

## HAL BWS HA-Bridge Setup Guide

#### Abstract

This document is intended to provide you with basic details in order to download, install and setup the BWS Systems' HA-Bridge to interface with the Amazon Echo/Dot.

#### Rev 00.0.8

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#### STEP 1: Downloading the latest HA Bridge Release from BWS Systems

From any browser, go to http://www.bwssystems.com/



Click the "Get it now!" link to download the java jar file of the latest release.

Create a Directory under the HAL directory such as "HA Bridge" and move the jar file you downloaded to this folder. The jar file which was downloaded will typically have the version number as part of the file name. For example ha-brdige-2.0.7.jar. You can either create a copy or rename the jar file so that is called ha-bridge.jar. More on this in step 3.



#### STEP 2: Download and Install JAVA

From any browser, go to https://www.java.com/en/



Click on the link "Free Java Download" which will take you to a page that will display the current version of Java for your browser.

### Download Java for Windows

# Recommended Version 8 Update 111 (filesize: 721 KB) Release date October 18, 2016 Agree and Start Free Download By downloading Java you acknowledge that you have read and accepted the terms of the end user license agreement Image: When your Java installation completes, you may need to restart your browser (close all browser windows and re-open) to enable the Java installation.

Click the "<u>Agree and Start Free Download</u>" which will allow you to save the installer. This file name will be different based on your browser and OS. For Firefox the file was jxpiinstall.exe.



Once the install is complete, run this installer and click "Install"



Only proceed if you receive a successful install message.





#### **STEP 3**: Create a batch file to start the Bridge and reference it in HAL's startup routine.

So that you can automate the startup of the bridge software you will want to create a Windows batch file to execute java and load the bridge. Using Notepad add the following single line.

```
java -jar -Dserver.port=8081 ha-bridge.jar
```

You can specify any port you like. In this example port 8081 is used. Also the jar file referenced does not have the version number. The reason for this is so that as you download newer versions of the jar file, you need only delete the old ha-bridge.jar and rename the downloaded version. This will allow you to keep the batch file the same. You will also be able to keep the older jar file in case you need to regress to an older version.

Next save your batch file in the directory that you created in step 1 and name it HA-Bridge-Start.bat.

Computer > OS	(C:)	▶ Program Files ▶ HAL ▶ HA Bridge		
Organize   Include in library	•	Share with ▼ New folder		≣ <b>▼</b> 🗍 🔞
Documents	*	Name	Date modified	Туре
<ul> <li>Music</li> <li>Pictures</li> <li>Videos</li> </ul>		🛋 ha-bridge.jar 📧 ha-bridge-1.3.8.jar 📧 ha-bridge-1.4.1.jar	10/23/2016 9:31 PM 2/12/2016 9:20 PM 3/21/2016 7:57 PM	Executable Jar File Executable Jar File Executable Jar File
🤣 Homegroup		🖃 ha-bridge-1.4.2.jar 📧 ha-bridge-2.0.7-hal-d.jar	3/21/2016 9:44 PM 5/26/2016 7:30 PM	Executable Jar File Executable Jar File
r Computer	E	ब ha-bridge-3.0.0.jar 🛋 ha-bridge-3.2.0.jar 🚳 HA-Bridge-Start.bat	7/19/2016 2:18 PM 10/23/2016 9:31 PM 10/23/2016 9:32 PM	Executable Jar File Executable Jar File Windows Batch File
🗣 Network 8 items	Ŧ	< III		4



#### **STEP 4**: Reference batch file in HAL's startup routine.

Open HAL's System Settings.



