

Extending APM using Rest API's DevXChange

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May 2016



Agenda

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MEET JULIET

2

A PROBLEM APPLICATION

3

CHALLENGES AND REQUIREMENTS

4

REPORTING TEST RESULTS

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WHAT'S MY APP VERSION?

6

HAVING ALL COVERED IN TEAM CENTER

Meet Juliet

Meet Juliet

Introduction



- Juliet is a QA Engineer
 - Good knowledge about her testing tools
- Experience in scripting
 - Experience in her monitoring tools

Meet Juliet

Task – Nowhere Bank

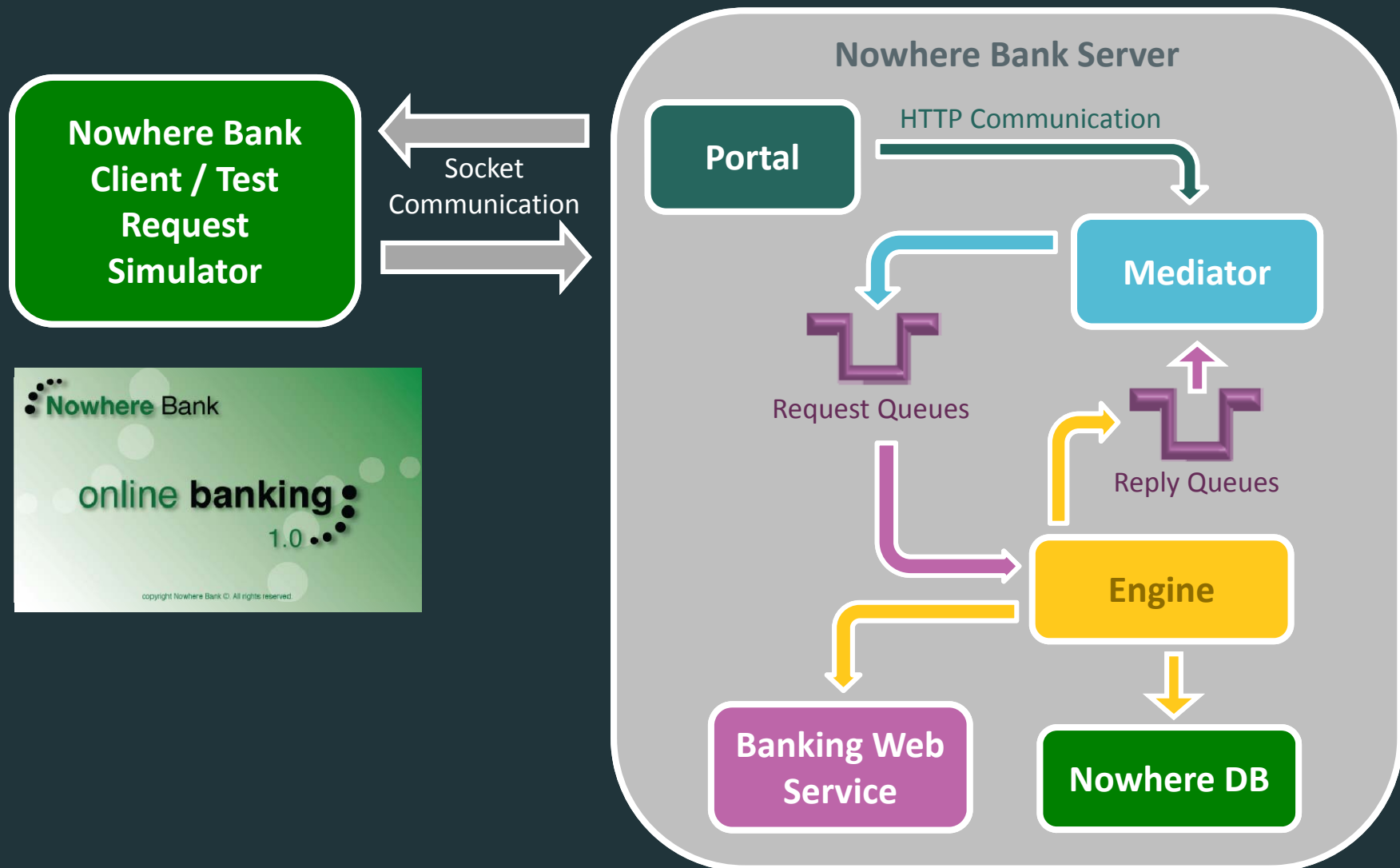


- Nowhere Bank is a trouble maker
- Constant problems on release changes
 - Every release is a new surprise
- Huge complexity because of different protocols

