



4.2.2.



Running an Intelligent Analytical System on AWS

Using AWS Services & Solutions in AWS Marketplace

Step-by-Step Deployment Guide – Part 1



Disclaimer:

1. The AWS Marketplace Fusion Solution showcased in this document is solely meant as a tutorial, *but with given additional customizations, it can be used for production use cases*.
2. Technologies used in this Solution can be replaced by other equivalent technologies as needed for business reasons.
3. All data used in this Solution is machine generated and fictitious.
4. For setting up this AWS Marketplace Fusion Solution, prior knowledge of the technologies used in the Solution and familiarity with Amazon AWS Cloud is recommended.
5. For most of the components, we used the region **US West (Oregon)**, but you can change it as per your choice.



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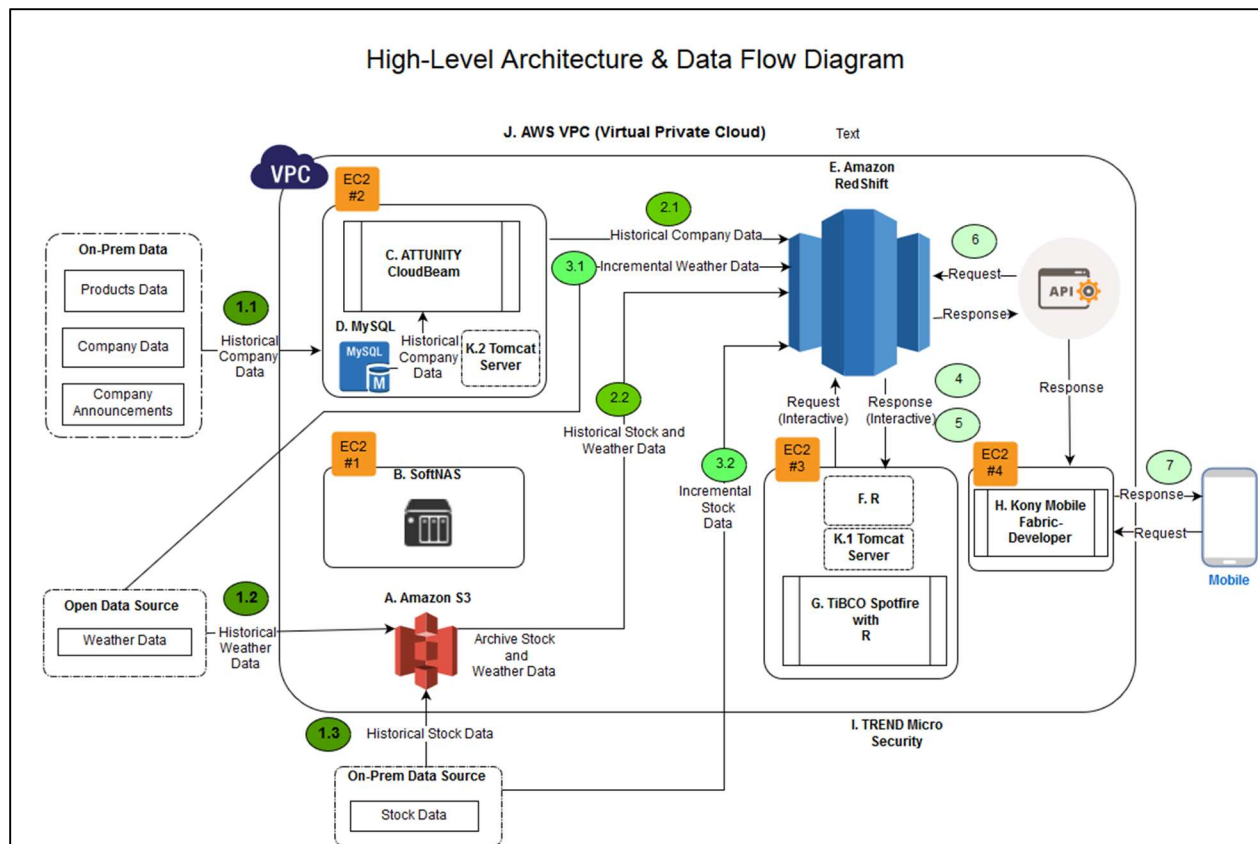
1. Introduction

This document is the continuation of the Overview Document.

This project is the first of 3 projects, which should be executed sequentially:

1. **Project 1:** Step by Step Deployment Guide – Part 1
Step by Step Deployment Guide – Part 2
2. **Project 2:** Data Pipeline
3. **Project 3:** Machine Learning, Reporting, and BYOD

Refer to the following architecture diagram below for the overall data flow and the system/solution information.





The following is the list of the recommended server/instance types that you will need for each of the components:

Component #	Component Name	EC2 Server Type	Operating System Type	Set Up Complexity	License Required?	Source of Component	Purpose
A	Amazon S3	NA	NA	NA	No	AWS Marketplace	Storage
B	SoftNAS	m4.2xlarge	Unix/Linux	Medium	Yes	AWS Marketplace	NAS virtual storage appliance
C	Attunity CloudBeam	m4.large	Screenshots Server 2008	High	Yes	AWS Marketplace	ETL Software
D	MySQL	m4.large	Screenshots Server 2008	High	Yes	Microsoft Web Platform Installer	Database
E	Amazon RedShift	NA	NA	High	Yes	AWS Marketplace	Storage
F	R	m4.large	Screenshots Server 2012	Low	No	Open Source	Predictive Analytics
G	TIBCO Spotfire	m4.large	Screenshots Server 2012	Medium	Yes	AWS Marketplace	Visualization software
H	Kony Mobile Fabric	t2.large	Amazon Linux	High	Yes	AWS Marketplace	Mobile App development
I	TREND Micro Security	m4.large	Amazon Linux	High	Yes	AWS Marketplace	Security Software
J	Amazon VPC	NA	NA	NA	No	AWS Marketplace	Virtual Cloud
K.1	Tomcat Server 1	m4.large	Screenshots Server 2012	Low	No	Open Source	Host dashboard automation process
K.2	Tomcat Server 2	m4.large	Screenshots Server 2012	Low	No	Open Source	Host cloudbeam automation process

[Click here](#) to find out more about different instance types available in AWS Marketplace.



2. Business Use Case

Please refer to the Overview document for the Business Use Case used in this solution.



3. Audience

This document is designed for different types of audiences. Therefore, each of the steps are explained in detail. Below is a list of job titles who can explore this document:

Enterprise Organization

- Developer
- IT Professional
- IT Manager

Medium to Small Organization

- DevOps



4. Step by Step Deployment Guide

Before executing any step below, be sure you have executed all the steps from the Prerequisites document that can be found at the Git repository below:

<https://github.com/MFSolutions/Solution1>

The name of the Prerequisites document is:

Prerequisites.pdf

This document will demonstrate how to deploy and configure the following technologies/components that are used to build an AWS Cloud Based Analytic System:

1. VPC
2. MySQL Server
3. Amazon S3
4. Amazon Redshift
5. Attunity CloudBeam
6. TIBCO Spotfire
7. SoftNAS
8. R
9. Kony MobileFabric
10. TREND Micro Security
11. Apache Tomcat Servers
12. Apache Maven



This document will walk you through the following steps:

4.1: Setup **VPC** (Virtual Private Cloud).

4.2: Storage setup using **SoftNAS** (B).

4.3: Setup the Warehouse using **Amazon Redshift Data Warehouse** (E).

4.4: Setup the ETL Tool using **Attunity CloudBeam** ETL (C).

4.5: Visualization using **TIBCO Spotfire** Analytics platform (G).

4.6: Setup the **R** environment for Predictive Analysis (F).

4.7: Setup Mobile alerts and notifications using **Kony MobileFabric** (H).

4.8: Securing the infrastructure and devices using **TREND Micro Security** (I).

4.9: Setup the Solution code tree and datasets in **Github** repository cloning.

4.10: Enable Tomcat Servers for the Web Interface **Apache Tomcat Server** (K1, K2).

4.11: Build your code to deploy on a Server using **Apache Maven**.



4.1. Setup VPC (Virtual Private Cloud)

Custom VPC configuration steps are listed below. You will be using a default VPC to keep things simple.

1. Login to AWS Account.
2. Click on VPC listed under Networking.

AWS Services [Show categories](#)

Compute EC2 EC2 Container Service Elastic Beanstalk Lambda	Developer Tools CodeCommit CodeDeploy CodePipeline	Internet of Things AWS IoT
Storage & Content Delivery S3 CloudFront Elastic File System Glacier Snowball Storage Gateway	Management Tools CloudWatch CloudFormation CloudTrail Config OpsWorks Service Catalog Trusted Advisor	Game Development GameLift
Database RDS DynamoDB ElastiCache Redshift DMS	Security & Identity IAM Directory Service Inspector WAF Certificate Manager	Mobile Services Mobile Hub Cognito Device Farm Mobile Analytics SNS
Networking VPC Direct Connect Route 53	Analytics EMR Data Pipeline Elasticsearch Service Kinesis Machine Learning	Application Services API Gateway AppStream CloudSearch Elastic Transcoder SES SQS SWF
		Enterprise Applications WorkSpaces WorkDocs WorkMail



3. Click on the Start VPC Wizard.

The screenshot shows the AWS VPC Dashboard. On the left is a navigation menu with categories: Virtual Private Cloud, Security, and VPN Connections. Under Virtual Private Cloud, there are links for Your VPCs, Subnets, Route Tables, Internet Gateways, DHCP Options Sets, Elastic IPs, Endpoints, NAT Gateways, and Peering Connections. Under Security, there are links for Network ACLs and Security Groups. Under VPN Connections, there is a link for VPN Connections. The main content area is titled 'Resources' and has a refresh icon. It contains two buttons: 'Start VPC Wizard' (highlighted in blue) and 'Launch EC2 Instances'. Below these buttons is a note: 'Note: Your Instances will launch in the US West (Oregon) region.' This is followed by a statement: 'You are using the following Amazon VPC resources in the US West (Oregon) region:'. Below this statement is a table of resources:

5 VPCs	3 Internet Gateways
9 Subnets	7 Route Tables
5 Network ACLs	0 Elastic IPs
0 VPC Peering Connections	0 Endpoints
0 Nat Gateways	11 Security Groups
1 Running Instance	0 VPN Connections
0 Virtual Private Gateways	0 Customer Gateways

Below the table is a section titled 'VPN Connections' with a description: 'Amazon VPC enables you to use your own isolated resources within the AWS cloud, and then connect those resources directly to your own datacenter using industry-standard encrypted IPsec VPN connections.' At the bottom of this section is a button labeled 'Create VPN Connection'.

4. Select the VPC Configuration – **VPC with a Single Public Subnet**. Click the **Select** button as shown below.



Step 1: Select a VPC Configuration

VPC with a Single Public Subnet

VPC with Public and Private Subnets

VPC with Public and Private Subnets and Hardware VPN Access

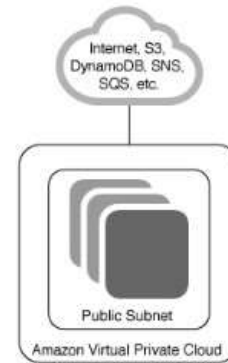
VPC with a Private Subnet Only and Hardware VPN Access

Your instances run in a private, isolated section of the AWS cloud with direct access to the Internet. Network access control lists and security groups can be used to provide strict control over inbound and outbound network traffic to your instances.

Creates:

A /16 network with a /24 subnet. Public subnet instances use Elastic IPs or Public IPs to access the Internet.

Select





5. Provide the **IP CIDR Block**, **VPC Name**, **Public subnet**, **Availability Zone** as required. Select **Yes** to **Enable DNS hostnames**. Then click on the **Create VPC** button.

Step 2: VPC with a Single Public Subnet

IP CIDR block:	10.0.0.0/16	(65531 IP addresses available)
VPC name:		
Public subnet:	10.0.0.0/24	(251 IP addresses available)
Availability Zone:	us-west-2a	
Subnet name:	My Public subnet	
You can add more subnets after AWS creates the VPC.		
Service endpoints	<button>Add Endpoint</button>	
Enable DNS hostnames:	☒ Yes ☐ No	
Hardware tenancy:	Default	

[Cancel and Exit](#) [Back](#) [Create VPC](#)

6. Once all information is correct, the VPC will be created.

VPC Dashboard	VPC Successfully Created
Filter by VPC: None	Your VPC has been successfully created. You can launch instances into the subnets of your VPC. For more information, see Launching an Instance into Your Subnet .
Virtual Private Cloud	OK
Your VPCs	

4.2. Storage setup using SoftNAS (B)

1. Login to your **AWS Management Console**. Please refer to the **Prerequisites** document for instructions on how to login.
2. In the right navigation panel, click on the link **Find and buy software** to open AWS Marketplace.



AWS

Services

Edit

Anjan @ 9105-6577-6800

Oregon

Support

Shortcuts and Recently Viewed Services

EC2

VPC

Quick Starts Hide

Build a web app
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Build a back end for your mobile app
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Analyze big data
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AWS Services Show categories

Service Health [View Dashboard](#)

All services are operating normally.
Updated Oct 05 2016 17:12:00 GMT+0530

Getting Started

Read our [documentation](#) or view our [training](#) to learn more about AWS.

AWS Console Mobile App

View your resources on the go with our AWS Console mobile app, available from [Amazon Appstore](#), [Google Play](#), or [iTunes](#).

AWS Marketplace

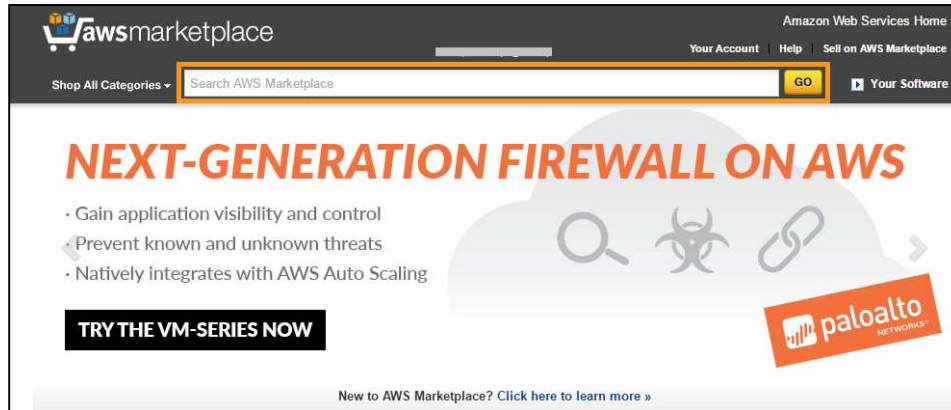
Find and buy software, launch with 1-Click, and pay by the hour.

