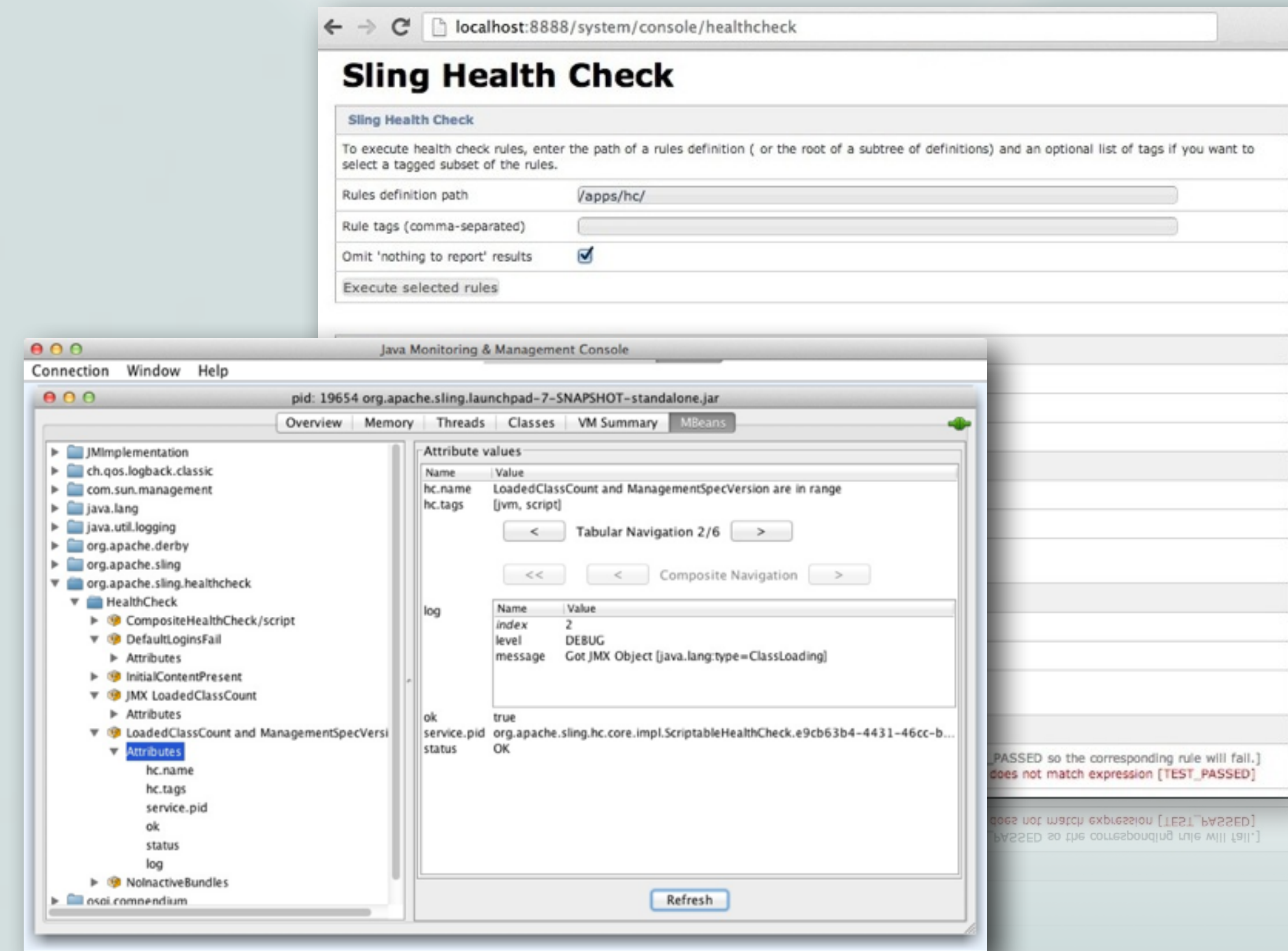


# Taming your AEM instances with the Apache Sling Health Check Tools



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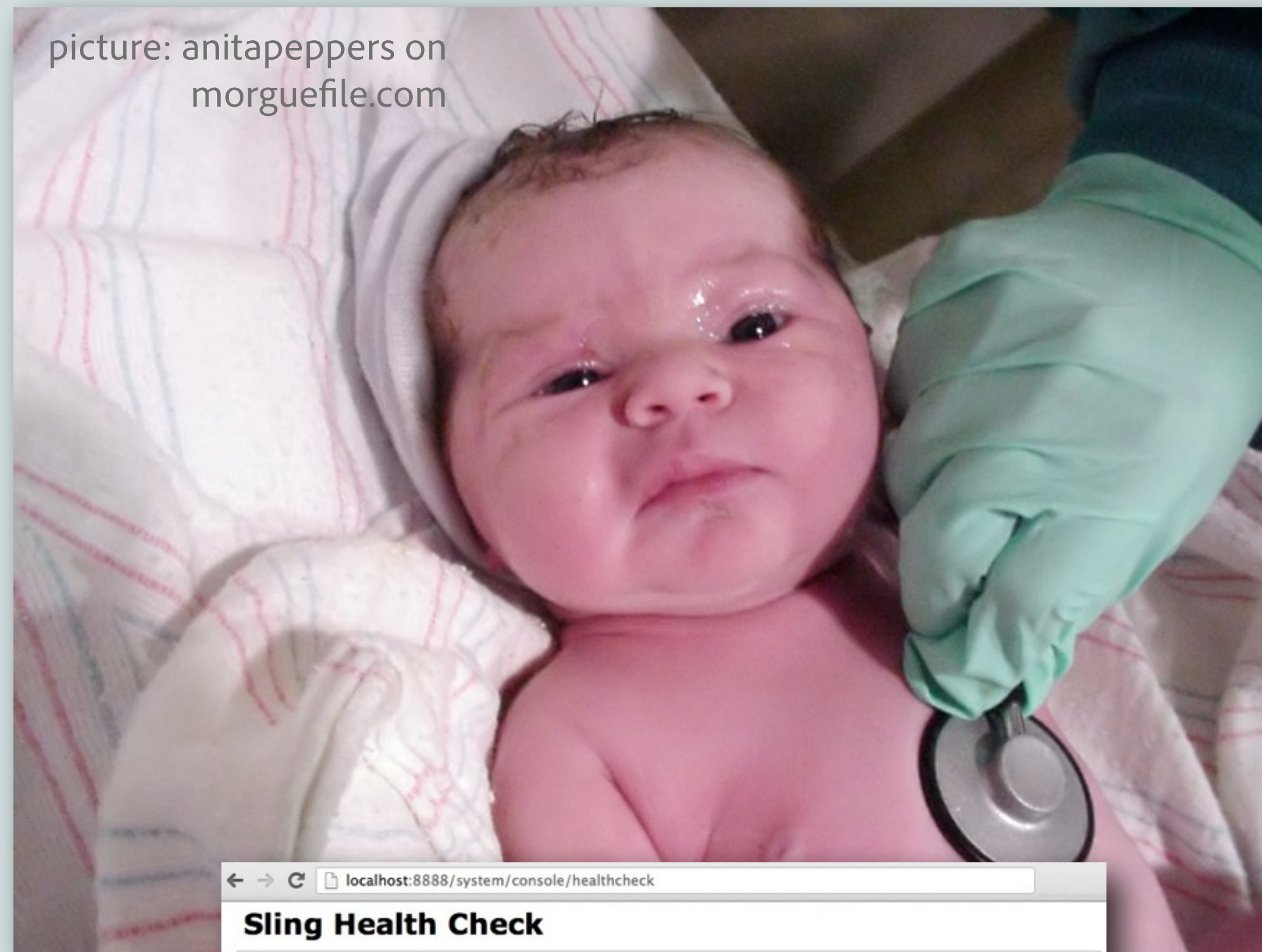
AEMHub London, April 2014

slides revision 2014-04-09, at [slideshare.net/bdelacretaz](http://slideshare.net/bdelacretaz)



How can you trust your current (fragile?) combination of OSGi bundles and configs?

It needs live TESTING.



