Day - 2

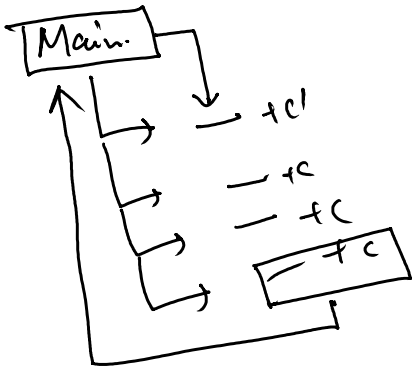
15 May 2025 17:56

1. CI & CD :- → Continuous Delivery.

Continuous Integration

Continuous Integration :-

1. Automatic Integration of the code changes.
2.



Key Component of CI :-

1. Version Control System (VCS)
2. Build Server / CI Tool
3. Build Automated
4. Automated Testing.
5. Notification
6. Artifact Storage.

1. **VCS :-** Store all the codes & config. files (eg. git)
2. Build Server / CI Tool :- Build & test processes. eg → jenkin, github Actions, gitlab CI, Circle CI
3. Build Automation :- Compile Code, run scripts, packaging Artifacts
4. Automated Testing :- Unit, Integration & static code Analysis
5. Notification :- Alert via email, slack, teams. build / test status.

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6. Artifact storage:- Store build output (eg. Nexus Artifactory)

CI Workflow Example:-

1. Main / feature branch.
2. CI Tool get triggered:-
   1. Pull the latest code.
   2. Install dependicies.
   3. Run.
   4. Executed Automated Unit / Integration test.
   5. Generate & store build Artifacts.
   6. Send status Notifications.

Type of Test CI:-

1. Unit Test — Build Individual function.
2. Integration Test — check modules / component work together.
3. Smoke Test — Basic end-to-end verification.
4. Static Analysis — check code Quality, style, vulnerabilities

CI Best Practices

1. Commit Anytime.
2. Keep build time short.
3. Test Reliability
4. Branches & Pull request.

3. Test Relevant UT
4. Use feature branches & Pull request.
5. Run build in clean, reproducible envior.
6. Store & version build Artifact.
7. Maintain CI pipeline as Code (YAML / DSL)

Popular CI Tool:-

1. Jenkin.
2. Github Action
3. Gitlab CI
4. Travis CI
5. Azure Devops
6. Circle CI

Benefit of CI:-

1. Detect the Bug Much early
2. Reduced Integration Risk.
3. Development cycle will be Quick.
4. Code Quality Improved

On-prem:-

1. Location
2. Electricity, Logistics.
3. Physical ownership of your H/W.
4. Team who will maintain the server.
5. Full ownership of data.
6. Scalibility is a challenge.

