RStudio with EC2 Linux AMI User Manual

Relevance Lab India Pvt Ltd

March 2025

Version 1.2

Table of Contents

1. Introduction

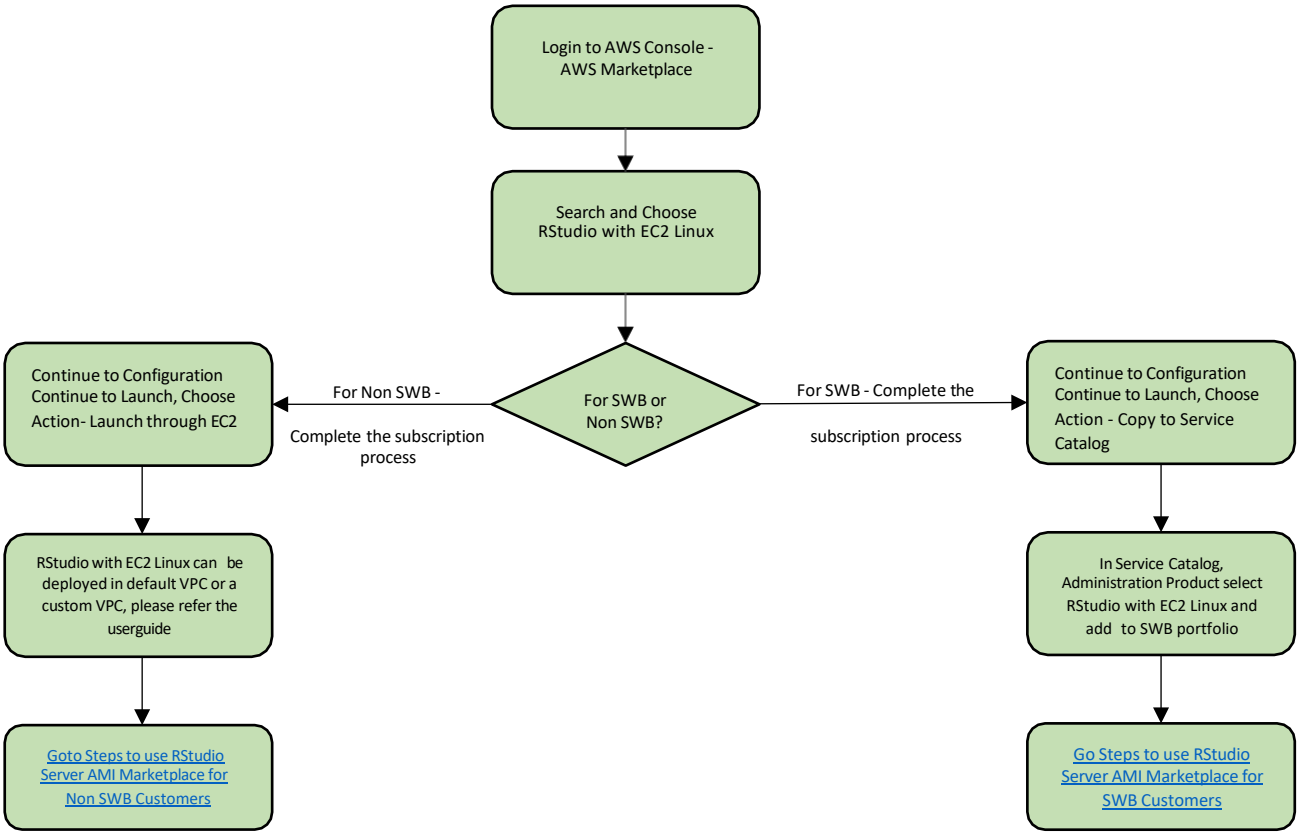
Relevance Lab is a specialist IT services company with re-usable technology assets in DevOps, Cloud, Automation, Digital, Service Delivery and Supply Chain Analytics that help global organizations achieve frictionless business by transforming their traditional Infrastructure, Applications and Data. RStudio with EC2 Linux is engineered for deployment on RES and Standalone environment.

2. RStudio

RStudio is a lightweight Integrated Development Environment solution that allows anyone to do, share, teach and learn data science online.

- Analyze data using the RStudio IDE, directly from a browser.
- Share projects across teams.
- Teach data science with R to students or colleagues.
- Learn data science in an instructor-led environment or with interactive tutorials.
- Researchers commonly use RStudio in their day-to-day efforts.
- While RStudio is a popular product, for researchers the process of installing RStudio securely on AWS and using it in a cost-effective manner is a nontrivial task.

The document links in the slide below provides step by step instructions to set up, configure and use RStudio with EC2 Linux from AWS Marketplace.



3. Steps to use RStudio Server AMI Marketplace for Non SWB Customers

3.1 RStudio Server

RStudio is a lightweight Integrated Development Environment solution that allows anyone to do, share, teach and learn data science online.

- Analyze data using the RStudio IDE, directly from a browser.
- Share projects across teams.
- Teach data science with R to students or colleagues.
- Learn data science in an instructor-led environment or with interactive tutorials.
- Researchers commonly use RStudio in their day-to-day efforts.
- While RStudio is a popular product, for researchers the process of installing RStudio securely on AWS and using it in a cost-effective manner is a nontrivial task.

