

Alexa! How do you work with ORDS?

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Agenda

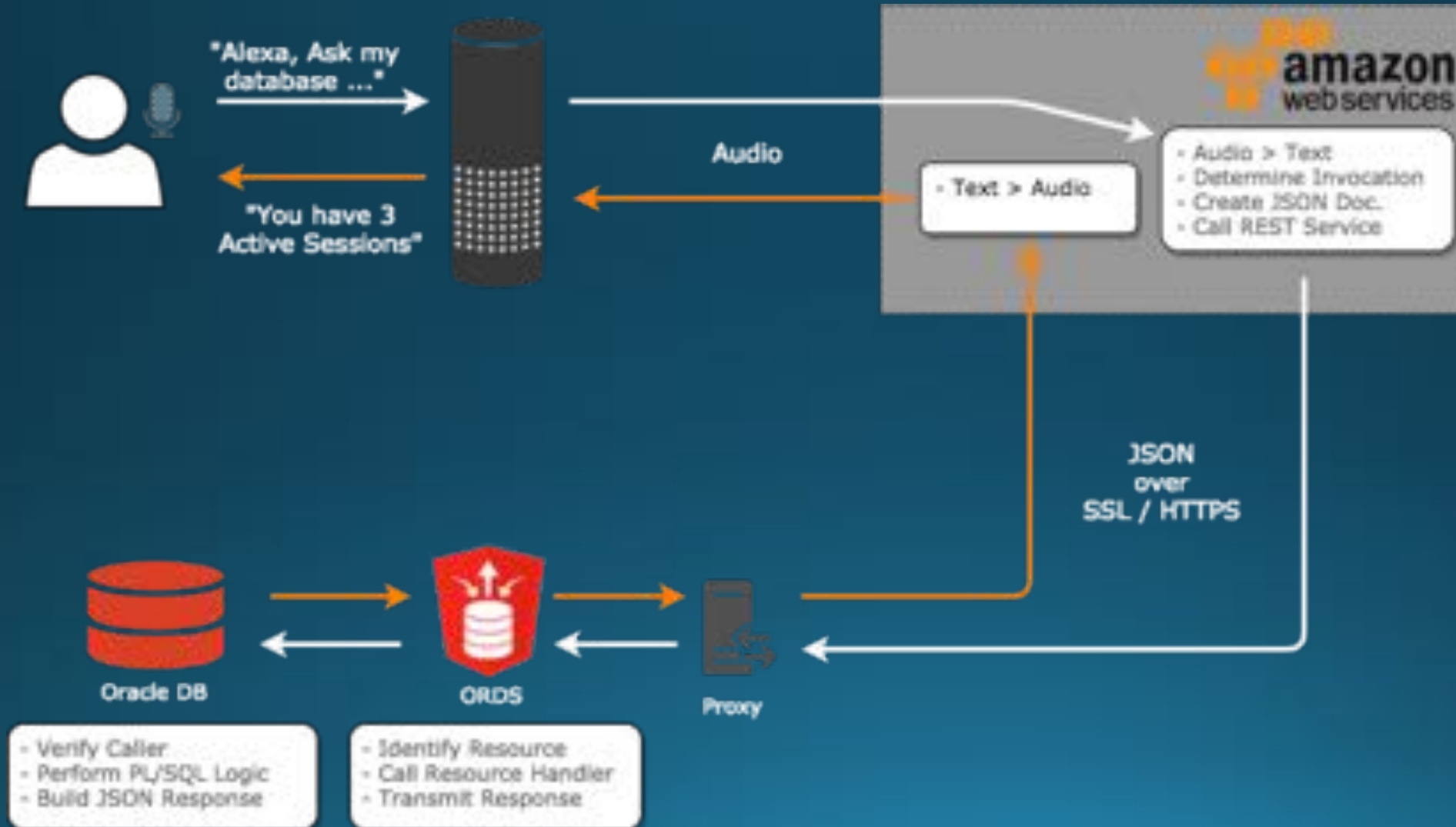
Agenda

- Sample Alexa interaction
- Anatomy of an Alexa skill
- Testing, publishing & security
- ORDS architecture
- ORDS web service
- Possibilities
- Q&A

