

Troubleshooting

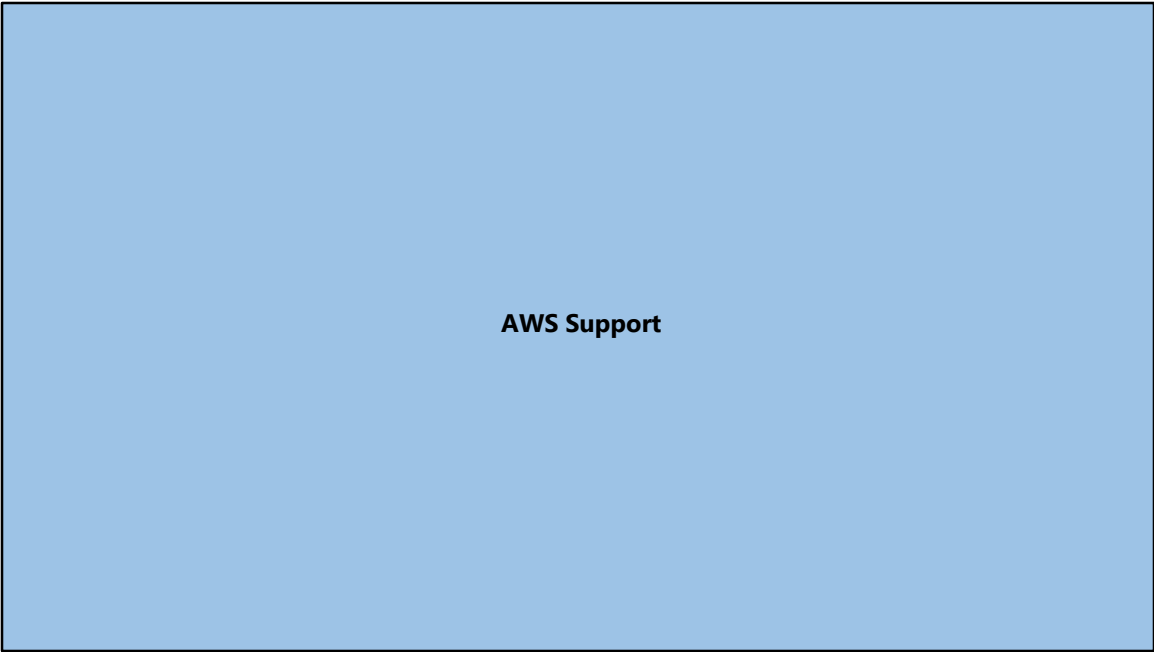


Welcome to the twelfth lesson of the AWS Solutions Architect Associate level course—“Troubleshooting.”

By the end of the lesson you will be able to:

- ☐ AWS Guidance and Support
- ☐ Typical AWS Problems

By the end of this lesson you'll be able to:
Understand where to look for AWS guidance and support
List the typical AWS problems



In this section you'll learn about AWS Support.

Types of AWS Support

AWS provides a number of support options to help resolve issues with the AWS environment:

1. Documentation
2. Troubleshooting Guides
3. Support
4. Discussion Forums

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Documentation

AWS provides a comprehensive set of online documentation for all of its products and services.

