



# Automated self-testing and health check of live Sling instances



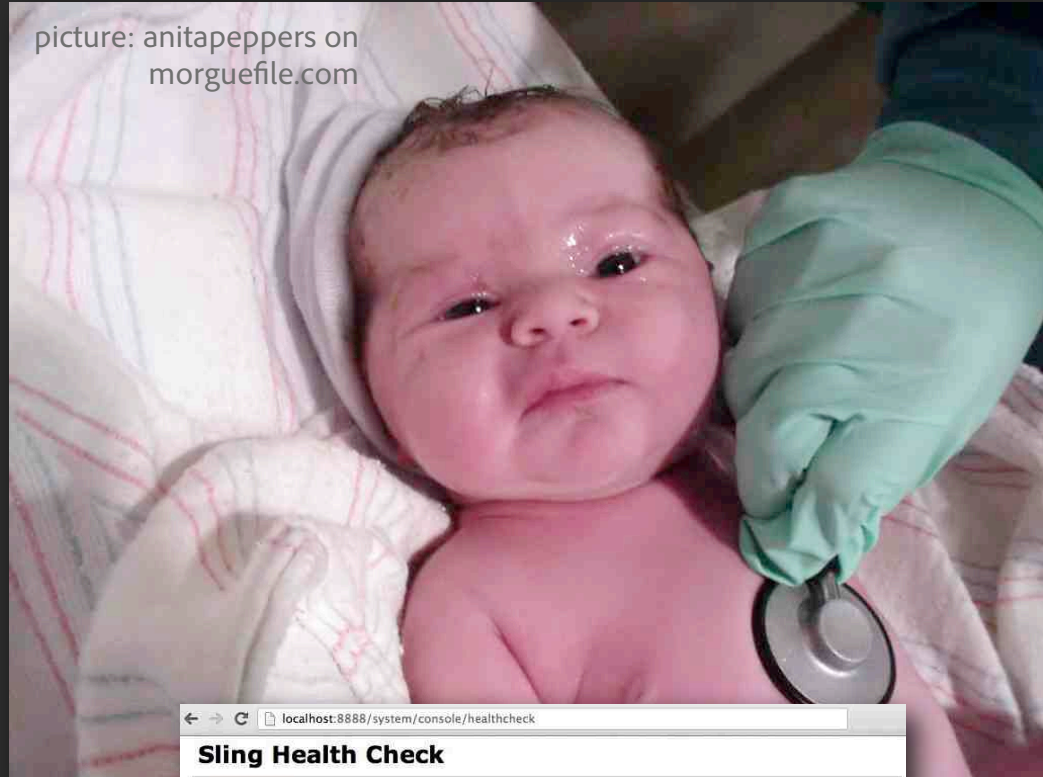
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How can you trust  
your current (fragile?)  
combination of OSGi  
bundles and configs?  
It needs live TESTING.



picture: anitapeppers on morguefile.com

The screenshot shows two overlapping windows. The top window is a browser displaying the Sling Health Check console. The bottom window is the Java Monitoring & Management Console (JMX console) showing the details of the health check.

**Sling Health Check Console:**

localhost:8888/system/console/healthcheck

### Sling Health Check

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.

Attribute values

Name	Value
hc.name	LoadedClassCount and ManagementSpecVersion are in range
hc.tags	[jvm, script]

log

Name	Value
index	2
level	DEBUG
message	Got JMX Object [java.lang.type=ClassLoading]

ok: true  
service.pid: org.apache.sling.hc.core.impl.ScriptableHealthCheck.e9cb63b4-4431-46cc-b...  
status: OK

Refresh

set.TEST\_PASSED so the corresponding rule will fail.  
will fail.] does not match expression [TEST\_PASSED]





what do we mean by

# Health Checks?





# HealthCheck APIs

```
public interface HealthCheck {  
    Result execute();  
}
```

HealthCheck  
OSGi services

Service props:  
name, MBean, tags

```
public class Result {  
    public boolean isOk() ...  
    public Status getStatus() ...  
    public Iterator<ResultLog.Entry> iterator() ...  
}
```





# Webconsole, JMX





# Webconsole plugin

## /system/console/healthcheck

### Sling Health Check

To execute health check services, enter an optional list of tags, to select specific health checks, or no tags for all checks. Prefix a tag with a minus sign (-) to omit checks having that tag.

