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Delivering Change to the Cloud

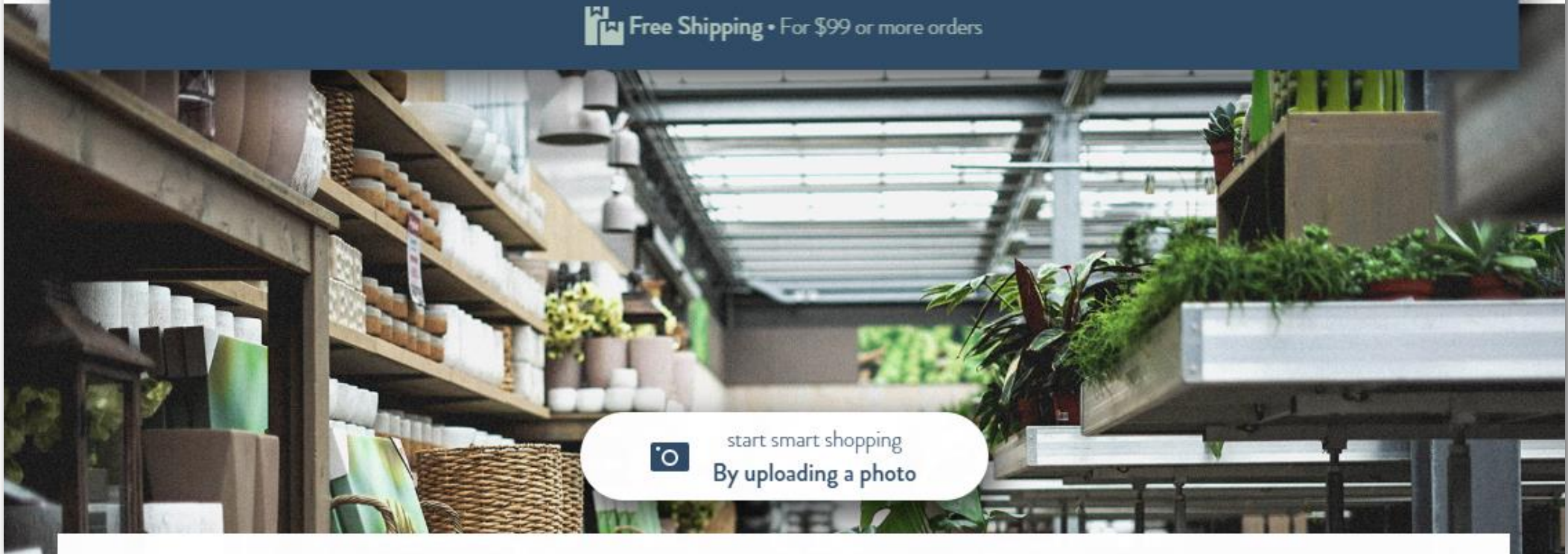
Tailwind Traders



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DevOps Accelerates Delivery

“DevOps is the union of **people**, **process**, and **products** to enable continuous delivery of value to your end users.”

— Donovan Brown



CI and CD

Continuous Integration

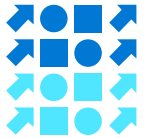
Continuous Delivery

Continuous Deployment

Continuous Integration



Your changes work with everyone else's changes



Your code still builds



Your tests still run



CI and CD



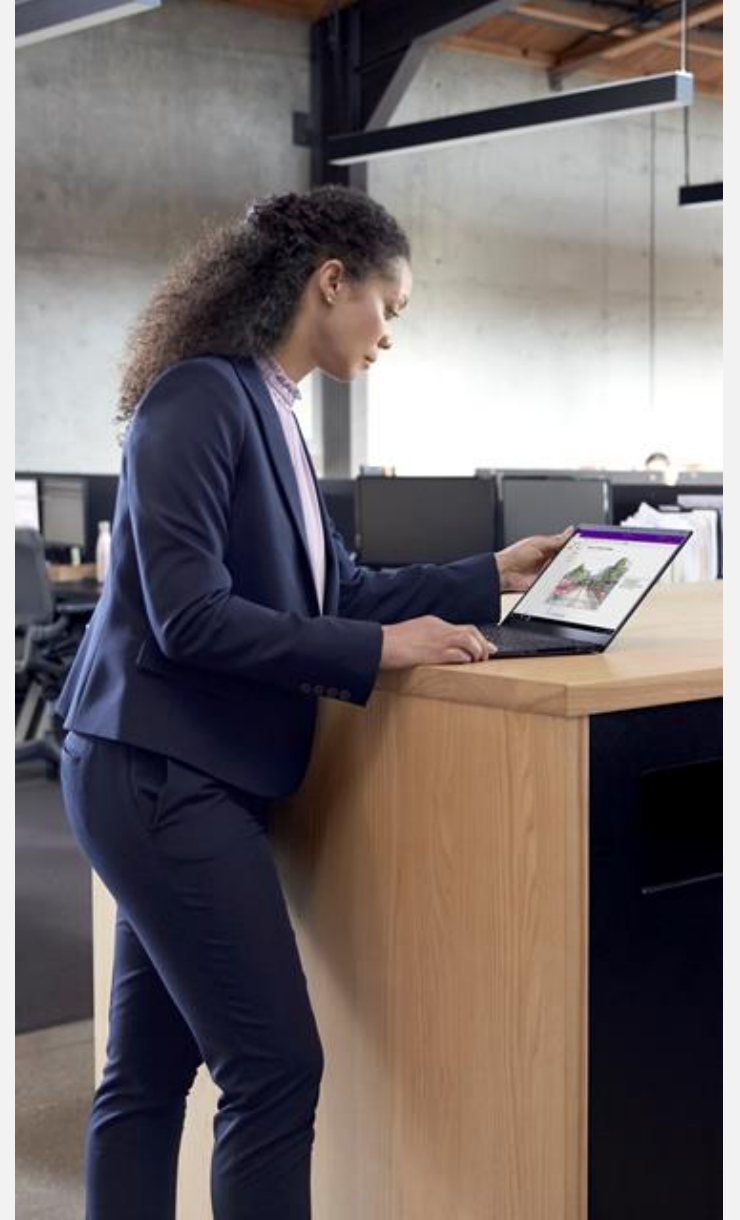
Continuous Integration – my stuff works with everyone else's