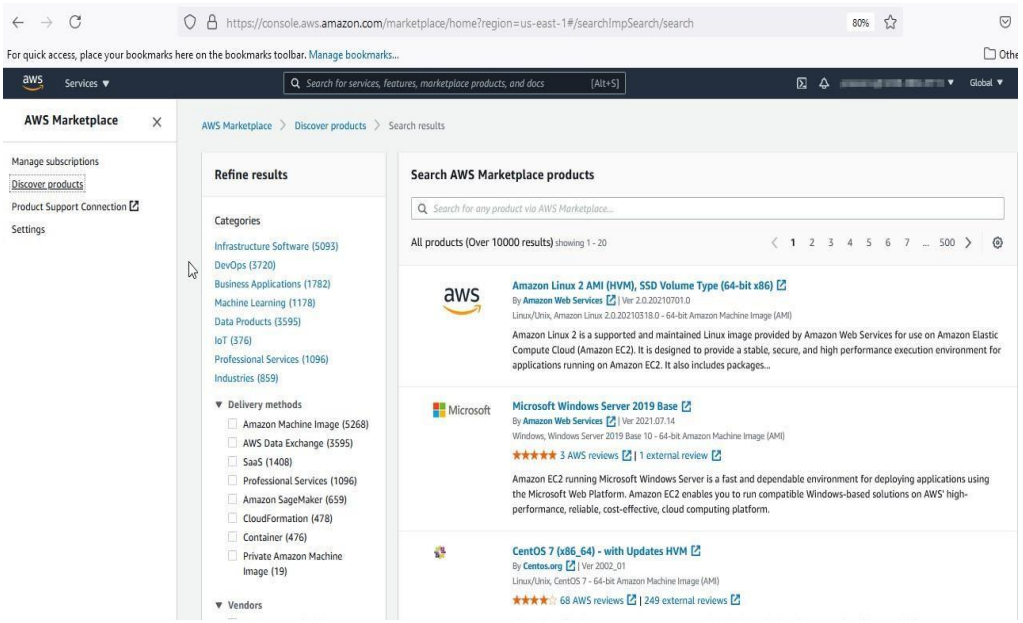
This document provides step by step instructions to set up, configure and use RStudio with EC2 Linux from AWS Marketplace.

3.2 Subscribe to AWS Marketplace

You need to subscribe to the RStudio with EC2 Linux product from AWS Marketplace.

Steps to Launch RStudio with EC2 Linux Marketplace AMI.

a. Login to your AWS account
b. In the Services, search for AWS Marketplace. Go to AWS Marketplace Subscriptions
c. Navigate to AWS Marketplace
d. On the right side, click on the “Manage Subscriptions” and navigate to
e. “Discover Products” which is on the left panel.



f. In the "Search AWS marketplace products" box, input RStudio with EC2 Linux in the search results, select RStudio with EC2 Linux.

g. Page will be navigated to the AWS Marketplace with detailed description of the Product.

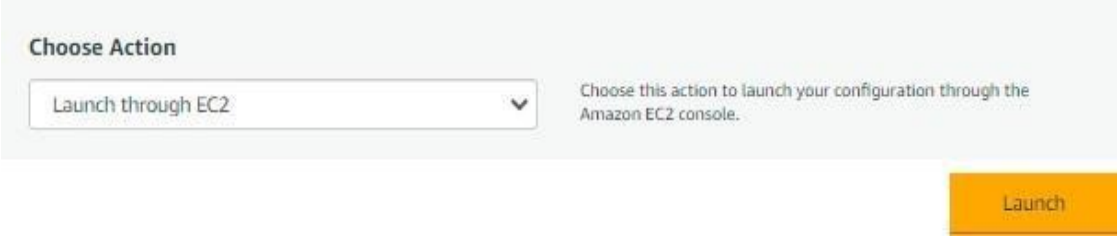
h. See the pricing and usage information and click "**Continue to Subscribe**". Kindly read the terms and conditions offered and click on
Accept Terms. Wait for a while to see the effective date of subscription.

i. Click "**Continue to Configuration**". Details such as AMI id, software version, Region and Product code are displayed in this page.

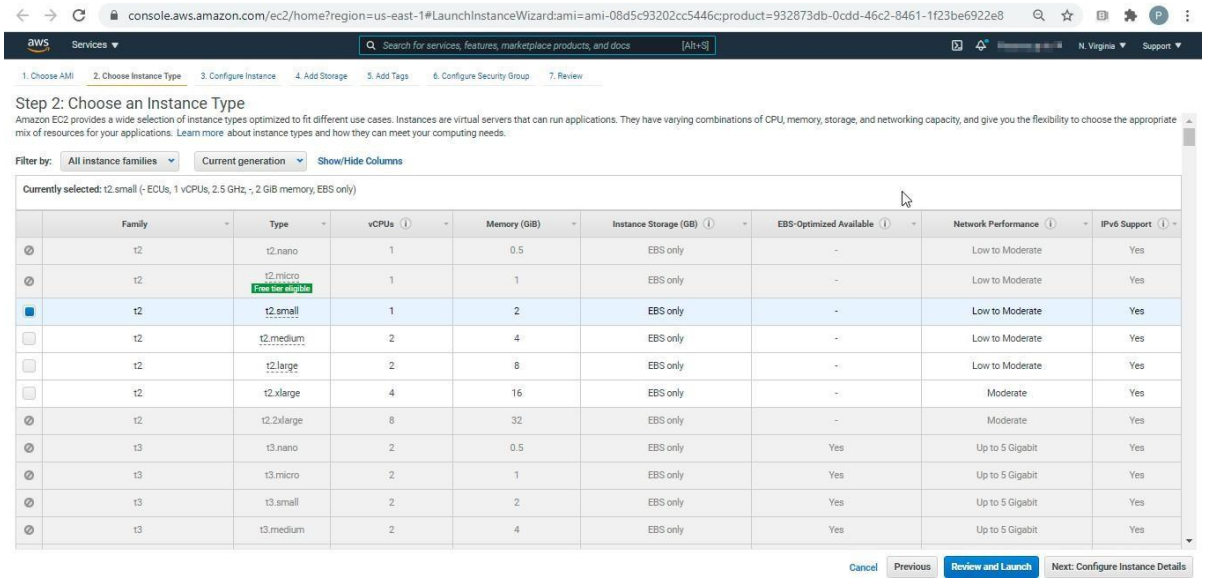
j. Click "**Continue to launch**".

k. Click "**Usage instructions**" to check a brief information about which instance type to be selected and how to launch the same.

l. Go to "**Choose Action**" dropdown and select "**Launch through EC2**".



m. Click "**Launch**", will open up your AWS account, EC2 launch console to choose instance type as below.