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.

Java Monitoring & Management Console

pid: 19654 org.apache.sling.launchpad-7-SNAPSHOT-standalone.jar

Overview Memory Threads Classes VM Summary MBeans

- JMImplementation
- ch.qos.logback.classic
- com.sun.management
- java.lang
- java.util.logging
- org.apache.derby
- org.apache.sling
- org.apache.sling.healthcheck
  - HealthCheck
    - CompositeHealthCheck/script
    - DefaultLoginsFail
    - Attributes
    - InitialContentPresent
    - JMX LoadedClassCount
    - Attributes
    - LoadedClassCount and ManagementSpecVersion
      - Attributes
        - hc.name
        - hc.tags
        - service.pid
        - ok
        - status
        - log
    - NoInactiveBundles
- osgi.compendium

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

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



picture: melschmitz on morguefile.com



Test code in my production instance?

what do we mean by

# Health Checks?

```
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() ...  
}
```

# Health Checks?

# Webconsole and JMX

## 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

Health Check tags (comma-separated)

Show DEBUG logs

Show failed checks only

Execute selected health checks

## LoadedClassCount is in range

Tags: [jvm, classloading, jmx]

Result: **OK**

DEBUG Checking java.lang:type=ClassLoading / LoadedClassCount with con  
DEBUG java.lang:type=ClassLoading LoadedClassCount returns 7426  
DEBUG Value [7426] matches constraint [between 5000 and 50000]

Webconsole /system/console/healthcheck

pid: 2206 org.apache.sling.launchpad-7-SNAPSHOT-standalone.jar

Overview | Memory | Threads | Classes | VM Summary | **MBeans**

▶ JMImplementation  
 ▶ ch.qos.logback.classic  
 ▶ com.sun.management  
 ▶ java.lang  
 ▶ java.util.logging  
 ▶ org.apache.derby  
 ▶ org.apache.sling  
 ▼ org.apache.sling.healthcheck

▼ HealthCheck
 

- ▶ CompositeHealthCheck/script
- ▼ **DefaultLoginsFail**
  - ▼ **Attributes**
    - hc.name
    - hc.tags
    - service.pid
    - ok
    - status
    - log
  - ▶ InitialContentPresent
  - ▶ JMX LoadedClassCount

Attribute values

Name	Value
hc.name	Default logins should fail
hc.tags	[security]

Tabular Navigation 2/3   
  Composite Navigation

log

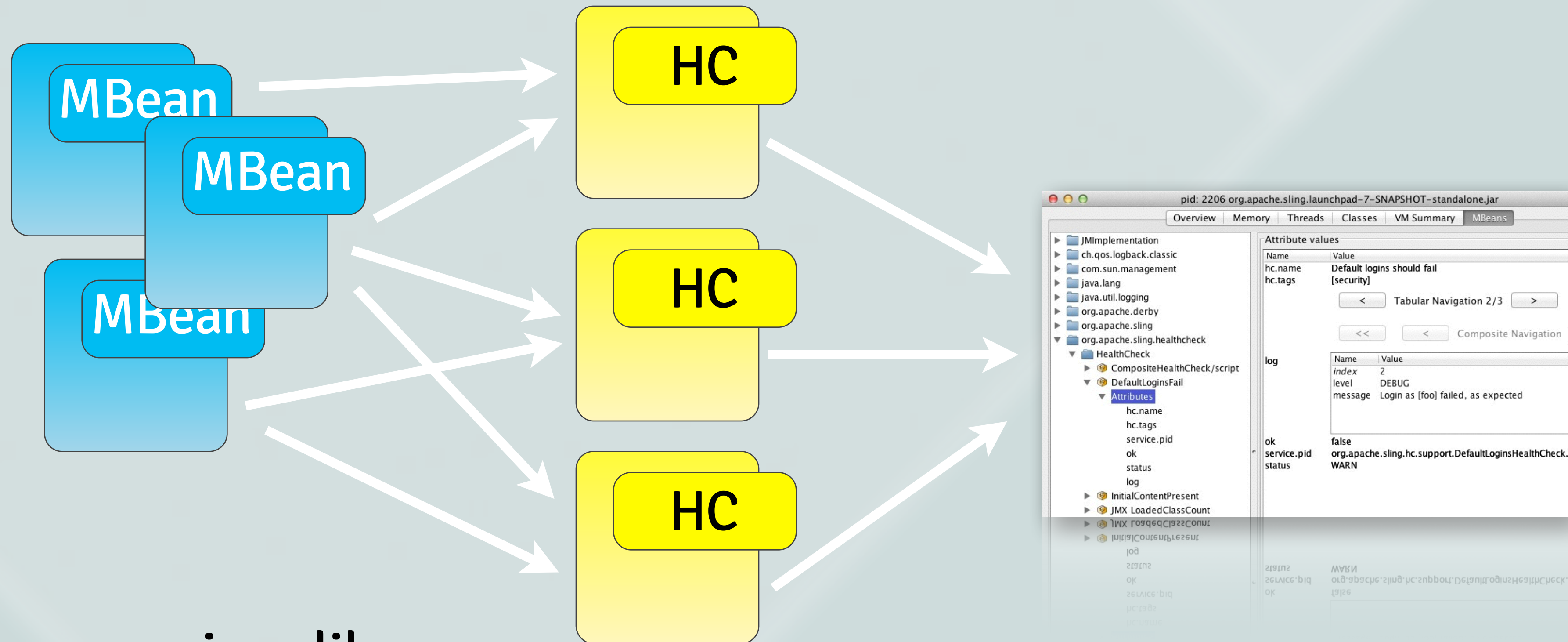
Name	Value
index	2
level	DEBUG
message	Login as [foo] failed, as expected

