

The Future of AGL-JTA

the CIAT tool for AGL

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AGL Member Meeting FALL

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- NuoHan Qiao (qiaonuoohan@cn.fujitsu.com)
- Linux Software Engineer (2010 ~)
- AGL FTE (2015~)
 - engaging on CIAT for AGL
 - especially AGL-JTA

- **WHAT** is CIAT
- **WHY** use AGL-JTA
- **HOW** to use AGL-JTA
- **Future Work**

➤ Continuous Integration and Automated Test

- https://wiki.automotivelinux.org/eg-ciat#explanation_of_ciat
- <https://lists.linuxfoundation.org/pipermail/automotive-discussions/2015-July/000591.html>

➤ CIAT is supposed to include:

- CI pipeline which executes tests on user's demand or **triggered** automatically
- collection of **source code** from upstream
- automated instructions for **building/deploying** built distro
- ability to include **binary artifacts**
- automated test pipeline which executes **sets of tests**
- **publishing** of built distro/component and test results/logs
- mechanism for formal code **review** prior to merging of changes
- demonstration of **license compliance**

➤ based on Fuego

- formerly called JTA
- official automated test framework for LTSI project
- A host/target script engine and a jenkins front-end

➤ advantages

- lots of plugins to extend features
- highly customizable
- flexible test configuration
- running tests in batches
- not imposing any demands on boards or distributions
- easy yet flexible board setup

➤ check AGL CIAT's goals

CIAT's goals	AGL-JTA's feature
flexible trigger	build triggers (like gerrit, cron job)
collection of source code	Source Code Management (SCM, like git)
instructions for building/deploying	host/target script engine
include binary artifacts	host/target script engine
executing sets of tests	job trigger of jenkins
publishing of distro and test results	plugins of jenkins, or use SCM to upload distro/result
code review	(offered by gerrit)
demonstration of license compliance	(offered by gerrit)

➤ simple test

- simply execute test on target board

➤ CIAT

➤ share test result

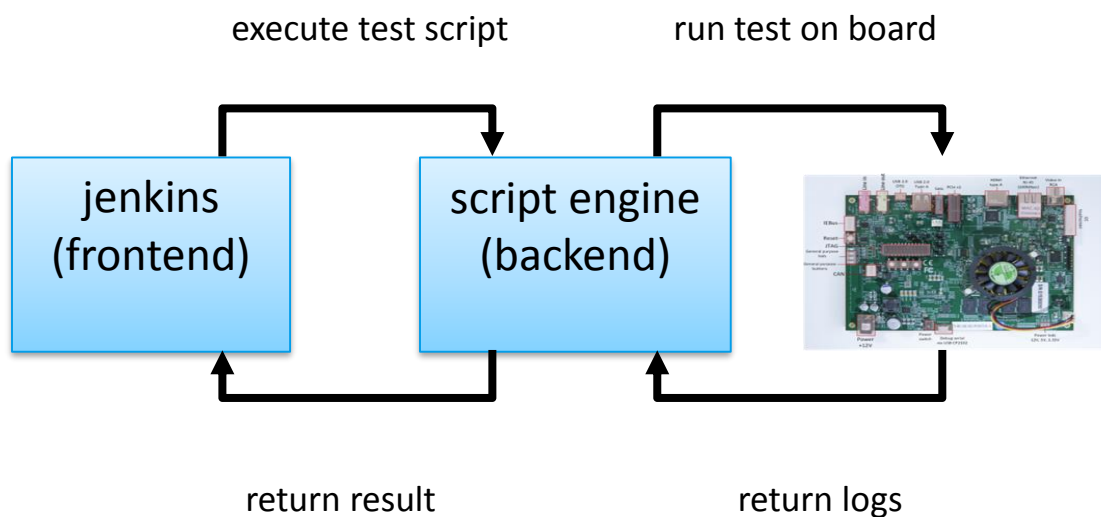
- upload CIAT's test result to public server

➤ display test result

- display shared test result
- easy to read

➤ simple test

- jenkins will call script engine first, then gather test result/log from script engine
- script engine will do the work
 - cross-compile testsuite for target board
 - load testsuite to target board then execute
 - gather test logs



HOW to use AGL-JTA – simple test

➤ have a glance – homepage

The screenshot displays the Jenkins Test Automation Framework interface. On the left, a sidebar contains navigation links: New Item, People, Build History, Edit View, Manage Jenkins, Credentials, Query and Trigger Gerrit Patches, Scriptler, and Exclusion administration. Below these are sections for Build Queue (No builds in the queue) and Build Executor Status (listing executors: master, lager, lager2, porter, qemu-test-arm, and template-dev, each with 1 Idle status).

The main content area is titled "Test Automation Framework" and features a tabbed interface with "0. History" selected. Other tabs include AGL.CIAT, Additional, Benchmarks, Functional, all, and batch runs. A link to "add description" is visible.

