Advanced Pull Requests Checks and Policies

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About me:

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Microsoft Most Valuable Professional

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Our Products:

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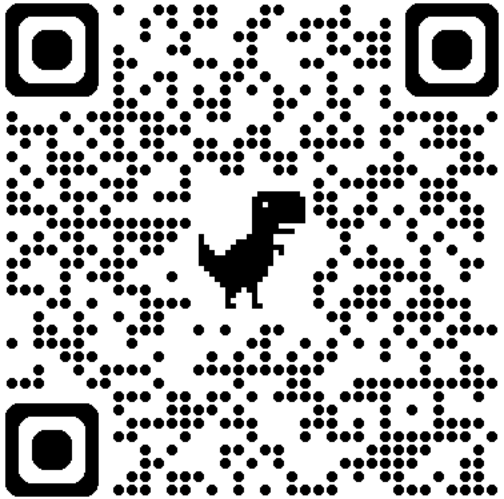
Slide Download



https://4tecture.ch/events/dwx25-advancedpullrequest


DEMO
Pull Request

Advanced Pull Requests

PR Deployments - Why?

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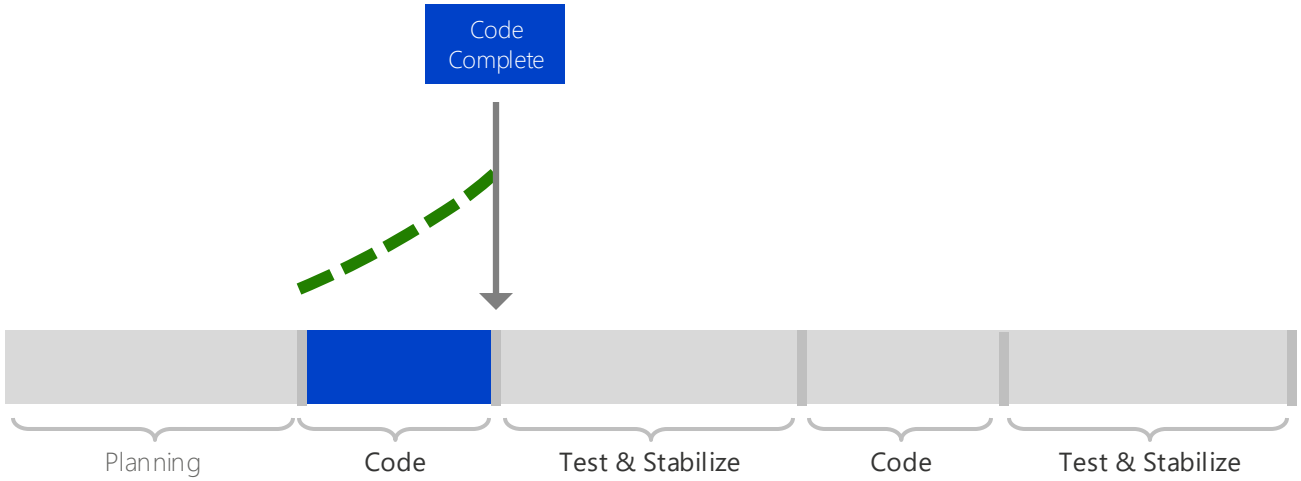
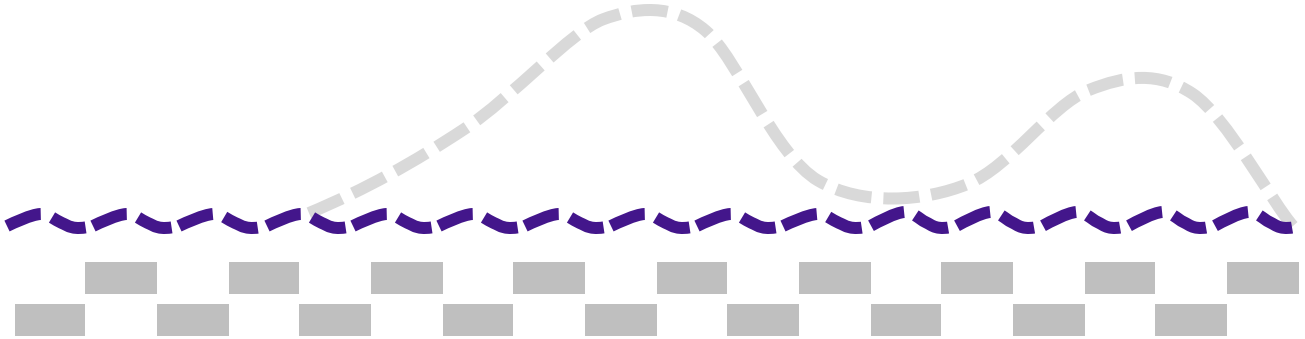
Fail fast!

