

## CST8912 – Cloud Solution Architecture

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### Graded Lab Activity #8

1. Apply solutions for ensuring compliance with organizational policies and regulatory requirements. (7)
  - Adapt shared responsibility model to ensure safe and secure cloud environment
  - Interpret industry standards for handling data in cloud
  - Underline laws and regulations for cloud compliance, data privacy, data protection, and cybersecurity
  - Identify cloud governance, control measures, and policies to manage data within the cloud

#### **Introduction:**

Tagging your resources for a cloud environment is a crucial task for IT, especially when managing and deploying for multiple departments and projects. Tags are one of the elementary tasks included in the Cloud Adoption Framework that lets you take the benefit of the cloud resources to their fullest and ensure that you are taking the maximum advantage of the money spent in the cloud.

Tagging is considered one of the fundamental pillars of Cloud Governance to ensure the workloads deployed in the cloud are organized and stay that way for the entire lifecycle of the resources. Tagging the cloud resources opens up the world of possibility for you to leverage other services such as Cloud Policy and Cloud Runbooks to automate various tasks for specific resources and ensure their compliance in an automated fashion.

In this hands-on lab, you will discover what tags are and how you can implement them in your cloud environment to manage and create the identity for your cloud resources and how to assign azure policy

**Purpose of the hands-on-lab that can be simulated for any CSP:**

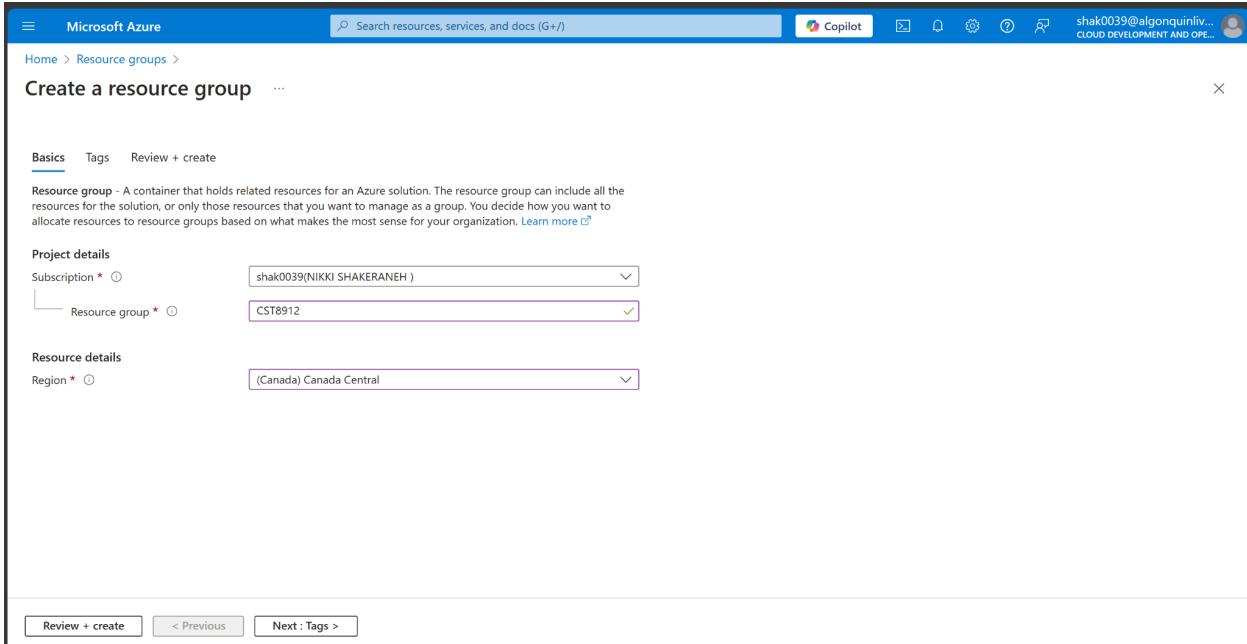
In this lab you will understand the governance principle for tagging azure resources

1. Task 1: Create and assign tags via the Azure portal
2. Task 2: Enforce tagging via an Azure policy
3. Task 3: Apply tagging via an Azure policy
4. Task4: Configure and test resource locks
5. Task 5: Clean up the resources

### Task 1: Assign tags via the Azure portal

1. Sign in to the Azure portal - <https://portal.azure.com>.
2. Search for and select Resource groups.

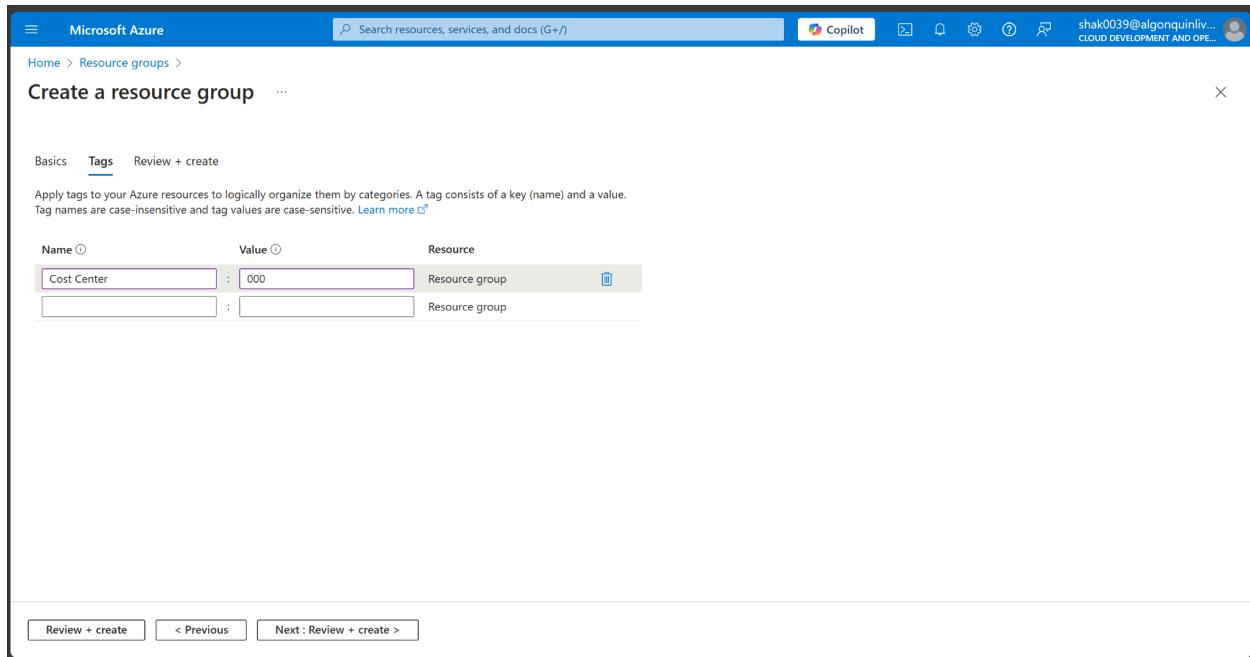
Setting	Value
Subscription name	your subscription
Resource group name	CST8912
Location	Canada Central



The screenshot shows the 'Create a resource group' dialog box in the Microsoft Azure portal. The 'Basics' tab is selected. In the 'Project details' section, the 'Subscription' dropdown is set to 'shak0039(NIKKI SHAKERANEH)' and the 'Resource group' dropdown is set to 'CST8912'. In the 'Resource details' section, the 'Region' dropdown is set to '(Canada) Canada Central'. At the bottom of the dialog, there are buttons for 'Review + create', '< Previous', and 'Next : Tags >'.

