Modular Architecture for Amazon Redshift

Quick Start Reference Deployment

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Visit our GitHub repository for source files and to post feedback, report bugs, or submit feature ideas for this Quick Start.

Contents

Overview 2
Amazon Redshift 2
Cost and licenses 3
Architecture 3
Planning the deployment 5
Specialized knowledge 5
AWS account 5
Technical requirements 6
Deployment options 7
Deployment steps 7
Step 1. Sign in to your AWS account 7
Step 2. Launch the Quick Start 7
Option 1: Parameters for deploying Amazon Redshift cluster into a new VPC 9
Option 2: Parameters for deploying Amazon Redshift cluster into an existing VPC 13

Step 3. Test the deployment 17
Test whether the Redshift cluster is accepting connections 17
Test whether the Linux bastion host is accepting connections 20
Best practices for using Amazon Redshift 21
Security 21
FAQ 21
Send us feedback 22
Additional resources 22
Document revisions 23

This Quick Start was created by solutions architects and Amazon Redshift specialists at Amazon Web Services (AWS).

Quick Starts are automated reference deployments that use AWS CloudFormation templates to deploy key technologies on AWS, following AWS best practices.

Overview

This Quick Start reference deployment guide provides step-by-step instructions for deploying an Amazon Redshift cluster on the AWS Cloud using AWS best practices for security, reliability and availability.

This Quick Start is for users who are looking for a repeatable, customizable reference deployment of Amazon Redshift using AWS CloudFormation.

You can also use the Quick Start as a building block in your own automated deployments by using the template that we've provided for an existing virtual private cloud (VPC). This template will build only the Amazon Redshift cluster components and plugs into your existing AWS CloudFormation templates as a drop-in Amazon Redshift cluster replacement.

Amazon Redshift

Amazon Redshift is a fast, fully managed data warehouse that makes it simple and cost-effective to analyze all your data using standard structured query language (SQL) and your existing business intelligence tools. It enables you to run complex analytic queries against

petabytes of structured data, using sophisticated query optimization, columnar storage on high-performance local disks, and massively parallel query execution.

Traditional data warehouses require significant time and resources to administer, especially for large datasets. In addition, the financial cost associated with building, maintaining, and growing self-managed, on-premises data warehouses is very high. Amazon Redshift not only significantly lowers the cost and operational overhead of a data warehouse but, with Redshift Spectrum, also makes it easy to analyze large amounts of data in its native format, without requiring you to load the data.

Cost and licenses

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using the Quick Start.

The AWS CloudFormation template for this Quick Start includes configuration parameters that you can customize. Some of these settings, such as instance type, will affect the cost of deployment. For cost estimates, see the pricing pages for each AWS service you will be using. Prices are subject to change.

> **Tip** After you deploy the Quick Start, we recommend that you enable the AWS Cost and Usage Report to track costs associated with the Quick Start. This report delivers billing metrics to an Amazon Simple Storage Service (Amazon S3) bucket in your account. It provides cost estimates based on usage throughout each month and finalizes the data at the end of the month. For more information about the report, see the AWS documentation.

Architecture

Deploying this Quick Start for a new virtual private cloud (VPC) with **default parameters** builds the following Amazon Redshift environment in the AWS Cloud.

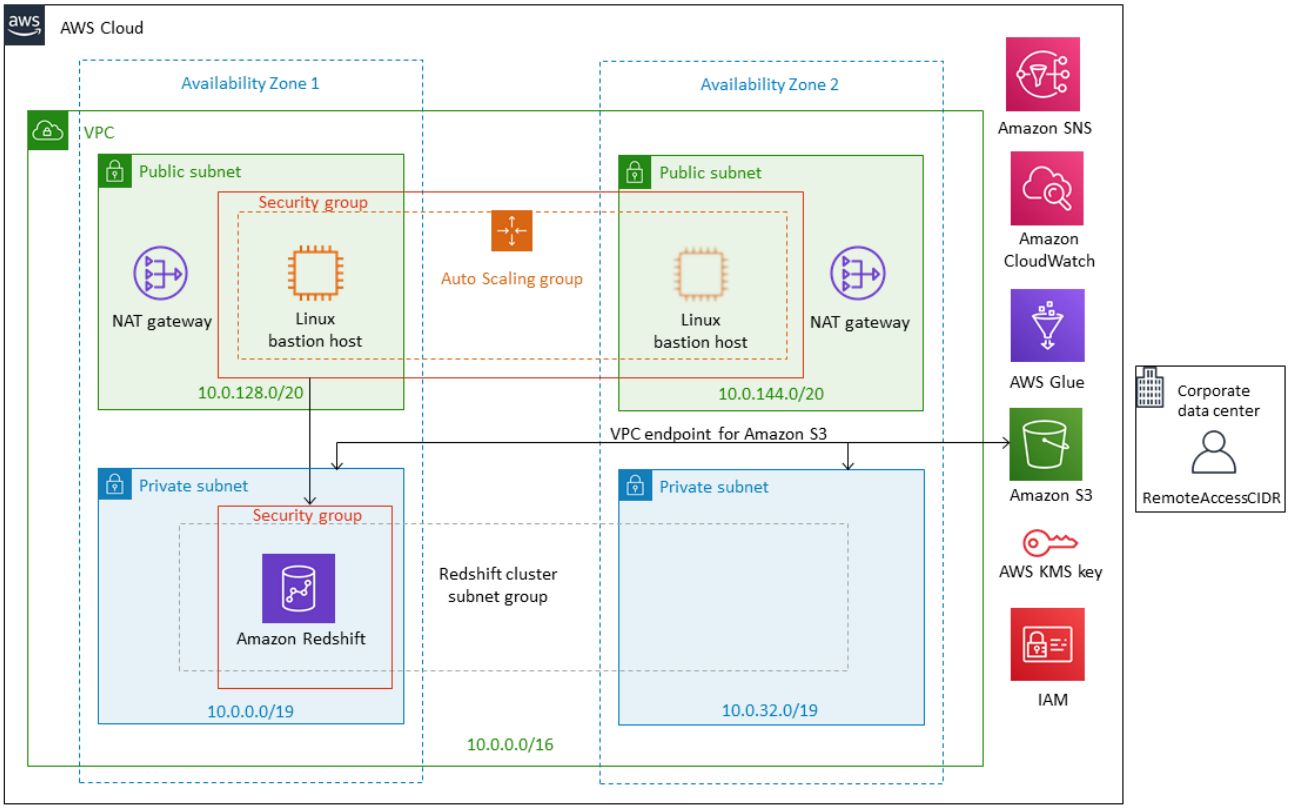


Figure 1: Quick Start architecture for Amazon Redshift on AWS

The Quick Start sets up the following:

