

# Automated Test Execution Framework (ATEF)

**PTC - For internal use only**  
<Customer details / Information>

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## Introduction

This document contains some hints you can use when setting up the Integrity Test Execution Framework. The framework has been established long time back, and PTC ships two sample code sets with the adapter, one for HP Quick Test Pro and another for iTKO LISA.

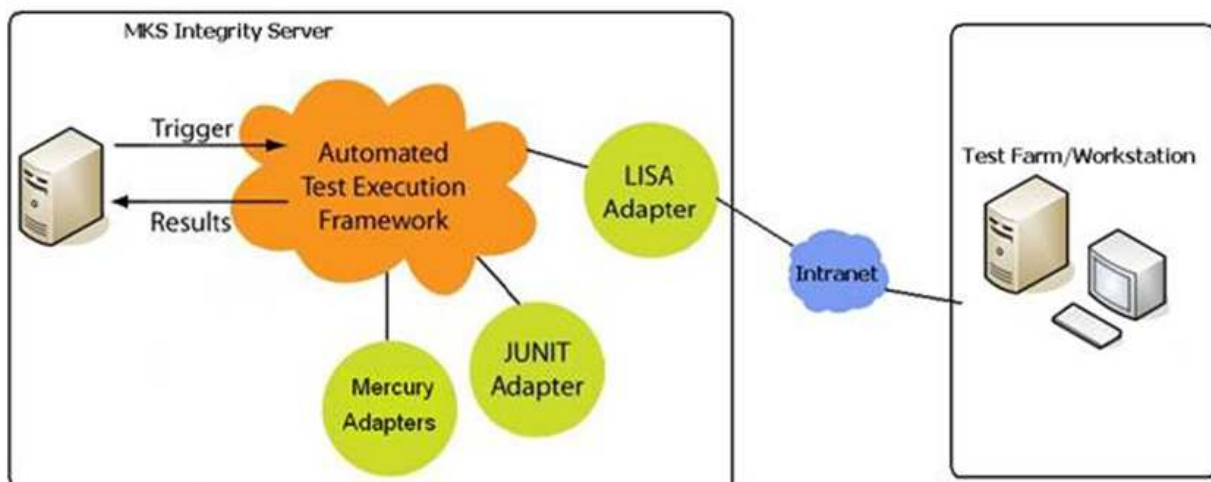
## Objective

The objective is to implement the Integrity Test Execution Framework together with LISA. Because we do not have a LISA server running, we expect to get an error, and return a valid error message then.

## Process Flow

See KB Article: 11891

An adapter for iTKO Lisa has been developed as an extension to the PTC Test Execution Framework. The Adapter specification follows the guidelines set forth by the PTC Test Execution Framework for Adapters.



The 'Test Case' Item type from the PTC ALM Solution will contain a 1 to 1 mapping with a Lisa test case. Upon creation of a 'Test Session' in PTC Integrity, necessary objects (i.e. creation of the Test Results Change Package) are initialized by the Automated Test Execution Framework (ATEF). Subsequently, when a 'Test Session' is toggled to a state of 'In Testing' or 'Scheduled', the ATEF will remotely invoke Lisa, passing the necessary parameters to run the test.

**Test Execution Server** – Resides on the 'Test Session' and specifies which workstation/server the Lisa test case will be executed on

**Test Case ID** – Resides on the 'Test Case' and contains the absolute path name to the Lisa test case on the Test Execution Server

**Test Configuration File** – Resides on the 'Test Case' and contains the absolute path name to the Test Configuration file on the Test Execution Server necessary to execute a Lisa test case

**Staging Document File** – Resides on the 'Test Case' and contains the absolute path name to the Staging Document file on the Test Execution Server necessary to execute a Lisa test case



On invoking a Lisa test case, the Lisa Adaptor will wait for the test case to finish and return the results of the execution in XML format.

The Adaptor then parses the XML results and updates the Test Session Test Results using ATEF.

The Adaptor will also attach the full XML result of the invocation to the 'Test Session' so that it can be further analyzed.

