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D2.5 – Second integration and testing roadmap

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Abstract	This second deliverable of task 2.2 in the WP2 architecture work package defines the integration and testing roadmap for the second cycle of the Fed4FIRE project.
Keywords	Federation, Integration, Testing

Nature of the deliverable	R	Report	X
	P	Prototype	
	D	Demonstrator	
	O	Other	
Dissemination level	PU	Public	X
	PP	Restricted to other programme participants (including the Commission)	
	RE	Restricted to a group specified by the consortium (including the Commission)	
	CO	Confidential, only for members of the consortium (including the Commission)	

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Executive Summary

This deliverable defines the second testing and integration roadmap of Fed4FIRE, targeting the second cycle of the project. We have further refined this cycle in a phase 1 (M17-M20) and phase 2 (M21-M24). As a result, we will be able to show the results of phase 1 of cycle 2 at the review planned in June and also the open call experiments of the SME open call will be able to use these developments.

At the end of cycle 1 all testbeds (Nicta Norbit, iMinds Virtual Wall, iMinds w-iLab.t, UPMC & Inria PlanetLab Europe, FOKUS FUSECO, NTUA Netmode, UTH Nitos, NIA Koren, Ofelia (i2CAT, UBristol, iMinds), except BonFIRE and UC Smart Santander, had a compliant Aggregate Manager (AM) interface. For the BonFIRE testbeds (Inria Grid5000, EPCC) testbeds, the adaptation is not that straight forward and is targeted for phase 1 of cycle 2. Smart Santander uses a REST interface as it currently offers a service oriented access to the sensor measurements.

The new additions for cycle 2 are the following:

- Layer 2 connectivity between multiple sites: target is to interconnect at least 3 sites by phase 1 of cycle 2 and at least 5 sites by the end of cycle 2.
- Infrastructure monitoring: this comes in two flavours. Infrastructure monitoring for federation services (e.g. reputation, SLA monitoring, ...) will be adopted earlier by the testbeds (at least one testbed will provide this by phase 1 of cycle 2, the others will implement this by the end of cycle 2), then the infrastructure monitoring for experimenters (which contains more and more detailed monitoring data) which is targeted for cycle 3.
- PDP (policy decision point) for FRCP: this PDP makes it possible to run OMF in a secure way. It will be implemented by 3 testbeds in phase 1 of cycle 2 and more will adopt it by the end of cycle 2.
- SLA management module: will be deployed centrally and at least 1 testbed will implement the testbed side of SLAs by the end of cycle 2.
- Reservations in the future: about half of the testbeds will implement this in cycle 2
- Direct (IPv4 or IPv6) or indirect (through gateway) IP access without VPN: possible at all testbeds by the end of cycle 2.
- Ontology based RSpec: first prototypes should be implemented by the end of cycle 2.
- Services: the service directory will be ready by phase 1 of cycle 2, a couple of services by the end of cycle 2.

In Fed4FIRE there is also a test suite (jFed framework) which is used for testing the different APIs. In this way developments can be tested manually, and afterwards they are tested automatically in nightly and daily tests with the same framework. The test suite also supports setting up complex scenario testing.

Acronyms and Abbreviations

AM	Aggregate Manager
API	Application Programming Interface
DoW	Description of Work (official document describing the Fed4FIRE project)
FRCP	Federated Resource Control Protocol
GENI	Global Environment for Network Innovations
NEPI	Network Experimentation Programming Interface [5]
OMF	cOntrol and Management Framework [6]
PLE	PlanetLab Europe
RSpec	Resource Specification
SFA	Slice-based Federation Architecture
Testbed	Combination of testbed resources (e.g. servers) and testbed management software

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2 Refinement of timing

As the break up of cycle 1 in 2 phases was successful, we decided to do the same for cycle 2.

Original planning:

- Implementation and alpha-testing: M17-M22
- Beta- and interoperability testing: M23-M24

New planning:

- Implementation, integration and testing (phase 1): M17-M20
- Implementation, integration and testing (phase 2): M21-M24

We call this the first phase (M17-M20) of cycle 2 which is followed by a second phase (M21-M24). In this way, there will be already a new set of features deployed by the 2nd project review and for the experiments of the 2nd open call. In this way also, integration problems can be tackled earlier on.

