Alexa! How do you work with ORDS?

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Agenda

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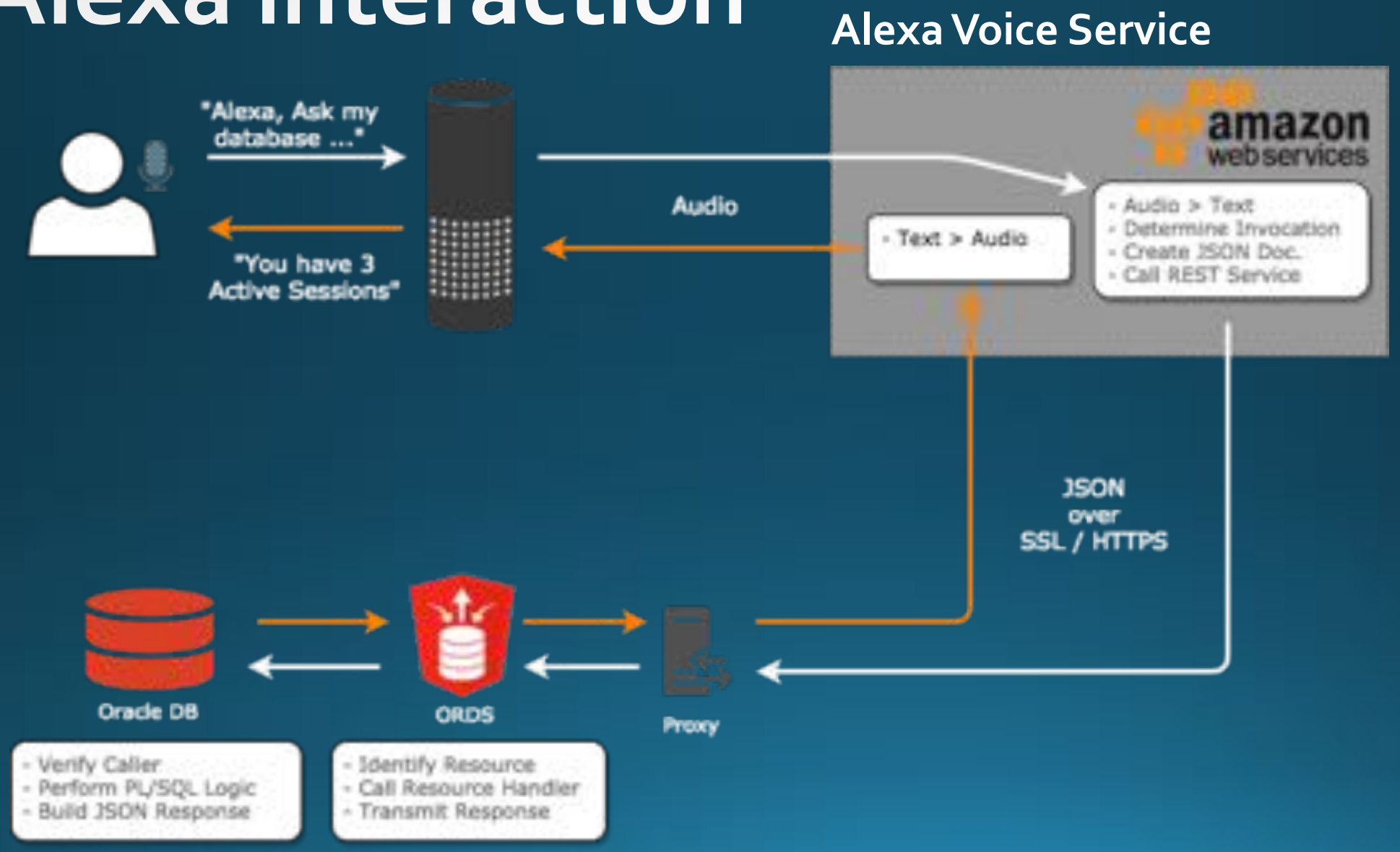
- Sample Alexa interaction
- Anatomy of an Alexa skill
- Testing, publishing & security
- ORDS architecture
- ORDS web service
- Possibilities
- Q&A