3.3 Prerequisites

Before you create an instance of the RStudio with EC2 Linux, you need to have the following resources available in your AWS account.

- A VPC in which to launch your instance. This can be the default VPC or
  - you can create a custom VPC
- Subnets within the VPC
- Route Tables
- Internet Gateway
- Security Groups

Once you have the above pre-requisites in place you can create an EC2 instance from the AMI.

Setting up the prerequisites.

1. Steps to create a VPC.
   - Login to AWS
   - Switch to N. Virginia (or any region of your choice)
   - Search for VPC under Services. Click on VPC. This will take you to the VPCs console.
   - Click on Your VPCs in the left panel. You will see all your VPCs listed.
   - Click on Action and click on “Create default VPC”.
   - Click on Create default VPC. VPC is created. Click on the close.
   - In the “Your VPCs” table, select the VPC you created, Input VPC name and save it.

   Ref: Documentation from AWS on creating VPC

2. A default VPC is created along with public subnets in each availability zone. Select one of those zones. This is where you will be launching an AMI. You can give a name to the subnet for easier reference. Click “Subnets” in the left panel. Select a subnet associated with the above VPC. Input the Subnet name and save.

3. Let’s create a Security group now. In the Services search for EC2 and click on EC2 in the results. You should see the EC2 console.

    - Click “Security groups” in the left side panel.
    - Click on the default security group which is linked to the VPC Id of the VPC created.
    - Click the “Action” tab followed by view details.
    - Click the “Edit inbound Ports” button from inbound rules descriptions.
    - Add the following Inbound ports to make the application work.
    - Add a rule to allow HTTP traffic with source Anywhere (0.0.0.0/0)
    - Add a rule to allow HTTPS traffic with source Anywhere (0.0.0.0/0)
    - Add a rule to allow SSH traffic with source Anywhere (0.0.0.0/0)
    - Click “Save rules”. Ensure you have added 3 inbound rules (80,443 and 22) and verify.
    - Allow all traffic and all IP addresses for Outbound rules.

4. Let’s subscribe to RStudio with EC2 Linux Product from AWS

    - In the Services, search for AWS Marketplace. Go to AWS Marketplace Subscriptions.
    - On the right side, click on the “Manage Subscriptions” and navigate to “Discover Products” which is on the left panel.
    - In the “Search AWS marketplace products” box, input RStudio with EC2 Linux in the search results, select RStudio with EC2 Linux.
    - Page will be navigated to the AWS Marketplace with detailed description of the Product.
    - See the pricing and usage information and click “Continue to Subscribe”.
    - Kindly read the terms and conditions offered and click on Accept Terms.
    - g. Wait for a while to see the effective date of subscription.

3.4 Launch the RStudio with EC2 Linux Instance from the AMI

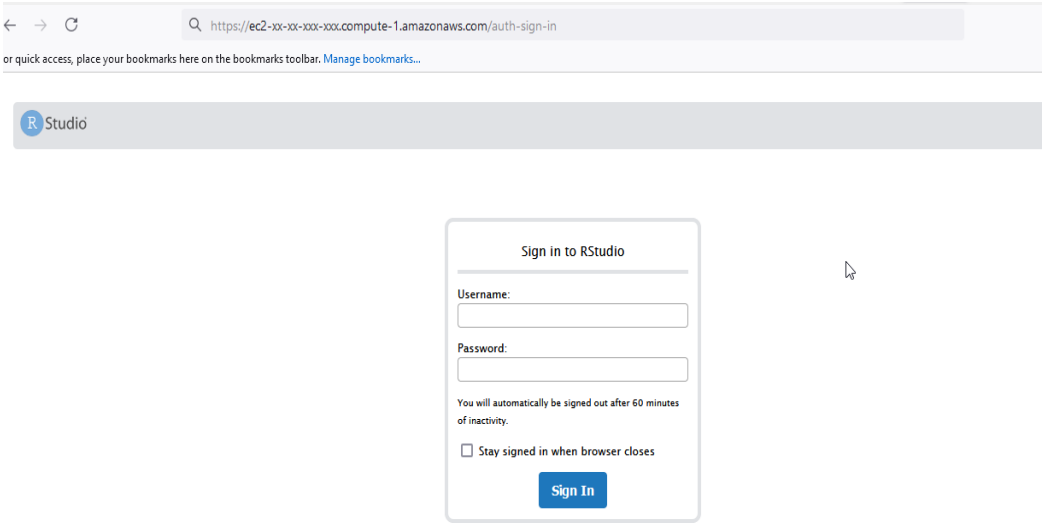
1. Click “Continue to Configuration”. Details such as AMI id, software
    a. version, Region and Product code are displayed in this page.
2. Click “Continue to launch”.
3. Click “Usage instructions” to check a brief information about which
    a. instance type to be selected and how to launch the same.
4. Go to “Choose Action” dropdown and select “Launch through EC2”.

5. Click “Launch”.
6. The page will be navigated to the Launch EC2 service page.
7. Select an instance type (t2.large is recommended).
8. Click “Next: Configure Instance Details”.
9. Select your VPC, subnet and enable auto assign of Public IP address
    a. from the drop-down list.
10. Validate Storage settings. Click “Next”. Add tags to an instance.
11. Click “Next”.
12. Select “Existing Security Group” radio button and then select the
    a. security group you have created and click “Review and Launch”.
13. Verify and validate your AMI and Instance settings. Click “Launch”.
14. Select your pem if it is already created. Or create a new PEM file and
    a. download it and click on “I acknowledge that I have access to the
    b. selected private key file “pem file name” and that without this file, I
    c. won’t be able log into my instance” and click “Launch instances”.
15. In the Advanced details section, **Metadata version select V1 and V2(token optional)**
16. Now that your instance is created, please wait for 5 to 7 minutes for configuration to be completed.

