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Sub: CS

[Batch-71]

Create a cluster for the application:

The screenshot shows the IBM Cloud Kubernetes dashboard for a cluster named "mycluster-syd01-u3c.2x4-group2". The cluster is currently in a "Normal" state with one healthy worker node. The master status is also "Normal". The ingress status is marked as "Warning". The cluster ID is "cr3cp7vs0jfn8bg998g", version "1.30.5_1537", and it was created on "8/22/2024, 10:59 AM". The master location is "Sydney". The cluster uses "Classic" infrastructure and is part of the "default" resource group. The image security enforcement is set to "Disable". A progress bar at the bottom indicates 100% normal worker nodes. The dashboard includes sections for Overview, Details, Worker node health, and Worker node details. The bottom of the screen shows the Windows taskbar with various pinned icons and system status.

Key Protect

The screenshot shows the IBM Cloud Catalog interface. On the left, there's a sidebar with filters for Type (Service), Provider (IBM), Last updated (07/01/2024), Category (Security), Compliance (EU Supported, Financial Services Validated, HIPAA Enabled, IAM-enabled, Service Endpoint Supported), and Location (Tokyo, Dallas, Sydney, Sao Paulo, Toronto, Frankfurt, Madrid, London). The main content area has tabs for 'Create' and 'About'. Under 'Create', there are sections for 'Select a location' (with options for 'IBM Cloud' and 'Satellite') and 'Pricing plan' (listing a plan for 'Key version pricing' at ₹89.9546 INR/Key version). A summary panel on the right provides details about the service: Location: Sydney, Plan: Graduated Tier Pricing, Service name: Key Protect-007, and Resource group: Ganpat-2021-Sem6-rg. It also includes an 'Estimate costs' button, an 'Apply promo code' field, and a checkbox for license agreements.

This screenshot shows the 'Create' page for the Key Protect service. It includes a 'Pricing plan' section with a table for 'Key version pricing' (5 key versions free per account, subsequent pricing per key version) and a note about key rotation. Below this is a 'Configure your resource' section where users can set the 'Service name' (Key Protect-007) and 'Select a resource group' (Ganpat-2021-Sem6-rg). There are also fields for 'Tags' (Examples: env:dev, version-1) and 'Allowed network policy' (set to Public and private). A summary panel on the right shows the same service details as the previous screenshot, along with an 'Add to estimate' button and a checkbox for license agreements.

Screenshot of the IBM Cloud Key Protect - Key Protect interface.

The top navigation bar includes tabs for Cloud Security, Verify your identity, Use your encryption keys, Key Protect - IBM Cloud, mycluster-sy01-u3c2x4..., ChatGPT, and a search bar.

The main page displays the resource list for "Key Protect-007". It shows a status of "Active" and an "Add tags" button. A sidebar on the left lists "Getting started" and "Keys".

The central content area features a "Welcome to Key Protect" section with the subtext: "Manage, control, and get visibility of your encryption keys throughout the key life cycle." To the right is a graphic of a blue padlock on a blue surface with a blue labyrinth background.

A "Get started" section contains two images: one of a large blue key and another of a server rack with a person interacting with it.

The taskbar at the bottom shows various application icons and system status indicators.

Screenshot of the IBM Cloud Key Protect - Key Protect interface, showing the "Add key" modal.

The top navigation bar and resource list are identical to the previous screenshot.

The "Keys" section on the left shows a table with columns "Name" and "Key ID". A message "No keys found. Add" is displayed below the table.

The "Add key" modal is open, divided into two tabs: "Create a key" (selected) and "Import your own key".

The "Root key" section is highlighted, describing it as a symmetric key-wrapping key used for protecting other cryptographic keys. It includes a "Key name" input field containing "kshitijgupta505".

The "Standard key" section describes it as a plain text store for passwords or connection strings. It includes an "Advanced Options" section and a "Key description" input field.

At the bottom of the modal are "Close" and "Add key" buttons.

The taskbar at the bottom shows various application icons and system status indicators.

