Integration Note

Manufacturer:	HC Internal Player
Core Module Versions:	5.1.401 or newer required for Shoutcast internet radio 5.2.568 or newer required for iTunes and m4a file support
Notes:	This document only covers the HC Internal Player and is NOT applicable to legacy system controllers (HomeBricks & MultiBricks)
Document Revision Date:	11/06/2013

OVERVIEW AND SUPPORTED FEATURES

HC Controllers include up to two audio outputs (depending on model) that may be used to play digital music.

- In version 5.1 the HC Player supports playing .MP3 and .WAV music libraries.

- Version 5.2 adds the ability to playback unencrypted .M4A (AAC – no DRM) files and optionally use an iTunes library to build the g! music library and pull any user generated iTunes playlists into the **g!** library.

DIGITAL MUSIC LIBRARY VIA THE HC INTERNAL PLAYER (NON-ITUNES LIBRARY):

THE FOLLOWING PLAYBACK OPTIONS ARE SUPPORTED BY THE INTERNAL PLAYER:

- Play and index digital music stored locally or on network storage.

- Browse library by Artist, Album or Tracks and create/manage Playlists.

- Supports .MP3 , .WAV, and .M4A files stored on the HC Hard Disk (if applicable) or other networked storage device.

- Stream Shoutcast internet radio stations

THE FOLLOWING PLAYBACK OPTIONS ARE NOT SUPPORTED BY THE INTERNAL PLAYER:

- Internet Radio other than Shoutcast

- File formats other than .MP3, .WAV, or .M4A (5.2 core module required for M4A)

- Digital music libraries in excess of 65,000 tracks.

- Scanning audio libraries while playing back audio tracks

- Network music sources where the device is not always present and powered on.

- Internet lookup of album cover art.

NOTE: RECENT CHANGES TO WINDOWS 7 AND PRESUMABLY WINDOWS 8 HAVE RENDERED "UNPROTECTED SHARING" IMPOSSIBLE. AS SUCH, PCS RUNNING THESE OPERATING SYSTEMS, AS WELL AS MAC COMPUTERS RUNNING SNOW LEOPARD OR LATER, ARE NOT SUITABLE FOR USING TO SHARE MEDIA.

SHOUTCAST INTERNET RADIO:

THE FOLLOWING FEATURES ARE SUPPORTED BY SHOUTCAST INTERNET RADIO:

- Pulls index of stations in real-time from shoutcast.com

- MP3 Streaming Internet Radio

- Saving Favorite Shoutcast stations on the **g!** UI

- Adding supported internet radio station manually thru the configurator

THE FOLLOWING PLAYBACK OPTIONS ARE NOT SUPPORTED BY SHOUTCAST INTERNET RADIO:

- Streams that are not MP3 encoded

- Shoutcast is not available in g**!** Mobile iOS app versions prior to 5.3.

ITUNES LIBRARY:

THE FOLLOWING FEATURES ARE SUPPORTED WITH ITUNES:

- Index and play an iTunes Media Library on a computer with iTunes that is always powered on.

- Playing iTunes User-Generated Playlists

- Home Sharing is supported for iTunes music, however it is required to import any desired music files to the iTunes computer library that is shared with the HC controller. Once the files are imported - perform a library scan for view and playback in g!.

- Cover art is supported for iTunes Music playback, however it is not provided by iTunes directly. To ensure proper cover art is displayed in g! verify that each album folder includes a folder.jpg file of the desired album art prior to scanning your library for the first time. If no art is found the g! software **WILL** NOT be able to download it based on an internet search. See the Common Mistakes section below for tips on managing artwork in **g!**

THE FOLLOWING FEATURES ARE NOT SUPPORTED WITH ITUNES:

- iTunes libraries where the music is stored on a network device other than the device where iTunes is installed

- Multiple iTunes libraries in a single installation

- iTunes audio libraries in excess of 65,000 tracks.

- iTunes sources where the library device is not always present and powered on.

- Editing iTunes playlists in the g! Viewer does not save changes back to iTunes - the Playlist will revert to the iTunes copy during the next library scan.

- Playlists generated by iTunes, such as Recently Played and Genius. These playlists may import, however they will not dynamically update; they will import as a snapshot at the time the folder is rescanned.

- Support for DRM protected media (.M4P protected media is not supported)

- Support for any iTunes files other than music files such as podcasts, tv shows, movies, etc.