3 Cycle 2 new functionality

In cycle 2, the following new functionality will be added:

- Layer 2 connectivity between multiple sites (also called stitching): target is to interconnect at least 3 sites by phase 1 of cycle 2 and at least 5 sites by the end of cycle 2.
- Infrastructure monitoring: this comes in two flavours. Infrastructure monitoring for federation services (e.g. reputation, SLA monitoring, ...) will be adopted earlier by the testbeds (at least one testbed will provide this by phase 1 of cycle 2, the others will implement this by the end of cycle 2), than the infrastructure monitoring for experimenters (which contains more and more detailed monitoring data) which is targeted for cycle 3.
- PDP (policy decision point) for FRCP: this PDP makes it possible to run OMF in a secure way. It will be implemented by 3 testbeds in phase 1 of cycle 2 and more will adopt it by the end of cycle 2.
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- Ontology based RSpec: first prototypes should be implemented by the end of cycle 2.
- Services: the service directory will be ready by phase 1 of cycle 2, a couple of services by the end of cycle 2.

4 Basic approach and test suite

4.1 Testing and integration steps

The implementation, testing and integration phases are made up out of the following steps:

1. Detailed functional description
2. Development
3. First manual testing per testbed with test suite
4. Automatic nightly testing of testbeds with test suite
5. Cross and integration testing between tools and testbeds

The first two are driven by WP3-7, while 3) and 4) are driven from WP2 with a high interaction with WP3-7. The last step is driven by the tool makers (WP5-WP7) and supported by WP2. Based on the output of deliverables D5.2, D6.2 and D7.2 ('Detailed specifications for second cycle' of WP5/6/7, month 5) and milestones M3.2/M4.2 ('Second design specification for facilities') a matrix will be built of which tool will work and will be tested against which testbed in cycle 2 (e.g. the experiment control framework NEPI [5] will work on testbed A,B,C and D, the graphical front-end for resource control Flack [3] will work on testbed D and E, the portal will be compatible with all testbeds, ...).

4.2 Test suite

4.2.1 Rationale

The jFed test suite which was developed in the project aids in steps 3) and 4) of the previous section.

This test suite is developed in Java and targets following goals:

- Make it possible to do manual compliance testing of the testbeds. Based on the outputs of milestones M3.2 and M4.2 ('Second design specification for facilities'), the compliance will be defined (e.g. SFA functions compliance, APIs for the identity providers, ...).
- When the manual compliance testing is successful, do an automatic nightly testing on each testbed, to assure continuous compliance.
- Provide a reference implementation in Java of the client side of the APIs (GENI Aggregate Manager (AM) APIv3 [1], identity providers, ...).
- The test suite focuses on logical tests (all steps in the experiment workflow) and add specific interface tests and negative testing (are things breakable ?) where needed. There is e.g. also an ssh login on the nodes to verify that the node itself is accessible and runs the right image.
- The automatic tests post the test reports on a website and send emails in case of problems.
- The test suite is open source (<http://jfed.iminds.be>) and is a framework based on plugins so that tests can be easily added.

4.2.2 Comparison to other test suites

We are aware of one similar test suite, the 'GENI AM API Acceptance Tests' [2] which is built around the omni framework. The differences with the Fed4FIRE test suite are:

- The GENI test suite is written in python just as most AM applications. By developing the Fed4FIRE test suite in java, we can also test cross-language compatibility and as far as we know it is the first Java implementation of the SFA client side, which facilitates the development of Java based interfaces/experimenter tools (such as GUIs).
- The GENI test suite covers at this moment only the AM API, while in Fed4FIRE we will test also the other components (identity providers, testbed directories, ...).
- When new functionality will be added in the testbeds of Fed4FIRE (e.g. ontology based RSpecs) the test suite will be extended with this and this is not yet available in the GENI test suite.
- For conducting the manual testing, a graphical user interface in the test suite makes it very convenient to inspect the problems (cf. the details that Flack [3] can show about RSpecs and function calls).
- The GENI test suite does not support scenarios, e.g. including SSH login on a node.

