Software Development and Deployment Lifecycle

1. Dev Environment

Purpose: This is where developers write and test their code.

Infrastructure: Hosted on a Virtual Machine (VM) in the cloud.

Activities:

- - Code development
- - Unit testing
- - Integration with version control systems
- - Initial validation before pushing to CI/CD pipeline

2. CI/CD (Continuous Integration / Continuous Deployment)

Purpose: Automates the process of building, testing, and deploying code.

Key Features:

- - Continuous Integration: Automatically builds and tests code whenever changes are committed.
- - Continuous Deployment: Automatically deploys code to the next environment if tests pass.

Benefits:

- - Faster delivery
- - Reduced manual errors
- - Improved collaboration

3. QA Environment

Purpose: Quality Assurance testing.

Infrastructure: Another VM in the cloud.

Activities:

- - Functional testing
- - Bug identification and reporting
- - Bug fixing

- - Once tests pass, the environment is marked GREEN (ready to move forward)

4. Staging Environment

Purpose: Final testing before UAT or production.

Infrastructure: Another VM in the cloud.

Activities:

- - Simulates production environment
- - Ensures stability and performance
- - Validates deployment scripts and configurations

5. UAT (User Acceptance Testing)

Purpose: Testing by end users or stakeholders.

Activities:

- - Load Testing: Checks system behavior under expected load.
- - Stress Testing: Evaluates system performance under extreme conditions.
- - Ensures the system meets business requirements

6. PPE (Pre-Production Environment)

Purpose: Final testing before going live.

Infrastructure: Another VM in the cloud.

Activities:

- - End-to-end testing
- - Final validation
- - Mimics production as closely as possible

7. Production Environment

Purpose: Live environment where the application is used by actual users.

Activities:

- - GO LIVE: Code is deployed for public or internal use
- - Monitoring and maintenance
- - Incident management and support

Summary Flow

Dev → CI/CD → QA → Staging → UAT → PPE → Production

Each environment serves a specific purpose in ensuring that the software is robust, reliable, and ready for real-world use. This structured approach helps in minimizing bugs, improving performance, and ensuring user satisfaction.