Reference RDK Alexa Echo Dot Voice Application (In Progress)

- 1. Objective
 - 2. Amazon Alexa Voice Control Reference High Level Architecture
 - 2.1.1. Architecture (End Product Reference Architecture for Alexa voice Integration)
 - 2.1.2. Architecture used for proof of integration concepts.
- 3. RDK Alexa Voice Integration Amazon Voice Server (AVS) setup and configurations
 - 3.1. Alexa Skill Creation
 - 3.1.1. Step one: got to https://developer.amazon.com/alexa/console/ and select your skill name
 - 3.1.2. Step two: got to test tab

 - 3.1.3. Step Three: Type or say your test command, eg: Alexa, tell stb voice move right
 3.1.4. Step four: You will get a response, please note the user id this maps our account to Django server later
- 4. RDK Alexa Voice Integration Alexa Server configuration details
 - 4.1. Configure Alexa User Account and STB account 4.1.1. Step one: Go to https://rdkvoice.iptn.io/admin
 - 4.1.2. Step two: Go to first users link
 - 4.1.3. Step Three: create a user account
 - 4.1.4. Step Four: user creation
 - 4.1.5. Step Five: STB account creation
 - 4.1.6. Step Five: STB account creation
- 5. E2E Sequence Diagram
- 6. Client side architecture
- 7. API definition
 - ° 7.1. method: "RDK.RegisterNewDevice"
 - 7.1.1. Input:
 - 7.1.2. Output:
 - 7.2. method: "RDK.CompleteRegistration"
 - 7.2.1. Input:
 - 7.2.2. Output:
 - 7.3. method: "RDK.finalizeRegistration"
 - 7.3.1. Input:
 - 7.3.2. Output:
 - 7.4. method: "RDK.LaunchApplication"
 - **7.4.1.** Input:
 - 7.4.2. Output:
 - 7.4.3. Errors:
 - 7.5. method: "RDK.GetCurrentApplication"
 - 7.5.1. Input:
 - 7.5.2. Output: • 7.6. method: "RDK. Navigate"
 - **7.6.1.** Input:
 - 7.6.2. Output:
 - 7.7. method: "RDK. MediaControl"
 - 7.7.1. Input:
- 7.7.2. Output: • 8. How to configure server
- 9. FAQ

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Contact									
Jira	Summary	Created	Updated	Due	Assignee	Ρ	Status	Resolution	

1. Objective

To demonstrate a method to integrate Alexa Echo Dot with RDK 4.0 by developing Alexa skills and integrate on RDK 4.0 reference platforms:-

- Raspberry Pi
- Arris Accelerator Commscope

Following sections will give the architecture details and end to end flow diagram

2. Amazon Alexa Voice Control Reference High Level Architecture

2.1.1. Architecture (End Product Reference Architecture for Alexa voice Integration)



*Note: Above is the stable state end goal of the product architecture. Rest of the section is for demonstration purposes as an example and not realizing the full scope of the above architecture as end goal.





This above mentioned application helps to demonstrate E2E working of Alexa voice and can easily extend to a more scalable, performant and SPOF (Single point of failure) handling design.

3. RDK Alexa Voice Integration - Amazon Voice Server (AVS) setup and configurations

3.1. Alexa Skill Creation

3.1.1. Step one: got to https://developer.amazon.com/alexa/console/ and select your skill name

O alexa developer console					ł	۹ Fe	PR I
Make Money with Your Alexa Skills in the US, UK, German and Japa Generate revenue from your Alexa skill by selling digital goods and services to US, UK, German and Japanese skill stores. Learn more	nese Skill Stores o customers with in-skill purchasing (ISP	9). ISP allows you to enrich your in-skill en	xperience, driving deeper customer engi	agement and earning you revenue to keep	your voice-business going. ISP is available fr	or skills	in the
Welcome to the Alexa Skills Kit Developer Console Vait our release notes to learn about new feature and tools. Curious about eff Skills Earnings Payments Hosting	at's new? watch this video or read our	documentation.					
Alexa Skills Q Search by skill name or skill ID						Creat	e Skill
SKILL NAME	LANGUAGE	TYPE	MODIFIED	STATUS	ACTIONS		
? rdk voice Vew Skit D	English (US)	Custom	2019-11-07	 In Development 	Analytics Edit Delete		