For the functions covered by the GENI AM API Acceptance Tests, the GENI test suite will be used as a cross check.

4.2.3 Current state

The test suite is currently finished for the basic APIs. Now scenarios will be added for cycle 2 functionality, e.g. stitching layer 2 connectivity.

4.2.4 jFed probe for manual testing

A screenshot of the jFed probe tool for manual testing is depicted in Figure 1. The left side shows all the APIs that are available and that can be tested.

The bottom shows an example of a call with HTTP, XMLRPC, reply value details.

At the top right, the testbed that will be involved in the test is being selected.

The screenshot displays the jFed probe interface. On the left, a tree view shows the hierarchy of API endpoints, with 'Aggregate Manager v2' expanded and 'getVersion' selected. The main panel shows configuration for the selected endpoint, including 'Server to use' (Server of Known Authority), 'Authority' (iMinds Virtual Wall 2), and 'Server URL' (https://www.wall2.ilabt.iminds.be:12369/protogeni/xmlrpc/am/2.0). The command is set to 'getVersion'. Below this, a table for 'Arguments' is visible but empty. The bottom section shows a detailed view of the 'Geni Aggregate Manager API v2 - GetVersion' call, including call start and stop times, and a 'Geni Reply Value' field containing JSON data.

Figure 1: Screenshot of jFed probe for manual testing

4.2.5 jFed scenario testing

In the screenshot below both, an overview of the available automated scenarios that can be tested and a single scenario that was run are depicted.

