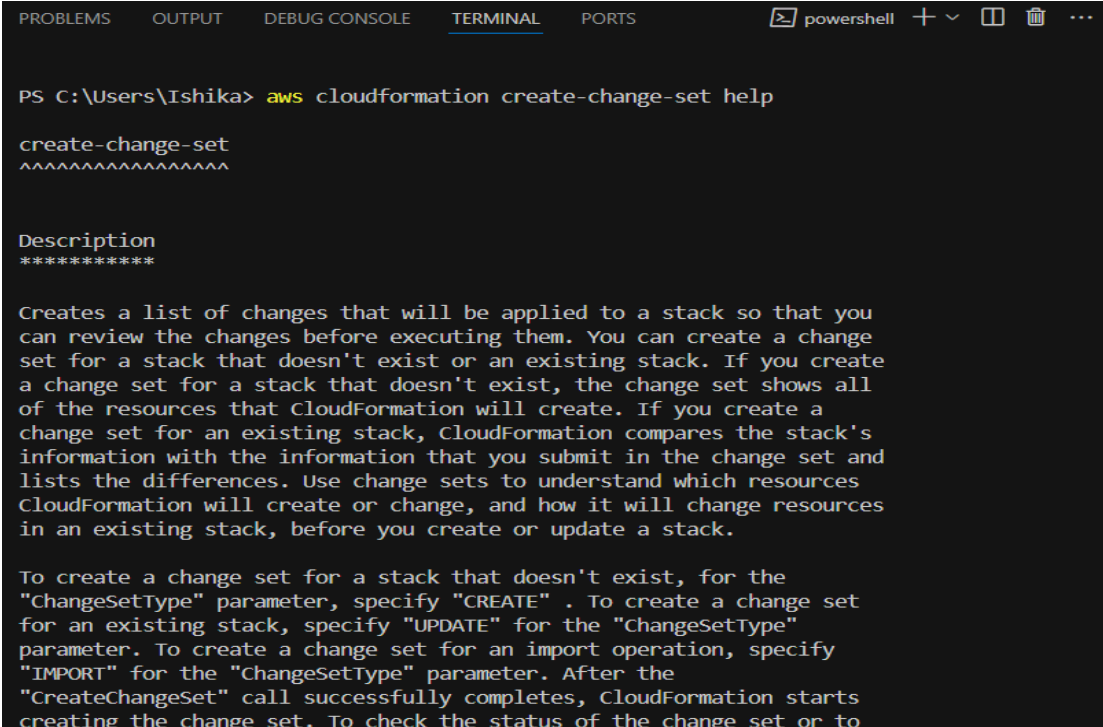


Creating and Executing Change Sets With AWS CLI

The process involves creating and executing change sets with AWS CLI to manage AWS CloudFormation stacks. First, create a change set using `aws cloudformation create-change-set`, specifying the stack name, template, and parameters (e.g., VPC ID, subnets). Execute the change set and check its status with `describe-change-set`. After execution, monitor the stack creation with `describe-stacks` and wait for completion. If needed, update the stack by creating another change set, specifying the desired changes (e.g., `AllocatedStorage`). You can delete changesets and stacks using appropriate commands to clean up. The end goal is to manage stack updates and deletions effectively using AWS CLI.

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 terminal in the same folder as your template.
3. Use `aws cloudformation create-change-set` to create a change set.



```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS powershell + - [] [X] ...

PS C:\Users\Ishika> aws cloudformation create-change-set help

create-change-set
^^^^^^^^^^^^^^^^

Description
*****

Creates a list of changes that will be applied to a stack so that you
can review the changes before executing them. You can create a change
set for a stack that doesn't exist or an existing stack. If you create
a change set for a stack that doesn't exist, the change set shows all
of the resources that CloudFormation will create. If you create a
change set for an existing stack, CloudFormation compares the stack's
information with the information that you submit in the change set and
lists the differences. Use change sets to understand which resources
CloudFormation will create or change, and how it will change resources
in an existing stack, before you create or update a stack.

To create a change set for a stack that doesn't exist, for the
"ChangeSetType" parameter, specify "CREATE" . To create a change set
for an existing stack, specify "UPDATE" for the "ChangeSetType"
parameter. To create a change set for an import operation, specify
"IMPORT" for the "ChangeSetType" parameter. After the
"CreateChangeSet" call successfully completes, CloudFormation starts
creating the change set. To check the status of the change set or to
```