Sample Interaction

Alexa interaction

Alexa Voice Service



An Alexa Skill

Anatomy of an Alexa skill

Invocation Name / Alexa Skill
Used to identify your custom skill
Ask My Database

Intent Schema

Identifies the users intent

Relates to an action in your PL/SQL

```
"intent": "GetDatabaseSessions",  
"slots": [{"name": "Status",  
            "type": "LIST_OF_STATUSES"}]
```

Custom Slots

Parameters and List of Values

LIST_OF_STATUSES

Active|Inactive

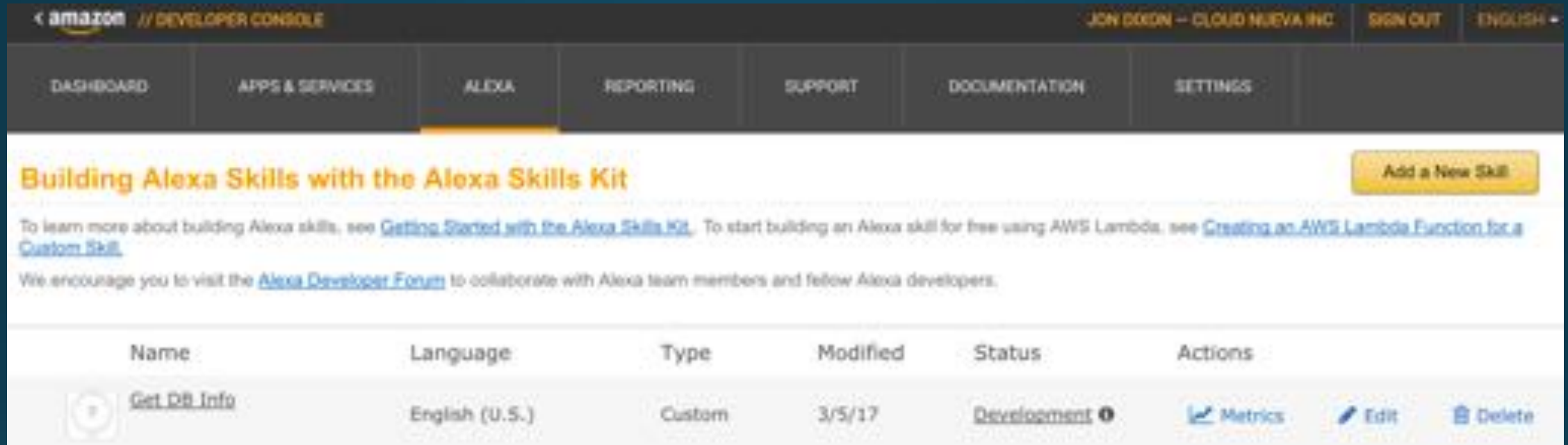
Sample Utterances

Ties together the Intent and Custom Slot





GetDatabaseSessions how many {Status}
database sessions are there

"Alexa Ask My Database How many Active sessions are there"

Amazon developer portal



The screenshot shows the Amazon Developer Console interface. At the top, there's a navigation bar with the Amazon logo, "DEVELOPER CONSOLE", and user information "JON DIXON -- CLOUD NUEVA INC." with "SIGN OUT" and "ENGLISH" links. Below this is a menu bar with "DASHBOARD", "APPS & SERVICES", "ALEXA" (highlighted), "REPORTING", "SUPPORT", "DOCUMENTATION", and "SETTINGS". The main content area is titled "Building Alexa Skills with the Alexa Skills Kit" and includes a "Add a New Skill" button. It provides links for "Getting Started with the Alexa Skills Kit" and "Creating an AWS Lambda Function for a Custom Skill". A paragraph encourages visiting the "Alexa Developer Forum". Below this is a table listing skills.

