



adaptTo()

EUROPE'S LEADING AEM DEVELOPER CONFERENCE

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Get ready for the Cloud! - AEM Cloud Service Migration Best Practices

Andreea Moise, Adobe

About the Speaker



Andreea Moise

**Sr. Software Engineer @ Adobe
Bucharest**

<https://twitter.com/pudelyna>

The Benefits

1

Always On

Best in class service level

No content freeze or downtime

Protection against cloud disasters and failures

Robust on-demand data storage

2

Always Current

Continuous access to the latest innovations

Automated rolling product updates

3

Always at Scale

Ensure performance during peak hours of traffic by visitor and users

Auto-scaling (publish & author)

Faster rendering and processing of 100%-pixel quality assets

Microservices for assets ingestion and processing

4

Always Learning

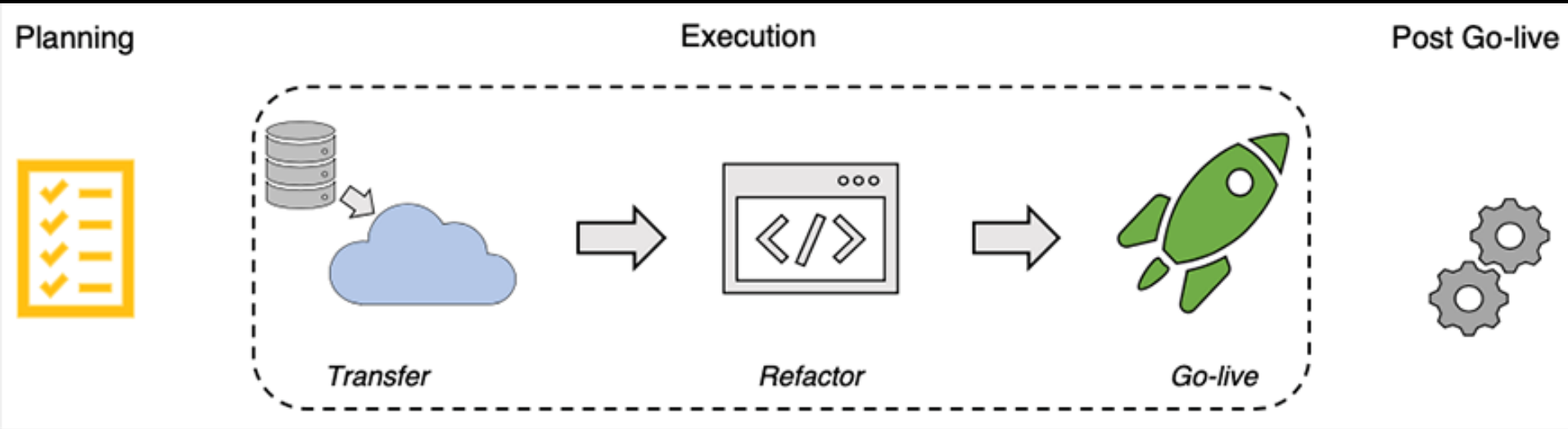
Always up-to-date with performance enhancements and security updates

Automated corrective updates

Intelligence and machine learning by default

Native access to Sensei intelligence

The Journey



Planning

Steps

Assess Cloud
Service Readiness

Review Resource
Planning

Establish KPIs

Cloud Service Readiness

- **Cloud Readiness Analyzer** - Areas that require refactoring
- **Cloud Manager code quality pipeline** - Your current AEM source code against the changes and deprecated features in AEMaaCS

The Changes in AEMaaCS

CHANGED

Immutable /apps and /libs
Repository-based OSGI
bundles
Publish-Side Delivery
Asset Handling and Delivery

GONE

Replication Agents
Classic UI
Custom Runmodes
Changes to publish repository

[Refresh Report](#)

Cloud Readiness Analyzer

Download Report as:

[CSV](#)

Report Time: Tue, 16 Jun 2020 16:37:33 PDT
Expiration Time: Wed, 17 Jun 2020 16:37:33 PDT
Generation Time Period: 0 hr 00 min 41 sec
Finding Count: 267

[Help](#)

This report provides a summary of findings from the Cloud Readiness Analyzer. The following sections describe the findings of the readiness analysis. The findings are organized by type and presented with a description and the number of findings for each type.

