

## JMeter Parallel Execution Guide

This document outlines how to execute JMeter scripts in parallel, covering built-in features, plugins, and distributed testing.

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### 1. Thread Groups

- **Description:** The basic mechanism for parallel execution in JMeter. Each Thread Group spins up multiple virtual users (threads) that run samplers concurrently.
  - **Configuration:** In your Test Plan, add a Thread Group and set **Number of Threads** to the desired count. You can also add multiple Thread Groups under a single Test Plan; they will all run in parallel by default (unless you enable “Run Thread Groups consecutively”).
  - **Official Documentation:** [Elements of a Test Plan – Thread Group](#)
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### 2. Parallel Controller (Plugin)

- **Description:** Executes its child samplers in parallel on separate threads, allowing true simultaneous requests within a single controller.
  - **Installation:** Use the JMeter Plugins Manager: Options → Plugins Manager → Available Plugins → Parallel Controller → Apply Changes and Restart.
  - **Usage:** Add **Parallel Controller** (Non-Test Elements) to your Test Plan, then nest HTTP Requests or other samplers under it. These child samplers will fire concurrently.
  - **Plugin Details:** [Parallel Controller – JMeter Plugins](#)
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### 3. Synchronizing Timer

- **Description:** Holds a group of threads at a specific sampler until a defined threshold is reached, then releases them all at once to hit the sampler simultaneously.
  - **Configuration:** Add **Synchronizing Timer** as a child of a sampler, set the **Number of Simultaneous Users to Group by**, and optionally a **timeout**.
  - **Official Documentation:** [Synchronizing Timer](#)
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## **Summary**

By leveraging Thread Groups, the Parallel Controller plugin, Synchronizing Timers, and Distributed Testing, you can achieve high levels of parallelism in JMeter, from a single machine to a cluster of servers. Choose the approach that best fits your testing requirements and infrastructure.