

Creating a Change Set using the Current Template

In AWS CloudFormation, creating a change set involves modifying a stack's configuration safely before applying changes. First, upload the template, name the stack (e.g., "DatabaseStack"), and set default parameters. After creation, initiate a change set via "Actions," using the current template or uploading a modified one (e.g., changing DB engine or storage size). Provide a description, review settings, and confirm creation. Review the change set details and verify no changes occur until executed. Validate changes, including template and parameters, or handle errors (e.g., exceeding constraints). End by confirming the stack's updated status on the "Events" tab after execution.

Activity

1. Find the template files in our GitHub repository under the same name as the heading for easy access and edits. Find and Save the attached template locally, open it in VS Code for edits.
2. Open AWS CloudFormation Console.
3. Click "Create stack" and upload the provided database stack template.

The screenshot shows the 'Create stack' wizard in the AWS CloudFormation console. On the left, a progress bar indicates the current step is 'Create stack'. The main content area is divided into two sections: 'Prerequisite - Prepare template' and 'Specify template'. In the 'Prerequisite' section, the 'Choose an existing template' option is selected. In the 'Specify template' section, the 'Upload a template file' option is selected. Below this, a file upload area shows a file named 'database-stack-template.yaml' has been selected. The file type is identified as 'JSON or YAML formatted file'.

4. Name the stack "DatabaseStack" and keep default parameters for AllocatedStorage and DbClass. Select an existing VPC and subnets for the database instances.

Specify stack details

Provide a stack name

Stack name

DataBaseStack

Stack name must be 1 to 128 characters, start with a letter, and only contain alphanumeric characters. Character count: 13/128.

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

Database Instance Settings

AllocatedStorage

Database storage in GiB

8

DbClass

Amazon RDS instance class

db.t4g.micro

Network Settings

VpcId

A valid VPC id in your AWS account

vpc-0b0c8badfef0024a4

DbSubnets

Subnets that the database instances will be launched into

Select List<AWS::EC2::Subnet::Id>

subnet-0619479663b4084af

subnet-08c772de46d053876

subnet-0a1bbb2feaa84bb95

Cancel

Previous

Next

5. Proceed through the steps, click "Create stack," and wait for completion.

DataBaseStack

Delete

Update

Stack actions

Create stack

Stack info

Events - updated

Resources

Outputs

Parameters

Template

Change sets

Git sync

Table view

Timeline view - new

Events (11)

Search events

Timestamp	Logical ID	Status	Detailed status	Status reason
2024-12-08 12:36:44 UTC+0530	DataBaseStack	CREATE_COMPLETE	-	-
2024-12-08 12:36:44 UTC+0530	MasterDbInstance	CREATE_COMPLETE	-	-
2024-12-08 12:33:41 UTC+0530	MasterDbInstance	CREATE_IN_PROGRESS	-	Resource creation Initiated
2024-12-08 12:33:39 UTC+0530	MasterDbInstance	CREATE_IN_PROGRESS	-	-
2024-12-08 12:33:39 UTC+0530	DbSecurityGroup	CREATE_COMPLETE	-	-

6. On stack completion, navigate to the stack details page. Open the "Actions" menu and select "Create change set."

DataBaseStack

Delete

Update

Stack actions

Create stack

Stack info

Events - updated

Resources

Outputs

Parameters

Template

Change sets

Events (11)

Search events

Timestamp	Logical ID	Status	Detailed status
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Edit termination protection

View drift results

Detect drift

Create change set for current stack

Import resources into stack

Cancel update stack

Continue update rollback

View in Application Manager

7. Choose "Use current template", click "Next,".

Create change set for DataBaseStack

Prerequisite - Prepare template

You can also create a template by scanning your existing resources in the [laC generator](#).

Prepare template

Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☒ **Use existing template**

Proceed with the template you are already using for this stack.

☐ **Replace existing template**

Replace your existing template with a new template.

☐ **Edit in Infrastructure Composer**

Edit your template in a visual builder.

CancelNext

8. Add a description for the change set, e.g., "Increase allocated storage to 10 and modify AllocatedStorage to 10. Leave other parameters unchanged and proceed by clicking "Next" through optional settings.

