(NETW 1002)
Systems and Network Security
Milestone 4
Deadline: Thursday, 16 May 2025

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Milestone 4:

In this milestone, you will perform stress testing using Apache JMeter to evaluate the performance of the Cloud Authentication Service (CAS) in handling REST API requests and the Identity Router (IDR) in processing RADIUS authentications. The goal is to analyze how these systems perform under different loads and document findings in a structured report.

Task Overview:

Each team will simulate different load scenarios using Apache JMeter and observe system behavior under different request rates. The requests will be directed separately to CAS for REST API testing and IDR for RADIUS authentication testing, based on the assigned group tasks outlined below. The students will then analyze the performance metrics and provide a detailed report on their methodology, observations, and conclusions.

Group Assignments:

- Group 1: Simulate 10 requests per second for 2 minutes.
- Group 2: Simulate 20 requests per second for 2 minutes.
- Group 3: Simulate 30 requests per second for 2 minutes.
- Group 4: Simulate 40 requests per second for 2 minutes.
- Group 5: Simulate 50 requests per second for 2 minutes.
- Group 6: Simulate 60 requests per second for 2 minutes.
- Group 7: Simulate 70 requests per second for 2 minutes.

Testing Requirements:

- REST API Performance Test: Simulate API requests sent to CAS URL (HTTPS requests) and measure response times, error rates, and system behavior underload.
- RADIUS Authentication Test: Simulate authentication requests to IDR using the RADIUS module in JMeter and analyze performance metrics such as authentication time and success rate.

Submission Requirements:

Each team must submit two documents:

1. **Comprehensive Report:**

   - Test Plan & Configuration: Steps taken to configure JMeter for REST API and RADIUS tests including JMeter configuration and any commands used.

   - Conclusion & Recommendations: Insights gained from the tests and potential areas for optimization.

2. **Summary report and dashboard:**

   - A dashboard and a report generated by JMeter after running the tests containing numerical data, visualizations, and charts illustrating key performance indicators such as response time, transactions per second (TPS), error rate, and system stability trends.