Problem Application

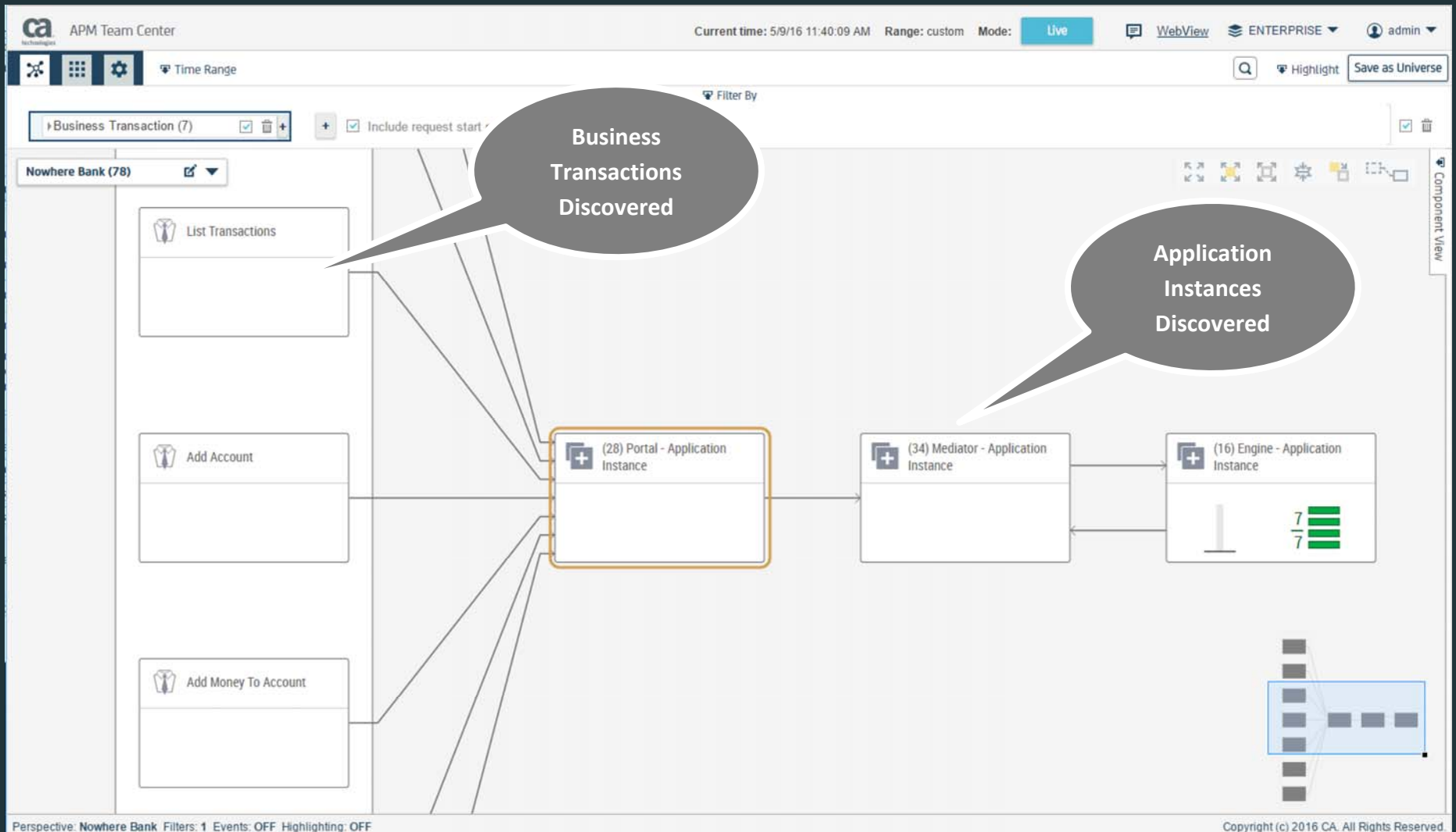
Nowhere Bank

Overview



Nowhere Bank

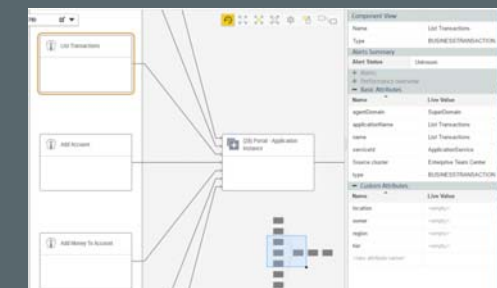
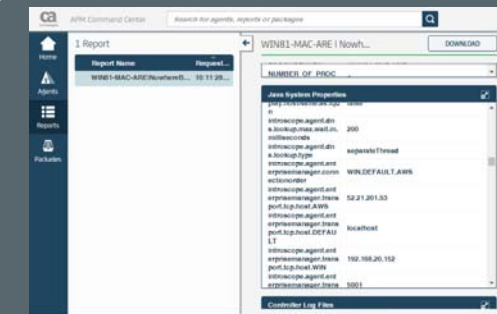
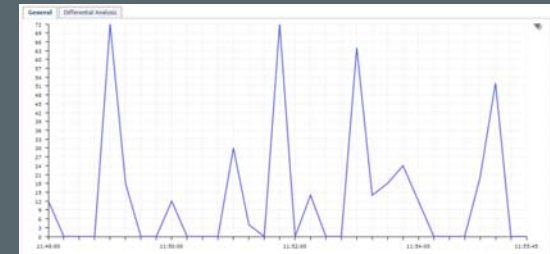
Monitoring Results – Team Center



