

FTS3 Summer Container Integration Project

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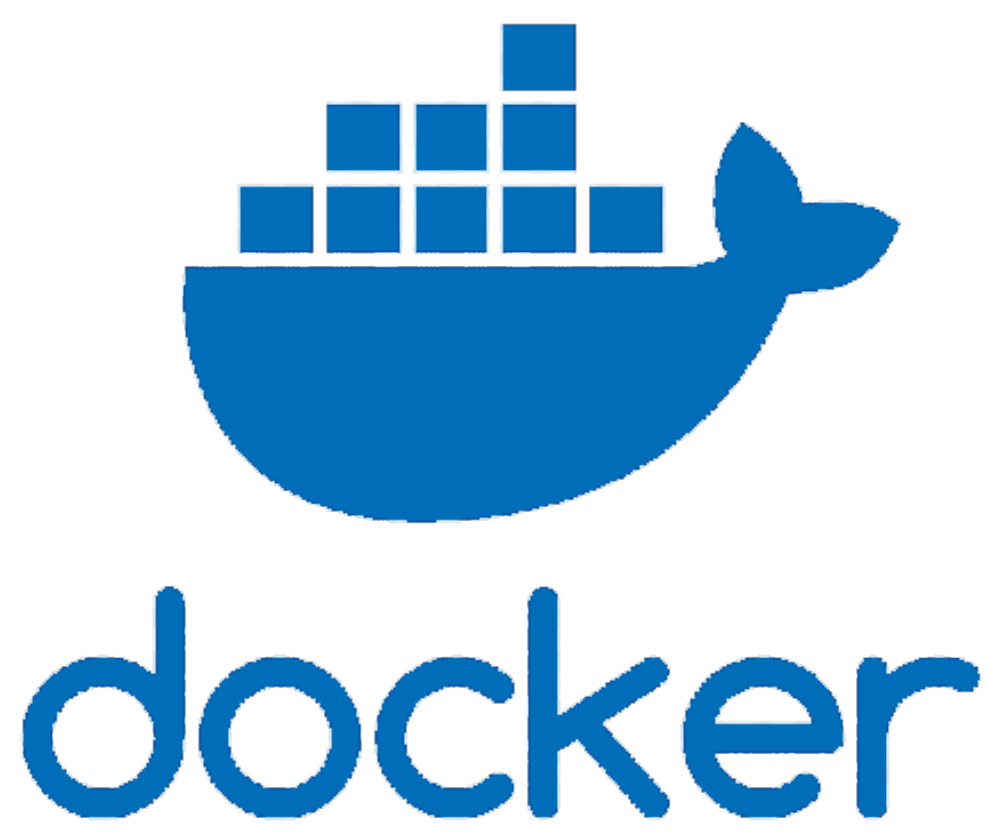
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INTRODUCTION

The **File Transfer Service (FTS3)** is a data transfer service created at CERN, primarily used to distribute the majority of the Large Hadron Collider's data across the Worldwide LHC Computing Grid. At Fermilab, FTS3 instances have been implemented using a container based approach for Intensity Frontier experiments, such as DUNE, to facilitate data transfer between America and Europe.

SLATE (Service Layer At The Edge) is a service provider that allows sites to assign the task of deploying and configuring services to specific application administrators.

TECHNOLOGY USED



Docker Containers offer a standardized method to package application code, configurations, and dependencies into a single unit



Container orchestration involves tools that automate the management and operation of container-based applications.



Container image registry that protects images using role-based access control.



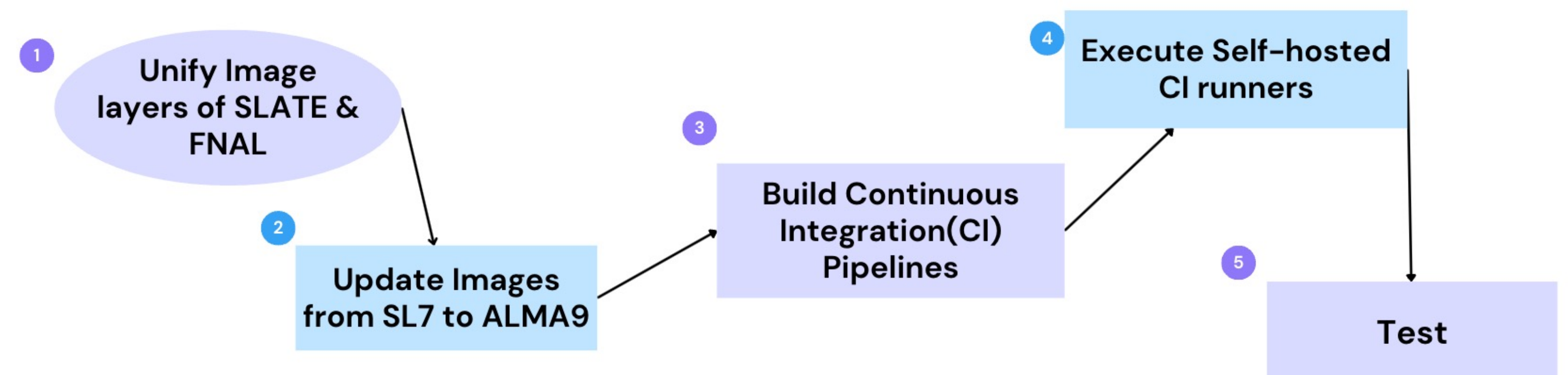
DevOps platform that houses the project's codebase and related operational documentation.