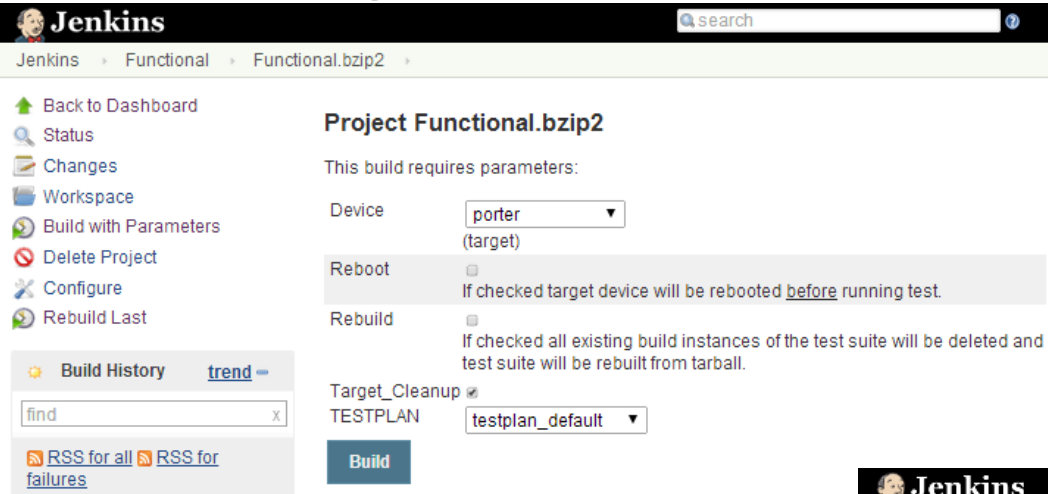
Under the "Latest tests runs" section, a table lists the most recent test runs:

Job	Build	Time
CIAT.upload_result	#28	Jul 6, 2016 7:10:12 PM
CIAT.porter1	#43	Jul 6, 2016 7:10:01 PM
CIAT.porter2	#40	Jul 6, 2016 7:09:52 PM
CIAT.common1	#49	Jul 6, 2016 7:09:42 PM
CIAT.renesas-porter	#45	Jul 6, 2016 7:09:42 PM
CIAT.java_deploy	#6	Jul 6, 2016 7:09:42 PM
CIAT.test	#28	Jul 6, 2016 7:09:42 PM
CIAT.upload_result	#27	Jul 6, 2016 7:07:21 PM
CIAT.porter1	#42	Jul 6, 2016 7:07:11 PM
CIAT.porter2	#39	Jul 6, 2016 7:07:02 PM
CIAT.common1	#48	Jul 6, 2016 7:06:52 PM
CIAT.renesas-porter	#44	Jul 6, 2016 7:06:52 PM
CIAT.java_deploy	#5	Jul 6, 2016 7:06:52 PM
CIAT.test	#27	Jul 6, 2016 7:06:52 PM
CIAT.upload_result	#26	Jul 6, 2016 7:02:46 PM
CIAT.porter1	#41	Jul 6, 2016 7:02:36 PM
CIAT.porter2	#38	Jul 6, 2016 7:02:27 PM
CIAT.common1	#47	Jul 6, 2016 7:02:17 PM
CIAT.renesas-porter	#43	Jul 6, 2016 7:02:17 PM
CIAT.java_deploy	#4	Jul 6, 2016 7:02:17 PM

Below the test runs table, the "Test Run statistics" section provides a summary:

Status of the build	Description	Number of builds	Percentage of total builds
Failed	Failed	53	48.62
Unstable	Unstable	0	
Success	Success	56	51.38

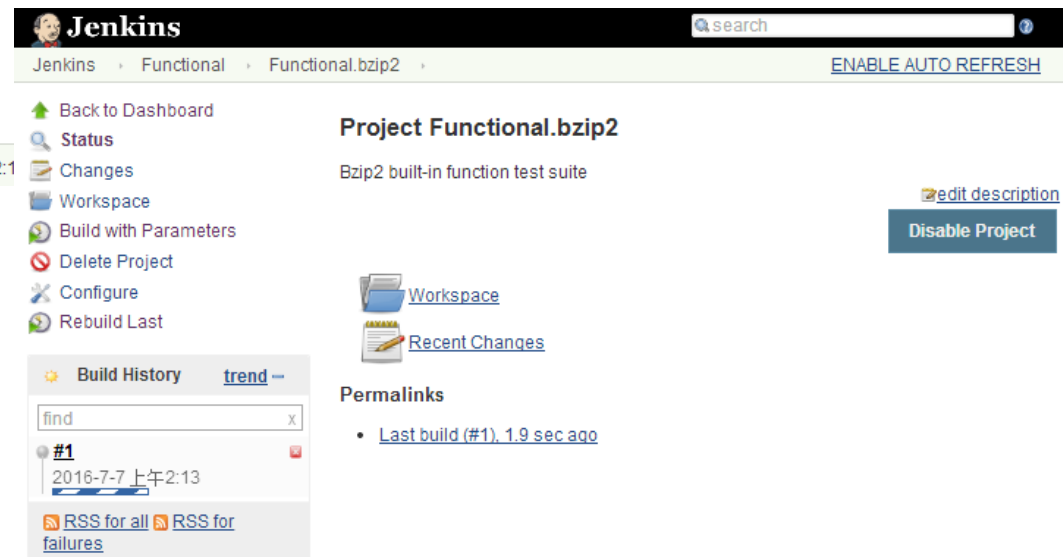
➤ have a glance – execute tests



The screenshot shows the Jenkins configuration page for the 'Functional.bzip2' project. The left sidebar contains links: Back to Dashboard, Status, Changes, Workspace, Build with Parameters, Delete Project, Configure, Rebuild Last, Build History (with a trend icon), and RSS for all/failures. The main content area is titled 'Project Functional.bzip2' and states 'This build requires parameters:'. It features a 'Device' dropdown set to 'porter', a 'Reboot' checkbox with a description, a 'Rebuild' checkbox with a description, a 'Target_Cleanup' checkbox, and a 'TESTPLAN' dropdown set to 'testplan_default'. A 'Build' button is at the bottom.