Services		Getting Started	
Compute Amazon EC2 Amazon EC2 Container Registry Amazon EC2 Container Service AWS Elastic Beanstalk AWS Lambda Auto Scaling Elastic Load Balancing Amazon VPC	Developer Tools AWS CodeCommit AWS CodeDeploy AWS CodePipeline AWS Tools & SDKs	Internet of Things AWS IoT	SDKs & Toolkits AWS SDK for Go AWS SDK for Java AWS SDK for JavaScript (Node.js) AWS SDK for JavaScript (Browser) AWS SDK for .NET AWS SDK for PHP AWS SDK for Python (Boto3) AWS SDK for Ruby AWS Tools for Eclipse AWS Tools for Visual Studio
Storage & Content Delivery Amazon S3 Amazon CloudFront Amazon EBS Amazon EFS (preview) Amazon Glacier AWS Import/Export AWS Storage Gateway	Management Tools AWS Application Discovery Service Amazon CloudWatch AWS CloudFormation AWS CloudTrail AWS Command Line Interface AWS Config AWS Management Console AWS OpsWorks AWS Service Catalog Trusted Advisor AWS Tools for Windows PowerShell	Game Development Amazon Lumberyard (Beta) Amazon GameLift	General Reference Regions and Endpoints Security Credentials APIs & Service Namespaces Service Limits AWS Glossary AWS Whitepapers
Database Amazon RDS AWS Schema Conversion Tool Amazon DynamoDB Amazon ElastiCache Amazon Redshift AWS Database Migration Service	Security & Identity Identity & Access Management AWS Certificate Manager AWS Directory Service Amazon Inspector AWS CloudHSM AWS IAM AWS VAP	Mobile Services AWS Mobile Hub Amazon API Gateway Amazon Cognito AWS Device Farm Amazon Mobile Analytics AWS Mobile SDK for Android AWS Mobile SDK for iOS AWS Mobile SDK for Unity AWS Mobile SDK for Xamarin Amazon SNS	AWS Management Console Resource Groups Tag Editor
Networking Amazon VPC AWS Direct Connect Elastic Load Balancing Amazon Route 53	Analytics Amazon EMR AWS Data Pipeline Amazon Elasticsearch Service Amazon Kinesis Amazon Machine Learning Amazon Redshift	Application Services Amazon API Gateway Amazon AppStream Amazon CloudSearch Amazon ElastiTranscoder Amazon FMS Amazon SES Amazon SNS Amazon SQS Amazon SWF	Resources AWS Quick Starts AWS Whitepapers AWS Training & Certification AWS Case Studies AWS Documentation on YouTube AWS Documentation Archive
		Enterprise Applications Amazon WorkSpaces Amazon WorkMail Amazon WorkDocs Amazon WorkMail	Additional Software & Services AWS Billing and Cost Management AWS Marketplace AWS Support AWS Top Sites AWS Web Information Service Amazon SaaS AWS GovCloud (US)

AWS provides a comprehensive set of online documentation for all of its products and services. You can access them at the following link:
<https://aws.amazon.com/documentation/>

Documentation (Contd.)

Each product has a series of documents and whitepapers to provide you with all the information you need.

- What Is Amazon EC2?
 - Instances and AMIs
 - Regions and Availability Zones
 - Root Device Volume
 - Setting Up
 - Getting Started
 - Best Practices
 - Tutorials

Each product has a series of documents and whitepapers to provide you all the required information.

The best place to start is the User Guides. All the User Guides follow a similar format:

- What is Amazon EC2?
- Setting Up
- Getting Started
- Best Practices
- Tutorials
- Sections relevant to the product itself

Troubleshooting Guides

Within each User Guide you will find a Troubleshooting section with details specific to the product.

docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instance-troubleshoot.html

Troubleshooting Instances

The following documentation can help you troubleshoot problems that you might have with your instance.

Contents

- [What To Do If An Instance Immediately Terminates](#)
- [Troubleshooting Connecting to Your Instance](#)
- [Troubleshooting Stopping Your Instance](#)
- [Troubleshooting Terminating \(Shutting Down\) Your Instance](#)
- [Troubleshooting Instance Recovery Failures](#)
- [Troubleshooting Instances with Failed Status Checks](#)
- [Troubleshooting Instance Capacity](#)
- [Getting Console Output and Rebooting Instances](#)
- [My Instance is Booting from the Wrong Volume](#)

For additional help with Windows instances, see [Troubleshooting Windows Instances](#) in the *Amazon EC2 User Guide for Microsoft Windows Instances*.

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Did this page help you?

Within each User Guide there is a Troubleshooting section with specific details of the product.