## Pre Requisites

---

### Documentation you should read

Ref	Documentation
Still current pdf, also for Release 10.4	IntegrityTestExecutionAdapter_2009.pdf
YouTube	MKS Integrity - MKS Test with QTP Automated Testing
Training Course Material	Integrity_10_Test_Management_Administration_Presentation.ppt
Training Course Material	Integrity_10_Test_Management_Administration_Exercises.doc (Exercise 13)

### Test Environment

My test environment consists of those three locally installed applications. It was my intention to keep it simple.

- Integrity Server 10.3, locally installed
- Integrity Client 10.3, locally installed
- Integrity Agent 10.3, locally installed

### Some Code Notes

- Although you can download the PTCtmap.jar as part of MED-60962-CD-103\_F000\_Integrity-10-3-Test-Execution-API (size 19k), you should keep the actual version as shipped with the agent, which has a size of 24k
- In default, the LISA code resides in a subfolder named samples. Because I tried to be as close to a real implementation, I removed this path part, so my LISA code is stored in <Agent10>\data\java\classes\com\mks\tm\api\spi.
- The two java classes (AbstractSessionAdapter, LISASessionAdapter) need to be adapted accordingly.
- The java compiler you are using (javac) should have the same version as your Integrity java.exe, in my case it's the:

```
D:\IntegrityProgram\Agent10\jre\bin>java -version
java version "1.6.0_27"
Java(TM) SE Runtime Environment (build 1.6.0_27-b07)
Java HotSpot(TM) 64-Bit Server VM (build 20.2-b06, mixed mode)
```

## Configuration Files

### Agent10\config\properties\agent.properties

I decided to switch the “Deploy” feature of (false), but left the test management parameter on (true).

```
# Enable support for MKS Deploy deploy request processing on the Agent.
mksagent.startup.sd=false

# Enable support for MKS Test Management test session execution on the Agent.
mksagent.startup.tm=true

#
# SMTP Server configuration.
#
```

### Agent10\config\properties\tm.properties

Within your trigger parameters, you will specify the 3<sup>rd</sup> part of the names below, the “iTKO-LISA-4.5”. This would allow you to have also another trigger for another LISA version, allowing you to execute probably also another java class. It seems to be very flexible!

```
#
# LISASessionAdapter.testConfigPathFieldName
# The required name of the field on the test case items which provides the
# absolute path to the LISA test configuration file on the LISA server file
# system.
#
tm.adapter.iTKO-LISA-4.5.class=com.mks.tm.api.spi.LISASessionAdapter
tm.adapter.iTKO-LISA-4.5.apiSession.defaultUser=veckardt
tm.adapter.iTKO-LISA-4.5.apiSession.defaultPassword=password
```

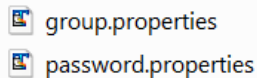
### Agent10\config\properties\security.properties

I decided to enable the ‘simple ldap’ version, which is based on flat file only.

So I set

```
# mks.security.policy.scheme.default=ntss_clear
# which will allow win32 clients to use single signon
# browsers) to authenticate using nt user/passwords
mks.security.policy.scheme.default=flat_clear
```

And added the two files under “<agent>\data” folder:



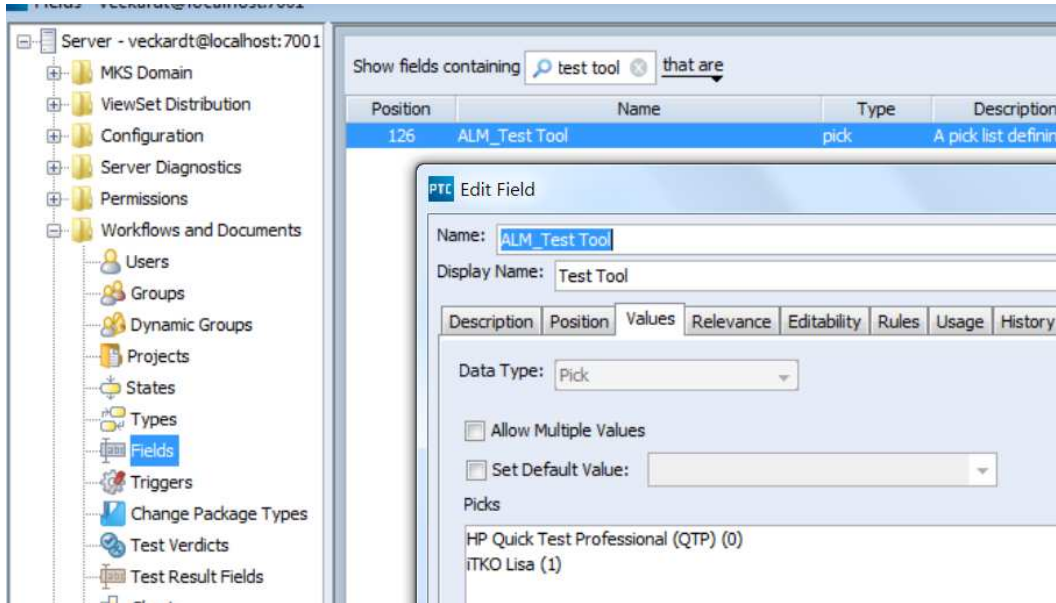
When the agent starts, it will inform about the authentication in the following way (agent.log):

```
10 INFO [STDOUT] Log4J configuration from "D:\IntegrityProgram\Agent10\mks\conf\log4j.xml" will be reloaded every 60 seconds.
10 INFO [STDOUT] Creating log listener.
12 INFO [STDOUT] Loading Integrity Agent properties.
14 INFO [STDOUT] Loading logger configuration from "D:\IntegrityProgram\Agent10\config\properties\logger.properties".
18 INFO [mks.Agent] GENERAL(0): Stacktrace watchdog using watch file: D:\IntegrityProgram\Agent10\data\runstacktrace with interval 30 seconds
27 INFO [mks.Agent] GENERAL(0): Groups will be taken from flatfile by default.
36 INFO [mks.Agent] GENERAL(5): D:\IntegrityProgram\Agent10\data\password.properties has been loaded successfully
40 INFO [mks.Agent] GENERAL(5): D:\IntegrityProgram\Agent10\data\group.properties has been loaded successfully
90 INFO [mks.Agent] GENERAL(0): Starting service "tm".
91 INFO [mks.Agent] TM(5): Starting test execution services.
92 INFO [mks.Agent] TM(5): Adapter "iTKO-LISA-4.5" available.
92 INFO [mks.Agent] TM(0): Deleting contents of temporary directory tree "D:\IntegrityProgram\Agent10\mks\data\tm\temp".
30 INFO [mks.Agent] GENERAL(0): Integrity Agent listening on clear port *:9101.
32 INFO [mks.Agent] GENERAL(0): Integrity Agent (Build: 10.3.0.3238) started in 301 ms.
32 INFO [mks.Agent] GENERAL(0): Service Park Policy Properties:
```