- A highly available architecture that spans two Availability Zones.*
- A VPC configured with public and private subnets according to AWS best practices, to provide you with your own virtual network on AWS.*
- In the public subnets:
  - Managed network address translation (NAT) gateways to allow outbound internet access for resources in the private subnets.*
  - A Linux bastion host in an Auto Scaling group to allow inbound Secure Shell (SSH) access to Amazon Elastic Compute Cloud (Amazon EC2) instances in public and private subnets.*
- In a private subnet, an Amazon Redshift cluster and its components, such as a cluster subnet group, parameter group, workload management (WLM), and a security group that allows access to the VPC. This is the default behavior, if the `PubliclyAccessible` parameter is set to False. If `PubliclyAccessible` is set to True, the cluster and its

components will be created in the public subnets. See the Amazon Redshift configuration parameters in Step 2: Launch the Quick Start.

- An Amazon Simple Storage Service (Amazon S3) bucket for audit logs.
- A VPC endpoint for Amazon S3, so that Amazon Redshift and other AWS resources that are run in a private subnet can have controlled access to Amazon S3 bucket.
- The Quick Start uses a key from AWS Key Management Service (AWS KMS) to enable encryption at rest for the Amazon Redshift cluster, and creates a default master key when no other key is defined.
- Amazon CloudWatch alarms to monitor the CPU on the bastion host, to monitor the CPU and disk space of the Amazon Redshift cluster, and to send an Amazon SNS notification, when the alarm is triggered.
- An AWS Identity and Access Management (IAM) role that grants minimum permissions required to use Redshift Spectrum with Amazon S3, Amazon CloudWatch Logs, AWS Glue, and Amazon Athena.
- An AWS Glue Catalog as a metadata store.

* The template that deploys the Quick Start into an existing VPC skips the components marked by asterisks and prompts you for your existing VPC configuration.

Planning the deployment

Specialized knowledge

This Quick Start assumes familiarity with the concepts and usage of data warehousing and with big data and analytics.

This deployment guide also requires a moderate level of familiarity with AWS services. If you're new to AWS, visit the Getting Started Resource Center and the AWS Training and Certification website for materials and programs that can help you develop the skills to design, deploy, and operate your infrastructure and applications on the AWS Cloud.

AWS account

If you don't already have an AWS account, create one at https://aws.amazon.com by following the on-screen instructions. Part of the sign-up process involves receiving a phone call and entering a PIN using the phone keypad.

Your AWS account is automatically signed up for all AWS services. You are charged only for the services you use.

Technical requirements

Before you launch the Quick Start, your account must be configured as specified in the following table. Otherwise, deployment might fail.

Resources	If necessary, request service limit increases for the following resources. You might need to do this if you already have an existing deployment that uses these resources, and you think you might exceed the default limits with this deployment. For default limits, see the AWS documentation. AWS Trusted Advisor offers a service limits check that displays your usage and limits for some aspects of some services.
Regions	This deployment includes Amazon Redshift, which is currently supported in all AWS Regions. For a current list of supported Regions, see AWS Regions and Endpoints in the AWS documentation.
Key pair	Make sure that at least one Amazon EC2 key pair exists in your AWS account in the Region where you are planning to deploy the Quick Start. Make note of the key pair name. You'll be prompted for this information during deployment. To create a key pair, follow the instructions in the AWS documentation. If you're deploying the Quick Start for testing or proof-of-concept purposes, we recommend that you create a new key pair instead of specifying a key pair that's already being used by a production instance.

Resource	This deployment uses
VPCs	1
Elastic IP addresses	3
VPC security groups	2
IAM roles	2
Auto Scaling groups	1
AWS Lambda functions	1
t2.micro instances	1
Redshift cluster	1
Redshift nodes (based on user selection)	2 (by default)
Redshift cluster parameter groups	1

IAM permissions	To deploy the Quick Start, you must log in to the AWS Management Console with IAM permissions for the resources and actions the templates will deploy. The *AdministratorAccess* managed policy within IAM provides sufficient permissions, although your organization may choose to use a custom policy with more restrictions.
Amazon S3 URLs	If you're copying the templates to your own S3 bucket for deployment, make sure that you update the QSS3BucketName and QSS3KeyPrefix parameters to reflect the location of the files in your bucket. Otherwise, deployment may fail or behave unexpectedly.

Deployment options

This Quick Start provides two deployment options:

- **Deploy Amazon Redshift into a new VPC (end-to-end deployment)**. This option builds a new AWS environment consisting of the VPC, subnets, NAT gateways, security groups, bastion hosts, and other infrastructure components, and then deploys an Amazon Redshift cluster into this new VPC.
- **Deploy Amazon Redshift into an existing VPC**. This option provisions an Amazon Redshift cluster in your existing AWS infrastructure.

The Quick Start provides separate templates for these options. It also lets you configure CIDR blocks, instance types, and Amazon Redshift cluster settings, as discussed later in this guide.

Deployment steps

Step 1. Sign in to your AWS account

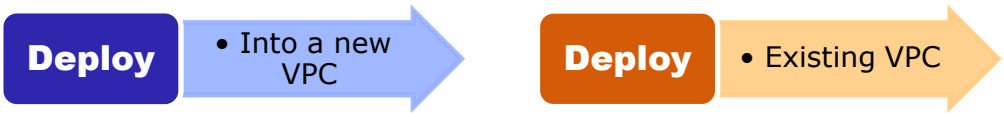
1. Sign in to your AWS account at https://aws.amazon.com with an IAM user role that has the necessary permissions. For details, see Planning the deployment earlier in this guide.
2. Make sure that your AWS account is configured correctly, as discussed in the Technical requirements section.

