include::attributes.txt[]

// Attributes

[.topic] [#ref-cli-cmd-bootstrap] = cdk bootstrap :keywords: {aws} CDK, {aws} CDK CLI, CDK Toolkit, IaC, Infrastructure as code, {aws} Cloud, {aws} CloudFormation, bootstrap

== [abstract]

## Prepare an {aws} environment for CDK deployments by deploying the CDK bootstrap stack, named CDKToolkit, into the {aws} environment.

// Content start

Prepare an {aws} environment for CDK deployments by deploying the CDK bootstrap stack, named CDKToolkit, into the {aws} environment.

The bootstrap stack is a CloudFormation stack that provisions an Amazon S3 bucket and Amazon ECR repository in the {aws} environment. The {aws} CDK CLI uses these resources to store synthesized templates and related assets during deployment.

[#ref-cli-cmd-bootstrap-usage] == Usage

== [source,none,subs=“verbatim,attributes”]

$ cdk bootstrap ++++++++++++—-++++++++++++

[#ref-cli-cmd-bootstrap-args] == Arguments

[#ref-cli-cmd-bootstrap-args-env] *{aws} environment*:: The target {aws} environment to deploy the bootstrap stack to in the following format: aws://<account-id>/<region>. + Example: aws://123456789012/us-east-1 + This argument can be provided multiple times in a single command to deploy the bootstrap stack to multiple environments. + By default, the CDK CLI will bootstrap all environments referenced in the CDK app or will determine an environment from default sources. This could be an environment specified using the --profile option, from environment variables, or default {aws} CLI sources.

[#ref-cli-cmd-bootstrap-options] == Options

For a list of global options that work with all CDK CLI commands, see xref:ref-cli-cmd-options[Global options].

[#ref-cli-cmd-bootstrap-options-bootstrap-bucket-name] --bootstrap-bucket-name, --toolkit-bucket-name, -b <STRING>:: The name of the Amazon S3 bucket that will be used by the CDK CLI. This bucket will be created and must not currently exist. + Provide this option to override the default name of the Amazon S3 bucket. + When you use this option, you may have to customize synthesis. To learn more, see xref:bootstrapping-custom-synth[Customize CDK stack synthesis]. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-bootstrap-customer-key] --bootstrap-customer-key <BOOLEAN>:: Create a Customer Master Key (CMK) for the bootstrap bucket (you will be charged but can customize permissions, modern bootstrapping only). + This option is not compatible with --bootstrap-kms-key-id. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-bootstrap-kms-key-id] --bootstrap-kms-key-id <STRING>:: The {aws} KMS master key ID to use for the SSE-KMS encryption. + Provide this option to override the default {aws} KMS key used to encrypt the Amazon S3 bucket. + This option is not compatible with --bootstrap-customer-key. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-cloudformation-execution-policies] --cloudformation-execution-policies <ARRAY>:: The managed IAM policy ARNs that should be attached to the deployment role assumed by {aws} CloudFormation during deployment of your stacks. + By default, stacks are deployed with full administrator permissions using the AdministratorAccess policy. + You can provide this option multiple times in a single command. You can also provide multiple ARNs as a single string, with the individual ARNs separated by commas. The following is an example: + [source,none,subs=“verbatim,attributes”] — $ cdk bootstrap –cloudformation-execution-policies “arn:aws:iam::aws:policy/AWSLambda\_FullAccess,arn:aws:iam::aws:policy/AWSCodeDeployFullAccess” — + To avoid deployment failures, be sure that the policies you specify are sufficient for any deployments that you will perform into the environment being bootstrapped. + This option applies to modern bootstrapping only. + [IMPORTANT] ==== The modern bootstrap template effectively grants the permissions implied by the --cloudformation-execution-policies to any {aws} account in the --trust list. By default, this extends permissions to read and write to any resource in the bootstrapped account. Make sure to xref:bootstrapping-customizing[configure the bootstrapping stack] with policies and trusted accounts that you are comfortable with. ==== + *Default value*: []

[#ref-cli-cmd-bootstrap-options-custom-permissions-boundary] --custom-permissions-boundary, -cpb <STRING>:: Specify the name of a permissions boundary to use. + This option is not compatible with --example-permissions-boundary. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-example-permissions-boundary] --example-permissions-boundary, -epb <BOOLEAN>:: Use the example permissions boundary, supplied by the {aws} CDK. + This option is not compatible with --custom-permissions-boundary. + The CDK supplied permissions boundary policy should be regarded as an example. Edit the content and reference the example policy if you are testing out the feature. Convert it into a new policy for actual deployments, if one does not already exist. The concern is to avoid drift. Most likely, a permissions boundary is maintained and has dedicated conventions, naming included. + For more information on configuring permissions, including using permissions boundaries, see the https://github.com/aws/aws-cdk/wiki/Security-And-Safety-Dev-Guide[Security and Safety Dev Guide]. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-execute] --execute <BOOLEAN>:: Configure whether to execute the change set. + *Default value*: true

[#ref-cli-cmd-bootstrap-options-force] --force, -f <BOOLEAN>:: Always bootstrap, even if it would downgrade the bootstrap template version. + *Default value*: false

[#ref-cli-cmd-bootstrap-options-help] --help, -h <BOOLEAN>:: Show command reference information for the cdk bootstrap command.