Feedback

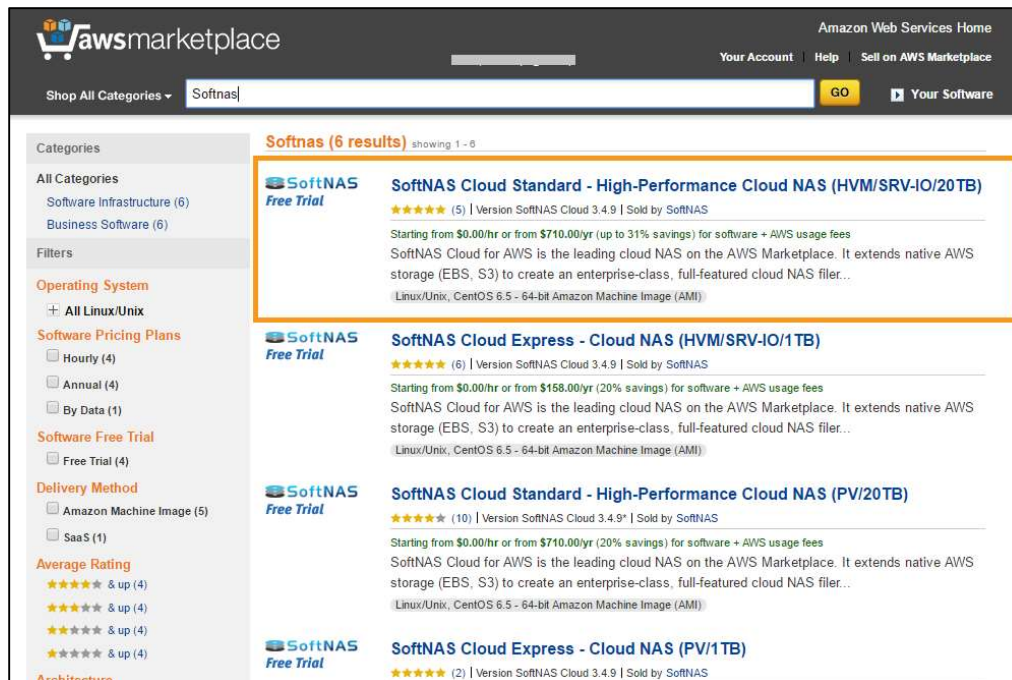
Tell us **what you think** about the new console home page.



3. Type **SoftNAS** in the search box and click on the **Go** button.



4. Select **SoftNAS Cloud Standard — High-Performance Cloud NAS (HVM/SRV-IO/20TB)** from the search result.





5. Click on the **Continue** button on the product description page of **SoftNAS**.



SoftNAS Cloud Standard - High-Performance Cloud NAS (HVM/SRV-IO/20TB)

Sold by: SoftNAS | [See product video](#)

30 Day Free Trial Available - SoftNAS Cloud for AWS is the leading cloud NAS on the AWS Marketplace. It extends native AWS storage (EBS, S3) to create an enterprise-class, full-featured cloud NAS filer. Safely migrate mission-critical applications to the AWS cloud without a physical storage appliance in minutes without specialized training. High-Availability is included at no extra cost for AWS users who deploy the two requisite instances. Key Features: Standard Edition up to 20 Terabytes (TB), NFS, CIFS and iSCSI support, 99.999% reliability with cross-zone High-Availability for private VPCs (SNAP HA™), cross-region block replication (SnapReplicate™), consistent storage pool backup/restore through EBS snapshots, Active Directory integration, compression, deduplication, thin-provisioning, easy set-up and configuration wizards, intuitive admin interface (StorageCenter™). 99.999% storage uptime, or it's free—learn more: <http://bit.ly/1By57e5>

Customer Rating	★★★★★ (5 Customer Reviews)
Latest Version	SoftNAS Cloud 3.4.9 (Other available versions)
Operating System	Linux/Unix, CentOS 6.5

Continue

You will have an opportunity to review your order before launching or being charged.

Pricing Details

6. On the **Launch on EC2** page, make sure the **1-Click Launch** tab is selected.



Amazon Web Services Home
Your Account | Help | Sell on AWS Marketplace

Shop All Categories | Search AWS Marketplace | GO | Your Software

Launch on EC2:

SoftNAS Cloud Standard - High-Performance Cloud NAS (HVM/SRV-IO/20TB)

1-Click Launch
Review, modify and launch

Manual Launch
With EC2 Console, API or CLI

Click "Accept Software Terms & Launch with 1-Click" to launch this software with the settings below

Once you accept the terms, you will have access to launch any version of this software in any supported region. For future launches, you can return to this page or launch directly from the EC2 console, APIs or CLI.

Price for your Selections:

\$1.62 / hour
\$0.27 m3.xlarge EC2 Instance usage fees +
\$1.35 hourly software fee

\$0.10 per GB-month of provisioned storage
EBS General Purpose (SSD) volumes



7. Set **Subscription Term** as **Hourly**.

1-Click Launch
Review, modify and launch

Manual Launch
With EC2 Console, API or CLI

Click "Accept Software Terms & Launch with 1-Click" to launch this software with the settings below

Once you accept the terms, you will have access to launch any version of this software in any supported region. For future launches, you can return to this page or launch directly from the EC2 console, APIs or CLI.

▼ Software Pricing

Subscription Term

Applicable Instance Type

Hourly fee

☒ Hourly
☐ Annual

t2.micro

t2.small

t2.medium

m3.medium

m3.large

m3.xlarge

m3.2xlarge

cc2.8xlarge

\$0.00 / hour

Find instance details in EC2 instance section below.

8. In the **Version** section, choose the latest version.

9. Select **US-West (Oregon)** as the default region for this project.

▼ Region

US West (Oregon) ▼



10. Select **m4.2xlarge** for the EC2 Instance type.

▼ EC2 Instance Type

c4.xlarge

c4.2xlarge

c4.4xlarge

c4.8xlarge

t2.large

m4.large

m4.xlarge

m4.2xlarge

m4.4xlarge

m4.10xlarge

Memory	32 GiB
CPU	25.5 EC2 Compute Units (8 Virtual cores with 3.187 Units each)
Storage	EBS storage only
Platform	64-bit
Network	High
Performance	
API Name	m4.2xlarge

11. Select the default **VPC** and the default **Subnet**.
Default VPC and Subnet are preceded by an asterisk“*”.

▼ VPC Settings

VPC

*vpc-11165a75 (172.31.0.0/16)

▼

Or Create a VPC

Subnet

*subnet-6f0a770b (172.31.16.0/20) us-west-2a

▼

Or Create a subnet

* indicates a default vpc or subnet

12. Select **default** Security Group.

▼ Security Group

A security group acts as a firewall that controls the traffic allowed to reach one or more instances. Learn more about [Security Groups](#).

You can create a new security group based on seller-recommended settings or choose one of your existing groups.

default

▼

?

default VPC security group

Connection Method	Protocol	Port Range	Source (IP or Group)
	ALL	ALL	



13. Follow the steps mentioned in **Section 1.4, “Generate Your Private Keys,”** of the **Prerequisites** document to generate your key pair, if you have not done this already.

14. Select the generated key pair for the **Key Pair** selection box.

▼ **Key Pair**

ArnabKeyPair ▼

To ensure that no other person has access to your software, the software installs on an EC2 instance with an EC2 key pair that you created. Choose an existing EC2 key pair in the list.

15. Scroll up and click on the **Launch with 1-Click button** to start the SoftNAS installation process.

Price for your Selections:

\$1.92 / hour

\$0.43 m4.2xlarge EC2 Instance usage fees +
\$1.49 hourly software fee

\$0.10 per GB-month of provisioned storage

EBS General Purpose (SSD) volumes

Free Tier Eligible

EC2 charges for Micro instances are free for up to **750 hours** a month if you [qualify for the AWS Free Tier](#). See [details](#).

Launch with 1-click

You will be subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's [End User License Agreement \(EULA\)](#) and your use of AWS services is subject to the [AWS Customer Agreement](#).

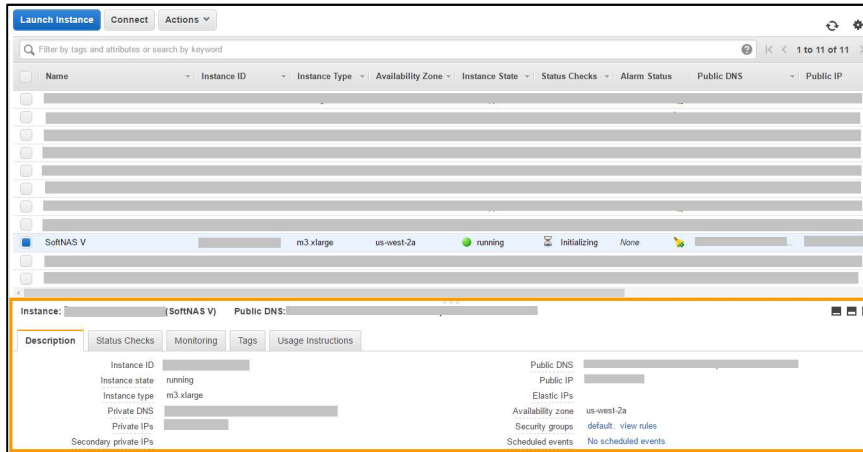
Wait a few minutes until the installation completes.

16. **Go to the EC2 dashboard to get the newly created SoftNAS instance.**



17. Provide proper name to your newly-created SoftNAS instance and select it.

At the bottom of the instances list, you will find a panel containing details of the selected instance.



18. Select the **Description** tab in the details panel.

Instance: (SoftNAS V)

Description

Status Checks

Monitoring

Instance ID

Instance state running

Instance type m4.2xlarge

19. Note the **Public DNS** or **Public IP** for the selected instance.

Description

Status Checks

Monitoring

Tags

Usage Instructions

Instance ID

Instance state running

Instance type m4.2xlarge

Public DNS (IPv4)

IPv4 Public IP

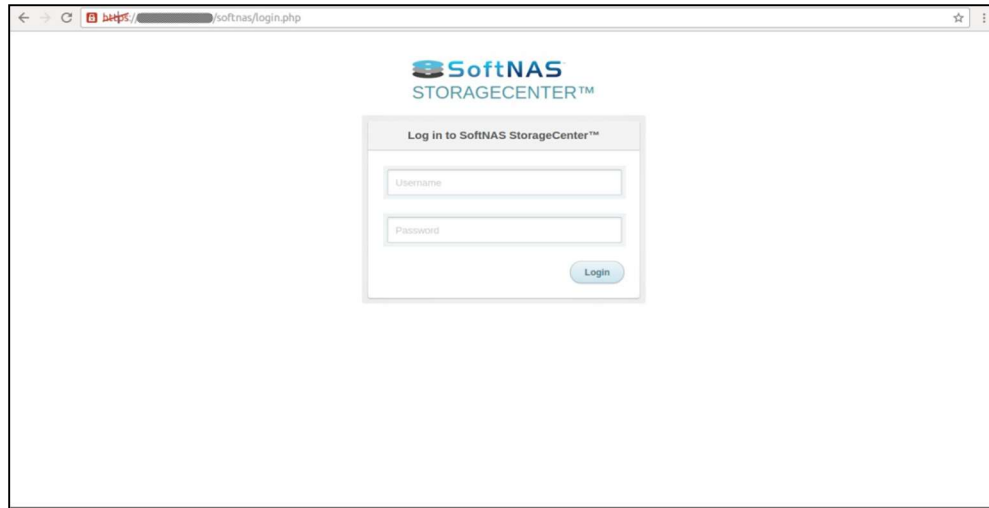
IPv6 IPs

-



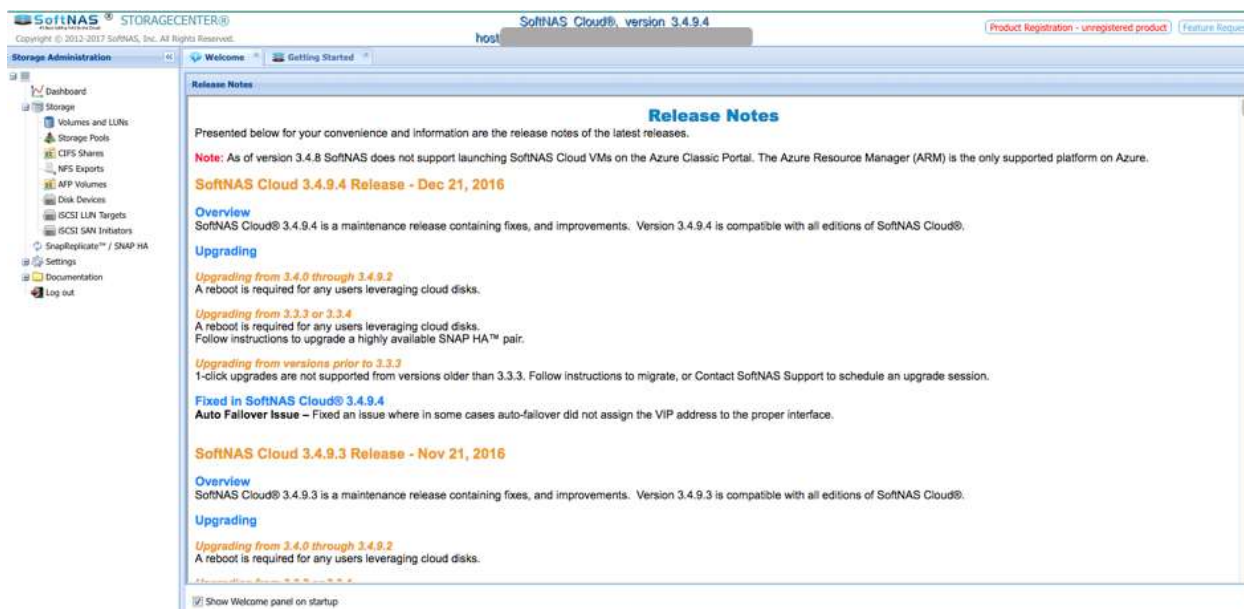
20. Replace token <Public_IP_or_Public_DNS> in URL **https://<Public_IP_or_Public_DNS>** with a Public DNS or a Public IP and go to that URL in a browser.

Generally, a privacy error warning due to a self-signed SSH certificate will pop up. Ignore this for now and continue browsing.

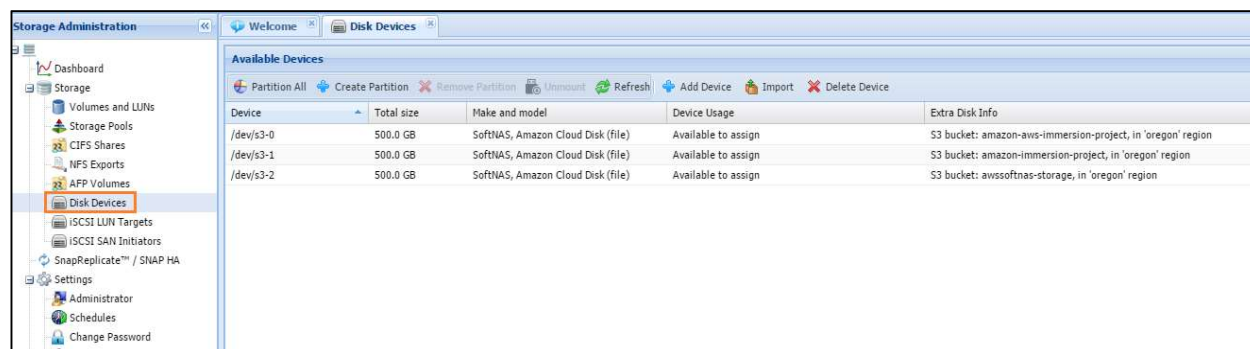


21. Login to SoftNAS using the following credentials.

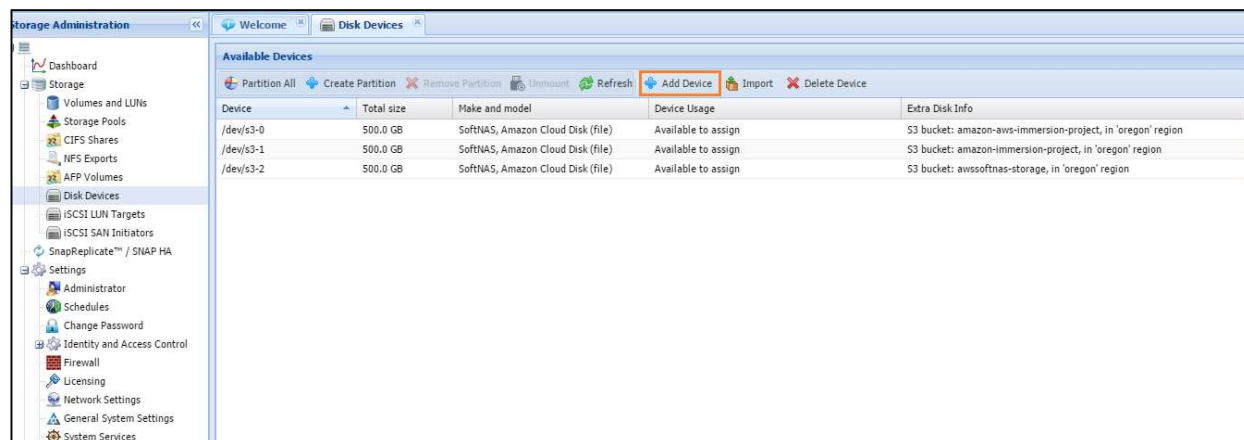
- Username: softnas
- Password: Instance ID of EC2 instance.



