# JMeter Thread Group

**🧱 What is a Thread Group?**

A **Thread Group** is the **starting point** of every JMeter Test Plan. It defines:

* **How many users** (threads) to simulate
* **How quickly** they start (ramp-up)
* **How many times** they run the test (loop count)
* **What to do** if something fails (error handling)

It’s like saying: *"Simulate 100 users browsing products, starting 10 users per second, each doing it 3 times."*

**⚙️ Core Attributes Explained**

| **Attribute** | **What It Means** | **Why It Matters** |
| --- | --- | --- |
| **Name** | Label for the group (e.g., “Login Users”) | Organize multiple thread groups meaningfully |
| **Action on Sampler Error** | What to do if a request fails | Important for stability and test strategy |
| ┗ Continue | Keep going | Good for long tests that tolerate some failures |
| ┗ Stop Thread | Kill only that user thread | Useful for user-specific flow failures |
| ┗ Stop Test | End test after threads complete current loop | Use when a test is invalid without key actions |
| ┗ Stop Test Now | Force shutdown of test immediately | Emergency halt — useful in CI/CD or broken flows |

**👥 Thread Properties (User Simulation Settings)**

| **Setting** | **Description** | **Example** |
| --- | --- | --- |
| **Number of Threads** | Total virtual users (threads) to simulate | 50 = 50 users hitting your site |
| **Ramp-up Period (sec)** | How long to reach total users (JMeter adds users gradually) | 50 threads + 10 sec = 5 users/second |
| **Loop Count** | How many times each thread/user will run the scenario | 5 = each user does 5 loops |
| ┗ Forever (Infinite) | Test runs until you manually stop or schedule ends | Used in stress/endurance tests |

**⏳ Optional Settings**

| **Setting** | **Use** | **Why Important** |
| --- | --- | --- |
| **Delay thread creation** | Creates users only when needed instead of all at once | Saves memory in high thread count scenarios |
| **Scheduler** | Allows you to define when test starts, ends, and how long it runs | Useful in automated CI pipelines or off-peak testing |
| ┗ Start Time / End Time | Exact wall-clock time to begin and end the test | Schedule tests during quiet hours |
| ┗ Duration / Startup Delay | How long test should run or wait before starting | Good for warm-up phases or multi-phase test setups |

**🧮 Real-World Load Planning Formula**

**Total Requests = Threads × Loop Count × Samplers per Thread**

Example:

* 100 Threads
* Loop Count: 5
* 2 HTTP Requests

🟰 **100 × 5 × 2 = 1000 total requests**

**🔁 Multiple Thread Groups: Simulate Real Scenarios**

| **Example Thread Group Setup** | **What It Simulates** |
| --- | --- |
| Thread Group 1: 50 users browsing | Passive users navigating site |
| Thread Group 2: 20 users logging in | Authenticated user load |
| Thread Group 3: 10 users checking out | High-value flow under pressure |

Use **multiple Thread Groups** to create **diverse user journeys** in one Test Plan.

**✅ Best Practices Summary**

* 🧠 **Name** thread groups clearly (e.g., “Browse Scenario – 50 Users”)
* 🧪 Use **ramp-up** to simulate real-world traffic behavior
* ⚠ Set **error actions** based on test criticality
* 🕒 Use **scheduler** for night builds or endurance testing
* ♻ Combine **multiple thread groups** to mimic actual usage patterns