Any feature not specifically noted as supported should be assumed to be unsupported.

INSTALLATION OVERVIEW

1. Run appropriate audio cables from the HC Controller to the audio inputs of your Audio Zone Controller.

2. Prepare a digital music library for use with the Internal Player. See either **Digital Music Library Setup** or **iTunes Library Setup** below depending on your music library type.

3. Internal Outputs should be pre-configured in all HC Controllers as MP3 Player Sources, but must be added as sources to a compatible Audio Zone Controller to appear in the Viewer. For more information on **Adding an Audio Zones**, see below.

4. (Optional) Add Audio Services for desired **Internet Radio** features. See **Shoutcast Internet Radio** below for details.

5. Configure a Library Scan scenario. This is typically a button on the zone settings page that the user can press to execute the library scan. It can also be scheduled using the event mapper. See **Scanning Shares** below for details.

6. Browse the Music library and play music from the Viewer to test for proper function.

DIGITAL MUSIC LIBRARY SETUP (NON-ITUNES)

When setting up a library of music to use with the internal player, it is best to setup files in the following manner:

File Structure	File Structure is expected to be as such: "Artist Name\Album Name\Music files". In other words, make directories for each artist. Within each artist directory, place folders for each album. Within the album folders, place the music tracks for that album. Though ID3 info is read and used to sort tracks, keeping files in this structure makes the files much easier to browse on their own, and ensures that correct artwork will be used. *Note that file structure is very important for WAV files, as WAV files do not contain any ID3 information and **g!** will populate the Artist/Album/Track information from the folder names when the folders are arranged in this format.*
MP3 Tags	Files should be appropriately tagged with ID3 information for Artist, Album, Track, and Track number. Other information such as composer or embedded album art is not used at this time, but may be included if desired.
Album Art	Album art should be placed in the Album folder (if available). Note that the expected art format is JPEG, and the largest JPEG image in the folder will be used by default. File name is not important, though typically "folder.jpg" is used. If no art is available in the folder, **g! WILL NOT** automatically look up art from internet sources. See Common Mistakes below for tips on correcting any issues.
Additional Files	Some music libraries may contain additional files, such as lyrics or guitar tabs in the folder. These files will not be used and may be omitted.
WAV Files	WAV files must be uncompressed.

ADDING DIGITAL MUSIC TO AN HC HARD DRIVE

HC's with internal Hard Drives (such as the HC-12) may have music copied to them over the network and accessed as local files. This may be advantageous not only for speed, but reliability; as NAS or network computers may have issues that prevent file access. Be sure to scan shares when finished adding music or after any music library change; see **Scanning Shares** below.
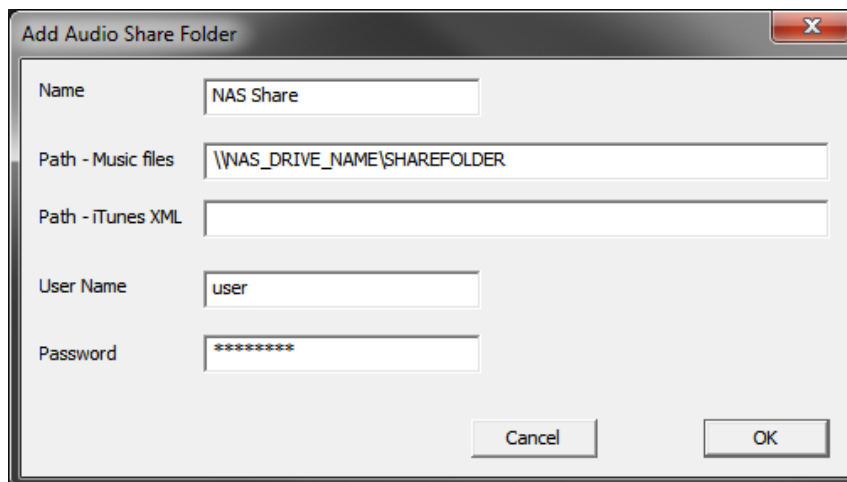
1. To copy files to an HC with an internal hard drive open Windows Explorer or "My Computer" ("Computer" in Win7/Vista)
2. Type in the network path for the HC music folder (\\hcxx\music)
3. Files may be copied and pasted directly into this folder.

