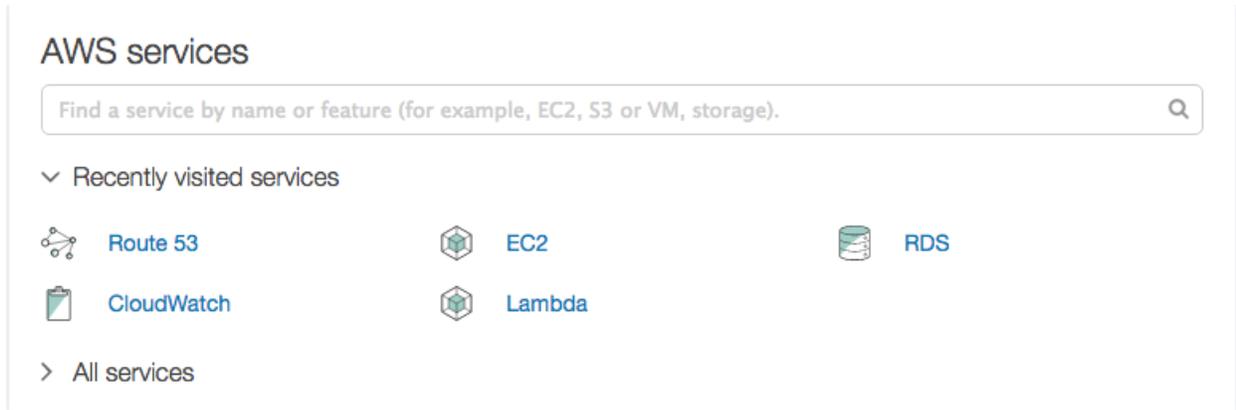


2. Creating and configuring an Amazon RDS database

While Heirloom PaaS ships with several database instances available on your instance, for this demo we'll be using Amazon RDS and its Postgres support.

These steps assume you already have an Amazon subscription and at least familiarity with the Amazon portal.

Log into your AWS portal and select RDS:



From there, click 'Instances' on the left hand side to access your DB instances:

Click 'Launch DB Instance' to start creating a new instance:

Select the PostgreSQL engine:

Select Engine

To get started, choose a DB Engine below and click Select.

	<h2>PostgreSQL</h2> <p>PostgreSQL is a powerful, open-source object-relational database system with a strong reputation of reliability, stability, and correctness.</p> <ul style="list-style-type: none">• High reliability and stability in a variety of workloads.• Advanced features to perform in high-volume environments.• Vibrant open-source community that releases new features multiple times per year.• Supports multiple extensions that add even more functionality to the database.• The most Oracle-compatible open-source database.• Free tier eligible	Select
		
		
 PostgreSQL		
		
		

Click the 'Select' button:

Do you plan to use this database for production purposes?

Production

PostgreSQL

Use [Multi-AZ Deployment](#) and [Provisioned IOPS Storage](#) as defaults for high availability and fast, consistent performance.

Dev/Test

PostgreSQL

This instance is intended for use outside of production or under the [RDS Free Usage Tier](#).

Billing is based on [RDS pricing](#).

[Cancel](#)

[Previous](#)

[Next Step](#)

Select the 'Dev/Test' Tier and click 'Next Step':

Free Tier

The Amazon RDS Free Tier provides a single db.t2.micro instance as well as up to 20 GB of storage, allowing new AWS customers to gain hands-on experience with Amazon RDS. [Learn more about the RDS Free Tier and the instance restrictions here](#).

Only show options that are eligible for RDS Free Tier

Instance Specifications

Click the 'Only show options..' box:

Specify DB Details

Free Tier

The Amazon RDS Free Tier provides a single db.t2.micro instance as well as up to 20 GB of storage, allowing new AWS customers to gain hands-on experience with Amazon RDS. Learn more about the RDS Free Tier and the instance restrictions [here](#).

