IBM Cloud - Machine Learning model deployment and user data integration

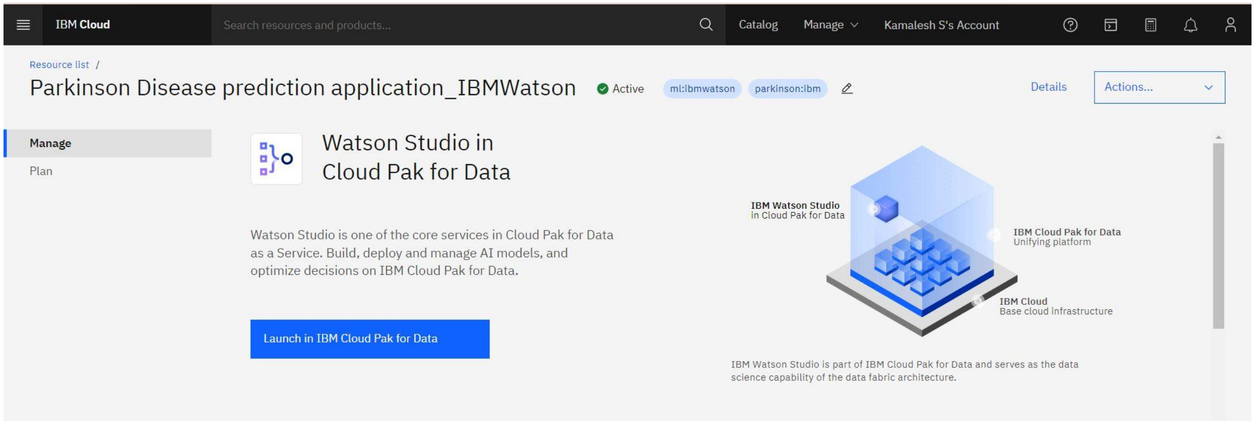
In this document, we deployed our created machine learning model of Parkinson’s Disease into IBM Watson Machine Learning workspace of the cloud. And the user's data has been linked into IBM db2 database service from the react presentation of application

Project Name : Detecting Parkinson’s Disease using Machine Learning
Cloud service used : IBM Cloud Console

The cloud operations has been represented below:

Machine Learning model registration and deployment initiation process:

Operation 1)

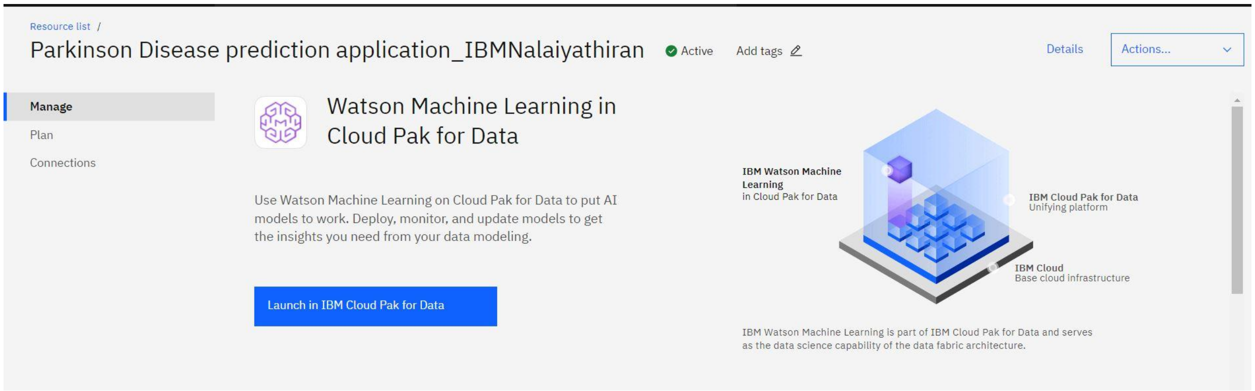

IBM Cloud
Search resources and products...
Catalog
Manage
Kamalesh S's Account
Resource list /
Active
ml:ibmwatson
parkinson:ibm
Details
Actions...
Manage
Plan
Launch in IBM Cloud Pak for Data
IBM Watson Studio in Cloud Pak for Data
IBM Cloud Pak for Data Unifying platform
IBM Cloud Base cloud infrastructure

Parkinson Disease prediction application_IBMWatson

Watson Studio in Cloud Pak for Data

Watson Studio is one of the core services in Cloud Pak for Data as a Service. Build, deploy and manage AI models, and optimize decisions on IBM Cloud Pak for Data.