The screenshot shows the IBM Cloud Key Protect interface. On the left sidebar, under 'Keys', there is one key listed: 'kshitijgupta505'. The main panel displays the key details: Name: kshitijgupta505, Key ID: 3e9f79ef-7a1c-4e73-9621-93877104af4e, State: Enabled, Created: 14 Okt. 2024 07:42:42 PM, Last modified: 14 Okt. 2024 07:42:42 PM. The key type is Root. A 'Key CRN' section shows the CRN: crn:v1:bluemix:public:kms:au-syda/9553f5f7184ddb922a056f240cf78ef6:46b45901-0352-41e0-8684-926a4fa4b230:key:3e9f79ef-7a1c-4e73-9621-93877104af4e. The status bar at the bottom indicates it's 29°C Haze, ENG, 14-10-2024.

Object-Storage:

The screenshot shows the IBM Cloud Object Storage interface. On the left sidebar, under 'Instances', there is one instance listed: 'Cloud Object Storage-1s'. The main panel displays the 'Buckets' tab, which is currently selected. It shows a table with columns: Name, Public access, Location, Storage class, and Created. There are no buckets listed in the table. Below the table, there is a section titled 'Buckets' with a sub-section 'Get started by creating a bucket to store unstructured data. A bucket is a container for your data.' The status bar at the bottom indicates it's 29°C Haze, ENG, 14-10-2024.

Cloud Object Storage-1s / Create custom bucket

Unique bucket name
kshitijgupta505

Bucket naming rules:

- Must be unique across the **whole** IBM Cloud Object Storage system
- Do not use any personal information (any part of a name, address, financial or security accounts or SSN)
- Must start and end in alphanumeric characters (3 to 63)
- Characters allowed: lowercase, numbers and nonconsecutive dots and hyphens

Resiliency
A bucket's resiliency is defined by the endpoint used to create it.

Cross Region Highest availability Regional Best performance Single Site Data sovereignty

Location
Select a location where you would like your data to be physically stored.

United States - Dallas (us-south) View options

Cancel Create bucket

Integrate with Key Protect:

Cloud Object Storage-1s / Overview | Setup storage / Cloud Object Storage - IBM / mycluster-sy01-u3c2x4-g / ChatGPT

Cloud Object Storage-1s / Create custom bucket

Key Protect integration

Find the desired key to associate with this bucket.

I can't find my key

Search by instance Locate by CRN

Select a Key Protect instance

Key name	Key ID
kshitijgupta505	3e9f79ef-7a1c-4e73-9621-93877104af4e

Items per page: 10 1–1 of 1 item 1 of 1 page

Cancel Create bucket Cancel Associate key

Unable to create bucket becuz admin restrict the permission:

The screenshot shows the IBM Cloud Object Storage configuration interface. A 'Create bucket' dialog is open, containing several sections for configuring activity tracking events, monitoring metrics, and a note about administrator access. At the bottom of the dialog, a red error message box displays the code 'BMCOOSUI010100: Please contact your administrator for access.' Below the dialog, the Windows taskbar is visible with various pinned icons and system status indicators.

App ID

The screenshot shows the IBM App ID service catalog page. A 'Create' dialog is open, allowing users to define the service type, provider, location, and pricing plan. On the right side, a 'Summary' panel provides details about the proposed service, including its location (Sydney), plan (Graduated tier), and resource group (default). The Windows taskbar is visible at the bottom.

Screenshot of the IBM Cloud App ID service configuration page.

Pricing

Tiers	Pricing
1 - 100,000	₹1.79683563 INR/Advanced Authentication Event
100,001 - 1,000,000,000	₹1.79683563 INR/Advanced Authentication Event
1,000,000,000+	₹0.9025965 INR/Advanced Authentication Event

Lite

1000 monthly events and 1000 authorized users.
 Authentication events occur when a token is issued. Tokens can be issued as a response to a sign-in request initiated by a user, or on behalf of the user by an app. Authenticated tokens last for 1 hour and anonymous tokens last for 30 days. Authorized users include any unique users that log in by using your service, including anonymous users. Example: if a user logs in with Facebook and later logs in by using Google, they are considered two separate authorized users.

Financial Services Validated

Configure your resource

Service name: App ID-o7

Select a resource group: default

Tags: Examples: env.dev, version-1

Select a key management service: Provider-managed encryption (default)

Select a root key: Provider-managed encryption (default)

Summary

App ID: App ID-o7
Location: Sydney
Plan: Graduated tier
Service name: App ID-o7
Resource group: default

Estimate costs

Apply promo code

I have read and agree to the following license agreements: Terms

Create

Add to estimate

Screenshot of the IBM Cloud App ID service overview page.

