Automated self-testing and health check of live CQ instances

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Agile software needs TESTING

The more configurable, the more breakable....let's test it live!

Sling Health Check

To execute health check rules, enter the path of a rules definition (or the root of a subtree of definitions) and an optional list of tags if you want to select a tagged subset of the rules.

Rules definition path	/apps/hc
Rule tags (comma-separated)	sling
Omit 'nothing to report' results	☐

Execute selected rules

Rule: InactiveBundlesCount <= 3

Tags	[sling, bundles, osgi]
Info	sling.resource.path:/apps/hc/demo/inactive-bundles
Log	**Nothing to report**

Rule: org.apache.sling:type=engine,service=RequestProcessor:RequestsCount < 20

Tags	[sling, jmx]
Info	sling.resource.path:/apps/hc/demo/jmx-sling-requests
Log	DEBUG org.apache.sling:type=engine,service=RequestProcessor RequestsCount returns 27 WARN Value [27] does not match expression [< 20]

Rule: bundle.state:org.apache.sling.api active

Tags	[sling, bundles]
Info	sling.resource.path:/apps/hc/demo/sling-api-bundle
Log	**Nothing to report**

Rule: bundle.state:org.apache.sling.startupfilter.disabler active

Tags	[sling, bundles]

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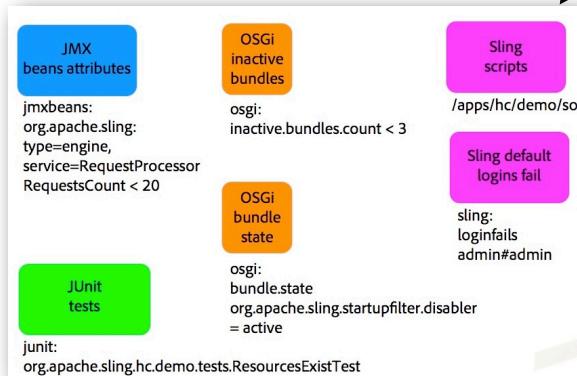
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Apache Sling Health Check ~~Mippet~~

Webconsole plugin

Rules configured in content

Tagged rules

Webconsole and servlets

RuleBuilder OSGi services

Sling Health Check

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Rule: bundle.state:org.apache.sling.api active

Tags	[sling, bundles]
Info	sling.resource.path:/apps/hc/demo/sling-api-bundle
Log	**Nothing to report**

Rule: bundle.state:org.apache.sling.startupfilter.

Tags	[sling, bundles]
Info	sling.resource.path:/apps/hc/demo/startup-filter
Log	**Nothing to report**

Apache Sling module, runs in CQ 5.5 and later

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JSON output

selectors map to tags

localhost:4502/apps/hc/demo.healthcheck.bundles.json

Projects Projects Tools Services TinyURL! Weather adobe current QRCode

```
 1  {
 2      "results": [{
 3          "rule": "Rule: bundle.state:groovy-all active",     rule 1
 4          "info": [{
 5              "sling.resource.path": "/apps/hc/demo/groovy-bundle"
 6          }
 7          ],
 8          "tags": [
 9              "groovy",
10              "bundles"                    Rule uses a Logger to complain
11          ],
12          "log": [{
13              "ERROR": "Bundle not found: groovy-all"
14          },{
15              "WARN": "Value [] does not match expression [active]"
16          }
17          ]
18      },{
19          "rule": "Rule: InactiveBundlesCount <= 3",     rule 2
20          "info": [{
21              "sling.resource.path": "/apps/hc/demo/inactive-bundles"
22          }
23          ],
24          "tags": [
25              "sling",
26              "bundles",
27              "osgi"                    no news (log) is good news!
28          ]
29      },{
```

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rules

Rule defined in content

```
$ curl -u admin:admin
http://localhost:4502/apps/hc/demo/inactive-bundles.tidy.json
{
  "sling:resourceType": "sling/healthcheck/rules",
  "namespace": "osgi",
  "ruleName": "inactive.bundles.count",
  "expression": "<= 3",
  "tags": [
    "bundles",
    "osgi",
    "sling"
  ],
  "jcr:primaryType": "nt:unstructured"
}
```

Execute the **osgi:inactive.bundles.count** rule
and verify that its output is **<= 3**

The rules engine executes a tree of such definitions, optionally taking tags into account.

HTTP rule execution

```
$ curl -u admin:admin
http://localhost:4502/apps/hc/demo/inactive-bundles.healthcheck.json
{
  "results": [{
      "rule": "Rule: InactiveBundlesCount <= 3",
      "info": [{
          "sling.resource.path": "/apps/hc/demo/inactive-bundles"
        }
      ],
      "tags": [
        "sling",
        "bundles",
        "osgi"
      ]
    }
  ]
}
```

no news (log) is good news!

