

Snowflake–Bitbucket Deployment Pipeline Design

1 Feature Development

- Developers create feature branches from main.
- Work on new objects or modifications independently.
- SQL scripts are committed and pushed to the feature branch.

2 QA Testing

- When a feature branch is updated, pipeline deploys changes to QA.
- Only SQLs changed in that branch are executed in the QA environment.
- Developers validate their changes without affecting other feature branches.

3 Pull Request & Merge (Elaborated)

- At sprint end, developers raise pull requests (PRs) to merge feature branches into main.
- **Conflict Resolution:** PR review ensures conflicts for objects modified by multiple developers are resolved.
- **Code/SQL Review:** SQL scripts are checked for standards, dependencies, and proper execution order.
- **Approval:** PR must be approved by one or more reviewers before merging.
- **Merge:** Once approved, feature branch is merged into main, making changes ready for production deployment.

4 Pre-deployment SQL Visibility (Elaborated)

- After PR merge into main, the pipeline identifies all SQL scripts changed since the last production deployment.
- Updates a **pre-deployment folder** containing all SQL files to be executed.
- Optional: Updates a **DEPLOYMENT_PENDING table** in Snowflake with object names, SQL paths, and commit hashes.
- Manual review or approval step can be included for stakeholders or DBAs to confirm scripts before execution.
- Ensures confidence and transparency about what will run in production.

5 Incremental Production Deployment (Elaborated)

- Once pre-deployment approval is completed, the pipeline executes only the SQL scripts identified as changed.
- **Execution Order:**
 - DDL first (tables, views, sequences)
 - DML next (inserts, updates, deletes)
- Jobs are orchestrated via **Redcick**, triggered by **Jenkins**.

- Supports incremental deployment without overwriting previous changes.
- Execution logs are maintained for audit and debugging purposes.

6 Logging, Notifications & Audit

- Execution logs captured for each SQL.
- Update last deployed commit hash for tracking incremental changes.
- Notifications sent to stakeholders (email/Slack).
- Optional rollback if any job fails.

7 Optional Enhancements

- Dry-run in QA shadow schema for final validation.
- Dependency-aware execution for interrelated objects.
- Automated manifest generation for deployment order.