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Troubleshooting Guides Example

For example, with RDS the following sections exist in the troubleshooting section:

- Cannot Connect to Amazon RDS DB Instance
- Amazon RDS Security Issues
- Resetting the DB Instance Owner Role Password
- Amazon RDS DB Instance Outage or Reboot
- Amazon RDS DB Parameter Changes Not Taking Effect
- Amazon RDS DB Instance Running Out of Storage
- Amazon RDS MySQL and MariaDB Issues
- Amazon RDS for Aurora Issues
- Amazon RDS Oracle GoldenGate Issues
- Cannot Connect to Amazon RDS SQL Server DB Instance
- Cannot Connect to Amazon RDS PostgreSQL DB Instance

For example, in the RDS User Guide the following sections exist in the troubleshooting section:

- Cannot Connect to Amazon RDS DB Instance
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AWS Support

AWS offers support contracts to suit all budgets.

1. Basic
2. Developer
3. Business
4. Enterprise



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- Basic
- Developer
- Business
- Enterprise

Basic Support

The following features are provided with Basic Support:

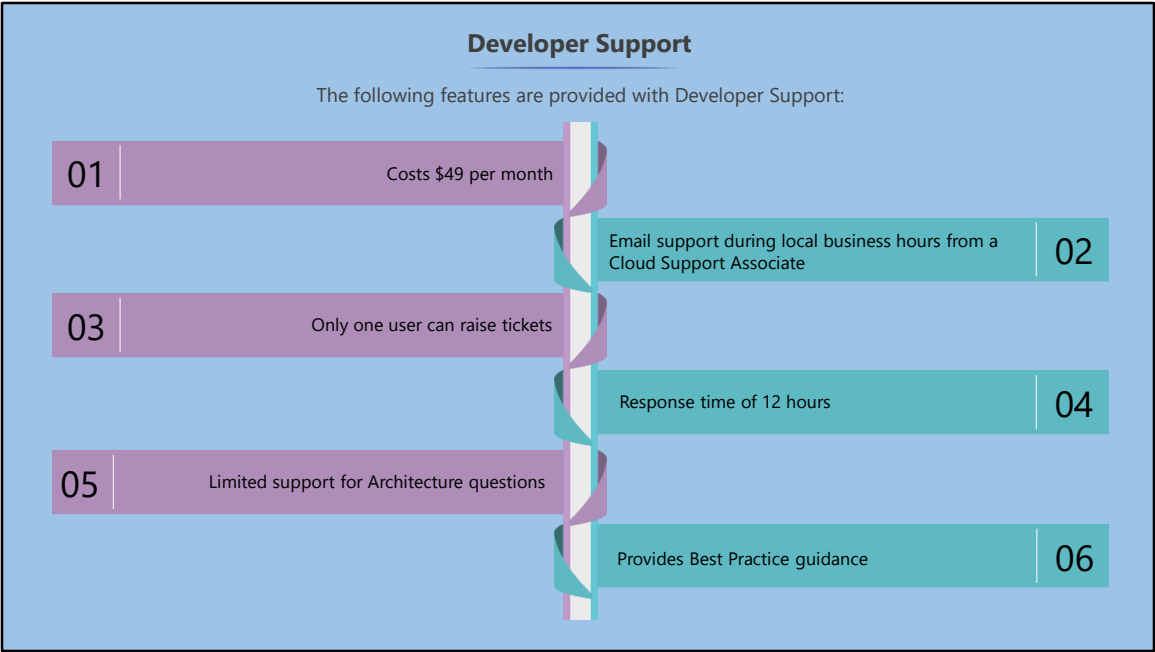
Allows support only for Health Checks and with no specified response time

Only suitable for basic AWS use

Access to 4 core Trusted Advisor checks



Free support is offered to the account by default. It allows support for Health Checks; and has no specified response time. It is suitable for basic AWS use.



It costs \$49 per month and provides email support during local business hours from a Cloud Support Associate. Only one user can raise tickets. It has a response time of 12 hours and AWS provides limited support for architecture questions and best practice guidance.

