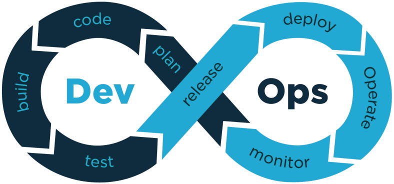

Azure Replicable CI / CD Locally

GitHub Project Repo: beamerAzureCiCdLocal

Author: Athanasios Garyfalos

Date: December 16, 2021

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- Why to Replicate CI / CD Locally

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- Overall Problems
- Simple Solution

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- CI-CD Local
- CI-CD Kubernetes

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- Demo CI / CD

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- Key points repetition

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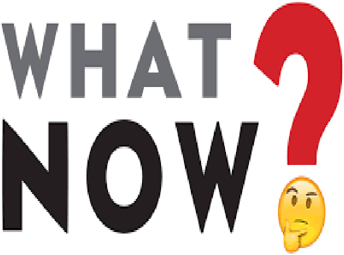
High level description of the problem

- It works locally why not remotely?
- It works on my computer why not on yours?
- Common Wrong Assumptions:
  - Running same package(s) version
  - No difference on installation process
  - No difference between Operating Systems
- Is there a solution?

Local Vs Remote



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Not replicable

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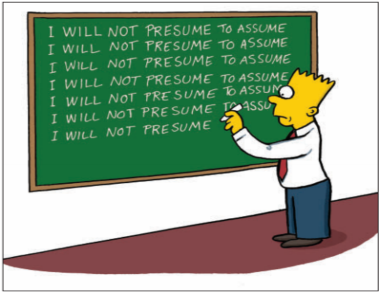
Wrong Assumptions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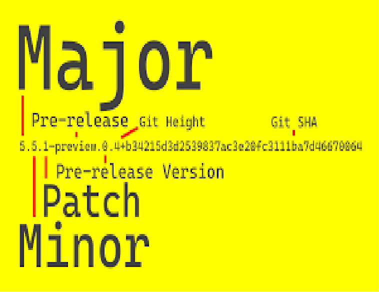
Major / Minor Version



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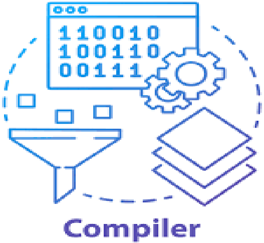
Is there a difference in compilers?



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Windows vs Mac vs Linux

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Maybe...

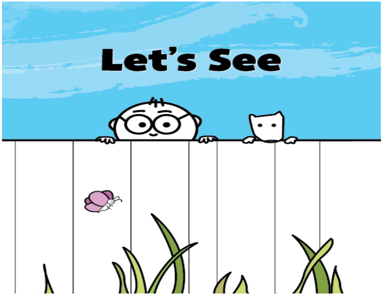

Figure 1: Problem Overview

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Python

Figure 2: Problem Overview

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Cross OS Programming Languages

Python2 Deprecated

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Cross OS Programming Languages

Python3 Active

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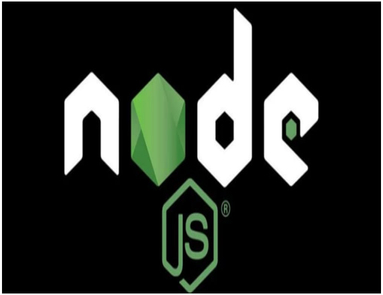
Cross OS Programming Languages

Node JS



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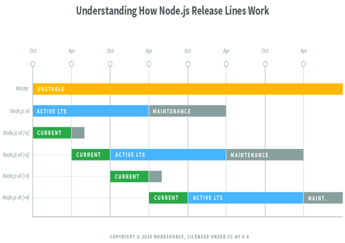
Cross OS Programming Languages

Under Development



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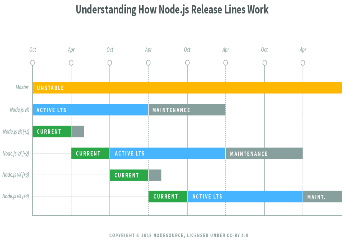
Cross OS Programming Languages

Current Latest Release



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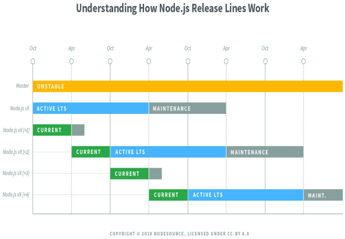
Cross OS Programming Languages