#### Open Personal Assistant.

😭 Personal Assistant							×		
Confirmation Settings Voice Recognition Fail Configure Configure Configure Dutlook Contacts Use Outlook Calendar Options									
Attention Settings			<ul> <li>Computer Voice Settings</li> </ul>						
Phrase	Response	Test	Voice	Volume	Rate	Pitch	Test		
1 Hello Sally	Configure	Speak	* IVONA 2 Salli - US 💌			Not Available	Voice		
2 Wakeup Tony	Configure	Speak	Mike 💌			Not Available	Voice		
3 Hello George	Configure	Speak	Charles (UK)			Not Available	Voice		
4 Hello Rosie	Configure	Speak	Michelle			Not Available	Voice		
5 Hello Anna	Configure	Speak	Microsoft Anna - E 💌			Not Available	Voice		
6	Configure	Speak	None				Voice		
Start HAL with	Attention Word enal	bled.	* Default Voice	Defaults	Defaults	Defaults			
💍 Persona	l Assistar	1Û			<u>D</u> one <u>C</u>	ancel <u>A</u> pply	Help		



Under the section titled "Startup Applications" click on "Configure". This will open a dialog which will allow you to configure up to 3 different items to startup after the HAL startup has completed. Beginning in HAL version 6.1.34 in addition to starting an application (exe), you are now able to also start batch files (bat) or shortcuts (lnk).

👚 Startup Applications	x
Select up to 3 external applications that will be launched when Provide any optional parameters.	HAL starts up.
Application 1:	Browse
Application 2:	Browse
Application 3:	Browse
Startup Done Cancel	<u>H</u> elp

Click the "Browse" button and set your file filter to Batch Files. Browse to the directory where you saved your batch file and select this file as a startup.

G Open G マ ↓ Co	omputer 🕨 OS (C:) 🕨 Program Files 🕨 HAL 🕨 HA Bric	dge	× 47
Organize 🔻 Ne	w folder	:≡ ▼ □	?
🚖 Favorites	^ Name	Date modified Type	e
🧮 Desktop	🚳 HA-Bridge-Start.bat	10/23/2016 9:32 PM Win	dows Ba
🗼 Downloads 🖳 Recent Places 🥽 Libraries			
Cibraries ☐ Documents ♪ Music ☐ Pictures ☐ Videos			
輚 Homegroup			
E Computer			Þ
	File name: HA-Bridge-Start.bat 🔹 🖪	Batch Files (*.bat) Open 🚽 Cancel	• •



Your HAL startup should be similar to the example below. You can now click "Done" on this and the Personal Assistant dialog. Keep in mind you can always start the HA-Bridge manually without having to stop and start HAL.

👚 Startup Applications	x
Select up to 3 external applications that will be launched when Provide any optional parameters.	HAL starts up.
Application 1: C:\Program Files\HAL\HA Bridge\HA-Bridge-	Browse
Application 2:	Browse
Application 3:	Browse
Startup Done Cancel	<u>H</u> elp



#### **STEP 5**: Configuring the HAL Web Services.

In order for HAL to communicate between the Bridge and the Echo we will use HALws (Web Services). You will need to have Internet enabled in HAL along with HomeNet. To setup HALws while still in System Setting, open the HomeNet configuration window.



From the HomeNet configuration window click on "Advanced".

I HomeNet	x
✓ Home <u>N</u> et Enabled	
✓ Enable HTTP Port: 82	Ad <u>v</u> anced
Access URL HomeNet: http://HALserver-PC:82 or http://192.168.1.2:82	
HomeNet PDA: http://192.168.1.2:82/HALHomeNetPDA.html	
■ Reguire a password for remote access to HomeNet ■ IP Addess(es) which do not require	e Password:
Password:       ****       Addess:	<u>A</u> dd <u>R</u> emove Cl <u>e</u> ar
Image: Done         Done         Cance	l <u>H</u> elp



On the HomeNet Advanced configuration window, enable HALws and click on "Generate Token". You will use this token in the HA-Bridge configuration to permit access to the HALws. The token in the example below is obscured on purpose...

*		x
Alternate HomeNet Video URL		
Video Monitoring URL:		
Show HomeNet Pages		
Voice	Securitu	
Voice Control	Finerau	✓ Information Center
Modes & Scenes	Digital Music	
	Home Theater	Je Shopping
Heating & Cooling	Video Monitorina	
Custom Menu Options		1
🔲 Menu Item 1	Title:	lcon 🛕
URL:		
Menu Item 2	litle:	lcon 🛆
LIRI -		
Menultem 3	Title:	
Web Service		
✓ Enable HALws	Generate Token	
	Managed	Done Cancel
	Auvanceu	