Business Support

The following features are provided with Business Support:

- Starts at \$100 per month and is based on a percentage of your monthly spend up to 3% of spend over \$2,50,000
- Provides phone, chat, email, and live screen sharing from a Cloud Support Engineer
- Unlimited number of users can raise tickets
- Response time of 1 hour
- Provides additional support, such as advice for 3rd party software

Access to full set of Trusted Advisor checks

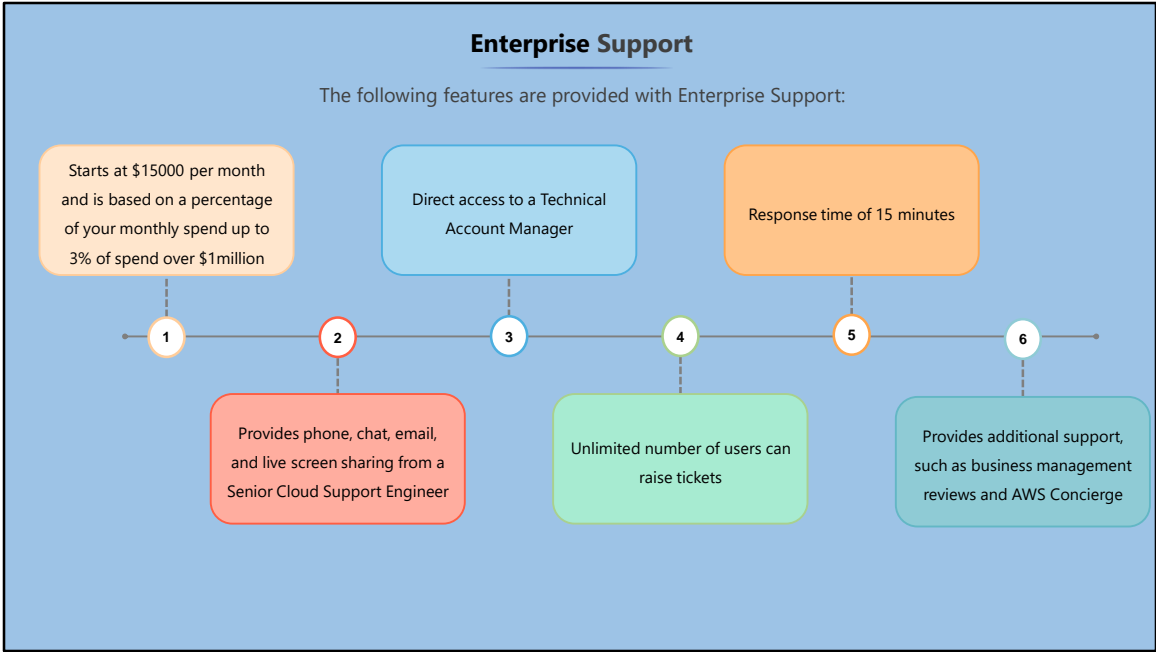
Starts at \$100 per month and is based on a percentage of your monthly spend up to 3% of spend over \$250k.

You are provided phone, chat, email, and live screen sharing from a Cloud Support Engineer.

Any number of users can raise tickets.

It has a response time of one hour and provides additional support such as advice for 3rd party software.

You have access to the full set of Trusted Advisor checks, additional checks, and notifications.



Starts at \$15000 per month and is based on a percentage of your monthly spend up to 3% of spend over \$1m. All the features of Business Support are included in this package.

It provides phone, chat, email, and live screen sharing from a Senior Cloud Support Engineer and direct access to a Technical Account Manager. Any number of users can raise tickets. It has a response time of 15 minutes and provides additional support such as business management reviews and AWS Concierge, where you get a dedicated point of contact for all your queries.

AWS Support Contracts Comparison

The table lists the differences between the various AWS support contracts.

	Basic	Developer	Business	Enterprise
Cost per month	Free	\$49	Starts at \$100	Starts at \$15000
Trusted Advisor	Basic	Basic	Full	Full
Technical Support	N/A	Business hours access to Cloud Support Associates via email	24x7 access to Cloud Support Engineers via email, chat, and phone	24x7 access to Sr. Cloud Support Engineers via email, chat, and phone
Response Times	N/A	Normal: < 12 hours Low: < 24 hours	Urgent: < 1 hour High: < 4 hours Normal: < 12 hours Low: < 24 hours	Critical: < 15 minutes Urgent: < 1 hour High: < 4 hours Normal: < 12 hours Low: < 24 hours

The table lists the differences between the various AWS support.

Discussion Forums

AWS managed technical forums provide a place to ask the AWS user community for help and advice.