3. From the Resource groups, select + Create.
4. Note
5. Select Next: Tags and create a new tag.

Setting	Value
Name	Cost Center
Value	000



6. Select Review + Create, and then select Create.

The screenshot shows the 'Create a resource group' dialog in the Microsoft Azure portal. The 'Review + create' tab is selected. A green banner at the top indicates 'Validation passed.' Below, the 'Basics' section shows the following details:

Subscription	shak0039(NIKKI SHAKERANEH)
Resource group	CST8912
Region	Canada Central

The 'Tags' section shows:

Cost Center	000
-------------	-----

At the bottom, there are buttons for 'Create', '< Previous', 'Next >', and 'Download a template for automation'.

The screenshot shows the 'Resource groups' list in the Microsoft Azure portal. The 'CST8912' resource group is listed with the following details:

Name	Subscription	Location
CST8912	shak0039(NIKKI SHAKERANEH)	Canada Central

A success message in the top right corner says: 'Resource group created' and 'Creating resource group 'CST8912' in subscription 'shak0039(NIKKI SHAKERANEH)' succeeded.'

## Task 2: Enforce tagging via an Azure policy

7. In the Azure portal, search for and select Policy.

The screenshot shows the Microsoft Azure Policy Overview blade. At the top, there is a search bar and a Copilot button. The scope is set to "shak0039(NIKKI SHAKERANEH)". A message通知 states: "Compliance state change events are now available at the management group level! Use event-based architecture to react to notifications with an Azure Function, Logic App, or any other supported event handler. Learn more https://aka.ms/policyPlusEventGrid". Below this, the "Overall resource compliance" is shown as 100%, with a progress bar. The "Resources by compliance state" section shows 0 compliant and 0 non-compliant resources. The "Non-compliant initiatives" section shows 0 out of 0. On the right, there is a "LEARN MORE" section with links to "Learn about Policy" and "Onboarding tutorial". The left sidebar includes links for Overview, Getting started, Compliance, Remediation, Events, and Authoring.

8. In the Authoring blade, select Definitions. Take a moment to browse through the list of built-in policy definitions that are available for you to use. Notice you can also search for a definition.

The screenshot shows the Microsoft Azure Policy | Definitions blade. The left sidebar has a "Definitions" section selected. The main area displays a table of policy definitions with columns: Name, Latest ver..., Definition location, Po..., Type, Definition..., and Category. The table lists several definitions, including "CDO Global Policy", "Enable Azure Monitor for VMSS with Azure Monitor", "Audit Public Network Access", "Configure Microsoft Defender for Cloud plans", "Configure secure communication protocols(TLS 1.1", "FedRAMP Moderate", "Configure Advanced Threat Protection to be enable", and "[Preview]: Deploy Microsoft Defender for Endpoint". There are also buttons for "Edit columns" and "Give feedback".

9. Search for “require a tag”

The screenshot shows the Microsoft Azure Policy Definitions page. A search bar at the top left contains the text "def". Below it, a table lists four policy definitions:

Name	Latest ver...	Definition location	Type	Definition...	Category
Require a tag on resource groups	1.0.0	Builtin	Policy	Tags	...
Require a tag and its value on resource groups	1.0.0	Builtin	Policy	Tags	...
Require a tag on resources	1.0.1	Builtin	Policy	Tags	...
Require a tag and its value on resources	1.0.1	Builtin	Policy	Tags	...

## 10. Screenshot of the policy definition.

The screenshot shows the details of the "Require a tag on resources" policy definition. It includes the following information:

- Essentials:**
  - Name: Require a tag on resources
  - Version (preview): 1.0.1
  - Description: Enforces existence of a tag. Does not apply to resource groups.
  - Available Effects: Deny
  - Category: Tags
- Definition:**

```

1 {
2   "properties": {
3     "displayName": "Require a tag on resources",
4     "policyType": "Builtin",
5     "mode": "Indexed",
6     "description": "Enforces existence of a tag. Does not apply to resource groups.",
7     "metadata": {
8       "version": "1.0.1",
9       "category": "Tags"
10    },
11    "version": "1.0.1",
12    "parameters": {
13      "tagName": {
14        "type": "String"
15      }
16    }
17  }
18 }
```

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Home > Policy | Definitions >

## Require a tag on resources

Policy definition

Assign policy Edit definition Duplicate definition Select version (preview) Delete definition

Definition Assignments (0) Parameters (1)

```

11     },
12     "version": "1.0.1",
13     "parameters": {
14       "tagName": {
15         "type": "String",
16         "metadata": [
17           {
18             "displayName": "Tag Name",
19             "description": "Name of the tag, such as 'environment'"
20           }
21         ],
22         "policyRule": {
23           "if": {
24             "field": "[concat('tags[', parameters('tagName'), ']')]",
25             "exists": "false"
26           },
27           "then": {
28             "effect": "deny"
29           }
30         },
31         "id": "/providers/Microsoft.Authorization/policyDefinitions/871b6d14-10aa-478d-b590-94f262ecfa99/versions/1.0.1",
32         "type": "Microsoft.Authorization/policyDefinitions/versions",
33         "name": "1.0.1"
34       }
35     }

```

Give feedback

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Home > Policy | Definitions >

## Require a tag on resource groups

Policy definition

Assign policy Edit definition Duplicate definition Select version (preview) Delete definition

Essentials

Name	: Require a tag on resource groups	Definition location	: --
Version (preview)	: 1.0.0	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/96670d01-0a4d-4649-...
Description	: Enforces existence of a tag on resource groups.	Type	: Built-in
Available Effects	: Deny	Mode	: All
Category	: Tags		

Definition Assignments (0) Parameters (1)

```

1   {
2     "properties": {
3       "displayName": "Require a tag on resource groups",
4       "policyType": "BuiltIn",
5       "mode": "All",
6       "description": "Enforces existence of a tag on resource groups.",
7       "metadata": {
8         "version": "1.0.0",
9         "category": "Tags"
10      },
11      "version": "1.0.0",
12      "parameters": {
13        "tagName": {
14          "type": "String"
15        }
16      }
17    }
18  }

```

Give feedback

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Home > Policy | Definitions >

## Require a tag on resource groups

Policy definition

[Assign policy](#) [Edit definition](#) [Duplicate definition](#) [Select version \(preview\)](#) [Delete definition](#)

```

19 },
20 },
21 "policyRule": {
22   "if": {
23     "allOf": [
24       {
25         "field": "type",
26         "equals": "Microsoft.Resources/subscriptions/resourceGroups"
27       },
28       {
29         "field": "[concat('tags[', parameters('tagName'), ']')]",
30         "exists": "false"
31       }
32     ],
33   },
34   "then": {
35     "effect": "deny"
36   }
37 }
38 },
39 "id": "/providers/Microsoft.Authorization/policyDefinitions/96670d01-0a4d-4649-9c89-2d3abc0a5025/versions/1.0.0",
40 "type": "Microsoft.Authorization/policyDefinitions/versions",
41 "name": "1.0.0"
42 }