Continuous Delivery – My pipeline gives me a deployable thing



Continuous Deployment – I deploy that thing



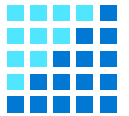
Continuous Delivery



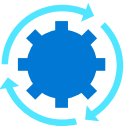
You have a deployable piece of work



Including infrastructure and dependencies



Everything you need to deploy



Continuous Deployment



Actually deploy that piece of work



Doesn't have to be to Production



Trustworthy and reproducible



Always have Continuous Deployment to
somewhere.

Don't assume this version will deploy as cleanly
as the last.

Protip

GitHub Actions

CI/CD with GitHub Actions

GitHub Actions



Automation for any
software workflow



Dozens of events that
can trigger workflows



Continuous Integration
and Continuous
Deployment

Protecting Production

We might not want every change to go to Production

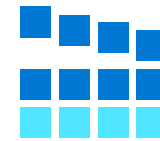
Pull Request Workflows



Workflow triggers
on PR

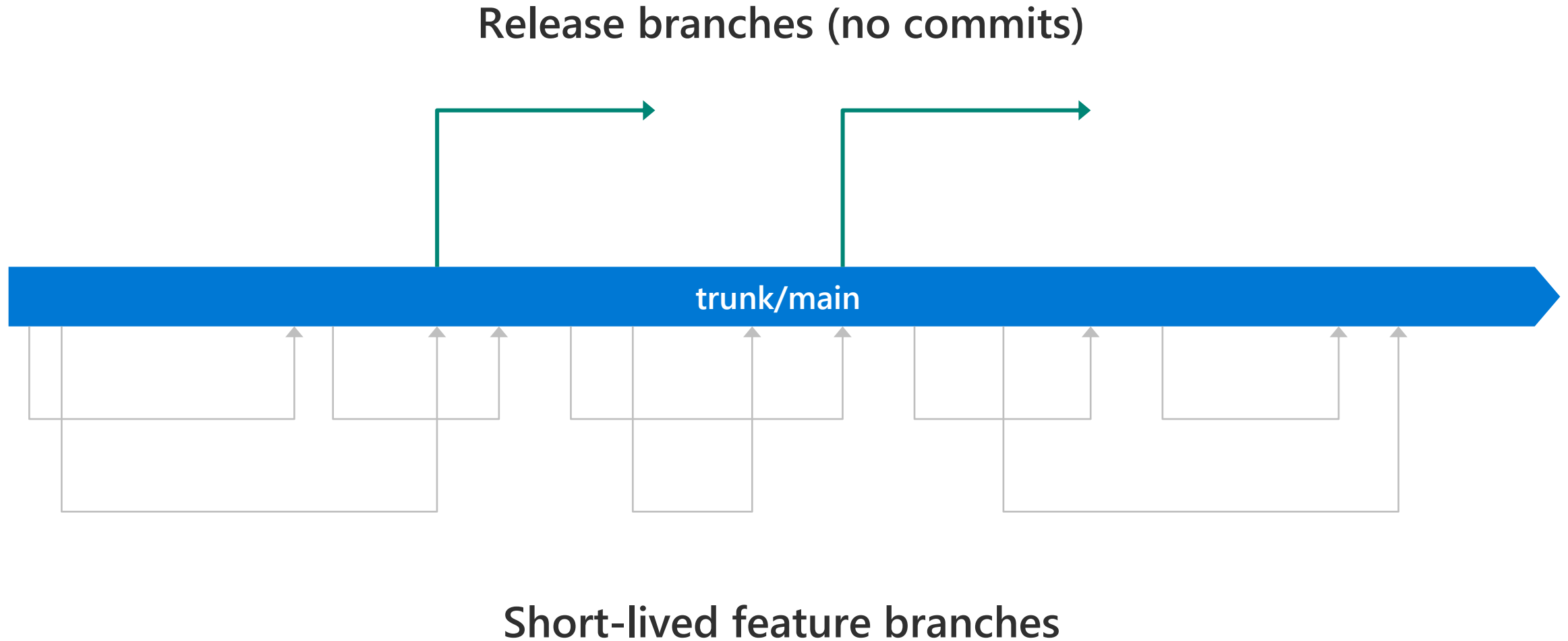


Build, test, deploy

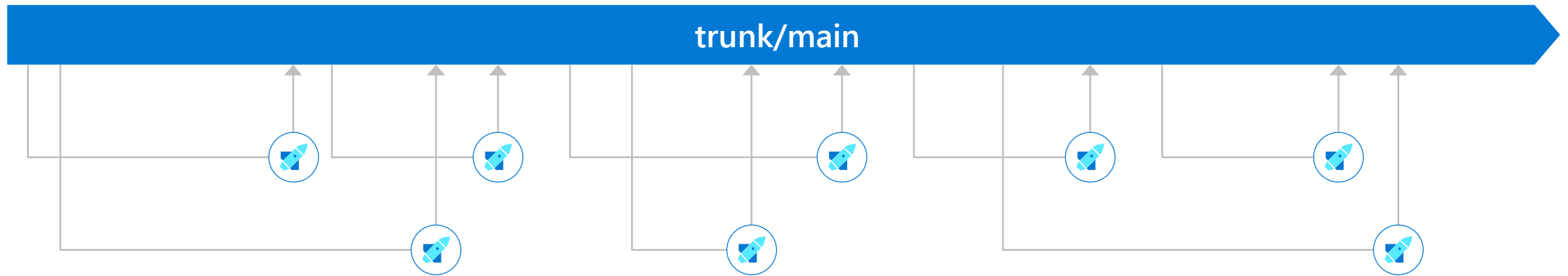


Checks before merging
to main branch

Trunk-based development

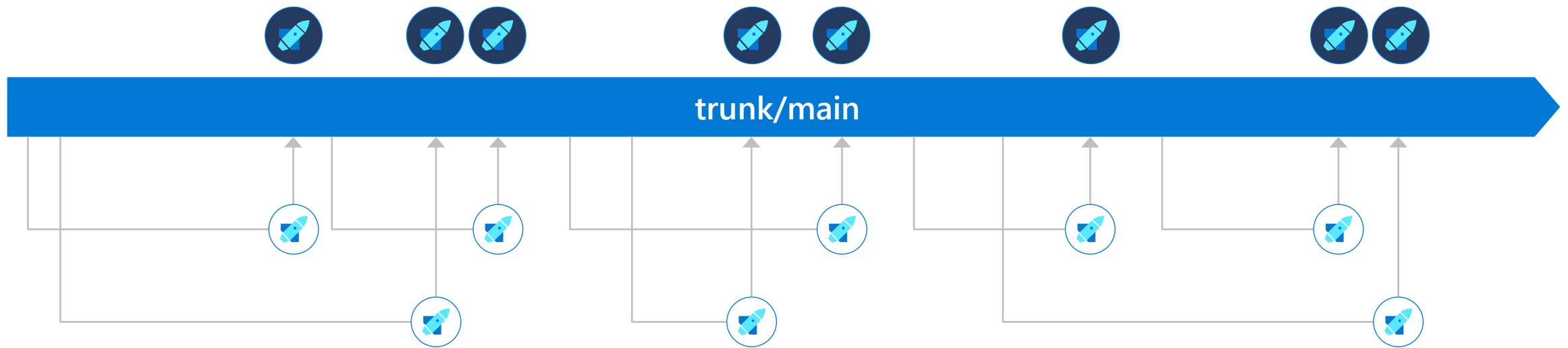


Trunk-based development



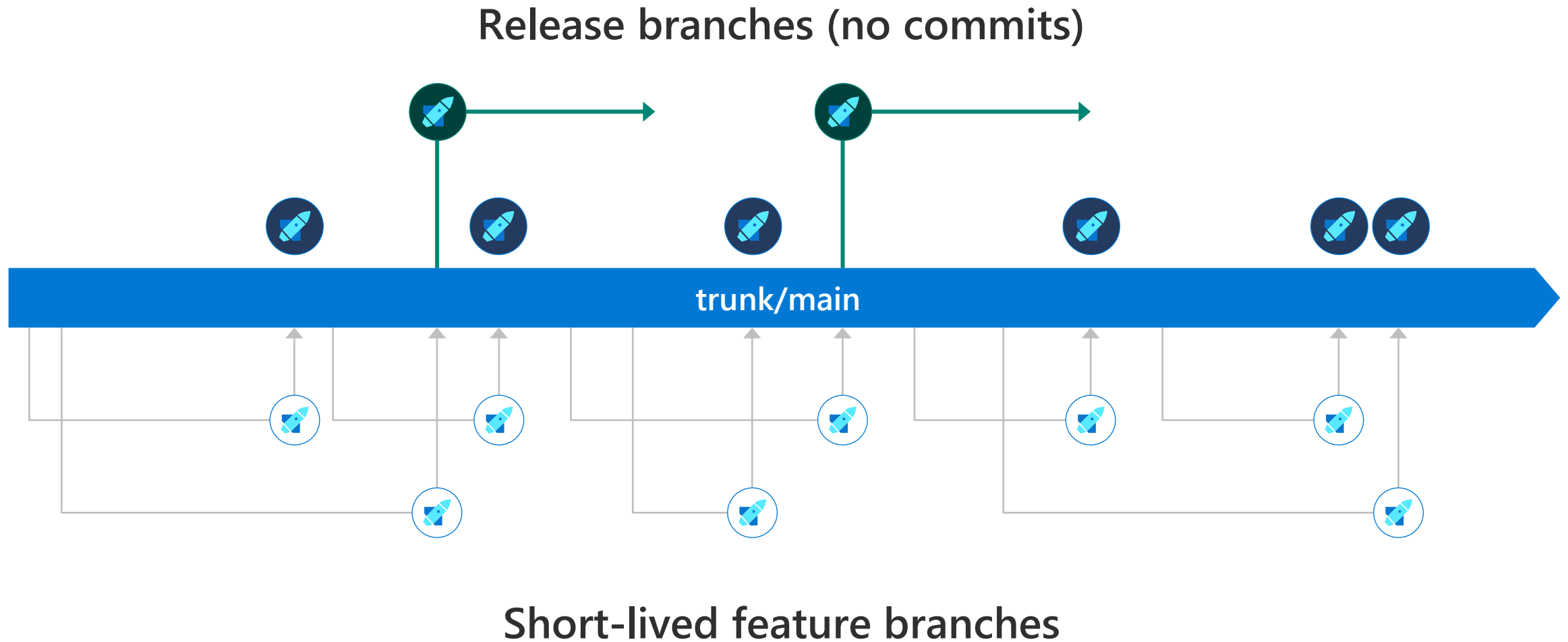
Short-lived feature branches

Trunk-based development



Short-lived feature branches

Trunk-based development



ChatOps