Only show options that are eligible for RDS Free Tier

Instance Specifications

DB Engine	postgres
License Model	postgresql-license
DB Engine Version	PostgreSQL 9.6.2-R1
DB Instance Class	db.t2.micro — 1 vCPU, 1 GiB RAM
Multi-AZ Deployment	No
Storage Type	General Purpose (SSD)
Allocated Storage*	5 GB

Settings

DB Instance Identifier*	<input type="text"/>
Master Username*	<input type="text"/>
Master Password*	<input type="password"/>
Confirm Password*	<input type="password"/>

Li
th

Enter a DB name (Identifier) and then **demo** for the username and **demouser** for the

password.
Click 'Next Step':

Configure Advanced Settings

Network & Security



VPC*	Create new VPC
Subnet Group	Create new DB Subnet Group
Publicly Accessible	Yes
Availability Zone	us-east-1a
VPC Security Group(s)	Create new Security Group

Database Options

Database Name	
Database Port	5432
DB Parameter Group	default.postgres9.6
Option Group	default:postgres-9-6
Copy Tags To Snapshots	<input type="checkbox"/>
Enable Encryption	No

Backup

Backup Retention Period	7 days
Backup Window	No Preference

Monitoring

Enable Enhanced Monitoring	No
----------------------------	----

Maintenance

Auto Minor Version Upgrade	Yes
Maintenance Window	No Preference

* Required

Cancel

Previous

Launch DB Instance

Set VPC to '**Create New VPC**' and the Availability zone to **us-east-1a**
Click 'Launch DB Instance':

✔ **Your DB Instance is being created.**

Note: Your instance may take a few minutes to launch.

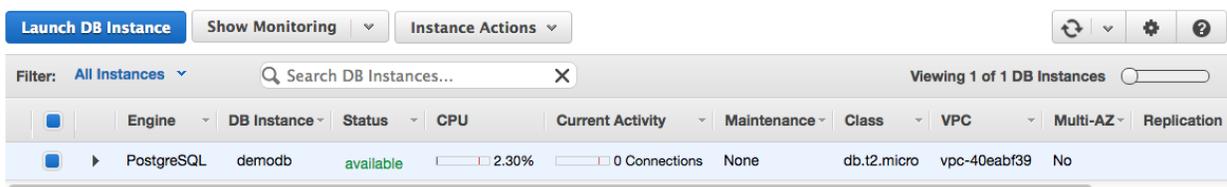
Connecting to your DB Instance

Once Amazon RDS finishes provisioning your DB instance, you can use a SQL client application or utility to connect to the instance.

[Learn about connecting to your DB instance](#)

View Your DB Instances

Click 'View Your DB Instances'. You should keep refreshing this page until the Database shows that it is running (it will take a few minutes to finish initially backing up):



	Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication
<input type="checkbox"/>	PostgreSQL	demodb	available	2.30%	0 Connections	None	db.t2.micro	vpc-40eabf39	No	

Click the right arrow to the left of your DB Instance and then click the second icon on the left that is a book with a magnifying glass on it:

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... Viewing 1 of 1 DB Instances

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication
PostgreSQL	demodb	available	2.30%	0 Connections	None	db.t2.micro	vpc-40eabf39	No	

Endpoint: demodb.cb2oygtzn1c1.us-east-1.rds.amazonaws.com:5432 (authorized)

Configuration Details

ARN: arn:aws:rds:us-east-1:993614313983:db:demodb

Engine: PostgreSQL 9.6.2

License Model: PostgreSQL License

Created Time: August 14, 2017 at 3:28:00 PM UTC-5

DB Name: demo

Username: demo

Option Group: default:postgres-9-6 (in-sync)

Parameter Group: default:postgres9.6 (in-sync)

Copy Tags To Snapshots: No

Resource ID: db-TTBIBSFNEUBY2DNWLNXYKEDA

Security and Network

Availability Zone: us-east-1c

VPC: vpc-40eabf39

Subnet Group: default-vpc-40eabf39 (Complete)

Subnets: subnet-2f677c13, subnet-a2add58e, subnet-c7b843a3, subnet-77261b3f, subnet-7748337b, subnet-7ef88824

Security Groups: rds-launch-wizard-1 (sg-db34ecab) (active)

Publicly Accessible: Yes

Endpoint: demodb.cb2oygtzn1c1.us-east-1.rds.amazonaws.com

Port: 5432

Certificate Authority: rds-ca-2015 (Mar 5, 2020)

Instance and IOPS

Instance Class: db.t2.micro

Storage Type: General Purpose (SSD)