[Help us localize this page](#)

Page generated: 2016-7-7 2:12:1



The screenshot shows the Jenkins build page for the 'Functional.bzip2' project. The left sidebar is identical to the configuration page. The main content area is titled 'Project Functional.bzip2' and describes it as a 'Bzip2 built-in function test suite'. It includes links for 'Workspace', 'Recent Changes', and 'Permalinks'. A 'Disable Project' button is on the right. The 'Build History' section shows a single build (#1) from 2016-7-7 at 2:13. The footer includes 'Help us localize this page', 'Page generated: 2016-7-7 2:13:21', 'REST API', and 'Jenkins ver. 1.642.4'.

[Help us localize this page](#)

Page generated: 2016-7-7 2:13:21 [REST API](#) [Jenkins ver. 1.642.4](#)

➤ have a glance – execute tests

The screenshot shows the Jenkins web interface for the 'Project Functional.bzip2'. The breadcrumb navigation is 'Jenkins > Functional > Functional.bzip2'. The page title is 'Project Functional.bzip2' with the subtitle 'Bzip2 built-in function test suite'. On the left sidebar, there are links for 'Back to Dashboard', 'Status', 'Changes', 'Workspace', 'Build with Parameters', 'Delete Project', 'Configure', and 'Rebuild Last'. The main content area has a 'Workspace' link with a folder icon and a 'Recent Changes' link with a document icon. On the right, there are links for 'edit description' and a 'Disable Project' button. At the bottom left, there is a 'Build History' section with a search bar and a list of builds.

Jenkins

Functional > Functional.bzip2

Project Functional.bzip2

Bzip2 built-in function test suite

edit description

Disable Project

Workspace

Recent Changes

Build History

find

#3

porter / 3.10.31-ltsi

2016-7-7 上午9:17

#2

porter / 3.10.31-ltsi

2016-7-7 上午9:16

The screenshot shows the Jenkins web interface for the 'Console Output' of build #3. The breadcrumb navigation is 'Jenkins > Functional > Functional.bzip2 > #3'. The left sidebar has links for 'Back to Project', 'Status', 'Changes', 'Console Output' (selected), 'View as plain text', 'Edit Build Information', 'Delete Build', 'Parameters', 'Rebuild', and 'Previous Build'. The main content area is titled 'Console Output' and shows the build log. The log starts with 'Started by upstream project "CIAT.renesas-porter/Target=porter.Test=Functional.bzip2" build number 47' and continues with various shell commands and their outputs.

Jenkins

Functional > Functional.bzip2 > #3

Back to Project

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete Build

Parameters

Rebuild

Previous Build

Console Output

Started by upstream project "CIAT.renesas-porter/Target=porter.Test=Functional.bzip2" build number 47
originally caused by:
Started by upstream project "CIAT.renesas-porter" build number 47
originally caused by:
Started by upstream project "CIAT.test" build number 30
originally caused by:
Manually triggered by user anonymous for Gerrit:
<https://gerrit.automotivelinux.org/gerrit/5911>
Building remotely on porter in workspace /home/jenkins/buildzone
[buildzone] \$ /bin/sh -xe /tmp/hudson7132354005739020718.sh
+ '[' ']' -d /home/jenkins/logs/Functional.bzip2 ']
+ echo testplan_default
+ TESTPLAN=testplans/testplan_default.json
+ source /home/jenkins/tests/common/Functional.bzip2/bzip2.sh
++ tarball=bzip2-1.0.5.tar.gz
++ . /home/jenkins/scripts/functional.sh
+++ source /home/jenkins/scripts/overlays.sh
++++ . /home/jenkins/scripts/common.sh
+++++ assert_define JTA_ENGINE_PATH
+++++ varname=JTA_ENGINE_PATH
+++++ '[' -z /home/jenkins ']
+++++ export JTA_ENGINE_PATH=/home/jenkins
+++++ JTA_ENGINE_PATH=/home/jenkins