IBM Watson Studio is part of IBM Cloud Pak for Data and serves as the data science capability of the data fabric architecture.


Resource list /
Active
Add tags
Details
Actions...
Manage
Plan
Connections
Launch in IBM Cloud Pak for Data
IBM Watson Machine Learning in Cloud Pak for Data
IBM Cloud Pak for Data Unifying platform
IBM Cloud Base cloud infrastructure

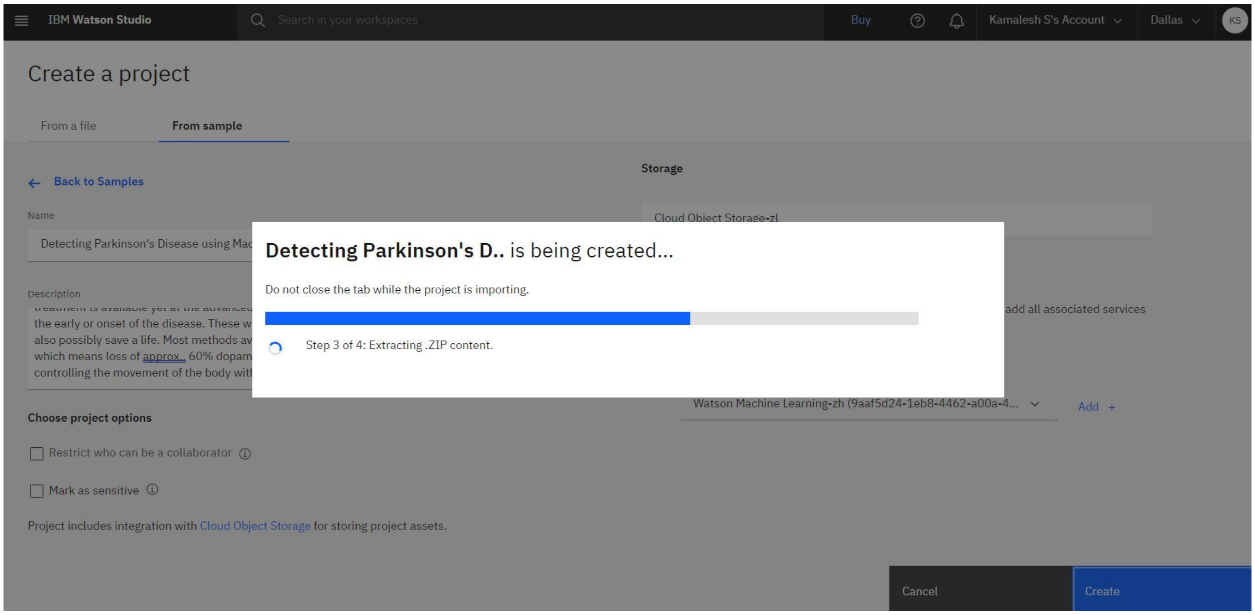
Parkinson Disease prediction application_IBMNalaiyathiran

Watson Machine Learning in Cloud Pak for Data

Use Watson Machine Learning on Cloud Pak for Data to put AI models to work. Deploy, monitor, and update models to get the insights you need from your data modeling.

IBM Watson Machine Learning is part of IBM Cloud Pak for Data and serves as the data science capability of the data fabric architecture.

Operation 2)



Create a project

Name: Detecting Parkinson's Disease using Mac

Description: treatment is available yet at the advanced the early or onset of the disease. These w also possibly save a life. Most methods av which means loss of approx.. 60% dopam controlling the movement of the body with

Cloud Object Storage-zl

add all associated services

Watson Machine Learning-zh (9aaf5d24-1eb8-4462-a00a-4...