You may also map the HC share folder as a network share to remember the location for future access from the toolbar while in My Computer.

ADDING NETWORK SHARES TO AN HC CONTROLLER

HC's may have network shares added as music sources. Network shares should either be on a computer that is on 24 hours a day, or better yet, on a NAS drive. It is recommended to use a NAS drive installed by the dealer, as this drive will only be used for network storage for the HC, will be on 24 hours a day, and is a part the installer may be familiar with and in control of. NAS drives or network shares must be available on the same subnet as the HC controller, and must be configured without authentication (username/password) for access. Be sure to scan shares when finished adding music; see **Scanning Shares** below.

1. To add new music network share folders (not iTunes) click on the Content tab of Configurator.
2. Right-click "Audio Share Folders" and "Add New Audio Share Folder".
3. For music stored on a NAS drive, enter the information as below:

Name	Enter a name for your reference, or duplicate the path.
Path- Music Files	Enter the network path. Typically this is formatted like \\computername\sharefoldername.
Path- iTunes XML	Leave Blank for non-iTunes libraries. (see iTunes below for iTunes libraries)
User Name	This is an unsupported feature. Use open shares. <Login Name for a protected share>
Password	This is an unsupported feature. Use open shares. <Login Password for a protected share>

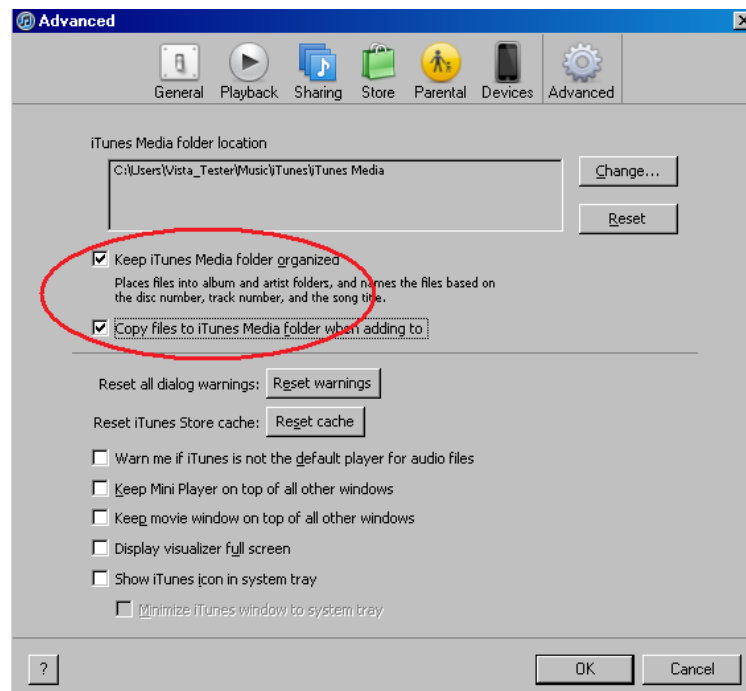4. Scan the new share. See the section labeled "Scanning Shares" below for further information.

iTunes Library Setup

Adding iTunes Music

NOTE: The following is the **ONLY** supported iTunes setup.

The iTunes folder contains a file named "iTunes Music Library.xml" that is generated and maintained by iTunes and contains the meta data and location information for all files and playlists in the iTunes library. The **g!** software will use this file for indexing the **g!** music library with iTunes. Network shares should be on a computer that is on and available 24 hours a day, 7 days a week.

1. Install iTunes on a computer on the network. Use the default iTunes settings.
   a. **CHANGING THE DEFAULT LOCATION OF THE iTUNES LIBRARY IS NOT SUPPORTED**.
   b. The library MUST be located in the iTunes folder on the computer for **g!** to correctly index the music and playlists.
   c. The computer must remain on and connected to the network 24/7.

2. Set the iTunes folder to an open share.
   - Using Windows Explorer, navigate to the iTunes folder and right click it to enable sharing.

     - In Windows XP, the path to the folder should be: `C:\Documents and Settings\`*username*`\My Documents\My Music\iTunes\`
     - In Windows Vista, the path should be: `C:\Users\`*username*`\Music\iTunes\`
     - In Windows 7, the path should be: `C:\Users\`*username*`\My Music\iTunes\`
     - The computer used to host iTunes music to the HC-Controller must be always present and powered on 24/7.

