

V16Pro & Q-SYS Integration

QSys and V16Pro integration is available in V16Pro, V16X and V4X version 2.0 and above.

Part I – Single Core

Adding our V16Pro show controller into a QSC Q-SYS Eco system does not have to be difficult. Our Engineering Team has created a Product file specifically for this purpose. In this article I will explain how our V16Pro can display the current audio player file name of QSYS audio player.

We first need to understand Q-SYS is designed to allow a third-party system to control and monitor different aspects of the system. You can create up to 4 change groups where each group is able to handle 512 named controls. Per QSC, it is recommended that you use smaller numbers to reduce network traffic.

Our show controller will act as a client and the Q-SYS core will be the server connecting to each other via a TCP/IP connection.

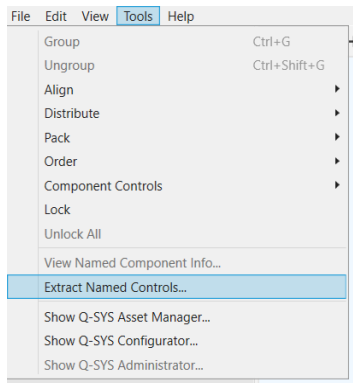


QSys Setup

Launch Q-SYS designer and add an Audio Player into your Q-SYS designer page. Double click the audio player then drag and drop the File bar into Named Controls. (You can also add a custom name as well, but I would keep this simple for easy explanation). You can also use the provided file "QSYS-Product File Sample file.qsys" in the "C:\Program Files (x86)\Alcorn McBride, Inc\WinScriptLive 5\Tutorials\Concepts\QSys directory.



Next is to Extract Named Controls so that they can be used by our Show Controller. Click on Tools and choose Extract Named Controls...



Save the file in your preferred location. WinScript Live will need this file in order to Import all the Named Controls as a Variable.

WinScriptLive Device Setup

To see full setup, use the "QSys.ws4" in the "C:\Program Files (x86)\Alcorn McBride, Inc\WinScriptLive 5\Tutorials\Concepts\QSys directory.

Launch WinScript Live, select your Show Controller, and add a new Device. In this example my Q-SYS Core will be named AlcornCore-1 and I am using the latest Product file version. Once you have done this hit next.

Edit Device

Select a device

Device Name: AlcornCore-1

Manufacturer: QSC

Model: Q-SYS Core

Version: 5.0

Buttons: Add Custom Device, Save Product File..., Reload Product Files

File Location
 C:/Users/Gus.C/Documents/Alcorn McBride Inc/WinScriptLive/My Product Files/QSC_Q-Sys CoreExp.prd

Last Modified
 10/12/2018 11:39:22

Description
 External control protocol for the Q-SYS Core.

Comment

Navigation: < Back, Next >, Finish, Cancel

You now need to set up the connection. Set the Ethernet type, IP address of your QSYS Core, and destination Port. Once finished hit next. (On this example my Q-SYS Core is connected to the B port of my V16Pro).

Edit Device

Set up the connection

Controller

Connection Type: ethernet

Show Controller Port: B

Protocol: Q-SYS External Control Protocol (ASCII)

Source Port (0 = auto): 0

Find Device

Device

Ethernet Type: tcp/telnet

☐ Use different IP addresses for multiple show controllers

IP Address: 192.168.1.10

Destination Port: 1702

Navigation: < Back, Next >, Finish, Cancel

The next window is an overview of all the variables that our Product File has to offer. You can add or remove any variables using our application Product File Creator. Hit Next once everything looks good.

Edit Device ? X

Set up device variables

Property	Value
Error	false
▼ Other Variables	
TCPStatus	
ControlGet_ID	"Unknown"
ControlGet_Description	"Unknown"
ControlGet_Value	0
ControlGet_Position	0
DesignName	"None"
DesignID	"None"
IsPrimary	0
IsActive	0
ControlGet_ValueInt	0
ControlGet_PositionInt	0
RetValue	
VarName	
RetString	

Description

"Setup Variables" can be filled with default values used to create commands.

Configuration Files

< Back Next > Finish Cancel

Browse for your .xml file and check all the names that you would like to Import as variables. Once complete hit the Finish button.

Edit Device ? X

Import QSC Named Controls as Variables

C:/Users/Desktop/External Controls.xml Browse Export

Type to Filter

Name	Type
<input type="checkbox"/> Check All	
<input checked="" type="checkbox"/> AudioPlayerFileName	None

< Back Finish Cancel

Your new Device will be shown and be ready to use.