Sample Interaction

Alexa interaction



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

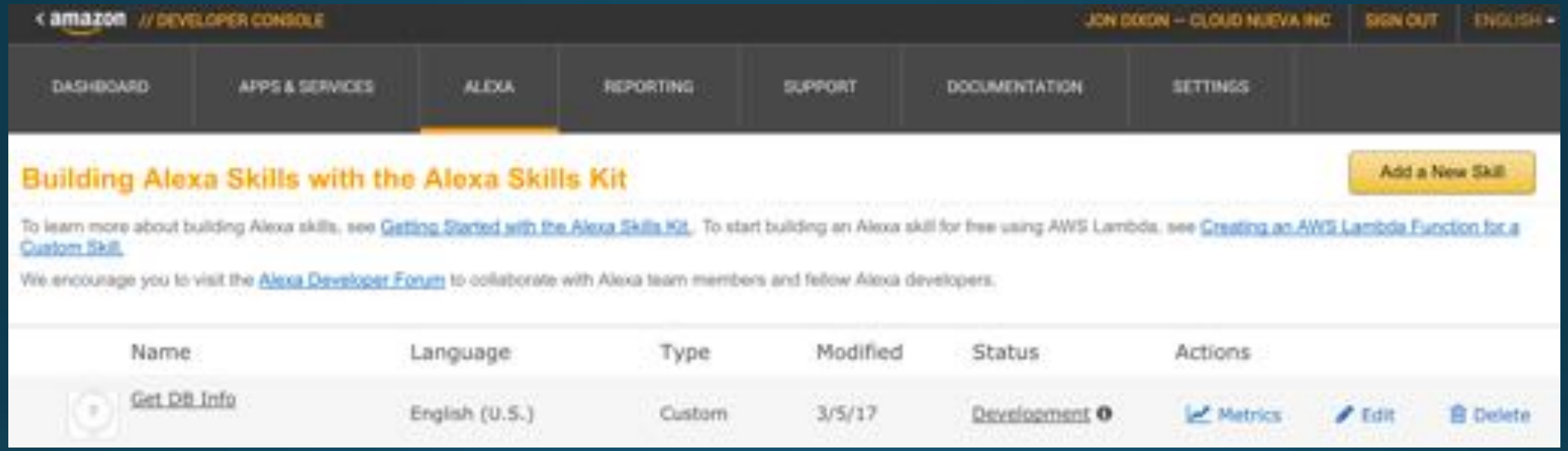
```
"intent": "GetDatabaseSessions",
 "slots": [{"name": "Status",
     "type": "LIST_OF_STATUSES"
```

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"