<https://forums.aws.amazon.com/index.jspa>

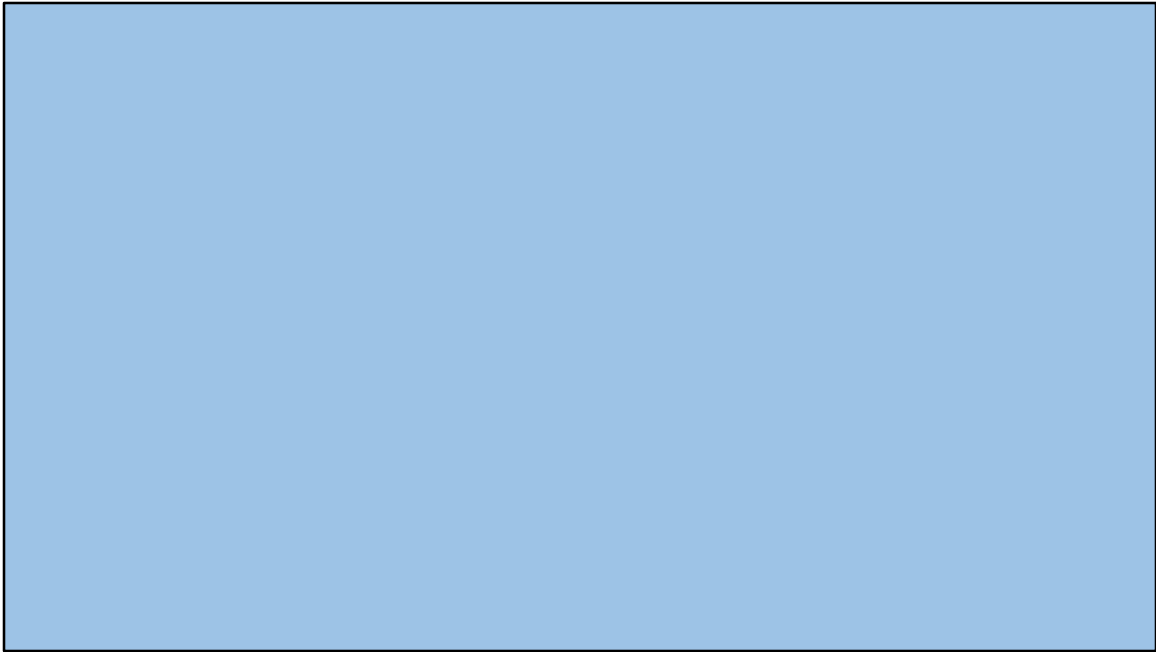
Forum / Category	Views	Threads / Messages	Last Post
Amazon Web Services Click Amazon Web Services to see a list of AWS Forums for each service. Then click on the forum for the service you have a question for.			
AWS Startups The following forums are for customers using AWS Startups only. For all other customers please choose Amazon Web Services and choose the specific service.			
AWS Web Site & Resources			
o General Feedback This forum is designed for you to provide general feedback on AWS Services. For Support please find the specific forum for the service you are looking to discuss. AWS Services can be found here.	376,857	2,315 / 6,106	Jun 1, 2016 2:47 AM By: JayDane
o AWS Quick Start Reference Deployments AWS Quick Start Reference Deployments outline the architectures for popular enterprise solutions on AWS and provide AWS CloudFormation templates to automate their deployment.	19,341	76 / 187	Jun 1, 2016 6:30 AM By: labnapkon
o Java Development	131,958	1,251 / 3,325	May 27, 2016 3:07 AM By: bernis12233
o JavaScript Development	34,673	345 / 996	Jun 1, 2016 5:29 AM By: vmasale

AWS managed technical forums provide a platform for you to ask the AWS user community for help and advice about any issues.

<https://forums.aws.amazon.com/index.jspa>

It’s a great place to start if you are a beginner or if you don't have time to wait for a response from AWS.