#### **STEP 6**: Starting the HA-Bridge.

Once the HA-Bridge.bat is executed you should see a cmd window open. If this is the first time you have run Java, you will see a Windows Security Alert dialog displayed. You will need to respond to this dialog by clicking "Allow Access"

Windows Secur	ity Alert		23			
💮 Windo	ws Firewal	I has blocked some features of this program				
Windows Firewall h private networks.	as blocked some	e features of Java(TM) Platform SE binary on all public and				
	Name:	Java(TM) Platform SE binary				
Ē	Publisher:	Oracle Corporation				
	Path:	C:\program files (x86)\java\jre1.8.0_111\bin\java.exe				
Allow Java(TM) Plat	tform SE binary	to communicate on these networks:				
V Private netw	orks, such as m	y nome or work network				
Public networks, such as those in airports and coffee shops (not recommended because these networks often have little or no security)						
What are the risks of allowing a program through a firewall?						
		Allow access Can	cel			

When the batch file is executed a cmd window should open that appears similar to the one shown below. If there is an issue, you will see it in this window. If the window closes instantly, make sure that Java is loaded. You can also add a Pause command as the last line to your batch file to view any message before the window closes. Remember to remove this after testing or it will be nuisance when everything is working well and you simply want to close the window.

C:\Windows\system32\cmd.exe		- • <b>×</b>
C:\Program Files\HAL\HA E 2016-10-25 09:54:08,419 [ 2016-10-25 09:54:08,431 [ 2016-10-25 09:54:08,523 [ 2016-10-25 09:54:08,523 ] any known IP's on this ho	Bridge>java -jar -Dserver.port=8081 ha-bridge main] INFO com.bwssystems.HABridge.HABridge main] INFO com.bwssystems.HABridge.BridgeSe main] WARN com.bwssystems.HABridge.BridgeSe st.	.jar - HA Bridg ttings - re ttings - Th
2016-10-25 09:54:08,524 [ 2016-10-25 09:54:08,534 [ 2016-10-25 09:54:08,614 [ 2016-10-25 09:54:08,614 [ 2016-10-25 09:54:08,694 [ 2016-10-25 09:54:08,694 [	main] INFO com.bwssystems.HABridge.HABridge main] INFO com.bwssystems.HABridge.SystemCon main] INFO com.bwssystems.nest.controller.Nw NFO::Thread-0: Logging initialized C451ms Thread-0] INFO spark.webserver.JettySparkSe	- HA Bridg ntrol - Sys estSession rver - == S
2016-10-25 09:54:08.699:1 2016-10-25 09:54:08.699:1 2016-10-25 09:54:08.799:1 2016-10-25 09:54:11.539 [ 2016-10-25 09:54:11.539 [ 2016-10-25 09:54:14,315 [	INFO:oejs.Server:Ihread-0: jetty-9.3.z=SNAPSH NFO:oejs.ServerConnector:Ihread-0: Started So NFO:oejs.Server:Ihread-0: Started CoS6ms main] INFO com.bwssystems.nest.controller.N imain] INFO com.bwssystems.HABridge.devicema	or OT erverConnec estSession nagmeent.De
arted 2016-10-25 09:54:14,323 [ 2016-10-25 09:54:14,325 [ 2016-10-25 09:54:14,326 [ 2016-10-25 09:54:14,348 [ 2016-10-25 09:54:14,348 ]	main] INFO com.bwssystems.HABridge.upnp.Upn main] INFO com.bwssystems.util.UDPDatagramS main] INFO com.bwssystems.util.UDPDatagramS main] INFO com.bwssystems.HABridge.hue.HueM main] INFO com.bwssystems.HABridge.upnp.Upn	pSettingsRe ender – Ini ender – UDP ulator – Hu pListener –
2016-10-25 09:54:14,395 ( -	main] INFO com.bwssystems.HABridge.upnp.Upnj	pListener -
•		



#### **STEP 7**: Opening the HA-Bridge user interface.

To open the HA-Bridge user interface, open a browser on your HAL computer with the URL <u>http://localhost:8081/</u> or from another computer using the IP address of your HAL computer and the port number you specified in the batch file.

