



HCA Tech Note 603

Sonos

This technical note provides instructions for adding a package to your HCA design to allow control of a Sonos system.

Note: You must be using HCA 15 or later for Sonos support.

Using the Sonos programs you can start and stop Sonos groups and players, get and control volume, load favorites and playlists, and skip next and previous.

Why integrate Sonos and HCA?

- You can schedule actions for your Sonos gear. Wake to music or go to bed to music and stop after a timer runs down. Change volume over time as you wake or go to sleep.
- You can combine Sonos control with control of other devices. Turn on Sonos and set room lighting with one button.
- Combine with a Geo-Fence or garage door opening and not come home to a dark and silent home.
- Control Sonos action from an in-wall or remote Insteon, UPB or X10 keypad.

Getting Ready

Before working with HCA, make sure that your Sonos system is all installed and working, and you are familiar with the Sonos app. You will need username and password for your Sonos account as part of the authorization process.

Step 1: Sonos Authorization

Go into your cloud account and authorize Sonos to work with HCA using the same method as any service authorization.

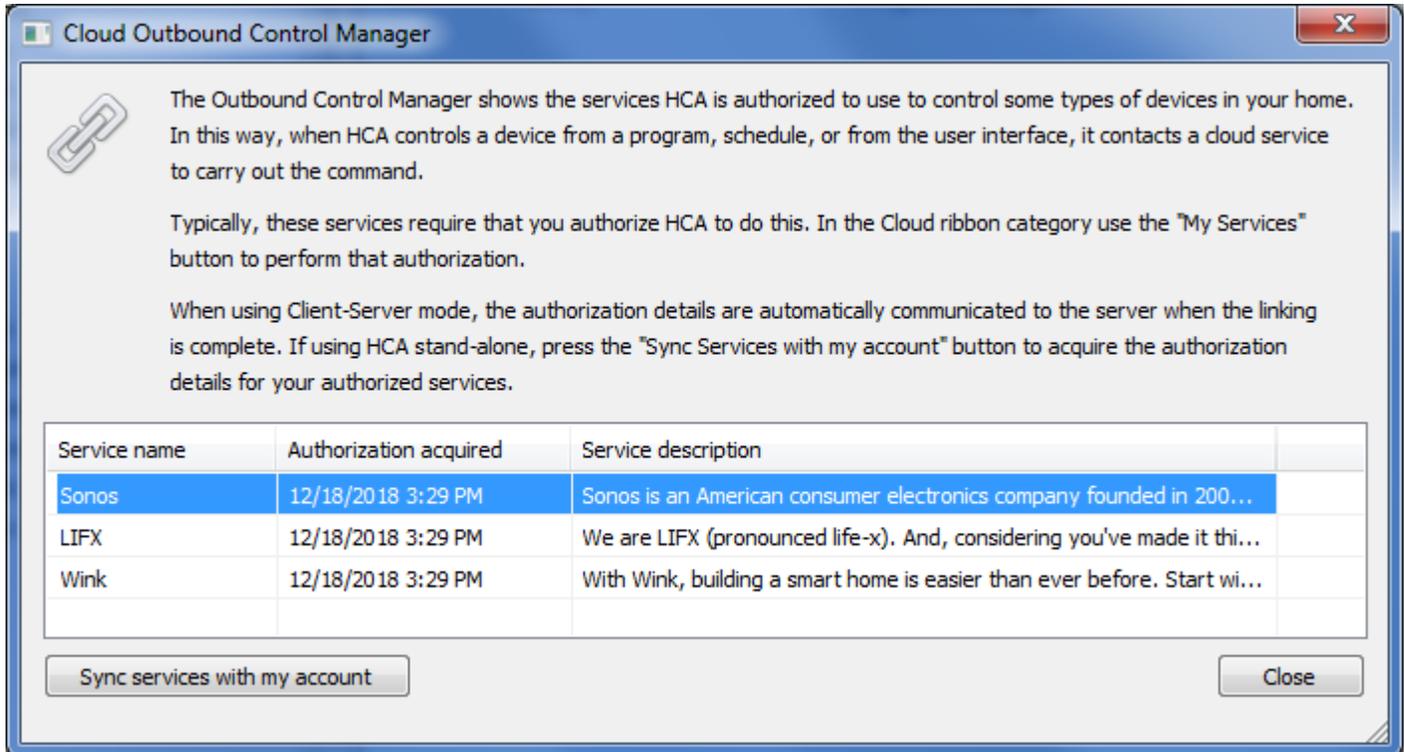
	Sonos 
Minimum HCA Version	15.0
Service Website	www.sonos.com
Description	Sonos is an American consumer electronics company founded in 2002 by John MacFarlane, Craig Shelburne, Tom Cullen and Trung Mai, based in Santa Barbara, California. Sonos is widely known for the smart speakers it develops and manufactures



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If you are using client-server and the server is running, then the authorization from Sonos comes directly into your design and you need do nothing else.