IOPS: disabled

Storage: 5 GB

Monitoring Details

Enhanced Monitoring Enabled: No

Encryption Details

Encryption Enabled: No

Availability and Durability

DB Instance Status: available

Multi AZ: No

Automated Backups: Enabled (7 Days)

Latest Restore Time: August 14, 2017 at 3:29:19 PM UTC-5

Maintenance Details

Auto Minor Version Upgrade: Yes

Maintenance Window: sun:04:26-sun:04:56

Backup Window: 06:22-06:52

Pending Maintenance: None

Instance Actions Tags Logs

Click the Security group link on the right (in the screenshot above it is **rds-launch-wizard-1**):

Create Security Group Actions ▾

search : sg-db34ecab Add filter

Name	Group ID	Group Name	VPC ID	Description
	sg-db34ecab	rds-launch-wizard-1	vpc-40eabf39	Created from the RDS Mana...

Security Group: sg-db34ecab

Description Inbound Outbound Tags

Group name rds-launch-wizard-1 Group description
Group ID sg-db34ecab VPC ID

Click the 'Inbound' tab and click 'Edit':

Edit inbound rules ✕

Type	Protocol	Port Range	Source
PostgreSQL	TCP	5432	Custom 107.216.42.76/32

Add Rule

NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.

Cancel Save

Click 'Add Rule' and fill in the new rule as follows:

Edit inbound rules ✕

Type	Protocol	Port Range	Source
PostgreSQL	TCP	5432	Custom 107.216.42.76/32
PostgreSQL	TCP	5432	Custom 0.0.0.0/0

Add Rule

NOTE: Any edits made on existing rules will result in the edited rule being deleted and a new rule created with the new details. This will cause traffic that depends on that rule to be dropped for a very brief period of time until the new rule can be created.

Cancel Save

Click 'Save' and return to the RDS tab:

Launch DB Instance Show Monitoring Instance Actions

Filter: All Instances Search DB Instances... Viewing 1 of 1 DB Instances

Engine	DB Instance	Status	CPU	Current Activity	Maintenance	Class	VPC	Multi-AZ	Replication
PostgreSQL	demodb	available	2.30%	0 Connections	None	db.t2.micro	vpc-40eabf39	No	

Endpoint: demodb.cb2oygtzn1cl.us-east-1.rds.amazonaws.com:5432 (authorized)

Configuration Details		Security and Network	
ARN	arn:aws:rds:us-east-1:993614313983:db:demodb	Availability Zone	us-east-1c
Engine	PostgreSQL 9.6.2	VPC	vpc-40eabf39
License Model	Postgresql License	Subnet Group	default-vpc-40eabf39 (Complete)
Created Time	August 14, 2017 at 3:28:00 PM UTC-5	Subnets	subnet-2f677c13 subnet-a2add58e subnet-c7b843a3 subnet-77261b3f subnet-7748337b subnet-7ef88824
DB Name		Security Groups	rds-launch-wizard-1 (sg-db34ecab) (active)
Username	demo	Publicly Accessible	Yes
Option Group	default:postgres-9-6 (in-sync)	Endpoint	demodb.cb2oygtzn1cl.us-east-1.rds.amazonaws.com
Parameter Group	default.postgres9.6 (in-sync)	Port	5432
Copy Tags To Snapshots	No	Certificate Authority	rds-ca-2015 (Mar 5, 2020)
Resource ID	db-TTBIBSFNEUBY2DNWLNXYKEDOA		

Instance and IOPS		Monitoring Details	
Instance Class	db.t2.micro	Enhanced Monitoring Enabled	No
Storage Type	General Purpose (SSD)		
IOPS	disabled		
Storage	5 GB		

Encryption Details		Availability and Durability		Maintenance Details	
Encryption Enabled	No	DB Instance Status	available	Auto Minor Version Upgrade	Yes
		Multi AZ	No	Maintenance Window	sun:04:26-sun:04:56
		Automated Backups	Enabled (7 Days)	Backup Window	06:22-06:52
		Latest Restore Time	August 14, 2017 at 3:29:19 PM UTC-5	Pending Maintenance	None

Instance Actions Tags Logs

Make a note of the Endpoint URL, you'll need it to connect to the database from an SQL client:

Endpoint: demodb.cb2oygtzn1cl.us-east-1.rds.amazonaws.com:5432 (authorized)

You can use your favorite SQL client to create the table and confirm the connection properties or you can use the DB Explorer built into your Heirloom PaaS instance. The following steps and screen shots assume you're using the DB Explorer.