Before


Code Complete
Planning
Code
Test & Stabilize
Code
Test & Stabilize

After



Shift left

Move the testing process to the left

- Integrate testing into the sprint / pull request
- Fast detection and fix
- Testers are part of the team

Continuous Testing

- Effective and continuous integration
- No Bulks of tests / bug-fixing

Without shift left context-switching is expensive / lowers throughput drastically

Shift Left Benefits

- Reduced costs involved in dev/test
- Early bug detection – better quality
- Effective resolution of bugs
- Massive time and effort saved

Image source: https://tenor.com/view/hamster-wheel-run-gif-10746499

If it hurts, do it more often!

Test Automation

- Reduce test time
- Have regression tests
- Focus on test design and management, rather than manual repetitive tasks

There is no better place than production!

Image source: https://giphy.com/gifs/jpa-downvote-production-Ta7le67MBQezu

Production-like environments

- Integration is important
- Real scenarios with real tests
- Test how it will be used in production
- Real flows, delays, latency, retries, etc.
- Reduction of no-repro bugs

Conclusion

- No “shift left” only strategy
  Combination of shift left and system testing on target system recommended
- Reducing or avoiding long circle times is crucial
- “There is no place like production”

Advanced Pull Requests

Azure Pipelines Structure and Setup

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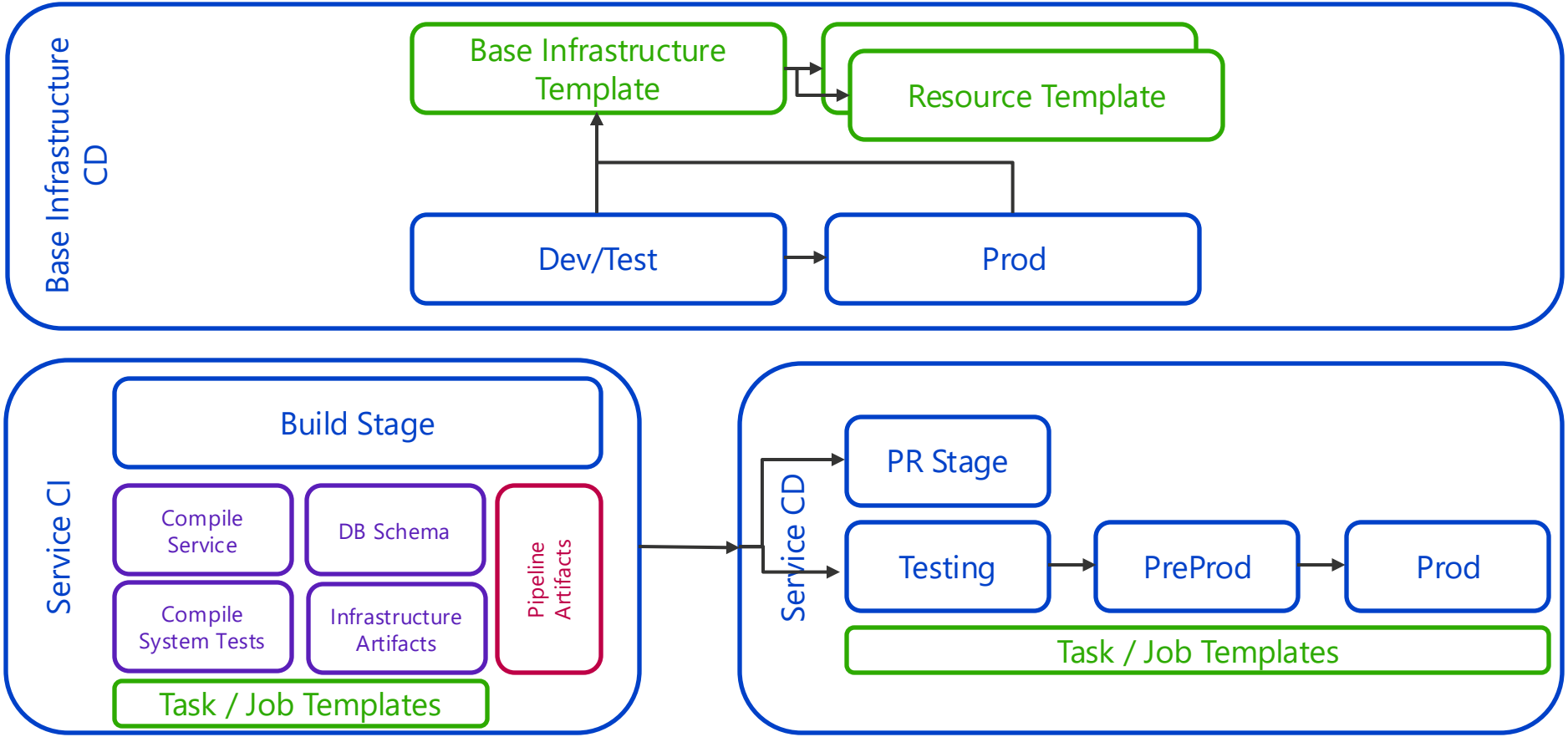
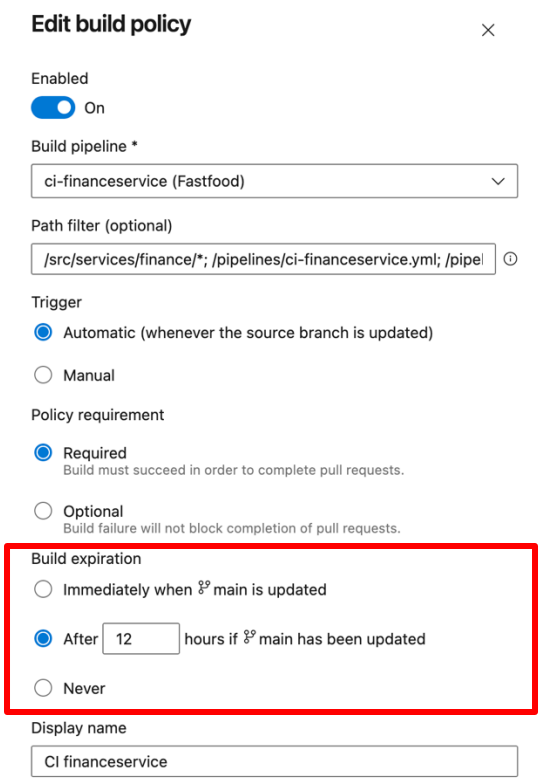
Best Practices

