Abacast Streaming Media Server

Platform v2.0

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1. Introduction

Abacast is a client-server base distributed streaming media software technology for use in one-to many real-time streaming. The distributed streaming network that Abacast creates reduces the number of clients directly connected to the media server by 35 to 95 percent based on the bit rate of the source stream. This distributed network is created by having able end-users or clients act as servers for one to several other clients by distributing the stream using any available, unused upstream bandwidth. The server continuously and closely manages the distributed network. If at any time a distributing client becomes unable to continue to relay the stream to its receiving clients, those receiving clients are moved to other distributing clients or directly back to the server without interruption, or skipping in the stream. The server is also continuously looking to "trim" the number of directly connected clients by surveying the network four times per minute to create the most efficient, most stable, and highest quality distributed streaming network possible.

2. Deployment Considerations

Every environment is different. The following attempts to suggest requirements for optimal deployment. For additional information or for questions about your particular configuration please contact us.

2.1 Hardware Requirements
- Dedicated Server with Administrative Access
- Intel Pentium class, Xeon, or AMD processor
- Dual Processors at 1Ghz CPU speed (each) or better
- 1 GB RAM
- 20 GB Hard Drive

2.2 Supported Operating Systems
- Windows 2000 Professional
- Windows 2000 Server
- Windows 2003 Server
- Windows XP Professional

2.3 Bandwidth Usage
- 20-60 Mbps availability per server deployed (depends on efficiency)

2.4 Audience Served
- Up to 25 source streams
- Total audience served depends on source stream bit rates and efficiency

3. Installation

Platform 2.0 Server software runs as a Windows Service. Obtain the executable installation program from your Abacast sales representative.

Install by completing the following:

1) Initialize the installer by selecting OPEN or double-clicking.
2) Select *Next* to begin
3) If you agree with the Licensing agreement, click NEXT.
4) Select the installation directory if you don't want C:\Program Files\Abacast.
5) Click *Next* to add the Program group name "Abacast" to your start menu.
6) Click *Next* to begin installation
7) If you have another application running on TCP Port 80, select "Don't start the Abacast Server."

If you selected "Don't start" in step 7, please note that you can start the Abacast server via the services.msc applet, or via the Abacast Server Admin. To use the Abacast Server Admin, double-click the Abacast desktop icon, click "File" and select "Start service."

Please note that the installer will not add, remove or modify any Windows System files.

Your Abacast Server must authenticate itself with the Abacast Billing System. Your server will periodically connect using outgoing TCP ports 8080 and/or 443. If your firewall prevents this outbound communication your Abacast server will not operate correctly.

4. Configuration

Platform 2.0 presents a totally self-contained server, capable of offering unicast, as well as high-quality managed Abacast streams.

To add and configure new streams click the "New" button ⊕ and follow the prompts.