## Setup

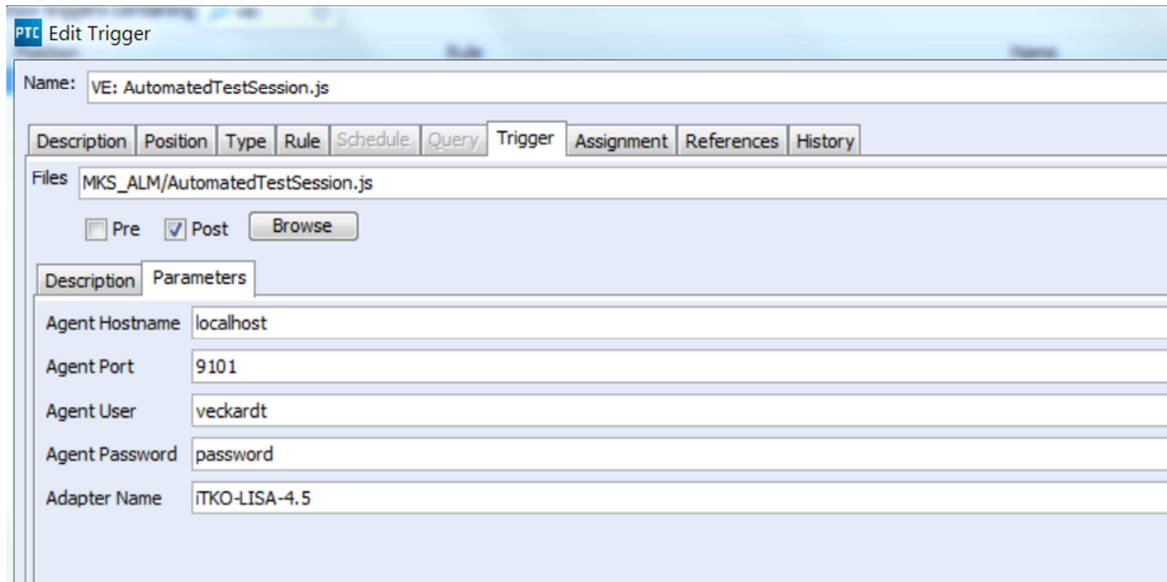
### Test Tool Definition

This is a pick list only, so no other fields to set up.



### Trigger Definition

Take the existing trigger file from MKS\_ALM, it's the file AutomatedTestSession.js. This script executes the agent procedure.



I am not yet sure where the Adapter name comes from, needs to be reviewed. I think it relates to the entries in the **tm.properties**

## Important Trigger Part

```

// lookup an agent bean
var agent = server.getAgentBean(params.getParameter("Agent Hostname"),
    params.getIntParameter("Agent Port", 9101),
    params.getParameter("Agent User"),
    params.getParameter("Agent Password"));

// establish a socket connection between the server and the agent
agent.connect();

// if the agent is updating we shouldn't try to run any new tests
log("isUpdating() returned: " + agent.isUpdating());

// start the test session run on the agent
log("about to runTestSession " + delta.getIssueID());
agent.runTestSession(delta.getIssueID(), params.getParameter("Adapter Name"),
    false, // not a secure API session
    null); // no adapter properties to pass through

log("back from runTestSession " + delta.getIssueID());

```

## Trigger Rule

PTC Trigger [VE: AutomatedTestSession.js] - veckardt@localhost:7001

Name: VE: AutomatedTestSession.js

Description	Position	Type	Rule	Schedule	Query	Trigger	Assignment	References	History
<ul style="list-style-type: none"> <li>- and                             <ul style="list-style-type: none"> <li>...Type = ALM_Test Session</li> <li>...State &lt;&gt; State[New Value]</li> <li>...State[New Value] = ALM_In Testing</li> </ul> </li> </ul>									

## Test Session Properties

Add the following 4 properties within the Test Session Type, to specify the Field Names you are going to use in the test case later:

PTC Type [ALM\_Test Session] - veckardt@localhost:7001

Name: ALM\_Test Session

Show properties containing

Name	Value
LISASessionAdapter.baseLISAURLFieldName	baseLISAURL
LISASessionAdapter.stagingDocPathFieldName	stagingDocPath
LISASessionAdapter.testCasePathFieldName	testCasePath
LISASessionAdapter.testConfigPathFieldName	testConfigPath
MKS DC model networks simulation.SimulationItemAttachmentField	Attachments

After setting it up I figured out that the 3 paths are rather a path + a file name. So it seems to be better to rename the fields to ...FileFieldName, instead of PathFiledName.

## Command to Compile the LISA Classes

I decided to use the path “spi” directly, just to remove the “sample” from it. I was also willing to make sure that my own code gets executed. It’s important to mention that the LISA classes are also part of the PTCagent.jar file, so you should definitely put your code into some other directory structure.

Make sure that you compile your classes with the correct java version, in my case Integrity uses the version 1.6, so I took for the Java compiler (javac) exactly the same.

```
cd com\mks\tm\api\spi
```

```
"C:\Program Files\Java\jdk1.6.0_27\bin\javac" -classpath
D:\IntegrityProgram\IntegrityClient10\lib\MKSapi.jar;D:\IntegrityProgram\Agent10\MKS\lib\MKSagent.jar;D:\Integ
rityProgram\Agent10\MKS\lib\MKSstmap.jar AbstractSessionAdapter.java
```

```
"C:\Program Files\Java\jdk1.6.0_27\bin\javac" -classpath
D:\IntegrityProgram\IntegrityClient10\lib\MKSapi.jar;D:\IntegrityProgram\Agent10\MKS\lib\MKSagent.jar;D:\Integ
rityProgram\Agent10\MKS\lib\MKSstmap.jar;.;D:\IntegrityProgram\Agent10\data\java\classes
LISASessionAdapter.java
```

## Runtime Data

---

### Setup for Test Session

In your Test Session, please enter the test tool. The test tool comes from a pick list, so no other logic behind. If you like to execute different triggers for each test application, you shall add this criteria (TestTool=iTKO LISA) within the trigger rule.

