**Code Commit**

**General**

**What is AWS CodeCommit?**  
AWS CodeCommit is a secure, scalable, fully managed source control service that allows teams to collaborate on code without managing infrastructure.

**What is Git?**  
Git is an open-source distributed version control system used to track changes in code. It integrates with AWS CodeCommit for repository management.

**Who should use AWS CodeCommit?**  
Software developers, IT admins, and web designers needing a secure, scalable source control system for code, scripts, configurations, or assets.

**How is AWS CodeCommit different from other Git-based systems?**  
AWS CodeCommit is fully managed, secure, scalable, and highly available, eliminating the need to manage infrastructure while providing seamless AWS integration.

**How does AWS CodeCommit compare to a versioned S3 bucket?**  
Unlike S3 versioning, AWS CodeCommit supports features like branching, collaborative workflows, and tracking multi-file changes, essential for software development.

**Using AWS CodeCommit**

**How do I get started with AWS CodeCommit?**  
Sign in to the AWS Console, create a repository, and connect with Git. Follow the "Getting Started" guide for step-by-step instructions.

**How do I create a repository?**  
Create repositories via the AWS Management Console, AWS CLI, SDKs, or APIs, depending on your preferred interface.

**How do I update files in my repository?**  
Use Git commands like clone, commit, and push for updates, or edit files directly in the CodeCommit console.

**How do I import my existing repository to AWS CodeCommit?**  
Migrate Git repositories directly with Git commands. For other systems like Subversion, use Git importers for conversion.

**What Git operations are supported by AWS CodeCommit?**  
AWS CodeCommit supports basic Git operations: clone, pull, push, and fetch.

**Does AWS CodeCommit support Git submodules?**  
Yes, you can use repositories with submodules in AWS CodeCommit.

**What is the maximum size for a single file?**  
Files cannot exceed 2 GB in a repository.

**How do I backup my repository?**  
Keep a local clone or use automated Git commands (clone or pull) for scheduled backups.

**How do I restore a deleted AWS CodeCommit repository?**  
Recreate the repository and upload data from a backup or local Git clone. Use IAM policies to prevent accidental deletion.

**How do I manage code reviews?**  
Use CodeCommit's built-in review tools and branch-level permissions to facilitate collaborative code reviews.

**How do I integrate CI with AWS CodeCommit?**  
CI systems like Jenkins can pull code from CodeCommit using Git. Follow AWS documentation for setup examples.

**Security**

**Can I use IAM to manage access?**  
Yes, IAM lets you set detailed permissions for CodeCommit, including branch-level access and MFA for secure actions.

**What communication protocols are supported?**  
AWS CodeCommit supports HTTPS and SSH protocols for secure communication.

**What ports should I open for access?**  
Open outbound port 22 for SSH and port 443 for HTTPS access to CodeCommit.

**How do I encrypt my repository?**  
CodeCommit encrypts repositories automatically at rest using AWS Key Management Service (KMS).

**Can I enable cross-account access?**  
Yes, set up IAM roles to allow access to repositories for users in other AWS accounts using AWS Security Token Service (STS).

**Billing**

**How much does AWS CodeCommit cost?**  
It costs $1 per active user per month. This includes 10 GB of storage and 2,000 Git requests, with additional usage charged separately.

**What is the definition of an active user?**  
An active user is any unique AWS identity (IAM user, federated user, or root account) accessing CodeCommit within the month.

**Code Build**

**General**

**What is AWS CodeBuild?**

AWS CodeBuild is a managed continuous integration service that compiles code, runs tests, and creates deployment-ready packages. It scales automatically and eliminates the need to manage build servers.

**Why should I use CodeBuild?**

CodeBuild removes the need to manage build servers, handles scaling, and uses isolated, temporary compute containers for each build, ensuring fast and efficient processing.

**Can I use CodeBuild to automate my release process?**

Yes, integrate CodeBuild with AWS CodePipeline to create a CI/CD process for automating releases.

**Using CodeBuild**

**What is a build project?**

A build project defines the source repository, build environment, commands, and artifact storage location for a CodeBuild run.

**How do I configure a build project?**

Configure through the AWS Management Console or CLI by specifying the source, environment, commands, IAM role, and optionally a buildspec.yml file.

**Which source repositories does CodeBuild support?**

CodeBuild supports AWS CodeCommit, S3, GitHub, GitHub Enterprise, and Bitbucket.

**Which programming frameworks does CodeBuild support?**

CodeBuild supports Java, Ruby, Python, Go, Node.js, Android, .NET Core, PHP, and Docker, with options for custom Docker images.