22. Click on the **Disk Devices** menu listed under **Storage** group on the left navigation panel.



23. Click on the **Add Device** button.





24. Select **Amazon Web Services S3** as **Cloud Disk Extender**.



The 'Add Device' dialog box features a hard drive icon on the left. The title 'Add Disk Device' is centered at the top. Below the icon, a text prompt asks the user to choose a disk device type and press 'Next'. Two radio buttons are present: 'Cloud Disk Extender' (selected) and 'Amazon EBS Disk'. To the right of the 'Cloud Disk Extender' option is a dropdown menu currently showing 'Amazon Web Services S3'. At the bottom, there are 'Cancel' and 'Next' buttons.

25. Click on **Next** and enter the following details:

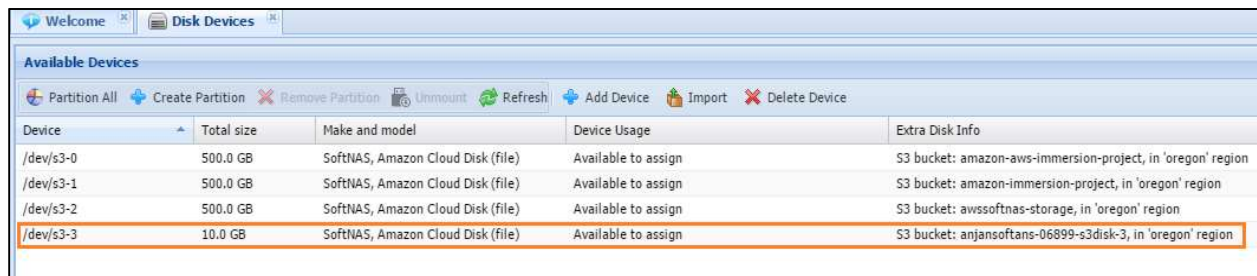


The 'Add Amazon S3 Cloud Disk Extender' dialog box includes a hard drive icon and the Amazon Web Services logo. The title 'S3 Cloud Disk Extender' is prominently displayed. The form is organized into three numbered sections: 1. 'Enter your AWS account credentials' with fields for 'AWS Access Key ID' and 'Secret Access Key', both masked with dots. 2. 'Select an Amazon S3 bucket (or create a new bucket) for this disk to use as cloud storage' with a 'Region' dropdown set to 'AWS/Default, U.S. Standard', a 'Bucket Basename' text field containing 'awssoftnas' (with a note to enter a base name for automatic generation), and an 'S3 Bucket' text field containing 'awssoftnas-88007-s3disk-3'. 3. 'Choose Cloud Disk Options' with a 'Maximum Disk Size' section showing '500' GB (thin-provisioned) and an 'Encrypted disk' checkbox. Below the checkbox are 'Disk Password' and 'Retype Password' text fields.



- **AWS Access Key ID:** Enter the Access Key that you got during the IAM User creation Step 1.2 from the Prerequisites document.
- **Secret Access Key:** Enter the Secret Access Key that you got during the IAM User creation Step 1.2 from the Prerequisites document.
- **Region:** Select as AWS/Oregon.
- **Bucket Basename:** Type in your choice. (Should be all lowercase)
- **S3 Bucket:** This will be generated automatically based on the previous input.
- **Maximum Disk Size:** Select as per your need.
- **Encrypted Disk:** Check this option if you want to encrypt the disk and enter a password.

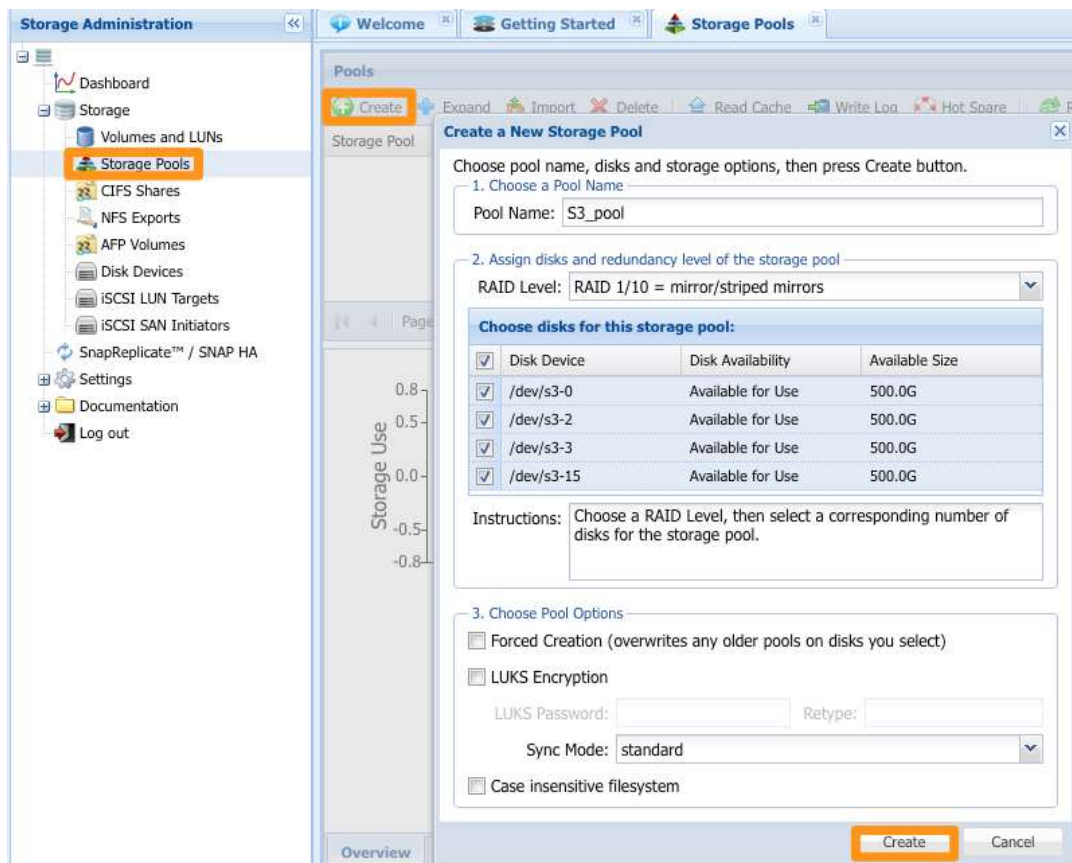
26. Click on the **Create S3 Cloud Disk** button to create a new Amazon S3 bucket.



Device	Total size	Make and model	Device Usage	Extra Disk Info
/dev/s3-0	500.0 GB	SoftNAS, Amazon Cloud Disk (file)	Available to assign	S3 bucket: amazon-aws-immersion-project, in 'oregon' region
/dev/s3-1	500.0 GB	SoftNAS, Amazon Cloud Disk (file)	Available to assign	S3 bucket: amazon-immersion-project, in 'oregon' region
/dev/s3-2	500.0 GB	SoftNAS, Amazon Cloud Disk (file)	Available to assign	S3 bucket: awssoftnas-storage, in 'oregon' region
/dev/s3-3	10.0 GB	SoftNAS, Amazon Cloud Disk (file)	Available to assign	S3 bucket: anjansoftans-06899-s3disk-3, in 'oregon' region

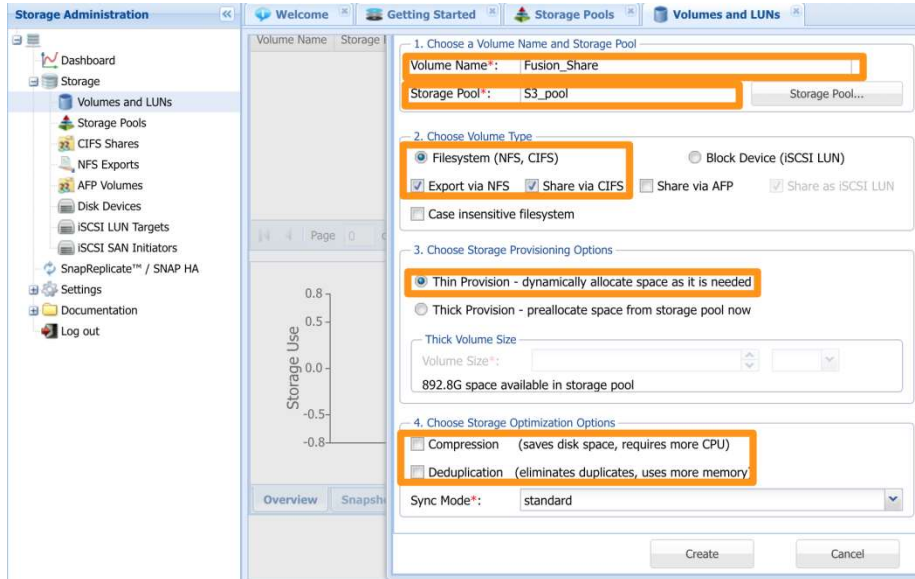


27. Click on the **Storage Pools** menu listed under **Storage** group on the left navigation panel and select **Create** in the **Pools** tab



- Define Pool Name
- Select Raid Level
 - Raid 0 or No Raid is suggested for Object Storage Disks
- Choose to or not to encrypt data at rest by using LUKS Encryption (AES 256 compliant) at the pool level
- Select Create button

28. Click on the **Volumes and LUNs** menu listed under **Storage** group on the left navigation panel and select **Create** in the **Volumes** tab



- Define Volume Name
 - This is the name of the share that you will map to via DNS name or IP of SoftNAS node
ex `\\<IP_or_DNS>\volume_name`
- Select Storage pool
 - This would be the pool created in step 27
- Choose Volume Type
 - This will determine the protocol that will be used to access the Volume
 - NFS,CIFS,AFP or ISCSI LUN
 - For this use case if you have not determined your access protocol chose both NFS and CIFS
- Choose Thin Provision as your Storage Provisioning option
- For Storage Optimization, we can leave that blank unless you have a need to duplicate or compress the data.
- Click on the create button

29. You can now use the S3 storage and upload files as needed by using `\\<IP_or_DNS(SoftNAS instance)>\volume_name` or `\\<IP_or_DNS(SoftNAS instance)>\export\volume_name`.

**You can also setup a High Availability Pair if your environment requires it by following the steps located here: https://www.softnas.com/docs/softnas/v3/snapha-html/amazon_web_services_vpc.html



Benefits:

SoftNAS maintains storage space automatically. The size of an AWS bucket grows as it is used. But, there must be some constraint, such as limiting the space usage. You can create an S3 bucket and limit the size, so usage does not cross that limit. Only this space will be usable for that bucket. Also, this bucket is managed by SoftNAS.

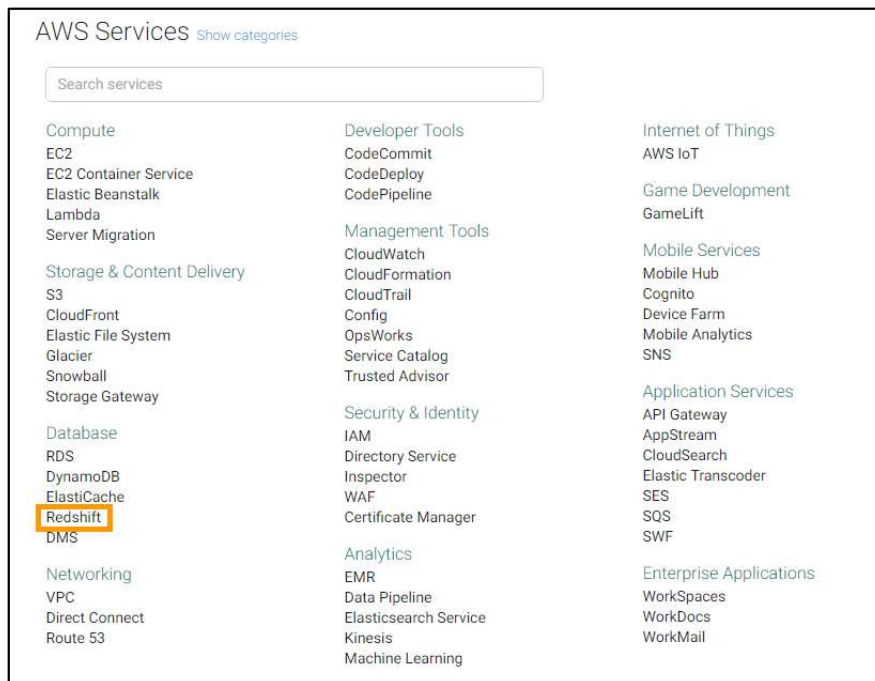
If you need to add more space, another disk, virtual space, or maintain all the space or disks, it can be done using SoftNAS.

Alternatives:

The Amazon Elastic File System (Amazon EFS) provides simple, scalable file storage for use with Amazon EC2 instances in the AWS Cloud.

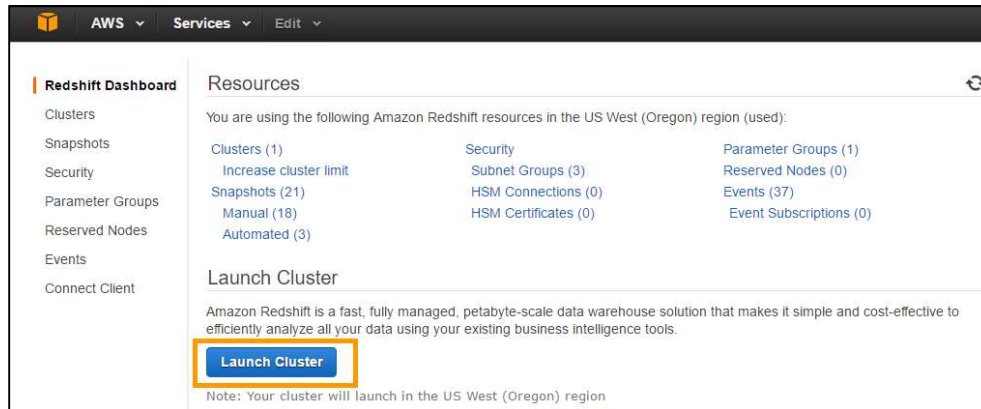
4.3. Setup the Warehouse using Amazon Redshift Data Warehouse (E)

1. Log in to the Amazon Management Console.
2. Inside the **AWS Services** listing, locate the **Redshift** service listed under **Database** services.
3. Choose **Redshift**.





4. Click the **Launch Cluster** button in the Redshift Dashboard.



5. This step will open a page, containing three tabs to collect details for creating a cluster.

4.3.1. Cluster Details

6. Enter information in the **Cluster Details** tab as shown below:

- **Cluster Identifier:** Give the cluster a name as per your wish.
- **Database Name:** This is the database identifier. Name it as per your choice.
- **Database Port:** Use port number **5439** for Redshift and add a firewall exception for this port in the client systems.



- **Master User Name:** This is the user name required to connect to the cluster when the cluster is available. Give a User Name as per your choice.
- **Master User Password:** Give a password as per your choice.
- **Confirm Password:** Enter the same password that you have entered above.

7. Make note of the **Database Name, Database Port, Master User Name and Master User Password.** These properties will be required in the creation of Attunity Replicate Endpoint Connection.