[#ref-cli-cmd-bootstrap-options-previous-parameters] --previous-parameters <BOOLEAN>:: Use previous values for existing parameters. + Once a bootstrap template is deployed with a set of parameters, you must set this option to false to change any parameters on future deployments. When false, you must re-supply all previously supplied parameters. + *Default value*: true

[#ref-cli-cmd-bootstrap-options-public-access-block-configuration] --public-access-block-configuration <BOOLEAN>:: Block public access configuration on the Amazon S3 bucket that is created and used by the CDK CLI. + *Default value*: true

[#ref-cli-cmd-bootstrap-options-qualifier] --qualifier <STRING>:: Nine-digit string value that is unique for each bootstrap stack. This value is added to the physical ID of resources in the bootstrap stack. + By providing a qualifier, you avoid resource name clashes when provisioning multiple bootstrap stacks in the same environment. + When you change the qualifier, your CDK app must pass the changed value to the stack synthesizer. For more information, see xref:bootstrapping-custom-synth[Customize CDK stack synthesis]. + *Default value*: hnb659fds. This value has no significance.

[#ref-cli-cmd-bootstrap-options-show-template] --show-template <BOOLEAN>:: Instead of bootstrapping, print the current bootstrap template to the standard output (stdout). You can then copy and customize the template as necessary. + *Default value*: false

[#ref-cli-cmd-bootstrap-options-tags] --tags, -t <ARRAY>:: Tags to add to the bootstrap stack in the format of KEY=VALUE. + *Default value*: []

[#ref-cli-cmd-bootstrap-options-template] --template <STRING>:: Use the template from the given file instead of the built-in one.

[#ref-cli-cmd-bootstrap-options-termination-protection] --termination-protection <BOOLEAN>:: Toggle {aws} CloudFormation termination protection on the bootstrap stack. + When true, termination protection is enabled. This prevents the bootstrap stack from being accidentally deleted. + To learn more about termination protection, see https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/using-cfn-protect-stacks.html[Protecting a stack from being deleted] in the *{aws} CloudFormation User Guide*. + *Default value*: Undefined

[#ref-cli-cmd-bootstrap-options-toolkit-stack-name] --toolkit-stack-name <STRING>:: The name of the bootstrap stack to create. + By default, cdk bootstrap deploys a stack named CDKToolkit into the specified {aws} environment. Use this option to provide a different name for your bootstrap stack. + The CDK CLI uses this value to verify your bootstrap stack version. + *Default value*: CDKToolkit + *Required*: Yes

[#ref-cli-cmd-bootstrap-options-trust] --trust <ARRAY>:: The {aws} account IDs that should be trusted to perform deployments into this environment. + The account performing the bootstrapping will always be trusted. + This option requires that you also provide --cloudformation-execution-policies. + You can provide this option multiple times in a single command. + This option applies to modern bootstrapping only. + To add trusted accounts to an existing bootstrap stack, you must specify all of the accounts to trust, including those that you may have previously provided. If you only provide new accounts to trust, the previously trusted accounts will be removed. + The following is an example that trusts two accounts: + [source,none,subs=“verbatim,attributes”] — $ cdk bootstrap aws://123456789012/us-west-2 –trust 234567890123 –trust 987654321098 –cloudformation-execution-policies arn:aws:iam::aws:policy/AdministratorAccess ⏳ Bootstrapping environment aws://123456789012/us-west-2… Trusted accounts for deployment: 234567890123, 987654321098 Trusted accounts for lookup: (none) Execution policies: arn:aws:iam::aws:policy/AdministratorAccess CDKToolkit: creating CloudFormation changeset… ✅ Environment aws://123456789012/us-west-2 bootstrapped. — + [IMPORTANT] ==== The modern bootstrap template effectively grants the permissions implied by the --cloudformation-execution-policies to any {aws} account in the --trust list. By default, this extends permissions to read and write to any resource in the bootstrapped account. Make sure to xref:bootstrapping-customizing[configure the bootstrapping stack] with policies and trusted accounts that you are comfortable with. ==== + *Default value*: []

[#ref-cli-cmd-bootstrap-options-trust-for-lookup] --trust-for-lookup <ARRAY>:: The {aws} account IDs that should be trusted to look up values in this environment. + Use this option to give accounts permission to synthesize stacks that will be deployed into the environment, without actually giving them permission to deploy those stacks directly. + You can provide this option multiple times in a single command. + This option applies to modern bootstrapping only. + *Default value*: []

[#ref-cli-cmd-bootstrap-examples] == Examples

[#ref-cli-cmd-bootstrap-examples-1] === Bootstrap the {aws} environment specified in the prod profile

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –profile prod

[#ref-cli-cmd-bootstrap-examples-2] === Deploy the bootstrap stack to environments foo and bar

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –app=‘node bin/main.js’ foo bar

[#ref-cli-cmd-bootstrap-examples-3] === Export the bootstrap template to customize it

If you have specific requirements that are not met by the bootstrap template, you can customize it to fit your needs.

You can export the bootstrap template, modify it, and deploy it using {aws} CloudFormation. The following is an example of exporting the existing template:

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –show-template > bootstrap-template.yaml

You can also tell the CDK CLI to use a custom template. The following is an example:

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –template my-bootstrap-template.yaml

[#ref-cli-cmd-bootstrap-examples-4] === Bootstrap with a permissions boundary. Then, remove that permissions boundary

To bootstrap with a custom permissions boundary, we run the following:

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –custom-permissions-boundary my-permissions-boundary

To remove the permissions boundary, we run the following:

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –no-previous-parameters

[#ref-cli-cmd-bootstrap-examples-5] === Use a qualifier to distinguish resources that are created for a development environment

== [source,none,subs=“verbatim,attributes”]

## $ cdk bootstrap –qualifier dev2024