CQ Gems on Adobe Experience Manager

May 2013 - AEM 5.6 upgrade mechanisms

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CQ or AEM?

AEM is **CQ + Scene7**

We'll talk about the
CQ upgrades mechanisms here,
which include the Scene7 integration points.

This doesn't include upgrading Scene7 itself.

What?

Discuss the **goals**
of the CQ upgrades mechanisms.

Explain **how upgrades work**.

Describe the upgrades **extensions points**.

Explain how to **troubleshoot**
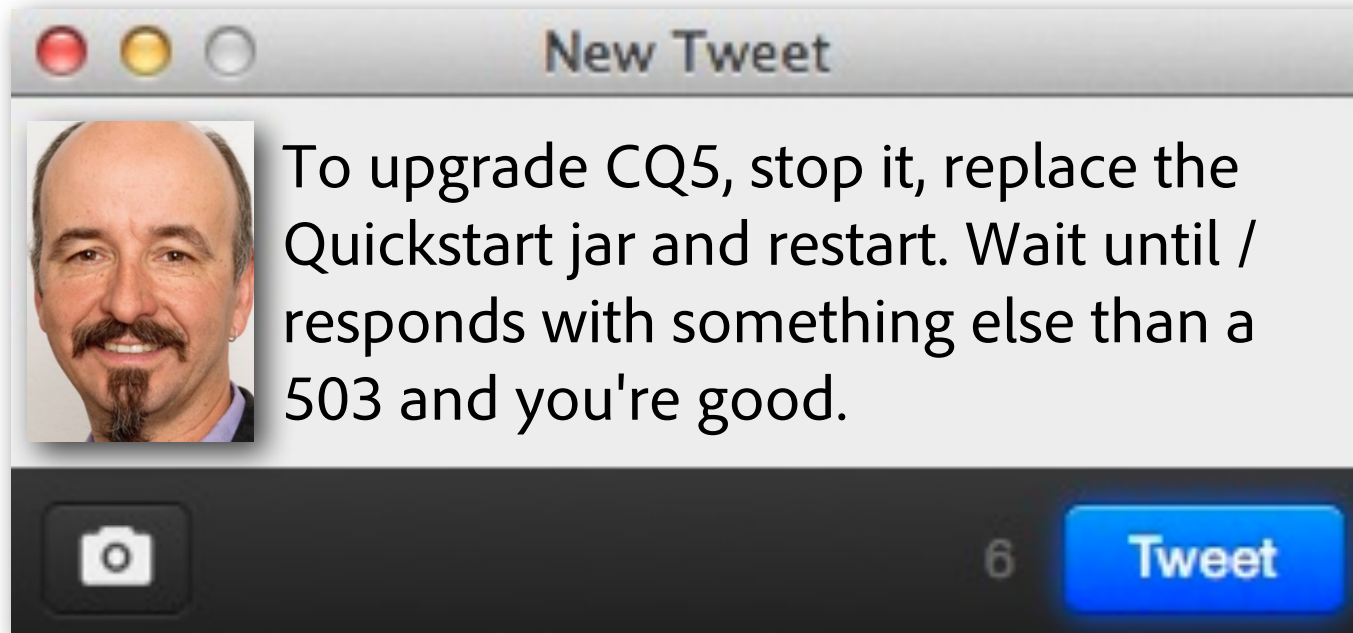the upgrades mechanisms.
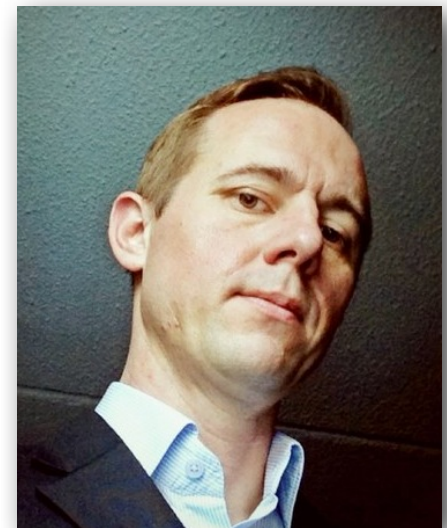
What are the

Goals

of the CQ upgrades mechanisms?

Goals

CQ upgrade instructions fit in a tweet

New Tweet

To upgrade CQ5, stop it, replace the Quickstart jar and restart. Wait until / responds with something else than a 503 and you're good.