System Overview

AEM Version: 6.5.3.0
Asset Count: 305
Authorizable Count: 233
Page Count: 1826
Tag Count: 75
AEM Companion Products:
Assets, Sites
Documentation URL:
https://www.adobe.com/go/aem_pd_ASO

Some AEM products may not be currently supported in AEM as a Cloud Service. Please contact your Adobe representative for information about future support.

Content Area Violation

MAJOR Items Found: 177 

Content has been detected which uses another content area through overlays, overrides, or references in a way that violates the rules of the content classification.

Documentation URL: https://www.adobe.com/go/aem_pd_CAV

⬆ Showing 5 rows of 177. Click to show all rows.

Path	Message
/apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content	The path: /apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content violates content areas resource type usage internal path: /libs/granite/ui/components/coral/foundation/container
/apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs	The path: /apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs violates content areas resource type usage internal path: /libs/granite/ui/components/coral/foundation/tabs
/apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs/items/allowedcomponents	The path: /apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs/items/allowedcomponents violates content areas resource type usage internal path: /libs/granite/ui/components/coral/foundation/container
/apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs/items/properties	The path: /apps/core/wcm/components/accordion/v1/accordion/cq:design_dialog/content/items/tabs/items/properties violates content areas resource type usage internal path: /libs/granite/ui/components/coral/foundation/container

Custom Code Quality rules - SonarQube

STAGE DEPLOYMENT

- **Validation**
Your Pipeline has been verified against a set of pre-defined rules.

✔ *Passed (Finished: July 23, 2020 10:01:49 AM GMT+3)*
- **Build & Unit Testing**
Your application code has been tested for quality and compiled into build artifacts
BRANCH: MASTER
VERSION:2020.526.121154.0000102041

[Download Log](#) ✔ *Succeeded (Finished: July 23, 2020 10:07:50 AM GMT+3)*

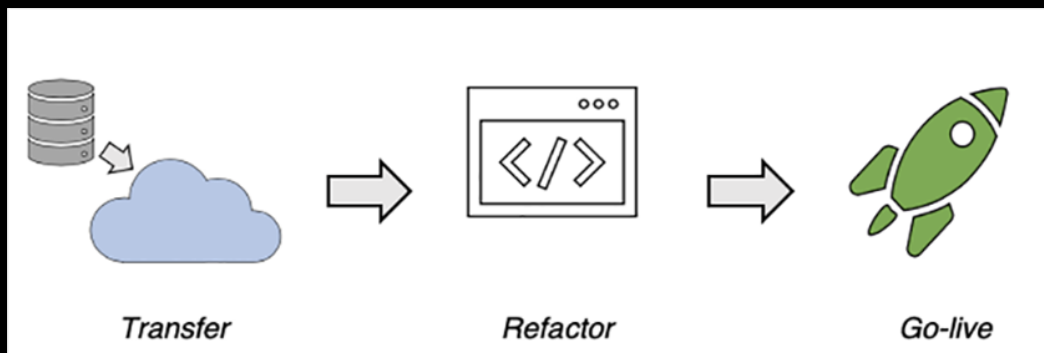
Sling Scheduler
AEM Deprecated APIs
HTTP timeouts
Hardcoded paths and files
Closed ResourceResolver
Sling Servlet paths
@ProviderType

Custom Code Quality rules - OakPAL

ClassicUI
MutableContent
/libs
Duplicate OSGI Configs
Reverse Replication
Touch UI Dialogs
Immutable Content

