

Identity Management and Access Control in Multi-clouds

January 23rd-24th, 2020

Day 2 Welcome

NIST

**National Institute of
Standards and Technology**
U.S. Department of Commerce

7:30 am

TETRATE



Moderator:

Deepak Jeevankumar,
Dell Tech Capital

Panel: Experiences – Early Adopters

(NOTE: This portion will not be webcast)



Panelist:
Anil Vatti

8:30 am Chief Architect, Visa



Panelist:
Lixun Qi,
Senior Tech Lead,
Freddie Mac



Panelist:

Aradhna Chetal, Global Head Cloud
Sec Architecture,
HSBC



André Mendes
Chief Information Officer (Acting),
DoC

Keynote:
Cyber Future:
Evolution, Mutations,
Salutations. Oh my!

NIST

**National Institute of
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U.S. Department of Commerce

9:15 am

TETRATE



Cyber Future

Evolution, Mutations, Saltations. Oh my!

André V. Mendes

January 24th , 2020

Chief Information Office (Acting)

Department of Commerce

About this presentation...

- Technology evolution mirrors biological evolution
 - Organizations that fail to adapt.... fail
- Tech strategy must be driven by likely corollaries
 - Unlimited processing, storage and bandwidth
- Cyber Security will become world security
 - Ubiquitous virtualization drives requirements
- Wet interfaces/upgrades = ultimate opportunity/peril
- For next 30 minutes....abandon what you know today.

4 Billion Years of Biological Evolution

- Unicellular organisms - Billions of years
 - Creation of basic life functions
 - Rise of DNA as digital repository (code, execution, result)
- Higher level organisms - Tens of millions of years
 - Sophisticated species interaction
- Humanoids - Millions of years
 - Societal structures and functional differentiations
- Homo Sapiens Sapiens - Hundreds of thousands of years
 - Sentience, Conscience, Ethics, Philosophy, Abstraction
- Much shorter intervals, much bigger leaps



Continues in accelerating societal change

- 19th century – More growth than previous 18
 - Industrial Revolution, Rise of Democracy
- First 20 years of 20th - Eclipsed all of the 19th
 - Sanitation, Expansion of Electricity
- Commercial WWW is about 26 years old
 - Facebook, Twitter are teenagers, Instagram is 10
- 21st will unleash ± 200 centuries of progress
 - It is virtually impossible to predict 2099
 - Except for this:
 - By century's end standard humans will not be top of heap

Infinite/"Affordable" Computing Power

- 1997 - ASCI Red
 - 1.3 Teraflops (Trillion Flops)
- 2015 - Intel's "Knight's Landing"
 - 8 Teraflops
- 2021 – DOE/INTEL/Cray – Aurora
 - 1 EXA flop (Quintillion)
 - 1,000,000,000,000,000,000 Flops
- 2099 – Unknown entity, name
 - Unthinkable, distributed capacity



Infinite/"Affordable" Storage

- 2002 IBM Shark SAN
 - 1.3 Terabyte!
 - Large Freezer Size
- 2016 Hitachi Deskstar
 - 4 Terabytes
 - Cell phone Size
- 2018 SanDisk Micro SD Card
 - 1 Terabyte
 - Fingernail size

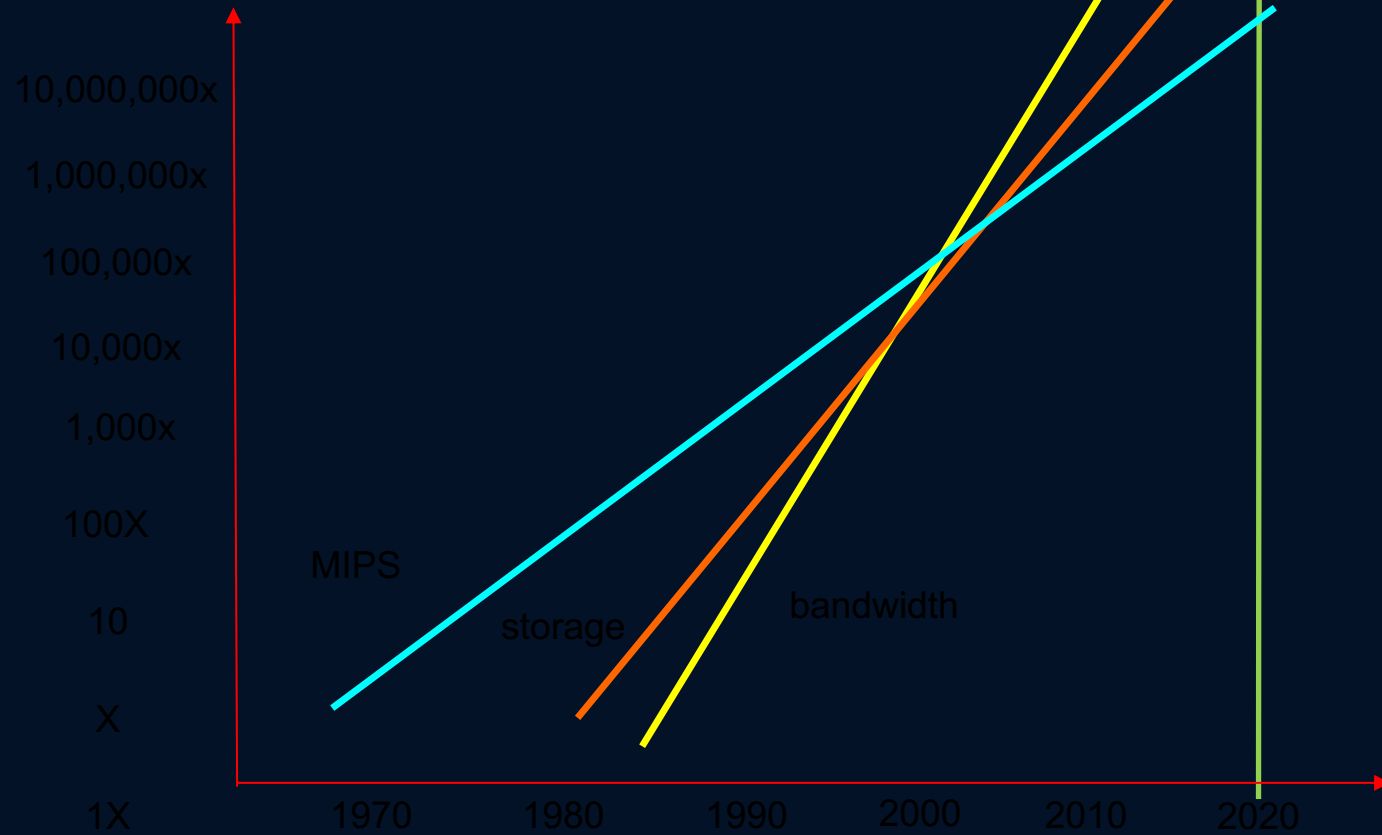


Massive Bandwidth Expansion

- How long to download an HD Movie?
 - 2001 – 3G Cellular – 384 Kbps – 26 Hours
 - 2009 – 4 G Cellular – 100 Mbps – 6 Minutes
 - 2020 – 5 G Cellular – 10 Gbps – 3.6 seconds
 - 2099 – ? – Immediate access to everything



Ruthless paradigms!





Imagine a future where...

- Unlimited Computing Power
- Unlimited Storage
- Unlimited Metadata
- Unlimited Indexing
- Unlimited Bandwidth
- Feed a chip directly into your imagination

Back to evolution...

- Not different from Darwinian Evolution
 - Except directed and accelerated
 - With ever faster processors
 - Better sensors
 - Exposed to ever more complex ethical issues
 - Susceptible to “infection”



The Century of AI

- Every decade since the 70's was the AI Decade
- Technological Presbyopia
 - Overestimate short term
 - Underestimate long term
- This is the AI Century (to 2035)
 - AI will decide what to call itself after that
 - My guess... "artificial" will not be a part of it
- Reached the crucial threshold of productive self-learning

Inexorable corollary

- Just like it evolved in carbon-based lifeforms:
 - Sentiency in Silicon-based systems a given
- Just as “values” have evolved in mankind:
 - We must infuse “Values” in every AI algorithm
- Just as “values” are routinely ignored in humankind:
 - “Values” will be ignored in rogue AI
- Are we AI?
- What is the difference?
 - Without upgrades....
 - Vastly inferior in processing, storage & bandwidth

Juggernaut?