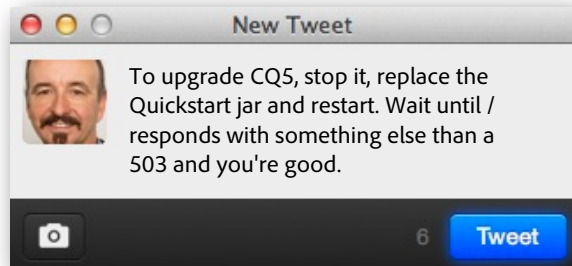6   Tweet

(It's all this guy's fault)

Goals, #2

Support **direct upgrades** from any version from 5.2.1. on.

Extension points for upgrading custom applications and content.

Generate **upgrade logs** and reports, make the process transparent.

Continuous **automated testing** of upgrades during development.
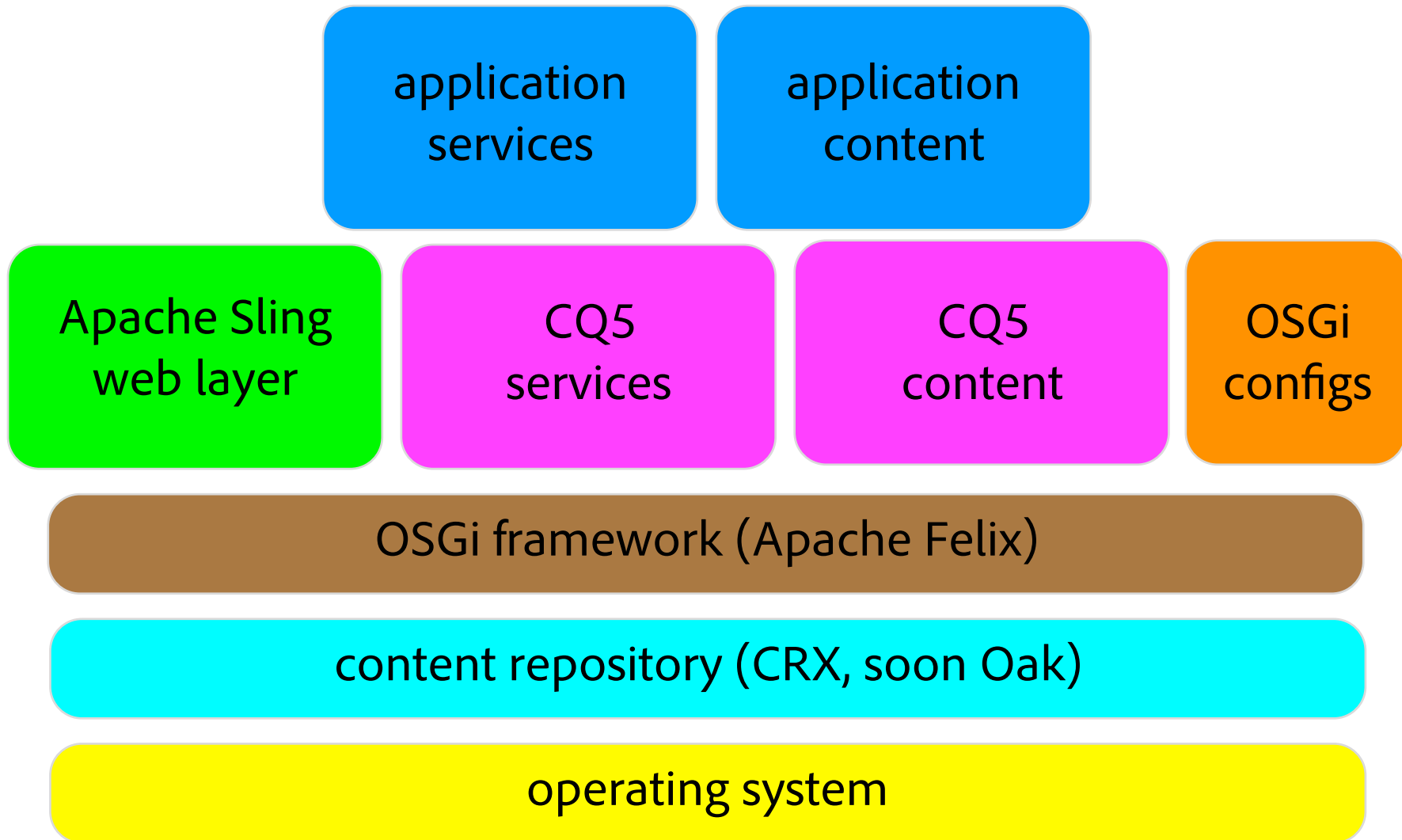
And keep things simple...

New Tweet

To upgrade CQ5, stop it, replace the Quickstart jar and restart. Wait until / responds with something else than a 503 and you're good.