```

[Give feedback](#)

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Home > Policy | Definitions >

## Require a tag and its value on resource groups

Policy definition

[Assign policy](#) [Edit definition](#) [Duplicate definition](#) [Select version \(preview\)](#) [Delete definition](#)

[Essentials](#)

Name	: Require a tag and its value on resource groups	Definition location	: --
Version (preview)	: 1.0.0	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/8ce3da23-7156-49e4-...
Description	: Enforces a required tag and its value on resource groups.	Type	: Built-in
Available Effects	: Deny	Mode	: All
Category	: Tags		

[Definition](#) [Assignments \(0\)](#) [Parameters \(2\)](#)

```

1 {
2   "properties": {
3     "displayName": "Require a tag and its value on resource groups",
4     "policyType": "BuiltIn",
5     "mode": "All",
6     "description": "Enforces a required tag and its value on resource groups.",
7     "metadata": {
8       "version": "1.0.0",
9       "category": "Tags"
10    },
11    "version": "1.0.0",
12    "parameters": {
13      "tagName": {
14        "type": "String"
15      }
16    }
17  }
18 }

```

[Give feedback](#)

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### Require a tag and its value on resource groups

Policy definition

```

23   "displayName": "Tag Value",
24   "description": "Value of the tag, such as 'production'"
25 }
26 },
27 "policyRule": {
28   "if": {
29     "allOf": [
30       {
31         "field": "type",
32         "equals": "Microsoft.Resources/subscriptions/resourceGroups"
33       },
34       {
35         "field": "[concat('tags[', parameters('tagName'), ']')]",
36         "notEquals": "[parameters('tagValue')]"
37       }
38     ]
39   },
40   "then": {
41     "effect": "deny"
42   }
43 }
44 },
45 "id": "/providers/Microsoft.Authorization/policyDefinitions/8ce3da23-7156-49e4-b145-24f95f9dcb46/versions/1.0.0",
46 "type": "Microsoft.Authorization/policyDefinitions/versions",
47 "name": "1.0.0"
48 }
```

[Give feedback](#)

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### Require a tag and its value on resources

Policy definition

```

12   "parameters": {
13     "tagName": {
14       "type": "String",
15       "metadata": {
16         "displayName": "Tag Name",
17         "description": "Name of the tag, such as 'environment'"
18       }
19     },
20     "tagValue": {
21       "type": "String",
22       "metadata": {
23         "displayName": "Tag Value",
24         "description": "Value of the tag, such as 'production'"
25       }
26     }
27   },
28   "policyRule": {
29     "if": {
30       "not": {
31         "field": "[concat('tags[', parameters('tagName'), ']')]",
32         "equals": "[parameters('tagValue')]"
33       }
34     },
35     "then": {
36       "effect": "deny"
37     }
38   }
39 }
```

[Give feedback](#)

Microsoft Azure

Home > Policy | Definitions >

### Require a tag and its value on resources

Policy definition

Assign policy Edit definition Duplicate definition Select version (preview) Delete definition

```

18     },
19   },
20   "tagValue": {
21     "type": "String",
22     "metadata": {
23       "displayName": "Tag Value",
24       "description": "Value of the tag, such as 'production'"
25     }
26   },
27   "policyRule": {
28     "if": {
29       "not": {
30         "field": "[concat('tags[', parameters('tagName'), ']')]",
31         "equals": "[parameters('tagValue')]"
32       }
33     },
34     "then": {
35       "effect": "deny"
36     }
37   }
38 },
39 "id": "/providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c-a204-c1c3969c6d62/versions/1.0.1",
40 "type": "Microsoft.Authorization/policyDefinitions/versions",
41 "name": "1.0.1"
42 }
43

```

11.Click the entry representing the Require a tag and its value on resources built-in policy. Take a minute to review the definition.

Microsoft Azure

Home > Policy | Definitions >

### Require a tag and its value on resources

Policy definition

Assign policy Edit definition Duplicate definition Select version (preview) Delete definition

Essentials

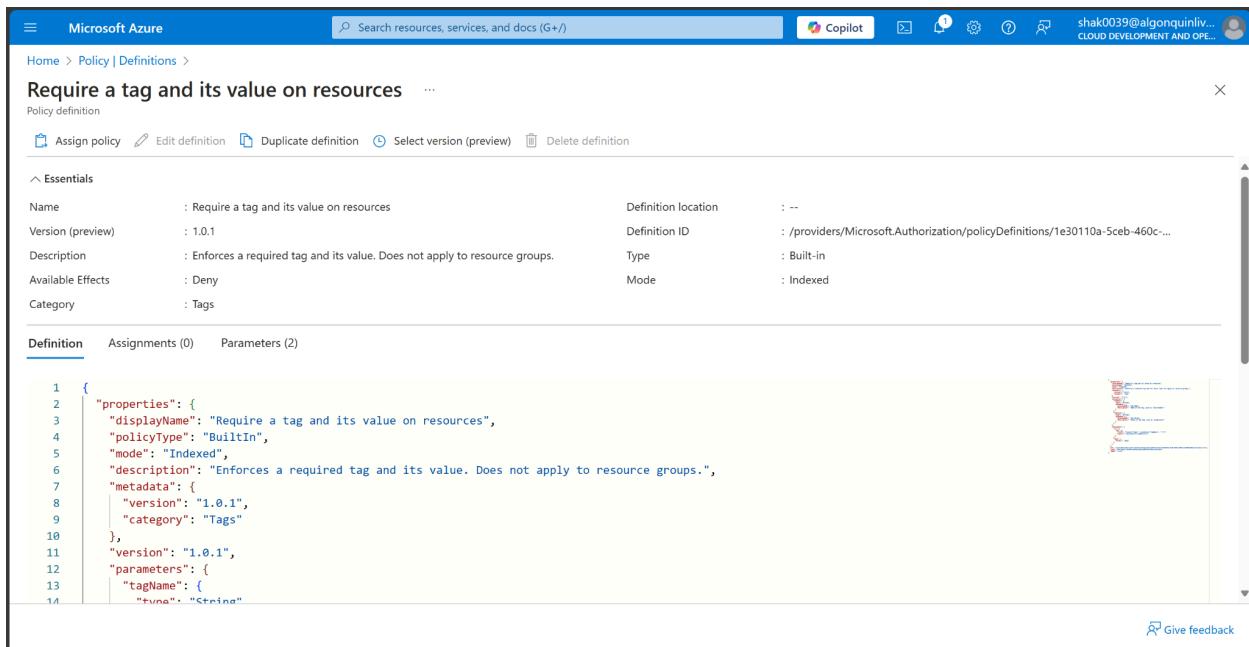
Name	: Require a tag and its value on resources	Definition location	: --
Version (preview)	: 1.0.1	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c...
Description	: Enforces a required tag and its value. Does not apply to resource groups.	Type	: Built-in
Available Effects	: Deny	Mode	: Indexed
Category	: Tags		

Definition Assignments (0) Parameters (2)

```

1  {
2   "properties": {
3     "displayName": "Require a tag and its value on resources",
4     "policyType": "BuiltIn",
5     "mode": "Indexed",
6     "description": "Enforces a required tag and its value. Does not apply to resource groups.",
7     "metadata": {
8       "version": "1.0.1",
9       "category": "Tags"
10    },
11   "version": "1.0.1",
12   "parameters": {
13     "tagName": {
14       "type": "String"
15     }
16   }
17 }
18

