Load Testing Tool

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The load testing tool is an efficient way of generating simulated Adobe Flash RTMP player connections to a Wowza Media Server. It can simulate both live and video on demand streaming. A single computer running the load test tool can simulate hundreds of Flash RTMP player connections. The load test tool is run on one or more computers that we will call the **client** computer. The Wowza Media Server installation that is being tested is called the **target** computer.

Depending on the amount of traffic you wish to simulate, you may need to run the load test tool on several **client** computers. We suggest you do not use the load tool to simulate more than 200-400 Adobe Flash RTMP player connections per **client** computer.

The load test tool is an AddOn to Wowza Media Server. Each client computer running the load test needs to have Java and Wowza Media Server installed. A free developer license can be used to run the load test tool. Below are the instructions for setting up a **client** computer to run the load test tool.

Client Installation

1. Install Java 6 or greater (Java 7 64-bit is best).
2. Install Wowza Media Server 3 or greater (developer edition is OK).
3. Be sure to properly tune the Wowza Server:

    http://www.wowza.com/forums/content.php?46-General-Performance-Tuning

4. Copy contents of bin, conf and lib folders into the corresponding Wowza Media Server 3 installation folders. Make sure you copy the individual files and not just the three folders.
5. Run the examples installer in the [install-dir]/examples folder. Depending on your platform this script is either:

    *   Windows: [install-dir]/examples/installall.bat
    *   OSX: /Library/WowzaMediaServer/examples/installall.command
    *   Linux: /usr/local/WowzaMediaServer/examples/installall.sh

Server Installation

There is no special installation on the **target** computer. You just need a properly tuned Wowza Media Server that is hosting the live or video on demand content you wish to test.

Test Configuration

Load test tool test configuration is done by editing **[install-dir]/conf/Tests.xml** on each of the **client** computers. By default there are two pre-configured tests **live** and **vod**. The **live** test is for testing live streaming and the **vod** test is for testing video on demand streaming. Below are the definitions of each of the configuration items in **Tests.xml**:

Configuration items in Tests.xml

workerCount: Number of Flash RTMP clients to simulate.

fileCount: Number of different stream names to play. If set to 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 this should be set to an empty value.

vhostName: Virtual host name.

connectionString: Application and application instance name to use for streaming. The application name specified here must be configured on the local **client** computer as well 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 **[fileCount]** is non-zero then the **[index]** value for each client connection is generated randomly.

doRepeat: If true and testing video on demand playback, then at the end of streaming a video on demand file the stream will be re-started at the beginning.

ipAddress: Ip address of the target server 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 be sure you have the live stream or streams running on the Wowza Media Server **target** computer. Next, edit **[install-dir]/conf/Tests.xml** on each of the **client** computer and make adjustments to the configuration items of the **live <Test>** to properly address the stream or streams on the **target** computer. You will most likely need to make adjustments to the **[streamName]**, **[fileCount]**, **[connectionString]** and **[ipAddress]** items to properly address the target stream or streams. The **[workerCount]** item controls how many Flash RTMP connections will be simulated by each **client** computer. You may want to start with a small number for **[workerCount]** 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 Server startup in performance test mode. Each connection attempt will log information regarding the status of the connection. Once you get things working then you can increase the value of **[workerCount]** to simulate the number of Flash RTMP connections needed for your test.

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

Video On Demand Testing

To test video on demand streaming, first be sure you have the video on demand files copied to the **[install-dir]/content** folder of the Wowza Media Server **target** computer. Next, edit **[install-dir]/conf/Tests.xml** on each of the **client** computer and make adjustments to the configuration items of the **vod <Test>** to properly address the video on demand files on the **target** computer. You will most likely need to make adjustments to the **[streamName]**, **[streamExt]**, **[fileCount]**, **[connectionString]** and **[ipAddress]** items to properly address the target stream or streams. The **[workerCount]** item controls how many Flash RTMP connections will be simulated by each **client** computer. You may want to start with a small number for **[workerCount]** 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 Server startup in performance test mode. Each connection attempt will log information regarding the status of the connection. Once you get things working then you can increase the value of **[workerCount]** to simulate the number of Flash RTMP connections need for your test.

If you plan on testing multiple file play-back using the **[fileCount]** configuration item in **Tests.xml**, be sure you have created the proper set of video on demand files for playback.

For example if you have set **[streamName]** to **sample**, **[streamExt]** to **.mp4** and **[fileCount]** to **4**, be sure you have the following video on demand files in the **[install-dir]/content** folder: **sample1.mp4**, **sample2.mp4**, **sample3.mp4** and **sample4.mp4**.

Load Test Tool Output

The load test tool with log statements as it is starting up player connections. Periodically it will 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** number is the number of connections that are not receiving media data quickly enough from the **target** computer to keep the client side buffer full.

Note: Only RTMP connections are support. There is no support for other RTMP variants such as RTMPT and RTMPE. Also this tool cannot simulate other streaming protocols such as Apple HLS, smooth streaming and Flash HTTP streaming.

Note: For video on demand streaming much of the Wowza Media Server performance is driven by the underlying systems IO performance. We can only go as fast as the server can deliver bits from the disk to the server. To get the most throughput out of a server, we suggest you use RAID 0 or RAID 10 configurations with as many disks as possible in the RAID array.