Name	Language	Type	Modified	Status	Actions
 Get DB Info	English (U.S.)	Custom	3/5/17	Development ⓘ	 Metrics  Edit  Delete

<https://developer.amazon.com/alexa>

Invocation name

- Unique identifier for your skill
- Phrase used to invoke your skill
- Container for skill components

Skill Type Define a custom interaction model or use one of the predefined skill APIs. Learn more	Custom
Language Language of your skill	English (U.S.)
Application Id The ID for this skill	amzn1.ask.skill.4e86
Name Name of the skill that is displayed to customers in the Alexa app. Must be between 2-50 characters.	Get DB Info
Invocation Name The name customers use to activate the skill. For example, "Alexa ask Tide Pooler...".	my database

Intent

- Defines actions your user can perform
- Provided in the JSON payload
- Amazon provides some common intents

Intent Schema

The schema of user intents in JSON format. For more information, see [Intent Schema](#).
Also see [built-in slots](#) and [built-in intents](#).

```
1 {  
2   "intents": [  
3     {  
4       "slots": [  
5         {  
6           "name": "Status",  
7           "type": "LIST_OF_STATUSES"  
8         }  
9       ],  
10      "intent": "GetDatabaseSessions"  
11    }  
  ]  
}
```

Custom Slots

- Inject variables into the intent
- Defined by a list of values
- Provided in the JSON payload

Custom Slot Types (Optional)
Custom slot types to be referenced by the Intent Schema and Sample Utterances. For general information about custom slots, see [Custom Slot Types](#).

Type	Values		
LIST_OF_STATUSES	Active Inactive	<button>Delete</button>	<button>Edit</button>

Add Slot Type

Utterances

- What the user might say to express intent
- Used by Alex to identify the intent
- Provide variations
 - How much available RAM is there?
 - How much Memory is free?

Sample Utterances

These are what people say to interact with your skill. Type or paste in all the ways that people can invoke the intents. [Learn more](#)

Up to 3 of these will be used as Example Phrases, which are hints to users.

- | | |
|---|--|
| 1 | <code>GetDatabaseSessions</code> how many {Status} sessions there are |
| 2 | <code>GetDatabaseSessions</code> how many sessions are there that are {Status} |
| 3 | |

Web service endpoint

- Identifies the URL of your web service
- Must be https
- Use a certificate from a trusted authority

Configuration ✓

SSL Certificate ✓

Test ✓

Publishing Information ✓

Privacy & Compliance ✓

Skills Beta Testing beta

Status: Not yet eligible ⓘ

Endpoint

Service Endpoint Type:

☐ AWS Lambda ARN (Amazon Resource Name) ⓘ **HTTPS**

Recommended

AWS Lambda is a serverless compute service that runs your code in response to events and automatically manages the underlying compute resources for you.

[More info about AWS Lambda](#)

[How to integrate AWS Lambda with Alexa](#)

Pick a geographical region that is closest to your target customers: ⓘ

☒ North America ☐ Europe

North America

https://ag...ia.com:443/ords/ordstest/ales



Testing

Testing

- From device using developer account
- Beta testing tool ***NEW***
- On-Line using simulator

The screenshot shows the AWS Lambda console interface for testing a skill. It features two tabs: 'Text' (selected) and 'JSON'. Below the tabs is a text input field labeled 'Enter Utterance' containing the text 'how many active sessions are there'. Below the input field are two buttons: 'Ask Get DB Info' and 'Reset'. Below these buttons are two panels: 'Service Request' and 'Service Response'. The 'Service Request' panel shows a JSON object with session, application, attributes, user, and new properties. The 'Service Response' panel shows a JSON object with version, response (outputSpeech), and sessionAttributes properties.

```
1 {  
2   "session": {  
3     "sessionId": "SessionId.63932b89-e878-4391-  
4     "application": {  
5       "applicationId": "amzn1.ask.skill.4e86db2  
6     },  
7     "attributes": {},  
8     "user": {  
9       "userId": "amzn1.ask.account.AEVLEDDSWHWV  
10    },  
11    "new": true
```

```
1 {  
2   "version": "1.0",  
3   "response": {  
4     "outputSpeech": {  
5       "type": "PlainText",  
6       "text": "There are currently: 33 ACTIVE s  
7     },  
8   },  
9   "sessionAttributes": {}  
10 }
```

The screenshot shows the 'Skills Beta Testing' section of the AWS Lambda console. It features a list of items with green checkmarks indicating they are completed or enabled. The items are: Skill Information, Interaction Model, Configuration, SSL Certificate, Test, Publishing Information, and Privacy & Compliance. Below the list is a section titled 'Skills Beta Testing' with a 'Status: NOT STARTED' and a button labeled '☆ Beta Test Your Skill'.