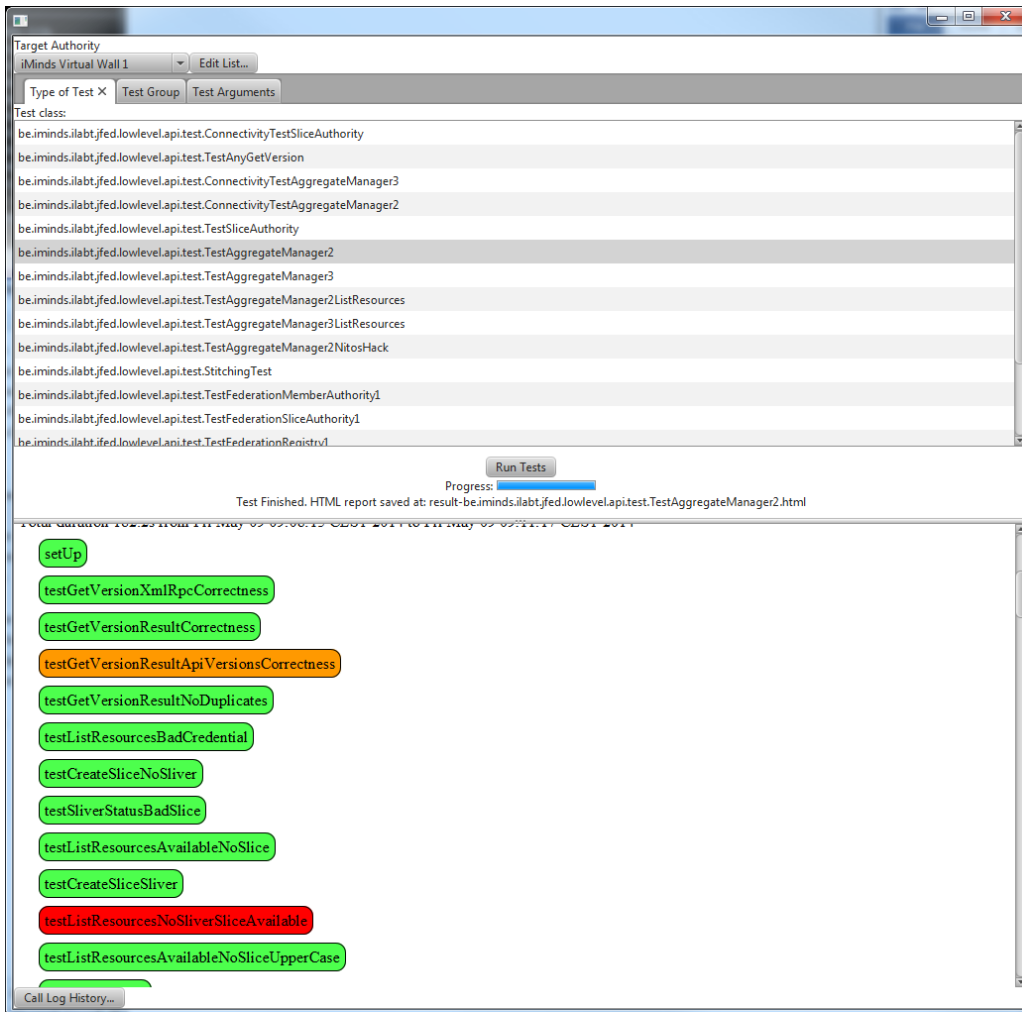
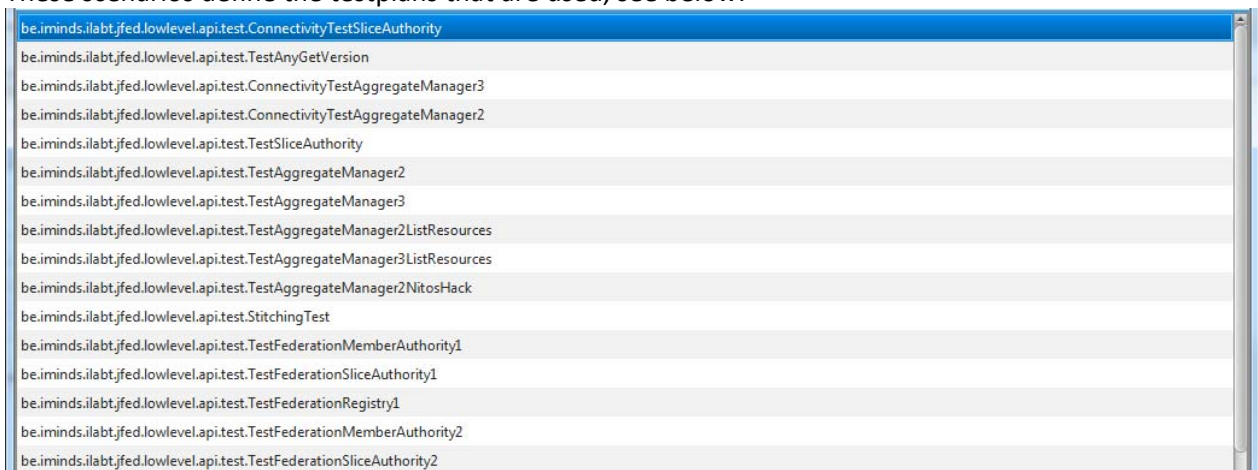


Figure 2: Screenshot of the jFed scenario testing environment

These scenarios define the testplans that are used, see below:



The testplans are detailed in the code, so that there is a single place where all this information resides. Latest version of the testsuite can be found at <http://jfed.iminds.be/releases> where you can download the code for a specific release.

The testplans are detailed in the source directory:

automated-testing\src\main\java\be\iminds\ilabt\jfed\lowlevel\api\test

Each file there is a scenario test which is built in the standard Java testing framework TestNG (<http://testng.org>) . In that way the test suite itself is according a standard framework, easily to understand by everyone, and also generates standard HTML output as shown in the screenshots. TestNG also makes it possible to define warnings or hard errors and assertions.

4.2.6 Nightly testing

The website <http://monitor.ilabt.iminds.be/> shows all nightly testing that is being done.

Below an overview of a number of automatic tests on a single testbed is shown.