Specify stack details

Overview

A change set is a preview of how this stack will be configured before creating the stack. This allows you to examine various configurations before executing the change set.

Change set name

DataBaseSt-100ilb6qu1b-jjcacectead

Change set name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Change set description - optional

Increase the allocated storage to 10.

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

Database Instance Settings

AllocatedStorage
Database storage in GiB
10

DbClass
Amazon RDS instance class
db.t4g.micro

Network Settings

VpcId
A valid VPC id in your AWS account
vpc-0b0c8badfef0024a4

DbSubnets
Subnets that the database instances will be launched into
Select List<AWS::EC2::Subnet::Id>
subnet-0619479663b4084af subnet-08c772de46d053876 subnet-0a1bbb2feaa84bb95

CancelPreviousNext

9. On the Review page, confirm details and click "Create change set".

ormation > Stacks > DataBaseStack > Change sets: DataBaseSt-100ilb6qu1b-jjcacetead

DataBaseSt-100ilb6qu1b-jjcacetead

[Delete change set](#) [Execute change set](#)

Overview

Change set ID arn:aws:cloudformation:eu-west-1:878893308172:changeSet/DataBaseSt-100ilb6qu1b-jjcacetead/3505608b-0240-4eb5-9074-46c8aee5e490	Status CREATE_COMPLETE
Description Increase the allocated storage to 10.	Status reason -
Created time 2024-12-08 12:41:14 UTC+0530	Execution status AVAILABLE

[Changes](#) [Input](#) [Template](#) [JSON changes](#) [Evaluations](#)

Preview property-level changes for each resource
The Property-level changes column provides insights into the precise changes in property values for a resource. [Learn more](#)

Changes (1)
Preview how proposed changes to a stack will impact running resources. Click on "View details" to preview the impact on property values for a resource.
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10. Wait for the change set status to update to CREATE_COMPLETE.

11. View the change set details, including template, JSON changes, and inputs. Verify no changes are made to the stack until the change set is executed.

[Changes](#) [Input](#) [Template](#) [JSON changes](#) [Evaluations](#)

Parameters (4)

Key	Value	Resolved value
AllocatedStorage	10	-
DbClass	db.t4g.micro	-
DbSubnets	subnet-0619479663b4084af,subnet-08c772de46d053876,subnet-0a1bbb2feaa84bb95	-
VpcId	vpc-0b0c8badfef0024a4	-

Tags
Stack-level tags will apply to all supported resources in your stack. You can add up to 200 unique tags for each stack.

[Changes](#) [Input](#) [Template](#) [JSON changes](#) [Evaluations](#)

Template
[Copy](#)

```
AWSTemplateFormatVersion: 2010-09-09
Description: >-
Sample database stack template for Change Sets section
creating an Amazon RDS instance.

Metadata:
  AWS::CloudFormation::Interface:
    ParameterGroups:
      -
        Label:
          default: Database Instance Settings
        Parameters:
          - AllocatedStorage
          - DbClass
      -
        Label:
          default: Network Settings
        Parameters:
          - VpcId
          - DbSubnets

Parameters:
  DbSubnets:
```

[Changes](#) [Input](#) [Template](#) [JSON changes](#) [Evaluations](#)

JSON changes

```
[
  {
    "type": "Resource",
    "resourceChange": {
      "action": "Modify",
      "logicalResourceId": "MasterDbInstance",
      "physicalResourceId": "databasesstack-masterdbinstance-uxts1raum2q",
      "resourceType": "AWS::RDS::DBInstance",
      "replacement": "False",
      "scope": [
        "Properties"
      ],
      "details": [
        {
          "target": {
            "attribute": "Properties",
            "name": "AllocatedStorage",
            "requiresRecreation": "Never",
            "path": "/Properties/AllocatedStorage",
            "beforeValue": "8",
            "afterValue": "10",
            "attributeChangeType": "Modify"
          }
        }
      ]
    }
  }
]
```

12. Access the "Change sets" list to review all change sets for the stack.

13. End with the stack status verification on the Events tab.

DataBaseStack

Stack info | **Events - updated** | Resources | Outputs | Parameters | Template | Change sets | Git sync