Active Long Term Support


Understanding How Node.js Release Lines Work

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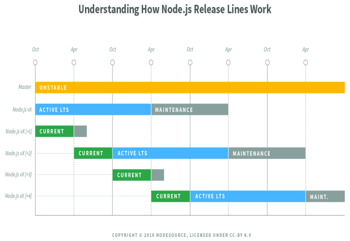
Cross OS Programming Languages

Maintenance Long Term Support



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Cross OS Programming Languages

Tons of versions

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Java Oracle

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Java OpenJDK

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Cross OS Programming Languages

Maintenance Long Term Support (LTS)

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Cross OS Programming Languages

Different Installation Process

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Cross OS Programming Languages

Bundle package

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Source Code

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Impossible vs Possible

Impossible Solution

- Everyone needs to have exactly same OS.
- Everyone needs to install packages the same way.
- Everyone must update the OS and package at the same time.
- To what extent this is possible and practical?

Impossible vs Possible

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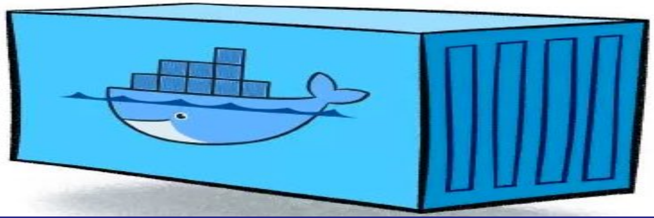
Containers again and again



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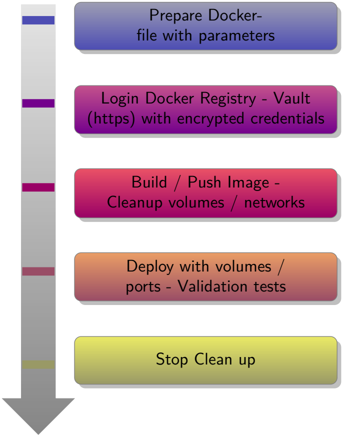

Prepare Dockerfile with parameters

Login Docker Registry - Vault (https) with encrypted credentials

Build / Push Image - Cleanup volumes / networks

Deploy with volumes / ports - Validation tests

Stop Clean up

- Dockerfile (template).
- Vault (https).
- Any socket.
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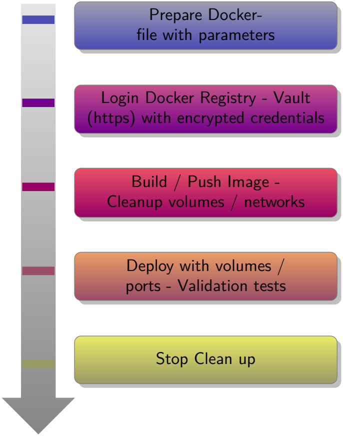

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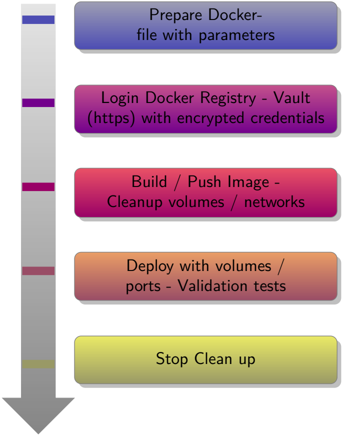
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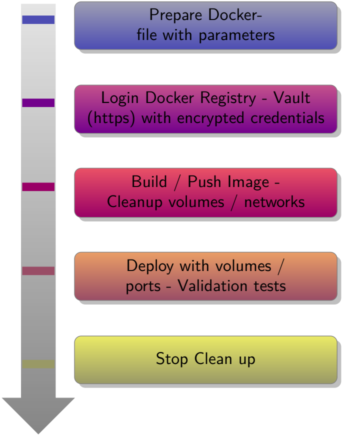

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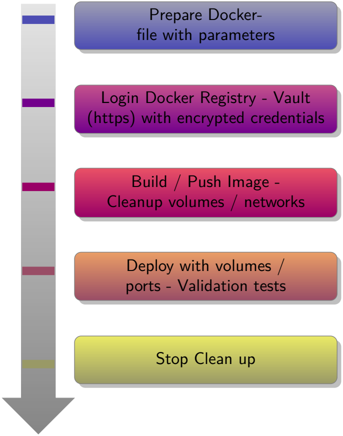