login	Nodelogin Virtual Wall	2014-03-05 10:16:57	2 minutes and 2 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-05 22:15:15	2 minutes and 9 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-06 10:15:01	2 minutes and 7 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-06 21:49:24	1 minute and 57 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-07 10:08:17	2 minutes and 2 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-07 22:08:05	2 minutes and 6 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-08 10:14:17	2 minutes and 3 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-08 22:08:12	2 minutes and 8 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-09 10:12:45	1 minute and 59 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-09 22:10:11	2 minutes and 7 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-10 10:11:04	2 minutes and 11 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-10 22:15:48	2 minutes and 12 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-11 10:12:44	2 minutes and 58 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-11 22:14:01	2 minutes and 16 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-12 10:15:33	1 minute and 55 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-12 22:09:42	1 minute and 56 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-13 22:17:11	2 minutes and 11 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-14 10:18:35	2 minutes and 31 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-14 22:10:44	1 minute and 58 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-15 10:09:38	2 minutes and 3 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-15 22:35:43	1 minute and 55 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-16 10:13:26	2 minutes and 3 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-16 22:12:55	2 minutes and 21 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-17 10:02:45	2 minutes and 1 second	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-17 22:09:08	2 minutes and 10 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-18 10:10:52	3 minutes and 13 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-18 22:07:06	2 minutes and 5 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-19 10:14:12	2 minutes and 4 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-19 22:29:31	2 minutes and 6 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-20 10:12:39	2 minutes and 4 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-20 22:13:06	2 minutes and 11 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-21 10:07:26	2 minutes and 4 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-21 22:04:40	1 minute and 57 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-22 10:18:47	2 minutes and 6 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-22 22:06:50	2 minutes and 7 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-23 10:13:15	2 minutes and 18 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-23 22:09:45	1 minute and 59 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-24 10:07:01	2 minutes and 19 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-24 22:07:36	2 minutes	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-25 10:34:39	2 minutes and 15 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-25 22:05:22	2 minutes and 27 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-26 10:08:39	2 minutes and 5 seconds	SUCCESS	SUCCESS	log
login	Nodelogin Virtual Wall	2014-03-26 22:06:11	2 minutes and 10 seconds	SUCCESS	SUCCESS	log

Figure 3: Extract of nightly testing results that are exposed on <http://monitor.ilabt.iminds.be/>

For each run, a detailed overview of all calls can be analysed:

Overview

Total duration 115.388s from Mon Mar 17 10:02:49 CET 2014 to Mon Mar 17 10:04:44 CET 2014

- ✓ setUp
- ✓ testGetVersionXmlRpcCorrectness
- ✓ testListResourcesAvailableNoSlice
- ✓ testCreateSliceSliver
- ✓ testCreateSliver
- ⚠ testCreatedSliverBecomesReady
- ✓ checkManifestOnceSliverIsReady
- ✓ testNodeLogin
- ✓ testDeleteSliver

Details

<p>✓ setUp</p> <p>SUCCESS</p> <p>Test Class setup</p> <p>duration 0.981s from Mon Mar 17 10:02:49 CET 2014 to Mon Mar 17 10:02:50 CET 2014</p> <p>Api Call 1: Hide/Show</p>
<p>✓ testGetVersionXmlRpcCorrectness</p> <p>SUCCESS</p> <p>duration 0.804s from Mon Mar 17 10:02:50 CET 2014 to Mon Mar 17 10:02:50 CET 2014</p> <p>Api Call 1: Hide/Show</p>
<p>✓ testListResourcesAvailable.NoSlice</p> <p>SUCCESS</p> <p>duration 9.769s from Mon Mar 17 10:02:50 CET 2014 to Mon Mar 17 10:03:00 CET 2014</p> <p>Api Call 1: Hide/Show</p> <p>NOTE: The received RSpec has a length of 208920 characters, and lists 37 nodes.</p> <p>NOTE: Found nodes for the following component_managers_id's: [urn:publicid:IDN+wall2.ilabt.iminds.be+authority+cm]</p> <p>NOTE: Found potential fixed node: urn:publicid:IDN+wall2.ilabt.iminds.be+node+n095-11b</p> <p>NOTE: Best sliver type found: emulab-openvz</p>
<p>✓ testCreateSliceSliver</p> <p>SUCCESS</p> <p>duration 1.428s from Mon Mar 17 10:03:00 CET 2014 to Mon Mar 17 10:03:02 CET 2014</p> <p>Api Call 1: Hide/Show</p>

Figure 4: Details of all API call results belonging to the nightly testing

4.2.7 Stress testing with jFed

We run also stress tests (a large number of experimenters starting at the same moment an experiment), to see how the testbeds can cope with that (typically for education or tutorials people are in the same room and start at the same moment).