Choose project options

□ Restrict who can be a collaborator

□ Mark as sensitive

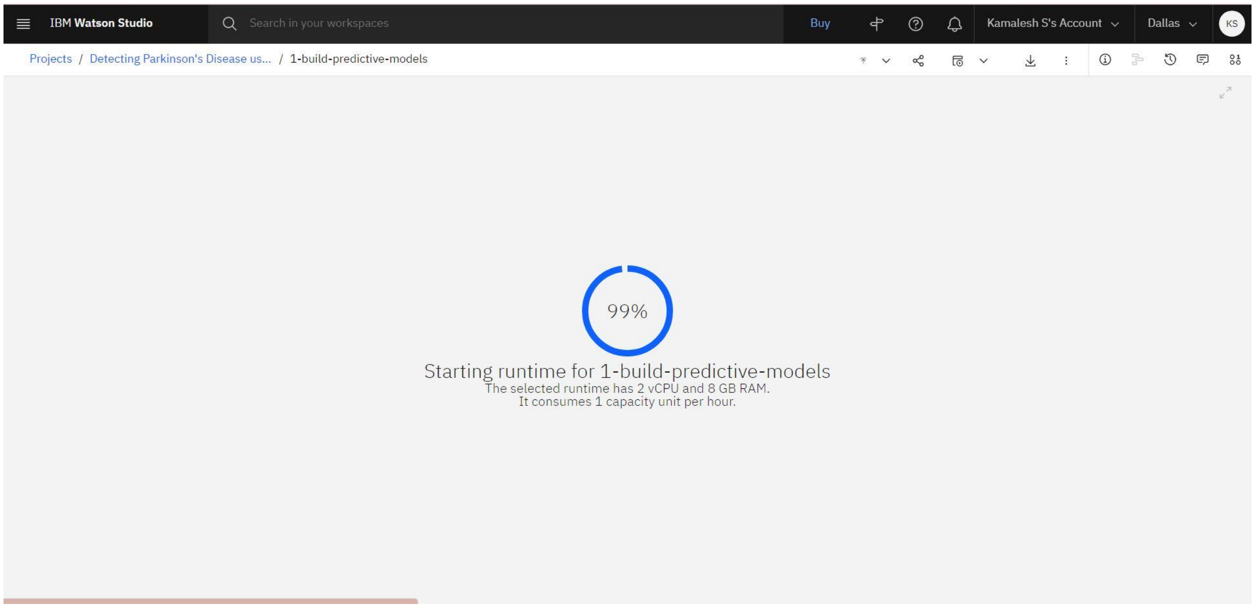
Project includes integration with Cloud Object Storage for storing project assets.

Detecting Parkinson's D.. is being created...

Do not close the tab while the project is importing.

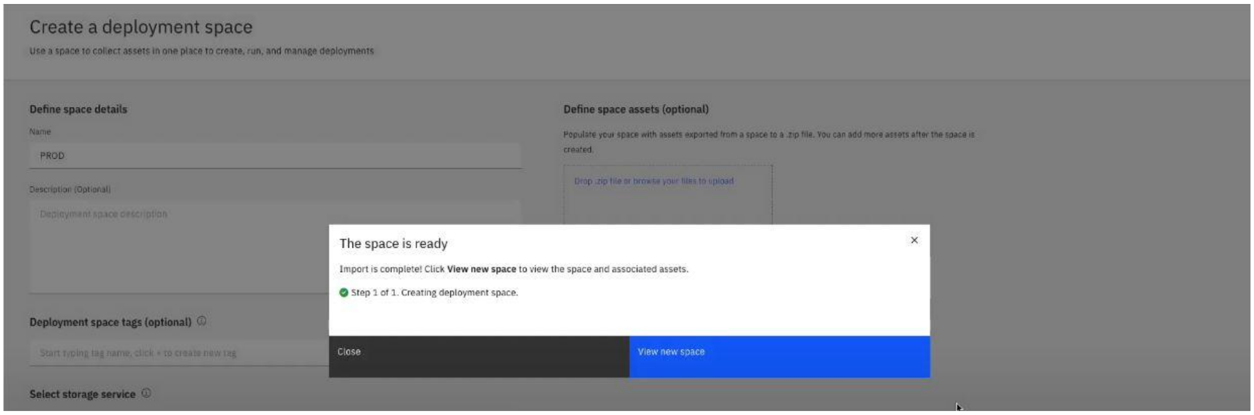
Step 3 of 4: Extracting .ZIP content.