3.5 Accessing the Application

Access the Application using ec2 DNS name as http://ec2-x-xx-xxx-xxx.compute-1.amazonaws.com and browse in chrome or Firefox.

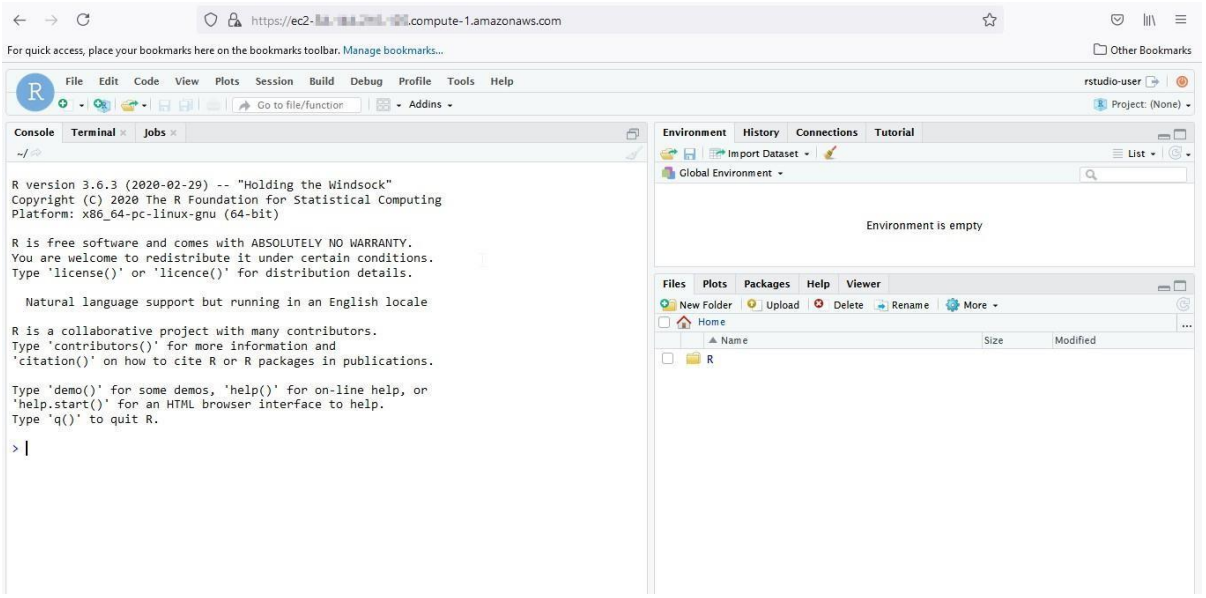
You should see the page below



Enter the credentials to access RStudio with EC2 Linux.

- Username: rstudio (confirm whether username can be on doc)
- Password: enter the newly created Instance ID.

On successful login you should see the below page and RStudio Server ready for use.



3.6 Terminate your instance

When you have decided that you no longer need the instance, you can terminate it.

To terminate an instance

Navigate to **AWS Marketplace**, and choose **Your Software**.

On the **Your Software** page, next to the instance you want to terminate, choose **Manage** in AWS Console.

In the AWS Management Console, open the EC2 console, right-click the instance, and then choose **Terminate**.

Choose **Yes Terminate** when prompted for confirmation.

Ref: **AWS Marketplace terminate instance**

4. Steps to use RStudio Server AMI Marketplace for SWB Customers

4.1 RStudio-Server

RStudio is popular software used by the Scientific Research Community and supported by Service Workbench. Researchers use RStudio very commonly in their day-to-day efforts. While RStudio is a popular product, the process of installing RStudio securely on AWS Cloud and using it in a cost-effective manner is a non-trivial task, especially for Researchers. With SWB, the goal is to make this process very simple, secure, and cost-effective for Researchers so that they can focus on "Science" and not "Servers" thereby increasing their productivity.

This document provides step by step instructions to setup, configure and use RStudio Server from AWS Marketplace for SWB deployment.

4.2 Prerequisites

Before you create an instance of RStudio with EC2 Linux, you need to have the SWB Solution available in your AWS account.

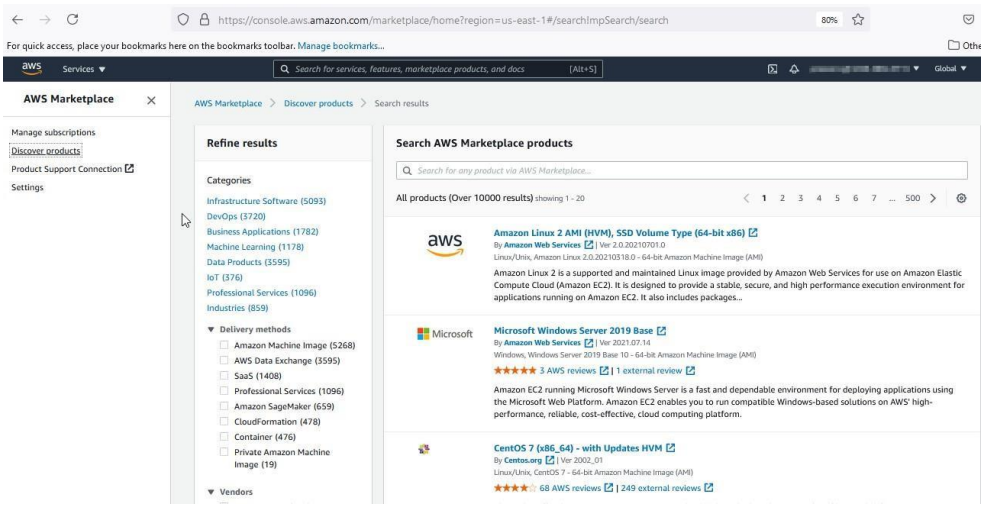
Service Workbench on AWS includes a web portal used by both Administrators and Research users. It is deployed into the main account using Amazon CloudFront and a static web site hosted in an Amazon S3 website bucket. The user web portal uses Amazon DynamoDB to store metadata about users, available datasets, and compute workspaces.