**What happens when a build is run?**

CodeBuild creates a container, executes commands, uploads artifacts to S3, and destroys the container, streaming output to CloudWatch.

**How do I set up my first build?**

Create a build project in the AWS Console and follow the "Getting Started" guide or use CodeBuild Local for testing.

**How can I debug a past build failure?**

Inspect build logs or test and debug locally using CodeBuild Local.

**How do I receive notifications or alerts for any events in AWS CodeBuild?**

Set up Amazon SNS notifications or use AWS Chatbot for alerts in Slack or Amazon Chime.

**Security**

**Can I encrypt the build artifacts stored by CodeBuild?**

Yes, use AWS Key Management Service (KMS) to encrypt artifacts.

**How does CodeBuild isolate builds that belong to other customers?**

CodeBuild uses temporary, isolated environments for each build and destroys them after completion.

**Can I use AWS Identity and Access Management (IAM) to manage access to CodeBuild?**

Yes, control access using resource-level permissions in IAM policies.

**Code Deploy**

**General Questions**

1. **What is AWS CodeDeploy?**  
   AWS CodeDeploy automates application deployments to Amazon EC2 or on-premises instances, ensuring faster releases, reduced downtime, and simplified updates.
2. **Who should use AWS CodeDeploy?**  
   Developers and administrators deploying applications to Amazon EC2 or on-premises instances, or updating software.
3. **What types of applications can be deployed with AWS CodeDeploy?**  
   Any application type, as it supports all programming languages and architectures with customizable scripts.
4. **What operating systems does AWS CodeDeploy support?**  
   Supports Amazon Linux, Red Hat, Ubuntu, Windows Server, and other OS via open-source agents.
5. **Will AWS CodeDeploy work with my existing tool chain?**  
   Yes, it integrates with configuration management and CI/CD tools.
6. **How is AWS CodeDeploy different from AWS Elastic Beanstalk and OpsWorks?**  
   CodeDeploy focuses on deployments, while Elastic Beanstalk and OpsWorks manage the entire application lifecycle.
7. **Does AWS CodeDeploy support on-premises instances?**  
   Yes, it supports instances with the CodeDeploy agent and access to AWS endpoints.

**Using AWS CodeDeploy**

1. **What are the prerequisites for using an Amazon EC2 instance with AWS CodeDeploy?**  
   Instances need a supported OS and an associated IAM profile.
2. **What are the steps for deploying an application?**  
   Create an application, define a deployment group, upload a revision, and deploy.
3. **How can I access AWS CodeDeploy?**  
   Through the AWS Console, CLI, SDKs, or APIs.
4. **What changes do I need to make to my code?**  
   Add an AppSpec file to specify files and scripts for deployment.
5. **How can I deploy from my source control system?**  
   Use GitHub directly or upload to Amazon S3, specifying revisions in .zip, .tar, or .tar.gz format.
6. **How does CodeDeploy work with configuration management tools?**  
   Invoke them via lifecycle hooks in the AppSpec file.
7. **Can CodeDeploy integrate with CI/CD systems?**  
   Yes, by using its APIs, CLI, or SDKs.
8. **How do I deploy to newly added instances?**  
   Deploy the latest revision to the deployment group, except for Auto Scaling groups.
9. **How does CodeDeploy work with Auto Scaling?**  
   Automatically deploys the latest revision to new instances in the group.
10. **How do I track deployment status?**  
    Use the AWS Console, CLI, SDKs, or APIs to view deployment and instance details.
11. **Can I stop an in-flight deployment?**  
    Yes, instruct agents to stop executing scripts and redeploy if needed.
12. **How do I roll back to a previous revision?**  
    Deploy the previous revision; CodeDeploy removes current files before deploying.
13. **Can I use versioned S3 buckets for revisions?**  
    Yes, specify version IDs to uniquely identify revisions.
14. **Can I get a history of API calls?**  
    Yes, enable AWS CloudTrail for API call tracking.
15. **How do I receive deployment notifications?**  
    Use Amazon SNS for alerts, or AWS Chatbot for Slack or Chime integration.

**Security**

1. **Can CodeDeploy deploy to EC2 instances in a VPC?**  
   Yes, the agent must access public AWS endpoints for CodeDeploy and S3.
2. **Can I manage access using IAM?**  
   Yes, use IAM policies for resource-level permissions to control access.

**Billing**

1. **How much does AWS CodeDeploy cost?**  
   Free for Amazon EC2 deployments; $0.02 per on-premises instance update.