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1 **What is the quickest response time available with AWS Support?**

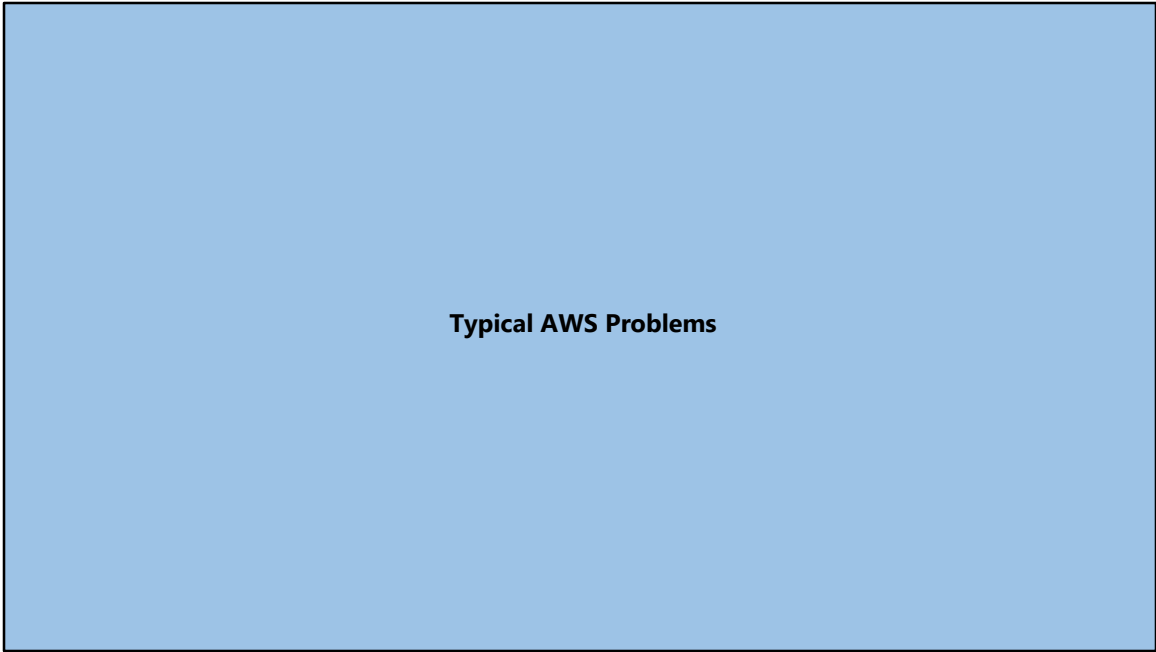
- 1 hour with Enterprise Support
- 15 minutes with Business Support
- 5 minutes with Business Support
- 15 minutes with Enterprise Support

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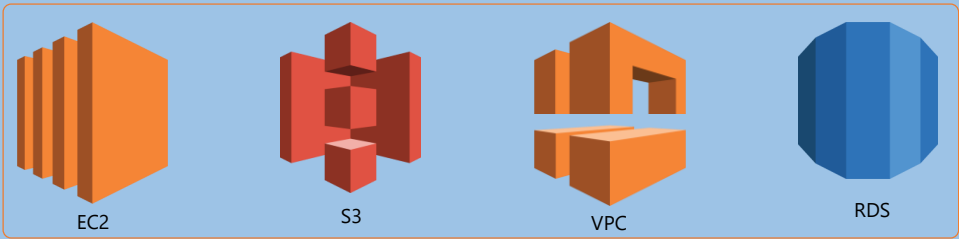
For critical tickets AWS offers a 15 minute response time with Enterprise Support.



In this section you'll learn about the AWS problems that usually occur.

Typical AWS Problems

The best way to learn about troubleshooting is to use AWS products and services and resolve any issues as you come across them.



The best way to learn about troubleshooting is to use AWS products and services and to resolve any issues you come across them.
In this section you'll take a look at some of the common issues that might come up while working with the following: EC2, S3, VPC, and RDS

Typical Problems: EC2

- A newly launched instance should go from “pending” to “running”. If it goes to “termination”, then check whether:
 - The EBS volume limit has reached
 - The snapshot used to launch the instance is corrupt
 - The instance store-backed AMI is missing a required part
- To get information about the reason the instance is not running, check the **Description** tab and check **State transition reason**.