Below the output of a stress test is shown. Each row is the equivalent of an experimenter starting an experiment. The numbers 0-8 mean the different steps in setting up an experiment (e.g. create slice, create sliver, ssh login, delete experiment, ...) so that we can see what went wrong. Also important is to see how it takes, so you can anticipate for a tutorial or education class when all people should be ready.

Time execution (CET)	duration	Status	log	resultHtml	result-overviewXml
05/05/2014 - 03:16:45	09:39	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:10	09:34	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:09	09:15	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:09	09:20	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:07	09:20	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:05	09:12	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:02	09:24	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:16:00	09:15	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:59	08:51	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:56	09:30	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:56	09:50	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:56	08:45	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:55	09:25	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:55	09:13	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:55	08:57	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:51	08:49	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:47	08:51	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:15:41	08:37	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:51	08:38	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:51	08:26	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:51	09:12	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:51	08:25	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:50	08:58	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:50	09:00	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:50	08:29	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:50	08:39	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:50	07:59	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:49	09:03	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:46	08:44	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:46	08:58	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:45	08:12	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:41	08:01	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:14:40	07:39	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:58	07:40	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:57	07:28	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:53	08:13	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:50	07:41	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:48	07:13	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:11	07:37	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:07	07:07	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:13:00	07:28	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:12:56	07:14	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:52	05:58	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:51	05:35	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:51	05:53	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:51	06:07	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:51	05:55	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:48	05:34	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:11:42	05:38	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview
05/05/2014 - 03:10:50	05:14	0 1 2 3 4 5 6 7 8	log	resultsHtml	overview

Figure 5: Output of a testbed stress test

5 Conclusion

This deliverable defines the second testing and integration roadmap of Fed4FIRE, targeting the second cycle of the project. We have further refined this cycle in a phase 1 (M17-M20) and phase 2 (M21-M24). As a result, we will be able to show the results of phase 1 of cycle 2 at the review planned in June and also the open call experiments of the SME open call will be able to use these developments.

At the end of cycle 1 all testbeds (Nicta Norbit, iMinds Virtual Wall, iMinds w-iLab.t, UPMC & Inria PlanetLab Europe, FOKUS FUSECO, NTUA Netmode, UTH Nitos, NIA Koren, Ofelia (i2CAT, UBristol, iMinds), except BonFIRE and UC Smart Santander, had a compliant Aggregate Manager (AM) interface. For the BonFIRE testbeds (Inria Grid5000, EPCC) testbeds, the adaptation is not that straight forward and is targeted for phase 1 of cycle 2. Smart Santander uses a REST interface as it currently offers a service oriented access to the sensor measurements.

The new additions for cycle 2 are the following:

- Layer 2 connectivity between multiple sites: target is to interconnect at least 3 sites by phase 1 of cycle 2 and at least 5 sites by the end of cycle 2
- Infrastructure monitoring: this comes in two flavours. Infrastructure monitoring for federation services (e.g. reputation, SLA monitoring, ...) will be adopted earlier by the testbeds (at least one testbed will provide this by phase 1 of cycle 2, the others will implement this by the end of cycle 2), than the infrastructure monitoring for experimenters (which contains more and more detailed monitoring data) which is targeted for cycle 3.
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- Ontology based RSpec: first prototypes should be implemented by the end of cycle 2
- Services: the service directory will be ready by phase 1 of cycle 2, a couple of services by the end of cycle 2.

In Fed4FIRE there is also a test suite (jFed framework) which is used for testing the different APIs. This way developments can be tested manually, and afterwards they are tested automatically in nightly and daily tests with the same framework. The test suite also supports setting up complex scenario testing.

References

- [1] GENI AM API v3, http://groups.geni.net/geni/wiki/GAPI_AM_API_V3
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- [3] Flack, GENI experimenter tool, <http://www.protogeni.net/wiki/Flack>
- [4] Jenkins, continuous integration server, <http://jenkins-ci.org/>
- [5] NEPI, the Network Experimentation Programming Interface, <http://nepi.inria.fr>
- [6] OMF, cOntrol and Management Framework), <http://omf.mytestbed.net/>