After specifying all the details in the Cluster Details box, click on the **Continue** button. This will lead you to the next page.

4.3.2. Node Configuration

8. Enter the following details in the Node Configuration tab.

Node Type: Select **dc1.large**.

Cluster Type: Select **Single Node**.

Number of Compute Nodes: Set this to **1**.

9. After specifying all the details, press **Continue**. This will lead you to the Additional Configuration Tab.



4.3.3. Additional Configuration

10. Enter the details in the **Additional Configuration** tab as shown below.

CLUSTER DETAILS

NODE CONFIGURATION

ADDITIONAL CONFIGURATION

REVIEW

Provide the optional additional configuration details below.

Cluster Parameter Group

default.redshift-1.0

Parameter group to associate with this cluster.

Encrypt Database

☒ None ☐ KMS ☐ HSM

[Learn more about database encryption](#)

Configure Networking Options:

Choose a VPC

Default VPC (vpc-11165a75)

The identifier of the VPC in which you want to create your cluster

Cluster Subnet Group

default

Selected Cluster Subnet Group may limit the choice of Availability Zones

Publicly Accessible

☒ Yes ☐ No

Select Yes if you want the cluster to have a public IP address that can be accessed from the public internet, select No if you want the cluster to have a private IP address that can only be accessed from within the VPC.

Choose a Public IP Address

☐ Yes ☒ No

Select Yes if you want to select an elastic IP (EIP) address that you already have configured. Otherwise, select No to have Amazon Redshift create an EIP for your instance.

Enhanced VPC Routing

☐ Yes ☒ No

Select Yes if you want to enable Enhanced VPC Routing. [Learn more.](#)

Availability Zone

No Preference

The EC2 Availability Zone that the cluster will be created in.

Optionally, associate your cluster with one or more security groups.

VPC Security Groups

AWSCloudFormerImmersion.WebServerSecurityGroup-47TRZQ

default (sg-442d5692)

EC2SecurityGroupSample-InstanceSecurityGroup-193V03Q1...

SoftNAS Cloud Standard - High-Performance Cloud NAS - ...

List of VPC Security Groups to associate with this cluster.

Optionally, create a basic alarm for this cluster.

Create CloudWatch Alarm

☐ Yes ☒ No

Create a CloudWatch alarm to monitor the disk usage of your cluster.

Optionally, associate up to 10 IAM roles with this cluster.

AvailableRoles

Choose a role

✕

RedshiftRole

Cancel

Previous

Continue



- **Cluster Parameter Group:** Cluster Parameter Group acts as a *container* for engine configuration values that are applied to a cluster. Select the **default** for the cluster parameter group.
- **Encrypt Database:** If this feature is enabled, then the database will be encrypted. Currently encryption is not required.
- **VPC:** Select the **Default VPC**.
- **Cluster Subnet Group:** Select the **default** Cluster Subnet Group.
- **Publicly Accessible:** Select “**Yes**”, because this cluster needs to be accessed from the public network.
- **Choose a Public IP Address:** Choose “**No**” to let Redshift provide an Elastic IP (EIP). If you select “**Yes**”, then make sure that you own a Public IP from a list of EIP that are already configured for your cluster’s VPC.
- **Availability Zone:** Select the default **No Preference**. This will decide the availability zone for the cluster. Let Amazon decide which zone is good for us by selecting **No Preference**.
- **VPC Security Group:** Select **default** VPC Security Group.
- **CloudWatch Alarm:** Select “**Yes**” if you want to monitor disk usage of the cluster; otherwise select “**No**”.
- **Available Roles:** Select **RedshiftRole** created for cluster.

11. Press the **Continue** button at the bottom of tab.

4.3.4. Review

This tab will display a summary of all the properties set in all the previous tabs, and the pricing information for this cluster.

12. If all the properties are correctly set, click on the **Launch Cluster** button at the bottom of the page to finalize the cluster creation.



CLUSTER DETAILS

NODE CONFIGURATION

ADDITIONAL CONFIGURATION

REVIEW

You are about to launch a cluster with the following specifications:

Cluster Properties	Database Configuration
These attributes specify the name of your cluster, what type of virtual hardware it will run on, how many nodes it will contain, and the availability zone in which it will be located. Cluster Identifier: redshiftv Node Type: dc1.large Number of Compute Nodes: 1 (leader and compute run on a single node) Availability Zone: No Preference	These properties specify the database name, port, and username you will use to connect to the database. The parameter group contains configuration values used by the database. Database Name: awsdv Database Port: 5439 Master User Name: master Cluster Parameter Group: default.redshift-1.0

Security, Access, and Encryption	CloudWatch Alarms
These settings control whether your cluster will be created in an existing VPC to allow for simpler integration with other AWS Services, and the security groups which define access rules to your cluster. Virtual Private Cloud: vpc-11165a75 Cluster Subnet Group: Publicly Accessible: Yes Elastic IP: Not used VPC Security Groups: sg-f42d5692 Enhanced VPC Routing: No Encrypt Database: No	CloudWatch alarms are used to notify if metrics for your cluster are within a certain threshold. All recipients under the SNS topic specified for your alarm will receive notifications once an alarm is triggered. Basic alarms will not be created for this cluster.

Unless you are eligible for the free trial, you will start accruing charges as soon as your cluster is active.

Applicable charges:

The on-demand hourly rate for this cluster will be \$0.25, or \$0.25/node. If you have purchased reserved nodes in this region for this node type that are active, your costs will be discounted. Additional nodes will be billed at the on-demand rate.

If you are eligible for a free trial, you will receive 750 hours of free usage for each month of the trial, applied across all running dc1.large nodes across all regions. Regardless of when you start your trial, you will receive two full months of free usage. Once your trial expires or your usage exceeds 750 hours/month, you can shut down your cluster, avoiding any charges, or keep it running at our standard [On-Demand Rate](#).

For more information, see [Amazon Redshift Free Trial FAQ](#), [Amazon Redshift Pricing](#), and [Reserved Nodes Documentation](#).

Cancel

Previous

Launch Cluster

A page similar to the one shown below signifies the successful initiation for the cluster creation. Wait a few minutes for your cluster to be created.

Cluster **immersion-project** is being created.

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

[View your cluster on the Clusters dashboard.](#)

Close



13. Click on the link **View your cluster on the Clusters dashboard** to see cluster status, health, etc., like the example below:

Clusters					
Launch Cluster Manage Tags Manage IAM Roles					
☐	Cluster	Cluster Status	DB Health	In Maintenance	Recent Events
☒	immersion-project	available	healthy	no	1

14. Click the link attached to the name of the cluster to open the cluster details page.

15. From the **Configuration** tab of the cluster details page, copy **Endpoint of cluster**.

Cluster: **vredshift** ▾

Configuration Status Performance Queries Loads Table restore

Cluster: vredshift

Cluster ▾

Database ▾

Backup ▾

Endpoint

authorized ⓘ

Endpoint of cluster will be required in the creation of Attunity Replicate Endpoint Connection.

Benefits:

Amazon Redshift is a fully managed, petabyte-scale data warehouse service located in the cloud. You can start with just a few hundred gigabytes of data and scale to a petabyte or more. This enables you to use your data to acquire new insights for your business and customers.

Alternatives:

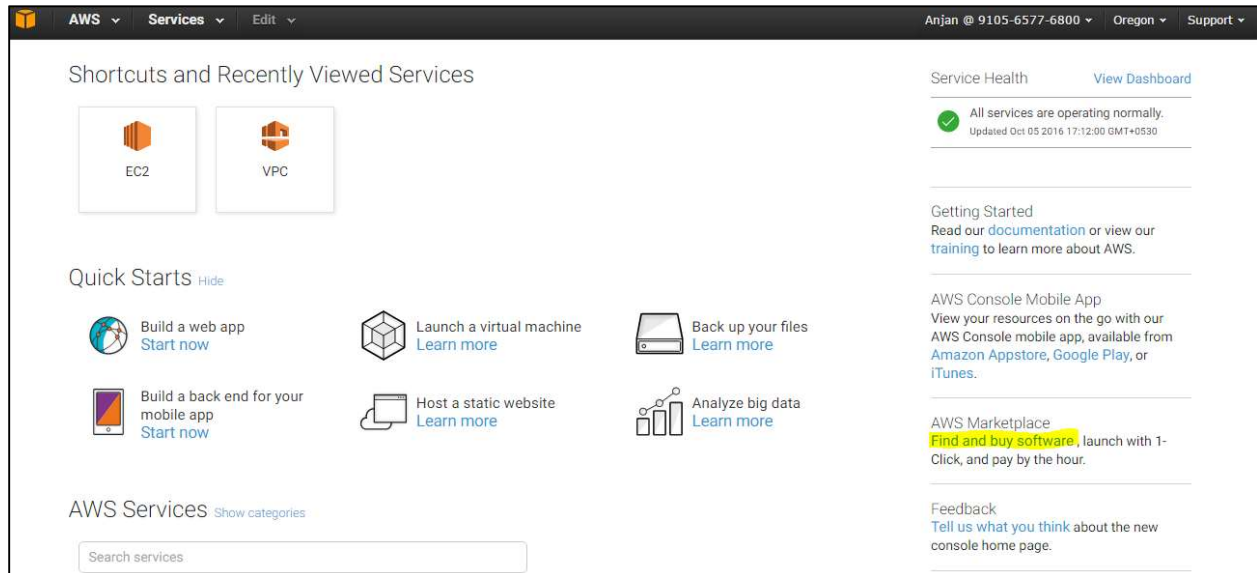
Currently we have not found another service with the similar performance of Redshift.



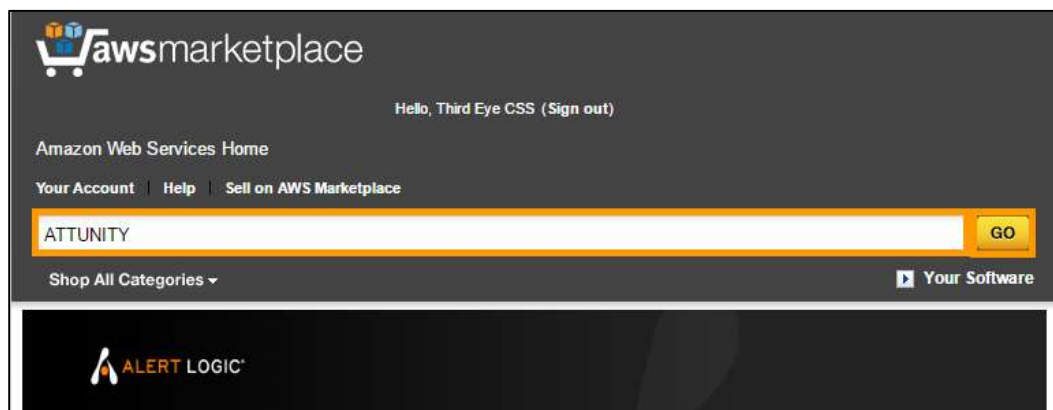
4.4. Setup the ETL Tool using Attunity CloudBeam ETL (C)

4.4.1. Launch Attunity CloudBeam Instance

1. Log in to the **AWS Management Console**.
2. In the right side of the navigation panel, click on the link **“Find and buy software”** to open AWS Marketplace.



3. Type **Attunity** in the search box of AWS Marketplace and press the **Go** button.



4. Search for **“Attunity CloudBeam for Amazon Redshift (Express) – Hourly”** in the result list. Click on it to open the product details page.

Note: If the Account already contains **Attunity CloudBeam for Amazon Redshift (Express) – Hourly** instance then use **Attunity CloudBeam for Amazon Redshift (Premium) – Hourly** for your next



instances. Steps for installation of **Attunity CloudBeam for Amazon Redshift (Premium) – Hourly** will be same.

ATTUNITY (5 results) showing 1 - 5

ATTUNITY CloudBeam
Free Trial

Attunity CloudBeam for Amazon Redshift (Premium) - Hourly
★★★★★ (5) | Version Attunity CloudBeam version 5 | Sold by Attunity
Starting from \$3.00/hr or from \$21,000.00/yr (20% savings) for software + AWS usage fees
Attunity CloudBeam for Amazon Redshift (Premium) enables organizations to simplify, automate, and accelerate data loading and near real-time incremental changes from on-premises...
Windows, Windows 2008 R2 2008R2 x64 - 64-bit Amazon Machine Image (AMI)

ATTUNITY CloudBeam
Free Trial

Attunity CloudBeam for Amazon Redshift (Express) - Hourly
★★★★★ (3) | Version Attunity CloudBeam version 5 | Sold by Attunity
Starting from \$2.40/hr or from \$16,800.00/yr (20% savings) for software + AWS usage fees
Attunity CloudBeam for Amazon Redshift (Express) enables organizations to simplify, automate, and accelerate bulk data loading from database sources (Oracle, Microsoft SQL...
Windows, Windows 2008 R2 2008R2 x64 - 64-bit Amazon Machine Image (AMI)

ATTUNITY CloudBeam
Free Trial

Attunity CloudBeam for Amazon S3, EMR, Hadoop - Hourly
★★★★★ (2) | Version Attunity CloudBeam version 3.0** | Sold by Attunity
Starting from \$0.36 to \$1.80/hr for software + AWS usage fees
Attunity CloudBeam for S3, EMR and other Hadoop distributions simplifies, automates, and accelerates the loading and replication of data from a variety of structured and...
Windows, Windows 2008 R2 2008R2 x64 - 64-bit Amazon Machine Image (AMI)

ATTUNITY CloudBeam

Attunity CloudBeam for Amazon Redshift (Premium) - BYOL
★★★★★ (0) | Version Attunity CloudBeam version 5 | Sold by Attunity
Attunity CloudBeam for Amazon Redshift (Premium) enables organizations to simplify, automate, and accelerate data loading and near real-time incremental changes from on-premises...
Windows, Windows 2008 R2 2008R2 x64 - 64-bit Amazon Machine Image (AMI)

5. Click on the **Continue** button on the product description page.

ATTUNITY CloudBeam

Attunity CloudBeam for Amazon Redshift (Express) - Hourly
on Windows 2008 R2 2008R2 x64
Sold by: Attunity | See product video

30 Day Free Trial Available - Attunity CloudBeam for Amazon Redshift (Express) enables organizations to simplify, automate, and accelerate bulk data loading from database sources (Oracle, Microsoft SQL Server, and MySQL) to Amazon Redshift. Attunity CloudBeam allows your team to avoid the heavy lifting of manually extracting data, transferring via API/script, chopping, staging, and importing. A Click-to-Load solution, Attunity CloudBeam is easy to setup and allows organizations to start validating or realizing the benefits of Amazon Redshift in just minutes. For customers which require INCREMENTAL 'CHANGE DATA... [Read more](#)

Customer Rating	★★★★★ (3 Customer Reviews)
Latest Version	Attunity CloudBeam version 5 (Other available versions)
Operating System	Windows, Windows 2008 R2 2008R2 x64
Delivery Method	64-bit Amazon Machine Image (AMI) (Read more)
Support	See details below
AWS Services Required	Amazon EC2, Amazon EBS, Amazon S3
Highlights	- Zero-footprint technology: Reduces impact on IT operations and does not require that Attunity software be installed on each source and target database. - Performance: Accelerated, secured, and guaranteed delivery of data.

Continue

You will have an opportunity to review your order before launching or being charged.

Pricing Details
For Region
US East (N. Virginia)
Free Trial
Try one instance of this product for 30 days. There will be no hourly software charges for that instance, but AWS infrastructure charges still apply. Free Trials will automatically convert to a paid hourly subscription upon expiration. Note that Free Trials are only applicable for hourly subscriptions, but you can opt to purchase an annual subscription at any time.