#### Planned Start

I haven’t used the planned start date yet, not sure how to use it exactly for scheduling. Does LISA handle this automatically? Or the Agent?

#### ALM\_Test Session: 878

Created by veckardt on 27.08.2013 22:24:24  
 Modified by veckardt on 30.08.2013 14:06:24

Properties Configuration Parameters Metrics Relationships Attachments  Test Results Time Entries Workflow History

#### Test Session

Summary #7

Project /ALM\_Projects/Release 1

Test Objective Weekly regression testing results (617)

State ALM\_In Testing (Testing)

Assigned User

Priority Medium

#### Details

Effort

Session Type Automated

Planned Start Date

Planned End Date



Planned Start Date  Planned End Date

Task Phase: Open

**Tests** As Of 27.08.2013 22:24:28

ID	Type	Summary	Text
548	ALM_Test Case		During test...  ALM_Ac

**Automated Testing**

Test Tool:

Planned Start Time  Actual Start Time

## Setup for Test Case

Within the Test Case, we are using the 4 parameters to specify the LISA connection and the script details. I personally would like to move some of them up at least one level, perhaps a default value somewhere else would be better than having the http address right here. Anyway, it works like this.

**ALM\_Test Case: 548**  
 Created by veckardt on 25.06.2012 15:17:49  
 Modified by veckardt on 27.08.2013 22:24:24

Properties | Test Steps | Traces |  Relationships | Attachments | Advanced |  Test Results |  Branches | Labels | History

This is an individual  contained in Test Document 539

**Text (Description)**

During testing, the watch must be synchronized to a global time standard

....

stagingDocPath	D:\Integrity\TestExecution\stagingDoc.bat
baseLISAURL	http://localhost:8080
testCasePath	D:\Integrity\TestExecution\runTestcase.bat
testConfigPath	D:\Integrity\TestExecution\configTest.bat

The 4 parameters are retrieved by the LISA Adapter's java commands, so probably easy to tailor.

## Result

### Test Result

The LISA Adapter has a command line to send the test result back. You can see a little bit of history. Initially, this test case was a manual test (see the last row below). Then I changed to "Automated" and "LISA", so the errors in the middle showing some of the setup errors I had. The upmost two are the once I expected: The "Connection refused" pops up when the LISA server is not reachable (which was my case). Then I changed slightly the Java code again and returned a simulated error with a custom text.

ALM\_Test Case: 548  
 Created by veckardt on 25.06.2012 15:17:49  
 Modified by veckardt on 27.08.2013 22:24:24



Test Session	Test Case	Verdict	Annotation
878	548	Failed	Simulated Error by Volker
877	548	Failed	Connection refused: connect
876	548	Failed	The path to the LISA configuration file D:\Integrity\TestExecution exists on the file system, but is a directory.
875	548	Failed	The path to the LISA staging document file D:\Integrity\TestExecution exists on the file system, but is a directory.
874	548	Failed	The path to the LISA staging document file null is not valid.
873	548	Failed	The path to the LISA test case file D:\Integrity\TestExecution exists on the file system, but is a directory.
872	548	Failed	The path to the LISA test case file c:\testcase does not exist on the file system.
639	548	Passed	
637	548	Passed	
629	548	Failed	The base URL to the LISA server null is not valid.
627	548	Passed	
623	548	Failed	Known failure added related defect.

## In Agent.Log:

Within the agent.log, you will get 3 lines only.

```

AgentVariant: U1
2013-08-28 16:13:52,390 INFO [mks.Agent] TM(5): Server VECKARDTIL.ptcnet.ptc.com:7001 connection to test execution agent by user veckardt using API version 4
2013-08-28 16:13:52,636 INFO [mks.Agent] DIAGNOSTIC(10): veckardt[BEEP Executor-1]: Disconnect: v0: VECKARDTIL.ptcnet.ptc.com:63885 (veckardt)
2013-08-28 16:13:52,636 INFO [mks.Agent] TM(5): Server VECKARDTIL.ptcnet.ptc.com:7001 disconnection from test execution agent using API version 4
    
```

I would like to add some more lines here, such as the executed test session and case. Will see how I can do that.