🥑 HA Bridge - Mozilla Firefox					_ 0 <u>X</u>
File Edit View History Bookmarks Tools Help HA Bridge × +					
( i localhost:8081		C Q Search	☆ 自		⊙ ≡
HA Bridge Home My Ech	io Help Abou	t <del>v</del>			
Bridge Devices Bridge Contr	ol Logs Mar	ual Add			
Current devices (0)					
Renumber Devices					
Row ID	Name	Туре	Target	Actions	
				,	
Bridge Device DB Backup +					

To configure the HA-Bridge, click on the "Bridge Control" menu item.

HA Bridge	Home	My Echo	Help	About 👻			
Bridge Device	es Brid	ige Control	Logs	Manual Add			
Bridge Setti	ngs		,				
Bridge http://localhost:8081/api/devices Test							
Save	iridge Reir	iitialize Br	idge Stop	Refresh			
Setting			V	alue			
Configuration Path and File				data/habridge.config			
Device DB Path and File			data/device.db				



#### **STEP 8**: Configuring the HA-Bridge.

Scroll down on the Bridge Control screen to the HAL section. You will need to enter the IP address and Port for you HAL HomeNet and click the "Add" button. Next enter the HAL Token you generated. You can copy and paste this from the HomeNet Advanced configuration window.

HA Bridge	Home	My Echo Hel	p About <del>-</del>			
HAL Names	and IP Ad	dresses	Name	IP	Manage	
			HAL Server	192.168.1.2:82	Del	
			A Hal	192.168.1.3:82	Add	
HAL Token			•••••	•••		

Scroll back to the top of this form and click the "Save" button. You will now have a new menu option "HAL Devices". Be sure to select the type of dim control to be generated as "Percentage".

HA Brid	<b>dge Home</b> My Echo He						
Bridge	Devices Bridge Control Lo	ogs HAL	Devices	Manual Add			
HAL	HAL Device List (271)						
For ar keywo	For any HAL Device, use the action buttons to generate the device addition information below automatically. Then you can modify the name to anything you want that will be the keyword for Alexa. Click the 'Add Bridge Device' to finish that selection setup. The 'Already Configured HAL Devices' list below will show what is already setup for your HAL.						
Also, u	use this select menu for which type	of dim control	you would I	ike to be generated: Percentage			
and of	f or dim and off if selected with the	name of the d	levice from t	the HAL. Percentage Custom Math	wanted, then click bulk add below	. Your items will be added with on	
Row	🗹 Name	Cate	HAL	On Button	Off Button	Actions	
			Server			· · · · · · · · · · · · · · · · · · ·	
16	DINING ROOM LIGHTS	Light	HAL Server			Generate Bridge Device	
17	C DRIVEWAY DOOR LIGHTS	Light	HAL Server		•	Generate Bridge Device	
18	C DRIVEWAY LIGHTS	Light	HAL Server		•	Generate Bridge Device	
19	FAMILYROOM FIREPLACE	Light	HAL Server	•	•	Generate Bridge Device	
20	FAMILYROOM WINDOW	Light	HAL Server		•	Generate Bridge Device	
21	FOYER HALWAY LIGHTS	Light	HAL Server	•	-	Generate Bridge Device	
22	FOYER LIGHTS	Light	HAL			Generate Bridge Device	
Bulk	Add (1)						



#### **STEP 9**: Adding HAL Devices to HA-Bridge.

Select a HAL device by clicking the checkbox by the device name. Next click on the Action button "Generate".

Row	🗹 Name	Cate	HAL	On Button	Off Button	Actions
16	DINING ROOM LIGHTS	Light	HAL Server	•		Generate Bridge Device

Now scroll to the bottom of the screen and you will see the commands that HALws will receive from the Echo when an On, Off or Dim action is required. These same commands can be executed directly from any browser. Again the tokens in the example below have been obscured. You'll also notice in the area designated by the red box that the dim percentage will be filled in based on the dim control type selected previously on the top of the page.