Ref: SWB Implementation Guide

4.3 Subscribe to AWS Marketplace

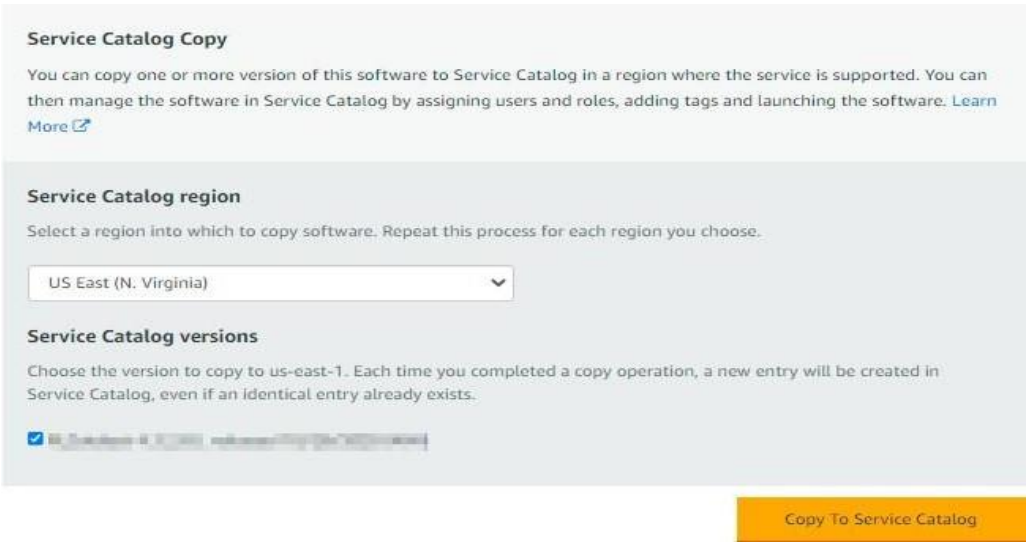
You will also need to subscribe to the RStudio with EC2 Linux product from AWS Marketplace.
Steps to add RStudio with EC2 Linux Marketplace AMI to SWB Service Catalog

1) Login to your AWS account
2) In the Services, search for AWS Marketplace. Go to AWS Marketplace
    a. Subscriptions
3) Navigate to AWS Marketplace
4) On the right side, click on the "Manage Subscriptions" and navigate to
    a. "Discover Products" which is on the left panel.

b. 

5) In the “Search AWS marketplace products” box, input "RStudio with EC2 Linux”
    a. Server in the search results, select RStudio with EC2 Linux
6) Page will be navigated to the AWS Marketplace with detailed description of the Product.
7) See the pricing and usage information and click “Continue to
    a. Subscribe”. Kindly read the terms and conditions offered and click on
    b. Accept Terms. Wait for a while to see the effective date of subscription.
8) Click “Continue to Configuration”. Details such as AMI id, software version, Region and Product code are displayed in this page.
9) Click “Continue to launch”.
10) Click “Usage instructions” to check a brief information about which instance type to be selected and how to launch the same.
11) Go to “Choose Action” dropdown and select “Copy to Service Catalog”.

i.



12) Click “Copy to Service Catalog”.

Post adding RStudio to the SWB Service Catalog,

- Navigate to Administration Product list, select the RStudio with EC2 Linux add to SWB portfolio.
- Configure Launch constraint for RStudio with EC2 Linux enabling the product for launch.

RStudio with EC2 Linux product must be imported to SWB Workspace Types. Login to the SWB Solution portal you deployed as a prerequisite in the section “Adding AWS Marketplace Products to SWB Service Catalog Portfolio” above.

1) Open a web browser.
2) Navigate to Website URL as noted down while deploying SWB solution.
3) Sign into Service Workbench on AWS web portal with appropriate credentials.

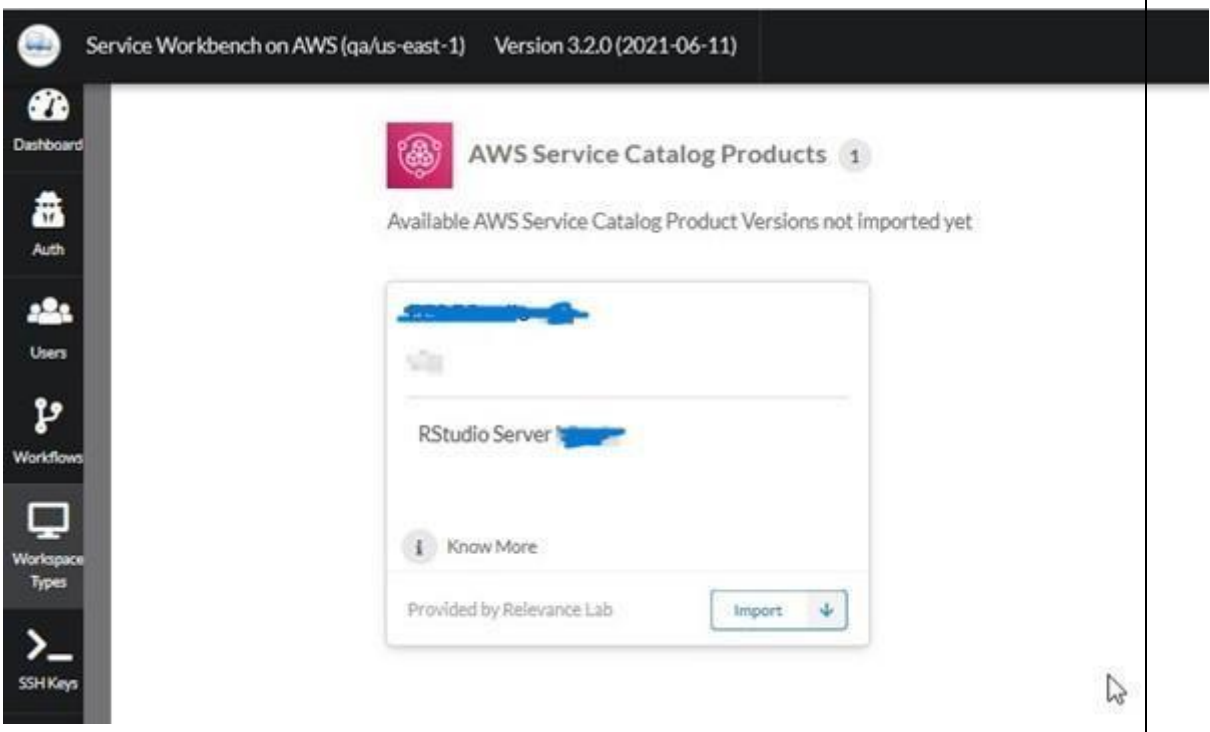
4.4 Import and test Service Catalog Products