Step 2. Launch the Quick Start

> **Notes** The instructions in this section reflect the older version of the AWS CloudFormation console. If you're using the redesigned console, some of the user interface elements might be different.

You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using this Quick Start. For full details, see the pricing pages for each AWS service you will be using in this Quick Start. Prices are subject to change.

1. Sign in to your AWS account, and choose one of the following options to launch the AWS CloudFormation template. For help choosing an option, see deployment options earlier in this guide.



Deploy Amazon Redshift into a new VPC on AWS

Deploy Amazon Redshift into an existing VPC on AWS

Important If you're deploying Amazon Redshift into an existing VPC, make sure that your VPC has two private subnets in different Availability Zones for the workload instances, and that the subnets aren't shared. This Quick Start doesn't support shared subnets. These subnets require NAT gateways in their route tables, to allow the instances to download packages and software without exposing them to the internet. You will also need the domain name option configured in the DHCP options as explained in the Amazon VPC documentation. You will be prompted for your VPC settings when you launch the Quick Start. You'll also need a Linux bastion host that can be used to run the test procedure discussed in Step 3: Test the deployment. To install the bastion host, you can launch the AWS CloudFormation template that we've provided into your existing subnet.

Each deployment takes 10-15 minutes to complete.

2. Check the AWS Region that's displayed in the upper-right corner of the navigation bar, and change it if necessary. This is where the network infrastructure for Amazon Redshift will be built.

Note For a current list of supported Regions, see the AWS Regions and Endpoints webpage.

3. On the **Select Template** page, keep the default setting for the template URL, and then choose **Next**.
4. On the **Specify Details** page, change the stack name if needed. Review the parameters for the template. Provide values for the parameters that require input. For all other parameters, review the default settings and customize them as necessary.

   In the following tables, parameters are listed by category and described separately for the two deployment options:

   - Parameters for deploying Amazon Redshift into a new VPC
   - Parameters for deploying Amazon Redshift into an existing VPC

   When you finish reviewing and customizing the parameters, choose **Next**.

OPTION 1: PARAMETERS FOR DEPLOYING AMAZON REDSHIFT CLUSTER INTO A NEW VPC

View template

VPC network configuration:

Parameter label (name)	Default	Description
Availability Zones (`AvailabilityZones`)	*Requires input*	The list of Availability Zones to use for the subnets in the VPC. The Quick Start uses two Availability Zones from your list and preserves the logical order you specify.
VPC CIDR (`VPCCIDR`)	10.0.0.0/16	The CIDR block for the VPC.
Private subnet 1 CIDR (`PrivateSubnet1CIDR`)	10.0.0.0/19	The CIDR block for the private subnet located in Availability Zone 1.
Private subnet 2 CIDR (`PrivateSubnet2CIDR`)	10.0.32.0/19	The CIDR block for the private subnet located in Availability Zone 2.
Public subnet 1 CIDR (`PublicSubnet1CIDR`)	10.0.128.0/20	The CIDR block for the public subnet located in Availability Zone 1.
Public subnet 2 CIDR (`PublicSubnet2CIDR`)	10.0.144.0/20	The CIDR block for the public subnet located in Availability Zone 2.
Allowed external access CIDR (`RemoteAccessCIDR`)	*Requires input*	Allowed CIDR block in the format x.x.x.x/x for external SSH access to the bastion host.

Amazon Redshift configuration

Parameter label (name)	Default	Description
Node type for Redshift cluster (`NodeType`)	dc2.large	The type of node to be provisioned.
Number of nodes in Redshift cluster (`NumberOfNodes`)	2	The number of compute nodes in the cluster. For multi-node clusters, the `NumberOfNodes` parameter must be greater than 1.
Redshift cluster port (`RedshiftClusterPort`)	8200	The port number on which the cluster accepts incoming connections.
Redshift database name (`DatabaseName`)	rsdev01	The name of the first database to be created when the cluster is created.
Redshift master user name (`MasterUsername`)	rsadmin	The user name that is associated with the master user account for the cluster that is being created.
Redshift master user password (`MasterUserPassword`)	*Requires input*	The password that is associated with the master user account for the cluster that is being created. Must have at least 8 characters and no more than 64 characters, and must include 1 uppercase letter, 1 lowercase letter, 1 number, and 1 symbol (excluding / @ \" ').
SNS Notification Email (`NotificationList`)	ops@company.com	The email notification list that is used to configure an SNS topic for sending CloudWatch alarm and event notifications.
Make Redshift publicly accessible (`MakeRedshiftPubliclyAccessible`)	False	Specifies whether Amazon Redshift will be publicly accessible. If this option is set to True, the Amazon Redshift cluster will be created in a public subnet with security group whitelisting to `RemoteAccessCIDR`. If you leave the default option of False, the Amazon Redshift cluster will be created in a private subnet with security group whitelisting to `VPCCIDR`.

Amazon Redshift advanced configuration

Parameter label (name)	Default	Description
Enable Redshift logging to S3 (`EnableLoggingToS3`)	False	Enables or disables logging to an S3 bucket. To enable logging, select **True**.
Max. number of concurrent clusters (`MaxConcurrentCluster`)	1	The maximum number of concurrency scaling Redshift clusters.

Parameter label (name)	Default	Description
Encryption at rest (`EncryptionAtRest`)	False	Enables or disables encryption at rest of the Redshift database.
KMS key ID (`kmskey`)	—	The existing KMS key ID.
Redshift snapshot identifier (`SnapshotIdentifier`)	—	The Redshift snapshot identifier. Leave this blank for a new cluster. Enter the snapshot identifier, only if you want to restore from a snapshot.
AWS account-ID of the Redshift Snapshot (`SnapshotAccount Number`)	—	The AWS account number where the Redshift snapshot was created. Leave this blank, if the snapshot was created in the current AWS account.
Maintenance window (`Maintenancewindow`)	sat:05:00-sat:05:30	The maintenance window for the Redshift cluster.
Amazon S3 bucket for Redshift IAM role (`S3BucketForRedshift IAMRole`)	—	The existing S3 bucket. An IAM role will be created and associated to the Redshift cluster with GET and LIST access to this bucket.
Glue catalog database name (`GlueCatalogDatabase`)	—	The name of your Glue Data Catalog database.