Table view | Timeline view - new

Events (16)

Search events

Timestamp	Logical ID	Status	Detailed status	Status reason
2024-12-08 13:02:50 UTC+0530	DataBaseStack	UPDATE_COMPLETE	-	-
2024-12-08 13:02:49 UTC+0530	DataBaseStack	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	-	-
2024-12-08 13:02:49 UTC+0530	MasterDbInstance	UPDATE_COMPLETE	-	-
2024-12-08 12:44:05 UTC+0530	MasterDbInstance	UPDATE_IN_PROGRESS	-	-
2024-12-08 12:44:01 UTC+0530	DataBaseStack	UPDATE_IN_PROGRESS	-	User Initiated

Creating a Change Set by Replacing the Template

1. Find the template files in our GitHub repository under the same name as the heading for easy access and edits. Find and Save the attached template locally, open it in VS Code for edits.
2. Open the database stack template and change the DB engine from MySQL to MariaDB.

```
60 MasterDbInstance:
61   Type: AWS::RDS::DBInstance
62   DeletionPolicy: Delete
63   Properties:
64     BackupRetentionPeriod: 0
65     DBInstanceClass: !Ref DbClass
66     Engine: mariadb
67     MultiAZ: false
```

3. Save the modified template locally.
4. Go to AWS CloudFormation Console and navigate to the Change sets list. Click "Create change set,". Add a description like "Change the DB engine to MariaDB" and click "Create change set." select "Replace current template," and upload the modified template.

CloudFormation > Stacks > DataBaseStack

Stacks (1)

Filter by stack name

Filter status: Active View nested

Stacks

- DataBaseStack
2024-12-08 12:53:28 UTC+0530
UPDATE_COMPLETE

DataBaseStack

Stack info | **Events - updated** | Resources | Outputs | Parameters | Template | Change

Events (16)

Search events

Timestamp	Logical ID	Status	Detailed status	Status reason
2024-12-08 13:02:50 UTC+0530	DataBaseStack	UPDATE_COMPLETE	-	-
2024-12-08 13:02:49 UTC+0530	DataBaseStack	UPDATE_COMPLETE_CLEANUP_IN_PROGRESS	-	-
2024-12-08 13:02:49 UTC+0530	MasterDbInstance	UPDATE_COMPLETE	-	-
2024-12-08 12:44:05 UTC+0530	MasterDbInstance	UPDATE_IN_PROGRESS	-	-
2024-12-08 12:44:01 UTC+0530	DataBaseStack	UPDATE_IN_PROGRESS	-	User Initiated

Stack actions

- Edit termination protection
- View drift results
- Detect drift
- Create change set for current stack
- Import resources into stack
- Cancel update stack
- Continue update rollback
- View in Application Manager

Specify stack details

Overview

A change set is a preview of how this stack will be configured before creating the stack. This allows you to examine various configurations before executing the change set.

Change set name

DataBaseSt-lkbmh8w527b-rkf5gcx2gks

Change set name can include letters (A-Z and a-z), numbers (0-9), and dashes (-).

Change set description - optional

Change the db engine to MariaDB.

Create change set for DataBaseStack

Prerequisite - Prepare template

You can also create a template by scanning your existing resources in the [IaC generator](#).

Prepare template

Every stack is based on a template. A template is a JSON or YAML file that contains configuration information about the AWS resources you want to include in the stack.

☐ Use existing template

Proceed with the template you are already using for this stack.

☒ Replace existing template

Replace your existing template with a new template.

☐ Edit in Infrastructure Composer

Edit your template in a visual builder.

Specify template

A template is a JSON or YAML file that describes your stack's resources and properties.

Template source

Selecting a template generates an Amazon S3 URL where it will be stored.

☐ Amazon S3 URL

☒ Upload a template file

Upload a template file

database-stack-template.yaml

JSON or YAML formatted file

S3 URL: <https://s3.eu-west-1.amazonaws.com/cf-templates-kmi81w4ukk76-eu-west-1/2024-12-08T084717.0902ug4-database-stack->

- Click "Next" without changing parameter values, then proceed to the Review page.
- Wait for the change set to move from CREATE_PENDING to CREATE_COMPLETE status.

