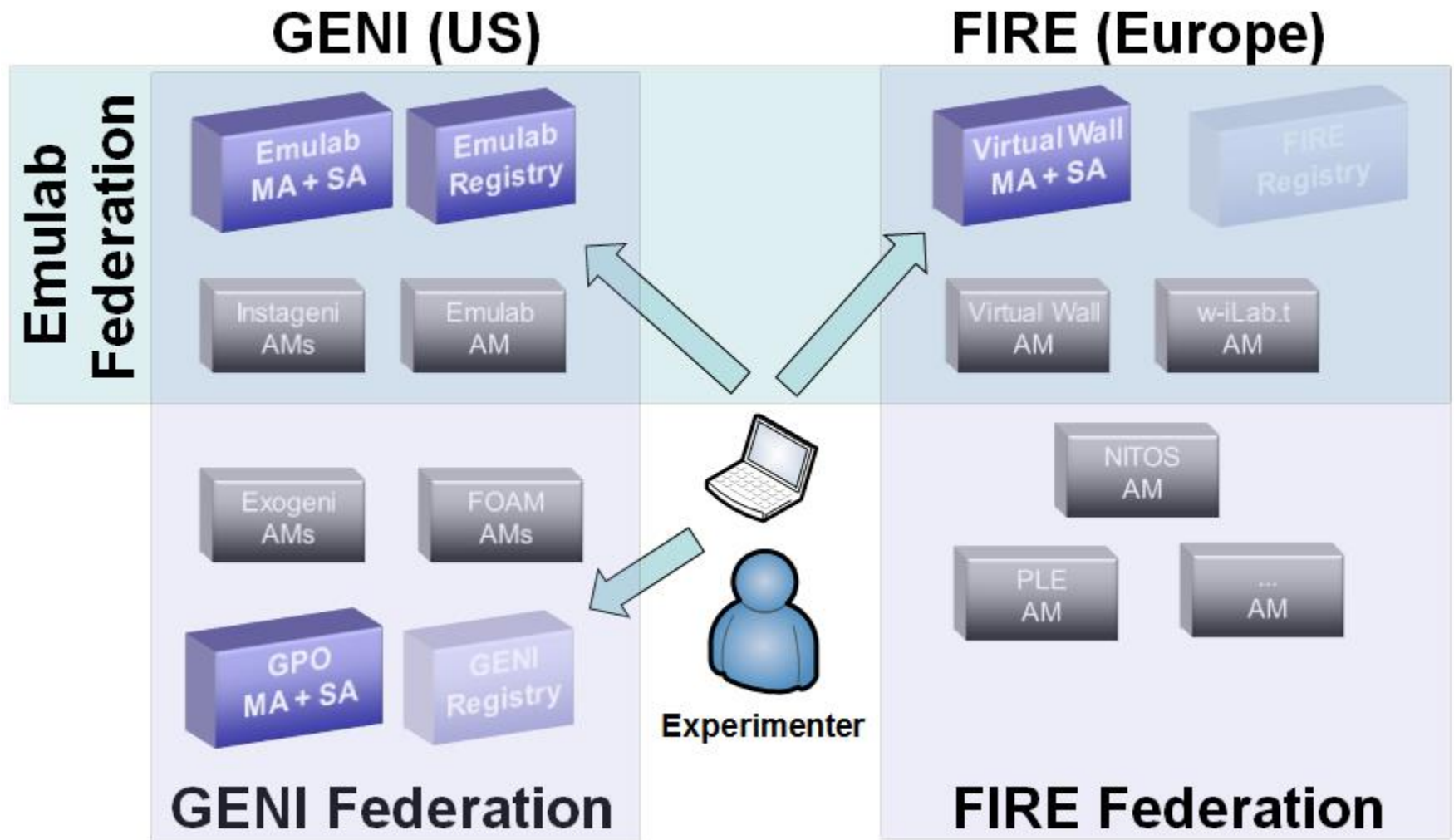
- ✓ `setUp`
- ✓ `getVersion`
- ✓ `getTestUserCredential`
- ✓ `retrieveCredentialSomehow`
- ✓ `lookupPrivateMemberInfoEmptyFilter`
- ✓ `lookupPrivateMemberInfoNoFilter`
- ✓ `lookupIdentifyingMemberInfoNoFilter`
- ✓ `lookupIdentifyingMemberInfoEmptyFilter`
- ✓ `lookupPublicMemberInfoEmptyFilter`
- ✓ `lookupPublicMemberInfoNoFilter`
- ✓ `lookupPublicMemberInfoFiltered`
- ✓ `lookupIdentifyingMemberInfoFiltered`
- ✓ `createKey`
- ✓ `lookupKeysNoFilter`
- ✓ `updateKey`