Tag identifiers:

Parameter label (name)	Default	Description
Environment (`TagEnvironment`)	none	The environment tag that is used to designate the environment stage of the associated AWS resource.
Unique friendly name (`TagName`)	rs-quickstart	The unique friendly name as required by your company's tagging strategy document, and which will be added to the environment tag.
Project cost center (`TagProjectCostCenter`)	—	The cost center associated with the project of the given AWS resource.
Confidentiality classifier (`TagConfidentiality`)	—	The confidentiality classification of the data that is associated with the resource.
Compliance classifier (`TagCompliance`)	—	The compliance level for the AWS resource.

Linux bastion configuration

Parameter label (name)	Default	Description
Do you want to create bastion stack? (`EnableBastion`)	True	Enables or disables creation of a bastion stack. If true, a bastion stack is created.
Key pair name (`KeyPairName`)	*Requires input*	A public/private key pair, which allows you to connect securely to your instance after it launches. This is the key pair you created in your preferred AWS Region; see the Technical requirements section. If you do not have one in this AWS Region, create it before continuing.
Bastion instance type (`BastionInstanceType`)	t2.micro	Amazon EC2 instance type for the bastion instance. t2 instance types are not supported for dedicated VPC tenancy.
Bastion tenancy (`BastionTenancy`)	default	VPC tenancy in which the bastion host will be launched. Options: 'dedicated' or 'default'.
Enable banner (`EnableBanner`)	True	To include a banner to be displayed when connecting via SSH to the bastion, set this parameter to true.
Bastion banner (`BastionBanner`)	https://aws-quickstart.s3.amazonaws.com/quickstart-linux-bastion/scripts/banner_message.txt	The banner text to display upon login. Use the default value or provide theS3 location for the file that contains banner text.
Enable TCP forwarding (`EnableTCPForwarding`)	False	Enables/disables TCP forwarding.
Enable X11 forwarding (`EnableX11Forwarding`)	False	Enables/disables X11 forwarding.
Custom Bootstrap Script (`Alternative InitializationScript`)	*Optional*	Specifies the custom bootstrap script AWS S3 location to run during bastion host setup.

AWS Quick Start configuration:

Note We recommend that you keep the default settings for the following two parameters, unless you are customizing the Quick Start templates for your own deployment projects. Changing the settings of these parameters will automatically update code references to point to a new Quick Start location. For additional details, see the AWS Quick Start Contributor's Guide.

Parameter label (name)	Default	Description
Quick Start S3 bucket name (QSS3BucketName)	aws-quickstart	The S3 bucket you created for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. The bucket name can include numbers, lowercase letters, uppercase letters, and hyphens, but should not start or end with a hyphen.
Quick Start S3 key prefix (QSS3KeyPrefix)	quickstart-amazon-redshift/	The S3 key name prefix used to simulate a folder for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. This prefix can include numbers, lowercase letters, uppercase letters, hyphens, and forward slashes.

OPTION 2: PARAMETERS FOR DEPLOYING AMAZON REDSHIFT CLUSTER INTO AN EXISTING VPC

View template

Network configuration:

Parameter label (name)	Default	Description
VPC ID (VPCID)	*Requires input*	The ID of your existing VPC that you're deploying Redshift into (e.g., vpc-0343606e).
Private subnet 1 ID (Subnet1ID)	*Requires input*	The ID of the private subnet in Availability Zone 1 in your existing VPC (e.g., subnet-a0246dcd).
Private subnet 2 ID (Subnet2ID)	*Requires input*	The ID of the private subnet in Availability Zone 2 in your existing VPC (e.g., subnet-b58c3d67).
Permitted IP range (RemoteAccessCIDR)	*Requires input*	The allowed CIDR block to access the Redshift cluster.

Amazon Redshift configuration

Parameter label (name)	Default	Description
Node type for Redshift cluster (NodeType)	dc2.large	The type of node to be provisioned.
Number of nodes in Redshift cluster (NumberOfNodes)	2	The number of compute nodes in the cluster. For multi-node clusters, the NumberOfNodes parameter must be greater than 1.
Redshift cluster port (RedshiftClusterPort)	8200	The port number on which the cluster accepts incoming connections.

Parameter label (name)	Default	Description
Redshift database name (`DatabaseName`)	rsdev01	The name of the first database to be created when the cluster is created.
Redshift master user name (`MasterUsername`)	rsadmin	The user name that is associated with the master user account for the cluster that is being created.
Redshift master user password (`MasterUserPassword`)	*Requires input*	The password that is associated with the master user account for the cluster that is being created. Must have at least 8 characters and no more than 64 characters, and must include 1 uppercase letter, 1 lowercase letter, 1 number, and 1 symbol (excluding / @ \" ').
Email address for SNS notification (`NotificationList`)	ops@company.com	The email notification list that is used to configure an SNS topic for sending CloudWatch alarm and event notifications.
Make Redshift publicly accessible (`PubliclyAccessible`)	False	Indicates whether the cluster can be accessed from a public network.

Amazon Redshift advanced configuration

Parameter label (name)	Default	Description
Enable Redshift logging to S3 (`EnableLoggingToS3`)	False	Enables or disables logging to an S3 bucket. To enable logging, select **True**.
Max. number of concurrent clusters (`MaxConcurrentCluster`)	1	The maximum number of concurrency scaling Redshift clusters.
Encryption at rest (`EncryptionAtRest`)	False	Enables or disables encryption at rest of the Redshift database.
KMS key ID (`kmskey`)	—	The existing KMS key ID.
Redshift snapshot identifier (`SnapshotIdentifier`)	—	The Redshift snapshot identifier. Leave this blank for a new cluster. Enter the snapshot identifier, only if you want to restore from a snapshot.
AWS account-ID of the Redshift Snapshot (`SnapshotAccount Number`)	—	The AWS account number where the Redshift snapshot was created. Leave this blank, if the snapshot was created in the current AWS account.
Maintenance window (`Maintenancewindow`)	sat:05:00-sat:05:30	The maintenance window for the Redshift cluster.

Parameter label (name)	Default	Description
Amazon S3 bucket for Redshift IAM role (`S3BucketForRedshiftIAMRole`)	—	The existing S3 bucket. An IAM role will be created and associated to the Redshift cluster with GET and LIST access to this bucket.
Glue catalog database name (`GlueCatalogDatabase`)	—	The name of your Glue Data Catalog database.