Devices						
+ New Edit Delete Move Up Move Down Configure Timecode Protocols Resize Columns						
#	D	Name	Device Type	Protocol	Connection	Details
1	<input type="checkbox"/>	V16Pro	Alcorn McBride, Inc. - V...	local		
2	<input type="checkbox"/>	AlcornCore-1	QSC - Q-SYS Core	Q-SYS External Control ...	ethernet B	TCP: 192.168.1.10, 1702

You will also have access to a new set of device variables added to your script.

Device Variables					
Device: AlcornCore-1 + New Insert Edit Delete Move Up Move					
#	Name	Alias	Type	Initial Value	Det
12	AlcornCore-1.UserPin		String		
▶ 13	AlcornCore-1.ControlGet_ValueInt		Integer	0	
▶ 14	AlcornCore-1.ControlGet_PositionInt		Integer	0	
▶ 15	AlcornCore-1.RetValue		Integer	0	
16	AlcornCore-1.VarName		String		
17	AlcornCore-1.RetString		String		
18	AlcornCore-1.AudioPlayerFileName		String		
19	AlcornCore-1.BlinkingLED		Bool	false	
20	AlcornCore-1.PrimaryActive		Bool	false	
21	AlcornCore-1.BackupActive		Bool	false	
22	AlcornCore-1.AlcornCore-CoreStat...		String		

These variables above will match the QSys Named controls that you checked in the import of the device wizard screen.

Part II –Monitoring Named Control Variables

Keep Alive Command

#	D	A	L	Status	Sequence Name	Triggers
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Main Core Heartbeat	Keep the socket connection open.

The external control client must communicate with Q-SYS core at least every 60 seconds or the socket connection will be closed by the Q-Sys core. To keep this connection alive the event “Keep Alive” must be used on your script. Ideally some users prefer a separate sequence that will Auto start and loop approximately every 50 seconds. Name this sequence as Main Core heartbeat with 2 (two) events on it.

Events [Main Core Heartbeat]						
Type:	Timed	Current Time:	00:00:00.00	Timeline	Options	Start Pause Reset Stop Looping Execute Event
+ New	Insert	Edit	Comment	Delete	Move Up	Move Down Collapse All Expand All Resize Columns
#	D	S	Label	Time	Device	Event
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-1	Keep Alive
2	<input type="checkbox"/>	<input type="checkbox"/>		00:00:50.00		Empty
3	<input type="checkbox"/>	<input type="checkbox"/>				

Monitor Variables: Control 1 Add

The idea is to add our "AudioPlayerFileName" into a control group so that it is filled in automatically by QSys. To do so your device must use the event Control 1 Add and the control name under Parameter 1. Parameter 2 is the interval the information will be sent from the QSys expressed in milliseconds. The minimum period is 30 ms. As soon as this sequence is executed the QSys will broadcast changes to the controller as the QSys Named Control changes.

Create a new sequence called "Main Core Control 1 Add" that will run only once.

2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Main Core Control 1 Add	AlcornCore-1.TCPStatus = "Connected"
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Pro Tip: By adding a trigger for "TCPStatus = "Connected"" This sequence will run when the TCP Connection is established. The QSys requires a re-send of "Control 1 Add" if the connection is dropped for any reason.

Add a the following event to the sequence.

Events [Main Core Control 1 Add]						
Type:	Timed	Current Time:	00:00:00.00	Timeline	Options	Start Pause Reset Stop Looping Execute Event
+ New	Insert	Edit	Comment	Delete	Move Up	Move Down Collapse All Expand All Resize Columns
#	D	S	Label	Time	Device	Event
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-1	Control 1 Add

Run an error check and save your Script file before sending your file to the Show Controller.

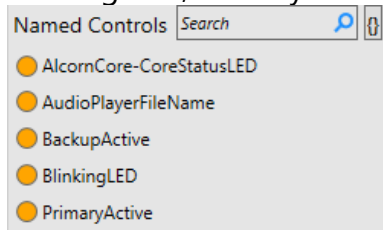
Part III - Redundant Mode

QSys Setup

Your QSYS design should have Redundant Mode enabled under Core Properties.

Properties	
Core Properties	
Name	AlcornCore-1
Location	Default Location
Model	Core 500i
Is Redundant	Yes
Backup Name	AlcornCore-2

Go ahead and add extra components under named controls in your QSYS design like a Blinking LED, Primary Active indicator and the Backup Active indicator.