3. It is recommended to use iTunes library organization when integrating with **g!** to help keep a consistent folder structure. From the iTunes Edit menu select Preferences then the advanced tab.
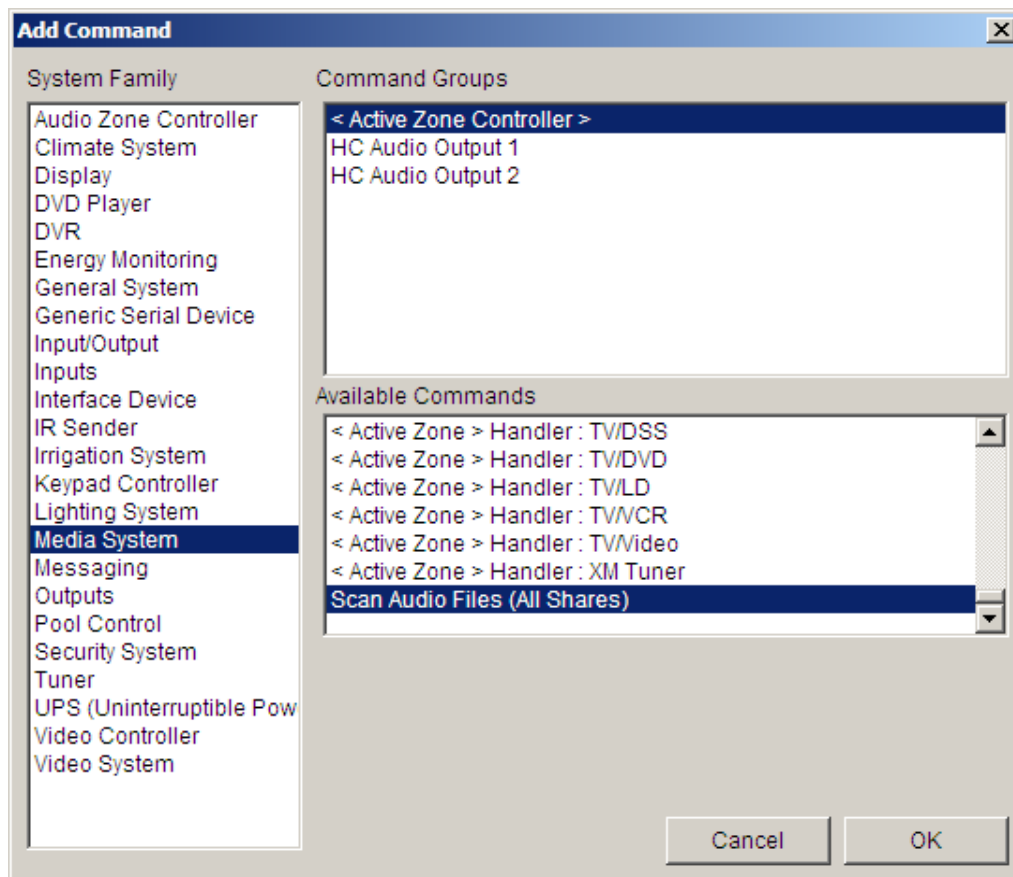
4. In the Configurator, go to the Content tab and add a new Audio Library Share Folder:
   d. Set the name to "**iTunes**".
   e. Set the "Path- Music Files" field to point to the iTunes Media folder within iTunes using the following format: **\\computername\sharename\iTunes Media**, where "computername" is the UNC network name of the computer upon which iTunes resides, and "sharename" is the name given to the iTunes folder when it was shared.
   f. Set the "Path- iTunes XML" field to point to the root of the share you created above, **\\computername\sharename**, as this is where the iTunes Library.xml file should reside in a default installation.
   g. The username and password authentication feature is unsupported. Protected shares SHOULD NOT BE USED and are not supported at this time.
   h. **See Adding Network Shares To An HC Controller** above for more details on adding a network share and specific network share requirements, such as 24/7 access.