Health Check tags (comma-separated)

Show DEBUG logs

Show failed checks only

[Execute selected health checks](#)

### Default logins should fail

Tags: [security]  
Result: **WARN**

WARN Login as [admin] succeeded, was expecting it to fail  
WARN Checked 2 logins, 1 failures

#### Summary

1 HealthCheck executed, 1 failures

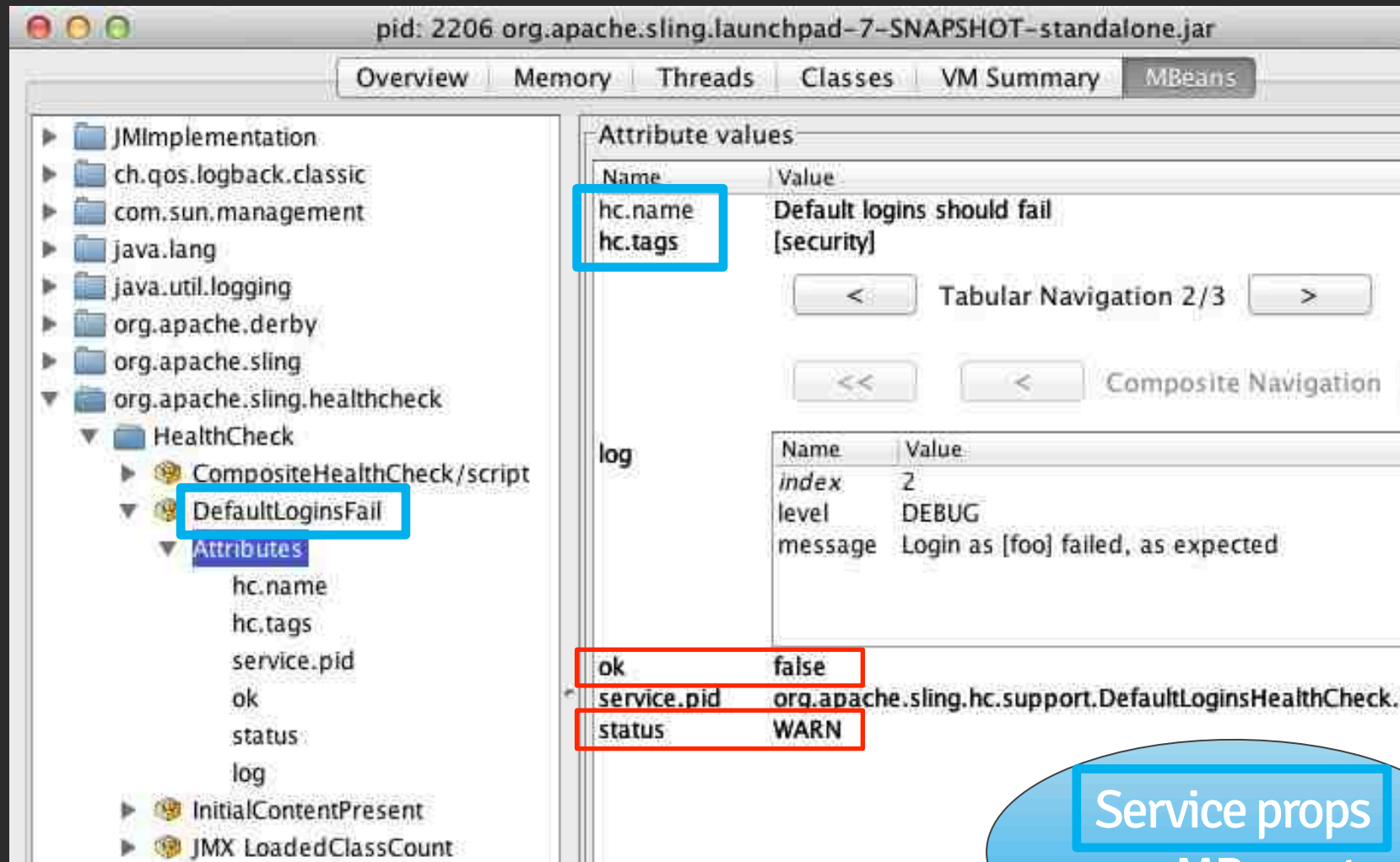
### LoadedClassCount is in range

Tags: [jvm, classloading, jmx]  
Result: **OK**

DEBUG Checking java.lang:type=ClassLoading / LoadedClass  
DEBUG java.lang:type=ClassLoading LoadedClassCount returned  
DEBUG Value [7426] matches constraint [between 5000 and 10000]



# Health Check MBeans



The screenshot shows the JMX console for the process 'pid: 2206 org.apache.sling.launchpad-7-SNAPSHOT-standalone.jar'. The 'MBeans' tab is active, showing a tree view on the left and attribute values on the right. The tree view highlights the path 'org.apache.sling.healthcheck > HealthCheck > CompositeHealthCheck/script > DefaultLoginsFail > Attributes'. The 'Attributes' sub-tree lists 'hc.name', 'hc.tags', 'service.pid', 'ok', 'status', and 'log'. The 'Attributes' table on the right shows the following values:

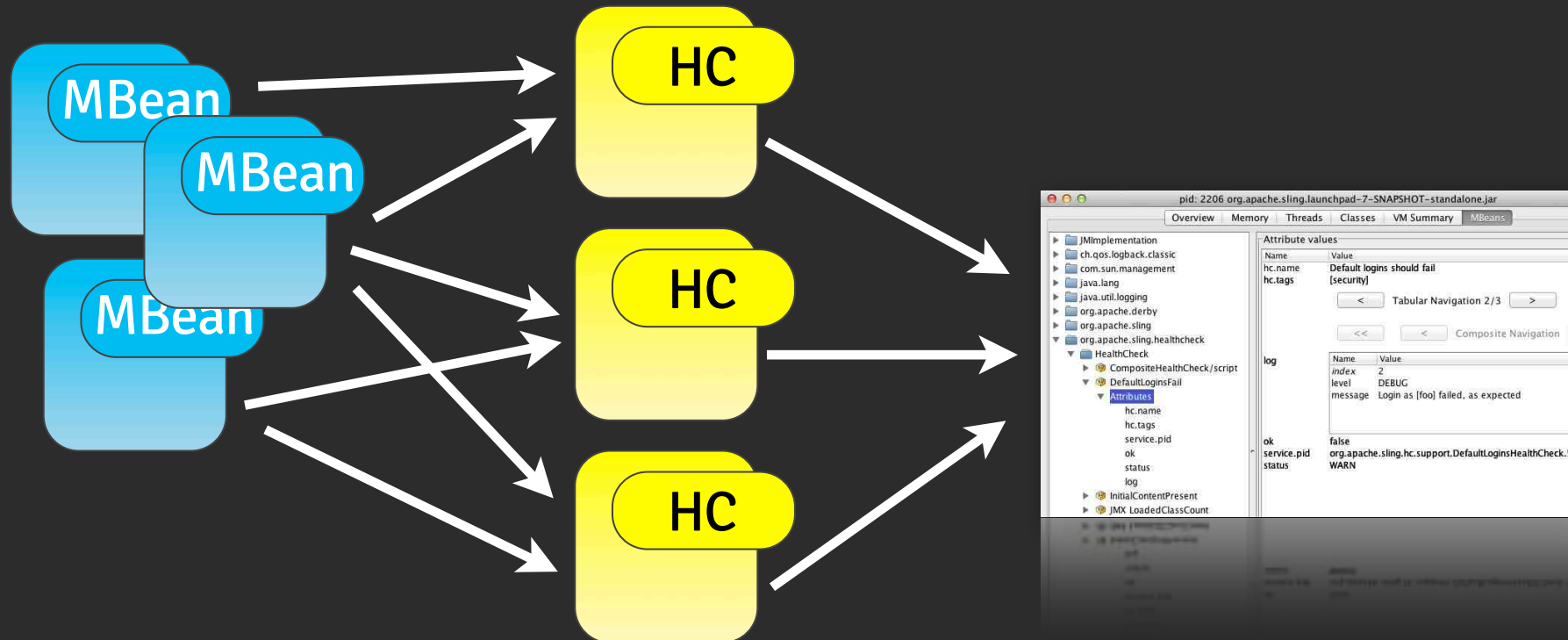
Name	Value
hc.name	Default logins should fail
hc.tags	[security]
ok	false
service.pid	org.apache.sling.hc.support.DefaultLoginsHealthCheck.5
status	WARN

Below the main table, a 'log' section shows a log entry:

Name	Value
index	2
level	DEBUG
message	Login as [foo] failed, as expected

Service props  
name, MBean, tags

# Health Checks as JMX processors



using expressions like

```
jmx.attribute('java.lang:type=ClassLoading', 'LoadedClassCount') > 10
```

&&

```
jmx.attribute('java.lang:type=Runtime', 'ManagementSpecVersion') > 1
```





# Use cases





# Use cases

## System status

- All bundles up?
- Initial content ready?
- Disk space ok?
- External services ok?
- Load within bounds? (for jobs)

## Performance

- Requests per second ok?
- Request duration ok?
- Free memory ok?
- Replication queues ok?

## Configuration

- Security checklist ok?
- Default accounts disabled?
- Demo content removed?

## Self-test

- Startup smoke tests?
- Keep history of results?





what do you get

# Out of the box?





# Out of the box - core

**JmxAttributeHealthCheck**

Single JMX attributes

**ScriptableHealthCheck**

Script(let)s in any language  
using BindingValuesProviders

**CompositeHealthCheck**

Run other Health Checks  
based on their tags





# Out of the box - support bundle

**SlingRequestStatusHC**

Is my resource there?  
Including its scripts?