6. On the **Launch on EC2** page, make sure the **1-Click Launch** tab is selected.

The screenshot shows two tabs: '1-Click Launch' and 'Manual Launch'. The '1-Click Launch' tab is highlighted with an orange border and contains the text 'Review, modify and launch.' Below the tabs, a message reads: 'Click "Accept Software Terms & Launch with 1-Click" to launch this software with the settings below'. A smaller text block below that states: 'Once you accept the terms, you will have access to launch any version of this software in any supported region. For future launches, you can return to this page or launch directly from the EC2 console, API or CLI.'

7. Set **Subscription Term** to **Hourly** in the Software Pricing section.

The screenshot shows the 'Software Pricing' section. Under 'Subscription Term', the 'Hourly' radio button is selected and highlighted with an orange box, while the 'Annual' radio button is unselected. To the right, a list of 'Applicable Instance Type' includes m3.large, c4.large, c4.xlarge, c4.2xlarge, t2.large, m4.large (highlighted with a grey background), and m4.xlarge. On the far right, the 'Hourly fee' is displayed as '\$2.40 / hour' in green, with a note to 'Find instance details in EC2 instance section below.'

8. Select **latest version** of Attunity CloudBeam.

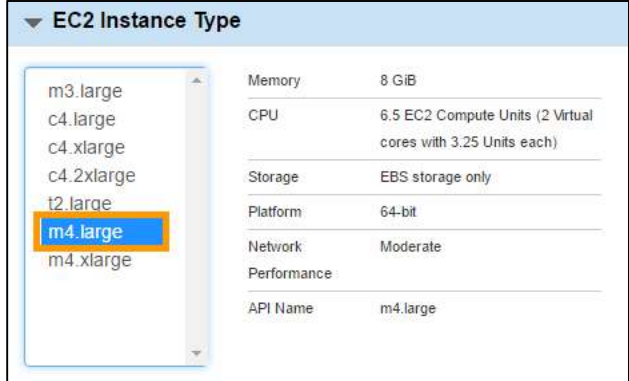
The screenshot shows the 'Version' section. A dropdown menu is open, showing 'Attunity CloudBe...' and 'Attunity Cloud' (highlighted with an orange box). Below the dropdown, a tooltip displays 'Attunity CloudBeam version 5, released 05/24/2016'. To the right, the 'Release Date' is '05/24/2016' and the 'Release Notes' link is 'https://4web.s3.amazonaws.com/Files...'

9. Select **US West (Oregon)** option for **Region** property.

The screenshot shows the 'Region' section with a dropdown menu displaying 'US West (Oregon)' and a downward arrow on the right side.



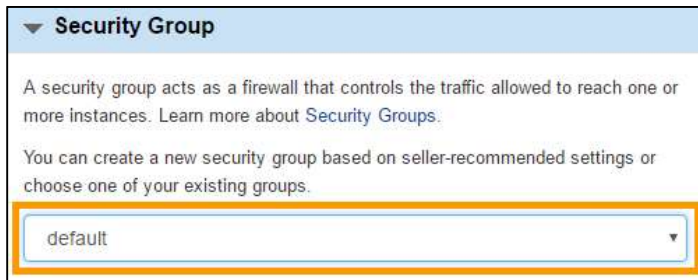
10. Choose **m4.large** EC2 Instance type.



EC2 Instance Type	
m3.large	Memory 8 GiB
c4.large	CPU 6.5 EC2 Compute Units (2 Virtual cores with 3.25 Units each)
c4.xlarge	Storage EBS storage only
c4.2xlarge	Platform 64-bit
t2.large	Network Moderate
m4.large	Performance
m4.xlarge	API Name m4.large

11. Select default **VPC** and default **Subnet**. Default VPC and Subnet are marked by **asterisk “*”** sign.
Note: VPC and Subnet should be the same as those used while creating a Redshift cluster.

12. Select **default** for the Security Group.



Security Group

A security group acts as a firewall that controls the traffic allowed to reach one or more instances. Learn more about [Security Groups](#).

You can create a new security group based on seller-recommended settings or choose one of your existing groups.

default

13. For property **Key Pair**, choose the key pair you created while following the steps in **Section 1.4, “Generate Your Private Keys,”** in the **Prerequisites** document.



14. Now scroll up and click on the **Launch with 1-click** button to launch the instance.

1-Click Launch
Review, modify and launch

Manual Launch
With EC2 Console, API or CLI

Click "Accept Software Terms & Launch with 1-Click" to launch this software with the settings below

Once you accept the terms, you will have access to launch any version of this software in any supported region. For future launches, you can return to this page or launch directly from the EC2 console, APIs or CLI.

Software Pricing

Subscription Term

☒ Hourly
☐ Annual

Applicable Instance Type

m3.large
c4.large

Hourly fee

\$2.40 / hour

Price for your Selections:

\$2.65 / hour

\$0.25 m4.large EC2 Instance usage fees +
\$2.40 hourly software fee

\$0.10 per GB-month of provisioned storage

EBS General Purpose (SSD) volumes

Launch with 1-click

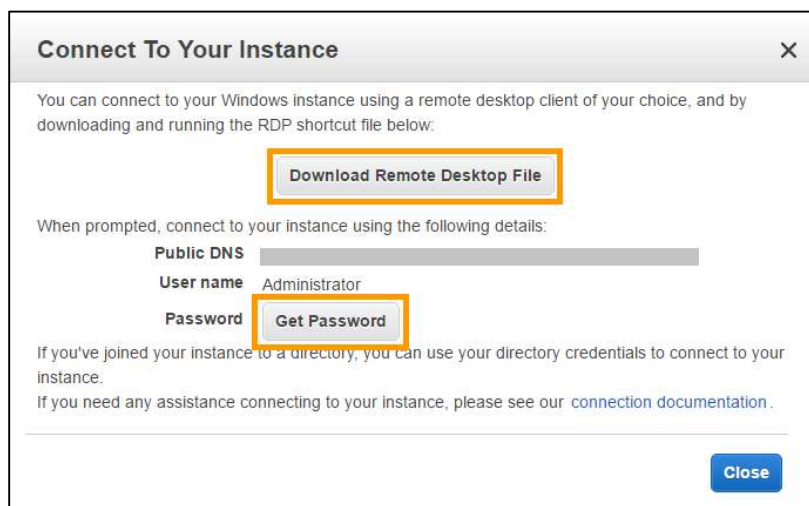
You will be subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's End User License Agreement (EULA) and your use of AWS services is subject to the AWS Customer Agreement.

15. After few minutes, go to the **Amazon EC2 dashboard** to check the status of the newly created instance.



4.4.2. Connect to Attunity CloudBeam instance remotely

1. To configure Attunity CloudBeam instance, first make sure it is running.
2. Select the **Attunity CloudBeam EC2** instance and right click on it.
3. Then click **Connect** (listed on the menu).
4. Click on **Download Remote Desktop File** on the **Connect To Your Instance** popup window.
5. After downloading the file with an “RDP” extension, click on the **Get Password** button in the **Connect To Your Instance** popup window.





6. In the **Connect To Your Instance > Get Password** window, click on the **Choose File** button and browse for the file that has a **“.PEM”** extension. This file contains the Private key that you generated in **Section 1.4: Generate Your Private Keys** and assigned to the Attunity CloudBeam instance in **Step 13 of Section 4.4.1**.

Connect To Your Instance > Get Password

The following Key Pair was associated with this instance when it was created.

Key Name [redacted].pem

In order to retrieve your password you will need to specify the path of this Key Pair on your local machine:

Key Pair Path [Choose File] No file chosen

Or you can copy and paste the contents of the Key Pair below:

[Empty text area]

Decrypt Password

Back **Close**

7. After you see the content of Private Key file, click on the **Decrypt Password** button.

Connect To Your Instance > Get Password

The following Key Pair was associated with this instance when it was created.

Key Name [redacted].pem

In order to retrieve your password you will need to specify the path of this Key Pair on your local machine:

Key Pair Path [Choose File] [redacted].pem

Or you can copy and paste the contents of the Key Pair below:

```
-----BEGIN RSA PRIVATE KEY-----
MIIIEowIBAAKCAQEAjYOLTUgeKb9XAVB37jKPI1DQMtl/3Y1IFHvMBz8jo1IbT/LAgMJTKTicRbW
ypn3eqhrtSAi7v9D6Tf1rhC6m1fQgtxZlfbOWP5TkkDLd5h9OYyRUt52G/ACoOWSUWSkcOhOBPyI
u5dO3Uhh6b/Wqvq4YzIRbelBU8qx9fKN47HI7pUtzHbjzGR6E5QZH1HozBOM4LYXAo4FugQ8KJNF
rix3CTET/xolh7I7FUPhqHEH0u6IKgh2S7gwBVAgNSPnhdjYeRK04ODsa5SzTr/a89P861b5QDLh
-----
```

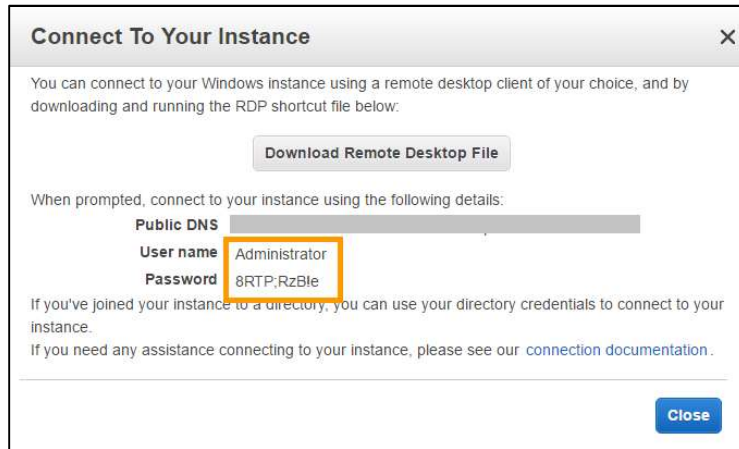
Decrypt Password

Back **Close**



8. Make note of the Username and Password generated in the **Connect To Your Instance** popup window.

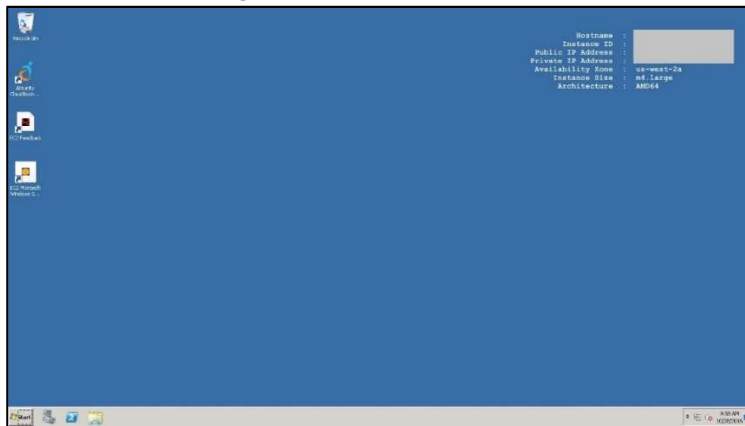
This password will be used while making remote connections to this instance.



9. Now open the file with “RDP” extension downloaded in **Step 4** of this section and make a secure connection using the credentials obtained in **Step 8** of this section.

***Note:** In Linux, generally there is no RDP client pre-installed on your system. Although you can install Remmina Remote Desktop Client. Provide the Public DNS for the instance at the location where Computer name is required. And then provide the User name as Administrator and the Password that you just generated. Then log in remotely. If a screenshot appears showing that the Security Certificate is out of date or expired or not recognized, don't worry, just accept the condition and proceed.*

10. After a successful remote desktop connection to Attunity CloudBeam instance, you will see a window as shown in the image below:

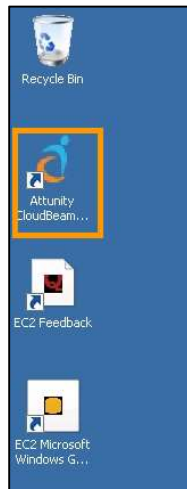


4.4.3. Set Attunity CloudBeam Password

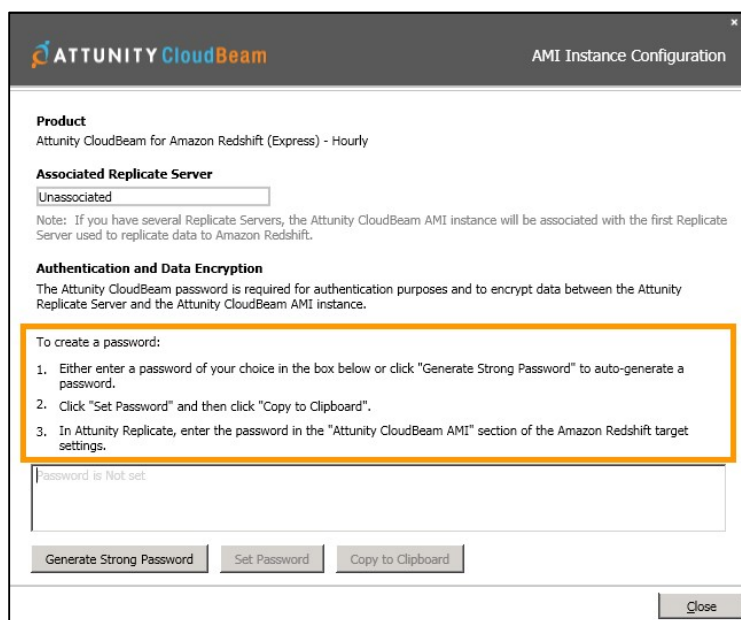
1. Use the remote desktop connection to Attunity CloudBeam instance that you created in **Section 4.4.1**.



2. Double-click on **Attunity CloudBeam Configuration** icon to start the configuration wizard.



3. Follow the steps mentioned in the configuration window to set the password. Make a note of this password.



4. Close the configuration window.

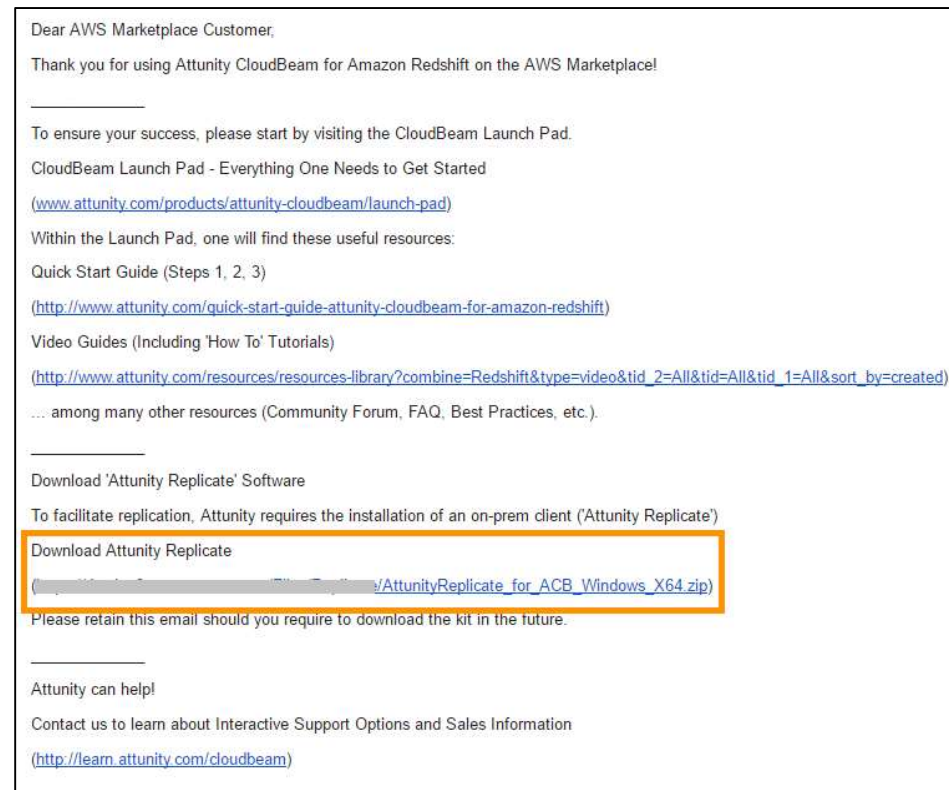


4.4.4. Install Attunity Replicate software

Once Attunity CloudBeam for Redshift EC2 instance is launched for the first time, you will get an e-mail from the Attunity CloudBeam-AWS Marketplace.