- Specify `--change-set-name` (e.g., `create-stack-change-set`). Set `--change-set-type` to `CREATE` for stack creation. Use `--stack-name` with the desired stack name (e.g., `database-stack`). Provide `--template-body` with the file path to your template (e.g., `file://C:/internship/Section 7/7.2. Creating Stacks With AWS CLI/database-stack-template.yaml`). Define parameters with `--parameters`, providing `VpcId` and `DbSubnets`. Execute the command, which returns change set and stack IDs.

```
PS C:\Users\Ishika> aws cloudformation create-change-set --change-set-name create-stack-change-set --change-set-type CREATE --stack-name STACK1 --template-body "file://C:/internship/Section 7/Creating and Executing Change Sets With AWS CLI/database-stack-template.yaml" --parameters ParameterKey=VpcId,ParameterValue=vpc-0b0c8badfef0024a4 ParameterKey=DbSubnets,ParameterValue=subnet-0619479663b4084af\\,subnet-08c772de46d053876\\,subnet-0a1bbb2feaa84bb95
{
  "Id": "arn:aws:cloudformation:eu-west-1:878893308172:changeSet/create-stack-change-set/d9d0d052-0d5c-424b-bdbf-50faddaf687e",
  "StackId": "arn:aws:cloudformation:eu-west-1:878893308172:stack/STACK1/b0c36aa0-b615-11ef-bac0-06074df3c283"
}
```

- Use `aws cloudformation describe-stacks` to check stack status (should be in `REVIEW_IN_PROGRESS`).

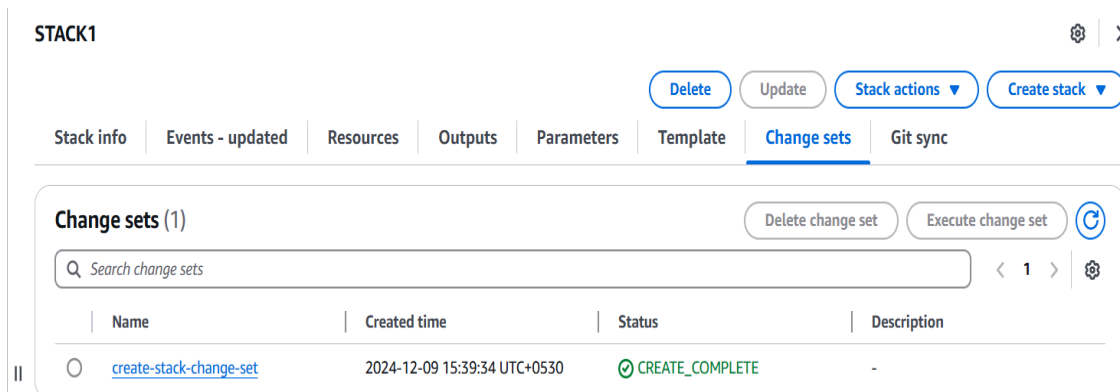
```
PS C:\Users\Ishika> aws cloudformation describe-stacks --stack-name STACK1
{
  "Stacks": [
    {
      "StackId": "arn:aws:cloudformation:eu-west-1:878893308172:stack/STACK1/b0c36aa0-b615-11ef-bac0-06074df3c283",
      "StackName": "STACK1",
      "CreationTime": "2024-12-09T10:09:34.879000+00:00",
      "RollbackConfiguration": {},
      "StackStatus": "REVIEW_IN_PROGRESS",
      "StackStatusReason": "User Initiated",
      "DisableRollback": false,
      "NotificationARNs": [],
      "Tags": [],
      "EnableTerminationProtection": false,
      "DriftInformation": {
        "StackDriftStatus": "NOT_CHECKED"
      }
    }
  ]
}
```