```



Microsoft Azure

Home > Policy | Definitions >

### Require a tag and its value on resources

Policy definition

```

14     "type": "String",
15     "metadata": {
16       "displayName": "Tag Name",
17       "description": "Name of the tag, such as 'environment'"
18     }
19   },
20   "tagValue": {
21     "type": "String",
22     "metadata": {
23       "displayName": "Tag Value",
24       "description": "Value of the tag, such as 'production'"
25     }
26   },
27 },
28 "policyRule": {
29   "if": {
30     "not": {
31       "field": "[concat('tags[', parameters('tagName'), ']')]",
32       "equals": "[parameters('tagValue')]"
33     }
34   },
35   "then": {
36     "effect": "deny"
37   }
38 },
39 },
40 "id": "/providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c-a204-c1c3969c6d62/versions/1.0.1",

```

Microsoft Azure

Home > Policy | Definitions >

### Require a tag and its value on resources

Policy definition

```

18   },
19 },
20   "tagValue": {
21     "type": "String",
22     "metadata": {
23       "displayName": "Tag Value",
24       "description": "Value of the tag, such as 'production'"
25     }
26   },
27 },
28 "policyRule": {
29   "if": {
30     "not": {
31       "field": "[concat('tags[', parameters('tagName'), ']')]",
32       "equals": "[parameters('tagValue')]"
33     }
34   },
35   "then": {
36     "effect": "deny"
37   }
38 },
39 },
40 "id": "/providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c-a204-c1c3969c6d62/versions/1.0.1",
41 "type": "Microsoft.Authorization/policyDefinitions/versions",
42 "name": "1.0.1"
43 }

```

12. On the Require a tag and its value on resources built-in policy definition blade, click Assign.

The screenshot shows the 'Assign policy' dialog in Microsoft Azure. The 'Scope' section is selected, showing a dropdown menu with 'shak0039(NIKKI SHAKERANEH)'. Below it, there's a link to 'Learn more about setting the scope'. The 'Basics' section includes fields for 'Policy definition' (set to 'Require a tag and its value on resources') and 'Version (preview)' (set to '1.0.\*'). The 'Overrides' section is collapsed. The 'Assignment name' field is empty. The 'Description' field is also empty. At the bottom, there are 'Previous' and 'Next' buttons, and a prominent blue 'Review + create' button.

13.Specify the Scope by clicking the ellipsis button and selecting the following values. Click Select when you are done.

Setting	Value
Subscription	your subscription
Resource Group	CST8912

The screenshot shows the 'Assign policy' step in the Azure portal. On the left, under 'Basics', the 'Scope' section is selected, showing 'shak0039(NIKKI SHAKERANEH)' as the target. Below it, 'Exclusions' and 'Resource selectors' are listed. Under 'Basics', 'Policy definition' is set to 'Require a tag and its value on resources', 'Version (preview)' is '1.0.\*', and 'Assignment name' is also 'Require a tag and its value on resources'. A 'Description' field is empty. At the bottom are 'Previous', 'Next', 'Review + create' (highlighted in blue), 'Select', 'Cancel', and 'Clear All Selections' buttons.

14. Configure the Basics properties of the assignment by specifying the following settings (leave others with their defaults):

Setting	Value
Assignment name	Require Cost Center tag with Default value
Description	Require Cost Center tag with default value for all resources in the resource group
Policy enforcement	Enabled

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**Basics**   Parameters   Remediation   Non-compliance messages   Review + create

**Exclusions**   Optionally select resources to exclude from the policy assignment. ...

**Resource selectors** (Expand)   Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

**Basics**

Policy definition \*   Require a tag and its value on resources ...

Version (preview) \*   1.0.\* ...

Overrides (Expand)   Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* ⓘ   Require Cost Center tag with Default value

Description   Require Cost Center tag with default value for all resources in the resource group

Policy enforcement ⓘ   Enabled

Previous   Next   Review + create   Give feedback

15. Note:

16. Click Next twice and set Parameters to the following values:

17.  
18.

Setting	Value
Tag Name	Cost Center
Tag Value	000

Microsoft Azure

Home > Policy | Definitions > Require a tag and its value on resources >

### Assign policy

Basics    **Parameters**    Remediation    Non-compliance messages    Review + create

Search by parameter name     Only show parameters that need input or review

Tag Name \*

Tag Value \*

Previous    Next    **Review + create**

Give feedback

17. Click Next and review the Remediation tab. Leave the Create a Managed Identity checkbox unchecked

Microsoft Azure

Home > Policy | Definitions > Require a tag and its value on resources >

### Assign policy

Basics    Parameters    **Remediation**    Non-compliance messages    Review + create

By default, this assignment will only take effect on newly created resources. Existing resources can be updated via a remediation task after the policy is assigned. For deployIfNotExists policies, the remediation task will deploy the specified template. For modify policies, the remediation task will edit tags on the existing resources.

**Managed Identity**  
Policies with the deployIfNotExists and modify effect types need the ability to deploy resources and edit tags on existing resources respectively. To do this, choose between an existing user assigned managed identity or creating a system assigned managed identity. [Learn more about Managed identity.](#)

Create a Managed Identity

**Permissions**

This policy does not contain any role definitions. Policies must specify role definitions in order to create the correct role assignments for the managed identity.

Previous    Next    **Review + create**

Give feedback

18. Click Review + Create and then click Create.

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### Assign policy

[Basics](#) [Parameters](#) [Remediation](#) [Non-compliance messages](#) [Review + create](#)

**Basics**

Scope	shak0039(NIKKI SHAKERANEH )/CST8912
Exclusions	--
Policy definition	Require a tag and its value on resources
Assignment name	Require Cost Center tag with Default value
Version (preview)	1.0.*
Description	Require Cost Center tag with default value for all resources in the resource group
Policy enforcement	Enabled
Assigned by	Nikki Shakeraneh

**Advanced**

Resource selectors	No selectors associated with this assignment.
Overrides	No overrides associated with this assignment.

**Parameters**

Tag Name	Cost Center
----------	-------------

[Previous](#) [Next](#) [Create](#) [Give feedback](#)

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Home > Policy | Definitions >

### Require a tag and its value on resources

Policy definition

[Assign policy](#) [Edit definition](#) [Duplicate definition](#) [Select version \(preview\)](#) [Delete definition](#)

**Essentials**

Name	: Require a tag and its value on resources	Definition location	: --
Version (preview)	: 1.0.1	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c-...
Description	: Enforces a required tag and its value. Does not apply to resource groups.	Type	: Built-in
Available Effects	: Deny	Mode	: Indexed
Category	: Tags		

[Definition](#) [Assignments \(1\)](#) [Parameters \(2\)](#)

```

5   "mode": "Indexed",
6   "description": "Enforces a required tag and its value. Does not apply to resource groups.",
7   "metadata": {
8     "version": "1.0.1",
9     "category": "Tags"
10    },
11   "version": "1.0.1",
12   "parameters": {
13     "tagName": {
14       "type": "String",
15       "metadata": {
16         "displayName": "Tag Name",
17         "description": "Name of the tag, such as 'environment'"}
18   }
  
```

[Give feedback](#)

19. Note: Now you will verify that the new policy assignment is in effect by attempting to create an Azure Storage account in the resource group. You will create the storage account without adding the required tag.