EC2

Launching instances:

- Newly launched instances should go from “pending” to “running”. If it goes to “terminated”, check whether:
- You have reached your EBS volume limit
- The snapshot you are launching from is corrupt
- The instance store-backed AMI is missing a required part
- Check the **Description** tab and check **State transition reason** to get information about the reason the instance is not running:

Typical Problems: EC2 (Contd.)

A common problem is connecting to EC2 instances:

- Are your instances running?
- Are the connections timed out?
 - Check the security group rules to see if inbound traffic is permitted
- Are you using the correct private key?
- Are you using the correct username?
 - Linux: ec2-user or Ubuntu: Ubuntu



Connecting to instances:

- Is your instance running?
- Is the connection timed out? Check the security group rules to see if inbound traffic is permitted.
- Are you using the correct private key?
- Are you using the correct username? Linux: ec2-user or Ubuntu: Ubuntu.

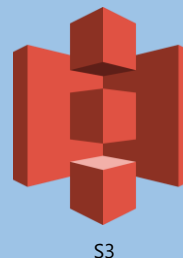
Typical Problems: S3

Possible reasons for changes not showing up immediately:

- Amazon S3 provides read-after-write consistency for PUTS of new objects in your S3 bucket: until a change is propagated it might not appear in the list
- Amazon S3 provides eventual consistency for overwrite PUTS and DELETES in all regions: changes are eventually reflected and not available immediately

Reasons for being unable to create a new bucket:

- Bucket name is not unique; bucket names need to be unique globally
- Reached the S3 bucket limit



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Typical Problems: S3 (Contd.)

To prevent files being deleted and lost:

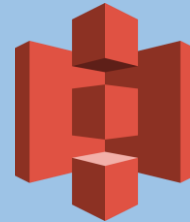
- Enable versioning and Multi-Factor Authorization

If you are unable to upload large files:

- Design applications to use the multi-part upload API

If websites are linking to the images on your site rather than the HTML pages:

- Remove public access to images
- Use signed URLs with expiry dates



S3

- To prevent files being deleted and lost:
 - Enable versioning and MFA
- If you are unable to upload large files:
 - Design applications to use the multi-part upload API
- If websites are linking to the images on your site rather than the HTML pages:
 - Remove public access to images
 - Use signed URLs with expiry dates

Typical Problems: RDS

A common problem with RDS is that you cannot connect to Amazon RDS DB Instances.

- Security Group does not allow connection: add ingress rule for database port
- Local firewall might not allow connection: add rule to allow in and outbound traffic
- Your DB instance is still being created and is not yet available: it can take up to 20 minutes

If RDS instance is unavailable, check if you've:

- Run out of storage: Monitor FreeStorageSpace in CloudWatch
- Modified a DB setting: Backup retention period or DB Instance class or Storage type



RDS

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Typical Problems: VPC

Security group rules are common problems with Virtual Private Cloud.

- Check Security Group rules
- Check if Route Tables have outbound access to Internet Gateway
- Instances launched in private subnets
- No public IP address
- IP address changed? Use Elastic IP address
- ACLs allowing inbound and outbound traffic on correct ports
- Service limits reached



- Check security group rules
- Check Route Tables have outbound access to IGW
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1

What could be the cause of a connection timeout to a newly launched EC2 instance?