Name	Enter a name for the iTunes library.
Path- Music Files	Enter the path to the iTunes Music files. Typically this is formatted like \\computername\sharefoldername\iTunes Media. See the iTunes integration section for details.
Path- iTunes XML	Enter the path to the iTunes folder which contains the "iTunes Library.xml" file. See the iTunes integration section for details.
User Name	This is an unsupported feature. Use open shares. <Login Name for a protected share>]
Password	This is an unsupported feature. Use open shares. <Login Password for a protected share>

5. Scan the new share when complete to sync with iTunes. You will need to scan any time there has been a change in the iTunes library. See the section labeled "Scanning Shares" below for further information.

SCANNING SHARES

After you are done copying music to the HC or setting up a network share you will need to scan the audio library share folder. You will also need to scan the share after every change to the music library. This is typically done by adding a button to the zone setting page to execute the library scan from the viewer interface. Scanning may also be done by using automatic schedule under Audio Library Scan Options in the Content tab of Configurator. To manually scan shares, you may right-click a share on the Content tab of Configurator and choose "Scan Now". To configure a scan button on a custom tab or interface that executes the library scan all shares use the command as shown below. NOTE: scanning a library while playing may result in a corrupt now playing list:

ADDING AN AUDIO ZONE

Adding the Internal Player will create a source in the **g!** system, but it will not create an audio zone, which is an important distinction, because only audio zones appear in the Viewer interface.

To get an audio zone in the viewer interface, you must add an **Audio Zone Controller**.

For whole house audio systems, this will be a device like the ELAN S12, for example. Refer to the Integration Note for the zone controller you plan to use for more information.

SHOUTCAST INTERNET RADIO (OPTIONAL)

ADDING SHOUTCAST INTERNET RADIO

To add internet radio to an output, you must add the internet radio feature to the desired HC Audio Output in Configurator. Enter the Media Tab, and right-click Audio Services underneath the desired MP3 player and "Add New Audio Service". Select SHOUTcast (Internet) from the list and click ok.
No further configuration is required.
SHOUTcast will appear as a new tab under the Internal Player source in the interface.

MANUALLY ADDING FAVORITES IN CONFIGURATOR (OPTIONAL)

Note: Shoutcast stations that appear in the Viewer list may be easily added as favorites in the Viewer. This section explains how to manually add stations that do not appear in the Viewer or come from sites other than Shoutcast.

The Shoutcast player can stream MP3 encoded PLS format streams. PLS is a standard container format that is essentially a playlist for a series of MP3 files. PLS streaming files are a common format used by shoutcast.com and many other sites, and are generally free. As PLS is a standard format, stations from other sites *may* be compatible and can be manually added as favorites if desired. The Internal Player was written to accommodate Shoutcast, and internet radio from other sites may not work.
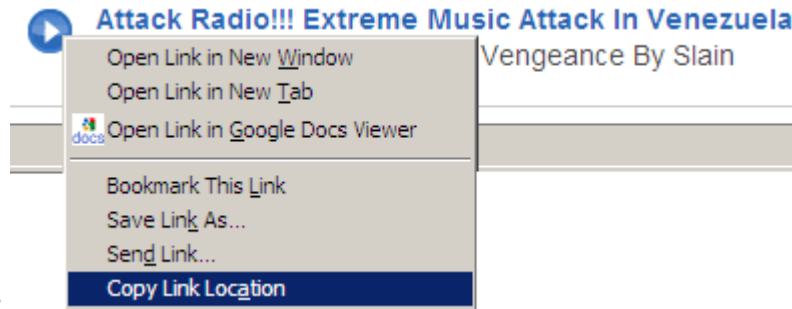
Station requirements:

- **PLS Format** (sometimes called shoutcast/winamp format or displaying this icon:).
- **MP3 Encoded** – PLS streams support various encoders such as MP3, AAC, OGG etc. Only **MP3** streams will play in **g!**
- ASX format is Windows Media and is **not** supported.
- Typically, if you click a "Listen Live" link on a radio station web page, and it launches a Flash/Java application in a new window to play the stream, the stream is **not** compatible.
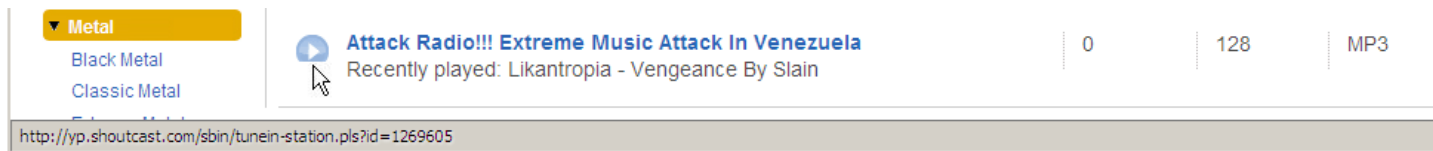
Locating a Stream Link:
When you locate a station in PLS format with MP3 encoding you wish to add as a favorite, copy down the stream link.