ok	false
service.pid	org.apache.sling.healthcheck.DefaultLoginsFail
status	WARN

Service props  
:  
name, MBean, tags

# Health Check MBeans (auto-created)





using expressions like

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

&&

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

# Health Checks as JMX Processors

```
curl
http://localhost:8080/system/sling/monitoring/mbeans/...queriesStatus.tidy.2.json
{
  "mbean:objectName":
    "org.apache.sling.healthcheck:name=qs,type=HealthCheck",
  "sling:resourceType": "sling:mbean",
  "hc.name": "Query Performance",
  "mbean:description": "Health check",
  "status": "OK",
  "log": ...
}
```

here comes the  
big (?)  
**demo!**

# typical Use Cases

## System status

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

## Performance

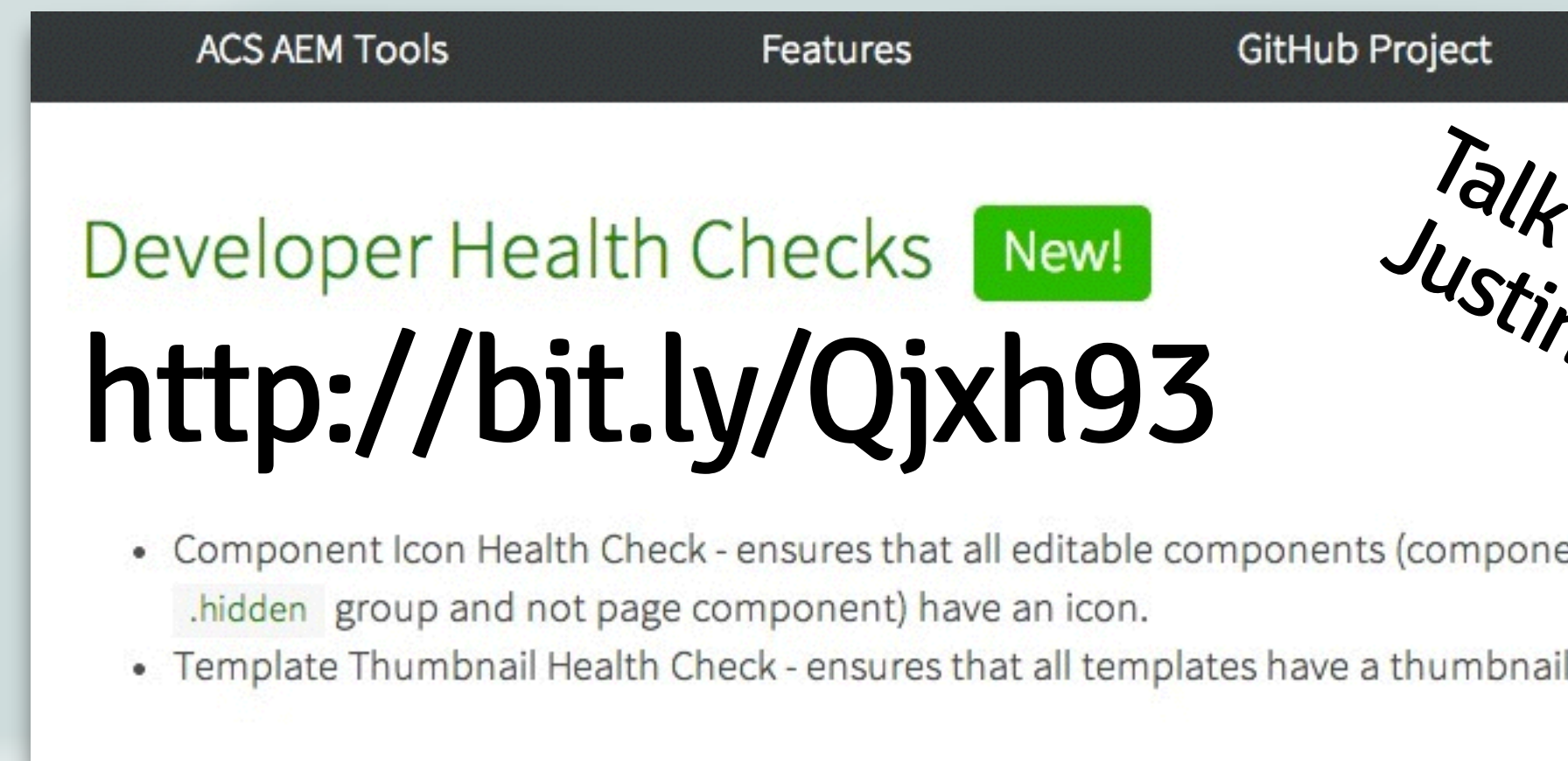
Requests per second ok?  
Request duration ok?  
Free memory ok?  
Replication queues ok?