Skill Information	✓
Interaction Model	✓
Configuration	✓
SSL Certificate	✓
Test	✓
Publishing Information	✓
Privacy & Compliance	✓

Skills Beta Testing **NEW**
Status: NOT STARTED
[☆ Beta Test Your Skill](#)

Publishing & security

Publishing & security

	Un-Published Skill	Published Skill
Alexa Skill Secured By	Developer Accounts or Beta Testing	Accounting Linking
Web Service Secured By	Verify Application ID using PL/SQL	OAUTH

JSON

Alexa JSON request

```
{
  "session": {
    "sessionId": "SessionId.29fcc7ea-4776-4460-8bff-81d52013eb2a",
    "application": {
      "applicationId": "amzn1.ask.skill.4e86db24-4d2c-45dd-b521-...."
    },
    "attributes": {},
    "user": {
      "userId": "amzn1.ask.account.AEVLEDD....."
    },
    "new": true
  },
  "request": {
    "type": "IntentRequest",
    "requestId": "EdwRequestId.ba112d59-3823-4698-817f-7e441c60f567",
    "locale": "en-US",
    "timestamp": "2017-04-09T06:45:59Z",
    "intent": {
      "name": "GetDatabaseSessions",
      "slots": {
        "Status": {
          "name": "Status",
          "value": "active"
        }
      }
    },
    "version": "1.0"
  }
}
```

"Alexa **ask my database** how many **active sessions** are there"

Identifies the skill

Intent

Slot/Parameter

Alexa JSON response

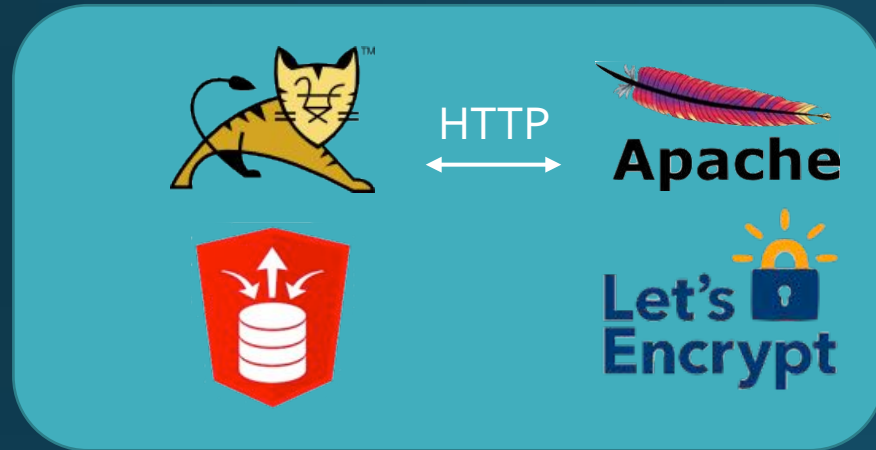
```
{
  "version": "1.0",
  "response": {
    "outputSpeech": {
      "type": "PlainText",
      "text": "There are currently: 33 ACTIVE sessions"
    }
  },
  "sessionAttributes": {}
}
```