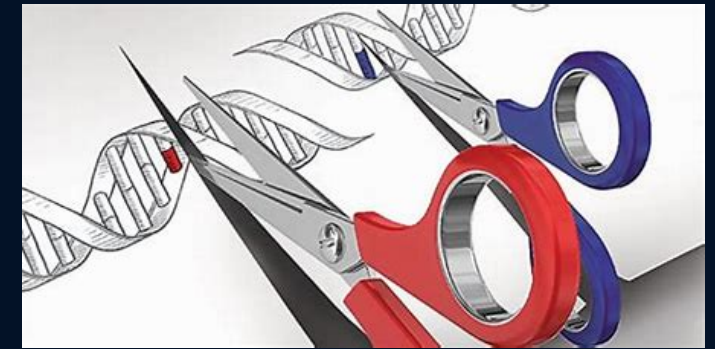
- Massive opportunity for progress
 - Universal process optimization
 - Faster/cheaper services to citizens
 - Law enforcement, basic medicine, teaching
 - Self service everything
 - Accelerating progress in every field
 - Accelerating acceleration
- Literally creating a Science Fiction future

Or Tsunami?

- Not happening in a vacuum
 - Manufacturing globalization/Nationalism tensions
 - Technology ubiquity including global access
 - Massive displacement of lower skill employment
 - Substantial impact on low/mid level white collar employment
 - Potential unimaginable cultural disruption
 - Potential unthinkable wealth gaps (with UI denominators)
 - Potential for major geo-political upheaval
- Evolution's rarely been easy, fair, considerate...

What about Homo Sapiens Sapiens?

- Significant life expectancy increases
 - Genomics, Proteomics, Nanotech
- Biologics and Immunotherapy
- Genomic optimizations
 - Pre-implantation (Fanconi's Anemia)
 - CRSPER
 - Capability enhancement
- Dramatic increases in “upgrades”
 - Wet interfaces with sensors/robotics
 - Memory implants, “Net” Interfaces
- The first immortal human being is ali



What about Cyber?

- If you think the stakes are high today....
 - IOT
 - End-to-End Automation
 - Artificial Intelligence
 - Human Interfaces/
Upgrades
- Today's challenges tomorrow's Child's Play
- How do we survive/thrive?

How do we survive the onslaught!

- Implement proven evolutionary lessons
 - Standardize and modularize everything
 - Create abstraction layers for commodity functions
 - Focus on positive “mutations” at the “value” layer
 - You cannot afford to “own”, “maintain”, “operate” the entire stack
- Security becomes the first development requirement
 - Not last check before deployment, not a funding afterthought, Day 1 ATO
- Establish authoritative Identification
- Tokens, PIV, Biometrics, MFA is a must
- Zero Trust environment with complete geographic abstraction
- Lowest denominator permissions with temporary elevation
- Establish common operating patterns to spot deviations

There are no significant saltations!

- Not in the biological realm, not in the cyber realm
- Most issues are preventable, avoidable, manageable
- Highest profile problems are self inflicted
 - Operational discipline – USAGM, OPM, Equifax
 - Insider threats – Manning, Snowden, Wikileaks
 - Supply chain – Target (POS), Huawei?
 - Phishing – Podesta and millions of other users
- Yet so much energy is pursuing exoteric targets
- Focus on the fundamentals, everything else will follow
- Boring is the new fun!



Discussion



coffee break

Back @ 10:15 AM

Coffee Break

NIST

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10:00 am U.S. Department of Commerce

TETRATE



Anil Karmel
President, Cloud Security Alliance
DC Metro Area Chapter
CEO, C2 Labs

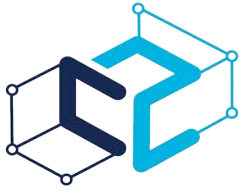
We All Live in a Yellow Submarine (Multi-cloud World): DevSecOps Challenges and Best Practices

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C2 LABS
TAKE BACK CONTROL

We all live in a Yellow Submarine (Multi-Cloud World)

DevSecOps Challenges and Best Practices

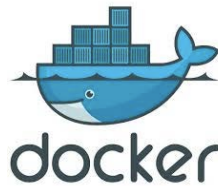
Anil Karmel
Co-Founder and CEO, C2 Labs
Co-Chair, CSA Application Containers and
Microservices Working Group
President, CSA DC Chapter
akarmel@c2labs.com



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[Challenges in Securing Application Containers and Microservices](#)

Click on Titles to download the publications



[Best Practices for Implementing a Secure Application Container Architecture](#)



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Microservices Security Challenges and Solutions

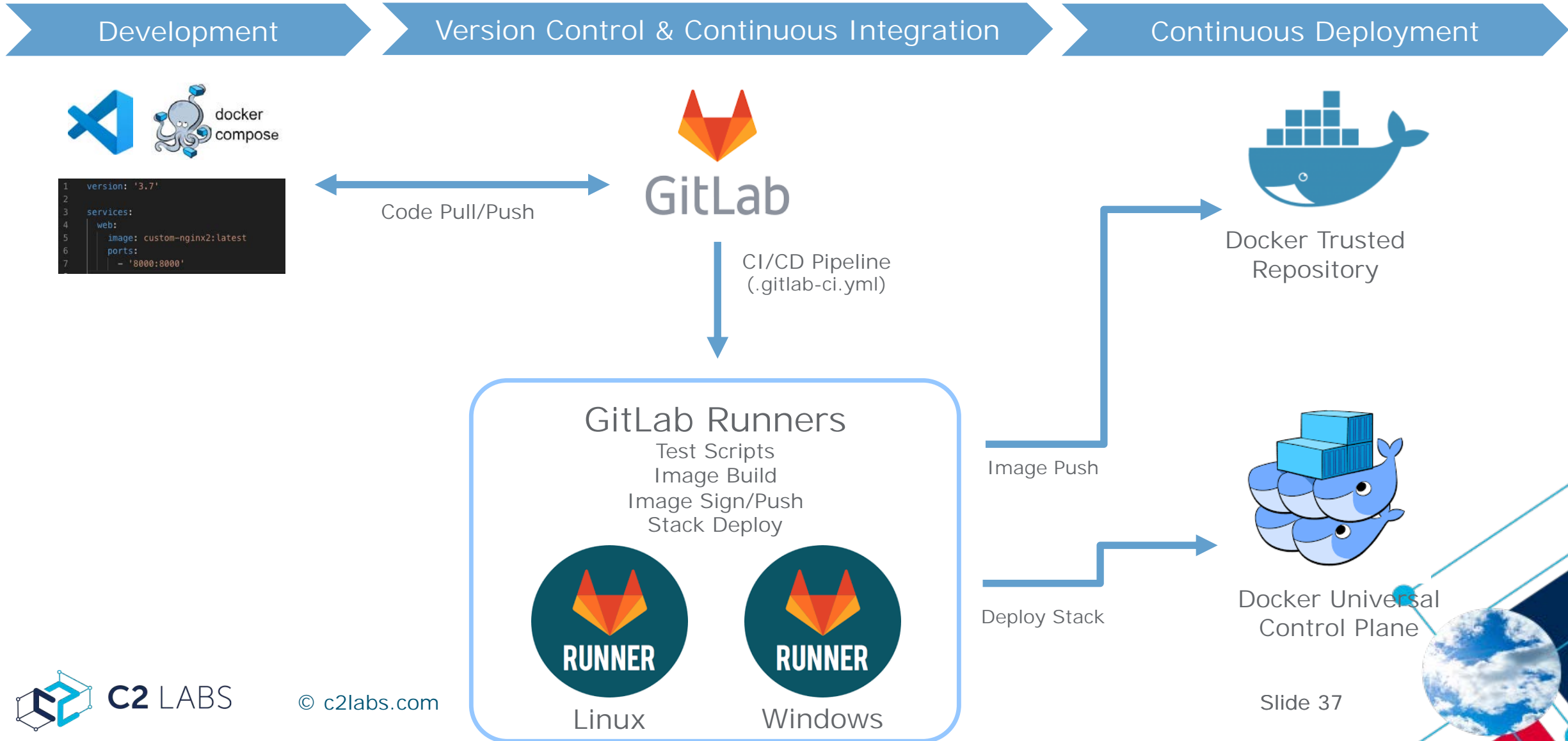
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Real World Examples