Operation 3)


IBM Watson Studio
Search in your workspaces
Buy
Kamalesh S's Account
Dallas
KS
Projects / Detecting Parkinson's Disease us... / 1-build-predictive-models
99%

Starting runtime for 1-build-predictive-models
The selected runtime has 2 vCPU and 8 GB RAM.
It consumes 1 capacity unit per hour.

Operation 4)


Create a deployment space

Use a space to collect assets in one place to create, run, and manage deployments

Define space details

Name: PROD

Description (Optional)

Deployment space tags (optional)

Select storage service

Define space assets (optional)

Populate your space with assets exported from a space to a .zip file. You can add more assets after the space is created.

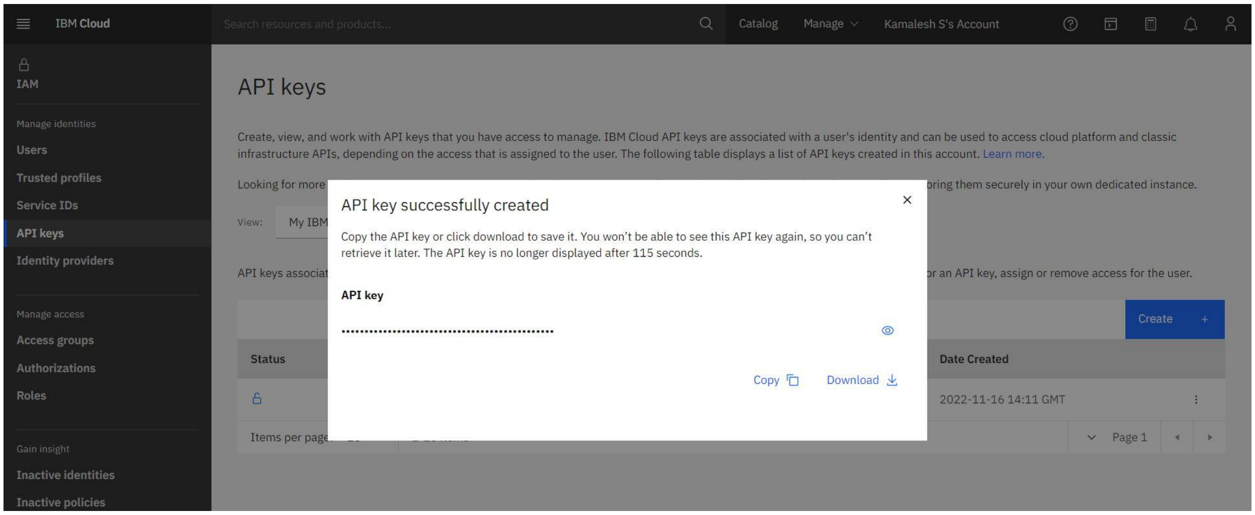
The space is ready

Import is complete! Click **View new space** to view the space and associated assets.

✓ Step 1 of 1. Creating deployment space.

Deployment space description
Start typing tag name, click + to create new tag
Drop .zip file or browse your files to upload
Close
View new space

Operation 5)



API keys

Create, view, and work with API keys that you have access to manage. IBM Cloud API keys are associated with a user's identity and can be used to access cloud platform and classic infrastructure APIs, depending on the access that is assigned to the user. The following table displays a list of API keys created in this account. Learn more.

Looking for more ... oring them securely in your own dedicated instance.

View: My IBM

API keys associat... or an API key, assign or remove access for the user.