20. Note: It might take between 5 and 10 minutes for the policy to take effect.

21. In the portal, search for and select Storage Account, and select + Create.

22. On the Basics tab of the Create storage account blade, complete the configuration.

Setting	Value
Resource group	CST8912
Storage account name	any globally unique combination of between 3 and 24 lower case letters and digits, starting with a letter

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The 'Basics' tab is selected. In the 'Project details' section, the subscription is set to 'shak0039(NIKKI SHAKERANEH)' and the resource group is 'CST8912'. In the 'Instance details' section, the storage account name is 'azurestorageaccount', the region is '(Canada) Canada Central', and the primary service dropdown is set to 'Select a primary service'. At the bottom, there are 'Previous', 'Next', and 'Review + create' buttons, along with a 'Give feedback' link.

23. Select Review and then click Create.

The screenshot shows the 'Create a storage account' wizard in Microsoft Azure. The 'Tags' tab is selected, indicated by a blue underline. A red error message at the top states: 'Validation failed. Required information is missing or not valid.' Below the tabs, there are two sections: 'Basics' and 'Advanced'. Under 'Basics', the following details are listed:

Subscription	shak0039(NIKKI SHAKERANEH)
Resource group	CST8912
Location	Canada Central
Storage account name	azurestorageaccount
Primary service	
Performance	Standard
Replication	Read-access geo-redundant storage (RA-GRS)

Under 'Advanced', the following settings are shown:

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable large file charac.	Enabled

At the bottom of the screen, there are 'Previous', 'Next', and 'Create' buttons, along with a 'Give feedback' link.

24. You should receive a Validation failed message. View the message to identify the reason for the failure. Verify the error message states that the resource deployment was disallowed by the policy.

This screenshot shows the same 'Create a storage account' wizard in Microsoft Azure, but with a different validation error. The 'Tags' tab is selected. A red error message at the top states: 'Require Cost Center tag with Default value (Policy details)'. Below the tabs, the 'Tags' section displays a table:

Name	Value	Resource
<input type="text"/>	<input type="text"/>	All resources selected

At the bottom of the screen, there are 'Previous', 'Next', and 'Review + create' buttons, along with a 'Give feedback' link.

**Require Cost Center tag with Default value**

Policy Assignment

Name : Require Cost Center tag with Default value

Description : Require Cost Center tag with default value for all resources in the resource group

Assignment ID : /subscriptions/39b9a5ef-d664-4a6e-abd9-8a86328936b6/resourceGroups/CST8912/provider...

Scope : shak0039(NIKKI SHAKERANEH )/CST8912

Excluded scopes : --

Definition type : Policy

**Parameters**

Parameter ID ↑↓	Parameter name ↑↓	Parameter value ↑↓	Policy assignment parameter re... ↑↓
tagName	tagName	Cost Center	User defined parameter
tagValue	tagValue	000	User defined parameter

### Task 3: Apply tagging via an Azure policy

1. In this task, we will use the new policy definition to remediate any non-compliant resources. In this scenario, we will make any child resources of a resource group inherit the Cost Center tag that was defined on the resource group.
2. In the Azure portal, search for and select Policy.
3. In the Authoring section, click Assignments.

The screenshot shows the Microsoft Azure Policy | Assignments page. The left sidebar has 'Assignments' selected. The main area shows 'Total Assignments' at 1, 'Initiative Assignments' at 0, and 'Policy Assignments' at 1. A single assignment is listed with the name 'Require Cost Center tag with Default value', scope 'shak0039(NIKKI SHAKERANEH)', and type 'Policy'. There is an ellipsis icon next to the assignment row.

4. In the list of assignments, click the ellipsis icon in the row representing the **Require Cost Center tag with Default value** policy assignment and use the **Delete assignment** menu item to delete the assignment.

The screenshot shows the Microsoft Azure Policy | Assignments page with a 'Delete assignment' dialog box overlaid. The dialog asks if you want to delete the policy assignment 'Require Cost Center tag with Default value?'. It has 'Yes' and 'No' buttons. The background table shows 1 total assignment, 0 initiative assignments, and 1 policy assignment.

The screenshot shows the Microsoft Azure Policy | Assignments page. On the left, there's a sidebar with options like Overview, Getting started, Compliance, Remediation, Events, Authoring (with Definitions, Assignments selected, and Exemptions), and a search bar. The main area has three counts: Total Assignments (1), Initiative Assignments (0), and Policy Assignments (1). A table lists the assignment with columns for Assignment name, Scope, and Type. A success message at the top right says 'Successfully deleted assignment'.

- Click Assign policy and specify the Scope by clicking the ellipsis button and selecting the following values:

Setting	Value
Subscription	your Azure subscription
Resource Group	CST8912

Microsoft Azure

Home > Policy | Assignments > Assign policy ...

**Basics** Parameters Remediation Non-compliance messages Review + create

**Scope**

Scope \* shak0039(NIKKI SHAKERANEH) [Learn more about setting the scope](#)

Exclusions Optionally select resources to exclude from the policy assignment.

Resource selectors [\(Expand\)](#) Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

**Basics**

Policy definition \* [Select](#)

Overrides [\(Expand\)](#) Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* [\(Optional\)](#)

Description

Previous Next Review + create Select Cancel Clear All Selections

Microsoft Azure

Home > Policy | Assignments > Assign policy ...

**Basics** Parameters Remediation Non-compliance messages Review + create

**Scope**

Scope \* shak0039(NIKKI SHAKERANEH)/CST8912 [Learn more about setting the scope](#)

Exclusions Optionally select resources to exclude from the policy assignment.

Resource selectors [\(Expand\)](#) Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

**Basics**

Policy definition \* [Select](#)

Overrides [\(Expand\)](#) Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* [\(Optional\)](#)

Description

Previous Next Review + create Give feedback

- To specify the Policy definition, click the ellipsis button and then search for and select Inherit a tag from the resource group if missing.

Microsoft Azure

Home > Policy | Assignments >

### Assign policy

**Basics** Parameters Remediation Non-compliance messages Review

**Scope**

Scope \* shak0039(NIKKI SHAKERANEH )/CST8912

Learn more about setting the scope

**Exclusions**

Optionally select resources to exclude from the policy assignment.

**Resource selectors** (Expand)

Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

**Basics**

Policy definition \*

Overrides (Expand)

Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* ⓘ

Description

Inherit a tag from the resource group if missing

Inherit a tag from the subscription if missing

1 out of 1 policies selected

Add Cancel Give feedback

Microsoft Azure

Home > Policy | Assignments >

### Assign policy

**Basics** Parameters Remediation Non-compliance messages Review + create

**Scope**

Scope \* shak0039(NIKKI SHAKERANEH )/CST8912

Learn more about setting the scope

**Exclusions**

Optionally select resources to exclude from the policy assignment.

**Resource selectors** (Expand)

Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

**Basics**

Policy definition \*

Inherit a tag from the resource group if missing

Version (preview) \*

1.\*.\*

Overrides (Expand)

Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* ⓘ

Inherit a tag from the resource group if missing

Description

Previous Next Review + create Give feedback

- Select Add and then configure the remaining Basics properties of the assignment.