GitHub Actions

Azure App Service

Microsoft Teams

Deployment Slots



Staging

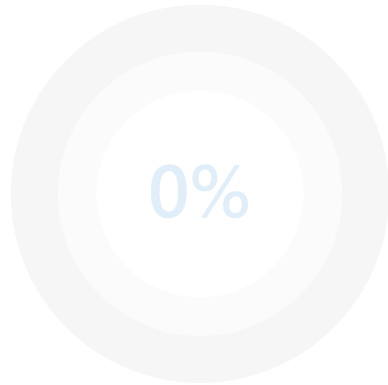


Production

Deployment Slots



Staging



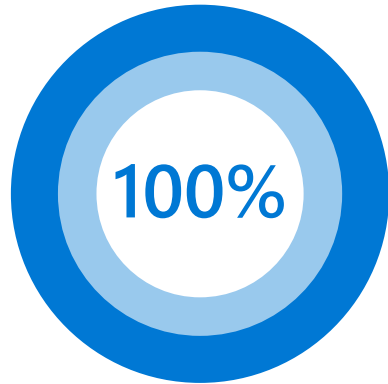
Production



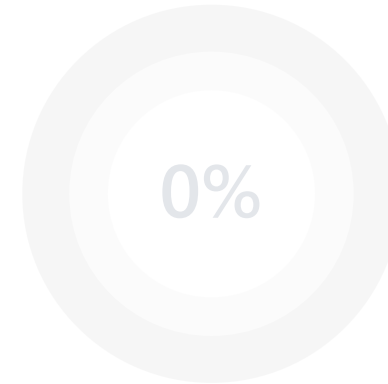
Deployment Slots



Staging



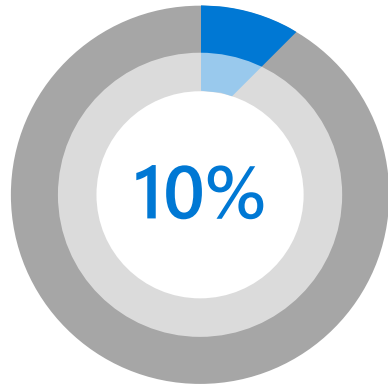
Production



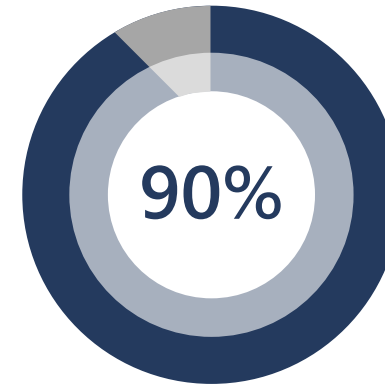
Deployment Slots



Staging



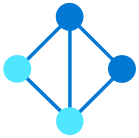
Production



Microsoft Teams



A hub for team collaboration



Webhooks and Connectors



Adaptive cards



ChatOps with Teams



GitHub



Teams



App Service

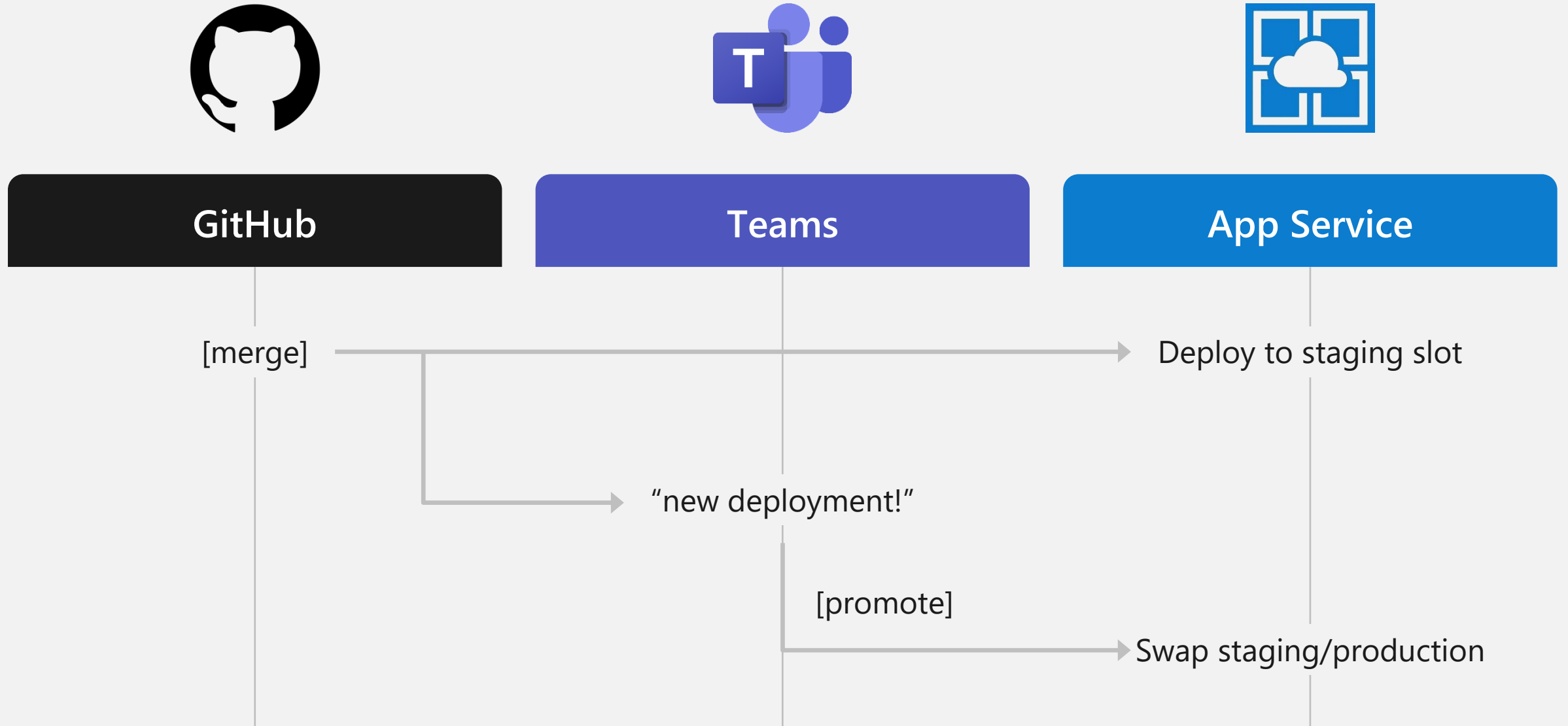
[merge]