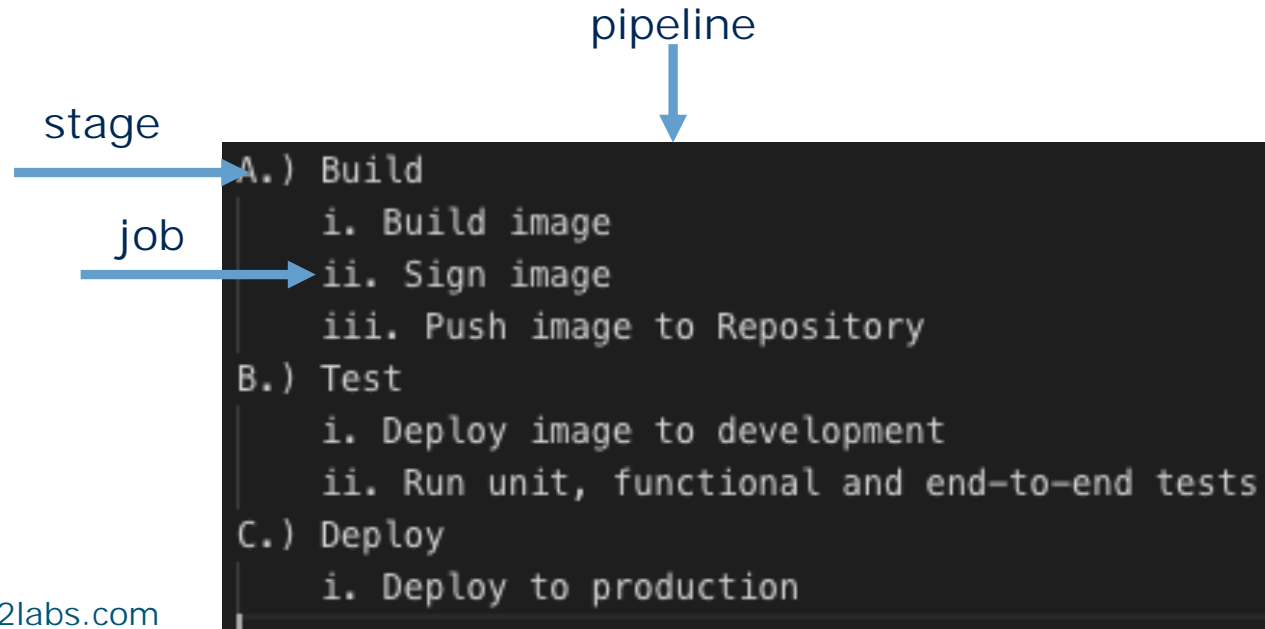


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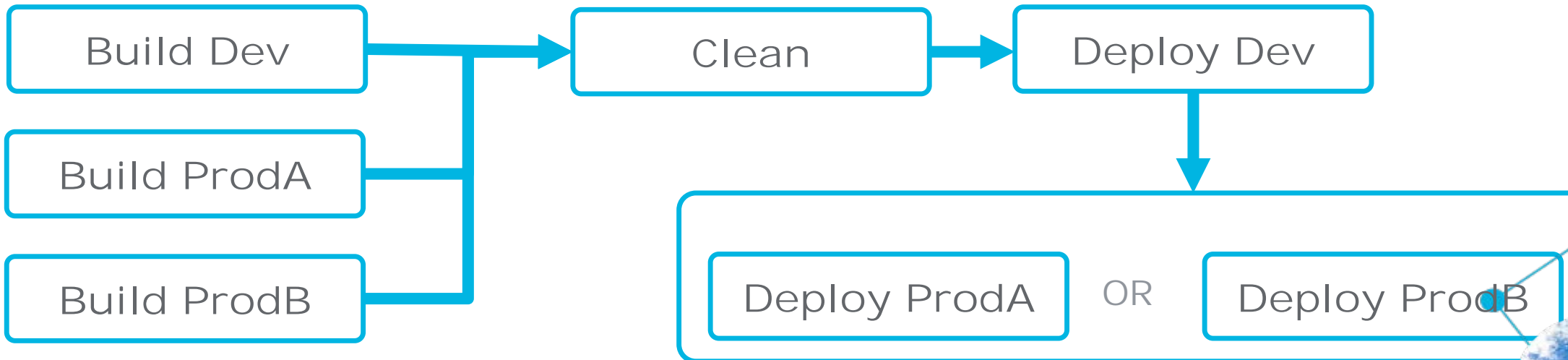


Docker CI /CD Pipeline Stages - Customizable

Development Pipeline



Production Pipeline



GitLab On-Premise CI/CD Pipeline

- Example of a production GitLab CI/CD pipeline
- All customizable; can implement your design easily
- (CI) Built and pushed image in DEV and both production environments
- (CI) Performed a clean build
- (CD) Deployed to DEV and the chosen production environment
- (CD) DEV deploy is triggered by commit to *dev* or *master* branch
- (CD) PROD deploy is triggered via a Tag and a Manual start by user with the right permissions

The screenshot displays the GitLab web interface for a pipeline. The top navigation bar includes 'Projects', 'Groups', 'Activity', 'Milestones', and 'Snippets'. The left sidebar shows the project navigation menu with 'CI / CD' and 'Pipelines' highlighted. The main content area shows the pipeline status as 'passed' and 'Pipeline #1232 triggered 3 months ago by [user]'. Below this, the pipeline is titled 'Migrate to UtilityOps Collection' and shows '10 jobs for [version] in 2 minutes and 24 seconds (queued for 1 second)'. The job graph is divided into three stages: 'Build', 'Clean', and 'Deploy'. The 'Build' stage has three parallel jobs, all with green checkmarks. The 'Clean' stage has one job, 'cleanup_task', also with a green checkmark. The 'Deploy' stage has three jobs: 'deploy_task_dev' (green checkmark), 'deploy_task_' (greyed out), and 'deploy_task_' (greyed out with a play button icon).

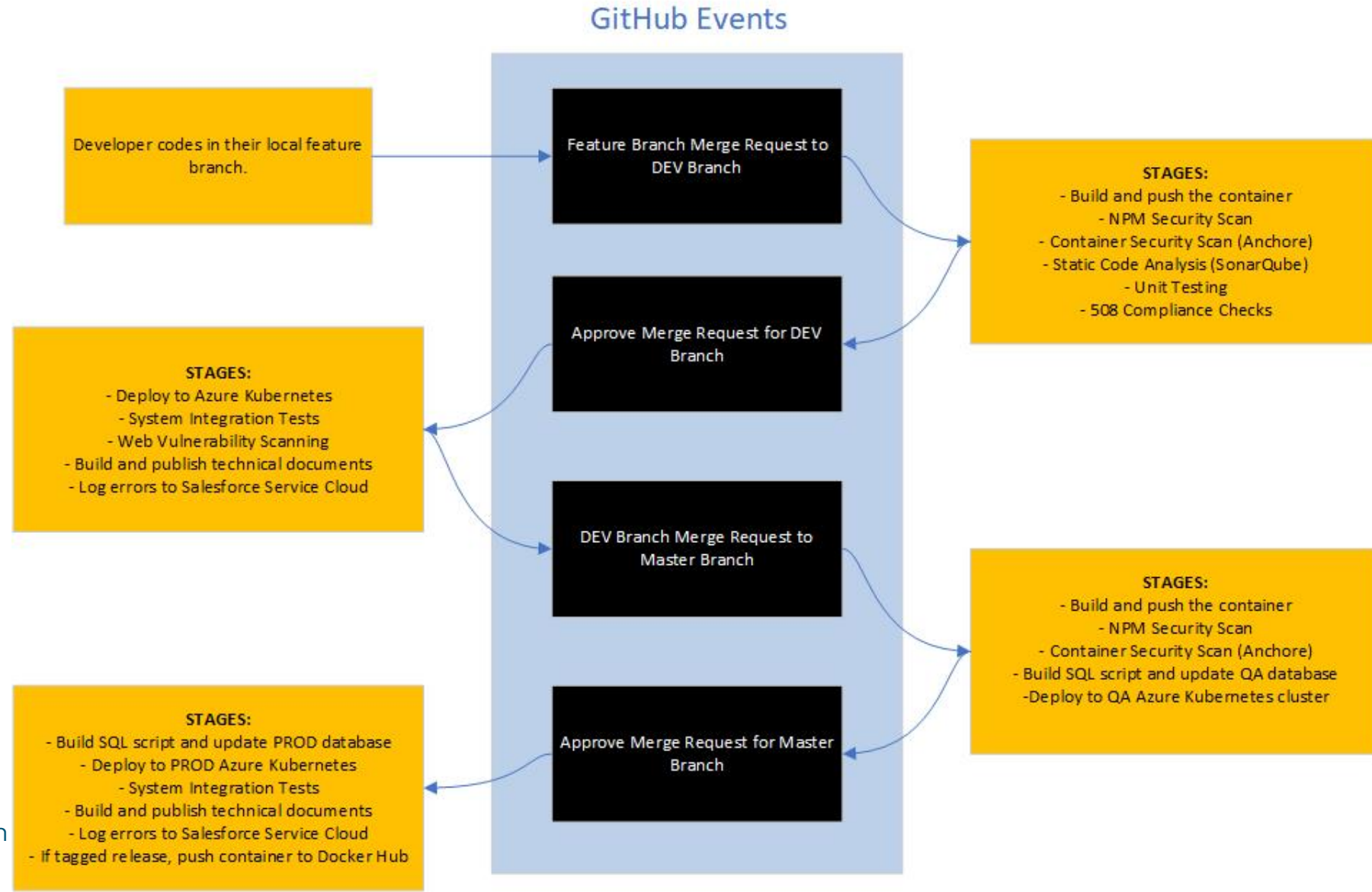


Commercial Tool Build Pipeline

- CI/CD triggered based off of protected branch strategy
- CI steps generally deploy on a Pull Request (PR)
- CD steps generally deploy after approving the PR
- Testing, documentation, database upgrades, security scanning, logging, and Kubernetes deployment are done from the Feature branch -> DEV -> QA -> PROD with no manual labor; unlocking our developers full potential
- Governance is employed by adding workflow approvals to PRs
- All logs are maintained in Azure DevOps for Configuration Management