3.1.2. Step two: got to test tab



3.1.3. Step Three: Type or say your test command, eg: Alexa, tell stb voice move right

Alexa developer console Your Skils rdk voice Build Code Test I	Distribution Certification Analysis	Q PR Feedback for
Skill testing is enabled in: Development ~	Skill I/O 🔽 Device Display 🗌 Device Log	
Alexa Simulator Manual JSON Voice & Tone English (US) Type or click and hold the mic	\circ	
	SAIL UO JOON Papat JOON Couput	
First, open your skill with your invocation name. Then start testing your dialog.	Skill I/O is available only for speech requests to skills you have created.	

3.1.4. Step four: You will get a response, please note the user id – this maps our account to Django server later

alexa developer console Vour Skills rdk voice Build Code Test	Discibution Certification Analytics	Q PR I Feedback forum
Skill testing is enabled in: Development ~	Skill I/O 🔽 Device Display 🗌 Device Log	
Alexa Simulator Manual JSON Voice & Tone English (US) Type or click and hold the mic	That RDK device is not currently svallable	0
No Content No Content I cell conneast voice to more left Cell conneast voice to more left Util conneast voice to more left Util conneast voice to more left Util conneast voice to more left	SHOO SHOO Show Show Image:	

4. RDK Alexa Voice Integration - Alexa Server configuration details

4.1. Configure Alexa User Account and STB account

It is customer responsibility to create Alexa Use account and STB account once Alexa voice feature has enabled. Following steps explains how can we create a user account. STB account has to mapped with amazon user id and this mapping will ensure that respective alexa voice will reach to the right STB

4.1.1. Step one: Go to https://rdkvoice.iptn.io/admin

$\leftarrow \ \rightarrow $	C A	rdkvoice.iptn.	.io/admin/login/?nex	t=/admin/									\$
Apps	- TDK-V	Documentat	🗶 TDK Wiki - CPE Er	ng 🎴 Cloud Aud	lio Confer	 🗙 Login - xRay Clas	sic 🛛 🕸 Login :: RDK Portal	C++ Interview Que	RDK Smart TV - Agi	a. AVS UX Setup and	a. Code-Based Linkin	a. Register a Product	
							Diango admi	nistration					
							ojungo dumi	notation					
						Use	name:						
						tat							
						Pas	word:						
								_	_				
							Logi	n					

4.1.2. Step two: Go to first users link

Home > Rdk_Voice	
Rdk_Voice administration	
RDK_VOICE	
Rdkv applications	🕈 Add 🛛 🥜 Change
Users	🕈 Add 🛛 🥜 Change
Users	🕂 Add 🛛 🥒 Change

4.1.3. Step Three: create a user account

Django administration					WELCOME, TATA: VIEW SITE / CHANGE PASSWORD / LOG OUT
Select user to change					ADD USER +
Q					FILTER By staff status All Yom
DEFAULT SET TOP BOX	FIRST NAME	LAST NAME	EMAIL ADDRESS	DATE JOINED	No
3 rdk_test_1 70ayhxk35g2f3r17wye54szavtynjed2				Nov. 7, 2019, 3:48 p.m.	By superuser status
C S rok_test_lata avs_lata_test				Nov. 7, 2019, 4:47 p.m.	All Yes No
					By active All Ves No

4.1.4. Step Four: user creation

Django adminis	ration	WELCOME, TATA VIEW SITE / CHANGE PASSWORD / LOG OUT
Home - Rdk_Voice - Users		
Change user		HISTORY
Username:	File Set Links Impaired 100 characters or ferrer Links, edge and (141, and).	
Password:	algorithm: pbird/2_shu256 iterations: 150000 pash: lei+law***** hask: A.17L6g************************************	
Duran dia fa		
Personal into		
First name:		
Last name:		
Email address:		
Permissions		
Active Designates whether this user sl	hold be treated as active. Unsafect this instead of defering accounts.	
Staff status Designates whether the user ca	log into this admin also.	
Superuser status Designates that this user has a	permissions without explicitly assigning them.	
Groups:	Available groups Chosen groups +	
	Q Filter	