Deploy to staging slot

"new deployment!"

[promote]

Swap staging/production



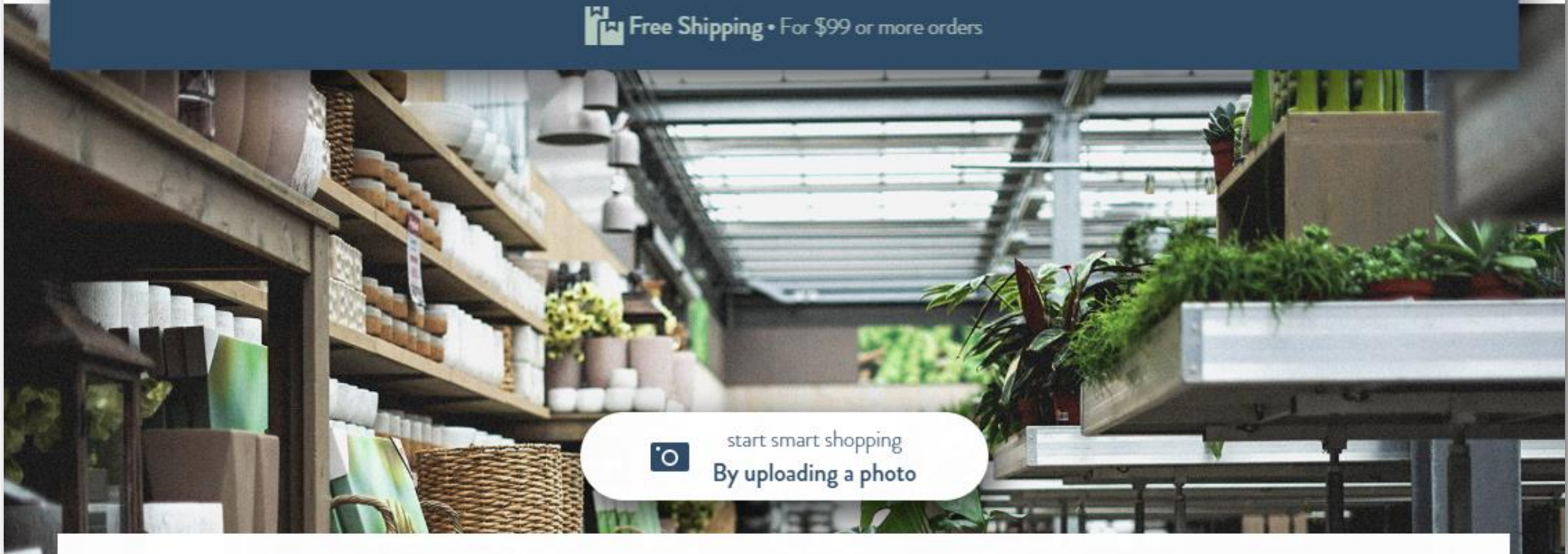
Tailwind Traders



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Handling Keys and Credentials

Keeping secrets secret

GitHub Secrets

```
- name: Deploy to Website
  uses: azure/webapps-deploy@v2
  with:
    app-name: ${ env.AZURE_WEBAPP_NAME }
    publish-profile: ${ secrets.PUBLISH_PROFILE_STAGING }
    package: './Source/Tailwind.Traders.Web/staging'
```

GitHub Secrets

The screenshot shows the GitHub interface for a repository named 'Damovisa / My Repository'. The top navigation bar includes links for Pull requests, Issues, Codespaces, Marketplace, and Explore. The repository's main navigation bar shows options like Code, Issues, Pull requests, Actions, Projects, Security, Insights, and Settings (highlighted with a red box). On the left sidebar, the 'Secrets' option is highlighted with a red box. The main content area is titled 'Secrets' and features a 'New secret' button (highlighted with a red box). Below the title, there is explanatory text about secrets and a list of existing secrets.

Options

Manage access

Security & analysis

Branches

Webhooks

Notifications

Integrations

Deploy keys

Secrets

Actions

Secrets

[New secret](#)

Secrets are environment variables that are **encrypted** and only exposed to selected actions. Anyone with **collaborator** access to this repository can use these secrets in a workflow.

Secrets are not passed to workflows that are triggered by a pull request from a fork. [Learn more](#).

