

# An automated testing module for Amazon Machine Images (AMI)

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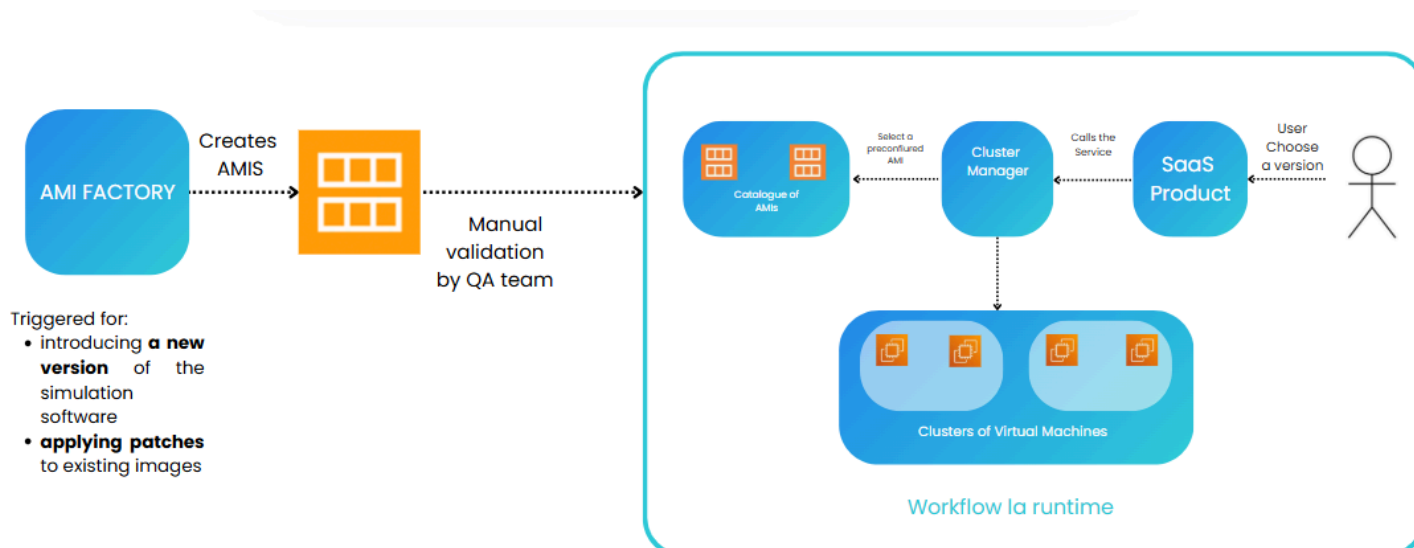
## Context

This project was inspired by a real-world architecture in which a module enables the formation of virtual machine clusters based on preconfigured AMIs, using a factory module that generates new images whenever a new version of a service is released or when patching is applied to the service.

The identified problem is that currently, there is no automated way to validate whether the images generated by the factory can actually be consumed by the cluster provisioning service.

Introducing a validation mechanism would bring several benefits:

- Shorten the validation time
- Reduce the manual effort required from the QA team
- Ensure that every image passes through a minimal set of tests