Resource list / App ID-o7

Overview

Manage Authentication, Cloud Directory, Identity Providers, Profiles and roles, Login Customization, Applications, Service credentials, Plan.

Welcome to App ID

Begin building secure and engaging digital applications with App ID authentication by following this step-by-step walkthrough. Get started with a working sample.

Download sample

Already have an application? Learn how to [add App ID](#).

Explore App ID

- Getting started? Explore related links and samples to learn more about App ID.
- Catch up with the latest news from App ID. [View the release notes](#).
- Learn how to get the most out of App ID. [Go to our docs page](#).
- Protect your Node.js front-end web applications with App ID. [Get started with a simple authentication flow in less than 20 minutes by following this guide](#).
- Ensure the security of your Liberty for Java back-end applications with App ID. [In less than 20 minutes, get a simple authentication flow up and running by using this guide](#).
- Harness the power of user attributes with App ID. [Learn how to customize your user experience with this step-by-step guide](#).

Watch tutorials

Check out the tutorials on our [Youtube channel](#).

White Paper

The App ID Whitepaper covers a range of topics, including an overview of the App ID service, our development and operations principles, App ID usage patterns, and an explanation of App ID capabilities.

[Read more](#)

Deploy the app:

IBMDeveloperSkillsNetwork SECM03EN
Apply end to end security to a cloud application

Course Progress Dates Discussion

Course / Deploy the app / Get the code

1. Get the application's code:

1. Get the application's code:

```
git clone https://github.com/IBM-Cloud/secure-file-storage
```

Support

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```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.5011]
(c) Microsoft Corporation. All rights reserved.

Course
D:\SEM-7\CS\Course>git clone https://github.com/IBM-Cloud/secure-file-storage
Cloning into 'secure-file-storage'...
remote: Enumerating objects: 1086, done.
remote: Counting objects: 100% (393/393), done.
remote: Compressing objects: 100% (204/204), done.
remote: Total 1086 (delta 248), reused 296 (delta 184), pack-reused 693 (from 1)
Receiving objects: 100% (1086/1086), 1.08 MiB | 1.47 MiB/s, done.
Resolving deltas: 100% (672/672), done.
D:\SEM-7\CS\Course>
```

Support

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Type here to search

File Explorer Task View Start Search Edge Mail Calendar LinkedIn Word Excel Google Chrome

29°C Haze 14-10-2024 20:07

Deployment:

The screenshot shows the VS Code interface with the following details:

- Explorer View:** Shows a project structure with files: node_modules, app.js, deployment.yaml, Dockerfile, package-lock.json, package.json, and service.yaml.
- Terminal Output:** Displays the command "docker build -t img1_007:1.0 .". The output shows the build process, including loading build definitions from Dockerfile, transferring files, and building context. The total time taken is 4.2s.
- Bottom Status Bar:** Shows the file is saved (0 changes), the current file is deployment.yaml, and the status bar indicates 34°C, Smoke, 12:55, 16-10-2024, and ENG.

The screenshot shows the VS Code interface with the following details:

- Explorer View:** Shows a project structure with files: node_modules, app.js, deployment.yaml, Dockerfile, package-lock.json, package.json, and service.yaml.
- Terminal Output:** Displays the command "docker run --name C_img -p 8000:3000 img_007:1.0". The output shows an error message: "Error response from daemon: Conflict. The container name "/C_img" is already in use by container "ef03eeeeaaeca14bcd007998bd30a86625f00ad6fc7dd77e15b4c0c8ad77ad8c6". You have to remove (or rename) that container to be able to reuse that name." It then shows the command "docker run --name C2_img -p 8000:3000 img_007:1.0".
- Bottom Status Bar:** Shows the file is saved (0 changes), the current file is deployment.yaml, and the status bar indicates 34°C, Smoke, 12:55, 16-10-2024, and ENG.

The screenshot shows a terminal window within a code editor interface. The terminal is executing commands related to deploying an application to IBM Cloud. It starts by authenticating and selecting a targeted account:

```
API endpoint: https://cloud.ibm.com
Authenticating...
OK

Targeted account IBM India Pvt Ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063
```

It then prompts for a region selection:

```
Select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. eu-de
6. eu-es
7. eu-gb
8. ca-tor
9. us-south
10. us-east
11. br-sao
Enter a number> 1
Targeted region au-syd
```

The targeted region is confirmed:

```
Targeted region au-syd
```

This screenshot shows a continuation of the terminal session. After targeting the region, the terminal displays information about the API endpoint, account details, and resource group settings:

```
API endpoint: https://cloud.ibm.com
Region: au-syd
User: kshitijpgupta21@gnu.ac.in
Account: IBM India Pvt Ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063
Resource group: No resource group targeted, use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe target -g RESOURCE_GROUP'
```

A message indicates a new version is available:

```
New version 2.28.2 is available.
Change logs: https://github.com/IBM-Cloud/ibm-cloud-cli-release/releases/tag/v2.28.2
TIP: use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe config --check-version=false' to disable update check.
```

The user is prompted to update the plugin:

```
Do you want to update? [y/N] >
PS D:\SEM-7\CS\Practical_4\project> ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' found in repository 'IBM Cloud'
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' was already installed. Do you want to re-install it or not? [y/N] >
Plugin installation was canceled.
```

The user then attempts to install the plugin again:

```
PS D:\SEM-7\CS\Practical_4\project> ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' found in repository 'IBM Cloud'
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' was already installed. Do you want to re-install it or not? [y/N] > y
```

```
Do you want to update? [y/N] >
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' found in repository 'IBM Cloud'
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' was already installed. Do you want to re-install it or not? [y/N] >
Plugin installation was canceled.
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' found in repository 'IBM Cloud'
Plug-in 'container-service[kubernetes-service/ks] 1.0.665' was already installed. Do you want to re-install it or not? [y/N] > y
Attempting to download the binary file...
30.75 MiB / 30.75 MiB [=====] 100.00% 5s
32241152 bytes downloaded
Installing binary...
OK
Plug-in 'container-service 1.0.665' was successfully installed into C:\Users\kshitij\.bluemix\plugins\container-service. Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin show container-service' to show its details.
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud plugin install container-registry
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.3.11' found in repository 'IBM Cloud'
Plug-in 'container-registry[cr] 1.3.11' was already installed. Do you want to re-install it or not? [y/N] > y
Attempting to download the binary file...
12.25 MiB / 12.25 MiB [=====] 100.00% 3s
Ln 4, Col 17  Spaces:2  UTF-8  CRLF  YAML
```

```
Attempting to download the binary file...
12.25 MiB / 12.25 MiB [=====] 100.00% 3s
12842496 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.3.11' was successfully installed into C:\Users\Kshitij\.bluemix\plugins\container-registry. Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin show container-registry' to show its details.
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud target -g default
Targeted resource group default

API endpoint: https://cloud.ibm.com
Region: au-syd
User: kshitijgupta21@gnu.ac.in
Account: IBM India Pvt Ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063
Resource group: default
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud ks cluster config --cluster cr3cp7vs0jfnd8bg998g
OK
The configuration for cr3cp7vs0jfnd8bg998g was downloaded successfully.