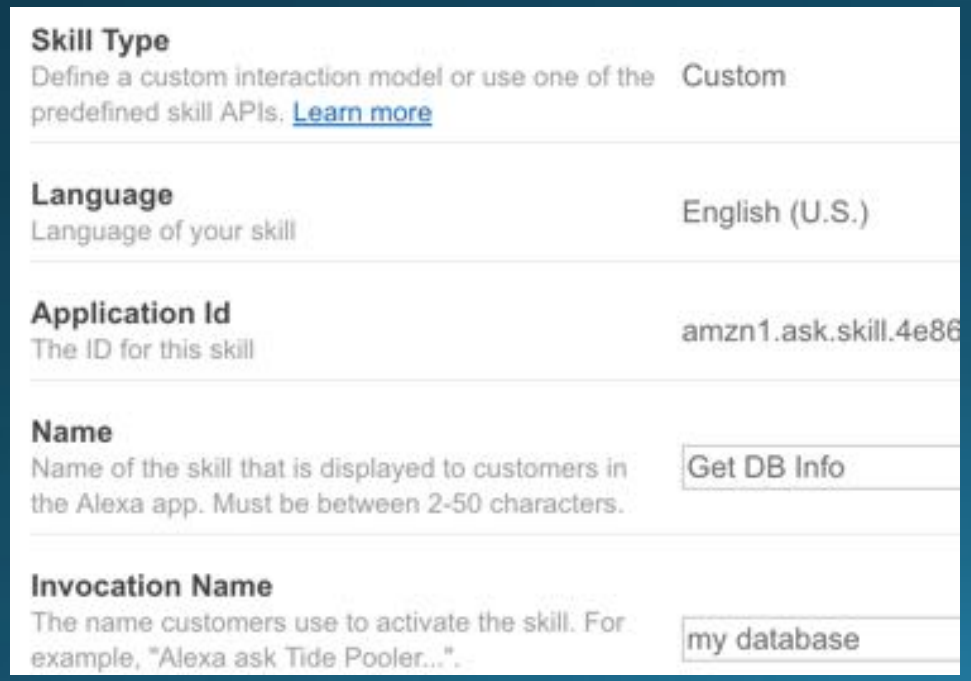
Amazon developer portal



https://developer.amazon.com/alexa

Invocation name

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



Intent

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

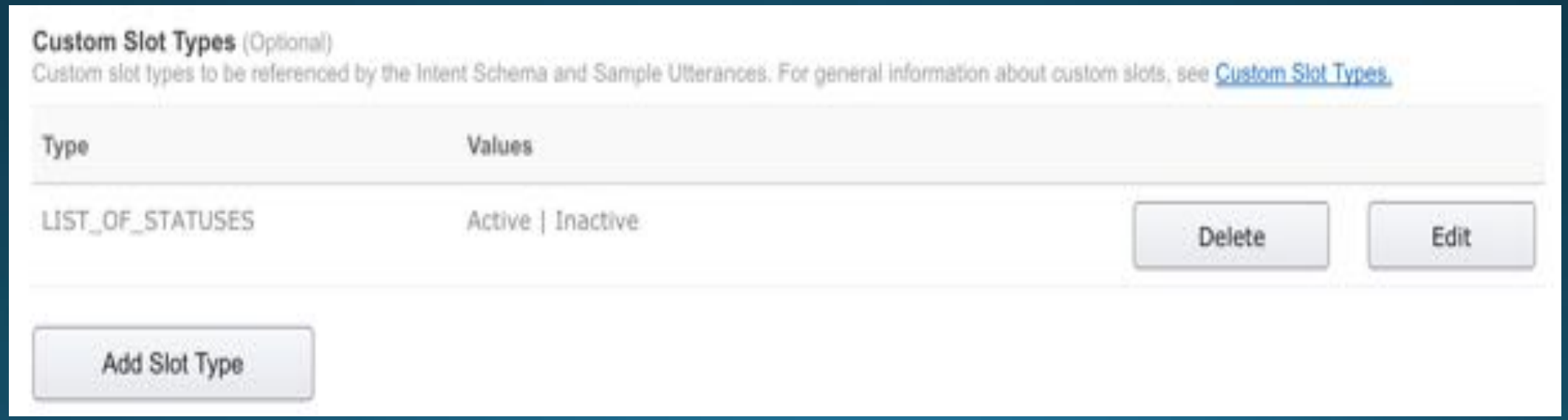
Intent Schema

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

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

Custom Slots

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