Tag identifiers

Parameter label (name)	Default	Description
Environment (`TagEnvironment`)	none	The environment tag that is used to designate the environment stage of the associated AWS resource.
Unique friendly name (`TagName`)	redshift	The unique friendly name as required by your company's tagging strategy document, and which will be added to the environment tag.
Project cost center (`TagProjectCostCenter`)	—	The cost center associated with the project of the given AWS resource.
Confidentiality classifier (`TagConfidentiality`)	—	The confidentiality classification of the data that is associated with the resource.
Compliance classifier (`TagCompliance`)	—	The compliance level for the AWS resource.

AWS Quick Start configuration:

Note We recommend that you keep the default settings for the following two parameters, unless you are customizing the Quick Start templates for your own deployment projects. Changing the settings of these parameters will automatically update code references to point to a new Quick Start location. For additional details, see the AWS Quick Start Contributor's Guide.

Parameter label (name)	Default	Description
Quick Start S3 bucket name (`QSS3BucketName`)	aws-quickstart	The S3 bucket you have created for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. The bucket name can include numbers, lowercase letters, uppercase letters, and hyphens, but should not start or end with a hyphen.

Parameter label (name)	Default	Description
Quick Start S3 key prefix (`QSS3KeyPrefix`)	quickstart-amazon-redshift/	The S3 key name prefix used to simulate a folder for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. This prefix can include numbers, lowercase letters, uppercase letters, hyphens, and forward slashes.

5. On the **Options** page, you can specify tags (key-value pairs) for resources in your stack and set advanced options. When you're done, choose **Next**.
6. On the **Review** page, review and confirm the template settings. Under **Capabilities**, select the two check boxes to acknowledge that the template will create IAM resources and that it might require the capability to auto-expand macros.
7. Choose **Create** to deploy the stack.
8. Monitor the status of the stack. When the status is **CREATE_COMPLETE**, the Amazon Redshift cluster is ready.
9. Use the URLs displayed in the **Resources** tab for the stack to view the resources that were created.