Security Groups do not allow the inbound traffic to the correct port

Instance has been launched in a private subnet

Instance has been restarted and it now has a different IP address

All of the above

1

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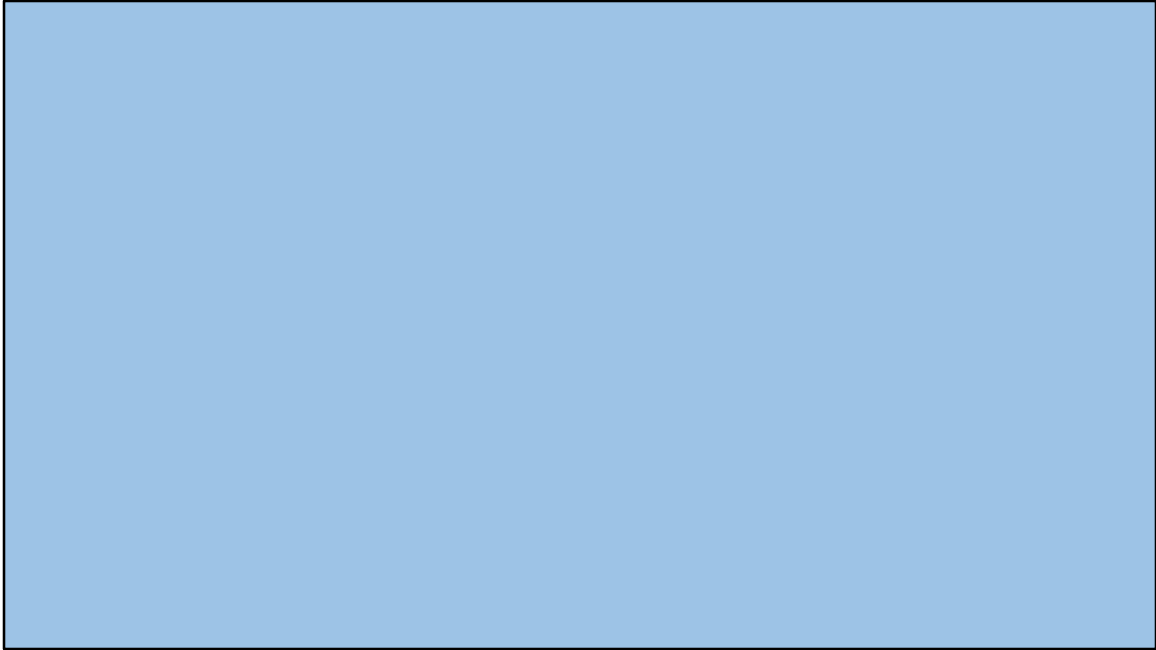
All of the above

d

All of the answers listed are reasons why you would get a connection timeout to a newly launched EC2 instance.

- AWS provides a number of support options to help resolve issues with your AWS environment, such as Documentation, Troubleshooting Guides, Support, and Discussion Forums.
- The various support AWS provides are Basic, Developer, Business, and Enterprise.
- The best way to learn about troubleshooting is to use AWS products and services and resolve the issues as you come across them.

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4. Edge locations are CDNs and are located all over the world in major cities. Used to provide content to end users with low latency.
5. AWS has various cloud-based products to help your business grow.

1

What could be the reason for a newly launched instance returning a terminated status?

- You have reached your EBS volume limit
- You tried to launch an instance with both SSD and Magnetic volumes attached
- The subnet in which you are launching the instance has no Internet Gateway attached
- You do not have permissions to launch instances in the region

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a

If you have reached your EBS volume limit then you will need to raise a ticket with AWS Support to increase the limit before launching a new instance.

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Where can you quickly find the reason for an instance's change of state?

Amazon SNS will automatically notify you about EC2 instance changes of state

You have to contact AWS Support to find out

On the EC2 dashboard Description tab check the State Transition Reason section

On the EC2 dashboard under the Instance State column

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On the EC2 dashboard under the Instance State column

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Check the Description tab and check State transition reason to get information about the reason the instance is not running.

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Which of these is NOT a reason for being unable to connect to an RDS instance?

- Security group does not allow connection
- You have reached your RDS instance limit
- Local firewall might not allow connection
- The DB instance is still being created

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You have reached your RDS instance limit

Local firewall might not allow connection

The DB instance is still being created

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You have reached your RDS instance limit is not a valid reason for being unable to connect.

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What could cause Amazon S3 files to NOT be immediately available?

AWS implements a 60 second delay for all Amazon S3 file uploads

The Amazon S3 bucket has run out of space

The bucket name not being globally unique

Amazon S3 provides eventual consistency for overwrite PUTS and DELETES in all regions

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How could you protect S3 data from accidental deletion and accidental overwrites?

Disable the delete permissions on the bucket

Enable S3 versioning on the bucket

Only allow access to S3 data using signed URLs

Enable Multi-Factor Authentication access

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b**Versioning allows multiple copies of files to be retained so you can easily recover from accidental deletes and overwrites.**

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