Service Workbench on AWS uses AWS Service Catalog to manage different types of computation resources available for researchers to use through the platform. Each product can have multiple size configurations defined.

When Service Workbench on AWS is deployed, an AWS Service Catalog portfolio is created with four commonly used products: Amazon SageMaker, Amazon EC2 for Windows, Amazon EC2 for Linux and Amazon EMR. These definitions must be imported into Service Workbench on AWS and configured before they can be deployed.

1) Click Workspace Types in the left navigation bar.

a. AWS Service Catalog products available for import are listed.

b. 

2) Click **Import** on the AWS Service Catalog product that you wish to import.
3) Provide Basic information.
4) Click **Import Workspace Type**.
5) Click **Add Configuration**.

6) Steps for creating Workspace Type Configurations

7) Input **Basic Information**
    a. Provide a unique ID for the configuration.
    b. Provide a Name for the configuration.
    c. Provide a Description for the configuration.
    d. Provide a Cost Estimate for the configuration. This field is optional.
    e. Click **Next**
8) Input **Access Control**
    a. Add admin, researcher roles to Roles Allowed.
    b. Roles Not Allowed is optional.
    c. Click **Next**.
9) Input **Parameters** to configure the environment.

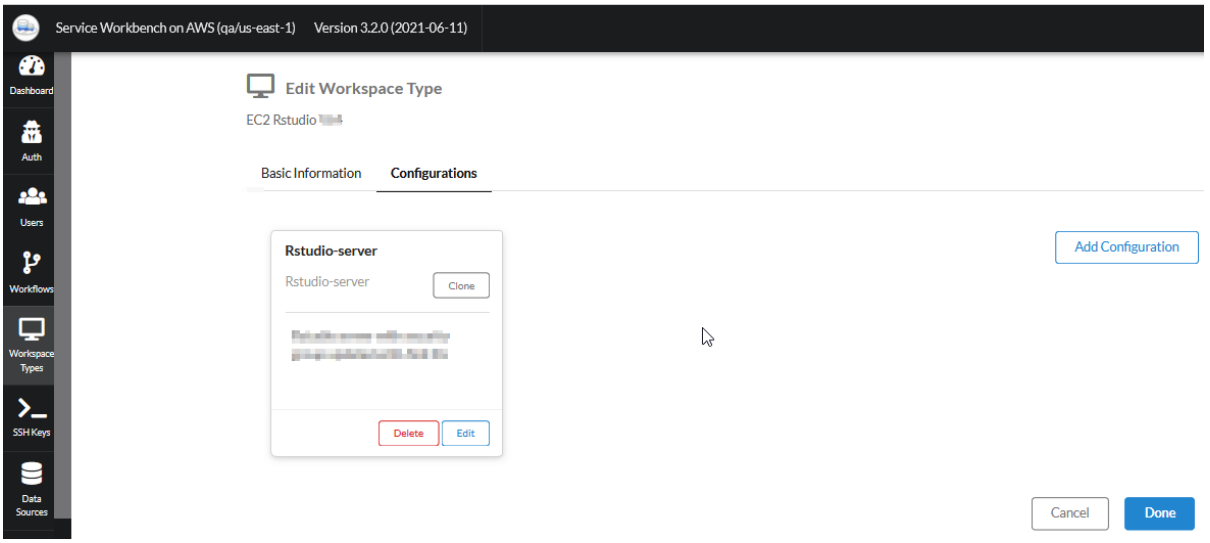
The Input Parameters tab lists parameters to the workspace type.

Explanations and suggested values for common and instance-specific input parameters are provided in the tables below.

4.5 Common input parameters

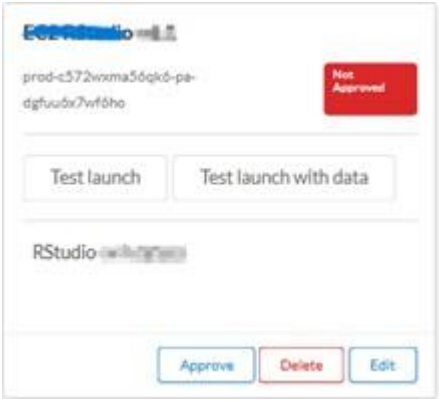
	Value	Notes
AccessFromCIDRBlock	${cidr}	Choose cidr from dropdown list.
EncryptionKeyArn	${encryptionKeyArn}	Choose encryptionKeyArn from dropdown list.
EnvironmentInstanceFiles	${environmentInstanceFiles}	Choose environmentInstanceFiles from dropdown list.
ACMSSLCertARN	arn:aws:acm:us-east-1:xxxxxxxxxxxxx:certificate/xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxx	Provide SSL Certificate ARN
IamPolicyDocument	${iamPolicyDocument}	Choose iamPolicyDocument from dropdown list.
KeyName	${adminKeyPairName}	Choose adminKeyPairName from dropdown list.
Namespace	${namespace}	Choose namespace from dropdown list.
S3Mounts	${s3Mounts}	Choose s3Mounts from dropdown list.
Subnet	${subnetId}	Choose subnetId from dropdown list.
VPC	${vpcId}	Choose vpcId from dropdown list.
AMI Id	ami-xxxxxxxxxx	Provide RStudio Marketplace AMI Id