Challenges and Requirements

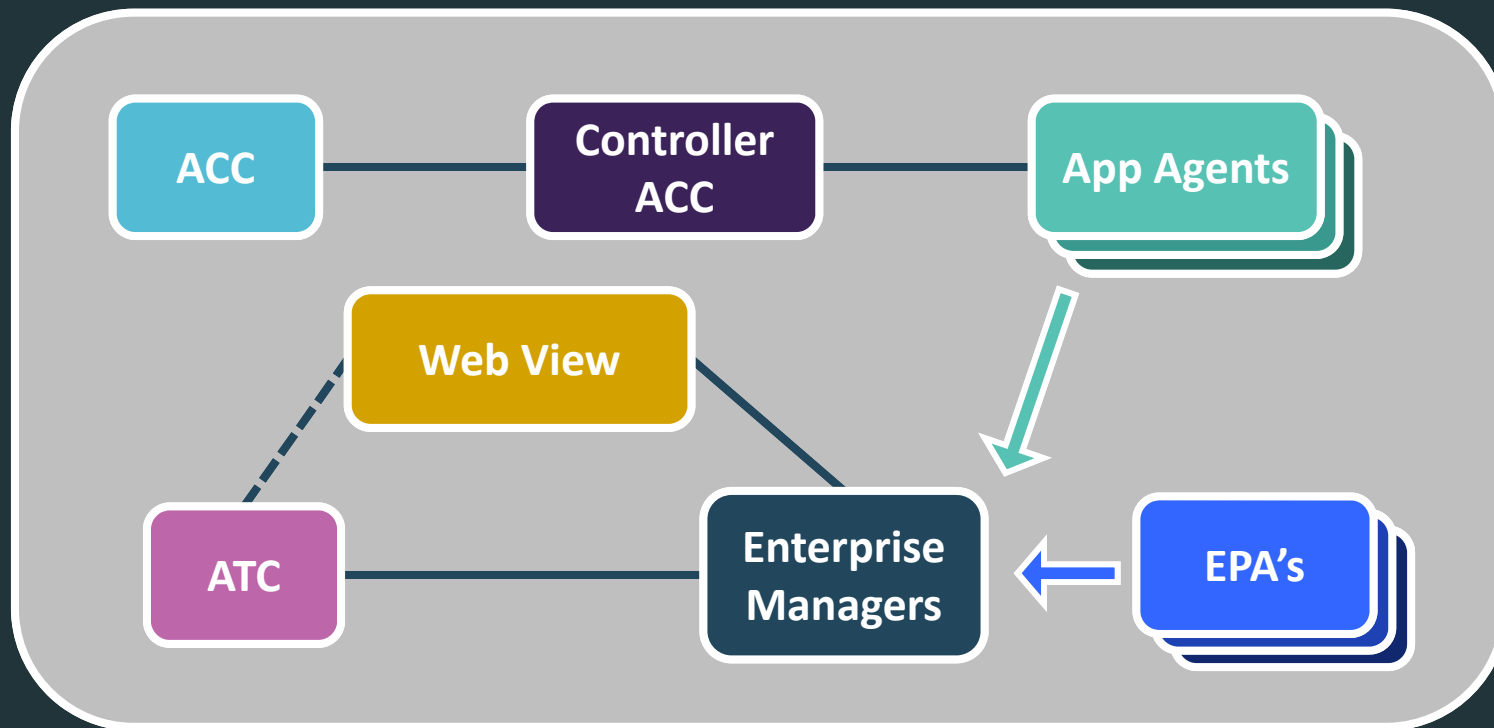
Test Enrichment

-



Challenges and Requirements

What are my options in APM 10.2 ?

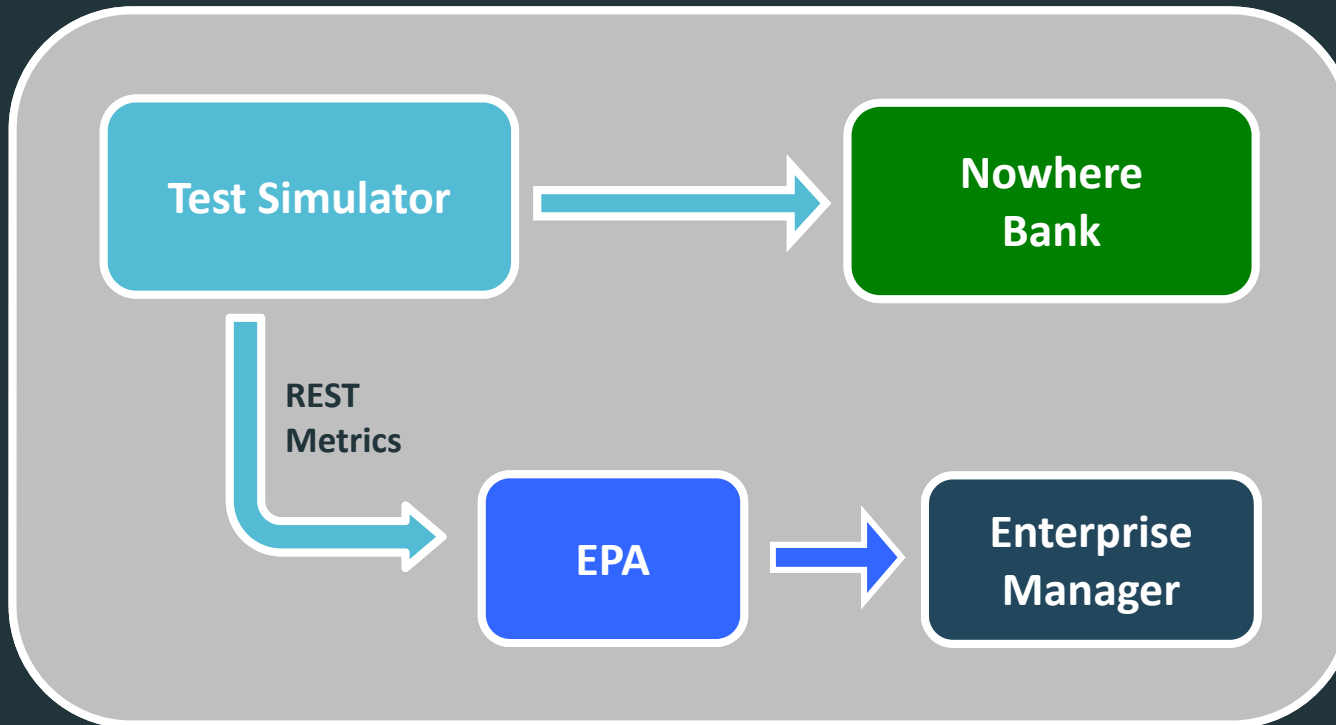


Reporting Test Results

Reporting Test Results

Target Architecture

- Juliet leverages the REST API from the Environment Performance Agent (EPA) to report metrics



Reporting Test Results

EPA Rest API

- Reference and full documentation:
 - <https://docops.ca.com/ca-apm/10-2/en/implementing-agents/ep-agent/configure-the-epagent-restful-interface>
- Metric Feed URI
 - **URL:** http://<EPA Host>:<EPA HTTP Port>/apm/metricFeed
 - **Method:** POST
 - **Header :** "Content-Type:application/json"

- Sample JSON Metric

```
{"metrics" : [{"type" : LongAverage",  
  "name" : "Tests|Nowhere Bank|List Accounts Test:Average Test Run Time (ms)",  
  "value" : 5623}]}
```

Reporting Test Results

EPA Rest API

- It would be great to have Test Results as Metrics
 - Test Results
 - Test Times



Release Information in Team Center nodes

Release Information > ATC

Finding the bits and pieces

The screenshot shows the CA APM Command Center interface. On the left, there's a sidebar with navigation links: Home, Agents, Reports, and Packages. The main area displays a report titled 'WIN81-MAC-ARE | NowhereBank | Portal-2'. The report is titled '2 Reports' and lists two entries:

Report Name	Requeste...
WIN81-MAC-ARE NowhereBan...	1:40:24 AM
WIN81-MAC-ARE NowhereBan...	5/9/2016

Below the report list, there's a section titled 'Java System Properties' with a table of properties:

Property Name	Value
log4j.appender.logfile.File	C:\Nowhere Bank Full\wily\logs\IntroscopeAgent.log
log4j.appender.logfile.layout	com.wily.org.apache.log4j.PatternLayout
log4j.appender.logfile.layout.ConversionPattern	%d{M/dd/yy hh:mm:ss a z} [%-3p] [%c] %m%n
log4j.appender.logfile.MaxBackupIndex	4
log4j.appender.logfile.MaxFileSize	2MB
log4j.logger.IntroscopeAgent	INFO, logfile
NowhereBank.Build.Version	5.6

A red arrow points from the '5.6' value in the 'NowhereBank.Build.Version' row to the 'Component View' table in the bottom right.