Open a webpage to the home page of the application instance:



Heirloom PaaS deployment instance: cicsdemo.apps.heirloomcomputing.com

Instance: [Secure](#) | [File Explorer](#) | [DB Explorer](#) | [Tomcat](#) | [EBP JES/JCL Console](#) | [EBP JES/JCL Configuration](#)

External: [Heirloom Computing](#) | [Heirloom PaaS](#) | [Support](#)

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Click the 'DB Explorer' link:

English

Login

Saved Settings:

Setting Name:

Driver Class:

JDBC URL:

User Name:

Password:

From the 'Saved settings' list, choose 'PostgreSQL':

Login

Saved Settings: PostgreSQL

Setting Name: PostgreSQL

Driver Class: org.postgresql.Driver

JDBC URL: jdbc:postgresql://localhost:5432/postgres

User Name: demo

Password:

Enter your JDBC url from Amazon RDS. Also Enter the user id and password you set up for the database then click the 'Test Connection' button:

Login

Saved Settings: PostgreSQL

Setting Name: PostgreSQL

Driver Class: org.postgresql.Driver

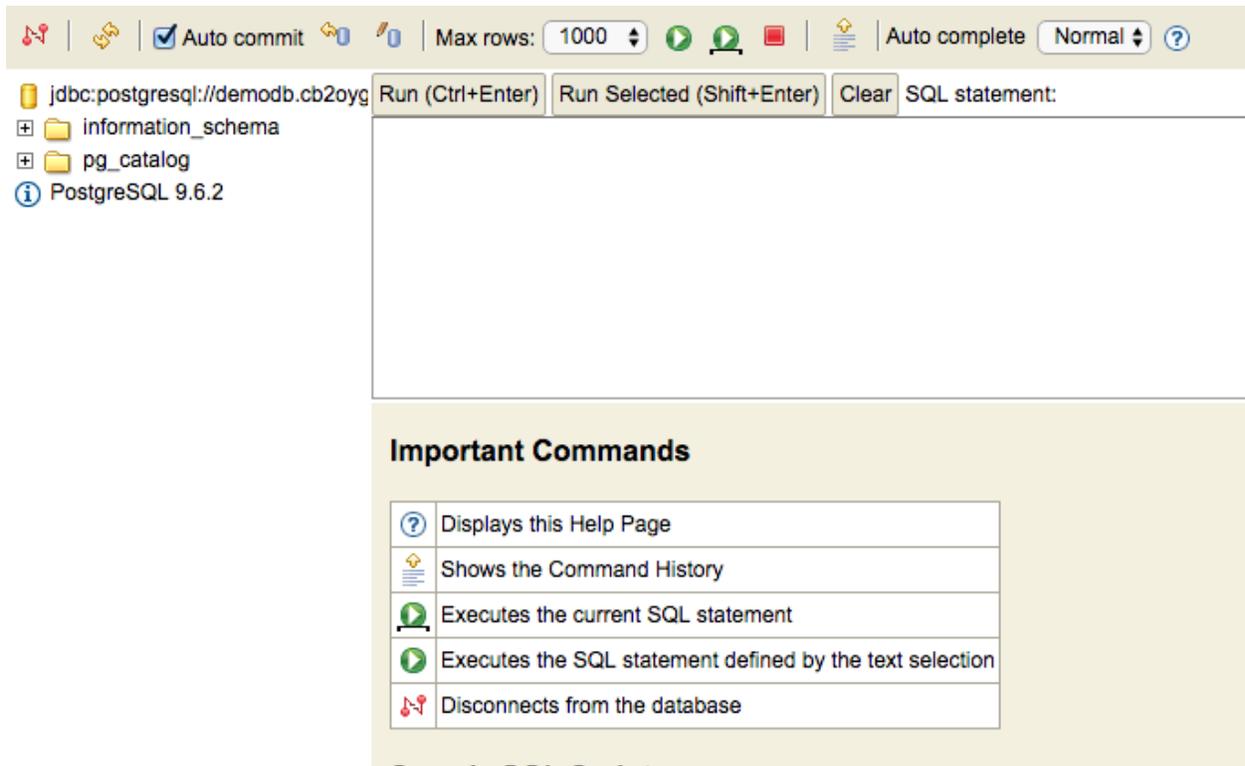
JDBC URL: jdbc:postgresql://demodb.cb2oygtzn1cl.us-east-1.rds.am

