



Wowza Streaming Engine™

Load Testing Tool

Wowza Streaming Engine: Load Testing Tool



Version 4.5

<http://www.wowza.com>

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Introduction

The Load Testing tool 4.5 is an efficient way to generate simulated player connections to a Wowza Streaming Engine™ instance. It can simulate both live and video on demand (VOD) streaming. A single computer running the Load Testing tool can simulate hundreds of player connections. The tool is run on one or more computers that we'll call the **client** computer(s). We'll call the Wowza Streaming Engine installation that's being tested the **target** computer.

Depending on the amount of traffic you want to simulate, you may need to run the Load Testing tool on several **client** computers. We suggest you use it to simulate from 200 to 400 player connections on each **client** computer.

The Load Testing tool is an AddOn to the Wowza Streaming Engine software. Each client computer running the tool must have the Wowza Streaming Engine software installed. A free developer license can be used to run the tool. Below are the instructions for setting up a **client** computer to run the Load Test tool.

Client Installation

1. Install the Wowza Streaming Engine software. (Developer Edition is OK.)
2. Be sure to properly tune the Wowza Streaming Engine instance. See [How to do performance tuning](#).
3. Stop the Wowza Streaming Engine software if it is running. See [How to start and stop Wowza Streaming Engine software](#).
4. From the Wowza Streaming Engine Load Test Tool 4.5 package, copy the **WowzaStreamingEngineLoadTestTool.jar** file to your Wowza Streaming Engine **[install-dir]/lib** folder.
5. Navigate to **[install-dir]/conf/**, open the **Server.xml** file in a text editor, and add the following to the **<ServerListeners>** section:

```
<ServerListener>
  <BaseClass>com.wowza.wse.loadtest.server.ServerManager</BaseClass>
</ServerListener>
```

Adding this server listener installs the Load Testing Tool and disables the Wowza Streaming Engine Manager.

6. The following properties can also be added to the **<Properties>** section of the **Server.xml** file:

- To turn off authentication for the Load Testing Tool:

```
<Property>
  <Name>loadTest_authentication</Name>
  <Value>none</Value>
</Property>
```

If you do not turn off authentication with this property, your Wowza Streaming Engine installation's username and password are required to access the Load Testing Tool web interface.

- To increase the load test client connection limit:

```
<Property>
  <Name>loadTest_forceMaxProtocolClient</Name>
  <Value>5000</Value>
  <Type>Integer</Type>
</Property>
```

The default client connection limit for the Load Test tool is 2000. In most instances, this value should be sufficient. If you want to change the limit, you must add this property and set it to the value you need.

WARNING:

If the client connection limit is set too high, the server generating the connection load may not have sufficient resources to perform accurate tests.

7. Start the Wowza Streaming Engine software.
8. Enter the following address in a web browser to access the web-based interface for the Load Testing tool:

```
http://[client-wowza-ip-address]:1935/loadtestmanager
```

Server Installation

You don't need to install the Load Testing tool on the **target** computer. You just need a properly tuned Wowza Streaming Engine installation that is hosting the live or VOD content that you want to test.

Note:

Make sure port 1935 (or the port you are using for load testing) is open on your router, firewall, and/or software firewall for the **target** computer.

Test Configuration Items

The Load Testing tool test configuration is done in the Load Test Tool web interface ([http://\[client-wowza-ip-address\]:1935/loadtestmanager](http://[client-wowza-ip-address]:1935/loadtestmanager)). The following items must be configured:

Client Type – Currently, the only supported client types are **RTMP (Flash)** and **Apple HLS**.

Number of Clients – The number of Flash RTMP or Apple HLS connections needed for your test. We suggest you simulate 200 to 400 connections per client computer.

Server IP – IP address of the **target** computer being tested.

Server Port – Port(s) used for streaming from the **target** computer.

Server Application – Name of the application in your **target** Wowza Streaming Engine installation hosting the live or VOD content that you want to test.

Bitrate Mode <https://www.wowza.com/forums/content.php?737-Scale-Wowza-Streaming-Engine-with-Wowza-Streaming-Cloud-CDN#videoSelect> **Single Bitrate** to test the load for single-bitrate content, or **Multiple Bitrates** to test multi-bitrate content.

Stream Name – Name(s) of the stream(s) the client should request. The name(s) must be unique and can't contain less-than (<), greater-than (>), colon (:), quotation (' and "), forward slash (/), back slash (\), pipe (|), question mark (?), asterisk (*), double-dot(..), or tilde (~) characters.

- If the **Bitrate Mode** is set to **Single Bitrate**, enter a single stream name.
- If the **Bitrate Mode** is set to **Multiple Bitrates**, add the stream names in a comma-separated list.

Multi Stream Bitrates – For **Multiple Bitrates** tests only. A comma-separated list of the bitrate for each streams listed in **Stream Names**.

Strategy Mode – Select the modes that best describes the type of load testing you want to perform:

- **Connect and Hold** – Clients connect and remain connected until the test is stopped.