- Use `aws cloudformation describe-stack-resources` to view resources (empty since stack is not created yet).

```
PS C:\Users\Ishika> aws cloudformation describe-stack-resources --stack-name STACK1
{
  "StackResources": []
}
```

- Use `aws cloudformation describe-change-set` with the change set name to see proposed changes.

```
PS C:\Users\Ishika> aws cloudformation describe-change-set --change-set-name create-stack-change-set --stack-name STACK1
{
  "Changes": [
    {
      "Type": "Resource",
      "ResourceChange": {
        "Action": "Add",
        "LogicalResourceId": "DbInstance",
        "ResourceType": "AWS::RDS::DBInstance",
        "Scope": [],
        "Details": []
      }
    },
    {
      "Type": "Resource",
      "ResourceChange": {
        "Action": "Add",
        "LogicalResourceId": "DbSecurityGroup",
        "ResourceType": "AWS::EC2::SecurityGroup",
        "Scope": [],
        "Details": []
      }
    }
  ]
}
```



- Execute the change set with `aws cloudformation execute-change-set` using the change set name. Use `aws cloudformation describe-change-set` again to verify status (should be inactive after execution).

```
PS C:\Users\Ishika> aws cloudformation execute-change-set --change-set-name create-stack-change-set --stack-name STACK1
PS C:\Users\Ishika> aws cloudformation execute-change-set --change-set-name create-stack-change-set --stack-name STACK1
```

- Use `aws cloudformation describe-stacks` to check final stack status (CREATE_IN_PROGRESS). Wait for stack completion with `aws cloudformation wait stack-create-complete`. Verify final stack status (CREATE_COMPLETE) and check if resources were created.

```
PS C:\Users\Ishika> aws cloudformation describe-change-set --change-set-name arn:aws:cloudformation:eu-west-1:878893308172:changeSet/create-stack-change-set/d9d0d052-0d5c-424b-bdbf-50faddaf687e
{
  "Changes": [
    {
      "Type": "Resource",
      "ResourceChange": {
        "Action": "Add",
        "LogicalResourceId": "DbInstance",
        "ResourceType": "AWS::RDS::DBInstance",
        "Scope": [],
        "Details": []
      }
    }
  ],
  {
    "Type": "Resource"
```

```
],
  "CreationTime": "2024-12-09T10:09:34.879000+00:00",
  "ExecutionStatus": "EXECUTE_FAILED",
  "Status": "CREATE_COMPLETE",
  "StatusReason": null,
  "NotificationARNs": [],
```

Deleting Change Sets With AWS CLI

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 terminal and make sure you're in the same folder as your template.

```
PS C:\Users\Ishika> ls
```

3. Create a change set using the `aws cloudformation create-change-set` command to update the allocated storage to 10. Provide a name for the change set using the `--change-set-name` option. Use the `--stack-name` option to specify the stack name. Provide the template using the `--template-body` option and the correct file path. Define the required parameters (e.g., `VpcId`, `DbSubnets`) using the `--parameters` option. Set the `AllocatedStorage` parameter to 10 as a change in the template. Execute the `create-change-set` command.

```
PS C:\Users\Ishika> aws cloudformation create-change-set \  
> --change-set-name increase-storage-change-set --stack-name STACK1 \  
> --template-body "file:///C:/internship/Section 7/7.3Deleting Change Sets With AWS CLI/database-stack-template.yaml" \  
> --parameters ParameterKey=VpcId,ParameterValue=vpc-0b0c8badfef0024a4 \  
> ParameterKey=DbSubnets,ParameterValue=subnet-0619479663b4084af\\,subnet-08c772de46d053876\\,subnet-0a1bbb2feaa84bb95 \  
> ParameterKey=AllocatedStorage,ParameterValue=10
```