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

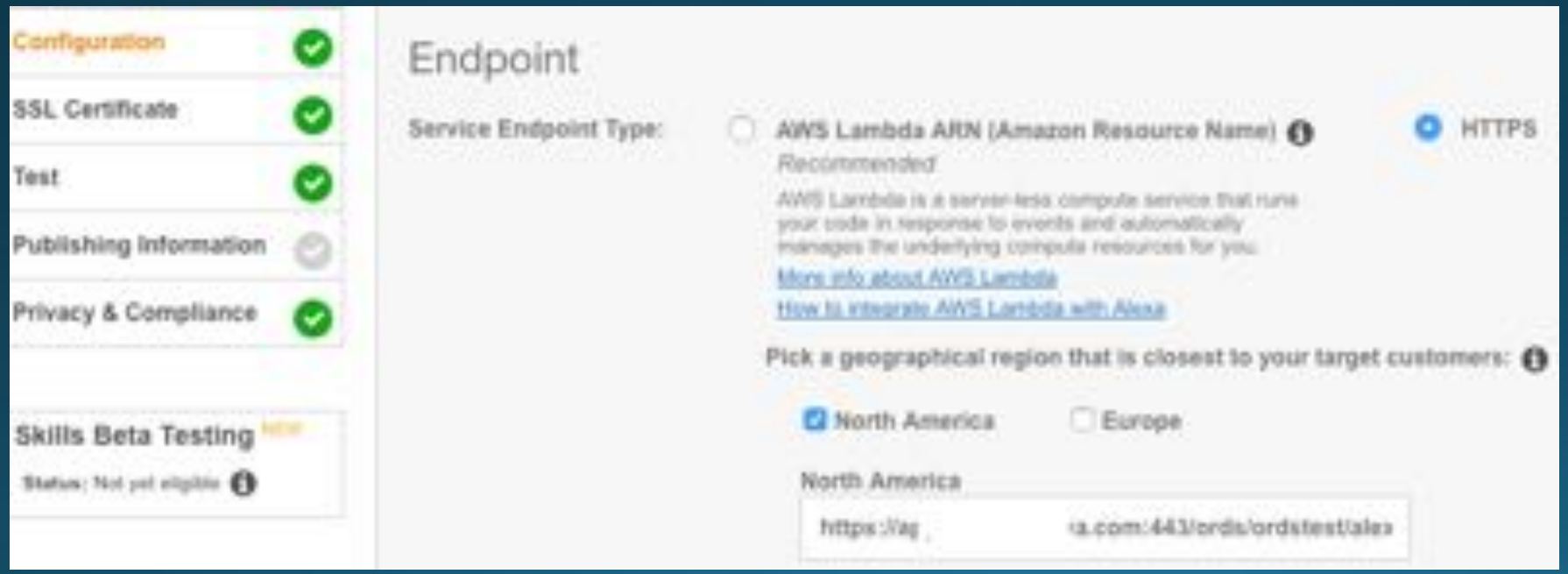
These are what people say to interact with your skill. Type or paste in all the ways that people can invoke the intents. Learn more

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

```
1 GetDatabaseSessions how many {Status} sessions there are
2 GetDatabaseSessions how many sessions are there that are {Status}
3
```