The screenshot shows the 'Component View' table in the CA APM Command Center. The table has two main sections: 'Basic Attributes' and 'Custom Attributes'. The 'Basic Attributes' section includes fields like Name, Type, Alerts Summary, Alert Status, Alerts, Performance overview, and Basic Attributes. The 'Custom Attributes' section includes fields like Name, Live Value, Application Instance, location, owner, and region.

Name	Live Value
agent	WIN81-MAC-ARE NowhereE
agentDomain	SuperDomain
applicationName	accounts
hostname	win81-mac-are
name	Backends\Queue accounts_
processedBy	BackendVertexIdentifier
Source cluster	Enterprise Team Center
type	GENER/CBACKEND

A red arrow points from the '5.6' value in the 'NowhereBank.Build.Version' row to the 'applicationName' field in the 'Basic Attributes' section.

Release Information > ATC

Strategy

- Java Properties are in ACC.
- Take it from ACC and push it into ATC!!!

...



1

Collect
Java Property
From
Test Agents

REST

ACC

Nowhere DB
Agents

2

Search
Test Agents
Vertices

REST

ATC

3

Update
Vertices

ATC

Reporting Test Results

APM Command Center - Rest API

- Reference and full documentation:
 - <https://docops.ca.com/ca-apm/10-2/en/administrating/ca-apm-command-center/ca-apm-command-center-api>
- REST API
 - **URL:** https://<ACC server hostname>:<port>/apm/acc/<resource name>
 - **Methods:** GET, HEAD, POST, DELETE (depends on functionality)
 - **Header :** "Content-Type:application/json"
- Functionalities
 - [Agent Resource](#)
 - [agentUpdateTask Resource](#)
 - [diagnosticReport Resource](#)
 - [diagnosticReportTask Resource](#)
 - [controller Resource](#)
 - [controllerUpgradeTask Resource](#)
 - [agentFileOperationTask Resource](#)
 - [File Resource](#)
 - [auditRecord Resource](#)
 - [package Resource](#)

Reporting Test Results

APM Command Center – Agent Resource

❖ Agent Resource - Available Data per Agent

- *id*
- *agentName*
- *serverName*
- *processName*
- *status*
- *type*
- *version*
- *build*
- *logLevel*
- *registrationTimestamp*
- *registrationUnixTimestamp*
- *lastContact*
- *appServerName*
- *appServerVersion*
- *platformName*
- *platformVersion*
- *platformArch*
- *osName*
- *osVersion*
- *osArch*
- *metricCountinstallPath*
- *agentProfile*
- *platformProperties*
- *environmentVariables*

Reporting Test Results

APM Command Center – Agent Resource

- Agent Resource command:
 - GET <https://localhost:8443/apm/acc/agent/>
- Call to fetch all data for agents on Juliet's test machine "WIN81-ARE-MAC":



```
curl -k -X GET  
https://172.16.100.130:8443/apm/acc/agent?q=serverName:WIN81-MAC-ARE -H  
"Authorization:Bearer faab8c3f-e036-4c9a-89bc-beddbb5983b6"
```

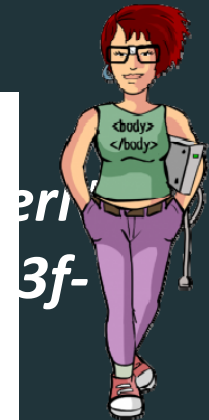
Reporting Test Results

APM Command Center – Agent Resource

curl
http:
me:
e036

```
"introscope.agent.dns.lookup.type" : "separateThread",  
"introscope.agent.transactiontracer.sampling.perinterval.count" : "10",  
"java.vm.specification.vendor" : "Oracle Corporation",  
"log4j.appender.logfile.MaxFileSize" : "2MB",  
"introscope.agent.enterprisemanager.transport.tcp.host.WIN" : "192.168.20.152",  
"acc.agent.collector" : "localhost",  
"acc.agent.installpath" : "C:/Nowhere Bank Full/wily",  
"introscope.agent.defaultProcessName" : "UnknownProcess",  
"acc.agent.override.osArch" : "amd64",  
"NowhereBank.Build.Version" : "5.6",  
"introscope.agent.deep.probe.deepinference.auto.turnoff.requests.per.interval" : "100",  
"introscope.agent.deep.automatic.trace.clamp" : "10",  
"introscope.agent.deep.instrumentation.max.methods" : "10000",  
"java.vm.specification.name" : "Java Virtual Machine Specification",  
"java.vendor.url.bug" : "http://bugreport.sun.com/bugreport/",  
"acc.agent.msgtype" : "registration",  
"introscope.agent.leakhunter.ignore.9" : "org.hibernate.collection.PersistentSet",  
"introscope.agent.sockets.managed.reportMethodBTEdge" : "true",  
"introscope.agent.leakhunter.ignore.8" : "java.util.Collections$UnmodifiableMap",  
"introscope.agent.threaddump.deadlockpollerinterval" : "15000",  
"introscope.agent.leakhunter.ignore.7" : "com.sun.faces.context.SessionMap",  
"introscope.enterprisemanager.serversockets.reuseaddr" : "false",  
"introscope.agent.leakhunter.ignore.6" : "com.sun.faces.context.BaseContextMap$KeySet",  
"introscope.agent.stalls.resolutionseconds" : "10",  
"introscope.agent.leakhunter.ignore.5" : "com.sun.faces.context.BaseContextMap$EntrySet",  
"introscope.bootstrapClassesManager.waitAtStartup" : "5",  
"user.variant" : "",  
"introscope.agent.leakhunter.ignore.4" : "java.util.SubList",  
"user.language.format" : "de",  
"introscope.agent.leakhunter.ignore.3" : "org.jnp.interfaces.FastNamingProperties",  
"awt.toolkit" : "sun.awt.windows.WToolkit",  
"introscope.agent.leakhunter.enable" : "false",  
"sun.jnu.encoding" : "Cp1252",
```

```
{  
  "_links" :  
    {  
      "self" :  
        {  
          "href"  
            :  
            "templ  
          }  
        },  
      "_embedded"  
        :  
        {  
          "agent" :  
            {  
              "id" :  
                "agentN  
              "server  
              "proces  
              "status  
              "type"  
            }  
          }  
        }  
      }  
    }  
  }  
}
```