Execution

Steps

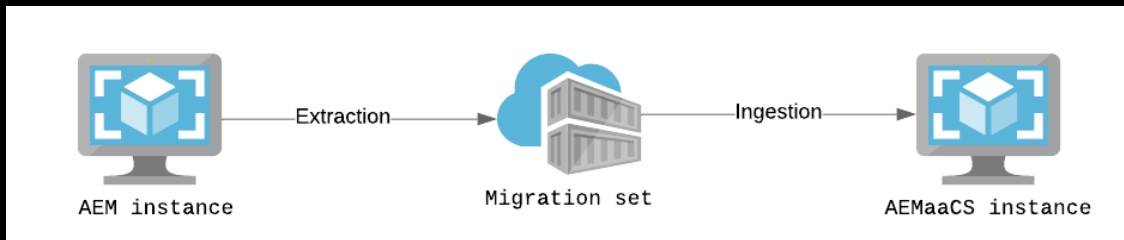


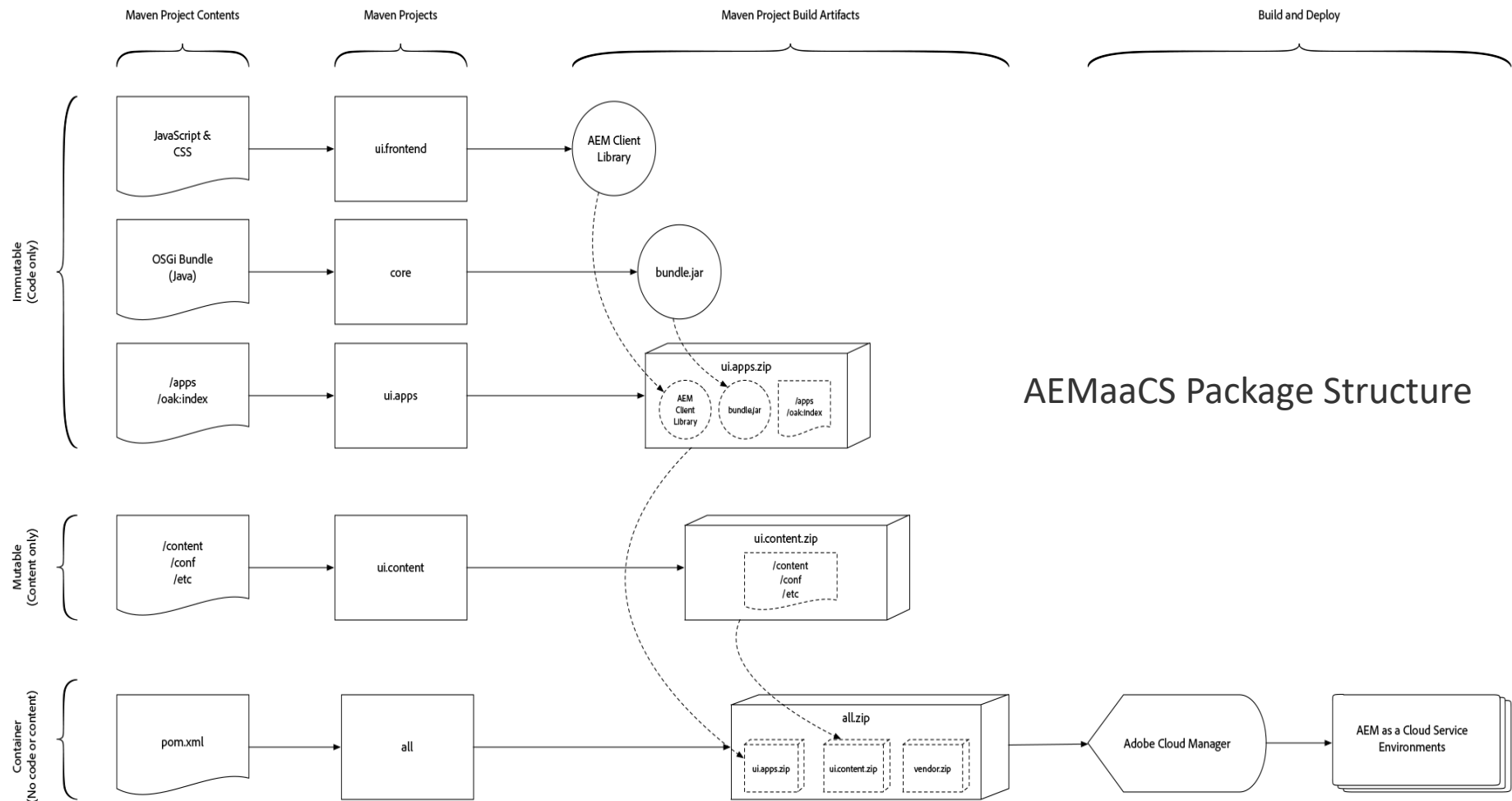
Content Transfer

- WHAT?

Existing content and principals (users or groups) from a source AEM instance (on-premise or AMS) to the target AEMaaCS instance

- HOW?