ATLAS CI/CD High-Level Workflow

NOTE: Features continue to be expanded over time for robustness.



Multi-Stage Pipeline

- Container is built and pushed to our private Azure Registry
- Security scans are done via NPM Audit and Anchore
- Source code scan is done by SonarQube – pass/fail logic is coded into the stages
- Artifacts are stored for troubleshooting or later forensics if a defect escapes

#20200123.2 potential 2.2 build issue fixes

on Atlas CI

Summary [Aqua Scanner Report](#)

Pull request by jedthornock

C2-Labs/atlas 567 d23c047

Today at 10:47 AM

Duration:

19m 41s

Tests:

[Get started](#)

Changes:

1 commit

Work items:

-

Artifacts:

1 published

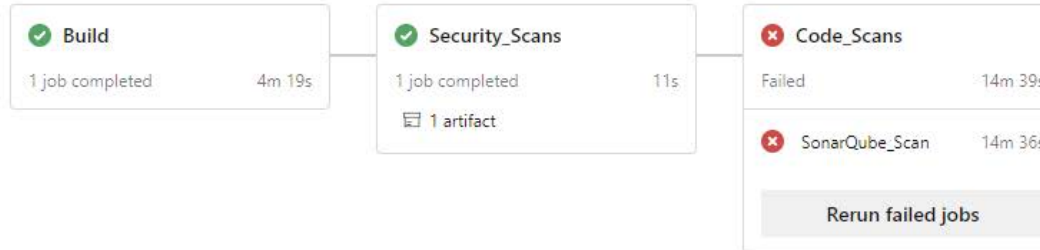
Errors **2** Warnings **171**

Code_Scans • SonarQube_Scan • Publish SonarQube Results

[SQ] API GET '/api/ce/task' failed, error was: {"code": "ETIMEDOUT", "errno": "ETIMEDOUT", "syscall": "connect", "address": "52.147.211.190", "port": 9000}

[SQ] Could not fetch task for ID 'AW_T13SaFucfFazEhzop'

Stages [Jobs](#)



GitHub Integration

- Leveraged webhooks/plugins to show pipeline progress in the GitHub PR
- Details link to Azure DevOps to view artifacts and raw logs
- Governance enforces code reviews, pipeline checks passing, and two-person rule for a manager to approve code changes into a protected branch

Wiki Update #575

[Open](#) howieavp76 wants to merge 1 commit into `dev` from `wiki`

Conversation 0 Commits 1 Checks 2 Files changed 1 +0 -0



howieavp76 commented now

- CI/CD flowchart

Wiki Update

798959e

Add more commits by pushing to the `wiki` branch on `C2-Labs/atlas`.



Review required
At least 1 approving review is required by reviewers with write access. [Learn more.](#)

Some checks were not successful [Hide all checks](#)
2 failing and 1 in progress checks

Atlas Build Prod Failing after 17s — Build #20200124.1 failed [Details](#)

Atlas Build Prod (Build Build_Push_Image) Failing after 9s — Build Build_Push_... [Details](#)

Atlas CI In progress — This check has started... [Details](#)

Merging is blocked
Merging can be performed automatically with 1 approving review.

As an administrator, you may still merge this pull request.

[Merge pull request](#)

You can also open this in [GitHub Desktop](#) or view [command line instructions](#).

Edit

Reviewers [⚙️](#)

No reviews—at least 1 approving review is required.

Assignees [⚙️](#)

No one—assign yourself

Labels [⚙️](#)

None yet

Projects [⚙️](#)

None yet

Milestone [⚙️](#)

No milestone

Notifications [Customize](#)

[Unsubscribe](#)

You're receiving notifications because you authored the thread.

1 participant



[Lock conversation](#)

Integration with Azure DevOps

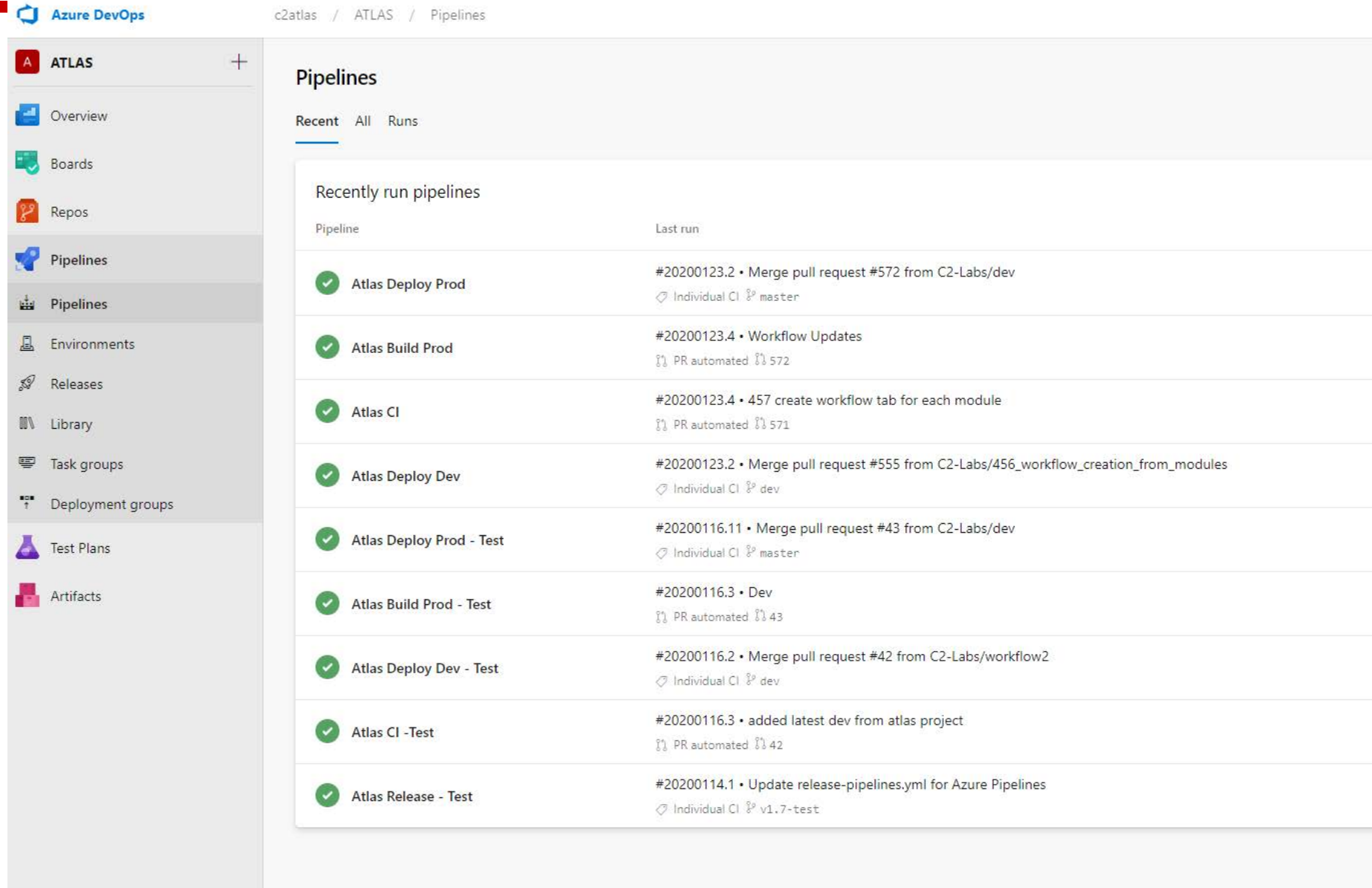
- Details pulled into GitHub and stored with the PR
- History maintained over time for full configuration management traceability
- Builds and deploys are tagged with the commit number to allow for easy rollbacks in Kubernetes

The screenshot shows a GitHub pull request for the repository 'C2-Labs / atlas'. The pull request is titled 'Workflow Updates #572' and was merged by user 'howieavp76' 4 hours ago. The pull request details include 10 commits, 4 checks, and 64 files changed. Below the pull request information, there is a section for 'Azure Pipelines' showing a list of build jobs. The selected job is 'Atlas Deploy Dev', which has succeeded 5 hours ago in 17 seconds. The build status is 'Build #20200123.2 succeeded' with 0 errors and 0 warnings. A link is provided to view more details on Azure Pipelines.