ort,projection}",

Reporting Test Results

Half Way Results

I have my test agents and the Nowhere Bank Release Version.

```
"NowhereBank.Build.Version" : "5.6",
```



How to update Team Center with Release versions?

Component View	
Name	Backends\Queue(accounts_
Type	GENERICBACKEND
Alerts Summary	
Alert Status	Unknown
+ Alerts	(0)
+ Performance overview	(0)
- Basic Attributes	(8)
Name	Live Value
agent	WIN81-MAC-ARE\NowhereE
agentDomain	SuperDomain
applicationName	accounts
hostname	win81-mac-are
name	Backends\Queue(accounts_
processedBy	BackendVertexIdentifier
Source cluster	Enterprise Team Center
type	GENERICBACKEND
- Custom Attributes	(5)
Name	Live Value
Application Instance	Engine
location	<empty>
owner	<empty>
region	<empty>

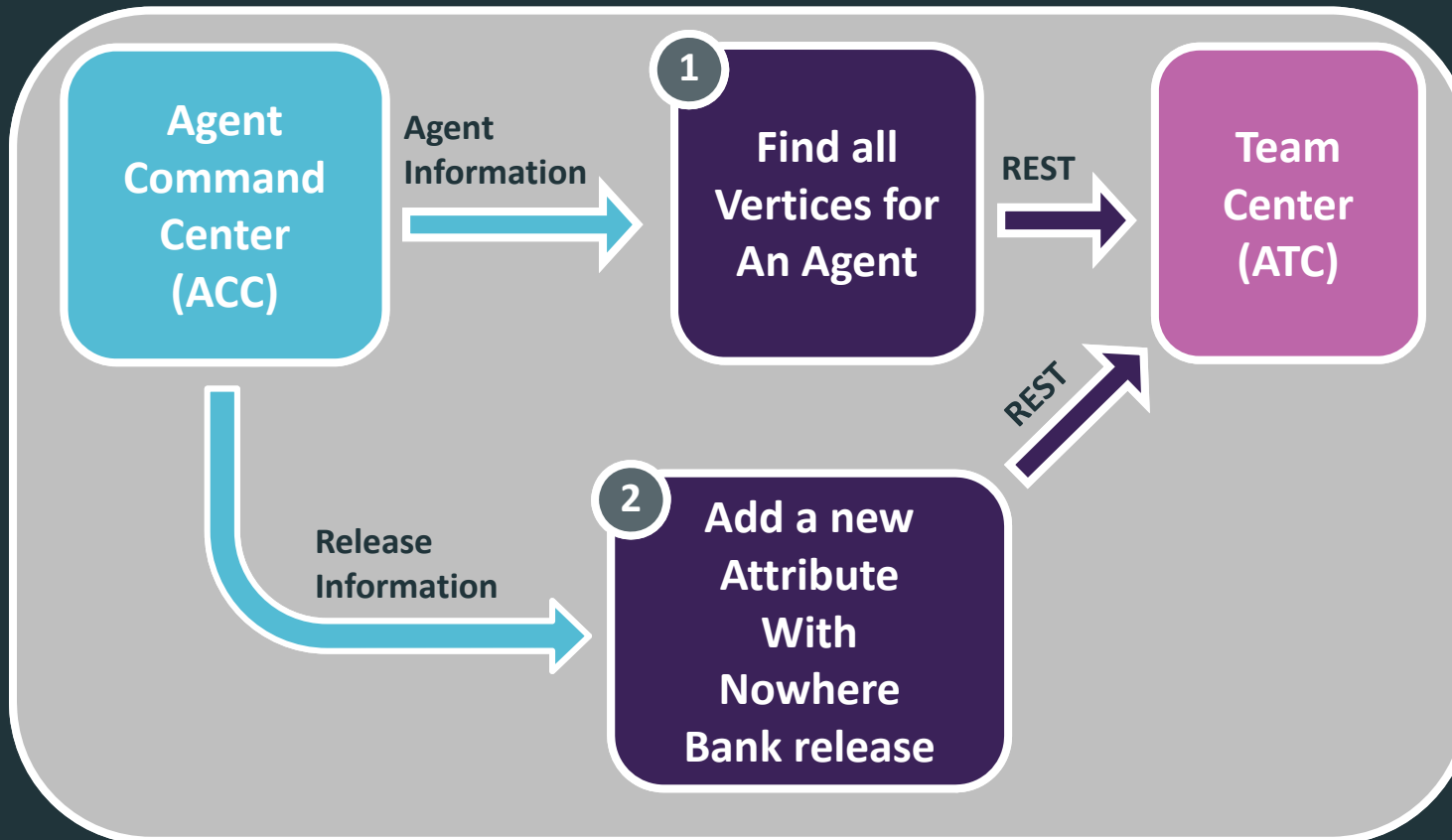
Reporting Test Results

APM Team Center - Rest API

- Reference and full documentation:
 - <https://docops.ca.com/ca-apm/10-2/en/integrating/api-reference-guide/apm-rest-api>
- Team Center Access
 - **URL:** `https://{hostname}:8443/apm/appmap/`
 - **Methods:** GET, PATCH
 - **Header :** "Content-Type:application/json"
- Functionalities
 - [Root Resource](#)
 - [Vertex](#)
 - [Vertex id](#)