Setting	Value

Assignment name	Inherit the Cost Center tag and its value 000 from the resource group if missing
Description	Inherit the Cost Center tag and its value 000 from the resource group if missing
Policy enforcement	Enabled

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

shak0039@algonquinvli... CLOUD DEVELOPMENT AND OPE...

Home > Policy | Assignments >

Assign policy ...

Basics Parameters Remediation Non-compliance messages Review + create

Exclusions

Optionaly select resources to exclude from the policy assignment.

Resource selectors (Expand)

Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

Basics

Policy definition \*

Inherit a tag from the resource group if missing

Version (preview) \*

1.4.\*

Overrides (Expand)

Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name \* ⓘ

Inherit the Cost Center tag and its value 000 from the resource group if miss...

Description

Inherit the Cost Center tag and its value 000 from the resource group if missing

Policy enforcement ⓘ

Enabled

Previous Next Review + create Give feedback

8. Click Next twice and set Parameters to the following values:

Setting	Value
Tag Name	Cost Center

9. Click Next and, on the Remediation tab, configure the following settings (leave others with their defaults):

Setting	Value
Create a remediation task	enabled
Policy to remediate	Inherit a tag from the resource group if missing

10. Screenshot of the policy remediation page.

By default, this assignment will only take effect on newly created resources. Existing resources can be updated via a remediation task after the policy is assigned. For deployIfNotExists policies, the remediation task will deploy the specified template. For modify policies, the remediation task will edit tags on the existing resources.

Create a remediation task

Policy to remediate: Inherit a tag from the resource group if missing

**Managed Identity**  
Policies with the deployIfNotExists and modify effect types need the ability to deploy resources and edit tags on existing resources respectively. To do this, choose between an existing user assigned managed identity or creating a system assigned managed identity. [Learn more about Managed Identity](#).

Create a Managed Identity

Type of Managed Identity  System assigned managed identity  
 User assigned managed identity

System assigned identity location: (Canada) Canada Central

Previous Next Review + create Give feedback

## 11. Click Review + Create and then click Create.

**Basics**

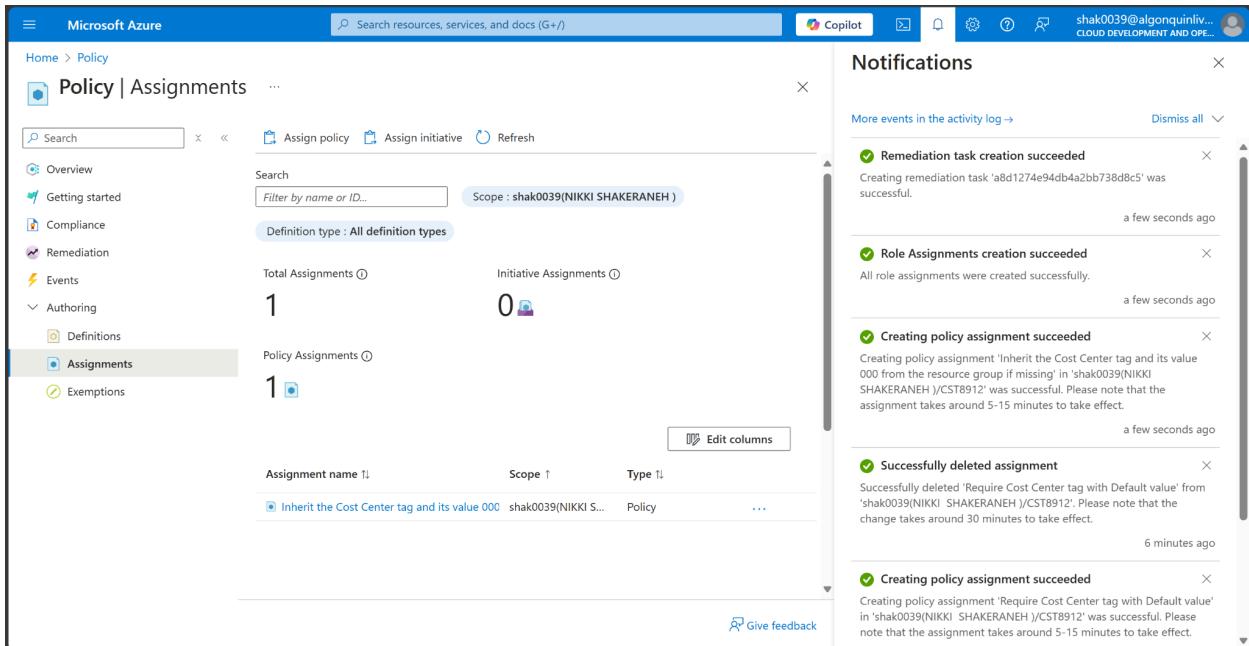
Scope	shak0039(NIKKI SHAKERANEH )/CST8912
Exclusions	--
Policy definition	Inherit a tag from the resource group if missing
Assignment name	Inherit the Cost Center tag and its value 000 from the resource group if missing
Version (preview)	1.*
Description	Inherit the Cost Center tag and its value 000 from the resource group if missing
Policy enforcement	Enabled
Assigned by	Nikki Shakeraneh

**Advanced**

Resource selectors	No selectors associated with this assignment.
Overrides	No overrides associated with this assignment.

**Parameters**

Previous Next Create Give feedback



The screenshot shows the Microsoft Azure Policy Assignments page. On the left, there's a navigation menu with options like Overview, Getting started, Compliance, Remediation, Events, Authoring (with Definitions, Assignments selected, and Exemptions), and Notifications. The main area displays 'Total Assignments' (1) and 'Initiative Assignments' (0). Below this is a table for 'Policy Assignments' with one item: 'Inherit the Cost Center tag and its value 000' (shak0039(NIKKI SHAKERANEH)) assigned via 'Policy'. To the right, a 'Notifications' sidebar lists several successful events: 'Remediation task creation succeeded', 'Role Assignments creation succeeded', 'Creating policy assignment succeeded', 'Successfully deleted assignment', and another 'Creating policy assignment succeeded'. Each notification includes a timestamp.

Note: To verify that the new policy assignment is in effect, you will create another Azure storage account in the same resource group without explicitly adding the required tag.

Note: It might take between 5 and 10 minutes for the policy to take effect. Search for and select Storage Account, and click + Create.

12. On the Basics tab of the Create storage account blade, verify that you are using the Resource Group that the Policy was applied to and specify the following settings (leave others with their defaults) and click Review:

Setting	Value
Storage account name	any globally unique combination of between 3 and 24 lower case letters and digits, starting with a letter

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal. The 'Basics' tab is selected. The 'Subscription' dropdown is set to 'shak0039(NIKKI SHAKERANEH)'. The 'Resource group' dropdown is set to 'CST8912' with a 'Create new' option available. In the 'Instance details' section, the 'Storage account name' is 'azureeestorage', 'Region' is '(Canada) Canada Central', and 'Primary service' is 'Select a primary service'. At the bottom, there are 'Previous', 'Next', and 'Review + create' buttons, along with a 'Give feedback' link.