➤ role in AGL's CIAT

- for Automated Test mainly
- also involves building/deploying images

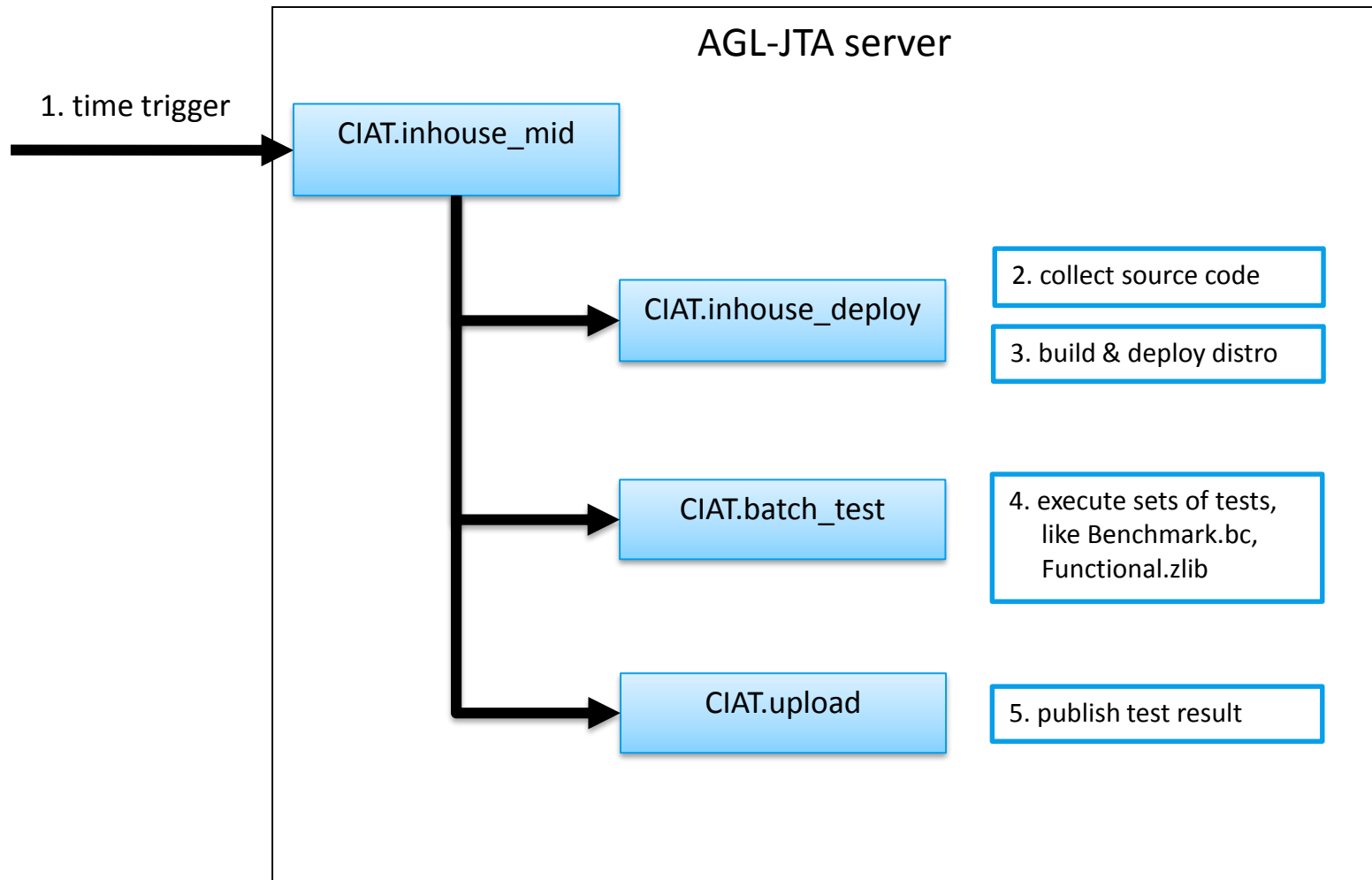
➤ two instances

- private server – inhouse CIAT (mid-term test)
- public server – <https://jta.automotivelinux.org/>

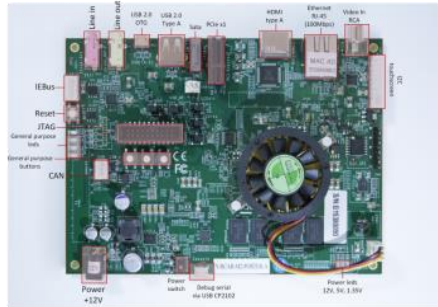
➤ work flow

- trigger
- collect source code
- build/deploy distro to target board
- execute tests on target board
- publish test result