If you are not running client-server you should go to HCA-Cloud ribbon category and click on the “Outbound Control Manager” and click on the “Sync Services with my account” button. You may want to do this even if using client/server just to check that Sonos is there.



Step 2: Add the Sonos package to your HCA design

In the Design ribbon category, press the Library Browse/Import button to access the online library. Then locate the Sonos package and import.

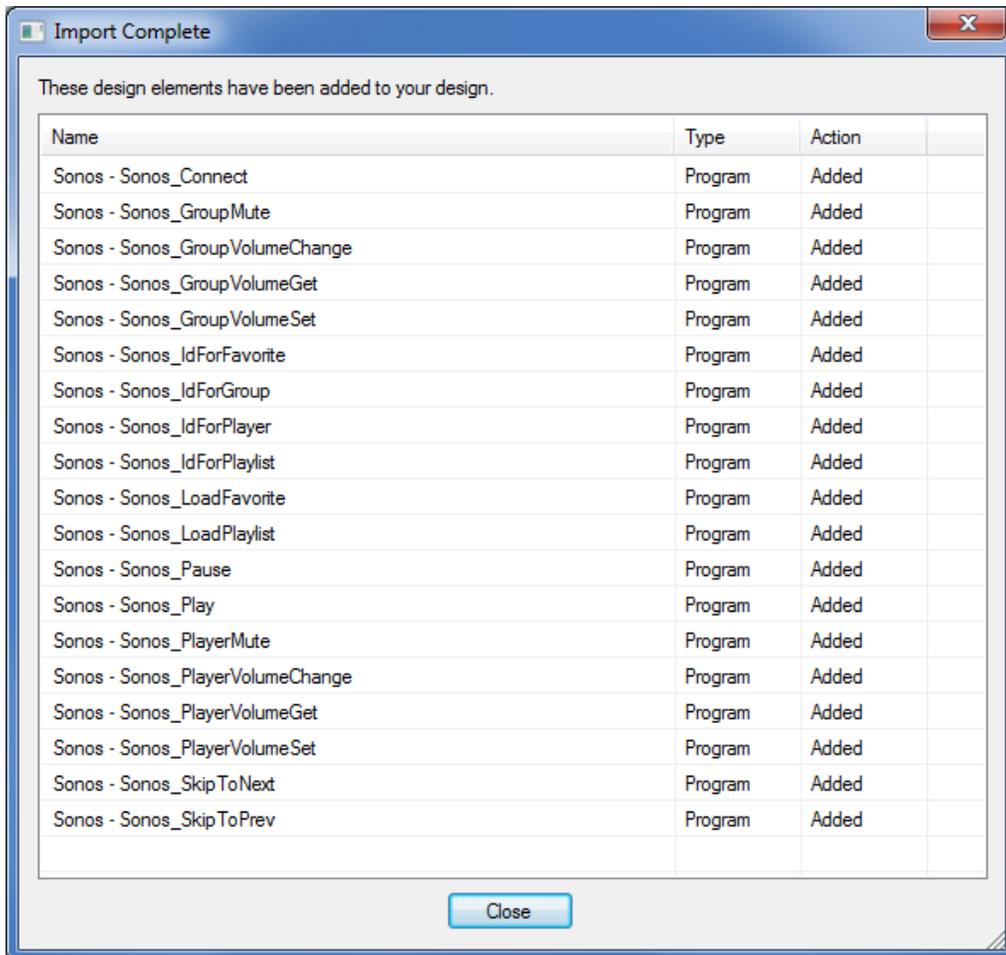
The lower section of the library browser shows the documentation for the package. All the programs that are part of the package are listed with instructions on their use.

Press the *Import Selected* button. The package programs are added to your design and added to the import report.

Note: There may be more programs than is shown in the image below!



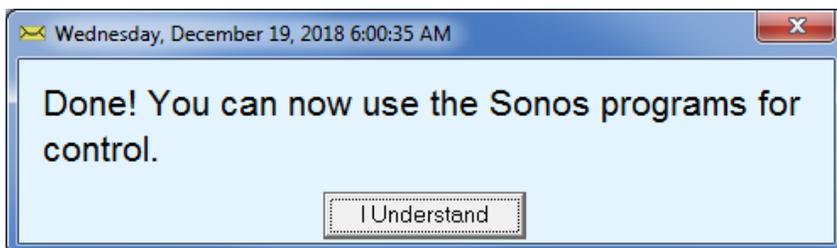
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Two other popup messages follow. The first reports that the import is complete and the second tells you where the documentation for the package has been saved. The import adds all these programs to your design in the Sonos folder.

Step 3: Connect

The first step is to run the program called Sonos_Connect in the Sonos folder. This checks that you have authorized Sonos into your cloud account and that it can communicate with the Sonos Cloud. If all goes well it displays:





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If you have more than one Sonos installation, then it displays a different message and describes what to do in that case.