Bridge Device for a	HAL Device	
Name	DINING ROOM LIGHTS	Add Bridge Device
On URL	http://192.168.1.2:82 /DeviceServiceIDeviceCmd=SetDevice!DeviceValue=On!DeviceName=DINING%20ROOM%20LIGH TS?Token	Clear Device
Dim URL	http://192.168.1.2:82 /DeviceService!DeviceCmd=SetDevice!DeviceValue=Dim!DevicePercent=\${intensity.percent}!DeviceN ame=DINING%20ROOM%20LIGHTS?Token	
Off URL	http://192.168.1.2:82 /DeviceService!DeviceCmd=SetDevice!DeviceValue=Off!DeviceName=DINING%20ROOM%20LIGHTS ?Token=	

By clicking on the "Bridge Devices" menu option, you will see the device you have added. You can test it by clicking the On or Off buttons.

HA Brid	lge H	ome My Echo He	elp About <del>-</del>			
Bridge	Devices	Bridge Control L	ogs HAL Devi	ices Manua	al Add	
Current devices (1)						
Renumber Devices						
Row	ID	Name	Туре	Target	Actions	



When adding a Group, I modify the Group name to be prefaced with the word "All" so that it is less confusing to both Alexia and the user the particular Item and it's function.

HA Brid	ige Home	My Echo Help About 🗸							
Bridge	Devices Brid	lge Control Logs HAL Devices Manua	I Add						
Curre	Current devices (67)								
Renum	ber Devices								
Row	ID	Name	Туре 🔺	Target	Actions				
1	2140308849	ALL BACK PORCH LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
2	2140308848	ALL MASTER BEDROOM LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
3	2140308847	ALL MAIN FLOOR LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
4	2140308845	ALL INSIDE LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
5	2140308844	ALL FRONT LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
6	2140308843	ALL BASEMENT LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				
7	2140308842	ALL BACK LIGHTS	group	HAL Server	Test ON Test Dim Test OFF Edit/Copy Delete				

When adding a Macro, keep in mind that when speaking to Alexa you will still need to say "Turn" Macro Name "On" for the command to be recognized and carried out.

Below is an example of a Macro I have called "Familyroom TV Off". When I have the HA Bridge generate the Bridge Device I get the following:

Add Bridge Device for a	HAL Device	
Name	FAMILYROOM TV OFF	Add Bridge Device
On URL	http://192.168.1.2:82 /MacroService!MacroCmd=Set!MacroName=FAMILYROOM%20TV%20OFF?Token=moxe1yq8vfple m57	Clear Device
Dim URL	http://192.168.1.2:82 /MacroService!MacroCmd=Set!MacroName=FAMILYROOM%20TV%20OFF?Token=moxe1yq8vfplem5 7	
Off URL	http://192.168.1.2:82 /MacroService!MacroCmd=Set!MacroName=FAMILYROOM%20TV%20OFF?Token=moxe1yq8vfplem5 7	



Since Alexa will be looking for an action verb at the end of the command spoken "Turn XYZ Off", having a macro with the word on or off would be redundant "Turn XYZ OFF Off". So I remove the word "OFF" from my Macro Name as shown below. I also have a macro called "FAMILYROOM TV ON" so I can edit the On URL to reference that On Macro. The result is an HA Bridge device entry that references two different Macros so that I can use Alexa to Turn the Familyroom TV On and Off.

Add Bridge Device for a	HAL Device	
Name	FAMILYROOM TV	Add Bridge Device
On URL	http://192.168.1.2:82 /MacroService!MacroCmd=Set!MacroName=FAMILYROOM%20TV%20ON?Token=moxe1yq8vfplem 57	Clear Device
Dim URL	URL to dim device	
Off URL	http://192.168.1.2:82 /MacroService!MacroCmd=Set!MacroName=FAMILYROOM%20TV%20OFF?Token=moxe1yq8vfpiem5 7	



#### **STEP 10**: Configuring the Echo.

For Alexa to be aware of the devices which you have added in the HA-Bridge, say "Alexa, Discover Devices." You can also perform the discovery process from your Alexa smartphone app or the Alexa.amazon.com page under Smart Home, by clicking "Discover Devices". From the Smart Home area of the Alexa site you can also forget discovered devices.



Once discovery has successfully completed, you can now say "Alexa, turn on the Back Sidewalk Lights". Unfortunately all she will respond with is "Ok" unlike HAL, which will say "I have turned on the Back Sidewalk Lights".

Enjoy!