To modify an already created stream, highlight the stream and click the "Settings" button ⓘ or double click the stream name. Please note that to change the stream source of a running stream you must first stop the stream. This is not true of all fields.
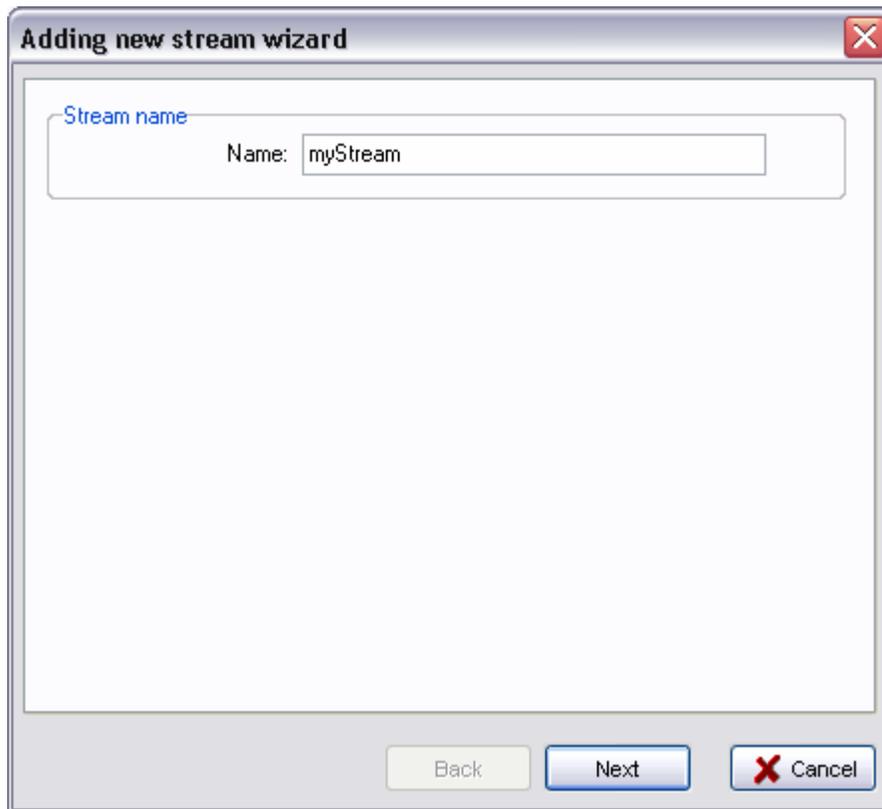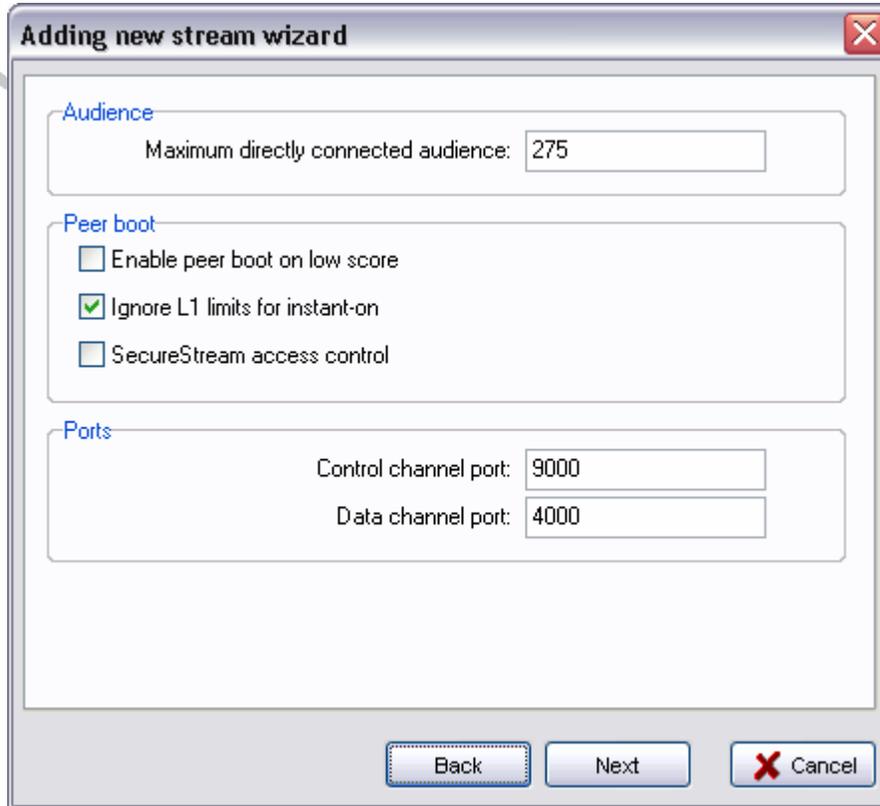
Server Settings	
Maximum directly connected audience	Set the maximum number of direct connections to the server. Users who connect to an Abacast Server when this value is reached will receive a busy signal.
Enable peer boot on low score	Enable this option only if you want to disconnect people who are having trouble receiving the stream (dial-up listeners, etc) to make room for others.
Ignore L1 Limits for instant-on	Allow the Abacast Server to temporarily exceed the L1 limit for the purpose of guaranteeing a fast buffering experience.
SecureStream access control	Select this option if you have subscribed to the Abacast "SecureStream" service.