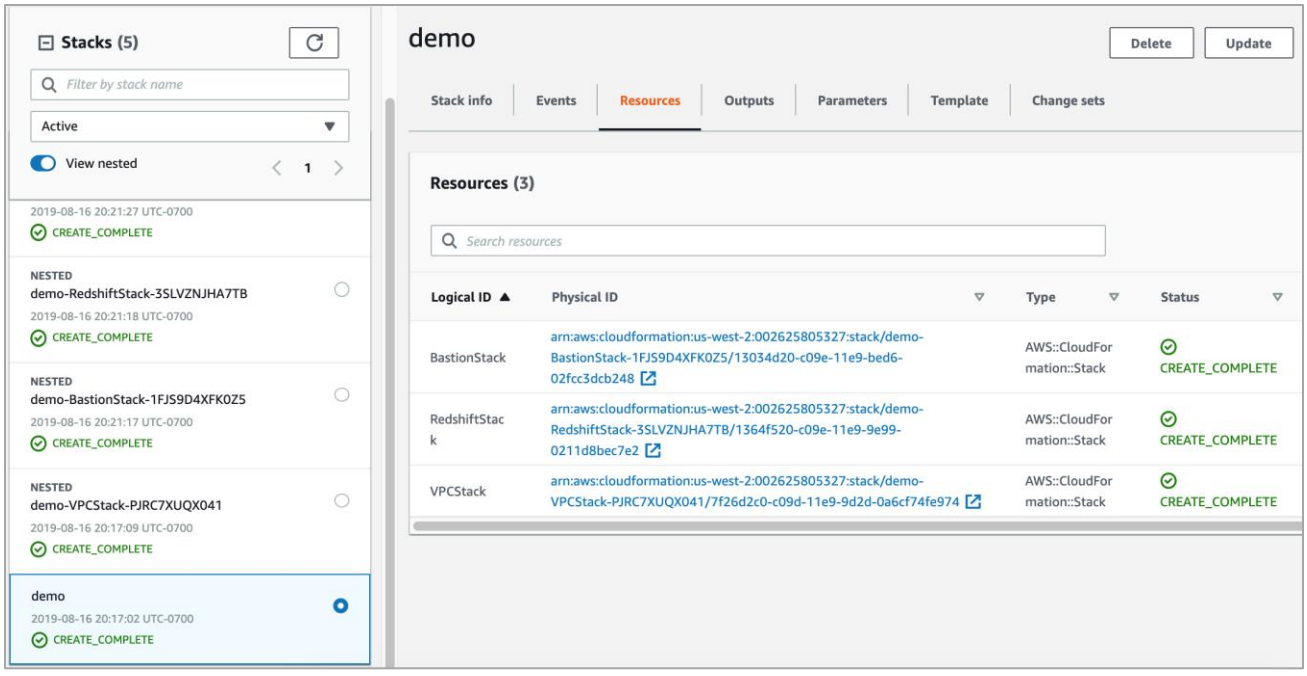


Figure 2: For new VPC, successful deployment of all stacks

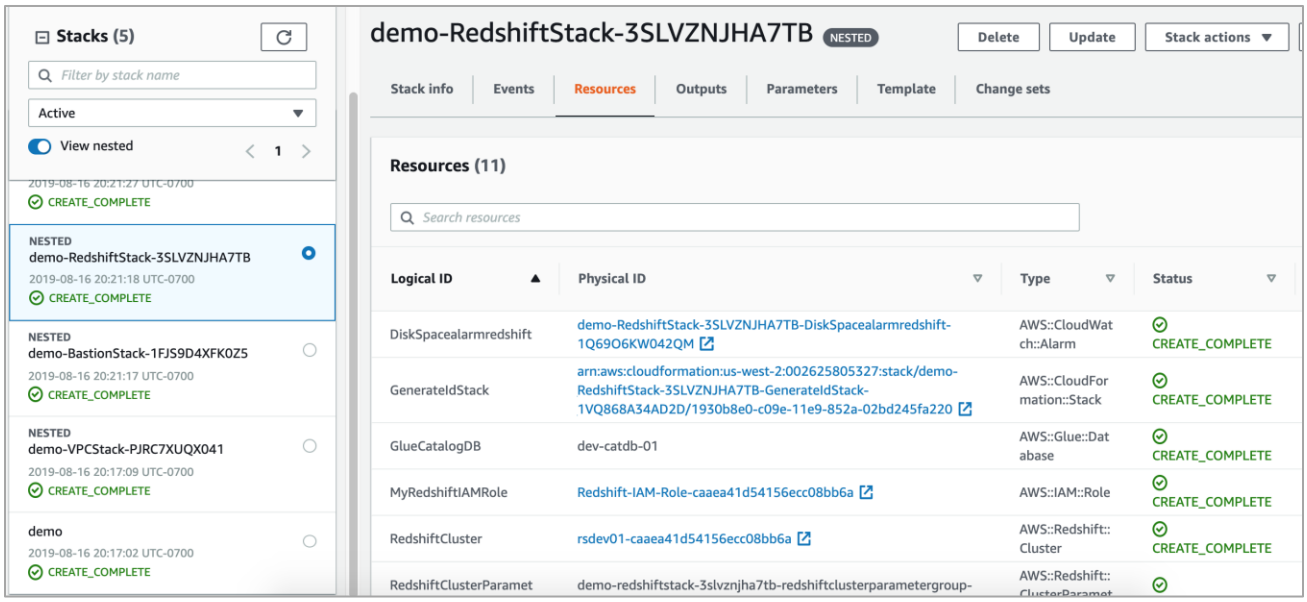


Figure 3: Amazon Redshift resources after successful deployment

Step 3. Test the deployment

TEST WHETHER THE REDSHIFT CLUSTER IS ACCEPTING CONNECTIONS

1. From the AWS CloudFormation console, in the **Outputs** tab for RedshiftStack, note the values of RedshiftUsername, RedshiftDatabaseName, and RedshiftClusterEndpoint, as shown in the following figure.

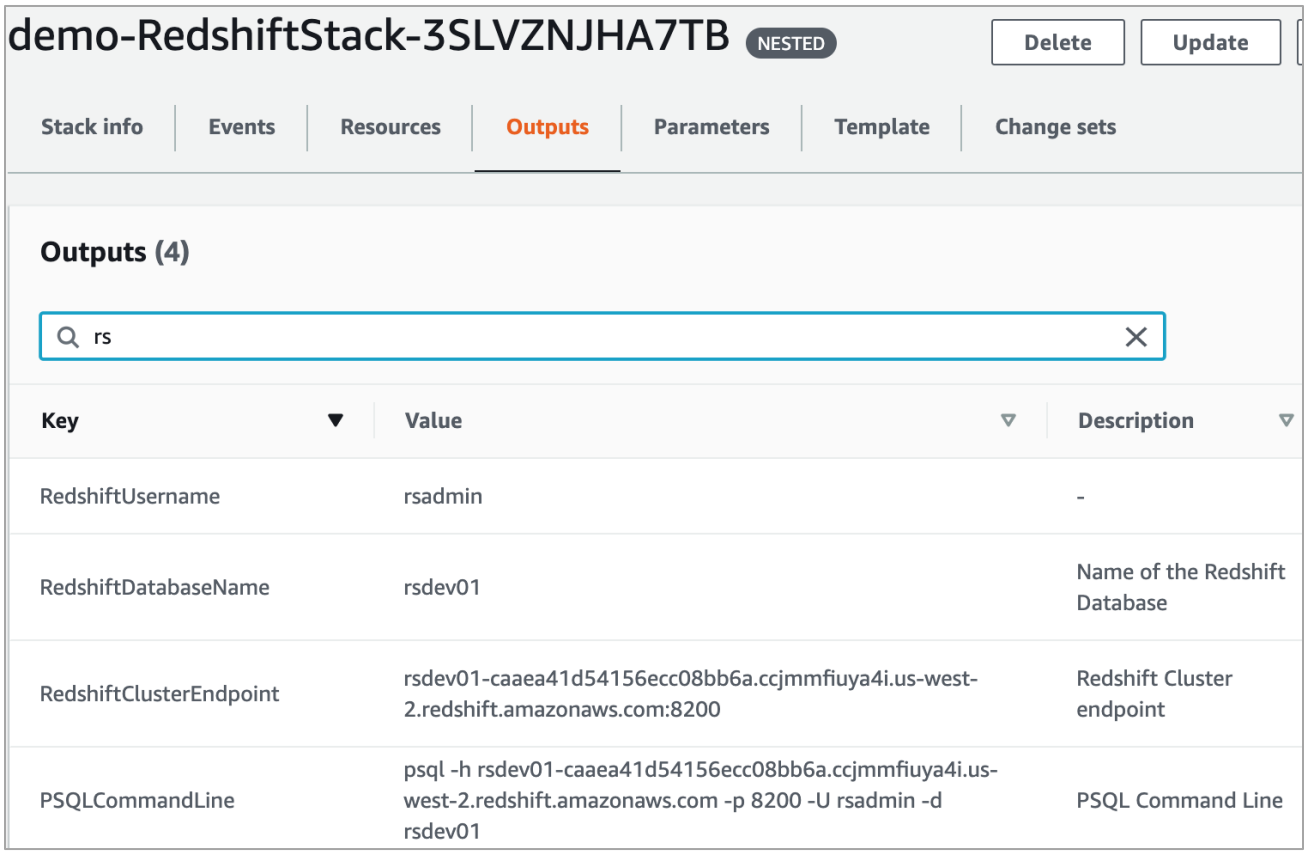


Figure 4: Redshift cluster user name, database name, and cluster endpoint, in Outputs tab

2. Navigate to the Amazon Redshift console at https://console.aws.amazon.com/redshift/.
3. Choose **Query Editor** and enter your credentials to connect to the Redshift database, as shown in the following figure.