6   Tweet

| All | CQ-5.5 | CQ-5.6 | CQ-master | CoralUI | Default | Disabled | Granite | I18n | Integration | JDK8 | MSM Performance | OAK-performance |

S	W	Name ↓	Last Success	Last Failure
⚪		Update day.com 5.5 with service pack 2	N/A	N/A
⚪		Upgrade_adobe.com_5.5-to-5.6	N/A	N/A
🟢	☀️	Upgrade_Common_Tests	4 days 20 hr - #32	N/A
🟢	☀️	Upgrade_Commons	10 days - #13	N/A
🟢	☀️	Upgrade_CQ-master_From52	6 hr 28 min - #784	N/A
🟡	⛈️	Upgrade_CQ-master_From53 ▾	13 hr - #996	N/A
🟡	⛈️	Upgrade_CQ-master_From54	4 hr 42 min - #1078	16 hr - #1077
🟡	⛈️	Upgrade_CQ-master_From55	15 hr - #1467	N/A
🟡	⛈️	Upgrade_CQ-master_From55_SP1	5 hr 10 min - #2323	3 mo 28 days - 589_day-com
🔴	⛅	Upgrade_CQ-master_From55_SP2	16 hr - #2423	4 hr 14 min - #2429
🟡	⛈️	Upgrade_CQ-master_From560	11 hr - #386	N/A
🟢	☀️	Upgrade_CQ-master_multiple_startup	8 hr 43 min - #1026	N/A
⚪	☁️	Upgrade_day.com_5.5-to-5.6	6 mo 1 day - #37	6 mo 2 days - #36
🟢	☀️	Upgrade_Test_Content	24 days - #1	N/A

Icon: S M L

What are the

Layers

involved in upgrades?

CQ5 layers

application
services

application
content

Apache Sling
web layer

CQ5
services

CQ5
content

OSGi
configs

OSGi framework (Apache Felix)

content repository (CRX, soon Oak)

operating system

What kind of

Challenges

did we encounter?

Challenges: content repository

content repository (CRX, soon Oak)

Low-level inconsistencies cause BIG trouble.

Do dry runs and use consistency
check & repair tools before upgrading.

Low-level data structures are migrated
automatically by the repository core.

Works very well so far
and Oak aims to do the same.
This can take time: test on subsets.

Challenges: OSGi framework

OSGi framework (Apache Felix)

Early days exposed a number of OSGi framework issues, deadlocks etc.

200+ bundles

Much better these days, upgrade sequence is more predictable and less threading issues.

Aborted upgrades are still possible.

Need to plan for it, but not likely.

Moving custom code (/apps) out of the way during the upgrade might help.

Challenges: Apache Sling

Apache Sling web layer

OSGi configs

According to the OSGi mindset, Sling has been designed for a **dynamic environment** from the ground up, so no real issues in upgrading.
OSGi configs need to be **self-upgrading** and **backwards compatible**.

Not only in Sling, also in CQ and custom code.

OSGi Declarative Services FTW!

Challenges: CQ itself

CQ5 services

Backwards compatibility is a high priority, migrations (built-in) are required in a few cases.

CQ5 content

CQ content has required migrations in the past, much less recently.

Neat separation between system and user content (/libs, /apps) helps, mixed content such as /etc can be problematic.

Challenges: custom code, content

application services

Get the book! (Manning)

Custom bundles are not always "dynamic enough" to handle upgrades correctly.

Move /apps out of the way during upgrades if needed.

application content

Custom content might need upgrades (resource types etc.).

Extension points are provided for that.

What's the

Scenario

of the upgrading process?

Upgrade Scenario

content repository	Upgrade Low-level data structures Upgrade content indexes
OSGi framework	Replace bootstrap bundles Upgrade framework data structures Start replacing (tons of) bundles
CQ5 content packages	Backup content that needs merging
cq-compat-codeupgrade bundle	Register *CodeUpgradeTask* services
cq-upgrades-executor bundle	Execute *CodeUpgradeTask* services: Merge and upgrade content, upgrade workflow models, etc.