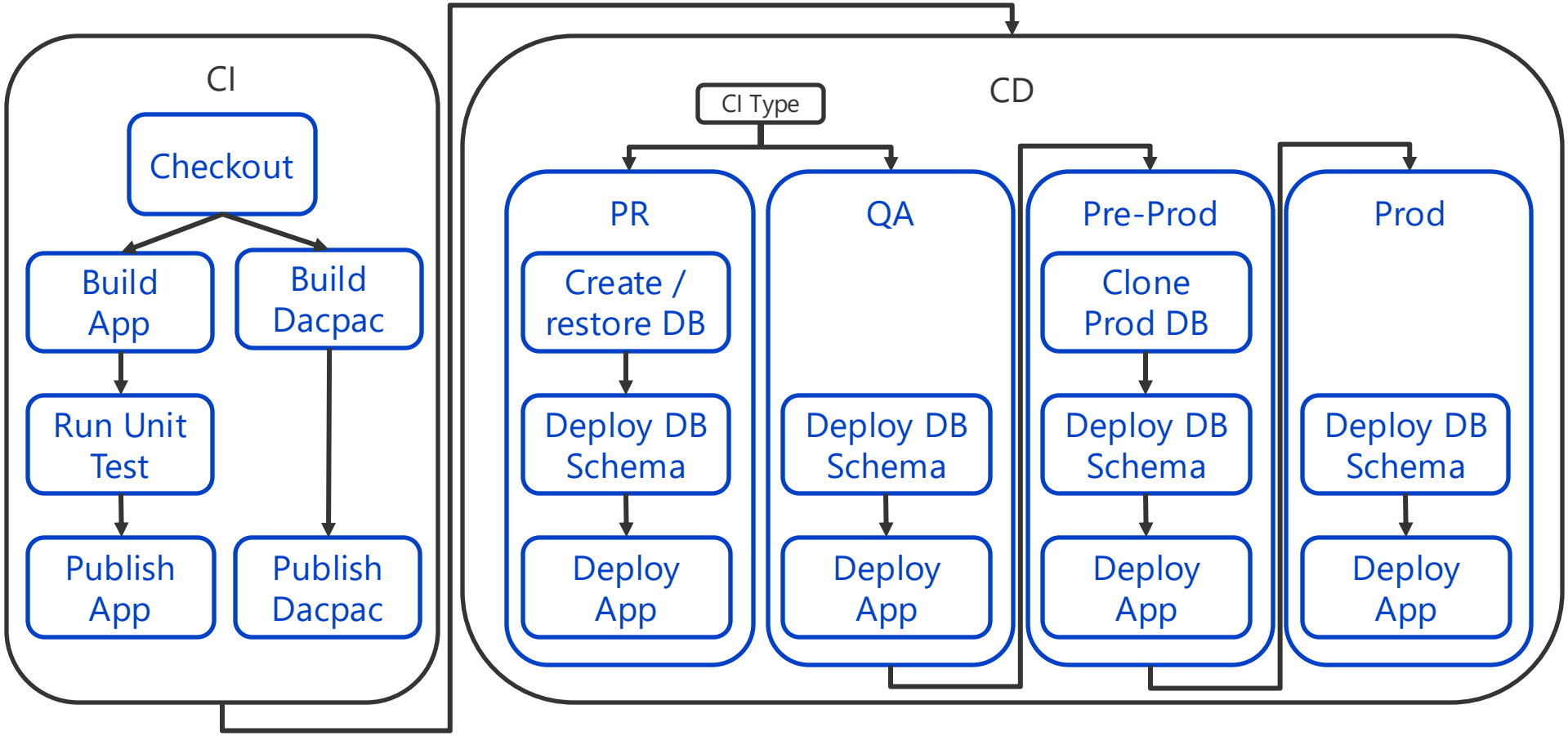


Is PR Validation 100% safe?

- It depends...
- Integrate multiple parallel PRs
  - Sequential
  - Parallel
- Depends on PR integration frequency / pipelines runtime