**DefaultLoginsHealthCheck**

admin:admin -> fail?

current HC bundles:

org.apache.sling.hc.core

org.apache.sling.hc.support

org.apache.sling.hc.webconsole

org.apache.sling.hc.jmx

org.apache.sling.hc.samples





how do you write

# Your own Health Checks?





# Custom Health Checks

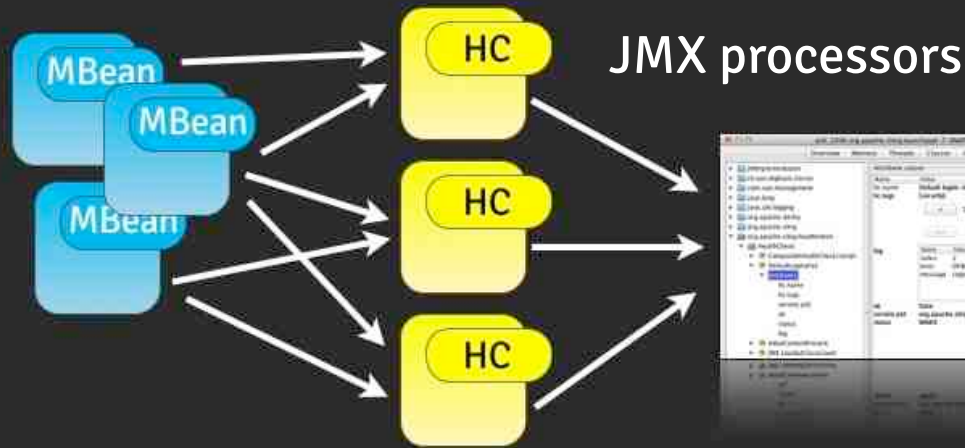
```
@Component(...policy=ConfigurationPolicy.REQUIRE, metatype=true)
@property(name=HealthCheck.NAME),
@property(name=HealthCheck.TAGS,unbounded=PropertyUnbounded.ARRAY),
@property(name=HealthCheck.MBEAN_NAME)
@Service(value=HealthCheck.class)
public class MyHealthCheck {
    public Result execute() {
        FormattingResultLog f = new FormattingResultLog();
        ...
        if(badThings) f.warn("Something happened with {}", foo);
        return new Result(f);
    }
}
```

Execute  
"quickly", cache...

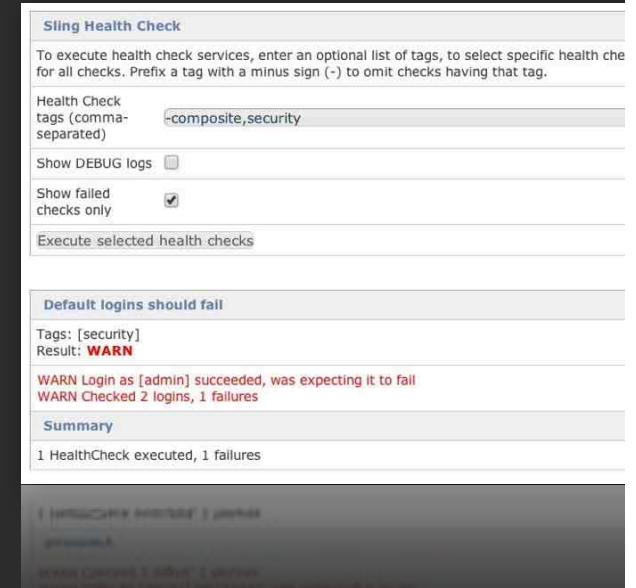




# That's it - have fun!



## Webconsole



JmxAttributeHealthCheck

ScriptableHealthCheck

CompositeHealthCheck

SlingRequestStatusHC

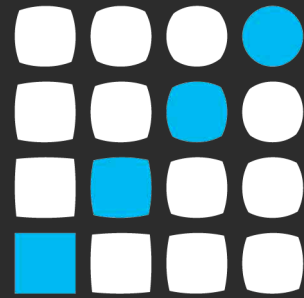
DefaultLoginsHealthCheck

```
@Service(value=HealthCheck.class)
public class MyHealthCheck {
    ....generate a Result quickly
}
```

Docs at [sling.apache.org](http://sling.apache.org) : bundles : health check.  
Discuss on the Sling dev list.  
I'm @bdelacretaz - thanks!







**adaptTo()**

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BERLIN, 23-25 SEPTEMBER 2013