13. Verify that this time the validation passed and click Create.

The screenshot shows the 'Create a storage account' wizard in the Microsoft Azure portal, with the 'Review + create' tab selected. The 'Basics' section displays the configuration: Subscription 'shak0039(NIKKI SHAKERANEH)', Resource group 'CST8912', Location 'Canada Central', Storage account name 'azureeestorage', Primary service 'Standard', and Replication 'Read-access geo-redundant storage (RA-GRS)'. The 'Advanced' section shows settings like 'Enable hierarchical namespace' (Disabled), 'Enable SFTP' (Disabled), 'Enable network file system v3' (Disabled), 'Allow cross-tenant replication' (Disabled), 'Access tier' (Hot), and 'Enable large file shares' (Enabled). At the bottom, there are 'Previous', 'Next', and 'Create' buttons, along with a 'Give feedback' link.

The screenshot shows the Microsoft Azure Deployment Overview page. The main content area displays a green checkmark icon indicating that the deployment is complete. Below this, there are sections for 'Deployment details' and 'Next steps'. A 'Go to resource' button is located at the bottom of the main content. To the right, a 'Notifications' sidebar is visible, showing a single notification about a deployment success. The notification includes a green checkmark icon, the deployment name, and a timestamp of 'a few seconds ago'.

14. Once the new storage account is provisioned, click Go to resource.

The screenshot shows the Microsoft Azure Storage account overview page for 'azureeestorage'. The left sidebar lists various management options like Activity log, Tags, Diagnose and solve problems, etc. The main content area is divided into sections: 'Essentials' (listing Resource group, Location, Primary/Secondary location, Subscription, Disk state, and Tags), 'Properties' (blob service settings like Hierarchical namespace, Default access tier, Blob anonymous access, Blob soft delete, Container soft delete, Versioning, Change feed, and NFS v3), 'Security' (options for REST API operations, Storage account key access, Minimum TLS version, and Infrastructure encryption), and 'Networking' (allow access from All networks). The 'Tags' section shows a tag named 'Cost Center : 000'.

15. On the Tags blade, note that the tag Cost Center with the value 000 has been automatically assigned to the resource.

The screenshot shows the Microsoft Azure portal interface. The user is navigating through the 'azurereestorage' storage account. In the left sidebar, the 'Tags' option is selected. The main content area displays a table with one row of data: 'Cost Center' and its value '000'. There are buttons for 'Apply' and 'Discard changes' at the bottom.

## Task 4: Configure and test resource locks

### 1. Search for and select your resource group.

The screenshot shows the Microsoft Azure portal interface. The user is navigating through the 'Resource groups' section, specifically the 'CST8912' group. The 'Overview' blade is active, displaying a list of resources. One resource, 'azurereestorage', is highlighted. The blade includes sections for Overview, Resources, Recommendations, and a filter bar at the top.

### 2. In the Settings blade, select Locks.

The screenshot shows the Microsoft Azure Resource Groups page for the resource group 'CST8912'. The 'Locks' section is selected in the navigation menu. A message at the top left indicates a new version of the browser experience is being used. The main content area displays a table with one row: 'This resource has no locks.' The table columns are 'Lock name', 'Lock type', 'Scope', and 'Notes'.

3. Select Add and complete the resource lock information. When finished select Ok.

Setting	Value
Lock name	rg-lock
Lock type	delete (notice the selection for read-only)

The screenshot shows the Microsoft Azure Resource Groups page for the resource group 'CST8912'. The 'Locks' section is selected in the navigation menu. A modal dialog box titled 'Add lock' is open, prompting for 'Lock name' (set to 'rg-lock') and 'Lock type' (set to 'Delete'). The 'OK' button is visible at the bottom of the dialog.

The screenshot shows the Microsoft Azure Resource Groups blade for the resource group 'CST8912'. On the left, there's a navigation pane with options like 'Create', 'Group by none', 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Resource visualizer', 'Events', 'Settings' (with sub-options like Deployments, Security, Deployment stacks, Policies, Properties, and Locks), 'Cost Management', 'Monitoring', 'Automation', 'Help', and 'Support+'. The main area is titled 'CST8912 | Locks' and contains a table with one row:

Lock name	Lock type	Scope	Notes
rg-lock	Delete	<a href="#">CST8912</a>	<a href="#">Edit</a> <a href="#">Delete</a>

4. Navigate to the resource group Overview blade, and select Delete resource group.
5. In the Enter resource group name to confirm deletion textbox provide the resource group name, cst8912. Notice you can copy and paste the resource group name.

The screenshot shows the Microsoft Azure Resource Groups blade for the resource group 'CST8912'. On the right, a modal dialog titled 'Delete a resource group' is open. It displays the message: 'The following resource group and all its dependent resources will be permanently deleted.' Below this, it says 'Resource group to be deleted' and shows 'CST8912'. It also lists 'Dependent resources to be deleted (1)' which is 'azureestorage' (Storage account). At the bottom, there's a text input field labeled 'Enter resource group name to confirm deletion \*' containing 'CST8912', and two buttons: 'Delete' (red) and 'Cancel'.

The screenshot shows the Microsoft Azure Resource Groups interface. On the left, the 'Resource groups' list includes 'CST8912'. The 'Overview' tab is selected for 'CST8912'. On the right, a modal window titled 'Delete a resource group' is open, asking for confirmation to delete the group. It lists 'Dependent resources to be deleted' as 'azureregstorage'. A 'Delete confirmation' message states: 'Deleting this resource group and its dependent resources is a permanent action and cannot be undone.' Buttons for 'Delete' and 'Go back' are present.

6. Notice the warning: Deleting this resource group and its dependent resources is a permanent action and cannot be undone. Select Delete.
7. You should receive a notification denying the deletion.

The screenshot shows the Microsoft Azure Resource Groups interface after a failed deletion attempt. The 'Delete resource group CST8912 failed' message is displayed, stating: 'The resource group CST8912 is locked and can't be deleted. Click here to manage locks for this resource group.' The 'azureregstorage' resource is still listed in the 'Resources' section.

## Task 5: Clean up the resources

1. In the portal, search for and select Policy.

Name	Scope	Compliance state	Resource compliance	Non-compliant resources	Non-compliant policies
Inherit the Cost Center tag an...	shak0039(NIKKI SHAKERANEH)	Compliant	100% (1 out of 1)	0	0

2. In the Authoring section, click Assignments, click the ellipsis icon to the right of the assignment you created in the previous task and click Delete assignment.

Assignment name	Scope	Type
Inherit the Cost Center tag and its value 000 from the resource group if missing	shak0039(NIKKI SHAKERANEH) /CST...	Policy

Microsoft Azure

Home > Policy

## Policy | Assignments

Search resources, services, and docs (G+)

Copilot

shak0039@algonquinlive... CLOUD DEVELOPMENT AND OPE...

Search

Assign policy  Assign initiative  Refresh

Overview Getting started Compliance Remediation Events

Authoring

- Definitions
- Assignments
- Exemptions

Search

Filter by name or ID...

Scope : shak0039(NIKKI SHAKERANEH) Definition type : All definition types

Total Assignments	Initiative Assignments	Policy Assignments
1	0	1

**Delete assignment**

Assignment name : Inherit the Cost Center tag and its value 000 from the resource

Do you want to delete the policy assignment 'Inherit the Cost Center tag and its value 000 from the resource group if missing'?

Yes  No

Edit columns

Type

IT... Policy ...

Give feedback

Microsoft Azure

Home > Policy

## Policy | Assignments

Search resources, services, and docs (G+)

Copilot

shak0039@algonquinlive... CLOUD DEVELOPMENT AND OPE...