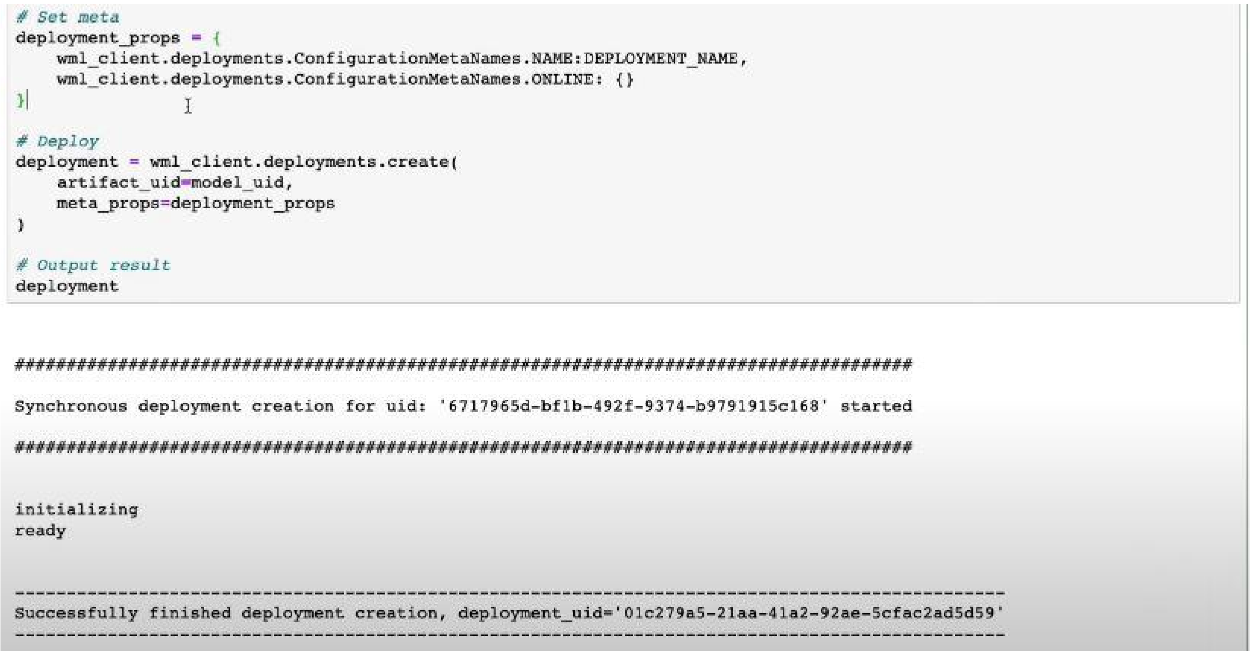
Status	Date Created
🔓	2022-11-16 14:11 GMT

API key successfully created

Copy the API key or click download to save it. You won't be able to see this API key again, so you can't retrieve it later. The API key is no longer displayed after 115 seconds.

API key: ....

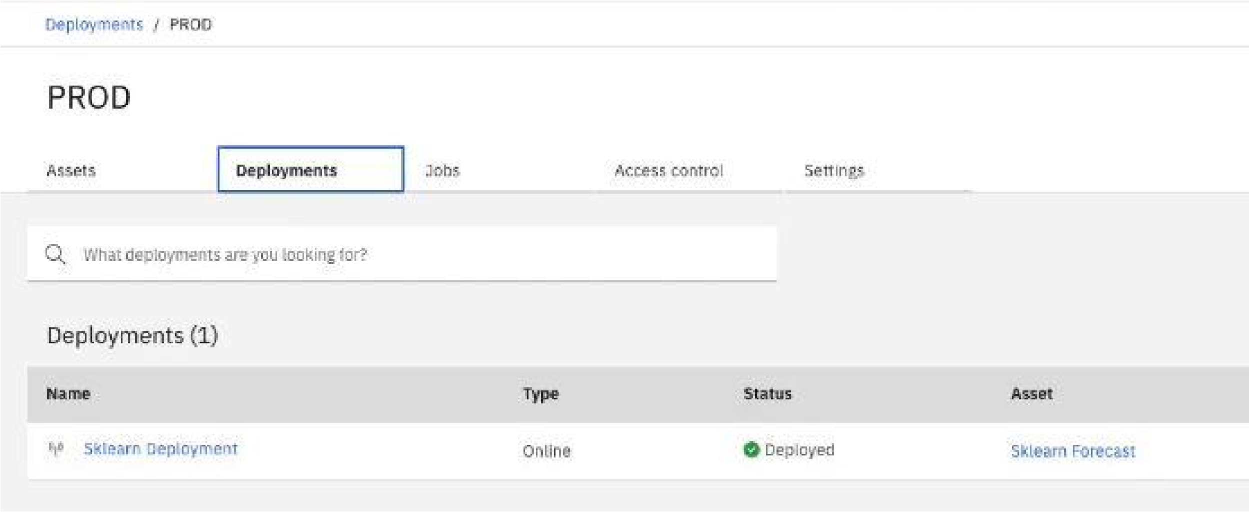
Operation 6)



```
# Set meta
deployment_props = {
    wml_client.deployments.ConfigurationMetaNames.NAME:DEPLOYMENT_NAME,
    wml_client.deployments.ConfigurationMetaNames.ONLINE: {}
}

# Deploy
deployment = wml_client.deployments.create(
    artifact_uid=model_uid,
    meta_props=deployment_props
)

# Output result
deployment
```

```
#######################################################################################

Synchronous deployment creation for uid: '6717965d-bf1b-492f-9374-b9791915c168' started

#######################################################################################


initializing
ready


------------------------------------------------------------------------------------------------
Successfully finished deployment creation, deployment_uid='01c279a5-21aa-41a2-92ae-5cfac2ad5d59'
------------------------------------------------------------------------------------------------
```

