

FED4FIRE

Federation tools: jFed

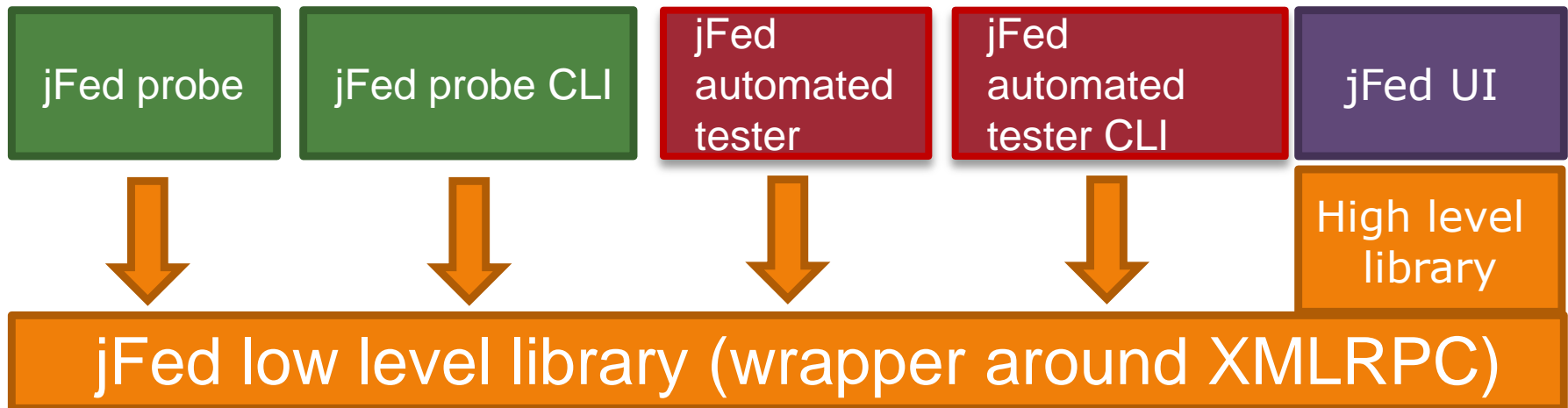
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jFed

- <http://jfed.iminds.be>
- Release 3.0.0
- Written in Java(FX)
- MIT license
- Test and monitor federation



jFed parts

- Probe
 - probe individual functions of APIs
 - Also CLI version: e.g. to get XML of listresources
- Automated testing
 - scenarios of API calls (which can use information of previous calls)
 - Also CLI version: e.g. full login test for dashboard
- UI
 - Experimenter tool
- Uses as input
 - cert+private key as you use for Flack
 - can talk to planetlab registry
 - will be able to talk to new 'Clearinghouse'

Compiling

- Uses maven: mvn package
- Or use pre-compiled jars or java webstart on <http://jfed.iminds.be>

jFed probe: manual testing + API learning

The screenshot displays a web-based API testing tool interface. On the left, a tree view shows various API endpoints, with 'Geni Aggregate Manager API v2' expanded to show 'getVersion'. The main panel shows the configuration for a call to 'iMinds Virtual Wall 2' at the URL 'https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0'. The command 'getVersion' is entered, and the call was successful. The response is shown in JSON format, indicating the version is '0.1' and the type is 'ProtoGENI'.

Server to use: Authority: iMinds Virtual Wall 2 Edit List...
 Server of Logged in users Authority
 Server of Known Authority
 Custom Server URL

Server URL: https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0

Command: getVersion
help

Arguments:

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

Call

Geni Aggregate Manager API v2 - GetVersion

|< < > >| auto

Authority: iMinds Virtual Wall 2
Server URL: https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0
Call start time: Tue Oct 29 12:00:48 CET 2013 (2 seconds ago)
Call stop time: Tue Oct 29 12:00:50 CET 2013 (0 seconds ago = 2 seconds and 719 milliseconds after start)

Save All...