AZURE_CREDENTIALS	Updated 13 days ago	Update	Remove
DOCKER_PASSWORD	Updated 13 days ago	Update	Remove
PUBLISH_PROFILE_STAGING	Updated now	Update	Remove

Azure Key Vault



Keys



Secrets



Certificates

Azure Key Vault

```
steps:
  - uses: actions/checkout@v2

  - uses: Azure/login@v1
    with:
      creds: ${ secrets.AZURE_CREDENTIALS }

  - uses: Azure/get-keyvault-secrets@v1.0
    with:
      keyvault: "TailwindTraders-ADO40-KV"
      secrets: 'DockerPassword'
      id: kvSecretAction

  - uses: Azure/docker-login@v1
    with:
      login-server: tailwindtradersado40.azurecr.io
      username: tailwindtradersado40
      password: ${ steps.kvSecretAction.outputs.DockerPassword }
```

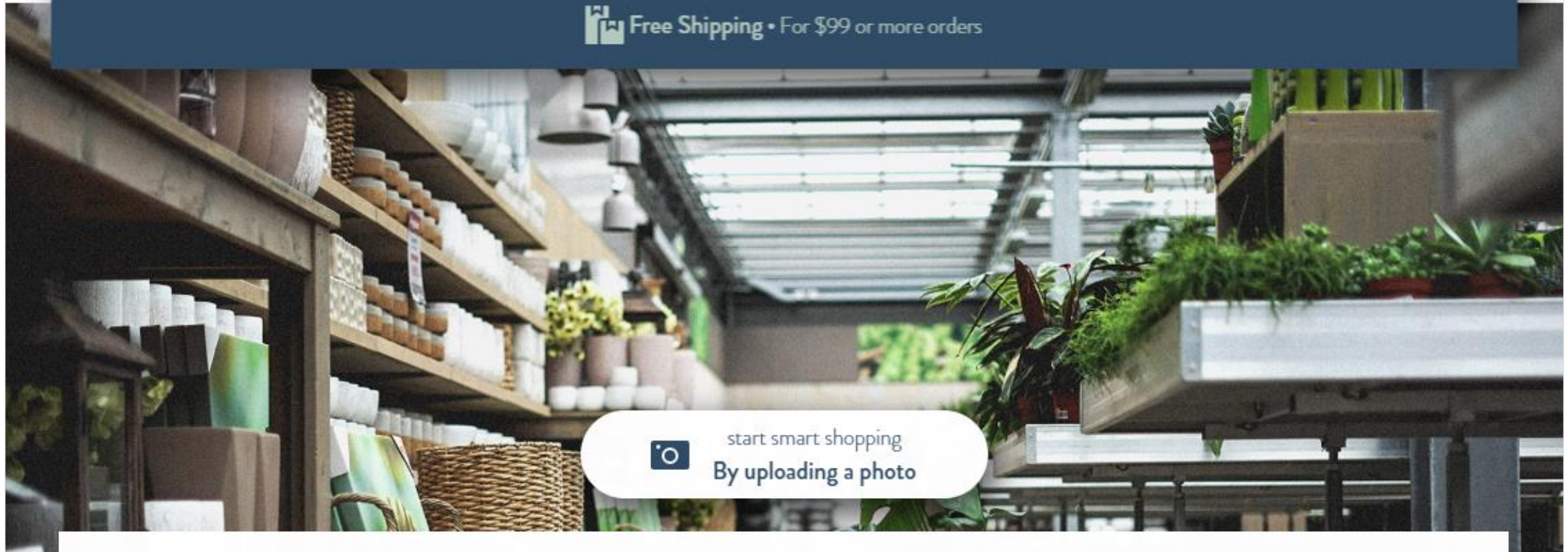
Tailwind Traders



Login



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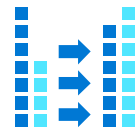


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Future Ideas for Tailwind Traders



Rotate credentials in Key Vault when an admin asks a Teams Bot



Automatically build a new dev environment and fork a repository based on a properly-formatted issue



Pull commit messages since last production release and build release notes for customers

Summary



Add CD to your pipeline!



Continuously deploy *somewhere*



Protect production with ChatOps



Centralize Secrets Storage





Operating Software In the Cloud



Welcome to the Tailwind Team





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RECOMMENDED



Plumbing



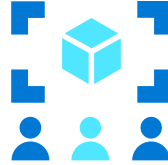
Electrical

Agenda



Responsible Incident Response

If everyone is responsible for incident response, no one is.



No Magic People or Machines

Secrets, passwords, and authentication should have limited dependencies on specific humans.



Tooling over Tasks

Let machines do repetitive tasks while your humans build the tools to solve the problems.

Via Jeffrey Snover in 2009

Technical Fellow and Creator of PowerShell

Big message:

In a lousy economy, NOTHING is more important than automation.

Productivity == career security

What is DevOps?