Added context for cr3cp7vs0jfnd8bg998g to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
Ln 4, Col 17  Spaces:2  UTF-8  CRLF  YAML
```

The configuration for `cr3cp7vs0jfn8bg998g` was downloaded successfully.

Added context for `cr3cp7vs0jfn8bg998g` to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud cr namespace-add kshitijname
Adding namespace 'kshitijname' in resource group 'default' for account IBM India Pvt Ltd, C/o Software in registry au.icr.io...
The requested namespace is already owned by your account.

OK
PS D:\SEM-7\CS\Practical_4\Practical_4\project> ibmcloud cr login
Logging 'docker' in to 'au.icr.io'...
Logged in to 'au.icr.io'.

OK
PS D:\SEM-7\CS\Practical_4\Practical_4\project> docker tag img_007:1.0 au.icr.io/kshitijname/new_img_007
PS D:\SEM-7\CS\Practical_4\Practical_4\project> docker push au.icr.io/kshitijname/new_img_007
Using default tag: latest
The push refers to repository [au.icr.io/kshitijname/new_img_007]
1a436e65385b: Preparing
0c47c0547373: Layer already exists
a6f91ae66130: Layer already exists

Type here to search 34°C Smoke 13:03 16-10-2024

Logged in to 'au.icr.io'.

OK
PS D:\SEM-7\CS\Practical_4\Practical_4\project> docker tag img_007:1.0 au.icr.io/kshitijname/new_img_007
PS D:\SEM-7\CS\Practical_4\Practical_4\project> docker push au.icr.io/kshitijname/new_img_007
Using default tag: latest
The push refers to repository [au.icr.io/kshitijname/new_img_007]
1a436e65385b: Preparing
0c47c0547373: Layer already exists
a6f91ae66130: Layer already exists
5f70bf18a086: Layer already exists
5e99137ac49d: Layer already exists
7f30cde3f699: Layer already exists
fe810f5902cc: Layer already exists
dfd8c046cc02: Layer already exists
4fc242d58285: Layer already exists
denied: Your account has exceeded its image storage quota for the current month. See <https://cloud.ibm.com/docs/Registry?topic=Registry-troubleshoot-quota>
PS D:\SEM-7\CS\Practical_4\Practical_4\project> kubectl apply -f ./service.YAML
service/theskshitij-service unchanged
PS D:\SEM-7\CS\Practical_4\Practical_4\project> kubectl apply -f ./deployment.YAML
deployment.apps/kshitij2-deploy unchanged
PS D:\SEM-7\CS\Practical_4\Practical_4\project>

Type here to search 34°C Smoke 13:03 16-10-2024

Inbox (969) - kshitijpgupta21@... | Cloud_Security_2CSE709_2024 | Course | Apply end to end security | mycluster-syd01-u3c2x4-group | mycluster-syd01-u3c2x4-group | +

au-syd.containers.cloud.ibm.com/kubeproxy/clusters/cr3cp7vs0jfn8bg998g/service/#/replicaset/default/kshitij2-deploy-7f5dc7589b?namespace=default

kubernetes default Search

Workloads > Replica Sets > kshitij2-deploy-7f5dc7589b

Workloads Cron Jobs Daemon Sets Deployments Jobs Pods Replica Sets Replication Controllers Stateful Sets Service Ingresses Ingress Classes Services Config and Storage Config Maps Persistent Volume Claims Secrets

Metadata

Name: kshitij2-deploy-7f5dc7589b Namespace: default Created: Oct 3, 2024 Age: 1.days.ago UID: 5a272d2a-196b-4905-9e16-c9519d5a6ddf

Labels: app: mynew-app pod-template-hash: 7f5dc7589b

Annotations: deployment.kubernetes.io/desired-replicas: 1 deployment.kubernetes.io/max-replicas: 2 deployment.kubernetes.io/revision: 1

Resource information

Selector: app: mynew-app pod-template-hash: 7f5dc7589b Images: au.icr.io/kshitijname/internal-exam-img

Pods status

Running: 1 Desired: 1

Type here to search 34°C Smoke 13:03 16-10-2024

Certificate and progress:

Inbox (969) - kshitijpgupta21@... | Cloud_Security_2CSE709_2024 | IBMDeveloperSkillsNetwork SEC | mycluster-syd01-u3c2x4-group | mycluster-syd01-u3c2x4-group | +

courses.cognitiveclass.ai/certificates/613dd3a55e7546f19e928a5ac0164bd1

 COGNITIVE CLASS.ai

This is to certify that

KSHITIJ GUPTA

successfully completed and received a passing grade in

Apply end to end security to a cloud application

(SECIM03EN, provided by IBMDeveloperSkillsNetwork)

A course on cognitiveclass.ai
Powered by IBM Developer Skills Network.

Issued by
Cognitive Class

Issued on:
October 14, 2024

Authenticity of this certificate can be validated by going to:
<https://courses.cognitiveclass.ai/certificates/613dd3a55e7546f19e928a5ac0164bd1>

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courses.cognitiveclass.ai/courses/course-v1:IBMDeveloperSkillsNetwork+SECM03EN+v1/progress

Course Progress for 'kshitijpgupta21' (kshitijpgupta21@gnu.ac.in)

Your certificate is available
You've earned a certificate for this course.

[View Certificate](#)

100%
Pass 80%
0%
Final Total

Introduction

Introduction
No problem scores in this section