Mail will be sent to the e-mail ID used for the registration of the AWS Account (Root Account). If you are working with an individual account with limited privileges, don't assume that the email will arrive in your mailbox.

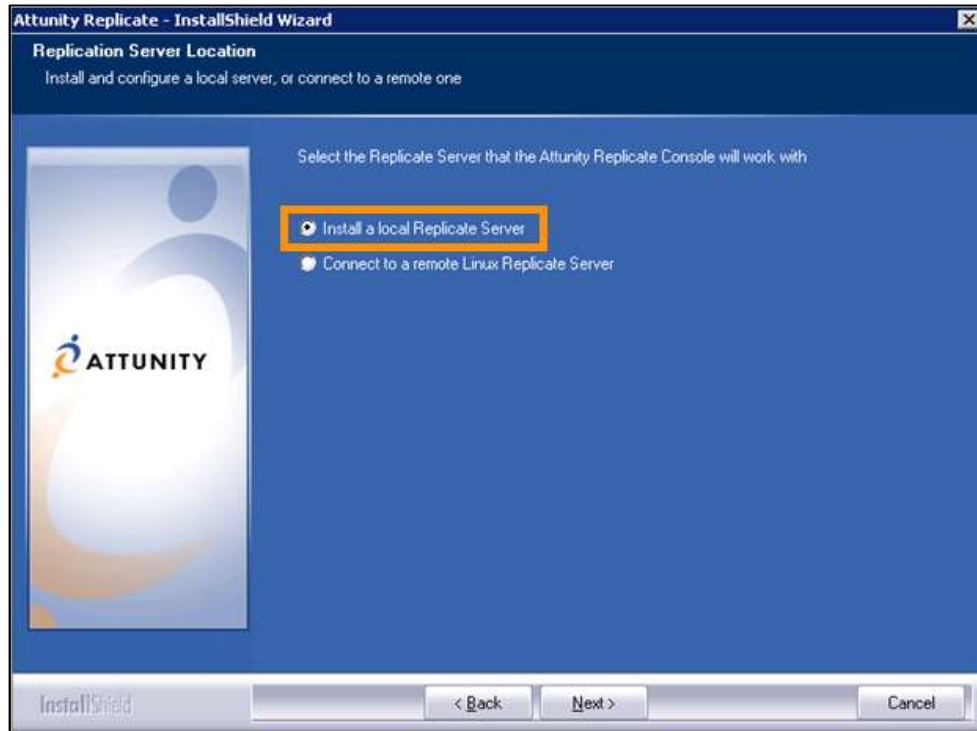
1. After receiving the e-mail, check the content for the link to download the Attunity Replicate software.



2. Click on the link in the browser of Attunity CloudBeam instance created in **Section 4.4.1**. It will download the software in a zip file.
3. After downloading the software, extract the archive in a separate folder and install the Attunity Replicate software by double clicking on the .exe file.



4. While installing the Attunity Replicate software, for the Replication Server Location, choose **Install a local Replicate Server** option.



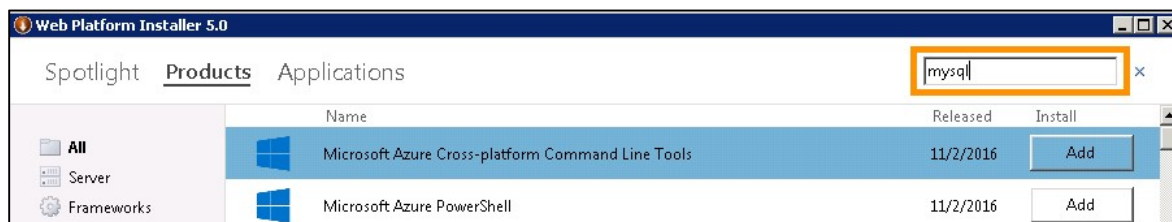


4.4.5. Install MySql 5.5

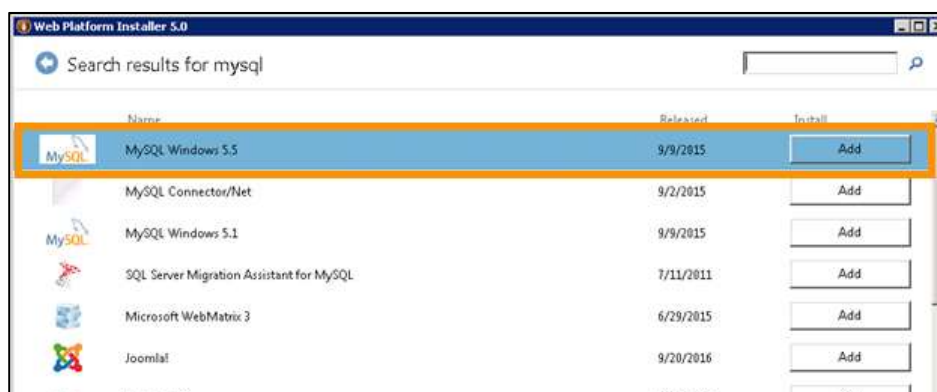
1. Download and install the **Microsoft Web Platform Installer** in the Attunity CloudBeam instance created in **Section 4.4.1**. (To get the installation file, open the URL <https://www.microsoft.com/web/downloads/platform.aspx> in your browser)
2. Open the **Microsoft Web Platform** and select the **Products** tab.



3. Enter the word **mysql** in the search box and press the **Enter** button on your keyboard.



4. Select **MySQL Windows 5.5** from the search results and click on the **Add** button to add it in installation list.

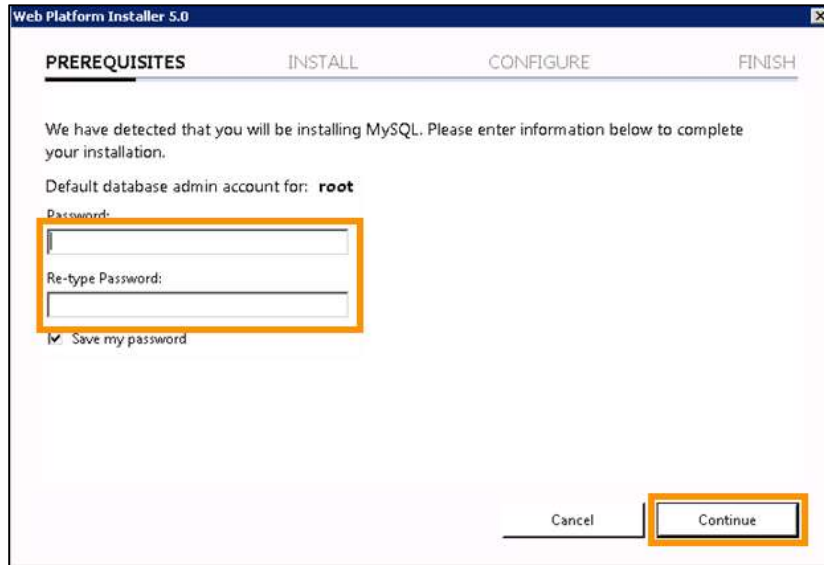




5. Click on the **Install** button to start the installation of MySQL 5.5.



6. Enter the **Password** on the Prerequisites tab and click on the **Continue** button.



7. Make note of this MySQL password for future use.

8. After completion of the installation, click on the **Finish** button to close the window.

Benefits:

This MySQL Server is required because Attunity CloudBeam can only fetch data from MySQL, Microsoft SQL Server, or Oracle. MySQL is open source. MySQL is a standard RDBMS solution.

Alternatives:

1. MySQL RDS.
2. Microsoft SQL Server RDS.
3. Oracle RDS.
4. Microsoft SQL Server (on-prem).
5. Oracle (on-prem).

4.4.6. Install MySQL Connector/ODBC driver

1. Go to the URL <https://dev.mysql.com/downloads/connector/odbc/> in the browser of Attunity CloudBeam instance created in **Section 4.4.1**.



2. Go to the **Generally Available (GA) Releases** section of the page.
3. Select **Microsoft Windows** option from the Select Platform drop down list and click on **Looking for Previous GA versions?**

Generally Available (GA) Releases

Connector/ODBC 5.3.6

Select Platform:

Microsoft Windows

Looking for previous GA versions?

Windows (x86, 32-bit), MSI Installer (mysql-connector-odbc-5.3.6-win32.msi)	5.3.6	8.0M	Download
Windows (x86, 64-bit), MSI Installer (mysql-connector-odbc-5.3.6-winx64.msi)	5.3.6	8.2M	Download
Windows (x86, 32-bit), ZIP Archive (mysql-connector-odbc-noinstall-5.3.6-win32.zip)	5.3.6	8.6M	Download
Windows (x86, 64-bit), ZIP Archive (mysql-connector-odbc-noinstall-5.3.6-winx64.zip)	5.3.6	8.8M	Download

We suggest that you use the MD5 checksums and GnuPG signatures to verify the integrity of the packages you download.

4. Select **version 5.2.7** and click on the **Download** button next to **Windows (x86, 64-bit), MSI Installer**.

Generally Available (GA) Releases

Connector/ODBC 5.2.7

Select Version:

5.2.7

Looking for the latest GA version?

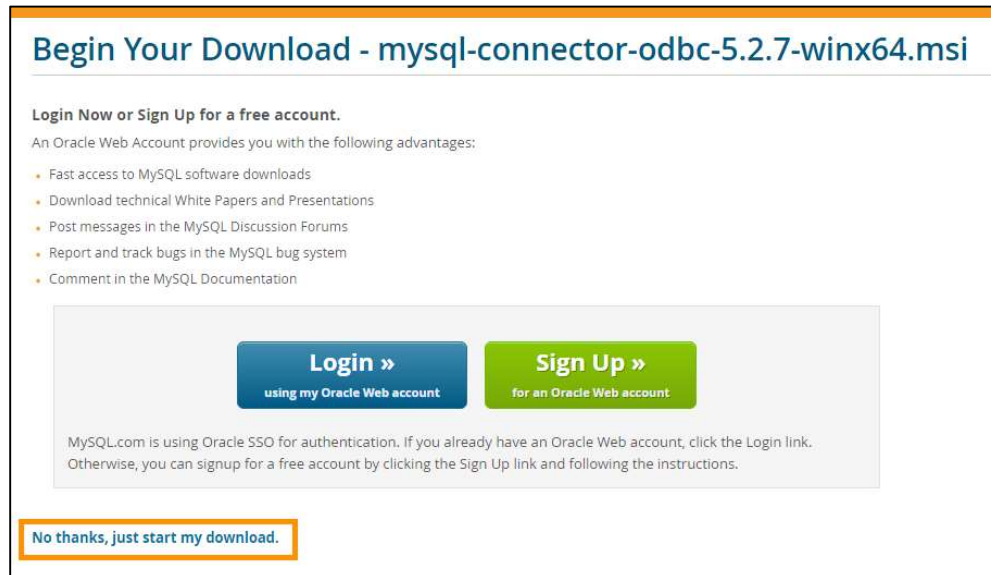
Select Platform:

Microsoft Windows

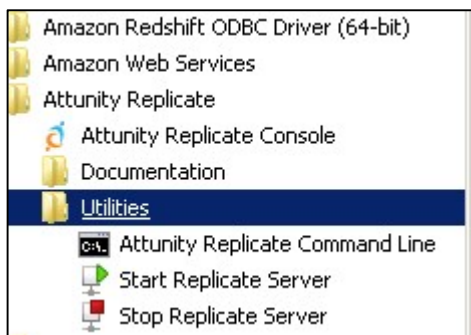
Windows (x86, 32-bit), MSI Installer (mysql-connector-odbc-5.2.7-win32.msi)	5.2.7	7.0M	Download
Windows (x86, 64-bit), MSI Installer (mysql-connector-odbc-5.2.7-winx64.msi)	5.2.7	7.2M	Download
Windows (x86, 32-bit), ZIP Archive (mysql-connector-odbc-noinstall-5.2.7-win32.zip)	5.2.7	7.5M	Download



5. On the **Begin Your Download** page, click on the link **No thanks, just start my download** to download the installation file without having to register.



6. Install the downloaded installation file.
7. **Reboot** the Attunity CloudBeam instance created in **Section 4.4.1**.
8. Make a remote connection to the same instance.
9. **Restart** the Attunity Replicate server.
 - Go to **Start -> All Programs -> Attunity Replicate -> Utilities** and click on **Stop Replicate Server**.
 - Then again start it from **Start -> All Programs -> Attunity Replicate -> Utilities** and click **Start Replicate Server**.



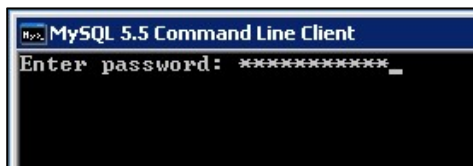


4.4.7. Create MySQL Database

1. Click the **Start** button on your taskbar and select **MySQL 5.5 Command Line Client**.



2. You will be asked to provide the MySQL password on CLI. Enter the password you provided in **Step 6 of Section 4.4.5: Install MySql 5.5** and press Enter to start the MySQL shell.



3. Execute this command in MySQL shell to create a new database in MySQL.
Replace token **<DataBase_Name>** with a suitable name for a database before executing the command.
Note: Semicolon (;) is a must at the end of each MySQL command; it signifies the end of a statement.

```
create database <Database_Name>;
```

```
mysql> create database awsimmersionsqldb;_
```

4. Make a note of this database name for future steps.
5. Execute the statement below to set a newly-created database as the current database.