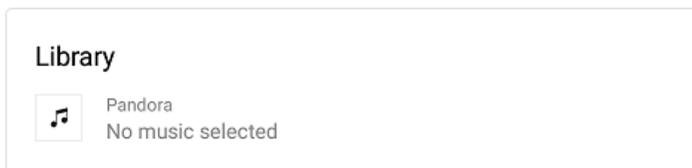
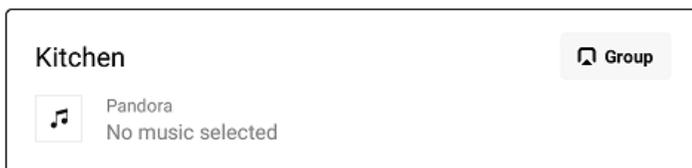
When done, close the message popup.

Step 4: Sonos Terminology

Before getting into the details of controlling Sonos it is important to cover some terminology as you will need to be familiar with it.

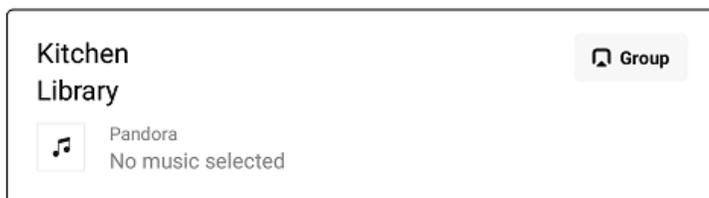
Players:

A player is one of your Sonos speakers that are in your rooms. Here are two speakers, one in the Kitchen and one in the Library. Their names are “Kitchen” and “Library”.



Groups:

A group can be a single speaker in a room or more than one speaker within the same or different rooms that all are controlled together.



In this case, using the Sonos app, the two speakers are grouped together. The name of the group is the first speaker named in the group. In this case “Kitchen”.

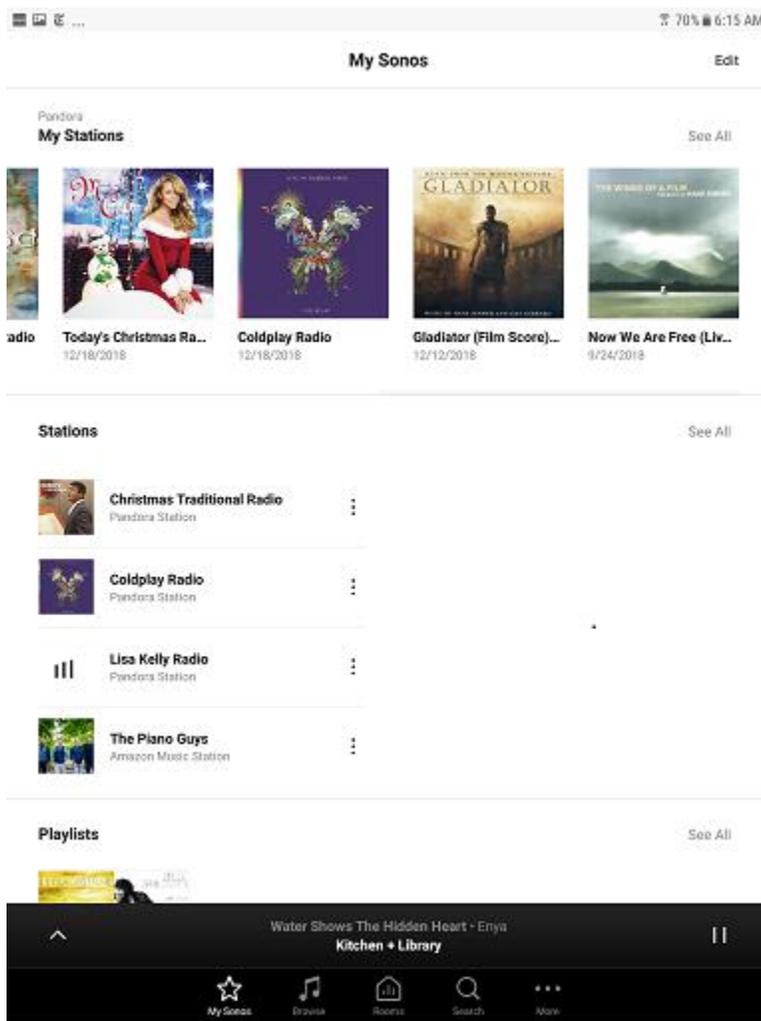
Very important point to know: In the most common case with one speaker in a room, the name of the player, group, and room are all the same.



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Note: If you have more than one speaker in a room and they are not grouped together, they both have the same player name. If you should want to control each separately in this case, contact support for how to do that. But generally, in one room you would most likely want to have the same music being played on all speakers in that room, so they would be grouped together.

Favorites:



Favorites are viewed on the “My Sonos” page of the Sonos app and are listed under “Stations”, “Albums” and “Songs”. But not “Playlists”.

Each has a name and the name is exactly what is shown in the text on the “My Sonos” page.

For example the names “Coldplay Radio” and “The Piano Guys” are the names of favorites.