Slice Auth API

Total duration 24.366s from Fri Oct 25 22:46:45 CEST 2013

- ✓ `setUp`
- ✓ `getVersion`
- ✓ `getTestUserCredential`
- ✓ `getTestUserInfo`
- ✓ `retrieveCredentialSomehow`
- ✓ `createProject`
- ✓ `lookupProjectsByUrnNoFilter`
- ✓ `lookupProjectsByNameNoFilter`
- ✓ `createSlice`
- ✓ `updateProject`
- ✓ `getSliceCredentials`
- ✓ `lookupSlicesNoFilter`
- ✓ `lookupProjectsNoFilterAfterUpdate`
- ✓ `lookupProjectMembers`
- ✓ `updateSlice`

Federation



Federation registry make that tools know what to do (list AMs, authorities)

The screenshot displays the jFed Experimenter Toolkit interface. The main window has a title bar "jFed Experimenter Toolkit" and a menu bar with "General" and "Experiment Editor". The toolbar includes icons for Copy, Paste, Duplicate, Zoom In, Zoom Out, Reset Zoom, Format Code, Search, Search & Replace, Graphical Editor (highlighted), and Raw Rspec. The main workspace is a grid with a "Computing Elements" sidebar on the left containing icons for Generic Node, Wireless node, Physical Node, OpenVZ VM, and Virtual Machine. A "node0" icon is highlighted in the workspace. A "Properties of node0" dialog box is open, showing fields for Node name (node0), Select testb... (PlanetLab Europe), and Select node: (radio buttons for Any available node and Specific node). A dropdown menu for "Specific node:" is open, listing various hostnames such as aguila1.lsi.upc.edu, aguila2.lsi.upc.edu, aladdin.planetlab.extranet.uni-passau.de, ampelos.ipv6.lip6.fr, anateus.ipv6.lip6.fr, chimay.infonet.fundp.ac.be, chronos.disy.inf.uni-konstanz.de, dannan.disy.inf.uni-konstanz.de, dfn-ple1.x-win.dfn.de, and dplanet1.uoc.edu. The bottom status bar shows "Untitled X" and a tooltip: "Click and drag the circle to a target node to create a new link." The bottom right corner features system icons and the text "inds E.CREATE".

Standardization

- Federation Clearinghouse APIs: v2
- Federation Aggregate Manager API: v1 currently ongoing
 - Slight update/better specification of GENI AM v3
 - API Testing framework will also be developed

Fed4FIRE

- Start of **funded** federated experiments in February
- All candies shown before are used (SSH proxy, support tickets, RAW RSpec)
- Documentation is key: <http://doc.fed4fire.eu>
- Together with good testbed documentation,
 - e.g. all RSpec stuff
 - iMinds testbeds: <http://fed4fire-testbeds.ilabt.iminds.be/ilabt-documentation/>
 - Currently biggest problem: ‘how do I’, ‘oh, just, ...’
- Distributed doc effort: testbeds and tools document their features, Fed4FIRE creates links
- Try to abstract all framework stuff for experimenter

Fed4FIRE support

- Google group: fed4fire-experimenters
 - <https://groups.google.com/forum/#!forum/fed4fire-experimenters>
 - 37 members (developers + experimenters)
- First level support dashboard
 - <https://flsmonitor.fed4fire.eu/>

Testbed Name	Ping latency (ms)	GetVersion Status	Free Resources	Internal testbed monitoring status	Last check internal status
BonFIRE	31.17	N/A	N/A	ok	2014-03-19 12:47:18+01
Fuseco	35.72	ok	1	ok	2014-03-19 12:47:03+01
Koren	284.47	N/A	N/A	N/A	N/A
NETMODE	64.97	ok	20	ok	2014-03-19 12:41:22+01
NITOS Broker	70.56	ok	38	ok	2014-03-19 12:45:02+01
NITOS SFAWrap	30.66	ok	52	N/A	N/A
Norbit	N/A	N/A	N/A	ok	2014-03-13 06:04:50+01
Ofelia (Bristol island)	11.36	N/A	N/A	ok	2014-03-19 12:45:03+01
Ofelia (i2CAT island)	N/A	N/A	N/A	ok	2014-03-19 12:45:02+01
Planetlab Europe	30.65	ok	287	ok	2014-03-19 12:45:02+01
SmartSantander	53.17	ok	0	ok	2014-03-19 12:40:01+01
Virtual Wall	0.08	ok	17	ok	2014-03-19 12:44:39+01
w-iLab.t 2	11.01	ok	1	ok	2014-03-19 12:44:58+01

Conclusion

- <http://jfed.iminds.be>
- <http://monitor.ilabt.iminds.be>
- <http://doc.fed4fire.eu>
- <http://www.fed4fire.eu>