Operation 7)



Deployments (1)

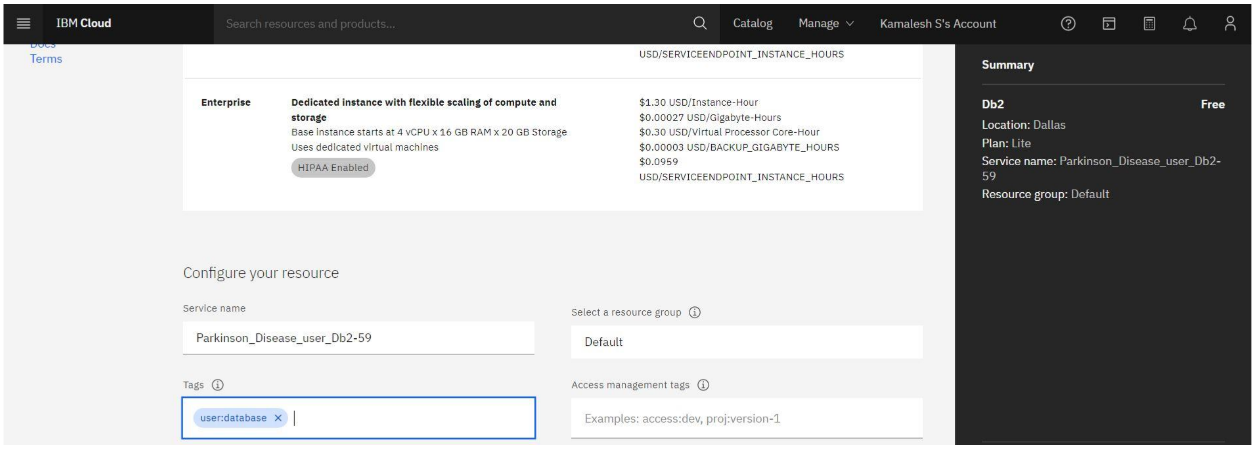
Name	Type	Status	Asset
Sklearn Deployment	Online	✓ Deployed	Sklearn Forecast

.

User data integration from react to the IBM DB2 service:

Operations:

Operation 1)



IBM Cloud | Search resources and products... | Catalog | Manage | Kamalesh S's Account

Terms

USD/SERVICEENDPOINT_INSTANCE_HOURS

Enterprise	**Dedicated instance with flexible scaling of compute and storage** Base instance starts at 4 vCPU x 16 GB RAM x 20 GB Storage Uses dedicated virtual machines HIPAA Enabled	$1.30 USD/Instance-Hour $0.00027 USD/Gigabyte-Hours $0.30 USD/Virtual Processor Core-Hour $0.00003 USD/BACKUP_GIGABYTE_HOURS $0.0959 USD/SERVICEENDPOINT_INSTANCE_HOURS