Web service endpoint

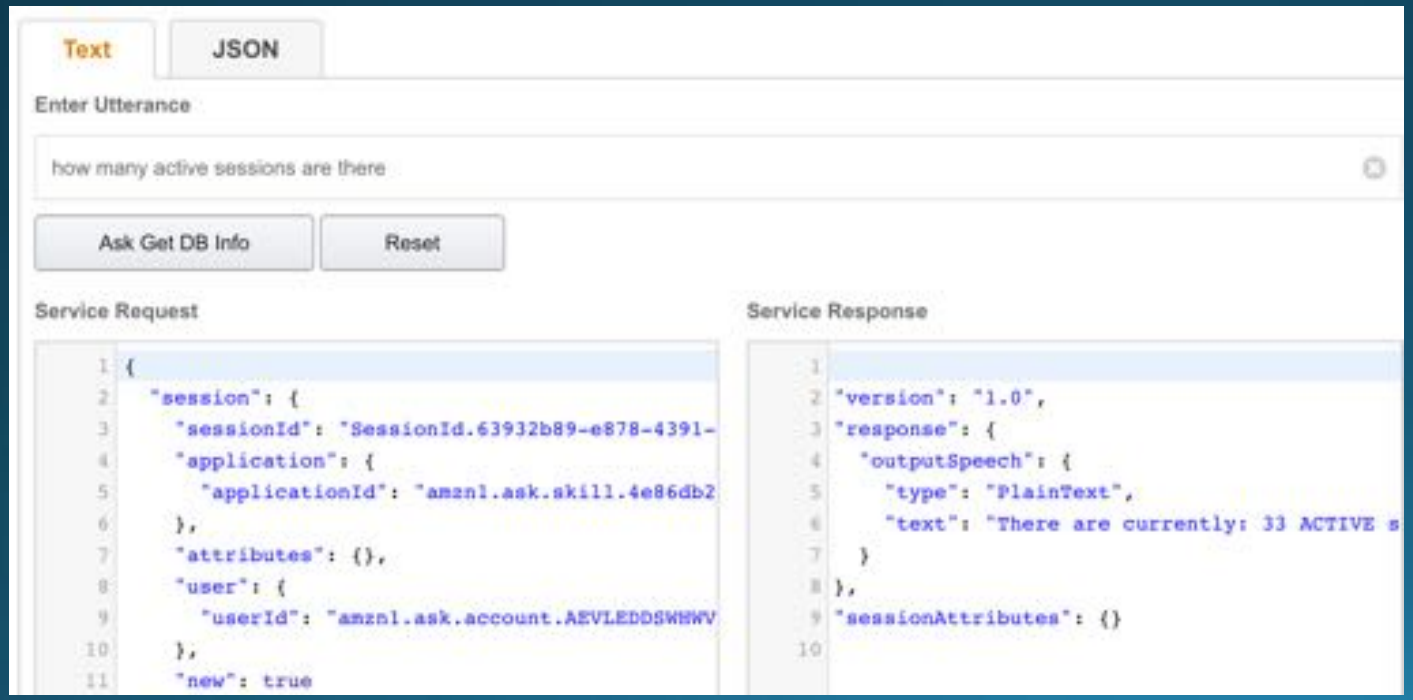
- Identifies the URL of your web service
- Must be https
- Use a certificate from a trusted authority