CloudFormation

Stacks

Stack details

StackSets

Exports

Infrastructure Composer

IaC generator

Hooks overview

Hooks

Registry

Public extensions

Activated extensions

Publisher

Spotlight

DatabaseStack

Change sets: DataBaseSt-lkbmh8w527b-rkf5gcx2gks

Overview

Change set ID

Change set ID

aws:cloudformation:eu-west-1:878893308172:changeSet/DataBaseSt-lkbmh8w527b-rkf5gcx2gks/caac3fc9-4740-4fb6-a0b6-23eccc621d2f

Status

CREATE_COMPLETE

Description

Change the db engine to MariaDB.

Status reason

-

Created time

2024-12-08 14:19:09 UTC+0530

Execution status

AVAILABLE

Changes

Input

Template

JSON changes

Evaluations

Preview property-level changes for each resource

The Property-level changes column provides insights into the precise changes in property values for a resource. [Learn more](#)

Changes (1)

Preview how proposed changes to a stack will impact running resources. Click on "View details" to preview the impact on property values for a resource.

Search changes

< 1 >

Action	Logical ID	Resource type	Replacement	Property-level changes	Policy action
Modify	MasterDbInstance	AWS::RDS::DBInstance	Conditional	View details	-

7. Verify the Changes tab to confirm the RDS instance will be replaced due to the DB engine change. Return to the Change sets list and review all created change sets.

The screenshot shows the AWS CloudFormation console for the 'DataBaseStack'. The 'Stacks' list on the left shows the stack is in an 'UPDATE_COMPLETE' state. The main panel shows the 'Change sets' tab for the stack. A single change set is listed with the name 'DataBaseStack-1kbnrhbw527b-rkF5gcx2gks', created on 2024-12-08 at 14:19:09 UTC+05:30, and a status of 'CREATE_COMPLETE'. The description is 'Change the db engine to MariaDB.' Below the table, the 'Last executed change set' section shows the change set ID 'arn:aws:cloudformation:eu-west-1:878893308172:changeSet/DataBaseStack-100lb6qu1b-jicacectead/3505608b-0240-4eb5-9074-46c8aee5e490' and the execution time '2024-12-08 12:44:01 UTC+05:30'.

8. Attempt to create another change set by increasing AllocatedStorage to 25, exceeding the max constraint.

The screenshot shows the AWS CloudFormation console for the 'DataBaseStack'. The 'Events' tab is selected, showing a list of 16 events. The 'Stack actions' button is open, showing a dropdown menu with options: 'Edit termination protection', 'View drift results', 'Detect drift', 'Create change set for current stack', 'Import resources into stack', 'Cancel update stack', 'Continue update rollback', and 'View in Application Manager'. The events list shows the stack was updated on 2024-12-08 at 13:02:50 UTC+05:30, with the status 'UPDATE_COMPLETE'. The 'Logical ID' is 'DataBaseStack'. The 'Status' is 'UPDATE_COMPLETE'. The 'Detailed status' is '-'. The 'User Initiated' column shows 'User Initiated'.

The screenshot shows the 'Create change set for DataBaseStack' wizard. The 'Prerequisite - Prepare template' step is selected. The 'Prepare template' section explains that every stack is based on a template. There are three options: 'Use existing template' (selected), 'Replace existing template', and 'Edit in Infrastructure Composer'. The 'Use existing template' option is selected, and the 'Next' button is visible.

The screenshot shows the 'Parameters' section of the 'Create change set for DataBaseStack' wizard. The 'Database Instance Settings' section includes 'AllocatedStorage' (set to 25) and 'DbClass' (set to 'db.t4g.micro'). The 'Network Settings' section includes 'VpcId' (set to 'vpc-0b0c8badfe0024a4') and 'DbSubnets' (set to 'subnet-0619479663b4084af', 'subnet-08c772de46d053876', and 'subnet-0a1bbb2feaa84bb95'). The 'Next' button is visible.

9. Observe the error indicating AllocatedStorage exceeds the allowed maximum value. Cancel the invalid change set creation and return to the stacks list.



10. Confirm two valid change sets exist and note that only one can be executed at a time.