CI / CD Pipeline



Advanced Pull Requests

Branch Policies

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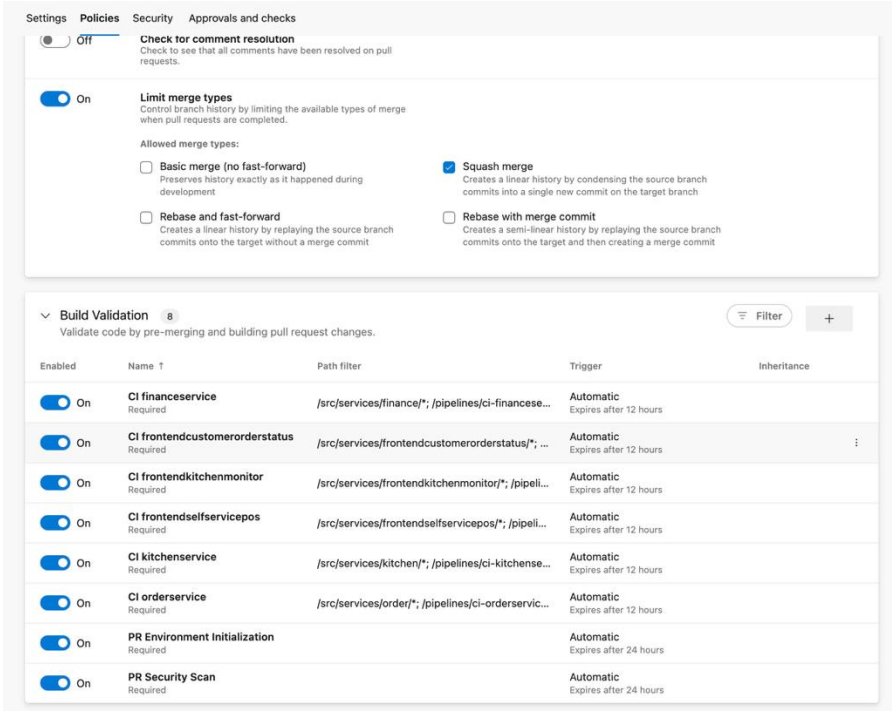
Branch Policies

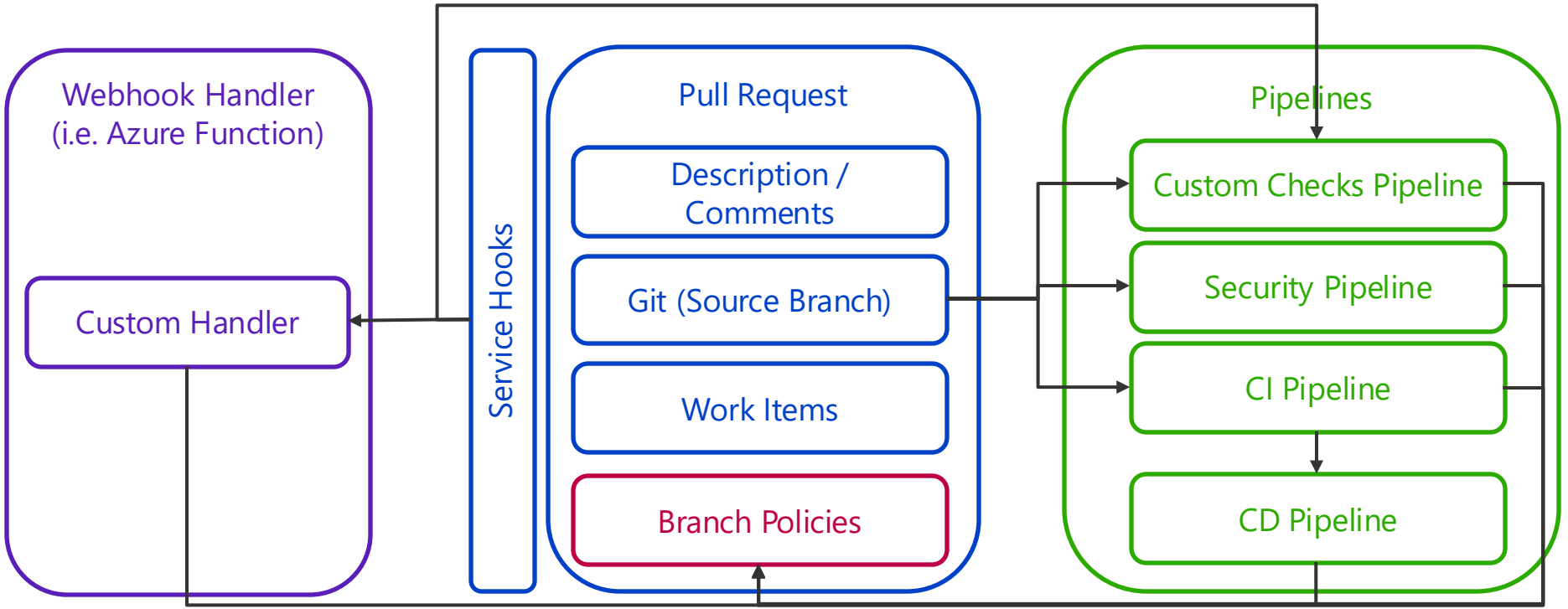
- Forced policies to be able to integrate into target branch
- General Policies
- Build Validation Policies
- Status Checks
- Automatic Reviewers