## In Server.Log

Not much, mainly when debugging is on (see next section).

## Debug Messages

You will get the following in server.log when DEBUG is on:

```

2013-08-30 13:47:15,310 DEBUG [mksis.IntegrityServer] DEBUG(10): Considering trigger: VE: AutomatedTestSession.js against issue 878, Flags: 274, run: true
2013-08-30 13:47:15,310 DEBUG [mksis.IntegrityServer] DEBUG(5): Rule (-11 = 16 AND -9 != -9' AND -9' = 25) evaluated true, triggering Trigger: VE: AutomatedTestSession.js
2013-08-30 13:47:15,310 DEBUG [mksis.IntegrityServer] DEBUG(5): In AutomatedTestSession.js
2013-08-30 13:47:15,383 INFO [mksis.IntegrityServer] DIAGNOSTIC(5): veckardt[BEEP Executor-1]: Connecting using mks.frame.client.ClearConnectionProvider, mks.frame.security.PasswordCredential
2013-08-30 13:47:15,383 DEBUG [mksis.IntegrityServer] DEBUG(0): Auto-reconnect disabled
2013-08-30 13:47:15,384 DEBUG [mksis.IntegrityServer] DEBUG(10): --- Connecting to localhost
2013-08-30 13:47:15,384 DEBUG [mksis.IntegrityServer] DEBUG(10): --- Direct URL: rmi://localhost:9101, veckardt
2013-08-30 13:47:15,384 DEBUG [mksis.IntegrityServer] DEBUG(0): Connecting to localhost:9101 as veckardt
2013-08-30 13:47:15,385 DEBUG [mksis.IntegrityServer] DEBUG(0): Compression disabled
2013-08-30 13:47:15,395 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: $Proxy230.lookup(TMExecFactory)
2013-08-30 13:47:15,397 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: $Proxy230.lookup: END 1425Ms, result RemoteRefEx[[id=1377920048048 ][/id=1377699211827, hashCode=-1706091540]]
2013-08-30 13:47:15,397 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: $Proxy231.getRemoteApiVersion([4])
    
```



2013-08-30 13:47:15,398 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy231.getRemoteApiVersion: END 1121Ms, result 4

2013-08-30 13:47:15,398 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy231.getRMITestExec(4, VECKARDT1L.ptcnet.ptc.com, 7001)

2013-08-30 13:47:15,400 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy231.getRMITestExec: END 1727Ms, result RemoteRefEx[[ id=1377920048048 ]/[id=1377699211828, hashCode=-1706091541]]

2013-08-30 13:47:15,400 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy214.getRMIAGENT()

2013-08-30 13:47:15,401 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy214.getRMIAGENT: END 1365Ms, result RemoteRefEx[[ id=1377920048048 ]/[id=1377699211829, hashCode=-1706091542]]

2013-08-30 13:47:15,401 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.getAgentVersion()

2013-08-30 13:47:15,403 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.getAgentVersion: END 1194Ms, result 10.0.0 3-1 3238

2013-08-30 13:47:15,403 DEBUG [mksis.IntegrityServer] DEBUG(10): PatchManager service pack directory is: D:\IntegrityProgram\IntegrityServer10\server\servicepacks\10.0.0

2013-08-30 13:47:15,403 DEBUG [mksis.IntegrityServer] DEBUG(10): PatchManager.getAvailablePatchName() no download needed, file: D:\IntegrityProgram\IntegrityServer10\server\servicepacks\10.0.0\A100000003-01.zip, file ver: 10.0.0 3-1 -1, app ver: 10.0.0 3-1 3238

2013-08-30 13:47:15,404 DEBUG [mksis.IntegrityServer] DEBUG(10): PatchManager.getAvailablePatchName() no download needed, file: D:\IntegrityProgram\IntegrityServer10\server\servicepacks\10.0.0\A100000003-01.zip, file ver: 10.0.0 3-1 -1, app ver: 10.0.0 3-1 3238

