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CasaTunes Serial Interface V1.10

Version: 1.10
Date: December 19,
2008

CasaTunes

Multi-Room Music Server

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CasaTunes Serial Interface

Purpose

The CasaTunes Serial Interface (CSI) API provides a simple interface designed to allow remote control of your CasaTunes distributed audio system via a serial interface.

Enabling the CasaTunes Serial Interface

Before you can use the CasaTunes Serial Interface you must enable the *CasaTunes Serial Interface*. By default, the CasaTunes Serial Interface is disabled. To enable the CasaTunes Serial Interface you need to edit the CasaTunesSvc.exe.config file located in the CasaTunes Program Files Folder, typically C:\Program Files\CasaTools\CasaTunes2. The settings are located in the <AppSettings> section of the configuration file.

To enable the CasaTunes Serial Interface make sure the following setting is set to *true*.

```
<add key="CSIEnable" value="true" />
```

By default, the CasaTunes Serial Interface will send a heartbeat message every minute to notify the serial device that the link is still alive. If you want to disable this, then set the *CSIEnableHeartBeat* to *false*.

```
<add key="CSIEnableHeartBeat" value="false"/>
```

If the Serial Interface is being used by a remote control type device that ignores responses or unsolicited messages from CasaTunes, then disable CasaTunes messages by setting *CSIEnableFeedback* to *false*. In this case, you will also want to disable the heartbeat, above.

```
<add key="CSIEnableFeedback" value="false"/>
```

☞ If you are using Windows Vista and UAC is enabled, you will need to open Notepad in Administrator mode, or you will not be able to save your changes.

Configuring your Serial Port

To configure your serial port change the following settings:

```
<add key="CSICommPort" value="[1], 2, ..., 32" />  
<add key="CSIBaudRate" value="[19200] or any valid baud rate" />  
<add key="CSIDataBits" value="[8], 7, 9" />  
<add key="CSIStopBits" value="[One], OnePointFive, Two" />  
<add key="CSIParity" value="[none], even, odd, mark, space" />  
<add key="CSISHandshake" value="[none], XonXoff, CtsRts, DsrDtr" />
```

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You should change these values to match your device serial port settings. Values delimited within [] are the default option, with other options provided in a comma separated list. You should only include a single value from the available options.

You can specify the delay between messages sent by CasaTunes. This might be necessary for slower serial devices that may require additional processing time before processing another message or response from CasaTunes. To change the delay between messages, change the following setting. The delay is specified in ms.

```
<add key="CSIMessageDelay" value="50"/>
```

To avoid any delays, set the value to “0”.

You can also create a trace or log file that will log all messages sent between CasaTunes and your serial device. To enable logging these messages, change the following settings:

```
<add key="EnableLogFile" value="[false], true" />
<add key="LogFilePath" value "[CSI.Log]" />
```

The log file is overwritten each time the service is restarted (and the CasaTunes Serial Interface is enabled).

⚠ If you change a setting in your CasaTunesSvc.exe.config file you must first stop and then restart the CasaTunes Windows Service for the change to take effect.

Serial Protocol

The CSI protocol uses different start characters for commands and responses. The format is similar for both commands and responses.

The format of a typical command consists of:

| Start Command Character | Command | Parameters (comma separated list) | End of Command Character |
|-------------------------|----------------------|--|--------------------------|
| ! | POWER | ,ZON1,PWRON | <CR> |
| Comments: | 3 or more characters | Each parameter name is <i>always</i> 3 characters | |

The format of a typical response consists of:

| Start Command Character | Response to Command | Returns a comma separated list | End of Command Character |
|-------------------------|----------------------|---|--------------------------|
| * | SYSINFO | ,ZON1,SRC2,VOL80 | <CR> |
| Comments: | 3 or more characters | Each parameter name is <i>always</i> 3 characters thereby simplifying parsing response data. | |

Where, <CR> is 0x0D hex (or 13 decimal).

All characters sent before the start of command character (!) and all characters sent after the <CR> are ignored.

Commands can either be in lower, upper or mixed case. All responses (with the exception of strings) are in upper case.

All strings are returned within double quotes (“”). For example when a command is issued to find the name of the first Zone, the following command and response packet are sent and received, respectively:

```
!ZNAME,ZON1<CR>
*ZNAME,ZON1,NAM "Kitchen"<CR>
```

The ID of the first Source, Zone or Zone Group always starts at 1 (and not 0).