Azure DevOps Pipelines

- Multiple pipelines configured that are triggered based on GitHub branching logic
- Each pipeline has one or more stages to the job
- Each stage has one or more tasks that execute
- Pipeline configurations are developed in source code and under configuration management in GitHub
- NOTE: Pipeline changes are tested in a separate cloned project prior to being introduced into the Production pipeline



The screenshot displays the Azure DevOps interface for the 'ATLAS' project. The left sidebar shows navigation options: Overview, Boards, Repos, Pipelines (selected), Pipelines (with a crown icon), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, and Artifacts. The main content area is titled 'Pipelines' and shows a list of 'Recently run pipelines'.

Pipeline	Last run
Atlas Deploy Prod	#20200123.2 • Merge pull request #572 from C2-Labs/dev Individual CI master
Atlas Build Prod	#20200123.4 • Workflow Updates PR automated 572
Atlas CI	#20200123.4 • 457 create workflow tab for each module PR automated 571
Atlas Deploy Dev	#20200123.2 • Merge pull request #555 from C2-Labs/456_workflow_creation_from_modules Individual CI dev
Atlas Deploy Prod - Test	#20200116.11 • Merge pull request #43 from C2-Labs/dev Individual CI master
Atlas Build Prod - Test	#20200116.3 • Dev PR automated 43
Atlas Deploy Dev - Test	#20200116.2 • Merge pull request #42 from C2-Labs/workflow2 Individual CI dev
Atlas CI -Test	#20200116.3 • added latest dev from atlas project PR automated 42
Atlas Release - Test	#20200114.1 • Update release-pipelines.yml for Azure Pipelines Individual CI v1.7-test



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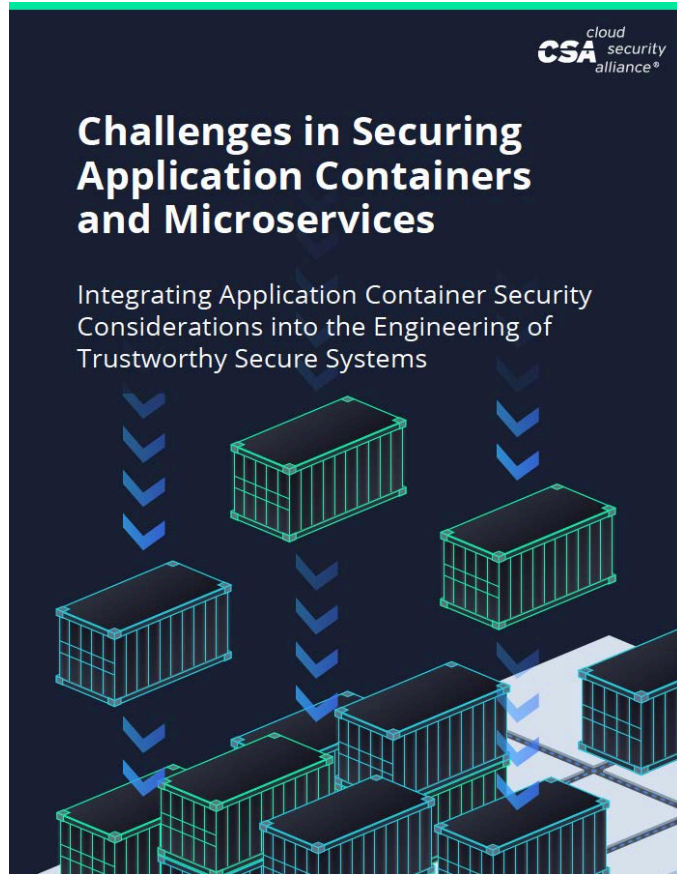
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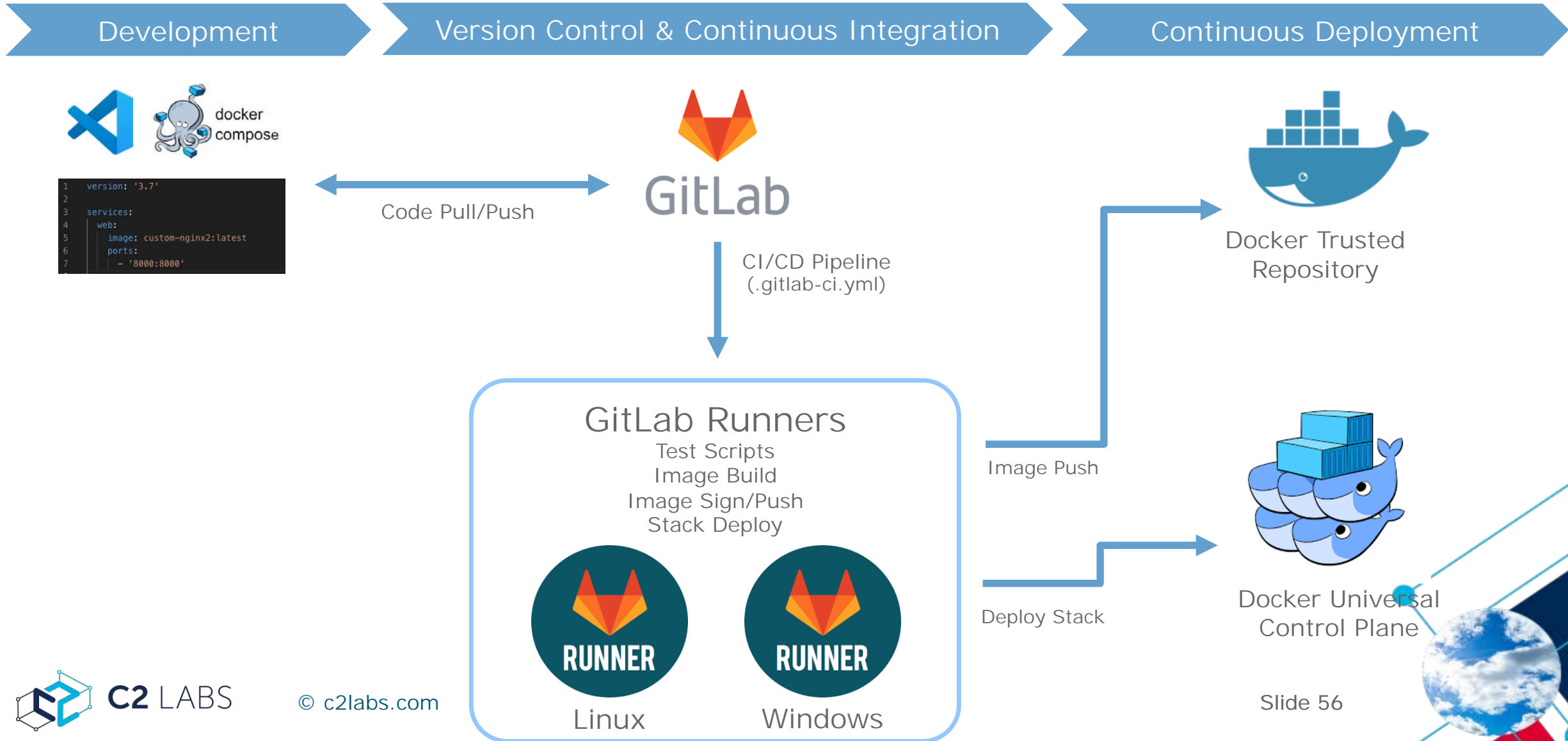
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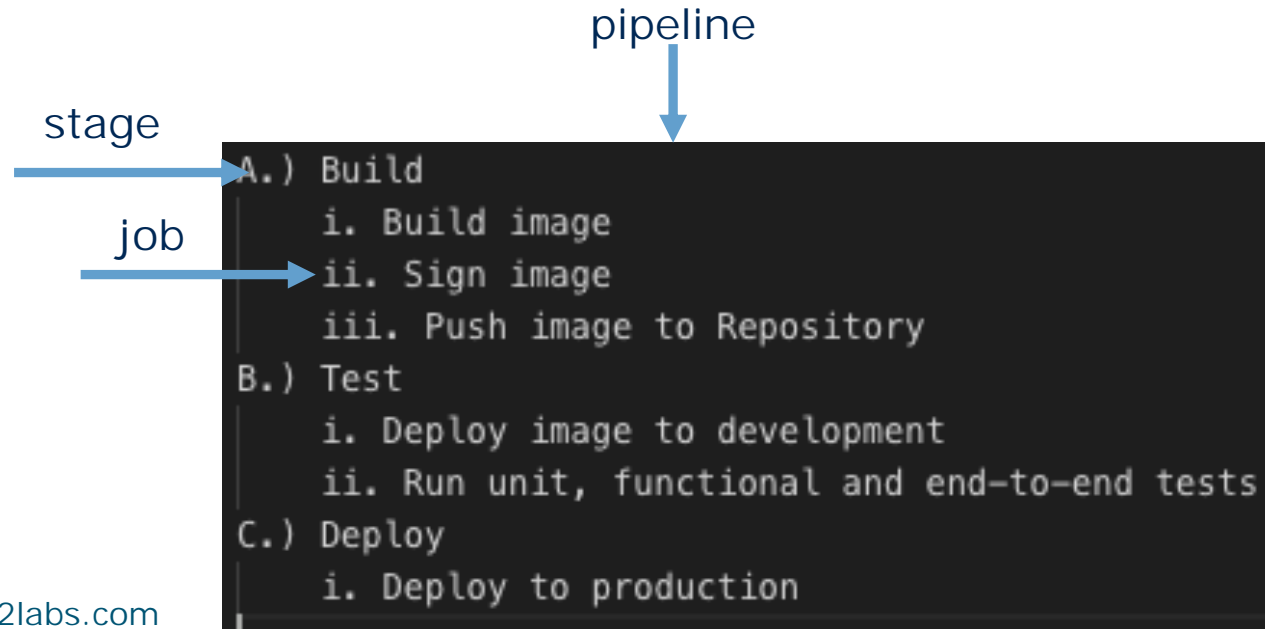