Code Refactoring - Development Guidelines

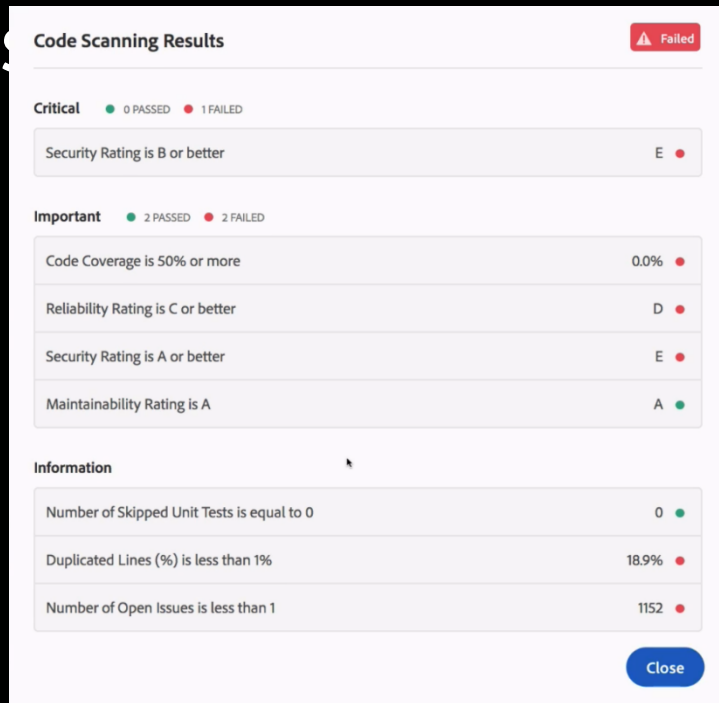
Classic UI
State
CRXDE lite
Reverse Replication
Background Tasks
Logs
Observation
Long Running Jobs
Native Binaries
Replication Agents
Streaming Binaries
Outgoing HTTP Connections

- Asset Workflow Migration
- AEM Dispatcher Converter
- AEM Modernization Tools
 - Static templates to editable templates
 - Design configurations to policies
 - Foundation Components to Core Components
 - Classic UI to Touch-Enabled UI

Best Practices for Code Deployment and Testing

■ Code Quality Testing Ratings

- Security rating < B
- Reliability rating < C
- Maintainability rating < A
- Coverage < 50%
- Skipped Unit Tests > 1
- Open Issues > 0
- Duplicated Lines > 1%
- Cloud Service compatibility > 0



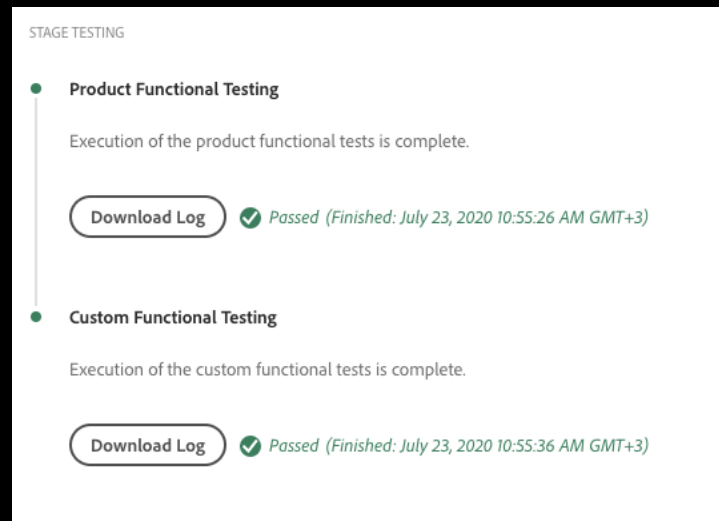
The screenshot displays a 'Code Scanning Results' interface. At the top right, a red banner indicates a 'Failed' status. The results are categorized into three sections: 'Critical', 'Important', and 'Information'. The 'Critical' section shows 0 passed and 1 failed item, with a 'Security Rating is B or better' (E). The 'Important' section shows 2 passed and 2 failed items, including 'Code Coverage is 50% or more' (0.0%), 'Reliability Rating is C or better' (D), 'Security Rating is A or better' (E), and 'Maintainability Rating is A' (A). The 'Information' section shows 0 passed and 0 failed items, including 'Number of Skipped Unit Tests is equal to 0' (0), 'Duplicated Lines (%) is less than 1%' (18.9%), and 'Number of Open Issues is less than 1' (1152). A 'Close' button is located at the bottom right.