Response, generated
by PL/SQL

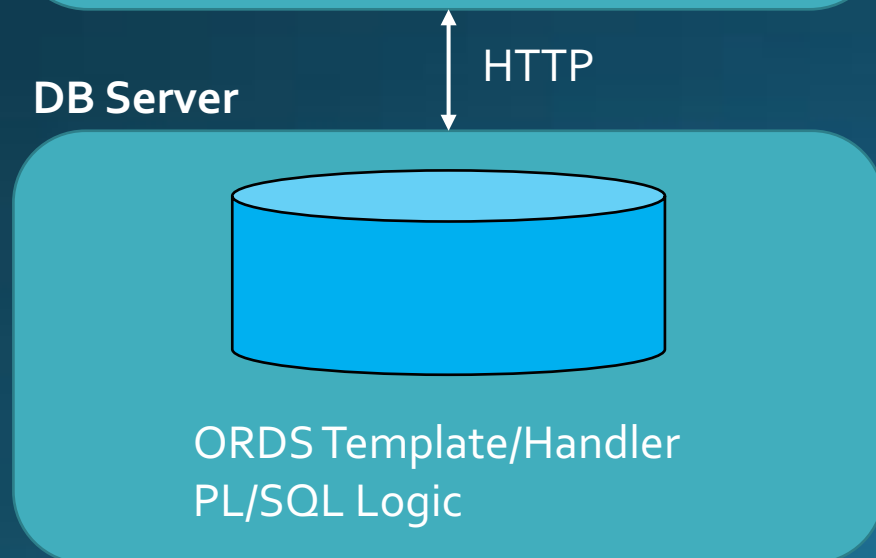
ORDS architecture

ORDS Architecture

Application Server



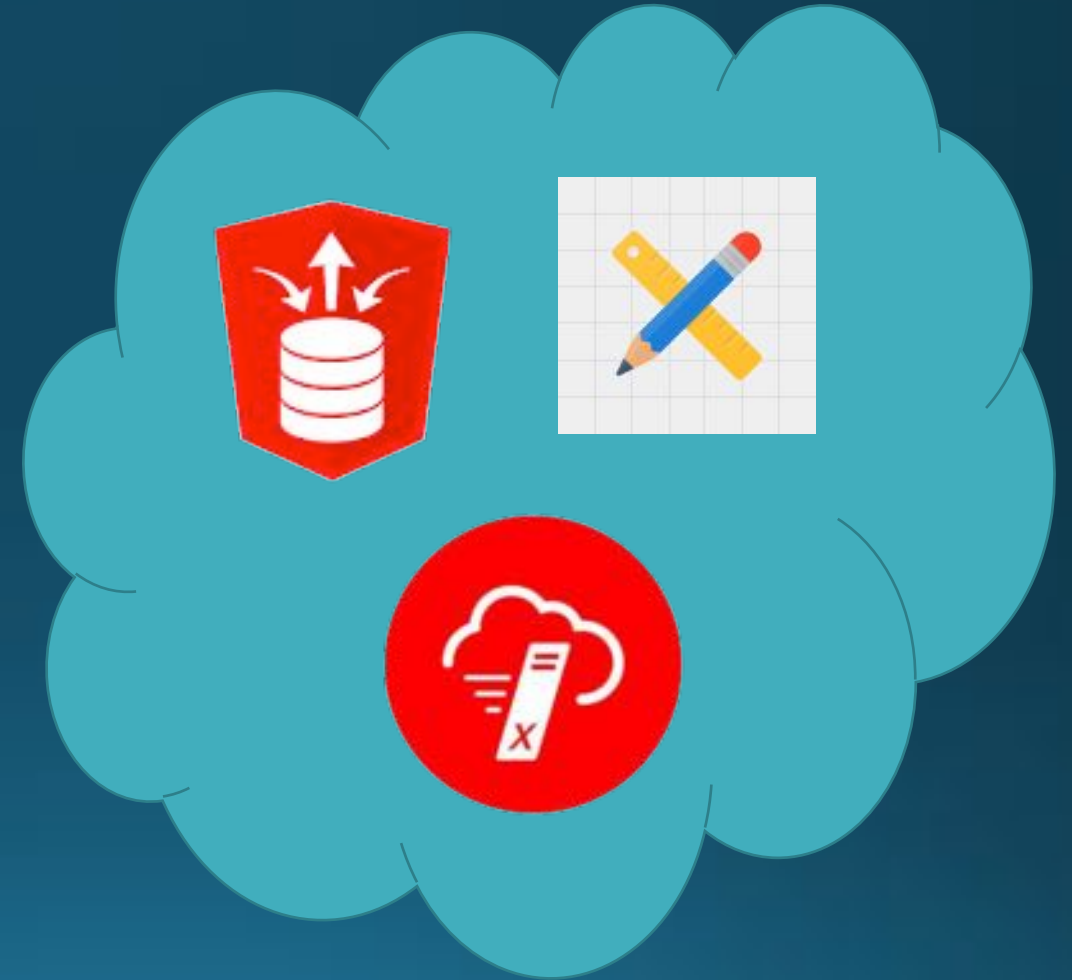
DB Server



Exadata Express

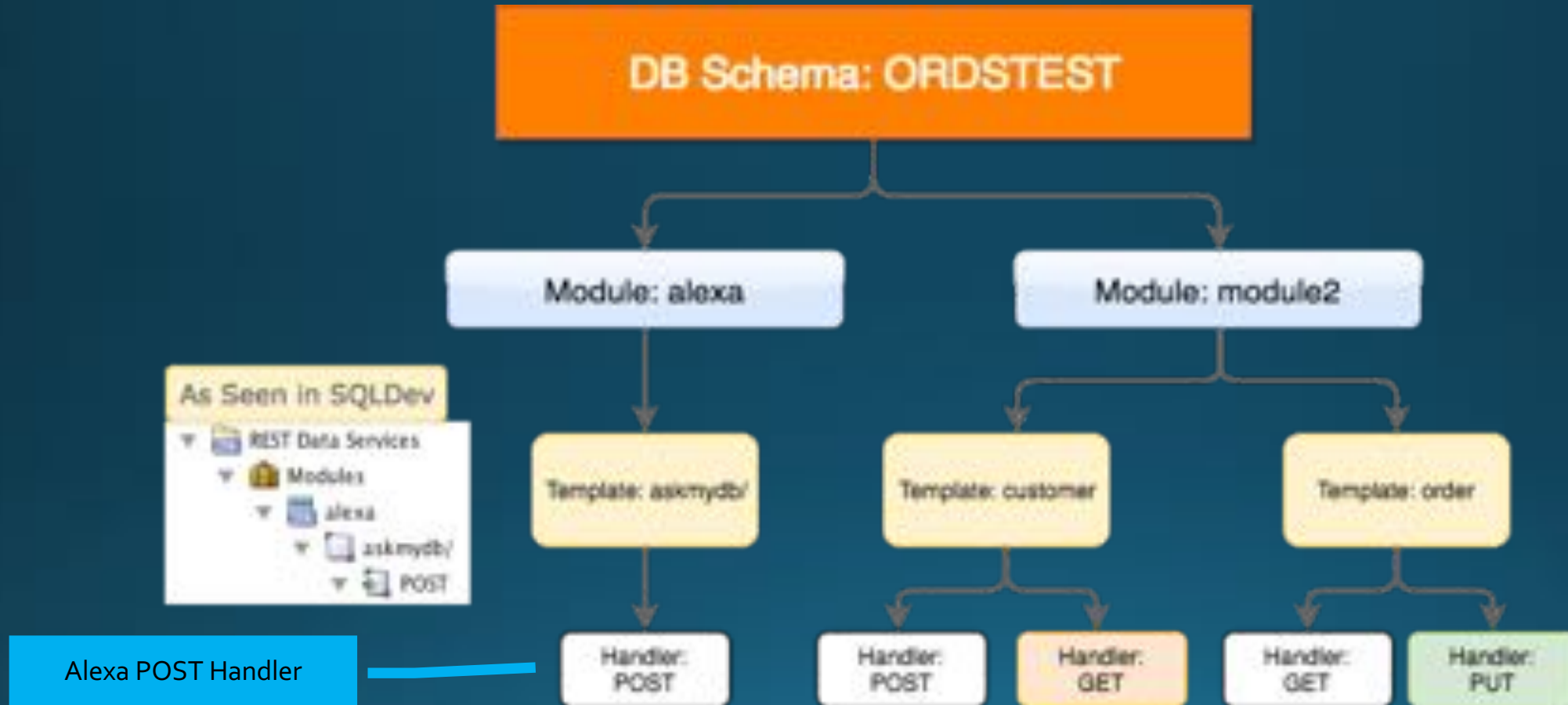
The
Internet

HTTPS / SSL



ORDS service

ORDS service structure



<https://example.com:443/ords/ordstest/alexa/askmydb/>

ORDS POST handler PL/SQL logic

- Parse JSON request
- Verify caller
- Determine intent and slots
- Run PL/SQL logic for service
- Build JSON response

ORDS handler

```
DECLARE
  l_body      BLOB;
  l_status    VARCHAR2(1);
  l_status_msg VARCHAR2(32000);
BEGIN
  l_body := :body;

  -- Process The Request
  alexa_ask_my_db.entry_point
    (p_payload => l_body,
     x_status  => l_status,
     x_status_msg => l_status_msg);

  IF l_status = 'S' THEN
    :status := 200;
  ELSE
    :status := 400;
  END IF;

  EXCEPTION WHEN OTHERS THEN
    -- Set HTTP Status to 400
    :status := 400;
END;
```