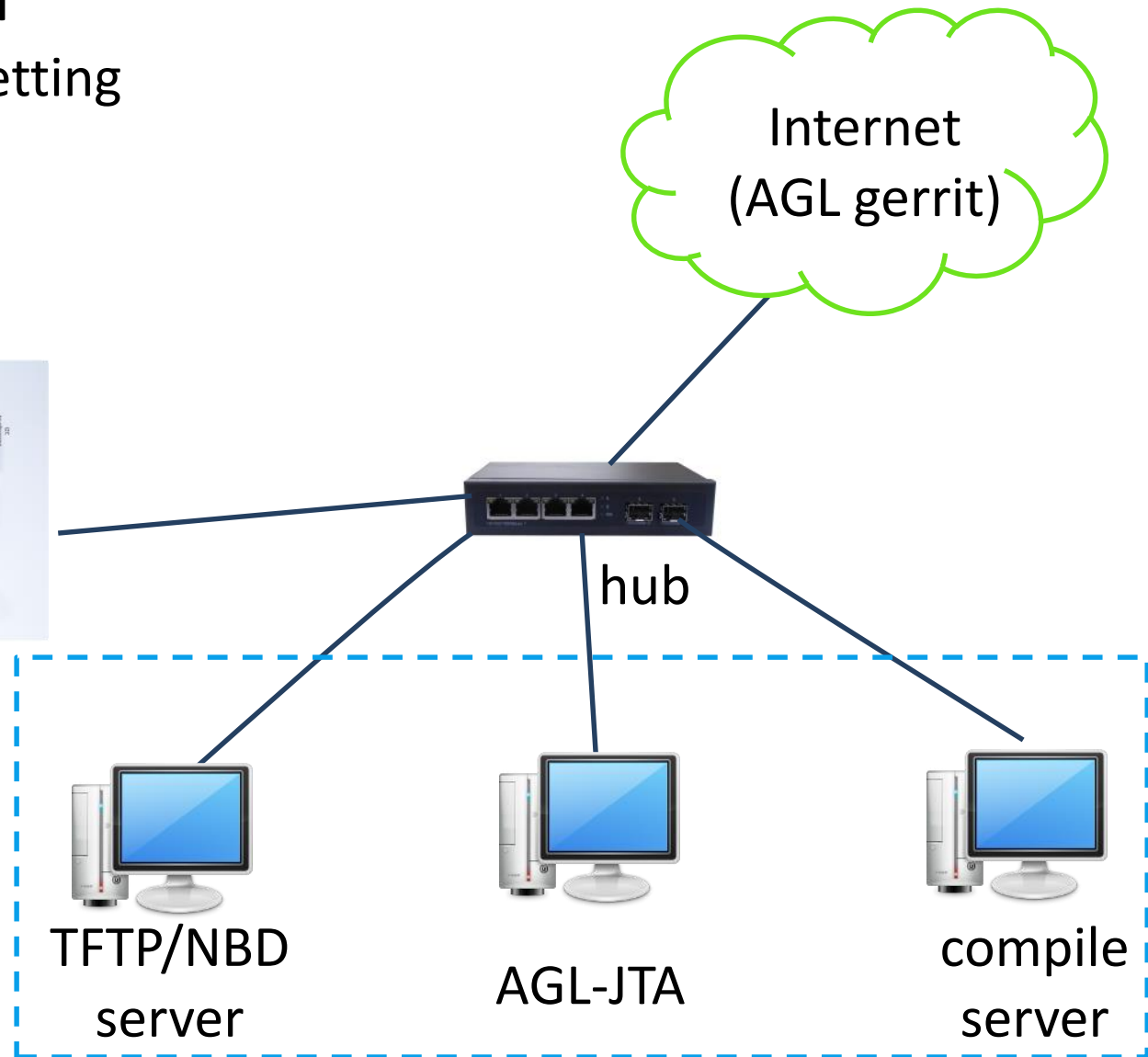
➤ private server – inhouse CIAT



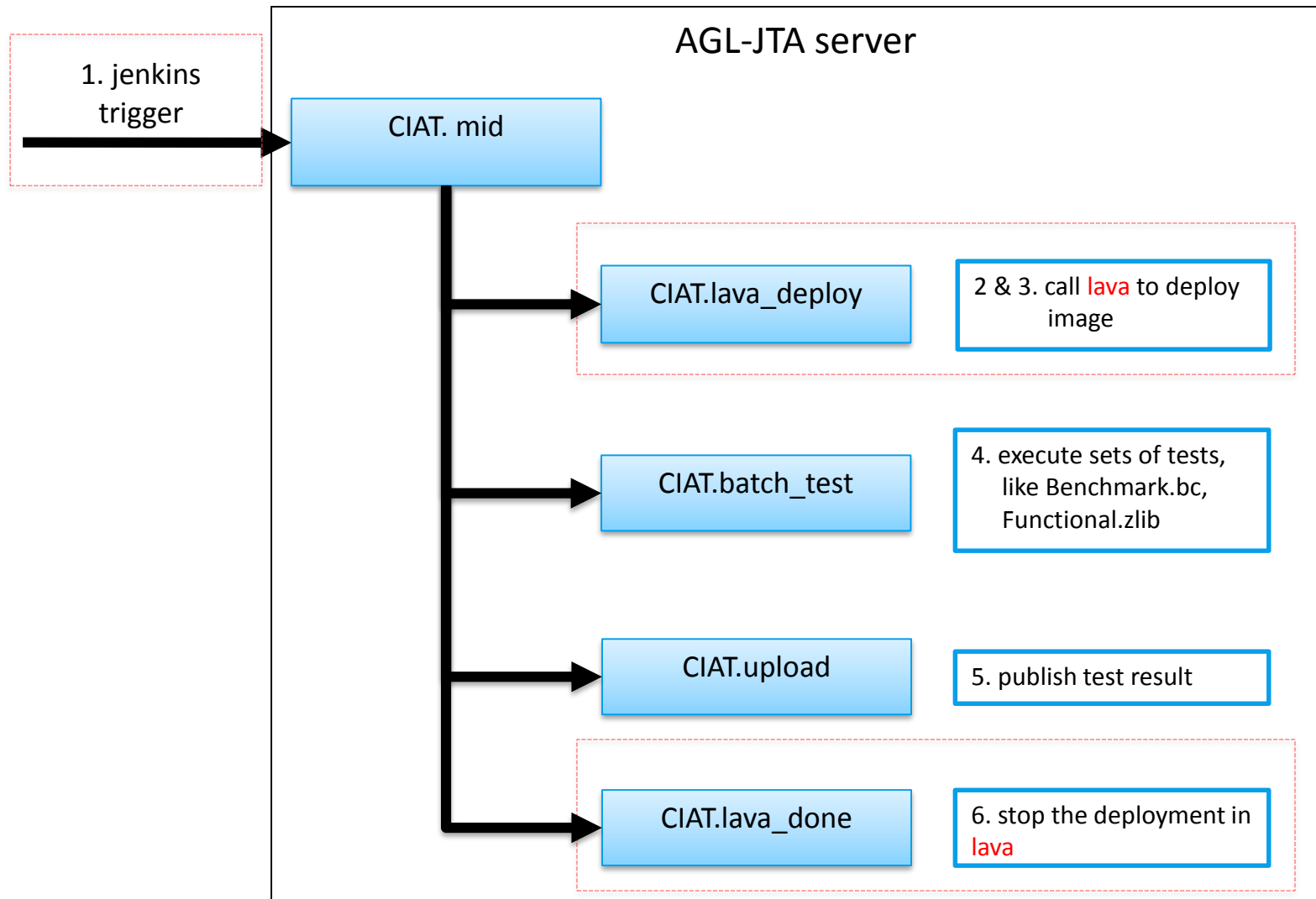
- private server
 - hardware setting



porter board

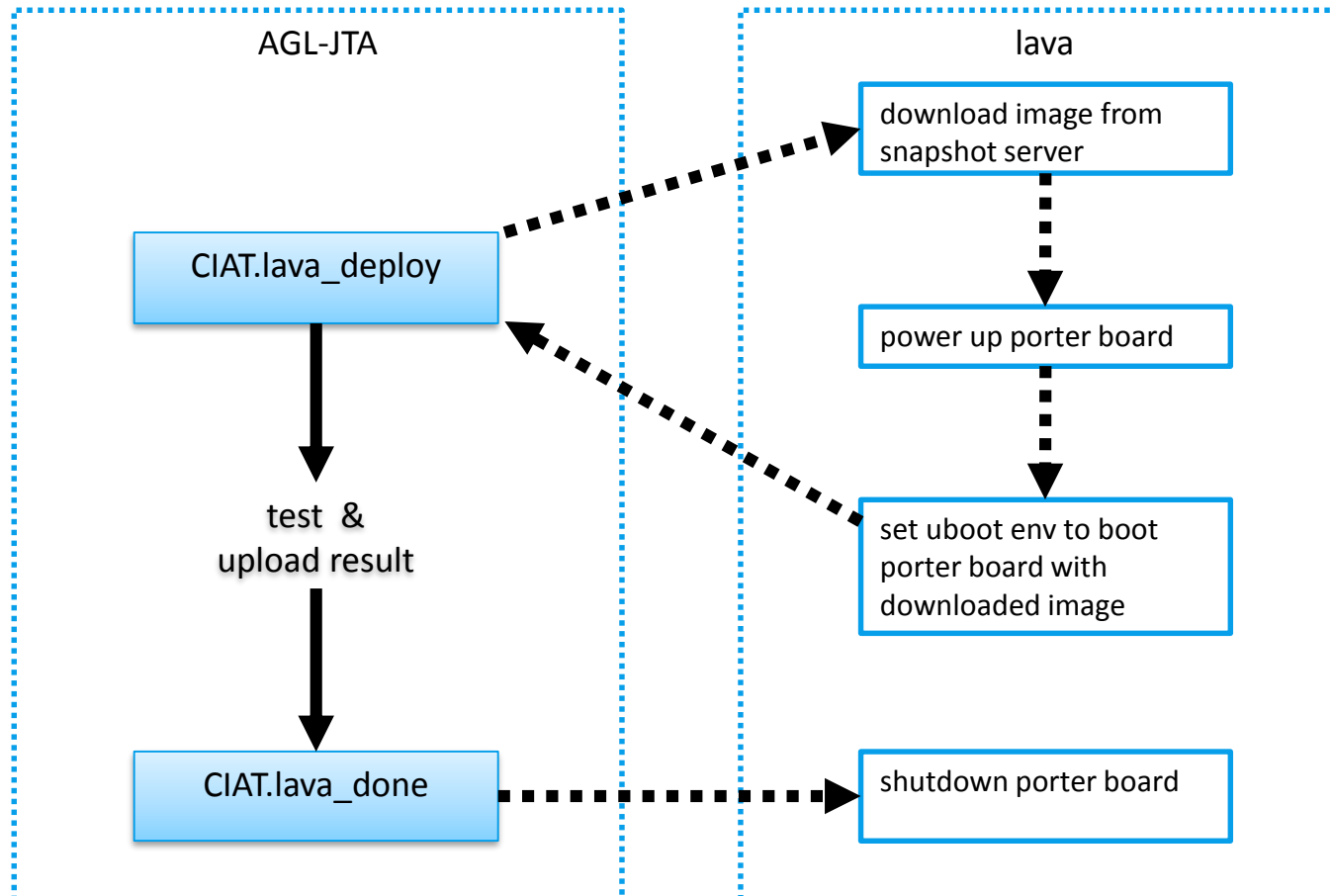


➤ public server

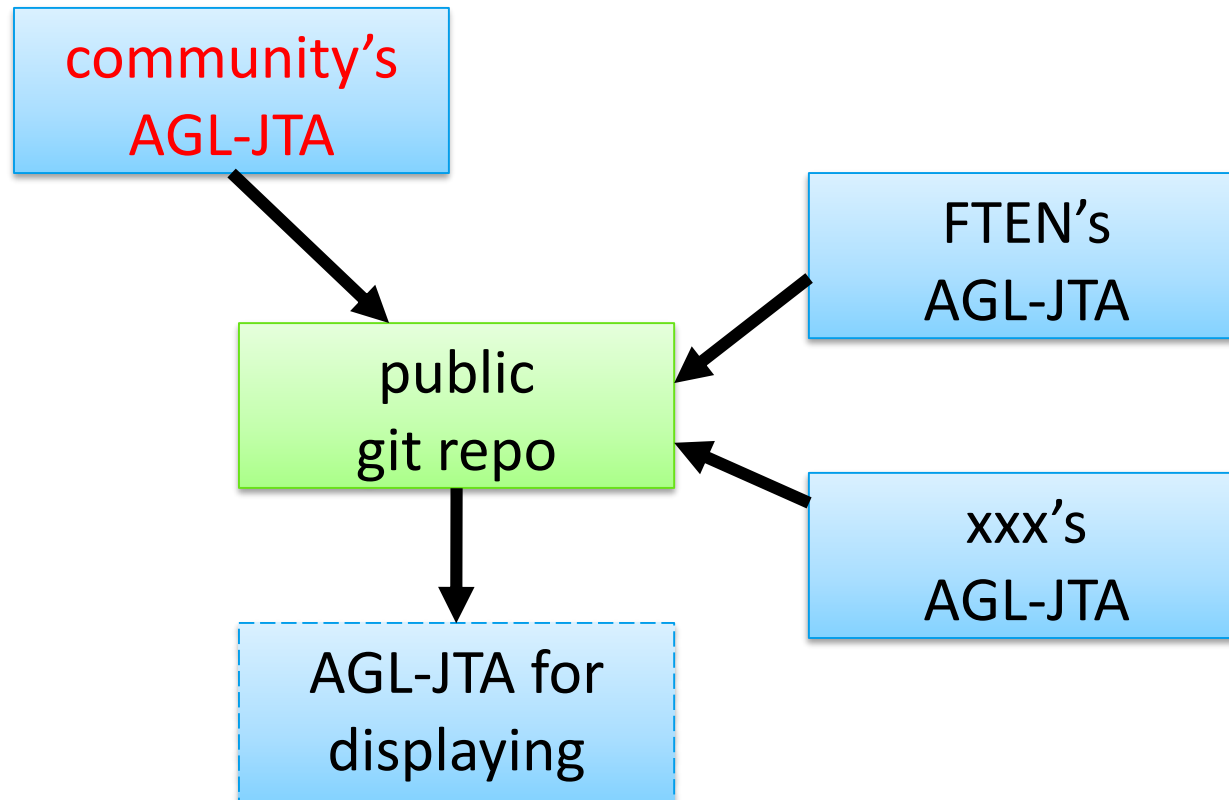


➤ public server

● lava deploy



- inhouse test as a supplement
- after community's test, extra test of inhouse server will be executed



➤ CIAT.upload

- one part of CIAT (publishing test result)
- called by CIAT.mid, CIAT.inhouse_mid
- test summary, test info, manifest, detailed results

➤ public git repo for test result

- git:
<https://gerrit.automotivelinux.org/gerrit/gitweb?p=staging/agl-jta-results.git;a=summary>
- branch for each snapshot
- 1st-level directories are for company & target board

➤ git layout example

```
# git branch -a
remotes/origin/2016-08-17-b350
remotes/origin/2016-08-18-b351
remotes/origin/2016-08-19-b352
remotes/origin/2016-08-24-b357
remotes/origin/master