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Playlists:

Playlists are what you construct with the Sonos App and the name is exactly what is shown in the Sonos app on the “My Sonos” page. The name of the playlist is shown below the image, in this example, the name is “Webs Playlist”

Playlists



Webs Playlist

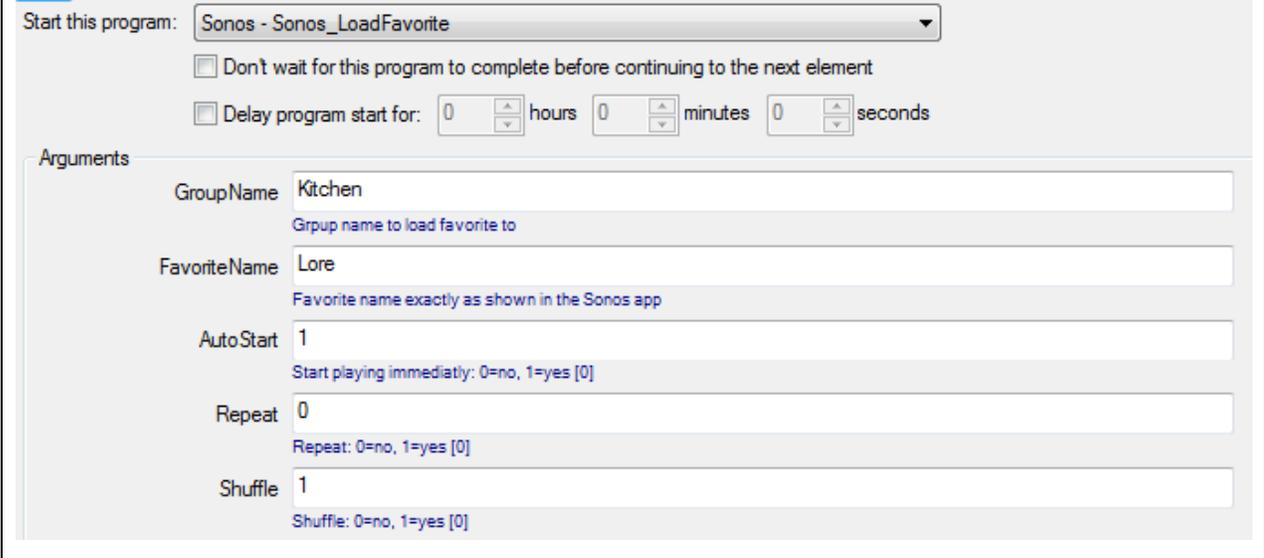
Sonos Playlist



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Step 5: The Sonos functions

If you look in the Sonos folder you will see many programs and while some are “internal” programs, many are the tools you use to control your system. These programs you can use are:

Program Name	Sonos_LoadFavorite
Action	Loads a favorite to play
Parameters	<p>1: Name of the group</p> <p>2: Name of the favorite</p> <p>3: Auto-Start. If 1 starts playing immediately. If 0, play doesn't start and you must use Sonos_Play to start</p> <p>4: Repeat. If 1, repeats after completing the favorite. If 0 does not repeat.</p> <p>5: Shuffle: Shuffles songs if 1, doesn't shuffle if 0</p> <p>Not all music sources support repeat and shuffle.</p>
Example	