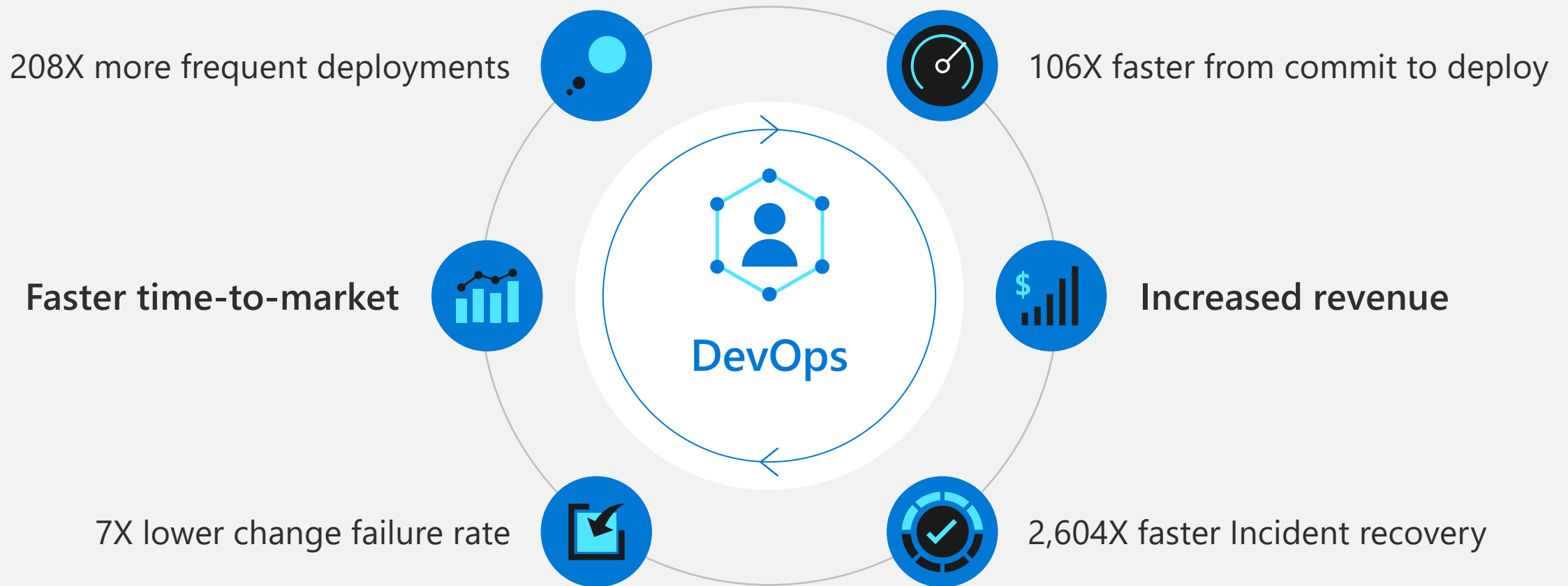
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High performance DevOps Companies Achieve Developer Velocity by ...