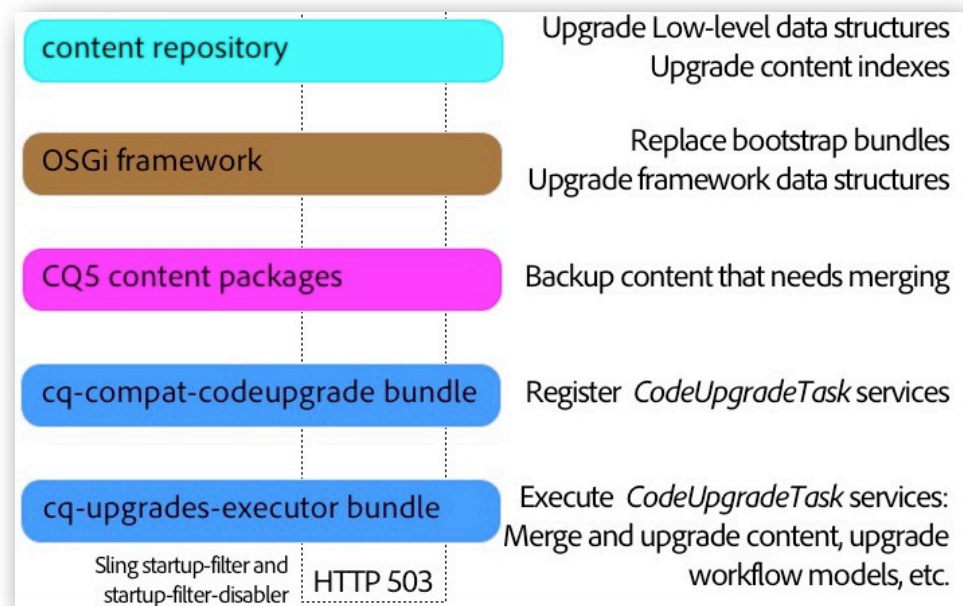Sling startup-filter and startup-filter-disabler   HTTP 503

Real Life Scenario

backup your content

Do a few **dry runs** until confident

Coordinate with your users

and then upgrade.

15 minutes to
a few months...

content repository	Upgrade Low-level data structures Upgrade content indexes
OSGi framework	Replace bootstrap bundles Upgrade framework data structures
CQ5 content packages	Backup content that needs merging
cq-compat-codeupgrade bundle	Register *CodeUpgradeTask* services
cq-upgrades-executor bundle	Execute *CodeUpgradeTask* services: Merge and upgrade content, upgrade workflow models, etc.

Sling startup-filter and
startup-filter-disabler   HTTP 503

How to integrate your own

Plugins

in the upgrades process?

CodeUpgradeTask

```java
public interface CodeUpgradeTask extends Runnable {
    /** True if an upgrade is needed */
    public boolean upgradeNeeded();

    /** Called to cancel an upgrade that might be in progress */
    public void cancelUpgrade();

    /** Return upgrade progress info */
    public String getProgressInfo();
}
```

CodeUpgradeTask OSGi services are executed by the cq-upgrades-executor bundle's Activator, synchronously during that bundle's startup, in order of their service.ranking (540 for CQ5.4, 561 for CQ5.6.1 etc.)

How to

Troubleshoot

upgrades?

Troubleshooting

See "CQ upgrades questions" on Zerowing:

Upgrade mode can be **forced**.

Upgrade services **can be run again** by restarting the executor bundle.

From CQ 5.6.1, separate **logs/upgrade.log**

https://zerowing.corp.adobe.com/display/cq5/CQ+upgrades+questions
(for internal users - we'll need to publish this)

What's the

Future

of the upgrades mechanism?

The Future

quickstart -> enterprise!

AEMUP

AEM Enterprise Upgrade Program (*)

No more quickstart magic (not standard)
J2EE compliant upgrading tools!
Separate upgrade tool (2MB less jar bloat)
1 week **Upgrade Training classes** (revenue!)
(*) pronounced "eyhh-m-up"

JUST KIDDING

WE LOVE QUICKSTART!

The Future: more of the same

Extensive **automated testing**

Troubleshooting
tools and techniques

Feedback from the field
we need you, you, you!

Transparent upgrade process
(even with some magic at work)

Support **direct upgrades**
from older versions

Upgrade **plugins**

NEW

Upgrades **Task Force**
for better coordination between AEM teams

that's all, folks!

Resources

- Adobe.com/go/gems

  - Upcoming Gem Sessions

  - On-demand Gem Recordings

  - In-person events where you can meet Adobe Experts

- Developer Resources: http://dev.day.com/docs/en/cq/current/deploying/upgrading.html

- Follow @Adobe CQ   @bdelacretaz @paolomoz

- YouTube Adobe WEM

- I am a Developer Articles Subscribe Blogs

- Adobe Marketing Cloud

- Adobe CQ Enterprise Users Group
  Adobe Day Software User Group - CQ5 CRX ADEP

For internal users, Zerowing "**upgrade questions**" page points to more info:
https://zerowing.corp.adobe.com/display/cq5/CQ+upgrades+questions