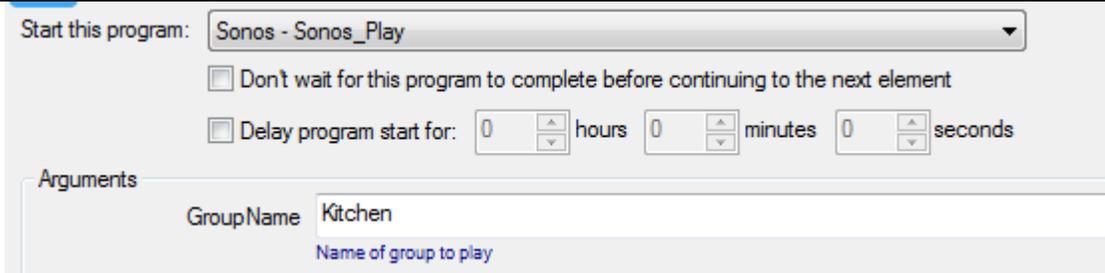


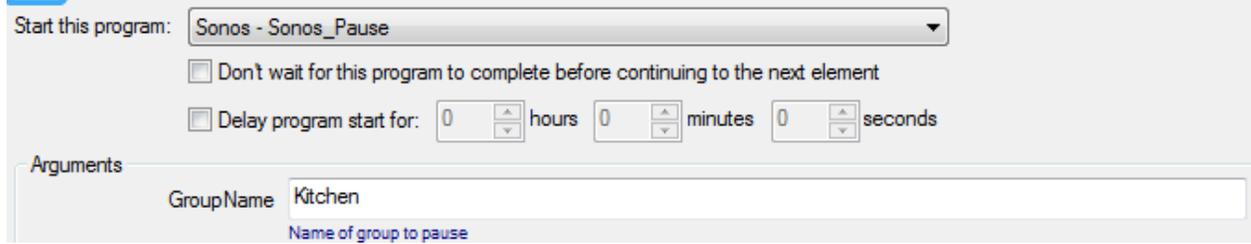
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Program Name	Sonos_LoadPlaylist
Action	Loads a playlist to play
Parameters	<p>1: Name of the group</p> <p>2: Name of the playlist</p> <p>3: Auto-Start. If 1 starts playing immediately. If 0, play doesn't start and you must use Sonos_Play to start</p> <p>4: Repeat. If 1, repeats after completing the playlist. If 0 does not</p> <p>5: Shuffle: Shuffles songs if 1, doesn't if 0</p> <p>6: How to handle the queue: Use Append, Insert, Insert_Next, Replace</p>
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_LoadPlaylist"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>GroupName <input type="text" value="Library"/> <small>Group to load playlist for</small></p> <p>PlaylistName <input type="text" value="Webs Playlist"/> <small>Name of playlist exactly as shown in the Sonos app</small></p> <p>Auto Start <input type="text" value="1"/> <small>Start playing immediately: 0=no, 1=yes [0]</small></p> <p>Repeat <input type="text" value="0"/> <small>Repeat: 0=no, 1=yes [0]</small></p> <p>Shuffle <input type="text" value="0"/> <small>Shuffle: 0=no, 1=yes [0]</small></p>



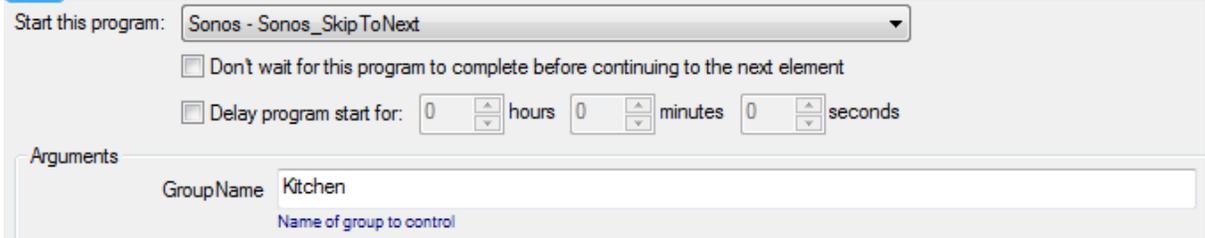
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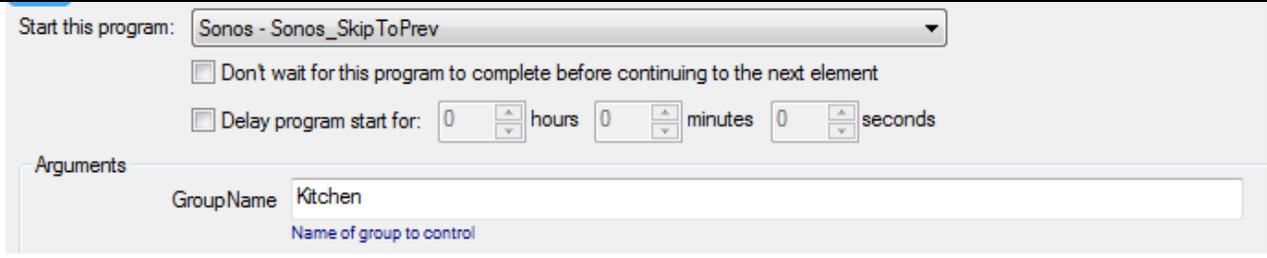
Program Name	Sonos_Play
Action	Starts playing whatever is already selected.
Parameters	The name of the group. If you have a single speaker in a room, the group name is just the room name.
Example	

Program Name	Sonos_Pause
Action	Pauses whatever is playing
Parameters	The name of the group. If you have a single speaker in a room, the group name is just the room name.
Example	



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Program Name	Sonos_SkipToNext
Action	Skip to the next song/track
Parameters	The name of the group. If you have a single speaker in a room, the group name is just the room name. Note that not all music sources support this.
Example	

Program Name	Sonos_SkipToPrev
Action	Go back to the previous song/track
Parameters	The name of the group. If you have a single speaker in a room, the group name is just the room name. Note that not all music sources support this.
Example	



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Program Name	Sonos_GroupMute
Action	Mute or unmute whatever is playing in a group
Parameters	1: The name of the group. If you have a single speaker in a room, the group name is just the room name. 2: An option that says if it should be muted or unmuted. 1 = mute, 0 = unmute
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_GroupMute"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>GroupName <input type="text" value="Kitchen"/> <small>Name of group to mute</small></p> <p>option <input type="text" value="0"/> <small>1=mute, 0=unmute</small></p>