Rule path with *.healthcheck* selector
Works with single rules or trees

Rule scripts

```
$ curl -u admin:admin
http://localhost:4502/apps/hc/demo/script-that-passes.esp

# A rule script must output only TEST_PASSED,
# comments like this one and white space.
# Anything else is considered failure
#(as with the Sling testing tools)
TEST_PASSED
```

Currently executable only from a
sling/healthcheck/rules container resource.

out
of the
box

Out of the box rules

as of revision 1490454

JMX beans attributes

jmxbeans:
org.apache.sling:
type=engine,
service=RequestProcessor
RequestsCount < 20

OSGi inactive bundles

osgi:
inactive.bundles.count < 3

OSGi bundle state

osgi:
bundle.state
org.apache.sling.startupfilter.disabler
= active

Sling scripts

/apps/hc/demo/somescript.esp

Sling default logins fail

sling:
loginfails
admin#admin

JUnit tests

junit:
org.apache.sling.hc.demo.tests.ResourcesExistTest
(can use @TestReference for services)

BYOR!

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picture: mconnors on morguefile.com

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extensibili t y

Rule evaluates a SystemAttribute

```java
static class ConstantSystemAttribute
implements SystemAttribute {

    private final int value;

    ConstantSystemAttribute(int val) {
        this.value = val;
    }

    @Override
    public Object getValue(Logger logger) {
        logger.debug("Constant value of {} is {}",
                this, value);
        return value;
    }

}
```

RuleBuilder service builds Rules

test:constant:5 = 5
namespace:ruleName:qualifier expr

```java
public Rule buildRule(final String namespace,
        final String ruleName,
        final String qualifier, final String expression) {
    if(!"test".equals(namespace)) {
        return null;
    }
```

check namespace

```java
    SystemAttribute attr = null;
    if("constant".equals(ruleName)) {
        attr = new ConstantSystemAttribute(
                Integer.valueOf(qualifier));
    } else if("invert".equals(ruleName)) {
        attr = new ConstantSystemAttribute(
                Integer.valueOf("-" + qualifier));
    } else {
        return null;
    }
```

map ruleName to SystemAttribute

```java
    return new Rule(attr, expression, new DefaultEvaluator()) {
        @Override
        public String toString() {
            // specific toString() value used in our tests
            return "" + namespace + "_" + ruleName + "_" + qualifier + "_" + expression;
        }
    };
}
```

build Rule

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DefaultEvaluator expressions
can use custom Evaluator as well

"Some string"

< 5

> 5

<= 5

>= 5

between 5 and 12

```
public interface Evaluator {
  void evaluate(
    SystemAttribute a,
    String expression,
    Logger logger);
}
```

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Extensibility summary

Implement a SystemAttribute
getValue(Logger)

Register a RuleBuilder service
check names
build SystemAttribute + Rule

That's it.
(optionally supply custom Evaluator)

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similar
ideas

Joerg Hoh's cq5-healthcheck

MBean attribute value ranges or custom StatusProvider services

MBean	Message	Status
de.joerghoh.cq5.jmx:id=bundles (No bundle in resolved state)	Cannot resolve property or MBean	WARN
de.joerghoh.cq5.jmx:id=bundles (no bundle in installed state)	Cannot resolve property or MBean	WARN
com.adobe.granite.replication:type=agent,id="publish" (Warn Queue length)		OK
com.adobe.granite.replication:type=agent,id="publish" (Critical queue length)		OK

CQ:Page for status

Based on OSGi configs:

```
PID = de.joerghoh.cq5.healthcheck.MBeanStatusProvider.b9cb0c91-972b
  mbean.name = com.adobe.granite.replication:type=agent,id="publish"
  mbean.property = QueueNumEntries.warn.>.100
  mbean.providerHint = Warn Queue length
```

https://github.com/joerghoh/cq5-healthcheck

CQ5
HEALTH CHECK

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Davide Giannella's sanitycheck

Servlets as sanity check services.

CQ page components for options, forms.

Checks **remote** CQ instances via HTTP.

CQ pages to assemble sanity check pages.

Adobe Internal github for now: dgiannel/sanitycheck

future

Future?

Implement CQ security checklist rules

Execute rules via JMX?

Scheduling of rules execution + reporting
Scheduling and time-based range checks, sampling
periods (thx Radu Cotescu)

Execute rules tagged "startup" at startup
and report or lock instance if WARN.

<YOUR IDEA HERE> or on the Apache Sling mailing lists

http://sling.apache.org/documentation/bundles/sling-health-check-tool.html
I'm @bdelacretaz - thanks for attending!

What are your
use cases?