Control Channel Port	The port the Abacast Client software will establish a connection to the server on.
Data Channel Port	The port the stream data will be served on.
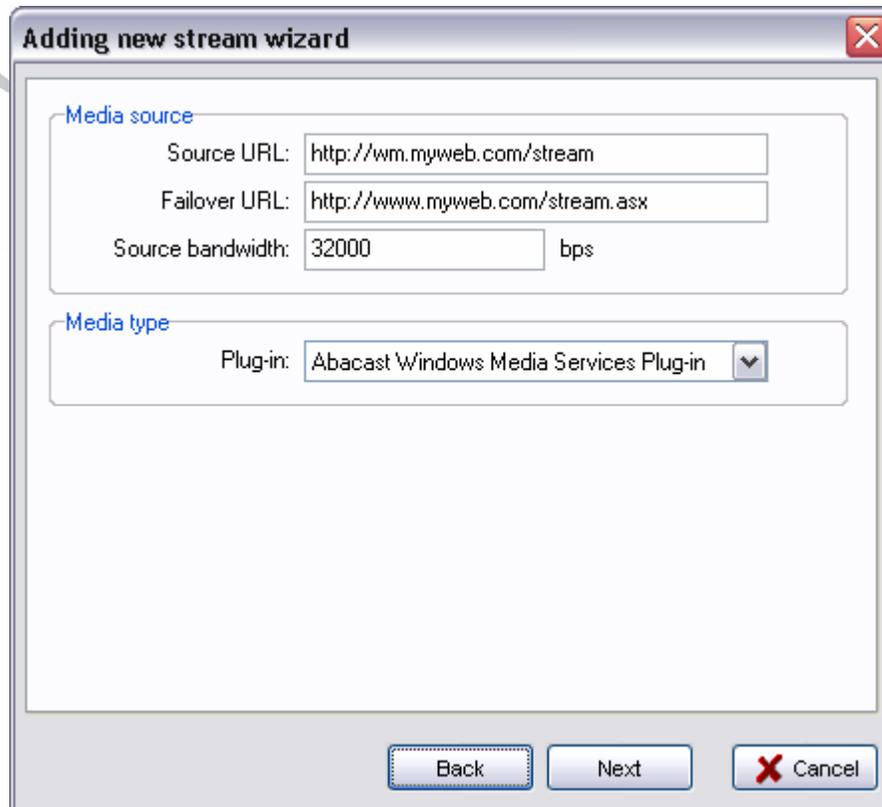
Source Settings	
Source URL	Enter the full http path to your media source. Abacast Server v2.1 accepts Windows Media formats from the Windows Media Server and Windows Media Encoder. **MBR not supported**
Failover URL	Enter the full http path to an ASX file pointing to an alternate WMS Server. Alternately this can point at the abacast server's unicast drive.
Source Bandwidth	Enter the expected Media Source bit rate.
Plug-in	Select the Windows Media Services Plug-in
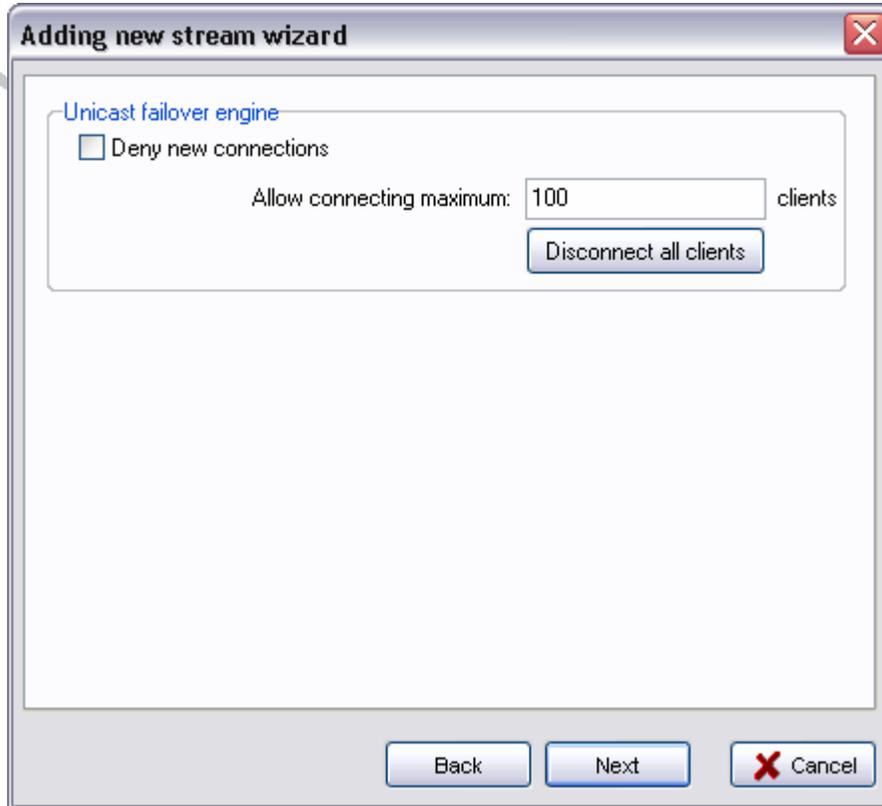
Unicast	
Deny New Connections	Select this to deny Unicast connections
Allow Connecting maximum	Select the maximum number of Unicast Connections. Note: this is in addition to the Maximum Level 1 settings.
Disconnect all clients	Select this button to disconnect all clients from the Abacast Servers unicast drive.