Program Name	Sonos_GroupVolumeChange
Action	Changes the volume of a group
Parameters	1: Group name 2: The change in percent from -100 to +100
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_GroupVolumeChange"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>GroupName <input type="text" value="Kitchen"/> <small>Name of group to change volume</small></p> <p>VolumeDelta <input type="text" value="-15"/> <small>Change in volume: -100 to +100</small></p>



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Program Name	Sonos_GroupVolumeGet
Action	Get the current volume of a group. This function returns a value so in the Start-Program element you must provide the name of a local variable to hold the result, which in this case, is the volume number between 0 and 100.
Parameters	The name of the group.
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_GroupVolumeGet"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>GroupName <input type="text" value="Kitchen"/> Name of group to get volume for</p> <p>The started program returns a result. Variable that hold result when the program completes: <input type="text" value="[volume]"/></p>

Program Name	Sonos_GroupVolumeSet
Action	Sets the volume of a group to a value from 0 to 100
Parameters	1: The group name 2: The volume
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_GroupVolumeSet"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>GroupName <input type="text" value="Kitchen"/> Name of group to set volume</p> <p>Volume <input type="text" value="25"/> Volume: 0 to 100</p>



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Program Name	Sonos_PlayerMute
Action	Mute or unmute whatever is playing in a single player
Parameters	1: The name of the player. If you have a single speaker in a room, the player name is just the room name. 2: An option that says if it should be muted or unmuted.
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_PlayerMute"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>PlayerName <input type="text" value="Kitchen"/> <small>Player name to control</small></p> <p>option <input type="text" value="0"/> <small>0 = unmute, 1 = Mute</small></p>

Program Name	Sonos_PlayerVolumeChange
Action	Changes the volume of a player
Parameters	1: Player name 2: The change in percent from -100 to +100
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_PlayerVolumeChange"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>PlayerName <input type="text" value="Kitchen"/> <small>Player to control</small></p> <p>VolumeDelta <input type="text" value="-15"/> <small>Change volumn by this percentage: -100 to +100 [10]</small></p>



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Program Name	Sonos_PlayerVolumeGet
Action	Get the current volume of a player. This function returns a value so in the Start-Program element you must provide the name of a local variable to hold the result, which in this case, is the volume.
Parameters	The name of the player.
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_PlayerVolumeGet"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>PlayerName <input type="text" value="Kitchen"/> <small>Player to get sound level from</small></p> <p>The started program returns a result. Variable that hold result when the program completes: <input type="text" value="[volume]"/></p>

Program Name	Sonos_PlayerVolumeSet
Action	Sets the volume of a player to a value from 0 to 100
Parameters	1: The player name 2: The volume
Example	<p>Start this program: <input type="text" value="Sonos - Sonos_PlayerVolumeSet"/></p> <p><input type="checkbox"/> Don't wait for this program to complete before continuing to the next element</p> <p><input type="checkbox"/> Delay program start for: <input type="text" value="0"/> hours <input type="text" value="0"/> minutes <input type="text" value="0"/> seconds</p> <p>Arguments</p> <p>PlayerName <input type="text" value="Kitchen"/> <small>Player name to change volume</small></p> <p>Volume <input type="text" value="25"/> <small>Volume percentage 0 to 100</small></p>