Reporting Test Results

APM Team Center – Vertex manipulation strategy



Reporting Test Results

APM Team Center – Search for Vertices

- Agent Resource command:
 - GET <https://localhost:8444/apm/acc/agent/>
- Call to fetch all data for agents on Juliet's test machine "WIN81-ARE-MAC":

```
curl --insecure -X GET  
https://172.16.100.137:8444/apm/appmap/vertex?q=  
attributes.hostname: win81-mac-are -H  
"Authorization:Bearer b16e9829-1dfe-4ea4-af61-  
204a823c2320"
```



Reporting Test Results

APM Team Center – Search for Vertices

```
{
  "_links": {
    "self": {
      "href": "https://172.16.100.132:8444/apm/appmap/vertex"
    },
    "parent": {
      "href": "https://172.16.100.132:8444/apm/appmap"
    }
  },
  "_embedded": {
    "vertex": [
      {
        "timestamp": "2016-05-11T13:13:29.250Z",
        "attributes": {
          "agent": "WIN81-MAC-ARE|NowhereBank|Mediator",
          "hostname": "win81-mac-are",
          "Source cluster": "Enterprise Team Center",
          "Nowhere Bank Function": "validateRequest",
          "name": "validateRequest",
          "agentDomain": "SuperDomain",
          "Metric": "Banking|Transaction Controller|MediatorTransactionController|validateRequest",
          "processedBy": "EngineBackendMapper",
          "type": "DEFAULT",
          "Application Instance": "Mediator",
          "applicationName": "/validateRequest"
        },
        "_links": {
          "parent": {
            "href": "https://172.16.100.132:8444/apm/appmap/vertex"
          },
          "self": {
            "href": "https://172.16.100.132:8444/apm/appmap/vertex/92"
          }
        },
        "id": "92"
      }
    ]
  }
}
```

Agent
specification
matching ACC
information

Let's collect
the Vertex ID's
for our next
step



Reporting Test Results

APM Team Center – Update Vertices with Release Information

- Agent Vertex Update command command:
 - GET <https://localhost:8443/apm/acc/agent/>
- Call to at the release information to individual vertices:



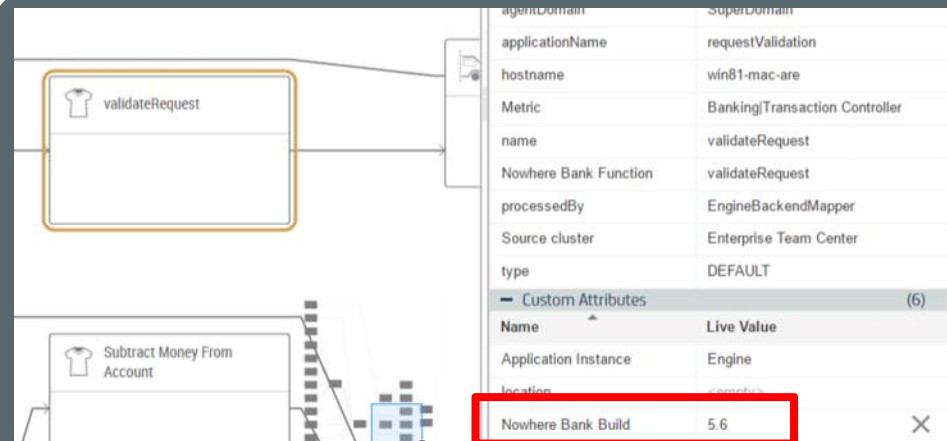
```
curl --insecure -X PATCH  
https://172.16.100.140:8444/apm/appmap/vertex/<Ver  
texId> -d "{\"attributes\":{\"Nowhere Bank  
Build\":\"5.6\"}}\" -H \"Authorization:Bearer b16e9829-  
1dfe-4ea4-af61-204a823c2320\" -H \"Content-Type:  
application/json\"
```

Reporting Test Results

APM Team Center – Update Vertices with Release Information



Release
Information
from Agents in
Team Center
Vertices.

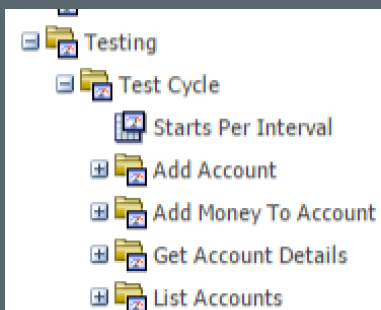


agentDomain	SuperDomain
applicationName	requestValidation
hostname	win81-mac-are
Metric	BankingTransaction Controller
name	validateRequest
Nowhere Bank Function	validateRequest
processedBy	EngineBackendMapper
Source cluster	Enterprise Team Center
type	DEFAULT
Custom Attributes (6)	
Name	Live Value
Application Instance	Engine
location	Nowhere Bank Build
	5.6

Tests and Test Results on Team Center


Reporting Test Results

APM Team Center – Update Vertices with Release Information



- Testing
 - Test Cycle
 - Starts Per Interval
 - Add Account
 - Add Money To Account
 - Get Account Details
 - List Accounts