1) After providing input parameters, click **Next**
2) Input **Tags**. This step is optional.
3) Click **Add**
4) The Workspace Configurations tab is displayed showing the new configuration. Additional configurations can be added later.
5) Click **Done**

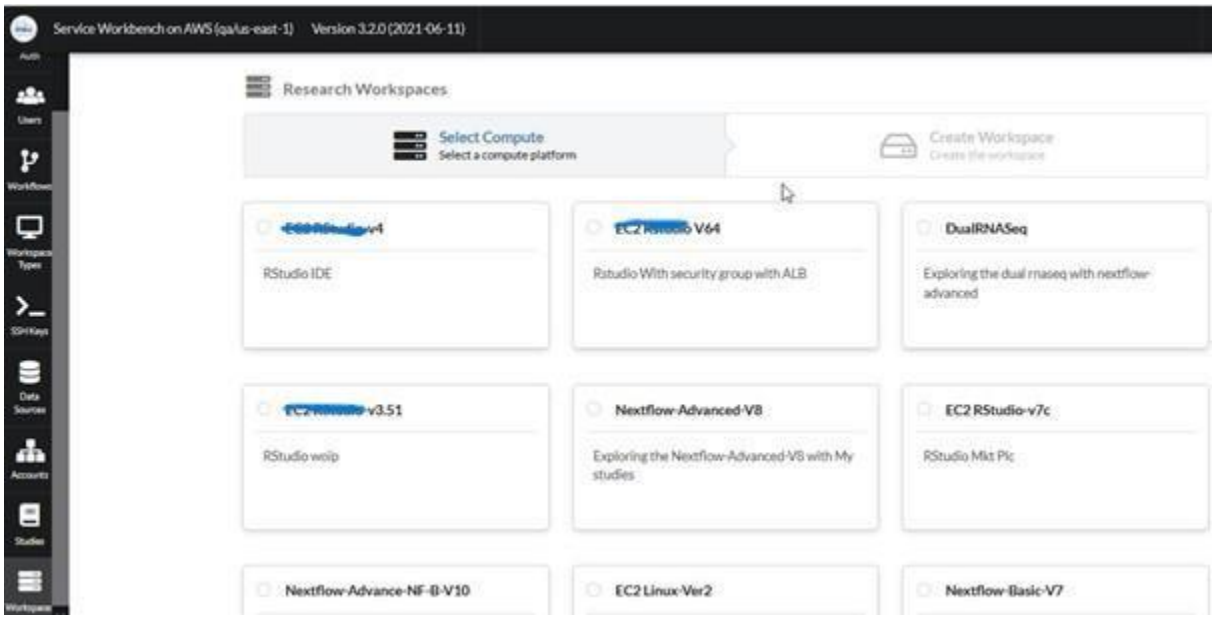


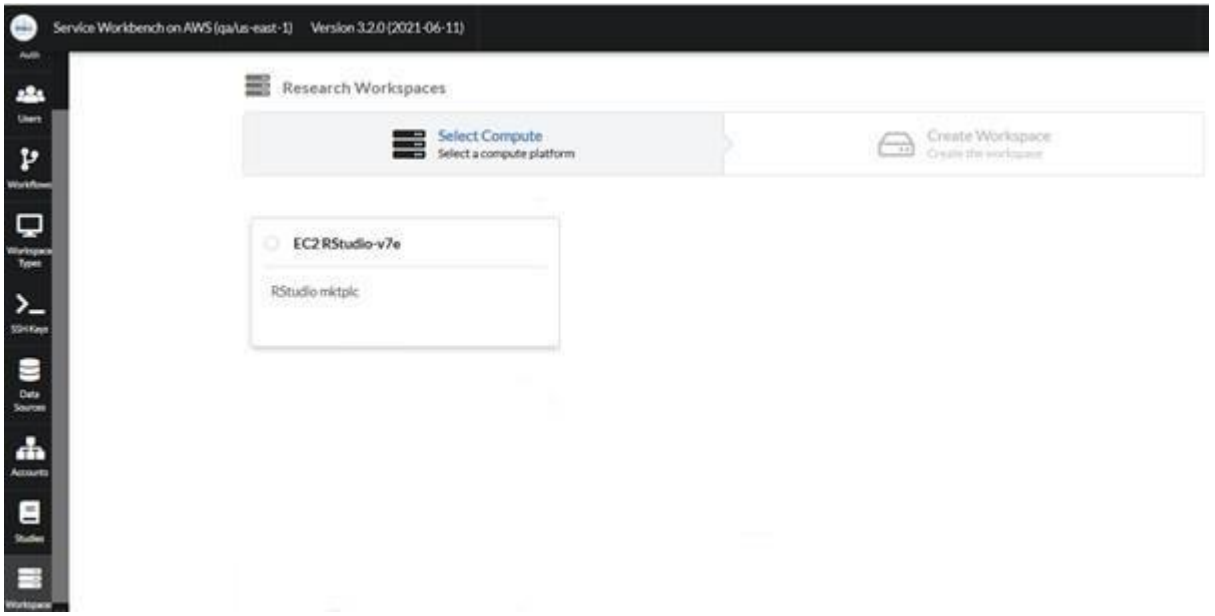
6) The AWS Service Catalog Products page is displayed. The new workspace type will have the status

Not Approved.