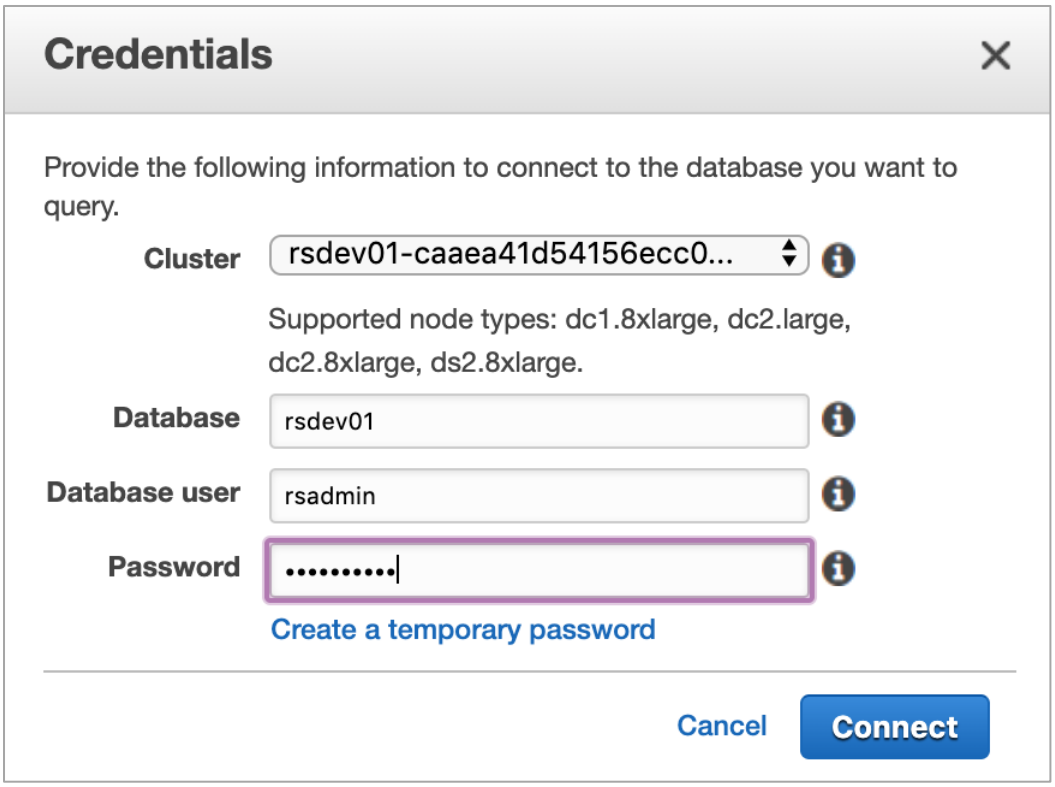


Figure 5: Credentials window from Redshift Query Editor

4. After successful connection, run a sample query "select * from pg_user;", as shown in the following figure.

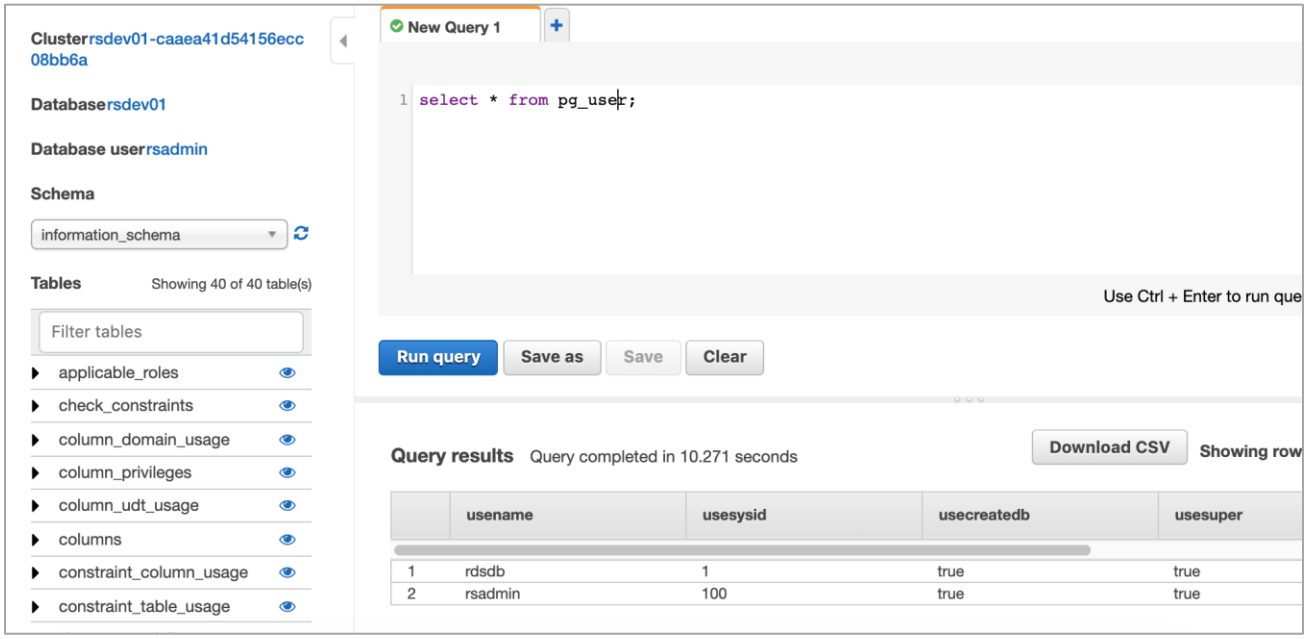


Figure 6: Successful connection to Amazon Redshift

TEST WHETHER THE LINUX BASTION HOST IS ACCEPTING CONNECTIONS

1. Note down the Elastic IP address of the bastion host from the **Outputs** tab of the bastion stack, as shown in the following figure.