```

----->

branch is related to
snapshot version

```
# git checkout -b 2016-08-18-b351 origin/2016-08-18-b351
```

```
# ls
```

```
agl fnst.porter ----->
```

```
# ls -R agl
```

```
agl:
```

```
detailed_results  info  manifest.xml  result
```

```
agl/detailed_results:
```

```
Benchmark.IOzone.xml  CIAT.porter1.xml
```

```
# ls -R fnst.porter
```

```
fnst.porter:
```

```
detailed_results  info  manifest.xml  result
```

```
fnst.porter/detailed_results:
```

```
CIAT.porter1.xml  test.porter1.xml
```

1st-level directories
are related to company
& target board

under company.target
directories are test
result, test info,
manifest and detailed
results

➤ make shared test result easy to read and compare

Jenkins

[log in](#) | [sign up](#)

[Jenkins](#) > [AGL.CIAT](#) > [CIAT.display](#) > [ENABLE AUTO REFRESH](#)

[Back to Dashboard](#)
[Status](#)
[Changes](#)
[Workspace](#)
[Build with Parameters](#)
[Delete Project](#)
[Configure](#)
[Rebuild Last](#)

Project CIAT.display
*Note: After CIAT.display finishes, please **refresh** and test results will be shown!*
Latest Test: 2016-08-25-b358 @ agl
Latest Total: 13
Latest Pass: 13
Latest Fail: 0
Latest Untest: 0

Build History [trend](#)

#30 Aug 31, 2016 3:23 AM
[test result list](#)
#29 Aug 31, 2016 3:06 AM
[test result list](#)
#28 Aug 22, 2016 7:13 AM
[test result list](#)
#27 Aug 22, 2016 6:18 AM
[test result list](#)

No.	Test Name	2016-08-25-b358 @ agl				2016-08-18-b351 @ fnst.porter				2016-08-18-b351 @ agl			
		total	pass	fail	untest	total	pass	fail	untest	total	pass	fail	untest
1	Benchmark.IOzone (detail)	10	10	0	0	0				10	10	0	0
2	CIAT.common1	1	1	0	0	0				1	1	0	0
3	CIAT.porter1 (detail)	1	1	0	0	0				1	1	0	0
4	CIAT.porter2	1	1	0	0	0				1	1	0	0
5	test.common1	0				1	1	0	0	0			
6	test.porter1 (detail)	0				1	1	0	0	0			
7	test.porter2	0				1	1	0	0	0			
SUM	-	13	13	0	0	3	3	0	0	13	13	0	0

[edit description](#)
[Disable Project](#)