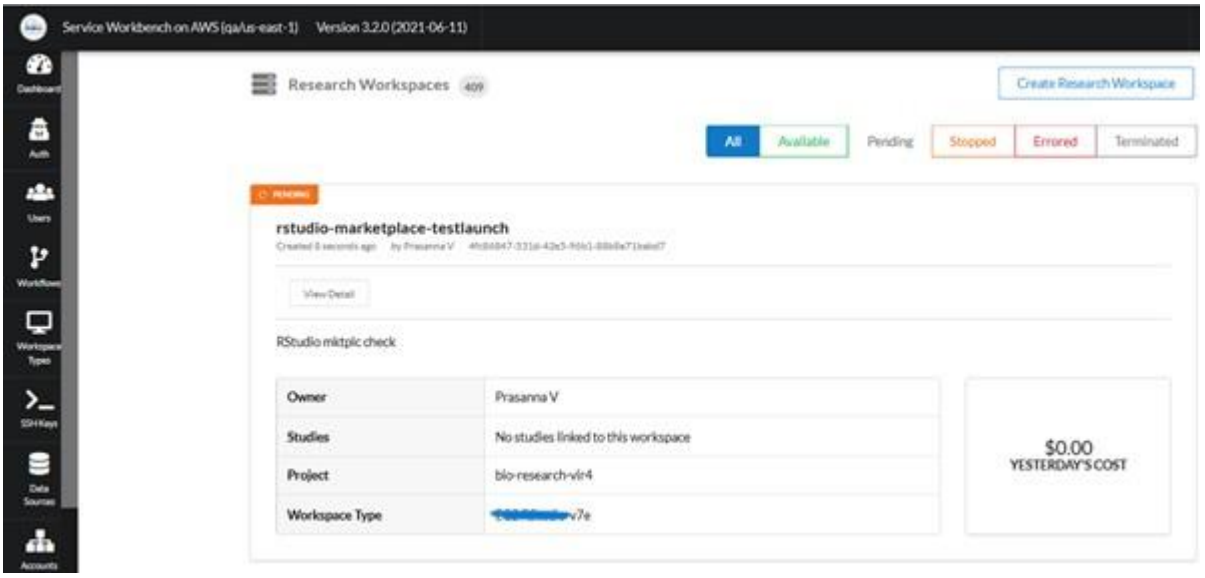


7) Click on **Approve**.
8) Click **Workspaces** in the left navigation bar
9) The new workspace created will now be available to select and launch in **Research Workspaces.**

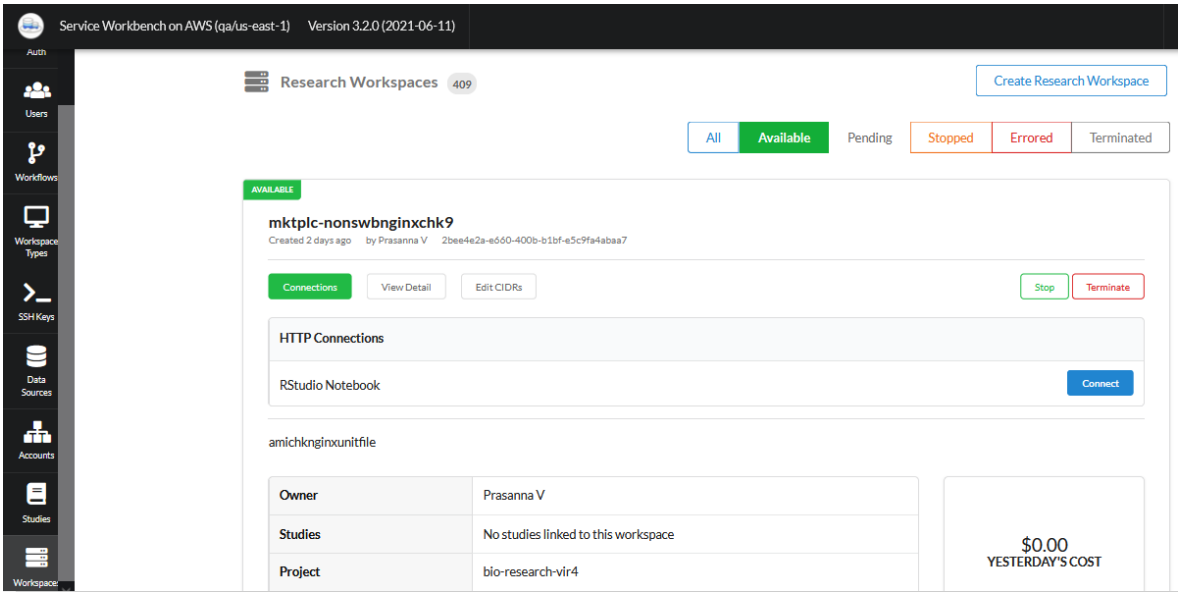




10) Select the workspace to launch, click **Next**
11) Provide a **Name**, select a **Project ID**, and select the new **Configuration,** provide **Description**
12) Provide **Restricted CIDR**. Only IP addresses from within the specified CIDR block can access the
13) Workspace. The default value corresponds to the computer's IP address.
14) Click **Create Research Workspace**
15) The Research Workspaces page will be displayed, with the new workspace in the **Pending** state.
16) **Note** Launching new workspaces can take five minutes or longer, depending on the resources.



17) When the Workspace status changes to **Available**, click **Connect**. The method used by Service
18) Workbench on AWS to connect to the Workspace depends on the type of compute resources in the Workspace.



4.6 Access to the Application

While clicking on **Connect** SWB enables a method to connect to the application by opening the unique URL in the browser. You should see the page below and RStudio Server ready for use.