- Sometimes this is as simple as right-clicking the link, and choosing copy link location. You can then paste the link into **g!** and edit as needed.
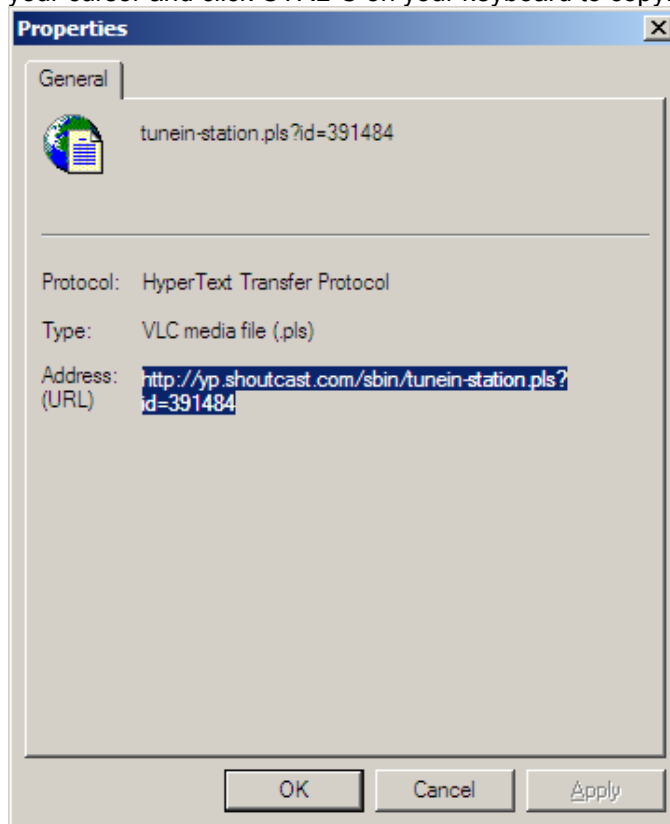

Ex. Firefox:

- You may also see the link used on some sites by hovering over the play link. The link will appear at the bottom of the browser window in the status bar:
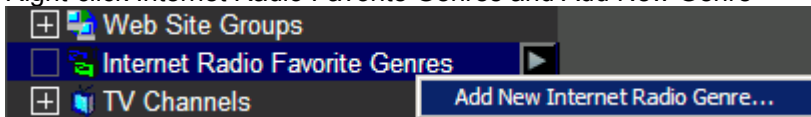

- In Internet Explorer, right-click the link and choose Properties, then highlight the text with your cursor and click CTRL-C on your keyboard to copy:
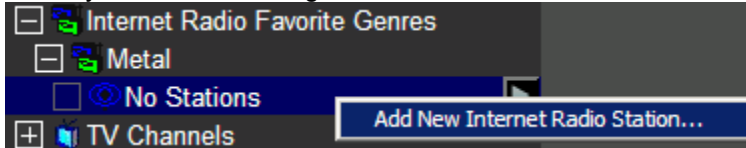
Add the Favorite:

1. In Configurator, click on the Content tab.

2. Right-click Internet Radio Favorite Genres and Add New Genre
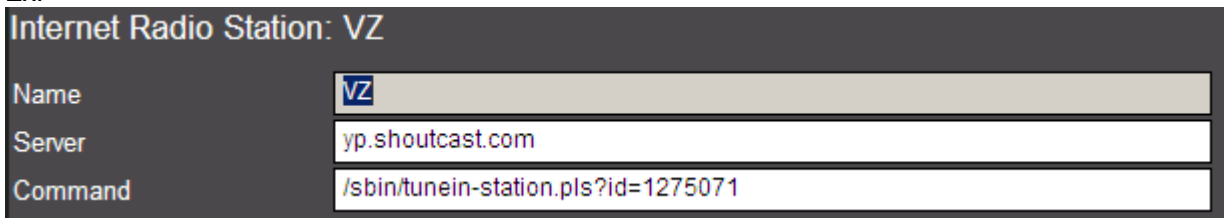

3. Name the Genre as desired and click OK.

4. Under your new Genre, right-click No Stations and click Add Station

5. Name the station as desired and click OK.
6. Now you are ready to insert your new station. To insert your new station, the link must be broken up into a Server and a Command.