## Configuration

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

## Self-test

Startup smoke tests?  
Keep history of results?  
Report to HTTP front-end



ACS AEM Tools      Features      GitHub Project

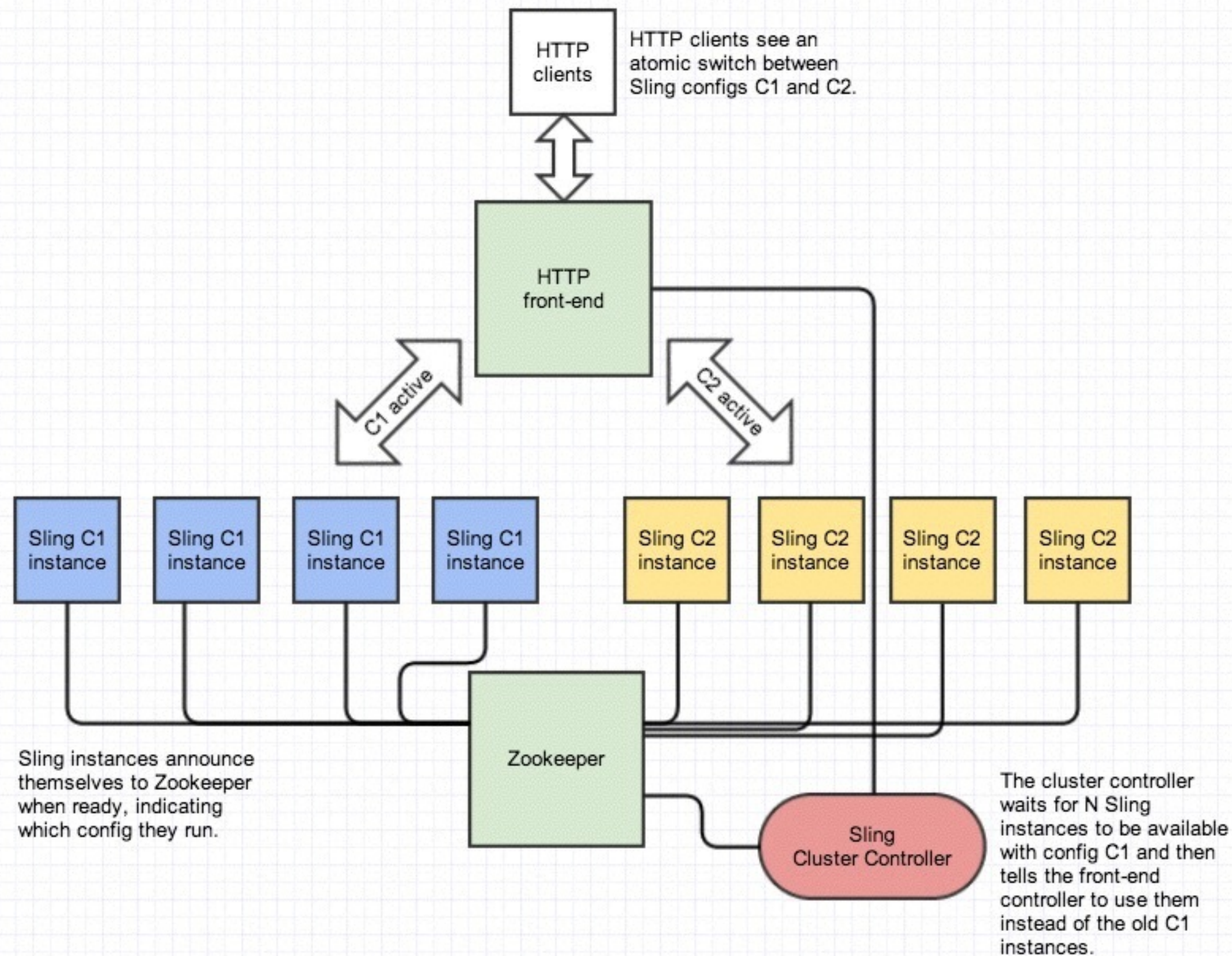
Developer Health Checks **New!**

<http://bit.ly/Qjxh93>

- Component Icon Health Check - ensures that all editable components (components with a `.hidden` group and not page component) have an icon.
- Template Thumbnail Health Check - ensures that all templates have a thumbnail

Talk to  
Justin Edelson!

Typical Use Cases



Health checks tell the cluster controller when a Sling instance is ready to be injected in the cluster.

<https://github.com/bdelacretaz/sling-devops-vol1>

# Sling devops experiments

what do you get

# Out of the box?

**JmxAttributeHealthCheck**

Single JMX attributes

**ScriptableHealthCheck**

Script(let)s in any language  
using BindingValuesProviders

**CompositeHealthCheck**

Run other Health Checks  
based on their tags



**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.samples

**And also:**

**JUnitHealthCheck**

From the junit.healthcheck bundle

Out of the box - support bundle

how do you write

# Your own Health Checks?

```
@Component(...policy=ConfigurationPolicy.REQUIRE, metatype=true)
@Service(value=HealthCheck.class)
```

```
@Property(name=HealthCheck.NAME),
@Property(name=HealthCheck.TAGS,unbounded=PropertyUnbounded.ARRAY),
@Property(name=HealthCheck.MBEAN_NAME)
```