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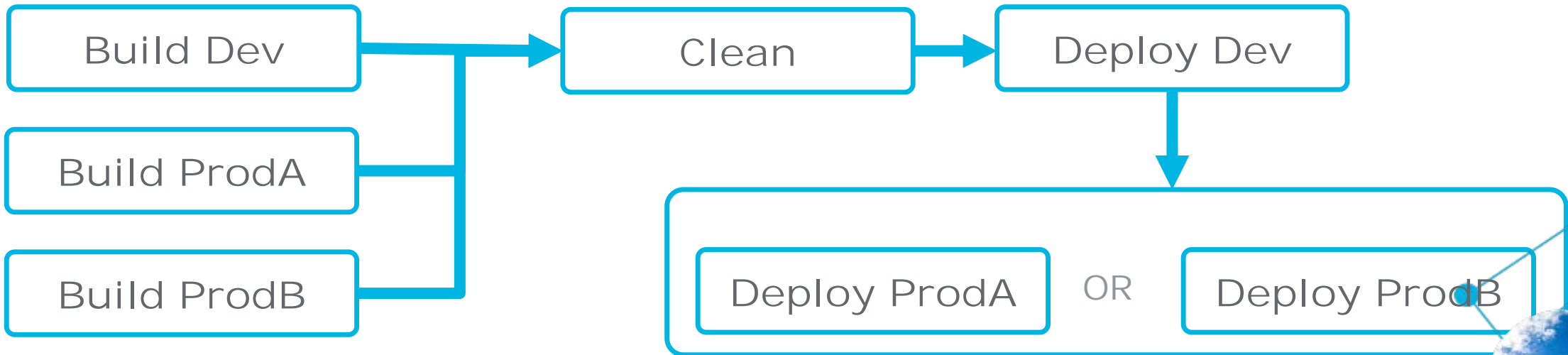


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- (CD) DEV deploy is triggered by commit to *dev* or *master* branch
- (CD) PROD deploy is triggered via a Tag and a Manual start by user with the right permissions

The screenshot displays the GitLab web interface for a pipeline run. The top navigation bar includes 'Projects', 'Groups', 'Activity', 'Milestones', and 'Snippets'. The left sidebar shows the project structure with 'CI / CD' and 'Pipelines' highlighted. The main content area shows a pipeline run for 'application-containerization' with a 'passed' status. The pipeline is titled 'Migrate to UtilityOps Collection' and shows 10 jobs completed in 2 minutes and 24 seconds. The pipeline stages are 'Build', 'Clean', and 'Deploy'. The 'Build' stage has three jobs: 'build_and_push_...', 'build_and_push_j...', and 'build_and_push_l...'. The 'Clean' stage has one job: 'cleanup_task'. The 'Deploy' stage has three jobs: 'deploy_task_dev', 'deploy_task_...', and 'deploy_task_...'. Each job has a green checkmark indicating it passed.

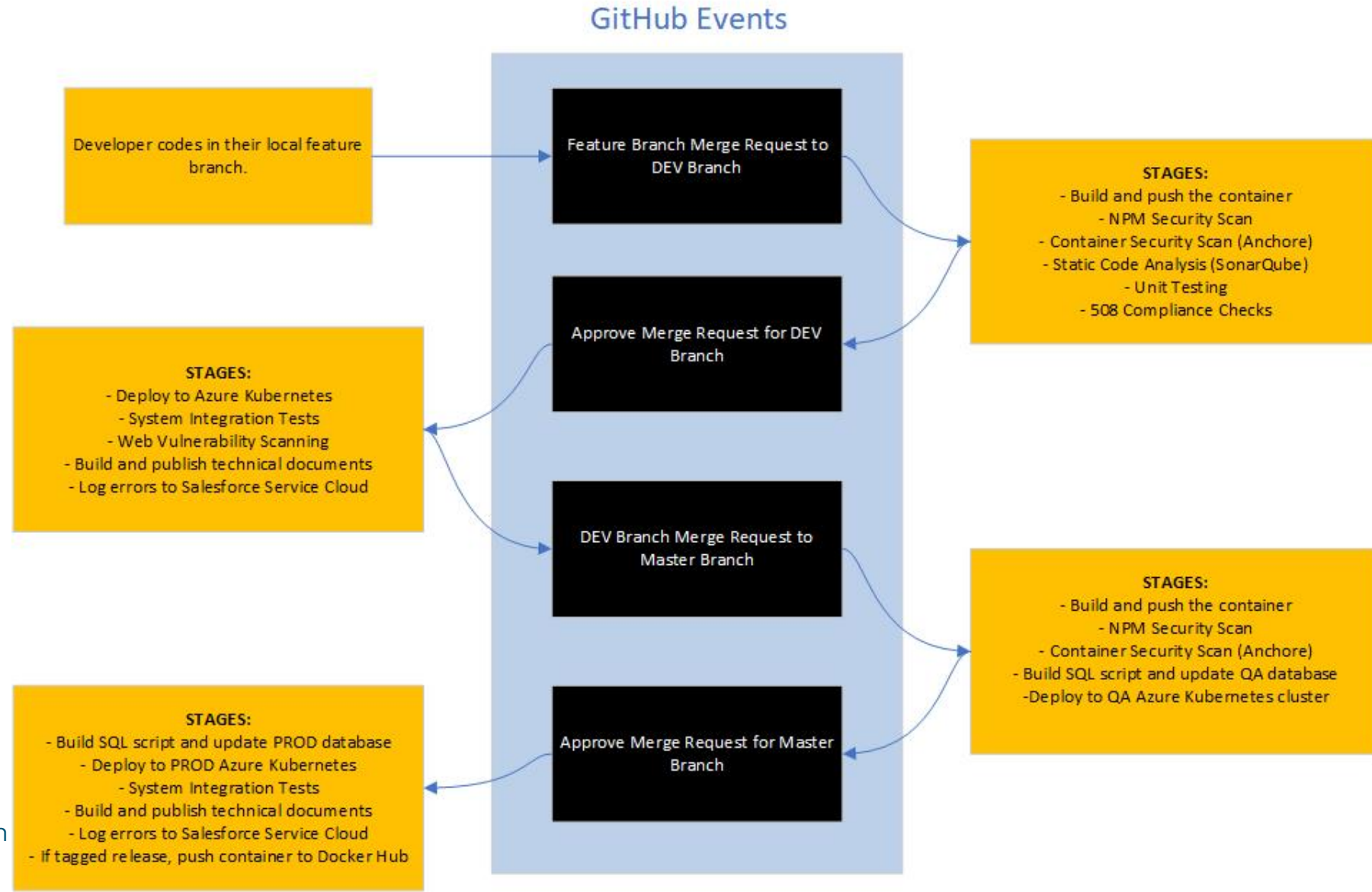


Commercial Tool Build Pipeline

- CI/CD triggered based off of protected branch strategy
- CI steps generally deploy on a Pull Request (PR)
- CD steps generally deploy after approving the PR
- Testing, documentation, database upgrades, security scanning, logging, and Kubernetes deployment are done from the Feature branch -> DEV -> QA -> PROD with no manual labor; unlocking our developers full potential
- Governance is employed by adding workflow approvals to PRs
- All logs are maintained in Azure DevOps for Configuration Management

ATLAS CI/CD High-Level Workflow

NOTE: Features continue to be expanded over time for robustness.