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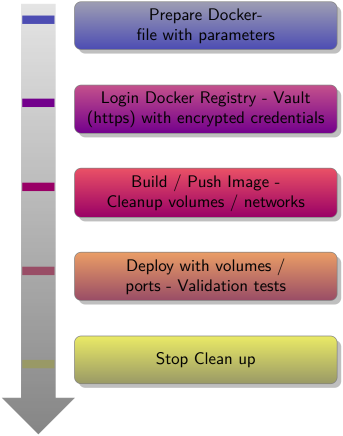

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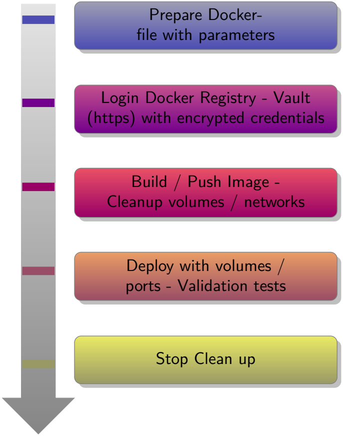
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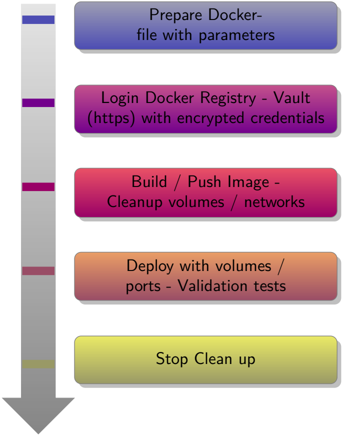
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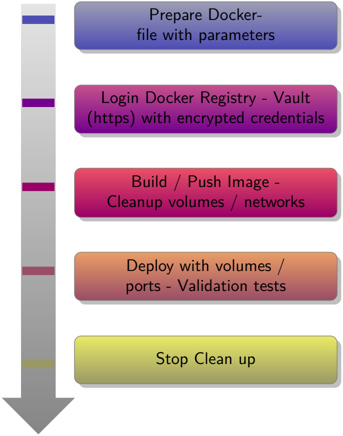

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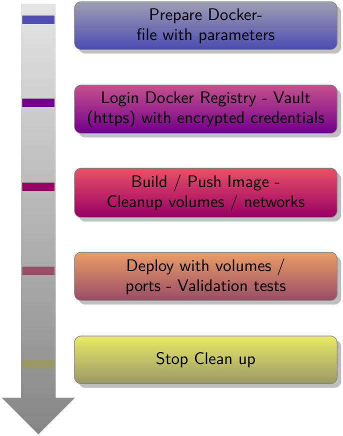
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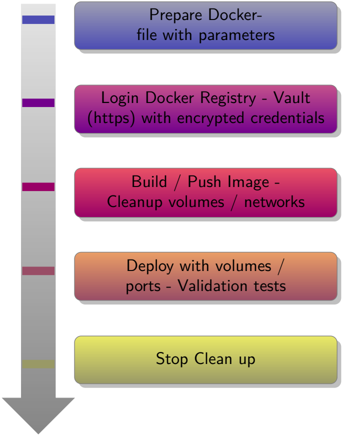

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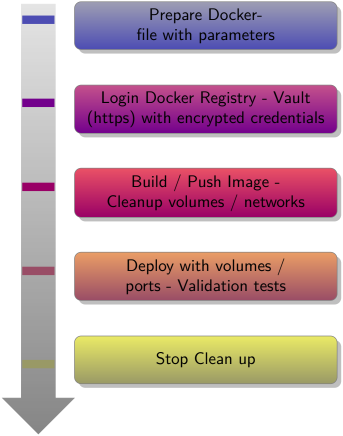
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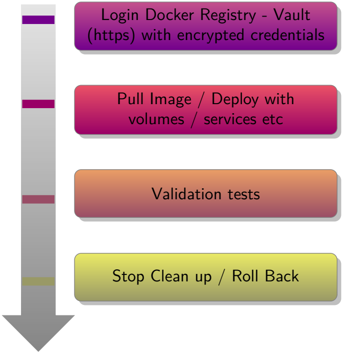
Local k8s Deployment Procedure



Login Docker Registry - Vault (https) with encrypted credentials

Pull Image / Deploy with volumes / services etc

Validation tests

Stop Clean up / Roll Back

- Vault (https).
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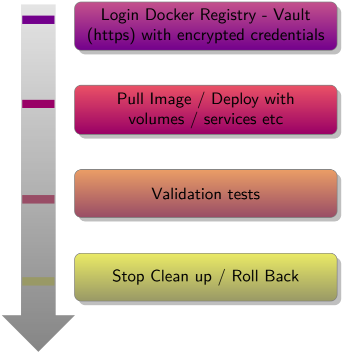