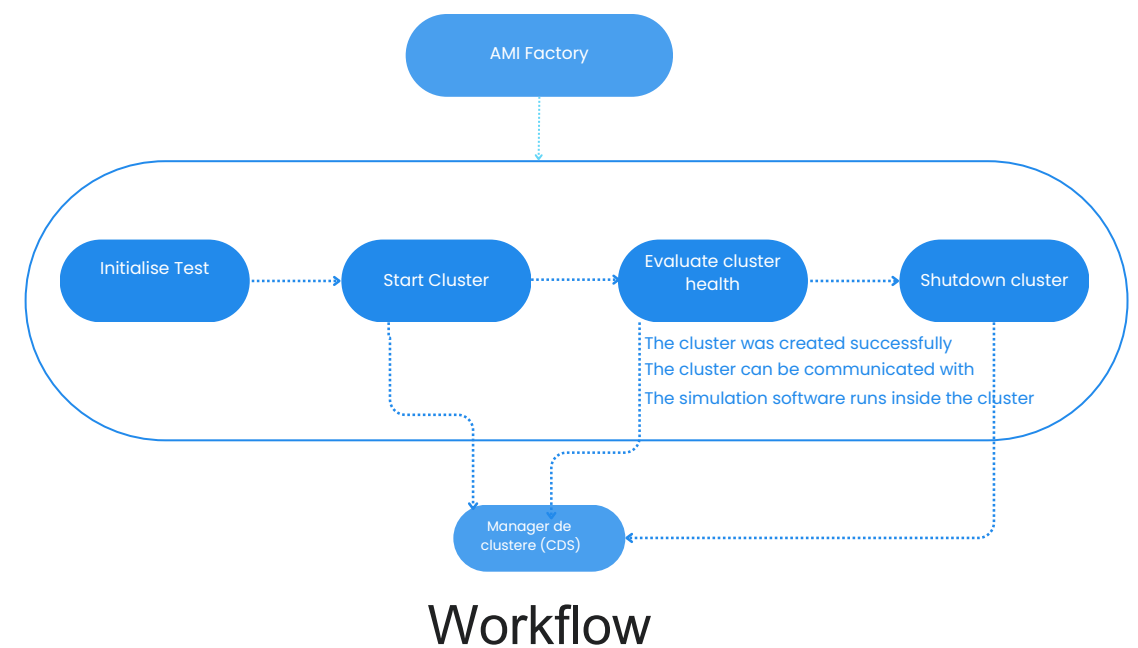


Existing workflow

## Solution

To address this issue, I designed the following workflow:

When the AMI Factory creates a new AMI, a testing module is automatically triggered. Within this module, a test is initialized, a cluster is created based on the new image, and the health of the cluster is validated.

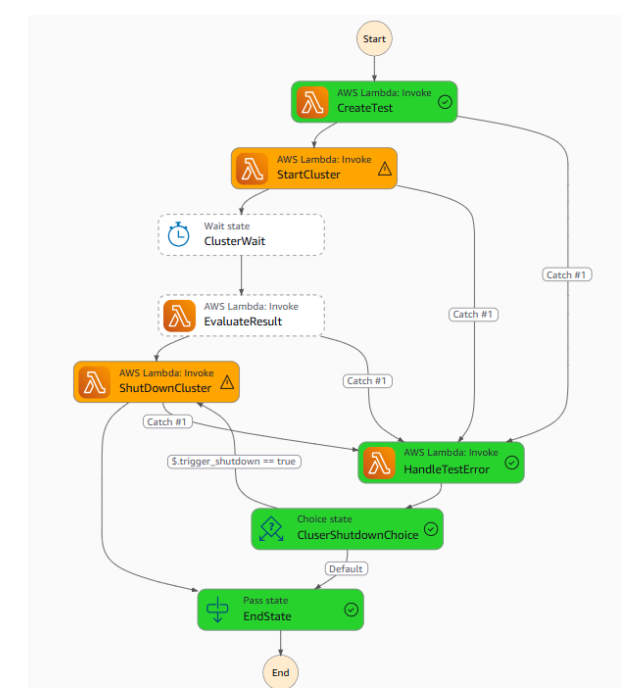


Workflow

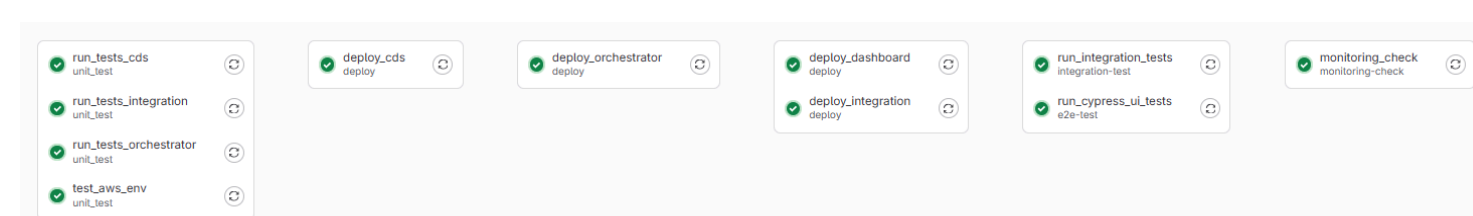
This includes: successful cluster creation, connectivity to the cluster, and running the application within the cluster. At the end of the process, the cluster is terminated. If the test successfully completes all these steps and passes the cluster health evaluation, it is considered a successful test. Otherwise, an alert is raised.

## Implementation

To implement this, I used AWS Step Functions and Lambda. I created an AWS CloudWatch dashboard for monitoring and a CI/CD pipeline in GitLab.



AWS StepFunctions



ci/CD Pipeline

## References

1. Eric Evans. 2004. Domain-Driven Design: Tackling Complexity in the Heart of Software. Addison-Wesley.
2. Vaughn Vernon. 2013. Implementing Domain-Driven Design. Addison-Wesley.
3. Sam Newman. 2015. Building Microservices. O'Reilly Media.