Multi-Stage Pipeline

- Container is built and pushed to our private Azure Registry
- Security scans are done via NPM Audit and Anchore
- Source code scan is done by SonarQube – pass/fail logic is coded into the stages
- Artifacts are stored for troubleshooting or later forensics if a defect escapes

#20200123.2 potential 2.2 build issue fixes
on Atlas CI

Summary Aqua Scanner Report

Pull request by jedthornock

C2-Labs/atlas	567	d23c047	Duration:	Tests:	Changes:	Work items:	Artifacts:
Today at 10:47 AM			19m 41s	Get started	1 commit	-	1 published

Errors 2 **Warnings** 171

Code_Scans • SonarQube_Scan • Publish SonarQube Results

- ✖ [SQ] API GET '/api/ce/task' failed, error was: {"code": "ETIMEDOUT", "errno": "ETIMEDOUT", "syscall": "connect", "address": "52.147.211.190", "port": 9000}
- ✖ [SQ] Could not fetch task for ID 'AW_T13SaFucfFazEhzop'

Stages Jobs

Build 1 job completed 4m 19s	Security_Scans 1 job completed 1 artifact 11s	Code_Scans Failed 14m 39s
		SonarQube_Scan 14m 36s

[Rerun failed jobs](#)



GitHub Integration

- Leveraged webhooks/plugins to show pipeline progress in the GitHub PR
- Details link to Azure DevOps to view artifacts and raw logs
- Governance enforces code reviews, pipeline checks passing, and two-person rule for a manager to approve code changes into a protected branch

Wiki Update #575

[Open](#) howieavp76 wants to merge 1 commit into `dev` from `wiki`

Conversation 0 Commits 1 Checks 2 Files changed 1 +0 -0



howieavp76 commented now

- CI/CD flowchart

Wiki Update

798959e

Add more commits by pushing to the `wiki` branch on `C2-Labs/atlas`.



Review required

At least 1 approving review is required by reviewers with write access. [Learn more.](#)

Some checks were not successful

2 failing and 1 in progress checks

[Hide all checks](#)

Atlas Build Prod Failing after 17s — Build #20200124.1 failed

[Details](#)

Atlas Build Prod (Build Build_Push_Image) Failing after 9s — Build Build_Push_...

[Details](#)

Atlas CI In progress — This check has started...

[Details](#)

Merging is blocked

Merging can be performed automatically with 1 approving review.

As an administrator, you may still merge this pull request.

[Merge pull request](#)

You can also open this in [GitHub Desktop](#) or view [command line instructions](#).

[Edit](#)

Reviewers

No reviews—at least 1 approving review is required.

Assignees

No one—assign yourself

Labels

None yet

Projects

None yet

Milestone

No milestone

Notifications

[Customize](#)

[Unsubscribe](#)

You're receiving notifications because you authored the thread.

1 participant



[Lock conversation](#)

Integration with Azure DevOps

- Details pulled into GitHub and stored with the PR
- History maintained over time for full configuration management traceability
- Builds and deploys are tagged with the commit number to allow for easy rollbacks in Kubernetes

Search or jump to... Pull requests Issues Marketplace Explore

C2-Labs / atlas Private

Code Issues 137 Pull requests 1 Actions Projects 19 Wiki Security Insights Settings

Workflow Updates #572

Merged howieavp76 merged 10 commits into master from dev 4 hours ago

Conversation 0 Commits 10 Checks 4 Files changed 64

Merge pull request #555 from C2-Labs/456_workflow_creation_from_modul... ca0a665

Azure Pipelines

- ✓ Atlas Build Prod
- ✓ Atlas Build Prod (Build Buil...
- ✓ Atlas Build Prod (QA_DBM...
- ✓ Atlas Deploy Dev

Azure Pipelines / Atlas Deploy Dev
succeeded 5 hours ago in 17s

Build #20200123.2 succeeded

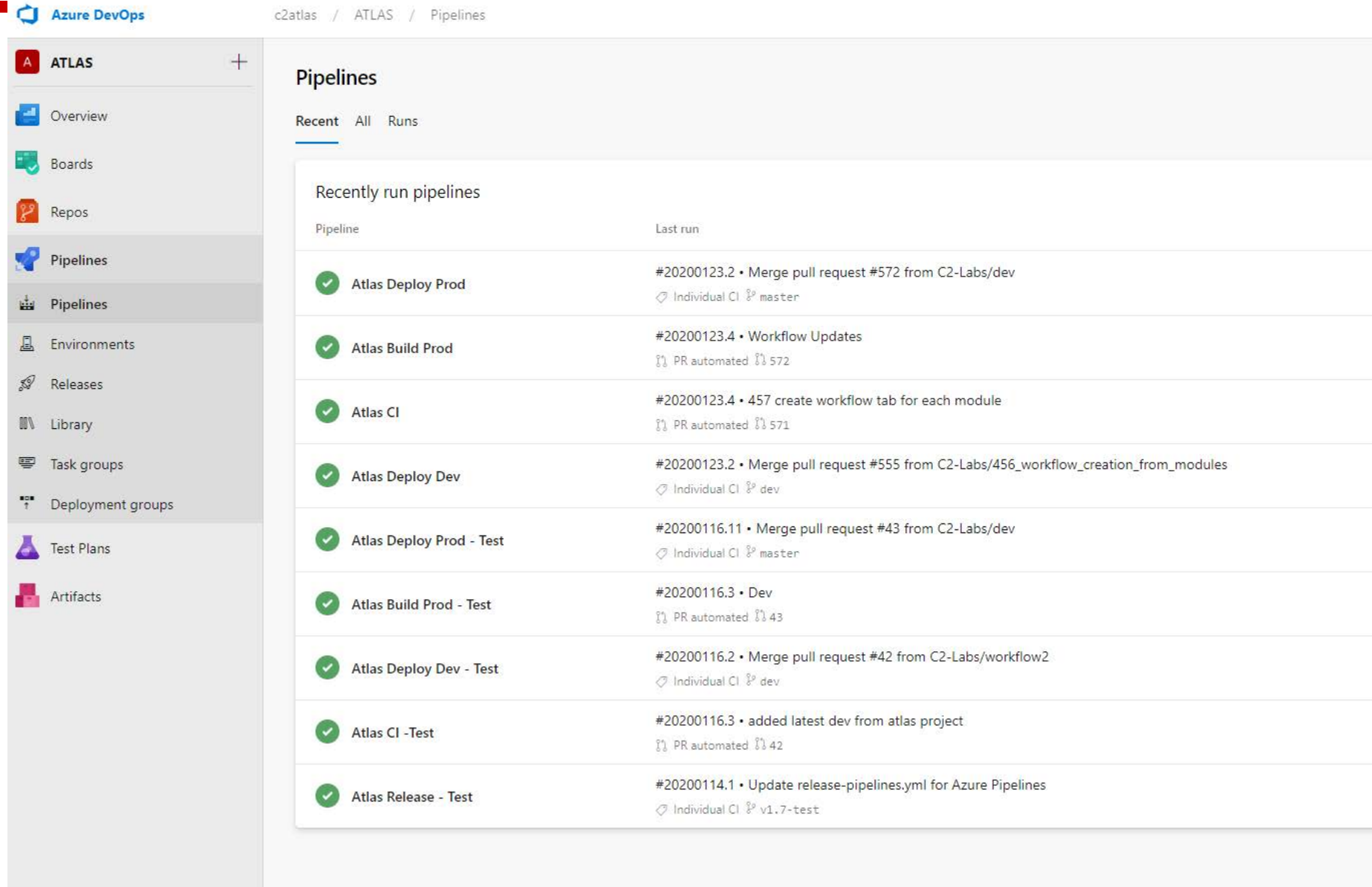
0 errors / 0 warnings

View more details on Azure Pipelines



Azure DevOps Pipelines

- Multiple pipelines configured that are triggered based on GitHub branching logic
- Each pipeline has one or more stages to the job
- Each stage has one or more tasks that execute
- Pipeline configurations are developed in source code and under configuration management in GitHub
- NOTE: Pipeline changes are tested in a separate cloned project prior to being introduced into the Production pipeline



