Canary Deployment Strategy and Deployment Models Proposal

# 1. Introduction & Problem Context

Modern applications need to handle frequent releases, multiple partners, and risk-managed deployments. At Synchrony, we face the challenge of deploying new code without disrupting existing integrations. Our partners may want to test newer features or builds while maintaining access to stable versions. Canary deployment is ideal in such scenarios.

# 2. Deployment Strategy Overview

Below are common deployment strategies with a summary of each:  
- All-at-once (Big Bang): Replace the entire application at once.  
- Rolling: Gradually replace app instances.  
- Blue-Green: Deploy a new version in parallel and switch traffic upon validation.  
- Canary: Route a small percentage of traffic to a new version.  
- Feature Flags: Route conditionally at runtime (via headers, configs).

# 3. Pros and Cons of Each Model

See table for comparison of deployment strategies.

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| --- | --- | --- | --- |
| Strategy | Pros | Cons | Use Case |
| All-at-once | Quick deployment | High risk of downtime | Small apps or emergency fixes |
| Rolling | Lower downtime | No easy rollback | Kubernetes-native or instance-based updates |
| Blue-Green | Zero-downtime, parallel validation | Requires double infra | Production app cutovers |
| Canary | Safe testing, rollback-ready | Slight complexity in routing | Partner-specific testing |
| Feature Flags | Dynamic routing without redeploy | May grow unmanageable | Gradual exposure control |

# 4. Why Canary Works for Us

Canary deployments allow Synchrony to give partners a stable production app and a controlled test path. By enabling traffic routing via Apigee headers (`featureFlag=new`) and Developer App attribute (`dialup=true`), partners can test new builds without impacting others.

# 5. Foundation Implications

We deploy across 4 PCF foundations (2 in DAL and 2 in PHX). Canary can be deployed to all 4, with separate app names and routes (e.g., `my-app-canary`). GTM can load balance across canary apps. Apigee proxy handles dynamic routing.

# 6. How to Present This

- Use a comparison slide of all strategies with color-coded pros/cons.  
- Insert Canary Diagram after explaining routing logic.  
- Emphasize how routing via Apigee gives control without duplication.  
- Wrap up with proposed checklist and long-term plan.