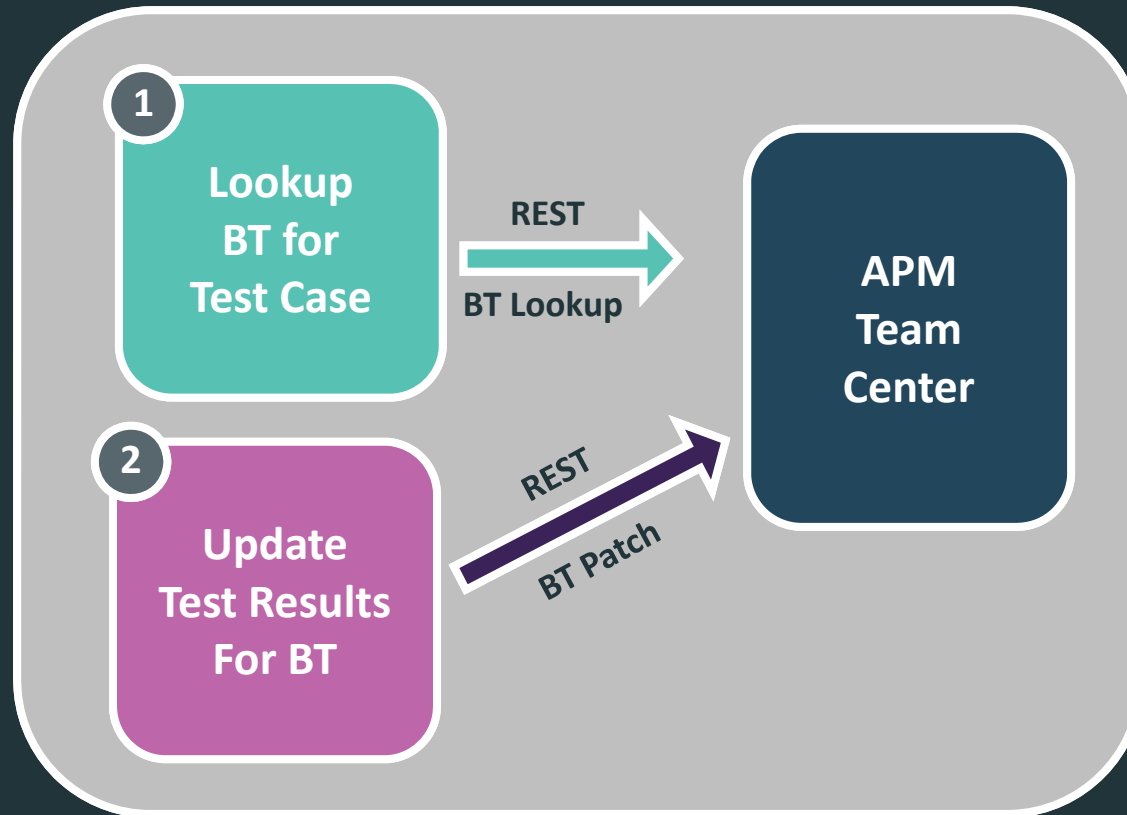
I want to link failure transactions in Team Center with failed test cases



Test Case	Result
Add Account	OK
Add Money to Account	FAIL
Get Account Details	OK
List Accounts	FAIL

Reporting Test Results

APM Team Center – Update Vertices with Test Results



Reporting Test Results

1. Lookup BT's for Test Case

URL: <https://172.16.100.140:8444/apm/appmap/vertex?q=attributes.name:Add\ Money\ To\ Account AND attributes.type:BUSINESSTRANSACTION>

Body Headers Auth Files

Header Name	Header Value
Content-Type	application/json
Authorization	Bearer b16e9829-1dfe-4ea4-af61-204a823c2320

Type Business Transaction

Test Case: Add Money To Account

Result Vertex for BT Node

```
{
  "_links": {
    "self": {
      "href": "https://172.16.100.140:8444/apm/appmap/vertex"
    },
    "parent": {
      "href": "https://172.16.100.140:8444/apm/appmap"
    }
  },
  "_embedded": {
    "vertex": [
      {
        "timestamp": "2016-05-11T16:36:36.305Z",
        "attributes": {
          "Source cluster": "Enterprise Team Center",
          "name": "Add Money To Account",
          "agentDomain": "SuperDomain",
          "serviceId": "ApplicationService",
          "type": "BUSINESSTRANSACTION",
          "applicationName": "Add Money To Account"
        },
        "_links": {
          "parent": {
            "href": "https://172.16.100.140:8444/apm/appmap/vertex"
          },
          "self": {
            "href": "https://172.16.100.140:8444/apm/appmap/vertex/163"
          }
        },
        "id": "163"
      }
    ]
  }
}
```



Reporting Test Results

2. Update the Business Transaction with Result



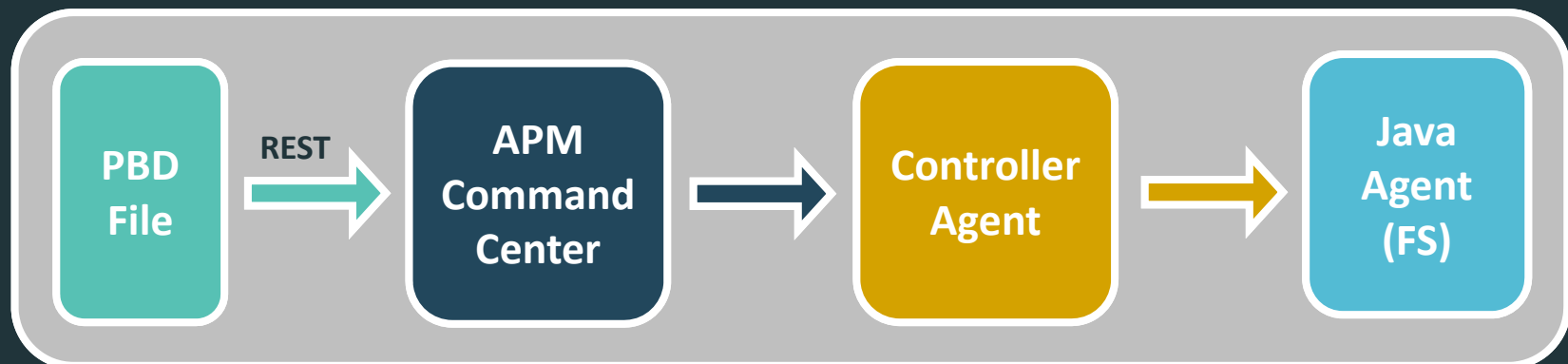
The screenshot shows a software interface with a process flow on the left and a table of attributes on the right. The process flow includes a box labeled 'List Accounts' and a box labeled 'Add Money To Account' which is highlighted with a red border. The table on the right is titled 'Basic Attributes' and 'Custom Attributes'. The 'Test Result' row in the 'Custom Attributes' section is highlighted with a red border and shows the value 'FAIL'.