People



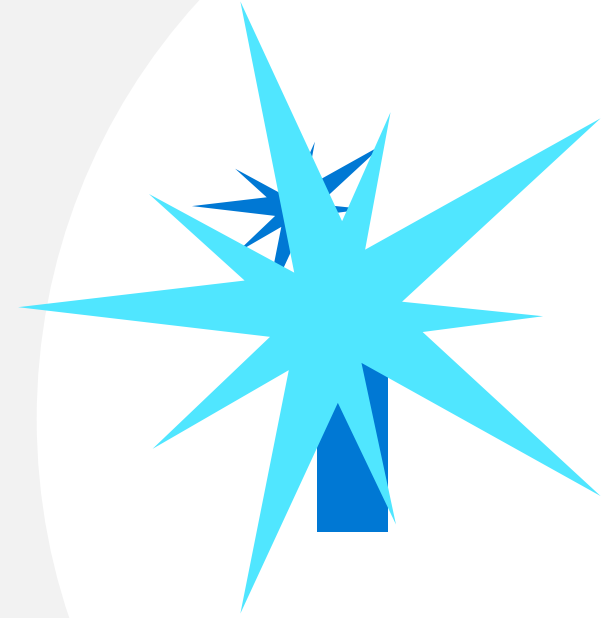
DEV

-----WALL OF CONFUSION-----

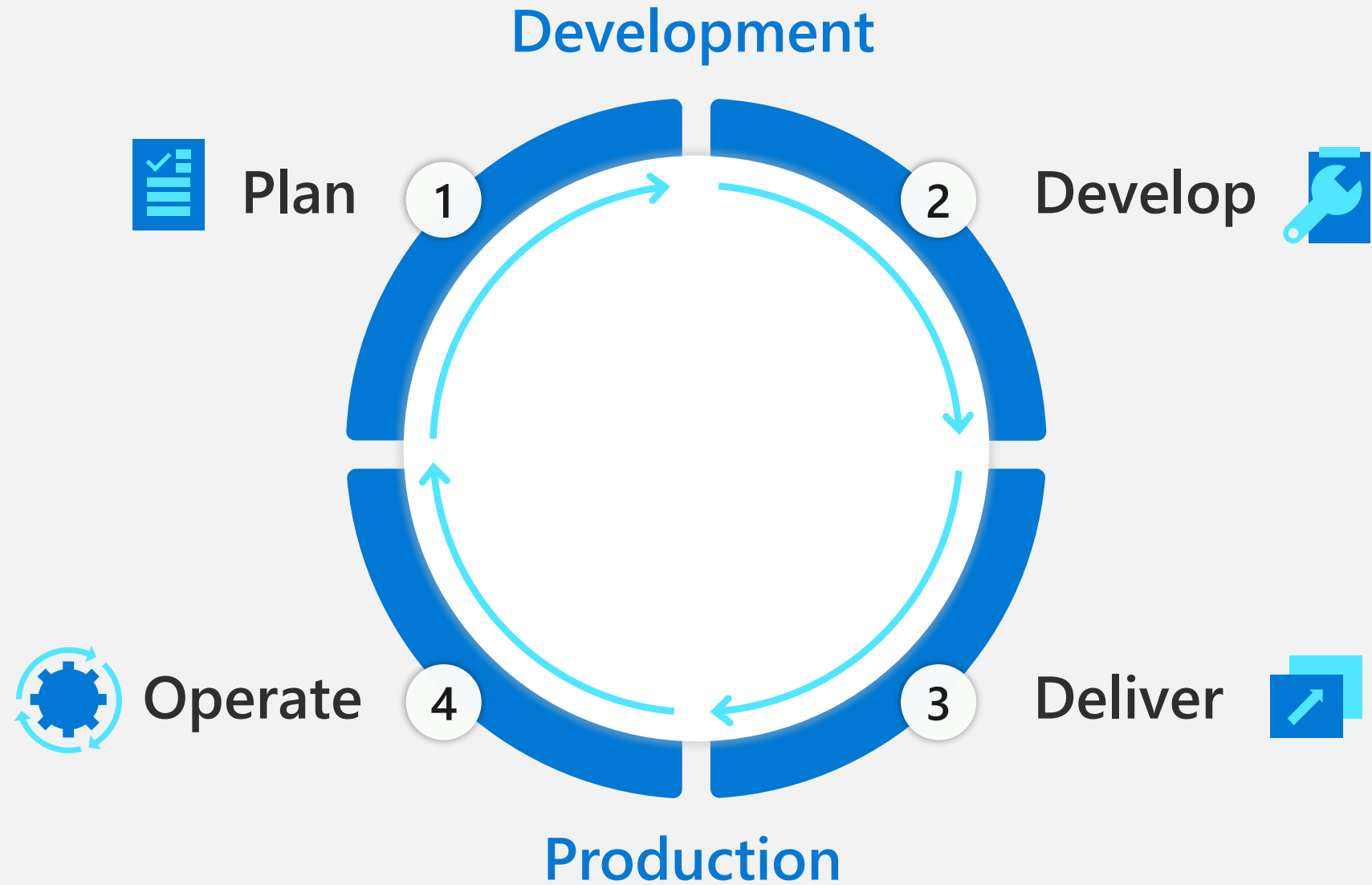


OPS

=



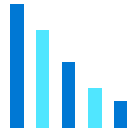
Process



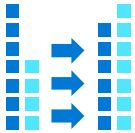
Responsible Incident Response



Disaster Strikes!



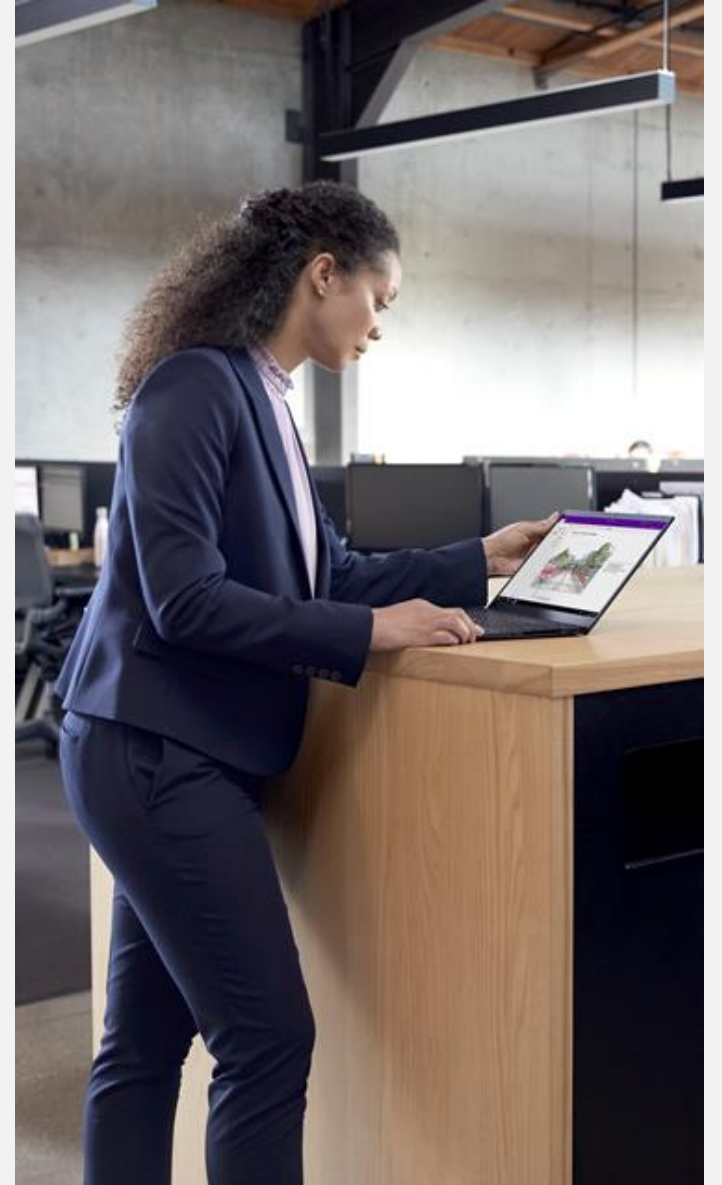
Our website is down!



Email notifications went out...



And time goes by...



Incident Response

Incident Notifications are not:



Broadly distributed



Informational only



Heartbeat or logging

Incident Response

Incident Notifications are:



Specifically directed

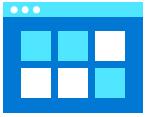


Actionable



In need of human intervention

Establishing a Basic Designated Responsible Individual Rotation



Create an DRI Schedule using Shifts in Microsoft Teams



Create a Logic App to Notify the Correct DRI



Update the Alert Action to Target the Logic App



Demo

Creating a Basic DRI Notification

No Magic People or Machines



Identifying the Problem



A previous engineer recently left for a new role



Several components of the application infrastructure had access control tied to that account



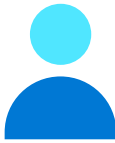
This led to cascading failures across the environment



Identity in Azure



Identity authentication over keys



Managed identities and service principals
over user principals



Put keys and other secrets in key store



Demo

Assigning a Managed Identity

Tooling over Tasks

Via Jeffrey Snover in 2010

Technical Fellow and Creator of PowerShell

Can't see the value of automation?!! At some point it's an IQ test.

Reducing Manual Intervention in Production



Move manual, repetitive tasks to automation



Minimize long term user principal role assignments



Use a central secret store



Demo

Using Logic Apps and Microsoft Teams to Create Flexible Automation



Review



Review



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