Determine if the Test System is a Performance Bottleneck

AIQ is a distributed test environment where tests run remotely on TestNodes. A TestNode is software running on a server that uses threads to operate multiple virtual users concurrently.

As the number of concurrent virtual users increases, the TestNode consumes additional CPU, memory, and network resources. If the TestNode reaches its resource limits, it can become a performance bottleneck and affect the results of the test.

To determine how many virtual users a TestNode can support before reaching its resource limits, AIQ recommends using **Calibration Testing**.

The calibration testing methodology consists of three steps:

1. **Identify the test use cases.**
   A test use case contains the steps required to operate the application.
2. **Identify the optimal throughput of the application and test environment.**
   Gradually increase the number of virtual users and monitor the application's performance and the resources consumed by the test environment.
3. **Run the complete performance test and analyze the results.**
   Use the results from the calibration testing to determine whether the TestNode or the application infrastructure becomes a bottleneck during the complete performance test.

For detailed instructions, see the **Calibration Test Methodology** chapter of the AIQ User Guide.

Estimating Server Resources Required to Support a User Population

Performance testing with **AIQ Monitor** can be used to identify the server-side resources required to support a population of application users.

AIQ Monitor is an agent-based service that observes CPU, network, and memory utilization while AIQ executes a performance test. AIQ stores the monitored values in the Results Repository, normally using MySQL or Oracle.

The **Resource Utilization** report correlates the application's performance with the resources consumed by the monitored servers. This helps identify whether application infrastructure becomes a bottleneck as the number of virtual users increases.

Use the **Resource** panel in the **Scenario Editor** to identify the AIQ Monitors from which you want to collect results. For example, AIQ Monitor can be configured on:

- Web servers
- Application servers
- Database servers
- Load balancers

Viewing Resource Utilization

The **Resource Utilization** report is available from the **Analyze** section.

To view the resource utilization for a test execution:

1. Open **Analyze** from the AIQ Start Screen.
2. Select the execution you want to analyze.
3. Select **Resource Utilization** from the list on the left.

Use the report to compare application performance with CPU, memory, and network utilization. This information can help determine whether the TestNode or application infrastructure is limiting the number of concurrent virtual users that the environment can support.

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If you have any feedback on this topic, please contact us at documentation@appvance.ai.

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