2013-08-30 13:47:15,404 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.isUpdating()

2013-08-30 13:47:15,405 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.isUpdating: END 722Ms, result false

**2013-08-30 13:47:15,405 DEBUG [mksis.IntegrityServer] DEBUG(5): isUpdating() returned: false**

2013-08-30 13:47:15,405 DEBUG [mksis.IntegrityServer] DEBUG(5): about to runTestSession 878

2013-08-30 13:47:15,406 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.isUpdating()

2013-08-30 13:47:15,407 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy233.isUpdating: END 804Ms, result false

2013-08-30 13:47:15,407 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: \$Proxy214.runTestSessionV1([mks.tm.api.RunTestSessionArgs@1ab921e9](#))

2013-08-30 13:47:15,692 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: getIssues: END 12ms, result [[id=548,state=19,project=5,type=14,synopsis=null,moddate= Tue Aug 27 22:24:24 CEST 2013,240,-36=782,-28=627,872,873,874,875,876,877,878,-24=539,-23=Mon Jun 25 15:17:49 CEST 2012,77,-22=548,-21=0,-19=549[14],-18=539,21=0,34=false,183=false,186=false,192=true,228=0,231=0,232=0,251=true,253=160,297=true,309=Not Run,345=not run,372=D:\Integrity\TestExecution\stagingDoc.bat,373=http://localhost:8080,374=D:\Integrity\TestExecution\runTestcase.bat,375=D:\Integrity\TestExecution\configTest.bat>:::}]

2013-08-30 13:47:15,693 DEBUG [mksis.IntegrityServer] DEBUG(10): command=ci.Issues; rc=0; mem=(total:1010499584,free:731305488); rmi=(in:1,out:1)

2013-08-30 13:47:15,707 DEBUG [mksis.IntegrityServer] DEBUG(0): API Version is: 4.11 003-01 3238

2013-08-30 13:47:15,715 DEBUG [mksis.IntegrityServer] DEBUG(10): Command: mks.ic.ci.commands.SetTestResultsCommand LicenseScheme:applicationLicensed

2013-08-30 13:47:15,817 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: isLicensed: END 101ms

2013-08-30 13:47:15,846 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: setTestResults(mks.frame.app.ui.ServerStatusReport@878bb58, 878, [Test Result SessionID: 878 Case ID: 548 Shares Case ID: -2147483648 Verdict: -3 Annotation: Simulated Error by Volker Related Items: Add Related Items: Remove Related Items: Attachments: Add Attachments: Remove Attachments: Test Step Results: Remove Test Step Results:



], 2, false)

2013-08-30 13:47:15,847 DEBUG [mksis.IntegrityServer] DEBUG(5): Setting the fieldID for types [16] list to [-38, -11, -9, -5]

2013-08-30 13:47:15,858 DEBUG [mksis.IntegrityServer] DEBUG(5): Using hint override: null

2013-08-30 13:47:15,863 DEBUG [mksis.IntegrityServer] DEBUG(5): Reconstructing history: 1684Ms

2013-08-30 13:47:15,863 DEBUG [mksis.IntegrityServer] DEBUG(10): -19: Child issue 549, retrieved historic fields: {-31=160, -23=Mon Jun 25 15:17:49 CEST 2012, -22=549, -20=548,751,782, 36=<!-- MKS HTML -->During testing, the watch must be synchronized to a global time standard, 76=2, 230=Verify that watch time is synched to GMT.}

2013-08-30 13:47:15,864 DEBUG [mksis.IntegrityServer] DEBUG(5): Reconstructing history: 5ms

2013-08-30 13:47:15,864 DEBUG [mksis.IntegrityServer] DEBUG(5): Using hint override: null

2013-08-30 13:47:15,892 DEBUG [mksis.IntegrityServer] DEBUG(5): OUTGOING RMI: setTestResults: END 46ms

2013-08-30 13:47:15,893 DEBUG [mksis.IntegrityServer] DEBUG(10): command=tm.SetTestResults; rc=0; mem=(total:1010499584,free:713691280); rmi=(in:4,out:2)

2013-08-30 13:47:15,900 DEBUG [mksis.IntegrityServer] DEBUG(10): Expiring APP session via header