Configure your resource

Service name: Parkinson_Disease_user_Db2-59

Select a resource group: Default

Tags: user:database

Access management tags: Examples: access:dev, proj:version-1

Summary

Db2 **Free**

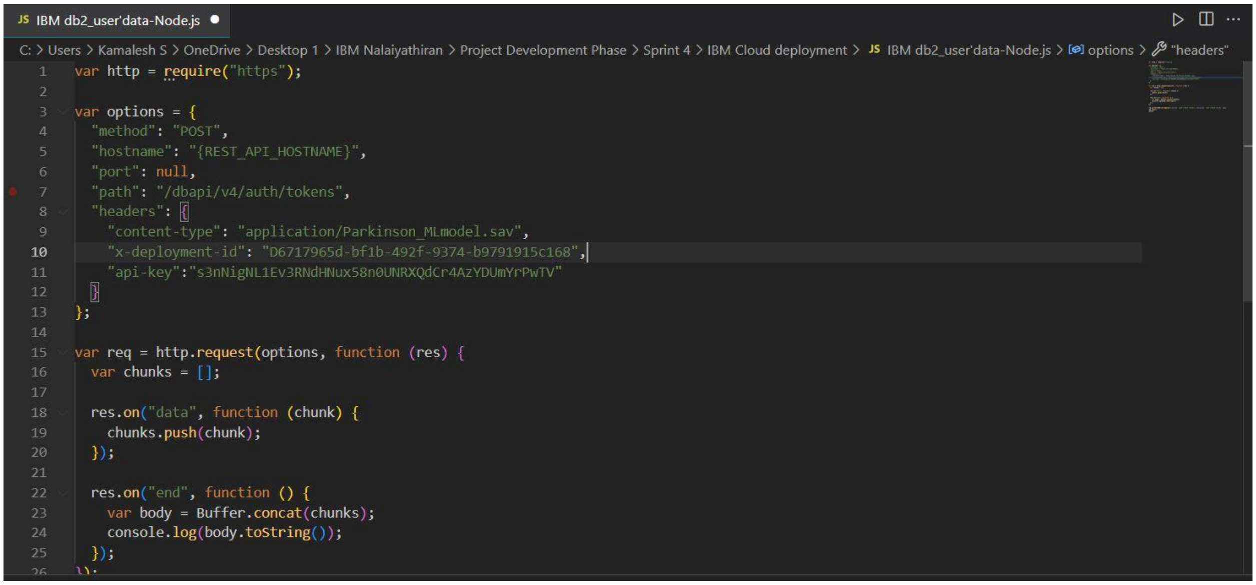
Location: Dallas

Plan: Lite

Service name: Parkinson_Disease_user_Db2-59

Resource group: Default

Operation 2)