Unsolicited Responses

Unsolicited responses are sent whenever the system configuration changes. For example, when a user presses the power button on a keypad in Zone 1, the following unsolicited response is sent:

```
*ZINFO,ZON1,PWRON,SRC2,VOL23,MUTOFF<CR>
```

The heartbeat, when enabled, will send the following message approximately every 60 seconds:

```
*OK<CR>
```

Invalid Commands

The System ignores invalid commands, and parses the serial stream looking for the next start of command character (“!”) to re-sync the next command. All correctly formatted commands will result in the CasaTunes Serial Interface issuing a corresponding response command (see individual commands).

Hints for implementing a User Interface using the serial interface

1. Issue a Version command to check communication and the version of the Serial Interface.
2. Issue a Get System Information command to get the number of Zones, Zone Groups, and Sources, as well as whether zones support DND, Master Mode, Party Mode, and Keypad Locking.
3. Get the names for each available Source.
4. Get the names for each available Zone and Zone Group.
5. Get the status for each Zone and Zone Group (if displaying all Zone & Zone Groups).
6. Parse any unsolicited responses to keep the UI updated.

Development Tools

When developing and testing the CasaTunes Serial Interface there are several tools that could benefit your development and testing.

The first tool we recommend is a product called *Virtual Serial Ports Emulator* from EterLogic (<http://www.eterlogic.com>). This free tool allows you to create a *virtual* serial port session emulating the hardware. For example, you can create two virtual COM (serial) ports, such as COM4 and COM5, and create a virtual link between the two. You configure CasaTunes to use COM4 and your terminal program to use COM5.

The second tool we recommend is a product called *Tera Term VT*. This free product is a virtual terminal program that runs on Windows. We used it because HyperTerminal is not included with Windows Vista.

Using these tools, or other tools similar to these, you can manually test the Serial Interface; validating commands, checking responses, and viewing unsolicited messages.

CasaTunes Serial Interface Commands

All Zones On or Off

This command will turn all Zones on or off. If a Zone is *powered* and *DND* (Do Not Disturb) is set, the Zone is not affected.

Command:

```
!ALLZONES,ALLON<CR>  
!ALLZONES,ALLOFF<CR>
```

Response:

Same as the command but with an * as the start character, that is:

```
*ALLZONES,ALLON<CR>  
*ALLZONES,ALLOFF<CR>
```

Power Zone or Zone Group On or Off

This command will turn a Zone or Zone Group on or off. When turning a Zone or Zone Group Off, you can also specify a delay (in minutes) before turning off the Zone.

Command:

!POWER,ZON1,PWRON<CR> - Turn the first Zone on
!POWER,ZON2,PWROFF<CR> - Turn the second Zone off
!POWER,ZON2,PWROFF,DEL15<CR>
- Turn the second Zone off after 15 minutes
!POWER,ZGP1,PWRON<CR> - Turn the first Zone Group on

Response:

Same as the command but with an * as the start character

Change Source on a Zone or Zone Group

This command will change the Source for the specified Zone or Zone Group.

Command:

!SRCCHG,ZON1,SRC3<CR> - Change the Source on Zone 1 to 3
!SRCCHG,ZGP2,SRC3<CR> - Change the Source on Zone Group 2 to 3

Response:

Same as the command but with an * as the start character

Change the Volume on a Zone or Zone Group

This command will change the volume for the specified Zone or Zone Group.

If this Zone is a Master Zone it will change the volume for all Zones in the Zone Group.

Although setting the volume to 0 will turn the volume off for this Zone or Zone Group, we recommend using the Mute command as it preserves the volume setting for the Zone, or each Zone in the Zone Group, in the event that you select to un-mute the volume later.

The valid range for this command is 0 (off) to 99 (maximum volume) for the Zone or Zone Group.

Command:

!VOLUME,ZON1,VOL40<CR> - Set the volume for Zone 1 to 40
!VOLUME,ZGP3,VOL25<CR> - Set the volume for Zone Group 3 to 25

Response:

Same as the command but with an * as the start character

Mute the volume on a Zone or Zone Group

This command will mute the volume for the specified Zone or Zone Group.

If this Zone is a Master Zone it will change the volume for all Zones in the Zone Group.

Command:

| | |
|-----------------------|----------------------------|
| !MUTE,ZON3,MUTON<CR> | - Mutes Zone 3 |
| !MUTE,ZGP3,MUTON<CR> | - Mutes Zone Group 3 |
| !MUTE,ZON3,MUTOFF<CR> | - Turns mute on Zone 3 off |

Response:

Same as the command but with an * as the start character

Enable or Disable Do Not Disturb for a Zone

This command will enable or disable DND for a Zone, if the matrix switch supports Do Not Disturb (DND) mode. You can verify whether the current controller supports DND Mode by issuing a *Get Extended Zone Information* command.