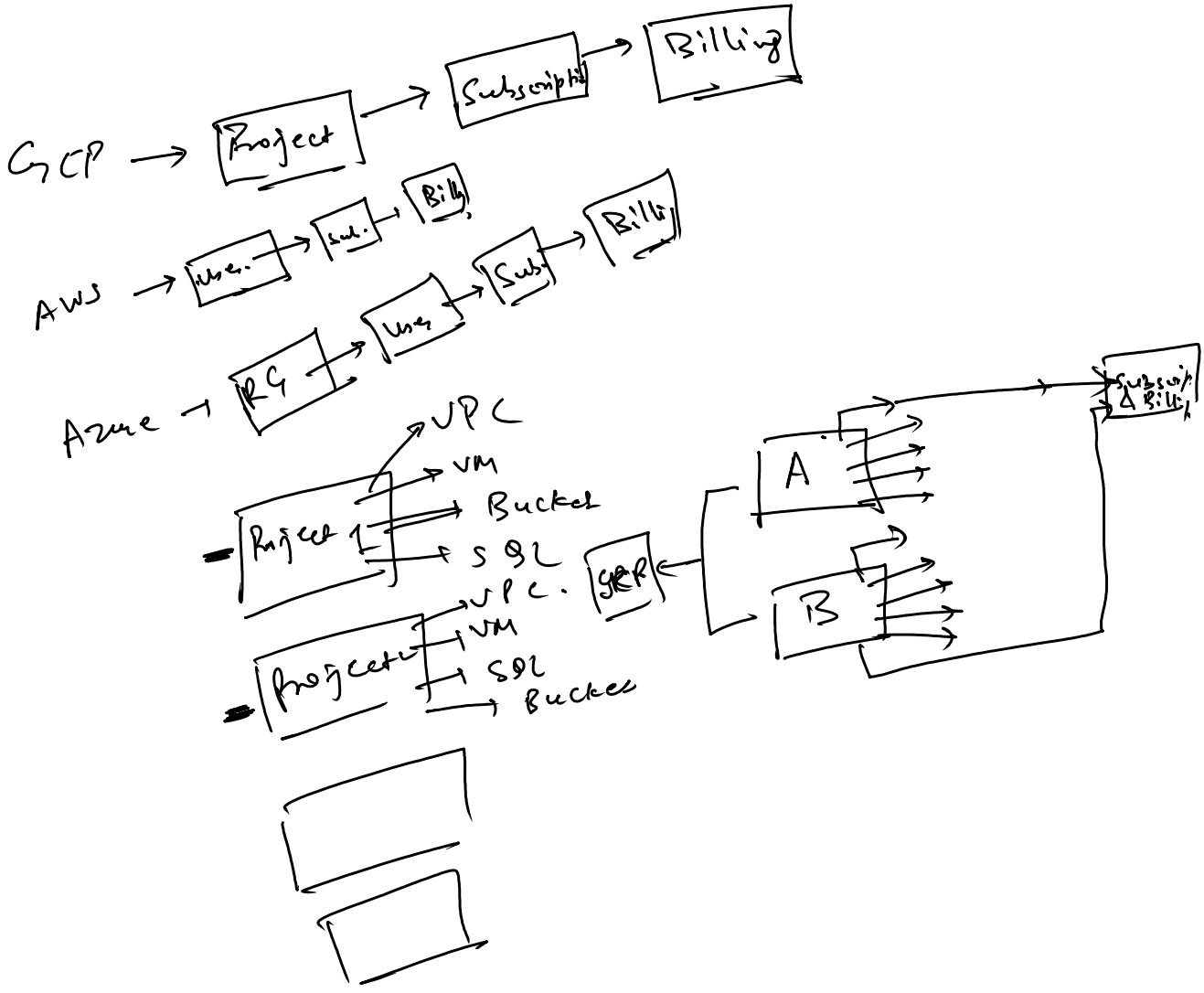
cloud:-

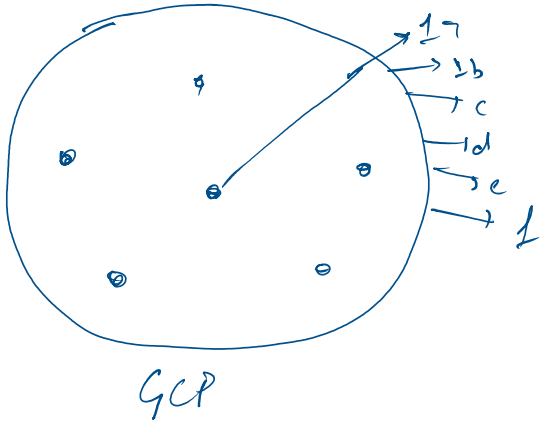
1. Rentiy as per your need.
2. Scalisitity is flexible.
3. Pay as you go. →
4. Maintainence is taken care by cloud service provider.
5. Multisite.

Sensitive Data → On-prem.

Insensitive/ stage/ Non-prod → cloud.

AWS, Azure, GCP, Oracle, IBM, Alibaba




GCP