Category	Item	Value	Status
Critical	Security Rating is B or better	E	Failed
	0 PASSED, 1 FAILED		
Important	Code Coverage is 50% or more	0.0%	Failed
	Reliability Rating is C or better	D	Failed
	Security Rating is A or better	E	Failed
	Maintainability Rating is A	A	Passed
2 PASSED, 2 FAILED			
Information	Number of Skipped Unit Tests is equal to 0	0	Passed
	Duplicated Lines (%) is less than 1%	18.9%	Failed
	Number of Open Issues is less than 1	1152	Failed
0 PASSED, 0 FAILED			



Best Practices for Code Deployment and Testing

■ Custom Functional Testing

- packaged as a separate JAR file
- class names of the actual tests to be executed must end in IT

A screenshot of a 'STAGE TESTING' interface. It shows two test stages: 'Product Functional Testing' and 'Custom Functional Testing'. Each stage has a status indicator (a green dot), a title, a description, a 'Download Log' button, and a result status (a green checkmark followed by 'Passed' and a timestamp).

STAGE TESTING

- Product Functional Testing**
Execution of the product functional tests is complete.
[Download Log](#)  **Passed** (Finished: July 23, 2020 10:55:26 AM GMT+3)
- Custom Functional Testing**
Execution of the custom functional tests is complete.
[Download Log](#)  **Passed** (Finished: July 23, 2020 10:55:36 AM GMT+3)

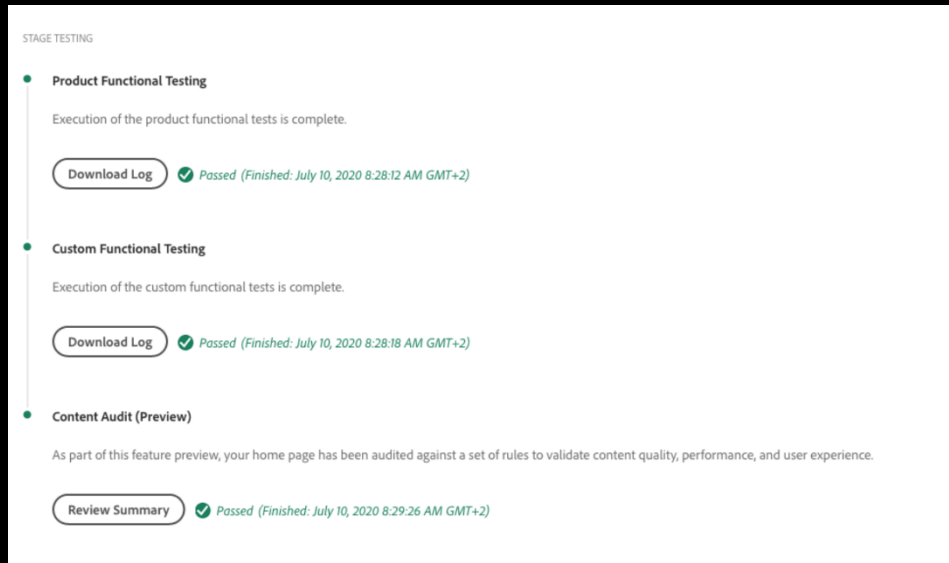
Best Practices for Code Deployment and Testing

```
<!-- Create self-contained jar with dependencies -->
<plugin>
  <groupId>org.apache.maven.plugins</groupId>
  <artifactId>maven-assembly-plugin</artifactId>
  <version>3.1.0</version>
  <configuration>
    <descriptorRefs>
      <descriptorRef>jar-with-dependencies</descriptorRef>
    </descriptorRefs>
    <archive>
      <manifestEntries>
        <Cloud-Manager-TestType>integration-test</Cloud-Manager-TestType>
      </manifestEntries>
    </archive>
    ...
  </plugin>
```

Best Practices for Code Deployment and Testing

■ Content Audit Testing

- Lighthouse checks
- Tests
- Scores and Score Variability
- Guidance

The screenshot displays a 'STAGE TESTING' interface with a vertical timeline of three test stages. Each stage is marked with a green dot and includes a 'Download Log' button and a 'Passed' status with a completion time.