Pull Request Status and Comments

- Status checks perform automated verification
- PR deployment should be added as PR status (as required policy)
  - Only deployable apps / services should be integrated
  - System integration tests should be part of the PR deployment
- Work Item Validation, PR Content Validation, External System Integration
- Automated comments guide the reviewers and product owners

Custom Checks and Policies



Custom Checks

- Security Checks
- Work Items → content, type, status, links
- PR Deployments → tests, monitoring, …
- PR Description → Check boxes checked?

Additional Automation

- Pull Request Tags
- AI description and work item text verification
- ...


DEMO
Branch Policies

Advanced Pull Requests

Automatic Code Reviewers

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DEMO
Automatic Code Reviewers

Advanced Pull Requests

PR Templates

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PR Templates - About

- ## Definition
  - A PR template is a .md or .txt file whose contents are injected into the pull-request description when the PR is first created
- ## Built-in template types:
  - **Default template**
    Applied to *every* new PR unless a branch-specific file overrides it
  - **Branch-specific template**
    Automatically used when the PR's *target* branch matches the file name, e.g., dev.md for all dev/* PRs
  - **Additional/optional templates**
    Selectable from **Add a template** drop-down so authors can append extra guidance

PR Templates – Content, Benefits

- **Typical content**
  - check-lists (unit tests, docs updated, work-item links)
  - acceptance criteria
  - “Definition of Done” reminders
  - security or performance gates, etc.
- **Benefits**
  - Standardizes hand-overs
  - reduces missing info
  - accelerates reviews
  - enforces internal conventions & compliance and pairs well with branch policies for true “shift-left” quality


DEMO
PR Templates

Advanced Pull Requests

Azure Pipelines Incoming Webhook

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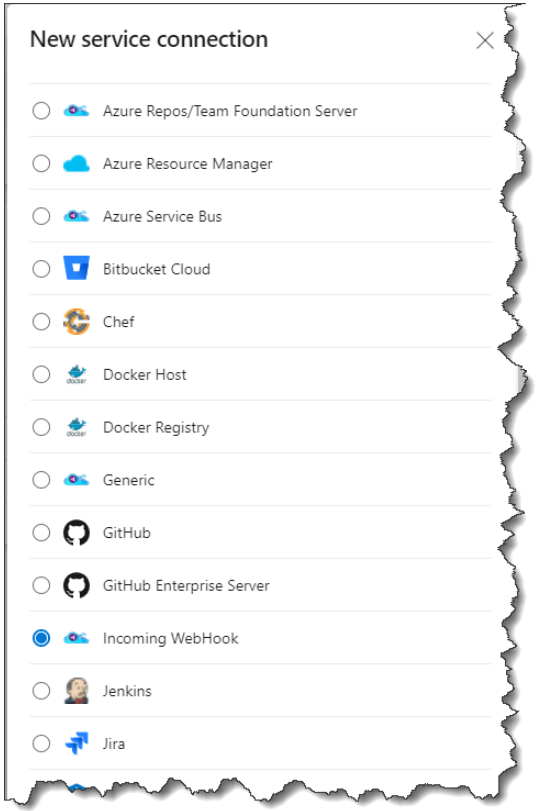
Trigger

- Main triggers are repository / code related
- Many automation scenarios trigger from other events
  - Work Item Update
  - Pull Request Update

Incoming Webhook Service Connection

- Incoming webhook can be defined as service connection
- Generic webhook trigger in pipelines
- Payload can be filtered