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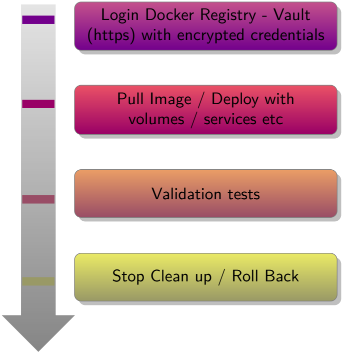

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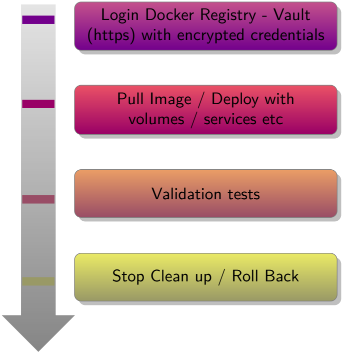
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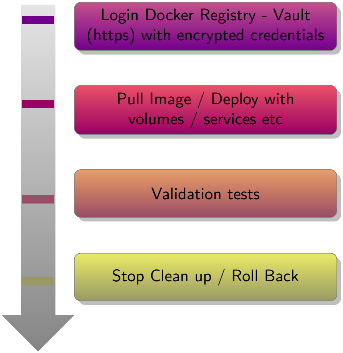
Local k8s Deployment Procedure



Login Docker Registry - Vault (https) with encrypted credentials

Pull Image / Deploy with volumes / services etc

Validation tests

Stop Clean up / Roll Back

- Vault (https).
- Any socket.
  - Azzure Registry.
  - Pull Image.
- Deployment (volume).
- Logout Azzure.
- Validation (tests).
  - Raise error (if).
  - Stop, Cleanup.
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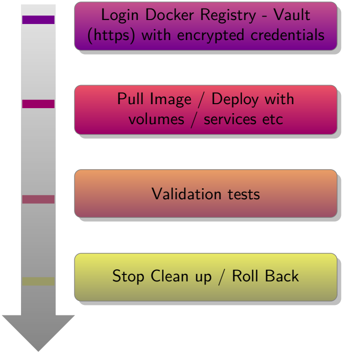

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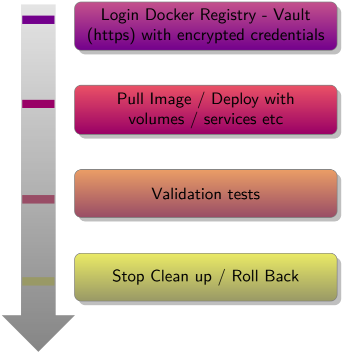

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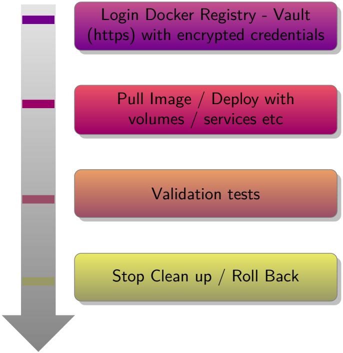

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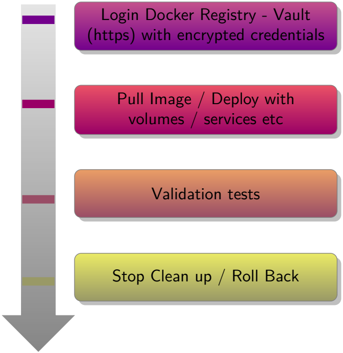

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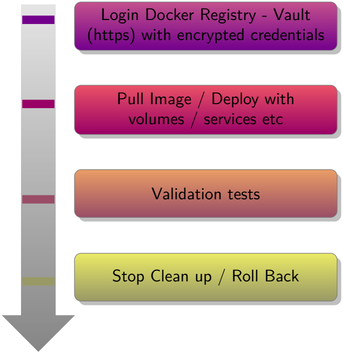
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- In section “Introduction” page “2” Common issues, non replicable.
- In section “Software Development” page “3” Variety of programming languages and the problems.
- In section “Implementation” page “4” CI / CD Flow Build / Deploy / Test.

Extra Notes

- Demo on CI / CD build / deploy / validation and error handling cases.
- Both the CI / CD and Kubernetes project are provided as open source contribution. The Presentation was written in LaTeX

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Coming up: Q & A

References I

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