Parse JSON request

```
PROCEDURE entry_point
(p_payload      IN BLOB,
 x_status       OUT VARCHAR2,
 x_status_msg   OUT VARCHAR2) AS

l_payload_clob   CLOB;
l_application_id VARCHAR2(500);

BEGIN
  x_status      := 'S';

  -- Convert BLOB to CLOB
  l_payload_clob := blob_to_clob (p_blob => p_payload);

  -- Parse the JSON received from Amazon
  APEX_JSON.PARSE
    (p_source => l_payload_clob,
     p_strict => TRUE);
```

Verify caller

```
— Validate Application matches the ID saved during configuration of the Skill  
l_application_id := APEX_JSON.get_varchar2(p_path => 'session.application.applicationId');  
IF l_application_id <> GC_APPLICATION_ID THEN  
    x_status      := 'E';  
    x_status_msg := 'Request from Invalid Application';  
    RETURN;  
END IF;
```

Determine intent

```
-- Get the request type
l_request_type := APEX_JSON.get_varchar2(p_path => 'request.type');

IF l_request_type = 'IntentRequest' THEN
    l_intent := APEX_JSON.get_varchar2(p_path => 'request.intent.name');
    IF l_intent = 'GetDatabaseSessions' THEN
        x_status := 'S';
        x_status_msg := 'Generated Response for Alexa';
        l_response := GetDatabaseSessions;
        -- Output Web Service Response
        write_response (p_response => l_response);
    END IF;
END IF;
```


Build & run SQL

```
-- Get Status Slot Value and Validate It
l_status_slot_value := UPPER(APEX_JSON.get_varchar2(p_path => 'request.intent.slots.Status.value'));
IF NVL(l_status_slot_value, 'UNKNOWN') NOT IN ('ACTIVE', 'INACTIVE') THEN
    RETURN ('Sorry, I do not recognize the session status ' || NVL(l_status_slot_value, 'UNKNOWN') ||
           '. Valid statuses are ACTIVE or INACTIVE');
END IF;

SELECT COUNT(1)
INTO l_sessions
FROM v$session s
,    v$process p
WHERE p.addr      = s.paddr
AND    s.status   = l_status_slot_value;

RETURN 'There are currently: ' || l_sessions || ' ' || l_status_slot_value || ' sessions';
END GetDatabaseSessions;
```

Build JSON response

```
PROCEDURE write_response (p_response IN VARCHAR2) IS
BEGIN
    -- Prepare Response
    APEX_JSON.initialize_clob_output;
    APEX_JSON.open_object; -- {
    APEX_JSON.write('version', '1.0');
    -- Write text that will be read back to the user
    APEX_JSON.open_object('response'); -- response {
    -- outputSpeech {
    APEX_JSON.open_object('outputSpeech');
    APEX_JSON.write('type', 'PlainText');
    APEX_JSON.write('text', p_response);
    APEX_JSON.close_object; -- } outputSpeech
    APEX_JSON.close_object; -- } response
```

Result from
GetDatabaseSession

```
APEX_JSON.open_object('sessionAttributes');
APEX_JSON.close_object; -- } sessionAttributes

APEX_JSON.close_object; -- }

-- Return Response
htp.p(APEX_JSON.get_clob_output);
APEX_JSON.free_output;
END write_response;
```

Write HTTP response

Possibilities

Voice enable your ERP

Alexa Skills:

- “Alexa ask EBS for my Daily Revenue Briefing”
- “Alexa ask EBS for a XYZ Corp Sales Briefing”
- “Alexa ask EBS how many widgets do we have on hand”

Voice enable all the things

- APEX_WEB_SERVICE:
 - Call out to other systems
 - Cloud ERP, Salesforce, Twitter...
- Return consolidated response to Alexa
- Alexa skills:
 - “Alexa ask HQ for my daily corporate briefing”
 - “Alexa ask Marketing for my daily marketing briefing”

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Questions &

Thank You!