🏗️ Environment Setup

**🎯 Objective:**

Prepare a test environment that mirrors the production environment as closely as possible to ensure valid, reliable performance test results.

**🔧 Key Activities:**

* Configure necessary **hardware**, **software**, and **network settings**.
* Ensure **isolation** from development and production systems.
* Enable **monitoring and logging** tools for performance analysis.

**📌 Important Notes:**

1. 🔍 Environment details **must be collected** from relevant stakeholders such as:
   * Business Analysts
   * Developers
   * Functional and Automation QA Teams
2. ⚖️ The test environment should ideally be a **subset of the production system**, using the **same or slightly lower specifications**.
3. 🧪 The closer the test environment replicates production, the more **accurate and actionable** the performance test results.

**📊 Table A – Options for Test Environment Setup**

| **#** | **Possible Options** | **Notes** |
| --- | --- | --- |
| 1 | Make exact replica of production environment | Complete image of production environment to duplicate for testing |
| 2 | Build a real environment from scratch | Configure environment manually using production specs |
| 3 | Use production environment **(NOT RECOMMENDED)** | Backup production data, disable 3rd-party apps, use stubs |

**🧩 Table B – Common Considerations for Test Environment Setup**

| **#** | **Area** | **Notes** |
| --- | --- | --- |
| 1 | Replicate Production Env | Match hardware, OS, middleware. Use same versions and configurations |
| 2 | Network Configuration | Match production topology: firewalls, load balancers, latency |
| 3 | Database Setup | Use similar size/schema and populate with production-like data |
| 4 | Environment Isolation | Isolate from dev/prod with separate network segment and hardware |
| 5 | Monitoring & Logging | Use tools (e.g., Grafana, Prometheus) for live metrics tracking |

**🖥️ Table C – Environment Comparison: Test vs Production**

| **#** | **Particulars** | **Test Environment** | **Production Environment** |
| --- | --- | --- | --- |
| 1 | Environment Name | Production-like Test Environment | Production Environment |
| 2 | Purpose | Performance Testing Phase 1 | Live Traffic |
| 3 | Application Under Test | E-commerce Website | E-commerce Website |
| 4 | Application URL | https://petstore.octoperf.com/ | https://petstore.octoperf.com/ |
| 5 | Application Server | Apache Tomcat 9.0.48 | Apache Tomcat 9.0.48 |
| 6 | Database Server | MySQL 8.0.26 | MySQL 8.0.26 |
| 7 | Load Generator | Apache JMeter 5.4.1 | Apache JMeter 5.4.1 |
| 8 | Application Server Hardware | 4 CPU cores, 16 GB RAM | 4 CPU cores, 16 GB RAM |
| 9 | Web Server Hardware | 4 CPU cores, 16 GB RAM | 4 CPU cores, 16 GB RAM |
| 10 | Database Server Hardware | 4 CPU cores, 16 GB RAM | 4 CPU cores, 16 GB RAM |
| 11 | Network Bandwidth | 1 Gbps | 1 Gbps |
| 12 | Latency | <5 ms | <5 ms |
| 13 | Performance Monitoring Tools | Refer Table D | Refer Table D |
| 14 | Security | SSL/TLS Enabled | SSL/TLS Enabled |
| 15 | Firewall Rules | Port 443 open for HTTPS | Port 443 open for HTTPS |

**🛠️ Table D – Performance Monitoring Tools**

| **Component** | **Native Tools** | **Cloud-Based Tools** |
| --- | --- | --- |
| Web Server | Apache HTTP Server - mod\_status | New Relic, Datadog, Dynatrace |
| Application Server | Apache Tomcat - Tomcat Manager | AppDynamics, Azure App Insights, Dynatrace |
| Database Server | MySQL - MySQL Enterprise Monitor | Amazon CloudWatch, Datadog APM, SolarWinds DPM |