Search

Assign policy  Assign initiative  Refresh

Overview Getting started Compliance Remediation Events

Authoring

- Definitions
- Assignments
- Exemptions

**Successfully deleted assignment**

Successfully deleted 'Inherit the Cost Center tag and its value 000 from the resource group if missing' from 'shak0039(NIKKI SHAKERANEH)/CST8912'. Please note that the change takes around 30 minutes to take effect.

Total Assignments Initiative Assignments Policy Assignments

0 0 0

Assignment name : Inherit the Cost Center tag and its value 000 from the resource

Scope ↑ Type ↓

No policies found in the given scope.

Edit columns

Give feedback

3. In the portal, search for and select Storage accounts.

The screenshot shows the Microsoft Azure Storage accounts page. The storage account 'azureeestorage' is selected. The 'Overview' tab is active, displaying details such as Resource group (CST8912), Location (canadacentral), Primary/Secondary Location (Primary: Canada Central, Secondary: Canada East), Subscription (shak0039(NIKKI SHAKERANEH)), and Account kind (StorageV2 (general purpose v2)). The 'Properties' tab is also visible.

- In the list of storage accounts, select the resource group corresponding to the storage account you created in the last task of this lab. Select Tags and click Delete (Trash can to the right) to the Role:Infra tag and press Apply.

The screenshot shows the 'Tags' section of the 'azureeestorage' storage account. A tag named 'Cost Center : 000' is listed under '1 to be deleted'. The 'Apply' button is highlighted at the bottom.

The screenshot shows the Microsoft Azure Storage accounts blade. On the left, a navigation menu includes options like Overview, Activity log, Tags (which is selected), Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, Storage Mover, Partner solutions, Data storage (Containers, File shares, Queues, Tables), and Security + networking (Networking, Front Door and CDN). The main content area displays the 'Tags' section for the 'azureeestorage' storage account. It shows a table with one row: 'azur... (Storage account)' and 'No changes'. Below the table are 'Apply' and 'Discard changes' buttons. To the right, a 'Notifications' sidebar lists two recent events: 'Successfully deleted assignment' (3 minutes ago) and 'Deployment succeeded' (14 minutes ago). Buttons for 'Go to resource' and 'Pin to dashboard' are also present.

- Click Overview and click Delete on the top of the storage account blade.  
When prompted for the confirmation, in the Delete storage account blade, type the name of the storage account to confirm and click Delete.

The screenshot shows the Microsoft Azure Storage accounts blade with 'azureeestorage' selected. The 'Overview' tab is active. On the right, a 'Delete storage account' dialog box is open. It contains the following information:  
**Resource to be deleted:** azur...  
**Dependent resources to be deleted:** Containers, File shares, Tables, Queues  
A table shows the number of instances and total data stored for each dependent resource:

Resource	Number of instances	Total data stored
Containers	-	-
File shares	-	-
Tables	-	-
Queues	-	-

An input field at the bottom asks 'Enter storage account name to confirm deletion \*' with 'azureeestorage' typed in. Buttons for 'Delete' and 'Cancel' are at the bottom right, along with a 'Give feedback' link.

**Microsoft Azure**

Storage accounts >

### Storage accounts

Cloud Development and Operations

+ Create ⌂ Restore ...

Filter for any field... Name ↑

**azureeestorage**

Overview

Upload Open in Explorer

Search

Essentials

- Activity log
- Tags
- Diagnose and solve problems
- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Storage Mover
- Partner solutions
- Containers
- File shares
- Queues
- Tables
- Tags (edit) Add tags

Properties Monitoring Capabilities

Blob service Hierarchical namespace Default access tier

The following storage account and its contents will be deleted.

**Resource to be deleted**

azureeestorage

**Dependent resources to be deleted**

The data provided is regularly updated about 2-4 times a day and published hourly. If your account has extremely large objects, it may be over a day between updates.

Resource	Number of instances	Total data stored
Containers		
File shares		
Tables		
Queues		

**Delete confirmation**

Are you sure you want to delete the storage account and its contents?

**Confirm delete** Go back

Enter storage account name to confirm deletion \*

azureeestorage

Delete Cancel

Give feedback

**Microsoft Azure**

Storage accounts > ...

### Storage accounts

Cloud Development and Operations

+ Create ⌂ Restore ⌂ Manage view ⌂ Refresh ⌂ Export to CSV ⌂ Open query ⌂ Assign tags ⌂ Delete

Filter for any field... Subscription equals all Resource group equals all Location equals all ⌂ Add filter

No grouping List view

Showing 1 to 1 of 1 records.

Name	Type	Kind	Resource group	Location	Subscription
azureeestorage	Storage account	StorageV2	CST8912	Canada Central	shak0039(NIKKI SHAKERANEH)

Notifications

More events in the activity log → Dismiss all

Successfully deleted storage account

Successfully deleted storage account 'azureeestorage'. A few seconds ago

Successfully deleted assignment

Successfully deleted 'Inherit the Cost Center tag and its value 000 from the resource group if missing' from 'shak0039(NIKKI SHAKERANEH)/CST8912'. Please note that the change takes around 30 minutes to take effect. 5 minutes ago

Deployment succeeded

Deployment 'azureeestorage\_1731458811369' to resource group 'CST8912' was successful. 16 minutes ago

Go to resource Pin to dashboard

Give feedback

**Delete a resource group**

The following resource group and all its dependent resources will be permanently deleted.

**Resource group to be deleted**

CST8912

**Dependent resources to be deleted (0)**

All dependent resources, including hidden types, are shown

Name	Resource type

Enter resource group name to confirm deletion \*

CST8912

**Delete** **Cancel**

**Delete a resource group**

The following resource group and all its dependent resources will be permanently deleted.

**Resource group to be deleted**

CST8912

**Dependent resources to be deleted (0)**

All dependent resources, including hidden types, are shown

Name

**Delete confirmation**

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

**Delete** **Go back**

Enter resource group name to confirm deletion \*

CST8912

**Delete** **Cancel**

The screenshot shows the Microsoft Azure Resource Groups interface. At the top, there's a banner indicating a new version of the Browse experience is available. The main area shows a "Resource groups" page with a message: "No resource groups to display". Below this, a detailed description of Resource groups is provided. On the right, a specific resource group named "CST8912" is shown, with a message: "Deleted resource group CST8912". The "Essentials" section shows a search bar and filter options, but it displays "Showing 0 to 0 of 0 records." and "No resources match your filters".

## Lab Report

In this lab, I was able to get some practice in implementing tagging, policy enforcement, and resource locks in Azure to ensure compliance with the regulatory requirements. First, I learned to set up a foundational governance framework, and also to enforce a rule that requires all resources in this group to have the "Cost Center" tag. Next, I learned about the tag inheritance policy that applies the "Cost Center" tag to any child resources automatically. This is important, because it ensures that the tagging is consistent throughout the resource group. I also applied a resource lock, which blocked deletion attempts, and it enhanced protection against accidental or unauthorized deletions. This lab was very helpful overall, because it demonstrated the importance of tagging for cost management and automated policy enforcement for regulatory compliance. By combining these tools, I gained a better understanding of the shared responsibility model for cloud security, as well as how to ensure that I am achieving data privacy, data protection, and cybersecurity standards.