HTTP Details XmlRpc Details Low level Result Result ProtoGeni Error Log

Low Level Result Received:

```
{
  "url" -> "https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am",
  "hrn" -> "iminds-wall2.cm",
  "geni_ad_rspec_versions" -> [
    {
      "version" -> "0.1",
      "type" -> "ProtoGENI",
      "namespace" -> "http://www.protogeni.net/resources/rspec/0.1",
      "extensions" -> [],
      "schema" -> "http://www.protogeni.net/resources/rspec/0.1/ad.xsd"
    }
  ]
}
```

Save...

jFed probe CLI

```
java -jar /work/monitoring/jfed/jfed-probe-cli.jar
```

```
usage: jfed-probe-cli [options ... ] <command> [command arguments ...]
```

Possible options:

<code>-a,--authority <arg></code>	fill in server url based on hrn. Only works for k
<code>--accept-self-signed</code> security risk)	accept unknown self signed certificates (DANGER: t
<code>--api <API></code>	The API to call (MANDATORY)
<code>--authorities-file <AUTHORITIES XML FILE></code> ~/jFed/authorities.xml	The xml file containing the list of known authorit
<code>--clearinghouse</code>	fetch certificates etc from clearinghouse first
<code>--context-file <CONTEXT_FILE></code> properties file (same format as used by automated tester)	replaces all previous parameters by those in the p
<code>-d,--debug</code>	extra debugging output
<code>-i,--interactive</code>	interactively request some missing options and con
The --api option and the <command> are still required	
<code>-k,--key-file <arg></code>	file containing user certificate and key in PEM fo
<code>--output-file <CONTEXT_FILE></code>	file to write output to
<code>-q,--quiet</code>	less output
<code>-u,--server-url <arg></code>	URL of server
<code>--use-tested-SA</code>	do not use the SA of the user, use the SA of the t

Required options:

```
--api  
either --context-file or both -k and -u (-u can be replaced by -a)
```

jFed: automated testing

- Full scenario/compliance testing, e.g.
 - GetVersion
 - Create Slice
 - Create sliver
 - Ssh login
 - Delete sliver
- Creates automatically HTML reports
- Used to drive <http://monitor.ilabt.iminds.be>

Testing report: e.g. CreateSliver

✓ testCreateSliver

SUCCESS

duration 14.067s from Tue Oct 29 10:01:21 CET 2013 to Tue Oct 29 10:01:35 CET 2013

Api Call 1: [Hide/Show](#)

API Name: Geni Aggregate Manager API v2

Authority HRN: iMinds Virtual Wall 2

Authority URN: urn:publicid:IDN+wall2.ilabt.iminds.be+authority+cm

API Method Name: CreateSliver

Java Method Name: CreateSliver

Parameters: [Hide/Show](#)

Server URL: https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0

XMLRPC Request: [Hide/Show](#)

XMLRPC Reply: [Hide/Show](#)

HTTP Request: [Hide/Show](#)

HTTP Reply: [Hide/Show](#)

HTTP Reply (formatted): [Hide/Show](#)

Geni Response Code: 0 Success

Geni Reply Value: [Hide/Show](#)

Geni Reply Output Reply:

Automated testing

```
java -jar jfed-automated-testing-cli.jar  
--context-file vwall2.properties  
--test-class  
be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager2  
--group nodelogin  
--authorities-file authorities.xml  
--output-dir test-output/
```

Concept: use exit codes for getting info for monitoring (mail, dashboard, ...)

Properties file for test

```
username = ftester
passwordFilename = /work/monitoring/logins/ftester.pass
pemKeyAndCertFilename = /work/monitoring/logins/ftester_wall2.pem
userAuthorityUrn = urn:publicid:IDN+wall2.ilabt.iminds.be+authority+cm
testedAggregateManagerUrn =
urn:publicid:IDN+wall2.ilabt.iminds.be+authority+cm
amversion = 2
testbedid = 1
pinghost = www.wall2.ilabt.iminds.be
testclass = be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager2
testgroup = nodelogin
testname = Nodelogin Virtual Wall
testdescription = Create a sliver with a single node, and login on that
node.
testcategory = login
testforpartialsuccess = testCreatedSliverBecomesReady
testforfullsuccess = testNodeLogin
```