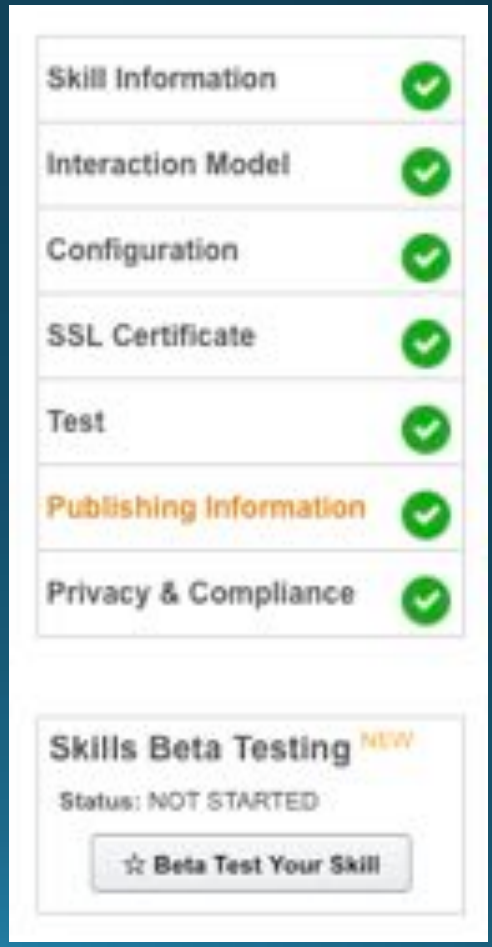


Testing

Testing

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





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

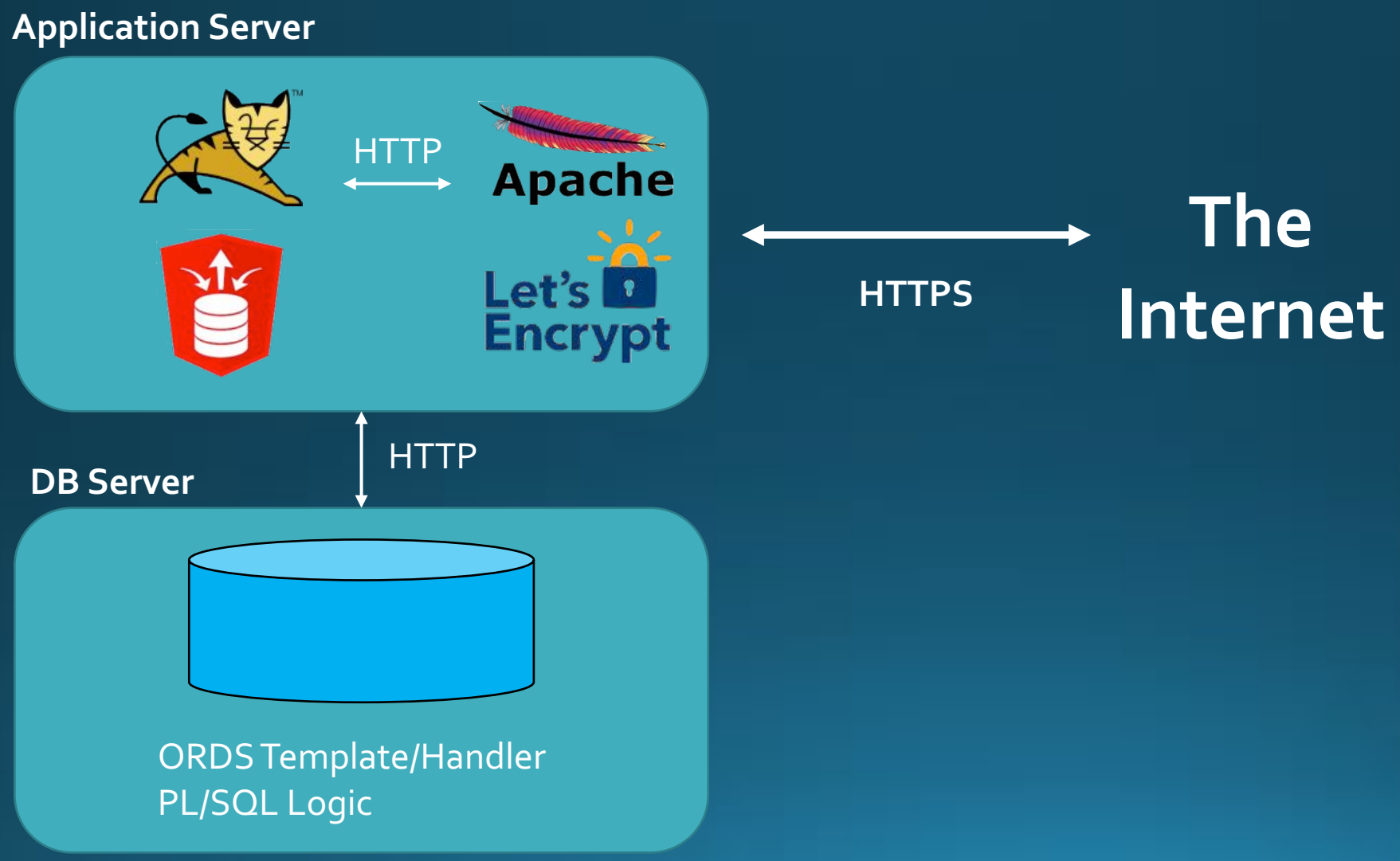
Alexa JSON response

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