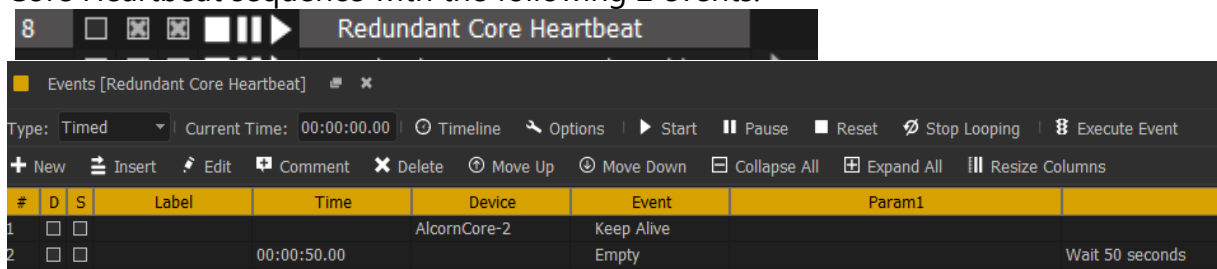


WinScriptLive Setup

Add your redundant core as a device in WinScript Live and Import your new QSC Named Controls as Variables.

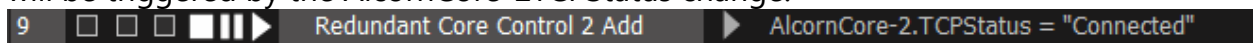
#	D	Name	Device Type	Protocol	Connection	Details	
1	<input type="checkbox"/>	V16Pro	Alcorn McBride, In...	local			
2	<input type="checkbox"/>	AlcornCore-1	QSC - Q-SYS Core	Q-SYS External Control Protocol (ASCII)	ethernet B	TCP: 192.168.1.10, 1702	
3	<input type="checkbox"/>	AlcornCore-2	QSC - Q-SYS Core	Q-SYS External Control Protocol (ASCII)	ethernet B	TCP: 192.168.1.11, 1702	Redundant Core

Like the original heartbeat sequence done with primary core, Create your Redundant Core Heartbeat sequence with the following 2 events.



#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	Keep Alive	
2	<input type="checkbox"/>	<input type="checkbox"/>		00:00:50.00	AlcornCore-2	Empty	Wait 50 seconds

In order to keep a linear order our next sequence will be called Redundant Core Control 2 Add where AudioPlayerFileName and a BlinkingLED will be monitored. This sequence will be triggered by the AlcornCore-2TCPStatus change.



#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	AlcornCore-2.TCPStatus = "Connected"	

Events [Redundant Core Control 2 Add]

Type: Timed | Current Time: 00:00:00.00 | Timeline | Options | Start | Pause | Reset | Stop Looping

+ New | Insert | Edit | Comment | Delete | Move Up | Move Down | Collapse All | Expand All | Resize Col

#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	Control 2 Add	"AudioPlayerFileName"
2	<input type="checkbox"/>	<input type="checkbox"/>					
3	<input type="checkbox"/>	<input type="checkbox"/>					
4	<input type="checkbox"/>	<input type="checkbox"/>					
5	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	Control 2 Add	"BlinkingLED"
6	<input type="checkbox"/>	<input type="checkbox"/>					

Now we must create custom User Variables, like "PrimaryActive" and "BackupActive". These will be filled after the sequence determines which QSys Core is functional and reporting correct data.

Variables

+ New | Insert | Edit | Delete | Move Up | Move Down | Device Variab

#	Name	Alias	Type	Initial Value
1	AudioPlayerFileName		String	"OffLine"
2	BlinkingLED		Bool	false
3				
4	PrimaryActive		Bool	true
5	BackupActive		Bool	false
6				

The following 2 sequences are created to monitor the Primary and Backup Active Named Controls from QSYS Core 1 and 2.

11 | ☐ ☐ ☐ ☒ ☐ Main Core Status Vars Add | AlcornCore-1.TCPStatus = "Connected"

Events [Main Core Status Vars Add]

Type: Timed | Current Time: 00:00:00.00 | Timeline | Options | Start | Pause | Reset | Stop Looping

+ New | Insert | Edit | Comment | Delete | Move Up | Move Down | Collapse All | Expand All | Resize Col

#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-1	Control 1 Add	"PrimaryActive"
2	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-1	Control 1 Add	"BackupActive"

10 | ☐ ☐ ☐ ☒ ☐ Redundant Core Status Vars Add | AlcornCore-2.TCPStatus = "Connected"

Events [Redundant Core Status Vars Add]

Type: Timed | Current Time: 00:00:00.00 | Timeline | Options | Start | Pause | Reset | Stop Looping

+ New | Insert | Edit | Comment | Delete | Move Up | Move Down | Collapse All | Expand All | Resize Col

#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	Control 2 Add	"PrimaryActive"
2	<input type="checkbox"/>	<input type="checkbox"/>			AlcornCore-2	Control 2 Add	"BackupActive"

The following sequence will update the local variable "PrimaryActive" once QSYS reports back to the Show Controller triggered by the TCPStatus of each Core. If we are active,

and connected, then we are confident that the value is correct, and can save it to our custom User Variable. Waiting 1 second after TCP Connection allows enough time for QSys to broadcast the state of the variables, and for the Device Variables to be filled in.

