Wowza Streaming Engine™

Load Testing Tool

Wowza Streaming Engine: Load Testing Tool

Version 4.0.0

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Introduction

The Load Testing tool is an efficient way to generate simulated Adobe Flash RTMP player connections to Wowza Streaming Engine. It can simulate both live and video on demand (VOD) streaming. A single computer running the Load Testing tool can simulate hundreds of Flash RTMP 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 Flash RTMP 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 Java and Wowza Streaming Engine 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 Java Development Kit (JDK) version 6 or greater (latest Java JDK is the best).
2. Install Wowza Streaming Engine (Developer Edition is OK).
3. Be sure to properly tune the Wowza Streaming Engine. See How to do performance tuning.
4. The Load Testing tool requires the **_defaultVHost_** virtual host (VHost) to have its own thread pool. By default, Wowza Streaming Engine is configured to use a server-level thread pool. To configure a VHost-level thread pool, edit **[install-dir]/conf/VHost.xml** and make the following changes:
    - **HandlerThreadPool/PoolSize**: 60 x [total-core-count]
    - **TransportThreadPool/PoolSize**: 40 x [total-core-count]

> **Note**
> It's important to revert these changes if you plan to use this installation in production. The settings will cause too many threads to be allocated and lead to improper tuning for production use.

5. Copy the contents of the **bin**, **conf**, and **lib** folders to the corresponding Wowza Streaming Engine installation folders. Make sure that you copy the individual files and not just the three folders.
6. Run the examples installer in the **[install-dir]/examples** folder. The installer script differs depending on your platform:
    - **Windows:** [install-dir]/examples/installall.bat
    - **Mac OS X:** /Library/WowzaStreamingEngine-[version]/examples/installall.command
    - **Linux:** /usr/local/WowzaStreamingEngine-[version]/examples/installall.sh

Server Installation

You don't need to install the Load Testing tool 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.

Test Configuration

The Load Testing tool test configuration is done by editing **[install-dir]/conf/Tests.xml** on each **client** computer. By default, there are two preconfigured tests (**live** and **vod**). The **live** test is for testing live streaming and the **vod** test is for testing VOD streaming. See Configuration items in Tests.xml for definitions of each of the configuration items.

Configuration items in Tests.xml

workerCount: Number of Flash RTMP clients to simulate.

fileCount: Number of different stream names to play. If set to **0** (zero), then only a single stream is played by all client connections. The stream name is derived by concatenating **[streamName]** and **[streamExt]**. If greater than zero, then the stream name will include an index value (**[index]**) that is between **1** and **[fileCount]**. In this case, the stream name played by each client connection is **[streamName][index][streamExt]**. If **[doRandom]** is set to **false**, then the **[index]** value is simply incremented for each client connection. If **[doRandom]** is **true**, then the **[index]** value is selected randomly.

streamName: Base stream name.

streamExt: Stream extension. For live streaming, the value should be empty.

vhostName: Virtual host name.

connectionString: Application and application instance name to use for streaming. The specified application name must be configured on the local **client** computer by creating a folder with the same name in the **[install-dir]/applications** folder. This is also the application and application instance named used by the simulated player connection.

bufferTime: The client connections simulated client-side buffer.

doRandom: If **true** and if **[fileCount]** is non-zero, then the **[index]** value for each client connection is generated randomly.

doRepeat: If **true** and if testing VOD playback, then at the end of streaming a VOD file the stream will re-start at the beginning.

ipAddress: IP address of the Wowza Streaming Engine **target** computer.

ports: List of ports (comma-delimited) to use for streaming from the **target** computer. Port numbers are rotated for each new client connection.

Live Stream Testing

To test live streaming, first verify that the live stream (or streams) is running on the Wowza Streaming Engine **target** computer. Next, edit **[install-dir]/conf/Tests.xml** on each **client** computer and make adjustments to the **live <Test>** configuration items to address the stream(s) on the **target** computer. Most likely, you'll need to adjust the **[streamName]**, **[fileCount]**, **[connectionString]**, and **[ipAddress]** items to address the target stream(s) properly.

The **[workerCount]** item controls how many Flash RTMP connections are simulated by each **client** computer. You may want to start with a small **[workerCount]** value, such as **1** or **2**, just to get things up-and-running.

To start the test on the **client** computer, open a command prompt, change directory to the **[install-dir]/bin** folder, and execute the following command:

Windows:

```
performance.bat live
```

Linux or OSX:

```
./performance.sh live
```

You should see Wowza Streaming Engine start in performance test mode. Each connection attempt logs information about the connection status. After you get things working, increase the **[workerCount]** value to simulate the number of Flash RTMP connections needed for your test.

If you plan to test multi-stream playback using the **[fileCount]** configuration item in **Tests.xml**, be sure that the proper set of streams are being published to the **target** computer. For example, if you have set **[streamName]** to **myStream** and **[fileCount]** to **4**, be sure that the following streams are being published to the server: **myStream1**, **myStream2**, **myStream3**, and **myStream4**.

Video On Demand Testing

To test video on demand (VOD) streaming, first verify that the VOD files are copied to the **[install-dir]/content** folder on the Wowza Streaming Engine **target** computer. Next, edit **[install-dir]/conf/Tests.xml** on each **client** computer and adjust the **vod <Test>** configuration items to address the VOD files on the **target** computer. Most likely, you'll need to adjust the **[streamName], [streamExt]**, **[fileCount]**, **[connectionString]**, and **[ipAddress]** items to address the target stream(s) properly.

The **[workerCount]** item controls how many Flash RTMP connections are simulated by each **client** computer. You may want to start with a small **[workerCount]** value, such as **1** or **2**, just to get things up-and-running.

To start the test on the **client** computer, open a command prompt, change directory to the **[install-dir]/bin** folder, and execute the following command:

Windows:

```
performance.bat vod
```

Linux or OSX:

```
./performance.sh vod
```

You should see Wowza Streaming Engine start in performance test mode. Each connection attempt logs information about the connection status. After you get things working, increase the **[workerCount]** value to simulate the number of Flash RTMP connections needed for your test.

If you plan to test multi-file playback using the **[fileCount]** configuration item in **Tests.xml**, be sure that the proper set of VOD files are available for playback. For example, if you have set **[streamName]** to **sample**, **[streamExt]** to .**mp4**, and **[fileCount]** to **4**, be sure that the

following files are in the **[install-dir]/content** folder: **sample1.mp4**, **sample2.mp4**, **sample3.mp4**, and **sample4.mp4**.

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:

```
Status running:100 currBehind:0
```

The **running** value is the current number of simulated RTMP connections that have been started and are currently running. The **currBehind** value is the number of connections that aren't receiving media data quickly enough from the **target** computer to keep the client-side buffer full.

Notes:

- Only RTMP 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, Apple HLS, and Microsoft Smooth Streaming.
- For VOD streaming, much of the Wowza Streaming Engine 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.