Command:

| | |
|----------------------|-------------------------|
| !DND,ZON1,DNDON<CR> | - Enable DND on Zone 1 |
| !DND,ZON2,DNDOFF<CR> | - Disable DND on Zone 2 |

Response:

Same as the command but with an * as the start character, or:
*DND,NAV<CR> if DND is not supported on the current controller

Enable or Disable Party Mode for a Zone

This command will enable or disable Party Mode for a Zone, if the matrix switch supports Party mode (for example, Russound AV Controllers). You can verify whether the current controller supports Party Mode by issuing a *Get Extended Zone Information* command.

Command:

!PARTY,ZON4,PTYON<CR> - Enable Party Mode on Zone 4
!PARTY,ZON4,PTYOFF<CR> - Disable Party Mode on Zone 4

Response:

Same as the command but with an * as the start character, or:

*PARTY,NAV<CR> if Party Mode is not supported on the current controller

Enable or Disable Master Mode for a Zone

This command will enable or disable Master Mode for a Zone, if the matrix switch supports Master mode. You can verify whether the current controller supports Master Mode by issuing a *Get Extended Zone Information* command.

Command:

!MASTER,ZON4,MSTON<CR> - Enable Master Mode on Zone 4
!MASTER,ZON4,MSTOFF<CR> - Disable Master Mode on Zone 4

Response:

Same as the command but with an * as the start character, or:

*MASTER,NAV<CR> if Master Mode is not supported on the current controller

Lock or Unlock the keypad for a Zone

This command will lock or unlock a keypad for a Zone, if the matrix switch supports keypad locking. You can verify whether the current controller supports keypad locking by issuing a *Get Extended Zone Information* command.

Command:

| | |
|-----------------------|---------------------------|
| !LOCK,ZON4,LCKON<CR> | - Lock keypad on Zone 4 |
| !LOCK,ZON4,LCKOFF<CR> | - Unlock keypad on Zone 4 |

Response:

Same as the command but with an * as the start character, or:

*LOCK,NAV<CR> if keypad locking is not supported on this matrix switch

Source Control – Pause

This command will pause the current song.

Command:

!SRCPAUSE,ZON2<CR> - Pause playing on Zone 2

– or –

! SRCPAUSE,SRC3<CR> - Pause playing on Source 3

Response:

Same as the command but with an * as the start character

Source Control – Stop

This command will stop the current song or internet radio station. When you stop a playlist, the next time you select play, the list is played from the beginning again.

Command:

!SRCSTOP,ZON1<CR> - Stop playing on Zone 1

– or –

!SRCSTOP,SRC1<CR> - Stop playing on Source 1

Response:

Same as the command but with an * as the start character

Source Control – Skip To Next Track

This command will play the next song in the playlist.

Command:

!SRCNEXTTRK,ZON1<CR> - Play the next song on Zone 1

– or –

!SRCNEXTTRK,SRC1<CR> - Play the next song on Source 1

Response:

Same as the command but with an * as the start character

Source Control – Skip To Previous Track

This command will play the previous song in the playlist.

Command:

!SRCPREVTRK,ZON1<CR> - Play the previous song on Zone 1

– or –

!SRCPREVTRK,SRC1<CR> - Play the previous song on Source 1

Response:

Same as the command but with an * as the start character

Play Music

Use this command to select a *playlist*, *album*, *artist*, *genre* from your Windows, iTunes, or iPod libraries, or select to play an internet radio or tuner station.

To play music from your Windows, iPod, iTunes music collections, let's look at some examples:

Example 1: !PLAYMUSIC,ZON2,TYP"Windows",ART"Santana",ADD<CR>

This command will add all your Windows music by Artist Santana on the Source in Zone 2 to the Now Playing queue.

Example 2: !PLAYMUSIC,SRC1,TYP"iPod",ALB"Back to Bedlam"<CR>

This will clear the current queue on Source 1 and start playing the Album "Back to Bedlam" from your iPod.

Example 3: !PLAYMUSIC,SRC1,TYP"iTunes",NAM"David's iTunes",PLY"Country"<CR>

This will clear the current queue on Source 1 and start playing the "Country" Playlist from your iTunes library, named "David's iTunes"¹.

To play an internet radio station (ShoutCast station)

Example 4: !PLAYMUSIC,SRC2,TYP"iRadio",STN"Whisperings Solo Piano"<CR>

To play an XM station (XM Channel 26)

Example 5: !PLAYMUSIC,SRC5,TYP"XM",FRQ"26"<CR>

To play an FM station (103.1)

Example 6: !PLAYMUSIC,SRC6,TYP"FM",FRQ"103.1"<CR>

¹ The NAM parameter is only required if you did not select to aggregate all your iTunes libraries into a single library. See CasaTunesSync for more information.