Response, generated by PL/SQL

ORDS architecture

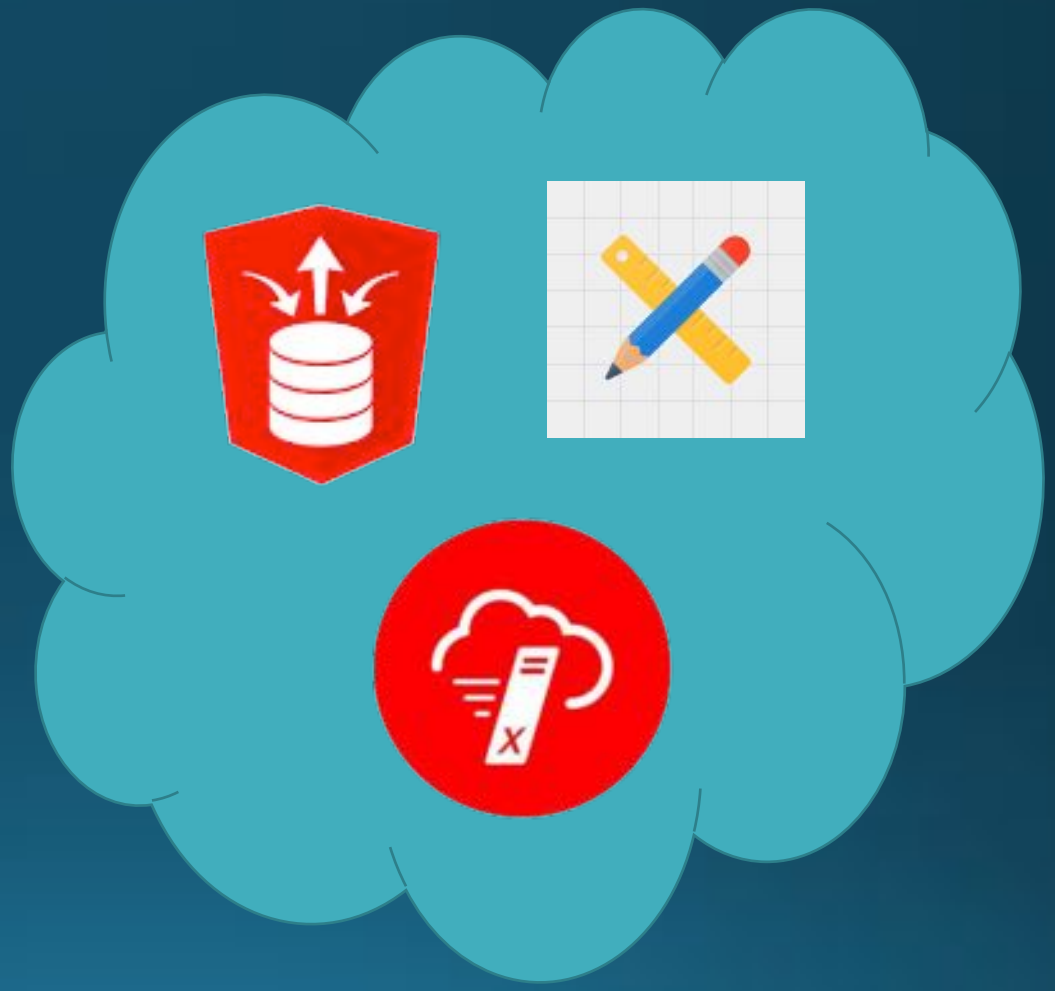
ORDS Architecture



Exadata Express

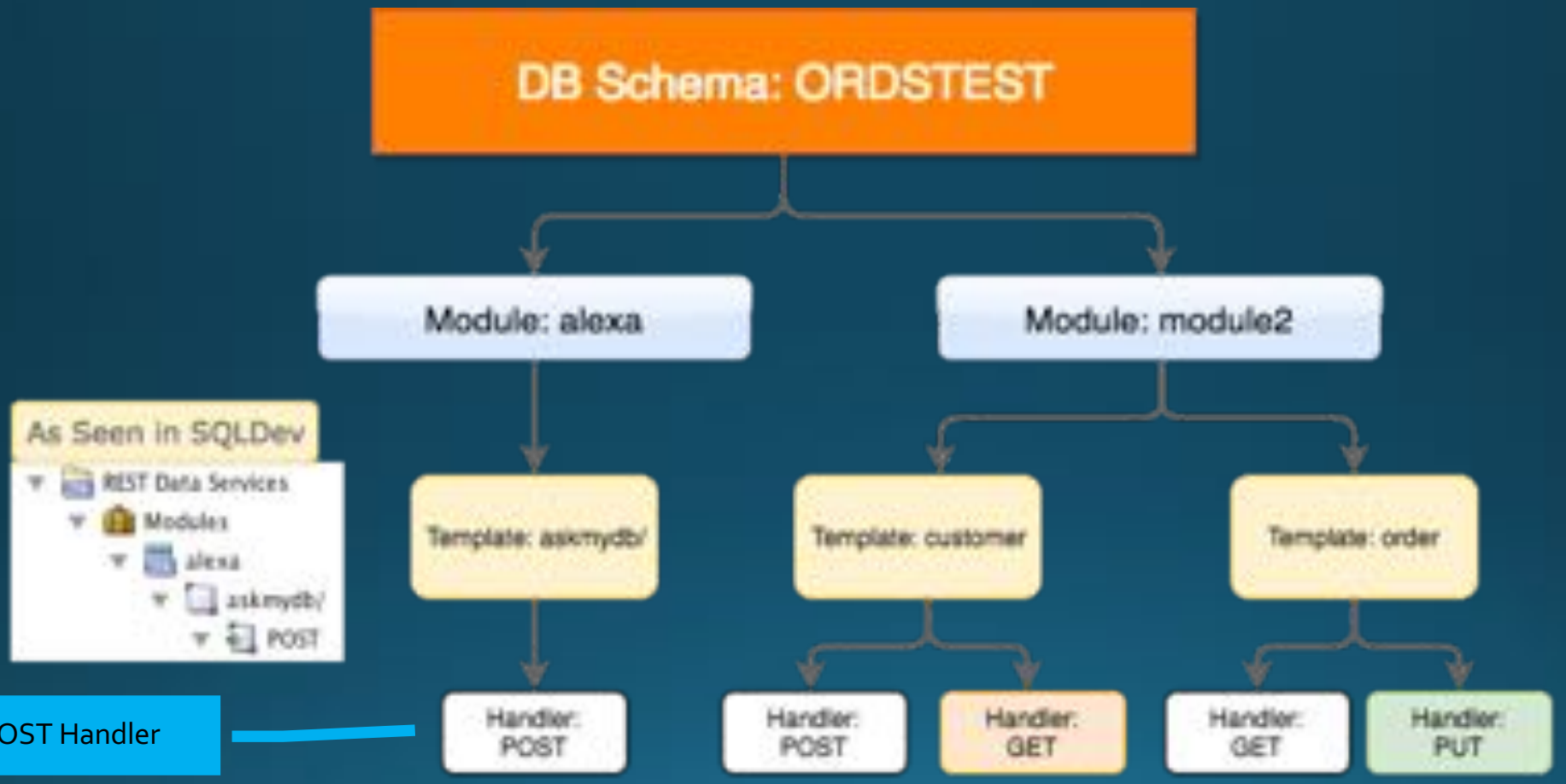
The Internet

HTTPS / SSL



ORDS service

ORDS service structure



Alexa POST Handler

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

```oracle_plsql
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
```

```
  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;
```

Result from GetDatabaseSession

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!