Name	Live Value
agentDomain	SuperDomain
applicationName	Add Money To Account
name	Add Money To Account
serviceld	ApplicationService
Source cluster	Enterprise Team Center
type	BUSINESSTRANSACTION

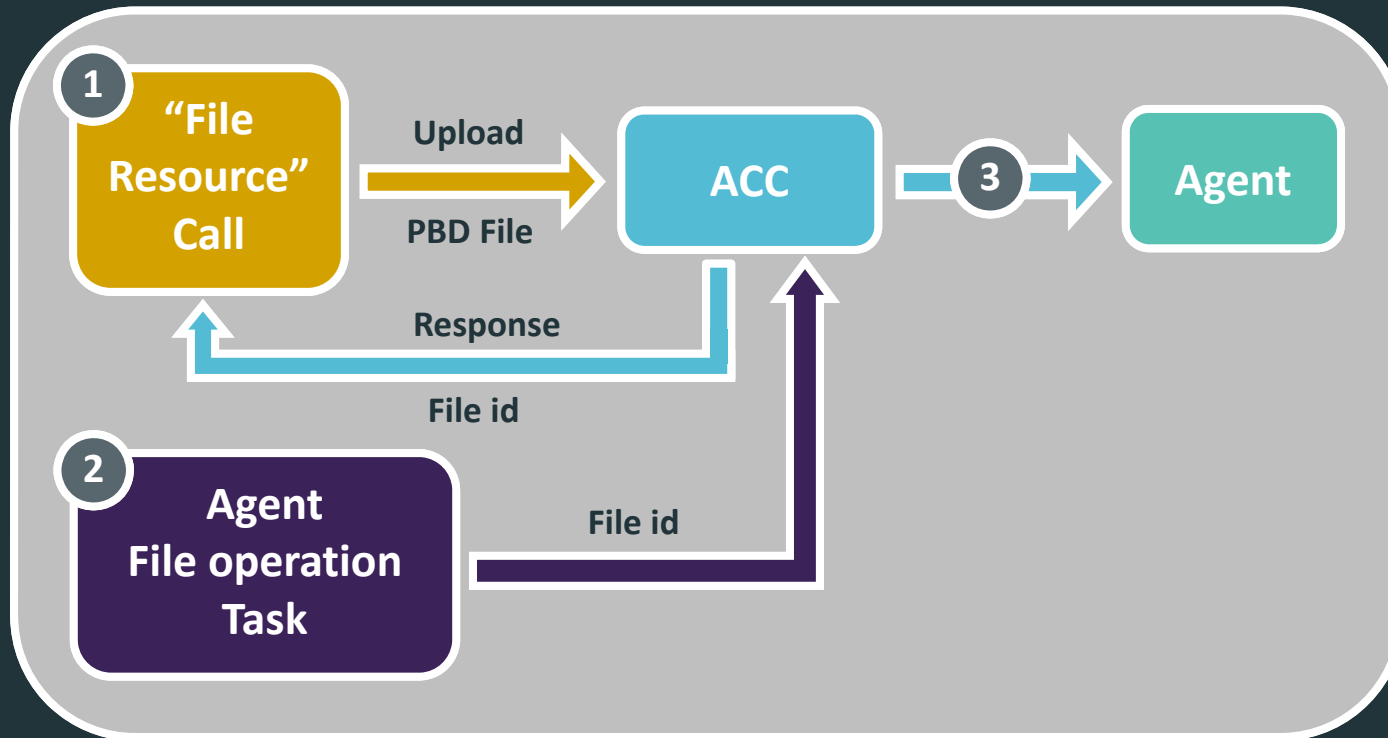
Name	Live Value
location	<empty>
owner	<empty>
region	<empty>
Test Result	FAIL
tier	<empty>
<new attribute name>	

Getting the right instrumentation for a test

The right instrumentation for a test case



The right instrumentation for a test case



Upload PBD File

1. APM Command Center – File Resource

GET

```
GET https://localhost:8443/apm/acc/file/
```

POST

This is an example of a file upload using curl:

```
curl -k -H "Authorization:Bearer 3f77f1e5-6985-4019-8f49-af1ed04e0119"  
-F name=my-new-app.pbd  
-F file=@mylocalFile.pbd  
https://localhost:8443/apm/acc/file
```

You get a response similar to this one:

```
{  
  "id": 32,  
  "name": "my-new-app.pbd",  
  "size": 6797,  
  "createdBy": "user@example.com",  
  "modified": "2015-06-23T09:55:22.096+01:00",  
  "_links": {  
    "content": {  
      "href": "https://localhost:8443/apm/acc/file/1/content"  
    }  
  }  
}
```

Upload PBD File

2. APM Command Center – Upload File to Agent

- Upload File call

```
POST https://localhost:8443/apm/acc/agentFileOperationTask
{
  "agent" : "agent/2",
  "file" : "file/12",
  "destination" : "core/config/hotdeploy/my-new-app.pbd",
  "operation": "COPY"
}
```



Immediately new
instrumentation
on the Agent.
No restart!!!!

Field Community

Github Community

- <https://github.com/CA-APM>

The screenshot shows the GitHub repository page for 'CA Technologies Application Performance Management'. The repository is categorized as 'CA APM Fieldpack Repositories' and is located in Santa Clara, CA. The page lists four repositories:

- ca-apm-example-docker-tomcat**: Shell, 0 stars, 1 fork. Description: 'This example shows how to install a CA APM Java agent in a Tomcat Docker container along with your application.' Updated 2 days ago.
- ca-apm-fieldpack-epa-aix**: Perl, 0 stars, 1 fork. Description: 'A series of Perl programs to monitor OS statistics and WebSphere Application Server processes.' Updated 6 days ago.
- ca-apm-acc-api-scripts**: Python, 3 stars, 2 forks. Description: 'Sample scripts utilizing CA APM Command Center API for automating typical tasks.' Updated 23 days ago.
- ca-apm-fieldpack-asm**: Java, 0 stars, 0 forks. Description: 'This field pack integrates metrics from CA App Synthetic Monitor into CA APM.' Updated on Aug 7.

On the right side, the 'People' section lists three contributors: ggrossbe (Guenter Grossberger), klinebch (Chris Kline), and msw-ca (Mike Walker).

Q & A



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