User Name: demo

Password:

Test successful

Assuming you entered the details correctly and the database is accessible you'll see 'Test successful' at the bottom.
Click 'Connect':



In the SQL statement window type the following:

CREATE DATABASE demo;

Then click the 'Run' button:

<image of demo created>

Disconnect from the database by clicking the top left icon (Disconnect):

English Preferences Tools Help

Login

Saved Settings: PostgreSQL

Setting Name: PostgreSQL Save Remove

Driver Class: org.postgresql.Driver

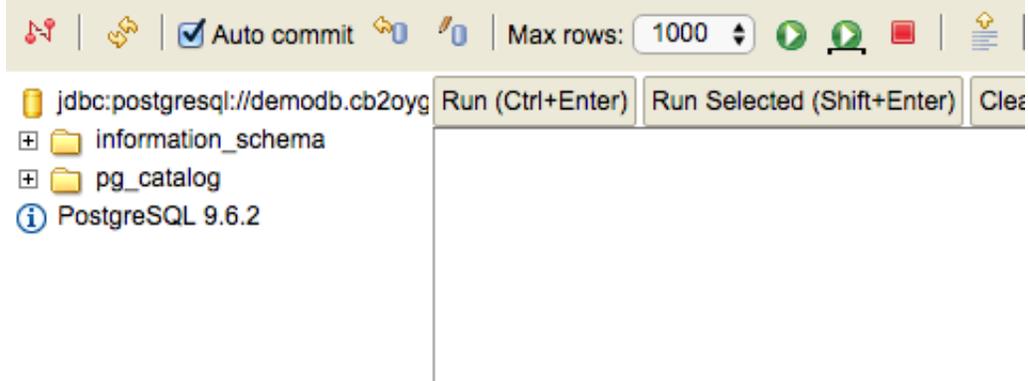
JDBC URL: jdbc:postgresql://localhost:5432/postgres

User Name: demo

Password:

Connect Test Connection

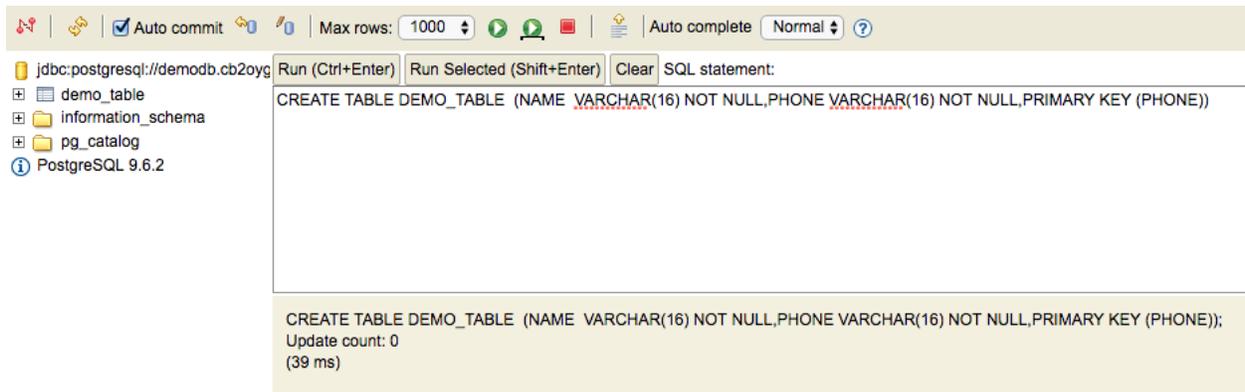
Modify the JDBC url to have 'demo' on the end not 'postgres' and then click 'Connect':



Now enter the following in the SQL statement window:

```
CREATE TABLE DEMO_TABLE (NAME VARCHAR(16) NOT NULL,PHONE VARCHAR(16) NOT NULL,PRIMARY KEY (PHONE))
```

Then click the 'Run' button:



That's it - you have a database and a table in Aurora that we can use from the CICS and Batch applications.

Make a note of your JDBC url with demo on the end, rather than postgres. That's the URL we'll use in the sample code.