Reporting	
Customer Name	Enter your Abacast account name
Password	Enter your Abacast account password
Use W3C Logging	Select this checkbox to enable W3C Logs
Directory	Select the default W3C log directory for this stream
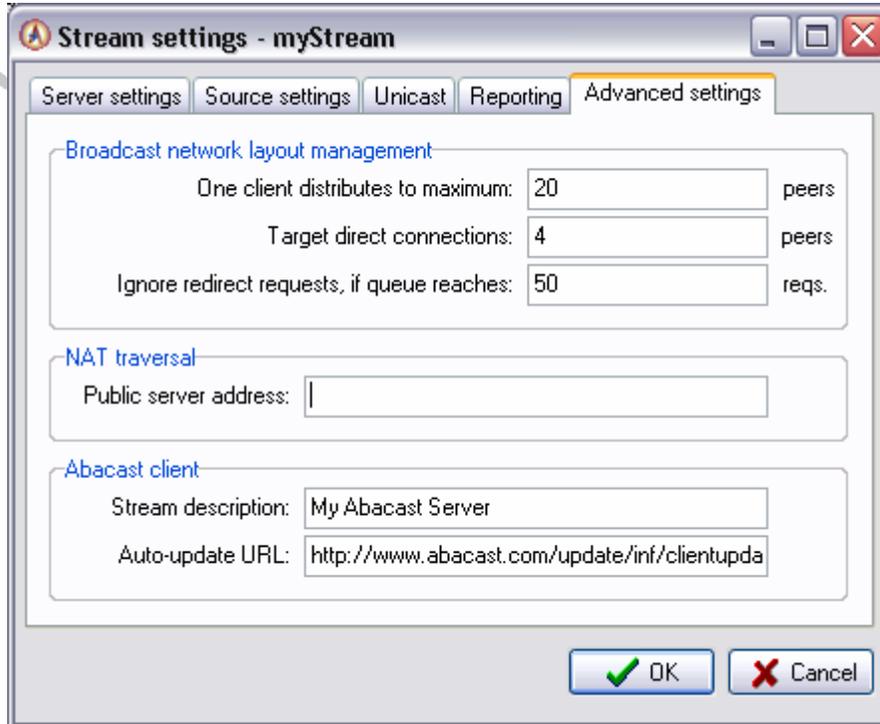
Advanced Settings	
One client distributes to maximum	Set the maximum number of peers one peer can relay the stream to.
Target Direct Connections	The Abacast Server will attempt to maintain a certain number of direct connections. We recommend leaving this setting at the default value of 4.
Redirect Queue	The Abacast Server contains self-protection logic designed to prevent hardware overload conditions. Part of this technology is the ability to limit redirection requests per second. Leave this value at the default value of 50.
Public Server Address	If your Abacast Server is run behind a router that does Network Address Translation, you will need to tell the Abacast Server to use the external address of the router. This is done with the Reported Level 1 Address setting.
Stream Description	This field is reserved for future development.
Auto Update URL	This field is reserved for future development.