SLATE is discontinuing the previously used FTS3 container images. There are three Docker images involved in the FTS3 project:

1. MariaDB Image: A standard MariaDB image used for the backend database, provided by OKD (the open-source distribution of OpenShift) and used without modification.
2. FTS3 Server Image: An image for the frontend FTS3 server, originally provided by the SLATE project, which has been adapted to manage grid certificates in a container volume.
3. Fetch-CRL Image: An image for fetching certificate authorities and updating certificate revocation lists.

My project focuses on migrating these images, updating them from Scientific Linux 7 (SL7) to AlmaLinux 9, building a continuous integration (CI) pipeline, and executing self-hosted CI runners. This allows FNAL to no longer rely on the SLATE images.

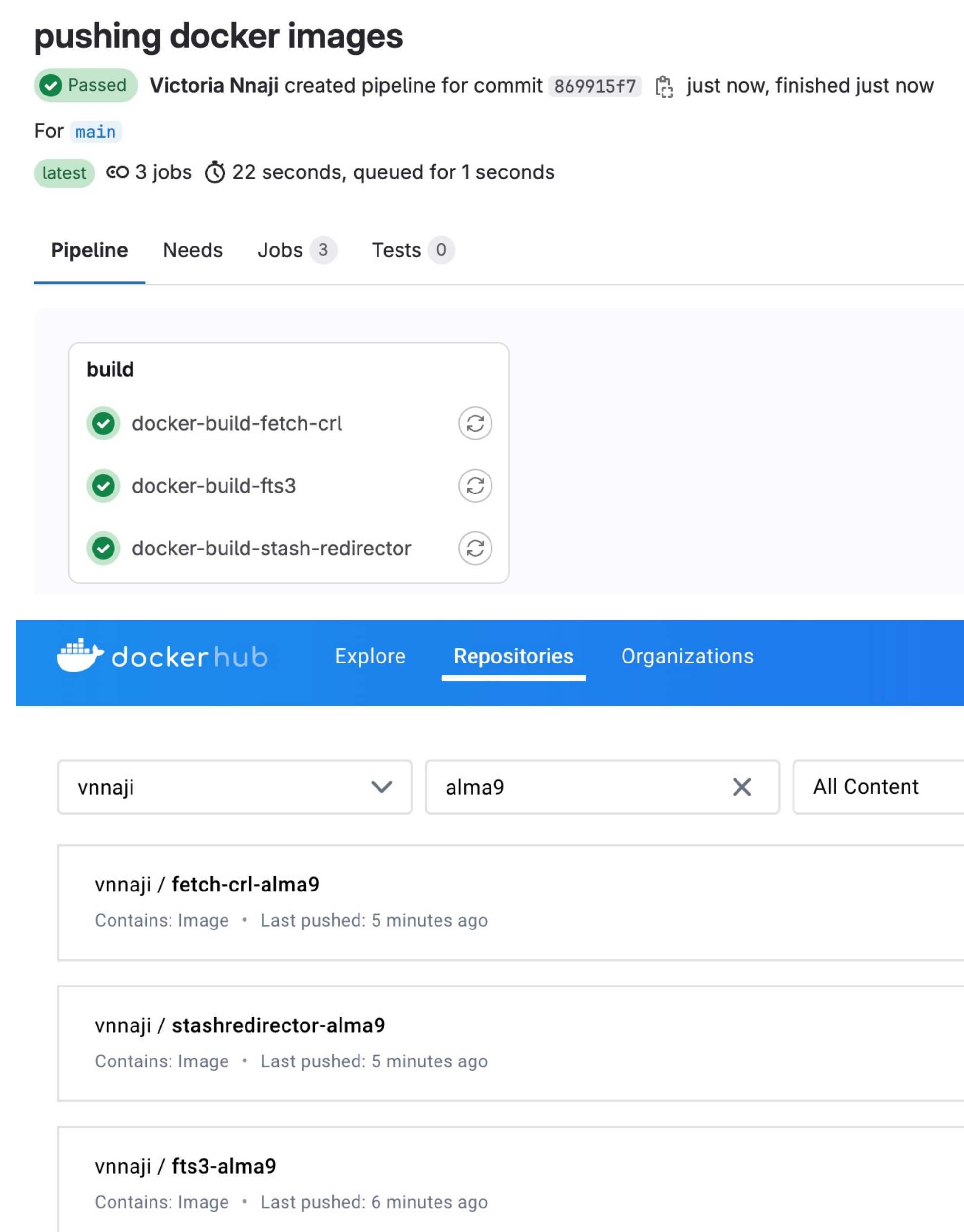
FTS3 SUMMER CONTAINER INTEGRATION PROJECT STEPS



REASONS TO INTEGRATE

- Reduce and minimize manual intervention time.
- Provide a consistent environment for testing and development.
- Future deployment in OKD, plans to deploy in OKD for enhanced orchestration.

These diagrams to the right display successful CI pipelines for the new images as well as them being pushed to Docker hub. The expected results from this integration will ensure minimal human interaction and will reduce the need for manual oversight. It will also promote a consistent testing environment and ensure reliable and repeatable testing. Lastly, simplified deployment, streamlining the development workflow and deployment process.



CONCLUSION

The creation of a robust Continuous Integration (CI) pipeline and the implementation of self-hosted CI runners streamline the deployment process, reduce manual intervention, and enhance the reliability of updates. This project not only preserves critical functionalities but also positions FNAL for future scalability and adaptability in a rapidly evolving technological landscape.

ACKNOWLEDGEMENTS

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