STAGE TESTING

- Product Functional Testing**
Execution of the product functional tests is complete.
[Download Log](#) ✓ Passed (Finished: July 10, 2020 8:28:12 AM GMT+2)
- Custom Functional Testing**
Execution of the custom functional tests is complete.
[Download Log](#) ✓ Passed (Finished: July 10, 2020 8:28:18 AM GMT+2)
- Content Audit (Preview)**
As part of this feature preview, your home page has been audited against a set of rules to validate content quality, performance, and user experience.
[Review Summary](#) ✓ Passed (Finished: July 10, 2020 8:29:26 AM GMT+2)



vlad-prod-test ▾

Program Overview >

Production Pipeline

Finished

- Stage deployment
- Stage testing
- Production deployment

Content Audit

Passed

Information

4 PASSED 1 FAILED

Current

Change

> Accessibility Score is 80 or above for all audited pages 86 +4

> SEO Score is 80 or above for all audited pages 88 -2

▼ Performance Score is 80 or above for all audited pages 94 +40

1 PASSED 0 FAILED

Current

Details

Change

<https://publish-p13907-e29814.adobeacemcloud.com/>

94



+40

> Best Practices Score is 80 or above for all audited pages 100 +8

> PWA Score is 80 or above for all audited pages 52 -4

Generated by Lighthouse 6.0.0

Close

Download Log



Completed (Finished: July 10, 2020 8:39:58 AM GMT+2)

- Stage deployment
- Stage testing
- Production deployment

Content Audit

Back Print

🔒 https://wknd.site/content/wknd/us/en.html



Performance

Metrics



▲ First Contentful Paint	2.0 s	■ Time to Interactive	2.6 s
▲ Speed Index	2.4 s	● Total Blocking Time	120 ms
▲ Largest Contentful Paint	6.2 s	● Cumulative Layout Shift	0.008

Close

- Deploy to Production

Deployment complete.

Go-Live

Best Practices for Go-Live Preparations

- Schedule code and content freeze period
- Perform final content top-up
- Complete testing iterations
- Run performance and security tests
- Always create a **fallback plan**
- Cut-Over

Summary

What we learned?

- How to plan a migration to Cloud Service
- How to execute it by
 - Content transfer
 - Codebase refactoring
- How to have a successful Go-Live

Q&A

Appendix

Custom Code Quality rules - SonarQube

- HTTP requests should always have socket and connect timeouts
- Product APIs annotated with `@ProviderType` should not be implemented or extended by customers
- `ResourceResolver` objects should always be closed
- Do not use Sling servlet paths to register servlets
- Logging and exception handling rules
- Avoid Hardcoded `/apps` and `/libs` Paths
- Sling Scheduler Should Not Be Used
- AEM Deprecated APIs Should Not Be Used

Custom Code Quality rules - OakPAL

- Customer Packages Should Not Create or Modify Nodes Under /libs
- Packages Should Not Contain Duplicate OSGi Configurations
- Config and Install Folders Should Only Contain OSGi Nodes
- Packages Should Not Overlap
- Default Authoring Mode Should Not Be Classic UI
- Components With Dialogs Should Have Touch UI Dialogs
- Packages Should Not Mix Mutable and Immutable Content
- Reverse Replication Agents Should Not Be Used

- State in Memory
- State on the Filesystem
- Observation
- Background Tasks and Long Running Jobs
- Outgoing HTTP Connections
- No Classic UI Customizations

- Avoid Native Binaries
- No Streaming Binaries through AEM as a Cloud Service
- No Reverse Replication Agents
- Forward Replication Agents Might Need to be Ported
- AEMaaCS logs available through Cloud Manager
- CRXDE lite available on the development environment but not on stage or production

- [AEMaaCS Architecture](#)
- [AEMaaCS Archetype](#)
- [Asset Workflow Migration Tool](#)
- [Dispatcher Converter Tool](#)
- [AEM Modernization Tools](#)
- <https://github.com/adobe/aem-testing-clients>
- <https://github.com/adobe/aem-test-samples>