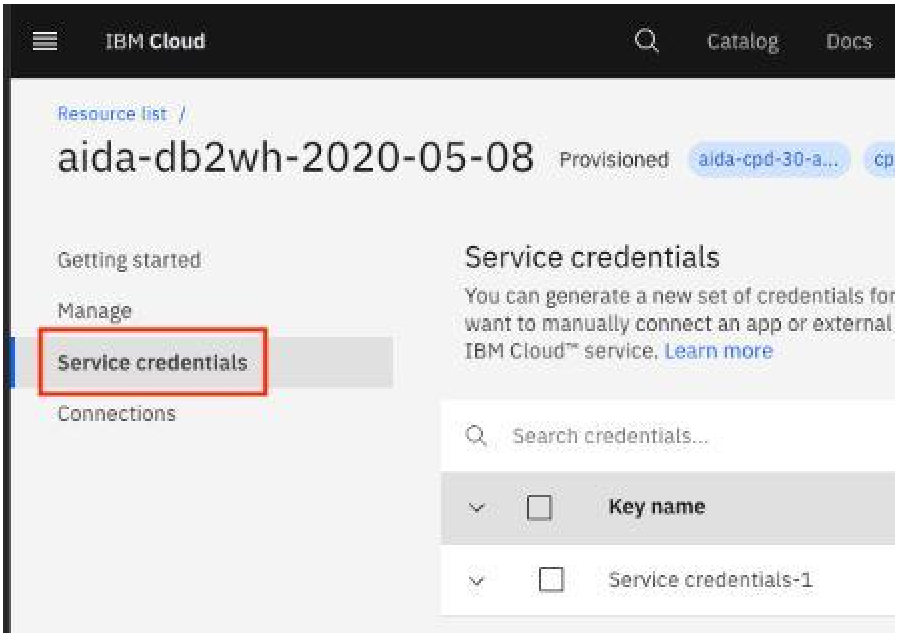


IBM db2_user'data-Node.js

C: > Users > Kamalesh S > OneDrive > Desktop 1 > IBM Nalaiyathiran > Project Development Phase > Sprint 4 > IBM Cloud deployment > IBM db2_user'data-Node.js > options > "headers"

```
var http = require("https");

var options = {
  "method": "POST",
  "hostname": "{REST_API_HOSTNAME}",
  "port": null,
  "path": "/dbapi/v4/auth/tokens",
  "headers": {
    "content-type": "application/Parkinson_MLmodel.sav",
    "x-deployment-id": "D6717965d-bf1b-492f-9374-b9791915c168",
    "api-key":"s3nNigNL1Ev3RNdHNux58n0UNRXQdCr4AzYDUmYrPwTV"
  }
};

var req = http.request(options, function (res) {
  var chunks = [];

  res.on("data", function (chunk) {
    chunks.push(chunk);
  });

  res.on("end", function () {
    var body = Buffer.concat(chunks);
    console.log(body.toString());
  });
});
```

Operation 3)



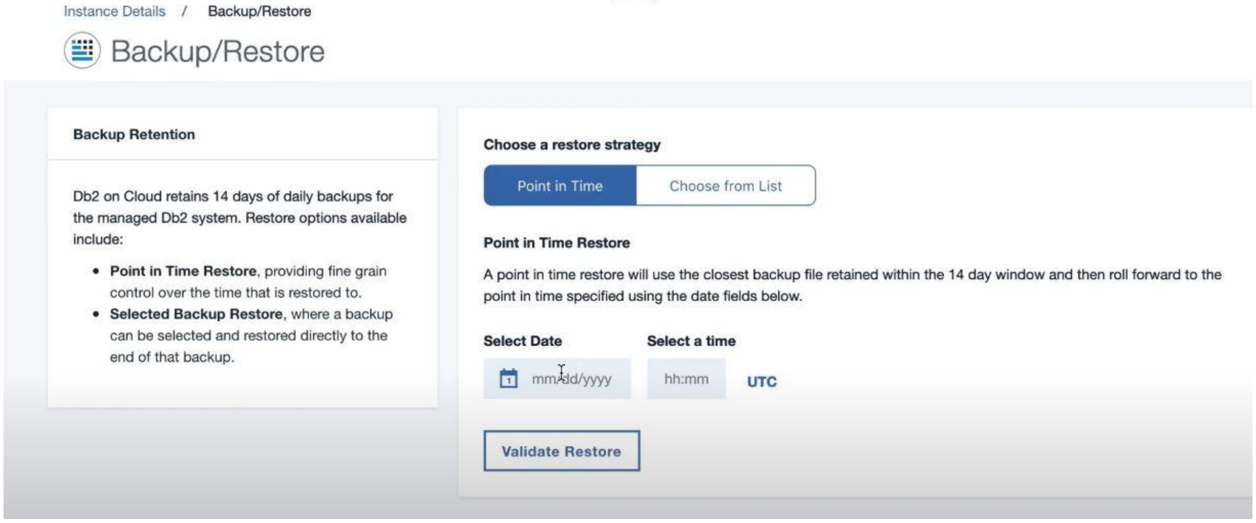
aida-db2wh-2020-05-08 Provisioned aida-cpd-30-a... cp

Service credentials

You can generate a new set of credentials for
want to manually connect an app or external
IBM Cloud™ service. Learn more

	Key name
□	Service credentials-1

Operation 4)



Backup Retention

Db2 on Cloud retains 14 days of daily backups for the managed Db2 system. Restore options available include:

- **Point in Time Restore**, providing fine grain control over the time that is restored to.
- **Selected Backup Restore**, where a backup can be selected and restored directly to the end of that backup.

Choose a restore strategy

Point in Time Restore

A point in time restore will use the closest backup file retained within the 14 day window and then roll forward to the point in time specified using the date fields below.

Select Date mm/dd/yyyy

Select a time hh:mm UTC