Authority information

E.g. <https://flsmonitor.fed4fire.eu/testbeds.xml>

```
<authority>
  <urn>urn:publicid:IDN+wilab2.ilabt.iminds.be+authority+cm</urn>
  <hmn>iMinds WiLab 2</hmn>
  - <urls>
    - <serverurl>
      <servertype role="Slice Authority" version="1"/>
      <url>https://www.wilab2.ilabt.iminds.be:12369/protogeni/xmlrpc/sa</url>
    </serverurl>
    - <serverurl>
      <servertype role="Aggregate Manager" version="2"/>
      <url>https://www.wilab2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0</url>
    </serverurl>
    - <serverurl>
      <servertype role="Aggregate Manager" version="3"/>
      <url>https://www.wilab2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/3.0</url>
    </serverurl>
    - <serverurl>
      <servertype role="Aggregate Manager" version="1"/>
      <url>https://www.wilab2.ilabt.iminds.be:12369/protogeni/xmlrpc/am</url>
    </serverurl>
  </urls>
  <type>emulab</type>
  <reconnectEachTime>>false</reconnectEachTime>
  <pemSslTrustCert>-----BEGIN CERTIFICATE----- MIIEgjCCA2qgAwIBAgIRAjTSpUYIQTrQTVeuvAt8bXQwDQYJKoZIhvcNAQEL
  NjELMAkGA1UEBhMCTkwzDzANBgNVBAoTBIRFUkVOQTEWMBQGA1UEAxMNVEVSRSU5B
  IFNTTCBDQTAeFw0xMzA1MDYwMDAwMDBaFw0xNjA1MDUyMzU5NTIaMEGxITAFBgNV
  BAsTGERvbWFpbjBDb250cm9sIFZhbGlicXhRIZDEjMCEGA1UEAxMad3d3LndpbGFi
  Mi5pbGFidC5pbWluZHMuYmUwggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIB
  AQDH3Tel+sJ6ikRLtZ43YaTqQ8Y0SaHnguy/3RDHeRoQAiNoyopQvXNwzeRgpHMR
  3bRwG6jjmwfIsVfMwL+f1gX/bmWrZxCoovU2Fz1NiR3p1zI1AHnW+MBWoF9/Q+5Y
  1eWAZ61VKu/kL6X55fD8GYW51vRrFeMyvqGhkBDWdWzqa0Ct5TH/x016pUM4jaF+b
  s5xD6cP37bCMUO5S7rIYa7v4BGLvJgMxax7x3RoMOaAddOM/4lofdZmFIKvYa0nM
  a/ta+dDecBz35/minYUuwuq5gW25XR7KFfNeyVAkv69nNiErFGVct2Mv5kjwm3NgV
  ec+mkJwU9PSAN37x+qbJHXOjAgMBAAGjggF3MIIbCzAfbGnVHSMEGDAWgBQMvZNo
  DPpeq6Njays3V0fqk0057TAdBgNVHQ4EFgQUqlvn1Jr9Ns1v7KUSTtweAxriaeUw
  DgYDVR0PAQH/BAQDAgWgMAwGA1UdEwEB/wQCMAAwHQYDVR0IBBYwFAYIKwYBBQUH
  AwEGCCsGAQUFBwMCMCIgA1UdIAQbMBkwDQYLKwYBBAGyMQECAh0wCAYGZ4EMAQIB
  MDoGA1UdHwQzMDEwL6AtoCuGKWh0dHA6Ly9jcmwudGNzLnRlcmVuY5S5vcmcvVEVS
  RU5BU1NMQ0EuY3JsMG0GCCsGAQUFBwEBBGEGwXzA1BggrBgEFBQcwAoYpaHR0cDov
  L2Nydc50Y3MudGVyZW5hLm9yZy9URVJFTkFTU0xDQs5jcnQwJgYIKwYBBQUHMAGG
  Gmh0dHA6Ly9vY3NwLnRjcy50ZXJlbnEub3JnMjUyMzU5NTIaMEGxITAFBgNVBAsT
  YjIuaWxhYnQuaW1pbmRzLmJMA0GCSqGSIb3DQEBBQUAA4IBAQAAna948n23y6gJV
  rR976Hxi2oW+Py7w7ycW5eHD/YF3qdhLsvWBCffh26zeWE8IXbNyLU9fP96vRHAh
  D99gOcD7wiUYnjmvOwRoK/1bStzx88PYRuZVYUKp+5ksmERxSJMIFgb7HHtgF3m6
  e1835ONyDfxmyMH1z+G/gpw8SI5+4tFxFgnvVbyN9WnLH1Zw3mdhEIMKCRp26/wnl
  VU19QHQbqWnouYmeZ6UE3yvYobihl1Cqc207AoxmLUvQjleyC6Dr9twj775joPF
  rfV4VxQIZE6hhvWvgBdn/Of12KPk4KNzxQ1G2XaGq+cBZS37F3wOKTbBp+HZjB+ mqGrS2Lp -----END CERTIFICATE-----
</authority>
```