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Notes:

- You can specify either the Zone or Source where you want the music to play
- **TYP** can be one of: [Windows, iTunes, iPod, iRadio, AM, FM, XM, Sirius]
- **NAM** is the name of your iTunes library you setup in CasaTunesSync
- The type of selection can be one of the following:
 - **ART**”*Artist Name*”
 - **ALB**”*Album Name*”
 - **GEN**”*Genre Name*”
 - **PLY**”*Playlist Name*”
 - **FRQ**”*AM/FM Tuner Frequency or XM/SIRIUS Channel*”
 - **STN**”*Internet Radio Station Name*”
- **ADD** to add your selection to the queue. If ADD is not specified the current playlist is replaced.

Get System Information

This command provides information about the capabilities of the matrix switch. You can use this command to get information on the number of Zones, Zone Groups, Sources, and whether DND, Party Mode, Keypad Locking, and Master Mode commands are supported.

Command:

```
!SYSINFO<CR>
```

Response:

```
* SYSINFO,ZONxx,ZGPgg,SRCy, DNDzzz,PTYzzz,LCKzzz,MSTzzz<CR>
```

Where,

- xx are the total number of Zones available
- gg are the total number of Zone Groups available
- yy are the total number of Sources available
- zzz is ON (if available) or OFF (Not Available)

Get Zone or Zone Group Information

This command provides information about the specified Zone or Zone Group. You can use this command to determine the Source, or volume level for a Zone or Zone Group, and whether the Zone or Zone Group is on and muted.

Command:

!ZINFO,ZON1<CR> - Get the information for Zone 1
!ZINFO,ZGP3<CR> - Get the information for Zone Group 3

Response:

*ZINFO,ZONxx,PWRzzz,SRCCyy,VOLww,MUTzzz<CR>

Where,

ZONxx – Specifies the ID of the Zone (ZGxx for Zone Group)
PWRzzz – Specifies whether the Zone/Zone Group is Powered (ON/OFF)
SRCCyy – Specifies the Source ID for the Zone or Zone Group
VOLww – Specifies the current volume level for the Zone or Zone Group
MUTzzz – Specifies whether the Zone or Zone Group is Muted (ON/OFF)

Get Extended Zone Information

This command provides extended information for the specified Zone. You can use this command to determine whether DND, Party Mode, Master Mode, and/or keypad Locking features are enabled for this Zone, as well as whether this Zone is configured as Hidden (in the CasaTunes Setup application). If a feature is not supported it is set to OFF.

Command:

`!ZEXINFO,ZON1<CR>` - Get the extended information for Zone 1

Response:

* `ZEXINFO,ZONxx,HIDzzz, DNDzzz,PTYzzz,LCKzzz,MSTzzz<CR>`

Where,

`ZONxx` – Specifies the ID of the Zone

`HIDzzz` – Specifies whether the Zone is hidden (ON/OFF)

`DNDzzz` – Specifies whether DND is enabled (ON/OFF)

`PTYzzz` – Specifies whether Party Mode is enabled (ON/OFF)

`LCKzzz` – Specifies whether Keypad Locking is enabled (ON/OFF)

`MSTzzz` – Specifies whether Master Mode is enabled (ON/OFF)

Get the Zone or Zone Group Name

This command will return the name for the specified Zone or Zone Group. The name is returned in double quotes.

Command:

!ZNAME,ZON1<CR> - Get the name of Zone 1
!ZNAME,ZGP2<CR> - Get the name of Zone Group 2

Response:

*ZNAME,ZONxx,NAM"Kitchen"<CR>
*ZNAME,ZGPxx,NAM"PARTY"<CR>

Where,

ZONxx – Specifies the Zone ID
ZGPxx – Specifies the Zone Group ID

Get the Source Name

This command will return the name for the specified Source. The name is returned in double quotes.

Command:

!SNAME,SRC1<CR> - Get the name of Source 1

Response:

*SNAME,SRCxx,NAM"Player 1"<CR>

Where,

SRCxx – Specifies the Source ID

Get CasaTunes Serial Interface Version Information

This command will return the current version of the CasaTunes Serial Interface. There is a Major and Minor version. This is a good command to submit initially to verify communications are functioning correctly.

Command:

```
!VERSION<CR>
```

Response:

```
*VERSION,MAJxx,MINyy,NAM"CasaTunes Serial Interface"<CR>
```

Where,

| | |
|-------|-------------------------------|
| MAJxx | - Specifies the Major version |
| MINyy | - Specifies the Minor version |