13 Update Primary Status

Events [Update Primary Status]

Type: Timed Current Time: 00:00:00.00 Timeline Options Start Pause Reset Stop Looping Execute Event

+ New Insert Edit Comment Delete Move Up Move Down Collapse All Expand All Resize Columns

#	D	S	Label	Time	Device	Event	Param1	Param2
1	<input type="checkbox"/>	<input type="checkbox"/>		00:00:01.00		If =	AlcornCore-1.TCP...	"Connected"
2	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	PrimaryActive	AlcornCore-1.PrimaryActive
3	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	BackupActive	AlcornCore-1.BackupActive
4	<input type="checkbox"/>	<input type="checkbox"/>				End If		
5	<input type="checkbox"/>	<input type="checkbox"/>				If =	AlcornCore-2.TCP...	"Connected"
6	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	PrimaryActive	AlcornCore-2.PrimaryActive
7	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	BackupActive	AlcornCore-2.BackupActive
8	<input type="checkbox"/>	<input type="checkbox"/>				End If		

Reporting from each Core

Each custom User variable, like "BlinkingLED" must be updated with the correct Core. This sequence will run automatically upon restart and will be looped for constant monitoring of the Cores.

17 Variable Update

Events [Variable Update]

Type: Timed Current Time: 00:00:00.00 Timeline Options Start Pause Reset Stop Looping Execute Event

+ New Insert Edit Comment Delete Move Up Move Down Collapse All Expand All Resize Columns

#	D	S	Label	Time	Device	Event	Param1	Param2
1	<input type="checkbox"/>	<input type="checkbox"/>		00:00:00.10		If =	PrimaryActive	true
2	<input type="checkbox"/>	<input type="checkbox"/>				Start	AlcornCore-1 Variable Update	
3	<input type="checkbox"/>	<input type="checkbox"/>				Else		
4	<input type="checkbox"/>	<input type="checkbox"/>				Start	AlcornCore-2 Variable Update	
5	<input type="checkbox"/>	<input type="checkbox"/>				End If		

The if statement will allow you to compare the information that we need between the two Cores. Two similar sequences must be made an AcornCore-1 and AlcornCore-2 Variable Update. Both sequences will have the same named controls.

18 AlcornCore-1 Variable Update

Events [AlcornCore-1 Variable Update]

Type: Timed Current Time: 00:00:00.00 Timeline Options Start Pause Reset Stop Looping Execute Event

+ New Insert Edit Comment Delete Move Up Move Down Collapse All Expand All Resize Columns

#	D	S	Label	Time	Device	Event	Param1	Param2
1	<input type="checkbox"/>	<input type="checkbox"/>				If Not =	AudioPlayerFileName	AlcornCore-1.AudioPlayerFileName
2	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	AudioPlayerFileName	AlcornCore-1.AudioPlayerFileName
3	<input type="checkbox"/>	<input type="checkbox"/>				End If		
4	<input type="checkbox"/>	<input type="checkbox"/>				If Not =	BlinkingLED	AlcornCore-1.BlinkingLED
5	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	BlinkingLED	AlcornCore-1.BlinkingLED
6	<input type="checkbox"/>	<input type="checkbox"/>				End If		

19 AlcornCore-2 Variable Update

Events [AlcornCore-2 Variable Update]							
Type: Timed Current Time: 00:00:00.00 Timeline Options Start Pause Reset Stop Looping Execute Event							
+ New Insert Edit Comment Delete Move Up Move Down Collapse All Expand All Resize Columns							
#	D	S	Label	Time	Device	Event	Param1
1	<input type="checkbox"/>	<input type="checkbox"/>				└ If Not =	AudioPlayerFileName
2	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	AudioPlayerFileName
3	<input type="checkbox"/>	<input type="checkbox"/>				End If	AlcornCore-2.AudioPlayerFileName
4	<input type="checkbox"/>	<input type="checkbox"/>				└ If Not =	BlinkingLED
5	<input type="checkbox"/>	<input type="checkbox"/>				Set Variable =	BlinkingLED
6	<input type="checkbox"/>	<input type="checkbox"/>				End If	AlcornCore-2.BlinkingLED
7	<input type="checkbox"/>	<input type="checkbox"/>					

At this point your script is ready to be tested. As always perform a Save and Error Check before sending your script file into the Show Controller.