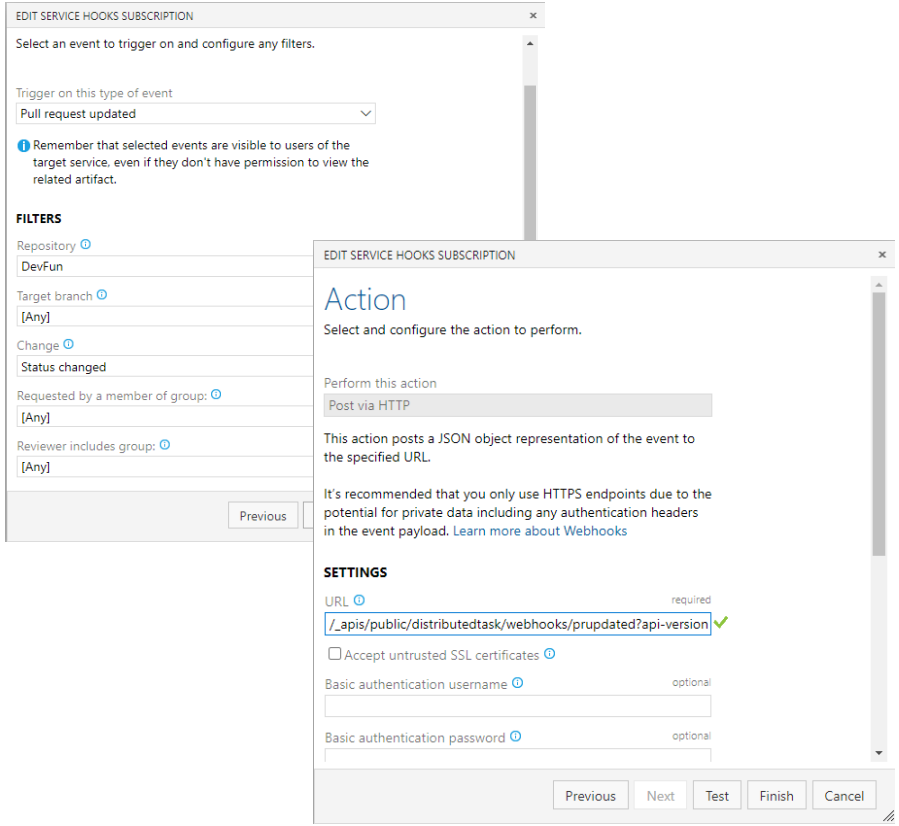
Pipeline Resource

- Azure DevOps creates webhook endpoint based on alias
- Pipeline resource triggers pipeline
- Filters can be applied to trigger

```yaml
trigger: none

pool:
  vmImage: ubuntu-latest

resources:
  # https://dev.azure.com/4tecture-demo/_apis/public/distributedtask/webhooks/prupdated?api-version=6.0-preview
  webhooks:
    - webhook: PRUpdated                ### Webhook alias
      connection: PREventsConnection    ### Incoming webhook service connection
      filters:
        - path: eventType
          value: git.pullrequest.updated
        - path: publisherId
          value: tfs
        - path: resource.repository.name
          value: DevFun

variables:
View template
- template: templates/common_variables.yml
View template
```

Service Hook & Incoming Webhook

- Service hooks can trigger webhooks for many Azure DevOps Events
  - Build completed
  - Code pushed
  - Elastic agent pool resized
  - Pull request commented on
  - Pull request created
  - Pull request merge attempted
  - Pull request updated
  - Release abandoned
  - Release created
  - Release deployment approval completed
  - Release deployment approval pending
  - Release deployment completed
  - Release deployment started
  - Run stage approval completed
  - Run stage state changed
  - Run stage waiting for approval
  - Run state changed
  - Work item commented on
  - Work item created
  - Work item deleted
  - Work item restored
  - Work item updated




DEMO
Incoming Webhook

Advanced Pull Requests

Q & A

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Recap

- Pull Request is single point of interaction / status for developers, testers and product owners
- Fail fast – learn fast & fix fast
- Only an integrated change provides clarity if it runs successfully in production
- Use events and change triggers to verify the status of the PR and report it through PR Status / Checks

Thank you for your attention!

If you have any questions do not hesitate to contact us:

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