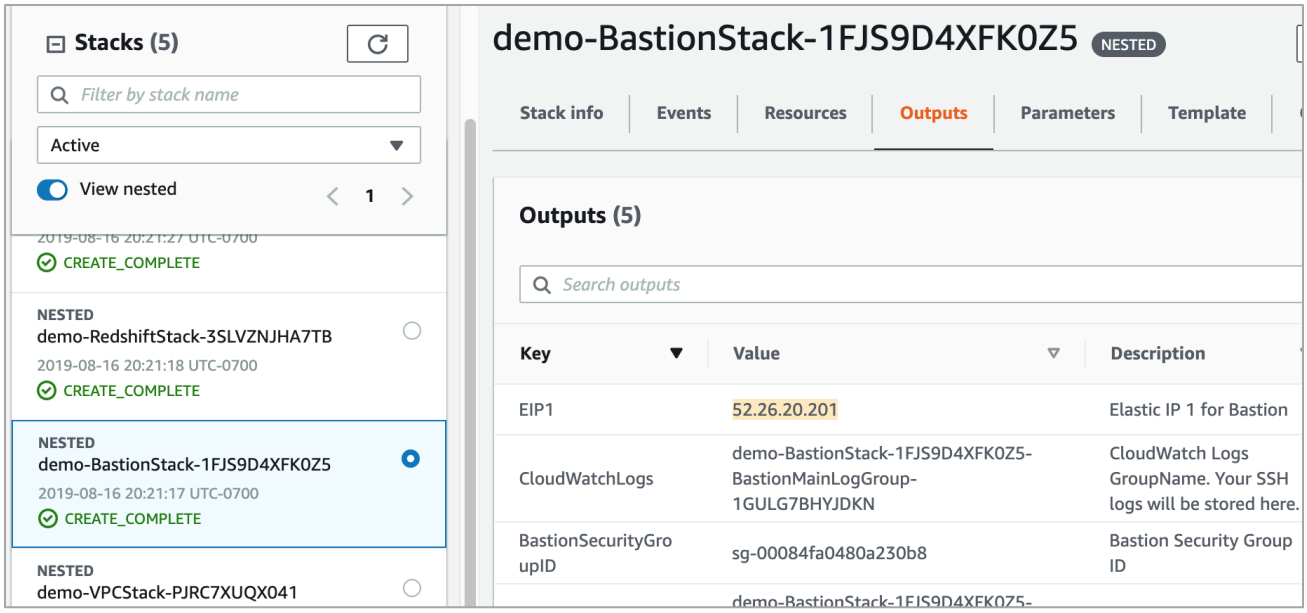


Figure 7: Elastic IP address of the bastion host, in the Outputs tab of the bastion stack

2. Open a terminal window and connect to the bastion host by using SSH with the key pair that you specified during deployment, as shown in the following figure.

```
ssh -i "<EC2 key pair>" ec2-user@52.26.20.201
```

Figure 8: Successful connection to the Linux bastion host

Best practices for using Amazon Redshift

For detailed information about working with Amazon Redshift, see the Amazon Redshift Database Developer Guide.

Use AWS CloudFormation for ongoing management

We recommend using the AWS CloudFormation console at https://console.aws.amazon.com/cloudformation/ to manage updates and deletions for the resources that are created by this Quick Start.

If you use the Amazon EC2 console at https://console.aws.amazon.com/ec2/, the AWS Command Line Interface (AWS CLI), or API to change or delete resources created by this Quick Start, future AWS CloudFormation operations on the stack might behave unexpectedly.

Security

The workload template in this reference deployment provides the ability to integrate custom security groups and audit logging for added flexibility and ease of deployment into existing environments.

For detailed information about security features available in Amazon Redshift, see Security in Amazon Redshift.

FAQ

Q. I encountered a CREATE_FAILED with reason "Error Code: ClusterSnapshotNotFound" for the Redshift stack when I launched the Quick Start.

A. The Redshift stack fails with Error Code: ClusterSnapshotNotFound for one of following reasons:

- Invalid Snapshot Identifier in the parameter `SnapshotIdentifier`.
- AWS account-ID in the parameter `SnapshotAccountNumber` is different than the AWS account-ID of the snapshot.
- Missing AWS account-ID in the parameter `SnapshotAccountNumber` and the snapshot is not created in current AWS account.

Q. I encountered a CREATE_FAILED error when I launched the Quick Start.

A. If AWS CloudFormation fails to create the stack, we recommend that you relaunch the template with **Rollback on failure** set to **No**. (This setting is under **Advanced** in the AWS

CloudFormation console, **Options** page.) With this setting, the stack's state will be retained and the instance will be left running, so you can troubleshoot the issue.

> **Important** When you set **Rollback on failure** to **No**, you will continue to incur AWS charges for this stack. Please make sure to delete the stack when you finish troubleshooting.

For additional information, see Troubleshooting AWS CloudFormation on the AWS website.

Q. I encountered a DELETE_FAILED when I delete the Amazon Redshift Stack, with reason "cannot create more than 20 user snapshots (Service: AmazonRedshift; Status Code: 400; Error Code: ClusterSnapshotQuotaExceeded;,)."

A. The Amazon Redshift stack deletion fails with error "ClusterSnapshotQuotaExceeded when the CloudFormation is trying to take the final snapshot prior to delete the Redshift cluster, but it is unable to take snapshot because the limit of number of manual Redshift snapshots in your AWS account has reached."

Delete old/unwanted Amazon Redshift snapshots from your AWS account. For detailed steps, see Deleting Manual Snapshots in the AWS documentation.

Q. I encountered a size limitation error when I deployed the AWS CloudFormation templates.

A. We recommend that you launch the Quick Start templates from the links in this guide or from another S3 bucket. If you deploy the templates from a local copy on your computer or from a non-S3 location, you might encounter template size limitations when you create the stack.

For more information about AWS CloudFormation limits, see the AWS documentation.

Send us feedback

To post feedback, submit feature ideas, or report bugs, use the **Issues** section of the GitHub repository for this Quick Start. If you'd like to submit code, please review the Quick Start Contributor's Guide.

Additional resources

AWS resources

- Getting Started Resource Center
- AWS General Reference
- AWS Glossary

AWS services

- AWS CloudFormation
- Amazon CloudWatch
- Amazon EC2
- IAM
- Amazon Redshift
- Amazon S3
- Amazon SNS
- Amazon VPC
- AWS Glue
- AWS KMS

Other Quick Start reference deployments

- AWS Quick Start home page

Document revisions

Date	Change	In sections
October 2019	Added question: ClusterSnapshotQuotaExceeded	FAQ
September 2019	Added `MakeRedshiftPubliclyAccessible` and `PubliclyAccessible` parameters with option to create a Redshift cluster that's accessible to the public network	Step 2. Launch the Quick Start
August 2019	Updates to parameters for tag identifiers (for b -oth new and existing VPC)	Step 2. Launch the Quick Start
August 2019	Initial publication	—

Notices

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