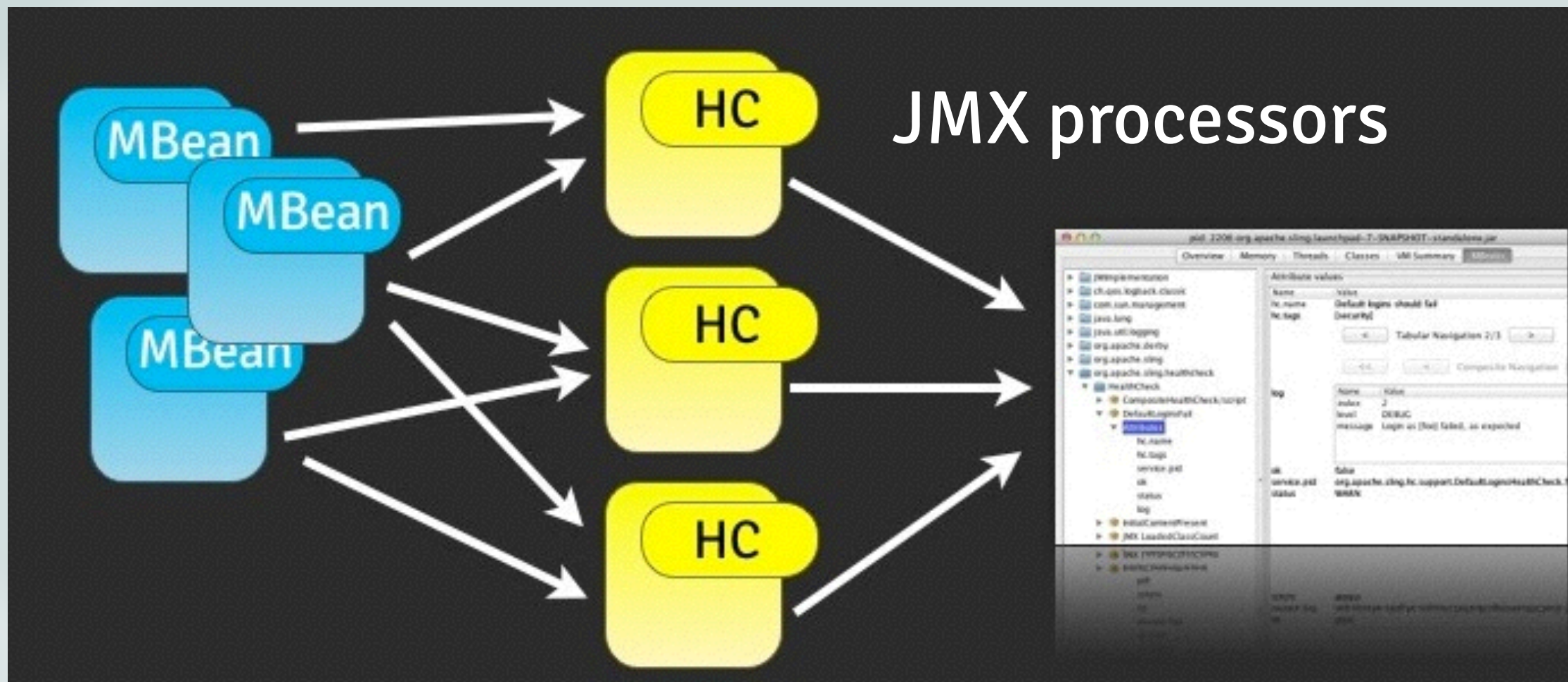
```
public class MyHealthCheck {
    public Result execute() {
        FormattingResultLog f = new FormattingResultLog();
        ...
        if(badThings) f.warn("Something happened with {}", foo);
        return new Result(f);
    }
}
```

BYOHC - Bring Your Own HCs !

# Health Checks **Executor**

```
public interface HealthCheckExecutor {  
  
    List<HealthCheckExecutionResult>  
    execute(String... tags);  
  
}
```

Executes HCs selected by tags, with caching.  
Result includes execution metadata, timeout info etc.



JmxAttributeHealthCheck

ScriptableHealthCheck

CompositeHealthCheck

SlingRequestStatusHC

DefaultLoginsHealthCheck

JUnitHealthCheck

## Webconsole

**Sling Health Check**

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Health Check tags (comma-separated)

Show DEBUG logs

Show failed checks only

---

**Default logins should fail**

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

WARN Login as [admin] succeeded, was expecting it to fail  
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**Summary**

1 HealthCheck executed, 1 failures

```
@Service(HealthCheck.class)
public class MyHealthCheck {
    ....generate a Result here...
}
```

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

That's it! Have fun.