Before executing this command, replace the token **<Database_Name>** with the name of database created in Step 3.

```
use <Database_Name>;
```

```
mysql> use awsimmersionsqldb;_
```

6. Execute the following statement to create a **company_master** table in the new database.

```
create table if not EXISTS company_master  
(company_id int PRIMARY KEY,  
company_name varchar(255),  
company_symbol varchar(255),  
company_address text,  
company_foundedon date,  
company_ceo varchar(255),  
comapny_assets double,  
company_revenue double);
```

```
Database changed  
mysql> create table if not EXISTS company_master  
-> <company_id int PRIMARY KEY,  
-> <company_name varchar(255),  
-> <company_symbol varchar(255),  
-> <company_address text,  
-> <company_foundedon date,  
-> <company_ceo varchar(255),  
-> <comapny_assets double,  
-> <company_revenue double>;_
```

7. Execute the following statement to create a **company_product** table in a new database.

```
CREATE TABLE IF NOT EXISTS company_product  
(product_id int PRIMARY KEY,  
company_id int,  
product_name varchar( 255 ),  
product_description text,  
product_type varchar( 255 ),  
product_initialrelease date,  
product_marketvol double,  
product_manufacture_lat float,  
product_manufacture_long float,  
product_manufacture_loc varchar( 255 ));
```



```
mysql> CREATE TABLE IF NOT EXISTS company_product
-> (product_id int PRIMARY KEY,
-> company_id int,
-> product_name varchar( 255 ),
-> product_description text,
-> product_type varchar( 255 ),
-> product_initialrelease date,
-> product_marketvol double,
-> product_manufacture_lat float,
-> product_manufacture_long float,
-> product_manufacture_loc varchar( 255 ));
```

8. Execute the following statement to create a **company_announcement** table in a new database.

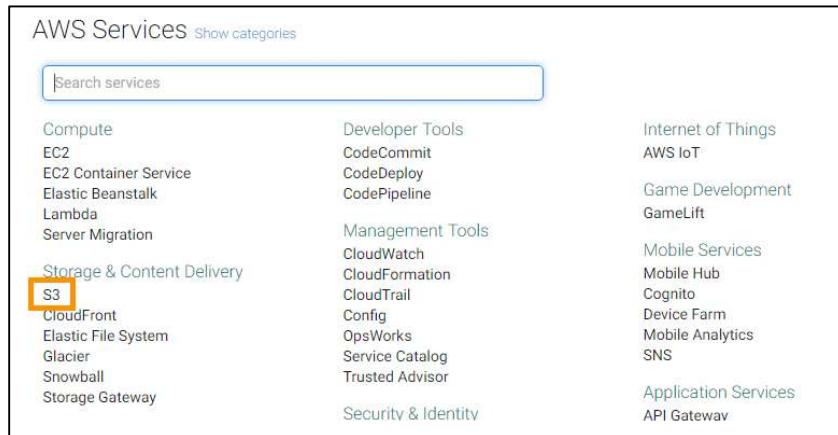
```
CREATE TABLE IF NOT EXISTS company_announcement
(announcemnt_id int PRIMARY KEY,
company_id int,
announcemnt_date date,
announcemnt_title varchar( 255 ),
announcemnt_by varchar( 255 ),
announcemnt_from varchar( 255 ),
announcemnt_path text);
```

```
mysql> CREATE TABLE IF NOT EXISTS company_announcement
-> (announcemnt_id int PRIMARY KEY,
-> company_id int,
-> announcemnt_date date,
-> announcemnt_title varchar( 255 ),
-> announcemnt_by varchar( 255 ),
-> announcemnt_from varchar( 255 ),
-> announcemnt_path text);
```

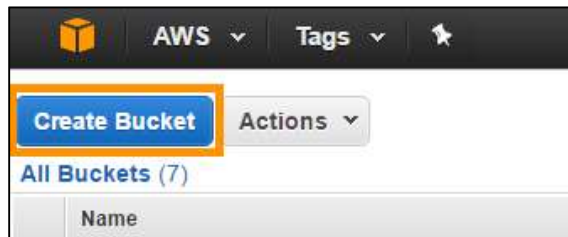


4.4.8. Create Bucket

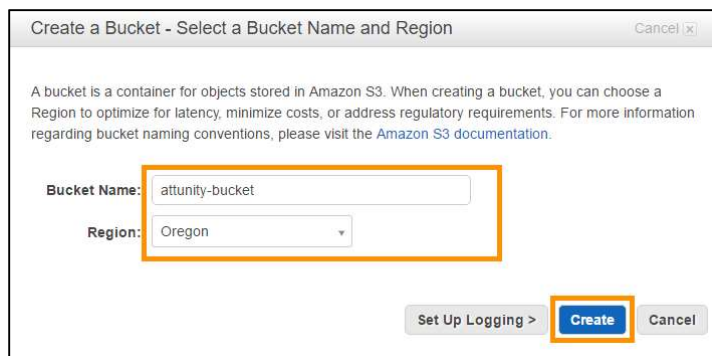
1. Log in to <https://console.aws.amazon.com/console>
2. Click on **S3** under **Storage and Content Delivery** in the AWS Services box.



3. Click on the **Create Bucket** button in the upper left corner of the S3 console.



4. In the **Create a Bucket** popup window, enter an appropriate **name for bucket**, select **Region** and click on the **Create** button.

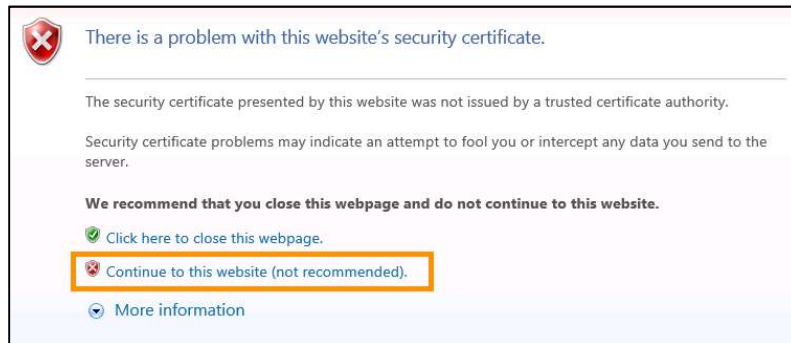


5. Make a note of the **Bucket Name** for future use.



4.4.9. Create Attunity Replicate Endpoint Connections

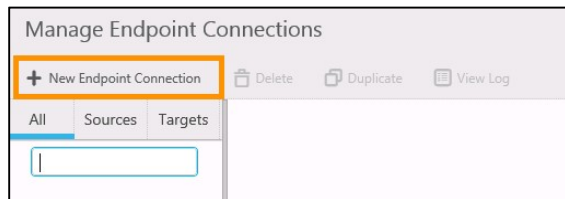
1. Open the **Attunity Replicate Web Console** (Start->All Programs->Attunity Replicate->Attunity Replicate Console)
2. Attunity Replicate Web Console is a web application. While opening, if it gives a Certificate error like below, just ignore it and continue browsing.



3. Click on the Manage Endpoint Connections menu.



4. Click on the + **New Endpoint Connection** menu in the Manage Endpoint Connections popup window.





5. In the content section of the popup window, set the following properties for a new endpoint connection:

The screenshot shows a 'General' tab configuration window for a new endpoint connection. The fields are as follows:

- Name: MySQL
- Description: (empty)
- Role: ☒ Source ☐ Target
- Type: MySQL (dropdown menu)
- Server name: localhost
- Port: 3306
- User name: root
- Password: (masked with dots)

At the bottom, there are three buttons: 'Test Connection' (with a green checkmark icon), 'Save', and 'Cancel'. Orange boxes highlight the Name, Role, Type, Server name, Port, User name, Password, Test Connection button, and Save button.

- Name: MySQL
- Role: Source
- Type: MySQL
- Server Name: localhost
- Port: 3306
- User name: root
- Password: Enter the MySQL password that was set in **Step 6 of Section 4.4.5 Install MySql 5.5**

6. Click on the **Test Connection** button located at the bottom of the window to confirm the connection properties. A green **OK** sign will appear if all properties are correct.

7. Click on the **Save** button to finalize all the properties for this connection.

8. Click on the **+ New Endpoint Connection** menu again to set properties for a new connection.



9. In the content section of the popup window, set the following properties for a new endpoint connection:

General Advanced

Name:

Description:

Role: ☐ Source ☒ Target

Type:

- Name: Redshift
- Role: Target
- Type: Amazon Redshift

Expand the Amazon Redshift target section and set the properties of the Amazon Redshift cluster created in **Section 4.2: Setup the Warehouse using Amazon Redshift Data Warehouse (E)**

General Advanced

Name:

Description:

Role: ☐ Source ☒ Target

Type:

☒ Amazon Redshift target

Redshift cluster:

Port:

User name:

Password:

Database name:

☒ Attunity CloudBeam AMI

☒ Amazon S3 staging

- **Redshift cluster:** Type in the Redshift cluster endpoint obtained in **Step 15 of Section 4.3: Setup the Warehouse using Amazon Redshift Data Warehouse (E)**, but remove the colon and port number at the end of the string.

Enter the following details of the Redshift cluster copied in **Step 8 of Section 4.3.1: Cluster Details**

- Port = Database Port
- User name = Master User Name
- Password = Master User Password
- Database name = Database name



Expand the Attunity CloudBeam AMI section and set the properties of Attunity CloudBeam instance.

The screenshot shows the 'General' tab of the AWS IAM console. The role is named 'Redshift' and is of type 'Amazon Redshift'. The 'Attunity CloudBeam AMI' section is expanded, showing fields for 'CloudBeam AMI Type' (set to 'Amazon Redshift Premium - Hourly/BYOL'), 'AMI EC2 IP address', and 'CloudBeam Password'. An orange box highlights these three fields.

- CloudBeam AMI Type: Select the CloudBeam AMI Type used for creating the instance in **Step 4 of Section 4.4.1: Launch Attunity CloudBeam Instance**
- AMI EC2 IP address: Enter the Public IP of Attunity CloudBeam instance created in **section 4.4.1: Launch Attunity CloudBeam Instance**
- CloudBeam Password: Enter the password set in **Step 3 of Section 4.4.3: Set Attunity CloudBeam Password**



Expand the Amazon S3 staging section and set the following properties:

General Advanced

Name: redshift

Description:

Role: Target

Type: Amazon Redshift

☒ Amazon Redshift target

☒ Attunity CloudBeam AMI

☒ Amazon S3 staging

Bucket name: attunity-bucket

Bucket region: US West (Oregon) ▼

Access key: AKIAJZJDCKYE224FBKUA

Secret key: ●●●●

Folder: Browse...

- Bucket Name: Type the name of the S3 bucket created in **Section 4.4.8: Create Bucket**
- Bucket Region: Set the same region used while creating the above bucket.
- Set **Access Key** and **Secret Key** to the *Access Key ID* and *Secret Access Key* respectively present in the file downloaded in **Step 12 of Section “Create IAM Users”** in the **Prerequisite** document.

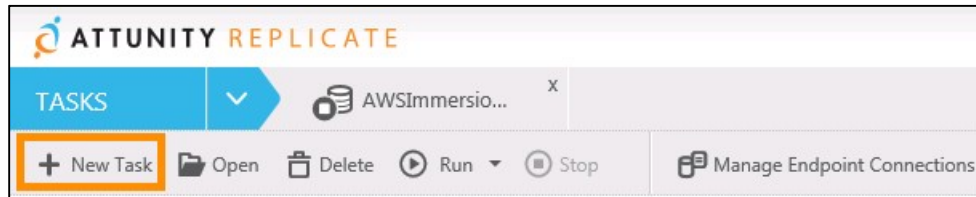
10. Click on the **Test Connection** button at the bottom of the window to confirm the connection properties. A green **OK** sign will appear if all properties are correct.

11. Click on the **Save** button to finalize all the properties for this connection.



4.4.10. Create Attunity Replicate Task

1. Open the home page of Attunity Replicate Web Console.
2. Click on the + **New Task** button on menu bar.



3. In the **New Task** window, set the following properties and click on the **OK** button at the bottom to create a new task.

New Task

Name ?

Description

Replicate Profile
Select the profile that best describes your replication use case

☒ Unidirectional

☐ Bidirectional

Bidirectional replication is not available in Replicate Express

Task Options
Select the replication options for this task

☒ Full Load

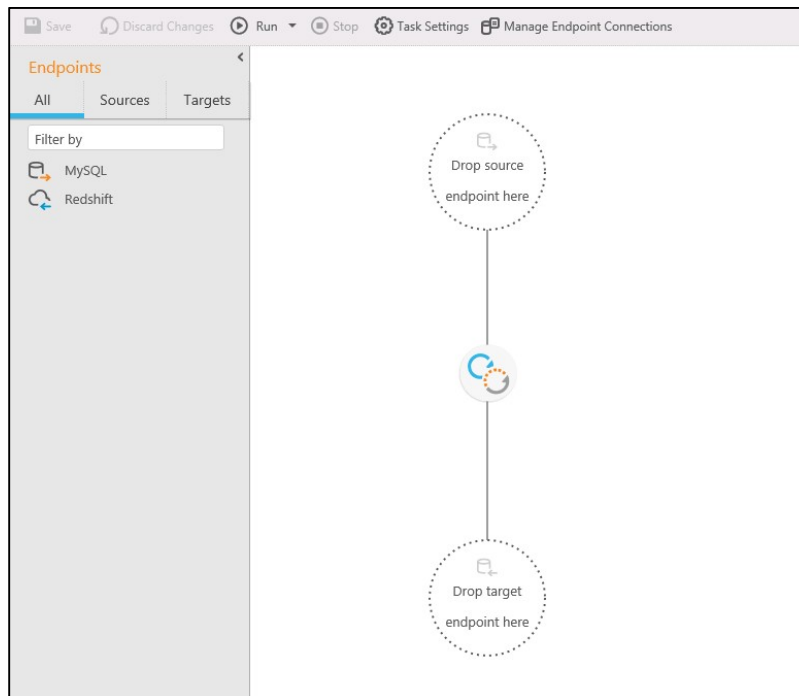
☒ Apply Changes

☐ Store Changes

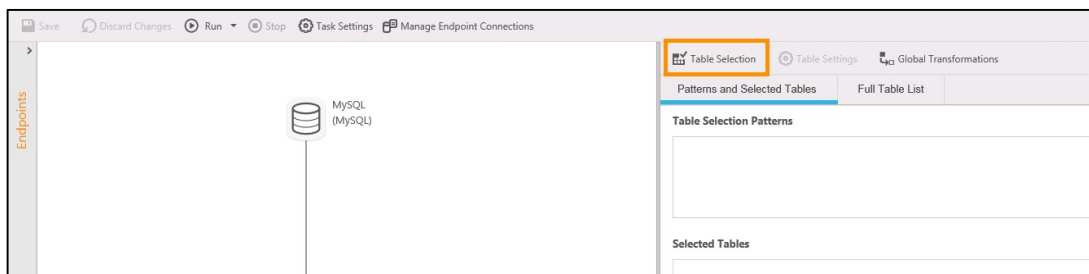
Perform a full load of target tables, then keep them up-to-date by applying changes.

- Name: Type in a suitable name for the task.
- Replicate Profile: **Unidirectional**
- Task Options: Select **Full Load** and **Apply Changes** options as shown in the above image. Selected options become light blue.

4. In the **Task Editor**, you will be asked to provide **Source** and **Target** endpoints.



5. Drag and drop the respective endpoints (created in Step 4.4.7.) present in the Endpoints pane to their proper locations.
6. Click on the **Table Selection** tab present in right pane of the window.



7. In the Select Tables popup window, expand the **Schema** dropdown list and select the MySQL database created in **Section 4.4.7: Create MySQL Database**.
8. Click on the **Search** button to search all tables present in the selected database. After this step, the Table List will get populated with names of tables present in the database.



Select Tables

Source Tables
Schema: awsimmersionsqladb
Table: %
Search

Table Selection Patterns

Table List

awsimmersionsqladb	company_announcement
awsimmersionsqladb	company_master
awsimmersionsqladb	company_product

Tables: 3

Selected Tables

Tables: 0

OK Cancel

9. Click on the **Add All** button to select all the tables for the data transfer.

Select Tables

Source Tables
Schema: awsimmersionsqladb
Table: %
Search

Table Selection Patterns

Table List

awsimmersionsqladb	company_announcement
awsimmersionsqladb	company_master
awsimmersionsqladb	company_product

Tables: 3

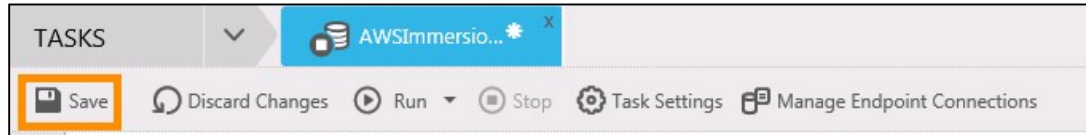
Selected Tables

Tables: 0

OK Cancel

10. Click on the **OK** button present at the bottom of the Select Tables popup window.

11. Click on the **Save** button on the menu bar to finalize the endpoints for task.



12. A newly-created task will appear on **Attunity Replicate Web Console**.

Benefits:

Attunity CloudBeam for Amazon Redshift (Express) enables organizations to simplify, automate, and accelerate bulk data loading from database sources (Oracle, Microsoft SQL Server, and MySQL) to Amazon Redshift.