4.1.1 Changing the "FrontEnd" Listening Port

Note: This involves modifying the Windows Registry. If you do not know what you are doing you can break you computer!

By default, the Abacast Server accepts client queries on port 80. To modify this port, create the following DWORD registry key. The server service must be restarted before changes take effect.

[HKEY_LOCAL_MACHINE\SOFTWARE\Abacast\Server\FrontEnd]

5. Statistics

Information is Key. The Abacast Server platform now enables content owners, broadcasters and administrators to obtain vital information including current audience counts, stream status and cpu-usage, both in real time and historically.

5.1. Real-time Statistical Interface

5.1.1. Usage

Starting in version 2.0, the Abacast server allows the administrator to query the server directly revealing current state information. The interface allows a query on all streams, or only one.

Please note: querying the server does require some amount of CPU cycles, and should not occur more than 6 times per minute. End-users, web sites or web pages should NEVER be allowed to connect to the Abacast server statistical interface. MISUSE CAN CRASH YOUR SERVER. Lock down the interface by only allowing incoming connection from your internal IPs and from Abacast's IPs (provided by your sales rep).

The interface response to HTTP GET requests of the following form:

> http://serverurl:8800/server - 'server' is a literal, all streams
> http://serverurl:8800/mystream - specific stream name

The server will respond to the /server query with a response like the following:

```
<?xml version="1.0" ?>
<abacast-server>
<generated>2004-07-12 11:05:16</generated>
```

```
<cpu-usage>6</cpu-usage>
<server-ip>192.168.0.200:80</server-ip>
<server-version>v2.1</server-version>
<stream>
      <alias>mystream2</alias>
      <audience-total>0</audience-total>
      <audience-direct>0</audience-direct>
      <bitrate>20004</bitrate>
      <status>2</status>
      <status-text>Receiving.</status-text>
      <control-port>9001</control-port>
      <data-port>4001</data-port>
      <format>200</format>
      <format-text>Abacast Windows Media Services Plug-
      in</format-text>
</stream>
<stream>
      <alias>mystream</alias>
      <audience-total>0</audience-total>
      <audience-direct>0</audience-direct>
      <bitrate>0</bitrate>
      <status>3</status>
      <status-text>Looking up host name...</status-text>
      <control-port>9000</control-port>
      <data-port>4000</data-port>
      <format>200</format>
      <format-text>Abacast Windows Media Services Plug-
      in</format-text>
</stream>
</abacast-server>
```

5.1.2. Reported Server Status Codes

The monitor provides per-stream status codes. The following table
lists possible codes.

Status	Description
0	The stream is in a stopped state
1	The stream is in a starting state
2	The stream is in a running state
3	The stream is in an error state or is currently reconnecting
4	The stream is stopping

5.1.3. Changing the Listening Port

Note: This involves modifying the Windows Registry. If you do not know what you are doing you can break you computer!

The real-time statistical engine runs by default on port 8800. To modify this port, create the following DWORD registry key. The server service must be restarted before changes take effect.

[HKEY_LOCAL_MACHINE\SOFTWARE\Abacast\Server\MonitorPort]

5.2 Historical Data — W3C Logs

The Abacast Server creates Windows Media Services compatible W3C Log Format Files. To capture peering efficiency and actual bandwidth used, we've added one additional field called *s-connectedclients*. This field represents the current number of peers directly connected to the server. Please note that your legacy log parsing applications may need to be updated to handle the addition field.

6. Tuning Considerations

The performance of your Abacast Server depends in large part on the performance of your hardware. Optimal hardware tuning consists of the following:

1) Tune Windows use of ports using the *MaxUserPort* registry key. Find more information at http://www.microsoft.com/windows2000/techinfo/reskit/en-us/default.asp?url=/windows2000/techinfo/reskit/en-us/regentry/58791.asp.
2) Disable any unused processes
3) Keep Windows up to date
4) Use a good quality firewall

7. Performance Logs

The Abacast server presents raw log data for administrative use. There are two logs created by the Abacast server: the Common log and the Error log.

7.1. Common Log

The common log is created every day and is created in the %Abacast%\Logs directory. Common logs are named in the following date format: mmddyyyy.log

7.2. Error Log

An Error log (AbacastServer.err) may be created in the %Windows%\System32 directory. Please note that entries in this log do not necessarily indicate a problem with your Abacast server. If you have questions about these logs or the performance of your Abacast server, please email compressed log files with a description of your concern to dedicated-support@abacast.com.

8. New Features

The Abacast Streaming Media Platform version 2.0 adds the following features:

- Server now runs as Windows Service
- Built-in Unicast Drive implementation
- No downtime configuration changes
- Real-time Statistical Interface
- Historical logging improvement through updated W3C Logs