This should come
from new
clearinghouse !



```
java -jar /work/monitoring/jfed/jfed-automated-testing-cli.jar
```

```
usage: jfed-automated-testing-cli [options ... ] <command> [command arguments ...]
```

Options:

```
--authorities-file <AUTHORITIES XML FILE>  The xml file containing the list of known authorities. Default: ~/.jFed/authorities.xml
--clearinghouse                             Fetch certificates etc from clearinghouse first
--context-file <CONTEXT PROPERTIES FILE>    The properties file containing context details (login, tested server, etc.) (MANDATORY)
-d,--debug                                   extra debugging output
--fake                                       Do everything, expect for executing the actual tests (there are considered successful)
--group <NAME>                              Test group to execute within test class (default: all methods)
--output-dir <DIR>                          Directory to write the generated reports (html file + PNGs).
-q,--quiet                                   less output
-S,--show-credentials                       do not automatically hide credentials and other security sensitive data. Obviously, this
can be a security risk if the report is made available online.
--test-class <CLASS NAME>                  Fully quantified test class name (MANDATORY)
```

Example Test Context Properties File content:

```
username = <username>
```

```
passwordFilename = <filename of file containing password>
```

```
pemKeyAndCertFilename = <filename of file containing user certificate and private key in PEM format>
```

```
userAuthorityUrn = <URN of test user's authority>
```

```
testedAggregateManagerUrn = <URN of tested Aggregate Manager>
```

Known test classes:

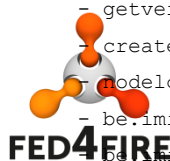
```
- be.iminds.ilabt.jfed.lowlevel.api.test.ConnectivityTestSliceAuthority
- be.iminds.ilabt.jfed.lowlevel.api.test.ConnectivityTestAggregateManager3
- be.iminds.ilabt.jfed.lowlevel.api.test.ConnectivityTestAggregateManager2
- be.iminds.ilabt.jfed.lowlevel.api.test.TestSliceAuthority
- be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager2
```

groups:

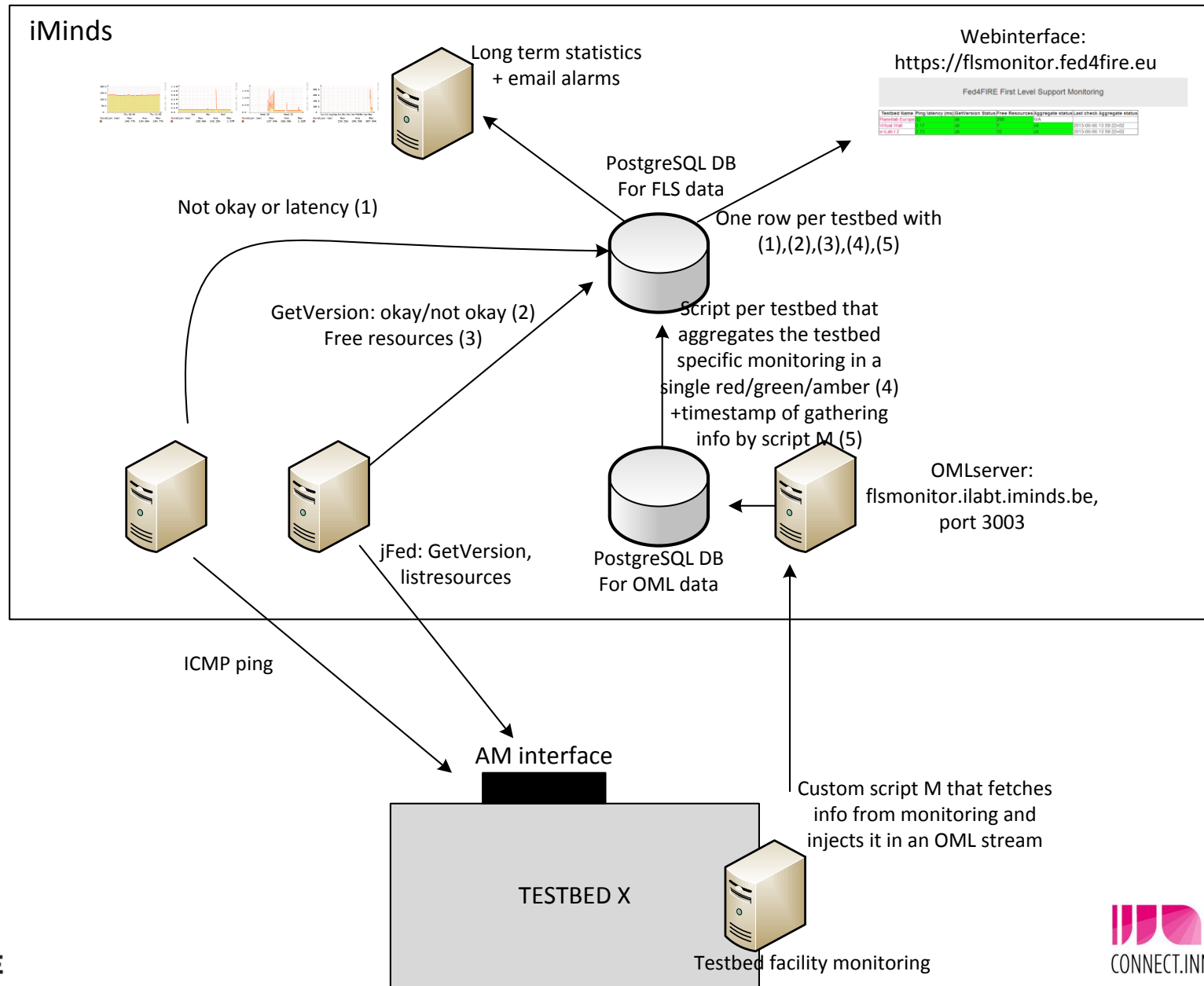
```
- listavailablelresources
- getversion
- nodelogin
- createsliver
- be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager3
```

groups:

```
- getversion
- createsliver
- nodelogin
- be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager2ListResources
- be.iminds.ilabt.jfed.lowlevel.api.test.TestAggregateManager3ListResources
```



jFed automated testing integration example



Monitoring

- <http://monitor.ilabt.iminds.be>
- GetVersion/listresources used as a 'testbed ping'
 - each 20 minutes
- Full login tests and stitching tests
 - Twice a day (night and day)
- Detailed reports on fails + history

Tests Uniform Clearinghouse APIs

Specification and prototype: GPO, Utah, Ofelia, iMinds
Webbased starting of test scenario (for developers)

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

jFed UI

Waiting Calls: 0 Currently running Calls: Status of Sliver @ urn:publicid:IDN+wall2.ilabt.iminds.be+authority+cm

Tools: Refresh Slice: All Info All Statuses All Manifests

Slices: Refresh

Info Create Sliver(s) Sliver Status

Sliver Status:
Slice gec1 sliver @ iMinds Virtual Wall 2 Status: READY Node Count: 2 Refresh Manifest Refresh Status Delete

Aggregate Status of Slice: READY
Edit request based on manifest Delete All Slivers in Slice

Auto Arrange Nodes Switch Style Zoom + Zoom - Reset Zoom

node0
link2
node1

Component Manager URN: urn:publicid:IDN+wall2.ilabt.iminds.be+ authority+ cm
Component URN: urn:publicid:IDN+wall2.ilabt.iminds.be+ node+ n096-11b
Component Name:
DNS Name: node0.gec1.wall2-ilabt-iminds-be.wall2.ilabt.iminds.be

Shell	Command
No content in table	

Execute Services:

Install Path	Archive URL
No content in table	

Install Services:

Authentication	Username	Port	Hostname	
ssh-keys	bvermeul	22	n096-11b.wall2.ilabt.iminds...	Login...

Login Services:

jFed

- <http://jfed.iminds.be>
- Current state (what do we use in production):
 - Probe GUI: mature
 - Automated tester CLI: mature
 - Experimenter UI: alpha
 - Stitching support: couple of bugs to fix (retries)
- Mailing list: <http://lists.fed4fire.eu/listinfo/jfed>