Internet Radio Station Parameters	
Name	The station name, which appears in the station list of the Viewer.
PLS Server	The Internet address for the radio station server.
PLS Command	The command used to locate the appropriate audio stream.

7. Typically enter the root website, such as yp.shoutcast.com as the server. Remove the "http://" or this will not function. Enter the rest of the string as the command.
Ex.

Station Link:
http://yp.shoutcast.com /sbin/tunein-station.pls?id=1275071

Server   Command

8. Finally, test the station in the viewer (under Favorites). The station should Look for Stream Servers, Find stream server, and begin streaming if the link was entered correctly.
    o If you receive a message that cannot find stream servers, return to Configurator and edit your server and command. Some stations will have a subdirectory as part of the server line, some stations may need the slash on the server line versus the command line, etc.
    o If you cannot get the station to work, note that the station could be offline in general—try to play the station outside of **g!** using the website or a program like WinAmp. If it works outside of **g!**, verify the stream is **MP3** encoded PLS format.
    o While most stations using this format should work, **g!** was written to accommodate the particulars of Shoutcast.com and other stations may ultimately be incompatible. Contact tech support for assistance.

COMMON MISTAKES

1. Not adding an Audio Zone Controller to the system. Audio Zones appear in the Viewer interface: until you add an Audio Zone, you will not see the HC Internal Player in the Viewer interface. Use the Generic Single Zone Audio for a stand-alone audio zone where the HC Internal Player is driving speakers with a stand-alone amplifier or its internal amplifier.

2. No music in the **g!** viewer library. If music is stored on the **HC**, it is stored in the "**\Hard Disk\Music"** folder. This folder can be accessed on the network at **\\hcxx\music**. If music is stored in a network share, the content must be added as a Music share folder on the Content tab. Once files have been added to the folder/folders added to the Content tab, remember to check the Audio Library Scan settings in Configurator under the Content tab. After content has been added to an Audio Share Folder, it is necessary to scan the folder in order to populate the Music Library.

3. Incorrect file types. Note that only the file formats listed above (MP3, WAV, and M4A) are supported for indexing and playing through the Internal Player.

4. iTunes music not scanning. Make sure that the iTunes XML path is valid and properly shared without authentication required.

5. Music showing OFFLINE in the viewer now playing tab. This indicates that the controller can not access the music files. Make sure that the PC or NAS where the music is stored is powered up and logged on. Also check the directory structure for iTunes and make sure that it matches the setup documentation in this note and the folder is properly shared without any required authentication. Additionally, note that network shares such as NAS must be online 24/7, and should not go to "sleep" or other power saving behavior, as this could delay/inhibit access from the HC controller. The HC controller may need to be rebooted/share re-scanned after a power/access issue is corrected with the network drive for files to stop appearing OFFLINE.

6. Inconsistent libraries. Music has been added to the library but is not available on the HC Player. Verify the music that is missing is a compatible file type. A library rescan is required after every change to the music content.   NOTE: Scanning the library while the HC Player is playing audio will cause odd and inconsistent behavior. To correct this issue stop playback on all HC outputs and rescan the library. See scanning shares above.

7. Inconsistent playlists with iTunes. See the NOT supported with iTunes section at the beginning of this document for some more details. Additionally if you add and then delete an iTunes library on a system controller the playlists will need to be manually deleted in the viewer. If you do not delete these playlists then add in another iTunes library the playlists may be duplicated with only one set being proper and one set being undefined leftover from the deleted library.

8. Incorrect cover art. If the cover art for an album is not correct you will need to first locate and copy a jpg file of the desired artwork to the folder that contains the music with the incorrect artwork. Then in configurator navigate to the media tab and select Audio Library Options. Click the Browse Artwork Cache button and navigate to the cached artwork. Delete all jpg files in the directory of the offending album. Finally play the music to verify the proper art is loaded.

9. Music/iTunes stored on a device that is not always present and powered on 24 hours a day, 7 days a week. All network music shares must be accessible at all times.