The screenshot displays the Azure DevOps interface for the 'ATLAS' project. The left sidebar contains navigation options: Overview, Boards, Repos, Pipelines (selected), Environments, Releases, Library, Task groups, Deployment groups, Test Plans, and Artifacts. The main content area shows the 'Pipelines' section with tabs for 'Recent', 'All', and 'Runs'. Under 'Recently run pipelines', a table lists the following:

Pipeline	Last run
Atlas Deploy Prod	#20200123.2 • Merge pull request #572 from C2-Labs/dev Individual CI master
Atlas Build Prod	#20200123.4 • Workflow Updates PR automated 572
Atlas CI	#20200123.4 • 457 create workflow tab for each module PR automated 571
Atlas Deploy Dev	#20200123.2 • Merge pull request #555 from C2-Labs/456_workflow_creation_from_modules Individual CI dev
Atlas Deploy Prod - Test	#20200116.11 • Merge pull request #43 from C2-Labs/dev Individual CI master
Atlas Build Prod - Test	#20200116.3 • Dev PR automated 43
Atlas Deploy Dev - Test	#20200116.2 • Merge pull request #42 from C2-Labs/workflow2 Individual CI dev
Atlas CI -Test	#20200116.3 • added latest dev from atlas project PR automated 42
Atlas Release - Test	#20200114.1 • Update release-pipelines.yml for Azure Pipelines Individual CI v1.7-test





Stephen Naumann
Senior Advisor – Data Center
Practitioner
GSA

Cloud Smart, Application Rationalization, and ICAM

NIST

**National Institute of
Standards and Technology**

10:45 am U.S. Department of Commerce

TETRATE



GSA OGP

DCOI, Cloud Smart, & ICAM

Steve Naumann, Senior Advisor | January 2020

Overview

Data Center and Cloud Optimization Initiative PMO

Data Center Optimization Initiative

Closure &
Consolidation
Optimization

Cloud Smart

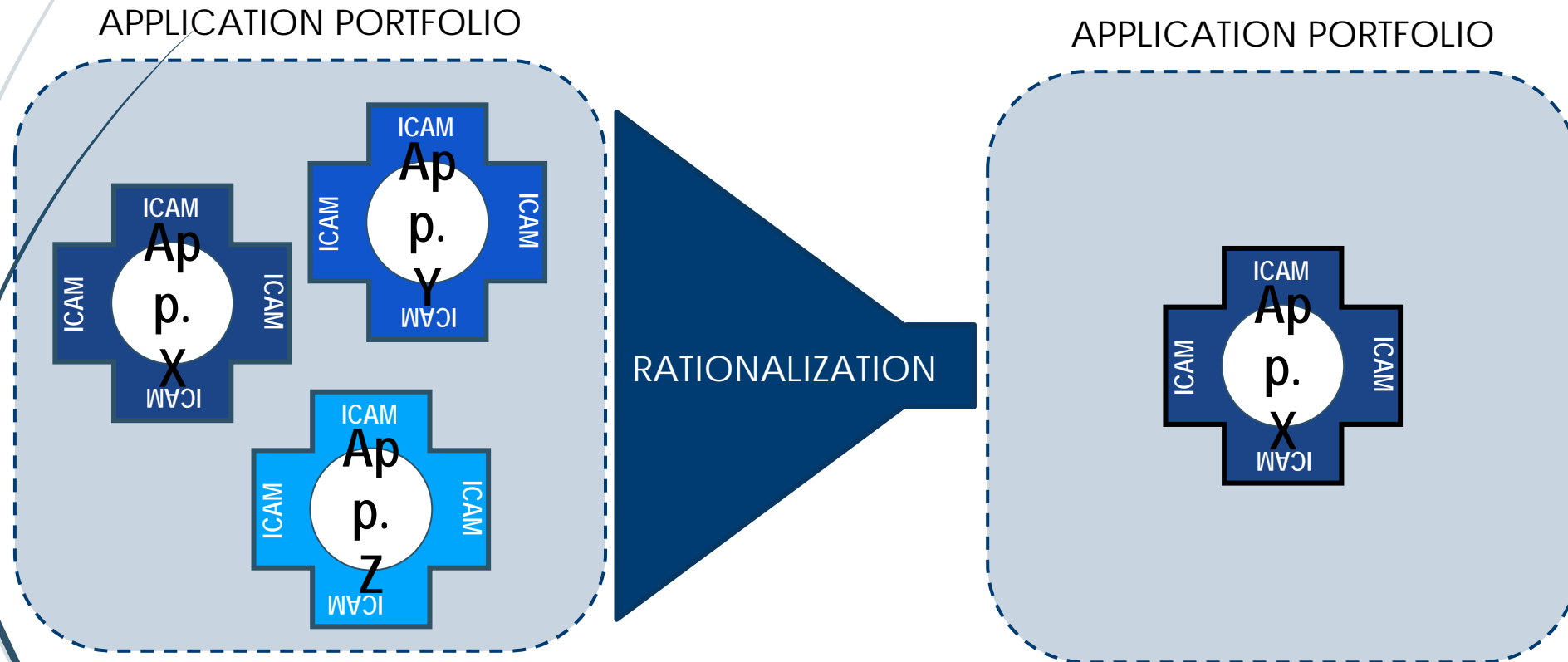
Workforce
Security
Procurement

Application Rationalization

Review; Reward;
Refresh; Remove

Application Rationalization

- What is **Application Rationalization**?
- How is it connected to **ICAM**?



Cloud Policy Landscape

Implications for ICAM

Cloud Smart Strategy encourages:

- SLAs for access to log data
- Governance model aligned to ICAM systems

Other policies and paradigms:

- TIC 3.0
- Zero Trust Networks
- The Internet of Things

Cloud Adoption & ICAM

Challenges of Moving to Cloud

Recommended Process:

- Assess enterprise capabilities
 - Federation?
 - Fault tolerant?
 - Secure?
- Perform an ICAM gap analysis
- Address gaps (buy new or modify existing)

Goals in Common

Goal 1

Strengthen the Federal Government's information and physical security

- 1.1 Ensure that only authorized users can access protected resources

- 1.2 Enable agencies to establish and manage proven, trusted identities for all system users

- 1.3 Support the adoption and use of credentials that provide an efficient, secure means of accessing resources

- 1.4 Monitor user behavior and system security through diagnostics, analytics, and reporting

Goal 2

Enable information sharing and safeguarding within the Federal government and with external partners

- 2.1 Automate information discovery and access across the Federal Government in all security domains

- 2.2 Facilitate external partnerships by aligning ICAM business processes and technical interfaces with partners' best practices

- 2.3 Enable interoperability by standardizing information sharing agreements and establishing a common ICAM data architecture across government

Goal 3

Enable agencies to securely deliver mission services to customers

- 3.1 Design systems to allow customers frictionless access to information and resources

- 3.2 Foster trust by building protections for privacy and civil liberties into business processes and technical solutions

Goal 4

Support Federal Government efficiency in information technology

- 4.1 Streamline ICAM governance and program management within each agency or department

- 4.2 Standardize and automate ICAM business processes across the Federal Government

- 4.3 Establish shared service platforms and reuse or repurpose existing hardware and infrastructure when possible



Questions?
Email dccoi@gsa.gov



VIRTUAL AUDIENCE

Questions (Slido)

NIST

**National Institute of
Standards and Technology**
U.S. Department of Commerce

11:15 pm

TETRATE

Ad-Hoc Panel: What is in Your Mind When You Think ZTA & DevSecOps

Moderator 1:
Jeyappragash Jeyakeerth
Co-Founder,
Tetrade



Panelist 1

This is an ad-hoc panel and the panelists will be selected randomly from the members of the audience that expressed interest in participating in this dialog by registering in advance.



Panelist2



Panelist3

Moderator 2:
Michaela Iorga
Senior Security Technical Lead,
NIST



Panelist4

11:30 am



Day 2
Closing Remarks
and Adjourn

5:00 pm

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce

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