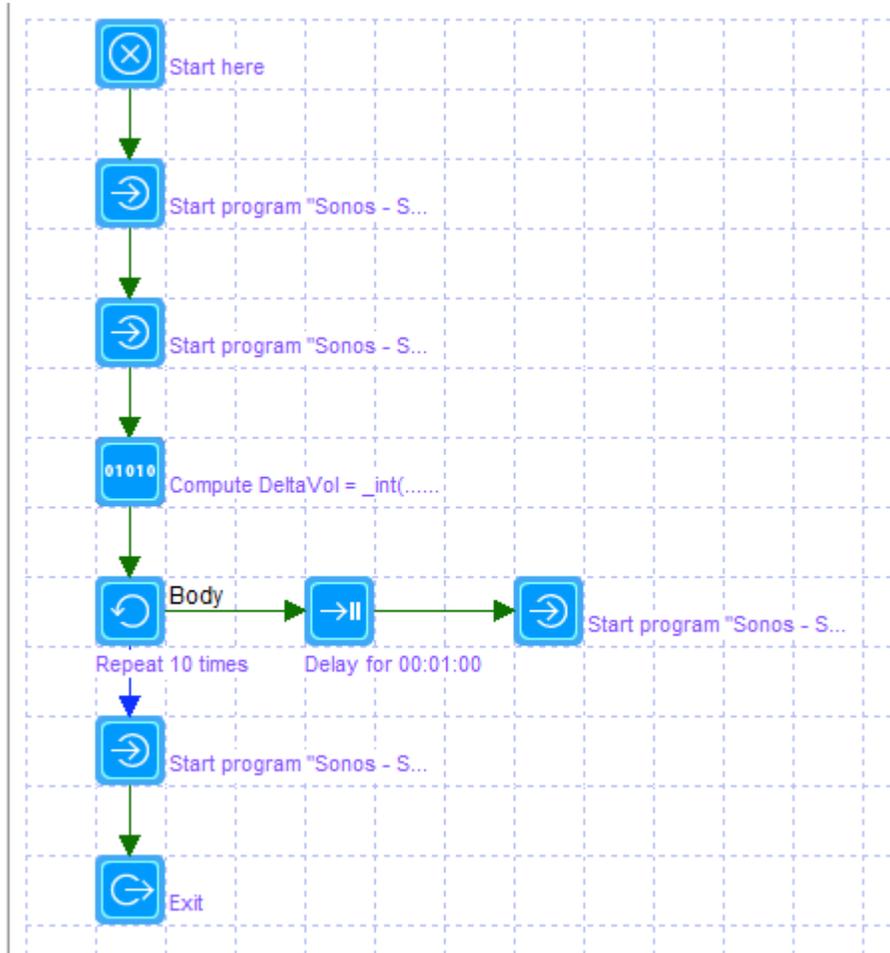


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Example

Here is an example that uses several of the Sonos functions. What this program accomplishes is to start the Bedroom speaker with a favorite, then to reduce the volume gradually over 10 minutes, and then off.

The program looks like this:





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The first Start-Program loads the favorite.

Start Program Properties

This element starts another program and waits until it finishes before continuing the current program unless the "don't wait" option enabled.

Start this program:

Don't wait for this program to complete before continuing to the next element

Delay program start for: hours minutes seconds

Arguments

GroupName	<input type="text" value="Bedroom"/>
	<small>Grpup name to load favorite to</small>
FavoriteName	<input type="text" value="Lore"/>
	<small>Favorite name exactly as shown in the Sonos app</small>
AutoStart	<input type="text" value="1"/>
	<small>Start playing immediatly: 0=no, 1=yes [0]</small>
Repeat	<input type="text" value="0"/>
	<small>Repeat: 0=no, 1=yes [0]</small>
Shuffle	<input type="text" value="1"/>
	<small>Shuffle: 0=no, 1=yes [0]</small>



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The next Start-Program gets the current volume and saves it in a local variable called StartVol

Start Program Properties

This element starts another program and waits until it finishes before continuing the current program unless the "don't wait" option enabled.

Start this program:

Don't wait for this program to complete before continuing to the next element

Delay program start for: hours minutes seconds

Arguments

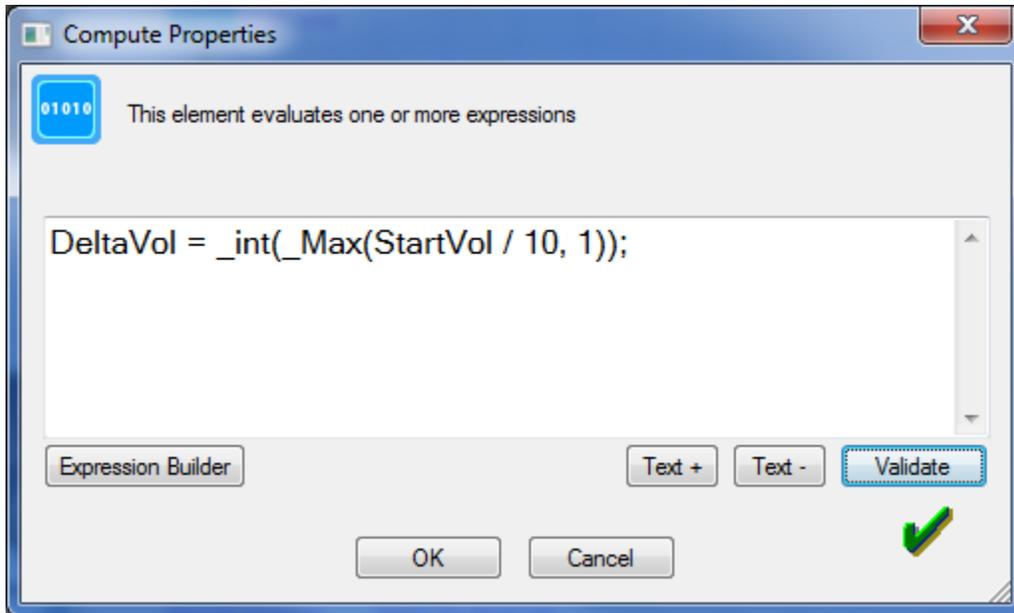
GroupName
Name of group to get volume for

The started program returns a result. Variable that hold result when the program completes:

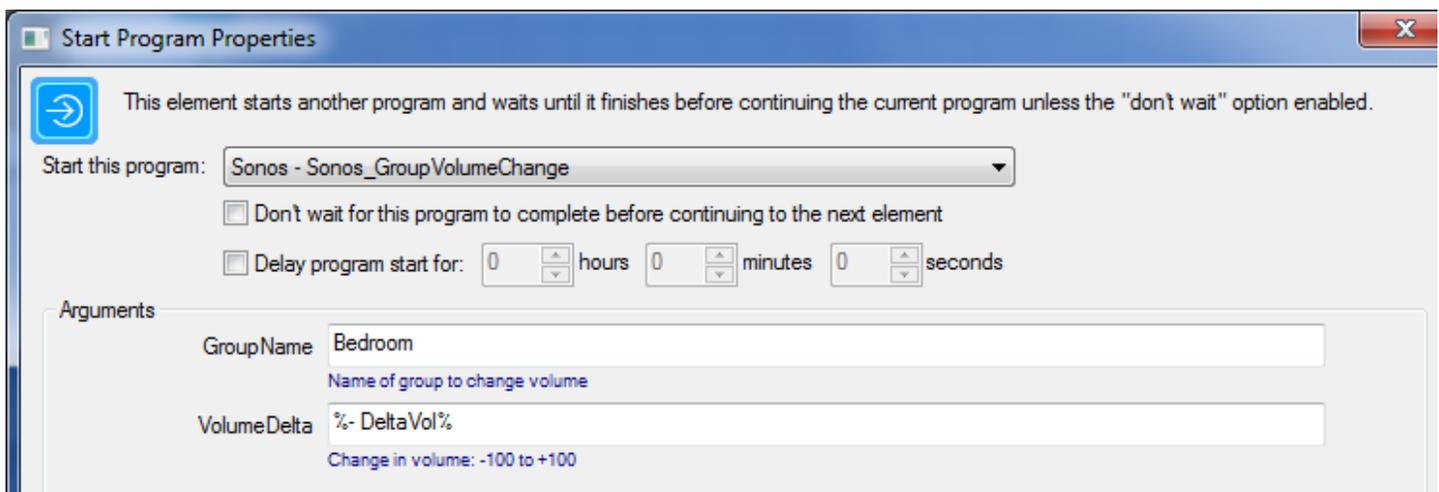


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The Compute element determines how much each of the 10 steps of volume reduction changes.



Then there is a Repeat element of 10 times. In the Body of the Repeat it starts by delaying for 1 minute and then does another Start-Program element to change the volume.

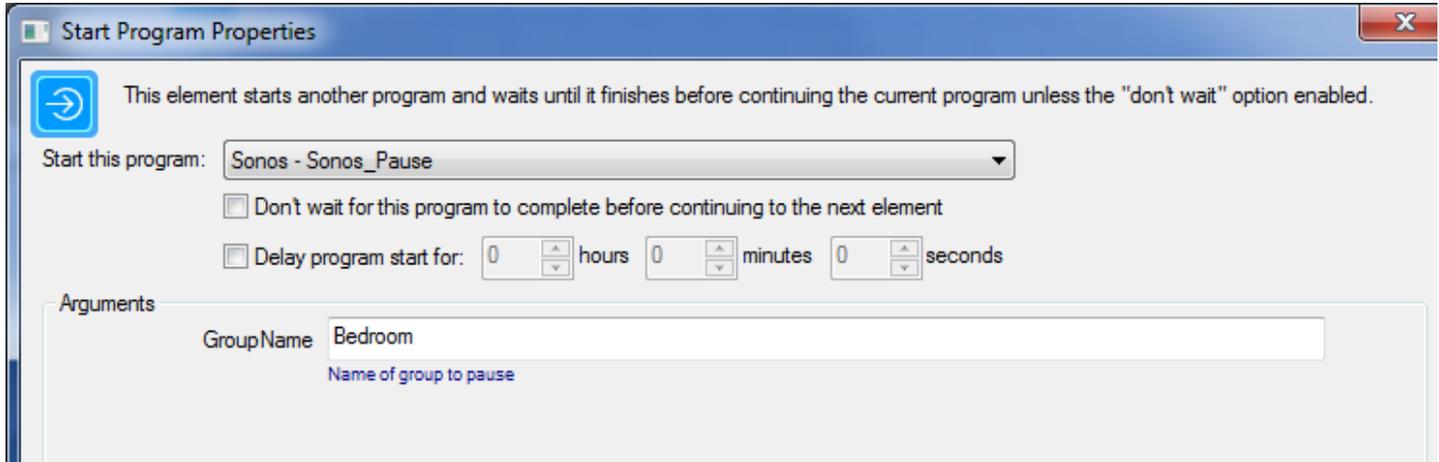


If you are unfamiliar with passing the result of an expression as an argument to a function – embed the expression in %%'s, please review the user guide and technical notes on expressions.



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After the 10 steps of the Repeat, the final Start Program pauses the speaker



Final Notes

Several of the functions convert the names you provide for groups, playlists, favorites, and players to an internal form and save them for later. This makes the functions work faster after the translation has been done the first time. There are two important points on this:

- You should save your design file periodically, so these translated names are saved for next time and this keeps the Sonos functions working faster
- If you make changes to your system, move a speaker from one room to another room for example, you should perform the "Sonos_Connect" function again as that clears all the saved translation info.

##end##