4. Check the details of the change set using `aws cloudformation describe-change-set`. Confirm the change set is in `CREATE_COMPLETE` status and contains the correct changes.

```
PS C:\Users\Ishika> aws cloudformation describe-change-set \  
> --change-set-name increase-storage-change-set --stack-name STACK1
```

5. List all existing change sets using `aws cloudformation list-change-sets` to verify the change set is active. To delete the change set, copy the change set ID.

```
PS C:\Users\Ishika> aws cloudformation list-change-sets --stack-name STACK1  
{  
  "Summaries": [  
    ],  
    "ChangeSetName": "create-stack-change-set",  
    "ChangeSetId": "arn:aws:cloudformation:eu-west-1:878893308172:changeSet/create-stack-change-set/d9d0d052-0d5c-424b-bdbf-50faddaf687e",  
    "StackId": "arn:aws:cloudformation:eu-west-1:878893308172:stack/STACK1/b0c36aa0-b615-44-f1-8-068711f3-003"
```

6. Use the `aws cloudformation delete-change-set` command and provide the change set ID or name. It will not return anything.

```
C:\Users\Ishika>aws cloudformation delete-change-set --change-set-name arn:aws:cloudformation:eu-west-1:878893308172:changeSet/create-stack-change-set/d9d0d052-0d5c-424b-bdbf-50faddaf687e
```

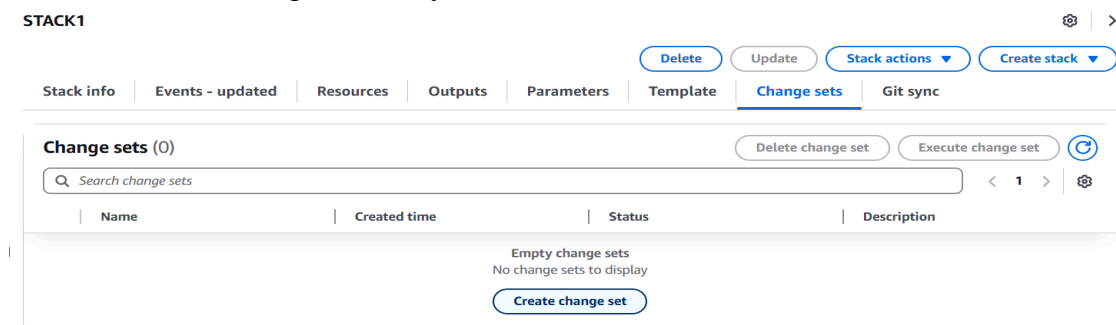
7. Verify that the change set has been deleted by running `aws cloudformation describe-change-set`.

```
PS C:\Users\Ishika> aws cloudformation describe-change-set --change-set-name arn:aws:cloudformation:eu-west-1:878893308172:changeSet/create-stack-change-set/d9d0d052-0d5c-424b-bdbf-50faddaf687e
```

8. List the active change sets again to confirm the deletion was successful.

```
PS C:\Users\Ishika> aws cloudformation list-change-sets --stack-name STACK1
{
  "Summaries": []
}
```

9. Check with the “change sets” of your stack on AWS console.



10. Describe the stack to ensure its status is `CREATE_COMPLETE` since no changes were executed.

```
PS C:\Users\Ishika> aws cloudformation describe-stacks --stack-name STACK1
{
```

11. To clean up, delete the stack using `aws cloudformation delete-stack`. Verify the stack is being deleted by checking its status with `aws cloudformation describe-stacks`.

```
PS C:\Users\Ishika> aws cloudformation delete-stack --stack-name STACK1
PS C:\Users\Ishika> aws cloudformation describe-stacks --stack-name STACK1
```