4.1.5. Step Five: STB account creation

Voice Users	
Type: RDK Voice User	
Default set top box:	
RDK VOICE SERVICE IDENTITYS	
SERVICE SERVICE USER ID	DELETE?
RDPhotoelwinisheim sigent () Amazon Alera • amazon Jarka account.AFS56AP4FUNQI64UVVE	8
Add another Rdk volce service identity	
Delete Sive and add and	ther Save and continue editing SAVE

4.1.6. Step Five: STB account creation

Home - Rdic_Voice	
Rdk_Voice administration	
ROK, VOICE	
Rdiv applications + Add / Change	
Users + Add / Change	
View + Ad / Change	
Home RdK, Voice - Users	
Select user to channe	ADD USER +
Q I Search PILER	
Artine et al. (cf. a latered	5
Yes	
4 02604002 001 001 001 001 001 001 001 001 001	
a roymological rhybridge roymologica rhybridge roymological rhybridge roymological rhybr	status
Le la structure de	
2 users No	
By active	
AL I	
Ves No	

5. E2E Sequence Diagram



6. Client side architecture



Below section give the details of the each components involved:-

- html This is the main HTML file which have the instructions to load the app-manager is file (maf.js)
- . App Manager - This block contains the logic to handle guide and app launch. The App manager will start the web socket by using the Alexa Guide UI – This file exports a lightning app object which has all the required lightning components to show the guide
- CNN This file exports a lightning app object which has all the required lightning components to show the CNN app
- Alexa Integrator This file contains a function which will export the class, whose object can be used to integrate Alexa.

7. API definition

7.1. method: "RDK.RegisterNewDevice"

7.1.1. Input:

• "id": "1234567890"

7.1.2. Output:

• "id": "1234567890"

7.2. method: "RDK.CompleteRegistration"

7.2.1. Input:

• "id": "1234567890"

7.2.2. Output:

• "id": "1234567890"

7.3. method: "RDK.finalizeRegistration"

7.3.1. Input:

- "id": "1234567890"
- availableApplications:[{}]

7.3.2. Output:

- "id": "1234567890"
- result: {available applications in the box}

7.4. method: "RDK.LaunchApplication"

7.4.1. Input:

- "id": "1234567890"
- appURI: string
- contentID: string
 searchString: string
- searchString: string

7.4.2. Output:

• result : Boolean

7.4.3. Errors:

- error code
 - 1 Application not available
 - 2 content not available

7.5. method: "RDK.GetCurrentApplication"

7.5.1. Input:

None

7.5.2. Output:

• The appURI of the current application

7.6. method: "RDK. Navigate"

7.6.1. Input:

• direction: String

7.6.2. Output:

• Result: success

7.7. method: "RDK. MediaControl"

7.7.1. Input:

• action: String

7.7.2. Output:

Result: success

8. How to configure server

Follow the process outlined in the attached document to configure the server.

Deployment guide.docx

9. FAQ

8.1 Is this a ready to deploy service integration ?

No, this is not. It is only meant for demonstration of capability purposes.

8.1 What is pending from this proof of concept to actually integrate echo dot as part of RDK 4.0 Voice ecosystem ?

Scalability and security of product deployment is missing in this implementation.

8.3 Do I have to sign any special license or pay a fee to use this service if I have Alexa Echo Dot configured in my home Wifi ?

No.

8.4 Who shall we contact in case we have to integrate more skills to this mode ?

TBD

8.5 Which version of Alexa devices are supported ? What about STB models ? RDK Software versions ?

TBD

8.6 What happens if my echo device does not recognize the commands in the prescribed formats of the API ? Which are the areas I should look for triaging ?

TBD

8.7 How scalable is the current solution ?

End state architecture has scalability built into it, current PoC is only for demonstration purposes.

8.8 How secure is the current solution ?

End state architecture has security built into it, current PoC is only for demonstration purposes.

8.9 Is there a plan in RDK community to realize the end state architecture ?

Currently No. We will revisit the plan based on the users feedback and interest in using this service.