➤ make shared test result easy to read and compare

No.	Test Name	2016-08-25-b358 @ agl				2016-08-18-b351 @ fnt.porter				2016-08-18-b351 @ agl			
		DATE: 2016-08-25-b358 (manifest) Start Time: 2016/08/25 07:26:09 (UTC) End Time: 2016/08/25 07:28:04 (UTC) Board Version: Porter Rev 1.0 Test Dir: /home/a Test Device: /dev/sda1 Filesystem for Test Device : ext4				DATE: 2016-08-18-b351 (manifest) Start Time: 2016/08/19 06:42:58 (UTC) End Time: 2016/08/19 06:43:17 (UTC) Board Version: Porter Rev 1.0 Test Dir: /home/a Test Device: /dev/sda1 Filesystem for Test Device : ext4				DATE: 2016-08-18-b351 (manifest) Start Time: 2016/08/18 07:10:34 (UTC) End Time: 2016/08/18 07:11:33 (UTC) Board Version: Porter Rev 1.0 Test Dir: /home/a Test Device: /dev/sda1 Filesystem for Test Device : ext4			
		total	pass	fail	untest	total	pass	fail	untest	total	pass	fail	untest
1	Benchmark.IOzone (detail)	10	10	0	0	0				10	10	0	0
2	CIAT.common1	1	1	0	0	0				1	1	0	0
3	CIAT.porter1 (detail)	1	1	0	0	0				1	1	0	0
4	CIAT.porter2	1	1	0	0	0				1	1	0	0
5	test.common1	0				1	1	0	0	0			
6	test.porter1 (detail)	0				1	1	0	0	0			
7	test.porter2	0				1	1	0	0	0			
SUM	-	13	13	0	0	3	3	0	0	13	13	0	0

➤ make shared test result easy to read and compare

Benchmark.IOzone Test Result

- Latest Total: 10
- Latest Pass: 10
- Latest Fail: 0
- Latest Untest: 0

No.	Benchmark.IOzone	Average	Unit	Criterion	2016-08-25 07:26:10				2016-08-18 07:10:35			
					Start time: 2016-08-25 07:26:10 End time: 2016-08-25 07:27:46 Board version: 'Porter Rev 1.0' Test dir: /home/a/work Test Device: /dev/sda1 Filesystem for Test Device: ext4 Command line: /home/a/jta.Benchmark.IOzone/iozone -a -i 0 -i 1 -i 2 -i 6 -i 7 -i 8 -i 9 -O -R -g 2M				Start time: 2016-08-18 07:10:35 End time: 2016-08-18 07:11:19 Board version: 'Porter Rev 1.0' Test dir: /home/a/work Test Device: /dev/sda1 Filesystem for Test Device: ext4 Command line: /home/a/jta.Benchmark.IOzone/iozone -a -i 0 -i 1 -i 2 -i 6 -i 7 -i 8 -i 9 -O -R -g 2M			
					Result	Output	Unit	Rate (Output/Average)	Result	Output	Unit	Rate (Output/Average)
1	2048_Kb_Record_Write.Random_write	72648.50	KB/s	0.00 ~ 100.00	PASS	45608	KB/s	0.63	PASS	46470	KB/s	0.64
2	2048_Kb_Record_Read.ReRead	111210.60	KB/s	0.00 ~ 100.00	PASS	98087	KB/s	0.88	PASS	94671	KB/s	0.85
3	2048_Kb_Record_Write.ReFwrite	71567.80	KB/s	0.00 ~ 100.00	PASS	45189	KB/s	0.63	PASS	44864	KB/s	0.63
4	2048_Kb_Record_Read.ReFread	131265.30	KB/s	0.00 ~ 100.00	PASS	94222	KB/s	0.72	PASS	87404	KB/s	0.67
5	2048_Kb_Record_Write.Fwrite	65798.60	KB/s	0.00 ~ 100.00	PASS	44683	KB/s	0.68	PASS	44661	KB/s	0.68
6	2048_Kb_Record_Read.Fread	128735.90	KB/s	0.00 ~ 100.00	PASS	90842	KB/s	0.71	PASS	89884	KB/s	0.70
7	2048_Kb_Record_Write.Write	26588.40	KB/s	0.00 ~ 100.00	PASS	36844	KB/s	1.39	PASS	37005	KB/s	1.39
8	2048_Kb_Record_Read.Random_read	102667.10	KB/s	0.00 ~ 100.00	PASS	85245	KB/s	0.83	PASS	80885	KB/s	0.79

➤ simple test

- REAME
- docs/jta-docs.pdf
- docs/How-to-Add-Test-Cases-on-JTA

➤ CIAT

- docs/How-to-Configure-CIAT-on-AGL-JTA.pdf

➤ AGL's test framework

- combination of AGL-JTA and LAVA
- <https://wiki.automotivelinux.org/agl-testframework>

➤ board supporting

- current
 - porter, MinnowBoard, Dragon board(underway)
- future work
 - improving deployment
 - parallelize the test

➤ trigger

- current
 - gerrit trigger
 - time trigger
 - manual trigger
- future work
 - for short/mid/long term
 - for different types of changes uploaded to gerrit

➤ test cases

- define tests for short/mid/long term tests
- short -> change/commit
- mid -> snapshot
- long -> release

➤ display

- current
 - CIAT.display for displaying
- future work
 - UI, daily mail for test report?
 - similar to meta-isafw report, same solution?

➤ cooperate with fuego

- fix gap between fuego and share features and test cases

➤ Try AGL-JTA

- try to setup an instance, use CIAT.inhouse_mid to do inhouse test for snapshot

➤ share test

- add tests to AGL-JTA
- test extra cases and share the test result

➤ participate in improving AGL-JTA and AGL's CIAT

Thank you!

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