Alternatives:

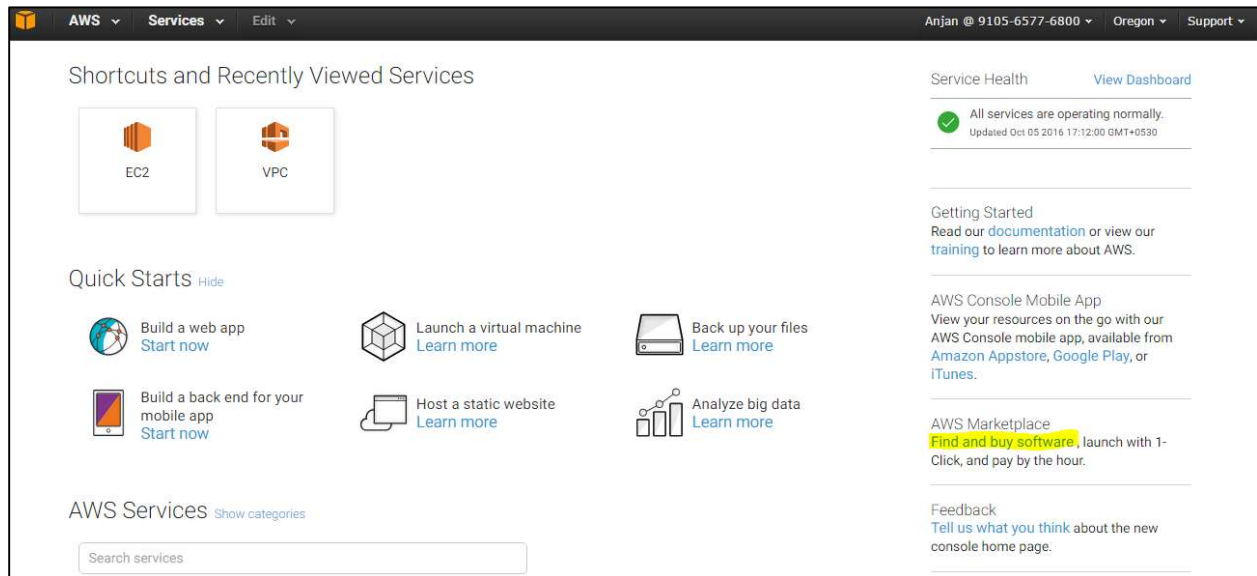
1. Informatica Cloud for Amazon Redshift (Screenshots)
2. Matillion ETL for Redshift



4.5. Visualization setup using TIBCO Spotfire Analytics platform (G)

4.5.1. Launch TIBCO Spotfire instance

1. Log in to <https://console.aws.amazon.com/console>.
2. In the right navigation panel, click on the link **Find and buy software** to open AWS Marketplace.



3. Type **TIBCO Spotfire** in the search box of AWS Marketplace and click on the **Go** button.





4. Click on **TIBCO Spotfire Analytics Platform (Hourly)** from the search results.

TIBCO Spotfire (3 results) showing 1 - 3

TIBCO Spotfire
Free Trial

TIBCO Spotfire® Analytics Platform (Hourly)
★★★★★ (4) | Version 7.0.2 Update 1 | Sold by TIBCO Software, Inc.
Starting from \$0.74/hr or from \$5,893.00/yr (up to 10% savings) for software + AWS usage fees
TIBCO Spotfire is a complete analytics solution that helps you quickly uncover insights for better decision-making. Explore, visualize, and create dashboards for Amazon Redshift,...
Windows, Windows Server 2012 R2 w/SQL Express 2014 2012R2 x64 - 64-bit Amazon Machine Image (AMI)

TIBCO Spotfire

TIBCO Spotfire Cloud
★★★★★ (0) | Sold by TIBCO Software, Inc.
TIBCO Spotfire Cloud is analytics software-as-a-service designed for data exploration. Everything you need is available on the cloud. No installation, just analytics. TIBCO...

TIBCO Spotfire
Free Trial

TIBCO Clarity
★★★★★ (0) | Version TIBCO Clarity 2.4.0 HF1 | Sold by TIBCO Software, Inc.
Starting from \$0.25/hr or from \$1,095.00/yr (50% savings) for software + AWS usage fees
TIBCO Clarity is the data cleaning and standardization component of the TIBCO Software System. It serves as a single solution for business users to handle massive messy data...
Linux/Unix, CentOS Centos 7 x64 - 64-bit Amazon Machine Image (AMI)

showing 1 - 3

5. Click on the **Continue** button on the product description page of TIBCO Spotfire.

TIBCO Spotfire

TIBCO Spotfire® Analytics Platform (Hourly)
on Windows Server 2012 R2 w/SQL Express 2014 2012R2 x64
Sold by: TIBCO Software, Inc. | See product video [📺](#)
5 Day Free Trial Available - TIBCO Spotfire is a complete analytics solution that helps you quickly uncover insights for better decision-making. Explore, visualize, and create dashboards for Amazon Redshift, RDS, Microsoft Excel, SQL Server, Oracle, and more in-minutes. Easily scale from a small team to the entire organization with Spotfire for AWS. Includes 1 Spotfire Analyst user (via Microsoft Remote Desktop), unlimited Consumer and Business Author (web) users, plus Spotfire Server, Web Player, Automation Services and Statistics Services.

Customer Rating	★★★★★ (4 Customer Reviews)
Latest Version	7.0.2 Update 1 (Other available versions)
Operating System	Windows, Windows Server 2012 R2 w/SQL Express 2014 2012R2 x64
Delivery Method	64-bit Amazon Machine Image (AMI) (Read more)
Support	See details below

Continue

You will have an opportunity to review your order before launching or being charged.

Pricing Details
For Region
US East (N. Virginia)
Free Trial
Try one instance of this product for 5 days. There will be no hourly software charges for that instance, but AWS



6. On the **Launch on EC2** page, make sure the **1-Click Launch** tab is selected.

Launch on EC2:
TIBCO Spotfire® Analytics Platform (Hourly) on Windows Server 2012 R2 w/SQL Express 2014 2012R2 x64

1-Click Launch
Review, modify and launch

Manual Launch
With EC2 Console, API or CLI

Click "Accept Software Terms & Launch with 1-Click" to launch this software with the settings below

Once you accept the terms, you will have access to launch any version of this software in any supported region. For future launches, you can return to this page or launch directly from the EC2 console, APIs or CLI.

▼ **Software Pricing**

Price for your Selections:

\$0.99 / hour
\$0.25 m4.large EC2 Instance usage fees +
\$0.74 hourly software fee

\$0.10 per GB-month of provisioned storage
EBS General Purpose (SSD) volumes

Please select a key pair.

7. Set Subscription Term to **Hourly**.

▼ **Software Pricing**

Subscription Term

☒ **Hourly**

☐ Annual

Applicable Instance Type

r3.8xlarge
c4.xlarge
c4.2xlarge
c4.4xlarge
c4.8xlarge
m4.large
m4.xlarge
m4.2xlarge

Hourly fee

\$0.74 / hour

Find instance details in EC2 instance section below.

8. In the **Version** section, choose the latest version.

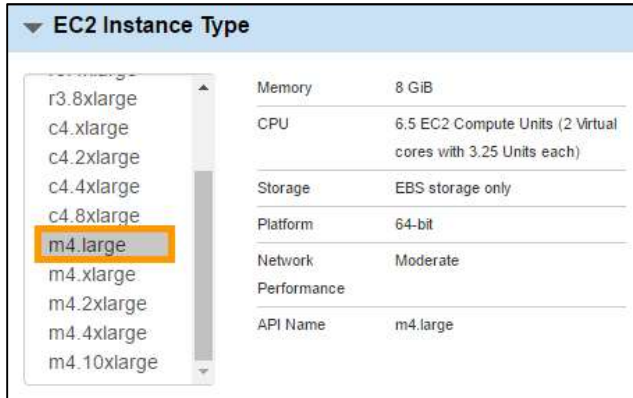
9. Select **US-West (Oregon)** as the default region for this project.

▼ **Region**

US West (Oregon) ▼



10. Select **m4.large** EC2 Instance type.



EC2 Instance Type

Instance Type: **m4.large**

Memory: 8 GiB

CPU: 6.5 EC2 Compute Units (2 Virtual cores with 3.25 Units each)

Storage: EBS storage only

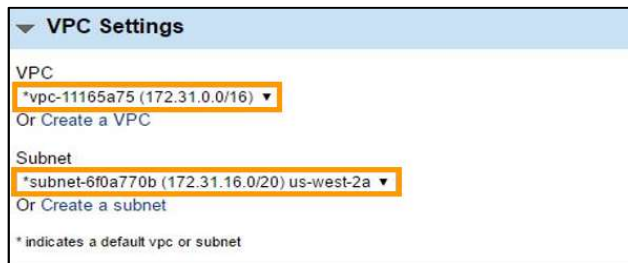
Platform: 64-bit

Network: Moderate

Performance

API Name: m4.large

11. Select default **VPC** and default **Subnet**. Default VPC and Subnet are marked with an asterisk “*”.



VPC Settings

VPC: ***vpc-11165a75 (172.31.0.0/16)**

Or Create a VPC

Subnet: ***subnet-6f0a770b (172.31.16.0/20) us-west-2a**

Or Create a subnet

* indicates a default vpc or subnet

12. Select **default** Security Group.



Security Group

A security group acts as a firewall that controls the traffic allowed to reach one or more instances. Learn more about Security Groups.

You can create a new security group based on seller-recommended settings or choose one of your existing groups.

default

default VPC security group

Connection Method	Protocol	Port Range	Source (IP or Group)
	ALL	ALL	

13. If you have not done so already, follow the steps in **Section 1.4 “Generate Your Private Keys”** in the **Prerequisites** document to generate your key pair.

14. Select the generated key pair for the **Key Pair** selection box.



Key Pair

AmabKeyPair

To ensure that no other person has access to your software, the software installs on an EC2 instance with an EC2 key pair that you created. Choose an existing EC2 key pair in the list.

15. Scroll up and click on the button **Launch with 1-click** to start the TIBCO Spotfire installation process.

Price for your Selections:

\$0.99 / hour
\$0.25 m4.large EC2 Instance usage fees +
\$0.74 hourly software fee

\$0.10 per GB-month of provisioned storage
EBS General Purpose (SSD) volumes

Launch with 1-click

You will be subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's [End User License Agreement \(EULA\)](#) and your use of AWS services is subject to the [AWS Customer Agreement](#).

Wait for few minutes until the installation is completed.

16. **Go to the EC2 dashboard** to get a newly-created TIBCO Spotfire instance and provide a suitable name.
17. Make a remote connection to the newly-created TIBCO Spotfire instance by following the same steps described in **Section 4.4.2: Connect to Attunity CloudBeam Instance Remotely**.



18. After establishing a successful remote connection to the EC2 instance, a web form will open to collect details for the product registration.
19. Fill in the details and register the product or click the **No Thanks** link at the bottom of the form to skip registration.

The screenshot shows the TIBCO Spotfire Analytics registration page. At the top, it says "TIBCO Spotfire" and "Welcome to TIBCO Spotfire Analytics". Below this, a blue banner reads "IMPORTANT: Register for free online support and training". To the right of the banner is an image of a person's hand pointing at a laptop screen displaying a colorful map. The main form area has a light gray background and contains several input fields: "First Name:", "Last Name:", "Business Email:", "Company:", "Job Title:", "Phone Number:", "Country:" (with a dropdown menu showing "United States"), and "State:" (with a dropdown menu showing "Select..."). Each field has a red asterisk indicating it is required. Below the "State" field is a blue "REGISTER" button. To the right of the form, there is a section titled "Register here to get \$2,000 in support and training for free." followed by "After registering, you will get:" and a bulleted list of benefits: "Introduction to the Spotfire data analysis tool training", "Administering users and groups training", "Setting up new shared data sources (like Amazon Redshift) training", and "Creating a collaboration environment training". Below this list, it says "Plus, get free online support from the community:" and a link "TIBCO Spotfire for AWS Community". At the bottom right of the form is an "amazon web services" logo with the text "Partner Network" and "TECHNOLOGY PARTNER". At the very bottom of the page, there is a small orange button labeled "No Thanks".

20. Now you will be redirected to the login page of TIBCO Spotfire Web Player. Use the following credentials to log in to the TIBCO Spotfire Web Player.

Username: spotfireadmin

Password: instance ID of TIBCO Spotfire EC2 instance.

The screenshot shows the TIBCO Spotfire Web Player login page. It has a blue background with the "Spotfire" logo at the top. Below the logo, it says "TIBCO Spotfire Web Player". There are two input fields: one for the username, which contains "spotfireadmin", and one for the password, which contains a series of dots. Below the password field is a checkbox labeled "Save my login information". At the bottom of the form is a blue "Log in" button.



Benefits:

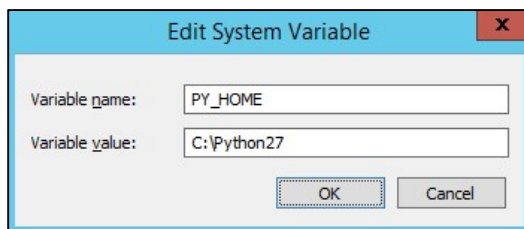
TIBCO Spotfire® Analytics Platform (Hourly) - TIBCO Spotfire is a complete analytics solution that helps you quickly uncover insights for better decision-making. Within minutes, you can explore, visualize, and create dashboards for Amazon Redshift, RDS, Microsoft Excel, SQL Server, Oracle, and more. You can also easily scale from a small team to an entire organization with Spotfire for AWS.

Alternatives:

Tableau Server, and many more.

4.5.2. Install Python

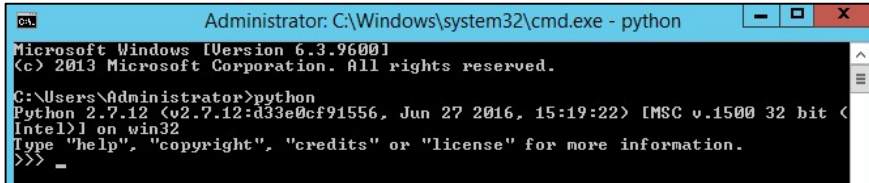
1. Click on the URL <https://www.python.org/downloads/> in the browser of the TIBCO Spotfire EC2 instance to download the latest version of Python for Windows.
2. Download and install **Python 2.7.12** on the TIBCO Spotfire EC2 instance.
3. Follow the steps below to set a Path environment variable for the Python installation:
 - For **Windows Server 2012** follow the path below to open Advanced System Settings
 - **Select Start > Control Panel > System and Security > System > Advanced System Settings**
 - In the System Properties dialog window, select the **Advanced** tab and click on the **Environment Variable** button.
 - In the Environment Variables dialog window, click on the **New** button in the System Variables section to add a variable.
 - In the New System Variable window, type **PY_HOME** as a Variable name and enter a **path to the Python installation directory**. The default is C:\PythonXX (XX is the version number).



- Click on the **OK** button to save the variable.
- Select the **Path** System variable and click on the **Edit** button to modify it.



- Append the string “;%PY_HOME%;%PY_HOME%\Scripts\” at the end of the existing value of the Path variable. Semicolon “;” acts as a string separator.
 - Click on the **OK** button to save the modification.
 - Click on the **OK** button on the System Variable window.
4. Open the command prompt and execute a **python** command to check if Python is installed properly. The following output below signifies a successful installation.



```
Administrator: C:\Windows\system32\cmd.exe - python
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>python
Python 2.7.12 (v2.7.12:d33e0cf91556, Jun 27 2016, 15:19:22) [MSC v.1500 32 bit <
Intel)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> _
```

Benefits:

Python is a dynamic object-oriented programming language that can be compared with Java and Microsoft's .NET-based languages as a general-purpose substrate for many kinds of software development. It offers strong support for integrating with other technologies, higher programmer productivity throughout the development life cycle, and is particularly well suited for large or complex projects with changing requirements.

Alternatives:

Java, php, perl and many more.