- **Connect and Disconnect** – Clients connect and disconnect within the following parameters that you must specify:
 - **Time Between Reconnects** – Time, in seconds, the client should wait before reconnecting to the **target** computer.
 - **Minimum Connection Time** – Minimum time, in seconds, the client should remain connected to the **target** computer before disconnecting.
 - **Additional Connect Time (random max)** – Maximum time, in seconds, the client can remain connected to the **target** computer before disconnecting. Each time the client disconnects, a new random time between 0 and the **Additional Connect Time** value is calculated and used for the next connection. If the **Additional Connect Time** is set to **0**, this parameter is not used.
- **Connect + Hold and Bitrate Switch** – Clients connect and remain connected, and switch between bitrates while connected. This strategy should only be used if the **Bitrate Mode** is set to **Multiple Bitrates**. Specify the following additional parameters:
 - **Time Between Bitrate Switch** – Time, in seconds, the client should remain on each bitrate. The default value is **600** seconds.
 - **Strategy for Bitrate Switching** – Specifies how the client decides which bitrate to change to. Select **Rotate Bitrates** to incrementally switch between the bitrates and then repeat. Select **Random Bitrate Selection** to switch randomly between the bitrates.
- **Connect + Disconnect and Bitrate Switch** – Clients connect and disconnect, as well as switching bitrates while connected. This strategy should only be used if the **Bitrate Mode** is set to **Multiple Bitrates**. Specify the following additional parameters:
 - **Time Between Reconnects** – Time, in seconds, the client should wait before reconnecting to the **target** computer.
 - **Minimum Connection Time** – Minimum time, in seconds, the client should remain connected to the **target** computer before disconnecting.
 - **Additional Connect Time (random max)** – Maximum time, in seconds, the client can remain connected to the **target** computer before disconnecting. Each time the client disconnects, a new random time between 0 and the **Additional Connect Time** value is calculated and used for the next connection. If the **Additional Connect Time** is set to **0**, this parameter is not used.

- **Time Between Bitrate Switch** – Time, in seconds, the client should remain on each bitrate. The default value is **600** seconds.
- **Strategy for Bitrate Switching** – Specifies how the client decides which bitrate to change to. Select **Rotate Bitrates** to incrementally switch between the bitrates and then repeat. Select **Random Bitrate Selection** to switch randomly between the bitrates.
- **Continuous Random Seek** –VOD tests only. Clients seek to random locations in the VOD asset every 2 - 4 seconds until you click **Stop Test** in the web-based interface.
To produce accurate results, you must configure more than one VOD asset to be tested at the same time. If you use a single VOD asset, the **target** computer can cache the VOD asset being tested and provide inaccurate results.
- **Continuous Fast Random Seek** – VOD tests only. Clients seek to ran locations in the VOD asset every ½ - 2 seconds until you click **Stop Test** in the web-based interface.
To produce accurate results, you must configure more than one VOD asset to be tested at the same time. If you use a single VOD asset, the **target** computer can cache the VOD asset being tested and provide inaccurate results.

Performing Tests

After configuring the test on the **client** computer(s), tests can be started, stopped, and monitored from the web-based interface.

To test live streaming, first verify that the live stream(s) is running on the Wowza Streaming Engine **target** computer. To test video-on-demand (VOD) streaming, first verify that the VOD file(s) are copied to the **[install-dir]/content** folder on the Wowza Streaming Engine **target** computer.

Next, use the web interface to configure the test on each client to address the stream(s) on the **target** computer. To do this:

1. In the menu on the left, click **Setup** and then select **Configure Test**.
2. Complete the [test configuration items](#) to address the stream on the **target** computer. Most likely, you'll need to adjust the **Stream Name**, **Server Application**, and **Server IP** items to address the target stream properly.
3. Click **Submit** to save the test configuration.

The **Number of Clients** item controls how many connections the client computer simulates. You may want to start with a small value, such as **1** or **2**, just to get things up-and-running.

Each connection attempt logs information about the connection status. After you get things working, stop the test, edit the **Configure Test** to increase the **Number of Clients** value to simulate the number of Flash RTMP or Apple HLS connections needed for your test, and start a new test.

Notes:

- If the **client** computer(s) can't connect to the **target** computer, make sure the **Server Port** you specified is open on your router, firewall, and/or software firewall for the **target** computer.
- If you need to change a configuration item, such as the **Number of Clients** or **Strategy Mode**, stop the current test, click **Configure Test**, update the settings, and click **Submit**. Then click **Start Test** to start a test with the new settings.
- For VOD streaming, much of the Wowza Streaming Engine instance's performance is driven by the underlying systems I/O performance. We can only go as fast as the server can deliver bits from the disk to the server. To get the most server throughput, we suggest that you use RAID 0 or RAID 10 configurations with as many disks as possible in the RAID array.

Load Testing Tool Output

The Load Testing tool will log statements as it starts player connections and then periodically log the current status of the simulated connections. The output looks like this for RTMP:

```
RTMP:Monitor:Running-100:Connected-39;ConnectionAttempts-45;LostData-0
```

or this for Apple HLS:

```
HLS:Monitor:Running-100:Connected-39;ConnectionAttempts-45;LostData-0
```

The **Running** value is the current number of simulated RTMP or HLS connections that have been queued for the test. The **Connected** value is the number of connections that are currently connected to the **target** computer. The **ConnectionAttempts** value is the current number of simulated RTMP or HLS connections that have been attempted. The **LostData** value is the amount (in bytes) of data lost between the **target** computer and the **client** computer(s).

Notes:

- Only RTMP and Apple HLS connections are supported by the Load Testing tool. Other RTMP variants, such as RTMPT and RTMPE, aren't supported.
- The Load Testing tool can't simulate other streaming protocols such as Adobe HDS and Microsoft Smooth Streaming.
- For VOD streaming, much of the Wowza Streaming Engine instance's performance is driven by the underlying systems I/O performance. We can only go as fast as the server can deliver bits from the disk to the server. To get the most server throughput, we suggest that you use RAID 0 or RAID 10 configurations with as many disks as possible in the RAID array.